BRITISH COLUMBIA

MINISTRY OF FORESTS, LANDS
NATURAL RESOURCE OPERATIONS
AND RURAL DEVELOPMENT

Tree Farm Licence 14

held by

Canadian Forest Products Ltd.

Rationale for

Allowable Annual Cut (AAC)

Determination

April 18, 2019

Diane Nicholls, RPF
Chief Forester

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Objective of this document

This document is intended to provide an accounting of the factors I have considered and the rationale I have employed as Chief Forester of British Columbia (BC) in making my determination, under Section 8 of the *Forest Act*, of the allowable annual cut (AAC) for Tree Farm Licence (TFL) 14. This document also identifies where new or better information is needed for incorporation in future determinations.

Acknowledgement

For preparation of the information I have considered in this determination, I thank licensee staff, and staff from BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) in the Southern Interior Forest Region - Rocky Mountain Resource District and the Forest Analysis and Inventory Branch (FAIB). I am also grateful to the First Nations and members of the public who have provided input.

Statutory framework

Section 8 of the *Forest Act* requires the chief forester to consider a number of specified factors in determining AACs for Timber Supply Areas (TSA) and TFLs. Section 8 of the *Forest Act* is reproduced in full as Appendix 1 of this document.

First Nations overview

The Crown has a duty to consult with and accommodate as necessary, those First Nations for whom it has knowledge of claimed or established Aboriginal rights and/or title or treaty rights (Aboriginal Interests) that may be impacted by a proposed decision, including strategic level decisions such as AAC determinations.

The Ktunaxa Nation Council, Shuswap Indian Band, Adams Lake Indian Band and Neskonlith Indian Band have asserted traditional territories over TFL 14. The Okanagan Indian Band, Lower Similkameen Indian Band, Penticton Indian Band, Upper Nicola Band and Okanagan Nation Alliance (all Okanagan Nation bands) have asserted traditional territories over the north-western periphery of TFL 14.

Description of the TFL

TFL 14 is held by Canadian Forest Products Ltd. (Canfor or the 'licensee'). It falls within the Kootenay-Boundary Region - Rocky Mountain Natural Resource District (RMNRD) which is administered from the district office in Cranbrook. The TFL covers a total area of nearly 152 000 hectares, of which 97 133 hectares is considered productive forest land and 46 064 hectares is anticipated to be available for timber harvesting and falls within the timber harvesting land base (THLB).

TFL 14 is located northwest of Invermere in the East Kootenays, situated between the height of land of the Purcell Mountains, to the west, and the Columbia River valley (known as the Rocky Mountain Trench) to the east. It is bounded by the Invermere TSA to the south and east, the Golden TSA to the north, and the Kootenay Lake TSA to the west. It also borders three protected areas National Park, Bugaboo Alpine Recreation Area, and the Columbia Wetlands Wildlife Management Area).

Four First Nations have asserted territory over the TFL, these are the Ktunaxa Nation Council, Shuswap Indian Band, Adams Lake Indian Band and Neskonlith Indian Band.

The major streams within the TFL are the Spillimacheen, Bobbie Burns and Vowell Creeks. These generally drain east and then south-east from the Purcell Mountains into the Columbia River, which forms a large portion of the eastern boundary of the TFL. The Columbia River flows north to Golden, through a large, complex wetland ecosystem called the Columbia Wetlands. There are four biogeoclimatic zones within the TFL: Interior Douglas-fir (IDF), Interior Cedar-Hemlock (ICH), Montane Spruce (MS), and Engelmann Spruce-Subalpine Fir (ESSF).

The predominant leading tree species within the forested areas of the TFL is pine (Pli), however, balsam (BI) is the primary species in the non-THLB. Pine represents 39 percent of the THLB followed by spruce (SE and Sx) at 25 percent, Interior Douglas-fir (Fdi) at 19 percent, and balsam (BI) at 15 percent.

Several species of identified wildlife (i.e., species requiring special management) are considered likely to occur within TFL 14. These include: badger, bull trout, grizzly bears, and caribou.

History of the AAC

The TFL, which was initially issued as a Forest Management Licence, was awarded to Cranbrook Sawmills Ltd. in 1953. At that time, the licence area was 95 903 hectares and the company was authorized to harvest 67 961 cubic metres per year. In 1961, the TFL was assigned to Crestbrook Timber Limited, whose name was changed in 1967 to Crestbrook Forest Industries Limited (Crestbrook). By 1968, the licence area had increased to 124 380 hectares, and with an updated inventory, improved utilization standards, the AAC was increased to 111 852 cubic metres. In 1990, the chart area of Forest Licence A18978 was added to the TFL, expanding the land base to 161 109 hectares. In 1995, an area of approximately 11 000 hectares was removed from the TFL following the creation of the Bugaboo Provincial Park.

In 2000, the TFL holder, Crestbrook, amalgamated with Tembec Industries Inc. to form Tembec Industries Inc., a wholly-owned subsidiary of Tembec Inc. Canadian Forest Products Ltd. purchased the TFL in 2009. The current tree farm licence term of 25 years began on March 1, 2017. Canfor has confirmed that there has been no material change to the gross area of the TFL since its acquisition.

Since 1960, there have been nine management plans (formerly called Management and Working Plans) for the TFL, the most recent being April 7, 2008, when then Deputy Chief Forester, set the AAC at 180 000 cubic metres. The forests of TFL 14 have been healthy and infrequent natural disturbances have resulted in a relatively stable AAC since 1971. In the 1990, 1996, and 2001 management plans, the AAC was 178 926, 164 000 and 160 000 cubic metres respectively.

New AAC determination

Effective April 18, 2019, the new allowable annual cut (AAC) for TFL 14 is 180 000 cubic metres which is the same as the AAC previously determined on April 7, 2008. This AAC will remain in effect until a new AAC is determined, which must take place within 10 years of the effective date of this determination.

Role and limitations of the technical information used

Section 8 of the *Forest Act* requires the chief forester, in determining AACs, to consider biophysical, social and economic information. Most of the technical information used in determinations is in the form of a timber supply analysis and its inputs related to inventory, growth and yield, and management. The factors used as inputs to timber supply analysis have differing levels of uncertainty associated with them, due in part to variation in physical, biological and social conditions.

Computer models cannot incorporate all of the social, cultural and economic factors that are relevant when making forest management decisions. Technical information and analysis, therefore, do not necessarily provide the complete answers or solutions to forest management issues that must be considered when making decisions such as AAC determinations. Such information does provide valuable insight into potential impacts of different uncertainties about or changes to resource information and management practices, and thus forms an important component of the information I must consider in AAC determinations.

In determining this AAC, I have considered the technical information provided, including any known limitations. Appendix 4 provides a list of information sources that I considered for this determination.

Guiding principles for AAC determinations

Section 8 of the *Forest Act* requires the chief forester to consider particular factors in determining the AACs for timber supply areas and tree farm licences.

Given the large number of periodic AAC determinations required for British Columbia's many forest management units, administrative fairness requires a reasonable degree of consistency of approach in addressing relevant factors associated with AAC determinations. In order to make my approach in these matters explicit, I have considered and adopted the following body of guiding principles, which have been developed over time by BC's chief foresters and deputy chief foresters. However, in any specific circumstance in a determination where I consider it necessary to deviate from these principles, I will explain my reasoning in detail.

When considering the factors required under Section 8, I am also aware of my obligation as a steward of the forests of British Columbia, of the mandate of the Ministry of Forests, Lands, Natural Resource Operations and Rural Development ("the Ministry") as set out in Section 4 of the *Ministry of Forests and Range Act*, and of my responsibilities under the *Forest Act*, *Forest and Range Practices Act* (FRPA), and *Forester's Act*.

AAC determinations should not be construed as limiting the Crown's obligations under court decisions in any way, and in this respect it should be noted that AAC determinations do not prescribe a particular plan of harvesting activity within the management units. They are also independent of any decisions by the Minister of Forests, Lands, Natural Resource Operations and Rural Development with respect to subsequent allocation of wood supply.

These guiding principles focus on responding to uncertainties; incorporating information related to First Nations' rights, titles and interests; and considering information related to integrated decision making, cumulative effects, and climate change.

Information uncertainty

Given the complex and dynamic nature of forest ecosystems coupled with changes in resource use patterns and social priorities there is always a degree of uncertainty in the information used in AAC determinations.

Two important ways of dealing with this uncertainty are:

(i) managing risks by evaluating the significance of specific uncertainties associated with the current information and assessing the potential current and future social, economic, and environmental risks associated with a range of possible AACs; and

(ii) re-determining AACs regularly to ensure they incorporate current information and knowledge, and greater frequency in cases where projections of short-term timber supply are not stable and/or substantial changes in information and management are occurring.

In considering the various factors that Section 8 of the *Forest Act* requires the chief forester to take into account in determining AACs, it is important to reflect those factors, as closely as possible, that are a reasonable extrapolation of current practices. It is not appropriate to base decisions on proposed or potential practices that could affect the timber supply but are not consistent with legislative requirements and not substantiated by demonstrated performance.

It is not appropriate to speculate on timber supply impacts that may eventually result from land-use designations not yet finalized by government. Where specific protected areas, conservancies, or similar areas have been designated by legislation or by order in council, these areas are deducted from the THLB and are not considered to contribute any harvestable volume to the timber supply in AAC determinations, although they may contribute indirectly by providing forest cover that helps meet resource management objectives such as biodiversity.

In some cases, even when government has made a formal land-use decision, it is not necessarily possible to fully analyse and immediately account for the consequent timber supply impacts in an AAC determination. Many government land-use decisions must be followed by detailed implementation decisions requiring, for instance, further detailed planning or legislated designations such as those provided for under the *Land Act* and FRPA. In cases where government has been clear about the manner in which it intends land-use decisions to be implemented, but the implementation details have yet to be finalized, I will consider information that is relevant to the decision in a manner that is appropriate to the circumstance. The requirement for regular AAC reviews will ensure that future determinations address ongoing plan implementation decisions.

Where appropriate, information will be considered regarding the types and extent of planned and implemented silviculture practices as well as relevant scientific, empirical and analytical evidence on the likely magnitude and timing of their timber supply effects.

I acknowledge the perspective that alternate strategies for dealing with information uncertainty may be to delay AAC determinations or to generally reduce AACs in the interest of caution. However, given that there will always be uncertainty in information, and due to the significant impacts that AAC determinations can have on communities, I believe that no responsible AAC determination can be made solely on the basis of a precautionary response to uncertainty with respect to a single value.

Nevertheless, in making a determination, allowances may need to be made to address risks that arise because of uncertainty by applying judgment as to how the available information is used. Where appropriate, the social and economic interests of the government, as articulated by the Minister of Forests, Lands, Natural Resource Operations and Rural Development, can assist in evaluating this uncertainty.

First Nations

The British Columbia government has committed to true, lasting reconciliation with Indigenous peoples in British Columbia, including fully adopting and implementing the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). Reconciliation and implementation of UNDRIP will likely require changes to policies, programs and legislation, which will take time and involve engagement with First Nations. While this work is undertaken, BC is committed to fulfilling its legal obligations to consult and accommodate Aboriginal Interests consistent with the Constitution, case law, and relevant agreements between First Nations and the government of BC.

Where First Nations and the Province are engaged in collaborative land and resource planning, the Province may make general commitments regarding stewardship and other aspects of resource management. Where such commitments have been made, I will consider them when determining AACs, within the scope of my statutory authority.

As is the case for land use and management planning in general, where land use zones or management objectives resulting from collaborative planning between First Nations and the Province have not been finalized, it is beyond the statutory authority of the chief forester to speculate on final outcomes. If the timber supply implications of final designations are substantial, application of the Allowable Annual Cut Administration Regulation to reduce a management unit AAC between Section 8 determinations, or a new AAC determination prior to the legislated deadline may be warranted.

Where the nature, scope and geographic extent of Aboriginal rights and title have not been established**,** the Crown has a constitutional obligation to consult with First Nations regarding their Aboriginal Interests in a manner proportional to the strength of those Interests and the degree to which they may be affected by the decision. The manner of consultation must also be consistent with commitments made in any agreements between First Nations and the Province. In this regard, full consideration will be given to the following:

(i) the information provided to First Nations to explain the timber supply review process and analysis results;

(ii) any information brought forward through consultation or engagement processes or generated during collaboration with First Nations with respect to Aboriginal Interests, including how these Interests may be impacted;

(iii) any operational plans and/or other information that describe how First Nations' Aboriginal Interests are addressed through specific actions and forest practices; and,

(iv) existing relevant agreements and policies between First Nations and the BC Government.

Aboriginal Interests that may be impacted by AAC decisions will be addressed consistent with the scope of authority granted to the chief forester under Section 8 of the *Forest Act*. When information is brought forward that is outside of the chief forester's scope of statutory authority, this information will be forwarded to the appropriate decision makers for their consideration. Specific considerations identified by First Nations in relation to their Aboriginal Interests that could have implications for the AAC determination are addressed in the various sections of this rationale where it is within the statutory scope of the determination.

Established Aboriginal title lands (meaning declared by a court or defined under an agreement) and other areas, such as Treaty Settlement Lands or Indian Reserves, are not provincial Crown land. Consequently, the timber on these lands does not contribute to the AAC of the timber supply area or tree farm licence with which they overlap. Prior to establishment of Aboriginal title, it is not appropriate for the chief forester to speculate on how potential establishment of Aboriginal title in an area, either by court declaration or by agreement, could affect timber supply, given uncertainties about the scope, nature and geographic extent of title. Until land has been established as Aboriginal title land, it remains as provincial land managed by the province, and will contribute to timber supply.

Integrated decision making and cumulative effects

One of the responsibilities of the Ministry is to plan the use of forest and range resources such that the various natural resource values are coordinated and integrated. In addressing the factors outlined in Section 8 of the *Forest Act*, I will consider relevant available information on timber and non-timber resources in the management unit, including information on the interactions among those resources and the implication for timber supply.

With respect to cumulative effects, I must interpret related information according to my statutory authority. As emphasized above, the chief forester is authorized only to make decisions on allowable harvest levels, not to change or institute new management regimes for which other statutory decision makers have specific authority. However, cumulative effects information can highlight important issues and uncertainties in need of resolution through land use planning, which I can note and pass to those responsible for such planning. Information on cumulative effect can also support considerations related to Aboriginal Interests.

Climate change

One key area of uncertainty relates to climate change. There is substantial scientific agreement that climate is changing and that the changes will affect forest ecosystems. Forest management practices will need to be adapted to the changes, and can contribute to climate change mitigation by promoting carbon uptake and storage. Nevertheless, the potential rate, amount, and specific characteristics of climate change in different parts of the province are uncertain. This uncertainty means that it is not possible to confidently predict the specific, quantitative impacts on timber supply.

When determining AACs, I consider available information on climate trends, potential impacts to forest ecosystems and communities that depend on forests and related values, and potential management responses. As research provides more definitive information on climate change and its effects, I will incorporate the new information in future AAC determinations. Where forest practices are implemented to mitigate or adapt to the potential effects of climate change on forest resources, or where monitoring information indicates definite trends in forest growth and other dynamics, I will consider that information in my determinations.

I note, however, that even with better information on climate change, in many cases there will be a range of reasonable management responses. For example, it is not clear if either increases or decreases to current harvest levels would be appropriate in addressing potential future increases in natural disturbance due to climate change, which appear to be likely in some areas. Hypothetically, focused harvests in at-risk forests could forestall losses of timber and allow for planting of stands better adapted to future conditions. Conversely, lower harvest levels could provide buffers against uncertainty. The appropriate mix of timber supply management approaches is ultimately a social decision.

Deciding on the preferred management approach will involve consideration of established climate change strategies, and available adaptation and mitigation options together with social, economic, cultural, and environmental objectives. Analysis will be useful for exploring options and trade-offs. Any management decisions about the appropriate approach and associated practices will be incorporated into future AAC determinations. In general, the requirement for regular AAC reviews will allow for the incorporation of new information on climate change, on its effects on forests and timber supply, and on social decisions about appropriate responses as it emerges.

The role of the base case

In considering the factors required under Section 8 of the *Forest Act* to be addressed in AAC determinations, I am assisted by timber supply forecasts provided to me through the work of the Timber Supply Review (TSR) program for TSAs and TFLs.

For most AAC determinations, a timber supply analysis is carried out using an information package including data and information from three categories — land base inventory, timber growth and yield, and management practices. Using this set of data and a forest estate model, a series of timber supply forecasts are produced, reflecting different starting harvest levels, rates of decline or increase, and potential trade-offs between short- and long-term harvest levels. From a range of possible forecasts, one is chosen in which an attempt is made to avoid both excessive changes from decade to decade and significant timber shortages in the future, while ensuring the long-term productivity of forest lands. Referred to as the base case, this forecast is designed to reflect current management practices and is the basis for comparison when assessing the effects of uncertainty on timber supply.

Since the base case incorporates information for which there is uncertainty, it is not an AAC recommendation. Rather, it is one of a number of theoretically possible timber supply forecasts that's validity is dependent on the data, assumptions and forest estate model used to create it. Therefore, much of what follows in this document is an examination of the degree to which all the assumptions made in creating the base case forecast are realistic and current, and the degree to which any adjustments to its predictions of timber supply must be made, if necessary, to more properly reflect the current situation.

These adjustments are made on the basis of informed judgment using currently available information about forest management, and that information may well have changed since the original information package was assembled. Forest management data are particularly subject to change during periods of legislative or regulatory change, or during the implementation of new policies, procedures, guidelines or plans.

Thus, in reviewing the considerations that lead to the AAC determination, it is important to remember that the AAC determination itself is not simply a calculation. Even though the timber supply analysis that has been provided to me is integral to those considerations, the AAC determination is a synthesis of judgment and analysis in which numerous risks and uncertainties are weighed. Depending upon the outcome of these considerations, the AAC determined may or may not, coincide with the base case. Judgments that in part may be based on uncertain information are essentially qualitative in nature and, as such, are subject to an element of risk. Consequently, once an AAC has been determined, no additional precision or validation would be gained by attempting a computer analysis of the combined considerations.

Timber supply analysis

The timber supply analysis for TFL 14 was prepared by the licensee using the spatially explicit optimization model Patchworks™. Patchworks allows the user to generate strategic-level timber supply forecasts and explore trade-offs between a broad range of forest management goals while considering operational objectives and limitations. Based on a review by FAIB, as well as my own experience reviewing results from similar models, I am satisfied that Patchworks is capable of providing an appropriate projection of timber supply.

The forest cover inventory was projected to January 1, 2017, for harvesting depletion and silviculture treatments. This was also the beginning date of the first period of all forecasts. The forecasts were run in five-year time steps over a total planning horizon of 250 years. The productive forested area was aggregated into groups of similar stands in order to assign yield projections for modelling. The aggregated analysis units were based on biogeoclimatic subzone variant, site productivity class, management era, and leading species.

The major changes since the previous Management Plan 9 (MP No. 9) include attainment of Forest Stewardship Council (FSC) certification which is now a part of the current management practices for TFL 14. FSC certification provides a forest management planning framework that assists forest managers with meeting and integrating an ecosystem-based management (EBM) plan. EBM includes social, economic and ecological aspects of forest management; however, it is usually defined as differing from other approaches to management by identifying the need to maintain ecological functioning, or ecological integrity, in order to maintain current and future social and economic values.

FSC commitments for TFL 14 were incorporated into the base case forecast resulting in the following changes: increased riparian buffers; designation of high conservation value forests (HCVF) with modified management practices; designation of endangered forest (EF) that are unavailable for harvesting; and designation of buffered avalanche paths for wildlife. The initial growing stock in the base case is approximately 12 percent lower than in the MP No. 9 analysis. This reduction was attributed to mountain pine beetle and timber harvesting. The current THLB is one percent smaller than an FSC Option scenario in MP No. 9 (which is the scenario most comparable to the current MP No. 10 base case).

Vegetation Resource Inventory (VRI) data used to create the base case were updated for disturbances and incorporated LiDAR-based stand height adjustments that were applied to the mature, non-logged, portion of the inventory.

Mountain Pine Beetle (MPB) was a significant consideration in MP No. 9. Since 2007, the epidemic has subsided and no longer represents a significant consideration for this analysis. The base case assumption was that dead pine has been salvaged. Non-recoverable losses (NRL) are estimated to be 6524 cubic metres per year, which is 3500 cubic metres per year greater than in MP No. 9. The increase in NRL is attributed to spruce bark beetle. Partial retention VQO was modelled as a cover constraint and was highly constraining. In MP No. 9, partial retention VQO was modelled as a volume reduction (partial cutting regime). The MP No. 9 analysis modelled disturbance of the non-THLB while the MP No. 10 analysis does not. MP No. 9 added a 30 percent operational adjustment factor (OAF 2) for Armillaria to Fdi-leading stands in the ICH while the current analysis applied 10.8 percent. Old-seral targets in low biodiversity emphasis areas had one-third of the required target met in the first rotation, two-thirds in the second rotation, and full target on the third rotation as prescribed in the licensee's Sustainable Forest Management Plan (SFMP) for its Kootenay Operations (Canfor, 2016). MP No. 9 modelled full seral targets starting in the first year of the modelling period.

The initial base case harvest level was selected as the highest attainable harvest level that could be maintained for as long as possible while meeting the harvest flow objectives. It was also the highest harvest level that could minimize the decrease to a sustainable mid-term. The initial base case harvest level is 181 000 cubic metres per year which is close to the current AAC of 180 000 cubic metres per year. The reported harvest level is net of non-recoverable losses (NRL) that were estimated to be 6524 cubic metres per year. The harvest profile is predominantly pine followed by spruce and Douglas-fir.

The base case harvest level declines by 10 percent after 20 years to a mid-term level of 163 000 cubic metres per year and then declines again after 40 years to a sustainable long-term level of 157 000 cubic metres per year. The forecast assures a future sustainable and stable growing stock.

Initially, the base case forecast is entirely dependent on natural stands. After the fourth decade the contribution from managed-stands increases sharply. For the first 15 years the average harvest age (157 years) is at its highest. Beginning in year 16, the average harvest age goes through a gradual decline until year 50 when it stabilizes at 81 years and minimally fluctuates until the end of the planning horizon. When the majority of the volume comes from natural stands the average harvest volume per hectare (VPH) is 336 cubic metres per hectare and when the majority of volume is from managed stands the VPH is approximately 300 cubic metres per hectare.

To assess the potential implications and risk to timber supply arising from uncertainty in data assumptions, various sensitivity analyses were conducted as part of the timber supply analysis. These sensitivity analyses and associated alternative harvest projections have also assisted me in considering the factors leading to my determination.

I have reviewed in detail the assumptions and methodology incorporated in the base case, as well as: the total growing stock; the harvest contributions from managed and unmanaged stands; the average volumes per hectare; the total area harvested annually; and the average ages of the forest stands harvested.

As discussed and quantified throughout this rationale, and in consideration of the items described above, I am satisfied, subject to the qualifications accounted for in various sections of this document, that the base case forecast and associated analyses presented in MP No. 10 provide an adequate basis from which I can assess the timber supply for TFL 14 in this determination.

Consideration of factors as required by Section 8(8) of the *Forest Act*

I have reviewed the information for all of the factors required to be considered under Section 8 of the *Forest Act*. Where issues require additional discussion and evaluation, I will discuss these factors further in this rationale. For other factors, where uncertainty exists or where public or First Nations' input indicates differences of opinion regarding the information used, modelling, or some other aspect under consideration, this rationale incorporates an explanation of how I considered the essential issues raised and the reasoning that led to my conclusions.

For some factors, I have concluded that the modelling of a factor in the base case, as described in MP No. 10, appropriately represents current management and reflects the best available information and uncertainties about the factor have little influence on the timber supply projected in the base case. In these cases, no discussion is included in this rationale. These factors are listed in Table 1.

Table 1. List of factors accepted as modelled in the base case forecast

***Forest Act* section and description**	**Factors accepted as modelled**
8(8)(a)(i) Composition of the forest and its expected rate of growth	- Non-TFL and Private Land - Non-forest and Non-productive forest - Existing and future roads, trails and landings - Parks - Non-commercial cover - Unstable terrain - Non-merchantable - Low productivity stands - Riparian management - Avalanche tracks - Old growth management areas - Endangered forests - Existing wildlife tree patch retention - Recreation sites - Other considerations - Cutblock adjacency and green-up - East Kootenay land use plan - Seral stage requirements - Visual quality objectives - Domestic watersheds - Minimum harvest age - Natural stand yield tables - Silviculture systems - Partially harvested stands - Managed stand yield tables - Site productivity estimates - Genetic gain - Operational adjustment factors for managed stands - Volume reductions for non-commercial species
8(8)(a)(iv) Standard of timber utilization and allowance for decay, waste and breakage	- Decay, waste and breakage for unmanaged stands - Timber utilization - Unharvested volume carry forward

***Forest Act* Section 8 (8)**

In determining an allowable annual cut under this section the chief forester, despite anything to the contrary in an agreement listed in section 12, must consider

(a) the rate of timber production that may be sustained on the area, taking into account

(i) the composition of the forest and its expected rate of growth on the area

Land base contributing to timber harvesting

- *general comments*

The timber harvesting land base (THLB) is an estimate of the land where timber harvesting is considered both available and economically feasible, given the objectives for all relevant forest values, existing timber quality, market values and applicable technology. It is a strategic-level estimate developed specifically for the timber supply analysis and, as such, could include, or exclude, some areas that may never be harvested.

The total area of the TFL 14 is approximately 152 000 hectares. Of this total area, 46 064 hectares are deemed to be available as THLB after deductions are applied for factors noted in Table 1 above and in factors discussed below.

As part of the process used to define the THLB, a series of deductions was made from the Crown forest land base (CFLB) to account for various land classes that do not contribute to the TFL timber supply (e.g., non-forest areas, uneconomic areas). These deductions account for biophysical, economic or ecological factors that reduce the forested area available for harvesting. In reviewing these deductions, I am aware that some areas may fall into more than one land class. For example, an area may be both uneconomic and on unstable terrain. To ensure accuracy in defining the THLB, care was taken to avoid double-counting areas with overlapping objectives. Hence, the deduction amount for a given factor stated in the analysis, or in this document, does not necessarily reflect the total area within that land class as some portion of it may have been deducted earlier under another land class.

For this determination, I accept that the approach used to determine the THLB for the TFL 14 base case was appropriate.

- *forest inventory*

In 2013, a new Vegetation Resources Inventory (VRI) was completed for TFL 14. The licensee found that the inventory included a generalized version of the harvest history layer and that the VRI did not accurately reflect the current status of the land base close to where harvesting had occurred. Using the best available silviculture information, the licensee undertook a process to update the VRI to 2017 for harvested stands, and to re-delineate and type stand polygons.

In preparation for the MP No. 10 analysis, the licensee compared the total growing stock volume from the new inventory to the growing stock used in the MP No. 9 analysis. The comparison showed that the growing stock volume in the new inventory was approximately 24 percent lower than the total growing stock in MP No. 9. Although a number of factors were identified that in combination could explain the difference in volume, the licensee concluded that bias in the stand-level attribute estimates accounts for approximately 10 percent of the total difference. They also noted that the magnitude of the estimated bias is close to the 11 percent average volume adjustment derived from Phase II field sample data that were applied in MP No. 9.

To address the growing stock difference, the licensee attempted to obtain the 2006 VRI Phase II field data to recompile with the 2013 inventory, however the data were unavailable. As an alternative to the Phase II data the licensee elected to use LiDAR data to improve stand-level height estimates. LiDAR (or Light Detection and Ranging) is an airborne remote sensing method that uses pulsed laser light to measure ranges (variable distances) to the vegetation canopy and the earth. It provides very detailed information of the ground shape (slope, and elevation) and vegetation (canopy extent, and tree height). The greatest advantage of LiDAR is that the measurements are taken of the entire treed area within the coverage rather than a sample of the treed area. LiDAR data were used to produce an individual tree inventory (ITI) and a method

was developed to use the ITI heights to adjust stand-level heights in the new VRI. The height adjustment process was accepted by the Forest Analysis and Inventory Branch (FAIB) remote sensing staff for this determination.

The main challenge with LiDAR height adjustments is in transforming the ITI data into a stand-level attribute that mimics VRI interpretation and can be used in the Variable Density Yield Projection (VDYP) program. VDYP provides yield predictions for unmanaged stands in inventory and timber supply applications. Other challenges with LiDAR include assessing the impact of not including stems less than 10 metres in height as part of the data, properly interpreting the data, and applying the height adjustment to adequate stands.

The adjustment to stand heights based on the ITI data was applied to 36 247 hectares of productive never-logged mature polygons (above 60 years) that overlapped with the ITI. The adjustment area represents 41 percent (18 613 hectares) of the THLB and resulted in an average height increase of 15 percent (3.42 metres) and an average volume per hectare increase of 14 percent. The LiDAR adjusted height was used in the base case forecast.

The sensitivity analysis included a forecast that did not apply LiDAR height adjustments to the VRI. The volume curves used in this sensitivity forecast were, on average, 20 percent lower than the base case volume curves (at 80 years of age). This lower productivity had a large effect on the short- and mid-term harvest levels when natural stands are harvested. Relative to the base case, the initial harvest level was 11 percent lower and the mid-term level was 6 percent lower. The long-term harvest was reduced by one percent.

I am aware that in MP No. 10 the licensee has made considerable effort to demonstrate that LiDAR provides greater detail for some aspects of forest cover inventory such as stand height. For this AAC determination FAIB remote sensing staff accepted the methodology for using LiDAR data in the base case forecast in the absence of field data to validate the volume. Work to develop the methodology for integrating LiDAR data into the VRI standard is currently ongoing and FAIB remote sensing staff have not yet finalized standards to implement LiDAR data in timber supply review. The licensee has indicated that more research and analyses using LiDAR data are needed to verify the timber supply impacts of these initial assessments. I recognize the licensee commitment to working with FAIB staff during the term of MP No. 10 to improve the process for using LiDAR data in timber supply analysis.

For this AAC determination I have concluded that the stand height adjustment process applied in the base case forecast currently constitutes the best information for determining the AAC for the term of MP No. 10. However, if substantial changes in the projected timber supply are demonstrated, I am prepared to revisit the AAC determination at an earlier date than specified in the *Forest Act*. I have requested under '**Implementation**' that the licensee continue to work with FAIB remote sensing staff during the term of MP No. 10 to implement the LiDAR data for the incorporation of the data in the next timber supply review.

- *inoperable and inaccessible*

Those portions of the TFL that are neither physically operable nor economically feasible to harvest due to steep slopes, road access or other logistical components are categorized as inoperable and were excluded from the THLB in the base case. The licensee conducted a thorough review of operability that considered the complete profile of available harvesting systems including cable, long cable and helicopter systems. An operability spatial layer was created and operability determined. A total of 27 766 hectares of forested land was removed from the THLB as inoperable.

The MP No. 10 operability classification did not specifically remove steep slope areas from the THLB. There is uncertainty regarding the operability of forests on slopes greater than 70 percent (class 3). I note that in the most recent AAC determination for the Invermere TSA, all with slopes greater than 70 percent and half of the areas on slopes between 40 percent and 70 percent (class 2) were excluded from the THLB. A comparison of the ratio of THLB to area logged across slope classes in TFL 14 showed that the ratio of logged area to THLB decreases with slope increase. The licensee stated that this performance reflects a disproportionate amount of conventional harvest ground being targeted to control and salvage MPB affected stands. The licensee also stated that they understand the issues regarding the steep-slope profile in the TFL

and informed me that it has recently increased its machinery capacity to harvest on steeper slopes. The company expects that it will be able to operate on all steep slopes within the productive forest, including those greater than 70 percent and hence, harvest restrictions based on slope class were not modelled in the base case scenario.

To understand the impact of setting targets or limits to harvesting on slope classes 2 and 3, a sensitivity analysis was conducted. This sensitivity analysis generated a timber supply forecast in which a harvest target of 53 000 cubic metres per year was required to come from areas in slope classes 2 or 3. This harvest target is equal to the average harvest level from classes 2 and 3 in the base case plus 10 percent. The requirement restricted the forest estate model from scheduling stands freely and did not result in a higher harvest volume relative to the base case. In a second sensitivity analysis, the harvest area on slopes over 40 percent was capped at 122 hectares per year, which is 20 percent of the area in the base case and approximates the steep-slope performance over the past decade. Compared to the base case, the sustainable harvest level in this forecast was lower in the short-, mid- and long-term harvest levels by six percent, seven percent and three percent, respectively.

I commend the harvest performance demonstrated by the licensee in effectively targeting MPB-killed stands over the past 10 years. I also recognize that this harvest strategy has restricted harvest to certain stand types and portions of the TFL, including stands on steeper slopes. This has resulted in a disproportionate accumulation of harvest on flatter terrain areas where the MPB-infested stand types generally occur. However, the sensitivity analyses presented to me clearly shows that the base case harvest level can only be achieved if future harvest includes approximately 40 percent of the harvest volume from steep slopes as opposed to the historical average of approximately 15 to 20 percent of harvested volume from steep slopes.

I appreciate the commitment made by the licensee to build steep slope harvesting capacity and I recognize the need for other harvest priorities such as ecological restoration, fire and forest health management will require continued harvest in flatter terrain areas. However, I have requested under '**Implementation**' that the licensee continue to monitor steep-slope harvesting performance, as well monitor steep-slope harvesting impact for potential site degradation and excessive waste, and report this information to me annually in anticipation of the next TSR.

After reviewing the base case and the sensitivity analysis, together with the input received from Ministry staff and the licensee on this factor, I am cognizant that the sustainability of my AAC decision is reliant on future harvesting on steep slopes to occur at a level higher than has occurred in the TFL over the last decade. Although I recognized the licensee's demonstrated commitment to increase steep-slope harvesting capacity, I believe there is uncertainty whether the level of this harvesting indicated in the base case can be achieved. For this reason, I conclude that the base case overestimates the short-term timber supply by an unquantified amount and I will account for this in my determination as discussed in '**Reasons for Decision**'. Further, if harvest performance does not reflect the levels assumed in the base case, I am prepared to revisit this determination earlier than required in legislation.

- *ungulate winter range*

To protect mountain caribou winter habitat in the Central Kootenay planning unit an Order for Ungulate Winter Range (UWR) U-4-014 was established under the Government Actions Regulation (GAR) and implemented in 2009. Currently, the only U-4-014 unit in the TFL is Caribou management zone 1 (or unit 1) where timber harvesting and road construction must not occur unless for, accessing areas outside of the unit, the maintenance of forest health, or for other special reasons. The gross area of UWR in the TFL is 8340 hectares. After previous (overlapping) netdown factors were applied a total area of 616 hectares was excluded from the THLB.

I have considered all information and input received on this factor and I agree that the base case reasonably represents current practice with respect to the protection of ungulate winter ranges in TFL 14. I am aware that there are pending decisions by the federal and provincial governments regarding the matrix habitat for southern mountain caribou that may potentially affect the timber supply of TFL 14. Consistent with my '*Guiding principles*', I am prepared to revisit this AAC determination at an earlier date than specified under

the *Forest Act* at the time the habitat protection decisions are legally implemented and significant changes to the available timber supply in TFL 14 are demonstrated.

I encourage the licensee to keep informed of pending decisions regarding matrix management of caribou habitat and the potential impact on the projected timber supply for TFL 14. In the interim, I suggest that the licensee consider the draft guidance on caribou habitat in the matrix area while undertaking forest operations in these areas.

- *rare and uncommon ecosystems*

Multiple conservation partners, including conservation organizations, industry and government agencies established the East Kootenay Conservation Project (EKCP) in 2001. The mandate of this program is to coordinate and facilitate habitat conservation efforts, and to set conservation goals and objectives for the EKCP study area which covers 3.3 million hectares located in the Rocky Mountain Trench, in the southeast portion of British Columbia.

The EKCP has defined rare ecosystems (Biogeoclimatic Ecosystem Classification (BEC) site series) as having less than 0.1 percent represented across the project area and uncommon ecosystems ranging between 0.2 percent and 0.5 percent. The licensee's rare ecosystems spatial layer includes attributes for rare and uncommon ecosystem groups, that are also described in the SFMP. Under the SFMP these ecosystems required 100 percent forest retention and are removed from the THLB. The gross area removed was 1343 hectares. After previous (overlapping) netdown factors were applied, a total area of 254 hectares was excluded from the THLB for this purpose.

After considering all of the information and comments that have been provided to me, I accept that the best available information was used to model rare and uncommon ecosystems in the base case and that the base case adequately accounts for FSC objectives for rare and uncommon ecosystems in TFL 14. I anticipate that upcoming revisions to BEC mapping may affect the projected timber supply for some of the areas in the TFL. These revisions will be incorporated in to the next timber supply review and AAC determination.

- *problem forest types*

Problem forest type (PFT) stands occupy sites that have the potential to produce merchantable timber but are currently not utilized. Compared to an average stand, PFT stands are typically less productive consisting of fewer sawlogs and sawlogs with small average piece size.

In preparation for MP No. 10, the licensee produced a memo that examined the applicability of PFT criteria developed for the Invermere TSA for use in the TFL 14 analysis. Under these criteria, PFT were considered to be pine-leading stands that have merchantable timber but do not achieve a minimum level of height growth. The memo showed that applying these criteria to TFL 14 would remove 2421 hectares from the THLB as PFT.

In the memo, the licensee stated that the company does not consider the Invermere TSA PFT criteria indicative of stands that are avoided during harvest planning in the TFL. The licensee contended that the PFT criteria was unnecessary since stands that did not reach a minimum harvest volume (MHV) of 120 cubic metres per hectare on slopes less than or equal to 45 percent and did not reach MHV of 150 cubic metres per hectare on slopes greater than 45 percent were removed from the THLB. For the above reasons, no netdown for PFT was applied in the base case.

I have considered the information and input received on PFT stands. On this basis, I conclude that if future harvesting does not include PFT stands that were assumed to contribute to the timber supply the base case over estimates the short-term timber supply by a small unquantified amount. Therefore, I caution the licensee to be attentive to this part of the profile and ensure that they make a concerted effort, as they suggested they will, to harvest these stands. I will address this further in '**Reasons for Decision**'.

- *Forest Stewardship Council*

The licensee's current Forest Stewardship Council (FSC) certification guides its management practices in TFL 14. This Sustainable Forest Management Plan (SFMP) is guided by both the FSC certification to the FSC-BC Oct. 2005 standard (30_07_2018) and the Canadian Standards Association (CSA) certification to the CSA Z809-08. The SFMP covers a defined forest area (DFA) that comprises Canfor's licenced harvesting areas within the Kootenay/Boundary Region – Rocky Mountain Resource District including all of TFL 14. The SFMP describes a suite of criteria, elements, values, objectives, indicators and targets that address the current environmental, economic and social conditions within the DFA and localizes the implementation and monitoring of the criteria and indicators for both standards. The SFMP also describes strategies that are to be followed to ensure conformance with FSC principles. Through FSC certification, the licensee voluntarily commits to exceeding the accepted forest management requirements under FRPA.

As part of the SFMP, High Conservation Value Forest (HCVF) areas have been delineated in the TFL. HCVF are important forested areas that i) contain high or pristine biodiversity, ii) contain rare or endangered ecosystems, iii) provide basic services of nature, or iv) are areas of significance to local communities. Within the HCVF, a gross area of 35 070 hectares were identified as endangered forests (EF) which are excluded from timber harvesting and were removed from the THLB in the base case. For all other HCVF, a series of conservation strategies have been established to guide management and harvesting. These strategies affect harvesting at the operational level and are described in the licensee's site plans.

District staff have not been directly involved in the FSC certification process and the licensee's current Forest Stewardship Plan (FSP) does not include the FSC commitments in the results and strategies. FSC commitments were incorporated into the base case forecast specifically resulting in the following changes, increased riparian buffers, HCVF with modified management practices, designation of endangered forest (EF) that are unavailable for harvesting, and designation of buffered avalanche paths for wildlife.

To understand the influence of the enhanced forest management requirements on the TFL timber supply, a sensitivity analysis forecast was generated that projected the timber supply following only FRPA requirements, without FSP enhancements. For this forecast, the THLB was changed to include areas that in the base case were excluded from the THLB for avalanche tracks, endangered forest areas, rare ecosystems, and OGMAs. The area reserved for riparian buffers was also reduced to align with FRPA standards, instead of FSC guidelines, which added over 4000 hectares to the THLB. The THLB defined for this forecast was 53 407 hectares, 17 percent greater than the base case. The growing stock was 9 250 000 cubic metres, which was 24 percent more than the base case growing stock. Non-timber targets were modelled as in the base case, except that seral targets were aspatially modelled, and there was no modelling of HCVF. With the increased THLB, the harvest level was increased from the current AAC by 6000 cubic metres per year at a non-declining harvest flow of 186 000 cubic metres per year.

I recognize that the licensee currently has FSC certification in place which guides its management practices in TFL 14. Through this certification, the licensee has voluntarily implemented practices that exceed forest management requirements under FRPA. As demonstrated by the sensitivity analysis presented to me, undertaking practices following the licensee's current FSP, which reflects FRPA standards, could potentially provide additional opportunity for increased volume. FRPA and Forest Planning and Practices Regulation (FPPR) provide a standard for BC's forest sustainability and provide licensees with forest sustainability objectives. The licensee decision to adopt FSC standards is acceptable and provides an opportunity for enhanced social license as per feedback from First Nations and the public on the nearby Invermere and Cranbrook TSAs.

While I recognize that the TFL 14 base case forecast was based on FSC standards to which the licensee is certified, I note that the licensee is also fully meeting legal FRPA/FPPR requirements. FSC standards that exceed FRPA/FPPR requirements represent commitments on the TFL for which no legal mechanisms exist to ensure that the management practices are implemented and continued over time. Therefore, until such time as government recognizes the FSC forest management requirements through amendments to FPPR or the establishment of new legal requirements, the commitments remain voluntarily and will remain in place over the term of the AAC. On this basis, I accept that the base case was modelled appropriately.

- *grizzly bear habitat and connectivity corridors*

The Kootenay-Boundary Higher Level Plan Order (KBHLPO) requires that mature and old-growth forests be kept in areas identified as connectivity corridors and adjacent to important grizzly bear habitat, such as high value avalanche tracks and denning sites. These areas are not additional to seral targets; instead, KBHLPO suggests that required mature and old stands are placed in identified grizzly bear habitat and connectivity corridors. Forests on slopes greater than 80 percent do not contribute as connectivity corridors. Consistent with the *Invermere TSA Updated Data Package* (FLNRORD, 2016), this requirement was not modelled explicitly but rather assumed to be managed operationally. A deduction for avalanche tracks thought to be utilized by grizzly bears was included in the base case THLB.

Habitat supply modelling (HSM) undertaken in the Invermere and Cranbrook TSAs showed forestry activity have very little effect on grizzly bear habitat in the TSA due to their reliance on other habitats such as avalanche paths, riparian areas and alpine. I was advised that the closest known grizzly bear sub-population is stable and located in the Central Purcell Mountains.

Considering the information provided to me including that the closest grizzly bear sub-population is in a stable position, avalanche tracks have been removed from the THLB, and other measures discussed in this rationale, I am comfortable that grizzly bear habitat and connectivity corridors were adequately considered in the base case. However, I would like to see for future TSRs, an assessment of grizzly bear habitat and connectivity. I have requested under '**Implementation**' that the licensee conduct a habitat supply assessment for grizzly bear within the TFL in time for the next AAC determination.

- *future wildlife tree patch retention*

Spatial requirements for wildlife tree patch (WTP) retention are prescribed according to the landscape unit (LU) and BEC variants following the licensee's FSC certification requirements. The stand areas to be set aside to meet these requirements during future logging were modelled in the base case as area reductions to unlogged stands in natural stand analysis units. The reduction amounts were specified for each LU-BEC to be consistent with the SFMP and were based on the percent of the unit that has been logged without WTPs, along with the percent of the unit available for harvest.

District staff advised me that Canfor's recently approved FSP for the Kootenay-Boundary Region, which includes TFL 14, commits to a the FPPR default stand-level biodiversity target of seven percent, which was not modelled in the base case. However, the district also advised me that the licensee's SFMP approach to stand-level biodiversity was found, through Forest & Range Evaluation Program (FREP) assessments, to adequately manage for this FRPA value. Staff also noted that the impact ratings for stand-level biodiversity have been improving in the TFL since 2004.

I have considered the information regarding future wildlife tree retention presented in the MP No. 10 analysis as well as the advice from district staff. Although there may be a discrepancy between the FSP targets and the base case assumptions, which are based on the SFMP, I believe wildlife tree retention practices were adequately accounted for in the base case forecast and will make no adjustment to the base case on this account.

Section 8 (8) (a) (ii) the expected time that it will take the forest to become re-established on the area following denudation

No factors considered under this section require additional comment.

Section 8 (8) (a) (iii) silvicultural treatments to be applied to the area

No factors considered under this section require additional comment.

Section 8 (8) (a) (iv) the standard of timber utilization and the allowance for decay, waste and breakage expected to be applied with respect to timber harvesting on the area

- *harvest performance*

Cut control records show the licensee reported volume harvested relative to the AAC. The TFL 14 AAC is apportioned entirely to Canfor and the cut control statement for the period 2015 to 2019 indicates that over the first four years of this period the reported volume harvested was 722 259 cubic metres. This volume equates to an average annual volume of 180 565 cubic metres, or approximately 103 percent of the current AAC of 180 000 cubic metres.

Harvest performance metrics for TFL 14 are reported annually by the Ministry in the *Provincial Timber Management Goals, Objectives and Targets* reports. One of these metrics is a comparison of the species profile of timber harvested and the species profile of mature timber available on the THLB. This metric showed that, during the period between 2011 and 2017, the proportions of pine and spruce harvested, relative to others species was higher than the proportions of mature pine and spruce indicated to be available on THLB. This shift was primarily due to the management response to bark beetle outbreaks that occurred during that period. This response included an increase in salvage harvesting of beetle impacted pine and spruce stands. Other performance metrics for the same period include comparisons of the harvest profile to the THLB profile by stand volume class, age class and terrain class. These metrics indicated a general agreement between the actual harvest and THLB profiles. However, I did note the following exceptions. The harvest proportion of mature stands (60 to 40 years old), low-volume stands (less-than 150 cubic metres per hectare) were higher than indicated by the VRI profile. Further, the harvest proportion of stands on slopes from 31 percent to 50 percent was slightly higher than proportion of these stands in the THLB profile.

I have considered the available information regarding harvest performance in TFL 14 and note that the full AAC is being harvested and the licensee is sufficiently harvesting the available timber profile. I commend the licensee's performance in this regard, particularly given the MPB challenges seen during the term of the current AAC, and I look forward to the continuation of this trend during the term of the new AAC.

Section 8 (8) (a) (v) the constraints on the amount of timber produced from the area that reasonably can be expected by use of the area for purposes other than timber production

The Ministry is required, under the *Ministry of Forests Act* to manage, protect and conserve the forest and range resources of the Crown; and to plan the use of these resources so that the production of timber and forage, the harvesting of timber, the grazing of livestock and the realization of fisheries, wildlife, water, outdoor recreation and other natural resource values are coordinated and integrated. The *Forest and Range Practices Act* and other legislation provide for, or enable, the legal protection and conservation of timber and non-timber values. Accordingly, the extent to which integrated resource management (IRM) objectives for various forest resources and values affect timber supply must be considered in AAC determinations.

Section 8 (8) (a) (vi) any other information that, in the chief forester's opinion, relates to the capability of the area to produce timber

<u>First Nations consultation</u>

Indigenous peoples of Canada have distinct, constitutionally protected rights. The Crown has a duty to consult with, and accommodate if required, those First Nations for whom it has knowledge of the potential existence of Aboriginal rights and/or title or treaty rights (Aboriginal Interests) that may be impacted by a proposed decision, including strategic-level decisions such as AAC determinations. In particular, recent court decisions have stated that decision makers must use credible information to consider the effects of land management decisions, including AAC determinations, on Aboriginal Interests. As chief forester, I must therefore consider information arising from the engagement process with First Nations, respecting Aboriginal Interests that may be affected by my AAC determination. As well, I will consider other relevant information available to the provincial government regarding Aboriginal Interests, including information gathered during other consultation processes.

As a strategic statutory decision, an AAC determination does not determine particular harvesting areas or patterns, and as a result, does not relate directly to the manner in which timber is utilized or managed on the ground. The relationship to claims of Aboriginal title is not a direct one. AAC determinations consider the sustainable harvest level from a particular geographic area, which may include lands claimed as Aboriginal title lands but not yet declared by a court to be such. While under claim, such lands remain Crown lands and may be considered by the Province to be part of the land base that is available for timber harvesting. Whether timber is ultimately harvested from those lands is an issue that is subject to allocation decisions, and the AAC determination does not determine that matter.

Aboriginal Interests may be connected to biophysical, spatial, social, cultural, spiritual or experiential values. AAC determinations may affect other decisions which can affect various resource values and therefore the ability of First Nations peoples to meaningfully exercise their Aboriginal rights. Information gained through consultation with potentially affected First Nations about Aboriginal rights claims was taken into account in the development of this determination.

The Province, through Ministry of Indigenous Relations and Reconciliation (MIRR), continues to work with First Nations to develop agreements including tenure opportunities related to forestry. These agreements include but are not limited to, Reconciliation Agreements and Strategic Engagement Agreements (SEAs), Forest Consultation and Revenue Sharing Agreements (FCRSAs), as well as other treaty related agreements.

TFL 14 is located entirely within the traditional territories of four First Nations, Ktunaxa Nation Council, Shuswap Indian Band, Adams Lake Indian Band and Neskonlith Indian Band. All four First Nations with territory that significantly overlaps TFL 14 were consulted in accordance with current Provincial guidance and applicable case law.

The asserted traditional territories of the Okanagan Indian Band, Lower Similkameen Indian Band, Penticton Indian Band, Upper Nicola Band and Okanagan Nation Alliance (all Okanagan Nation bands) overlap minimally on the north-western side of TFL 14. Okanagan Nation bands were not engaged in the TSR for TFL 14 because the areas of overlap are limited to high-alpine lands, which are not part of the THLB and will not contribute to the timber supply supporting this AAC determination.

Of the four First Nations whose territories significantly overlap TFL 14, three First Nations are members of two First Nations Councils. The two councils are the Ktunaxa Nation Council, and the Shuswap Nation Tribal Council. The Shuswap Nation Tribal Council member bands are the Adams Lake Indian Band, Neskonlith Indian Band and Shuswap Indian Band. The Ktunaxa Nation Council member communities are the ʔakisq̓nuk First Nation (Akisqnuk), akink̓um̓asnuqɬiʔit ʔaq̓am (Tobacco Plains Indian Band), ʔaq̓am (St. Mary's) and yaqan nukiy (Lower Kootenay Band). Various agreements have been made between the Province and the First Nations that have significant territory overlap with TFL 14. All engagement with First Nations is documented within the Consultation Record Tracking System (Forests - TSR - Timber Supply Review for TFL 14 - Canfor (02-2017).xml).

- *consultation process*

Ministry staff at Kootenay/Boundary Region led the consultation process for TFL 14 in two stages. Stage one included the review of the draft Information Package, and stage two included the review of the timber supply analysis and the draft Management Plan.

On February 20, 2017, the Ministry sent initial engagement letters to each of the four First Nations with territory intersecting the THLB in TFL 14. These letters informed the First Nations of my intent to make an AAC determination and outlined the timber supply review process, planned consultation steps and proposed a level of engagement for the decision which was consistent with signed agreements held by the First Nation and/or determined following the Haida Principles.

Following the initial engagement, consultation letters on the TFL 14 Information Package were sent to the four First Nations on June 7, 2017. Each First Nation was asked to review the package and provide comments or identify concerns regarding the information it contained. The First Nations were also asked to inform the Ministry of how their Aboriginal Interests might be impacted by the AAC determination. Ministry staff offered to meet with First Nations to discuss the information provided.

On August 21, 2018, Draft Management Plan No. 10 consultation packages were sent out to four First Nations. Each was asked to review the timber supply analysis and draft management plan and provide comments or concerns regarding the information contained in the documents and to inform the Ministry of how Aboriginal Interests might be impacted by the AAC determination. Ministry staff offered to meet with First Nations to discuss the information provided. All communications between the Province, First Nations and the licensee and all comments and information provided by First Nations were compiled by the Kootenay-Boundary Region. I have reviewed and considered this information for the purposes of this determination.

I note that comments and concerns from First Nations were mostly received during the management plan review phase of the project and included responses received from the Shuswap Indian Band, Adams Lake Indian Band and Ktunaxa Nation Council.

The Kootenay-Boundary Region sent an email to Shuswap Indian Band on October 17, 2018, to confirm that the Shuswap Indian Band did not intend to comment on the plan (since no responses had been received). On October 18, 2018, Shuswap Indian Band responded by email that they had no concerns regarding the draft plan.

On September 20, 2018, the Adams Lake Indian Band responded with an email, deferring a response to Shuswap Indian Band. The First Nations Advisor for the Kootenay-Boundary Region sent an email on October 17, 2018, to Neskonlith Indian Band confirming that Neskonlith Indian Band did not intend to comment on the plan. No reply to this email was received.

On October 22, 2018, Ktunaxa Nation Council responded to the Ministry with a letter that outlined general concerns related to the protection of archaeological values in the TFL and made recommendations for procedures for archaeological assessments. This letter was forwarded to the licensee who responded that they agreed with Ktunaxa recommendations.

On November 28, 2018, MIRR received a letter from seven of the southern Secwepemc bands. The letter indicated that the Secwepemc bands have suspended all engagement and consultation activities on provincial decisions due to the lack of agreement on a Letter of Commitment. The Secwepemc bands suspended engagement effective Monday, December 3, 2018. On March 14, 2019, a Letter of Commitment was signed the southern Secwepemc bands and a mutually agreed process put in place for addressing the referrals backlog.

- *summary of First Nations engagement*

I recognize that TFL 14 is located entirely within the traditional territories of four First Nations, Ktunaxa Nation Council, Shuswap Indian Band, Adams Lake Indian Band and Neskonlith Indian Band.
I acknowledge all of the First Nation's concerns identified through this process. Based on my review of the engagement processes followed, the Aboriginal Interests information available to Ministry staff, and the potential impact my decision may have on these interests, I conclude that the Province has engaged in consultation in accordance with applicable case law and current provincial guidance. Furthermore, I note that Ministry staff will continue to consult with First Nations on issues at the operational planning level.

I have reviewed the information received from First Nations and have consider how Aboriginal Interests may or may not be affected by my AAC determination. Where appropriate, I have addressed these concerns in my decision. Some concerns were identified which are not within my authority under Section 8 of the *Forest Act*, and other concerns identified that are being or can be addressed operationally. Following the chief forester's '*Guiding principles for AAC determinations*' and my review of the information sharing and consultation process, the Aboriginal Interest information available to Ministry staff, and the potential impact my decision may have on these interests, I believe that the Ministry has engaged in consultation in

accordance with current provincial guidance and applicable case law. I conclude that no additional accommodation beyond that which I have described in this rationale document is required as part of this decision. I believe that any adverse impacts upon Aboriginal Interest within the area of TFL 14 stemming from forest development activities that occur subsequent to the AAC determination, can be appropriately mitigated or minimized through existing legislation and regulation, planning documents and meaningful engagement at the operational level.

Other considerations

- *climate change*

Climate change is predicted to impact forest ecosystems in a number of ways, including general increases in temperature, changes in precipitation patterns and increased frequency and severity of disturbances.

The report, *Adapting Forest Management to Climate Change in the Kootenay/Boundary Region* (2016) shows projected changes based on a standard set of Global Climate Models in average temperature, precipitation and derived climate variables. The report notes that climate change modelling suggests a potential decline in timber supply over the long term (> 50 year from now) due to increased natural disturbance and lower precipitation in the growing season.

While projected climate change will likely affect future forest conditions, the dynamics of natural disturbances, forest pests and hydrological balances (e.g., drought stress), mean that the specific magnitude of these changes and their spatial and temporal distribution are uncertain. It will be worthwhile during the term of this determination for the Province to continue to consult and collaborate with federal government agencies, First Nations, universities, and forest licensees to better understand climate adaptation and mitigation challenges and opportunities in relation to forest management. I am aware that FAIB is collaborating with climate modelling, growth and yield and timber supply specialists to begin to integrate climate change considerations into timber supply, growth and yield, and natural disturbance models to help inform future decisions.

In making this AAC determination, I have considered available information about the effects of climate change and the potential impacts of these changes on forest conditions in the TFL. As noted in '*Guiding principles for AAC determinations'* incorporating climate change in decisions like AAC determinations is challenging due to the high level of uncertainty about the changes, and the wide range of potential responses. Given this uncertainty about future climate changes I have not speculatively accounted for them in this AAC determination. However, I anticipate that the requirement for regular AAC determinations will mean that emerging knowledge and changes in forest practices instituted to mitigate or adapt to climate change will be incorporated in future AAC determinations.

I encourage the licensee to continue to work collaboratively with FLNRORD staff and to continue to monitor climate changes and, where possible, collect information used to inform future AAC determinations. I also encourage the licensee to work collaboratively with FLNRORD staff with the objective of developing a climate-change mitigation strategy. I am aware of a range of ongoing efforts to mitigate the impact of climate change such as development of climate-based seed transfer standards, monitoring of plantations for drought stress and assessing stocking standards to address natural disturbance. Any additional information and corresponding analysis that helps the Ministry increase understanding of how forest management decisions can be adapted to mitigate impacts will be incorporated into future timber supply reviews.

- *cumulative effects*

Cumulative effects are changes to social, economic and environmental conditions caused by the combined impact of past, present and potential human activities or natural events. The Province's Cumulative Effects Framework (CEF) policy was developed as a standardized approach to assess, validate and communicate the condition of identified CEF values and the effectiveness of the existing management regimes. It contains policies, procedures and decision-support tools to improve the consideration of cumulative effects in natural resource decision-making in BC. It also enables a strategic approach to assessing cumulative effects to

CEF values and identifying management responses that support ongoing sustainable management of that value, or actions that are necessary to mitigate undesired effects to these values.

Cumulative effects assessments within pilot areas across the province are currently ongoing. Although a pilot has yet to be established for TFL 14, many of the current objectives and management approaches applied in TFL 14 are thought to reduce or mitigate the effects of forest development activities. Management objectives reflected in the timber supply analysis include the Kootenay-Boundary Land Use Plan and Order, and the management of non-timber values such as fish and wildlife habitat, biodiversity, visual quality, and terrain stability. In addition, as discussed under '*Forest Stewardship Council'*, the licensee has committed to implementing FSC standards in the TFL which have resulted in increased riparian buffers, the establishment of High Conservation Value Forest with modified management practices, designation of endangered forest and designation of buffered avalanche paths for wildlife.

I have considered information on cumulative effects, and have interpreted the related information according to my statutory authority and my '*Guiding principles for AAC determinations'*. I conclude that the base case adequately reflects current management, the current status of the effects of past and present industrial activity on the land base, and the legal objectives established by government for various non-timber resources. I will therefore make no adjustment on this account. Changes in management objectives that result in changes to current practices, as the implications of cumulative effects are considered further, will be reflected in future AAC determinations.

- *public comments*

The public was provided with two opportunities to review and provide comments on the TFL 14 Draft Management Plan No. 10 following a strategy approved by the Regional Executive Director. The first occasion was public review and First Nations information sharing of a draft timber supply analysis information package (IP). The second occasion was public review and First Nations information sharing of a draft MP that included the accepted IP and the timber supply analysis results.

The first phase of public comments began in 2017, when copies of the draft IP were provided to FAIB and the Kootenay-Boundary Region - Rocky Mountain Natural Resource District office by the licensee. The comments received by the licensee included a request for a hard copy of the data package that the licensee provided. A comment was made regarding the operational planning completed by the licensee undertook with the comment provider and no further input was received. The licensee met with another comment provider and supplied a hard copy of the IP. No further input was received. The licensee received a request for a hard copy of the IP from the Akisqnuk First Nation. The data was sent and no further input was received. The second phase of public comments began in 2018 when copies of the draft MP No. 10 were provided to FAIB and the RMRD Office.

Although no comments were received during the review period, I am satisfied that the required effort was made, and the public was given the opportunity to review and comment on the management plan in advance of my determination.

Section 8 (8) (b) the short and long term implications to British Columbia of alternative rates of timber harvesting from the area

Alternative harvest forecasts

The base case projects an initial harvest level of 181 000 cubic metres per year that is sustained for the first 20 years of the 250-year forecast. This harvest level then decreases over the next two decades to 163 100 cubic metres per year. The harvest level then decreases to a sustainable level of 157 100 cubic metres per year. In addition to the base case, an alternative non-declining even-flow initial harvest level of 160 000 cubic metres per year was also analyzed. The alternative non-declining even-flow rate of harvest compared to the base case provided a 12 percent lower harvest level in the short term, a two percent lower level in the mid term, and a two percent higher harvest level in the long term.

Having reviewed the information regarding the assumptions used in the selection of the initial base case harvest level and having discussed this information with staff, I support the decision to utilize an initial

harvest level of 181 000 cubic metres per year as a basis for my considerations prior to making necessary adjustments as discussed under '**Reasons for Decision**'.

Section 8 (8) (c) the nature, production capabilities and timber requirements of established and proposed timber processing facilities

This section of the *Forest Act* has been repealed [2003-31-2 (BC Reg. 401/2003)].

Section 8 (8) (d) the economic and social objectives of the government, as expressed by the minister, for the area, for the general region and for British Columbia

Economic and social objectives

- *Minister's letter*

The Minister of Forests, Lands, Natural Resource Operations and Rural Development has expressed the economic and social objectives of the Crown for the province, in a letter dated October 30, 2017. In it, he emphasizes the BC Government's commitment to building a strong, sustainable innovative economy and creating well-paid jobs in the province. The letter identifies Government's three objectives for the management of BC's forests and Crown lands that are relevant to AAC determinations. These are:

1. modernizing land-use planning to effectively and sustainably manage BC's ecosystems, rivers, lakes, watersheds, forests and old growth forests;
2. expanding investments in reforestation; and,
3. developing strategies for the management of wildlife resources and habitat (in collaboration with relevant Natural Resource Ministries, indigenous partners, and industry).

The October 30, 2017, letter also asks that I ensure the Ministry's approved strategies for delivering its forestry objectives are integrated into the TSR process.

With respect to First Nations, the letter asks that I ensure AAC determinations take into consideration relevant agreements between First Nations and the Government of BC, and court decisions that define Aboriginal title and rights. In addition, it confirms the Government's commitment to moving forward on reviewing policies, programs, and legislation to determine how to bring the United Declaration on the Rights of Indigenous Peoples (UNDRIP) into action with respect to AAC determinations. It asks that I consider traditional knowledge and other input from BC First Nation communities and organizations as they pertain to the AAC determination.

The Minister asked for consideration as to how AAC determinations can support Government's objective to focus on planning and sustainable resource management in a way that supports robust forest recovery and timely and effective responses to emerging threats from factors such as insect infestations and wildfire while promoting forest health and values.

As well, the Minister asks that I ensure the TSR process incorporates the best available information on climate change and the cumulative effects of multiple activities on the land base and explores management options that align with established climate change strategies, adaptation and mitigation practices. Where the cumulative effects of timber harvesting and other land based activities indicate a risk to natural resource values, ensure the TSR identifies those risks for consideration in land use planning.

Finally, the minister suggested the chief forester should consider the environmental, social and economic needs of local communities as expressed by the public during TSR processes, including strategies that contribute to community economic stability, and the jobs that the forest sector creates in communities, where these are consistent with the government's broader objectives. When faced with necessary reductions in AACs, that those reductions be no larger than necessary to avoid significant longer-term impacts.

With respect to the Minister's letter, I note that the base case and alternative harvest projections prepared for this determination have a primary objective of attaining a stable, long-term harvest level where the growing stock is also stable. I am satisfied that the base case has incorporated the best available information regarding the impacts of insect infestations and wildfire while promoting forest health and values in TFL 14.

During my consideration of the factors required under Section 8 of the *Forest Act*, I have considered both the local objectives, as provided in the KBHLPO and associated plans and orders, as well as the objectives of First Nations. I have considered the socio-economic objectives expressed in the 2017 letter in this determination for TFL 14, and have reviewed the public consultation process undertaken by the region and considered the input received in making my determination. On this basis, I am satisfied that this determination accords with the objectives of Government as expressed by the Minister.

Section 8 (8) (e) abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area

- *unsalvaged losses*

Unsalvaged losses represent an annual volume of timber loss due to damage caused by environmental conditions, or insects that is not salvaged or accounted for by other factors. The damage is over and above endemic values already captured within the growth and yield models. Unsalvaged losses for TFL 14 were calculated as a percentage of unsalvaged loss estimates used in the *Invermere TSA TSR Updated Data Package* (FLNRORD, 2016). The process of pro-rating was based on the area of THLB, which was estimated to be 25 percent of the Invermere TSA THLB (FAIB, 2016).

Mountain pine beetle (IBM or MPB) is not included in the loss estimates because most of the IBM-infested stands have been harvested and new IBM infestations remain at endemic levels. The licensee has observed epidemic populations of IBM in the past, but following several years of managing that IBM through harvesting and fall and burn treatments, a significant decrease in observed populations has occurred in recent years. The licensee continues to monitor and manage the smaller endemic populations of IBM, but it is no longer a significant contribution to unrecoverable loss volume.

Spruce beetle (IBS) has not been a significant threat in TFL 14 for at least 10 years. The Province's 2018 forest health overview flights identified three small 'low severity' IBS polygons in the TFL suggesting low numbers of spruce beetle on the TFL. The licensee also reported observing small endemic populations of IBS in the Upper Spillimacheen landscape unit and has been proactive in addressing these populations when identified. Apart from this small outbreak, the licensee stated that, at present, IBS has not been a significant issue in TFL 14. District staff confirmed that, over the past 10 years, IBS has not been a significant threat in TFL 14 and advised me that the estimated unsalvaged loss from IBS indicated by the prorate of the Invermere TSA estimates is likely too high.

Currently, the licensee and district staff consider the largest forest health issue on the TFL to be Douglas-fir beetle (IBD). The losses occur primarily on the lower benches of the Twelve Mile Landscape Unit and the licensee has been actively managing that population through an annual funnel trap program, as well as some salvage harvesting over the past three years. The licensee will continue to monitor the IBD populations.

District staff advised me that the estimated loss from Douglas-fir bark beetle applied in the base case to be too low, but not to the magnitude that would offset the overestimation losses applied for spruce bark beetle. Considering the overestimation of losses for IBS and the under estimation of losses for IBD, district staff approximate a net adjustment to the total estimated annual loss (6500 cubic metres per year) to be reduction of between 4000 to 3500 cubic metres per year.

I have reviewed the above information including the historical trends, 2018 forest health overview flights, licensee proactive actions in addressing IBS populations and monitoring of bark beetle populations. I agree that the estimated loss applied in the base case from Douglas-fir bark beetle to be low and the estimated loss from spruce bark beetle to be high. I conclude that the base case under estimates the short-term timber supply by approximately 3500 cubic metres per year or approximately one percent of the base case. I will consider this underestimation of timber supply as discussed in '**Reasons for Decision**'.

Reasons for Decision

In reaching my AAC determination for TFL 14, I have considered all of the factors required under Section 8 of the *Forest Act*. I have made the considerations documented above, all of which are integral to the reasons for my decision, and from which I have reasoned further as follows.

I note the base case initial harvest level of 181 000 cubic metres per year is 1000 cubic metres per year (0.6 percent) above the current AAC of 180 000 cubic metres. The base case suggests that the initial harvest could be maintained for 20 years before declining by 10 percent to 163 000 cubic metres per year. The long-term harvest level of 157 000 cubic metres per is reach year 40 years into the forecast and maintained for the remainder of the 250 year forecast.

I am satisfied that the assumptions applied in the base case for the majority of factors that I considered were appropriately modelled and reasonably reflect current legal requirements, demonstrated forest management and the best available information for TFL 14. However, I have identified a number of factors which, when considered separately, indicate that the short-term timber supply may be either greater or less than that projected in the base case. Some of these factors can be readily quantified and their impact on the harvest level assessed with reliability while others may influence timber supply by adding an element of uncertainty to the projection but cannot be reliably quantified at this time. In this section, I have summarized my considerations related to these factors.

I have identified the following factors that indicate the base case overestimates timber supply.

- *Inoperable and inaccessible* - the sustainability of the base case harvest level is reliant on steep-slope harvesting to occur at levels higher than demonstrated in the TFL over the last decade. On this basis, there is uncertainty whether the level of the harvesting indicated in the base case can be achieved and the base case overestimates the short-term timber supply by an unquantified amount.
- *Problem forest types (PFT)* - I have considered the information and input received on problem forest types. On this basis, if future harvest does not include problem forest types, which contribute to the base case timber supply, the base case forecast overestimates the short-term timber supply by a small unquantified amount.

I have identified one factor that indicates that the timber supply projected in the base case may have been underestimated to some extent:

- *Unsalvaged losses* - The estimated loss from spruce bark beetle included in the base case forecast is likely too high resulting in an underestimation of the base case timber supply by approximately 3500 cubic metres per year.

The base case forecast incorporated the licensee's FSC certification, which included management components that vary from legal FRPA requirements. As demonstrated by the sensitivity analysis, management practices that align with the licensee's current FSP, which reflect FRPA standards, could provide an opportunity for harvesting above the base case level. However, I will assume the licensee's voluntary commitment to implementing FSC standards, as described in their analysis, represent current practice for the TFL and will remain in place over the term of the AAC. If such practices change during the term of the AAC then I am prepared to revisit this determination sooner than the 10 years required by legislation.

As noted previously, I recognize that a determination at the base case harvest level can only be achieved if future harvesting increases on steep slopes in the THLB. If these areas were excluded from the THLB the sustainable timber supply would be significantly lower than the level indicated in the base case. I am satisfied that all anticipated changes committed to by the licensee, which include increasing steep-slope harvesting capacity, will allow the AAC to be at the base case level. I also emphasize the need for continuous monitoring of steep-slope harvesting practices to identify and address potential risk of site degradation and waste.

The base case identifies a sustainable harvest level that is marginally higher than the current AAC. In reviewing the implications for the timber supply resulting from the above factors taken collectively, I find that the short-term timber supply is overestimated by an unknown, though likely small, amount. I approximate this amount to be in the order of less than one percent of the base case forecast.

Determination

I have considered and reviewed all the factors as documented above, including the risks and uncertainties of the information provided. It is my determination that a timber harvest level that accommodates objectives for all forest resources during the next 10 years and that reflects current management practices as well as the socio-economic objectives of the Crown, can be best achieved in TFL 14 by establishing an AAC of 180 000 cubic metres.

This determination is effective April 18, 2019, and will remain in effect until a new AAC is determined, which must take place within 10 years of the effective date of this determination.

If additional significant new information is made available to me, or major changes occur in the management assumptions upon which I have predicated this decision, then I am prepared to revisit this determination sooner than the 10 years required by legislation.

Implementation

In the period following this decision and leading to the subsequent determination, I encourage FLNRORD staff and the licensee to undertake or support the tasks and studies noted below, the particular benefits of which are described in appropriate sections of this rationale document. I recognize that the ability of all parties to undertake or support these projects is dependent on provincial priorities and available resources, including funding. However, these projects are important to help reduce the risk and uncertainty associated with key factors that affect the timber supply in TFL 14.

1. *Forest inventory:* I requested that the licensee continue to work with Forest Analysis and Inventory Branch (FAIB) remote sensing staff to refine and implement procedures for incorporating LiDAR data into the TFL 14 forest inventory in time for the next timber supply review.
2. *Steep-slope harvesting performance:* I request that licensee continue to monitor steep-slope harvesting performance a and to report the harvest performance to me annually in anticipation of the next timber supply review.
3. *Steep-slope harvesting:* I request that the licensee monitor steep-slope harvesting impact for potential site degradation and excessive waste and report this information to me annually in anticipation of the next timber supply review.
4. *Grizzly bear habitat and connectivity corridors*: I request that the licensee conduct habitat supply assessments to help protect grizzly bear and to prepare for the next timber supply review.

Diane Nicholls, RPF
Chief Forester

April 18, 2019

Appendix 1: Section 8 of the *Forest Act*

Section 8 of the *Forest Act*, Revised Statutes of British Columbia 1996, c. 157, (current to April 10, 2019), reads as follows:

Allowable annual cut

8 (1) The chief forester must determine an allowable annual cut at least once every 10 years after the date of the last determination, for

(a) the Crown land in each timber supply area, excluding tree farm licence areas, community forest agreement areas and woodlot licence areas, and

(b) each tree farm licence area.

(2) If the minister

(a) makes an order under section 7 (b) respecting a timber supply area, or

(b) amends or enters into a tree farm licence to accomplish a result set out under section 39 (2) or (3),

the chief forester must make an allowable annual cut determination under subsection (1) for the timber supply area or tree farm licence area

(c) within 10 years after the order under paragraph (a) or the amendment or entering into under paragraph (b), and

(d) after the determination under paragraph (c), at least once every 10 years after the date of the last determination.

(3) If

(a) the allowable annual cut for the tree farm licence area is reduced under section 9 (3), and

(b) the chief forester subsequently determines, under subsection (1) of this section, the allowable annual cut for the tree farm licence area,

the chief forester must determine an allowable annual cut at least once every 10 years from the date the allowable annual cut under subsection (1) of this section is effective under section 9 (6).

(3.1) If, in respect of the allowable annual cut for a timber supply area or tree farm licence area, the chief forester considers that the allowable annual cut that was determined under subsection (1) is not likely to be changed significantly with a new determination, then, despite subsections (1) to (3), the chief forester

(a) by written order may postpone the next determination under subsection (1) to a date that is up to 15 years after the date of the relevant last determination, and

(b) must give written reasons for the postponement.

(3.2) If the chief forester, having made an order under subsection (3.1), considers that because of changed circumstances the allowable annual cut that was determined under subsection (1) for a timber supply area or tree farm licence area is likely to be changed significantly with a new determination, he or she

(a) by written order may rescind the order made under subsection (3.1) and set an earlier date for the next determination under subsection (1), and

(b) must give written reasons for setting the earlier date.

(4) If the allowable annual cut for the tree farm licence area is reduced under section 9 (3), the chief forester is not required to make the determination under subsection (1) of this section at the times set out in subsection (1) or (2) (c) or (d), but must make that determination within one year after the chief forester determines that the holder is in compliance with section 9 (2).

(5) In determining an allowable annual cut under subsection (1) the chief forester may specify that portions of the allowable annual cut are attributable to one or more of the following:

(a) different types of timber or terrain in different parts of Crown land within a timber supply area or tree farm licence area;

(a.1) different areas of Crown land within a timber supply area or tree farm licence area;

(b) different types of timber or terrain in different parts of private land within a tree farm licence area.

(c) [Repealed 1999-10-1.]

(6) The regional manager or district manager must determine an allowable annual cut for each woodlot licence area, according to the licence.

(7) The regional manager or the regional manager's designate must determine an allowable annual cut for each community forest agreement area, in accordance with

(a) the community forest agreement, and

(b) any directions of the chief forester.

(8) In determining an allowable annual cut under subsection (1) the chief forester, despite anything to the contrary in an agreement listed in section 12, must consider

(a) the rate of timber production that may be sustained on the area, taking into account

(i) the composition of the forest and its expected rate of growth on the area,

(ii) the expected time that it will take the forest to become re-established on the area following denudation,

(iii) silviculture treatments to be applied to the area,

(iv) the standard of timber utilization and the allowance for decay, waste and breakage expected to be applied with respect to timber harvesting on the area,

(v) the constraints on the amount of timber produced from the area that reasonably can be expected by use of the area for purposes other than timber production, and

(vi) any other information that, in the chief forester's opinion, relates to the capability of the area to produce timber,

(b) the short and long-term implications to British Columbia of alternative rates of timber harvesting from the area,

(c) [Repealed 2003-31-2.]

(d) the economic and social objectives of the government, as expressed by the minister, for the area, for the general region and for British Columbia, and

(e) abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area.

(9) Subsections (1) to (4) of this section do not apply in respect of the management area, as defined in section 1 (1) of the **Haida Gwaii Reconciliation Act**.

(10) Within one year after the chief forester receives notice under section 5 (4) (a) of the **Haida Gwaii Reconciliation Act**, the chief forester must determine, in accordance with this section, the allowable annual cut for

(a) the Crown land in each timber supply area, except the areas excluded under subsection (1) (a) of this section, and

(b) each tree farm licence area

in the management area, as defined in section 1 (1) of the **Haida Gwaii Reconciliation Act**.

(11) The aggregate of the allowable annual cuts determined under subsections (6), (7) and (10) that apply in the management area, as defined in section 1 (1) of the **Haida Gwaii Reconciliation Act**, must not exceed the amount set out in a notice to the chief forester under section 5 (4) (a) of that Act.

Appendix 2: Section 4 of the *Ministry of Forests and Range Act*

Section 4 of the *Ministry of Forests and Range Act* (current to April 10, 2019) reads as follows:

Purposes and functions of ministry

4 The purposes and functions of the ministry are, under the direction of the minister, to do the following:

(a) encourage maximum productivity of the forest and range resources in British Columbia;

(b) manage, protect and conserve the forest and range resources of the government, having regard to the immediate and long-term economic and social benefits they may confer on British Columbia;

(c) plan the use of the forest and range resources of the government, so that the production of timber and forage, the harvesting of timber, the grazing of livestock and the realization of fisheries, wildlife, water, outdoor recreation and other natural resource values are coordinated and integrated, in consultation and cooperation with other ministries and agencies of the government and with the private sector;

(d) encourage a vigorous, efficient and world competitive

(i) timber processing industry, and

(ii) ranching sector

in British Columbia;

(e) assert the financial interest of the government in its forest and range resources in a systematic and equitable manner.

Appendix 3: Minister's letter of October 30, 2017

Reference: 230810

October 30, 2017

Diane Nicholls, Chief Forester and Assistant Deputy Minister
Ministry of Forests, Lands, Natural Resource Operations
and Rural Development
Victoria, British Columbia
V8W 2H1

Dear Diane

The British Columbia *Forest Act* conveys the responsibility to determine an Allowable Annual Cut (AAC) to the Chief Forester of the Province of BC for each timber supply area and tree farm licence in the province. It also specifies considerations that must be brought to bear during the course of such determinations including, among others, the economic and social objectives of the government.

This letter is intended to provide you with guidance regarding the objectives of the British Columbia (BC) government that require your consideration when determining an AAC.

Your office implements a rigorous Timber Supply Review Process to help ensure that each AAC you determine responds to a broad array of objectives and aligns with land use and management decisions established by provincial statutes and regulations. The objectives identified below are to be considered and as part of the review process to ensure that AAC determinations, and the timber harvest rates they enable, continue to support government goals.

This letter replaces two letters previously issued by the Minister of Forests and Range to the chief forester, dated July 4, 2006 and October 27, 2010. It is intended to be used in concert with direction provided by the Minister of Forests, Lands and Natural Resource Operations to the chief forester in a letter dated April 12, 2013, concerning objectives outlined in the Shared Decision Making Process pursuant to the Nanwakolas Reconciliation Protocol.

The BC government has committed to building a strong, sustainable, innovative economy and creating well paid jobs in the province. The health of the forest sector, and its ability to respond to an array of short and long term social, economic and environmental interests, is a key to delivering on this commitment. As such, Government has identified specific objectives for the management of BC's forests and Crown lands. Those relevant to AAC determinations include:

Ministry of Forests, Lands, Natural Resource Operations and Rural Development
Office of the Minister
Mailing Address: PO BOX 9049 Stn Prov Govt Victoria, BC V8W 9E2
Telephone: (250) 387-6240
Fax: (250) 387-1040
Website: www.gov.bc.ca/for

Diane Nicholls, Chief Forester and Assistant Deputy Minister

- modernizing land-use planning to effectively and sustainably manage BC's ecosystems, rivers, lakes, watersheds, forests and old growth forests
- expanding investments in reforestation; and
- collaborating to develop strategies to manage wildlife resources and habitat

Strategies for delivering on these objectives will be developed in collaboration with the Ministry of Forests, Lands, Natural Resource Operations and Rural Development, relevant Natural Resource Ministries, indigenous partners and industry. Once approved by government, I ask that you ensure such strategies are integrated into the Timber Supply Review Process to support AAC determinations.

The BC government has committed to full and lasting reconciliation with Indigenous peoples. As chief forester, your responsibility includes continuing to ensure that AAC determinations take into consideration relevant agreements between First Nations and the Government of BC, court decisions that define Aboriginal title and rights as well as moving forward on reviewing policies, programs, and legislation to determine how to bring the principles of the United Nations Declaration on the Rights of Indigenous Peoples into action for AAC determinations. You also have a responsibility to continue to carefully consider traditional knowledge and other input from BC First Nation communities and organizations in the course of AAC determinations as they pertain to the AAC determination.

The *Forest Act* requires that the chief forester consider a range of forest health issues as part of AAC determinations, including the impacts of circumstances such as infestations, devastations and salvage programs. This is particularly relevant as BC's forest sector emerges from a period of significant, compounding challenges. The infestation of the Mountain Pine Beetle that peaked in the late 2000s has largely subsided but with continuing effects to the size and composition of the forest inventory. Currently, the north area is experiencing Spruce Beetle infestations which also pose impacts. Recently, the Province has experienced record levels of wildfires that have impacted timber supply, community stability and multiple forest values.

In response to these challenges, it is a government objective to focus on planning and sustainable resource management in a way that supports robust forest recovery and timely and effective responses to emerging threats. Please consider how your AAC determinations can support these objectives while promoting forest health and values. In some cases AAC determinations may encourage management practices that avert another infestation in the province's forests. In certain regions, they will need to reflect the reality of a lower timber supply. Some regions will require expanded investment in reforestation and/or an increased focus on timber utilization and recovery. In the wake of extensive natural disasters, the extent of damage in certain areas may also warrant re-determining AACs earlier than scheduled.

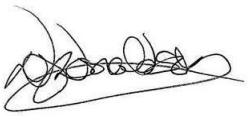
In order to ensure that AAC determinations align with government objectives to modernize land-use planning and sustainably manage B.C.'s ecosystems, rivers, lakes, watersheds, forests and old growth forests, the Timber Supply Review process should incorporate the best available information on climate change and the cumulative effects of multiple activities on the land base. Management options that align with established climate change strategies, adaptation and mitigation practices should be explored. Where the cumulative effects of timber harvesting and other land based activities indicate a risk to natural resource values, the process should identify those risks for consideration in land-use planning.

Diane Nicholls, Chief Forester and Assistant Deputy Minister

This government recognises that the forest sector is of critical importance to BC. The needs of rural communities and forest based industries are evolving in response to a number of the factors mentioned above. To support BC's forest-dependent communities, I ask that your AAC determinations consider the environmental, social and economic needs of local communities as expressed by the public during Timber Supply Review processes, including strategies that contribute to community economic stability, and the jobs that the forest sector creates in communities, where these are consistent with the government's broader objectives. I also ask that when faced with necessary reductions in AAC's, that those reductions be no larger than necessary to avoid significant longer term impacts.

Thank you Diane, for your continued service and considerable efforts in these regards.

Sincerely,



Doug Donaldson
Minister

Appendix 4: Information sources used in the AAC determination

The information sources considered in determining this AAC for TFL 14 include but are not limited to, the following:

- BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development. 2017. Cranbrook Timber Supply Area. Rationale for Allowable Annual Cut (AAC) Determination;
- BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development. 2017. Invermere Timber Supply Area. Rationale for Allowable Annual Cut (AAC) Determination;
- BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development. 2018. Chief Forester's Standards for Seed Use. https://www2.gov.bc.ca/assets/gov/farming- natural-resources-and-industry/forestry/tree-seed/legislation- standards/consolidated_cf_stds amended_5apr2018.pdf;
- BC Ministry of Forests, Lands and Natural Resource Operations. 2015. Invermere Timber Supply Area. Timber Supply Review Data Package;
- BC Ministry of Forests, Land and Natural Resources Operations. 2016. Invermere TSA Timber Supply Review. Updated Data Package following completion of the timber supply analysis;
- BC Ministry of Forests, Land and Natural Resources Operations. 2016. Seed Planning Units (SPU) & Species Plans. https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/tree-seed/seed-planning-use/seed-planning-units-species-plans;
- BC Ministry of Forests, Lands and Natural Resource Operations. 2016. Invermere Timber Supply Area. Timber Supply Review Discussion Paper;
- BC Ministry of Forests, Lands and Natural Resource Operations. 2016. Adapting Forest Management to Climate Change in the Kootenay Boundary Region. https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/nrs-climate-change/regional-extension-notes/kbren160222.pdf;
- BC Ministry of Forests, Lands and Natural Resource Operations. 2017. Vegetation Resources Inventory. https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/forest-inventory/forest-cover-inventories;
- BC Ministry of Forests. 1995. Biodiversity Guidebook. *Forest Practices Code of British Columbia Act*. Strategic Planning Regulations Operational Planning Regulation. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/frep/frep-docs/biodiversityguidebook.pdf
- BC Ministry of Forests. 1998. Procedures for Factoring Visual Resources into Timber Supply Analyses;
- BC Ministry of Forests. 1998. Cranbrook Forest District Problem Forest Type Summary Report;
- BC Ministry of Forests. 1999. Invermere Timber Supply Area. Inventory Audit;
- BC Ministry of Forests. 2000. Timber Supply Review, Invermere Timber Supply Area Analysis Report. Timber Supply Branch.
- BC Ministry of Sustainable Resource Management. 2002. Kootenay-Boundary Higher Level Plan Order and variances;
- BC Ministry of Forests. 2003. Bulletin-Modelling Visuals in TSR III;
- B.C Ministry of Forests. 2003. BC Heartlands Economic Strategy - The Forestry Revitalization Plan BC. Ministry of Forests. 2000. Timber Supply Review, Invermere Timber Supply Area Data Package. Timber Supply Branch;

- BC Ministry of Sustainable Resource Management. 2003. Southern Rocky Mountain Management Plan;
- BC Ministry of Water, Land and Air Protection. 2004. Identified Wildlife Management Strategy, Procedures for Managing Identified Wildlife. http://www.env.gov.bc.ca/wld/documents/identified/IWMS%20Procedures.pdf;
- Braumandl, T. F. 2002. Land Management Handbook 20 parts 1 and 2. A Field Guide for Site Identification and Interpretation for the Nelson Forest Region site series interpretation. Victoria, BC;
- Canadian Forest Products Ltd. 2016. Sustainable Forest Management Plan Canfor Kootenay Operations Version 4.0;
- Canadian Forest Products Ltd. 2017. Tree Farm Licence 14 Management Plan No. 10 Timber Supply Analysis Updated Data Package;
- Canadian Forest Products Ltd. 2018. Tree Farm Licence 14 Management Plan No. 10;
- Forest Genetic Council of British Columbia. http://www.fgcouncil.bc.ca/doc-04-speciesplans.html;
- Forsite Consultants Ltd. 2007. Timber Supply Analysis Information package. TFL 14 - Spillimacheen Management Plan No. 9. Prepared for the Tembec Industries Inc.;
- GeoSense. 1998. Riparian Management Area Classification for Cranbrook Forest District;
- JMJ Holdings Inc. 1999. Terrestrial Ecosystem Mapping Project Nelson BC Volume I: Expanded Legend to Ecosystem Units;
- Kootenay Inter-Agency Management Committee. 1997. Kootenay-Boundary Land Use Plan Implementation Strategy;
- Letter from the Forests, Lands, Natural Resource Operations and Rural Development Regional Ecologist to the Director Forest Analysis and Inventory Branch approving the use of the SIBEC and PEM estimates for use in the TFL 14 Timber Supply Review. June 3, 2015;
- Letter from the Minister of Forests, Lands, Natural Resource Operations and Rural Development to the chief forester stating the economic and social objectives of the Crown, BC Government October 30, 2017;
- Province of British Columbia. RSBC 1996. *Forest Act*. Section 8 – Allowable annual cut. http://www.bclaws.ca/civix/document/id/complete/statreg/96157_02. Current to April 10, 2019;
- Province of British Columbia. RSBC 1996. *Heritage Conservation Act*. Victoria, BC. http://www.bclaws.ca/civix/document/id/complete/statreg/96187_01. Current to April 10, 2019;
- Province of British Columbia. RSBC 1996. *Land Act*. Victoria, BC. http://www.bclaws.ca/civix/document/id/complete/statreg/96245_01. Current to April 10, 2019;
- Province of British Columbia. RSBC 1996. *Ministry of Forests and Range Act*. Section 4 – Purposes and functions of Ministry. http://www.bclaws.ca/civix/document/id/complete/statreg/96300_01#section4. Current to April 10, 2019;
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