

**BRITISH COLUMBIA  
MINISTRY OF FORESTS AND RANGE**

**Tree Farm Licence 43**

held by  
**Kruger Products L.P.**

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

**Effective March 26, 2010**

**Melanie Boyce, RPF  
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) 43. 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**

Tree Farm Licence 43 is held by Kruger Products L.P. The TFL covers 10 175 hectares on the alluvial flood plains of the lower Fraser, Homathko and Kingcome Rivers, in the Chilliwack, Sunshine Coast, and North Island – Central Coast Forest Districts. Of the total area, 8980 hectares are Crown land and 1195 hectares are fee simple lands owned by Kruger. The current AAC, determined in 2000, is 39 900 cubic metres. In 2003 the AAC determination was postponed for 10 years after the last determination, as provided for under Section 8(3.1) of the *Forest Act*.

The TFL is unique in the province in that the timber management objective for the TFL is to convert existing mixed or low quality deciduous and coniferous stands to productive cottonwood and hybrid poplar stands.

The South Central Coast Order (2007) implements ecosystem based management (EBM) in the south and central coast area. The objective is to maintain ecosystem integrity and improve human well-being as supported by a viable forest industry. The Kingcome block of TFL 43 resides in this area, and by the Order is exempted from EBM.

## **New AAC determination**

Effective March 26, 2010, the new AAC for TFL 43 will be 39 900 cubic metres, unchanged from the previous AAC.

## **Information sources used in the AAC determination**

Information sources considered in determining this AAC for TFL 43 include but are not limited to the following:

- Forsite Consulting for Kruger Forest Products: Timber supply analysis: Submitted September 21, 2009, accepted December 9, 2009.
- Kruger Forest Products, 2007. Forest Stewardship Plan for the Homathko Forest Development Unit – TFL 43. April 1, 2007 to March 31, 2011.
- Kruger Forest Products, 2007. Forest Stewardship Plan for the Fraser Forest Development Unit – TFL 43. April 1, 2007 to March 31, 2012.
- Scott Paper Limited and Olympic Resource Management, 1999. Management Plan No. 4, Tree Farm Licence 43 Appendix V: Timber Supply Analysis Report.
- Scott Paper Limited and Olympic Resource Management, 1999. Management Plan No. 4, Tree Farm Licence 43 Appendix VI: 20-Year Plan.
- TFL 43 Information Package: First submission September 21, 2009, final acceptance, December 9, 2009.

- Scott Paper Limited, 1999. Management Plan No. 4 – Tree Farm Licence 43 – The Broadleaf Tree Farm Licence Including Managed Forest #23, approved January 1, 2000.
- Scott Paper Limited and Olympic Resource Management, 1999. Management Plan No. 4 – Tree Farm Licence 43 – Appendix IV – Timber Supply Analysis Information Package.
- TFL 43 Twenty-year Plan: accepted: Chilliwack FD, July 20, 1999; Sunshine Coast FD June 23, 1999; Port McNeill FD June 2, 1999. Revised for this AAC Determination September 21, 2009.
- AAC Determination Postponement Order, May 14, 2003, Ken Baker, Deputy Chief Forester.
- Correspondence related to public review and First Nations consultation.
- Existing stand yield tables for TFL 43, approved by British Columbia Forest Service (BCFS) Resources Inventory Branch, March 10, 1999.
- Managed stand yield tables and site index curves, approved by BCFS Research Branch, June 1, 1999.
- BC MoF, Forest Practices Branch, 1998: Procedures for factoring visual resources into timber supply analyses. Victoria, B.C. REC 029.
- Province of BC, July 1995: *Forest Practices Code of British Columbia Act*.
- Province of BC, April, 1995: *Forest Practices Code of British Columbia Act Regulations and Amendments*.
- BC Ministry of Forests, October, 2007: Coast Forest Action Plan.
- Province of BC, Integrated Land Management Bureau, April 18, 2008. Background and Intent Document for the South Central Coast and Central and North Coast Land Use Objectives Orders.
- Coast Information Team, March 2004. *Ecosystem Based Management Planning Handbook*.
- BC Ministry of Environment, 2004. Identified Wildlife Management Strategy.
- BC Ministry of Sustainable Resource Management, June 2004: Order Establishing Provincial Non-Spatial Old Growth Objectives.
- BC Ministry of Agriculture and Lands, July 2007. South Central Coast Order.
- BC Ministry of Agriculture and Lands, March 2009. Amended South Central Coast Order.
- Minister of Forests and Range, July 4, 2006. Letter to the chief forester stating the economic and social objectives of the Crown.
- British Columbia *Forest and Range Practices Act*, 2002 and amendments.
- British Columbia *Forest and Range Practices Regulations*, 2004 and amendments.
- British Columbia Forest Service and MELP, March 1999. *Landscape Unit Planning Guide*.
- BCFS and MELP, December 1996. Higher Level Plans: Policy and Procedures.
- Recreation Inventory – TFL 43, 1999.
- Technical review and evaluation of current operating conditions on TFL 43 through comprehensive discussions with Chilliwack, Sunshine Coast and North Island-Central Coast District staff, including the AAC determination meeting held in Victoria, BC on February 3, 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 43 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 43.

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 43, 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 43. It is also independent of any decisions by the Minister of Forests and Range 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 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 43**

The December 8, 2009 timber supply analysis in support of this AAC determination for TFL 43 was prepared for the licensee by Forsite Consultants Ltd. Because current growth and yield data for managed cottonwood and hybrid poplar stands remains limited, the results of any traditional volume-based timber supply analysis for TFL 43 would be subject to uncertainty. Therefore, to provide a basis for consideration in this and previous AAC determinations for TFL 43, the licensee has calculated the average annually harvestable area for each block, based on the anticipated harvestable age, and then multiplied the average volume per hectare of stands over age 30 years for each block to derive a base case forecast of the overall volume that is harvestable annually. To demonstrate the feasibility of this forecast the licensee submitted a 20-year mapped harvest projection (a 20-year plan) as an appendix to the timber supply analysis report.

For the year 2000 AAC determination the licensee was required to submit a volume- and an area-based analysis for the Fraser Block to verify that the estimated timber volume resulting from the area-based approach approximated a volume-based analysis. Since this was indeed verified, no volume analysis was requested for this current determination.

The projected annual harvest area was calculated for each of the three blocks by dividing the THLB (i.e. the total harvestable forest) by the sum of the rotation age plus the regeneration delay. The results of the calculations for the three blocks are:

Fraser:  $1167.1 \text{ hectares} / 26 \text{ years} = 44.9 \text{ hectares per year}$ ;

Homathko:  $1828.8 \text{ hectares} / 32 \text{ years} = 57.1 \text{ hectares per year}$ ;

Kingcome:  $489.8 \text{ hectares} / 31 \text{ years} = 15.8 \text{ hectares per year}$ ;

Total annually harvestable area for the TFL is 117.8 hectares.

The annually harvestable volume projection was derived by multiplying the annually harvestable area for each block by its average volume per hectare, for stands greater than 30 years old, with the following resulting annually harvestable volumes:

Fraser (290 cubic metres per hectare):  $12\,886.3 \text{ cubic metres per year}$ ;

Homathko (332 cubic metres per hectare),  $18\,957.2 \text{ cubic metres per year}$ ;

Kingcome (514 cubic metres per hectare),  $8121.2 \text{ cubic metres per year}$ .

The total derived annually harvestable volume for the TFL was 39 964.7 cubic metres per year.

As mentioned above, the feasibility of allocating the area-based calculation on the ground was demonstrated by the 20-year plan submitted with the timber supply analysis. The operational priority for allocating stands was (1) salvage of usable dead or damaged stands; (2) stands at risk from erosion; (3) low quality/grade alder and coniferous stands during periods of favourable market conditions; (4) older cottonwood/poplar plantations.

As discussed and quantified throughout this rationale, and in consideration of the items described above, I am satisfied that the base case 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"> <li>• Forest inventory, except considerations for 'log grades' and 'volume estimates for existing stands'</li> <li>• Land base exclusions made in deriving the timber harvesting land base, in respect of: <ul style="list-style-type: none"> <li>○ New parks</li> <li>○ Non-forested areas</li> <li>○ Roads, trails and landings</li> <li>○ Non-commercial cover</li> <li>○ Inoperable and inaccessible areas</li> <li>○ Environmentally sensitive areas</li> <li>○ Low productivity sites</li> <li>○ Areas sensitive to erosion and accretion</li> <li>○ Problem forest types</li> <li>○ Wildlife habitat areas</li> <li>○ Riparian reserves</li> </ul> </li> <li>• Site index estimates</li> <li>• Operational adjustment factors</li> <li>• Harvest species profile and sequencing</li> </ul>
8(8)(a)(ii) Expected time that it will take the forest to become re-established following denudation	<ul style="list-style-type: none"> <li>• Regeneration delay</li> <li>• Not-satisfactorily-restocked areas</li> <li>• Impediments to prompt regeneration</li> </ul>
8(8)(a)(iii) Silvicultural treatments to be applied	<ul style="list-style-type: none"> <li>• Silvicultural systems</li> </ul>
8(8)(a)(iv) Standard of timber utilization and allowance for decay, waste, and breakage	<ul style="list-style-type: none"> <li>• Utilization standards and compliance</li> <li>• Decay, waste and breakage</li> </ul>
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"> <li>• Riparian reserves and management zones</li> <li>• Cutblock adjacency</li> <li>• Recreation resources</li> <li>• Visual quality management</li> <li>• Community watersheds</li> <li>• Wildlife management: bald eagle, grizzly bear, fisheries</li> <li>• Stand-level biodiversity, including wildlife tree patches</li> <li>• Landscape-level biodiversity, including Old Growth Management Areas (OGMAs)</li> </ul>
8(8)(a)(vi) Any other information	
8(8)(d) Economic and social objectives of the government	<ul style="list-style-type: none"> <li>• Employment and community-related factors</li> </ul>
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"> <li>• Non-recoverable losses</li> </ul>

For factors that are subject to more uncertainty, or for which input from First Nations or the general public indicates contention—with respect to the information used, to the analytical method, or to some other aspect under consideration—I have set out in the sections below the way in which I have considered and accounted for any such information or related issue 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**

#### Land base contributing to the timber harvest

##### *- general comments*

Having reviewed with Ministry of Forests and Range (MFR) staff the procedure for deriving the timber harvesting land base (THLB) in the licensee's base case forecast, I am satisfied that the methodology is appropriate. I also note that the sensitivity analysis with which I was provided showed that increasing or decreasing the net area of the THLB in the TFL by five percent respectively increased or reduced both the annually harvestable area of 117.8 hectares, and the approximate harvestable volume equivalent of 39 964.7 cubic metres per year, in direct proportion, by just five percent. I have been mindful of this result in considering the sustainability of the derived harvest level and the short- and long-term implications to British Columbia of alternative rates of timber harvesting from the area.

##### *- areas subject to erosion and accretion*

While I am satisfied that the accounting for these areas in the timber supply analysis is adequate for my consideration in this determination, I also note that for the future, the licensee has indicated its willingness to collaborate with First Nations in identifying areas of interest in detail with the advantage of the knowledge gained through its extensive, direct operational experience in the area.

#### Existing forest inventory

I am satisfied that the best available inventory information was used in the base case for TFL 43, with the following qualifications respecting 'volume estimates for existing stands' and 'log grades'.

##### *- volume estimates for existing stands*

For the analysis, the inventory was updated to December 31, 2007 for harvest depletion, but not for growth. Volume estimates for existing stands used in the base case for this determination are the inventory volumes for stands older than age 30 years used in the 1999 analysis that formed the basis for the March, 2000 AAC determination. I note that the volume estimates used in the 1999 analysis were accepted by the MFR's Forest Analysis and Inventory Branch.

The average volume per hectare derived for stands older than 30 years for each block, also listed above under 'timber supply analysis', are 290 cubic metres per hectare for the Fraser block, 332 cubic metres per hectare for the Homathko block, and 514 cubic metres per hectare for the Kingcome block. Considering this information, I am satisfied the volume estimates for existing stands remain based on the best available information, and as such are appropriate for use in the base case and for my consideration in this determination. Nonetheless, the yield estimates derived with the methods used in the analysis are very uncertain, especially when projected into the future.

I note that TFL 43 was first issued in 1985. As a result, using the minimum 30-year old limit for stands to be included in the calculation of the average volume per hectare for each block very likely excluded any managed cottonwood stands from the calculation. For the small area of second-growth cottonwood stands that may have been included, I note that the site index estimates used in the derivation of the average volume per hectare were based on the original species occupying the site, and these generally underestimate the growing capacity of poplars. In addition, the estimates of average volumes per hectare are based on the species composition of the stands that existed 10 years ago on the TFL, and over time these are being converted to cottonwood and hybrid poplar stands. I question whether hybrid poplar will attain 514 cubic metres per hectare in the 30-year growing period assumed for minimum harvestable age in the Kingcome block. Finally, the growth of stands on the TFL over the last 10 years was not accounted for in the yield estimates.

At the time of the next AAC determination that is scheduled for 10 years after this determination, managed poplar and hybrid poplar stands will have aged to beyond 30 years. Therefore, to retain confidence in the validity of the yield estimates into the future, in preparation for the next AAC determination in '**Implementation**' below, I have instructed the licensee to report by block on the number of hectares harvested annually, as well as the number of cubic metres harvested, separately, both for stands aged up to 30 years, and for stands of 30 years and older. This should also be broken down by currently existing mixed stands, managed cottonwood stands and hybrid poplar stands.

*- log grades*

The potentially utilizable component of standing dead trees on the THLB, which should be identified in the inventory, has not yet been assessed for this TFL. Given the licensee's practice of removing essentially all debris from harvested sites, this may not significantly affect the utilizable volumes. However, for completeness, if possible an estimate of this component should be provided for inclusion in the analysis in support of the next AAC determination for the TFL and under '**Implementation**' below I have instructed the licensee to provide this information.

Expected rate of growth

*- volume estimates for regenerating, managed stands*

The licensee did not provide an analysis that incorporated regenerated stand yield tables because: a) yield estimates for managed cottonwood and hybrid poplar stands are currently very uncertain; b) the currently limited number of permanent sample plots (PSPs) in the TFL does not adequately represent the high degree of variation between hybrid and non-hybrid poplar plantations resulting from a range of silvicultural practices; and c) changes in management practices in the last 10 years for density control limit the helpful information that can be derived from the PSPs.

I acknowledge that precision in regenerated stand yield volumes is not directly required in the analysis provided by the licensee for this determination, particularly because regenerated stands have not yet sufficiently matured for harvest and were not included in the average volume per hectare calculations. Nonetheless, this information is very relevant to my confidence in the appropriateness of the harvest levels to be determined over time, in respect of the same consideration I noted earlier under '*volume estimates for existing stands*', which is the need to derive more accurate estimates of the volume that may be expected over time from regenerating managed cottonwood and hybrid poplar stands, as well as from existing mixed-wood stands as their prevalence is gradually reduced through harvesting and they are replaced with managed poplar stands. This will become of increasing significance as the regenerated stands begin to approach harvestable age in the not too distant future.

While I accept that the uncertainty in the volume estimates for regenerating, managed poplar stands does not introduce a risk to the validity of the current determination, in ‘**Implementation**’ below I have instructed the licensee to work with MFR staff in developing an appropriate methodology for obtaining estimates of managed stand yields for inclusion in the next timber supply analysis and consideration in the next AAC determination for the TFL. I understand that this process is already underway, in that PSP data has been collected in the TFL since 1991 on a yearly basis and stored by the MFR for the licensee, that the licensee has been establishing additional PSPs in the last 10 years, and that it intends to continue to do so into the future. I recognize and appreciate this valuable stewardship work by the licensee, and I strongly encourage its continuation, which will help to improve the reliability of future AAC determinations.

*- minimum harvestable ages*

Minimum harvestable age is usually defined as the youngest stand age at which a licensee considers trees to be of sufficient size to be harvestable, acknowledging that the harvest likely will not take place consistently at this age, but that in timber supply analysis the harvest flow may occasionally need to be supported by such stands.

In the base case for TFL 43, minimum harvestable age is defined as the age at which trees reach specific desired product conditions, with tree diameter being among the most important for poplar. The estimated harvestable ages used in the analysis, based on a variety of PSP data and incorporating information reflecting spacing trials, were 25 years for the Fraser block, 31 years for the Homathko Block, and 29 years for the Kingcome block, with one additional year applied in each case to account for regeneration delay.

In the field, the licensee considers a stand to be optimally merchantable when it attains a diameter at breast height between 30 and 35 centimetres. In practice, some stands are likely to be harvested at lower than the minimum ages assumed in the analysis, due to their advantageous proximity to other harvestable stands, and due to the as-yet unknown potential for faster growth in hybrid species, noting from the preceding section that regenerating poplar stand volumes are uncertain at this time. This means that the minimum harvestable ages used in the analysis have likely been overestimated, and the associated harvestable volume over time correspondingly underestimated, to some unquantified extents.

Ministry of Forests and Range district staff consider that the rotation ages assumed in the analysis for the Fraser and Homathko blocks are reasonable reflections of current performance, while in the Kingcome block there has been no performance to assess because the harvest is still in old growth.

A sensitivity analysis was provided to examine the effect on harvest levels if the rotation lengths in each of the blocks were increased, or decreased, by two years. The results were proportionate as shown for the land base sensitivity described earlier in ‘Land base contributing to the timber harvest - *general comments*’.

From this I conclude that while it is likely minimum harvestable ages may prove somewhat shorter than assumed in the analysis, nonetheless the figures used are within a reasonable range of uncertainty and they pose low risk to timber supply as demonstrated by the sensitivity analysis. They are also reasonably representative of current performance, and they are adequate for use in this determination.

I commend the licensee for the work undertaken to date toward ascertaining the minimum harvestable ages, and in order to further reduce related uncertainty in these figures, which are an important component of any area-based analysis, I encourage the licensee to continue to refine its growth and yield information.

**(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, and with the exception of the following considerations respecting incremental silviculture, I find them to have been appropriately accounted for in the base case, with no further comment required.

Silvicultural treatments

Since 2001, trees have been planted at 4.5-metre spacing on all sites. Most of the Fraser block is site-prepared to the extent that it resembles an intensively managed forest. In the remaining area, and on other blocks, sites are prepared by moulding and spot scarification.

Broad-band fertilisers are applied at a rate of 50 kilograms per hectare in the Fraser block of the TFL, but the increased growth and yield implications are not explicitly accounted for in the base case yield estimates.

The licensee has established a planting stock nursery at Harrison Mills where clonal testing from natural stock for adaptability by biogeoclimatic subzone is ongoing; desirable traits include adaptability to wet sites and pest resistance. The company has approximately 400 clones and currently 50 are used in the silvicultural program. Genetic diversity is protected through the use of local natural stand cuttings in the planting stock. The growth and yield implications of genetic gains in the managed stand are not accounted for in the base case yield estimates.

To the extent that any stands older than 30 years have undergone any of these treatments, the available volumes in the timber supply are therefore probably underestimated to an unknown degree, likely with respect to fertilization, but I have no basis from which to make any quantitative adjustment to the harvestable volume, and for the purposes of this determination I have assumed that the base case adequately reflects current practice.

**(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, and with the exception of the 'log grade' factor considered earlier under 'Existing Forest Inventory', 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 and Range 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 I have considered a number of factors which I have concluded are adequately accounted for in the base case, as noted earlier in Table 1. Comments for other factors follow.

*- riparian management*

The licensee's practices in riparian management zones and their representation in the analysis have not changed from the previous analysis and determination; wherever possible wildlife tree patches are combined with riparian zones.

*- First Nations' archaeological sites and cultural heritage resources*

Matters relating to archaeological sites and cultural heritage resources are considered below, under First Nations considerations.

*- stand-level biodiversity*

As indicated in Table 1, I am satisfied that stand-level biodiversity considerations have been adequately accounted for in the base case. In further explanation I note that for the Fraser Block, the BC Ministry of Environment (MoE) has exempted the licensee from fulfilling wildlife tree patch requirements on areas previously planted with hybrid poplar; the objective here is to ensure that these requirements are met within the natural cottonwood stands. As noted above, wherever possible, wildlife tree patches are combined with riparian management or reserve zones where natural cottonwood stands are generally still located.

*- landscape-level biodiversity and old growth management areas*

As indicated in Table 1, I am satisfied that for each of the three blocks, landscape-level biodiversity considerations have been adequately accounted for in the base case. I will make the following explanatory observations.

For the Fraser block, the MFR and MoE recognize the young, homogeneous cottonwood/hybrid poplar stands as areas of highly altered landscape, for which no reductions for landscape unit biodiversity are required.

The September 27, 2001 Homathko Landscape Unit Plan provided for the establishment of a series of Old Growth Management Areas (OGMAs) within the TFL, for which, where necessary, separate land base exclusions totalling 16 hectares were applied in deriving the THLB in the base case.

For the Kingcome block, in lieu of a landscape unit plan, management follows the direction of the 2004 Order Establishing Provincial Non-Spatial Old Growth Objectives. Since 34 percent of older productive forest was already excluded in an adequate distribution of ecosystems in deriving the THLB, no additional area was required to be excluded on this account; the excluded areas, together with another 412 hectares of Ecological Reserves, fulfill the landscape-level biodiversity requirements for this block.

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

Other information

*- Twenty-Year Plan*

The licensee prepared a Twenty-Year Plan which confirmed the feasibility of operationally achieving on the landscape the proposed harvest level of 117.8 hectares, equivalent to an annually harvestable volume of 39 964.7 cubic metres, while meeting the objectives for the other identified forest values.

This finding is of particular significance in that the 20-year plan validates the achieving of the harvest over substantial proportions of the assumed rotation ages for the respective blocks. I have been mindful of the achievability of the Twenty-Year Plan in determining the AAC for this TFL, as discussed in 'Reasons for Decision'.

*- partitioning the harvest*

The licensee developed the base case forecast by analysing the available timber supply separately for each of the three blocks, then adding the results. A review of the licensee's past performance shows that it has not harvested more than the volume derived for a given block on the basis of having harvested less than the volume derived for another block.

The Dzawada'enuxw First Nation has expressed concern that, to avoid over-harvesting in areas of asserted interest, a separate AAC should be determined for the Kingcome block, which would amount to a partitioned AAC, to prevent any transfer of AAC from one block to another.

In response, I note that the licensee has already confirmed its intention not to move the harvestable area or volume between the blocks, even if not formally prevented by a harvest partition. In view of this commitment, and of the demonstrated history, I am satisfied that there is virtually no risk of over-harvesting in any of the blocks on this account. To ensure that this conclusion remains valid, the locations of areas harvested and the volumes obtained should be monitored on an ongoing basis as instructed earlier.

*- First Nations considerations*

The Crown has a duty to consult with, and where appropriate, accommodate, those First Nations who have overlapping asserted traditional territory and where the First Nations rights and title may be impacted by a proposed decision, including administrative decisions such as AAC determinations.

For TFL 43 I have considered the consultation and information sharing with First Nations separately for the three supply blocks, as follows.

*Block 1, Fraser*

The following First Nations have asserted traditional territories overlapping the Fraser Block of TFL 43: the Cheam, Chehalis, Popkum, and Ch-ihl-kway-uhk Tribes, and the Leq'a:mel, Kwaw-Kwaw-Apilt, Scowlitz, Shxw'ow'hamel, Union Bar, Aitchelitz, Peters Band, Skowkale, Skwah, Shxwhá:y Village, Squiala, Tzeachten, Yakweakwioose, Sumas, Skawahlook, Stó:lō Nation, Stó:lō Tribal Council and Seabird Island.

All of these First Nations except the Shx'ow'hamel, Stó:lō Nation and Stó:lō Tribal Council have Forest and Range Agreements (FRA) and Forest and Range Opportunity (FRO) agreements with MFR. These agreements provide for revenue sharing and forest tenure opportunities and contain provisions for consultation on administrative decisions including AAC determinations, which were followed by district staff. For those First Nations without an FRO, consultation followed the principles outlined in the *Haida* decision.

Consultation with these First Nations on the TFL 43 timber supply review (TSR) was initiated by the Chilliwack Forest District in October 2009 and concluded in January 2010. The consultation process included sending letters to initiate consultation and providing the TFL 43 Timber Supply Analysis Information Report/Analysis Report. Opportunities to meet with MFR staff were provided and follow-up emails and letters were sent. Preliminary assessments were completed for these First Nations, which included a review of aboriginal interests information, available traditional use studies, and an assessment of potential impacts my AAC decision may have on those interests. During the consultation First Nations were asked for additional information about their aboriginal interests and how this decision may impact these interests. For a more detailed record of the correspondence that occurred for this decision, a record is kept in the Chilliwack Forest District office.

Comments received from the Cheam First Nation during the TSR consultation process for the Fraser block included:

- Importance of Herrling Island for hunting, fishing and gathering of Cascara bark.
- Concern was expressed over the impact of timber harvesting on spiritual activities on the islands.
- A historic settlement near the Agassiz bridge and possibly on Ferry Island was noted as significant.
- Significant concern was expressed over flooding and erosion on the islands within TFL 43 and a request was made for a no-harvest buffer around the perimeter of the islands.
- There is a need for the licensee to protect archaeological sites that may be present on the islands, and a request was made that the licensee should conduct a Cultural Heritage Overview Assessment.
- A request was made to the licensee to provide a map of TFL 43 showing the areas of private and Crown land.

I am aware the MFR district office ensures First Nations aboriginal rights of hunting, gathering and fishing are maintained through unrestricted access to these resources. In addition, the district has worked with First Nations to control access to sensitive fish habitat areas on Herrling Island that were being damaged by the general public. The process has been successful due to the input and support from First Nations. Furthermore, an additional clause was recently included in the TFL 43 Licence Document to allow access to the TFL area for First Nations subject to safety concerns, so that they may exercise those aboriginal interests such as fishing, gathering, hunting and spiritual activities.

Accretion and erosion occurs within TFL 43 annually during the spring freshet. Concerns of erosion on the islands were expressed by the Cheam and Popkum First Nations. Any future harvesting on the islands would require consultation at the operational level where this can be more effectively addressed. As well, the licensee indicated it will consider these concerns in its harvesting plans. In its forest stewardship plan the licensee has also included some riparian and wildlife tree retention strategies that may provide bank stabilization. I encourage the licensee and district staff to continue working with First Nations at the operational level to ensure that timber harvesting does not further contribute to erosion on these islands.

Based on the information provided in the *Report on Research into Issues Involving the Cheam First Nation* produced by the Ministry of Attorney General, no known archaeological sites were recorded for Ferry Island or Island 32; however several sites were recorded along the south and north side of the Fraser River adjacent to the TFL. In addition, the licensee has conducted three Archaeological Impact Assessments and no archaeological sites were found. Several First Nations, however, have also identified TFL 43 as having high potential for archaeological and cultural features, and therefore I encourage district staff and the licensee to continue working with the Cheam First Nation and others to identify and operationally manage these sites, and to discuss the possibility of conducting a Cultural Heritage Overview Assessment.

Respecting the request for a map, I am advised that the best available information was provided in the form of an incomplete map, but a commitment has been made to provide a completed map when it is available. Therefore, as noted in '**Implementation**', below, I instruct the licensee to provide this map to the Cheam First Nation when it becomes available.

Comments received from the Chehalis First Nation included a list of high priority aboriginal places within their traditional territory. The Chehalis indicated there are temporary settlements and important family fishing areas on three small islands in TFL 43 on the north side where the Harrison and Fraser Rivers meet. They have also requested that the licensee conduct a reconnaissance of the islands to identify any 'permanent living units'.



Therefore, as noted in ‘**Implementation**’, below, I instruct the licensee to carry out reconnaissance on these islands, to ensure that timber harvesting does not damage these significant aboriginal places, ‘permanent living units’, and family fishing areas.

The Ch-ihl-Kway-uhk Tribes, representing the Aitchelitz, Kwah-Kwah-Apilt, Skowkale, Shxwhá:y Village, Skwah, Squiala, Tzeachten, and Yakweakwioose First Nations, indicated that although TFL 43 is outside their asserted traditional territories, this area is considered ‘High’ for Archaeological Impact Assessment (AIA) and Traditional Use Survey (TUS) work, and they would like to be consulted prior to operations.

In response, I encourage the licensee to continue working with First Nations on this matter.

The Popkum First Nation is concerned about increasing erosion and instability from future harvesting on Island 2, the small island in front of its reserve, and has requested the licensee not to harvest on this island. I am advised that the licensee has indicated it will not be harvesting on this island in the near term.

The Stó:lō First Nation requested clarification on the statement made in the analysis report that no specific reductions were made for cultural heritage resources because AIAs that have been conducted to date have not revealed significant cultural heritage values. MFR staff brought this to the licensee’s attention and also committed to follow-up with the Stó:lō First Nation on “established knowledge” of archaeological sites on the islands and, if available, ask if this information can be shared with the licensee.

As noted above, I encourage the licensee and district staff to continue working with First Nations to identify and operationally manage cultural heritage resources. If it becomes known that there are significant implications to the timber supply due to cultural heritage resources then this will be incorporated in future analyses and AAC determinations.

The Skowlitz First Nation expressed concern with the islands upstream from the confluence of the Harrison and Fraser Rivers. Further information was not provided by them regarding these concerns; however, district staff will continue to work with the First Nation to identify these concerns and how they may be addressed. I am also aware that in past consultation processes the Skowlitz First Nation identified concern about over-fishing, fertilization, access and gravel removal on TFL 43. These concerns are outside my authority as deputy chief forester; however, I am aware that district staff are working with the Skowlitz First Nation on these issues and that measures are being taken to address these concerns. In addition, the licensee has committed to referring its plans to the Skowlitz First Nation to address any issues of over-fishing.

From my review of the consultation summary, I conclude that exceptional efforts were made by the Chilliwack Forest District to inform 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. Again, I encourage the licensee and district staff to continue working with First Nations to effectively address their concerns of flooding, erosion and the need for bank stabilization. I also encourage the licensee to discuss with the Cheam First Nation the possibility of conducting a Cultural Heritage Overview Assessment. If any new information becomes available regarding archaeological sites, cultural heritage resources or aboriginal interests, this can be incorporated into future analyses and AAC determinations.

In review, the licensee should at its earliest opportunity provide the Cheam First Nation with a complete map showing private and Crown lands in TFL 43, and should also ensure that prior to timber harvesting, it conducts reconnaissance of the three islands on the north side of where the Harrison and Fraser rivers meet, as instructed in ‘**Implementation**’ below.

*Block 2, Homathko*

The Xwemalhkwu (formerly the Homalco) First Nation, the Wei Wai Kum (formerly the Campbell River) First Nation, and the Ulkatcho First Nation all have asserted traditional territory overlapping the Homathko Block of TFL 43. The Laich-Kwil-Tach Treaty Society represents the Wei Wai Kum First Nation and they were also consulted as part of this timber supply review. All three First Nations have FRO agreements and these have guided the consultation process for the TFL 43 AAC determination.

Consultation with these First Nations on the TFL 43 timber supply review was initiated by the Ministry of Forests and Range in July 2009 and concluded in November 2009. The consultation process included sending letters to initiate consultation and providing the TFL 43 Timber Supply Analysis Information Report/Analysis Report. Opportunities to meet with MFR staff were provided and follow-up emails and letters were sent. Preliminary assessments were completed for these First Nations, which included a review of aboriginal interests information, available traditional use studies, and an assessment of potential impacts my AAC decision may have on those interests. During the consultation First Nations were asked for additional information about their aboriginal interests and how this decision may impact these interests. For a more detailed record of the correspondence that occurred for this decision, a record is kept in the Sunshine Coast Forest District office.

The Xwemalhkwu First Nation did not respond specifically to the TSR process but did provide comments regarding the TFL 43 licence replacement, and these comments also apply to this AAC determination. Their comments included that “any proposed activities may significantly impact our land and resources with resulting infringement on our Aboriginal Rights Title.

A review of the ethno-historical information of the Xwemalhkwu First Nation suggests there is some potential for claims of aboriginal title to be proven in some of the areas of the TFL. Current forest practices on the Homathko block will not significantly alter the land or its uses, and I emphasize that the forest management regime employed on Crown land in British Columbia – as codified in the *Forest and Range Practices Act* and related regulations and policies, and reflected in land use decisions – is designed to ensure the maintenance of the capacity of the land to support values associated with forests, such as water, wildlife, fish, trees and other forest vegetation. I have reflected that forest management framework in my AAC determination. Furthermore, a significant portion of the Homathko block will not be managed for timber harvesting, leaving much of the area in an unmanaged state available for use by First Nations. About one percent of the block is forecast to be harvested each year.

The Ulkatcho and the Wei Wai Kum First Nations, and the Laich Kwil Tach Treaty Society did not comment on this TSR. They did comment on the TFL 43 license replacement and indicated they did not have any concern with this decision.

I also note that Wei Wai Kum First Nation did not respond, likely because the Homathko block is not a core area in its asserted traditional territory.

No comments were received from the Ulkatcho First Nation. A small area of the TFL is located at the edge of the Ulkatcho First Nation’s asserted traditional territory; however, since the area consists of non-contributing land and non-forested area I expect no impact on their aboriginal interests.

Respecting archaeological resources on the Homathko block, one village site, and two culturally modified trees adjacent to the TFL were identified through the Remote Access to Archaeological Data application (RAAD); these are all located on reserves outside the TFL and do not affect its timber supply.

From my review of the consultation summary, I conclude that reasonable efforts were made by the Sunshine Coast Forest District to inform 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 any new information becomes available regarding archaeological sites, cultural heritage resources or aboriginal interests, this can be incorporated into future analyses and AAC determinations.

### *Block 3, Kingcome*

The Kingcome block of TFL 43 is fully contained within the asserted traditional territory of the Dzawada'enuxw First Nation (DFN). The block is located 4.6 kilometres north of the designated reserve Quaae – IR #7, and is exclusively claimed by the DFN. They have an FRO agreement, which has guided this consultation process, and an Interim Measures Agreement with MFR that provides economic accommodation for potentially adverse effects on their aboriginal interests from forestry decisions.

Consultation with the DFN on the TFL 43 timber supply review was initiated by the Ministry of Forests and Range in July 2009 and concluded in January 2010. The consultation process included sending letters to initiate consultation and providing the TFL 43 Timber Supply Analysis Information Report/Analysis Report. Opportunities to meet with MFR staff were provided and follow-up emails and letters were sent. A preliminary assessment was completed and shared with the DFN. This included a review of information on aboriginal interests, available traditional use studies, and an assessment of potential impacts that my AAC decision may have on those interests. During the consultation, First Nations were asked for additional information about their aboriginal interests and how this decision may impact these interests. For a more detailed record of the correspondence related to this decision, a record is kept in the North Island – Central Coast Forest District office.

The DFN provided a letter on January 5, 2010, requesting:

- additional land base exclusions for cultural heritage resources and traditional features and uses;
- a longer forest rotation age for hybrid poplar;
- a consideration for a separate AAC for this block.

A response was provided to the DFN from MFR district staff to indicate that a response to their comments would be forthcoming at the conclusion of the determination process. No area was excluded for cultural heritage resources from the THLB of the Kingcome block because no features have been found to date. Instead of applying an aspatial netdown in the timber supply analysis, it was suggested that specific cultural areas could be identified and protected at the operational level. As well, the licensee has committed in its analysis report to ongoing examination of methods by which information on cultural sites can be acquired. These methods will be explored with the DFN during consultation on forest stewardship plans for the Kingcome block and the licensee will work with the DFN to determine how site specific information will be collected. Furthermore, district staff have assured me that cutting permits are not issued until the District Manager is confident that First Nations have been made aware of site-level development and have had an opportunity to share information. Given these steps, I am assured that information sharing will take place at several levels following this determination and that there will be opportunity to identify cultural heritage resources at the landscape level.

Regarding the DFN's request to apply a longer forest rotation age for the hybrid poplar plantations, the licensee indicated there is much uncertainty about harvest ages in northern blocks. Information from other jurisdictions however, suggests that the ages used in this analysis likely overestimate the time needed to reach the harvestable age.

As noted above under '*partitioning the harvest*', the DFN have requested a separate AAC for this block in order to maintain an even-flow of activities such as employment, economic opportunities, and maintenance of infrastructure. I concluded in that section that I am satisfied that there is virtually no risk of over-harvesting in any of the blocks. To ensure that this conclusion remains valid I requested that the locations of areas harvested and the volumes obtained be monitored on an ongoing basis.

From my review of the foregoing and all associated information, I believe that the MFR has engaged in consultation at an appropriate level with the affected First Nations having overlapping asserted traditional territories with TFL 43. Furthermore, based on the preliminary assessments, I agree with district staff that the scope of consultation reflected MFR's assessment of the aboriginal interests asserted by the First Nations within TFL 43.

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 mathematical approach used in the analysis for TFL 43 did not incorporate the temporal simulation usually provided when computer models are used to project timber supply. Nonetheless, as noted, the Twenty-Year Plan confirmed the feasibility of locating the projected harvestable area, as forecast in the base case, for the major part of the rotation periods of the forests on the long-term THLB in each of the three supply blocks.

No volume-based analysis was requested in support of the current AAC determination since the essential equivalency of the volume- and area-based analyses had been established for the Fraser block in the previous analysis; however, the land-base sensitivity analysis noted earlier in '*Land base contributing to the timber harvest*' indicated the current validity of this equivalence and the minor implications of changes in the harvestable area from that projected in the base case.

From this information and analyses, I am satisfied that the rate of harvesting for TFL 43 projected in the base case is an adequate and appropriate reflection of the capability of this land to support timber harvesting now and into the foreseeable future.

*- community dependence on the harvest level*

The privately held Canadian company Kruger Inc. which wholly owns Kruger Products L.P., the holder of TFL 43, maintains a Western Manufacturing Division, located in New Westminster, consisting of a groundwood mill, four paper machines and assorted converting operations to produce tissue products. Kruger's operations in all three blocks of TFL 43 are managed from its woodlands office located in New Westminster. The New Westminster pulp mill has a consumption capacity of 100 000 cubic metres per year. Kruger also owns a converting facility in Calgary, to which fibre is sent from TFL 43 in the form of pulp and ground rolls. The licensee takes advantage of market opportunities to purchase additional poplar on the open market to run its mill.

The predominant beneficiary of the economic activity derived from TFL 43 is the greater Vancouver area. However, forestry contractors operating in the TFL are generally from the local communities adjacent to each block, i.e., for the Fraser block, the Lower Fraser Valley, including Chilliwack, Kent, Abbotsford and Mission; for the Homathko block, Powell River; and for the Kingcome block, Campbell River and the Dzawada'enuxw First Nation, formerly the Tsawataineuk Band.

The licensee has maintained an ongoing working relationship with aboriginal people living in the vicinity of TFL 43. In particular, members of Bands adjacent to the Fraser block, and to the Dzawada'enuxw First Nation in the Kingcome block, have played an active role in the operations on TFL 43. Members of the Ohamil, Skwah and Seabird Bands have harvested portions of the volume available in the Fraser block, and have been employed to carry out planting and other silviculture activities.

In making my AAC determination I have remained mindful of the current and potential community benefits to be derived in various parts of the province through the forestry and processing operations associated with the licensee's ongoing management of TFL 43.

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

### Economic and Social Objectives

#### *- Minister's letter*

The Minister of Forests and Range has expressed the economic and social objectives of the Crown for the province in a letter to the chief forester dated July 4, 2006, attached to this document 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 43 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. For this TFL the achievability of these objectives was confirmed in the ground layout of harvesting operations as demonstrated in the Twenty-Year Plan for a period covering the major portion of the forest rotation age for each block, and by extension, into the indefinite future.

I have also considered with care 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 all of these considerations throughout, 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 suggests that the chief forester should consider important social and economic objectives that may be derived from the public input in the TSR 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 consultation process*', public input was invited by the licensee through advertisements placed on September 24, 2009 in the *North Island Gazette*, and on September 25, 2009 in the *Chilliwack Progress*, *Powell River Peak* and the *Campbell River Mirror*, inviting the public to view TSR documents at the licensee's New Westminster office, and to submit comments, until November 23, 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.**

### Non-recoverable losses

Unsalvaged losses are rare within the TFL, since the licensee employs an aggressive salvage program and access is highly developed on all three blocks. Appropriately, no adjustments were made to account for non-recoverable losses. Any losses will be accounted for by adjusting the total area logged each year to include areas where losses are sustained. From this information I am satisfied that the base case analysis is reliable in respect of any non-recoverable losses.

### **Reasons for Decision**

In reaching my AAC determination for TFL 43, I have made all of the considerations documented above, all of which are integral to the reasons for my decision, and from which I have reasoned further as follows.

The December 8, 2009 timber supply analysis in support of this AAC determination showed that for the three blocks of the TFL, the following areas and volume equivalents could be harvested annually from the TFL:

- Fraser block: 44.9 hectares, equivalent to 12 886.3 cubic metres annually,
- Homathko block: 57.1 hectares, equivalent to 18 957.2 cubic metres annually,
- Kingcome block, 15.8 hectares, equivalent to 8121.2 cubic metres annually,

for a total annual harvest in the TFL of 117.8 hectares, equivalent to 39 964.7 cubic metres. This closely approximates the AAC of 39 900 cubic metres currently in effect for the TFL, as determined effective March 1, 2000 and extended in the postponement order of May 14, 2003.

As I have noted in my considerations, I am satisfied that the methodologies used in deriving the timber harvesting land base (THLB) in the analysis are appropriate. I have also noted that the sensitivity analysis with which I was provided showed that increasing or decreasing the net area of the THLB in the TFL by five percent respectively increased or reduced the approximate harvestable volume equivalent in direct proportion by just five percent. This result indicates that minor changes associated with potential inaccuracies in deriving the THLB do not disproportionately affect the validity of the base case projection in respect of either the area, or the equivalent timber volume, that may be sustainably harvested annually.

In reaching my determination of an appropriate AAC for this TFL, I have been mindful of the already demonstrated achievability of the Twenty-Year Plan for the TFL, which represents sustainability in achieving the harvest over the majority of the rotation age for each of the blocks in the TFL.

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 those noted qualifications, and mindful that the AAC for this TFL must be reviewed within a 10-year period, I am satisfied that the AAC for TFL 43 can be maintained at the current level of 39 900 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 43 that a timber harvest level that accommodates as far as possible the range of objectives for identified forest resources in each of the three supply blocks can be best achieved at this time by maintaining the AAC at 39 900 cubic metres. This new AAC will become effective on March 26, 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 MFR staff and licensees 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. These projects are, however, important to help reduce the risk and uncertainty associated with key factors that affect the timber supply in TFL 43.

1. To retain confidence in the validity of the timber volume per hectare estimates into the future in preparation for the next AAC determination, the licensee should report on the number hectares harvested annually, as well as the number of cubic metres harvested, separately for stands aged up to 30 years, and for stands of 30 years and older, in each block. This should also be broken down by currently existing mixed stands, managed cottonwood stands and hybrid poplar stands.
2. The licensee should ensure the inventory projections used in the next timber supply review include estimates of dead potential volumes.
3. The licensee should work with MFR staff on developing an appropriate methodology for obtaining estimates of managed stand yields for inclusion in the next timber supply analysis and consideration in the next the AAC determination. These will be helpful also in refining values for minimum harvestable ages.
4. At the earliest possible date, the licensee should provide a map of Crown and private areas of the TFL to the Cheam First Nation, in response to its request of July, 2009.
5. The licensee should carry out reconnaissance on the noted three small islands in TFL 43 on the north side of where the Harrison and Fraser Rivers meet, to ensure that timber harvesting does not damage significant aboriginal places, 'permanent living units', and family fishing areas.

  
Melanie Boyce, RPF  
Deputy Chief Forester

March 26, 2010



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

Section 8 of the *Forest Act*, Revised Statutes of British Columbia 1996, c. 157, current to March 3, 2010, 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 and Range Act***

Section 4 of the *Ministry of Forests and Range Act* (consolidated to March 30, 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 coordinated and integrated, in consultation and cooperation with other ministries and agencies of the government and with the private sector;
- (d) encourage a vigorous, efficient and world competitive
  - i. timber processing industry, and
  - ii. ranching sectorin British Columbia;
- (e) assert the financial interest of the government in its forest and range resources in a systematic and equitable manner.

## **Appendix 3: (Document attached): Minister's letter of July 4, 2006**

## **Appendix 4: Responses from First Nations**

Records of all related communications are maintained in the respective Forest District Offices.



JUL 04 2006

Jim Snetsinger  
Chief Forester  
Ministry of Forests and Range  
3<sup>rd</sup> 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  
Minister

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

Location:  
Parliament Buildings  
Victoria BC V8V 1X4  
e-mail: FDR.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,

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

Rich Coleman  
Minister