BRITISH COLUMBIA
MINISTRY OF FORESTS

Kootenay Lake Timber Supply Area

Rationale for Allowable Annual Cut (AAC) Determination

Effective June 4, 2024

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Objective of this document

This document provides an accounting of the factors I considered, and the rationale I employed in making my determination of the allowable annual cut (AAC) for the Kootenay Lake Timber Supply Area (TSA). This document also identifies where new or better information should be incorporated in future determinations.

Acknowledgement

For preparation of the information I considered in this determination, I am indebted to staff of the BC Ministry of Forests (the "Ministry") in the Selkirk Natural Resource District and the Forest Analysis and Inventory Branch (FAIB). I am also grateful to the First Nations, forest industry representatives, local residents, and other stakeholders who contributed to this process.

Statutory framework

Section 8 of the *Forest Act* requires the chief forester to determine AACs for TSAs and Tree Farm Licences (TFL) after considering certain specified factors. Section 8 of the *Forest Act* is reproduced in full as Appendix 1 of this document. For the purposes of this AAC determination in accordance with Section 23(3) of the *Interpretation Act*, the deputy chief forester is expressly authorized to carry out the functions of the chief forester (including those required under Section 8 of the *Forest Act*).

Description of the Kootenay Lake Timber Supply Area

The Kootenay Lake TSA is located in south-eastern BC between the Selkirk and Purcell Mountain ranges. North of the TSA is Glacier National Park and to the south is the Canada-United States international border. The three largest communities in the TSA are Nelson, Creston and Kaslo. The 2021 census estimates the population of the Kootenay Lake TSA at approximately 34,000. The total area of the TSA is approximately 1.241 million hectares. The Kootenay Lake TSA is administered by the Selkirk Natural Resource District office in Nelson.

The Ktunaxa Nation, Secwepemc Nation, Okanagan Nation (Syilx), and the Sinixt (Lakes Tribe of the Colville Confederated Tribes (CCT) have member First Nations/Bands whose territories overlap the Kootenay Lake TSA. The Ktunaxa Nation Council represents four First Nations communities in the TSA: Yaqan Nuʔkiy (Lower Kootenay), ʔakisq̓nuk (Columbia Lake), Yaq̓it ʔa·knuqƛiʾit (Tobacco Plains), and ʔaq̓am (St. Mary's). Five of the Secwepemc Nation member bands have territories which overlap the Kootenay Lake TSA: Adams Lake Indian Band, Little Shuswap Lake Band (Skwl'ax te Secwepemcul'ecw), Splatsin First Nation, Neskonlith Indian Band, and Shuswap Indian Band. None of the Secwepemc member band reserves or main communities are in the Kootenay Lake TSA. There are five member bands in Okanagan Nation whose territories overlap the TSA. These include the: Okanagan Indian Band, Lower Similkameen Indian Band, Penticton Indian Band, Upper Nicola Band, and Osoyoos Indian Band. All the Okanagan Nation member band reserves and main communities are outside of the TSA. The Lakes Tribe (CCT) has been identified as a Sinixt rights holding collective.

The Kootenay Lake TSA includes both moist and wet climatic regions and is commonly referred to as part of the Interior Wet Belt. The forests within the TSA are diverse. Tree species at lower elevations, within the Interior Cedar Hemlock (ICH) zone, include western redcedar, western hemlock, grand fir, Engelmann spruce, subalpine fir, western larch, Douglas-fir, western white pine, western yew, ponderosa pine and lodgepole pine. At higher elevations, within the Engelmann Spruce Subalpine Fir (ESSF) zone, Engelmann spruce and subalpine fir are the dominant climax tree species, while alpine larch and whitebark pine also occur.

There are 220 128 hectares of provincial parks, protected areas, and reserves within the TSA. The diverse forest of the Kootenay Lake TSA supports a wide variety of wildlife species. Large mammals include black bear, grizzly bear, moose, mule deer, white-tailed deer, elk, mountain goat, bighorn sheep, caribou,

cougar, lynx, wolverine, badger, and bobcat. Bird species include year-long residents and migratory birds such as woodpeckers, songbirds, waterfowl, raptors and shorebirds. The Kootenay region is part of a great migratory corridor, with Creston flats at the south end of Kootenay Lake being particularly rich in birdlife. The rivers and lakes of the TSA are home to numerous fish species including kokanee, Gerrard rainbow trout, westslope cutthroat, bull trout, whitefish, eastern brook trout, burbot and white sturgeon.

Operating within the Kootenay Lake TSA are six forest licensees, three community forests, fourteen woodlots and British Columbia Timber Sales (BCTS). There are two sawmills located in Creston which are owned by major tenure holders, Canfor (previously Wynndel Box & Lumber sawmill), and J. H. Huscroft. There are also several small mill operations which process custom lumber located in Harrop-Proctor, Meadow Creek and Kaslo. Three other major tenure holders (Atco Wood Products Ltd., Kalesnikoff Lumber Company, and Porcupine Wood Products Ltd.) own processing facilities in the adjacent Arrow TSA. In addition, other businesses within the TSA make value added products such as timber frame homes, posts and rails, and products for musical instruments.

In addition to forestry, other major economic drivers of the economy of the area include tourism, retail trade, agriculture, education, health care, construction, and an emerging technology sector.

History of the AAC

The AAC for the Kootenay Lake TSA was first established on June 1, 1981, at 900 000 cubic metres. On June 1, 1995, that AAC was reduced to 700 000 cubic metres. On January 1, 2002, the AAC was reduced to 681 300 cubic metres, and on August 12, 2010, the chief forester reduced the AAC to 640 000 cubic metres. After the creation of a Community Forest Agreement (an area-based tenure) on May 5, 2016, the AAC was reduced to its current level of 634 861 cubic metres in accordance with the Allowable Annual Cut Administration Regulation.

New AAC determination

Effective June 4, 2024, the new AAC for the Kootenay Lake TSA will be 550 000 cubic metres and includes the following partitions:

1. A maximum of 25 300 cubic metres (4.6 percent of the AAC) can be harvested from old forest stands. Old forest stands are stands older than 250 years in less frequently disturbed ecosystems (natural disturbance type, or NDT 1, 2, and 4) and older than 140 years in more frequently disturbed ecosystems (NDT 3).
2. A maximum of 524 700 cubic metres (95.4 percent of the AAC) can be harvested from forest stands that are not old. Forest stands that are not old are stands younger than or equal to 250 years in less frequently disturbed ecosystems (NDT 1, 2, and 4) and younger than or equal to 140 years in more frequently disturbed ecosystems (NDT 3).

This new AAC is 13.4 percent below the current AAC and will remain in effect until another AAC is determined, which must take place within 10 years of this determination.

Role and limitations of the technical information used in this determination

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 AAC determinations is in the form of a timber supply analysis and its inputs related to forest inventory, growth and yield and management practices. The factors used as inputs to timber supply analysis have differing levels of uncertainty associated with them, due in part to variation in physical, biological, and social conditions.

Computer models cannot incorporate all of the social, cultural and economic factors that are relevant when making forest management decisions. Technical information and analysis, therefore, do not necessarily provide the complete answers or solutions to forest management decisions such as AAC

determinations. Such information does provide valuable insight into potential impacts of different resource-use assumptions and actions, and thus forms an important component of the information I must consider in AAC determinations.

In determining the AAC for the Kootenay Lake TSA I have considered known limitations of the technical information provided. I am satisfied that the information provides a suitable basis for my determination.

Guiding principles for AAC determinations

Given the substantial number of periodic AAC determinations required for B.C.'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 B.C.'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 ("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 the *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 with respect to subsequent allocation of timber supply.

These guiding principles establish a framework for AAC decision-making with consideration to the following: advancing reconciliation with Indigenous people; responding to uncertainties; the incorporation of forest landscape planning information (including any legal orders associated with forest management), cumulative effects, and climate change.

<u>Reconciliation with Indigenous people</u>

The Government of B.C. has committed to true and lasting reconciliation with Indigenous people. The *Declaration on the Rights of Indigenous Peoples Act* of 2019 (the '*Declaration Act*') creates the path forward for aligning provincial laws with the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). Recognizing that reconciliation and changes to policies, programs, and legislation take time, any interim processes undertaken for AAC determinations should be responsive to the information and issues raised by Indigenous people to the extent possible within the existing legislative framework for AAC determinations. Interim collaborative engagement processes will seek to move beyond the legal duty to consult, align with relevant agreements between First Nations and the Province (including commitments regarding stewardship or resource management), promote capacity building within Indigenous communities, and provide a clear and transparent understanding of the decision-making process.

Where the nature, scope and geographic extent of Aboriginal rights and title have not been established, the Province has a constitutional obligation to consult with First Nations in a manner proportional to the strength of any claimed Aboriginal rights (including title) and the degree to which they may be affected by the decision. The Province also has an obligation to consult with First Nations regarding their treaty rights. In this regard, when making an AAC determination I will give consideration to the following information:

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

(ii) information, including Indigenous Knowledge, brought forward through consultation or a collaborative engagement process with respect to Aboriginal Interests, and how these interests may be impacted by an AAC decision;

(iii) any strategic level plans, operational plans, or management information that describe how Aboriginal Interests are addressed through specific actions and forest practices;

(iv) existing relevant agreements and policies between First Nations and the Province; and,

(v) other information regarding the potential impact of an AAC decision on the ability of Indigenous communities to meaningful exercise of Section 35 rights as recognized in the *Constitution Act* (1982), such as information about cumulative effects.

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 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 provincial timber. Consequently, it does not contribute to the AAC of the management unit 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 timber supply, 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. However, where there is clear intent by government to recognize lands as title land that are yet to be finalized, I will consider information that is relevant to the decision in a manner that is appropriate to the circumstances. The requirement for regular AAC reviews will ensure that future determinations address ongoing changes to the land base.

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. The following are two ways of addressing they uncertainty of information available to support an AAC determination:

i. undertaking analyses to evaluate the significance of uncertainties associated with available information and assessing the social, economic, and environmental risks associated with a range of possible decisions; 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 several 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 that (as closely as possible) 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 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.

Where appropriate, the chief forester will consider information 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 an alternative strategy for dealing with information uncertainty is to generally reduce AACs in the interest of caution. On its own, this precautionary approach is not a complete framework for decision making under uncertainty. It is one tool that could be used to address the risk of serious harms in situations of deep uncertainty or significant deficiencies in information. However, the precautionary approach does not consider the full spectrum of values or extensive range of research and information utilized by the chief forester. For these reasons, AAC determinations more appropriately follow a decision process utilizing analyses of current land and management practices and the exploration of the potential effects of uncertainties, rather than relying on an overriding precautionary approach.

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, can assist me in evaluating this uncertainty.

Forest Landscape Planning

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 a sustainable timber supply.

AAC determinations will be made in the context of new forest landscape plans and legal orders that establish forest management expectations. These plans and orders direct forestry activities and guide the stewardship of B.C.'s public land and resources, have been established with an understanding of the relationships among the various components of forest management systems, and follow deliberative processes and laws designed to achieve a balance of natural resources values and benefits.

As is the case for land use and management planning in general, it is beyond my statutory authority to speculate on final outcomes where there are preliminary but not yet finalized and formalized land use zones or management objectives. If the timber supply implications of final designations are substantial a new AAC determination prior to the legislated deadline may be warranted.

In some cases, even when government has made a formal land-use decision, it is not necessarily possible to fully analyze and immediately account for the consequent timber supply impacts in an AAC determination. Many of government's land-use decisions must be followed by detailed implementation decisions requiring, for instance, further planning or legislated designations such as those provided for under the 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 AAC 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.

Cumulative Effects

Cumulative effects (CE) are changes to environmental, social, and economic values caused by the combined effect of past, present and potential future human activities and natural processes. In the context of AAC determinations, I am aware of the mandate provided by the Minister of Forests (FOR) which tells me to ensure that my AAC determinations continue to incorporate the best available information on the CE of multiple activities on the land base. Where the CE of timber harvesting and other land-based activities indicate a risk to natural resource values, my determinations should identify those risks for consideration in land-use planning. I am also asked to consider ways in which my AAC determinations could encourage actions or practices to mitigate risks to natural resource values.

Section 8 of the *Forest Act* only authorizes the chief forester 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 refer to those responsible for such planning.

Where a cumulative effects assessment has suggested that an important value is at risk and that a reduced harvest level or implementation of an AAC partition could help to reduce that risk, I will appropriately factor these into my AAC determination. I may also identify actions or implementation instructions that would mitigate risk or accommodate potential impacts to Aboriginal Interests. In this case, I will include expectations that Ministry staff work with relevant interests to address the issues identified and encourage forest licensees to follow the recommendations of CE assessments.

As with all management issues, additional information and any changes can be incorporated into subsequent AAC determinations.

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. 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 substantiated predictions 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 are likely in some areas. Hypothetically, focused harvests in at over-risk forests could forestall losses of timber and allow for planting of stands better adapted to future conditions. Conversely, lower harvest levels and the use of partitions in my AAC decisions could provide buffers against uncertainty. The appropriate mix of timber supply management approaches is ultimately a social decision.

Due to the uncertainty surrounding impacts on the AAC from climate change, it is important to encourage dialogue to develop climate change mitigation and adaptation strategies and remain open to new

opportunities for forest management. 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. The timber supply analysis is a useful tool to determine the potential changes to the frequency, intensity, and scope of natural disturbances under climate change; and for exploring options and tradeoffs. Any management decisions about the appropriate approach and associated practices will be incorporated into future AAC determinations. The requirement for regular AAC reviews will ensure continuous improvement of the information and knowledge on climate change and ensure the development of a responsive decision-making process to emerging natural resources issues.

The role of the base case

In considering the factors required under Section 8 of the *Forest Act* in AAC determinations, I am assisted by timber supply projections 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 a data package containing data and information from three categories: land base inventory, timber growth and yield, and management practices. Using this set of data and a computer model, a series of timber supply projections can be produced to reflect 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 harvest projection, 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, demonstrated performance, and established management requirements.

Because it represents only one of several theoretical timber supply 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 projection of timber supply, whose validity, as with all the other projections provided, depends on the validity of the data and assumptions incorporated into the computer model used to generate it.

Therefore, much of what follows in the considerations outlined below is an examination of the degree to which the assumptions made in generating the base case are realistic and current, and the degree to which resulting projections of timber supply must be adjusted to more properly reflect the current and foreseeable situation.

These adjustments are made based on informed judgment using currently available information about forest management, and that information may well have changed since the original data 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 analyses I am provided are 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, particularly in cases characterized by a large degree of unquantified uncertainty, 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 the Kootenay Lake TSA

The total land area of the Kootenay Lake TSA is 1 240 878 hectares. After removing areas not managed by the province, non-forest and non-productive areas, and areas managed by area-based tenure holders the remaining forested area is 675 024 hectares (54 percent of the TSA area). This area is referred to as the analysis forest land base (AFLB) and contributes to timber and non-timber objectives.

The timber harvesting land base (THLB) is an estimate of the land where timber harvesting is considered both legally available and economically feasible, given the objectives for all relevant forest values, 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.

As part of the process used to define the THLB, a series of deductions were made from the AFLB. These deductions account for biophysical, economic, or ecological factors that reduce the forested area available for harvesting. For the Kootenay Lake TSA, the THLB that is available after deductions are applied is 168 501 hectares. The THLB represents about 14 percent of the total area of the TSA and about 25 percent of the AFLB.

In reviewing these deductions, I am aware that some areas may have more than one classification. To ensure accuracy in defining the THLB, care was taken to avoid any potential double-counting associated with overlapping objectives. Hence, a specific deduction for a given factor reported in the analysis or the AAC rationale does not necessarily reflect the total area with that classification; some portion of it may have been deducted earlier under another classification.

For this determination, I accept that the approach used to determine the THLB for the Kootenay Lake TSA base case was appropriate.

The base case for the Kootenay Lake TSA was prepared by FAIB staff using the Ministry's spatial timber supply model (StTSM) which was developed using the Spatially Explicit Landscape Event Simulator (SELES) modelling framework. StTSM was used to project harvesting and growth over an analysis horizon of 250 years. The data and assumptions used in the base case are intended to reflect current legal requirements, the best available information, demonstrated forest management practices and current conditions in the Kootenay Lake TSA as documented in the *Kootenay Lake TSA Data Package* (November 2020).

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 harvest projections developed to support this AAC determination were designed to provide a rigorous and reasonable basis for the AAC decision and be consistent with the guiding principles for AAC determinations.

A *Discussion Paper*, which contained the results of the timber supply analysis, was published in May 2023. The base case for the Kootenay Lake TSA projects a harvest level of 640 000 cubic metres per year beginning in 2020 and maintains this harvest for 45 years before decreasing to a long-term harvest level of 586 000 cubic metres per year for the remainder of the projection.

The base case is used as reference point to assess the timber supply in Kootenay Lake TSA, including exploration of the potential impacts of uncertainties through sensitivity analyses. I reviewed all inputs to the base case, including how the environmental objectives in the Kootenay/Boundary Higher Level Plan Order (KBHLPO) were incorporated into the analysis. I also reviewed in detail the assumptions and methodology incorporated in the base case, as well as the model output, including species distribution over time; growing stock projections by age class over time; average age, area, and volume harvested annually; and other factors as described in my considerations below. For this determination I am satisfied

that the base case harvest projection and the sensitivity analyses have provided a suitable basis for my assessment of timber supply for the Kootenay Lake TSA.

First Nations engagement

Secwepemc Nation

Five of the Secwepemc Nation member bands have territories which overlap the Kootenay Lake TSA: Adams Lake Indian Band, Little Shuswap Lake Band (Skwl'ax te Secwepemcul'ecw), Splatsin First Nation, Neskonlith Indian Band, and Shuswap Indian Band. These member bands are not involved in the BC treaty process. All, except Splatsin currently have Forest Tenure Opportunity Agreements (FTOA) with the Ministry. None of the Secwepemc member band reserves or main communities are located within the Kootenay Lake TSA.

Okanagan Nation (Syilx)

There are five member bands in Okanagan Nation whose territories overlap the TSA. These include the: Okanagan Indian Band, Lower Similkameen Indian Band, Penticton Indian Band, Upper Nicola Band, and Osoyoos Indian Band. None of these five bands in the Okanagan Nation are actively involved in the BC treaty process; rather, Ministry staff work with non-treaty First Nations through engagement and economic agreements, working groups, and other non-treaty processes. Okanagan Indian Band, Lower Similkameen Indian Band and Upper Nicola have FTOAs with the Ministry. All the Okanagan Nation member band reserves and main communities are outside of the TSA.

Lakes Tribe of the Colville Confederated Tribes (Sinixt)

The Kootenay Lake TSA overlaps a portion of the Sinixt Territory. On April 23, 2021, the Supreme Court of Canada ruled that the Lakes Tribe is a modern-day successor of the Sinixt and are an "Aboriginal peoples of Canada" who have an Aboriginal right to hunt in Canada under s. 35 (1) of the *Constitution Act*, 1982. As a result, the Province considered it appropriate to share information with the Lakes Tribe during the public discussion phase (May 2023) of the TSR.

Ktunaxa Nation Council

The Ktunaxa Nation Council (KNC) is a political entity representing four Kutenai bands in the TSA: Yaqan Nuʔkiy (Lower Kootenay), ʔakisq̓nuk (Columbia Lake), Yaq̓it ʔa·knuqłiʾit (Tobacco Plains), and ʔaq̓am (St. Mary's). KNC has several agreements with the Province, including the Ktunaxa Economic, Community & Development Agreement (ECDA), Forest Consultation and Revenue Sharing Agreements (FCRSA), and FTOAs. The KNC holds one non-replaceable forest licence within the Kootenay Lake TSA. KNC also signed a Strategic Engagement Agreement (SEA) with the Province in 2010; this agreement expired on March 31, 2024. KNC has been in treaty negotiations since 1993. In fall 2021, the KNC suspended the stage 5 treaty negotiations, and the individual Ktunaxa Nations are reviewing options for self-determination and governance structure.

Since initiating the Kootenay Lake TSR in 2018, Ministry staff contacted all First Nations with territories overlapping the Kootenay Lake TSA to discuss their perspectives on timber supply within their respective territories. First Nations were provided with the data, analysis results and the *Discussion Paper* to inform their discussions with Ministry staff. The provincial government has committed to collaborative engagement with Indigenous communities on the Kootenay Lake TSR and AAC determination. KNC was the only nation that engaged with the Ministry on the Kootenay Lake TSR. KNC participated in a

technical working group with FAIB staff and provided input on both the *Data Package* and the *Discussion Paper*.

On February 20, 2024, I participated in a video-conference call where I met with representatives from the Ktunaxa Nation Council. At this meeting I listened to the concerns and issues raised by the representatives, and I will reflect on what I heard when making the AAC decision. KNC is concerned that current forest management practices are degrading lands and waters, and cumulative developments interacting with accelerating climate change are putting forest biodiversity at unacceptable levels of risk. To address these concerns, KNC prepared a Forestry Standards Document (FSD) that specifies the management practices they would like to see implemented in the TSA. In general, the FSD specifications exceed legal requirements and current practices implemented in the TSA.

In October 2023, KNC finalized the Ktunaxa Enhanced Stewardship Scenario (KESS), a draft modelling scenario which incorporates the management practices contained in the FSD. The THLB used for the KESS scenario is 37 percent smaller than the THLB derived for the TSR base case. This is mainly due to the exclusion of Ktunaxa old growth and cultural areas, Ktunaxa mature areas, caribou core areas, grizzly bear high priority areas, additional riparian and road buffers, increased wildlife tree retention, and larger steep terrain reductions. Consequently, the KESS resulted in an even-flow harvest level of 325 000 cubic metres per year – 49 percent lower than the initial harvest in the TSR base case.

On March 11, 2024, I attended an in-person meeting with representatives of the Ktunaxa Nation Council at the Selkirk Natural Resource District office in Nelson BC. KNC informed me that they are not against forestry, but that we need to find a balance between the environment and the economy. As such, changes in forest management practices are needed to manage for values such as grizzly bear, goshawk, old growth, and fish habitat. The Ktunaxa FSD was approved by the KNC and the FSD is considered a "living" document, so there may be changes to the standards in the future.

I informed the representatives of the KNC that I will consider their interests to the extent possible within my scope of authority, but that the TSR is not a land use planning process. The representatives acknowledged that modernized land use planning (which goes beyond forest landscape planning) is required to make the desired changes. They stated that they need to be recognized and acknowledged, and to be involved at the start of the process rather than near the end.

In my considerations for the Kootenay Lake TSA, I am mindful of the significant interest shown by First Nations in the harvest level and the effect of past and present harvesting on their interests and ability to meaningfully practice their rights. I am also aware of the government's desire for reconciliation with First Nations and the government's intention to change the way forests are managed in this province as described in the June 2021 document titled *Modernizing Forest Policy in British Columbia: Setting the intention and leading the forest sector transition* (Intentions Paper).

I reviewed the entire First Nations consultation record provided by staff which included comments from those I met as well as from those I did not meet. I will reflect on what I read as well as what I heard during my meetings with First Nations as I make this AAC decision.

Licensee engagement

The *Data Package* and the *Discussion Paper* were made available to all licensees operating in the Kootenay Lake TSA. The *Data Package* contained the sources of the data used and licensees were able to review those data. The *Discussion Paper* contained the results of the timber supply analysis including the base case harvest projection, and the sensitivity analyses conducted.

On March 4, 2024, I participated in a video-conference call where I met with representatives from Atco Wood Products Ltd., Cooper Creek Cedar Ltd., Kalesnikoff Lumber Company, and Porcupine Wood Products Ltd. Licensees were concerned about any reduction in the AAC for the TSA and what this would mean for their continued operations. In particular, they mentioned the priority old-growth

areas identified by the government's Technical Advisory Panel on old-growth management in BC. Avoiding harvesting in these areas is already affecting the operations of one licensee. Licensees were also concerned about the potentially more restrictive forest practices being proposed by the KNC in their FSD.

Comments and recommendations from licensees were included in the factors I considered for this determination. Also included were the responses from staff to the licensees. Many of the comments requested clarification to data and explanation of modelling methods. I read and discussed these comments with staff as the factors were considered.

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

I reviewed the information for the factors required to be considered under Section 8 of the *Forest Act*. Where I 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 timber supply projected in the base case, 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, or some other aspect under consideration, this rationale incorporates an explanation of how I considered the issues raised and the reasoning that led to my conclusions.

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

***Forest Act* section and description**	**Factors accepted as modelled and not discussed further in the rationale**
8(8)(a)(i) the composition of the forest and its expected rate of growth on the area	• Land ownership and forest tenures not contributing to the TSA timber supply • Non-forest and non-productive forest • Provincial parks, reserves and protected areas strategy • Conservation lands • Wildlife habitat areas and wildlife habitat features • Experimental and permanent sample plots • Inoperable and uneconomic areas, and isolated THLB • Deciduous forest • Low productivity sites • Under-utilized stands • Volume estimates for existing stands • Site index estimates • Genetic gain • Operational adjustment factors
8(8)(a)(ii) the expected time that it will take the forest to become re-established following denudation	• Regeneration delay and impediments to regeneration • Not satisfactorily restocked
8(8)(a)(iii) silviculture treatments to be applied to the area	

Forest Act **section and description**	**Factors accepted as modelled and not discussed further in the rationale**
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 levels • Decay, waste, and breakage • Minimum harvestable criteria
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	• Cutblock adjacency and green-up • Scenic resources – visual quality objectives • Ungulate winter range
8(8)(a)(vi) any other information that, in the chief forester's opinion, relates to the capability of the area to produce timber	• Forest health • Dead potential • Harvest performance
8(8)(b) the short and long term implications to British Columbia of alternative rates of timber harvesting from the area	• Alternative harvest flows
8(8)(d) 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 expressed in the Minister's letter • Summary of public input
Section 8(8)(e) Abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area	• Abnormal infestations

***Forest Act* Section 8 (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

- roads and permanent access structures

Roads, railways, hydro lines, pipelines, and landings are considered permanent access structure as they are not considered suitable for the growth of a commercial crop of trees or because they are required for a long enough time that prevents the timely regeneration of a commercial crop of trees. For these reasons, they are considered non-forest and are removed from the AFLB.

To estimate the reductions for roads, railways, hydro lines, and pipelines a buffer was applied to each side of the road using a geographic information system (GIS). The total right-of-way widths applied vary with the type of access structure: 30 metres for highways, 20 metres for local roads, 15.3 metres for main lines, 6.8 metres for secondary roads, 30 metres for railways and pipelines, and 50 metres for hydro lines. These access structures occupied a gross area of 18 294 hectares, and after accounting for overlaps with

other areas previously deducted in the classification process, a net area of 9515 hectares was removed from the AFLB.

Data for the past 10 years from the Reporting Silviculture Updates and Land Tracking System (RESULTS) indicate that a reduction of five percent of the THLB would account for future roads. The total area removed from the THLB for future roads was 936 hectares.

Based on a report prepared by the consultant, Forsite, and local staff knowledge, it was estimated that a reduction of 2.8 percent of the THLB is required to account for landings. However, this base case did not account for this reduction. A sensitivity analysis indicated that removal of the landings would decrease long-term timber supply by 0.3 percent.

For this factor, I conclude that the base case overestimated long-term timber supply by about 0.3 percent. As discussed under '**Reasons for Decision**', I account for an overestimation of long-term timber supply of 0.3 percent to adjust for landings in my determination.

- *old growth management/landscape-level biodiversity*

The KBHLPO specifies targets for the minimum area of old and mature forest required to contribute to landscape-level biodiversity objectives. Targets are specified by biogeoclimatic zone and by landscape unit. Old growth management areas (OGMA) contribute to achieving the biodiversity objectives of the KBHLPO. In this TSA OGMAs are spatially identified but are not legally established.

A total area of 264 791 hectares of OGMAs were identified in the TSA. After accounting for overlaps with other deductions a net area of 44 147 hectares was removed from the THLB in the base case.

The spatial OGMAs in this TSA are not sufficient to meet the old growth targets specified in the KBHLPO. For most landscape units in the TSA, the amount of old forest currently present is below the minimum requirements specified in the KBHLPO. In the base case, in addition to excluding OGMAs, the KBHLPO aspatial old forest management objectives were modelled to restrict harvesting so that the target amounts of old and mature forest can be met as stands become older in the future.

The KNC have raised ongoing concerns regarding the state of old growth forest management in the TSA. As described under '*First Nations engagement***'**, the Ktunaxa FSD recommends forest management practices that will address those concerns. There were 94 written submissions from members of the public expressing disapproval with the way old-growth forest is managed in the TSA.

In response to KNC's concerns regarding old-growth management in the TSA, staff modelled two scenarios to provide information on the implications of changing management practices to meet those concerns. Instead of using the existing OGMAs, a new dataset was created using priority old-growth areas identified by the independent technical advisory panel (discussed below), old growth not identified as priority old growth, and the oldest of the remaining mature forest in the AFLB. The first scenario modelled meeting the KBHLPO targets for old- and mature-forest using the dataset created (without any contribution from parks). This scenario showed that in the short term, timber supply would be 7.4 percent lower than in the base case. Long-term timber supply would be 8.9 percent lower than the base case. The second scenario modelled meeting 50 percent of the range of natural variability (RoNV) targets (also without any contribution from parks). This scenario showed that in the short-term timber supply would be 25.4 percent lower than in the base case. Long-term timber supply would be 21.2 percent lower than the base case.

I am also concerned that the KBHLPO targets for old forest in the TSA are not being met. I was presented with information showing that stands greater than 140 years old make up 9 percent of the THLB and 41 percent of the non-THLB. The information also showed that most of these stands were less than 250 years old. I expected that since this TSA is in the interior wet belt there would be greater amount of stands greater than 250 years old. Staff informed me that fires in the late 1800's are largely responsible for this age class distribution, and I note that the KBHLPO requirements were appropriately

modelled in the base case. Under '**Implementation**', I ask that staff update me on the status of the KBHLPO targets in the TSA.

Technical advisory panel

In June 2021, government convened an independent Old Growth Technical Advisory Panel (TAP) to identify at-risk old growth ecosystems and prioritize areas for temporary deferral from harvesting. The TAP identified 2.6 million hectares of BC's most at-risk old growth forests for deferral, including priority old forest with large trees (1.7 million hectares), ancient forest (400 000 hectares) and rare forest (500 000 hectares).

In August 2022, the Kootenay-Boundary Region received unanimous support for the implementation of at-risk old-growth forests deferrals from all First Nations with traditional territory in the region. In the Kootenay Lake TSA, at-risk old-growth forests deferral areas cover 54 892 hectares of AFLB, of which 6404 hectares are in the THLB. Licensees operating in the TSA have agreed to not harvest the at-risk old-growth forest until a final decision on old-growth management is made.

The base case harvest projection for the Kootenay Lake TSA includes the 6404 hectares of at-risk old-growth forest in the THLB. A sensitivity analysis which removed the at-risk old-growth forest from the THLB showed that timber supply would be reduced by 5.6 percent in the short term and by 3.8 percent in the long term.

I do not have the authority to make land use decisions regarding the amount of area protected for old growth management in the province. However, I note that there is unanimous support from all First Nations with traditional territory in the region for the implementation of at-risk old-growth forests deferrals. I also note that licensees have agreed to not harvest the at-risk old-growth forest until a final decision on old-growth management is made. As such, I expect that there will not be any harvesting of the at-risk old-growth forests identified for deferral in this TSA.

As noted above, under '*old growth management/landscape-level biodiversity*', I am concerned about the amount of old forest in this TSA currently below the minimum requirements specified in the legally established KBHLPO. I am aware that based on the KBHLPO old forest definition, 3879 hectares of the at-risk old-growth forest identified for deferral, or about 60 percent (3879 hectares / 6404 hectares), is old and the remainder is not old. I am also aware that there is a total of 5154 hectares of old forest in the THLB, including the portion of the at-risk old-growth forest identified for deferral, that meets the KBHLPO definition. This leaves approximately 1275 hectares of old forest in the THLB that is available for harvest (5154 hectares – 3879 hectares). Based on this information and considering the KBHLPO old growth management requirements for this TSA, I expect that the contribution of old forest to harvesting will be limited.

Since removing the at-risk old-growth forest areas identified for deferrals (which includes approximately 40 percent of forest that is not old) reduced short-term timber supply by 5.6 percent, removing all old-growth forest would reduce timber supply in the short term by 4.6 percent. While I do not have the authority to prescribe management practices, I am aware of the need to ensure that there is flexibility for the implementation of appropriate long-term measures for old forest management that reflect the evolving management expectations around old growth.

As the base case includes the at-risk old-growth forest identified for deferral, I conclude that avoiding harvesting of the at-risk old-growth forest identified for deferral may lead to over-harvesting the portion of the THLB not considered priority at-risk old-growth forest. Further, given the amount of old forests in this TSA, I conclude that there is a risk of overharvesting the forest that is not old. As discussed under '**Reasons for Decision**', I will specify a partition limiting the harvest in the THLB in both the older and younger forests. I acknowledge that a portion of the priority deferral areas identified by TAP is not old and while I do not expect harvesting in this portion, I conclude that the partitions I will specify will ensure

a sustainable level of harvest in this TSA while a long-term management approach for old growth is finalized.

- recreation and the Dewdney heritage trail

Under the *Heritage Conservation Act*, Section 9(1)(a), the Dewdney heritage trail, along with a 100-metre buffer on either side, is a protected area. In the base case, 46 hectares of AFLB, and 23 hectares of THLB were excluded from harvesting to account for the portion of the Dewdney heritage trail in the TSA.

Areas known as Crown Use, Recreation and Enjoyment of the Public (UREP) are designated under the *Land Act,* but they are not reserved from harvesting. In the Kootenay Lake TSA, there are 55 UREPs, covering a total of 3531 hectares. In the base case, there are 256 hectares of UREPs in the THLB. District records indicate that there was some harvesting in UREPs.

Established under the FRPA, there are two interpretive forests, 41 recreation reserves, 81 recreation sites, and 308 trail sections (approximately 41 km) established in the Kootenay Lake TSA. The management strategies for recreation under FRPA do not preclude harvesting in these areas and they were included in the THLB. District records indicate that there was some harvesting in recreation areas.

Staff informed me that harvesting in recreation areas must be authorized by a recreation officer and it is likely that the rate of harvesting in these areas would be much less than in other areas of the THLB. I concur with staff, and under '**Reasons for Decision**', I will account for a small unquantified overestimation of short- and long-term timber supply attributable to recreation.

- riparian reserves and management areas

Riparian areas are transition zones between aquatic areas such as lakes, streams or wetlands, and drier upland areas. Riparian areas provide key habitat for various fish, plant and animal species and provide help conserve water quality and biodiversity while also providing for habitat connectivity.

Riparian management objectives have been established to minimize or prevent impacts of forest and range practices on these aquatic resources. Riparian areas along lakes, wetlands and streams provide key habitat for fish and wildlife and help conserve water quality and biodiversity. The Forest Planning and Practices Regulation (FPPR) requires protection of riparian areas. It defines riparian classes and specifies minimum widths of reserve and management zones for streams, wetlands, and lakes. Stream classes are based on stream width and fish presence, and whether the streams are within a community watershed. Riparian management objectives have been established to minimize or prevent impacts of forest and range practices on these aquatic resources.

In the base case, lakes and streams were buffered to reflect the riparian reserve zone and riparian management zone widths specified in the FPPR. In the Kootenay Lake TSA, 36 407 hectares were within a riparian buffer, and 9179 hectares of this total were removed from the THLB.

BCTS commented that although a buffer is not required for S6 streams, they leave a riparian reserve zone of 10 metres for these streams east of Kootenay Lake in the Ktunaxa and Penticton Indian Band consultation areas.

KNC stated that wider riparian buffers are necessary and consistent with their requirements for more sustainable forest management in their territory. Implementing the riparian buffers specified in their FSD would reduce the THLB by 5.8 percent and reduce short-term timber supply by 8.6 percent. Long-term timber supply would be reduced by 8.0 percent. Staff informed me that there is anecdotal evidence that some licensees have implemented or partially implemented these buffers in some cutting permits. Since the extent to which this practice is occurring is not known, it was not reflected in the base case.

It is beyond the scope of my authority to require forest practices beyond those specified in legislation. Future AAC decisions will account for any changes in forest practices. I note that it is current practice for BCTS to leave buffers along S6 streams and the base case did not account for this practice. In addition,

there is anecdotal evidence that in some situations wider buffers are being left by some licensees. Under '**Reasons for Decision**', I will account for a small, unquantified overestimate of the base case timber supply attributable to wider riparian buffers.

- terrain stability and environmentally sensitive areas

Landslide hazard information is useful for planning safe operations and avoiding environmental issues. Terrain stability mapping (TSM) provides an assessment of where existing or potential development may be affected by landslide hazards or slope stability. Where TSM is not available, older environmentally sensitive area (ESA) mapping is used to assess terrain stability. TSM mapping includes reconnaissance terrain stability mapping which has three stability classes (stable, potentially unstable, and unstable), and detailed terrain stability mapping which has five hazard classes (I, II, III, IV, V).

In the base case, 90 percent of areas considered unstable or in hazard class V were excluded from the THLB. Thirty percent of areas considered potentially unstable or in hazard class IV were excluded from the THLB. ESA polygons with extremely fragile or unstable soils, ESA 1 (high), were completely excluded from the THLB. In this TSA, 127 902 hectares of AFLB are mapped as unstable, potentially unstable or as ESA1. Of this total, 14 877 hectares remain in the THLB after accounting for overlaps with other categories of land base removals.

Comments from KNC and the public recommend that 100 percent of the areas considered unstable or potentially unstable should be removed from the THLB.

I understand the concerns regarding harvesting in unstable and potentially unstable terrain. I also note that harvesting records show that some harvesting has occurred in unstable terrain and a greater amount of harvesting occurred in potentially unstable terrain. An examination of the data shows that almost all of the unstable and potentially unstable terrain are in steep slopes. I will therefore account for unstable terrain below under '*steep slopes'*.

- steep slopes

In the Kootenay Lake TSA slopes greater than 40 percent are considered steep slopes. Steep slopes account for approximately 34 percent (57 966 hectares) of the THLB in the TSA. During the period 2010 to 2019, approximately 26 percent of the area harvested was from steep slopes. In the base case 50 percent of the volume harvested during the first decade was from steep slopes.

It is important that the current operational harvest profile align with the profile modelled in the base case. Under harvesting in steep slopes indicates that the THLB modelled in the base case may be operationally unattainable resulting in an overestimation in the base case timber supply.

A sensitivity analysis showed that restricting harvest on steep slopes to the historic level of 26 percent resulted in a reduction of 11.4 percent to short-term timber supply. I note that there is a significant risk that timber supply may be overestimated unless licensees are able to increase their harvest from steep slopes.

Wildsight, an environmental organization in the region, commented that THLB reductions should be based on industry performance. It was suggested that only 50 percent of the slopes between 40 and 70 degrees should be included in the THLB to reflect industry performance more accurately.

An analysis of the data by terrain classification and slope shows that of the 14 877 hectares of unstable and potentially unstable terrain in the THLB, almost all (12 181 hectares or 7.2 percent of the THLB) are on steep slopes. Considering that for the base case harvest projection to be realised, licensees will have to double their rate of harvest from steep slopes, I conclude that the base case overestimates timber supply. I will therefore reduce the base case timber supply projection by 7.2 percent (the proportion of the THLB on unstable and potentially unstable terrain on steep slopes) to account for a more realistic level of harvesting on steep slopes.

The stable terrain in steep slopes amounts to 45 785 (57 966 – 12 181) hectares, which is 27 percent of the total THLB. This more closely aligns with the recent level of harvesting (26 percent) occurring on steep slopes. For this determination to be sustainable, the harvest profile must align with the THLB profile modelled in the base case. Under '**Reasons for Decision**', I will account for a 7.2 percent overestimation of short- and long-term timber supply attributable to terrain stability and steep slopes.

- stand-level biodiversity

One objective under FRPA is to maintain structural diversity in managed stands by retaining wildlife-tree patches in each cutblock. The default practice requirement for wildlife-tree retention under FRPA is a minimum of 3.5 percent area retention in each block and seven percent retention overall for blocks logged in a 12-month period.

To determine a reasonable deduction for wildlife-tree retention, staff used RESULTS data to calculate the proportion of the existing retention that is located within the THLB relative to the retention area located within the AFLB outside the THLB. Applying this proportion to the seven percent required by FRPA indicated that the THLB should be reduced by five percent to account for stand-level biodiversity. In the base case the THLB was reduced by five percent (9831 hectares) to account for stand-level biodiversity.

A subsequent analysis of RESULTS data for the broader period of 2008 – 2018 showed that wildlife tree retention is 12.8 percent. After accounting for the proportions within the THLB and outside the THLB, it was determined that the reduction for stand-level biodiversity should have been 8.75 percent. A sensitivity analysis showed that reducing the THLB by an additional 3.75 percent (8.75 - 5.0) would reduce short- and long-term timber supply by 4.2 percent.

KNC commented that their FSD requires that 10 percent of harvested areas be maintained for wildlife tree retention. Wildsight commented that the seven percent wildlife tree retention target should be applied in full without considering overlapping area exclusions such as OGMAs, inoperable, and riparian reserves.

I note that in this TSA the actual retention for stand-level biodiversity is 12.8 percent and that this reduction accommodated the concerns of the KNC and Wildsight. Under '**Reasons for Decision**', I will account for a 4.2 percent overestimation of timber supply in the base case attributable to increased wildlife tree retention.

- First Nations cultural heritage resources

A cultural heritage resource is defined in the *Forest and Range Practices Act* as, "an object, site, or location of a traditional societal practice that is of historical, cultural or archaeological significance to the province, a community, or an aboriginal people". Cultural heritage resources include archaeological sites, structural features, heritage landscape features, and traditional use sites.

Indigenous cultural heritage, however, is broader in its definition. Indigenous cultural heritage encompasses land, resources, creation stories, histories, knowledge, practices, relations, and language. It also includes all the places, spiritual areas, and objects that are linked to Indigenous history and traditions: transformer places, archaeological sites, trails, hunting grounds, gathering areas, burial grounds, artifacts, and cultural objects and materials.

There are 266 known archeological sites in the Kootenay Lake TSA. These sites average less than 0.5 hectares each and the total area is 121 hectares. In the base case, archaeological sites were not excluded from the THLB because of their small size. After accounting for overlapping exclusions, 28 hectares of archeological sites remain in the THLB.

Licensees receive information about cultural heritage sites through information sharing and consultation with First Nations. Cultural heritage resources are often situated near water bodies and can therefore be protected by being included as riparian areas, or by creating a wildlife tree retention area where wildlife values also exist. Where necessary, licensees alter development plans to mitigate impact to these sites.

Ktunaxa Nation Council do not agree that archaeological or cultural sites should be expected to be co-located such that they simultaneously meet other retention objectives.

I conclude that archaeological sites should have been accounted for in the base case. I note that the THLB for the base case is overestimated by 28 hectares and under '**Reasons for Decision**', I will account for a small overestimation of timber supply attributable to First Nations cultural heritage resources.

- Qat'muk Indigenous Protected and Conserved Area

Indigenous Protected and Conserved Areas (IPCA) are areas that Indigenous Nations identify for conservation. The Qat'muk IPCA is an area with cultural and spiritual values for the Ktunaxa. The IPCA, also known as the Jumbo Valley, straddles the boundary of the Kootenay Lake and the Invermere TSAs.

Discussions on the IPCA boundaries and activities allowed within those boundaries are underway. Upon completion of those discussions, KNC would like the decisions to be fully reflected by current management within the TSA.

It is beyond the scope of my authority to make land use decisions attributable to the amount of area to be reserved for IPCAs. I am also aware of government's desire for reconciliation with First Nations and the government's intention to change the way forests are managed in this province. If the creation of this IPCA significantly affects the sustainability of the AAC I determine, there are mechanisms to adjust the AAC of the TSA until another determination is made. For this determination I will not make any adjustments to the base case harvest projection to account for the proposed Qat'muk IPCA.

- volume estimates for managed stands

Managed stands are those stands that have been harvested and are now regenerated. To produce volume tables for managed stands, FAIB used RESULTS data to incorporate both planting data as well as free-growing survey data, thus accounting for species changes after planting due to ingress or mortality. A managed stand yield table was developed for every existing managed stand. Where data was insufficient to generate a yield table, stands were assigned an aggregate yield table. Those tables were produced using a species composition and stem density derived from averages calculated for each biogeoclimatic zone and subzone based on recent planting history in the TSA.

In this analysis, managed stand volume projections were developed using Table Interpolation Program for Stand Yields (TIPSY). TIPSY provides yield tables for single-species and even-aged stands based upon the interpolation of yield tables generated by the individual tree growth model Tree and Stand Simulator (TASS). Mixed species yield tables generated by TIPSY are weighted averages of single-species yield projections and do not directly consider inter-species interactions. BatchTipsy Composer version 5.0 was used for this analysis.

To verify that managed stand growth aligns with the TIPSY volume projections FAIB initiated a Young Stand Monitoring (YSM) sampling program across the province. In the Kootenay Lake TSA 46 YSM plots were established in 2011 and 2012. These plots were remeasured in 2016 and the data indicates that TIPSY yield projections underestimate measured plot volume.

I note that YSM sample data suggest that the managed stand yield tables underestimate stand volume. Since these stands are expected to contribute to the harvest about 60 years from now, I conclude that the volume projections for managed stands underestimate timber supply by an unquantified amount in the long term. Under '**Reasons for Decision**', I will account for an unquantified underestimate of future timber supply attributable to managed stands in the long term. Under '**Implementation**', I will request that staff continue the young stand monitoring program in this TSA.

- volume estimates – SDM study

Staff reported that young lodgepole pine stands planted in the ICH biogeoclimatic zone are susceptible to damage from insects, disease, animals (e.g. bears), and weather-related effects (e.g. snow breakage). Stand Development Monitoring (SDM) plots were established in 30 openings to examine the effect of those agents on volume growth. The plot data show that these stands have 22 percent less volume compared to unaffected, healthy stands. Affected lodgepole pine stands in the TSA occupy 2885 hectares or 1.7 percent of the THLB. A sensitivity analysis which reduced the volume contribution of affected stands by 22 percent showed that long-term timber supply is overestimated by 0.4 percent.

Under '**Reasons for Decision**', I will account for a 0.4 percent overestimation of long-term timber supply attributable to forest health agents on lodgepole pine growing in the ICH biogeoclimatic zone.

(iii) silviculture treatments to be applied to the area

- silviculture systems

Clearcuts and clearcut with reserves are the primary silviculture systems used in the TSA. RESULTS data for the period 2009 to 2022 inclusive showed that more than 93 percent of the silviculture systems used in the TSA were clearcut systems. In this analysis patch cuts are considered clearcuts. All harvesting was modelled as clearcuts with reserves in the base case.

I am encouraged to see that some partial harvesting occurred during 2009 to 2015. As discussed below under '*domestic watersheds'* and '*climate change'*, I expect that the proportion of partial harvesting will have to increase substantially in the future to harvest the full AAC. I urge licensees to dedicate more resources to partial harvesting systems to prepare for the effects of climate change.

For this determination I will not make any adjustments to the base case harvest projection to account for silviculture systems. However, I urge licensees to consider partial harvesting to manage water quality, adapt to climate change and to maintain and enhance timber supply.

(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

- community watersheds

There are 54 community watersheds in the Kootenay Lake TSA covering a total area of 84 063 hectares. Of this total, 52 984 hectares are within the AFLB, and 14 030 hectares are within the THLB.

The objective set by government contained in Section 8.2 (2) of the FPPR stipulates that the cumulative hydrological effects of primary forest activities in a community watershed: do not have a material adverse impact on the quantity of water or the timing of the flow of the water to the waterworks, or do not have a material adverse impact on human health that cannot be addressed by water treatment.

Forest management objectives for community watersheds are not standardized but are prescribed based on a hydrological assessment of the watershed. At present, licensees in the TSA have commitments in forest stewardship plans requiring them to complete hydrologic assessments of community watersheds and to abide by the recommendations of the assessments.

The base case modelled a management objective where no more than 30 percent of the THLB within each watershed could be less than 17.3 metres in height at any given time over the planning horizon.

The Forest Stewardship Council of Canada suggests that there should be no more than 25 percent of the THLB within each watershed less than 17.3 metres in height. A sensitivity analysis modelling the 25 percent limit showed the same initial harvest level as in the base case. However, this harvest level could be maintained for only 35 years rather than 40 years as was possible in the base case.

There were 82 comments received from the public expressing concern about the impacts of management practices on water quality in community watersheds. The main themes of the comments were: forests play an important role in maintaining water quality and quantity for fish and human consumption; 30 percent of the TSA is within community watersheds; remove community watersheds from the THLB; the current harvest level does not protect drinking water; clearcut harvesting increases flooding risk.

It is beyond the scope of my authority to prescribe forest management practices to be applied in community watersheds. I note that the base case modelled the disturbance limit used in current practice and that the immediate short-term timber supply was not affected if a lower disturbance limit was used. For this determination I will not make any adjustments to the base case harvest projection to account for community watersheds.

- domestic watersheds

Many residents in the TSA rely on small streams for their water supply. The KBHLPO has provisions for management of consumptive use streams. Small streams (S5 and S6) that are upstream from water intakes are required to have a 30 metres management zone within which site-specific measures to safeguard water used for human consumption are to be taken. Hydrological assessments may be completed by licensees in domestic watersheds similar to those in community watersheds.

There are 48 609 hectares (29 percent) of THLB within domestic watersheds in the Kootenay Lake TSA. There were no additional forest management objectives modelled for domestic watersheds in the base case.

District staff reported that licensees are not avoiding the domestic watersheds but rather accessing them to the limits of public acceptance. During the period 2010 to 2019, 25.5 percent of the harvest was within domestic watersheds. In the base case 37.7 percent of the projected harvest for the first 10 years is from domestic watersheds.

Two sensitivity analyses were completed to assess the effect of alternate management practices within domestic watersheds. In the first sensitivity analysis, the rate of harvest was limited to the rate practiced in community watersheds (i.e. no more than 30 percent of the THLB within each domestic watershed could be less than 17.3 metres in height at any given time). This analysis showed that timber supply would be reduced by 2.8 percent in the short term and by 0.2 percent in the long term.

In the second sensitivity analysis the timber supply contribution from domestic watersheds was limited to the historic contribution level (26 percent). This analysis showed that timber supply would be reduced by 8.3 percent in the short term and by 2.0 percent in the long term.

Comments from the public regarding domestic watersheds were the same as those documented under '*community watersheds*'. District staff are concerned that the public is unlikely to accept a rate of harvest higher than the historic level. Unless the rate of harvest increases significantly it is not likely that the short-term timber supply projected in the base case will be attainable. I share these concerns, and under '**Reasons for Decision**', I will account for an unquantified overestimation of short-term timber supply attributable domestic watersheds. Under '**Implementation**', I ask that staff provide me annual reports regarding the volume of timber harvested in domestic watersheds. I urge licensees to consider alternative methods of harvesting, such as partial cutting, to reduce the impact of their activities in these watersheds.

- climate change

In May 2021, staff prepared a report, *Kootenay Lake TSA Climate Change Analysis*, for consideration in this TSR. Using data from the Pacific Climate Impact Consortium for northwest North America for the period 1942 to 2012, current climate trends were calculated for the Kootenay Lake TSA. The data showed that during this period mean annual temperature increased by 1.0^0 C, with winter warming the most (1.6^0 C). During this same period mean annual precipitation increased by 14 percent. Precipitation

increased by 53 percent in the spring, and by 33 percent in the summer. In contrast, winter precipitation decreased by 14 percent.

Estimates of future temperature and precipitation were projected using the Climate BC v6.40 climate model. It is projected that during the period 2041 to 2070 mean annual temperature may increase by 3.2^0 C. Annual precipitation is projected to increase by 5.1 percent. The largest increase in precipitation is expected in spring (11.8 percent), and summer is expected to be drier (-8.9 percent). Annual precipitation as snow is expected to decrease by 30.1 percent.

Future climate projections indicate a higher drought risk especially in the summer. Although there may be more frost-free days and growing-degree days, moisture availability may limit the potential for increased tree growth. It is also likely that the projected hot dry conditions will limit the natural defences of trees from disturbances such as fires and pests.

KNC commented that accelerating climate change, together with cumulative effects, is putting cultural values, ecosystems, and biodiversity at risk. They pointed out that the KESS harvest projection, which is 49 percent lower than the base case, represents less risk to cultural values, improved climate change mitigation, and carbon benefits. There were also numerous comments from the public expressing concern about impacts of climate change on forests. The public was concerned that climate change would lead to reduced timber supply because of increased risk of fires, floods, extended regeneration delay, blowdown, and insect and disease outbreaks.

Staff informed me that there are efforts to mitigate and adapt to climate change in the Kootenay/Boundary Region. Examples of those efforts include deferring the harvest of priority at-risk old-growth forest; using climate-adapted seed for forest regeneration; applying fertilizer to increase the rate of carbon sequestration in targeted stands; and adopting wildfire risk reduction stocking standards in high-risk fire areas.

Drought risk assessment

Projected climate change is expected to shift many ecosystems toward warmer and drier conditions, which would result in reduced soil moisture over the long term. Increases in drought could have far-reaching impacts on forests, both directly, through impacts on tree growth and survival, and indirectly, through drought-related increases in the frequency of disturbances such as fire and insect outbreaks.

For this timber supply review, staff explored the implications of increased drought-related mortality on timber supply. The Stand-Level Drought Risk Assessment Tool was used to classify stands based on current and future risk of drought-induced mortality. Stands were classified as either low, moderate, high, or very high risk based on biogeoclimatic zone, relative soil moisture regime, and leading species in the stand. This classification showed that stands having a high to very high drought risk are primarily in the southern portion of the TSA. There was a higher proportion of stands with moderate or higher drought risk in the ICH biogeoclimatic zone than there were in the ESSF zone.

The base case harvest projection was analyzed showing the amount of harvest occurring in each risk category. This analysis showed that by the year 2070 more than 50 percent of the harvest is projected to be contributed from stands with moderate or higher drought risk.

A sensitivity analysis was conducted where stands were prioritized for harvest based on drought risk. This analysis showed no change compared to the base case harvest projection. In discussions with staff, I note that the base case did not account for stand mortality due to drought risk. I expect that the base case timber supply would have been lower if it accounted for mortality due to drought risk. I encourage licensees to use the Stand-Level Drought Risk Assessment Tool when scheduling harvesting to minimize losses due to drought.

Dry sites

To explore the potential impacts of climate change on timber supply, existing natural stands in the driest biogeoclimatic subzone (ICHxw), and the south and southwest facing sites of the second driest biogeoclimatic subzone (ICHdw1), were removed from the THLB after being harvested for the first time.

The total area of dry sites within Kootenay Lake TSA is 26 166 hectares, of which 11 323 hectares are in the THLB. Removing dry sites from the THLB after they are harvested reduces the long-term harvest level by 22 percent.

I note the concerns expressed by the KNC and the public regarding the potential effects of climate change. I support the efforts being made by the Ministry to mitigate and adapt to the current and projected effects of climate change. I expect forest management practices for adapting to climate change will evolve as more knowledge and experience is gained.

While I do not have the authority to prescribe forest management actions, I expect such actions will be mandated as forest landscape planning occurs within the Kootenay Lake TSA. The requirement for regular AAC determinations provides the ability to incorporate actions taken in response to climate change in future AAC determinations. Considering the changes in climate already experienced and projected changes described here, I expect that future timber supply will be reduced as the effects of climate change unfold. For this determination, as described under '**Reasons for Decision**', I will account for an unquantified long-term overestimation of timber supply in the base case harvest projection due to climate change.

- *carbon sequestration*

The 'carbon cycle' refers to the constant movement of carbon from land and water through the atmosphere and living organisms. Forests are a vital part of the carbon cycle, both storing and releasing carbon in a dynamic process of growth, decay, disturbance, and renewal, thus making them important from a carbon and climate change mitigation perspective.

Forests act either as carbon sources or carbon sinks. A forest is considered a carbon source if it releases more carbon than it absorbs. A forest is considered a carbon sink if it absorbs more carbon from the atmosphere than it releases. The net ecosystem carbon balance (NECB) is used to describe the net change between the given ecosystem and the atmosphere. If the atmosphere is used as a base, a positive NECB means the atmosphere carbon pool is increasing and the given ecosystem is a carbon source, while a negative NECB means the atmosphere carbon pool is decreasing and the ecosystem is a carbon sink.

Five terrestrial carbon pools have been defined by the Intergovernmental Panel on Climate Change (IPCC): above ground biomass carbon, below ground biomass carbon, dead organic matter, forest floor litter, and soil organic carbon. The sum of all five pools is referred to as total ecosystem carbon (TEC).

A carbon analysis of the base case harvest projection was completed using carbon budget model – Canadian forest sector version 3 (CBM-CFS3) to project carbon dynamics over the first 100 years in the TSA. Sources of greenhouse gases modelled were harvesting, wildfires, non-recoverable losses due to insects and disease, and road building. In accordance with the *British Columbia Greenhouse Gas Offset Protocol: Forest Carbon* (Draft, 2022), the retention factor for harvested wood product (HWP) in use after 100 years was 0.06, and the HWP in landfill was treated as a one-time emission.

The TSA is a net carbon sink (NECB < 0), with an annual carbon gain of about 0.5 Mt CO2e over the 100-year projection period. The major source of carbon emission is timber harvesting, which releases about 0.5 Mt CO2e per year (all the harvested logs are treated as one-time emission). Other sources of carbon were from wildfires, slash burning, future road building, and non-recoverable losses.

A carbon analysis of the KESS management practices and harvest projection was also conducted for this TSR. The analysis showed that the annual carbon gain from KESS is approximately 64 percent higher than in the TSR base case (average ~0.82 Mt CO_{2e} per year of net carbon gain in KESS compared to gain ~0.5 Mt CO_{2e} in the TSR base case).

I note that in both the TSR base case and the KESS the TSA is a carbon sink. The carbon analysis conducted for the Kootenay Lake TSA provides useful information to understand the impact of the base case harvest projection on forest carbon and greenhouse gas emissions. Any reduction in timber harvesting will result in the TSA being an even greater carbon sink. I note the loss of ecosystem carbon from slash burning and I urge licensees to increase biomass utilization to reduce greenhouse gas emissions. I will not make any adjustment to the base case harvest projection to account for forest carbon.

- *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 provincial cumulative effects team has developed a framework, the cumulative effects framework (CEF), for assessing cumulative effects on high priority values and implementing cumulative effects assessments across the province.

Currently, the CEF is focused on developing current condition reports and online data platforms for five environmental values: aquatic ecosystems, forest biodiversity, old growth forest, grizzly bear, and moose. In the Kootenay Lake TSA, there are current condition reports available for grizzly bear and aquatic ecosystems.

Grizzly bear

The current condition report for *Grizzly Bear in the Kootenay-Boundary Region (2019 Analysis)* was released in May 2023. Ten indicators were used to describe and assess the status of grizzly bear populations and habitat. The results of the current condition report show that grizzly bear population units within the Kootenay Lake TSA (North Purcells, Central-South Purcells, Central Selkirk, South Selkirk and Yahk population units), have a moderate or high conservation concern.

Aquatic ecosystems

The watershed hazard assessment for the Kootenay Boundary region is summarized in an online GIS application and conveys the results of the *Provincial Interim Assessment Protocol for Aquatic Ecosystems* (Version 1.3) for assessing the current condition of watersheds across British Columbia. The assessment estimates the potential sensitivity of watersheds to further disturbances for three ecosystem values: high flow (water quantity), sediment (water quality), and riparian (aquatic habitat).

For the Kootenay Lake TSA 40 percent of the assessment units showed a high hazard rating for high flow, 54 percent had a high rating for sediment, and 55 percent showed a high hazard for riparian.

The KNC noted the lack of regionally specific cumulative effects reports. Six comments were received from the public suggesting that the AAC be lowered to mitigate the cumulative effects of industrial harvesting.

I recognize that work is continuing to provide assessments for the remaining three ecosystem values and that this work will be considered in future AAC decisions. While it is beyond the scope of the chief forester to give direction on forest practices, I will be mindful of the projected cumulative effects to forest values as I make this AAC determination.

- *wildlife habitat supply*

Recent court decisions have stated that decision makers must consider the potential implications of their decisions on First Nations' rights to harvest wildlife (e.g., hunting, trapping, fishing, and trading) using credible information. To address this need for timber supply reviews, wildlife habitat supply models were completed for seven wildlife species in the Arrow, Cranbrook and Invermere TSAs. KNC was consulted on the selection of priority wildlife species and given an opportunity to comment on the potential subset of species to be modelled. The species selected included flammulated owl, northern goshawk, Williamson's sapsucker, Rocky Mountain elk, mule deer, grizzly bear, and American marten. For this TSR, KNC also requested habitat analyses for the northern myotis and/or the little brown myotis. These species are listed as "endangered" under the Government of Canada's *Species at-r Act* (SARA) and are protected by SARA measures for listed wildlife species.

The data and wildlife habitat supply models were either not available or were not updated to address concerns raised by KNC. In the Kootenay Lake TSA, two scenarios for old-growth management and additional habitat analyses for three species, northern goshawk, grizzly bear, and caribou, were agreed upon in lieu of the wildlife habitat supply modelling. These analyses were completed to provide information on the potential implications of the TSR decision on wildlife and KNC's interests.

The analyses for old-growth management were discussed earlier under '*old growth management/landscape-level biodiversity'*.

Grizzly bear

Two sensitivity analyses and one calculation of road density were conducted to understand the impacts of timber harvesting on grizzly bear habitat. The sensitivity analyses for grizzly bear were based on the findings of Michael Proctor, Clayton Lamb, and Grant MacHutchon (2017). Proctor *et al.* found that two key factors consistently influenced grizzly bear habitat selection and demographic processes: huckleberry patches and the availability of secure habitat. Based on this work, areas of value to grizzly bears were classified as high, medium, or low priority.

In the first sensitivity analysis, high priority areas were excluded from the THLB. This reduced the THLB by 9557 hectares (5.7 percent). This analysis showed that short-term timber supply could be maintained for only 25 years rather than the 45 years in the base case. Mid- and long-term timber supply would be six percent lower than the base case projection.

In the second sensitivity analysis, high priority areas were excluded from the THLB and the volume harvestable from medium- and low-priority areas were reduced by 50 percent and 30 percent respectively. This analysis showed that short-term timber supply could be maintained for only 20 years rather than the 45 years in the base case. Mid- and long-term timber supply would be 13.5 percent lower than the base case harvest projection.

The third analysis was conducted to estimate current road density in the grizzly wildlife habitat area (WHA). The grizzly WHA is in the southeastern corner of the TSA covering about 192 square kilometres and there are approximately 427 kilometres of roads within the WHA. Harvesting is permitted in the WHA.

In the literature, the road density threshold for grizzly bears generally used is 0.6 km/km^2. Studies have shown that while grizzly bears can tolerate road densities between 0.6 and 1.2 km/km^2, they significantly prefer habitats with road densities below 0.6 km/km^2. Currently, road density within the WHA is 2.2 km/km^2.

I note that while short-term timber supply is not affected if the changes to management of grizzly bear priority areas described in the sensitivity analyses above are implemented, long-term timber supply could be from 6 to 13 percent lower. I reviewed the results of the analysis of road density in the grizzly bear

WHA and note that it is significantly higher than the generally accepted threshold that grizzly bears usually tolerate. I request that licensees prioritize road rehabilitation and utilize existing road systems as much as possible rather than adding to existing road densities.

Caribou

Three Southern Mountain caribou populations and five herds occur within the Kootenay Lake TSA: Central Selkirks (Nakusp and Duncan herds), South Purcells (North and South Purcell herds) and South Selkirks (South Selkirk herd). Southern Mountain caribou populations are listed as threatened under the SARA and are provincially red listed (e.g., species at risk of extinction or extirpation).

Three GAR orders, covering a total area of 212 757 hectares, were established in 2009 to protect caribou habitat in the TSA. While timber harvesting is allowed in a small portion of the area (962 hectares), there will not be any harvesting allowed after 2028. The THLB in the base case does not include any land specified in the GAR orders.

The Provincial Caribou Recovery Program (PCRP) is working on provincial strategies to ensure BC is meeting or exceeding provincial and federal population and habitat objectives for caribou. The recovery strategy for caribou populations has two components: legal objectives for sustaining the distribution and abundance of all southern mountain caribou populations; and spatially delineated caribou core habitat (low elevation winter and summer range, high elevation winter and summer range, and matrix types). Core areas are where caribou forage, calve, migrate, and breed. Matrix areas surround core areas and influence caribou activities throughout the year. The PCRP has not yet made a final decision on core and matrix areas.

KNC requested that the ongoing work of the PCRP be considered when assessing caribou habitat supply. They requested assessing that work using one of the draft proposals currently being reviewed by the PCRP. Two sensitivity analyses were conducted to examine the effect of caribou recovery management on timber supply using the draft proposal.

In the first sensitivity analysis draft core habitat was excluded from the THLB. Excluding core areas had no effect on short-term timber supply and reduced long-term timber supply by one percent compared to the base case. In the second sensitivity analysis, core habitat was excluded from the THLB, and within the AFLB of the draft matrix area no more than 12 percent of the forest could be less than 40 years old. This analysis showed that timber supply would be 4.7 percent lower in the short term, and 2.2 percent lower in the long term.

I am aware of the actions the government has already taken to protect caribou populations in BC. I note that if the measures for both core and draft matrix area requested by KNC are implemented, short-term timber supply may be overestimated by 4.7 percent. Consistent with my guiding principles, it is not appropriate for me to speculate on the timber supply impact arising from decisions that are yet to be made. As indicated in my considerations for old growth management, I do not expect harvesting of the at-risk old growth forests identified for deferral in this TSA, and I intend to specify a partition which will limit harvesting in old forests. I believe this partition would potentially benefit caribou as well, and I will discuss this further under '**Reasons for Decision**'.

Northern goshawk

Northern goshawk nest in mature and old-growth stands with a closed canopy and open understory for foraging. Populations are relatively widespread, with goshawk nests observed in both coniferous and deciduous forests that contain their preferred nesting and foraging features. The most significant factor threatening northern goshawk populations in British Columbia is the loss of mature and old forests.

Three analyses, using the West Kootenay Northern Goshawk nesting model, were completed to explore the impact of the base case and the KESS harvest projections on goshawk nesting habitat supply. The

land base was classified as being highly suitable or moderately suitable for goshawk nesting based on elevation, stand age, species composition, patch size, and slope. Crown closure was not modeled in the analyses.

The first analysis showed that high suitability nesting areas declined during the entire harvest projection period of 250 years. In the base case high suitability areas declined by 74 percent, and in the KESS high suitability areas declined by 57 percent. The second analysis showed that moderate suitability areas declined by 46 percent in the base case and by 20 percent in the KESS.

The third analysis looked at the effect of expected road development on high suitability areas. At the start of the projection there were 2724 patches that met the criteria for high suitability. Of those patches 52 were 50 hectares or larger. At the end of the projection period the base case contained 2501 patches of high suitability of which 19 were 50 hectares or larger. At the end of the projection period the KESS contained 3898 patches of high suitability of which 25 were 50 hectares or larger.

I note that neither the base case nor the KESS scenario provide a stable supply of suitable habitat and in both scenarios the number of patches greater than 50 hectares declined over the projection period. Staff informed me that licensees are required to leave a buffer around goshawk nests they find while planning operations. In keeping within the scope of my authority, I will not prescribe actions to manage goshawk habitat. Future AAC decisions will account for any changes in goshawk management practices.

I am aware that the resource values assessed are of particular importance to First Nations. I also expect Ministry staff and licensees continue to work with First Nations on planned actions for wildlife habitat management and mitigate the effects of timber harvesting on habitat values.

- non-recoverable losses

Non-recoverable losses (NRL) are timber volumes destroyed or damaged on the THLB by natural causes such as fire, wind, and disease that are not recovered through salvage operations and remain unutilized. These timber volumes do not include endemic losses that are incorporated within growth and yield model projections or epidemic losses specifically modelled.

Average annual NRL between 2009 and 2018 is 37 651 cubic metres. Of this total, wildfires accounted for 20 682 cubic metres. Staff explained that the large loss to wildfires is mostly because of the fires that occurred in 2018. Staff also informed me that there were wildfires in this TSA in 2021. Given the projections discussed under '*climate change'*, I expect this trend to continue. In the base case, 37 651 cubic metres per year was removed from the harvest to account for NRLs.

The non-THLB forest may also be disturbed by many factors such as fire, pests, wind, and road building. These disturbances influence both timber supply and requirements for non-timber objectives. In the base case a disturbance probability that included information on old-growth age and disturbance return interval was applied to the non-THLB.

Concerns about the impact of natural disturbances on forest ecosystems were received from the public. There is a concern that the information used to assessed NRLs is outdated and that in the future, NRLs will increase. I note that ongoing monitoring will provide information about NRLs that will be incorporated in future AAC determinations. I concur with the assumptions modelled in the base case and I will not make any adjustments to account for non-recoverable losses in this determination.

- Armillaria root disease

Ministry staff were concerned that losses due to Armillaria root disease are likely not accounted for sufficiently by the provincial default second operational adjustment factor (OAF 2) value of five percent that is applied in TIPSY. As such, the volume projections for managed stands are likely optimistic.

Since there was not any information on the extent of Armillaria root disease available specifically for the Kootenay Lake TSA, a sensitivity analysis was conducted based on the work done for the neighbouring

Arrow TSA. In that TSA a customized OAF 2 for Armillaria was developed based on biogeoclimatic zone moisture regime and leading species. Growth and mortality losses were developed for three levels of infection severity (low, moderate, and high).

The sensitivity analysis using the modified OAF 2 to account for Armillaria root disease shows a long-term harvest level that is 13.4 percent lower than for the base case. The sensitivity analysis did not consider the implications of reduced Armillaria impacts resulting from forest management treatments such as stumping.

I considered the sensitivity analysis described above and I note that it does not agree with the information I considered under '*volume estimates for managed stands'* where ground samples collected under the young stand monitoring program indicate the stands are likely growing better than projected by the managed stand yield tables. On this basis, I will not make any adjustments to the base case harvest projection. However, under '**Implementation**', I request that staff continue the young stand monitoring program in this TSA and have more definitive results for the next AAC determination.

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

- *wildland urban interface*

The Wildland Urban Interface (WUI) is an area within two kilometres of a community with a minimum density of six structures per square kilometer. This TSA is within the Regional District of Central Kootenay where there are several community wildfire protection plans available. These plans identify the wildfire risks within and surrounding a community and outline potential treatments to mitigate those risks. Since the area treated to date is very small, WUI treatments were not modelled in the base case.

There are 26 895 hectares of THLB (16 percent of the TSA THLB) within the WUIs in Kootenay Lake TSA. Of this total, 25 031 hectares are in risk class 1, the highest risk class. During the past 10 years, the area harvested in the WUI accounted for 12 percent of the total area harvested. In the base case, the area harvested in the WUI accounted for 26 percent of the total area harvested.

I urge licensees to increase harvesting in the WUI since the timber there is needed to support the base case harvest projection and since harvesting can be used to reduce fuel loads. Failure to increase harvesting in the WUI may lead to increased risk of fires and a reduction of timber supply. If harvesting does not increase in the WUI, I may consider setting a partition limiting harvest in the non-WUI portion of the THLB to reduce the likelihood of that portion of the land base being over-harvested.

- *grade 4 credit*

AACs reflect the merchantable volume understood to be available using the information contained in the forest inventory, research plots and projected by growth and yield models.

Operationally, the harvest level within a TSA is monitored through various tenure decisions and billing of harvest to those tenures. However, Section 17 (6) of the Cut Control Regulation allows licensees to apply to have grade 4 logs that are delivered to a non-lumber or veneer facility not count towards the volume attributed to their licence (this is often referred to as "grade 4 credit"). This allows the licensee to harvest an additional cubic metre of timber for each cubic metre that is approved under Section 17(6). Grade 4 logs are mostly from dead pine stands but can also originate from other species and can be either live or dead. Grade 4 credit is a tool that was developed to provide an incentive for the harvest of low-quality logs and promote higher levels of fibre utilization.

Regional staff conducted a review of harvest records which indicated that during the period 2015 to 2021, approximately 2.6 percent of the volume harvested annually qualified for grade 4 credit in the Kootenay Lake TSA.

Staff informed me that during the period 2010 to 2022, approximately 96 percent of the AAC in this TSA was harvested. Accounting for the grade 4 credit increases the annual harvest to 98.6 percent of the AAC. The AAC that I determine represents the maximum amount of timber that is available for harvesting and includes all grades. I am concerned that the practice of grade 4 crediting may lead to over-harvesting the AAC, especially since I am considering reducing the AAC of this TSA. Under '**Implementation**', I ask Regional staff to monitor the use of grade 4 credit in this TSA to ensure the AAC is not over-harvested.

- *unharvested volume carried forward*

In January 2018 the Ministry introduced a *Policy Regarding the Administration of Unharvested Volumes, Uncommitted Volumes and Unused BCTS Volumes* (collectively referred to as accumulated volume). Accumulated volume, excluding BCTS volume, in the Kootenay Lake TSA is currently 399 383 cubic metres.

The base case harvest projection is predicated on the condition of the forest, including the amount of merchantable timber growing stock present, as of the date of the timber supply analysis. The standing forest was not depleted to account for potential harvesting of any accumulated ('undercut') volume in the TSA. Therefore, any volume harvested (including accumulated volume) that is above the AAC in this determination, constitutes use of the growing stock at a greater rate than projected in the base case, if the AAC were fully utilized.

I am not aware of plans to dispose of any portion of the accumulated volume and will therefore not make any adjustments to the base case harvest projection to account for accumulated volume.

Reasons for Decision

In reaching my AAC determination for the Kootenay Lake TSA, I considered the factors required under Section 8 of the *Forest Act* and reasoned as follows.

The base case showed that a harvest level of 640 000 cubic metres per year can be maintained for 45 years before decreasing to 586 000 cubic metres per year for the remainder of the harvest projection period of 250 years. The average volume harvested during the period 2010 to 2022 was 611 323 cubic metres per year (96 percent of the AAC).

I am satisfied that the assumptions applied in the base case for many of the factors applicable to the Kootenay Lake TSA were appropriate, as detailed in Table 1 or as described elsewhere in this rationale. However, I have identified factors which, considered separately, indicate that the timber supply may be either greater or less than projected in the base case. Some of these factors can be readily quantified and their impact on the harvest level assessed with reliability. Others may influence timber supply by adding an element of risk or uncertainty to the decision but cannot be readily quantified at this time.

I identified the following factors in my considerations as indicating that the timber supply projected in the base case may have been overestimated, to a degree that can be quantified:

- *roads and permanent access structures* – The base case did not remove areas occupied by landings. Staff estimated that a reduction of 2.8 percent of the THLB is required to account for landings. A sensitivity analysis indicated that removal of the landings would decrease long-term timber supply by 0.3 percent.
- *terrain stability/steep slopes* – Slopes greater than 40 percent were considered steep slopes in this TSA. Steep slopes account for 56 966 hectares, or 34 percent, of the THLB but only about 26 percent of the area harvested during the period 2010 to 2019 was from steep slopes. To meet the base case harvest projection, approximately 50 percent of the volume harvested during the first decade must come from steep slopes.

In the base case 90 percent of unstable terrain and 30 percent of potentially unstable terrain were removed from the THLB. An analysis of the data by terrain classification and slope shows that of the 14 877 hectares of unstable and potentially unstable terrain remaining in the THLB, almost all (12 181 hectares) are on steep slopes. Removing unstable and potentially unstable terrain on steep slopes from the THLB reduces the THLB on steep slopes to 27 percent of the total THLB. This more closely aligns with the historic harvest contribution of 26 percent from steep slopes. I will therefore reduce the short- and long-term base case timber supply projection by 7.2 percent (the proportion of the THLB comprising unstable and potentially unstable terrain on steep slopes) to account for the reduced level of harvesting on steep slopes.

- *Stand-level biodiversity* – In the base case the THLB was reduced by five percent to account for stand-level biodiversity. A subsequent analysis of RESULTS data showed that the reduction should have been 8.75 percent. Reducing the THLB by an additional 3.75 percent (8.75 - 5.0) resulted in a 4.2 percent lower timber supply in both the short- and long-term.
- *volume estimates – SDM* – Field data show that young lodgepole pine stands planted in the ICH biogeoclimatic zone are susceptible to forest health agents affecting their growth. These stands have 22 percent less volume compared to unaffected, healthy stands. A sensitivity analysis which reduced the volume contribution of affected stands by 22 percent showed that long-term timber supply is overestimated by 0.4 percent.

I have identified the following factor in my considerations as indicating that the timber supply projected in the base case may have been underestimated, but is not quantifiable at this time:

- *volume estimates for managed stands* – Data from the Young Stand Monitoring (YSM) sampling program in the Kootenay Lake TSA suggest that TIPSY yield projections underestimate measured plot volume. Since these stands are expected to contribute to the harvest about 60 years from now, I conclude that the volume projections for managed stands underestimate timber supply by an unquantified amount in the long term.

I identified the following factors in my considerations as indicating that the timber supply projected in the base case may have been overestimated, but are not quantifiable at this time:

- *recreation and the Dewdney heritage trail* – The management strategies for recreation under FRPA do not preclude harvesting in recreation areas and they were included in the THLB. District records indicate that there was some harvesting in recreation areas. Staff informed me that harvesting in recreation areas must be authorized by a recreation officer and it is likely that the rate of harvesting in these areas would be much less than in other areas of the THLB.
- *riparian areas and management zones* – In the base case, lakes and streams were buffered to reflect the riparian reserve zone and riparian management zone widths specified in the FPPR. BC Timber Sales (BCTS) reported that although a buffer is not required for S6 streams, they leave a riparian reserve zone of 10 metres for these streams east of Kootenay Lake in the Ktunaxa and Penticton Indian Band consultation areas. Staff informed me that there is anecdotal evidence that some licensees have also implemented or partially implemented wider buffers than required by the FPPR in some cutting permits. The extent to which this practice is occurring is not known and it was not reflected in the base case.
- *First Nations cultural heritage resources* – In the base case, archaeological sites were not excluded from the THLB because of their small size. After accounting for overlapping exclusions, 28 hectares remain in the THLB. Since harvesting is not allowed in these areas, I will account for a small overestimation of timber supply.
- *climate change* – Estimates of future temperature and precipitation using the Climate BC v6.40 climate model indicate that the mean annual temperature may increase by 3.2^0 C, and annual

precipitation to increase by 5.1 percent. Summer precipitation is projected to be 8.9 percent less than current levels. These projections indicate a higher drought risk, more wildfires and a greater incidence of insects and disease may be possible. I expect these factors will result in lower timber supply than projected in the base case.

- *domestic watersheds* – Domestic watersheds account for 29 percent of the THLB in the TSA. To meet the harvest projected in the base case, domestic watersheds must provide 38 percent of the harvest for the first 10 years. Staff are concerned that the public is unlikely to accept a higher rate of harvest in these areas which would lead to a lower timber supply in the short- and long-term.

In considering the above-mentioned influences, I find that the combined effect of accounting for the quantifiable factors represents a net overestimation of short-term timber supply of about 11.4 percent. While there was one factor (*volume estimates for managed stands*) where I considered timber supply to be underestimated by an unquantified amount in the long term, there were several factors (*recreation and the Dewdney heritage trail, riparian areas and management zones, First Nations cultural heritage resources, domestic watersheds, and climate change*) where I considered the base case timber supply to be overestimated by unquantified amounts. I conclude that, taken together, these uncertainties pose a significant risk to timber supply.

I am mindful of the concerns raised by the KNC that current forest management practices are degrading lands and waters, and cumulative developments interacting with accelerating climate change are putting forest biodiversity at unacceptable levels of risk. I am also aware that the AAC in this TSA is fully utilized and that any reduction in the AAC will adversely affect licensees operating in the TSA. While it is beyond the scope of my authority to prescribe remedies to maintain these values and to mitigate the risks to timber supply, I expect that the AAC I determine will account for these unquantified risks and give staff the opportunity to adopt forest practices to mitigate the risk to these values and to timber supply.

When making AAC determinations, the chief forester can specify portions of the harvest attributable to different timber types, geographic areas, or types of terrain. This is referred to as an AAC partition. The purpose of a partition is to ensure that the harvest attributable to certain types of timber, terrain or geographic areas of the TSA is not taken from another (potentially higher value) area or type of forest. A partition may also be applied to encourage use of the timber from different areas and timber types that may not be otherwise harvested.

As discussed under '*old growth management/landscape-level biodiversity'*, I am aware that there is unanimous support for and voluntary compliance with priority at-risk old forests identified for deferral and I do not expect these areas will be harvested. I am concerned about the amount of old forest in this TSA, especially considering the need to ensure flexibility for developing and implementing appropriate long-term measures for old growth management. Therefore, I have decided that there should be a partition specifying the maximum amount of the AAC I determine that may be harvested from both the older and younger forests.

The priority at-risk old growth forest areas identified by TAP have not been legally removed from the land base contributing to timber supply and I do not have the authority to make land use decisions. I am aware that according to the definitions specified in the KBHLPO, only about 60 percent of the areas identified by TAP are old. Removing all old growth forests as defined in the KBHLPO from the base case reduced short-term timber supply by 4.6 percent. In keeping with my guiding principles, I will include the contribution from these areas in the AAC. However, I will stipulate that no more than 4.6 percent of the AAC I determine may be harvested from the portion of the THLB that is old. I will also stipulate that no more than 95.4 percent of the AAC I determine may be harvested from the portion of the THLB that is not old. This is intended to prevent the possibility of unsustainable harvesting of the AAC from the portion of the THLB that is either old or not old forest.

Following the comprehensive public review of the analysis results for the Kootenay Lake TSA, I have considered the many comments and concerns regarding harvest levels expressed by First Nations, licensees, and residents of the TSA. The factors where the impact to timber supply were quantifiable indicate that short-term timber supply in the base case should be decreased by 11.4 percent to 567 000 cubic metres. However, after considering the unquantifiable factors discussed above, I concluded the base case timber supply was overestimated by an unquantified amount, I decided that the AAC for this TSA should be 550 000 cubic metres. Of this AAC, no more than 25 300 cubic metres may be harvested from old forest stands and no more than 524 700 cubic metres may be harvested from forest stands that are not old. Consistent with the KBHLPO, old forest stands are defined as stands older than 250 years in less frequently disturbed ecosystems (NDT 1, 2, and 4) and older than 140 years in more frequently disturbed ecosystems (NDT 3). Forest stands that are not old are defined as stands younger than or equal to 250 years in less frequently disturbed ecosystems (NDT 1, 2, and 4) and younger than or equal to 140 years in more frequently disturbed ecosystems (NDT 3).

I expect that the reductions I made to the base case harvest projection, along with the partitions will address the concerns raised by First Nations, residents of the TSA and licensees.

Determination

I have considered and reviewed 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 Kootenay Lake TSA by establishing an AAC of 550 000 cubic metres.

This AAC includes the following partitions:

- A maximum of 25 300 cubic metres (4.6 percent of the AAC) can be harvested from old forest stands. Old forest stands are stands older than 250 years in less frequently disturbed ecosystems (natural disturbance type, or NDT 1, 2, and 4) and older than 140 years in more frequently disturbed ecosystems (NDT 3); and,
- A maximum of 524 700 cubic metres (95.4 percent of the AAC) can be harvested from forest stands that are not old. Forest stands that are not old are stands younger than or equal to 250 years in less frequently disturbed ecosystems (NDT 1, 2, and 4) and younger than or equal to 140 years in more frequently disturbed ecosystems (NDT 3).

This new AAC of 550 000 cubic metres is 13.4 percent below the current AAC (14 percent below the base case harvest projection) and will remain in effect until another AAC is determined, which must take place within 10 years of this determination.

This determination becomes effective on June 4, 2024, and will remain in effect until a new AAC is determined, which must take place within 10 years of the effective date of this determination.

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

Implementation

In the period following this decision and leading to the subsequent determination, I encourage Ministry staff, other agencies, and licensees (as appropriate) to undertake or support the tasks noted below, the particular benefits of which are described in greater detail in appropriate sections of this rationale.

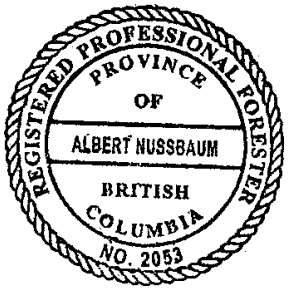
I recognize that the ability of staff and licensees to undertake projects is dependent on available resources, including funding. However, I have highlighted here what I view to be the most critical needs to help

reduce the risk and uncertainty associated with key factors that affect the timber supply in the Kootenay Lake TSA.

1. *Old-growth management/landscape-level biodiversity* – I am concerned that the old-growth targets are not being met in this TSA. I ask that staff annually update me on the status of the KBHLPO targets in the TSA.
2. *Domestic watersheds* – There is some concern that harvesting will not increase to the extent needed to meet the base case harvest projection. I ask that staff provide me annual reports regarding the volume of timber harvested in domestic watersheds. I urge licensees to consider alternative methods of harvesting, such as partial cutting, to reduce the impact of their activities in these watersheds.
3. *Volume estimates for managed stands* – I request that staff continue the young stand monitoring program in this TSA to verify that managed stand volumes continue to meet yield expectations.
4. *Grade 4 credit* – Licensees in this TSA are harvesting the full AAC, and I am concerned that any increase in the grade 4 credits currently allowed will lead to over-harvesting the AAC. I ask Regional staff to monitor the use of grade 4 credit in this TSA to ensure the AAC is not over-harvested.
5. *Partitions* – I request Ministry staff to work with licensees to develop and implement a monitoring plan to assess harvest performance within the partitions and report to me annually.

Albert Nussbaum, RPF
Deputy Chief Forester

June 4, 2024



Appendix 1: Section 8 of the *Forest Act*

Section 8 of the *Forest Act*, Revised Statutes of British Columbia 1996, c. 157, (current to May 28, 2024) 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 licence areas of area-based licences, 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 this Act, 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 May 28, 2024) reads as follows:

Purposes and functions of ministry

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

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

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

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

(d) encourage a vigorous, efficient and world competitive

(i) timber processing industry, and

(ii) ranching sector

in British Columbia;

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

Appendix 3: Minister's letter of November 24, 2021

Reference: 268022

November 24, 2021

Diane Nicholls, R.P.F.
Assistant Deputy Minister and Chief Forester

Dear Diane Nicholls:

The *Forest Act* gives you the authority to determine an allowable annual cut (AAC) for each timber supply area and tree farm licence in the province and specifies what you must consider when determining an AAC. Included in these considerations are the economic and social objectives of the government, which are provided below. These government objectives are to be considered as part of the comprehensive timber supply review process that your office has developed and implemented to ensure that your AAC determinations consider many forest management objectives and aligns with provincial statutes and regulations. They replace the objectives provided to you by the former minister, Doug Donaldson, on October 30, 2017.

British Columbians expect a government focused on building a strong sustainable economy that works for everyone, providing a path for lasting and meaningful reconciliation with Indigenous peoples, and developing strategies to address climate change. Government has committed to delivering on these priorities while recognizing that healthy, resilient forests are essential to the social, economic, and environmental interests of current and future generations. To advance these commitments, natural resource ministries, Indigenous partners, and stakeholders are collaborating to develop and implement forest management strategies and policies that will be relevant to your AAC determinations. I ask that you remain mindful of these commitments and as government approves related objectives, that you ensure they are fully considered within the timber supply review process.

The British Columbia (BC) government has committed to full and lasting reconciliation with Indigenous Peoples. As the provincial government implements the *Declaration on the Rights of Indigenous Peoples Act* and works toward aligning provincial laws with the United Nations Declaration on the Rights of Indigenous Peoples, I ask that your AAC determinations fully consider relevant outcomes of that work. For greater certainty, please continue to ensure that your AAC determinations are consistent with relevant agreements that are in effect between First Nations and the BC government, and court decisions that define Aboriginal title and rights. I expect you to continue to find ways to advance engagement and collaboration with Indigenous Peoples throughout the timber supply review process. In making your AAC determinations, I also ask that you continue to carefully consider Indigenous knowledge and other input that could have implications for your AAC determinations from First Nations and organizations whose traditional territories overlap the management unit under consideration.

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

Diane Nicholls, Assistant Deputy Minister and Chief Forester

BC's forests provide fibre for forest products, habitat for plants, fish and wildlife, and many other benefits essential to diverse and resilient communities. The capacity of these forests to support economic and environmental sustainability and reconciliation with Indigenous peoples is challenged by insect infestations, increasing levels of wildfire activity and other risks related to climate change. As healthy forests are essential for a healthy industry and province, I ask you consider how your determinations may encourage economic recovery and forest revitalization, improve forest health, and support approved strategies to reduce wildfire.

Since a sustainable and resilient timber supply supports BC's goals for a better, cleaner future and environmental sustainability, your AAC determinations should continue to incorporate, as appropriate, the best available information on climate change and forest health. When making your AAC determinations, please consider ways to encourage management practices that reduce greenhouse gas emissions and support forest resiliency. Practices that are consistent with established climate change strategies, adaptation, and mitigation practices, including practices that result in better fibre utilization and sector diversity, should be explored.

As new land use policies are developed and implemented to support BC's goals for economic activity, environmental sustainability, and reconciliation with Indigenous peoples, I ask that your determinations continue to incorporate, as appropriate, the best available information on the cumulative effects of multiple activities on the land base. Where the cumulative effects of timber harvesting and other land-based activities indicate a risk to natural resource values, your determinations should identify those risks for consideration in land-use planning. I also ask that you consider ways in which your AAC determinations could encourage actions or practices to mitigate the identified risks to natural resource values.

Forests are essential to build a strong, sustainable economy that supports people, communities and competitiveness and this government is focused on transitioning the forestry sector from high volume to high value production. As part of the timber supply review process, I ask that you consider ways to foster and encourage the value-added sector and increase the use of fibre. Please identify timber types that may not be reflected in harvest choice, and in your AAC determinations, examine opportunities for these timber types to sustain clean-energy jobs and value-added products or enhance ecosystem health and resiliency.

In making your AAC determinations, I ask that you consider the needs of local communities as expressed by the public during timber supply review process. This includes input that contribute to the economic recovery and sustainability of communities and is consistent with the government's broader objectives. To ensure a sustainable future for BC's forest-dependent communities, I also ask that when faced with necessary reductions in AAC's that wherever possible those reductions be no larger than necessary to avoid significant longer-term impacts.

Thank you, Diane, for your service and your care and attention to these important matters.

Sincerely,

Katrine Conroy
Minister

Appendix 4: Information sources used in the AAC determination

The information sources considered in determining the AAC for the Kootenay Lake TSA include the following:

Adapting Natural Resource Management to Climate Change in the Kootenay Boundary Region: Considerations for Practitioners and Government Staff. See https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/nrs-climate-change/regional-extension-notes/kbren160222.pdf (Accessed May 31, 2024);

Aerial Overview Surveys. Ministry of Forests, Lands, Natural Resource Operations and Rural Development. See https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/forest-health/aerial-overview-surveys (Accessed May 31, 2024);

Approved Government Actions Regulation – Ungulate Winter Ranges. See http://www.env.gov.bc.ca/wld/frpa/uwr/approved_uwr.html (Accessed May 31, 2024);

Approved Government Actions Regulation – Wildlife Habitat Areas. See http://www.env.gov.bc.ca/cgi-bin/apps/faw/wharesult.cgi?search=show_approved (Accessed May 31, 2024);

Approved Legal Orders. Ministry of Forests, Lands, Natural Resource Operations and Rural Development. See https://www2.gov.bc.ca/gov/content/industry/crown-land-water/land-use-planning/regions (Accessed May 31, 2024);

Approved Ministerial Order #M213 Wildlife Features in the Kootenay Boundary Region. See https://www2.gov.bc.ca/assets/gov/environment/natural-resource-policy-legislation/legislation-regulation/frpa-pac/wildlife-habitat-features/wildlife_habitat_features_order_kootenay_boundary.pdf (Accessed May 31, 2024);

Archaeology in British Columbia. Ministry of Forests, Lands, Natural Resource Operations and Rural Development. See https://www2.gov.bc.ca/gov/content/industry/natural-resource-use/archaeology (Accessed May 31, 2024);

Biogeoclimatic Ecosystem Classification Program. Ministry of Forests, Lands and Natural Resource Operations. See https://www.for.gov.bc.ca/hre/becweb/program/climate%20change/index.html (Accessed May 31, 2024);

British Columbia Geographic Warehouse. See https://www2.gov.bc.ca/gov/content/data/geographic-data-services;

Chief Forester's Standards for Seed Use, Amendments Established. See https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/tree-seed/legislation-standards/chief-forester-s-standards-for-seed-use (Accessed May 31, 2024);

Creston Valley Wildlife Management Act. See http://www.bclaws.ca/civix/document/id/complete/statreg/96084_01 (Accessed May 31, 2024);

Cut Control Regulation. Victoria, BC. See http://www.bclaws.ca/Recon/document/ID/freeside/17_578_2004. (Accessed May 31,2024);

Declaration on the Rights of Indigenous Peoples Act. See https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/19044 (Accessed May 31, 2024);

Electronic Commerce Appraisal System (ECAS). Ministry of Forests, Lands and Natural Resource Operations. See https://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/electronic-commerce-appraisal-system (Accessed May 31, 2024);

Foord, V. 2021. Kootenay Lake TSA Climate Change Analysis. Prepared for the Kootenay Lake TSA Determination, 2024.

Forest Act. See https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/96157_00. (Current to May 28, 2024);

Forest and Range Practices Act. See https://www.bclaws.ca/civix/document/id/complete/statreg/02069_01 (Accessed May 31, 2024);

Forest Planning and Practices Regulation. See http://www.bclaws.ca/civix/document/id/complete/statreg/14_2004 (Current to March 5, 2024);

Forest Practices Code Riparian Management Area Guidebook. Ministry of Forests, Lands, Natural Resource Operations and Rural Development. See https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/silviculture/silvicultural-systems/silviculture-guidebooks/riparian-management-area-guidebook (Accessed May 31, 2024);

Government Actions Regulation. See http://www.bclaws.ca/civix/document/id/complete/statreg/582_2004 (Current to May 28, 2024);

Government of Canada. S.C. 2002, c.29. *Species at Risk Act*. Ottawa, Ont. See https://laws-lois.justice.gc.ca/eng/acts/S-15.3/ (Accessed May 31, 2024);

Harvest Billing System (HBS). Ministry of Forests. See https://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/harvest-billing-system (Accessed May 31, 2024);

Haida Nation v. British Columbia (Minister of Forests), [2004] 3 S.C.R. 511, 2004 SCC 73. See https://decisions.scc-csc.ca/scc-csc/scc-csc/en/item/2189/index.do (Accessed May 31, 2024);

Heritage Conservation Act. Section 9. Heritage designation. See http://www.bclaws.ca/civix/document/id/complete/statreg/96187_01#section9 (Accessed May 31, 2024);

Heritage Conservation Act Order-In-Council #467. See http://www.bclaws.ca/civix/document/id/oic/arc_oic/0467_1991/search/CIVIX_DOCUMENT_ROOT_STEM:(Dewdney%20Heritage%20Trail)?6#hit1 (Accessed May 31, 2024);

Kootenay-Boundary Higher Level Plan Order. See https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/land-water-use/crown-land/land-use-plans-and-objectives/kootenayboundary-region/kootenayboundary-rlup/kootenayboundary_rlup_fpc_26oct2002.pdf (Accessed May 31, 2024);

Kootenay-Boundary Land Use Plans. See https://www2.gov.bc.ca/gov/content/industry/crown-land-water/land-use-planning/regions/kootenay-boundary/kootenay-boundary-rlup (Accessed May 31, 2024);

Kootenay Lake Timber Supply Area Timber Supply Analysis Discussion Paper, Ministry of Forests, Lands, Natural Resource Operations and Rural Development. November 2020. See https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/stewardship/forest-analysis-inventory/tsr-annual-allowable-cut/13ts_dpkg_2020_november.pdf (Accessed May 31, 2024);

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Kootenay Lake Timber Supply Area Timber Supply Review – Ktunaxa Enhanced Stewardship Scenario, Dated April 2024. Submitted May 13, 2024;

Kootenay Lake TSA Visual Quality Objective Order. See https://www2.gov.bc.ca/assets/gov/environment/natural-resource-policy-legislation/legislation-regulation/gar-ministerial-orders/visualgarorder.pdf (Accessed May 31, 2024);

Ktunaxa Nation Response to KL TSR. Submitted February 20, 2024;

Land Act. See http://www.bclaws.ca/civix/document/id/complete/statreg/96245_01 (Current to May 28, 2024);

List of Wildlife Species at Risk, Schedule 1 (Subsections 2(1), 42(2) and 68(2)). See https://www.canada.ca/en/environment-climate-change/services/species-risk-act-accord-funding/listing-process/wildlife-schedule-1.html (Accessed May 31, 2024);

MacKenzie, W.H. 2012. Biogeoclimatic ecosystem classification of non-forested ecosystems in British Columbia. Prov. B.C., Victoria, B.C. Tech. Rep. 068. See www.for.gov.bc.ca/hfd/pubs/Docs/Tr/Tr068.htm (Accessed May 31, 2024);

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Ministry of Forests and Range Act. Section 4 – Purposes and functions of Ministry. See http://www.bclaws.ca/civix/document/id/complete/statreg/96300_01 (Current to May 28, 2024);

Ministry of Forest, Lands, Natural Resource Operations and Rural Development. First Nations Consultation Report for the Kootenay Lake TSA Timber Supply Review (12820-20-048) for 2018-2021.

Ministry of Forests, Lands. 2024. First Nations Consultation Summary Report for Kootenay Lake TSA (FNCS Record A-3639) for 2021-2024.

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Muhly, T. 2016. A Model of Future Forestry Road Development and Caribou Habitat Disturbance to Assess Future Forestry Effects on Wildlife for Timber Supply Reviews. Forest Analysis and Inventory Branch, Ministry of Forest. See https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/stewardship/forest-analysis-inventory/tsr-annual-allowable-cut/wildlife-analysis/road_cutblock_model_20161102.pdf (Accessed May 31, 2024);

Penner, M. (Forest Analysis Ltd.) 2013. Documentation of Vegetation Resources Inventory Statistical Analysis for Kootenay Lake TSA. See https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/stewardship/forest-analysis-inventory/ground-sample-inventories/vri-audits/kootenaylaketsa_vri_documentation_analysis.pdf (Accessed May 31, 2024);

Policy Regarding the Administration of Unharvested Volumes, Uncommitted Volumes and Unused BCTS Volumes. Ministry of Forests, Lands and Natural Resource Operations and Rural Development. See https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/timber-tenures/timber-tenure-bulletins-policies-procedure/policy_regarding_the_administration_of_unharvested_volumes_uncommitted_volumes_and_unused_bcts_volumes.pdf (Accessed May 31, 2024);

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