



MEMORANDUM

File: 195-30/IAPP

March 18, 1998

To: Regional Managers

From: The Honourable David Zirnhelt
Minister of Forests

I hereby approve Amendment No. 3 to the *Interior Appraisal Manual*, and attach a copy of it for your use. The following sections are amended:

- Section 4.3.2.3 Clarifies the applicable biogeoclimatic zones.
- Section 4.4.2 Correct the numbering of subsections.
- Section 4.4.3 Clarify the definition of what is included as part of ground skidding.
- Section 4.5.3 Clarify the definitions for de-water and re-load.
- Section 5.4 Amend the target rate equation by subtracting \$0.30/m³ from the current calculation.
- Section 6.5 Amend to permit adjustable timber sale licences under the small business forest enterprise program to be reappraised if there is an error in appraisal.
- Section 6.7.2 Amend to update the miscellaneous stumpage rates for timber licences in keeping with the *Forest Act*.

This amendment will come into force on April 1, 1998. Amendments or revisions to this manual require my further approval.



David Zirnhelt
Minister

Attachment

pc: Bill Howard, Director, Revenue Branch

All Subscribers, *Interior Appraisal Manual*



FOR FURTHER INFORMATION CONTACT:

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MANUAL TITLE

Interior Appraisal Manual

REVISION No. 3

ISSUE DATE

April 1, 1998

MANUAL CO-ORDINATOR

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Please make the following changes to your copy of the above Ministry manual. Please insert the following specified pages and **file this notice** immediately after the Amendments Tab.

ACTION (Remove/Insert)	(VOL.) CHAPTER-SECTION-SUBJECT	PAGE(S)	COMMENTS
	TABLE OF CONTENTS		
REMOVE	Chapter 4	13 - 14	
INSERT	Chapter 4	13 - 14	
REMOVE	Chapter 4	27 - 32	
INSERT	Chapter 4	27 - 32	
REMOVE	Chapter 4	39 - 40	
INSERT	Chapter 4	39 - 40	
REMOVE	Chapter 5	5 - 6	
INSERT	Chapter 5	5 - 6	
REMOVE	Chapter 6	5 - 6	
INSERT	Chapter 6	5 - 6	
REMOVE	Chapter 6	11 - 12	
INSERT	Chapter 6	11 - 12	
INSERT	Parameters	1 - 8	Behind Parameters Tab.

5. Soil Moisture Regime (SMR):

Soil moisture regimes 'sub-hygic, hygric, sub-hydric or hydric' within CWH, MH, ICH, SBS, or ESSF Biogeoclimatic Zones are eligible for an increased cost estimate. Any other biogeoclimatic zones and any other soil moisture regimes are not.

6. Biogeoclimatic Zones:

CWH or MH	-	Coastal Western Hemlock or Mountain Hemlock
ESSF	-	Engelmann Spruce - Subalpine Fir
IDF	-	Interior Douglas Fir
ICH	-	Interior Cedar Hemlock
SBPS	-	Sub-Boreal Pine - Spruce
SBS	-	Sub Boreal Spruce

4.3.2.3 Subgrade Cost Estimate

For each operational and block road the subgrade cost estimate in \$/km is determined from the equation for the appropriate road group.

Road Group

1	$6426 + 649 * \text{SLOPE\%} + 174 * \text{ROCK\%} + 7971 * \text{OP} + 13688 * \text{CWH} + 13688 * \text{MH}$
2	$8188 + 339 * \text{SLOPE\%} + 4672 * \text{OP}$
3	$3934 + 116 * \text{SLOPE\%} + 7160 * \text{OP}$
4	$2007 + 314 * \text{SLOPE\%} + 3616 * \text{SMR} + 7222 * \text{OP}$
5	$4837 + 216 * \text{SLOPE\%} + 5446 * \text{SMR} + 4363 * \text{OP}$
6	$6406 + 101 * \text{SLOPE\%} + 6782 * \text{OP} - 1956 * \text{ESSF}$
7	$497 + 260 * \text{SLOPE\%} + 10155 * \text{SMR} + 18682 * \text{OP} + 6498 * \text{ESSF}$
8	$4149 + 5145 * \text{OP} - 3014 * \text{IDF} - 2368 * \text{SBPS}$
9	$3543 + 357 * \text{SLOPE\%} + 3660 * \text{OP}$
10	$8295 + 151 * \text{SLOPE\%} + 4472 * \text{ESSF}$
11	$5571 + 742 * \text{SLOPE\%}$
12	$596 * \text{SLOPE\%} + 10091 * \text{OP}$ (\$1935/km set as minimum. If less than \$1935/km then use \$1935/km)

Where:

Road groups are defined in Table 4.1

OP	=	1 if an Operational Road, otherwise = 0
SMR	=	1 if Soil Moisture Regime is 'sub-hygic, hygric, sub-hydric or hydric' and is in CWH, MH, ICH, SBS or ESSF biogeoclimatic zones. Otherwise SMR = 0.
CWH	=	1 if road construction is within this biogeoclimatic zone. Otherwise CWH = 0.
MH	=	1 if road construction is within this biogeoclimatic zone. Otherwise MH = 0
ESSF	=	1 if road construction is within this biogeoclimatic zone. Otherwise ESSF = 0
IDF	=	1 if road construction is within this biogeoclimatic zone. Otherwise IDF = 0
SBPS	=	1 if road construction is within this biogeoclimatic zone. Otherwise SBPS = 0.

Snow roads

The subgrade cost estimate for all snow roads (winter) is **\$5700/km**.

4.4.1 Harvesting Methods

Certain harvesting methods are recognized only when required by the cutting authority document (inclusive of logging plan).

- Helicopter,
- Horse,
- Ground Skidding, and
- Overhead Cable Logging.

4.4.2 Tree-to-Truck Variables

For appraisal purposes the following variables are recognized, based on all compiled cruise plots segregated by logging method where applicable (see Section 4.4.5). Where the utilization of deciduous is mandatory then all applicable variables are to include the deciduous component.

1. Biogeoclimatic Zone

A separate biogeoclimatic zone may be recognized for each ground skidding (clear-cut), ground skidding (partial cut), overhead cable (clear cut), and skyline (clear cut) logging method as part of the regional constant.

2. Slope (SLOPE%)

The average side slope percent is derived from an area weighted average of the maximum side slope percentage on all cruise plots, rounded to the nearest whole percentage point.

3. Volume per Hectare (VOLHA)

The average net cruise volume per hectare (m³/ha), rounded to the nearest cubic metre. For partial cutting, it is based on the actual volume per hectare being harvested.

4. Percent Blowdown (BD%)

The percentage of the net cruise volume classified as blowdown. Where, if BD% is less than or equal to 15% then BD% = 0.

5. Percent Partial Cut (PCUT)

Partial cutting includes silviculture systems such as faller selection, shelterwood, individual tree and group selection (where the opening size does not exceed one hectare).

The percent partial cut is determined as:

$$PCUT = \frac{\text{Net cruise volume required to be removed using the Partial Cut System}}{\text{Total net cruise volume on the area where Partial Cut System is required}} * 100\%$$

and the maximum percent partial cut is less than 90%. All partial cut percent from 90-100% are to be appraised as clear cut.

6. Distance to Support Centre (DS)

Accessible cutting authorities: (see Section 4.8.2), the one way distance to support centre is the distance over continuous road access from the geographic centre of the cutting authority to the main post office (or other location designated by the Regional Appraisal Coordinator) in a community from the following list. The distance to support center includes the distance covered by a daily barge or ferry service. Where there is more than one block in the cutting authority, the weighted average distance to support centre must be calculated using the individual distances and the individual block volumes. Where more than one alternative is possible, the least cost alternative is used. The distance is measured to the nearest kilometre. The following is a list of communities by Forest Region.

Prince Rupert

Burns Lake
Houston
Kitimat

Kitwanga
New Hazelton

Smithers
Stewart

Terrace

Kamloops

Boston Bar
Clearwater
Hope

Kamloops
Kelowna
Lillooet

Merritt
Pemberton
Penticton

Princeton
Salmon Arm
Vernon

Prince George

Chetwynd
Dawson Creek
Fort Nelson

Fort St. James
Fort St. John
Fraser Lake

Mackenzie
McBride
Prince George

Valemount
Vanderhoof

Nelson

Canal Flats
Castlegar
Cranbrook

Creston
Fernie
Golden

Grand Forks
Greenwood
Invermere

Nakusp
Nelson
Revelstoke

Cariboo

100 Mile House

Quesnel

Williams Lake

For isolated cutting authorities: (see Section 4.8.2), the distance to support centre is the one-way road distance from the geographic centre of the cutting authority to the isolated camp or where there is no isolated camp, to a community from the list above. Where more than one alternative is possible the least cost alternative is used. The distance is measured to the nearest kilometre.

7. Volume per Tree (VOLTREE)

The average net cruise volume per tree (m^3), rounded to two decimals. For partial cutting, it is based on the trees to be harvested.

8. Gross Volume (GVOL)

Gross volume per tree (m^3) is computed as: $\text{tree volume} / (1 - \text{defect \%}/100)$.

Where:

Defect is the estimate of decay, waste and breakage (DWB) percent of the coniferous gross volume from the cruise summary for the trees to be harvested. DEFECT% is recorded to the nearest whole percentage point for appraisal calculation purposes.

4.4.3 Tree-to-Truck Cost Estimate

Tree-to-Truck costs estimates are determined for each harvesting method as follows:

1. Helicopter Logging

Only partial cut and clear-cut logging variables are recognized. The cost estimates are applied to the volume of timber which is required to be logged by helicopter.

Two variations are recognized:

- a. Clear Cut $\$/\text{m}^3 = 65.29$

Clear Cut is defined as volume removal of 90 percent or greater of the total net cruise volume.

- b. Partial Cut $\$/\text{m}^3 = 79.22$

Partial cut is defined as volume removal of less than 90 percent (see Section 4.4.2 (5)) of the total net cruise volume.

2. Horse Logging

No variables are recognized for this method. The cost estimates are applied to the volume of timber to be clear cut or partial cut, which the logging plan requires to be skidded by horse(s).

$$\$/\text{m}^3 = 28.95$$

3. Ground Skidding

The ground skidding equipment options include, but are not limited to, rubber tired skidder, crawler tractor, soft track skidder, small cat skidding, hoe chucking, long line skidding, clambunk forwarders, low ground pressure skidders, harvester forwarders and cut to length processors. A system does not have to skid wood all the way from the stump to the landing to be included. Some wood may be moved part way by longlining or hoechucking before being skidded by some other system to the landing.

Two variations are recognized:

- a. Clear Cut

Clear Cut is defined as the removal of 90 percent to 100 percent of the total net cruise volume.

b. Partial Cut (PCUT)

Partial cut is defined as the removal of less than 90 percent (see Section 4.4.2 (5)) of the total net cruise volume.

When the volume per tree is less than 0.20 m^3 , a cost additive will apply to the Ground Skidding Tree-to-Truck cost estimates in all Forest Regions. The cost additive is determined as follows:

$$\$/\text{m}^3 = 3.75 - 17.60 * \text{VOLTREE}$$

The tree-to-truck cost estimate is determined from the equation as follows:

$$\$/\text{m}^3 = \text{CONSTANT} + 7.02 * \text{SLOPE\%/100} - 6.57 * \text{VOLHA/1000} + 4.85 * \text{BD\%/100} + 6.67 * \text{DPCUT} - 6.63 * \text{PCUT/100} + 1.16 * (\text{DS}-50)/100$$

Where CONSTANT =

Region	Biogeoclimatic Zone			
	CWH/MH	ICH	ESSF	All Other
Nelson	21.14	20.22	21.11	18.82
Prince George	18.41	17.49	18.38	16.09
All Other	19.05	18.13	19.02	16.73

For the above equation the following definitions apply:

- if DS is less than or equal to 50 km, then $(\text{DS}-50) = 0$,
- if DS is greater than 150 km, then $(\text{DS}-50) = 100$,
- if BD % is less than or equal to 15, then BD % = 0,
- GVOL = gross volume per tree (m^3) computed as $\text{VOLTREE} / (1 - \text{DEFECT \%} / 100)$,
- DPCUT = 1 if partial cut percent is greater than 0 and less than 90 otherwise DPCUT = 0,
- PCUT = percent volume removed in a partial cut (EXCEPT: if partial cut percent $\geq 90\%$ then, PCUT=0).

4.5.2 Truck Haul Cost Estimates

4.5.2.1 Primary Haul

The primary truck haul cost estimate is determined from the following equation.

1. Highway Haul

For all highway haul equations if the CT is greater than 0 then the minimum is \$1.08/m³.

$$$/m^3 = 0.45 + (1.85 * CT) - (1.22 * CE/100) + (2.85 * HE/100) + (1.44 * LA/100) - (0.27 * LO/100) - (0.62 * SP/100) - (1.73 * WH/100)$$

If:

CT = 0 then \$/m³ = 0.

2. Off-Highway Haul

For all off-highway haul equations if CT is greater than 0 then the minimum is \$1.54/m³.

$$$/m^3 = 1.28 + (1.50 * CT) - (0.026 * (CT)^2) - (0.53 * BA/100) - (0.83 * CE/100) - (0.66 * HE/100) - (0.88 * LO/100) - (1.21 * SP/100)$$

If:

CT = 0 then \$/m³ = 0.

Where: CT Cycle time to the nearest 0.1 hour

BA = Balsam

LO = Lodgepole Pine

CE = Cedar

SP = Spruce

HE = Hemlock

WH = White Pine

LA = Larch

For both hauling equations, the species listed are the species percents taken from the appraisal data sheet to the nearest 1.0%.

4.5.2.2 Secondary Haul

The secondary haul cost estimate is made when logs must be truck hauled between the dewater and reload site to the appraisal point.

$$$/m^3 = 1.646 * CT$$

CT for the secondary haul is determined using the method described in Section 4.5.1,(1).

4.5.3 Water Transportation Cost Estimate

A water transportation cost estimate is made when logs must be transported by water between the cutting authority and the point of appraisal or reload. The estimate includes the costs of strapping logs on the truck, dumping, booming, developing and operating dumping and booming grounds, and towing. The cost estimate for reservoir lakes applies to all marine appraisals and to Arrow, Kinbasket, Ootsa, Revelstoke and Williston Lakes. All other lakes receive the natural lake cost estimate.

1. Dump and Boom:

Reservoir Lakes and Marine:	\$3.23
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Natural Lakes:	\$1.87
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2. Tow:

All	$$/m^3 = 0.4559 + 0.006541 * d$
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Where; d = one-way tow distance in kilometres

3. Dewater and Reload:

All lakes	\$2.83
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Only considered if the mill infeed is not located on the same lake, or a dam transfer is required. Otherwise dewatering is part of the manufacturing cost estimate.

4.5.4 Special Transportation Systems

A special transportation system is recognized in the appraisal where geographic conditions dictate its use.

The cost estimates include all costs associated with servicing the appropriate cutting authorities, excluding all on-site costs of owning and operating a camp facility.

The recognized special transportation systems are as follows:

1. Railway

a. Truck to Rail Transfer

5.4 Market Value Indexing

At the times specified in Section 1.6, target rates are adjusted upwards or downwards to reflect changes in the value of softwood lumber as indicated by Statistics Canada.

Beginning with the month of September 1997 the British Columbia Softwood Lumber Index Number P2459 is used for the Interior. This Index is a measure of the changes in market value for a “basket” of lumber products representative of the normal production in the interior. Quarterly indexing is based on averages of StatsCan values for the three-month periods ending January, April, July, and October each year. The base of (1992 = 100) is adjusted back to the base of 1981 = 100.

New Interior Target Rate Calculation

1. If the INDEX is less than or equal to 161 then,

$$TR = \left[\frac{\text{INDEX}}{139.0} * 8.59 \right] - 0.30$$
2. If the INDEX is greater than 161, but less than or equal to 186 then,

$$TR = \left[9.95 + \left[\frac{(\text{INDEX} - 161)}{25} * 9.35 \right] \right] - 0.30$$
3. If the INDEX is greater than 186 then,

$$TR = \left[19.30 + \left[\frac{(\text{INDEX} - 186)}{49} * 6.74 \right] \right] - 0.30$$

Where: TR = New Target Rate
(\$/m³)

Quarterly Stumpage Rate Adjustment Date	New Statistics Canada Index based on index values for the months of:
January 1 April 1 July 1 October 1	Preceding August, September, October Preceding November, December, January Preceding February, March, April Preceding May, June, July

The applicable Statistics Canada Index is published by Revenue Branch at the time of each quarterly stumpage adjustment and becomes an integral part of this manual.

5.5 Base Rate

The Interior Base Rate is redetermined and published by Revenue Branch at the time of each quarterly stumpage rate adjustment and becomes an integral part of this manual.

6.4 Partially Harvested Timber

Where decked timber, or timber which has been felled and bucked, such as on right-of-way, is sold without competition; and where the stumpage value is over \$3,000 or volume exceeds 300 m³, a full cost estimate appraisal is completed upon an "as is, where is" basis.

Phase costs may be based on borrowed data from a representative cutting permit, adjusted for partial phase.

If the timber volume is being sold competitively, the timber may be priced according to the procedures in Section 6.2.

6.5 Small Business Forest Enterprise Program (SBFEP) Sales

For appraisal purposes, the SBFEP includes:

- All timber sale licenses (TSL) issued under the *Forest Act*, Sections 20 and 21, and
- all TSLs issued under the *Forest Act*, Section 23 except 23 (1) (a) and 23 (1) (b).

Fixed/Adjustable Stumpage Rates for SBFEP Cutting Authorities

The adjustable stumpage rate option can be provided to a licensee only if the upset rate has been determined by means of a full appraisal. The data for the full appraisal may be site-specific or may be obtained from a comparable cutting authority. Once a selection has been made, it remains in effect for the term and all extensions. If the District Average Value Index method is used, the upset and hence the total stumpage rate must be fixed for the term of the cutting authority and all extensions. The only exceptions are if a reappraisal is done under Section 2.3 (1) or Section 2.3 (5).

A licensee's election of fixed stumpage rates also precludes any correction to the upset stumpage rate determination that would otherwise be warranted because of an error in the appraisal.

Section 20 Timber Sale Licences (Prior to May 1, 1994)

A licensee who holds a timber sale licence issued under Section 20 of the *Forest Act* that was advertised or awarded prior to May 1, 1994 may elect to have the stumpage rate on that licence fixed at the April 30, 1994 level for the term and all extensions. The election must have been made prior to July, 1, 1994.

Section 21 Timber Sale Licences (Prior to May 1, 1994)

For a timber sale licence issued under Section 21 of the *Forest Act*, the licensee may have elected to have the stumpage rate fixed at the April 30, 1994 level until April 30, 1996 on timber marks issued under that licence if:

- the timber sale licence was advertised or awarded prior to May 1, 1994,
- the timber mark was issued prior to May 1, 1994, and
- the election to fix rates was made before July, 1, 1994.

The above timber marks with rates fixed until April 30, 1996 will be reappraised effective May 1, 1996. All subsequent reappraisals for those timber marks will be as per Section 2.3.

6.7.2 Miscellaneous Stumpage Rates for Timber Licences

The stumpage rates in Table 6-2 apply only to timber licence cutting authorities that are not appraised and have a cutting authority term that began before May 1, 1995.

For each species of timber in column 1 of Table 6-2, the stumpage rate immediately opposite that species in columns 2, 3 and 4 respectively, apply to sawlogs scaled in the indicated forest regions on and after April 1, 1998.

Table 6-2 Miscellaneous Stumpage Rates for Timber Licences

Column 1 Species of timber	Forest Region		
	Column 2 Vancouver except the Mid-Coast and Queen Charlotte forest districts (that part west of the Cascades Mountains) \$/cubic metre	Column 3 Prince Rupert and the Mid-Coast and Queen Charlotte forest districts (that part west of the Cascades Mountains) \$/cubic metre	Column 4 All forest regions and those parts of regions east of the Cascade Mountains \$/cubic metre
Fir			
Spruce			
Balsam			
Cedar			
Hemlock			
Cypress			
White pine			
Yellow pine			
Larch			
Lodgepole pine			
Other conifers			
All non-conifers	1.00	1.00	0.50
All species Grades 3, 4, 5, and 6	N/A	N/A	0.25
All species Firmwood reject	Nil	Nil	Nil
All species Grade Y	0.25	0.25	N/A

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