

**BRITISH COLUMBIA
MINISTRY OF FORESTS, MINES AND LANDS**

Tree Farm Licence 53

held by
Dunkley Lumber Ltd.

Rationale for Allowable Annual Cut (AAC) Determination

Effective November 30, 2010

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Deputy Chief Forester**

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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 Tree Farm Licence (TFL) 53. This document also identifies where new or better information is needed for incorporation in future determinations.

Statutory framework

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

In accordance with Section 23(3) of the *Interpretation Act*, the deputy chief forester is expressly authorized to carry out the functions of the chief forester, which include those required under Section 8 of the *Forest Act*.

Overview of the TFL

TFL 53, held by Dunkley Lumber Ltd. ('the licensee'), is located along Highway 97 between Prince George and Quesnel near the communities of Hixon and Strathnaver. The TFL is within the Northern Interior Forest Region and is administered by the Prince George Forest District.

The terrain is characterized by gently rolling plateaus intersected by stream networks and several small lakes. The TFL is primarily within the Ahbau and Naver Creek watersheds. The forests of TFL 53 are within the Sub-Boreal Spruce (SBS) (83 percent) and Engelmann Spruce Subalpine Fir (ESSF) (17 percent) biogeoclimatic zones. Spruce and pine are the most common tree species, representing 77 percent of the forest cover. Subalpine fir makes up about 16 percent of the tree cover and the remaining forest has minor amounts of Douglas-fir, aspen, birch and cottonwood.

The gross area of the TFL is 87 693 hectares with a productive forest of 79 838 hectares (91 percent). After accounting for other values (wildlife habitat, riparian reserves, etc.), inoperable and non-merchantable timber, the timber harvesting land base (THLB) is 68 642 hectares (78 percent). Timber harvested from TFL 53 is processed in the licensee's sawmill in Strathnaver. Timber not suitable for sawlogs (e.g. dead unmerchantable MPB pine) is sold as pulpwood or chips for biomass production.

The five First Nation groups that have asserted traditional territory that cover all or portions of TFL 53 are: Lheidli T'enneh First Nation, Nazko First Nation, Red Bluff First Nation, Tsilhqot'in National Government and Ulkatcho First Nation.

New AAC determination

Effective November 30, 2010, the new AAC for TFL 53 will be 219 000 cubic metres, unchanged from the previous AAC.

Information sources used in the AAC determination

Information sources considered in determining this AAC for TFL 53 include but are not limited to the following:

- Regarding an Extension of the Allowable Annual Cut within TFL 53. Prepared by Dunkley Lumber Ltd, Analysis by Industrial Forestry Service. March 12, 2009;
- Rationale for Allowable Annual Cut (AAC) Determination, Henry Benskin, Deputy Chief Forester, Effective October 19, 2005;
- *First Nations Consultation Summary*. Ministry of Forests, Mines and Lands, Prince George Forest District, October 6, 2009;

- *Forest Practices Code of British Columbia Act* and amendments and guidebooks, current to March 17, 2010;
- *Forest and Range Practices Act and regulations*, current to March 17, 2010;
- *Ministry of Forests and Range Act*, current to November 3, 2010;
- *Forest Act*, current to November 3, 2010;
- *Landscape Unit Planning Guide*, Forest Practice Code of British Columbia. BC Ministry of Forests and Ministry of Environment, Lands and Parks. Province of British Columbia. 2000;
- Recreation Inventory – TFL 53, 2009;
- Memorandum on log grade changes from Doug Konkin, Deputy Minister, Ministry of Forests and Range. 2006;
- Letter from the Minister of Forests and Range (now the Minister of Forests, Mines and Lands) to the Chief Forester, stating the economic and social objectives of the Crown, July 4, 2006;
- Technical review and evaluation of current operating conditions on TFL 53 through comprehensive discussions with Prince George Forest District Staff, including the AAC determination meeting held in Victoria, BC on February 9, 2010.

Role and limitations of the technical information used

Section 8 of the *Forest Act* requires the chief forester to consider biophysical, social and economic information when determining AACs. A timber supply analysis, and the inventory and growth and yield data used as inputs to the analysis, typically form the major body of technical information used in AAC determinations. Timber supply analyses and associated inventory information are concerned primarily with management practices and biophysical factors, such as the rate of timber growth and definition of the land base considered available for timber harvesting.

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. Ongoing 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 TFL 53 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

The chief forester has expressed the importance of consistency of judgement in making AAC determinations. I also recognize the need for consistency of approach, and am familiar with the guiding principles that the chief forester has employed in making AAC determinations. I find these principles to be reasonable and appropriate and I have adopted them as described below in making my AAC determination for TFL 53.

Rapid changes in social values and in the understanding and management of complex forest ecosystems mean there is always uncertainty in the information used in AAC determinations. In making the large number of periodic determinations required for British Columbia's many forest

management units, administrative fairness requires a reasonable degree of consistency of approach in incorporating these changes and uncertainties. To make my approach in these matters explicit, I have set out the following body of guiding principles. In any specific circumstance where I may consider it necessary to deviate from these principles, I will explain my reasoning in detail.

Two important ways of dealing with uncertainty are:

- i) minimizing risk, in respect of which in making AAC determinations I consider particular uncertainties associated with the information before me, and attempt to assess and address the various potential current and future, social, economic and environmental risks associated with a range of possible AACs; and
- ii) redetermining AACs frequently, in cases where projections of short-term timber supply are not stable, to ensure they incorporate current information and knowledge. This principle is central to many of the guiding principles that follow.

In considering the various factors that Section 8 of the *Forest Act* requires the chief forester to take into account in determining AACs, I will reflect, as closely as possible, those forest management factors that are a reasonable extrapolation from current practices. It is not appropriate to base my decision on unsupported speculation with respect to factors that could affect the timber supply that 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 the chief forester takes this uncertainty into account to the extent possible in context of the best available information. In making my determination for TFL 53, as deputy chief forester, I have followed the same approach.

It is my practice not 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). Although I do not consider these areas to contribute any harvestable volume to the timber supply in AAC determinations, they may contribute indirectly by providing forest cover requirements 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 the *Forest and Range Practices Act* (FRPA). In cases where there is a clear intent by government to implement these decisions that have not yet been finalized, I will consider information that is relevant to the decision in a manner that is appropriate to the circumstance. The requirement for regular AAC reviews will ensure that future determinations address ongoing plan implementation decisions.

Where appropriate I will consider information on 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.

Some persons have suggested that, given the large uncertainties present with respect to much of the data in AAC determinations, any adjustments in AAC should wait until better data are available. I agree that some data are incomplete, but this will always be true where information is constantly evolving and management issues are changing. The requirement for regular AAC reviews will ensure that future determinations incorporate improved information.

Others have suggested that, in view of data uncertainties, I should immediately reduce some AACs in the interest of caution. However, any AAC determination I make must be the result of applying my judgement to the available information, taking any uncertainties into account. Given the large impacts that AAC determinations can have on communities, no responsible AAC determination can be made solely on the basis of a response to uncertainty. Nevertheless, in making my determination, I may need to make allowances for risks that arise because of uncertainty.

With respect to First Nations' issues, I am aware of the Crown's legal obligation resulting from recent Court decisions to consult with First Nations regarding 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, I will consider the information provided to First Nations to explain the timber supply review (TSR) process and any information brought forward respecting First Nations' aboriginal interests including how these interests may be impacted, and any operational plans and actions that describe forest practices to address First Nations' interests, before I make my decision. As I am able, within the scope of my authority under Section 8 of the *Forest Act*, where appropriate I will seek to address aboriginal interests that will be impacted by my decision. When aboriginal interests are raised that are outside my jurisdiction, I will endeavour to forward these interests for consideration by appropriate decision makers.

The AAC that I determine should not be construed as limiting the Crown's obligations under the Court's decisions in any way, and in this respect it should be noted that my determination does not prescribe a particular plan of harvesting activity within TFL 53. It is also independent of any decisions by the Minister of Forests, Mines and Lands with respect to subsequent allocation of wood supply.

Overall, in making AAC determinations, I am mindful of my obligation as steward of the forest land of British Columbia, of the mandate of the Ministry of Forests, Mines and Lands (formerly the Ministry of Forests and Range) as set out in Section 4 of the *Ministry of Forests and Range Act*, and of my responsibilities under the *Forest and Range Practices Act* (FRPA) and the *Forest Act*.

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 TSR program for TSAs and TFLs.

For most AAC determinations, a timber supply analysis is carried out using an information package including data and information from three categories: land base inventory, timber growth and yield, and management practices. Using this set of data and a computer simulation model, a series of timber supply forecasts can be produced, reflecting different starting harvest levels, rates of decline or increase, and potential trade-offs between short- and long-term harvest levels.

From a range of possible 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 for a TFL is not an AAC recommendation. Rather, it is one possible forecast of timber supply, whose validity—as with all the other forecasts provided—depends on the validity of the data and assumptions incorporated into the computer simulation used to generate it.

Therefore, much of what follows in the considerations outlined below is an examination of the degree to which all the assumptions made in generating the base case forecast are realistic and current, and the degree to which 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 judgement, using currently available information about forest management, information that 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 with which I am provided is integral to those considerations, the AAC determination is a synthesis of judgement and analysis in which numerous risks and uncertainties are weighed. Depending upon the outcome of these considerations, the AAC, when determined, may or may not coincide with the base case forecast. Judgements that in part may be based on uncertain information are essentially qualitative in nature and, as such, are subject to an element of risk. Consequently, once an AAC has been determined, no additional precision or validation would be gained by attempting a computer analysis of the combined considerations.

Timber supply analysis for TFL 53

The timber supply analysis for TFL 53 was prepared in 2009 by Industrial Forestry Services Ltd under the direction of licensee staff. The licensee had requested a Section 8 (3.1) postponement of the AAC and not a Section 8 (1) AAC determination; therefore a full timber supply analysis was not required. However, the licensee chose to complete a robust timber supply analysis with updated assumptions to provide sufficient information to postpone the AAC determination as provided for under section 8 (3.1) of the *Forest Act*. In my review of the analysis, I found the base case forecast and updated assumptions sufficiently comprehensive to re-determine the AAC as provided under Section 8 (1) for TFL 53.

For the 2009 analysis, the licensee used the assumptions and data inputs from the base case of the 2005 analysis as a starting point. The inventory was then updated to reflect new roads, disturbance and growth up to December 31, 2007. The starting point of the 2009 base case forecast was therefore January 1, 2008. Analysis assumptions were updated to reflect a new visual landscape inventory and mountain pine beetle impacts on the land base.

The initial harvest level in the 2009 base case is 230 000 cubic metres, which is five percent higher than the current AAC of 219 000 cubic metres. This level is then maintained for 50 years after which the harvest increases further over the subsequent two decades to reach the long-term harvest level of 311 600 cubic metres.

For this analysis, the licensee assumed a shelf life of 15 years for dead pine, not three years as reflected in the previous 2005 timber supply analysis, which is more appropriate as demonstrated over the past few years.

The base case shows a requirement to harvest, on average, 50 000 cubic metres of balsam from year 11 to year 40. The licensee anticipates the need to market larger volumes of balsam than at present and is currently kiln drying the lumber separately. The dried balsam lumber can then be included with the pine and spruce lumber before being shipped to market. The licensee does not foresee any issues with processing larger volumes of balsam in the future.

As discussed and quantified throughout this rationale, and in consideration of the items described above, I am satisfied that the base case forecast provides a suitable reference point from which to assess the timber supply for this determination.

Consideration of Factors as Required by Section 8 of the *Forest Act*

I have reviewed the information for all of the factors required 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 included in this rationale. These factors are listed in Table 1.

Table 1. List of factors for which assumptions have been accepted as incorporated in the base case.

Forest Act section and description	Factors accepted as modelled
8(8)(a)(i) Composition of the forest and its expected rate of growth	<ul style="list-style-type: none"> • Land base exclusions made in deriving the timber harvesting land base, in respect of: <ul style="list-style-type: none"> • Non-forested, non productive forest and non-commercial cover • Existing and future roads and landings • Low productivity sites • Environmentally sensitive areas • Recreation areas • Riparian considerations • Problem forest types • Terrain stability • Operability considerations • Deciduous • Site index estimates • Operational adjustment factors • Minimum merchantability standards
8(8)(a)(ii) Expected time that it will take the forest to become re-established following denudation	<ul style="list-style-type: none"> • Regeneration delay • Not-satisfactorily-restocked areas
8(8)(a)(iii) Silvicultural treatments to be applied	<ul style="list-style-type: none"> • Silvicultural treatments and systems
8(8)(a)(iv) Standard of timber utilization and allowance for decay, waste, and breakage	<ul style="list-style-type: none"> • Utilization standards • Decay, waste and breakage
8(8)(a)(v) Constraints on the amount of timber produced by use of the area for purposes other than timber production	<ul style="list-style-type: none"> • Cutblock adjacency • Recreation resources • Cultural heritage resources • Visual quality considerations • Wildlife habitat • Watershed considerations • Biodiversity
8(8)(a)(vi) Any other information	<ul style="list-style-type: none"> • First Nations considerations
8(8)(d) Economic and social objectives of the government	<ul style="list-style-type: none"> • Employment and community-related factors
8(8)(e) Abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area	<ul style="list-style-type: none"> • Non-recoverable losses

For other factors, where more uncertainty exists, or where public or First Nations' input indicates contention regarding the information used, the modelling techniques, or some other aspect under consideration, I have stated below how I considered the information or the issues raised in making my determination.

Section 8 (8)

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

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

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

- timber harvesting land base

For the 2009 analysis, the timber harvesting land base was derived from the 2005 analysis and updated for minor factors, such as deductions to account for new roads, and an increase in the TFL due to updates to the licence boundary. After reviewing the procedures used for deriving the 2005 timber harvest land base and the new land-base-related information, I am satisfied that the best available information was applied in deriving the timber harvesting land base for the 2009 analysis.

- volume estimates for existing stands

For 2009 forecasts, the licensee used the yield tables generated for previous analyses. I note these volume estimates were previously accepted and confirmed by the Forest Analysis and Inventory Branch staff.

For the current analysis, the inventory was updated to December 31, 2007 for harvest depletion and growth, including the small amount of remaining dead pine that was inadvertently projected to continue to gain annual volume. This approach in timber supply analysis has often occurred because yield projections aggregate all species to reflect annual growth. According to the licensee, the resulting overestimation of total volume at the beginning of the forecast could be up to 88 000 cubic metres, less than one percent of the total growing stock of about 10.9 million cubic metres.

Another factor affecting volume estimates is the level of actual harvesting. In the transition period between the AAC of 880 000 cubic metres to the lower level of 219 000 cubic metres starting November 2008, the licensee harvested slightly higher levels than the 230 000 cubic metres forecast in the analysis for 2008 and 2009. However I note that actual harvest levels were within authorized levels and did not exceed cut control limits. Nevertheless, the analysis did not account for these higher harvest levels in 2008 and 2009, which staff estimate is about 370 460 cubic metres.

In addition, grade 4 — lower quality wood — is often not accounted in cut control for the purpose of AAC limits, although it may be included in the estimated volumes applied in the timber supply analysis. The lower quality wood volume may have been included in the estimated volumes if the harvested trees were healthy at the time they were tallied for the forest inventory; if they were dead then they would not have been tallied. Regardless, I note the estimated amount of harvested grade 4 was about 39 700 cubic metres in 2009.

As a result of the above factors, the base case forecast may represent an overestimate of timber supply by up to five percent and I will discuss this further under ‘**Reasons for Decision**’.

- forest inventory

The licensee requested a five-year postponement to allow sufficient time to complete an updated forest inventory for TFL 53. In particular, there is a concern that species composition is no longer reasonable; often stands classified as pine in the inventory have been found in the field to have more spruce content.

As noted above in *Timber supply analysis for TFL 53*, the information provided for this determination was sufficient, and therefore a postponement was not necessary. Nonetheless, I am concerned the current forest inventory is out-dated and I appreciate the licensee’s objective to

complete a new forest inventory within five years and hence prior to the next determination. The licensee has stated they plan to initiate a comprehensive new timber supply analysis immediately after completing the new forest inventory, using the up-to-date information particularly on the post-mountain pine beetle stands. I support this objective and am prepared to determine a new AAC earlier than the 10-year term now authorized in Section 8. I have considered this in my determination, as discussed below in ‘**Reasons for Decision**’.

- volume estimates for managed stands

In developing yield tables for managed stands for the 2009 analysis, the licensee utilized the yield tables from previous analyses. I note these volume estimates were previously accepted and confirmed by the Forests Research staff.

In 2007, the licensee surveyed its pine plantations and found that mountain pine beetles had damaged about 2030 hectares of regenerating forests. Of the impacted stands, 1263 hectares exhibited minor damage and still met free-to-grow standards. Only about 767 hectares were found to be more severely affected and require additional silviculture treatments to meet stocking and free-to-grow standards. These stands are currently being rehabilitated and will contribute to the mid-term timber supply. Therefore the impact over the longer term from mountain pine beetle attack in younger pine plantations is expected to be minor. New information will be available for the next timber supply review and can be more fully considered at that time.

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

As noted in Table 1, I have considered factors related to regeneration delay and not-satisfactorily restocked areas, and I find them to have been appropriately accounted for in the base case, with no further comment required.

(iii) silvicultural treatments to be applied to the area:

As noted in Table 1, I have considered the silvicultural systems and treatments to be applied to the area, I find them to have been appropriately accounted for in the base case, with no further comment required.

(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:

As noted in Table 1, I have considered factors related to utilization, and decay, waste and breakage, I find them to have been appropriately accounted for in the base case analysis, with no further comment required.

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

Integrated resource management objectives

The Ministry of Forests, Mines and Lands 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. 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.

Under this section of the *Forest Act*, I have considered a number of factors in my determination which I have concluded are adequately accounted for in the base case forecast, as noted earlier in Table 1, with the exception of the following factor.

- visual quality objectives

In the 2005 rationale, the former deputy chief forester requested the visual landscape inventory be updated to account for visual quality objectives (VQO) in the TFL. A new VQO inventory was completed and was applied in the current analysis. The preservation and retention class VQOs remained relatively the same but the area classified as partial retention, modification and maximum modification increased significantly. Overall, the area classified with VQOs increased from 2874 hectares to 5336 hectares.

The Northern Interior Regional staff reviewed the new inventory and stated that it is acceptable with the exception of VQO areas on the west side of Ahbau Lake. The licensee contends that formal VQOs are not required for this area, nonetheless they commit to managing the visual landscapes through their operational harvest plans and block layout. I understand the area is relatively small and would have no impact on the base case forecast and therefore I have made no adjustments.

Over the term of this determination, I request that the district and licensee staff continue to work together to determine appropriate levels of visual quality management in the TFL, and ensure any new information is incorporated into future analysis.

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

Other information

- partitioning the harvest

Although the current AAC does not have partitions and the licensee has not requested AAC partitions for this determination, in the course of my review of the 2009 timber supply analysis I noted the importance of the contribution of several species over the forecast period.

In the 1999 AAC rationale, which was prior to the outbreak of mountain pine beetles, the AAC included two partitions: 4100 cubic metres attributed to residual balsam-leading stands resulting from historic logging, and 2000 cubic metres attributed to aspen-coniferous stands.

In the 2005 AAC rationale, the determination reflected the requirement to focus all harvesting efforts on pine-leading stands in order to reserve non-pine species to offset further impacts to the mid-term timber supply.

At this time, I believe it is important to reaffirm harvesting performance that targets a mixture of species based on their proportionate contribution to the timber supply. While each of these components: balsam-leading, aspen-coniferous and remaining pine stands, do not on their own contribute significantly to timber supply, in combination with other factors noted in this rationale if these types are consistently avoided, then they could represent a downward pressure to timber supply in the mid- to long-term. I have considered this in my determination as noted below in '**Reasons for Decision**'.

- First Nations considerations

Five First Nations were consulted about the AAC decision: the Lheidli T'enneh, Nazko, Red Bluff, Ulkatcho, and the Tsilhqot'in National Government. Of these First Nations, the Lheidli T'enneh and Red Bluff have asserted traditional territory covering portions of the TFL 53 area.

On July 6, 2009 the Prince George Forest District initiated consultation on the timber supply review for TFL 53 with the five First Nations. District staff sent a letter to all but the Ulkatcho First Nation. The consultation process also included information sharing by the licensee, who provided the timber supply analysis report to the five First Nations.

At the beginning of the consultation process for this timber supply review, the Nazko First Nation's asserted territory was assumed to cover the Mountain Pine Beetle Agreement boundary

which covered the entire area of TFL 53. However, now its asserted territory is assumed to cover the area identified in the Nazko Band Forest and Range Agreement. None of this area covers TFL 53. Nevertheless in my determination I have considered Nazko's input on this decision.

The Tsilhqot'in National Government was identified in the *William Decision* as being the holder of identified rights and title within the Charleyboy Writ area. The Ulkatcho First Nation was identified as one of the First Nations comprising the Tsilhqot'in National Government and the Charleyboy Writ area covers part of TFL 53. The Lheidli T'enneh First Nation is currently at stage 5 of the B.C. Treaty Commission process. The Lheidli T'enneh Final Agreement was initialled on October 29, 2006 but it has not yet been ratified. None of the agreement-in-principle areas identified during the process overlap with the boundaries of TFL 53.

The Nazko First Nation is at stage 4 of the treaty process. Its statement of intent regarding traditional territory boundary does not cover any portion of the TFL 53 area. The other three First Nations are currently not involved in the treaty process.

From my review of the First Nations Consultation Summary, I conclude that reasonable efforts were undertaken by the Prince George Forest District staff to inform the First Nations about the timber supply review and engage them in consultation regarding their aboriginal interests and how these interests may be affected by this AAC determination. 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 the 10 years required by legislation.

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

Alternative harvest flows

The nature of the transition from harvesting old growth forests to harvesting second growth forests is a major consideration in determining AACs in many parts of the province. In the short term, the presence of large timber volumes in older forests often permits harvesting above long-term levels without jeopardizing future timber supply. In keeping with the objectives of good forest stewardship, AACs in British Columbia have been and continue to be determined to ensure that current and mid-term harvest levels will be compatible with a smooth transition toward usually (but not always) the lower long-term harvest level. Thus, timber supply should remain sufficiently stable so that there will be no inordinately adverse impacts on current or future generations. To achieve this, the AAC determined must not be so high as to cause later disruptive shortfalls in supply nor so low as to cause immediate social and economic impacts that are not required to maintain forest productivity and future harvest stability.

As the initial harvest level shown in base case forecast is about five percent higher than the current AAC and over subsequent periods the base case forecast is generally higher than previous analysis — prior MPBs — I have considered this level as represents a possible alternative harvest flow. As such, the forecast demonstrates that a higher level is possible for the next several decades and then higher levels are possible in the future. Thus the base case analysis shows there is flexibility in the short term to offset minor uncertainties without causing major disruptions to the mid- or long-term timber supply.

From this information and analyses, I am satisfied the rate of harvesting projected for TFL 53 in the base case is an adequate and appropriate reflection of the capability of this land to support timber harvesting until the next determination. I have considered this information below, under '**Reasons for Decision**'.

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

Economic and social objectives

- Minister's letter

The former Minister of Forests and Range expressed the economic and social objectives of the Crown for the province in a letter to the chief forester dated July 4, 2006, attached as Appendix 3.

The letter stresses the importance of a stable supply of timber to maintain a competitive and sustainable forest industry while being mindful of other forest values. In respect of this, a primary objective in the base case harvest level projection for TFL 53 has been to attain a stable harvestable area that will remain viable in consistency with meeting objectives for other forest values over the longer term.

I have also considered the adequacy of the provisions, both as made in current practice and as assumed in the analysis, for maintaining a range of forest values. From applying careful attention to these considerations, I am satisfied that my determination is in accordance with the objectives of government as expressed by the Minister.

- local objectives

The Minister's letter of July 4, 2006 also suggests the chief forester should consider important social and economic objectives in the timber supply reviews that may be derived from public input where these are consistent with government's broader objectives. To this end, and to ensure appropriate opportunities both for public input and for consultation with First Nations, in addition to the formal First Nations consultation process described under *First Nations considerations*, public input was invited by the licensee through advertisements placed on August 1, 2009 in the Prince George Citizen and Quesnel Cariboo Observer to submit comments, until October 1, 2009.

No responses were received from the public, and therefore I have no public input from which to consider deriving further social and economic objectives in addition to those expressed by the minister.

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

Mountain pine beetle infestation

TFL 53 lies within the area in central British Columbia that has experienced a significant mountain pine beetle (MPB) epidemic. In the past, MPB infestations have regularly occurred at endemic levels and therefore could be managed at lower levels. Although MPB infestations continue to be natural events, the current epidemic is unprecedented in its severity and extent. In the TFL and surrounding areas, the infestation has killed virtually all the pine in predominantly pine stands, with only some remaining in mixed-species stands.

The MPB infestation in TFL 53 began in the late 1990s and by 2000 the MPB population was at epidemic levels and the licensee directed its harvesting activities towards salvaging pine. By 2003 the licensee estimated the total pine volume at risk in moderate and high risk stands over 60 years old was about 3.6 million cubic metres and stated the AAC of 239 500 cubic metres was insufficient to harvest and salvage the large amount of dead pine. The licensee provided the former deputy chief forester with timber supply analysis information and based on that, on May 20, 2003 the AAC was first increased to 500 000 cubic metres to assist in mitigating timber losses from the epidemic.

As the MPB infestation continued to expand, by 2005 the licensee estimated the rate of pine mortality had increased to 80 to 90 percent and predicted 100 percent mortality by 2006. Also, the licensee estimated that pine shelf life — estimated time after death that trees remain suitable for lumber production — was about three years. As a result they needed to further accelerate

harvesting and requested a further uplift of the AAC. Based on the supporting analysis and assuming a three-year shelf life, effective October 19, 2005 the deputy chief forester determined a two-tier AAC to provide the licensee with the opportunity to harvest as much of the remaining pine as possible before the end of the shelf life. In the determination, from October 19, 2005 to October 19, 2008 the AAC was 880 000 cubic metres and from October 20, 2008 the AAC was 219 000 cubic metres until the next AAC determination.

Current to December 31, 2007 the reported volume of live and dead pine older than 80 years on the THLB was about 1.2 million cubic metres. Then by May 2010, the licensee reported that its salvage program had progressed to the point where pine was only a minor component of the remaining mature stands within the TFL and that most of the remaining mature pine was in mixed-stands and would be harvested over the next 10 years.

For the analysis provided for this determination, shelf life was revised from 3 years to 15 years to reflect current practice, based on improved milling technology and a better understanding of the rate of standing tree degradation following mortality.

I note the licensee's successful salvage program and commend them for harvesting while most were still merchantable and then promptly reforesting the MPB impacted stands. I will discuss this further below in '**Reasons for Decision**'.

Reasons for decision

In reaching my AAC determination for TFL 53, I have considered all of the factors required under Section 8 of the *Forest Act* and I have reasoned as follows.

I have reviewed all the previous information gathered for this determination as well the assumptions applied in the 2009 base case forecast and I am satisfied the majority of the assumptions were appropriate as detailed earlier in Table 1. The following is my consideration of those factors for which I consider it appropriate to further consider and take into account pressures on the timber supply as projected in the base case forecast.

I have identified the following factor in my considerations as indicating the timber supply as projected in the base case may have been overestimated:

- *volume estimates*: there were several issues raised that potentially represent an overestimation of volume estimates. The projected estimates were not adjusted to eliminate the annual projected volume growth for existing pine trees killed by MPBs. The licensee estimated the unadjusted volume could be up to a total of 88 000 cubic metres. In addition, the actual harvest for 2008 and 2009 was a total of 370 459 cubic metres above the base case level of 230 000 cubic metres. Also, grade 4 volumes although harvested were not charged to the AAC but should be considered in projecting timber supply volumes. The licensee estimated about 39 700 cubic metres of grade 4 timber was harvested in 2009. In total, these factors represent a downward pressure of up to five percent on short- to mid-term timber supply forecasts.

I have identified the following factor as indicating the timber supply as projected in the base case may have been underestimated:

- *alternative harvest flows*: a harvest level of 230 000 cubic metres per year was projected for the first 50 years in the base case, which is about five percent higher than the current AAC. I understand the licensee chose a higher level to demonstrate the stability of the timber supply and address any uncertainty regarding factors to consider in the short- to mid-term.

I conclude from my review of the upward and downward pressures on the current AAC that, on balance, there is minimal risk to maintaining the current level in the short term. I further note the licensee is undertaking a new forest inventory with the intent of completing it within about five years and then promptly initiating the next timber supply review.

I am mindful the MPB infestation has killed the predominantly pine stands and that the licensee has completed salvage harvesting of these stands. I commend the licensee for completing the salvage operation while most of the impact trees remained merchantable. The remaining phase of the salvage program will be aimed at harvesting MPB-killed pine where it is a minor component of a stand.

For this determination, while I am mindful that previous AAC determinations for TFL 53 had specified partitions, at this time I will not specify partitions. In particular I note previous partitions set at 4100 cubic metres for residual balsam-leading stands resulting from historic logging, 2000 cubic metres for aspen-coniferous stands, as well as a priority to harvest MPB pine stands. Nevertheless while each of these types does not on their own contribute significantly to the timber supply, in combination with other factors noted above, if these types are consistently avoided, they could represent a downward pressure to timber supply in the mid- to long-term. For the next determination, as noted below in '**Implementation**', I request that the licensee examine the contribution of these challenging timber types to the timber supply and state how they plan to ensure performance in these types over time.

In my considerations I have identified particular areas where new or better information is needed for incorporation in future determinations, and I have included these as instructions below, in '**Implementation**'. With these noted qualifications, and mindful the licensee intends to promptly initiate a new timber supply analysis once they have completed a new forest inventory, I am satisfied that the AAC for TFL 53 can be maintained at the current level of 219 000 cubic metres without risk, for the effective period of this determination.

Determination

Having considered and reasoned from all of the factors as documented above, including evaluating the risks and uncertainties in the information provided, it is my determination for TFL 53 that a timber harvest level that accommodates as far as possible the range of objectives for identified forest resources can be best achieved at this time by maintaining the AAC at 219 000 cubic metres.

This new AAC will become effective on November 30, 2010, and will remain in effect until the next AAC is determined within 10 years.

Implementation

In the period following this decision and leading to the subsequent determination, I encourage staff and the licensee to undertake the tasks and studies noted below, the particular benefits of which are described in appropriate sections of this rationale document. I recognize that the ability of staff and licensees to undertake these projects is dependent on available resources including funding. However these projects are important to help reduce the risk and uncertainty associated with key factors that affect the timber supply in TFL 53.

1. Complete a new forest inventory and promptly initiate a new timber supply review;
2. Assess the merchantability of balsam, deciduous and the dead pine component of the inventory to ensure they are appropriately contributing to timber supply; and
3. Continue to monitor pine plantations that have suffered volume losses due the MPB. Incorporate any delays or growth reductions in the next timber supply analysis.



Melanie Boyce, RPF
Deputy Chief Forester

November 30, 2010



Appendix 1: Section 8 of the *Forest Act*

Section 8 of the *Forest Act*, Revised Statutes of British Columbia 1996, c. 157, Consolidated to December 30, 2009, reads as follows:

Allowable annual cut

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

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

(2) If the minister

- (a) makes an order under section 7 (b) respecting a timber supply area, or
- (b) amends or enters into a tree farm licence to accomplish a result set out under section 39 (2) or (3),

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

- (c) within 10 years after the order under paragraph (a) or the amendment or entering into under paragraph (b), and
- (d) after the determination under paragraph (c), at least once every 10 years after the date of the last determination.

(3) If

- (a) the allowable annual cut for the tree farm licence area is reduced under section 9 (3), and
- (b) the chief forester subsequently determines, under subsection (1) of this section, the allowable annual cut for the tree farm licence area,

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

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

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

(b) must give written reasons for the postponement.

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

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

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

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

(5) In determining an allowable annual cut under subsection (1) the chief forester may specify portions of the allowable annual cut attributable to

(a) different types of timber and 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, and

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

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

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

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

(a) the community forest agreement, and

(b) any directions of the chief forester.

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

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

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

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

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

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

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

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

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

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

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

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

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

Section 4 of the *Ministry of Forests and Range Act* (consolidated 2006) 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 co-ordinated and integrated, in consultation and co-operation with other ministries and agencies of the government and with the private sector;
 - (d) encourage a vigorous, efficient and world competitive
 - (i) timber processing industry, and
 - (ii) ranching sectorin British Columbia;
 - (e) assert the financial interest of the government in its forest and range resources in a systematic and equitable manner.

Document attached:

Appendix 3: Minister's letter of July 4, 2006



JUL 04 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.

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Minister of
Forests and Range
and Minister Responsible
for Housing

Office of the
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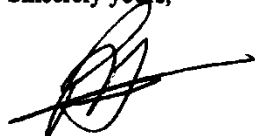
Jim Snetsinger

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,

A handwritten signature in black ink, appearing to be 'Rich Coleman', with a long horizontal stroke extending to the right.

Rich Coleman
Minister