BRITISH COLUMBIA
MINISTRY OF FORESTS, LANDS AND
NATURAL RESOURCE OPERATIONS

Robson Valley
Timber Supply Area

Rationale for
Allowable Annual Cut (AAC)
Determination

Effective May 22, 2014

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Objective of this document

This document provides an accounting of the factors I have considered and the rationale I have employed in making my determination, under Section 8 of the *Forest Act*, of the allowable annual cut (AAC) for the Robson Valley Timber Supply Area (TSA). This document also identifies where new or better information is needed for incorporation in future determinations.

Acknowledgement

For preparation of the information I have considered in this determination, I am indebted to staff of the BC Ministry of Forests, Lands and Natural Resource Operations (FLNR) in the Prince George Natural Resource District, the Omineca Region, and the Forest Analysis and Inventory Branch (FAIB). I am also grateful to the Villages of McBride and Valemount, First Nations, local residents, forest tenure holders, and other organizations who contributed to this process.

Statutory framework

Section 8 of the *Forest Act* requires the chief forester to consider a number of specified factors in determining AACs for timber supply areas (TSAs) and tree farm licences. In addition to the chief forester, Section 23 (3) of the *Interpretation Act* expressly authorizes the deputy chief forester to carry out the functions of the chief forester, including those required under Section 8 of the *Forest Act*. Section 8 of the *Forest Act* is reproduced in full as Appendix 1 of this document.

Description of the Robson Valley TSA

The Robson Valley TSA is situated in east-central British Columbia. The boundary of the TSA covers a total area of approximately 1.46 million hectares, including parks and all ownerships, and is administered from the Prince George Natural Resource District office in Prince George and the field office in McBride.

The TSA is bordered to the west by the Wells Gray and Bowron Lake Provincial Parks, and the Mitchell Lake-Niagara Protected Area that connects them, and by the Kakwa Recreation Area to the north. To the east are the Willmore Wilderness Area, Jasper National Park, and Mount Robson and Mount Terry Fox Provincial Parks.

The terrain of the TSA is varied: the bottomlands of the Rocky Mountain Trench are flat to rolling, while the adjacent snow-capped ranges are rugged with steep forested lower slopes and deeply cut side valleys. The diversity of the landscape is reflected in the broad mix of tree species, the diversity of wildlife habitats, and the wide variety of land uses in the TSA, including forestry, recreation, agriculture, and protected areas.

Tree species in the TSA include spruce, subalpine fir (balsam), lodgepole pine, western redcedar, western hemlock with smaller components of Douglas-fir and various deciduous species such as aspen and birch. The resultant mix of habitats supports a variety of wildlife species, including mountain caribou, grizzly bear, and mule deer, as well as wolverine, cougar, wolf and lynx.

The Robson Valley TSA lies within the Regional District of Fraser Fort George – Electoral Area H. According to the 2006 Canadian census data, the total population is approximately 1900 residents. The largest communities in the TSA are Valemount and McBride with populations of 1,020 and 586, respectively. Smaller communities include Crescent Spur and Loos, Dunster, Tête Jaune Cache, and Albreda. Based on 2006 Statistics Canada information for

the Regional District, the main employers include the forest sector, public sector, tourism, construction, and agriculture and food.

The following First Nations have asserted traditional territories within the Robson Valley TSA: Lheidli T'enneh First Nation, Simpcw (North Thompson) First Nation, Lhtako Dene Nation, Canim Lake First Nation, Xat'súll (Soda Creek) First Nation, Shuswap First Nation, Okanagan Indian Band, Adams Lake Indian Band, Neskonlith First Nation, Saulteau First Nations, and the Tsilhqot'in National Government.

History of the AAC

From 1981 to 1987, the AAC for the Robson Valley TSA was 500 000 cubic metres. In 1987, the AAC was increased to 560 000 cubic metres, and a 60 000 cubic metre per year non-replaceable licence was issued in 1988 to harvest mature and overmature cedar and hemlock stands (the non-replaceable licence was later cancelled in 1992). In 1988, the AAC was increased to 700 000 cubic metres to enable a 140 000 cubic metre licence to address forest health management harvesting in the Rausch and Goat drainages, however no related harvesting occurred. In 1990, the AAC was determined to be 600 000 cubic metres.

In 1996, the AAC was increased to 602 377 cubic metres, which included a partition of 6000 cubic metres attributable to deciduous-leading forest types. The 2001 AAC determination maintained the 1996 AAC.

In 2006, the AAC was reduced to 536 000 cubic metres while maintaining the 6000 cubic metre deciduous partition. This reduction took into account the removal of the McBride Community Forest Agreement (CFA) area from the TSA land base.

The minister apportioned 55 000 cubic metres of the AAC determined in 2006 to community forest agreements (see Table 1 below). Since then the Valemount and Dunster Community Forest Agreements were issued with a combined AAC of 55 000 cubic metres. Community Forest Agreement areas are not part of the TSA. The effective AAC remaining for the Robson Valley TSA was therefore 481 000 cubic metres. The majority of deciduous stands that formed the basis for the partition are now within the new Community Forest Agreement areas.

Table 1 shows the apportionment of the AAC by the Minister of Forests, Lands and Natural Resource Operations in 2007.

Table 1. Apportionment of the AAC

Apportionment	**Volume (m^3)**	**% of AAC**
Forest Licences Replaceable	283 930	53.0
Forest Licences Non-Replaceable	81 468	15.2
BCTS Timber Sale Licences	108 980	20.3
Community Forest Agreements	55 000	10.3
Forest Service Reserve (FSR)	5 360	1.0
FSR Small Scale Salvage	1 262	0.2
Total	536 000	100.0

New AAC determination

Effective May 22, 2014, the new AAC for the Robson Valley TSA will be 400 000 cubic metres. The AAC includes a partition of 355 000 cubic metres for the more accessible areas identified on page 37 in Figure 1, titled 'Robson Valley Timber Supply Area - Accessibility - 2014'.

This AAC will remain in effect until a new AAC is determined, which must take place within 10 years of this determination.

Information sources used in the AAC determination

In addition to other information sources mentioned in the specific factors that I address in this AAC rationale document, sources of information include:

- *Heritage Conservation Act* consolidated to May 7, 2014;
- *Forest Act* and *Regulations* consolidated to May 7, 2014;
- *Forest and Range Practices Act* and *Regulations* consolidated to May 7, 2014;
- *Ministry of Forests and Range Act* consolidated to May 7, 2014;
- Designations and objectives set by government including:
    - Caribou ungulate winter range U-7-003;
    - Mule deer ungulate winter range U-7-010;
    - Scenic areas and visual quality objectives established for Highways 5 and 16 corridors by the district manager in 1998; established for side drainages by order;
    - Special landscape unit objectives for Canoe Mountain;
    - Landscape units and biodiversity emphasis;
    - Old-growth management areas (OGMA)in landscape units in northern and southern portions of the TSA (but not in the McBride-Valemount corridor);
    - Wildlife corridors in landscape units in south half of TSA;
    - Robson Valley Sustainable Resource Management Plan – South Trench Landscape Unit - Draft old-growth management areas and enhanced riparian/wildlife movement corridors, May 31, 2005;
    - Fisheries sensitive watershed designations for Goat and Milk Rivers;
- *Identified Wildlife Management Strategy—Accounts and Measures for Managing Identified Wildlife*, Southern Interior Forest Region, Version 2004, Province of BC;
- Robson Valley Land and Resource Management Plan (LRMP), April 1999. Cabinet-approved;
- Opportunities for Crown Land Use in the Robson Valley - Crown land use guidelines, approved November 4,1985;
- Order establishing Agriculture Development Areas for the Robson Valley Crown Land Plan, November 23, 2006;
- Robson Valley Crown Land Plan. Draft document but endorsed by the Robson Valley LRMP;

- Province of British Columbia, Order of the Minister of Agriculture and Lands, Establishing Land Use Objectives Under Section 93.4 of the *Land Act* for the purposes of the *Forest and Range Practices Act*, November 21, 2006;
- Valemount Winter Recreation Sustainable Resource Management Plan;
- *Provincial Logging Residue and Waste Management Procedures Manual*, Ministry of Forests and Range, 2011 and subsequent amendments;
- *Procedures for Factoring Visual Resources into Timber Supply Analysis*, Ministry of Forests, 1998;
- *Modelling Visuals in Timber Supply Review III*, Ministry of Forests and Range Bulletin, December 2003;
- *Chief Forester's Standards for Seed Use, effective April 1, 2005, amended October 3, 2010;*
- *Summary of dead potential volume estimates for management units within the Northern and Southern Interior Forest Regions,* Ministry of Forests and Range, 2006;
- *Provincial-Level Projection of the Current Mountain Pine Beetle Outbreak: Update of the infestation projection based on the Provincial Aerial Overview Surveys of Forest Health conducted from 1999 through 2011 and the BCMPB model (year 9),* A. Walton, Ministry of Forests, Lands and Natural Resource Operations, 2012*;*
- *Robson Valley Timber Supply Area Rationale for Allowable Annual Cut (AAC) Determination*, Ministry of Forests and Range, August 4, 2006;
- *Robson Valley Timber Supply Area Timber Supply Review Data Package.* Ministry of Forests, Lands and Natural Resource Operations, December 2012;
- *Robson Valley Timber Supply Area Timber Supply Analysis Public Discussion Paper*, Ministry of Forests, Lands and Natural Resource Operations, December 2013;
- Letter from the Minister of Forests and Range to the Chief Forester stating the economic and social objectives of the Crown, July 4, 2006;
- Letter from the Minister of Forests and Range to the Chief Forester stating the economic and social objectives of the Crown regarding mid-term timber supply in areas affected by the Mountain Pine Beetle, October 27, 2010;
- Letter from the Assistant Deputy Minister, Tenures and Revenue Division, Ministry of Forests and Range to all licensees concerning cut-control changes resulting from new log grades, February 24, 2006;
- *First Nations Consultation Summary related to the Robson Valley Timber Supply Area Allowable Annual Cut Determination*, Prince George Natural Resource District, March 2014;
- *Updated Procedures for Meeting Legal Obligations When Consulting First Nations – Interim*; Province of British Columbia; May 7, 2010;
- Technical review and evaluation of current operating conditions in the Robson Valley TSA through comprehensive discussions with staff from the Ministry of Forests, Lands and Natural Resource Operations, including the AAC determination meeting held in Prince George, BC on February 5th and 6th, 2014.

Role and limitations of the technical information used

Section 8 of the *Forest Act* requires the chief forester, in determining AACs, to consider biophysical, social and economic information. Most of the technical information used in determinations is in the form of a timber supply analysis and its inputs of inventory and growth and yield data. These are concerned primarily with biophysical factors, such as the rate of timber growth and the definition of the land base considered available for timber harvesting, and with management practices.

The analytical techniques used to assess timber supply necessarily are simplifications of the real world. Many of the factors used as inputs to timber supply analysis are uncertain, due in part to variation in physical, biological and social conditions. On-going scientific studies of ecological dynamics will help reduce some of this uncertainty.

Furthermore, 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 this AAC for the Robson Valley 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

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

Given the large number of periodic AAC determinations required for British Columbia's many forest management units, administrative fairness requires a reasonable degree of consistency of approach in addressing relevant factors associated with AAC determinations. In order to make our approach in these matters explicit, we, the chief forester and deputy chief foresters, jointly established the following body of guiding principles. However, in any specific circumstance in a determination where we consider it necessary to deviate from these principles, we will explain our reasoning in detail.

When considering the factors required under Section 8, we are also mindful of our obligation as stewards of the forests of British Columbia, of the mandate of the Ministry of Forests, Lands and Natural Resource Operations as set out in Section 4 of the *Ministry of Forests and Range Act*, and of our responsibilities under the *Forest Act* and *Forest and Range Practices Act (FRPA)*.

<u>Integrated decision-making</u>

One of the key objectives of the Ministry of Forests, Lands and Natural Resource Operations is to take an integrated approach to all resource management decisions that consider all resource values. In considering the factors outlined in Section 8 of the *Forest Act*, we will continue to consider all available information on timber and non-timber resources in the management unit, and all available information on the interactions of the management of those resources on timber supply.

Information uncertainty

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

Two important ways of dealing with this uncertainty are:

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

(ii) re-determining AACs frequently, in cases where projections of short-term timber supply are not stable, to ensure they incorporate current information and knowledge.

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

In many areas, the timber supply implications of some legislative provisions remain uncertain, particularly when considered in combination with other factors. In each AAC determination, this uncertainty is taken into account to the extent possible in the context of the best available information.

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

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

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

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

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

Climate change

One key area of uncertainty relates to climate change. While some controversy appears to remain on the causes of climate change, there is substantial scientific agreement that climate is changing, that the changes will affect forest ecosystems, and that forest management practices will need to be adapted. Nevertheless, the potential rate, amount, and specific characteristics of climate change in different parts of the province are uncertain. As research provides more definitive information on climate change, we will consider the findings in AAC determinations. Where forest practices are implemented to mitigate or adapt to the potential effects of climate change on forest resources, we will consider related information in our determinations.

In addition, vulnerability assessments can provide information on the potential risks associated with climate change, and could be useful in defining how to consider climate change in different AAC determinations. Such assessments could also highlight key topics in need of research that could improve climate change considerations for future determinations.

We note, however, that even with better information on climate change there will be a range of reasonable management responses. Considerations of how to respond in anticipation of uncertain, potential future impacts and risks differ from those related to responding to known or on-going processes such as the recent mountain pine beetle (MPB) infestation. 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. Conversely, the present forest conditions resulting from the MPB infestation provide a clearer circumstance to which to respond.

To some extent, decisions on the preferred management responses to potential future risks, including potential changes to allowable timber harvests, are appropriately informed by broad discussion among interested parties. We will monitor such discussions and consider them insofar as they are relevant to AAC determinations. In general, the requirement for regular AAC reviews will allow for the incorporation of new information on climate change and its effects on forests and timber supply as it emerges.

First Nations

The Crown has a legal obligation to consult with First Nations regarding their asserted rights and title (aboriginal interests) in a manner proportional to the strength of their aboriginal interests and the degree to which the decision may impact these interests. In this regard, full consideration will be given to:

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

(ii) any information brought forward respecting First Nations' aboriginal interests, including how these interests may be impacted; and

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

Aboriginal interests that may be impacted by AAC decisions will be addressed consistent with the scope of authority granted to the chief forester under Section 8 of the *Forest Act*. When information is brought forward that is outside of the chief forester's jurisdiction, 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 and the AAC determination are addressed in the various sections of this rationale.

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 the determinations do not prescribe a particular plan of harvesting activity within the management units. They are also independent of any decisions by the Minister of Forests, Lands and Natural Resource Operations with respect to subsequent allocation of wood supply.

The role of the base case

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

For most AAC determinations, a timber supply analysis is carried out using an information package including data and information from three categories: land base inventory, timber growth and yield, and management practices. Using this set of data and a computer model, a series of timber supply forecasts 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 forecasts, one is chosen in which an attempt is made to avoid both excessive changes from decade to decade and significant timber shortages in the future, while ensuring the long-term productivity of forest lands. This is known as the "base case" forecast and forms the basis for comparison when assessing the effects of uncertainty on timber supply. The base case is designed to reflect current management practices.

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

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

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

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

Base case for the Robson Valley TSA

The last AAC for the Robson Valley TSA, determined in 2006, was 536 000 cubic metres. Since then, two Community Forestry Agreements (CFA) were issued within the boundaries of the TSA. When CFAs are issued, the area covered by the CFAs is no longer part of the TSA land base. At the time these two CFAs were issued the legislation was not yet in place for reducing the AAC of the TSA to reflect the exclusion of the area covered by the CFAs. The only available opportunity for adjusting the AAC to account for such exclusions is a new AAC determination, and I will consider the implications from the exclusion of these areas for the timber supply of the Robson Valley TSA in this determination.

The Standard Timber Supply Model (StTSM), which is a raster-based timber supply simulator utilizing the SELES (Spatially Explicit Landscape Event Simulator) modelling environment, was used for the timber supply analysis. StTSM was developed by FAIB staff.

In the base case, the initial harvest level of 480 000 cubic metres per year can be maintained for five years. This level is about the same as the AAC determined in 2006 minus the 55 000 cubic metres apportioned to CFAs at that time. After five years the harvest level decreases by about 10 percent per five-year period for 20 years before reaching a mid-term harvest level of 290 000 cubic metres per year (about 60 percent of the initial harvest level) which can be maintained for 30 years. After that, in year 50, the harvest level increases over five decades until it reaches a long-term level of 350 000 cubic metres per year.

The base case harvest forecast is based on a timber harvesting land base that is 35 percent smaller than in the previous timber supply review (TSR 3). The major changes since TSR 3 are:

- Two new CFAs were issued;
- New core habitat for mountain caribou was designated as part of the Mountain Caribou Recovery Implementation Plan approved by Cabinet;
- New old-growth management areas were established in some landscape units;
- An updated economic operability classification was used;
- The order restricting harvesting in the Agriculture Development Areas and Settlement Reserve Areas was issued.

I have reviewed the assumptions and methodology incorporated in the base case harvest forecasts and I am satisfied, subject to the considerations discussed in this rationale, that the information presented to me regarding the base case provides a suitable basis from which I can assess the timber supply for the Robson Valley TSA. In addition to the base case, I was provided with a number of alternative harvest flows and sensitivity analyses. These, and other information described in the following sections, have been helpful in the considerations and reasoning leading to my determination.

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

I have reviewed the information for all of the factors that require consideration under Section 8 of the *Forest Act*. Where I have concluded that the modelling of a factor in the base case appropriately represents current management or the best available information, and uncertainties about the factor have little influence on the timber supply projected in the base case, no discussion is generally included in this rationale. One exception is for factors that I discuss in order to respond to public input. The factors accepted as modelled where no discussion is provided are listed in Table 2.

Table 2. List of factors accepted as modelled

***Forest Act* section and description**	**Factors accepted as modelled and not discussed further in rationale**
8(8)(a)(i) the composition of the forest and its expected rate of growth on the area	• Land not administered by FLNR • Non-forest areas including existing roads • Parks and Protected Areas • Crown Land Plans • Recreation sites, trails and reserves • Non-merchantable forest types • Sites with low timber growing potential • Operability • Volume estimates for regenerating stands • Operational adjustment factors • Minimum harvest age and volumes
8(8)(a)(ii) the expected time that it will take the forest to become re-established on the area following denudation	• Regeneration delay and not-satisfactorily-restocked/current backlog
8(8)(a)(iii) silviculture treatments to be applied to the area	• Silviculture systems
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	• Decay, waste and breakage
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	• Riparian management • Scenic areas and visual quality objectives • IRM - adjacency and block size distribution • Community watersheds and water licences • Fisheries sensitive watersheds
8(8)(a)(vi) any other information that, in the chief forester's opinion, relates to the capability of the area to produce timber	-
8(8)(b) the short and long term implications to British Columbia of alternative rates of timber harvesting from the area	• Harvest sequencing
8(8)(d) the economic and social objectives of the government, as expressed by the minister, for the area, for the general region and for British Columbia	-
8(8)(e) abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area	-

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 essential issues raised and the reasoning leading to my conclusions.

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,

Land base contributing to timber harvesting

- *general comments*

The total area within the outer boundary of the Robson Valley TSA is 1 458 588 hectares. Land within the outer boundary of the TSA that does not contribute to the TSA Crown forest land base includes community forest agreement areas, woodlot licence areas, private land, non-productive areas (including water), and existing lineal features (e.g., roads, railways, transmission lines). Excluding these areas leaves 462 280 hectares in the Crown forest management land base. The excluded areas were assumed not to contribute to achieving integrated resource management (IRM) objectives in the analysis.

As part of the process used to define the timber harvesting land base, a series of deductions was made from the Crown forest management land base. These deductions account for economic or ecological factors that operate to reduce the forest area available for harvesting. In reviewing these deductions, I am aware that some areas may have more than one classification. To ensure accuracy in defining the THLB, care must be 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 the Robson Valley TSA, I acknowledge that the above approach was used in the timber supply analysis, resulting in a base case THLB – the area available for harvesting – of 132 497 hectares, which represents about nine percent of the area covered by the outer boundary of the TSA and 29 percent of the Crown forest management land base. This means that over two thirds (about 71 percent) of the Crown forest management land base is unavailable for timber harvesting for a variety of reasons such as: (i) areas are dedicated for the management of other resource values, (ii) areas are physically inoperable, and (iii) areas are uneconomic or otherwise unsuitable for timber harvesting.

- *inventory*

The current forest cover inventory for the Robson Valley TSA was completed in 1994-95. It has been updated annually to reflect changes in age, growth, and disturbance (fire and harvesting) and is now current to 2012. Satellite imagery was used to detect and update the inventory for any additional changes in forest cover not already recorded.

Existing mature stand ages in the base case are based on the annually updated forest cover inventory for the TSA. The 1998 inventory audit indicated that mature stand age may be overestimated in the inventory by an average of 14 percent, or about 28 years. VRI phase 2 ground sampling was completed in the TSA in 2011 and indicated mature stand age may be overestimated by an average of 17 percent, or about 32 years. These two studies suggest the yields in the base case may have been underestimated because the growth and yield model (Variable Density Yield Projection model version 7 or VDYP7) used in the analysis reduces stand volume as very old stands age to account for tree mortality.

The fact that existing stands are likely younger than the ages identified in the inventory, coupled with the projected volume reductions after a certain age in VDYP7, affects available volume in a second way. In the base case, volume per hectare merchantability limits were set to reflect that stands with less than a certain volume per hectare cannot be harvested economically. Stands that may have attained these merchantability limits at younger ages become unmerchantable as they age and their stand volume declines. As a result some older existing stands do not and will never contribute to timber supply in the base case. However, with the finding that these stands are actually younger than assumed in the base case, their volume per hectare may be high enough at the younger ages to cross the merchantability threshold so that they contribute to timber supply.

A sensitivity analysis was conducted in which the effect on timber supply of using the younger ages in mature stands, based on the 1998 audit and 2011 sampling, was assessed. Using these younger ages, available volume increases due to the higher volumes projected in VDYP7 for younger-aged stands and the increased area of these now higher-volume stands that exceed the merchantability thresholds. This analysis indicated there would be a three percent increase in available timber volume – which represents about 9000 cubic metres per year of timber supply over the forecast period – if the younger mature stand ages are assumed.

I note that the two ground-based sampling projects provided very similar results. I have therefore concluded that stand ages are likely overestimated in the base case and that, as a result, timber supply is underestimated by about 9000 cubic metres per year over the forecast period. I will discuss this further in **'Reasons for Decision'**.

- volume estimates for existing stands

Timber volume yields for existing stands, defined in the analysis as all stands with no logging history, were estimated in the analysis using VDYP7 and the updated forest cover inventory as previously described. These stands are older than age 30 years, but the vast majority of them are mature. The 1998 inventory audit for the Robson Valley TSA concluded that in mature forests there was no statistically significant difference between the average volume for the audit and the inventory at the time.

The 2011 phase 2 ground sampling, however, did indicate that the inventory volumes for existing mature stands are significantly underestimated. The difference between the audit results and phase 2 ground sampling results is attributed to the current use of VDYP7 for the forest cover inventory. In the 1998 audit, volumes were compared against the inventory using an earlier version of VDYP. The phase 2 findings suggest the current forest cover inventory, using VDYP7, underestimates mature volumes by nearly 20 percent.

District staff and licensees operating in the TSA expressed concerns about the magnitude of the suggested underestimation of volumes based on the phase 2 findings considering the volumes being cruised and recovered in the TSA. In order to quantify these concerns, Forest Analysis and Inventory Branch staff undertook a comparative analysis of 29 cutting permits representing 90 cutblocks. Staff compared inventory volume estimates per hectare with cruise volumes per

hectare and billed volumes per hectare (using the harvest billing system) for the same areas. The results suggest that the current inventory reasonably reflects what has been logged and recovered over the past decade and that adjusting the inventory based on phase 2 ground sampling may unduly inflate volume estimates for existing mature stands.

It is possible that the phase 2 ground samples were insufficient to accurately reflect the profile of the THLB as less than 30 percent of the samples were in the THLB. The phase 2 ground sampling findings may be true for the overall inventory, but may not adequately capture the situation in the THLB. A sensitivity analysis was conducted that demonstrates how increases to estimates of existing mature volumes can have a marked effect on timber supply in the short- and mid-term.

For this determination, given the large difference between the phase II volume estimates and the findings of the comparison of inventory volumes per hectare to billed volumes per hectare, and the fact that only 30 percent of the phase II samples were on the THLB, I accept the existing stand volumes as modelled. I am concerned about the uncertainty in this factor, and therefore, under '**Implementation',** I request that Forest Analysis and Inventory Branch (FAIB) staff develop and implement a plan for ground sampling in the TSA to provide statistically valid volume estimates for existing mature stands in the timber harvesting land base.

- log grades

In 2006, new log grades were implemented for the BC Interior where grades are based on a log's size and quality at the time it is scaled without regard to whether it was alive or dead at harvest. The forest cover inventory for the Robson Valley TSA, completed in 1994-95, does not report on dead wood volumes, and standard yield tables generated by VDYP do not incorporate 'dead potential volume' (i.e., grade 3 endemic and grade 5 log volumes).

Estimates of dead potential volume can be obtained from 1998 inventory audit and 2011 phase 2 ground sampling information for the Robson Valley TSA as well as from permanent and temporary sample plots. Estimates, however, can vary considerably depending on the information source. In the report *Summary of dead potential volume estimates for management units within the Northern and Southern Interior Regions,* dead potential volume for the TSA is estimated to be 11.2 percent based on 49 inventory audit plots and 0.6 percent based on 816 permanent sample plots.

As noted above under 'volume estimates for existing mature stands', the review of cruise volumes and harvest billing volumes suggests the forest cover inventory provides a reasonable estimate of volume, and therefore that review also suggests that there is not an additional 11 percent of dead potential volume that is being harvested. Although perhaps not at the 11 percent level, some harvesting of dead potential logs is expected to add to the timber supply as compared to what was assumed in the base case forecast.

Having discussed this information with ministry staff, I am satisfied that an unknown quantity of dead potential timber is likely being harvested and billed in the TSA. I have concluded short-term timber supply in the base case is underestimated by an unquantified amount on this account and I will discuss this further under **'Reasons for Decision'.** I have also recommended, under **'Implementation',** that the ministry improve estimates for dead potential volumes in the timber harvesting land base as part of a plan for ground sampling in the TSA to provide statistically valid volume estimates for existing mature stands.

- *site productivity estimates*

Inventory data includes estimates of site productivity for each forest stand, expressed in terms of a site index. The productivity of a site largely determines how quickly trees grow, and the site index is based on the stand's height as a function of its age. The rate of tree growth in turn affects the time seedlings will take to reach green-up conditions, the volume of timber that can be produced, and the ages at which a stand will satisfy mature forest cover requirements and reach a merchantable size.

In general, forest stands between 30 and 150 years of age provide the most accurate measurements of site productivity. Site indices determined from younger stands and older stands may not accurately reflect potential site productivity. In stands younger than 30 years, growth often depends as much on recent weather, stocking density, and competition from other vegetation as it does on site quality. In stands older than 150 years, which have not been subject to management of stocking density, the trees used to measure site productivity may have grown under intense competition or may have been damaged, and therefore may not reflect the true growing potential of the site. This has been verified in many areas of the province where old-growth site index studies suggest that actual site indices may be higher than those indicated by existing data from mature forests.

The timber supply analysis supporting the 2006 AAC determination employed inventory site index estimates to generate managed stand yield curves. In his 2006 determination, the chief forester requested that local site index information be generated for incorporation in the next timber supply analysis and AAC determination.

Due to lack of Predictive or Terrestrial Ecosystem Mapping (PEM/TEM) for the Robson Valley TSA, site index (SI) estimates from biogeoclimatic ecosystem classification (BEC) units using SIBEC could not be used to create managed stand yield curves.

Instead new provincial site productivity estimates were used in the base case. The ministry has completed new site productivity mapping across the province that combines SIBEC estimates with estimates from a biophysical model developed from sample plots established for various growth and yield projects. The biophysical model is constructed from biogeoclimatic zone, slope, aspect, elevation, and climate variables and provides a reasonable estimate of site index for 15 commercially important tree species in BC.

The use of the provincial site productivity estimates has a significant impact on when stands become available for harvest in the base case. As a consequence, in the base case the same long-term harvest level as forecasted in the 2006 analysis (using inventory based site index estimates) is attained even though the current timber harvesting land base is 35 percent smaller than assumed in 2006 (given removal of community forests from the TSA and other factors).

Public comments were received noting the difficulty in predicting growth rates of managed stands given climate change. Although I agree there is some uncertainty in this factor due to climate change, the ministry is actively undertaking several projects to enable future forests to adapt to climate change. These projects are outlined in the *BC Forest Stewardship Action Plan for Climate Change Adaptation* and should generate new information for consideration in future AAC determinations. As noted in my 'Guiding Principles', the requirement for regular AAC reviews will allow for the incorporation of new information on climate change and its effects on forests and timber supply as it emerges.

In reviewing this factor with ministry staff, I conclude that the provincial biophysical model provided the best available information for use in the base case and for this determination I accept this information as modelled. However, given the significance of this factor in projecting timber supply, under **'Implementation'**, I encourage the Forest Analysis and Inventory Branch in

collaboration with District staff to obtain improved site productivity estimates for managed stands considering tools such as Predictive or Terrestrial Ecosystem Mapping (PEM/TEM), Forest and Range Evaluation Program (FREP) stand development monitoring, and/or inventory young stand monitoring. Improved site productivity estimates will help reduce uncertainty in timber supply projections in support of the next AAC determination.

- *genetic gain*

The Ministry's tree improvement program has a long history in forest management in British Columbia since concerted reforestation efforts began in the 1950's. Foresters realized that, like crop species, regenerating forests could benefit by selecting seed from desirable trees in unmanaged forests. The implementation of a successful tree breeding and improvement program has produced 'Class A' select seed that has reduced plantation failures and resulted in gains in growth from three to 30 percent, depending on the species and area of the province.

The *Chief Forester's Standards for Seed Use* require the use of the best available genetic quality seed when replanting Crown land. Therefore, Class A seed, when available, is used instead of Class B seed collected from wild stands. The superior growth of Class A select seed over Class B seed is expressed in terms of 'genetic worth' (GW). That means trees grown from Class A select seed, based on research findings, are projected to grow more volume than trees generated from Class B seed or trees regenerated naturally. For example, trees grown from Class A select seed with a GW of 10 are projected to gain 10 percent more volume at a given age than Class B seed.

For the Robson Valley TSA, Class A select seed is predominately used to grow spruce seedlings for planting. In the base case the genetic gain for spruce was weighted by the proportion of the area regenerated with Class A select seed out of the total area planted as recorded in Reporting Silviculture Updates and Land status Tracking System (RESULTS). The area weighted GW of spruce is 3.2 percent. In the base case, the 12-year GW for each analysis unit was applied to the spruce components of all TIPSY yield curves for stands harvested since 2000 and for all future harvested areas.

There was public comment that the select seed 'theory' (with respect to genetic worth or GW) has no basis in scientific facts.

Scientists working in the tree improvement program have published articles about how genetic worth is calculated. Example articles include: M. Stoehr, J. Webber, and J. Woods (2004), *Protocol for rating seed orchard seedlots in British Columbia: quantifying genetic gain and diversity*, Forestry, vol. 71, no. 4, pp. 297-303 and C. Xie, and A.D. Yanchuk (2003), *Breeding Values of Parent Trees, Genetic Worth of Seed Orchard Seedlots, and Yields of Improved Stocks in British Columbia*, Western J. Applied Forestry, vol. 18, no. 2, pp: 88-100. In general, every parent tree in every seed orchard has a breeding value calculated from progeny tests. The contribution of the parental breeding values to the seedlot results in the calculation of a genetic worth for that seedlot.

A sensitivity analysis for the Robson Valley TSA indicated that use of genetic gain assumptions used in the base case had no impact on short-term timber supply. Consequently, if information becomes available that indicates that the productivity gains associated with the use of select seed are different than assumed in the base case, this new information can be reflected in subsequent timber supply reviews. In reviewing this factor, including the public input, I am satisfied that genetic gains assumed in the base case appropriately reflect current management requirements and information about improved growth rates when using select seed.

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

Expected time to re-established the forest following denudation

I accept the assumptions pertaining to the 'Regeneration delay and not satisfactorily restocked/current backlog' factor as modelled in the base case as noted in Table 2.

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

Silvicultural treatments

I accept the assumptions pertaining to the 'Silviculture systems' factor as modelled in the base case as noted in Table 2.

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

Utilization

- *utilization standards*

The utilization standards used in the base case for the Robson Valley TSA follow the Interior Timber Merchantability Specifications. District staff have reviewed the utilization standards used and indicate that they appropriately reflect current practice.

A member of the public asked why tenure holders are allowed to reject and burn sound wood, and how this volume is handled when estimating timber supply.

Since there are no major processing facilities in the Robson Valley TSA, harvested volumes are hauled long distances to mills outside the TSA, such as to Prince George. Consequently, licensees sometimes only remove the better wood, and may not always transport all the wood that meets accepted utilization standards. However, licensees are billed under the 'take or pay' policy for wood that meets utilization standards but is left on the harvested area and not utilized. In addition, this unused volume, also referred to as avoidable waste, is counted undercut control requirements as having been harvested as part of the AAC of the TSA.

Having reviewed this factor with ministry staff, and considering public input on this factor, I accept the utilization standards used in the base case.

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

Integrated resource management

- *general comments*

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

- *land use plans*

The Robson Valley Land and Resource Management Plan (LRMP) was approved by Cabinet in 1999. The plan divides the area into 23 resource management zones that fall into one of six categories: settlement and agriculture, community watersheds, resource development, general resource management, special management, and protected areas.

Other than the designation of new parks and protected areas stemming from the LRMP, most of the plan provides policy guidance to agency staff, tenure holders, and others. The timber supply analysis has included the guidance in the LRMP where licensees have committed to forest management practices consistent with LRMP objectives. Where there is uncertainty regarding plan implementation, sensitivity analysis was provided so that effects on timber supply can be examined.

A Crown Land Plan was endorsed in the Robson Valley LRMP. A legal Order under Section 93.4 of the *Land Act* was issued in 2006 for two of the zones in the Crown Land Plan: Agriculture Development Areas and Settlement Reserve Areas. The Order essentially prohibits timber harvesting except where needed to address environmental or safety concerns, or to address forest health. As a consequence, these areas were excluded from the THLB.

Following Robson Valley sustainable resource management planning, the following legal Orders were issued:

- the South Trench and West Kinbasket Landscape Units and Landscape Unit Objectives for the Canoe Mountain zone (for Canoe Mountain, the objectives address visual quality and forest harvesting activities);
- the East Kinbasket, West Kinbasket, Hugh Allan, Foster and Dawson Landscape Unit Objectives (for old-growth management areas, and riparian habitat to facilitate wildlife movement and use);
- the Crescent Spur, Lower Morkill/Cushing, Forgetmenot, Upper Morkill, North Trench and Goat Landscape Unit Objectives (for old-growth management areas); and
- the Kiwa-Tete and Canoe Landscape Unit Objectives (for old-growth management areas, and riparian habitat for wildlife movement and use).

In 2005 a letter was prepared by the Regional Director of the former Ministry of Sustainable Resource Management that recognized the draft old-growth management areas and enhanced riparian/wildlife movement corridors as meeting the intent of the 'Order Establishing Provincial Non-Spatial Old Growth Objectives', as provided for under Section 8 of the Order, if a forest stewardship plan identifies these areas and proposes results or strategies that maintains their integrity.

Assumptions were included in the base case reflecting the direction in all of the above legal Orders and the letter from the regional executive director.

I reviewed the Robson Valley LRMP and Crown Land Plan with ministry staff, and the various legal Orders that have been issued, and I am satisfied they are appropriately reflected in the base case. I discuss this further in some of factors below.

- *landscape-level biodiversity*

Landscape-level biodiversity can be sustained by maintaining forests with a variety of patch sizes and seral stages across a variety of ecosystems and landscapes. Given other forest management provisions that provide for a diversity of forest stand conditions, old forest retention is a key landscape-level biodiversity consideration.

Spatially defined old-growth management areas (OGMAs) have been established for landscape units at the north and south ends of the Robson Valley TSA. OGMAs were excluded from the THLB in the base case.

The 2004 'Order Establishing Provincial Non-Spatial Old Growth Objectives' applies to landscape units where spatial OGMAs have not been established. Such landscape units are located in the central portion of the Robson Valley TSA. The Order also enables the Minister or delegate to accept draft OGMAs as meeting the intent of the Order; this has occurred in the South Trench Landscape Unit within the TSA. In the base case the draft OGMAs were consequently excluded from the THLB, and the requirements of the Non-Spatial Order were modelled in the landscape units within the TSA where no established or draft landscape units exist.

Several public comments focussed on the need to protect old forests, particularly mature cedar-hemlock stands in the Interior Cedar-Hemlock biogeoclimatic zone. These stands represent the Interior Wet Belt of BC and some are very old (ancient) with unique stand characteristics. Considering this feedback, I requested an analysis of the amount of old growth cedar-hemlock in the TSA. The analysis indicated that there are about 39 000 hectares of old growth (>140 years old) cedar–hemlock forests within the outer boundary of the TSA (nearly three percent of the total area). About two-thirds of this area is in protected areas, OGMAs, uneconomic stands, and other land classes that are outside of the THLB.

Given this analysis, I am satisfied that a high proportion of old cedar-hemlock forests within the boundary of the TSA are either protected or not likely to be harvested. Further, additional protection of these forests is a land-use decision beyond the scope of my authority in making an AAC determination. If legal designations are established that protect additional forests, this can be reflected in future timber supply reviews.

Having reviewed with staff how old growth was addressed in the base case, I am satisfied that it was consistent with the legal Orders for the various landscape units within the Robson Valley TSA.

- stand-level retention

Stand-level biodiversity can be sustained through stand-level retention as it maintains or restores in managed stands important structural attributes such as wildlife trees, coarse woody debris, tree species diversity, and understory vegetation diversity. The base case timber harvesting land base (THLB) was reduced by seven percent (11 133 hectares) to account for stand-level retention. The percentage used is consistent with legal requirements under the *Forest Planning and Practices Regulation* and commitments in Forest Stewardship Plans. However, not all of this area is required to be located in the THLB.

Forest and Range Evaluation Program stand-level biodiversity sampling conducted in the Robson Valley TSA from 2006 to 2011 revealed an area-weighted average retention on the gross cutblock area of 19 percent. Stand-level retention provides an additional impact on the THLB where it does not overlap with other retained areas. Further analysis of the FREP data indicated that only three percent of the THLB is retained strictly for stand-level retention (i.e., with no other overlapping constraints). A sensitivity analysis was conducted to examine the effect of using a three percent reduction for stand-level retention rather than the seven percent assumed in the base case. Mid-term timber supply increased by 29 000 cubic metres per year compared to the base case.

I am satisfied that the THLB in the base case has been underestimated by about four percent, and as a result, mid-term timber supply in the base case is underestimated by 29 000 cubic metres per year. I will discuss this further in '**Reasons for Decision'**.

- cultural heritage resources

A cultural heritage resource (CHR) is 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. CHRs include, but are not limited to, archaeological sites, structural features, heritage landscape features and traditional use sites.

Features associated with past and current human use, including aboriginal use, are found throughout the Robson Valley TSA. The Simpcw, Canim Lake and Lheidli T'enneh First Nations' Traditional Use Studies contain information specific to the Robson Valley. Hunting grounds, fishing areas, travel corridors and campsites figure prominently along the major water courses of the TSA. With the exception of the Simpcw First Nation, belonging to the North Thompson division of the Secwepemc aboriginal peoples, there is no historic information of residency in the Robson Valley TSA.

Available ethno-historic reports suggest that the Secwepemc People fished, hunted and gathered edible plants between early spring and late fall in the TSA. In the late fall, people would return to their village where they spent the winter. Archaeological studies have identified winter home sites and underground food cache sites at a variety of locations including Tête Jaune. Carrier people lived in permanent villages, usually located near salmon fisheries, though they also spent part of the year harvesting resources from the surrounding areas.

Archaeological sites established under the *Heritage Protection Act* within the Robson Valley TSA are found along the major water courses within riparian reserve areas, or are incorporated into wildlife tree patches as part of stand-level retention, or are removed from the harvest area. If a forest tenure holder plans to harvest over a known site, they apply to the Archaeological Branch for a 'site alteration permit' granted under the *Heritage Protection Act.*

The *Robson Valley LRMP Archaeological Overview Assessment* completed in 1995 is used as a coarse filter approach to assess the archaeological potential of an area. Major licensees may also use the *Norcan Archaeological Predictive Model* as a fine filter approach. If proposed harvesting is within a 'high' potential area, current management practices follow one of the following options: remove the 'high' potential area from the proposed harvest; or complete an archaeological assessment of the area; or propose to proceed with harvesting with management recommendations shared with affected First Nations for input.

For CHRs not protected under the *Heritage Protection Act* but addressed under the *Forest and Range Practices Act*, during the consultation process for operational plans and permits: an assessment of all known values is shared with the First Nations affected by the proposal; a request is made to First Nations for further CHR information to determine if they may be impacted during forest operations; major licensees provide a result or strategy commitment in their Forest Stewardship Plans as to how they intend to address CHR values that become known during operations; and major licensees include a communication strategy to inform First Nations of found CHRs and how the CHRs will be managed during operations.

First Nations have expressed CHR interest in trail networks, wildlife habitat, protection of archaeological sites, cumulative impacts to ungulate travel corridors, medicinal plants, and culturally modified trees (CMTs) such as cedar and pine stripping. They have also noted that many CHRs were lost with the Kinbasket reservoir.

In summary, district staff note that when CHRs have been identified, their protection usually occurs at the operational level by incorporating them into wildlife tree patches for stand-level biodiversity or in other reserves or designations. Staff believe that the base case therefore has captured current practices in the 'stand-level retention' factor or other factors. Additional CHR areas over and above those already excluded because they overlap with other management objectives are anticipated to be minimal; therefore no additional land base reduction was applied for CHRs.

In reviewing this factor with ministry staff, I am satisfied that cultural heritage resources were addressed appropriately in the base case.

- *grizzly bear management*

The 1999 Cabinet-approved Robson Valley Land and Resource Management Plan (LRMP) strategy for grizzly bear management includes: "Where important avalanche paths are identified, a total reserve of 100 metres should be left on each side of the path. Selective harvesting will be considered pending further research."

Under 'Implementation' in the 2006 AAC Rationale for the Robson Valley TSA, the chief forester requested: "District staff should engage the other affected agencies in finding the most appropriate means of integrating the already existing policy direction with the new inventory information, to decide which of the avalanche chutes are high value that require the 100-metre buffer, and to establish the legal means for designating and enforcing the required management." The chief forester included several other implementation requests and prefaced them by noting that the ability of staff to undertake these projects is dependent on available resources including funding.

In the absence of legal designations that buffer high value avalanche tracts, the chief forester in 2006 accepted the application of 50-metre buffers for key avalanche paths mapped in an avalanche tract mapping project. This was considered to best reflect current practice. The chief forester accounted for the uncertainty (e.g., 50-metre buffer current practice *versus* 100-metre buffer in LRMP) as a probable overestimation of the THLB in his 'Reasons for Decision'.

No new legal designations have been established for grizzly bear management in the Robson Valley TSA since the 2006 AAC determination. In the base case a 50-metre buffer was assumed along all warm aspect (southeast to southwest facing) avalanche tracts below 2000 metres elevation similar to what was done for the 2006 AAC determination. District staff advise that to date licensee management practices are consistent with the assumed 50-metre buffers for these warm aspect avalanche tracts.

The total forested area in 50-metre buffers along warm aspect avalanche tracts is 26 000 hectares, of which 3500 hectares would be classified in the THLB when other, overlapping THLB exclusions are considered. The 3500 hectares represent about 2.5 percent of the THLB. Sensitivity analysis indicated that including this area in the THLB would increase the mid-term timber supply by about 2.8 percent.

According to the regional biologist, the grizzly bear population in this area is stable and not threatened. This suggests the current practise of 50-metre buffers along avalanche chutes is functioning for this population.

Several public comments were received that expressed concern about grizzly bears in the TSA and the adequacy of measures to protect grizzly bear habitat.

I am aware that the 50-metre buffers assumed in the base case are narrower than the 100-metre buffers recommended in the 1999 Cabinet-approved LRMP. I am also aware that no buffers have been legally established. As I mentioned above, district staff advise that the base case assumptions best reflect current management in the TSA and according to the regional biologist the grizzly bear population is stable. I therefore make no adjustment on this account for this determination.

Grizzly bears are on the Blue List in the British Columbia Conservation Data Centre.
A blue-listed species is considered to be of special concern because of characteristics that make them particularly sensitive to human activities or natural events. Because of this special concern and the uncertainty associated with avalanche chute buffer widths I request under '**Implementation'** that appropriate ministry staff work with the Ministry of Environment to review measures to conserve grizzly bears and their habitat in the TSA, such as buffers along avalanche chutes, to assess their effectiveness and adequacy.

- ungulate winter range

After extensive stakeholder consultation, in 2007 the provincial government announced its endorsement of the Mountain Caribou Recovery Implementation Plan (MCRIP). Considering the MCRIP and other information, in 2009 the Deputy Minister of Environment established caribou ungulate winter range and objectives in Order U-7-003 under the *Government Actions Regulation* (GAR). Objectives for high value caribou habitat prohibit timber harvesting and road building. In order to account for this decision, 44 469 hectares were excluded from the timber harvesting land base in the base case for the Robson Valley TSA.

GAR Order U-7-003 also addresses medium value caribou habitat and travel corridors, and Order U-7-010 addresses mule deer winter range, where modified harvest methods are required. The required forest cover constraints were modelled in the base case and consisted of:

- Caribou travel corridor: more than 20 percent of corridor must be covered with forests older than100 years, and less than 20 percent of the corridor can be covered with stands less than three metres in height;

- Caribou medium habitat: less than 30 percent of the volume in an opening can be removed every 80 years, and openings must be less than one hectare with a mean size of less than 0.5 hectares;
- Mule deer winter range: to provide for snow interception and thermal cover, more than 50 percent of the forest must be in age class eight or nine with more than 66 percent canopy closure.

As part of the public input, concern was raised about the management for moose. Provincial Fish and Wildlife staff informed me that a small portion of the Robson Valley TSA along the valley bottom is moose habitat. Little information is available about moose populations in the TSA. Moose cow and calf hunting has been all but eliminated through regulation in the Omineca region, and this includes the Robson Valley TSA. No additional forest cover constraints for moose were assumed in the base case as there have been no legal orders established for moose ungulate winter range. If legal orders are established in the future, the order's provisions can be accounted for in the next timber supply review.

Having reviewed these legally established ungulate winter ranges and objectives, I am satisfied that the base case accounted for forests not available for harvesting due to high value caribou habitat by removing them from the timber harvesting land base, and for other ungulate winter ranges through the application of forest cover constraints. As noted under 'wildlife habitat areas' below, I have included a request that relates to this and other wildlife factors under **'Implementation'**.

- *wildlife movement corridors*

The 'Order to Establish the East Kinbasket, West Kinbasket, Hugh Allan, Foster and Dawson Landscape Unit Objectives' includes objectives to enhance riparian management areas for nine streams for wildlife movement corridor purposes. The total area for wildlife movement corridors is 6931 hectares. Within the corridors, no more than 30 percent of the area in riparian management zones may be covered with trees less than three metres in height, no clearcuts may be longer than 200 metres, and greater than 40 percent of basal area must be retained when non-clearcut systems are used.

These forest cover constraints were modelled in the base case to account for the legally established wildlife movement corridors, and I accept that this factor was appropriately addressed. As noted under 'wildlife habitat areas' below, I have included a request that relates to this and other wildlife factors under **'Implementation'**.

- *wildlife habitat areas*

'Identified wildlife' are species at risk and regionally important wildlife in BC that have been designated as requiring special management attention. Habitat needs for many wildlife species can be addressed through parks and protected areas, the productive Crown forest land base that is outside the THLB, and in the THLB through existing management strategies such as those for biodiversity, riparian management, ungulate winter range or through the application of forest cover constraints.

The Identified Wildlife Management Strategy (IWMS) provides direction and guidance for managing identified wildlife where their habitat needs are not already addressed. According to provincial policy, in the absence of strategic plan direction, all habitat requirements for identified wildlife are to be addressed within a one percent THLB impact limit. This impact limit has generally been applied to each management unit.

Consistent with the IWMS, in 2013 the Ministry of Environment established five bull trout wildlife habitat areas (#7-007 to 7-011) in the upper Goat River drainage with a total area of 800 hectares. The general wildlife measures for the wildlife habitat areas prohibit timber harvesting, therefore the areas were excluded from the timber harvesting land base. Given overlaps with high value caribou habitat, ungulate winter range and old-growth management areas, the net impact on the timber harvesting land base was 197 hectares.

District staff note that no timber harvesting has occurred in the upper Goat River, and none is planned in the immediate future, in part due to the legal provisions established for non-timber values.

I have reviewed this factor with ministry staff and I am satisfied that it was appropriately accounted for in the base case. Under **'Implementation'** I request that appropriate ministry staff work with the Ministry of Environment to review existing monitoring programs that relate to various wildlife designations in the TSA to help ensure the intended conservation measures are working effectively, and to identify any key gaps in monitoring.

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

Other information

- *harvest performance*

Timber harvesting in most of the Robson Valley TSA, with the exception of the trench area, typically involves high operating costs associated with difficult terrain for logging and road building. High logging costs combined with increased hauling costs associated with the lack of large scale local processing facilities have rendered the overall extent of the operable land base elastic and dependent on fluctuating commodity prices and market cycles.

Harvest levels over the past decade have been below the AAC and have declined significantly as a result of low commodity prices due to the collapse of the North American housing market. Harvest levels on the TSA were also appropriately reduced as a result of the issuance of the two community forest agreements which reduced the area of the TSA. The average volume harvested in the TSA over the past decade has been about 250 000 cubic metres per year.

Harvest billing system results for 2002 to 2012 (2006 excluded) indicate pine and spruce were the dominant species harvested, primarily due to utilization of pine damaged by the mountain pine beetle.

The AAC in effect immediately before this determination was partitioned for deciduous-leading stands (aspen and birch) at 6000 cubic metres. As I mentioned previously a large proportion of deciduous stands are now in the area covered by the Valemount and Dunster community forest agreements. Deciduous-leading species contribute 4100 hectares to the current timber harvesting land base with about 600 hectares that is birch-leading. The majority of the remaining area is aspen-leading and is not being used in the TSA. Birch is processed in at least two local manufacturing plants making flooring.

Deciduous-leading stands contribute approximately 12 000 cubic metres per year to the base case forecast; about 11 000 cubic metres per year are from aspen-leading stands. In a sensitivity analysis, excluding deciduous-leading stands decreased the THLB by about three percent, and this resulted in a seven-percent decrease in the mid-term projected in the base case.

I understand that the base case includes about 11 000 cubic metres per year of aspen volume, yet there has been no aspen harvesting in the TSA due to the lack of market demand. For this determination I conclude that short- to long-term timber supply is overestimated in the base case on this account and I will discuss this further in my '**Reasons for Decision'**.

- *First Nations considerations*

The Crown has a duty to consult with, and accommodate if necessary, those First Nations for whom it has knowledge of the potential existence of aboriginal interests that may be impacted by a proposed decision, including strategic-level decisions such as AAC determinations. As deputy chief forester, I must therefore consider information arising from the consultation process with First Nations respecting aboriginal interests and treaty rights that may be affected by my AAC determination. As well, I will consider other relevant information available to the ministry regarding aboriginal interests, including information gathered during other consultation processes.

The following First Nations have asserted traditional territories within the Robson Valley TSA according to the Provincial Consultative Database (CAD): Lheidli T'enneh First Nation, Simpcw (North Thompson) First Nation, Lhtako Dene Nation, Canim Lake Band, Xat'súll (Soda Creek) First Nation, Shuswap First Nation, Okanagan Indian Band, Adams Lake Indian Band, Neskonlith First Nation, Saulteau First Nation, and Tsilhqot'in National Government. The description of First Nations interests in the TSA below summarizes material provided to me by district staff.

There is considerable overlap of First Nation asserted territories in the Robson Valley TSA. There are no reserves or First Nations communities in the TSA. The Simpcw, Canim Lake, Lhtako and Lheidli T'enneh First Nation have expressed interest in obtaining a forest tenure in the Robson. The Neskonlith and Adams Lake First Nations have recently asserted territory in the Robson Valley TSA.

The Saulteau First Nation asserts territory overlapping less than one percent of the Robson Valley TSA with no asserted territory within the timber harvesting land base. A decision was made prior to the beginning of the timber supply review process to not consult with this First Nation given the very small amount of asserted territory within the TSA and that the asserted territory does not overlap with the THLB. For other decisions related to the Robson Valley TSA, the district has also not consulted with the Saulteau First Nation.

The Secwepemc People, known by non-natives as the Shuswap, are a Nation of bands occupying the south-central part of BC.

The Simpcw 'People of the Thompson River' belong to the North Thompson division of the Secwepemc aboriginal peoples. The Simpcw traditionally were noted for their hunting ability. In the summer months much of their time was spent in hunting camps in the mountains above the North Thompson and upper Fraser Rivers. The Simpcw asserted traditional territory includes the southern three-quarters of the Robson Valley TSA. The Simpcw First Nation general interests in the Robson Valley include: rebuilding of traditional culture; community economic prosperity; supporting the various local economies within their territory; concerns regarding cumulative effects of resource activity on traditional culture; having a community forest in the vicinity of Tête Jaune Cache; and a Forest Tenure Opportunity in the TSA. High areas of interest within the TSA include Tête Jaune Cache, Canoe River and Camp Creek. The Simpcw signed a Forest Consultation and Revenue Sharing Agreement with the province in 2013.

The People of the Canim Lake Band, or the Tsq'escenemc ('The People of Broken Rock'), as they are known in their native language, are members of the Shuswap Nation. The Tsq'escenemc are part of the Lakes People of the Northern Shuswap, using the vast number of lakes in the

region to maintain sustenance. Both the Canim Lake and Xats'ull (Soda Creek) First Nations assert territory in the central portion of the Robson Valley on the west side of the Fraser River. Canim Lake First Nation general interests in the Robson Valley include: cultural rediscovery; economic prosperity and diversity; concerns about cumulative effects of resource activity on traditional culture; and Forest Tenure Opportunity in the TSA. High areas of interest in the TSA include Tête Jaune Cache and the corridor from Albreda to Tête Jaune Cache. The Canim Lake First Nation signed a Forest Consultation and Revenue Sharing Agreement with the province in 2011; they have a Forest Tenure Opportunity Agreement with 100 Mile House Natural Resource District signed in 2012; and are in Stage 4 of the BC Treaty Process.

The Xat'súll (Soda Creek) First Nation is the northern most Shuswap tribe of the Secwepemc People. The Xat'súll First Nation followed a hunting, fishing and gathering lifestyle centred on family groups and focussed on the Fraser River and the salmon. As noted earlier, both the Canim Lake and Xat'súll (Soda Creek) First Nations assert territory in the central portion of the Robson Valley on the west side of the Fraser River. District staff have limited knowledge of the Xat'súll's general interest or high areas of interest in the Robson Valley. The Xat'súll First Nation signed a Forest Consultation and Revenue Sharing Agreement with the province in 2012; and are in Stage 4 of the BC Treaty Process.

The Shuswap and Simpcw First Nations belong to the North Thompson Division of the Secwepemc. The Shuswap First Nation based their economy on salmon and ungulates resulting in a pattern of occupation centering on river meadows and forest edges. The Shuswap asserted traditional territory includes the southern third of the Robson Valley TSA. District staff have limited knowledge of their general interest or high areas of interest in the Robson Valley. Shuswap First Nation agreements with the province include a Revenue Sharing Agreement signed in 2010; a Forest Consultation and Revenue Sharing Agreement signed in 2011; and a Forest Tenure Opportunity Agreement signed in 2013.

The Adams Lake Indian Band and Neskonlith First Nation are members of the Shuswap Lake Division of the Secwepemc. The Adams Lake asserted traditional territory includes a relatively small area at the extreme southern end of the Robson Valley TSA. District staff have limited knowledge of their general interest or high areas of interest in the Robson Valley. Adams Lake Indian Band's agreements with the province include a Forest Consultation and Revenue Sharing Agreement signed in 2012 and amended in 2013; and a Reconciliation Framework Agreement signed in 2013 with modified implementation beginning in January 2014.

The original Neskonlith Indian Band was divided into three bands by the colonial government forming Adams Lake, Neskonlith, and Little Shuswap Bands. Adams Lake and Neskonlith First Nations are members of the Shuswap Lake Division of the Secwepemc. The Neskonlith First Nation asserted traditional territory includes the southern three-quarters of the Robson Valley TSA. District staff have limited knowledge of their general interest or high areas of interest in the Robson Valley. The Neskonlith First Nation agreements with the province include a Forest Consultation and Revenue Sharing Agreement signed in 2013; a Reconciliation Framework Agreement signed in 2013 with modified implementation beginning in January 2014; and a Forest Tenure Opportunity signed in 2012.

The Okanagan Indian Band asserted traditional territory includes the southern portion of the Robson Valley TSA. District staff have limited knowledge of their general interest or high areas of interest in the Robson Valley.

The Carrier People occupy a large portion of the central interior of BC; the Lheidli T'enneh and Lhtako Dene First Nations are part of the Carrier who have asserted traditional territories that include the Robson Valley TSA.

The Lheidli T'enneh First Nation is a central Carrier group that lived in permanent villages, usually located near salmon fisheries, where they also spent part of the year harvesting resources from surrounding areas. Hunting grounds, fishing sites and other resource areas were divided among closely related, extended family groups, phratries or clans. The Lheidli T'enneh First Nation asserted traditional territory includes the northern three-quarters of the Robson Valley TSA. Their asserted territory in the most northern part of the TSA does not overlap with other First Nations' territories. Their general interests in the TSA include fisheries; economic development; and wildlife. Areas of high interest within the TSA include Snowshoe Creek, the Morkill River, the Milk River, and the Raush River. The Lheidli T'enneh First Nation agreements with the province include a Forest Consultation and Revenue Sharing Agreement signed in 2012; a Forest Tenure Opportunity signed in 2013 (but not in the Robson Valley TSA); and they are in Stage 5 of the BC Treaty Process. The process however is currently stalled.

The Lhtako Dene Nation asserted traditional territory includes the central part of the Robson Valley TSA to the Alberta border. Their general interests in the TSA include economic interests and partnering with industry. District staff have limited knowledge of their particular areas of high interest. The Lhtako Dene Nation signed a Forest Consultation and Revenue Sharing Agreement with the province in 2011.

The Saulteau First Nations belong to the Cree culture group, and have asserted traditional territories that include a small portion of the northeast corner of the Robson Valley TSA. District staff have limited knowledge of their general interest or high areas of interest in the Robson Valley. The Saulteau First Nation are part of Treaty 8.

The Tsilhqot'in National Government is a federally incorporated company that was established in 1989 to represent the needs of five Tsilqot'in communities. The Tsilhqot'in National Government asserted traditional territory includes the mid-western boundary of the Robson Valley TSA. District staff have limited knowledge of their general interest or high areas of interest in the Robson Valley. The Tsilqot'in Framework Agreement Engagement Zone A with the province was finalized and signed in 2011.

All First Nations with the exception of the Okanagan Indian Band have a form of agreement with the province relating to the consultation level of an AAC determination such as Forest Consultation and Revenue Sharing Agreements. Consultation with the Okanagan Indian Band was guided by the *Updated Procedures for Meeting Legal Obligations When Consulting First Nations*. I reviewed the document entitled *First Nations Consultation Summary related to the Robson Valley Timber Supply Area Allowable Cut Determination* prepared by Prince George Natural Resource District staff.

Information sharing letters were sent to First Nations regarding the data package collection stage of the Robson Valley TSA timber supply review process on January 17, 2012.

Consultation letters were sent to First Nations regarding the release of the *Robson Valley Timber Supply Review Data Package* process on January 11, 2013, with follow-up phone calls and e-mails later in January and February to First Nations suggesting meetings to discuss the Data Package process. On March 5, 2013 a meeting was held with the Xat'súll First Nation, and on April 24, 2013 with the Lheidli T'enneh First Nation.

An e-mail was sent to all affected First Nations regarding the *Public Discussion Paper* on December 5, 2013 with an electronic copy of the paper attached and with a hardcopy sent by mail as follow-up. Consultation letters were sent to all First Nations on December 12, 2013 regarding the *Public Discussion Paper*. A follow-up e-mail was sent to First Nations on January 21, 2014 suggesting meetings to discuss the *Public Discussion Paper*. There was an information sharing meeting with Lheildi T'enneh First Nation staff in preparation for meeting with Chief Frederick.

A meeting was held with the Canim Lake First Nation on February 20, 2014, and with the Simpcw First Nation on March 5, 2014.

Some of the First Nations have requested timber tenures in the Robson Valley TSA. This interest is beyond the scope of my authority in making an AAC determination. The Minister has the authority to make timber allocation decisions. I will ensure that staff who make recommendations to the Minister about issuing tenures are aware of First Nations interests in obtaining timber tenures in the TSA.

Common interests and concerns raised by First Nations during consultation as it relates to the AAC determination include:

- Simpcw, Okanagan: Request for funding to provide cultural heritage resource interests;
- Canim Lake: Request for licensees to do research and protect cultural heritage resources; request that deciduous and whitebark pine stands be removed from THLB;
- Lheidli T'enneh: interest in participating in the Wildlife Project (i.e., a habitat supply impact assessment piloted in other TSAs but not yet done for Robson Valley); waterways, fish use and habitat in the TSA are very important to the community members in the TSA;
- Xat'súll: also interest in participating in the Wildlife Project; concern with road densities on wildlife, especially endangered species (caribou, grizzly bear); concern that measures are taken to protect wildlife.

I previously reviewed 'cultural heritage resources' and concluded that I was satisfied that this factor was appropriately addressed in the base case. I have also reviewed factors related to grizzly bears and wildlife (ungulate winter range, wildlife movement corridors, wildlife habitat areas), and also concluded that existing requirements or current management practices for these important values were appropriately modelled in the base case . The THLB assumed in the base case does not include whitebark pine-leading stands. It does include 4100 hectares of deciduous leading stands of which 600 hectares are covered with birch-leading stands and the remainder primarily with aspen-leading stands. In making this determination I considered birch-leading stands to contribute to the AAC since birch is currently being utilized by two local manufacturing plants making flooring. However, as I explain in **'Reasons for Decision'**, as aspen-leading stands have not been harvested, and recognizing Canim Lake First Nation's expressed interest in deciduous species contributing to other values such as biodiversity and wildlife habitat, I excluded the contribution from aspen-leading stands for this AAC determination.

No specific information was presented to me that quantifies the amount of wildlife or wildlife habitat, or area for cultural or subsistence practices that is needed in addition to the assumptions used for these values in the base case. Area exclusions and volume reductions in the base case for old-growth management areas, riparian reserve zones and other reasons will serve to address these interests to some unknown extent. It appears generally that at this time the required management adjustments can be, and are being, made operationally, without incurring changes in the projected timber supply. If further clarity is gained on any of these issues, for instance through on-going consultations or joint studies, this information can be considered in future determinations.

Based on my review of the information sharing and consultation processes described above, the available information regarding aboriginal interests, and the potential impact my decision may have on these interests, I conclude that the consultation requirements established in agreements between government and First Nations or as guided by the *Updated Procedures for Meeting Legal Obligations When Consulting First Nations* have been met. Furthermore, I note

that district staff will continue to be available to meet and consult with First Nations at the operational planning level.

I am satisfied that opportunities were provided to all First Nations to share their concerns related to specific aboriginal interests that may be impacted by this decision and to the extent possible within the scope of my authority under Section 8 of the *Forest Act*, I have accommodated those aboriginal interests that were made known to me during consultation on this decision. If new information regarding First Nations' aboriginal interests becomes available that significantly varies from the information that was available for this determination and that may affect timber supply, I am prepared to revisit this determination sooner than required by legislation.

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

Alternative rates of harvesting

- *alternative harvest forecasts*

Several alternative harvest forecasts are presented in the *Public Discussion Paper* and were presented to me at the determination meeting. However, many could only maintain the initial harvest level for five years before declining rapidly to the mid-term. When initial levels were maintained for more than five years, the forecasts declined precipitously to mid-term levels that were often below the base case.

Given the sharp declines in harvest levels over five-year increments in the base case, and in consideration of the various factors that I must account for in my decision, at the technical review of the information available for this determination on February 5 and 6, 2014, I requested supplementary harvest forecasts at lower initial harvest levels where the transition to mid-term harvest levels can more gradually occur over 10-year periods rather than the five-year periods applied in the base case. These forecasts also include changes to the timber harvesting land base to address some of the upward and downward pressures on timber supply noted earlier in this rationale document (i.e., adjustments to inventory stand age, stand-level retention, and removal of aspen volumes). The aggregate impact was a net four percent increase in the timber harvesting land base (about 5500 hectares) relative to that assumed in the base case.

One of these supplementary forecasts starts at 400 000 cubic metres per year which can be maintained for 10 years before declining at 10 percent per decade to a mid-term level of 300 000 cubic metres per year after 30 years. This forecast begins to gradually step up to a long-term harvest level beginning after 50 years. The supplementary forecasts, including the one with an initial harvest level of 400 000 cubic metres per year, suggest that the slightly expanded timber harvesting land base combined with a lower initial harvest level allows for a slower and more gradual transition to the mid-term relative to the base case.

District staff informed me that the average actual harvest performance in the TSA over both the last five- and 10-years is well below projected mid-term harvest levels, and the current commitment for volume is nearly 400 000 cubic metres per year as approximately 81 000 cubic metres have been apportioned for non-replaceable forest licences that have not been issued.

I find the supplementary forecast described above provides a more stable forecast than the base case, and a more stable timber supply should assist in maintaining community stability. In addition, the more gradual decline in the forecast would help to ameliorate adverse timber supply impacts should it be found that the uncertainties in the information available for this

determination have caused an overestimation of timber supply. I am also mindful that the initial level in this forecast is well above actual performance over the last 10 years. I will discuss my considerations of this forecast further in **'Reasons for Decision'**.

Economic viability

- *accessibility*

An operability assessment of the TSA concluded that a number of drainages containing significant amounts of mature fibre cannot be expected to be accessed under current or foreseeable economic conditions. These areas were historically assumed to contribute to the THLB, but no harvesting has taken place there yet. In the base case they were again assumed to contribute to the THLB because at some time economic factors may lend themselves to harvesting these areas. A map of the areas is provided in Figure 1 on page 37. Some areas (portions of the Cariboo and Foster Landscape Units) were excluded from the THLB in the base case because in the 2006 AAC determination the chief forester concluded these areas are too difficult to access and should not contribute to the THLB.

The currently uneconomic areas include about 13 660 hectares of the timber harvesting land base. An analysis was conducted to estimate the non-declining even-flow harvest contribution of these areas using base case assumptions. According to this analysis these areas support an annual harvest level of approximately 45 000 cubic metres. District staff are concerned that continued inclusion of these areas in the THLB could result in over-harvesting in the accessible areas of the TSA.

There were public comments supporting the removal of these currently uneconomic areas from the THLB. There was also feedback from BC Timber Sales for establishing a partition for these areas to account for them in the AAC should the right economic and market conditions occur to make them viable.

I reviewed this factor with ministry staff. I too am concerned about the viability of harvesting in these areas given that none has taken place to date. I have concluded that a partition is warranted to avoid over-harvesting of the accessible land base and I will discuss this further in my **'Reasons for Decision'**.

Section 8(8) (c) repealed [2003-31-2 (B.C. Reg. 401/2003)]

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

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

Economic and social objectives

- *Minister's letters*

The Minister of Forests and Range expressed the economic and social objectives of the Crown in two letters to the chief forester, dated July 4, 2006 (attached as Appendix 3) and October 27, 2010 (attached as Appendix 4). The minister asked for consideration, during AAC determinations, of the importance of a stable timber supply in maintaining a competitive and sustainable forest industry while being mindful of other forest values. The minister, in his 2010 letter, provided the

Crown's objectives with respect to mid-term timber supply in areas affected by the mountain pine beetle.

In respect of this, in the supplementary alternative harvest forecast I described above, a primary objective was to provide a more stable timber supply for the Robson Valley TSA by lowering initial harvest levels so that the transition to mid-term harvest levels can more gradually occur over 10-year periods rather than the five-year periods applied in the base case. This forecast also increases mid-term harvest levels relative to the base case. As noted above, I have considered this forecast in my '**Reasons for Decision'**.

I have accounted for the mountain pine beetle impacts in the Robson Valley TSA in my determination (see below) and impacts on mid-term timber supply have also been reflected in the supplementary alternative harvest forecast mentioned above.

Finally, the minister suggested that the chief forester should consider the local social and economic objectives expressed by the public, and relevant information received from First Nations.

During my consideration of the factors required under Section 8 of the *Forest Act*, I have been mindful of the local objectives, as provided in the Robson Valley Land and Resource Management Plan and associated plans and orders. I have also reviewed the public and First Nations consultation process undertaken by the district and considered the input received in making my determination. I have accounted for this input in the various applicable factors described in this document, and as noted below. On this basis, I am satisfied that this determination accords with the objectives of government as expressed by the minister.

- public input

The Prince George Natural Resource District sought public input throughout the timber supply review process for Robson Valley TSA. In February 2012, the district sent e-mails to a wide range of organizations (local governments, forest industry, environmental groups, chambers of commerce, community associations and groups, groups representing resource tenure holders, government agencies, and, as noted earlier, to First Nations) announcing the start-up of the timber supply review process. In January 2013 the district sent an e-mail to those organizations announcing the 60-day public review and comment period for the data package. In December 2013, the district sent an e-mail to those organizations announcing the 60-day public review and comment period regarding the public discussion paper. In December 2013, the district also made presentations to the Robson Valley forest licensees at a TSA Steering Committee Meeting, and to the Village of Valemount staff and mayor; an invitation for a presentation was also offered to the Village of McBride.

The outreach effort by district staff resulted in numerous public comments – although most were directly related to the timber supply review process, some of the comments were outside the scope of this AAC determination. At the determination meeting I reviewed specific comments for each factor I must consider in my determination. The more general comments received can be grouped into four themes: community forests; climate change; public involvement/other forest values; and the level of the AAC.

I received several comments about the management of community forest agreement areas, and whether they should be expanded. Although I appreciate receiving these comments, they are outside the scope of my authority to make an AAC determination for the Robson Valley TSA. Community forest agreements are area-based tenures with AACs that are determined separately from other area-based tenures and TSAs. Decisions regarding the apportionment of the AAC that I determine, including expansion of community forest agreements, will be made by the Minister

of Forests, Lands and Natural Resource Operations following this determination. For these reasons, I cannot consider the comments and information related to community forests in this determination. That said, I will ensure that staff making apportionment recommendations to the Minister are made aware of these comments.

I also received comments related to climate change and the ensuing uncertainty about how this might affect future forests and timber supply. The chief forester and I have described our approach to considering climate change in our '**Guiding principles for AAC Determination**', which indicate that the impact of climate change and management responses to it are uncertain. In practice this means that although we acknowledge that climate is changing, we cannot account for the effect of the changes in any single AAC determination; however, the cyclic nature of AAC determinations ensures that as information and forest management practices evolve, the timber supply can be regularly reassessed.

As I note under 'site productivity', although I agree there is some uncertainty due to climate change, the ministry is actively undertaking several projects to develop management regimes that will enable future forests to adapt to climate change. These projects are outlined in the *BC Forest Stewardship Action Plan for Climate Change Adaptation* and should generate new information for consideration in future AAC determinations.

The public also commented on public involvement and other forest values. The ministry, and I as deputy chief forester, very much recognize that forests are more than trees to be harvested. Forests have many other values, and these values are important factors that I must consider when making an AAC determination. The timber supply review process is conducted to help determine an AAC for a management unit like the Robson Valley TSA in a manner that accounts for other values in the forest. There were also comments under this theme regarding wildlife populations and hunting levels that are beyond the scope of my authority in making an AAC determination; I will ensure these comments are directed to the right authorities for consideration.

There were also public comments about what the AAC should be and why. The Village of McBride, McBride Community Forest, Valemount Community Forest, Carrier Lumber Ltd., and Hauer Bros. Lumber Ltd. commented that the chief forester should reduce the target AAC to between 390 000 cubic metres and 400 000 cubic metres, the volume committed to replaceable forest licenses, BCTS, and possibly a small allowance for the Forest Service reserve. The Village of Valemount commented that the AAC should be reduced to the committed volume only, to ensure sustainable forests in the Robson Valley TSA. Other public comments recommended significantly reducing the AAC. There were no comments received that supported the initial harvest level in the base case. In my **'Reasons for Decision'** I have remained mindful of the public input and the apparent consensus that the AAC should be reduced.

With regard to the term "target AAC" used in the public input, an AAC is the maximum annual volume that can be harvested from a given management unit. However, apportionment of the full AAC is not a requirement. Ultimately, decisions regarding the apportionment of the AAC I determine will be made by the minister following this determination.

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

Abnormal infestations, devastations and salvage programs

- *mountain pine beetle infestation*

The mountain pine beetle (MPB) epidemic has severely impacted timber supply in many interior management units in BC. In most units the infestation is essentially over. The Robson Valley TSA has mixed forests so the impact of MPB-killed pine on mid-term timber supply is not projected to be significant compared to other management units where pine is a larger component of the land base.

Pine-leading stands occupy 15 percent of the THLB, and pine volumes account for 10 percent of the mature merchantable volume in the TSA. Over the past five years, 50 percent of the billed harvest volume has been pine.

For the timber supply analysis, the BCMPB v. 9 model was used to calculate existing and future mortality in pine-leading stands greater than 60 years of age. MPB-caused mortality in the model was updated based on the results of the 2011 provincial overview forest health survey. Pine mortality from the MPB epidemic infestation began in the TSA in 1999 and peaked on the THLB in 2010; mortality is projected to plateau in 2015 at 1.5 million cubic metres of cumulative dead pine that is potentially salvageable.

About 55 percent of the potentially salvageable dead pine on the THLB occurs in pine-leading stands, with the remaining volume occurring in non-pine-leading stands. Just over 20 percent of the dead pine is in pine-leading stands that contribute to meeting integrated resource management objectives for various non-timber forest resources and values.

In the base case, dead pine contributes to the timber supply until 15 years after death as it is assumed that the tree has at that time deteriorated to the point that it is no longer economically viable to salvage harvest. The timber supply analysis projects 1.2 million cubic metres (about 3172 hectares) of non-recoverable dead pine by 2037.

Sensitivity analyses were conducted to test the effect of various levels of directed harvest to maximize pine salvage and assess impacts on mid-term timber supply. Although there were significant increases in salvaged volumes in the short term, prioritizing pine harvest had no significant impact on mid-term harvest levels.

In reviewing this factor with staff, I am satisfied that the implications of the MPB epidemic on the Robson Valley TSA timber supply were appropriately addressed in the base case. Although the analysis suggests that the transition to mid-term harvest levels is not significantly influenced by a directed harvest of dead pine, under **'Implementation'** I encourage forest licensees and BC Timber Sales to maintain their focus on salvaging as much the dead pine losses as practicable.

- *non-recoverable losses*

Non-recoverable loss factors are used in the analysis to account for the average volume lost each year due to natural causes, such as pests, fire and wind, that are not recovered or salvaged. Endemic pest losses are considered natural processes within stands and are accounted for within growth and yield models. Non-recoverable losses due to the MPB infestation are addressed separately in the previous factor.

A GIS project provided non-recoverable loss estimates for fire and insects (other than MPB) for the Robson Valley TSA. Cumulative non-recoverable losses from insects were estimated by overlaying harvest history information, derived from Forest Tenure Administration (FTA) and RESULTS data, onto polygonal data from the provincial forest health aerial overview surveys for a 12-year period (2000 to 2011).

Non- recoverable losses from fires were estimated by overlaying harvest history with fire mapping for the period of 2004 to 2011. No recent studies have been conducted in which losses due to disease and wind damage are assessed; therefore the estimates from the last timber supply review were utilized.

Estimated non-recoverable losses total 78 900 cubic metres per year in the TSA, with 65 percent attributable to spruce bark beetle, 27 percent to balsam bark beetle, six percent to fire, and less than three percent to disease, wind damage and Douglas-fir beetle combined.

The estimated losses used in this timber supply analysis are significantly higher than the 43 386 cubic metres per year estimate used in the previous timber supply analysis; however the current estimate is believed to be more accurate as it is based on the GIS project using recent data.

In the timber supply analysis 78 900 cubic metres per year were subtracted from the gross harvested volumes in the harvest forecasts. Since the main agents of loss (spruce and balsam bark beetle) primarily affect mature unmanaged forests, non-recoverable losses were assumed to decline over time as these stands are harvested.

Sensitivity analysis was conducted to test the effect of targeted salvage operations on the non-recoverable losses. If 50 percent of the losses were salvage harvested, this would have a significant positive effect on mid-term timber supply.

In my review of this factor, I conclude that non-recoverable losses were appropriately accounted for in the base case and that there is a substantial opportunity to improve mid-term harvest levels by increasing salvage harvesting and thereby reducing these losses. Consequently, under **'Implementation'**, I encourage forest licensees and BC Timber Sales to salvage as much of these losses as practicable.

Reasons for Decision

In reaching my AAC determination for the Robson Valley Timber Supply Area (TSA) I have considered all of the factors required under Section 8 of the *Forest Act* and I have reasoned as follows.

The base case presented in the *Robson Valley TSA Timber Supply Analysis Public Discussion Paper* (December 2013) showed that an initial harvest level of 480 000 cubic metres per year can be maintained for five years before stepping down approximately 10 percent each five-year period for 20 years to a mid-term level of 290 000 cubic metres per year. After three decades the harvest level gradually steps up to a long-term harvest level of 350 000 cubic metres per year.

I am satisfied that the assumptions applied in the base case for the majority of the factors applicable to the Robson Valley TSA were appropriate, as detailed in Table 2 or elsewhere in this rationale.

As I mentioned under 'alternative harvest forecasts', I requested alternative harvest forecasts with lower initial harvest levels than attained in the base case and a more gradual transition to the mid-term over 10-year periods rather than the five-year periods applied in the base case. I also asked that the assumptions for three factors be changed for these forecasts to address the uncertainties I identified in my considerations above.

The uncertainties in the three factors are as follows:

- *Deciduous (aspen) volume*: the base case includes a contribution of about 11 000 cubic metres per year of aspen volume, yet there has been no aspen harvesting in the TSA due to the lack of market demand. In addition, the Canim Lake First Nation articulated an interest in excluding aspen from the THLB for the benefit of other values. I concluded this represents an overestimation of timber supply in the base case over the forecast period.
- *Stand-level retention*: In the base case, the timber harvesting land base was reduced by seven percent to account for stand-level retention. A review indicated that in operations only three percent of the THLB is retained for stand-level retention and four percent of the requirement is located in other already constrained areas. I concluded mid-term timber supply in the base case is underestimated by about four percent or 29 000 cubic metres per year.
- *Inventory stand age*: The 1998 inventory audit and 2011 phase II ground sampling indicate mature stand age in the inventory may be overestimated by an average of about 28 years and 32 years respectively. I accepted the results of the audit and phase II sampling and concluded short- to long-term timber supply is underestimated in the base case by about 9000 cubic metres per year on that account.

For the alternative forecasts I asked that aspen stands not contribute to the harvest forecast, stand-level retention be reduced to three percent of the THLB and the inventory audit and phase II ground sampling be used in place of the assumptions applied in the base case.

The initial harvest level of one of the alternative forecasts was 400 000 cubic metres per year. It could be maintained for 10 years before declining at 10 percent per decade to a mid-term level of 300 000 cubic metres per year after 30 years. After 50 years the forecast gradually increased to the long-term harvest level. I consider this to be a reasonably stable forecast with a rate of decline to the mid-term that should not cause serious disruptions to the local economy.

I have identified the following factor in my considerations that indicates the timber supply projected in the base case may have been underestimated.

- *Dead potential volume estimates*: I concluded that, as a result of the new log grades that were implemented for the BC Interior in 2006, short-term timber supply is underestimated by an unquantified amount.

In addition to the factors noted above, I also considered the following factors in my determination:

- *Accessibility*: The base case includes about 13 660 hectares of timber harvesting land base located in areas that district staff do not expect to be accessed under current and foreseeable economic conditions due to the high cost of development. District staff are concerned that including these areas as contributing to the AAC could result in over-harvesting in the economic areas. The currently uneconomic areas contribute 45 000 cubic metres per year.

- *Public input:* I noted under 'harvest performance' that over the last decade the average harvest performance has been about 250 000 cubic metres per year, which is 47 percent of the AAC determined in 2006. There was input from the Villages of McBride and Valemount, two community forests, and two forest licensees to reduce the AAC to between 390 000 cubic metres per year and 400 000 cubic metres per year. There was

other input that the AAC should be even lower. There was no expressed support to determine the AAC at the initial harvest level in the base case.

When reviewing the information available to me for this determination I am struck by the steep decline in harvest levels to the mid-term projected in the base case. For this reason I requested the alternative forecast described above that provides for a more gradual decline to the mid-term. I find this forecast is more stable than the base case, and that a more stable timber supply should assist in maintaining community stability. In addition, the more gradual decline in the forecast should help to ameliorate adverse timber supply impacts if the truth about any of the uncertainties in the information available for this determination is found to have caused an overestimation of timber supply.

Any dead potential timber harvested will provide for a more robust timber supply in the base case and in the alternative forecast.

I am concerned about the areas included in the THLB in which no harvesting has taken place because operations in these areas has been, and continues to be, uneconomic. The even-flow harvest level that can be attained from these areas is 45 000 cubic metres per year. I will continue to include these areas as contributing to the timber supply of the Robson Valley TSA in case economic conditions change to the extent that some or all of these areas can sustain economic harvesting. However, I will also attribute a harvest level to the currently economic area to ensure it is protected from overharvesting.

In making this determination I am also mindful that actual harvest levels over the last decade have been much less than the initial level attained in the alternative forecast and the base case, and of the desire of the public, communities and licensees to have the AAC reduced to a more stable level.

In consideration of the above I am satisfied that the alternative forecast with the adjustments applied to account for the larger uncertainties identified in my considerations provides a more reasonable projection of timber supply for the Robson Valley TSA.

Determination

I have considered and reviewed all the factors as documented above, including the risks and uncertainties of the information provided. It is my determination that a timber harvest level that accommodates objectives for all forest resources during the next 10 years and that reflects current management practices as well as the socio-economic objectives of the Crown, can be best achieved in the Robson Valley TSA by establishing an AAC of 400 000 cubic metres.

This includes a partition of 355 000 cubic metres for the more accessible areas identified in Figure 1 on page 37 of this document.

This determination is effective May 22, 2014, and will remain in effect until a new AAC is determined, which must take place within 10 years of the date of this determination.

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

Implementation

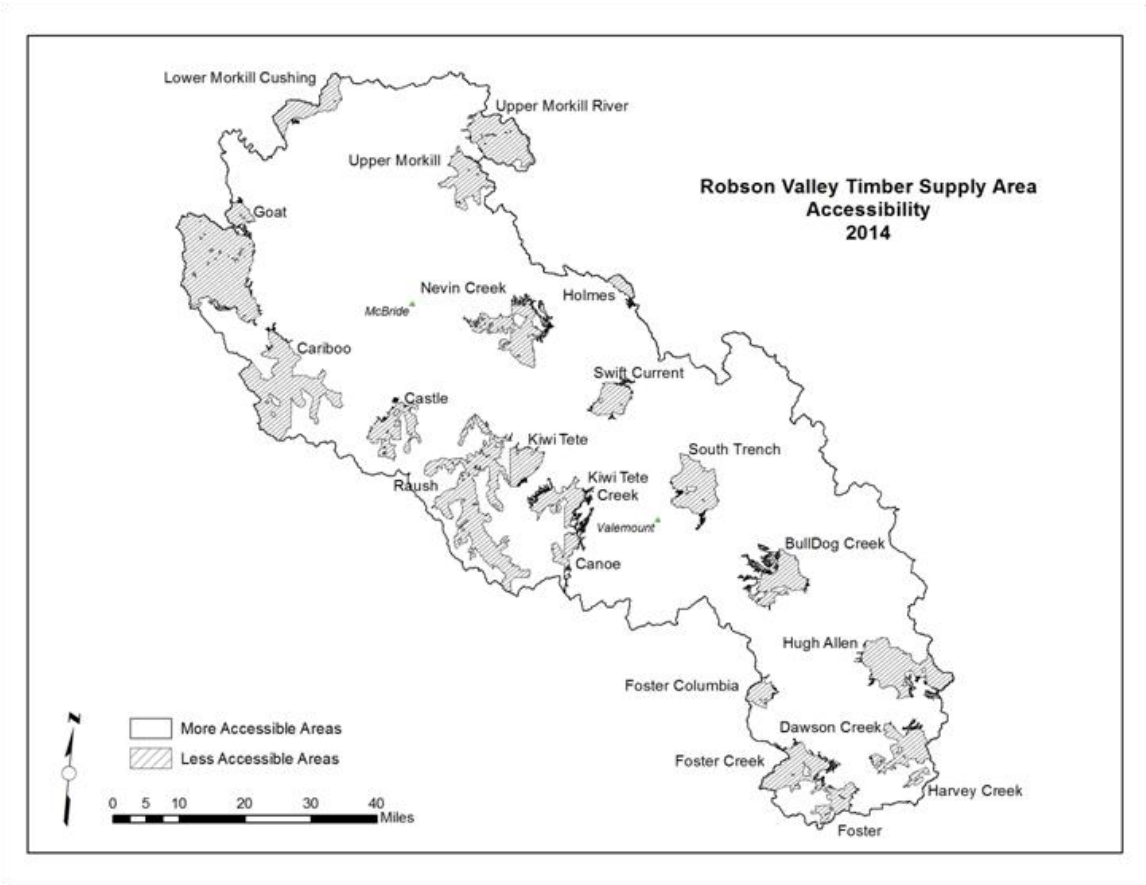
In the period following this decision and leading to the subsequent determination, I encourage Ministry of Forests, Lands and Natural Resource Operations (FLNR) staff, other agencies and licensees (as appropriate) to undertake or support the tasks and studies noted below, the particular benefits of which are described in the relevant sections of this rationale document. I recognize that the ability of staff and licensees to undertake or support these projects is dependent on available resources including funding. These projects are, however, important to help reduce the risk and uncertainty associated with key factors that affect the timber supply in the Robson Valley TSA.

1. *Volume estimates from inventory*: Forest Analysis and Inventory Branch (FAIB) should develop and implement a plan for ground sampling in the TSA to provide statistically valid volume estimates for existing mature stands, including dead potential volumes, in the timber harvesting land base.
2. *Site productivity*: FAIB, in collaboration with District staff, are encouraged to obtain improved site productivity estimates for managed stands considering tools such as Predictive or Terrestrial Ecosystem Mapping (PEM/TEM), Forest and Range Evaluation Program stand development monitoring, and/or inventory young stand monitoring.
3. *Wildlife*: Ministry staff are encouraged to work with MOE to review existing monitoring programs that relate to various wildlife designations in the TSA (such as ungulate winter range, wildlife movement corridors and wildlife habitat areas) to help ensure the intended conservation measures are working effectively, and to identify any key gaps in monitoring.
4. *Grizzly bears*: Ministry staff are encouraged to work with MOE to review measures to conserve grizzly bears and their habitat in the TSA, such as buffers along avalanche chutes, to assess their effectiveness and adequacy.
5. *Non-recoverable losses:* There is a significant volume of mountain pine beetle-killed pine and losses from other damaging agents in the TSA. Forest licensees and BC Timber Sales are encouraged to maintain their focus on salvaging as much of these losses as practicable.

Diane Nicholls, RPF
Deputy Chief Forester

May 22, 2014

Figure 1. Robson Valley Timber Supply Area - Accessibility - 2014



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 7, 2014), reads as follows:

Allowable annual cut

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

(a) the Crown land in each timber supply area, excluding the Crown land in the following areas:

(i) tree farm licence areas;

(ii) community forest agreement areas;

(iii) first nations woodland licence areas;

(iv) woodlot licence areas, and

(b) each tree farm licence area.

(2) If the minister

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

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

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

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

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

(3) If

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

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

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

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

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

(b) must give written reasons for the postponement.

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

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

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

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

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

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

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

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

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

(6) The 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 7, 2014) 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 July 4, 2006

BRITISH COLUMBIA

JUL 0 4 2006

Jim Snetsinger
Chief Forester
Ministry of Forests and Range
3rd Floor, 1520 Blanshard Street
Victoria, British Columbia
V8W 3C8

Dear Jim:

Re: Economic and Social Objectives of the Crown

The *Forest Act* gives you the responsibility for determining Allowable Annual Cuts-decisions with significant implications for the province's economy, communities and environment. This letter outlines the economic and social objectives of the Crown you should consider in determining Allowable Annual Cuts, as required by Section 8 of the *Forest Act*. This letter replaces the July 28, 1994 letter expressing the economic and social objectives of the Crown, and the February 26, 1996 letter expressing the Crown's economic and social objectives for visual resources. The government's objective for visual quality is now stated in the Forest Practices and Planning Regulation of the *Forest and Range Practices Act*.

Two of this government's goals are to create more jobs per capita than anywhere in Canada and to lead the world in sustainable environmental management. The Ministry of Forests and Range supports these objectives through its own goals of sustainable forest and range resources and benefits. In making Allowable Annual Cut determinations, I ask that you consider the importance of a stable timber supply in maintaining a competitive and sustainable forest industry, while being mindful of other forest values.

The interior of British Columbia is in the midst of an unprecedented mountain pine beetle outbreak. Government's objectives for management of the infestation are contained in British Columbia's Mountain Pine Beetle Action Plan. Of particular relevance to Allowable Annual Cut determinations are the objectives of encouraging long-term economic sustainability for communities affected by the epidemic; recovering the greatest value from dead timber before it burns or decays, while respecting other forest values; and conserving the long-term forest values identified in land use plans.

Minister of Forests and Range and Minister Responsible for Housing

Office of the Minister

Mailing Address:
PO Box 9049 Stn Prov Govt
Victoria BC V8W 9E2
Telephone: 250 387-6240
Facsimile: 250 387-1040

Location:
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e-mail: FOR.Minister@gov.bc.ca

Jim Snetsinger

To assist the province and affected communities in planning their responses to the beetle infestation, it would be best to have realistic assessments of timber volumes that can be utilized economically. Therefore, in determining the best rate of harvest to capture the economic value from beetle-killed timber, I ask that you examine factors that affect the demand for such timber and products manufactured from it, the time period over which it can be utilized, and consider ways to maintain or enhance the mid-term timber supply.

The coast of British Columbia is experiencing a period of significant change and transition. In making Allowable Annual Cut determinations I urge you to consider the nature of timber supply that can contribute to a sustainable coast forest industry, while reflecting decisions made in land and resource management plans.

You should also consider important local social and economic objectives expressed by the public during the Timber Supply Review process, where these are consistent with the government's broader objectives as well as any relevant information received from First Nations.

Sincerely yours,

Rich Coleman
Minister

Appendix 4: Minister's letter of October 27, 2010

BRITISH COLUMBIA
The Best Place on Earth

File: 280-30/MPB
Ref: 126097

OCT 2 7 2010

Jim Snetsinger, Chief Forester
ADM Forest Resource Stewardship Division
Ministry of Forests and Range
3rd Floor, 1520 Blanshard Street
Victoria, British Columbia
V8W 3C8

Dear Mr. Snetsinger:

Re: Economic and Social Objectives of the Crown Regarding Mid-Term Timber Supply in Areas Affected by the Mountain Pine Beetle

On July 4, 2006, Rich Coleman, former Minister of Forests and Range, wrote to you outlining the social and economic objectives of the Crown for AAC determination (in accordance with Section 8 of the *Forest Act*) with respect to issues associated with the Mountain Pine Beetle (MPB) epidemic. The aforementioned letter articulated the Crown's objectives of ensuring long-term economic sustainability for communities affected by the epidemic; recovering the greatest value from dead timber before it burns or decays, while respecting other forest values; and conserving the long-term forest values identified in land use plans. I am writing to you regarding the Crown's objectives with respect to mid-term timber supply in areas affected by the mountain pine beetle.

The MPB infestation has had a profound impact on the timber supply outlook for the interior of the province. In particular, forecasts of timber supply in the mid-term—the period between the ending of the economic shelf life of killed pine and the time when the forest has re-grown and again become merchantable—are now significantly lower than prior to the infestation. These shortages threaten the wellbeing of forest-dependent cities and towns. The

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Victoria, BC V8W 1X4
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Fax: (250) 387-1040
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gov.bc.ca/forilmbwww.gov.bc.ca

Jim Snetsinger, Chief Forester

Government of British Columbia is working closely with beetle action committees, municipalities, and the private sector to diversify economies. However, for many forestry-dependent towns mid-term timber supply shortages could still have significant socio-economic impacts.

During this challenging time it will be necessary to reassess management objectives and administrative approaches that were developed when forest conditions in the province's interior were very different than now exist. In this reassessment it will be important to enhance the understanding of how best to balance objectives for non-timber forest values with objectives for timber supply to achieve a range of socio-economic benefits. It will also be important to assess how innovative practices and incremental silviculture could mitigate mid-term timber supply shortfalls in MPB affected areas, and if flexibilities can be found in timber supply administration.

During the Timber Supply Review process, in addition to the considerations included in the July 2006 letter, I would like you to undertake analysis that can provide information on how changes to current management practices and administration could increase mid-term timber availability in MPB-affected areas. This information should be shared with Ministry of Forest and Range Executive and used to inform discussions among interested parties, and considered by appropriate land use and management decision makers. If formal changes are made to management objectives and administration, you will be in a position to incorporate those changes in Timber Supply Reviews and AAC determinations.

Sincerely,

Pat Bell
Minister

pc: Dana Hayden, Deputy Minister