

**BRITISH COLUMBIA  
MINISTRY OF FORESTS, LANDS  
NATURAL RESOURCE OPERATIONS  
AND RURAL DEVELOPMENT**

# **Tree Farm Licence 8**

held by

**Interfor Corporation**

**Rationale for  
Allowable Annual Cut (AAC)  
Determination**

**Effective February 10, 2022**

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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) 8. 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 Interfor Corporation staff and the staff of the BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development (the ‘Ministry’) in the Selkirk Resource District, the Southern Interior Natural Resource Region, and the Forest Analysis and Inventory Branch (FAIB). I am also grateful to the First Nations and the public who have taken the time to make me aware of the issues unique to this TFL.

## **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 (TSAs) and TFLs. Section 8 of the *Forest Act* is reproduced in full as Appendix 1 of this document.

## **Description of the TFL**

TFL 8 is held by the Interfor Corporation (‘Interfor’, or the ‘licence holder’, or the ‘licensee’). It encompasses an area of 77 189 hectares located across two distinct blocks in the southern interior of British Columbia. The south block is north of Greenwood in the Boundary Creek area, and the north block is within the drainages of Trapping Creek and Carmi Creek north of Beavertell (Figure 1). The TFL is administered from the Selkirk Resource District within the Kootenay-Boundary Natural Resource Region of the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (the ‘Ministry’).

The forests within TFL 8, which are spread across an elevation range from 764 metres to 2316 metres, are predominately mixtures of Douglas-fir, larch, lodgepole pine and ponderosa pine at lower and mid-elevations, and lodgepole pine and spruce/balsam at higher elevations. Biogeoclimatic zones present in the TFL include the Montane Spruce (~50 percent of area), Interior Douglas-fir (29 percent of area), Interior Cedar Hemlock (13 percent of area), and Engelmann Spruce Subalpine Fir (8 percent of area) zones. Nearly one-half of the forest stands within the timber harvesting land base (THLB) are pine leading, with 23 percent Douglas-fir leading, 15 percent larch leading, 7 percent spruce leading, and 6 percent balsam (true fir) leading. Mule deer, white-tailed deer, moose, elk, black bear, and many smaller mammals, birds and reptiles are prevalent within the TFL or its surrounds.

The TFL overlaps with the traditional territories of the following First Nations: Lower Similkameen Indian Band, Okanagan Indian Band, Okanagan Nation Alliance, Osoyoos Indian Band, Penticton Indian Band, Splotsin First Nation, Upper Nicola Band, and Westbank First Nation.

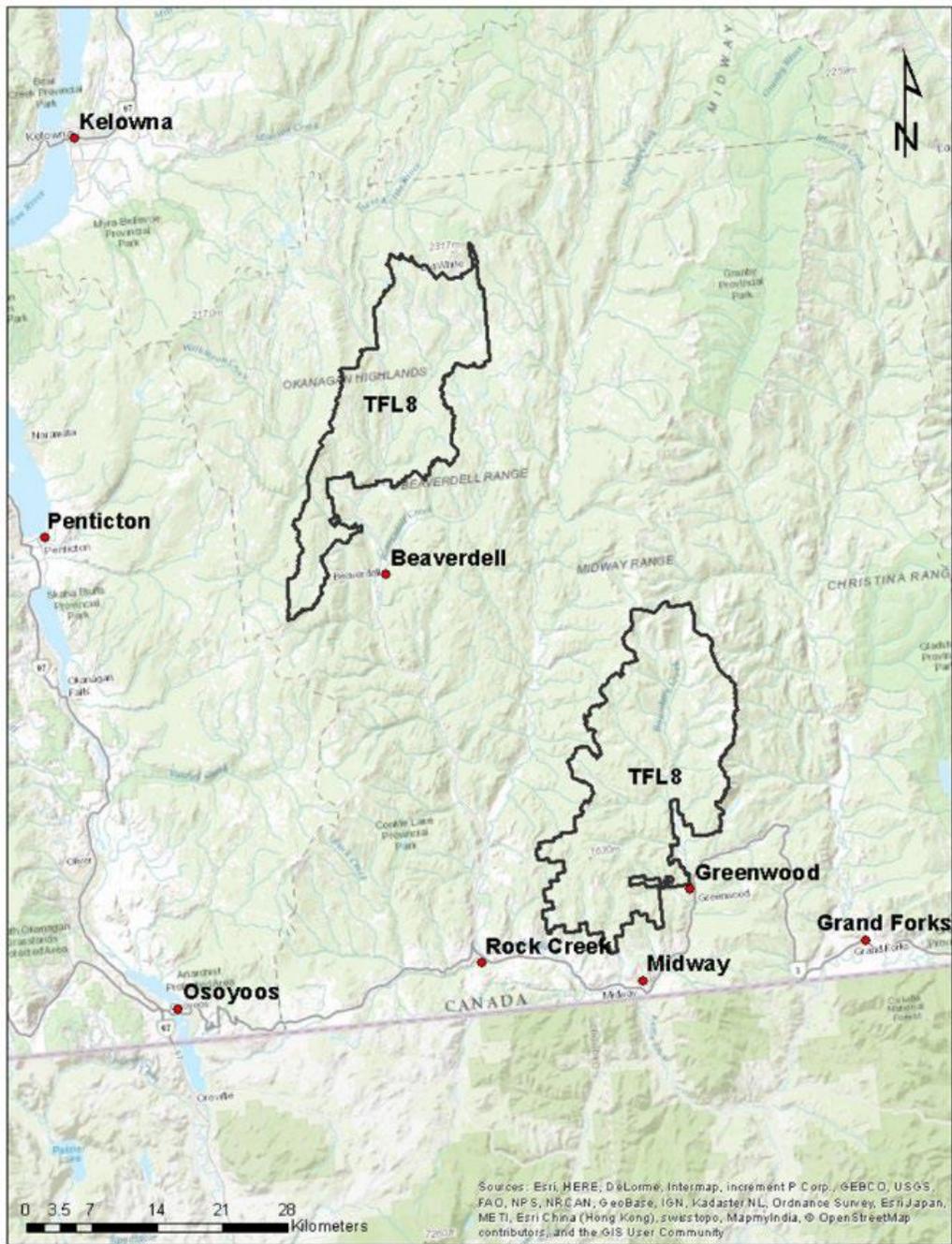


Figure 1. The north and south blocks of TFL 8.

The south block of TFL 8 was first awarded to Boundary Sawmills Limited in 1951. The north block was granted to Olinger Lumber Company, as TFL 11, in 1952. The rights to both TFL blocks changed hands several times until 2008 when Interfor acquired the rights from Pope & Talbot Ltd. The current 25-year TFL agreement was last replaced on March 1, 2018, and expires on February 28, 2043.

## **History of the AAC**

When first established in 1951, the south block of TFL 8 had an AAC of 35 679 cubic metres. Subsequent AAC increases were made to account for new information. The north block, which was formerly TFL 11, was added to TFL 8 in 1967 increasing the AAC to 141 585 cubic metres with subsequent AAC adjustments. Between 1987 and 1993, the AAC was temporarily increased to permit harvesting and salvage of mountain pine beetle (MPB) infested pine stands; at its peak, the AAC was 312 000 cubic metres. Following the decline of the MPB infestation, the AAC was decreased in 1994 to 145 000 cubic metres. The AAC was slightly reduced again in 1998 to 144 720 cubic metres to reflect a deletion from the TFL for a woodlot licence. The AAC was then increased in 2002 to 175 000 cubic metres and further increased in 2009 to the current AAC of 186 000 cubic metres. The latter increases were largely due to new site productivity estimates that indicated the productivity of managed stands had previously been underestimated.

## **New AAC determination**

Effective February 10, 2022, the new AAC for the TFL 8 will be 158 400 cubic metres. This AAC is 14.8 percent lower than the AAC in place prior to this determination. The AAC is partitioned as follows:

- 131 500 cubic metres that is attributed to areas with average slope that is less than or equal to 45 percent.

This AAC will remain in effect until a new AAC is determined, which must take place within 10 years of this determination. If additional significant new information is made available to me, or major changes occur in the management assumptions upon which this decision is predicated, then I am prepared to revisit this determination sooner than the 10 years required by legislation.

## **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. The AAC determination is a strategic-level decision for which the Crown maintains a duty to consult and accommodate, as necessary, those First Nations for whom it has knowledge of claimed Aboriginal Interests that may be impacted by a proposed decision. The chief forester must consider the information provided by First Nations through engagement and the consultation process.

Computer models cannot incorporate all 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.

## Guiding principles for AAC determinations

Given the large number of periodic AAC determinations required for BC'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 *Professional Governance 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 Aboriginal rights, title 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 BC government has committed to true, lasting reconciliation with Indigenous Peoples, including fully adopting and implementing the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP). The *Declaration on the Rights of Indigenous Peoples Act* of 2019 (the ‘*Declaration Act*’) commits the provincial government to aligning provincial laws with UNDRIP. Reconciliation and implementation of UNDRIP will likely require changes to policies, programs and legislation, which will take time and involve collaborative engagement with Indigenous Peoples. While this work is undertaken, BC is committed to fulfilling its legal obligations to consult and accommodate potential impacts to established and asserted Aboriginal rights, title and/or treaty rights (‘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 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.

Where collaborative planning between First Nations and the Province is ongoing, there may be preliminary but not yet finalized and formalized land use zones or management objectives. As is the case for land use and management planning in general, 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 their Aboriginal Interests and the

degree to which they may be affected by the decision. The Crown also has a constitutional obligation to consult with First Nations regarding their treaty rights. 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) 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 treaty rights or Aboriginal Interests, including how these rights or Interests may be impacted;
- (iii) any operational plans and/or other information that describe how First Nations' treaty rights or Aboriginal Interests are addressed through specific actions and forest practices; and,
- (iv) existing relevant agreements and policies between First Nations and the BC Government.

Treaty rights or 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*, and with consultation obligations defined in court decisions. 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 treaty rights or 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.

The timber on established Aboriginal title lands (meaning Aboriginal title declared by a court or defined under an agreement with necessary federal and provincial implementation legislation), Treaty Settlement Lands or Indian Reserves, is no longer likely to be provincial Crown timber, depending on the particular circumstances. Consequently, if it is not provincial Crown timber, it does not contribute to the AAC of the timber supply area or tree farm licence overlapped by those lands. 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 could affect the AAC determination, given uncertainties about the scope, nature and geographic extent of title. Unless land has been established to be Aboriginal title land, Treaty Settlement Land or reserve 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 computer simulation model, a series of timber supply forecasts can be 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 harvest projections, 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. This is known as the “base case” and it forms the basis for comparison when assessing the effects of uncertainty on timber supply. The base case is designed to reflect current management practices.

Because the base case represents only one in a number of theoretical projections, and because it incorporates information about which there may be some uncertainty, the base case is not an AAC recommendation. Rather, it is one possible forecast of timber supply, whose validity – as with all the other forecasts provided - depends on the validity of the data and assumptions incorporated into the computer simulation used to generate it.

Therefore, much of what follows in the considerations outlined below is an examination of the degree to which all the assumptions made in generating the base case forecast are realistic and current, and the degree to which any adjustments to its projections 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 I am provided 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.

### **Base case for TFL 8**

The timber supply analysis used for this determination was prepared for the licence holder by Foresite Consultants Ltd. using the modelling software Patchworks™ which has been approved by FAIB for use in TSR. Patchworks is a spatially explicit forest estate model used to project timber harvesting activities following current management practices including objectives for non-timber values such as biodiversity, wildlife habitat, cultural heritage resources, recreation and visual quality. Based on the review by FAIB staff, as well as my own experience reviewing results of analyses conducted using this software, I am satisfied that Patchworks can provide an appropriate projection of timber supply.

There have been several major changes in the forest management assumptions, information sources and modelling methods applied in this analysis for TFL 8 since the previous analysis was completed in 2007. These changes include the following:

- spatial, non-legal old growth management areas (OGMAs) were established in 2007 and excluded from the THLB in this analysis;
- wildlife tree retention was addressed within the model (i.e., not treated as an explicit THLB reduction as was done in the previous analysis);
- Wildlife Habitat Areas (WHAs) were established to protect habitat for Williamson's sapsucker and badger;
- completion of the Williamson's Sapsucker Recovery Strategy that classifies critical habitat and defines best management practices to maintain this habitat;
- revised assumptions to account for existing roads and future roads, trails and landings were updated;
- the forest inventory attributes were updated and projected to January 1, 2020;

- increased allowance for non-recoverable losses;
- inclusion of 671 hectares of not satisfactorily restocked (NSR) areas in the THLB;
- revised regeneration assumptions and inclusion of silviculture eras for managed stands;
- revised modelling to determine disturbance limits for visual quality objectives and greater visually effective green-up heights;
- updates to stand yield models for natural and managed stands;
- inclusion of additional THLB reductions to account for Aboriginal Interests.

The THLB assumed in the base case harvest projection is approximately 14 percent lower than the THLB in the 2007 analysis. This reduction is due in part to additional removals from the THLB for enhanced protection of riparian areas and other resource features important to First Nations. Additionally, a large area was removed from the THLB as spatial OGMAs.

The data and assumptions used in the base case are intended to provide a reasonable representation of current forest management practices based on evidence of actual practices, using the best available information. The base case is used as a reference point to assess the timber supply in the TFL, including exploration of the potential impacts of uncertainties through sensitivity analyses.

The timber supply projections are not predictions, because many unforeseeable events will certainly occur, and practices and knowledge will change and evolve. Given this change and uncertainty, the projections may change in the future. Changes in practices and information will be incorporated into future AAC determinations. However, the projections developed to support this AAC determination were designed to provide a rigorous and reasonable basis for the AAC decision.

The main harvest flow objective for the base case was to balance current and future harvest rates while doing the following:

- avoiding, if possible, large or abrupt disruptions in timber supply during transitions from short- to mid- to long-term periods;
- achieving a stable long-term harvest level over a planning horizon of 300 years;
- ensuring a non-declining growing stock during the last 50 years of the projection;
- providing additional retention to address Aboriginal Interests.

For this analysis, the forest cover inventory was updated to January 1, 2020, and the initial year of the base case projection is 2020.

The base case initial harvest level is 170 080 cubic metres per year, which is 8.6 percent lower than the current AAC of 186 000 cubic metres. This initial level is maintained for 70 years before the harvest level increases by 16.9 percent to 198 780 cubic metres per year for the balance of the projection.

In addition to the base case, I was provided with three alternative harvest projections. One of these projections (*Highest Initial First Nations Interests*) also the applied additional THLB removals for Aboriginal Interests; however, it attempts to maximize the initial harvest level as opposed to a non-declining flow which was applied in the base case. The initial harvest level of this alternative projection is 182 030 cubic metres per year (compared to the initial base case level of 170 080 cubic metres per year). After one decade, the harvest resumes at the base case level for 80 years after which time it increases to a long-term level of 198 850 cubic metres per year.

The other two alternative projections did not apply the additional THLB removals for Aboriginal Interests; this allowed for higher harvest levels in these projections. One projection is initiated at the highest possible non-declining even-flow of 181 780 cubic metres per year, which is

maintained for 70 years before increasing to a long-term level of 212 940 cubic metres per year. The other projection is initiated close to the current AAC at 185 930 cubic metres per year, which is maintained for one decade after which the harvest declines to 181 850 cubic metres for the remainder of the mid-term.

In my determination, I have also considered the results of sensitivity analyses undertaken to examine how changes in the base case assumptions affect timber supply. These analyses have been helpful as I made specific considerations and reasoning in my determination as documented in the following sections.

From my review of the base case timber supply projection and other projections provided by the licence holder, I am satisfied, unless otherwise noted in this rationale, that they represent the best information available respecting various aspects of the current timber supply in TFL 8. As such, they are suitable for reference in my considerations 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 I have concluded that the modelling of a factor in the base case is a reasonable reflection of current legal requirements, demonstrated forest management and the best available information, and uncertainties about the factor have little influence on the base case projection, no discussion is included in this rationale. These factors are listed in Table 1.

For other factors, where more uncertainty exists or where public or First Nations' input indicates contention regarding the information used, modelling method, 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.

*Table 1. List of accepted factors*

<b><i>Forest Act</i> section and description</b>	<b>Factors accepted as modelled</b>
8(8)(b) Alternative Rates of Harvest 8(8)(a)(i) Forest Composition and Rate of Growth	<ul style="list-style-type: none"> <li>• Alternative Harvest Projections</li> <li>• Forest Cover Inventory</li> <li>• Non-Forest and Non-Productive Areas</li> <li>• Hydro Line Right of Way</li> <li>• Non-Commercial Cover</li> <li>• Inoperable Areas</li> <li>• Site Index</li> <li>• Minimum Harvestable Criteria</li> <li>• Volume Estimates for Natural Stands</li> <li>• Volume Estimates for Existing and Future Managed Stands</li> </ul>
8(8)(a)(ii) Expected Time for Forest to be Re-Established	<ul style="list-style-type: none"> <li>• Silviculture Management Regimes</li> <li>• Visual Quality Objectives</li> </ul>
8(8)(a)(iv) Utilization Standard and Decay, Waste and Breakage Allowance	<ul style="list-style-type: none"> <li>• Decay, Waste and Breakage</li> <li>• Grade 4 Credit</li> </ul>
8(8)(a)(v) Constraints for Other Uses	<ul style="list-style-type: none"> <li>• Williamson's sapsucker habitat</li> <li>• Wildlife Tree Retention and Stand-level Biodiversity</li> <li>• Recreation Sites, Recreation Reserves and the Trans-Canada Trail</li> <li>• Other Resource Features</li> </ul>

***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**

Land base contributing to the timber harvest

*- general comments*

The THLB is an estimate of the land where timber harvesting is 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 some areas that may never be harvested or could exclude some areas that may be harvested.

The total land and water area of TFL 8, excluding private land, is approximately 77 189 hectares, of which 71 911 hectares are considered productive forest land. As part of the process used to define the THLB, a series of area deductions were made from the productive forest land base for various reasons such as for OGMA, riparian areas, unstable terrain, wildlife tree patches, low productivity sites, non-merchantable areas, non-commercial cover and recreation areas. After the initial deductions were applied, the current THLB was estimated to be 60 484 hectares. Further area reductions were made to account for Aboriginal Interests which reduced the current THLB to 56 548 hectares and aspatial reductions for wildlife trees, Williamson’s Sapsucker, and roads resulted in a future THLB of 53 713 hectares, or approximately 70 percent of the TFL area.

As noted under ‘*Role and limitations of technical information used*’, several factors influence the size of the THLB. In the following section, I have described my reasoning as to why specific considerations indicate the THLB is either overestimated or underestimated.

The forest cover inventory for TFL 8 was originally created in 1994. Since then, the inventory has been updated to reflect harvest depletions and growth and converted to the provincial VRI standard to allow the Ministry to maintain updates. The inventory used for the base case was projected to January 1, 2020. I note that the licence holder is currently participating in the Ministry’s *Boundary TSA Predictive Forest Inventory (PFI)* project. The objective of the PFI project is to produce a consistent, precise, accurate, complete and contiguous forest inventory for Crown lands encompassed by the Boundary TSA, including TFL 8, that exceeds the utility of the current VRI standard. The results of this project are expected to be available for use in next TSR.

**Section 8(8)(a)(i) the composition of the forest and its expected rate of growth on the area**

Forest composition and growth

*- roads, trails, and landings*

The permanent road network on TFL 8 is well developed with most of the THLB is located near an existing road. The licence holder maintains spatial data that identify the location and classification of roads within TFL 8. These data were used to determine and apply the appropriate road buffer area for each classified road in the TFL. This resulted in 1347 hectares being removed from the THLB for existing road. No reduction was made for landings or trails as most logging in TFL 8 uses roadside harvesting systems.

I note that the provisions of several orders under the Government Actions Regulation (GAR) of the *Forest and Range Practices Act (FRPA)* that are applicable to TFL 8, stipulate requirements for road density and screening. These provisions were not modelled as the licence holder

indicated the provisions are addressed operationally without the need for additional land removals. For example, screening of roads to reduce visibility of wildlife may be included in the design of in-block retention, and roads may be deactivated to prevent access to sensitive sites.

The area removed from the THLB for existing roads was used as a basis for estimating the reduction in growing space due to future roads. The resulting estimate was that two percent of the area in future stands will be occupied by future roads. This was applied in the base case as a reduction to the estimated yield of future managed stands.

I accept the land base deductions applied for existing and future road are a reasonable approximation current management and make no adjustment for this reason. I will discuss the implications of not modelling road density in the section on '*mule deer ungulate winter range*'.

*- environmentally sensitive areas and unstable terrain*

Environmentally sensitive areas (ESA) are places that have been noted to have environmental attributes worthy of retention or special care. ESA within TFL 8 were mapped in 1993. Since then, information for most categories of ESA has since been replaced by more detailed and current information.

In the TFL 8 base case, ESA level 1 (highly sensitive) mapping was used to reduce the THLB for unstable soils and potential regeneration problems. These areas were fully excluded from the THLB unless they were previously harvested. No reduction was made for ESA level 2 (moderately sensitive) mapping since many of these overlap previously harvested areas where more detailed operational assessments have been carried out. The total area removed from the THLB for ESA was 1474 hectares.

Terrain Stability Mapping is a more current method for delineating areas that are expected to contain unstable terrain, potentially unstable terrain or areas at risk of landslide initiation. In 2003, two levels of terrain stability mapping (Level C – detailed, Level D - reconnaissance) were completed for TFL 8. In the base case, all areas delineated by detailed mapping as unstable terrain or delineated by reconnaissance level mapping as having a high likelihood of landslide initiation following timber harvesting or road construction were removed from the THLB. The total area removed for these two reasons was 326 hectares.

In their submission to the licence holder, the Penticton Indian Band (PIB) expressed concern that ESA reductions, as well as other reserves applied in the base case, do not reflect First Nations' perspective, principle, and practice. In their response, the licensee indicated that retention areas modelled in their analysis reflect either legal or policy requirements that the company must adhere to in its operations. The licensee completes detailed terrain assessments during cutblock layout to identify specific areas that have terrain stability concerns. Sensitive areas identified in operational assessments are typically addressed through in-block retention or the application of alternative harvesting approaches.

Notwithstanding PIB concerns regarding First Nations' perspective, principle, and practice, I note that the combination of ESA mapping and more current Terrain Stability Mapping used in the analysis constitutes the best available information for TFL. However, as indicated in '**Implementation**', I expect the licence holder to continue to improve data on terrain stability and conduct up-to-date watershed and terrain assessments when planning operations in areas of steep slope to fully understand the risks and avoid impacts.

Regarding PIB concerns about the analysis not reflecting First Nations' perspective, principle, and practice for reserve areas, I note that following receipt of these comments the licence holder revised the base case to incorporate additional THLB reductions to reflect enhanced protection of riparian areas and other resource features important to First Nations. These reductions exceed

what is expected to meet current regulatory requirements in the TFL and I commend this approach. I encourage the licence holder to continue to work with local First Nations to ensure they remain aware of Indigenous perspective and concerns regarding operations in the TFL.

*- non-merchantable forest types and low productivity sites*

Non-merchantable forest types are stands or sites with non-commercial species, low timber volumes, or low potential for growing timber. In TFL 8, non-commercial forest types include stands classified as non-commercial brush, deciduous stands, which are not currently harvested, and mature coniferous stands that have not achieved a specified minimum height or volume. In the analysis, these stand types were considered unavailable for harvesting which resulted in 820 hectares being removed from the THLB.

In the 2009 AAC determination, the Deputy Chief Forester recognized considerable uncertainty about the potential contribution of dense pine stands to the TFL timber supply and noted an overestimation in the base case for this reason. Since that determination, when market conditions allowed, the licence holder has demonstrated performance in dense, low-volume, pine stands. They report that 38 percent of mature dense pine stands deemed to be non-merchantable in 2007 have been harvested as of December 31, 2019. On this basis, the licence holder updated its definition of non-merchantable pine stands for the current analysis to exclude stands that contain more than 70 percent pine and are not expected to reach 100 cubic metres per hectare by age 120. This resulted in the removal of 335 hectares from the THLB.

In their comments provided to the licence holder on the *Information Package*, the PIB disagreed with the term “problem forest types” noting it lacks the First Nations’ perspective which is holistically focused on the harmonious balance of the forested ecosystem and not specifically focused on the extraction of resources for economic gain. PIB also stated that unmerchantable stand types may be particularly important for non-commercial forest values. The licence holder responded by removing reference to problem forest types and modified other parts of the package to make it clear that all parts of the forest are important.

Based on the harvest performance information presented by the licence holder, I accept the revised approach to the classification and modelling of non-merchantable forest types and dense pine stands. However, as indicated in ‘**Implementation**’, I expect the licence holder to continue to monitor age and volume of harvested dense pine stands and to provide monitoring results before the next TSR. Reflecting on PIB comments about the ecological value of non-commercial stands, I encourage the licence holder to retain deciduous species across the TFL for their biodiversity value which maintains and protects ecosystem function, integrity, and resilience.

*- old growth management areas*

Landscape-level biodiversity objectives in TFL 8 are met using ‘non-legal’ old growth management areas (OGMAs). Non-legal OGMAs are areas of forest that have been delineated to meet biodiversity objectives but have not been formally established by legal order. OGMAs in TFL 8 were delineated by government in 2007 to meet the biodiversity requirements in the *Kootenay-Boundary Higher Level Plan Order* (KBHLPO). In the timber supply analysis, OGMAs were modelled as ‘no harvest’ zones resulting in 5090 hectares being removed from the THLB.

There are three landscape units intersecting TFL 8; two of these landscape units, which overlap the majority of the TFL, are assigned a low Biodiversity Emphasis Option (BEO). The third landscape unit is assigned to intermediate and high BEO. All three landscape units include a significant area that extends outside the TFL boundary into other management units. I note that

in the KBHLPO the default old-seral targets for landscape units with a low BEO are set at one-third of the full targets that appear in the *Provincial Biodiversity Guidebook*.

Although the licence holder's forest stewardship plan (FSP) commits the holder to not harvesting in OGMAs, except for specific conditions and where suitable replacement area is identified, it does not commit to meeting the full targets nor to a recruitment strategy to meet the full target in low BEO landscape units.

I note that the analysis report included a projection that showed meeting the full old-growth targets in low BEO landscape units after three rotations, which is 220 years, would not significantly impact the base case projected timber supply. No projection was generated to examine the timber supply implications of immediately meeting the full targets in low BEO landscape units.

A second sensitivity analysis was conducted to examine the impact of applying an updated version of the Biogeoclimatic Ecosystem Classification (BEC) (Version 11) for modelling old-growth targets. Applying the updated version of BEC resulted in a small (0.4 percent) short-term increase to the base case timber supply with no long-term impact.

In their comments on the *Information Package*, the Boundary Forest Watershed Stewardship Society said that more old growth should be left on the land base for a variety of reasons and that they are opposed to the draw-down of targets in low BEO landscape units. They also called for an immediate moratorium on logging in ecosystems and landscapes with very little old forest and revisions to OGMAs.

TFL 8 intersects portions of three landscape units where the obligation for meeting the KBHLPO is shared with other licensees who operate elsewhere in these landscape units. I am advised by District staff that there is no strategic plan in place for how old-growth requirements are being managed in these shared landscape units.

With respect to the appropriateness and efficacy of the existing old growth requirements, I do not have the authority to alter existing or establish new legal requirements. However, I do understand that the Kootenay-Boundary Natural Resource Region has initiated a process to consider options for improving old growth management in the Region and that First Nations will be engaged prior to any decisions being made on how to proceed. This will provide a venue for more detailed discussions on old-growth targets and options for improved management.

On April 30, 2020, an independent panel appointed by the BC Government submitted their report *A New Future for Old Forests: A Strategic Review of How British Columbia Manages for Old Forests Within its Ancient Ecosystems*. Currently, the BC Government is engaging with First Nations across the Province about how recommendations from the report will be implemented within the context of a Provincial Old Growth Strategy. As the elements of this strategy come into effect, any necessary changes to the AAC for TFL 8 will be addressed at that time and incorporated in subsequent timber supply reviews.

As noted under '**Implementation**', I expect the licence holder to work with First Nations, District staff and other licence holders active in landscape units shared with TFL 8 to review current OGMAs and where necessary revise them so that they are fully meeting the intent of the KBHLPO using the most current version of the BEC.

- *dead potential volume*

In April 2006, new log grades were implemented for BC's Interior. Under the previous grade system, a log was scaled according to whether the tree it came from was alive or dead at the time of harvest, and logs from dead trees were not charged to the AAC. Under the current grading system, grades are based on the size and quality of the logs at the time they are scaled without regard to whether they were alive or dead when harvested. It is now possible for dead volume to contribute to the AAC under cut control calculations.

The base case did not account for the increased timber volume due to log grade changes since the inventory and yield projections only account for live volume. To estimate the amount of dead potential volume FAIB staff rely on the 2006 report, *Summary of dead potential volume estimates for managed units within the Northern and Southern Interior Forests Region*. This report summarizes forest inventory audit data that indicates that the dead potential volume for TFL 8 could be as much as 9.9 percent of the live volume for the forested land base over 60 years of age.

In considering the underestimation associated with dead potential volume, I am cognizant that the Ministry estimate represents the maximum amount of dead volume available for harvest but does not consider the actual utilization of this volume. Since I have not been provided with evidence of significant utilization of dead volume in TFL 8, I will be cautious regarding my expectation about how much dead volume will contribute to the AAC. In addition, I am aware that dead trees provide important habitat for many species of wildlife. I will discuss this further in '**Reasons for Decision**'.

As indicated in '**Implementation**', given current fibre needs, I expect the licence holder to fully utilize dead potential volume while maintaining important habitat for species that depended on or benefit from the occurrence of dead trees.

- *genetic gain*

Genetic gain is an increase in specific traits such as stem volume or pest resistance of planted trees grown from select seeds over what would be seen of seed from naturally regenerated trees. The use of genetically improved stock has been identified as a key silviculture element for positively impacting timber flow and harvest levels within a given management unit.

The licence holder used four distinct silviculture eras to describe differences in the genetic gain of planted trees. For Era 1 stands (established 1975 to 1986), no genetic gain was applied. For planted stands in Era 2 stands (established 1987 to 2000) and Era 3 stands (established 2001 to 2006), the genetic gains of planted trees were derived from information prepared for Management Plan #10 (the previous plan). The genetic gains for planted Era 4 stands (established 2007 to 2019) were derived from the gains recorded in planting records from 2007 to 2017. Managed stands received the same genetic gains as Era 4 stands.

Genetic gain information was reviewed by a FLNRORD seed resource specialist who noted a discrepancy in the gains applied to planted larch stands. The specialists' analysis showed 5.7 percent less weighted genetic gain than what was assumed in the base case.

I accept the approach used to model genetic gain in the analysis noting, however, that the gain assumed for planted larch stands was incorrect. This error indicates that the base case likely overestimates the timber supply in the mid- and long-term by an unquantified amount. I will discuss this further in '**Reasons for Decision**'.

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

Forest re-establishment

*- not satisfactorily restocked areas*

A classification of not satisfactorily restocked (NSR) is assigned to areas where timber has been removed, either by harvesting or by natural causes, and a stand of suitable trees and stocking has yet to be established. Where a suitable stand has not been regenerated and the site was harvested prior to 1987, the classification is “backlog NSR”. All other NSR is considered “current NSR”.

In the base case projection, 671 hectares of backlog NSR was included in the THLB and assumed to contribute to the timber supply. Although this area was not surveyed, the licence holder used “imagery checks” to confirm that the area was currently forested. The adequacy of these checks was questioned by the Boundary Forest Watershed Stewardship Society who correctly noted that “currently forested” does not mean the area is satisfactorily restocked.

Since there is uncertainty as to whether all NSR areas will become stocked within the regeneration delayed period noted above, I believe modelling them as managed stands results in an overestimation in the base case by up to 1.2 percent in the mid- and long-terms. I will discuss this further in ‘**Reasons for Decision**’.

As indicated in ‘**Implementation**’, I expect the licence holder to undertake monitoring to quantify reforestation success from planting to beyond free-growing to improve on information for the next TSR.

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

*- silviculture systems*

A silviculture system is a program of silvicultural treatments designed to achieve specific stand characteristics or to meet other site objectives. These treatments typically integrate specific harvesting, regeneration and stand tending methods to achieve predicted outcomes over time.

Clearcut with reserves, using a range of even-aged patch sizes, is the predominate silviculture system applied in TFL 8. Partial cutting systems are also applied where appropriate. In the clearcut with reserves system, older forest remnants remain within the harvested blocks, functioning as wildlife tree patches or retention to conserve forest values. In partial cutting systems, selected trees are harvested while other trees are left which are desired for various stand objectives such as seed trees, shelterwood or forest cover retention.

I note that the base case projection assumed only clearcut with reserves is applied in the TFL 8 even though partial cutting systems are also applied. Since timber yields are typically lower in partial cutting systems, the result of not modelling the use of this system is an overestimation of the short-term timber supply by an unquantified amount. I will discuss in ‘**Reasons for Decision**’.

I encourage the licensee to consider the use of partial harvesting in the Interior Douglas-fir (IDF) BEC zone on south-facing slopes and to model partial cutting in the next TSR if it is being practiced in the TFL.

**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**

*- utilization, residual waste, and waste reporting*

In the base case, the licence holder accounted for decay, waste and breakage in natural stands by applying default factors within the Variable Density Yield Projection (VDYP 7) model. Waste and losses for managed stands were assumed to be captured by the default Operational Adjustment Factors (OAFs) applied in the TIPSY yield model.

Although, I note that the utilization levels applied in the base case projection are consistent with provincial standards, public concern arose during the TSR about the minimum top diameter specified in the licence holder's log quality specification being larger than what is set out in the *Provincial Logging Residue and Waste Measurements Procedure Manual – Interior Version* (the procedures manual). In response to this concern, the licence holder stated “that operationally, top size utilization is market driven and set by the licensee. Waste and Residue assessments are conducted in accordance with provincial standards and applicable waste volumes are charged to AAC.”

I am aware that the procedures manual specifies that waste volumes are measured and billed monetarily depending on whether the waste is avoidable or unavoidable, based on the type of waste. The licence holder is billed for avoidable waste generated above an established benchmark level, and some of this avoidable waste, depending on the type, may be charged to the licence holder's AAC. Unavoidable waste is not billed but may be charged to the AAC.

I asked Ministry staff to further explore the issue of waste levels in TFL 8. In response, District staff reviewed cut control information for the TFL for the periods 2009-2020. They found that waste levels have been increasing since the last TSR. Regional staff informed me that there is anecdotal information to suggest possible differences in operational utilization in TFL 8 and the assumptions applied in this timber supply analysis. Therefore, it is possible that the licence holder's log quality specifications created waste over and above what would have been created if the provincial standards were used. Even though the license holder follows all the waste rules, of particular concern is that the previous ocular waste measurement procedures may have underestimated the actual amount of waste. However, the new *Waste Procedures Manual*, which was implemented in April 2019, has changed the waste survey methodology from an ocular method to a survey method which should increase the accuracy of waste measurements.

As discussed under ‘**Implementation**’, given the demand for fibre in the southern Interior, I expect the licence holder to minimize residual waste, with a focus on providing more fibre to value-added manufacturing and to meet government's expectations regarding waste assessment procedures.

**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**

Integrated resource management objectives

*- cultural heritage resources and Aboriginal Interests*

A cultural heritage resource (CHR) is defined under the *Forest Act* as “an object, a site or the location of a traditional societal practice that is of historical, cultural or archaeological significance to the Province, a community or an Aboriginal people”. CHR include, but are not limited to, archaeological sites and traditional use sites. Archeological sites, including culturally modified trees that pre-date 1846, are protected under the federal *Heritage Conservation*

*Act* (HCA). Section 10 of the Forest Planning and Practices Regulation (FPPR) requires licensees to incorporate specific information with respect to CHR within their FSPs to conserve or protect CHR that are not regulated under the HCA. I note that there are two archeological sites within the TFL, however, neither of these sites requires reserves. The licence holder stated in the *Information Package* that they will establish reserves around archaeological sites, if encountered in the future.

First Nations have indicated that TFL 8 contains culturally important plants, animals, lands, waters, and other areas. The licence holder has worked with First Nations to identify these areas on a site-specific basis during field reviews of proposed cutblocks. In such field reviews, the Penticton Indian Band (PIB) identified increased retention for all waterbodies, wetlands and streams including non-classified drainages when compared with FRPA and licensee's Forest Stewardship Plan requirements. Given that TFL 8 overlaps the traditional territories of several First Nations, the licensee recognizes that PIB's Interests do not represent all Aboriginal Interests, however this feedback was used to gain an understanding of potential Aboriginal Interests in the TFL. The feedback was also used to develop a scenario that explored the timber supply implications of implementing enhanced retention for riparian and other features within the TFL. This included 2751 hectares removed as spatial riparian buffers, 542 hectares removed as aspatial riparian buffers and 643 hectares removed to protect values related to food gathering, wildlife habitat and Indigenous culture. This scenario, which applied a non-declining harvest flow policy, was ultimately chosen as the base case for the timber supply analysis.

From my review of the information presented in the licence holders' reports, I conclude that the land base assumptions applied in the base case adequately account for the forest areas that must be retained to protect cultural heritage resources. I also acknowledge that the enhanced retention areas applied in the base case provide additional protection for other Aboriginal Interests associated with riparian areas and other areas important for food, ceremonial, social and wildlife values.

*- watershed health*

Natural and human created disturbance in a watershed can impact streamflow, sediment delivery, channel stability, riparian function and aquatic habitat as well as downstream watershed values. Although there are no designated community watersheds and no watersheds with significant downstream fisheries values within the TFL, there is a common concern for watershed health in the area. During the TSR this was expressed by First Nations, the Boundary Forest Watershed Stewardship Society, the public and FLNRORD staff.

To respond to these concerns, the licence holder relied on equivalent clearcut area (ECA) calculations to gain insight into watershed health in the TFL. ECA is a coarse level indicator of forest disturbance and recovery in a watershed. An ECA level above 30 percent is commonly considered as a red flag and often indicates a need for further assessment.

For their analysis, the licence holder created surrogate watersheds within the TFL based on the provincial watershed atlas. They modelled two scenarios which constrained timber harvesting so as not to exceed specific ECA thresholds in each surrogate watershed. The first scenario limited ECA to 30 percent. The short-term harvest level in this scenario was 4.3 percent lower than the base case and there was no reduction in the long term. The second scenario limited ECA to 40 percent. The harvest levels in this scenario were the same as the base case.

I am aware of a report completed in 2020 by the Forest and Range Evaluation Program (FREP) for the Kootenay-Boundary Region. The report (FREP Report #41) found that most land disturbances in the treatment watersheds were due to logging and roads. Results were supplemented with data from assessments of potential sediment delivery and habitat connectivity at road crossings. The largest of the watersheds sampled was Boundary Creek, which encompasses most of the southern block of TFL 8 and is composed of 21 sub-catchments. The study determined that this watershed was not properly functioning. The level of impairment was significantly higher due to human-caused riparian disturbance. Forestry was identified as the main development activity upstream in all but one of the sub-catchments, where agriculture was dominant.

In January 2021, the Kootenay-Boundary Regional Cumulative Effects staff completed a report, *2019 Analysis of the Kettle River Watershed: Streamflow and Sedimentation Hazards*. This report provides a map-based overview of estimated streamflow and sedimentation hazards using data from 2019 in the Kettle River watershed which covers an area of 9945 square kilometres that includes the two blocks of TFL 8. The assessment found that much of the watershed has a higher natural sensitivity to generate peak streamflow and that disturbance was a key factor in increasing the streamflow hazard rating. The higher potential hazard to generate high peak streamflow comes from disturbance in the central and western sub-basins where TFL 8 is located. The report indicates that preventing additional disturbance in watersheds where ECA is high, particularly at mid- to high-elevations, should be considered until recovery has advanced.

From reviewing the information presented to me regarding watershed health within TFL 8, it is clear to me that increased consideration needs to be given to hydrologic hazards and risks resulting from harvesting and road development in the TFL. I am pleased to learn that the licence holder has indicated that they have hired a professional hydrologist to complete a watershed assessment for the Boundary Creek block and that they will consider directions received from registered professionals in future decision making. I encourage the company to also carefully review the recommendations of the 2019 assessment completed for the Kettle River Watershed and to incorporate these recommendations into their decision-making process. I also support ongoing research and tool development by Ministry staff regarding watershed health.

I recommend that Ministry staff and licensees work collaboratively with First Nations to implement management objectives to protect and rehabilitate watershed health in the TFL 8.

*- wildlife habitat areas*

Wildlife habitat areas (WHA) are established to provide habitat for identified wildlife species that are at risk or are of regional importance. The General Wildlife Measures (GWM) of a WHA can permit, manage, or prohibit harvesting. Section 69 of the FPPR specifies that primary forest activities must comply with each GWM that apply to an area.

In TFL 8, WHA have been established for four wildlife species, Lewis's woodpecker, Williamson's sapsucker, grizzly bear and badger and cover areas of 0.6 hectares, 530 hectares, 8353 hectares and 29 hectares, for each species respectively. In the base case scenario the entire area of the one WHA of Lewis's woodpecker and 15 WHAs for Williamson's sapsucker was excluded from the THLB, as the GWM for these do not permit timber harvesting.

The GWM for the one WHA for grizzly bear within TFL 8 sets out requirements related to the timing of operations, road screening, retention of coarse woody debris, stocking standards and the protection of habitat features. The licence holder indicated that these measures can be met operationally without requiring a reduction to the THLB, so no specific consideration was applied in the base case.

The GWM for the on WHA for badger allows timber harvesting only for purposes of ecological restoration to create future stands with a target density of 20 stems per hectare. This was modelled in the base case by allowing existing stands to be harvested once after which the regenerated stands were not scheduled for harvest.

The Penticton Indian Band (PIB) stated support for restrictive measures to protect habitat for Grizzly bears, Williamson's Sapsucker and badgers. However, they commented that the syilx worldview does not have a species-specific focus; rather its viewpoint is that all living things and waters are connected to the land and each other and that all species, lands, and waters need to be taken care of in accordance with syilx principle and practice. While PIB recognize there are some benefits derived through the Province's GAR orders, they also suggested many species of plants and animals seem unaccounted for. The PIB understands that modelling GAR order requirements are an important component of the TFL TSR process, but the syilx perspective should be incorporated as well.

In response to PIB, the licence holder indicated that they recognize and value the syilx principles regarding holistic management of resources. While the timber supply analysis may not explicitly address the requirements of all species of plants and animals, it does ensure the projected harvest levels reflect Aboriginal Interests.

I accept that assumptions applied in the base case projection reasonably reflect legal requirements for wildlife habitat areas in TFL 8.

*- mule deer ungulate winter range*

Ungulate winter ranges (UWR) are areas established under a GAR order that contain habitat necessary for winter survival of an ungulate species. TFL 8, is within the area of a UWR for mule deer. The GWM for this UWR sets limits on road construction, road density, snow interception cover (SIC) retention, SIC crown-closure, and limits on the amount of early-seral forest. The cover requirements for SIC specify a percentage of forest in planning cells (subdivisions of the UWR) that must be above a specified age (101 years or 121 years). Early-seral limits restrict the area that can be less than 21 years of age within moderate snowpack zones of the UWR.

In the base case, SIC requirements were modelled as mature forest cover requirement applied individually to the UWR planning cells. The early-seral limits, which were applied in the moderate snowpack zone, were modelled as a disturbance limits in applicable planning cells. No constraints were applied for road density or SIC crown closure. In the *Information Package*, the licence holder indicated that the UWR road requirements would be addressed in operations and would not limit timber supply. Crown-closure requirements were not modelled since the available yield tables do not contain crown-closure predictions.

To assess the degree the modelled GWM requirements were limiting to timber supply, the licensee evaluated the area of THLB in a "tight" condition due to the requirement over each period of the projection. A planning cell was in a "tight" condition if it was within one percent of the target at the end of the period. For example, if the minimum SIC retention is 19.5 percent, the planning cell would be considered "tight" if there is less than 20.5 percent SIC retention. They observed that the proportion of THLB impacted at any one time was relatively low, ranging between zero percent and 2.9 percent of the total THLB area is in a tight condition.

I am aware of a 2016 report on mule deer GAR orders in southern BC which concluded that UWR effectiveness monitoring is lacking, and thereby it is unknown if UWR prescriptions address wildlife needs. However, I note that the Selkirk Resource District has completed compliance checks for this UWR and has observed that open road density exceeds the maximum

allowed in several planning cells. Since portions of these planning cells are located outside the TFL, it is unknown whether road density values exceed the limit within the TFL. Additionally, District staff note small SIC deficits in two planning cells.

The Boundary Forest Watershed Stewardship Society commented on the decline in mule deer populations which they attribute to the loss of habitat and food due to clearcut logging. They stated that full measures known to preserve or enhance mule deer habitat should be observed.

From reviewing the information presented on UWR, I am satisfied that the SIC cover requirements and early-seral limits were adequately accounted for in the base case. However, two factors critical to winter habitat, road density and crown-closure for SIC, were not properly accounted. To understand the implications of this I rely on a graph presented in the analysis report (as Figure 19). As stated above, the graph shows that up to 2.9 percent of the THLB is in ‘tight’ condition at specific times in the projection due to the modelled constraints. Further, about half of this amount (1.5 percent) is in tight condition over most of the first seven decades of the projection. Not having information about how road density and crown-closure requirements (which were not modelled) may further limit harvesting in this area, I will consider the equivalent amount of THLB to be unavailable for timber harvesting. As a result, I conclude the base case to be overestimated by an amount equal to 1.5 percent in the short term and I will discuss this further in ‘**Reasons for Decision**’.

As discussed under ‘**Implementation**’, I expect the licence holder to manage operations within the TFL to be compliant with the GAR order, and to incorporate the modelling of road density into the analysis completed for the next TSR.

*- moose ungulate winter range*

An UWR established through GAR order for moose habitat intersects TFL 8. This order specifies forest cover retention requirements and maximum disturbance limits for planning cells. These measures were accounted for in the base case using harvesting constraints applied to individual planning cells. The disturbance limits were found to be slightly limiting for one period early in the projection.

Regional habitat staff have indicated that the Boundary moose population is thought to be declining and the significant drivers of impacts being: (1) an increase in clearcut logging resulting in a lack of snow interception and thermal cover and secure habitat to give birth and escape predators, and (2) an increase in road density which improves predator efficiency, especially wolves. I note that the Ministry does not have an established procedure for checking compliance with the GAR Order, therefore there is some uncertainty as to whether targets are being achieved in TFL 8.

As discussed under ‘**Implementation**’, I expect the Ministry to institute an effectiveness monitoring program for mule deer and moose ungulate winter ranges and report the results for next TSR.

*- green-up/cutblock adjacency*

Patch size and adjacency in TFL 8 are governed by block size and adjacency constraints in the Forest Planning and Practices Regulation (FPPR) and KBHLPO. The FPPR specifies that timber must not be harvested on a new cutblock unless the trees on adjacent cutblocks meet a specific height (i.e., green-up height) and stocking requirements. The KBHLPO specifies the green-up height to be 2.5 metres. In the base case this requirement was modelled aspatially by ensuring no more than 25 percent of the THLB area not overlapping another constraint (e.g., ungulate winter range, visual quality) can be less than 2.5 metres in height at any time. This objective is limiting

timber supply on approximately 23 percent of the total THLB for a period of 10 years in the mid term.

I note that the aspatial approach applied in the base case is not consistent with the deputy chief forester's 2009 *TFL 8 Rationale* instruction. However, after reviewing the information of the THLB netdown and details on the analysis procedures, I have concluded that, for the purpose of this determination, that the aspatial adjacency rule applied in the base case combined with a spatially defined THLB and harvest aggregation (patching) rules is an acceptable approach to modelling harvest adjacency objectives for TFL 8.

*- cutblock size*

Section 64 of the FPPR specifies that the net area of a cutblock not exceed 40 hectares unless harvesting is being done to recover damaged timber, is for sanitation treatments or is designed to be consistent with openings from natural disturbance. If a licensee plans to harvest a cutblock larger than 40 hectares, a rationale is required and must be retained in their record system. In the base case, harvest units greater than 40 hectares were limited to five percent of the area harvested in any five-year period. As a result, the model harvested less than one block per year larger than 40 hectares and most of those blocks were less than 50 hectares in size.

District staff evaluated the number of cutblocks larger than 40 hectares harvested on TFL 8 in the period between 2014 and 2018. They found five large cutblocks, created in five different years, which ranged in size from 45 hectares to 180 hectares. FAIB staff assessed the size of cutblocks that were harvested on TFL 8 for the same five years. They identified 268 contiguous blocks harvested in that period with a median size of 14.4 hectares, and 16 of the blocks were over 40 hectares.

The licence holder is harvesting cutblocks that exceed the maximum 40-hectare size specified in the FPPR. Consequently, the number of cutblocks exceeding 40 hectares is likely underestimated in the base case. Had the model included block sizes observed in practice it may have generated a lower timber supply due to adjacency requirements. For this reason, the base case may overestimate the timber supply by an unquantified amount.

A member of the public commented that the licence holder's rationale for creating large cutblocks is flawed potentially impactful to communities downstream of the watersheds in the TFL. The company responded stating that harvesting practice is actively monitored by the Selkirk Resource District and the Ministry is working with Interfor to ensure patch size distributions are consistent with established forest management objectives in the TFL.

It is my expectation that the licensee will not create openings over 40 hectares in size because of the issues with wildlife, biodiversity, water, terrain stability and road density. This is particularly important given that adjacency requirements will be difficult to meet on steeper slopes and the licensee needs to increase harvest performance on steeper slopes as these areas have been avoided in the past. If, however, a cutblock needs to be over 40 hectares in size, then a sound rationale must be provided and reviewed by the District when harvesting is planned and before it commences.

**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**

Other information

*- consultation, engagement and information sharing*

The Crown maintains a duty to consult with and accommodate, as necessary, those First Nations for whom it has knowledge of claimed Aboriginal Interests that may be impacted by a proposed decision, including strategic-level decisions such as AAC determinations. The AAC determination, as a strategic decision, sets the stage for other decisions such as AAC apportionment and disposition, leading to issuance of cutting authorities. AAC determinations do not determine the location of harvesting areas or patterns, and as a result do 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. The AAC considers the sustainable harvest level from a 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 are part of the harvestable land base. 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. The overall AAC can affect various resource values and therefore the ability of Aboriginal Peoples to meaningfully exercise their Aboriginal rights. Information gained through consultation with potentially affected First Nations about Aboriginal Interests has been considered in the development of this determination.

Seven Bands/First Nations and one Tribal Council have asserted territorial boundaries that overlap with TFL 8: Lower Similkameen Indian Band (LSIB), Okanagan Indian Band (OKIB), Osoyoos Indian Band (OIB), Penticton Indian Band (PIB), Spltasin First Nation (SFN), Upper Nicola Band (UNB), Westbank First Nation (WFN) and Okanagan Nation Alliance (First Nations Tribal Council) (ONA).

The Provinces’ consultation procedure was consistent with the *Updated Procedures for Meeting Legal Obligations When Consulting First Nations* and with the signed agreements held by the potentially impacted First Nations. District staff and the Kootenay-Boundary Region First Nations Advisor advised me that the consultation timeline was reasonable given the Information Sharing and ongoing communications between the licence holder and the First Nations who have asserted territorial boundaries that overlap with TFL 8.

The Province provided engagement letters and consultation packages to First Nations of the draft *Information Package (IP)* and draft *Management Plan (MP) #11*. MP #11 was provided for engagement and consultation on February 3, 2021. The letters to First Nations noted a consultation end date of March 31, 2021. The final IP and *Analysis Report (AR)* were appendices to the MP which was based on the licence holder’s information sharing with First Nations, stakeholders and the public. Communication from the Province noted that the chief forester would be available to meet with First Nations prior to decision making to ensure clarity on any questions or concerns. The consultation indicated that if further communication from First Nations followed the completion of the determination meeting and prior to release of the AAC decision, the Province would continue to engage with First Nations.

No response was received from LSIB, OKIB, OIB, PIB, UNB and OIB. The SFN requested a status update and was notified that a response was required on or before July 16, 2021. The WFN provided a non-consent letter and the Province requested details for non-consent as none were

provided. The offer to meet with the chief forester was reiterated and WFN responded that they would defer to PIB (who did not respond to the Province).

The licence holder also had significant engagement with First Nations. Interfor staff offered to meet with First Nations to review the draft IP and draft MP and indicated they were committed to working collaboratively with First Nations to ensure their values were appropriately considered when the final MP is submitted to the chief forester prior to the AAC determination. PIB reviewed proposed development in the field and had a meeting with the licensee to review the TSR process and discuss possible ways that First Nations' values could be incorporated into the IP. Following this meeting, the PIB provided a "Status Report" to the licence holder, and results from this engagement were incorporated into the draft IP before it underwent public review.

In reviewing the First Nations consultation process with District staff, I accept the Ministry staff's assessment that all potentially impacted First Nations whose asserted territorial boundaries overlap with TFL 8 were consulted in accordance with current Provincial guidance and applicable case law. I am satisfied that consultation has been carried out in good faith and the Crown's process of seeking to understand potentially outstanding issues and impacts was reasonable.

Any adverse impacts upon the Aboriginal Interests of the relevant First Nations within the area of the TFL 8, stemming from forest development activities that occur after the AAC determination, can be appropriately mitigated or minimized through existing legislation and regulation, planning documents and meaningful engagement at the operational level.

*- climate change*

When the climate changes, species can die, move, be displaced by encroaching species, or adapt to new conditions. A changing climate is predicted to impact forest ecosystems in several ways: general increase in temperatures; change in precipitation patterns; increase in the frequency and severity of disturbances including wildfires, floods, landslides; and occurrences of insects and disease above endemic levels. This will result in both predictable and unpredictable ecological shifts in ecosystems.

The climate of the Kootenay-Boundary Region has already changed noticeably over the past century and is expected to continue to change. By mid-century, temperature is expected to warm, on average by 2° to 5° Celsius in winter, spring and fall and by 3° to 7° Celsius in summer. Precipitation is projected to increase by 10 to 25 percent in winter, spring and fall and decrease by up to 30 percent in summer. In combination, the projected changes in temperature, precipitation, and precipitation as snow will reduce winter snowpack, result in earlier snowpack melt, and increase spring peak water flow. These changes increase the risk of seasonal flooding and slope failures. The drier, warmer conditions will increase the risk and severity of forest fires, while the increased drought stress will reduce stand disease and pest resistance.

The base case does not include any analysis specific to climate change. Changes to natural stand yields have significant impacts on the short- to mid-term because they are the main source of harvest volume during the first 35 to 40 years of the planning horizon. Sensitivity analyses investigated the uncertainty in the growth and yield assumptions for natural and managed stands. Increasing or decreasing natural yields by 10 percent allows for an increase or decrease in short- to mid-term harvest levels of 6.9 or 6.3 percent, respectively. Long-term harvest levels are unchanged. When managed stand yields are increased or decreased by 10 percent, long-term harvest levels are increased or decreased by about the same amount (10.2 percent). The impact on short- to mid-term harvest levels is an increase of 3.8 percent or a decrease of 2.6 percent.

Biogeoclimatic zones (BGCZ) reflect the combined effects of multiple factors, predominately climate conditions. At the lowest elevations in the southern portion of the Kootenays, shifts are predicted from drier Interior Cedar-Hemlock or Interior Douglas-fir BGCZs to grassland-steppe envelopes. The trend extends across the Boundary. At higher elevations, climate modelling results are variable: one scenario projects an upward shift of existing ICH BGCZ; another to more coastal transition systems (CWH/ICH); and a third shows a shift to drier Ponderosa pine dominated types. All scenarios project a significant decrease in ESSF, parkland and alpine envelopes.

Changes to tree species distributions in the region are expected to follow the provincial trend of moving north and upwards in elevation, although the magnitude of change is uncertain. Significant tree mortality is also expected, especially at low- and mid-elevations in response to climate change. Climatic suitability for drought-fire tolerant species is projected to extend to ridge tops in the Boundary, and surprisingly far north into the current 'ICH wet belt', although significant seed sources for Ponderosa pine and other species may be limited further north. Tree growth may increase in moister, cooler ecosystems. Growth potential, however, may not be realized.

The Ministry has developed Climate Based Seed Transfer (CBST) to aid forest managers in developing future forests better adapted to climate change. CBST promotes healthy resilient and productive forests and ecosystems. It matches seed sources to climatically suitable planting sites. CBST is currently an option but it is expected to be the *Chief Forester's Standards for Seed Use* in the near future. The Ministry is also developing the Climate Change Informed Species Selection (CCISS) tool that will be linked to CBST.

Due to the uncertainty surrounding impacts on AAC from climate change, it is important to encourage dialogue to develop climate change mitigation and adaptation strategies and new opportunities for forest management. While projected climate change will likely affect forest productivity and growth, the dynamics of natural disturbances, forest pests and hydrological balances, the magnitude, extent, and timing of these impacts is uncertain. In determining AACs it is not my practice to account for the potential climate change effects on timber supply and other resource values in any single AAC determination. However, due to the requirements for regular AAC determinations, these changes will be accounted for over time. Therefore, without knowing what the magnitude or management responses to climate change will be, I have not accounted for them in this AAC determination.

I have provided a more detailed description of how I account for climate change in AAC decisions under the '*Guiding principles for AAC determinations*' section of this rationale.

As indicated in '**Implementation**', I expect the licence holder to complete carbon modelling and/or a climate vulnerability assessment before the next TSR as well as initiate a young stand monitoring program to monitor managed stand yield assumptions over time.

*- 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 improves the consideration of cumulative effects in natural resource decision making in BC. It also enables a strategic approach to assessing CEF values and identifying management responses supporting sustainable management of that value, or actions required to mitigate undesired effects to these values.

Timber harvesting and road construction are essentially the only industrial activity occurring in TFL 8 and cumulative effects are primarily due to these activities.

No analysis of cumulative effects was conducted as part of this timber supply analysis. However, as noted in *'watershed health'*, the findings in the *2019 Analysis of the Kettle River Watershed: Streamflow and Sedimentation Hazards* indicate that increased consideration needs to be given to hydrologic hazards and risks resulting from harvesting and road development in the TFL. Under *'ungulate winter range'*, I note that further work also needs to be done ensure the density of open roads in ungulate winter range are within the requirements of applicable GAR orders and that the implication of managing to these requirements are considered in the next timber supply review.

*- harvest performance*

The licence holders' harvest performance was evaluated using information from the Ministry's Harvest Billing System (HBS), and the *Provincial Timber Management Goals, Objectives and Targets – Management Unit Targets* (PTMGOT).

Information from the HBS indicates that the AAC was undercut in the two cut control periods (CCP) ending 2008 and 2013. In the CCP ending 2018, HBS records indicate the licence holder overharvested the AAC by 31 104 cubic metres (3.3 percent) with much of the harvesting occurring in the final year of the CCP. Currently, TFL 8 is in year three (2021) of the five-year cut control period with 15.5 percent harvested in the first two years.

The 2021 PTMGOT indicates that harvest by slope class in TFL 8 may be inconsistent with AAC expectations. Of concern, is the performance in areas with slopes that exceed 45 percent. To further investigate this, FAIB staff generated a summary of the area of blocks harvested in the last decade that intersect steep slope areas. They found that only one percent of the harvested area in this period was in steep slope areas. In contrast, the proportion of the base case THLB that intersects steep slope areas is eight percent. The volume harvested from steep slope areas in the base case is 17 percent for the first three decades, about three percent between the fourth and seventh decade and about eight percent for the long term. The licence holder used LiDAR to identify steep slope areas where slope exceeds 45 percent.

From my review of this information, I note that in recent years the licence holder has been successful in harvesting the AAC for the TFL. However, their performance in steep slope areas is well below the proportion of THLB that is steep slope and below the proportional contribution of steep slope areas to base case projection. This concerns me since harvesting the full AAC without adequate performance in steep slope areas results in an over harvest in areas with lower slope. For this reason, I will specify an AAC partition that will attribute part of the AAC to areas with an average slope that is less than or equal to 45 percent and free of terrain stability concern. I will discuss this further under **'Reasons for Decision'**.

As indicated in **'Implementation'**, I expect the licence holder to work with Ministry staff to develop measures that ensure progress is made towards a harvest distribution that better represents the terrain profile of the THLB. It is my expectation that the licence holder and Ministry staff will monitor, evaluate, and report on annual harvest performance by slope class in preparation for the next TSR.

*- unharvested volume*

In 2018, the Ministry introduced a policy *Regarding the Administration of Unharvested Volumes, Uncommitted Volumes and Unused BCTS Volume* (collectively referred to as accumulated volume). This policy provides guidance on the administration of accumulated volumes for forest tenures in accordance with Section 75.8 of the *Forest Act*. The policy sets out a process to

determine the unharvested volume that may be made available in the next AAC determination period (after a Section 8 AAC determination is made).

In March 2021, the Selkirk Resource District initiated consultation and engagement on options for the disposition of accumulated volume that had accrued in multiple TSAs and TFLs between 2006 and 2019. Included is 115 987 cubic metres of accumulated volume for TFL 8. The options described in the engagement documents include (a) not to dispose of any of the undercut volume for a given management unit, (b) dispose of some of the undercut volume in a given management unit, and (c) dispose of all the undercut volume in a given management unit. The document also states that the Province may decide not to dispose of any of the undercut volume if an assessment of forest management implications indicates that the disposal would have negative impacts or if there is not sufficient interest for this volume which may be in constrained terrain or low value timber types.

In accordance with Section 75.8 of the *Forest Act*, unharvested volume from a cut control period cannot be carried forward into a subsequent cut control period and is not available for harvest by the licence holder. For this reason, it is necessary for me to account for accumulated volume in the TFL which may be harvested under a licence other than the TFL over the term of the AAC. I also acknowledge that the decisions regarding the disposition of this volume is independent of my AAC determination and involves a range of considerations including the outcomes of consultation with First Nations. I will discuss this further under ‘**Reasons for Decision**’.

**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’s letter of October 30, 2017 expressing the economic and social objectives of the government is attached in Appendix 3. The Minister emphasizes the BC Government’s commitment to building a strong, sustainable, innovative economy and creating well paid jobs in the Province. The letter makes the Government responsible for the management of BC’s forests and Crown lands. Three items that that are relevant to AAC determinations 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. collaborating to develop strategies to manage wildlife resources and habitat.

The October 30, 2017, letter asks that I do the following when making an AAC determination:

- ensure that the Ministry’s approved strategies for delivering its forestry objectives are integrated into the TSR process;
- ensure 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 support Government’s commitment to 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;
- consider traditional knowledge and other input from BC First Nation communities and organizations as they pertain to the AAC determination;
- consider 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;
- 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;
  - consider the environmental, social and economic needs of local communities as expressed by the public during the TSR review process, including strategies that contribute to community economic stability, and the jobs that the forest sector creates in communities, where these are consistent with government's broader objectives; and,
  - when faced with necessary reductions in AAC's, that those reductions be no larger than necessary to avoid significant long-term impacts.

During my considerations of the factors required under Section 8 of the *Forest Act*, I have been mindful of the Section 8(8)(d) objectives articulated in the Minister's letter dated October 30, 2017. I have reviewed the licence holder's and the Ministry's consultation process with First Nations, and the public review process and am satisfied that they were appropriately conducted. I have considered the feedback received in the applicable factors in this determination. I have addressed the considerations noted above that the Minister has asked to take into account such as climate change and cumulative effects. On this basis, I am satisfied that this determination accords with the objectives of government as expressed by the Minister.

*- summary of public engagement*

Section 6 of the TFL Management Plan Regulation outlines the requirements for public review and comment. A public review strategy was drafted by the licence holder and approved by the Regional Executive Director on December 9, 2019.

As per the strategy, notification e-mails and/or letters were sent to all stakeholders for both the draft *Information Package* (IP) in April 2020 and for the draft *Management Plan* (MP) in October and November 2020. Advertisements were placed in the Grand Forks Gazette and the Kelowna Courier Valleywide Classifieds for a period of two consecutive weeks in the same time periods. The e-mails, letters and/or advertisements indicated that the draft IP or MP were available for a period of 60 days for review and comment and noted the public viewing locations as well as other provisions to access copies of the documents.

Comments on the advertised *Information Package* were received from several members of the public and the Boundary Forest Watershed Stewardship Society.

- The following revisions were made to the draft IP and AR based on this review. It was assumed that existing wildlife tree retention (WTR) met the entire WTR requirement in stands less than 33 years old so the aspatial WTR netdown was removed for this age cohort.
- The old seral sensitivity analyses were revised to continue excluding OGMA from the THLB, rather than allowing the model to harvest in them and possibly select other areas for old growth retention.

- The requirement for mule deer winter range snow interception cover (SIC) was based on gross planning cell area, rather than on productive forest area, to make SIC requirements consistent with GAR order.
- Minor edits were made to the IP and AR to correct inconsistencies and to improve clarity about harvested block size and how surrogate watersheds were used in the analysis.

The draft MP was the second, and final product made available for review. It provided a general description and history of the TFL, listed the primary planning documents that guide the management of the TFL and summarized outcomes from the public review and First Nations referral process. The draft MP also included, as appendices, the accepted *Information Package* and a draft timber supply analysis. The review period for the draft MP was from October 28, 2020 to January 6, 2021. The only comments received were from the BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development and these comments were addressed by the licence holder.

Interfor followed all steps in the public review strategy. As such, I conclude that the public review has been completed to the specification outlined in the review strategy and to the expected standard for TSR.

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

#### Infestations and salvaged losses

##### *- unsalvaged losses*

Unsalvaged loss estimates are intended to address unsalvaged losses from fire, wind, insects, and diseases on the THLB that are not included in the endemic losses factored into stand yield estimates.

Interfor used aerial overview survey (AOS) data to estimate annual unsalvaged losses to be 1575 cubic metres. These losses were primarily related to MPB. Added to this was the average annual volume harvested under the Small-Scale Salvage program that is not charged to the AAC, which is 2071 cubic metres. This resulted in a total unsalvaged loss estimate of 3646 cubic metres per year.

I note that unsalvaged losses are 2.1 percent of the TFL 8 base case harvest projection. For comparison, in the 2013 Boundary TSA TSR, unsalvaged losses were estimated at 4.2 percent of the base case projection.

District staff advised me that losses from drought were present in the 2018 AOS data, but the licensee did not include it in their current estimate. A field review confirmed that much of the 2018 drought mortality was in younger stands which should be addressed through the application of OAFs in managed stand yield estimates. However, 130 hectares of mature stands impacted by drought were not accounted for as an unsalvaged loss. Significant drought also occurred in 2019 and 2021. I anticipate that the licensee's decision to not include drought in the NRL estimate may change as result of climate change and as noted below, I expect that drought losses to be factored into the next TSR.

Not accounting for the 130 hectares of mature stands impacted by drought as an unsalvaged loss, resulted in a 0.2 percent overestimation in the short-term timber supply projected in the base case, which I will discuss further in '**Reasons for Decision**'.

As indicated in ‘**Implementation**’, I expect the licence holder to undertake monitoring of forest health conditions and report on losses related to factors such as drought to improve on information for the next TSR.

*- natural disturbance in the non-timber harvesting land base*

Natural disturbances such as epidemic insect infestations, wildfires, and blowdown typically occur on the landscape in both the timber harvesting land base (THLB) and non-THLB. Within the THLB, natural disturbances were either harvested, or accounted for as outlined in ‘*unsalvaged losses*’.

Patchworks can be configured to randomly disturb stands outside the THLB. However, on smaller land bases such as TFL 8, this could lead to the non-THLB fulfilling an unrealistic portion of the forest cover requirements for non-timber resource values. Therefore, specific disturbance on the non-THLB was explored in a sensitivity analysis.

Sensitivity analyses that applied disturbance intervals and other parameters derived from the *Biodiversity Guidebook* were used to evaluate the potential impact of natural disturbance in the non-THLB. Approximately 43 hectares of non-THLB were disturbed each year. The resulting impact on the projected timber supply was a 0.2% reduction in harvest in the short- and mid-term, and 0.1% reduction in the long-term harvest. It was explained in the analysis report that this small impact is likely the result of the non-timber requirements not being particularly limiting in this analysis.

Based on the results of the sensitivity analyses undertaken to estimate the impact of disturbance in the non-THLB, I conclude that the short-term timber supply in the base case projection is overestimated by 0.2 percent. I will discuss this further in ‘**Reasons for Decision**’.

## **Reasons for Decision**

In reaching my AAC determination for the TFL 8, I have considered all the factors required under Section 8 of the *Forest Act*. In the following section I will summarize the factors which influenced my understanding of available timber supply in relation to the base case. These factors include the following: genetic gain, the contribution of dead potential volume, backlog NSR, unsalvaged losses, disturbance in the non-contributing land base, application of partial harvesting systems, ungulate winter range and the disposition of unharvested volume.

The base case harvest projection has an initial harvest level of 170 080 cubic metres per year that is maintained for seven decades before increasing to 198 780 cubic metres per year for the remainder of the projection. This base case reflects a THLB that was further reduced to account for Aboriginal Interests (enhanced riparian buffers, food, ceremonial, social and wildlife), and an objective of maintaining the highest possible non-declining even-flow harvest in the short- and mid-term before transitioning to a sustainable long-term level.

When I determine an AAC, I typically identify factors which indicate reasons why the actual timber supply may be either greater or less than what is projected in the base case. Some of these factors can be quantified and their implications assessed with reliability. Others may influence the assessment of the timber supply by introducing risk or uncertainty but cannot be quantified reliably at the time of the determination and must be accounted for in more general terms.

I have identified the following factors as indicating that the base case timber supply projection for TFL 8 is overestimated to a degree that can be quantified:

- *Backlog not satisfactorily restocked areas* – the modelling of backlog NSR as stocked managed stands results in the base case overestimating the long-term timber supply by 1.2 percent.

- *Unsalvaged losses* – not accounting for the 130 hectares of mature stands impacted by drought as an unsalvaged loss results in the base case overestimating the short-term timber supply by 0.2 percent.
- *Natural disturbance in the non-THLB* – not accounting for natural disturbances in the non-THLB portion of the TFL results in the base case overestimating the short-term timber supply by 0.2 percent.
- *Ungulate winter range (mule deer)* – not accounting for road density and SIC crown-closure requirements in mule deer winter habitat results in the base case overestimating the short-term timber supply by 1.5 percent.

In addition to the considerations noted above, I identified the following factors that result in a lower timber supply than projected in the base case but by amounts that cannot be quantified at this time:

- *Genetic gain* – incorrect genetic gain applied to planted larch stands results in the base case overestimating the long-term timber supply by an unquantified amount.
- *Cutblock size* – not modelling the distribution of cutblocks sizes that occur in operations, potentially results in the base case overestimating the timber supply by an unquantified amount.
- *Silviculture systems* – not modelling the application of partial harvesting systems results in the base case overestimating the short-term timber supply by an unquantified amount.

I identified the following factor that results in a higher timber supply than projected in the base case by an amount that cannot be quantified at this time:

- *Dead potential volume* – the volume from dead trees that could potentially be used as sawlogs but not accounted for in the model results in the base case underestimating the short-term timber supply by an unquantified amount.

Of the above factors that can be quantified, it is those factors that affect the short-term period of the projection that are most relevant to the quantity of my AAC determination. In aggregate, these factors indicate the base case projection overestimates short-term timber supply by 1.9 percent (this does not include the overestimation due to backlog NSR that applies to the projected long-term harvest level).

Of the factors that cannot be quantified, two affect the short-term timber supply, silviculture systems and dead potential. These factors are offsetting and I assess that their net effect on the base case to be negligible.

As noted in ‘*unharvested volume*’ the Selkirk Resource District is currently consulting with First Nations about the potential disposition of accumulated volume that includes 115 987 cubic metres from TFL 8. This is unharvested volume that accrued in the 2009-2013 cut control period and is not available for harvest by the licence holder. The Regional Executive Director (RED) is authorized to make the decision to dispose (under licence) or not to dispose this volume, which I anticipate will occur early in the term of this AAC. Although the outcome of this separate and independent decision is not known, it is important that I account for its potential impact on timber sustainability in the TFL. FAIB staff have advised me that the accumulated volume for TFL 8 represents 2.6 percent of the current growing stock assumed in the base case. I deem this to be the lower range of a possible adjustment. If the accumulated volume is disposed under licence, the additional harvest may be as much as 11 599 cubic metres per year for 10 years, which is seven percent of the adjusted base case level. I deem this to be the higher range of a possible adjustment. I am also cognizant of the alternative harvest projection (*Highest Initial First*

*Nations Interests*) which demonstrates that a harvest level of 182 030 cubic metres per year, seven percent above the base case, can be sustained for one decade before declining to the base case level. The alternative projection indicates that short-term timber supply in the base case is moderately robust to absorb some amount of harvest additional to the base case over the next 10 years. However, considering the uncertainty related to both quantified and unquantified factors that I have listed above, as well as other information available to me concerning the disposition of accumulated volume in TFL 8, I believe that a downward adjustment of five percent of the short-term harvest level appropriately accounts for accumulated volume.

In summary, after applying the adjustment necessary to address the overestimation in the base case (1.9 percent) and a further reduction to account for accumulated volume (five percent), I conclude that the allowable annual cut for TFL 8 is appropriately set at 158 400 cubic metres. This is 6.9 percent below the base case harvest level and a 14.8 percent reduction from the current AAC.

I believe this reduction in AAC will help to reduce the risk to watershed health from forestry operations in the TFL. This is dependent on the licence holder implementing wider riparian buffers and following the recommendations in the Boundary Creek watershed assessment. If additional measures to reduce risk are implemented by the Ministry or the licensee, an adjustment to this AAC may be necessary and I am prepared to revisit this determination sooner than the 10 years required by legislation.

The licensees' LiDAR analysis shows that approximately eight percent of the THLB in TFL 8 overlaps areas with steep slope (i.e., where slopes are greater than 45 percent) and 17 percent of the volume harvested in the first three decades of the base case is from these steep slope areas. Although I am encouraged that the licence holder indicates they are now harvesting more on steep slopes, actual performance has been lower than these amounts. A review of past harvest performance conducted by Ministry staff shows that steep slope areas comprised about one percent of area harvested over the last decade. I am concerned that full utilization of the AAC without adequate performance in steep slope areas will result in an over harvest in areas with lower slope. For this reason, as allowed under Section 8(5)(a) of the *Forest Act*, I will attribute 131 500 cubic metres of the AAC to areas where the average slope is less than or equal to 45 percent. This represents 83 percent of the AAC.

I have addressed the remaining expectations in '**Implementation**'.

## **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 8 by establishing an AAC of 158 400 cubic metres.

I specify, under Section 8(5)(a) of the *Forest Act*, a partition of 131 500 cubic metres that is attributed to areas with average slope that is less than or equal to 45 percent.

This determination is effective February 10, 2022, 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 this decision is predicated, 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 expect District and licence holder staff to undertake or support the tasks and studies noted below, the 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 8.

1. *Low Productivity Sites and Non-merchantable Forest Types (Dense Pine)* – I expect the licence holder to monitor harvest of dense pine stands and to provide monitoring results before the next TSR.
2. *Old Growth Management Areas and Landscape-level Biodiversity* – I expect the licence holder to work with First Nations, District staff and other licence holders to ensure that biodiversity objectives set out in the KBHLPO are fully met for shared landscape units.
3. *Dead Potential Volume* – I expect the licence holder to fully utilize dead potential volume, especially given current fibre needs in the area.
4. *Managed Stand Monitoring* – I expect the licence holder to undertake a monitoring program to quantify and report on reforestation success and the health and development of managed stands to improve on information for the next TSR.
5. *Utilization, Residual Waste and Waste Reporting* – I expect the licence holder to meet government expectations regarding timber utilization and waste measurement procedures respecting the *Provincial Logging & Waste Measurement Procedures Manual*.
6. *Ungulate Winter Range* – I expect the licence holder to manage operations within the TFL to be compliant with the GAR order, and to incorporate the modelling of road density into the analysis completed for the next TSR. I also expect Ministry staff to undertake effectiveness monitoring for mule deer and moose ungulate winter ranges and report the results for next TSR.
7. *Climate Change and Cumulative Effects* – I expect the licence holder to complete carbon modelling and/or a climate vulnerability assessment for the next TSR.
8. *Steep Slopes* – I expect the licence holder to conduct up-to-date watershed and terrain assessments on steep slopes and ensure progress is being made towards a harvest distribution that better represents the terrain profile of the THLB. I also expect the licence holder and Ministry staff to monitor, evaluate, and report on annual harvest performance on steep slopes in preparation for the next TSR.



Diane Nicholls, RPF  
Chief Forester

February 10, 2022



## Appendix 1: Section 8 of the *Forest Act*

Section 8 of the *Forest Act*, Revised Statutes of British Columbia 1996, c. 157, (current to January 19, 2022), 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 the Crown land in the following areas:

- (i)tree farm licence areas;
- (ii)community forest agreement areas;
- (iii)first nations woodland licence areas;
- (iv)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 respect of an allowable annual cut determined under subsection (1), the chief forester may, at any time, 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.]

(5.1) The chief forester may, at any time, amend or cancel a specification made under subsection (5).

(6) The minister must determine an allowable annual cut for each woodlot licence area in accordance with the woodlot licence for that area.

(7) The minister must determine an allowable annual cut for

(a) each community forest agreement area in accordance with the community forest agreement for that area, and

(b)each first nations woodland licence area in accordance with the first nations woodland licence for that area.

(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 January 19, 2022) 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 sectorin 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:

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Ministry of Forests, Lands,  
Natural Resource Operations  
and Rural Development

Office of the Minister

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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.

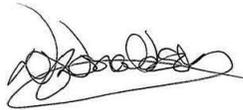
In order to ensure that AAC determinations align with government objectives to modernize land-use planning and sustainably manage B.C.'s ecosystems, rivers, lakes, watersheds, forests and old growth forests, the Timber Supply Review process should incorporate the best available information on climate 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,

A handwritten signature in black ink, appearing to read "Doug Donaldson", with a horizontal line underneath.

Doug Donaldson  
Minister

## Appendix 4: Information sources used in the AAC determination

The information sources considered in determining the AAC for TFL 8 include the following:

### Legislation

- Landscape Unit Planning Guide, 1999;
- Province of British Columbia. 1995. Biodiversity Guidebook. Victoria, BC. [www.for.gov.bc.ca/hfd/library/documents/bib19715.pdf](http://www.for.gov.bc.ca/hfd/library/documents/bib19715.pdf);
- Province of British Columbia. Cut Control Regulation. [https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/17\\_578\\_2004](https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/17_578_2004). Current to January 25, 2022;
- Province of British Columbia. *Forest Act* and regulations. [https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/96157\\_01](https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/96157_01). Current to January 26, 2022;
- Province of British Columbia. *Forest and Range Practices Act* (FRPA) and regulations and amendments. [https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/02069\\_01](https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/02069_01). Current to January 26, 2021;
- Province of British Columbia. Forest Planning and Practices Regulation (FPPR). [https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/14\\_2004](https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/14_2004). Current to January 25, 2022;
- Province of British Columbia. *Foresters Act*. [https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/03019\\_01](https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/03019_01). Current to January 26, 2022;
- Province of British Columbia. *Heritage Conservation Act*. [https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/96187\\_01](https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/96187_01). Current to January 26, 2022;
- Province of British Columbia. *Interpretation Act*. [https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/96238\\_01](https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/96238_01). Current to January 26, 2022;
- Province of British Columbia. *Land Act*. [https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/96245\\_01](https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/96245_01). Current to January 26, 2021;
- Province of British Columbia. *Ministry of Forests and Range Act*. [https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/96300\\_01](https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/96300_01). Current to January 26, 2022;
- Province of British Columbia. *Professional Governance Act*. <https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/18047>. Current to January 26, 2022;
- Province of British Columbia. *The Declaration on the Rights of Indigenous Peoples Act*. <https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/19044>. Current to January 26, 2022;

- Province of British Columbia. Tree Farm Licence Management Plan Regulation. [https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/280\\_2009](https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/280_2009). Current to January 25, 2022;
- *Species at Risk Act*. Government of Canada (S.C 2002, c29). <https://laws-lois.justice.gc.ca/eng/acts/s-15.3/>. Current to January 12, 2022.

#### **Licence Holder Plans and Timber Supply Review Documents**

- Tree Farm Licence 8 Management Plan #11 Proposed Referral Public Review Strategy, Interfor Corporation, November 2019;
- Tree Farm Licence 8 Management Plan #11, including Information Package and Timber Supply Analysis Report, Interfor Corporation. January 25, 2021;
- Tree Farm Licence 8 Rationale for Allowable Annual Cut (AAC) Determination, Ministry of Forests and Range. April 2009;
- 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;
- Boundary Timber Supply Area Timber Supply Review Rationale 2014. BC Ministry of Forests, Lands and Natural Resource Operations;
- Cumulative Effects Framework Policy, 2016. Province of BC, Natural Resource Board;
- Updated Procedures for Meeting Legal Obligations When Consulting First Nations – Interim. Province of British Columbia. May 2010.

#### **Land Use, Forest Practices and other Documents**

- Kootenay-Boundary Higher Level Plan Order, as amended from time to time. Ministry of Sustainable Resource Management;
- Provincial Non-Spatial Old Growth Objectives (NSOGO), BC Ministry of Sustainable Resource Management;
- 2019 Analysis of the Kettle River Watershed: Streamflow and Sedimentation Hazards. Van Rensen, C., N.N. Neumann and V. Young. 2021. BC Ministry FLNRORD;
- Watershed assessments in the Kootenay-Boundary region: combining GIS and ground-based methodology with pour-point design. FREP Report #41. BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development. Victoria, BC. Nordin, L. August 2020;
- Government Actions Regulation (GAR) Orders applicable to TFL 8;
- Order for Establishment of Visual Quality Objectives and scenic Area for the Arrow Boundary Forest District. BC Ministry of Forests;
- Ungulate Winter Range #U-8-007.Moose – Arrow Boundary. BC Ministry of Environment. 2006;
- Ungulate Winter Range #U-8-008. Mule Deer -Arrow Boundary. BC Ministry of Environment. 2006;
- Ecosystem Classification Program. BC Ministry of Forests, Lands and Natural Resource Operations;

- Chief Forester's Standards for Seed Use. Ministry of Forests, Lands, Natural Resource Operations and Rural Development. 2019;
- Summary of Dead Potential Volume Estimates for Management Units within Northern and Southern Interior Forest Regions. March 2006;
- Policy Regarding the Administration of Unharvested Volumes, Uncommitted Volumes and Unused BCTS Volumes. January 10, 2018. Ministry of Forests, Lands, Natural Resource Operations and Rural Development;
- Provincial Timber Management Goals, Objectives & Targets: Provincial Timber Targets 2019 Status Report. BC Ministry of Forests, Lands and Natural Resource Operations and Rural Development. 2020;
- Provincial Timber Management Goals, Objectives & Targets - Management Unit Targets - TFL 8 Boundary. BC Ministry of Forests, Lands and Natural Resource Operations and Rural Development. 2020;
- Provincial Timber Management Goals, Objectives & Targets - Management Unit Targets - TFL 8 Boundary. BC Ministry of Forests, Lands and Natural Resource Operations and Rural Development. 2021;
- Best Management Practices for Timber Harvesting, Roads, and Silviculture for Williamson's Sapsucker in British Columbia: Okanagan-Boundary Area of Occupancy. B.C. Ministry of Forests, Lands and Natural Resource Operations. 2014;
- A New Future for Old Forests: A Strategic Review of How British Columbia Manages for Old Forests Within its Ancient Ecosystems. Gorley, A and Merkel, G. 2020;
- Provincial Logging Residue and Waste Measurement Procedure Manual. BC Ministry of Forests.

### **First Nations**

- Updated Procedures for Meeting Legal Obligations when Consulting First Nations. Province of British Columbia, May 2010;
- Haida Nation v. British Columbia (Minister of Forests), [2004] 3 S.C.R. 511, 2004 SCC 73;
- Tsilhqot'in Nation v. British Columbia, 2014 SCC 44, [2014] 2 S.C.R.;
- R. v. Sparrow, [1990] 1 S.C.R. 1075;
- United Nations Declaration on the Rights of Indigenous Peoples. United Nations. 2007.