TIMBER PRICING BRANCH

Interior Appraisal Manual

Effective October 1, 2017

Cost Base of: 2015

Includes Amendments	Effective Date
Amendment 1	November 1, 2017
Amendment 2	March 1, 2018
Amendment 3	May 1, 2018

BRITISH COLUMBIA

New 2017 Interior Appraisal Manual Highlights

The October 1, 2017, *Interior Appraisal Manual* (*IAM*) has been updated to a cost base of 2014/15. Changes by section as compared to the 2016 *IAM* are:

Section or Appendix	**Description**
1.1	Woodland Licence definition is updated to First Nations Woodland Licence. Ministry name definition is updated to Forests, Lands, Natural Resource Operations and Rural Development. Mature Timber definition is updated to correct section references to the *Wildfire Act* and Merchantability table in this IAM.
1.2.2	Stumpage appraisal parameters definition is updated to include 12-month running total harvest level.
1.3	Point of Appraisal (POA) list is updated to remove Lumby as a POA. Canoe POA is added to the list of POAs with an upcoming expiry date (December 2017).
1.4.4	Transportation Route is redefined for appraisals with a water transportation route available. Appraisals with water routes available must now use the lowest transportation (LC) cost calculation to determine the appraisal transportation route and POA. Suitable transportation route definition is removed.
1.5.4	Documentation requirements is updated to clarify that it is only required when cutting authorities are effective April 1, 2017 or later.

Section or Appendix	Description
2.2	New text to clarify that a reappraisal cannot be triggered for both suddenly and severely damaged timber and an amendment because of a Timber Damaging Event, for the same cutting authority. New text to clarify that any bonus bid/or offer remains in effect in a reappraisal (note -moved from 2.2.2 under changed circumstance to make it inclusive of changed circumstance, suddenly and severely damaged timber or MD reappraisals).
2.2.1	New text to clarify that a cutting authority amended because of a timber damaging event can have a reappraisal submitted at any time.
2.2.2	Changed circumstances updated to align with changes to the transportation route definition in section 1.4.4 (changed circumstance for water transportation SO is no longer required under the new TC calculation policy). Log dumps added to the list of changed circumstances. The provision where a licensee does not have to submit a changed circumstance reappraisal (i.e. <0.25/m^3) is update with new criteria (i.e. < $5000). Changed circumstance updated with a new provision to allow non-tributary development in a reappraisal (for cutting authority areas amended due to a Timber Damaging Event). Text updated for readability.
2.2.3	Timeline to submit a sudden and severe reappraisal extended from 30 days to 90 days.
3.1	Estimated Winning Bid equation is updated with new constants and variables.

Section or Appendix	Description
3.2	Estimated Winning Bid variables are updated to reflect the new MPS equation. New variable definitions added for Blowdown, Deciduous, Hemlock and Balsam, Exchange and Total Harvest. Text updated for readability.
3.3	Specified operations definition is realigned with new water transportation (TC) policy calculation in 1.4.4.
3.3.1-3.3.7	Specified Operations cost estimates are updated to the 2014/2015 cost year. Water transportation cost estimate (DB and Tow) is split into separate estimates for reservoir and natural lakes. Tow cost estimate equation is replaced with averages for natural and reservoir lakes.
3.3.8	A new Specified Operation is added for Uneven Aged Management.
3.4	Average CPI for the 2014/2015 cost base is updated.
4.2.1	Forest Management Administration TOA cost estimate equation is updated.
4.3.1	Development costs on Ministry of Transportation and Infrastructure roads are no longer required to be based on competitive bids. New text to clarify that development projects identified for future cutting authorities cannot be used in a reappraisal. A new provision is added to allow cost estimates for the reassessment of MOTI bridge design vehicle loads for non-tributary cutting authorities.

Section or Appendix	Description
4.3.2	New Biogeoclimatic Zones are added to support new road cost equations. Road subgrade cost equations are updated. New road variables are added. Snow and Ice road cost estimate is updated.
4.3.3	Culvert cost estimates is updated. Bridge cost estimates is updated.
4.3.4.1	Road stabilization cost estimate equations are updated.
4.3.5	Cattle guard, fence and pipeline cost estimates are updated.
4.3.6	Engineered cost estimate for upgrade is updated to include the reassessment of MOTI bridges for design vehicle load.
4.4	Road Management cost estimates are updated. A maximum size of 950 mm is added to culverts replacements that qualify as road management.
4.4.1	Road and Land Use Charges section is updated to include costs for traffic control when it forms part of a MOTI junction permit.
4.5	Basic silviculture cost estimates are updated. Definitions are updated for clarity. Silviculture cost estimate is updated to include a cost estimate for Enhanced Silviculture when a licensee commits to additional planting densities in eligible BEC zones. Cruise adjustment factor table is updated. Text is also updated for clarity.

Section or Appendix	Description
4.6	Low grade fraction table for those cutting authorities with less than 35% red and grey MPB is updated. McBride and Lumby POAs are removed from the low grade fraction table for those cutting authorities with 35% or greater red and grey MPB.
4.7	Return to Forest Management and the Market Logger Cost estimate equation are both updated.
5.1.1	The definition for upset value for decked timber is updated for clarity.
6.4.3	Cruise based salvage equation, variables and base rate table are updated. The annual redetermination date of June 1 is changed to the 1st day of the month following a manual update (i.e. same time as a MPS equation update).
6.4.4	BCTS salvage section is updated for clarity.
6.11	A new section for cutting authorities issued with funding from the Forest Enhancement Society of BC.
6.6	Area based stumpage rates are updated.
Appendix 1	Equipment and labour rates are updated to the 2014/2015 cost year.
Appendix VI	Log dump list is updated. Clearwater, lost Cabin and bear Creek are removed.

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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 and Natural Resource Operations;

"**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 *Forest 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 *Forest 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;

"**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);

"**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** Ra**t**e" 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;

"**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 Forest 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 Values, BC Consumer Price Index, 12-month running total harvest level 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 POAs that may be considered for use in the appraisal are set out in Table 1-1 unless:

   a. five years have passed from the date that a milling facility was permanently rendered incapable of producing lumber and chips, and

   b. it was the only milling facility associated with that POA, or

   c. The appraisal effective date is past the expiry date for that POA indicated in subsection (3) of this section.

   For the purposes of subsection (1)(a), permanently rendered incapable means the equipment required to produce lumber and chips has either been destroyed or permanently removed from the site, or has not been in use for a period of five years or more.

2. The selling price zone indicated in Table 1-1 for the point of appraisal determined under this section must be used in the appraisal; with the exception of determining the Conifer Zonal Volume (as provided in Table 3-2).

3. The following Point of Appraisal will expire on the date indicated; Slocan (October 24, 2018), Canoe (December 23, 2017).

Table 1-1: Points of Appraisal

Zone 5 (Northern Interior)	Zone 6 (Skeena)	Zone 7 (Southern Interior)	Zone 8 (South Cariboo)	Zone 9 (Fort Nelson-Peace)
Bear Lake Burns Lake Engen Fort St. James Fraser Lake Houston Isle Pierre Mackenzie Prince George Quesnel Smithers Strathnaver Vanderhoof	Terrace	Adams Lake Armstrong Canal Flats Canoe Castlegar Craigellachie Creston Elko Galloway Grand Forks Kelowna Lavington Merritt Midway Princeton Radium Revelstoke Slocan Thrums Vavenby Westbank Ymir	100 Mile House Chasm Squamish 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. 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 Harvest Land Base (THLB).

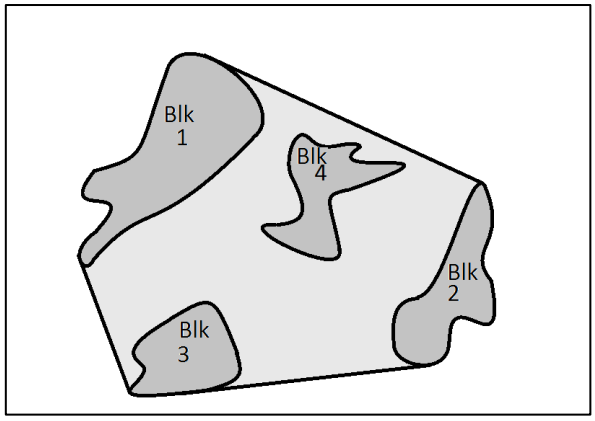


Figure 1: Example of polygon enclosing four blocks in a cutting authority.

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[1]; or
   b. each cutblock has less than 35% MPB attacked Lodgepole pine[1].

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. For cutting authorities located in an area with water transportation routes available, the transportation route in subsection (1) means the route with the lowest transportation cost (TC) using the following equation:

[1] Net Merchantable Volume as indicated in the appraisal summary report from the cruise compilation.

TC = [1.834 * (CYCLE + (0.5 * CYCLE_INC6)) * CPIF] + [SOs * (CPI/ACPI)]

Where

CYCLE = as defined in section 3.2.13 with the exception of subsection (3)(d) of that subsection.

CYCLE_INC6 = as defined in section 3.2.13

SOs = the sum of the water transportation specified operations costs from section 3.3.1 that apply to the transportation route.

CPI = as defined in section 3.2.1

ACPI = as defined in section 3.4

CPIF = as defined in section 3.2.1

3. For cutting authorities other than those in subsection (2), 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 with the exception of subsection (3)(d) of that subsection.

4. A transportation route must be:

   a. a route suitable for the transportation of logs at the time of the submission of the original appraisal in ECAS; or

   b. 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

1. 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.

   a. In the case of a road section or bridge,

      i. 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 been permanently decommissioned (i.e. no authorizations are 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 in order to determine a stumpage rate or an upset stumpage rate, that information must include:

   a. The Cruise Compilation Report, and

   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.

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^3, 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^3 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. A submission in ECAS must be signed 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 signed 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 Map

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

1.5.4 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.

        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 type 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

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.
   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 (2) 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^3 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 **camp or 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

b. the cutting authority harvest area is different from what was used in the original appraisal. These changes include:

i. an absolute[1] 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[1] change in **harvest area** that exceeds 3 hectares from an original appraisal for a **cruise based** cutting authority.

Note: 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.

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.

[1]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.

3. A licensee representative must submit a changed circumstance reappraisal data submission and/or certify that no changed circumstances have occurred 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 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 $5,000. Total stumpage is calculated using the rate ($/$m^3$) x the total net cruise volume (m^3).
      i. The provision in paragraph (b) above does not apply to a changed circumstance for harvest area under subsection (2)(b)(ii).
      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 harvest area 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.

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. Woodlot Adjustable Stumpage Rates:

   The stumpage rate for a cutting authority issued for a woodlot 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).

EWB ($/m^3) = CPIF * [4.876
+ 0.3552 * RSP
+ 17.27 * CE
- 121.8 * CE * CEDAR_DECAY
- 15.32 * HE
- 5.314 * (BA + 2 * (BA – 0.5) * BA50)
- 7.966 * LAYP
- 5.476 * (FIRYP) * DRY_BELT
- 20.77 * CABLE
+ 1.624 * ln (VOL/1000)
- 16.64 * DECAY
- 11.93 * FIRE
+ 7.889 * ln (VPT)
+ 1.523 * ln (VPH_CON)
- 1.834 * (CYCLE + (0.5 * CYCLE_INC6))
- 8.440 * ZONE_9
- 12.15 * (DECID – BLOWDOWN) * CB
- 5.360 * (CB * (1 - RG35))
- 5.646 * (CB * RG35)
+ 0.9204 * AUC2016
- 19.09 * GREY * CB * RG35
- 0.007371 * GS_SLOPE * GS_FRACTION
+ 65.48 * DECK
+ 1.457 * DANB
- 4.172 * PC
- 0.04174 * SLOPE
- 9.400 * (BLOWDOWN – GREY)
- 28.63 * EXCHANGE
+ 0.4584 * TOT_HARV_12MR]

If EWB less than $0.25/m^3 then EWB = $0.25/m^3

Note: ln = natural logarithm.

3.2 Estimated Winning Bid Variables

3.2.1 Consumer Price Index Factor (CPIF)

1. CPIF is the consumer price index factor calculated as CPI/144.3; and
2. CPI is the Monthly B.C. Consumer Price Index as published every month in the Stumpage Appraisal Parameters.

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 from the Stumpage Appraisal Parameters published each month by Timber Pricing Branch (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:

      Final LO Cruise LRF = LO Cruise LRF + (LO green attack volume * 3 + LO red attack volume * 33 + LO grey attack volume * 83) ÷ 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	107	81	94	98	86
Spruce	128	107	118	119	104
Balsam	120	101	107	112	95
Douglas Fir	97	-	81	88	-
Larch	93	-	81	88	-
Cedar	72	52	63	64	-
Hemlock	74	55	66	69	-
White Pine	91	-	79	84	-
Yellow Pine	-	-	82	92	-

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 YP)

1. LAYP 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 YP)

1. FIRYP 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 (CABLE)

1. CABLE is the fraction of harvest method volume that is appraised as overhead cable yarding (includes Skyline < 600m horizontal, or Tethered or winch-assist systems on slopes that are too steep for conventional ground-based equipment).

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 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).
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 Major Tenure Cutting Authority means a cutting authority that does not meet the criteria in subsections (1) or (2).

Table 3-2: Zonal Volume[1]

Zone	Total Net Coniferous Volume (m^3)
5	50,874
6	49,869
7 OK	32,525
7 SE	37,189
8	41,052
9	37,490

3.2.9 Conifer Decay (DECAY)

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

3.2.10 Fire Damage (FIRE)

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

[1] 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

3.2.11 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 (VPH_CON)

1. VPH_CON is the net coniferous volume per hectare (m^3/ha).

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 transportation route (refer to section 1.4.4) and deemed to include all costs of loading, hauling, weighing, unloading, return time, and unavoidable delays.
   a. If a district has developed standard cycle time schedules from specific road junctions to the point of appraisal, the person who determines the stumpage rate must use these schedules to calculate the Primary 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.
   b. The primary cycle time is calculated using the procedures in subsection (c) through (f), using distances each rounded to the nearest 0.1 km.
   c. Determine the cycle time from each cutblock to the common junction in accordance with the following steps:
      i. 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 junction for the cutblock;
      ii. From the junction in subparagraph (c)(i), determine the cycle time to the nearest point over which all appraised timber on the cutting authority area must travel on the way to the point of appraisal (the "common junction"); and
   d. Weight the cycle times in subsection (c) by the Total Net Cruise Volume for each cutblock to determine the weighted average cycle time to the common junction.
   e. Determine the cycle time from the common junction by road to:
      i. the mill associated with the point of appraisal (POA) that is closest to the cutting authority area point of appraisal chosen in accordance with section 1.4.4;
      ii. in the case of a route to the point of appraisal involving rail transportation, the appraisal place of unloading for placement on railcars; or

iii. in the case of a route to the point of appraisal involving water transportation:

aa. the location closest by road to the cutting authority area that is listed in Appendix VI; and that has not been determined unsuitable under section 1.4.4.1; or

bb. any closer location to the cutting authority area not included in Appendix VI that has in place authorizations allowing use of the location as a transfer point for water transportation of timber; or

iv. in the case of a route to the point of appraisal involving water transportation and subject to a changed circumstance reappraisal where one or more log dumps was used during operations:

aa. the first and second closest location by road to the cutting authority area that is listed in Appendix VI and that has not been determined unsuitable under section 1.4.4.1; or

bb. any closer locations to the cutting authority area not included in Appendix VI that has in place authorizations allowing use of the location as a transfer point for water transportation of timber;

and weight the cycle time from the common junction by the Total Net Cruise Volume for each location; and

f. Sum the times calculated under subsection 3(d) and 3(e), and add an estimate for unavoidable delay of 93 minutes for cable yarding systems or 78 minutes for all other systems.

4. SECONDARY is the cycle time when logs must be truck hauled following dewatering.

a. If a district has developed standard cycle time schedules from specific road junctions to the point of appraisal, the person who determines the stumpage rate must use these schedules to calculate the secondary cycle time.

b. To determine the secondary cycle time, use distances each rounded to the nearest 0.1 km from the reload site to the closest mill associated with the point of appraisal.

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 = 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 (AUC2016)

1. AUC2016 = 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 (GS)

1. GS_SLOPE is $(GSCCPC\_Slope)^2$ 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^3 of the cutting authority area that is to be ground skid clear cut.
8. GSPC_Vol is the volume in m^3 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	3.3
	DCH		Williams Lake	29	A, B, C, D	2.5
DCS	DCS					3.6
DFN	DFN					1.0
DJA	DJA					2.3
DKA	DHW	18	Robson Valley Kamloops	17 11	A	2.6
	DKA		Excluding proxy district DHW			3.9
DKM	DKM					1.9
DMH	DMH					3.8
DMK	DMK					2.0
DND	DND					3.1
DOS	DOS					3.1
DPC	DPC					1.6
DPG	DHW	18	Robson Valley Kamloops	17 11	A	2.6
	DPG		Excluding proxy district DHW			3.4
DQU	DQU					3.3
DRM	DRM					2.3
DSE	DAB	3, 8, 23	Arrow Boundary	1 2		2.8
	DCO	55, 56	Golden Revelstoke	7 27		2.2
	DKL		Kootenay Lake	13		2.4
DSS	DSS					2.6
DVA	DVA					2.2

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 – 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.

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 *Forest 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 *Forest 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 (BLOWDOWN – GREY) is <0 then BLOWDOWN = 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.

3.3 Specified Operations

1. For adjustable rate cutting authorities, specified operation cost estimates described in this section may be included in an appraisal data submission if
   a. it is used in the harvesting or transportation of timber on the cutting authority; or
   b. the transportation route with the lowest transportation cost selected for the purposes of section 1.4.4(2) includes water transportation.
2. For a Timber Sale Licence, specified operation cost estimates described in this section may be included in an appraisal data submission if
   a. the harvesting or transportation of timber requires the operation(s); or
   b. the transportation route with the lowest transportation cost selected for the purposes of section 1.4.4(2) includes water transportation; or
   c. for high development costs (refer to section 3.3.7).
3. Where appropriate, the cost estimates are weighted according to the applicable net cruise volume.

3.3.1 Water Transportation Systems

1. Water transportation 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; or, in the case of water transportation of logs by barge, all analogous costs involved in the barging of logs.
2. The cost estimate may include an amount for each of the following:
   a. Dump and Boom
      i. Reservoir and Marine = $\$3.10/m^3$
         (Reservoir: Arrow, Kinbasket, Ootsa, Revelstoke, and Williston)
      ii. Natural Lake = $\$1.72/m^3$
   b. Tow
      i. Reservoir and Marine = $\$1.77/m^3$
         (Reservoir: Arrow, Kinbasket, Ootsa, Revelstoke, and Williston)
      ii. Natural Lake = $\$1.17/m^3$
   c. Dewater and Reload = $\$2.08/m^3$
      (Only considered if a dam transfer is required or if logs are dewatered and reloaded on trucks for further transportation to the mill yard)

3.3.2 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 = $\$2.08/m^3$

      (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 3-4: Railway Transportation

Origin	Cost Estimate	Point of Appraisal
Leo Creek	$\$13.18/m^3$	Fort St. James
Lovell	$\$17.31/m^3$	Fort St. James
Bear Lake	$\$24.27/m^3$	Fort St. James
Minaret Creek	$\$26.66/m^3$	Fort St. James
Niteal	$\$23.23/m^3$	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 $\$3.91/m^3$.

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 $\$1.29/m^3$.

3.3.3 Camps

1. A camp specified operation may be included in an appraisal if all of the criteria in this section are met for the cutting authority area being appraised.
2. Workers who work on the cutting authority area must reside in the camp and travel each day of work during timber harvesting and hauling operations from the camp to the cutting authority area.
3. The licensee or the managing licensee submitting the appraisal must incur the following:
   a. Costs to establish the camp either through capital expenditure or through long-term lease arrangements, and
   b. Costs to operate and maintain the camp.

   A managing licensee means a licensee who has entered into a long-term forest management arrangement with the holder of the cutting authority and bears the camp costs in (a) and (b) and all the harvesting, transportation and tenure obligations costs relating to the cutting authority.
4. The camp must:
   a. Be comprised of buildings or structures of a permanent or semi-permanent nature,
   b. Have a cookhouse(s) and a bunkhouse(s),
   c. Have full time camp staff, and
   d. Be located outside the municipal boundary of a support centre listed in Table 3-5.
5. The camp specified operation cost estimate is:
   a. For a camp with rail access only = $\$4.11/m^3$
   b. For a remote camp = $\$3.53/m^3$

      Where a remote camp is defined by a loaded one-way log truck haul greater than:
      i. Five (5) hours to a support centre, or
      ii. Three (3) hours to a support centre and the primary log haul is to either a log dump for water transportation and/or a rail siding for a rail transportation specified operation.
   c. For a non-remote camp $\$/m^3 = 227.37 * CAMPV^{-0.3886}$

      Where CAMPV is the average volume for the specified camp in the list of camps maintained by Timber Pricing Branch.
      i. If the equation yields a cost estimate more than $\$2.93/m^3$, then use $\$2.93/m^3$.
      ii. If the equation yields a cost estimate less than $\$1.29/m^3$, then use $\$1.29/m^3$.
      iii. For camps without an average volume on the list maintained by the Timber Pricing Branch, the cost estimate is $\$1.74/m^3$.

6. a. A licensee must submit camp cost information in the 2015 and future Interior Log Cost Report (ILCR) to be eligible for a camp cost estimate in a cutting authority issued on or after July 2, 2016.

   b. If a camp is shared by more than one licence/or licensee, the total volume harvested and total costs must be reported in the 2017 and future ILCR. In the case of more than one licensee (or a managing licensee), there must be a written agreement between the licensees documenting the cost sharing arrangement and identifying one licensee responsible for submitting the total volume harvested and total costs of the camp in the ILCR.

Table 3-5: Support Centres

North Area			
Burns Lake Houston Kitimat Chetwynd Vanderhoof	Kitwanga New Hazelton Fort St. James Fort Nelson McBride	Smithers Stewart Fraser Lake Mackenzie Valemount	Terrace Prince George Fort St. John Dawson Creek

South Area			
Boston Bar Clearwater Hope Canal Flats Castlegar Cranbrook Williams Lake	Kamloops Kelowna Lillooet Creston Fernie Golden	Merritt Pemberton Penticton Grand Forks Greenwood Invermere Princeton	Salmon Arm Vernon Nakusp Nelson Revelstoke 100 Mile House Quesnel

3.3.4 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: $\$3.99/m^3$ for the harvest method volume appraised as skyline.

3.3.5 Helicopter Logging

1. The specified operation cost estimate is $\$96.75/m^3$ for the harvest method volume appraised as Heli.

3.3.6 Horse Logging

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

3.3.7 High Development Cost

1. For BCTS timber sale licences only, where the development cost estimate (DC) determined under chapter 4 is greater than $\$3.01/m^3$, the high development cost specified operations estimate (HDC) is calculated as follows:

   HDC $\$/m^3$ = DC – 1.35

   If DC < = 3.01, HDC = 0

3.3.8 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 an entire cutting authority meets the requirements in this section,
   b. where greater than 50% of the net cruise volume (before leave tree reductions) has been retained, and
   c. 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 $\$1.50/m^3$ (in addition to the partial cut contribution (PC) 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 total of the specified operations that are applicable to the appraisal or reappraisal of the cutting authority area.

2. Expressed as an equation:

$$FEWB = EWB - (SO \times (CPI \div ACPI))$$

Where:

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 $\$/m^3$.

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

ACPI = 140.9 (the average CPI for the cost base (2014/15))

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

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)

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),
- Archaeological surveys,
- Right-of-way easements,
- Foreshore and other land leases,
- Tree marking Beetle probing & Pheromone baiting,
- Engineering (bridge inspections, road layout, survey including geotechnical surveys, and design, other than those applicable as engineered cost estimate).
- Suitable Secondary Stand Structure Survey.

The forest management administration cost estimate in an appraisal is determined as follows:

$$\text{FMA } (\$/m^3) = 4.7016 + (0.0030 * \text{CP slope}^2)$$

Where:

CP Slope is the cutting permit average slope from the Cruise Appraisal Summary Report.

If the equation yields less than $\$4.74/m^3$ then use $\$4.74/m^3$. If the equation yields more than $\$14.69/m^3$ then use $\$14.69/m^3$.

4.2.2 Final Forest Management Administration (FFMA)

For cruise based cutting authorities:

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

For scale based cutting authorities:

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

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.

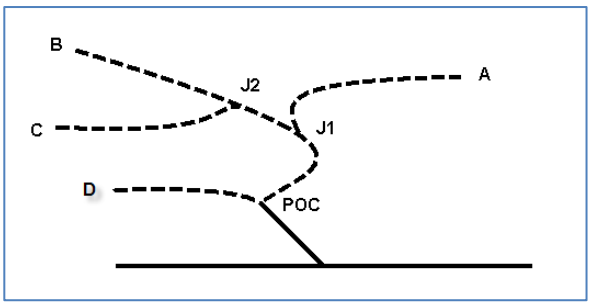


Figure 2: Combo Road Examples – POC to A, B, or C; POC to D; J1 or J2 to a POT.

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 the Ministry of Transportation and Infrastructure 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^3)	=	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^3)	=	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 charges 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^3 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. Right-of-way felling and logging is excluded.

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 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

   BWBS - Boreal White – Black Spruce

   MS - Montane Spruce

   IDF - Interior Douglas-fir

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	3,948 + (133 * SLOPE % * LT) + (5,947 * LT)
3	3,721 + (4,244 * LT)
4	4,599 + (146 * SLOPE %) + (4,399 * LT) + (1,551 * WET)
5	4,063 + (174 * SLOPE %) + (2,241 * LT)
6	4,606 + (92 * SLOPE %) + (2,668 * LT) + (2,889 * ESSF)
7	8,841 + (6,706 * WET) + (2,921 * LT) - (3,266 * BWBS)
8	4,398 + (4,873 * LT)
9	8,164 + (155 * SLOPE %) + (7,569 * LT) – (5,012 * IDF) – (3,099 * MS)
10	4,640 + (241 * SLOPE %) + (2,702 * LT)
11	16,397 + (485 * SLOPE %)
12	8,225 + (138 * SLOPE %) + (6,725 * LT)

Where:

Road groups are defined in Table 4-1.

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

ROCK % = 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

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

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

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

4.3.2.4 Subgrade Construction Road Groups

1. For tabular subgrade construction and stabilizing material cost equations, the road groups in Table 4-1 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 4-1: 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	Vanderhoof	Prince George TSA, SBs C, E, F & I, TFL 52 Blk B[1], Cascadia TSA Blk 8
6		Mackenzie TSA, SBs G through P, Prince George TSA SB's A & B
7	Peace Fort Nelson	Mackenzie TSA, SBs A through F
8		Williams Lake TSA, SBs A through I Quesnel TSA, SBs A through D

[1] Portion of TFL 52 that was within the former TFL5

		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 $7,584/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:

   http://www.for.gov.bc.ca/tasb/legsregs/fpc/FPCGUIDE/Guidetoc.htm

4.3.3.1 Culvert Cost Estimates

1. The costs in Table 4-2 include all costs of supplies, transporting the culvert to the jobsite and installation of the culvert to the final subgrade stage. 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 4-2.
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 4-2.
4. Engineered cost estimates are required where a culvert larger than 1.8 m, or 20 m in length is used.

Table 4-2: Culvert Cost Estimates

INSTALLED CULVERT COST ESTIMATE ($)														
Culvert length (m)	Equivalent Round Diameter													
	0.3	0.4	0.45	0.5	0.6	0.7	0.8	0.9	0.95	1	1.2	1.4	1.6	1.8
	X-Sectional Area (m^2)													
	0.07	0.13	0.16	0.2	0.28	0.38	0.5	0.64	0.71	0.79	1.13	1.54	2.01	2.54
9	502	519	596	683	884	1122	1396	1706	1875	2054	2858	3808	4904	6147
10	502	551	637	734	957	1221	1526	1871	2059	2257	3150	4206	5424	6805
11	502	584	679	785	1030	1321	1656	2035	2242	2460	3442	4604	5944	7462
12	502	616	720	835	1103	1420	1786	2200	2425	2663	3735	5002	6464	8120
13	502	649	761	886	1176	1520	1916	2364	2608	2866	4027	5400	6983	8778
14	502	681	802	937	1250	1619	2045	2529	2792	3069	4319	5798	7503	9436
15	502	714	843	988	1323	1719	2175	2693	2975	3272	4612	6196	8023	10094
16	519	746	884	1038	1396	1818	2305	2858	3158	3475	4904	6593	8543	10752
17	537	779	925	1089	1469	1918	2435	3022	3341	3678	5197	6991	9062	11409
18	555	811	966	1140	1542	2017	2565	3187	3525	3881	5489	7389	9582	12067
19	573	843	1007	1191	1615	2117	2695	3351	3708	4084	5781	7787	10102	12725
20	592	876	1049	1241	1688	2216	2825	3515	3891	4287	6074	8185	10622	13383

4.3.3.2 Bridge Cost Estimates

1. The cost estimates for new construction, new single-span, single-lane, steel girder bridges from 6 m to 18 m in length with untreated timber decks, and concrete lock block, log crib/or sill foundations with heights from 0.3 m to 1.5 m (or 2-tiers for concrete blocks) are determined from Table 4-3 or 4-4.
2. The costs in Tables 4-3 and 4-4 include all costs of materials, and installation to the final subgrade stage. This includes items such as site plans and general arrangement, design, decking materials, ballast walls, curbs and rails, bearing pad assemblies, miscellaneous steelwork and hardware, approach works and crossing certification/assurance statement.
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 0.5 m, use 0.6 m.
4. Span Length (m) is the distance measured from the one end of the steel girder to the other end of girder.
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. Each measured abutment height is then added together and averaged to determine the average abutment height.
6. Abutment Tiers (#) is the number of rows of concrete lock blocks. For bridges differing in # of rows for each abutment, the average cost between 1 and 2 tiers in the table is used.

Table 4-3: L-75 and CL/BCL-625 Bridge Cost Estimates

Super Structure Length (m)	Abutment Height (m) Log Crib or Sill					Abutment Tiers (#) Concrete Lock Block	
	0.3	0.6	0.9	1.2	1.5	1	2
6	22,800	22,800	22,800	26,974	32,341	33,766	42,123
9	23,973	25,762	28,744	32,918	38,285	39,710	48,067
12	32,375	34,164	37,145	41,320	46,687	48,111	56,469
15	43,234	45,023	48,004	52,179	57,546	58,970	67,328
18	56,550	58,339	61,321	65,495	70,862	72,287	80,644

Table 4-4: L-100 Bridge Cost Estimates

Super Structure Length (m)	Abutment Height (m) Log Crib or Sill					Abutment Tiers (#) Concrete Lock Block	
	0.3	0.6	0.9	1.2	1.5	1	2
6	23,700	23,700	23,700	27,874	33,241	34,666	43,023
9	25,073	26,862	29,844	34,018	39,385	40,810	49,167
12	33,675	35,464	38,445	42,620	47,987	49,411	57,769
15	44,734	46,523	49,504	53,679	59,046	60,470	68,828
18	58,250	60,039	63,021	67,195	72,562	73,987	82,344

7. In addition to the cost estimates in Table 4-3 or 4-4, an engineered cost estimate may be included with the tabular cost estimate for the following material and activities:
   a. The costs of delivering the structure and materials from the Free on Board (FOB) site to the install site.
   b. The costs of mobilization and demobilization if the equipment is not required for adjacent tabular or other ECE development projects.
   c. The costs of supply, installation and removal of a work bridge.
8. Bridge cost estimates for types or sizes not represented in this section require an engineering cost estimate.

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. rock drilling, explosives, loading of explosives and blasting,
   c. loosening and/or pushing materials in borrow pits when required (e.g., compacted or cemented gravel, oversize material, etc.),
   d. loading gravel trucks,
   e. truck hauling, and
   f. spreading and compacting the material.
3. 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.
4. 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

1. 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	19,218
3	7,787 + (1,003 * D) + (7,171 * Q)
4	12,733
5	8,407 + (216 * D)
6	12,973

7	11,923
8	8,407 + (216 * D)
9	11,723
10	15,364
11	15,364
12	15,364

Where:

Road groups	=	as defined in Table 4-1.
D	=	Distance in kilometres from source of ballast to the centre of the section that requires ballast (rounded to the nearest 0.1 km)
Q	=	1 if quarried or ripped rock, otherwise Q = 0

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

1. 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:

a.	Cattle Guards	$6,484 each
b.	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	$1,297 per 100 m
c.	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	$3,173 each
b.	Multiple pipe crossing (where 2 or more pipes are crossed within the same right-of-way)	$2,462 per pipe

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 type 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 there are a minimum of three bidders and a contract is awarded to the lowest bidder.
        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 the Ministry of Transportation and Infrastructure (MOTI). The submitter must receive approval of the reassessment from the MOTI 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 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, where the timber pricing co-ordinator is satisfied that when included in an appraisal it will result in an appraisal with the highest stumpage rate. 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.

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

Area	TFL #	TSA	TSA #	Supply Block	$/m^3
Northern Interior		Bulkley	3	All	4.21
		Cascadia	45	9, 10 & 11	4.21
		Cassiar	4	All	4.21
		Dawson Creek	41	All	1.35
		Fort Nelson	8	All	1.35
		Fort St. John	40	All	1.35
		Kalum	10	All	4.21
		Kispiox	12	All	4.21
		Lakes	14	All	1.91
		Mackenzie	16	All	2.26
		Morice	20	All	1.91
		Nass	43	All	4.21
		Pacific	44	All	4.21
		Prince George	24	A, B	0.95
		Prince George	24	C	0.95
		Prince George	24	D	1.73
		Prince George	24	E, F, I	1.92
		Prince George	24	G, H	2.89
	1				4.21
	30				2.89
	41				4.21
	48				1.35
	53				2.89
Southern Interior		100 Mile House	23	A, B, C, D	2.05
		100 Mile House	23	E, F, G. H	3.07
		Arrow	1	All	3.02
		Boundary	2	C, D, G	3.02
		Boundary	2	E, F	2.20
		Cascadia	45	1, 2, 3 & 4	3.02
		Cascadia	45	5, 6, 7 & 8	2.89
		Cranbrook	5	All	2.17
		Golden	7	All	3.84
		Invermere	9	All	2.17
		Kamloops	11	1	1.96
		Kamloops	11	2, 3, 4	2.87
		Kootenay Lake	13	All	1.71

Area	TFL #	TSA	TSA #	Supply Block	$/m^3
Southern Interior		Lillooet	15	All	4.21
		Merritt	18	All	2.15
		Okanagan	22	1, 2, 3	2.37
		Okanagan	22	4, 5, 6, 7	3.28
		Okanagan	22	8, 9	3.84
		Quesnel	26	A, B, C, D	1.67
		Quesnel	26	E, F, G, H, I	2.89
		Revelstoke	27	All	3.84
		Robson Valley	17	All	1.96
		Williams Lake	29	A, B, C, D, E, I	2.08
		Williams Lake	29	F, G, H, J	2.05
		Williams Lake	29	K, L, M, N	3.07
	3				3.02
	5[1]				1.92
	8				2.37
	14				2.17
	18				1.96
	23				3.02
	33				3.84
	35				2.87
	49				3.28
	52				2.89
	55				3.84
	56				3.84
	59				2.37

[1] The portion of TFL 52 that was within the former TFL 5

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 an 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:

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

2. For scale based cutting authorities:

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

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

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

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:

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

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^3). Where ATNCV is the Total Net Conifer Volume adjusted by the factor in Table 4-6 by species and selling price zone (SPZ).

[1] 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	0.827	0.867	1.249	0.959	0.932	1.032	0.940	0.505	1.104
6	0.653	0.851	1.009	0.982	0.932	0.740	0.870	0.505	1.104
7	0.815	0.869	0.987	0.915	0.931	0.873	0.965	0.504	1.104
8	0.760	0.867	1.045	0.959	0.932	0.956	1.006	0.505	1.104
9	0.779	0.867	1.009	0.959	0.932	0.831	0.950	0.505	1.104

Cost =

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

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^3).

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.

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

(except if partial cut percent > = 90%, then PCUT = 0)

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

CAPCUT% = (CA TNCRV/CA Gross TNCRV) * 100

CA Gross TNCRV (m^3) = vGS(C) + (vGS(P) / GS(PCUT/100)) + vOC(C) + (vOC(P) / OC(PCUT/100)) + vSK(C) + vHorse(C) + vHeli(C) + (vHeli(P) / Heli(PCUT/100))

Where:

PCUT	=	Logging method PCUT (%)
CAPCUT	=	Cutting Authority (CA) partial cut percent
V	=	Harvest Method Volume (m^3) 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. The FSP must specify the minimum planting density to be achieved 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. Costs in Table 4-7 for enhanced silviculture and in the Interior Douglas-fir BEC zones dk1, dk3, dk4, xh2 and xm may only be included in the calculation of the silviculture cost estimate if the area is being managed to an even-aged stand as a result of damage caused by the 2017 wildfires.

4.5.2 Root Disease Control

1. 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. The cost estimates are determined on the basis of information at hand using the procedures approved by the region or Timber Pricing Branch.

4.5.3 Total Silviculture Cost Estimate

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

[1] For scale based CAs, use ATNCV. For cruise based CAs use TNCRV.

Table 4-7: BEC Silviculture Cost Estimates

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

BEC Unit	Basic $/ha	Enhanced $/ha
BWBS	1,167	na
BWBSdk	765	na
BWBSdk1	765	na
BWBSdk2	764	na
BWBSmk	1,167	na
BWBSmw	1,280	na
BWBSmw1	1,231	na
BWBSmw2	1,242	na
BWBSvk	1,168	na
BWBSwk1	1,078	na
BWBSwk2	1,107	na
BWBSwk3	1,107	na
CWH	535	na
CWHvh1	535	na
CWHvh2	535	na
CWHvm	535	na
CWHvm1	535	na
CWHvm2	535	na
CWHvm3	535	na
CWHwh1	535	na
CWHwh2	535	na
CWHwm	535	na
CWHws1	485	na
CWHws2	616	na
CWHxm1	535	na
CWHxm2	535	na
ESSF	1,091	na
ESSFdc1	1,093	na
ESSFdc2	1,072	na
ESSFdk	1,026	na
ESSFdk1	1,026	na
ESSFdk4*	1,026	na
ESSFdm	1,091	na
ESSFdv	1,091	na
ESSFdvp	1,091	na
ESSFmc	881	212
ESSFmh	1,093	na
ESSFmk	1,091	na
ESSFmm1	1,091	na
ESSFmm2	1,091	na
ESSFmv1	684	317
ESSFmv2	1,013	na
ESSFmv3	801	na
ESSFmv4	834	na

BEC Unit	Basic $/ha	Enhanced $/ha
ESSFmw	947	na
ESSFvc	3,530	na
ESSFvv	1,640	na
ESSFwc1	1,849	na
ESSFwc2	1,360	na
ESSFwc3	1,509	na
ESSFwc4	1,570	na
ESSFwh1	1,849	na
ESSFwh2	1,697	na
ESSFwh3	1,849	na
ESSFwk1	1,282	272
ESSFwk2	1,215	na
ESSFwm	1,697	na
ESSFwm2	1,697	na
ESSFwm3	1,570	na
ESSFwm4	1,091	na
ESSFwv	1,091	na
ESSFxc	984	na
ESSFxc1	984	na
ESSFxc3	984	193
ESSFxv1	364	na
ESSFxv2	364	na
ICH	1,552	na
ICHdk	1,552	198
ICHdm	1,552	na
ICHdw	1,249	na
ICHdw1	1,908	na
ICHdw2	1,642	na
ICHdw4	1,689	na
ICHmc1	606	na
ICHmc2	606	na
ICHmk1	1,103	na
ICHmk2	1,088	na
ICHmk3	1,174	288
ICHmm	1,552	na
ICHmw1	1,647	na
ICHmw2	1,689	na
ICHmw3	1,523	242
ICHmw4	1,689	na
ICHmw5	1,689	na
ICHvc	1,552	na
ICHvk1	3,108	na
ICHvk2	2,893	165
ICHwc	3582	na

BEC Unit	Basic $/ha	Enhanced $/ha
ICHwc1	3582	na
ICHwc4	3582	na
ICHwk1	2,228	na
ICHwk2	1,209	328
ICHwk3	2,113	148
ICHwk4	2,113	148
ICHxw	1,552	na
IDF	849	na
IDFdc	849	na
IDFdk*	767	na
IDFdk1	1,108	617
IDFdk2	1,056	na
IDFdk3	606	1,006
IDFdk4	767	933
IDFdm1	1,097	na
IDFdm2	872	na
IDFdw	849	na
IDFmw1	1,552	na
IDFmw2	1,421	na
IDFww	849	na
IDFxh1	1,378	na
IDFxh2	1,411	434
IDFxh4	1,378	na
IDFxm	849	851
IDFxw	849	na
MH	1,578	na
MHmm2	1,578	na
MS	752	na
MSdc1	1,370	na
MSdc2	1,423	na
MSdc3	1,423	na
MSdk	1,046	na
MSdk1	1,046	na
MSdk4*	1,046	na
MSdm1	859	na
MSdm2	981	na
MSdv	752	na
MSxk	762	na
MSxk1	768	na
MSxk2	768	na
MSxv	364	218
PP	72	na
PPdh1	73	na
PPdh2	72	na
PPxh1	73	na
PPxh2	73	na
SBPS	491	na
SBPSdc	529	272
SBPSmc	469	308
SBPSmk	562	423
SBPSxc	286	315
SBS	881	na
SBSdh1	881	na
SBSdh2	882	na
SBSdk	987	300
SBSdw1	1,059	334
SBSdw2	757	373
SBSdw3	816	220
SBSmc1	984	281
SBSmc2	834	313
SBSmc3	648	319
SBSmh	881	294
SBSmk1	843	196
SBSmk2	805	na
SBSmm	890	261
SBSmw	993	241
SBSvk	1,416	391
SBSwk1	1,107	133
SBSwk2	1,072	na
SBSwk3	978	227
SWB	1,210	na
SWBdk	1,210	na
SWBdks	1,210	na
SWBmk	1,210	na
SWBmks	1,210	na
SWBvk	1,210	na
SWBvks	1,210	na

* Indicates BEC units that have expired and are not to be included in appraisals submitted after October 31, 2016. Reference applicable Land Management Handbook crosswalk tables where necessary.

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 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 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	0.4425	0.1911	0.0921	0.1231	0.0900	0.5450	0.1889	0.3450	0.1732
Adams Lake	0.3225	0.2712	0.0580	0.1894	0.0639	0.4094	0.1212	0.2768	0.1713
Armstrong	0.4004	0.2377	0.0530	0.1938	0.0653	0.5147	0.1038	0.3301	0.1713
Bear Lake	0.3613	0.6380	0.0959	0.7777	0.0900	0.8188	0.1473	0.3450	0.1732
Burns Lake	0.2411	0.6380	0.0982	0.7204	0.0900	0.3495	0.1281	0.3450	0.1732
Canal Flats	0.2312	0.2630	0.0664	0.2526	0.0856	0.1699	0.0978	0.3485	0.1548
Canoe	0.2687	0.2185	0.0310	0.0747	0.0465	0.3994	0.0736	0.3485	0.1713
Castlegar	0.3744	0.1568	0.0628	0.1806	0.0906	0.2035	0.0916	0.3823	0.1713
Chasm	0.2959	0.1911	0.0616	0.1231	0.0900	0.3692	0.1644	0.3450	0.1732
Chetwynd	0.2268	0.2462	0.0653	0.2636	0.0900	0.2531	0.1043	0.3450	0.1732
Craigellachie	0.4941	0.4052	0.0436	0.3717	0.1383	0.4023	0.1251	0.3426	0.1713
Creston	0.0978	0.0707	0.0476	0.0629	0.0743	0.1197	0.0697	0.3485	0.1713
Elko	0.1444	0.2630	0.0711	0.2526	0.0686	0.1346	0.0809	0.3485	0.1713
Engen	0.2697	0.6380	0.0982	0.7204	0.0900	0.8558	0.1708	0.3450	0.1732
Fort St. James	0.4050	0.6380	0.0905	0.7204	0.0900	0.6679	0.1593	0.3450	0.1732
Fort St. John	0.2026	0.2462	0.0653	0.2636	0.0900	0.3830	0.1374	0.3450	0.1732
Fraser Lake	0.2697	0.6380	0.0982	0.7204	0.0900	0.8558	0.1708	0.3450	0.1732
Galloway	0.1267	0.2630	0.0441	0.2526	0.0855	0.0838	0.0633	0.3485	0.1681
Grand Forks	0.3087	0.2302	0.0755	0.4147	0.1151	0.1849	0.1034	0.3485	0.1713
Houston	0.3415	0.6380	0.0982	0.7204	0.0900	0.4530	0.1905	0.3450	0.1732
Isle Pierre	0.3445	0.6380	0.0898	0.7381	0.0900	0.7641	0.1555	0.3450	0.1732
Kelowna	0.3638	0.2428	0.0583	0.2526	0.0660	0.3403	0.0940	0.2432	0.1713
Lavington	0.3671	0.2086	0.0533	0.1790	0.0713	0.4610	0.0906	0.3916	0.1713
Mackenzie	0.2379	0.6380	0.0982	0.7204	0.0900	0.5424	0.1328	0.3450	0.1732
Merritt	0.2805	0.2630	0.0750	0.1116	0.0901	0.4105	0.1185	0.3485	0.1713
Midway	0.2212	0.1474	0.0774	0.2526	0.0888	0.1824	0.0688	0.3485	0.1713
Prince George	0.3445	0.6380	0.0898	0.7381	0.0900	0.7641	0.1555	0.3450	0.1732
Princeton	0.2765	0.2630	0.0731	0.2526	0.1196	0.2817	0.1595	0.3485	0.1713
Quesnel	0.3071	0.6380	0.0964	0.7204	0.0900	0.7491	0.1250	0.3450	0.1732
Radium	0.2467	0.2132	0.0398	0.2526	0.0753	0.1706	0.0837	0.3485	0.1713
Revelstoke	0.4264	0.3892	0.0212	0.4360	0.1714	0.2060	0.0950	0.3531	0.1713
Slocan	0.3700	0.1512	0.0629	0.1768	0.0943	0.4306	0.0859	0.5397	0.1713
Smithers	0.2417	0.0770	0.0982	0.2675	0.0900	0.1927	0.0851	0.3450	0.1732
Squamish	0.2805	0.2630	0.0750	0.1116	0.0901	0.4105	0.1185	0.3485	0.1713
Strathnaver	0.3664	0.6380	0.1044	0.7204	0.0900	0.7368	0.1517	0.3450	0.1732
Terrace	0.1242	0.1487	0.0653	0.2668	0.0900	0.1732	0.0570	0.3450	0.1732
Thrums	0.3723	0.1507	0.0837	0.1600	0.1510	0.4001	0.1164	0.6475	0.1713
Vanderhoof	0.2697	0.6380	0.0982	0.7204	0.0900	0.8558	0.1708	0.3450	0.1732
Vavenby	0.3192	0.2620	0.0629	0.2026	0.0697	0.5804	0.1355	0.1922	0.1713
Westbank	0.3444	0.2630	0.0542	0.2526	0.0657	0.3150	0.0974	0.3485	0.1713
Williams Lake	0.2414	0.1393	0.1301	0.1378	0.0900	0.3714	0.1163	0.3450	0.1732
Ymir	0.2964	0.1117	0.0686	0.1303	0.1231	0.2130	0.1093	0.3485	0.1713

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
Canal Flats	0.2782	0.1884	0.0553	0.1014	0.0503	0.4966	0.0921	0.1825	0.8364
Canoe	0.3908	0.4081	0.0694	0.1025	0.0647	0.3198	0.0885	0.5507	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
Craigellachie	0.3908	0.4081	0.0694	0.1025	0.0647	0.3198	0.0885	0.5507	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
Slocan	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
Squamish	0.2719	0.1791	0.0900	0.2233	0.5769	0.6669	0.1434	0.3226	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
Thrums	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:

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

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

Where:

TTOA	=	Total Tenure Obligation Adjustment ($/m^3)
FFMA	=	Final Forest Management Administration cost ($/m^3)
DC	=	Total Development cost ($/m^3)
FRM	=	Final Road Management cost ($/m^3)
TS	=	Total Silviculture cost ($/m^3)
LG	=	Low Grade percent adjustment
		(for cruise based cutting authorities, LG =0)
RFM	=	Return to Forest Management Factor = 1.041
MLC	=	Market Logger Cost ($/m^3)
	=	[(MLDC / 1-LG) + MLSO] x [CPI / ACPI]
		Where
		MLDC = $1.35/m^3 (the average market logger development cost for the auction dataset)
		MLSO = $0.09/m^3 (the average market logger specified operation cost from the auction dataset)
CPI	=	Monthly BC Consumer Price Index (see section 3.2.1)
ACPI	=	140.9 (the average CPI for the cost base (2014/15))

5 Stumpage Rate Determination

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

1. Sections 5.1.1 through 5.1.3 are the policies and procedures for determining the upset for a cutting authority that is entered into under a BCTS licence.

2. a. The Market Pricing System for BCTS can only be used in the appraisal of a BCTS licence where data is available to do a full appraisal.

   b. Where the data is not available to do a full appraisal of a cutting authority area, the appraisal must use the procedures outlined in chapter 6 of this manual.

3. a. All upsets for section 20 timber sale licences advertised on or after November 1, 2003, and Forestry Licences to Cut entered into under section 47.6(3) of the *Forest Act* and subject to section 6.7 of this manual, are fixed for the term and all extensions except where:

      i. a reappraisal is done under section 2.2.3 due to sudden and severe damage, or

      ii. a Minister's directed reappraisal is done under section 2.2.4.

5.1.1 Upset Stumpage Rates (Upset)

1. The upset can either be an upset rate ($/m^3) or an upset value ($).

2. The variable cost to prepare the timber for sale (VCU) is calculated by the timber sales manager.

3. Except as otherwise provided in this section the upset for a timber sale licence shall not be less than the greater of either:

   a. The indicated upset determined by the regional revenue staff under section 5.1.2, or

   b. The VCU

   Unless approved by the Executive Director, BCTS.

4. Where applications for a timber sale licence with an upset determined under subsections (3) or (6) of this section have been invited but no applications have been received, the upset for the re-advertised timber sale shall be no less than the VCU.

5. a. The upset for decked timber or partially harvested timber shall be the upset requested by the timber sales manager.

   b. If the Timber Sales Manager intends to sell the decked timber or partially harvested timber competitively as a lump sum, the upset value is the upset value requested by the Timber Sales Manager using the volume of the decked or partially harvested timber as determined by an authorised scaler using a method approved by the minister.

6. The upset for a timber sale licence where the Total Net Deciduous Volume to be harvested on the cutting authority area is equal to or greater than sixty percent of the Total Net Cruise Volume on the cutting authority area shall be determined in accordance with section 5.1.1(3).
7. A timber sale licence where the timber on the cutting authority area does not meet the criteria in section 6.9 requires the approval of the Executive Director, BCTS before it can be cruise based.

5.1.2 IU Calculation

IU = FEWB x (1- DF) or

IU = SALVAGE x (1-DF)

Where:

IU	=	Indicated upset
FEWB	=	Final estimated winning bid from section 3.4
SALVAGE	=	Stand-as-a-whole stumpage rate from section 6.4.3 or a BCTS Salvage stumpage rate from section 6.4.4.
DF	=	0.30

Where the IU calculated under this section is less than $\$0.25/m^3$, then the IU must be $\$0.25/m^3$.

5.1.3 Total Stumpage

1. The total stumpage is the total of the upset plus the bonus, if any, that must be paid by the licensee.
2. Except as otherwise provided in this section, where the upset is determined under subsections 3 and 5(a) of section 5.1.1, and
   a. The timber sale is scale based for billing, the total stumpage applies to Grades 1 and 2 coniferous sawlogs, or
   b. The timber sale is cruise based for billing, the total stumpage payable applies to the Total Net Cruise Volume; with the exception of cruise-based salvage cutting authorities where the total stumpage payable applies to the total net merchantable volume.
3. Where the upset is determined under 5(b) of section 5.1.1, the total stumpage applies to the entire volume of decked or partially harvested timber.
4. Where the upset is determined under subsection 6 of section 5.1.1, and
   a. The timber sale is scale based for billing, the total stumpage applies to Grades 1 and 2, coniferous and deciduous sawlogs, or
   b. The timber sale is cruise based for billing, the total stumpage applies to the Total Net Cruise 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 3.7 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

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

1. 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:

   a. North Central Zone - Fort St. James, Mackenzie, Nadina, Prince George (less Robson Valley TSA), Quesnel and Vanderhoof.

   b. North East Zone - Fort Nelson and Peace.

   c. North West Zone - Coast Mountain (excluding that portion that lies geographically within the North Coast Timber Supply Area), Skeena Stikine.

   d. South Central Zone – Williams Lake TSA Blocks A, B, C, D, E & I.

   e. South East Zone - Okanagan Shuswap, Rocky Mountain, Selkirk, and Thompson Rivers (plus Robson Valley TSA).

   f. South West Zone - 100 Mile House, Cascades, and Williams Lake TSA Blocks F, G, H, and J to N.

2. Where a species of coniferous timber is not listed in Table 6-1, 6-2, 6-4, 6-4a and 6-5, the rate that must be used for that species of timber is the rate listed in the column headed as OTHER.

Table 6-1: Coniferous Average Sawlog Stumpage Rates in $/m^3

FOREST ZONE	BALSAM	CEDAR	FIR	HEMLOCK	LARCH	L. PINE	SPRUCE	W. PINE	Y. PINE	OTHER[1]
North Central	26.44	-	38.32	27.03	-	23.20	27.99	-	-	27.40
North East	7.91	-	-	-	-	9.33	7.82	-	-	8.20
North West	4.71	11.83	-	2.71	-	17.66	13.06	-	-	8.05
South Central	13.67	-	15.96	-	-	16.93	16.64	-	-	16.93
South East	19.98	22.01	23.74	14.32	23.55	21.47	20.67	17.94	21.79	21.50
South West	24.48	26.69	28.37	29.02	22.85	26.15	25.97	27.14	-	26.92

[1] Average for the Forest Zone

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^3

FOREST ZONE	BALSAM	CEDAR	FIR	HEMLOCK	LARCH	L. PINE	SPRUCE	W. PINE	Y. PINE	OTHER[1]
North Central	3.97	-	5.75	4.06	-	3.48	4.20	-	-	4.11
North East	1.19	-	-	-	-	1.40	1.17	-	-	1.23
North West	0.71	1.77	-	0.41	-	2.65	1.96	-	-	1.21
South Central	2.05	-	2.39	-	-	2.54	2.50	-	-	2.54
South East	3.00	3.30	3.56	2.15	3.53	3.22	3.10	2.69	3.27	3.23
South West	3.67	4.00	4.26	4.35	3.43	3.92	3.90	4.07	-	4.04

[1] Average for the Forest Zone

6.1.3 Incidental Conifer in Deciduous Leading Stands

1. Except as provided in section 5.1.1(6), 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^3 or Less Volume

1. Where the total estimated coniferous volume to be harvested in a cutting authority area is 2000 m^3 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^3, or no coniferous annual allowable 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[1] 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^3 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.

[1] 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^3 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 minster 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^3 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 rate must be the rate 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 on 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 $\$1.20/m^3$ 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 if there is a minimum positive scale based billed volume of 500 m^3 of coniferous sawlogs from which the weighted average sawlog stumpage rate may be determined, or

   b. where a rate under (a) is not available, the 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^3$) for a road permit granted to the holder of a scale based timber sale licence entered into under section 20 of the Act must be the same as the total stumpage rate ($/$m^3$) 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.

Table 6-3: Coniferous Average Sawlog Stumpage Rates by Smallest Geographic Unit

TSA is Smallest Geographic Unit			
District	**Rate ($/m^3)**	**TSA**	**Rate ($/m^3)**
Cascades	24.02	Lillooet	6.03
		Merritt	27.90
Coast Mountain (excluding North Coast Timber Supply Area)	0.43	Cascadia Blks 9,10,11	0.25
		Kalum	0.25
		Nass	0.26
		Pacific Blks 28A,28B	0.25
Nadina	22.88	Lakes	22.81
		Morice	22.89
Peace	8.20	Dawson Creek	9.29
		Fort St John	6.53
Prince George	29.42	Robson Valley	6.42
Quesnel	26.90	Cascadia Blks 5,6,7,8	26.90
		Quesnel	26.90
Rocky Mountain	21.98	Cranbrook	23.68
		Invermere	17.13
Selkirk	20.12	Arrow	18.75
		Boundary	23.41
		Cascadia Blks 1,2,3	18.75
		Cascadia Blk. 4	5.41
		Golden	22.45
		Kootenay Lake	24.39
		Revelstoke	5.41
Skeena Stikine	14.69	Bulkley	15.16
		Cassiar	0.49
		Kispiox	14.29

District/District Portion is Smallest Unit			
TSA	**Rate ($/m^3)**	**District/District Portion**	**Rate ($/m^3)**
Prince George	29.89	Fort St. James	29.17
		Vanderhoof	20.95
Williams Lake	27.90	Cariboo Chilcotin	27.78
		Williams Lake TSA Blks, A, B, C, D, E & I	12.95

District & TSA are the same		
District	**TSA**	**Rate ($/m^3)**
Fort Nelson	Fort Nelson	6.53
Mackenzie	Mackenzie	24.60
Okanagan Shuswap	Okanagan	22.57
Thompson Rivers	Kamloops	22.63
100 Mile House	100 Mile House	31.05

Region is Smallest Unit			
Area	**Rate ($/m^3)**	**Region**	**Rate ($/m^3)**
North	21.03	Northeast	8.20
		Omineca	28.02
		Skeena	15.65
South	23.34	Cariboo	28.38
		Kootenay Boundary	20.81
		Thompson-Okanagan	22.91

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:

i. estimated total net coniferous volume of timber on each cutblock is comprised of 80% or more Burnt Timber[1] (Burnt timber means any trees that meet the definition of Fire Codes A, B or C as per the Cruising Manual), and

ii. 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^3

FOREST ZONE	BALSAM	CEDAR	FIR	HEMLOCK	LARCH	L. PINE	SPRUCE	W. PINE	Y. PINE	OTHER[1]
North Central	15.86	-	34.49	16.22	-	17.40	25.19	-	-	16.44
North East	4.75	-	-	-	-	7.00	7.04	-	-	4.92
North West	2.83	10.65	-	1.63	-	13.24	11.75	-	-	4.83
South Central	8.20	-	14.37	-	-	12.70	14.98	-	-	10.16
South East	11.99	19.81	21.37	8.59	21.19	16.10	18.61	13.45	16.35	12.90
South West	14.69	24.02	25.53	17.41	20.57	19.61	23.38	20.36	-	16.15

[1] Average for the Forest Zone

[1] 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^3

FOREST ZONE	BALSAM	CEDAR	FIR	HEMLOCK	LARCH	L. PINE	SPRUCE	W. PINE	Y. PINE	OTHER[1]
North Central	14.79	-	26.24	15.32	-	11.07	16.22	-	-	15.62
North East	0.89	-	-	-	-	1.37	1.27	-	-	1.28
North West	1.74	5.59	-	1.11	-	7.35	5.34	-	-	3.29
South Central	2.32	-	4.08	-	-	12.70	4.78	-	-	5.12
South East	9.29	12.00	12.42	5.75	12.02	10.25	10.00	8.53	10.83	10.66
South West	13.06	14.47	16.90	16.20	10.59	14.58	14.75	15.05	-	15.48

[1] Average for the Forest Zone

Table 6-5: Coniferous Average Sawlog Stumpage Rates for Salvage of Post-Harvest Material in $/m^3

FOREST ZONE	BALSAM	CEDAR	FIR	HEMLOCK	LARCH	L. PINE	SPRUCE	W. PINE	Y. PINE	OTHER[1]
North Central	6.61	-	19.16	6.76	-	11.60	13.99	-	-	6.85
North East	1.98	-	-	-	-	4.67	3.91	-	-	2.05
North West	1.18	9.46	-	0.68	-	8.83	6.53	-	-	2.01
South Central	3.42	-	7.98	-	-	8.46	8.32	-	-	4.23
South East	5.00	17.61	11.87	3.58	11.77	10.73	10.34	8.97	10.90	5.38
South West	6.12	21.36	14.19	7.25	11.43	13.08	12.99	13.57	-	6.73

[1] Average for the Forest Zone

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^3 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[1] (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 annually on June 1st in accordance with this section.

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[2]; 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

      = BASE RATE - [1.834 * (CYCLE + (0.5 * CYCLE_INC6)) + 8.44 * ZONE 9] * CPIF - [SO's * (CPI/ACPI)];

      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 3.2.13.

[1] 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.

[2] 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,
CPI, and CPIF

SO's	=	the sum of the transportation specified operations that apply to the transportation route from section 3.3.
ACPI	=	140.9 (the average CPI for the cost base (2014/15))

b. The prescribed minimum stumpage rate.

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

FOREST ZONE	BASE RATE**($/m^3)	TSL BASE RATE***($/m^3)
North Central	13.93	26.67
North East	13.93	26.67
North West	13.93	26.67
South Central	6.40	22.60
South East	10.46	27.82
South West	6.40	22.60

* Rate prior to adjustments for transportation 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 1st 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 (3), 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 5.1.2) 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[1] (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.

[1] 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 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 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

Unless otherwise specified in this manual, the stumpage rates, at the time of scale for timber harvested for the purposes described, in the districts listed, in the forest district specific section of Table 6-7 are as prescribed in that table. This table does not apply to cruise based cutting authorities.

Table 6-7: Miscellaneous Stumpage Rates

All Interior Forest Regions

Species	Code[1]	Product	Reserve Stumpage Rate
All Species	SB	Shake & Shingle Bolts, Blocks and Blanks.	$5.30/m^3
All Species	SK	Shakes	$6.00/m^3
Cedar	PR	Posts & Rails (Split and Round)	$3.00/m^3
All other Species	PR	Posts & Rails (Split and Round)	$1.20/m^3
All Species	MT	Mining Timbers	$3.00/m^3
All Species	FW	Firewood	$0.50/m^3
Yew		All	$0.25/m^3
All Species	CH	Wood chips from post-harvest material where a waste assessment has been made[2]	$0.25/m^3
All Species	HF	Hogged tree material from post-harvest material where a waste assessment has been made[2]	$0.25/m^3
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(5)	$0.25/m^3
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(5)	$0.50/m^3
All Species	SS	Stakes & Sticks.	$1.20/m^3
All Species	XM	Christmas Tree Length: under 3m 3-5 m over 5 m	$0.20/each $1.00/each $1.50/each

[1] Special Forest Products as described in the Special Forest Products Regulation under the *Act*.

[2] Where the post-harvest material is removed under a different tenure from the original cruise based cutting authority, a waste assessment is not required.

All Species		Logs salvaged below the high water levels of Reservoir Lakes and the Shuswap, Slocan, Kootenay, Mineral, and Babine Lakes	$0.25/m^3
All Species		Marine Beachcomb	$0.70/m^3
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)	$0.25/m^3
All Species		Firmwood Reject	NIL
All Coniferous		For sawlogs in excess of the allowable cap subject to the Pre-harvest Waste Assessment standards as defined in the *Provincial Logging Residue and Waste Measurement Procedures Manual*.	The cutting authority stumpage rate[1] ($/m^3)
All Coniferous		Commercial thinning refers to an intermediate harvest with regard to even-aged stand management with: • Commercial thin stocking standards incorporated in a Forest Stewardship plan, • Stand age less than 45 years old; and • Residual stand left in a healthy, productive condition.	$0.25/m^3

District/TSA Specific

Description of Activity	**Forest District**	**Reserve Stumpage Rate**
New Crown land area disturbed for mining exploration trails, seismic lines[2], gas or oil well sites and right-of- way to well sites[3], or, authorizations for investigative purposes issued under the *Land Act*.	Ft. Nelson Mackenzie Peace Rocky Mountain	$ 836 /ha $ 955 /ha $ 1080 /ha $ 1683 /ha

[1] In addition to the applicable special forest product rate from this table.

[2] The corresponding district reserve stumpage rate from the above table is adjusted according to the category of line clearing as follows:
Category 1 - no adjustment
Category 2 - 1/2 of the reserve stumpage rate Category 3 - 1/3 of the reserve stumpage rate

The gross area for each category reported as new line on either; the Oil and Gas Commission's Geophysical Final Plan cover sheet or an As Cleared Plan is multiplied by the reserve stumpage rate as adjusted above (refer to Appendix V for category definitions).

[3] For pipe line rights-of-way a stumpage rate must be determined by using the above rates for cutting authorities containing 2000 m^3 or less, of merchantable coniferous volume. For pipe line rights-of-way cutting authorities greater than 2000 m^3 use section 6.7.

6.7 Specific Licences to Cut

1. This section applies to:
   a. Master licences to cut,
   b. Occupant licences to cut, and
   c. Forestry licences to cut :
      i. Issued under section 47.6(3) of the *Act* in conjunction with an activity funded out of the BCTS account,
      ii. 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 any of the activities listed in Table 6-7 that have an area reserve stumpage rate in the following districts: Fort Nelson, Peace, Mackenzie, or Rocky Mountain, or
   b. The proposed Site C reservoir and dam site, or
   c. Projects where cruising of the timber to be harvested on any tenure listed in subsection (1) has been initiated for use in a full appraisal prior to November 1, 2013, or
   d. 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) issued on or after November 1, 2013, must be the stumpage rate 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, plus the average basic silviculture cost[1] for all species for the applicable Interior Area in which the cutting authority area is located at the time the stumpage rate is determined.
4. Where the licensee will have a silvicultural obligation imposed by the Ministry then the basic silviculture cost is not added under subsection (3) of this section.
5. 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.
6. Except as provided under paragraph (7) of this section, the stumpage rate determined under this section will be re-determined annually on June 1st.
7. 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.

[1] From the Interior Basic Silviculture Costs published quarterly and available on the Timber Pricing Branch website.

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 *Forest 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[1], 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[1], 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[1], 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 5.1.3(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,

[1] 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).

b. the stumpage rate determined under paragraph (a) of this subsection must apply to the net merchantable volume on the cutting authority area.

3. Except as provided in subsections (4) and (5) of this section, if, after an insect damage reappraisal under section 2.2.3 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 must have the stumpage rate determined by a full appraisal ("fully appraised") in accordance with chapters 1, 2, 3, 4 and 5.
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 cannot be used by the licensee in an appraisal for another cutting authority.

Appendices

Appendix I Equipment and Labour Rates

a. "All Found" Equipment Rates (Source: 2015-2016 B.C. Road Builders & Heavy Construction Association, Equipment Rental Rate Guide ("The Blue Book")

EQUIPMENT DESCRIPTION	BLUE BOOK SECTION NUMBER	[1]BLUE BOOK CATEGORY	[2]BLUE BOOK MODELS	$/HOUR
Drilling Equipment - Rock Drill	1.4		750 cfm compressor or Equivalent Tank Drill Outfit and 2 operators	250.90
Excavator – Heavy Hydraulic *	7.3	45,000 – 50,999 lbs	Case CX210B, CX210C; Cat 323F; Deere 200D-LC 210D-LC; Doosan DX225LC; Hitachi ZX200LC-3, ZX210LC-5; Kobelco SK210; Link-Belt 210-X3; LiuGong 922D, 922D LC; Volvo EC220D/DL/EL	156.70
Excavator – Heavy Hydraulic *	7.3	51,000 – 58,999 lbs	Case CX250C, CX225MSR; Cat 320EL/EL RR/EL LR, 320E N/E RR; Deere 130G, 225D-LC, 250G-LC; Doosan DX255LCR; Hitachi ZX225USC-3, ZX250LC-5, ZX250LC-5/6; Kobelco 215SRLC, 235SLRC; Link-Belt 235-X3; LiuGong 925D, 925D LC; Volvo EC250D/DL/EL, ECR235D/DL	162.14
Excavator – Heavy Hydraulic *	7.3	59,000 – 67,999 lbs	Cat 324E/E L, 326F, 329D2/D2-L/DL, 330D2-L; Deere 290G-LC; Doosan DX300LC; Hitachi ZX290LC-5, Zx300LC-6; Kobelco SK260LC-9	181.89
Excavator – Heavy Hydraulic *	7.3	68,000 – 87,999 lbs	Cat 239F, 328D, 329E/E L, 335F CR, 336E/E H/E L/E H; Deere 300G-LC 350G-LC, 380G-LC; Doosan DX350LC; Hitachi ZX350LC-6, ZX350LC-5; Kobelco SK295LC-9, SK350LC-9; Komatsu PC308USLC-3; LiuGong 936D, 936D LC; Volvo EC300D/DL/EL, EC340DL, EC380DL, EC380ELC, ECR305C	220.11
Excavator – Heavy Hydraulic *	7.3	88,000 – 95,999 lbs	Cat 336F, 336F XE; Doosan DX420LC; Volvo EC350EL	234.03
Excavator – Heavy Hydraulic *	7.3	96,000 – 102,999 lbs	Cat 345DL; Komatsu PC400LC-8, PC400LC-8 VG, PC450LC-8 (all out-of-date models)	269.01
Excavator – Wheel	7.2	70,000+ lbs	Cat MH3037, MH3049, MH3059	188.20
Grader	8.1	200-249 FWHP	Case 865B; Cat 12M2/M2 AWD/M3, 140M/M2/M2 AWD 160 M/M AWD; Deere 770G, 772G	159.45
Lifting Equipment - Crane	9.2	18 tonnes		119.15
Loader - Front End 4X4 (Gravel)	10.2	5 cu yd ($3.82m^3$)	Cat 966K, 966M; Deere 744K, Doosan DL420; Kawasaki 90Zv-2; Volvo L120H, L150G	182.70
Loader – Front End (Logs)	10.2	6 cu yd ($4.59m^3$)	Case 1121F; Doosan DL450, DL450-3, DL500; Kawasaki 92ZV-2; LiuGong 888 III; Volvo L180H	190.95
Skidder - Grapple Rubber Tired	17.1	21,000 – 28,000 lbs 104-152 hp	Cat 515, 518C; Clark/Ranger 666-C, 666-D, F-66, F-66-D, H-66-G; Deere 540, 548-D, 548-E, 548-G, 548-GII, 548-GIII; TimberJack 360-D, 380 A/B/C/D (out-of-date models)	100.70
Skidder + Roller – Towed: Pneumatic Tired or Vibratory Steel Wheel	17.1 & 13.6	2.7-3.6 tonne roller	Cat 515, 518C; Clark/Ranger 666-C, 666-D, F-66, F-66-D, H-66-G; Deere 540, 548-D, 548-E, 548-G, 548-GII, 548-GIII; TimberJack 360-D, 380 A/B/C/D (out-of-date models)	115.40
Skidder + Roller – Towed: Sheepsfoot and grid	17.1 & 13.5	32 in. diameter (813mm) 2 drums rollers	Cat 515, 518C; Clark/Ranger 666-C, 666-D, F-66, F-66-D, H-66-G; Deere 540, 548-D, 548-E, 548-G, 548-GII, 548-GIII; TimberJack 360-D, 380 A/B/C/D (out-of-date models)	116.30
Tractor - Crawler	15.2	85-129.9 FWHP	Cat D4K2 XL, D5K2 XL; Deere 650J LT/LGP/XLT, 700J-LGP/XLT/K/LK	142.00
Tractor - Crawler	15.2	130-189.9 FWHP	Cat D6K2 XL-T4i, D6N-T4i; Deere 750K, 850J	184.05

Tractor - Crawler	15.2	190-259.9 FWHP	Cat D7E-T4; Deere 764H-SD, 850K, 950J, 950J-LGP	217.90
Tractor - Crawler	15.2	260-359.9 FWHP	Cat D8T; Deere 1050J, 1050K; Dressta/Dresser TD25R	261.15
Tractor - Crawler	15.2	360-519.9 FWHP	Cat D9T	313.80
Truck – Concrete Transit Mix	4.5	8 cu yd (6.1 m^3)		107.50
Truck – Dump Gravel – Standard S/A or Tandem	16.1	14 cu yd (10.7m^3)	Standard haul	96.25
Truck – Dump Gravel – Standard S/A or Tandem	16.1	14 cu yd (10.7m^3)	Includes 10% for rip-rap haul	105.88
Truck – Dump Gravel Articulated	16.8	20-24 tonnes	Bell B25D, B25E; Cat 730C, 730C EJ; Deere 250D-II; Volvo A25F	162.35
Truck – Dump Gravel Articulated	16.8	25–29 tonnes	Bell B30D, B30E; Cat 735B/C,740B EJ; Deere 300D-II; Doosan/Moxy DA30; Volvo A30E, A30F	179.60
Truck – Logging (Highway)	16.2-C	6 axle 45,000 kg	Tandem tractor & lowbed with booster	121.00
Truck – Log Self Loading	16.2-C & 16.3		Truck – Logging (Highway) and 5-ton deck crane	134.15
Truck - Lowbed	16.2-C	5 axle unit	Tandem tractor and lowbed	110.00
Truck - Lowbed	16.2-C	7 axle unit	A or B train (or triple axle with booster)	138.60
Truck – Miscellaneous – Pilot Vehicle	16.2-A			53.55

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

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

"[1]BLUE BOOK CATEGORY" Categories as applicable provide:

- Capacity in cubic feet per minute, diameter or tonnes (Drills, Rollers, Cranes)
- Capacity in yards/m^3 (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)

"[2]BLUE BOOK MODELS" – Associated rates in $/hour are for Blue Book equipment models for years 2012-2015 unless "out of date" (pre-2012) in which case the rate in $/hr is for the relevant Blue Book equipment model for the specified year.

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

EQUIPMENT DESCRIPTION	BLUE BOOK SECTION NUMBER	BLUE BOOK CATEGORY	*$/HOUR
Concrete Mixer	4.4	6 cu ft (0.17 m^3)	7.76
Concrete Vibrator	4.3	12' to 21' (3.65m – 6.10m)	5.12
Powersaw	11.1	Over 20+ inch blade; over 57cm^3	3.70

*Labour not included

c. Wage Rates (Source: 2014-2019 United Steelworkers agreement rates)

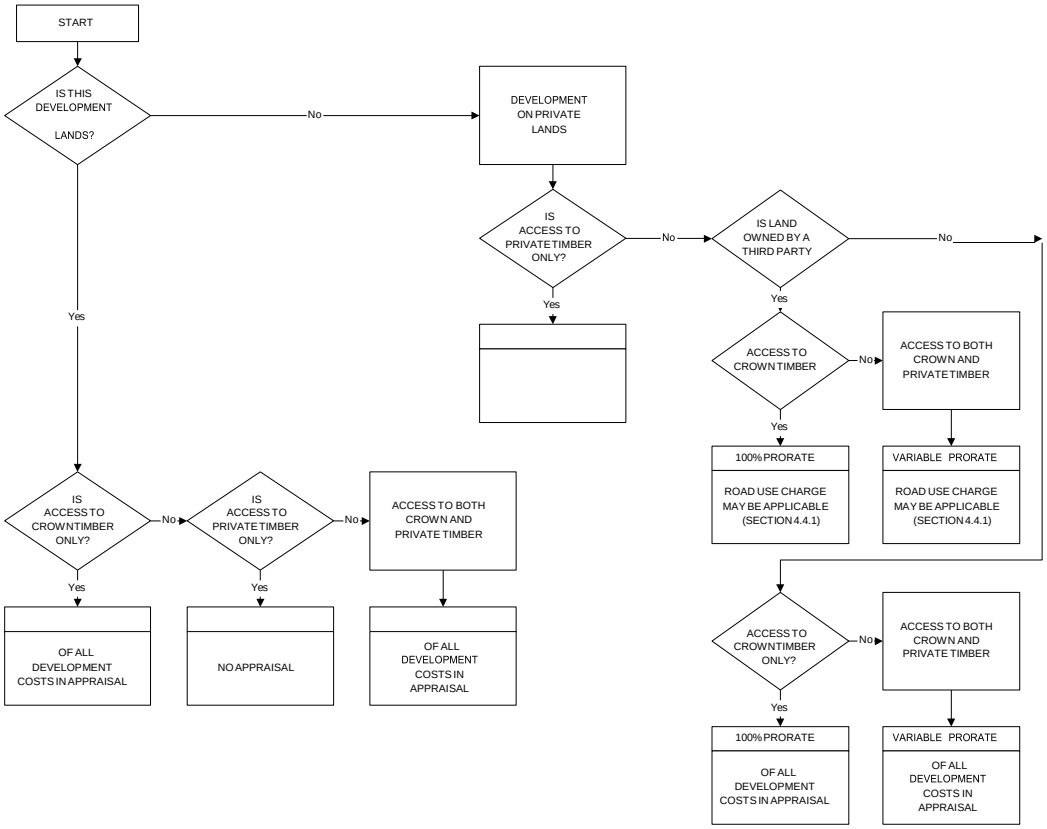
LABOUR DESCRIPTION	GROUP	*$/HOUR
Labourer	Group I	38.61
Roadman	Group II	38.93
Crib/Culvert Maker, Powderman	Group VII	40.89
Landingman	Group VIII	41.41
Rockdriller & Powderman (for load & blast only)	Group VII & XI	85.09
Bridgeman	Tradesman	50.64
Faller, including powersaw cost		72.71

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

1. Except as provided in subsection 4 below, the labour and equipment rates in the Appendix I table will be used for all engineering cost estimates made under section 4.3.6 of this manual.
2. Except for subsections 3 and 4 of this appendix, there are no additions permitted to the Appendix I table rates.
3. A nominal cost estimate of $50.00/person/day for the period of the project is permitted in the ECE for:
   a. crew transportation, if the crew transportation cost has not already been accounted for in the appraisal, and if applicable,
   b. crew accommodation, if those doing the work must stay in a camp[1] while working on the project and the licensee whose appraisal includes the ECE is not getting the camp specified operation in the appraisal.
4. Use of rates for equipment not listed in this appendix must be approved by the regional timber pricing co-ordinator.

[1] As defined in section 3.6.3

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

Area	BEC Zone	Subzone	Relative Soil Moisture Regime Class (from field guide)							
			0	1	2	3	4	5	6	7
SOUTH	BG	xh1	ED	ED	ED	ED	ED	SD	M	W
SOUTH	BG	xh2	ED	ED	ED	ED	ED	SD	M	W
SOUTH	BG	xh3	ED	ED	ED	ED	ED	SD	M	W
SOUTH	BG	xw1	ED	ED	ED	ED	ED	SD	M	W
SOUTH	BG	xw2	ED	ED	ED	ED	ED	SD	M	W
SOUTH	ESSF	dc1	VD	MD	MD	SD	SD/F	M	VM	W
SOUTH	ESSF	dc2	VD	MD	MD	SD	SD/F	M	VM	W
SOUTH	ESSF	dk	VD	MD	MD	SD	SD/F	M	VM	W
SOUTH	ESSF	dv	VD	MD	MD	SD	SD/F	M	VM	W
SOUTH	ESSF	mh	VD	MD	MD	SD	F	M	VM	W
SOUTH	ESSF	mw	VD	MD	MD	SD	F	M	VM	W
SOUTH	ESSF	vc	MD	SD	SD	F	M	VM	VM	W
SOUTH	ESSF	vv	MD	SD	SD	F	M	VM	VM	W
SOUTH	ESSF	wc1	MD	MD	SD	F	M	M	VM	W
SOUTH	ESSF	wc2	MD	MD	SD	F	M	M	VM	W
SOUTH	ESSF	wc3	MD	MD	SD	F	M	M	VM	W
SOUTH	ESSF	wc4	MD	MD	SD	F	M	M	VM	W
SOUTH	ESSF	wh1	MD	MD	SD	F	F	M	VM	W
SOUTH	ESSF	wh2	MD	MD	SD	SD/F	F	M	VM	W
SOUTH	ESSF	wh3	MD	MD	SD	F	F	M	VM	W
SOUTH	ESSF	wk1	MD	MD	SD	F	M	M	VM	W
SOUTH	ESSF	wm	MD	MD	SD	F	F	M	VM	W
SOUTH	ESSF	wm2	MD	MD	SD	F	F	M	VM	W
SOUTH	ESSF	wm3	MD	MD	SD	F	F	M	VM	W
SOUTH	ESSF	wm4	MD	MD	SD	SD	F	M	VM	W
SOUTH	ESSF	xc	VD	VD	MD	MD	SD	M	VM	W
SOUTH	ESSF	xv	VD	VD	MD	MD	SD	F	M	W
SOUTH	ICH	dk	VD	VD	VD	MD	SD	M	VM	W
SOUTH	ICH	dw1	VD	VD	MD	SD	F	M	VM	W
SOUTH	ICH	dw2	ED	ED	VD	MD	SD	M	VM	W
SOUTH	ICH	dw4	ED	VD	MD	MD	SD	F	M	VM
SOUTH	ICH	mk1	VD	MD	MD	SD	F	M	VM	W

Area	BEC Zone	Subzone	Relative Soil Moisture Regime Class (from field guide)							
			0	1	2	3	4	5	6	7
SOUTH	ICH	mk2	VD	MD	MD	SD	F	M	VM	W
SOUTH	ICH	mk3	VD	MD	MD	SD	F	M	VM	W
SOUTH	ICH	mw1	VD	MD	MD	SD	F	M	VM	W
SOUTH	ICH	mw2	VD	MD	MD	SD	F	M	VM	W
SOUTH	ICH	mw3	VD	MD	MD	SD	F	M	VM	W
SOUTH	ICH	mw4	VD	MD	MD	SD	F	M	VM	VM
SOUTH	ICH	mw5	VD	MD	MD	SD	F	M	VM	W
SOUTH	ICH	vk1	MD	MD	SD	F	M	M	VM	W
SOUTH	ICH	wk1	VD	MD	SD	F	F	M	VM	W
SOUTH	ICH	wk2	VD	MD	SD	F	F	M	VM	W
SOUTH	ICH	wk4	VD	MD	SD	F	F	M	VM	W
SOUTH	ICH	xw	VD	VD	VD	MD	SD	M	VM	W
SOUTH	IDF	dk1	ED	VD	VD	VD	MD	F	M	W
SOUTH	IDF	dk2	ED	VD	VD	VD	MD	F	M	W
SOUTH	IDF	dk3	ED	VD	VD	VD	MD	F	M	W
SOUTH	IDF	dk4	ED	VD	VD	VD	MD	F	M	W
SOUTH	IDF	dm1	ED	VD	VD	VD	MD	F	M	W
SOUTH	IDF	dm2	ED	VD	VD	VD	MD	F	M	W
SOUTH	IDF	mw1	VD	VD	VD	MD	SD	F	VM	W
SOUTH	IDF	mw2	VD	VD	VD	MD	SD	F	VM	W
SOUTH	IDF	u	ED	VD	VD	MD	MD	F	VM	W
SOUTH	IDF	ww	VD	VD	VD	MD	SD	F	M	W
SOUTH	IDF	xh1	ED	ED	VD	VD	MD	SD	M	W
SOUTH	IDF	xh2	ED	ED	VD	VD	MD	SD	M	W
SOUTH	IDF	xm	ED	ED	VD	VD	MD	SD	M	W
SOUTH	IDF	xw	ED	ED	VD	VD	MD	SD	M	W
SOUTH	MS	dc	VD	VD	VD	MD	SD	M	VM	W
SOUTH	MS	dk	VD	VD	VD	MD	SD	M	VM	W
SOUTH	MS	dm1	VD	VD	VD	MD	SD	M	VM	W
SOUTH	MS	dm2	VD	VD	VD	MD	SD	M	VM	W
SOUTH	MS	xk	VD	VD	VD	VD	MD	F	M	W
SOUTH	MS	xv	VD	VD	VD	MD	SD	F	VM	W
SOUTH	PP	dh1	ED	ED	ED	VD	VD	SD	M	W
SOUTH	PP	dh2	ED	ED	ED	VD	VD	SD	M	W

Area	BEC Zone	Subzone	Relative Soil Moisture Regime Class (from field guide)							
			0	1	2	3	4	5	6	7
SOUTH	PP	xh1	ED	ED	ED	ED	VD	SD	M	W
SOUTH	PP	xh2	ED	ED	ED	ED	VD	SD	M	W
SOUTH	SBPS	dc	ED	ED	VD	MD	SD	F	M-VM	W
SOUTH	SBPS	mc	VD	VD	VD	MD	SD	F	M-VM	W
SOUTH	SBPS	mk	ED	VD	VD	MD	SD	F	M-VM	W
SOUTH	SBPS	xc	ED	ED	VD	VD	MD	SD	M	W
SOUTH	SBS	dw1	VD	MD	MD	SD	SD	F	M	W
SOUTH	SBS	dw2	VD	MD	MD	SD	SD	F	M	W
SOUTH	SBS	mc1	VD	MD	MD	SD	F	M	VM	W
SOUTH	SBS	mc2	VD	MD	MD	SD	F	M	VM	W
SOUTH	SBS	mh	VD	MD	MD	SD	SD	M	VM	W
SOUTH	SBS	mm	VD	MD	MD	SD	F	M	VM	W
SOUTH	SBS	mw	VD	MD	MD	SD	F	M	VM	W
SOUTH	SBS	wk1	VD	MD	SD	F	F	M	VM	W
NORTH	BWBS	dk	VD	MD	MD	SD	F	M	VM	W
NORTH	BWBS	mk	VD	MD	MD	SD	F	M	VM	W
NORTH	BWBS	mw	VD	MD	MD	SD	F	M	VM	W
NORTH	BWBS	wk1	VD	MD	SD	SD	F	M	VM	W
NORTH	BWBS	wk2	VD	MD	SD	SD	F	M	VM	W
NORTH	BWBS	wk3	VD	MD	SD	SD	F	M	VM	W
NORTH	CWH	vh2	SD	SD	F	F	M	VM	W	W
NORTH	CWH	vm1	MD	SD	SD	F	F	M	VM	W
NORTH	CWH	vm2	MD	SD	SD	F	F	M	VM	W
NORTH	CWH	wm	SD	SD	SD	F	F	M	VM	W
NORTH	CWH	ws1	VD	MD	MD	SD	F	M	VM	W
NORTH	CWH	ws2	VD	MD	MD	SD	F	M	VM	W
NORTH	ESSF	mc	VD	MD	SD	SD	F	M	VM	W
NORTH	ESSF	mk1	VD	MD	MD	SD	F	M	VM	W
NORTH	ESSF	mm1	VD	MD	MD	SD	F	M	VM	W
NORTH	ESSF	mv1	VD	MD	SD	SD	F	M	VM	W
NORTH	ESSF	mv2	VD	MD	SD	SD	F	M	VM	W
NORTH	ESSF	mv3	VD	MD	SD	SD	F	M	VM	W
NORTH	ESSF	mv4	VD	MD	SD	SD	F	M	VM	W
NORTH	ESSF	wc2	MD	MD	SD	F	M	M	VM	W
NORTH	ESSF	wc3	MD	MD	SD	F	M	M	VM	W

Area	BEC Zone	Subzone	Relative Soil Moisture Regime Class (from field guide)							
			0	1	2	3	4	5	6	7
NORTH	ESSF	wk1	MD	MD	SD	F	M	M	VM	W
NORTH	ESSF	wk2	MD	MD	SD	F	M	M	VM	W
NORTH	ESSF	wv	MD	SD	SD	F	F	M	VM	W
NORTH	ICH	mc1	VD	MD	SD	SD	F	M	MV	W
NORTH	ICH	mc1a	VD	MD	SD	SD	F	M	MV	W
NORTH	ICH	mc2	VD	MD	SD	SD	F	M	MV	W
NORTH	ICH	mm	VD	MD	MD	SD	F	M	VM	W
NORTH	ICH	vc	MD	SD	SD	F	M	M	VM	W
NORTH	ICH	vk2	MD	SD	SD	F	M	M	VM	W
NORTH	ICH	wc	MD	MD	SD	F	F	M	VM	W
NORTH	ICH	wk1	VD	MD	SD	F	F	M	VM	W
NORTH	ICH	wk3	VD	MD	SD	F	F	M	VM	W
NORTH	ICH	wk4	VD	MD	SD	F	F	M	VM	W
NORTH	MH	mm1	SD	SD	F	F	F	M	VM	W
NORTH	MH	mm2	SD	SD	F	F	F	M	VM	W
NORTH	MH	wh	SD	SD	F	F	F	M	VM	W
NORTH	SBPS	mc	VD	VD	VD	MD	SD	F	M-VM	W
NORTH	SBS	dh	VD	MD	MD	SD	SD	F	M	W
NORTH	SBS	dk	VD	MD	MD	SD	SD	F	M-VM	W
NORTH	SBS	dw1	VD	MD	MD	SD	SD	F	M	W
NORTH	SBS	dw3	VD	MD	MD	SD	SD	F	M	W
NORTH	SBS	dw3	VD	MD	MD	SD	SD	F	M	W
NORTH	SBS	mc2	VD	MD	MD	SD	F	M	VM	W
NORTH	SBS	mc3	VD	MD	MD	SD	F	M	VM	W
NORTH	SBS	mh	VD	MD	MD	SD	SD	M	VM	W
NORTH	SBS	mk1	VD	MD	MD	SD	F	M	VM	W
NORTH	SBS	mk2	VD	MD	MD	SD	F	M	VM	W
NORTH	SBS	mw	VD	MD	MD	SD	F	M	VM	W
NORTH	SBS	vk	MD	SD	SD	F	M	M	VM	W
NORTH	SBS	wk1	VD	MD	SD	F	F	M	VM	W
NORTH	SBS	wk2	VD	MD	SD	F	F	M	VM	W
NORTH	SBS	wk3	VD	MD	SD	F	F	M	VM	W

NOTES:

ED = Extremely (0, extreme xeric)
VD = Very Dry (1, xeric)
MD = Moderately Dry (2, sub-xeric)
SD = Slightly Dry (3, sub-mesic)
F = Fresh (4, mesic)
M = Moist (5, sub-hygric)
VM = Very Moist (6, hygric)
W = Wet (7, sub-hydric)

Absolute Soil Moisture	**Soil Moisture Code**
ED, VD, or MD	D-Dry
SD or F	M-Moist
M, VM or W	W-Wet

Appendix IV Appraisal Map Content

The map(s) submitted with the appraisal data submission must be at a scale of 1:5000 or 1:10000. Additional maps at other scales may be included as required. At a minimum the map(s) must indicate the following information:

a. Cutting authority boundaries.

b. Delineation of 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 each cutblock and common junction of the permit.

i. Existing roads.

j. 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).

k. 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.

l. Location and type of other development such as remedial fencing, cattleguards and pipeline crossings.

m. Map Scale indicated using a graphic bar scale.

The appraisal map may include other information considered relevant to the appraisal, and must be attached to the appraisal data submission in georeferenced PDF electronic format.

For reappraisal data submissions, reference may be made to the original map submitted. Any change to the harvest plan or area of harvest due to a "changed circumstance" (refer to section 2.2.2) during the term of the cutting authority must be mapped and submitted to the district manager with the ADS, for the reappraisal.

Appendix V Geophysical Clearance Line Categories

The following categories of geophysical line clearing apply to Table 6-7. All clearing activity in the categories below 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. The categories are defined as follows:

Category 1 - Any line section over 100 metres in length and over 4.25 metres in width.

Category 2 - Any line section over 100 metres in length and between 3.0 metres and 4.25 metres in width.

Category 3 - Any line section over 100 metres in length and less than 3.0 metres in width.

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	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	Nation
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

Area	District	Marine (M) Natural (N) or Reservoir (R)	Water Body Name	Dump Location Name
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

BRITISH COLUMBIA
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.

Complete Legal Name of Licensee:			
Licensee Address:			
Licence:	**CP:**	**Mark:**	**ECAS ID:**

Project(s): *(see attached)*	
TOTAL COST ESTIMATE FOR APPORTIONMENT ($):	
Licence and Cutting Authority	**Amount Apportioned ($)**
Total Amount Apportioned ($):	

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

Approved by Regional Executive Director or designate Name & Title (printed)	**Licensee Representative Name & Title** (printed)
RED or Designate Signature	**Licensee Representative Signature**
Date Signed (yyyy-mm-dd)	**Date Signed** (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*

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