

**British Columbia
Ministry of Forests and Range**

Innovative Forestry Practices Agreement

**Rationale for an Increase in
Allowable Annual Cut (AAC)**

**Issued to
International Forest Products Ltd.
Adams Lake Lumber Division**

August 6, 2008

**T.P. (Phil) Zacharatos, R.P.F.
Regional Manager
Southern Interior Forest Region**

Executive Summary

Section 59.1 of the *Forest Act* enables the regional manager of the Ministry of Forests and Range (MFR) to increase the current allowable annual cut (AAC) associated with the licence of an innovative forestry practices agreement (IFPA) holder. An increase in AAC must be justified based on the licensee documenting their innovative forestry practices or activities in a Forestry Plan approved by the regional manager and demonstrating the impacts of the practices on timber supply by methodology approved by the chief forester.

On November 17, 1997, the Minister of Forests signed an IFPA for a period of 10 years with International Forest Products Ltd. Adams Lake Lumber Division. On December 14, 2007 the agreement was extended to August 31, 2011.

On January 1, 2003 the regional manager awarded the IFPA-holder an increase in AAC based on the innovative forestry practices of the IFPA-holder. This increase expired December 31, 2007.

On December 21, 2007, the IFPA-holder submitted an application for an AAC increase of 16,000 cubic metres per year. The application included an updated Forestry Plan, supporting timber supply analysis, and documentation on the three supporting projects: deer winter range, mature volume inventory, and site productivity.

In this rationale, I determine that it is reasonable for a 15 000 cubic metres per year increase in the AAC of the IFPA-holder's forest licence A18693. The determination is effective January 1, 2008 and will remain in effect until August 31, 2011 unless otherwise determined.

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Objective of this Document

This document is intended to provide an accounting of the factors that I, as regional manager of the Southern Interior Forest Region, have considered, and the rationale that I have used in making my determination, under Section 59.1 of the *Forest Act*, of a request to approve a Forestry Plan and to increase the current allowable annual cut (AAC) of a replaceable forest licence under an innovative forestry practices agreement (IFPA). Specifically, on December 21, 2007 International Forest Products Ltd. made an application to increase the AAC of their licence FL A18693 that is under an innovative forestry practices agreement. This agreement is referred to as the Adams Lake IFPA.

In addition to my accounting and reasons for decision, this document outlines the background of the Adams Lake IFPA, the statutory framework, and guiding principles. The appendices contain the IFPA legislation and a memorandum from the chief forester on timber supply methodology. This rationale does not identify all the work completed by the IFPA-holder, but is intended to address the submitted Forestry Plan approval and the AAC increase application.

Innovative Forestry Practices Agreement

In the fall of 1997, the Minister of Forests signed an IFPA for a period of 10 years with International Forest Products Ltd. Prior to the expiry, in January 2007 the Minister of Forests and Range enabled the extension of all IFPAs to August 31, 2011. The IFPA-holder applied for such an extension and on December 14, 2007 the Adams Lake IFPA was extended to August 31, 2011.

Description of IFPA Area

The Adams Lake IFPA area comprises approximately 180 000 hectares in south central British Columbia. The IFPA area encompasses, for the most part, the watershed of Adams Lake extending to Running Bear Lake in the north and Little Shuswap Lake in the south. Climate for the area varies from the relatively dry south to an increasingly wetter north with elevation ranging from 350 m to 2130 m.

The IFPA area contains eleven biogeoclimatic variants that reflect various combinations of climate, terrain, and soils. Extensive fluvio-glacial deposits are present along the lower slopes bordering Adams Lake. The forests contain a mixture of species including the primary species of Douglas-fir, Engelmann spruce, lodgepole pine and subalpine-fir. Other common species include western redcedar, western hemlock, hybrid white spruce, birch and trembling aspen.

Administratively, the IFPA area is located in the Headwaters and Kamloops forest districts within the Southern Interior Forest Region. The community of Adams Lake lies within the IFPA area. Nearby communities, outside of the IFPA area, include Chase to the south, Vavenby to the north, Barriere to the west and Scotch Creek to the east. Four

First Nation bands are located in the Adams Lake area: Adams Lake Indian Band, Neskonlith Indian Band, North Thompson Indian Band, and Little Shuswap Indian Band. Within the IFPA boundaries are the operating areas of Adams Lake Lumber Division of International Forest Products Ltd., Gilbert Smith Forest Ltd., and British Columbia Timber Sales. Further all First Nations located in the Adams Lake area hold or imminently will hold non-replaceable forest licences.

Statutory Framework

Section 59.1 of the *Forest Act* enables the regional manager to increase the current allowable annual cut associated with the licence of an innovative forestry practices agreement holder. Prior to such approval, the regional manager must have approved a Forestry Plan in which the innovative forestry practices or activities are identified.

Eligible categories of innovative forestry practices and activities are described in the Innovative Forestry Practices Regulation. These categories include improvements due to harvesting or silvicultural systems, silvicultural treatments, collection and analysis of new data on forest composition and expected growth, and management activities to enhance and protect other resource values. To be eligible, the practices and activities must be within a Forestry Plan approved by the regional manager. Further, the collection and analysis of new data must be in accordance with the available specifications of the chief forester.

An increase in AAC must be justified based on timber supply analysis methodology approved by the chief forester. The chief forester has made known his approved timber supply analysis methodology in a memorandum dated April 6, 2001 to the regional managers. This memorandum provides the general principles of the timber supply analysis methodology that is required to justify an increase in allowable annual cut to the licence of an innovative forestry practices agreement holder.

Under section 59.1 of the *Forest Act*, the regional manager can limit an AAC increase to a period of time, area of land, type of timber or any other condition. The regional manager can also reduce or eliminate an increase at any future time given new information or for non-compliance with the Forestry Plan or the conditions set. Further, the regional manager is enabled to suspend or cancel an innovative forestry practices agreement if the holder is not complying with the agreement, Forestry Plan, conditions, *Forest Act*, or *Forest and Range Practices Act*.

Section 59.1 of the *Forest Act*, the Innovative Forestry Practices Regulation, and the memorandum on timber supply methodology from the chief forester, are reprinted in the appendices.

Guiding Principles

As a number of decisions with respect to innovative forestry practices agreements under section 59.1 of the *Forest Act* were expected to be made, I, as regional manager, outlined

the following guiding principles for these decisions. These principles assist me in ensuring administrative fairness and consistency in how I approach my decisions.

- For an innovative forestry practice or activity to be considered in an AAC increase decision, the practice or activity must be either currently implemented or the plans for the practice must be clear, practical, and feasible. Given the nature of innovative forestry practices, I accept that some innovative forestry activities presented may be at an initiation stage rather than a current practice stage.
- Innovative forestry practices or activities identified in the approved Forestry Plan, but which are not addressed in an AAC increase request, need to be considered in the AAC increase determination. It is my expectation that the IFPA-holder will work towards implementing the Forestry Plan as approved. My approval is based on the whole plan, not simply components that might result in increased timber supply. As such, I may weigh the risks of practices not yet carried out against identified increases presented to me.
- Any AAC increase decision should be made in the context of current government policy. While I may be aware of proposed policy changes that could impact an AAC increase decision, I must be mindful of the ever changing nature of proposed policy and not speculate on the acceptance of proposed policy. Similarly, it would be inappropriate for me to speculate on the impacts of strategic land-use or treaty processes before the decisions have been made by government and the appropriate implementation details have been determined.
- The most recent timber supply review for the management unit in which the IFPA is located provides the basis for describing current practice. This base may be updated with new information or management practices that are not innovative forestry practices or activities. While I will not credit the IFPA-holder for increases in harvest flow associated with practices that are not defined as innovative in the Forestry Plan and regulation, I must consider impacts on the harvest flow of these updates in relation to the base harvest flow and to any benefits derived from innovative forestry practices and activities.
- The right of the IFPA-holder's licence to access timber volume within the timber supply area is not affected by the IFPA unless otherwise agreed upon. Nevertheless, I expect that any increase in AAC will be harvested from within the IFPA boundaries in accordance with the information and practices identified in the IFPA application and review.
- An AAC increase awarded under the IFPA must not cause a negative impact on non-IFPA licensees operating within the IFPA boundaries without the approval of the non-IFPA licensees. The non-IFPA licensees can agree to manage their operating areas within the IFPA area in accordance with the IFPA Forestry Plan but are not eligible for any AAC increase. However, any AAC increase associated with innovative practices carried out under the IFPA Forestry Plan within the IFPA area can be attributable to the IFPA-holder, even if the activities are undertaken by a non-IFPA licensee.
- Innovative forestry practices and activities can be assumed to apply to areas that are temporally excluded from the IFPA (e.g., timber licences, partitions outside of the IFPA-holder's licence) only after they have reverted to general timber supply area

status. Any increases in harvest flow identified on these stands before they revert will not be eligible under the IFPA.

- Uncertainty exists in the data and management practices presented and modelled in a review of timber supply. In my decision, I consider this uncertainty and associated risks and, where necessary, I account for such.
- One method to reduce risk is to periodically review the determination. As such, I will specifically assign a time period for which an AAC increase is applicable. Nevertheless, if prior to this time period, new information or an assessment of the innovative practices indicates that the increment is not justified, or the licensee is not complying, I have the right to remove or decrease any AAC increase that I may have determined.
- A second method to reduce risk associated with an increased harvest flow is to award a lower AAC increase than the timber supply analysis suggests. The level of caution that I exercise will depend on the uncertainty of the timber supply increase being attributed to an innovative practice, which is normally related to the quality of the information on the practice, and to inherent uncertainties in ecological dynamics and biophysical factors.

With respect to First Nations' issues, I am aware of the Crown's legal obligations resulting from recent court decisions including those in the British Columbia Court of Appeal and the Supreme Court of Canada. The AAC increase that I may determine should not in any way be construed as limiting those obligations.

In my decision, I have considered all information brought forward respecting First Nations' interests, including information from the chief forester resulting from his AAC determination for the Kamloops TSA under Section 8 of the *Forest Act*. If, subsequent to my determination, I become aware of information respecting First Nations' interests that was not available to me at the time of this decision, and indications are that all or part of any increase awarded was not justified, I will re-visit my determination.

My acceptance of information on practices within this decision does not supersede or fetter other statutory decision-making authorities, and is not to be construed as approval required by any other authority or agency.

In making my decision, I am aware of my obligations as a steward of the forests of British Columbia and of the mandate of the Ministry of Forests and Range as set out under the relevant legislation.

Information Sources

In making this decision, I have considered information from a variety of sources. Many of these sources were used to compile a technical summary of the application that was presented to me on May 20, 2008. This document was my primary source for reviewing the application; the document may refer to additional sources of information not listed below.

- Ministry of Forests and Range (unpublished). Technical Summary of the Interfor Innovative Forestry Practices Agreement Request for an Allowable Annual Cut Increase. May 20, 2008. Kamloops, British Columbia

The allowable annual cut increase application, associated timber supply analysis documents, and the Forestry Plan submitted by the IFPA-holder provide much of the input into the technical summary.

- International Forest Products Ltd. 2007. Adams Lake Innovative Forestry Practices Agreement Forestry Plan #2 Version 1.0 December 21, 2007
- International Forest Products Ltd. 2007. Adams Lake IFPA AAC Uplift Application for Forestry Plan #2. Version 1.0 December 21, 2007

I have also reviewed the 2008 allowable annual cut determination for the Kamloops TSA made by the chief forester. The timber supply review information for the Kamloops TSA was the base for the analysis used in the current application.

- Ministry of Forests and Range. 2008. Binder for Kamloops TSA timber supply review.
- Snetsinger, J. 2008. Kamloops Timber Supply area. Rationale for allowable annual cut determination. Ministry of Forests and Range. Effective June 1, 2008.

I have also considered other information sources applicable to the land base and forest management within the IFPA area and Kamloops TSA.

- Coleman, R. Letter to IFPA-holders about agreement extensions. January 19, 2007
- Jahrus & Associates Consulting Inc. & Churlish Consulting Ltd. 2008. Kamloops TSA. Documentation of analysis for vegetation resources inventory statistical adjustment. January 2008.
- J.S. Thrower & Associates Ltd. 2001. Potential site index estimates for the major commercial tree species in the Adams Lake IFPA area: Final report. 30 March 2001.
- J.S. Thrower & Associates Ltd. 2001. Adams Lake IFPA Growth & yield monitoring program sample and implementation plan. 31 March 2001.
- J.S. Thrower & Associates Ltd. 2001. Interim site index elevation model for spruce in the ESSF Adams Lake IFPA. 31 March 2001.
- J.S. Thrower & Associates Ltd. 2004. Statistical Audit of the MSRM Inventory of Mature Stands in the ESSF Portion of the Adams Lake IFPA Area (version 2). May 6, 2004.
- Keystone Wildlife Research. 2003. Adams Lake IFPA Mule Deer Winter Range Definition and Management Options. 31 March 2003.
- Snetsinger, J. Guidance on landscape- and stand-level structural retention in large-scale Mountain pine beetle salvage operations. December 2005.
- Timberline Natural Resource Group. 2008. Site index adjustment of the Kamloops Timber Supply Area. 31 March, 2008.

- Walton A., J. Hughes, M. Eng, A. Fall, T. Shore, B. Riel, and P. Hall. 2007. Provincial-Level Projection of the Current Mountain Pine Beetle Outbreak: Update of the infestation projection based on the 2006 Provincial Aerial Overview of Forest Health and revisions to the “Model” (BCMPB.v4). Ministry of Forests and Range, Research Branch, Victoria, BC.

With respect to First Nations, my staff prepared a summary of the consultation in which the correspondences received are noted. Additional information and sources of information considered are identified within the consultation summary.

- Pitts, Korene. 2008. Consultation Summary – Adams Lake IFPA Memorandum to Phil Zacharatos, Regional Executive Director, Southern Interior Forest Region. May 8, 2008.

I have also received information through a technical review and discussion of current and expected operating conditions with BC Forest Service staff, including a meeting held in Kamloops on May 20, 2008.

Forestry Plan

Prior to awarding an AAC increase under Section 59.1, the regional manager must have approved a Forestry Plan in which the innovative forestry practices or activities are identified.

On August 25, 2000 the regional manager approved a Forestry Plan submitted by the IFPA-holder for a 5 year period. The Forestry Plan, with minor amendments, was subsequently extended until November 12, 2007.

On December 21, 2007, the IFPA-holder submitted a new Forestry Plan with their application for an allowable annual cut increase. Within this determination I will be considering the approval of the submitted Forestry Plan in addition to the allowable annual increase application.

Public review and First Nations consultation of the Forestry Plan has been conducted in conjunction with the AAC increase application.

Allowable Annual Cut Increase Application

On December 21, 2007, the IFPA-holder applied to the regional manager of the Southern Interior Forest Region for an increase in the allowable annual cut of their replaceable forest licence under an innovative forestry practices agreement. The application requested that the regional manager consider an increase of 16 000 cubic metres per year above the current allowable annual cut. The application identified the proposed innovative forestry practices and presented a supporting timber supply analysis.

In response to the application, the regional manager requested that the IFPA-holder share the application information with First Nations and obtain and summarize input from the public, ministry of environment, ministry of forests and range, and public groups constituted by the provincial government with a role in land use planning in the TSA. The IFPA-holder completed the referral period on March 10, 2008.

I have reviewed the IFPA-holder's application including the timber supply analysis for the proposed allowable annual cut increase. My process for this determination consists of two steps. The first step is the confirmation that the proposed practices can be considered innovative forestry practices as defined by regulation. The second step is to determine, as justified by the chief forester's methodology, the increase, if any, in harvest flow attributable to the innovative forestry practices.

The Role of Timber Supply Analysis

Section 59.1(7) of the *Forest Act* identifies that an increase in allowable annual cut must be justified according to timber supply analysis methodology approved by the chief forester. The chief forester has made known this methodology in a memorandum dated April 6, 2001. The memorandum provides the general principles, not detailed procedures, of timber supply analysis required to assist my decision.

The timber supply analysis consists of two components. The first component is an information package that includes information from three categories: land base and inventory; timber growth and yield; and management practices. The second component is a suite of timber supply forecasts based on the information package that investigates different harvest flow options and data uncertainty.

To determine an increase in AAC requires that I have both knowledge of timber supply based on current practices and of the changes associated with the IFPA innovative forestry practices and activities. As such, the timber supply analysis provides separate forecasts without and with the innovative forestry practices and activities.

For the current AAC increase application, I made use of timber supply analysis provided by the IFPA-holder within the application of December 21, 2007. This analysis was completed by the consulting firm Forsite using the forest estate model Forest Planning Studio (FPS). To identify the implications of the innovative forestry practices, the analysis included a scenario based on modelling assumptions of the recent Kamloops TSA timber supply review and scenarios that looked at the innovative forestry practices individually and in composite.

I am satisfied that the methodology used in the timber supply analysis that supported the application for an AAC increase sufficiently meets the methodology identified in the chief forester's April 6, 2001 memorandum.

The timber supply analysis with which I am provided is an integral component to my review of the AAC increase application. However, the determination itself is not a

calculation but a synthesis of judgement and analysis in which risks and uncertainties are weighed. Analytical methods such as forest estate models cannot incorporate all the social, cultural, and economic factors that are relevant when making forest management decisions. As such, depending upon the outcome of these considerations, the increase in AAC determined may or may not coincide with harvest flows identified in the timber supply analyses.

In this rationale, I will not discuss in detail many of the timber supply analysis assumptions or factors where I am satisfied that such are appropriately considered and are documented within the timber supply analysis report.

Base Scenario

Under section 59.1 of the *Forest Act*, I am enabled to increase the allowable annual cut authorized in the licence of an IFPA-holder whereas the chief forester's decision under Section 8 is to determine the allowable annual cut of a management unit. While these decisions may use similar information, they are different decisions.

For this decision, which is an increase in the AAC of a licence, I need to identify a base to which to compare the impact of the innovative forestry practices. For this decision, the IFPA-holder has presented me a base case that they felt represented the same management assumptions as the base case analysis presented to the chief forester for the 2008 Kamloops TSA allowable annual cut determination. The IFPA base case localized certain information (e.g., create volume tables based only on IFPA area) and modified other information to reflect the decision needs (e.g., how mountain pine beetle was presented).

The base scenario identified harvest flows that had a short-term level of 257 800 cubic metres per year with a step down at decade 9 to 250 800 cubic metres per year. This harvest flow pattern is consistent with the harvest flow pattern of the timber supply area.

I find that the base case is reasonable for assisting with my decision. However, I recognize, as did the chief forester in his recent TSA allowable annual cut determination, that uncertainties exist in the information that could either positively or negatively impact the base case harvest flow and, for my decision, the effects on harvest flow related to the innovative forestry practices.

Innovative Forestry Practices

The application identifies a variety of practices that the IFPA-holder has undertaken. I have discerned from the application and the supporting documentation three proposed practices that the IFPA-holder is presenting as innovative forestry practices concerning:

- Mature volume inventory
- Site productivity
- Mule deer winter range

Innovative forestry practices are expected to be identified within the approved Forestry Plan. Projects for the above were presented in the previous Forestry Plan and accepted as innovative forestry practices in the past AAC increase determination that expired in 2007. The submitted Forestry Plan upon which I am concurrently making a decision continues to identify the innovative forestry practices for the above areas. I outline the details of the practices in the sections below.

I find that projects identified in the Forestry Plan can be considered innovative forestry practices as defined under the Innovative Forestry Practices Regulation sections 2(e) and 2(f). The inventory and site productivity projects provide information or analysis that result in a more accurate representation of the forest composition and the deer winter range proposal could enhance wildlife values.

To assess the timber supply implications of the three practices, a composite scenario was completed. The composite of all three innovative forestry practices resulted in a 6.6% increase in the short-term harvest to 274 800 cubic metres per year and an increase in the long term to 362 800 cubic metres per year. This is a 17 000 cubic metre change over the base scenario in the short-term.

I discuss the individual factors in the sections below and my decision on an allowable annual cut increase attributable to these innovative forestry practices within “Reasons for Decision”.

Mature Volume Inventory

The forest inventory within the Adams Lake IFPA area is a FC1 forest cover inventory based on aerial photography from 1990 and 1995. This inventory provides estimates of species composition, age, height, volume, and other characteristics by forest polygon across the land base. The estimates are obtained either through direct photo-interpretation or derived from the photo-interpreted attributes with other tools (e.g., use of model to generate volumes). All FC1 inventory has been converted to a Vegetation Resources Inventory (VRI) data structure for data management purposes. The IFPA-holder updated the inventory for harvest depletions to August 2007 for the timber supply analysis.

As an innovative forestry practice, the IFPA-holder conducted projects that are known as VRI phase II and net volume adjustment factor (NVAF). A VRI phase II involves the statistical layout and analysis of ground samples. These ground samples provide a population estimate of certain attributes (e.g., volume, height, and age). These population estimates are distributed across the photo-interpreted polygon estimates through statistical procedures to adjust the existing inventory values. The NVAF obtains information from a destructive individual tree sample to adjust the derived tree volume estimates.

The IFPA-holder initially collected VRI Phase II information on 76 plots during the period from 1998 to 2000 and completed NVAF sampling. This identified that the net merchantable volume was over-estimated by 11%. Stratifying by subzone indicated that the overestimate in the ESSF was 30% and in the non-ESSF only 5%. As the sampling error was higher than desired in the ESSF a further 12 plots were established in the ESSF in 2003. With these additional plots the net merchantable volume was seen to be overestimated by 26% (sampling error 17%) in the ESSF. This latter information was provided to the regional manager for the previous AAC increase determination but not included directly in the timber supply analysis.

For the current timber supply analysis, the decrease in inventory volume was incorporated directly in the analysis. The adjustment resulted in a 9.7% decrease in the short-term harvest flow (to 232 800 cubic metres) with the long-term harvest flow, as expected, remaining the same as the base scenario.

The VRI Phase II projects conducted by the IFPA-holder were rolled into a larger TSA-wide statistical adjustment completed in January 2008. Results from this adjustment suggested that for the Kamloops TSA as a whole there was a 7% underestimation of volume as opposed to the overestimation in the IFPA area as was identified by the IFPA-holder.

As these results seem contradictory, Ministry inventory staff verified that within the IFPA area the data do identify an overestimation of volume. However, ministry staff indicate that since the IFPA-holder completed their VRI Phase II analysis, changes have been made in the analysis standards including the weighting procedures for the net volume adjustment factors. These changes suggest that for the IFPA area the overall overestimation is about 5% (as compared to 11%). This change would imply that the initially observed 25 000 cubic metre short term reduction resulting from the inventory projects may actually be only 11 500 cubic metres.

No input was received about the VRI phase II and NVAF project during the public review. For the previous AAC increase determination, a request from the public specifically identified the need to consider the results of the VRI Phase 2 sampling.

For the purposes of this determination, I consider it appropriate to apply an adjustment to the inventory based on the VRI Phase II and the NVAF projects. However, I do not consider the older methodology to calculate NVAF to be the best information available

and therefore considered the volumes presented in the application may underestimate inventory volumes. While I recognize this updated information will result in an increase in the harvest flow attributable to the innovative forestry practice, I am mindful that the IFPA-holder has not provided this information and that the ministry staff estimates were not fully documented and included within the timber supply analysis.

I discuss this further within “Reasons for Decision”.

Site Productivity

The productivity of a site largely determines how quickly trees grow, which in turn affects the volume of timber produced and the age at which a stand will reach various conditions (e.g., green-up, merchantable size). In British Columbia, site productivity is expressed in terms of a site index value, which is based on a function of tree height and age. In turn, the site index value is often a driver for growth and yield projections of timber volume and stand height that are used within timber supply analysis.

In British Columbia the traditional source of site indices has been from age and height information from the forest cover inventory. However, such estimates typically are recognized as not accurate for younger (i.e., <30 years) or older stands (i.e., >140 years).

As an innovative forestry practice, the IFPA-holder completed two projects to improve the assessment of site productivity potential within the IFPA area: (1) a site index adjustment project and (2) an elevation based site index model.

The site index adjustment project was applicable to (1) Douglas-fir and lodgepole pine leading stands in the ICH, IDF, and MS subzones, (2) spruce in the ICH, IDF, and MS subzones, and (3) the ESSF subzones below 1600 m. Among these three zones, the application of the site index adjustment project differed. The elevation based site index model was developed for spruce leading stands in the ESSF subzone above 1600 m.

The site index adjustment project consisted of three stages. The first stage was an assignment of preliminary potential site indices based on the collective opinion of three experts in the area of ecology and site productivity. These experts considered site productivity information from a variety of sources. The second stage was the ground collection of site index information from a statistically based sample design. This sample resulted in 43 plots where a site index value was obtained for either lodgepole pine (14 plots) and/or Douglas-fir (33 plots). The third stage was the derivation of an equation based on the sample data that appropriately adjusts the preliminary potential site indices.

Site indices for Douglas-fir and lodgepole pine leading stands in the ICH, IDF, and MS subzones were calculated following the above three stages. Ministry staff recognize that the sampling scheme provides a valid estimate of the site productivity for the population total. However, ministry staff expressed concerns that the 43 plot sample may not have captured all subzones adequately, especially for subzones with no valid samples for which an adjustment is made.

Site indices for spruce in the ICH, IDF, and MS subzones are based on the use of a site index conversion equation for pine to spruce applied to the calculated site index adjustment for lodgepole pine. Ministry staff indicate that the conversion equations are provincial in scope and had concerns that the local correlation may differ. Staff would have preferred that site index be derived from local samples for spruce.

Site indices for the ESSF below 1600 m elevation were based solely on the preliminary potential site index values derived by the three experts. No ground samples were available to create a valid adjustment. Ministry staff have concerns that the expert opinion was not validated. As seen by the adjustment equations, differences are likely present between the preliminary and the values based on field samples.

Site indices for the ESSF above 1600 m elevation were derived from an elevation-based model. The model is parameterized on data collected from 47 plots from outside the IFPA area and 8 plots within the IFPA-area. These plots were not chosen from a statistical based sample. Ministry staff expressed concerns that there is insufficient statistically based data to confirm the predictions of the model. However, ministry staff have identified that the model is more reasonable than an earlier model presented by the IFPA-holder.

I believe that the above methods in entirety do better represent the potential site productivity of the IFPA-area than existing forest inventory based estimates. However, I recognize the concerns of ministry staff that there is still uncertainty in the estimates presented and that further work is desirable.

The full productivity improvement identified by the IFPA-holder's site index adjustment project identified that it was possible to raise the short-term harvest level by 17.6% to 303 200 cubic metres and the long-term level to 362 800 cubic metres. The rise in the short-term is enabled by the earlier availability for harvest of future managed stands. This enables existing stands to be harvested that otherwise would have been held until the mid-term.

As the proposed site productivity estimates in the ESSF have greater uncertainty, the IFPA-holder provided an analysis that excluded all adjustments in the ESSF. This scenario demonstrated the harvest flow contribution from the adjustments within ESSF was 3000 cubic metres per year in the short-term and 6800 cubic metres in the long-term. Further, the contribution of the elevation based model in the ESSF above 1600 m was only 500 cubic metres per year in the short term and 1000 cubic metres in the long term.

While not large, the harvest flow contribution due to site productivity information changes in the ESSF is a significant component of the AAC increase request. Awarding an AAC increase for information from the ESSF subzone raises two concerns for me. Firstly, the information for the ESSF subzone can be considered weaker than that in other subzones. Secondly, I have concerns that the gains in harvest flow identified in the ESSF might, in the short-term, be applied to (i.e., harvested from) other subzones. Thus, if the

gains in the ESSF did not exist, a relatively larger harvest outside of the ESSF would be placing greater pressure on the sustainability of the timber supply and other resource values.

At my request, the IFPA-holder provided me with information on the distribution of harvest for the past 5 years. This information suggests that harvesting in the ESSF has been occurring. In 2007 no harvesting in the ESSF occurred but this was a function of both shifting harvest to Mountain pine beetle infested stands and reduced harvesting due to economic conditions throughout the entire IFPA area. Based on this information, my concerns about harvest priority are reduced. Nevertheless, my expectations remain that the licensee will have a harvest profile that reflects the analysis used to support an awarded AAC increase and that proportionate harvesting will enable appropriate future sampling opportunities to monitor site productivity estimates in the ESSF.

I discuss the implications of the above uncertainties further within “Reasons for Decision”.

Deer Winter Range

Current deer winter range requirements were developed under the Kamloops Land and Resource Management Plan (LRMP). The IFPA-holder, as an innovative forestry practice, investigated if deer winter range could be better defined in the IFPA area with management prescriptions for future harvesting and silvicultural management.

The resulting deer winter range management proposal, as prepared by Keystone Wildlife Research, recommended a 5 to 6 fold increase in deer winter range dispersed over both timber and non-timber harvesting land base in various size blocks within 19 assessment units. The proposal applies a mature seral constraint that requires the presence of between 15% and 39% suitable habitat within an assessment unit. Suitable habitat provides snow interception cover and was defined by conifer-dominated, multi-layered stands at least 10 m tall, with at least 70% canopy closure and patch sizes greater than 40 hectares. The Kamloops LRMP required that 25% of gross forested area to be over 20 m and no more than 20% of the timber harvesting land base to be less than 3 m in height. The proposal while differing from the LRMP management is believed to generally meet the intent of the LRMP.

The timber supply analysis provided in the application identified that the deer winter range proposal had no impacts on timber supply. While no impacts to timber supply are observed, the analysis did identify differences in the underlying timber supply dynamics.

The IFPA-holder proposal was presented to the LRMP monitoring table for consideration. The monitoring table requested an impact assessment on how the changes would not only affect timber supply, but also how the changes would affect the overall balance of the LRMP. Such work has not been completed. The IFPA-holder has indicated to my staff that they are managing for deer winter range according to their proposal and

also ensuring that the requirements of the current deer winter range objectives under the higher level plan are met.

The Ministry of Environment is currently updating the mule deer winter range mapping and management objectives in the Kamloops TSA. Ministry staff indicated that the process being followed is similar to that used by the IFPA-holder but that the update will differ from the IFPA-holder proposal.

I find it reasonable that the IFPA-holder investigates deer winter range management and that they consider the impact of such within the submitted allowable annual cut increase application. However, I note that it is not my prerogative to accept or reject the proposed deer winter range mapping and management. This responsibility lies within the purview of the Ministry of Environment. Nevertheless, as there are no timber supply impacts I do not further discuss the implications of the proposed deer winter range mapping and management with respect to the allowable annual cut application.

Other Considerations

Reviewing the assumptions modelled in the timber supply analysis identifies several factors that may impact the modelled harvest flows or for which comment is warranted. For this rationale I will only discuss factors that affect the decision or need elaboration due to concerns expressed.

Identified Wildlife Management Strategy

Under the *Forest and Range Practices Act* (FRPA) the Minister of Environment may establish wildlife habitat areas and general wildlife measures for identified wildlife where other forest management strategies do not provide adequate protection. Identified wildlife are designated species that are either a species at risk or regionally significant and whose habitat may be adversely impacted by forest or range practices.

The chief forester in his recent allowable annual cut determination for the Kamloops TSA recognized that while a relatively small number of wildlife habitat areas have been established on the timber harvesting land base, further wildlife habitat areas would likely be established. He considered that there may be up to a 1 percent mid- and long-term impact on timber supply for identified wildlife.

As the allowable annual cut increase in this application is based on improved mid-term timber supply through improved site productivity information, any downward pressure on mid-term timber supply will have implications on the observed short-term increase in timber supply.

In my guiding principles I identify that any increase decision should be made in the context of government policy. While I recognize that the wildlife habitat areas have not yet been established, I do recognize that it is the intention of the government as seen through general policy guidance provide by written direction of assistant deputy ministers

and through supporting information for Section 7 notices under FRPA that wildlife habitat areas may have an equivalent impact of up to 1% of the timber harvesting land base.

I further discuss the implications of this impact within “Reasons for Decision”.

Other Wildlife and Fish

The Adams Lake IFPA area supports a variety of wildlife and fish species. As noted above, some species such as mule deer or designated identified wildlife species may have special habitat management requirements. However, the management of habitat of most species is not specifically identified and is expected to be addressed through general strategies such as landscape-level biodiversity, stand-level biodiversity, and riparian management. Likewise, in the analysis presented to me such considerations are expected to be addressed through the modelling of these general strategies.

A specific concern about the management of habitat for furbearers was brought to my attention by a registered trapline holder in the Adams Lake area. This trapper has seen a decrease in harvested species, such as martin, over the past few years. Over this time period, he has observed an increase in timber harvesting within his trapline area which he believes is resulting in the decline of martin populations. Ministry of Environment biologists, as a follow up to the comments, confirm that the patch size and leave strip retention strategy in the localized area of this trapline may be insufficient to maintain local populations of fisher and martin.

As a steward of the forests, I have concerns about operational considerations around harvesting and the management of habitat. Licensees need to be cognizant of their stewardship roles and how this relates to other stakeholders. I also recognize that my allowable annual cut increase decision for the IFPA area is at a higher strategic level and that tradeoffs are possible at local operational levels. Nevertheless, I do have concerns about the implications of my decision on habitat and stakeholders such as trappers. I expand on this concern in my discussion on “Harvest Level within IFPA Area”.

A further concern to me was that the local trapper did not become aware of the IFPA-holder’s application for an allowable annual cut increase or Forestry Plan update until after the referral period had ended. I expect that stakeholders, such as trapline holders, would be aware of decision processes that might impact their activities (e.g., through an increase in harvest). However, I note that the requirements of the innovative forestry practices agreement do not specifically identify that such stakeholders be directly notified and that the expectation is through newspaper advertisement that such awareness would occur. Regardless of the minimum agreement requirements, I feel that it is helpful for my decision if such stakeholders are identified and notified directly. Subsequently, I address this need within my “Determination and Conditions”.

Research Plots

Within the Adams Lake IFPA area there are a number of active experimental plots (EP) and growth and yield permanent sample plots (PSP). These areas, which are geographically referenced and mapped, are typically deferred from harvest under current practice. The total area deferred is about 33 hectares.

These areas were not removed from the timber harvesting land base within the current analysis. Given the current no harvest practice is likely to continue into the mid-term, these areas will not contribute to the identified short-term harvest flow increase.

Given the small area of EPs and PSPs, the impact to any observed increased in allowable annual cut due to the innovative forestry practices is insignificant. I discuss my considerations within “Reasons for Decision”.

Archaeological sites

Archaeological sites are protected under the *Heritage Conservation Act*. In the Kamloops TSA about 1865 sites have been identified, the majority of which are located outside of the timber harvesting land base. The sites within the timber harvesting land base, assuming a 50 m radius no harvest buffer, occupy about 150 hectares within the Kamloops TSA.

No accounting or information on archaeological sites within the Adams Lake IFPA area was presented to me. Given the likely small area of these sites, the impact to any observed increased in allowable annual cut due to the innovative forestry practices will be very small. I discuss my considerations within “Reasons for Decision”.

Woodlots

Ministry staff have identified that one established woodlot (1122 ha gross size) found within the Adams Lake IFPA was not included in the timber supply analysis on which the proposed increase is based. This area should be considered excluded from the land base within the timber supply area, and hence, not contribute to any increased harvest flow in the IFPA area.

I discuss my considerations within “Reasons for Decision”.

Impact on Other Licensees

One of my guiding principles is that an AAC increase awarded under the IFPA must not cause a negative impact on non-IFPA licensees operating within the IFPA boundaries without the approval of the non-IFPA licensee.

In the IFPA-holder's application, the timber supply analysis was approached in a manner that avoids impact implications for non-IFPA licensees working in the pulpwood agreement or old cedar-hemlock partitions. Existing volumes from areas likely to be harvested by these non-IFPA licensees was excluded from contributing to the increase harvest flow. These licensees are therefore not impacted by the proposed AAC increase.

The application did not consider impacts related to the British Columbia Timber Sales (BCTS) program. BCTS has operating areas within the Adams Lake IFPA area that include about 7048 ha of timber harvesting land base (9370 ha gross area). Due to government objectives around the integrity of market pricing, current ministry policy restricts licensees other than BCTS from harvesting in BCTS operating areas. As such, unless operating area boundaries are changed to reflect the presented inventory and site productivity information (i.e., BCTS operating area would need to be reduced) the IFPA-holder will not have access to identified increases in harvest flow from the BCTS operating areas.

As it appears that the IFPA-holder cannot capture the harvest flow increases associated with the BCTS operating area, I therefore conclude in "Reasons for Decision" that about 6 percent of the identified harvest flow increase is not available to IFPA-holders.

Mountain Pine Beetle

The mountain pine beetle (MPB) epidemic is a major concern in the Kamloops TSA where about 28% of the forest is in pine-leading stands and mortality cumulative to 2007 is at 54%. In the IFPA area pine-leading stands represent only 11% of the timber harvesting land base, however, mortality on such land base can have significant timber supply implications.

The IFPA-holder's timber supply analysis did not model the mortality and decay implications of the mountain pine beetle infestation. The only consideration in the analysis was to place a harvest priority on the pine analysis units in order to reflect current harvest priorities in the Kamloops TSA. The analysis did not consider directly the implications of Mountain pine beetle for issues such as shelf life or the inability to recover mortality. It was felt that the impacts of the innovative forestry practices would be more understandable if the timber supply change was investigated without the complexities of the Mountain pine beetle in the harvest flows.

The mountain pine beetle infestation impacts timber supply both in terms of loss of currently available wood volume and the growth of future forests. The following highlights some of the concerns.

- *Non-recoverable losses:* All trees killed or to be killed by the Mountain pine beetle will not be harvested. As such, the inventory modelled in the analysis will be over-estimated.

- *Regeneration delays:* Stands with high pine content that are not salvaged and are not treated are expected to regenerate more slowly than stands that are harvested and treated. This regeneration delay can result in a decrease in timber supply.
- *Managed Stand Volume:* Stands that are not regenerated to a managed stand condition will not capture the higher stand volume growth rates modelled in the timber supply analysis. This impacts the base analysis but particularly impacts the improved site productivity scenarios as some of the additional growth associated with the improved site productivity estimates is not realised.
- *Young plantations:* Studies in the Kamloops Forest District suggest that about 48% of the stems in stands younger than 60 years, based on 2007 information, are being attacked. The timber supply analysis did not consider any mortality or non-recoverable losses. In the timber supply review of the Kamloops TSA, a sensitivity analysis showed that the loss of the younger stands would result in about a 7% mid-term harvest flow impact. If we assumed a similar rate but for a land base with one third of the percent of pine-leading stands, we would expect about a 2.3% mid-term impact in the IFPA area.

In reviewing the timber supply analysis and concerns around mountain pine beetle, I do believe that the effects of the mountain pine beetle infestation will cause a downward pressure on timber supply. The resulting mortality will directly result in the loss of existing inventory available for the short-term harvest. Indirectly, short-term harvest increases resulting from the innovative forestry practices will be impacted as there is less ability to shift mid-term gains to the short-term. I reflect on these conclusions below in “Reasons for Decision”.

Harvest Level within IFPA Area

The previous regional manager identified the need to monitor the harvest levels specifically occurring within the IFPA-area. This monitoring is necessary to enable comparison of actual harvest levels with those identified from the analysis supporting the allowable annual cut increase application.

Based on information provided by the IFPA-holder, the average total harvest in the IFPA area has been about 316 000 cubic metres per year for the period 2003 to 2007. The timber supply analysis presented for the 2002 allowable annual cut increase determination suggested if the innovative forestry practices are considered, the short-term harvest flow is between 296 000 cubic metres (non-declining) to 340 600 cubic metres (maintain for three decades with mid-term drop). The previous regional manager in his decision identified uncertainties in the information and did not accept all the gains due to the innovative forestry practices thus suggesting lower expected harvest flows. Based on this information and assuming that a non-declining harvest flow is appropriate to mirror the harvest flow in the timber supply area, it appears that the average harvest may be higher than modelled harvest flows used for the 2002 determination.

The timber supply analysis provided with the current application had different assumptions on current management, the innovative forestry practices, and the

accounting of harvest flow available from partitioned types. As such, the harvest flow forecasts differ from the previous analysis. The current full composite analysis identifies a short-term harvest level of 274 000 cubic metres per year and a long-term level of 362 800 cubic metres. In the past 5 years, harvesting only by the IFPA-holder has averaged 262 000 cubic metres per year with a low in 2007 of 118 673 cubic metres. As such, given other licensees such as BCTS and NRFL holders operate in the IFPA area as modelled in the current analysis, the average level of harvest likely would exceed the modelled harvest flows.

The modelled harvest flows provide a guideline of what might be considered sustainable harvest levels within the IFPA-area. While the information used to generate the modelled flows contains much uncertainty, the harvest flow can be considered a reasonable operational bound of harvest. Exceeding this bound in the short-term could potentially result in significantly lower harvest levels in the future or infringe on other management objectives.

I expect that the IFPA-holder will manage harvest levels within the IFPA area to reflect the sustainable levels identified by their analysis. The IFPA-holder is not necessarily limited to harvest within the IFPA-area, and if necessary to ensure the sustainability of the IFPA-area, the IFPA-holder should actively pursue their harvest rights outside of the IFPA area.

Any allowable annual cut increase decision that I make is dependent on the understanding gained through the information provided. If information, such as actual harvest levels, differs then my considerations will need to reflect such.

Other

The chief forester in his recent allowable annual cut for the Kamloops timber supply area identified a number of other factors that potentially had some impact on the timber supply analysis. I have reviewed these issues and determined that they do not apply to the IFPA area or are irrelevant to the decision of an allowable annual cut increase.

First Nations Consultation

The following First Nations are considered to have potential interest in the Adams Lake IFPA area and were consulted: Adams Lake Indian Band, Kamloops Indian Band, Little Shuswap Indian Band, Neskonlith Indian Band, and Simpcw First Nation.

The consultation process consisted of 2 components. In the first step, information was shared by IFPA-holders about their application. In the second step, the ministry consulted directly with the First Nations with potential interest in the decision.

Interfor, the IFPA-holder, was requested to share information and solicit input from First Nations. On January 11, 2008, Interfor forwarded a letter that identified their allowable annual cut increase application was available for comment and where to obtain a copy.

This letter was sent to the Adams Lake Indian Band, the Little Shuswap Indian Band, the Neskonlith Indian Band, and the Simpcw First Nation. In response, Interfor received communication from Adams Lake Indian Band but no specific aboriginal interests were identified for this decision.

The Southern Interior Forest Region initiated consultation with the above First Nations with an initial letter sent January 23, 2008 and follow up letters on March 5, 2008. My staff prepared a consultation summary for me on May 8, 2008 that summarized the consultation communication, reviewed additional information sources available for the IFPA area, and identified the status of current accommodation agreements.

First Nations did not raise any specific concerns with respect to the allowable annual cut increase application or the Forestry Plan.

Current accommodation agreements with First Nations do not speak to this decision directly but do provide some accommodation for administrative decisions regarding the amendment of forest tenure.

I have reviewed the information provided to me about consultation with First Nations and I am satisfied that sufficient consultation has occurred to inform my decision around an allowable annual cut increase and that there is no need for further accommodation where my decision maintains good stewardship of the forest.

Reasons for Decision

Forestry Plan

The Forestry Plan presented by the IFPA-holder in December 2007 is much simpler than the previous Forestry Plan. Much of the background information on the social, economic, and environmental values has not been included within the 2007 plan. While I find such information useful for context, it is not a required component of the Forestry Plan.

The 2007 Forestry Plan identifies a low level of current activity by the IFPA-holder and minimal future plans. The IFPA-holder indicates the activity level reflects the maturity of the agreement. While I recognize this maturity and the current economic environment, I do believe that there are still opportunities to further enhance the productivity of the forest resource as is the intent of the agreement. As such, my preference is to see the IFPA-holder continue to investigate further initiatives.

Regardless of my preferences, I find that the Forestry Plan dated December 21, 2007 meets the minimum requirements for a Forestry Plan identified in Section 59.1 of the *Forest Act* and is sufficient for my approval.

Allowable Annual Cut Increase

In reaching my decision on a request for an increase in allowable annual cut by the IFPA-holder, I have considered all of the factors presented to me, and I have reasoned as follows.

I am satisfied that the information provided with the application is sufficient upon which to base a decision about an allowable annual cut increase on the licence of the IFPA-holder. The information presented by the IFPA-holder in the form of a timber supply analysis and report reasonably identifies the harvest flow resulting from current practice and the innovative forestry practices. Some differences from current practice and uncertainties in the information have been identified that I consider below.

In my considerations, I organize my thoughts around the timber supply analysis provided with the application. For this discussion, I will use the composite harvest flow that, as compared to the base scenario, identifies a 17 000 cubic metre difference. While my discussion will be organized around the analysis, as I had previously noted I recognize that the determination is not a calculation but a synthesis of judgement and analysis in which risks and uncertainties are weighed.

The information presented to me suggests both downward and upward pressures on the 17 000 cubic metres due to differences from current practice and uncertainties. These pressures result from both information about current practice and about the innovative forestry practices. These pressures affect the observed harvest flow in three different ways: (1) changes that impact the innovative forestry practices, (2) decreases or increases on the amount of land base affected by the innovative forestry practices, and (3) changes that influence the harvest flow dynamics.

As these three influences are related, I discuss each of them on the observed increase and then my reasons how I consider these factors for my decision on an increase in allowable annual cut.

First, there is information that affects the observed innovative forestry practices. These changes can be assumed to directly impact the observed 17 000 cubic metre difference

- *Mature Volume Inventory:* Differences in compilation standards for net volume adjustment factors suggest about a 5% rather than an 11% over-estimation of the existing inventory. This difference suggests up to a 13 500 cubic metre upward pressure on the 17 000 cubic metre increase. However, due to the current Mountain pine beetle infestation, mature volumes will be less due to a higher non-recoverable loss.
- *Site Productivity:* The information presented provides improved estimates of site productivity potential over existing inventory based methods. I have concerns that the estimates provided for the ESSF zone, both below and above 1600 metres elevation, have not been sufficiently verified. Excluding these improvements

suggests up to a 3000 cubic metre downward pressure on the observed 17 000 cubic metre difference.

Secondly, there were a number of factors that suggest a smaller timber harvesting land base from which the observed allowable annual increase could be realized. These factors include:

- *Woodlots:* As established woodlots should be excluded from the IFPA area there is about a 1% downward pressure on the timber harvesting land base.
- *Research Plots and Archaeological Sites:* The area associated with growth and yield permanent sample plots, experimental plots, and archaeological sites is very small, likely less than 50 ha of timber harvesting land base is being impacted in the IFPA area. This will not significantly impact the modelled harvest flows.
- *Identified Wildlife Management Strategy:* The need to established wildlife habitat areas will be present and I have considered that this will result in up to a 1% downward pressure on the timber harvesting land base.
- *BCTS operating area:* I have considered that it is unlikely that the IFPA-holder can access any increased harvest flow from BCTS operating area and thus there is about a 6% downward pressure on the modelled harvest flow increment.

Thirdly, there are factors that affect the timber supply dynamics that can impact the ability to increase short-term harvest resulting from benefits due to improved site productivity information derived in the mid- and long-term.

- *Mountain Pine Beetle:* In addition to impacts from non-recoverable losses of mature inventory, I deem that the Mountain pine beetle infestation, through mortality in young pine stands and through regeneration delay, will cause about an impact on the mid-term harvest flow (i.e., 8000 – 14 000 cubic metres) across the IFPA area. This impact is on both the base scenario and on the innovative forestry practices scenario. However, it may have greater impact on the innovative forestry practices scenarios that enable increased short-term harvesting by improving mid-term conditions.

The modelled short-term harvest flow increase is seen to have both upward and downward pressures attributable directly to the innovative forestry practices and that these pressures have associated uncertainties.

I find that the Mountain pine beetle related issues could have significant downward pressure on the 17 000 cubic metre proposed increase. However, I also recognize that this downward pressure is balanced in part by information about the mature volume inventory compilation. For this decision, I consider these 2 factors to balance except for a 1000 cubic metre downward pressure.

I accept that there is about a 8% smaller land base on which the innovative forestry practices apply than was modelled. I assume that this prevents the IFPA-holder from

obtaining about 1000 cubic metres of the increased harvest flow attributable to the innovative forestry practices.

Given the above downward pressure of about 2000 cubic metres, I believe that about a 15 000 cubic metres increase in harvest flow is available due to the innovative forestry practices.

In making allowable annual cut increase determinations, I am mindful of my obligation as steward of the forest land of British Columbia. I am concerned about the impacts on other values, such as habitat, in which an increase in the IFPA-holder's allowable annual cut will result. In order to meet non-timber objectives, it is important that harvest levels do not exceed those levels which are sustainable.

Determination and Conditions

First, I approve the Forestry Plan as submitted December 21, 2007. My approval of the Forestry Plan is effective January 1, 2008 and expires August 31, 2011.

Second, I determine that the innovative forestry practices or activities under the agreement provide 15 000 cubic metres per year from within the Adams Lake IFPA area and I award such to the IFPA-holder's forest licence A18693.

The award is subject to the conditions below:

- Submit an annual report by April 30th of each year. The annual report will:
 - summarize the activities completed by the IFPA-holder in the past year, the expected activities in the upcoming year, how conditions of this award have been met, and identify if work is being conducted or not with respect to the recommendations.
 - contain an annual summary (1 January to 31 December) of harvest in the IFPA area. This summary should identify harvest by licensee and separate harvest by ESSF and non-ESSF biogeoclimatic zones.
 - compare the harvest levels of the past 5 years to the harvest forecasts of the analysis provided within the allowable annual cut application.
 - identify any new or changed inventory or management information that would influence the harvest flows for the base and innovative forestry practices scenarios presented in the application.
- For future information sharing, stakeholders such as registered trapline holders must be included as part of the direct contact for applications for the Forestry Plan and allowable annual cut increase.

This determination is effective January 1, 2008 and will remain in effect until August 31, 2011, the date at which the innovative forestry practices agreement expires. I note that I am prepared to reduce the allowable annual cut awarded if I find information or assumptions upon which this decision is based are not justified or that conditions of this decision have not been met.

Recommendations

Information presented for the determination identifies uncertainty and areas for improvement. As part of my rationale, I encourage the IFPA-holder to address the recommendations below. These recommendations are intended to reduce the uncertainty and risk associated with future determinations and to ensure that the intent of the Forestry Plan is met.

- *Mature Inventory Volumes*: using the current analysis standards, determine updated inventory adjustment factors based on the VRI phase 2 and net volume adjustment factor information of the IFPA area.
- *Furbearer management*: work with registered trapline holders and the Ministry of Environment to address operational concerns around furbearer habitat management.
- *Site Productivity*: monitor site productivity in managed stands and, in particular, verify directly estimates of site index for spruce-leading stands.
- *Sustainable Harvest Level in IFPA area*: monitor the harvest levels within the IFPA area and adjust harvests to ensure sustainable levels.

Yours truly,

A handwritten signature in black ink, appearing to read 'Phil Zacharatos', with a stylized, cursive script.

T.P. (Phil) Zacharatos, R.P.F.
Regional Manager
Southern Interior Forest Region

August 6, 2008

Appendix 1: Section 59.1 of Forest Act

Innovative forestry practices 59.1

- (1) For the purpose of improving the productivity of the forestry resource, the minister, at his or her discretion, may enter into an agreement with a person referred to in subsection (2) to allow that person to carry out, subject to subsection (5) and the *Forest and Range Practices Act*, one or more of the innovative forestry practices and other activities that are set out in a regulation made under subsection (4).
- (2) For the purposes of subsection (1), the minister may enter into an agreement with a person who (a) is the holder of a forest licence or other agreement that is entered into under section 12 and specified in a regulation made under subsection (4) of this section, and (b) presents a written proposal for an agreement to the minister.
- (3) An agreement under subsection (1) (a) must be for a term not exceeding 15 years, and (b) may include terms and conditions that (i) the minister considers are necessary to effectively carry out the purpose of the agreement and further the social and economic objectives of the government, and (ii) are consistent with this Act and the regulations and the *Forest and Range Practices Act*, and the regulations and standards made under that Act.
- (4) The Lieutenant Governor in Council may make regulations specifying (a) the innovative forestry practices and other activities that may be the subject of an agreement referred to in subsection (1), and (b) the agreements entered into under section 12, the holders of which may enter into an agreement with the minister under subsection (1) of this section.
- (5) A person may only carry out an innovative forestry practice or other activity referred to in subsection (1) if the person (a) has prepared and obtained the regional manager's approval of a Forestry Plan that meets the requirements of subsection (6), and (b) is carrying out the practice or activity in accordance with the plan.
- (6) A Forestry Plan (a) must contain a description of the management area where the innovative forestry practices or other activities will be carried out, (b) must specify the particulars of the innovative forestry practices or other activities, (c) must contain a description of how the innovative forestry practices or other activities will be carried out, (d) must contain a schedule of when the innovative forestry practices or other activities will be carried out, (e) must specify how the innovative forestry practices or other activities will contribute to improved productivity of the forestry resource, (f) must specify how the innovative forestry practices or other activities will justify an increase in the allowable annual cut of the participant's licence or agreement referred to in subsection (2) (a), and (g) may include other terms and conditions that (i) the regional manager believes are necessary to effectively carry out the agreement referred to in subsection (1), and (ii) are consistent with this Act and the regulations and the *Forest and Range Practices Act*, and the regulations and standards made under that Act.
- (7) After approving a person's Forestry Plan, the regional manager may increase the allowable annual cut authorized in the person's licence or agreement referred to in subsection (2) (a) by an amount that is justified according to timber supply analysis methodology approved by the chief forester or the chief forester's designate.
- (8) When the regional manager increases an allowable annual cut under subsection (7), the regional manager may limit the increase to a period of time, area of land and type of timber, and may make the increase subject to conditions.
- (9) If an assessment of (a) the innovative forestry practices or other activities being carried out under the Forestry Plan, or (b) information that was not available at the time the regional manager increased the

allowable annual cut under subsection (7) indicates that all or part of the allowable annual cut increase was not justified, the regional manager may reduce the allowable annual cut of the licence or agreement referred to in subsection (2) (a) by an amount not exceeding the increase granted under subsection (7).

- (10) If, with respect to an innovative forestry practice or other activity, a person is not complying with (a) the agreement referred to in subsection (1), (b) the Forestry Plan approved under subsection (5), (c) any limitation or conditions imposed under subsection (8), or (d) this Act and the regulations made under this Act, or the *Forest and Range Practices Act* and the regulations or standards made under that Act, the regional manager may do one or both of the following: (e) suspend or cancel the agreement referred to in subsection (1) and sections 76 and 77 apply with respect to that suspension or cancellation; (f) reduce the allowable annual cut of the person's licence or agreement referred to in subsection (2) (a) by an amount the regional manager determines is attributable to the default.
- (11) A reduction under subsection (9) or (10) may be apportioned over a period of up to 5 years.
- (12) If the forest licence, or other agreement referred to in subsection (2) (a), is suspended, the agreement under subsection (1) is suspended.
- (13) If the forest licence, or other agreement referred to in subsection (2) (a), is cancelled or surrendered, the agreement under subsection (1) is cancelled.
- (14) If the agreement referred to in subsection (1) is suspended or cancelled, the Forestry Plan is suspended or cancelled, as the case may be.

Appendix 2: Innovative forestry practices regulation

B.C. Reg. 197/97, O.C. 0694/97 - Deposited June 18, 1997
Consolidated to August 5, 2003

1. Definitions
2. Authorized innovative forestry practices and activities
3. Authorized forms of agreement

Definitions

1. In this regulation:

"**Act**" means the *Forest Act*;

"**Forestry Plan**" means a Forestry Plan required to be submitted for approval under section 59.1(5) of the Act;

"**forest practice**" has the same meaning as in the *Forest Practices Code of British Columbia Act*;

"**free-growing stand**" has the same meaning as in the *Forest Practices Code of British Columbia Act*;

"**holder**" means a person that presents a written proposal for an agreement under section 59.1(2)(b) of the Act;

"**permanent access structure**" has the same meaning as in the *Forest Practices Code of British Columbia Act*;

"**standard practices**" means the forest practices routinely applied by licensees in the timber supply area when the Forestry Plan is submitted or at any other time determined by the regional manager;

"**stocking requirements**" has the same meaning as in section 1 (1) of the Operational and Site Planning Regulation, B.C. Reg. 107/98.

Authorized innovative forestry practices and activities

2. The innovative forestry practices and other activities that may be the subject of an agreement under section 59.1(1) of the Act are the following:

- (a) the implementation of harvesting methods or silvicultural systems that may

(i) increase the total amount of timber available to harvest in the timber supply area over the amount available under standard practices, or

(ii) reduce the loss of productivity associated with permanent access structures from the loss of productivity under standard practices for similar terrain and timber types in the timber supply area;

(b) activities that result in the establishment of free-growing stands on

(i) previously unforested areas,

(ii) areas that are below stocking requirements and are not part of the holder's free-growing responsibilities under section 69.1 (3) and 70(3) of the *Forest Practices Code of British Columbia Act*, or

(iii) areas that

(A) have stands of timber with repressed growth or that contain brush or species that are not commercially valuable, and

(B) are not part of the holder's free-growing responsibilities under section 69.1 (3) and 70 (3) of the *Forest Practices Code of British Columbia Act*;

(c) silviculture treatments on free-growing stands;

(d) silviculture treatments on sites that are not free growing in order to produce stands that exceed current growth performance or standards achieved using standard practices for the timber supply area;

(e) the collection and analysis of new data, in accordance with the specifications of the chief forester, to provide a more accurate representation of the forest composition and its expected rate of growth compared to the rate existing when the forest plan is submitted or at any other time determined by the regional manager;

(f) activities that will enhance and protect other resource values, including, but not limited to, water, fisheries, wildlife, biological diversity, soil productivity and stability, forage production, grazing and recreation values.

Authorized forms of agreement

3. The holders of the following agreements under section 12 of the Act may enter into an agreement under section 59.1 of the Act:

(a) replaceable forest licences, and

(b) replaceable timber sale licences with an allowable annual cut greater than 10 000 cubic metres.

Appendix 3: Memorandum from chief forester on timber supply methodology



Ministry of
Forests

Chief Forester

MEMORANDUM

File: 19500-01/IFPA

April 6, 2001

To: Regional Managers

From: Larry Pedersen
Chief Forester

Re: Timber Supply Analysis Methodology Related to Innovative Forest Practices Agreements (IFPAs)

I am certain you are aware that the *Forest Act*, section 59.1, gives regional managers the responsibility for determining if increases in allowable annual cuts (AACs) for IFPA holders are justified. The *Act* requires regional managers to make their judgements according to a timber supply analysis methodology approved by the Chief Forester or the Chief Forester's designate. Attached to this memorandum is a timber supply analysis methodology to fulfill my responsibility under section 59.1 of the *Act*.



The methodology covers general analytical issues related to information needs, analysis outputs, links between AACs for IFPAs and TSAs, harvest flow, AAC increases, and legislation and policy. The method does not dictate the types of innovative practices that should or may be considered appropriate for approval as part of forestry plans, or for justifying AAC increases. Approval of forestry plans is clearly the regional managers' responsibility under the *Act*. Further, I believe that information and practices must be evaluated on their own merits within specific contexts; hence it would not be reasonable for me to prescribe evaluative criteria.

In the end, regional managers must make their own determinations based on analysis that provides insight on the full range of relevant factors, including the important risks and uncertainties. The analysis methodology is designed to assist in this undertaking.

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The methodology should be included as an appendix to the Forestry Plan Outline to ensure the approach is clear to all government staff and external stakeholders. Please contact Chris Fletcher of Timber Supply Branch (250-356-5959, Chris.Fletcher@gems8.gov.bc.ca) with comments or concerns.


Larry Pedersen
Chief Forester

Attachment: Timber Supply Analysis Considerations for Innovative Practices Agreements

cc: Gary Townsend, Director, Timber Supply Branch
Ralph Archibald, Director, Forest Practices Branch
Henry Benskin, Director, Research Branch
Dave Gilbert, Director, Resources Inventory Branch
Dale Draper, Director, Tree Improvement Branch
Jim Langridge, Director, Resource Tenures and Engineering Branch
Drew Brazier, Resource Tenures and Engineering Branch

Timber Supply Analysis Considerations for Innovative Forest Practices Agreements

Section 59.1 (7) of the *Forest Act* allows regional managers, after approving an IFPA Forestry Plan, to increase the allowable annual cut of the holder's forest licence by an amount that is justified according to a timber supply analysis method approved by the chief forester or the chief forester's designate. The following discussion outlines the timber supply analysis method and allowable annual cut decision principles used by the chief forester.

The focus is on components and principles of timber supply analysis that are crucial in gaining an understanding of factors that determine timber supply in an area. Because of the complexities involved in determining harvest levels, it is not possible to develop precise procedures or simple calculations for timber supply analysis. The process can be guided by general principles—which are outlined below—however, the detailed aspects must be developed using case specific professional judgement. In this light, the following ideas are provided as guidance, not as firm procedural requirements that must be followed in all cases. While the general ideas apply in almost all cases, each case must be viewed as unique: some cases may require additional analysis to that outlined, while others may be assessed satisfactorily with less detail than suggested here.

If a timber supply analysis incorporates the types of information noted below, and facilitates evaluation of the considerations discussed, it will have followed a timber supply analysis method supported by the chief forester.

The chief forester's task under the *Forest Act* is to provide an analysis method, not to evaluate, or provide a method for evaluating information quality. Hence, the discussion here does not address information quality but focuses on an analytical method. Nevertheless, the results of any analysis depend heavily on the quality of the information used in the analysis; that is, information about the forest land base, growth and yield, and management objectives. Evaluation of information quality must be done on a case-specific basis, which regional managers, in their evaluation of IFPA analyses, are best positioned to do.

Analysis should consist of clear descriptions of issues, information sources, assumptions, and any relevant data manipulations or adjustments related to the following three categories:

Land base:

- A tabular description of the categories of land and forest that are excluded from the timber harvesting land base, and the area excluded in each category. Such tabular descriptions are included in all timber supply analysis reports published for TSAs as part of the Timber Supply Review.
- A detailed description of the criteria employed in deriving the area included in the above table. This description should follow a format similar to the Information Package for Tree Farm Licence analyses.

- A description of the composition of the timber harvesting land base and the total forested land base in terms of species, site quality, stand age, and any other features relevant in the area.

Growth and yield:

- A description of the models and methods used in generating timber yield tables for existing and regenerated stands.
- The yield tables used for each species and site quality group and silvicultural regime.
- Detailed descriptions of methods and concepts underlying site productivity estimates and yield tables that reflect any planned innovative management.
- Notice of acceptance by appropriate BC Ministry of Forests staff of site productivity or yield estimates or adjustments corresponding to both baseline and innovative practices, and of any sampling or study methods related to deriving the estimates.
- MFR, Regional Growth and Yield Foresters will coordinate the growth and yield review process.

Management objectives:

- A description of the various management objectives that apply to the area and the methods used to represent actions used to achieve the objectives (e.g., silvicultural regimes, utilization levels, seral forest cover requirements, extended “rotations,” alternative harvesting systems). The description should specify the component of the land base to which the objective applies; for example, timber harvesting land base, or Crown forested area. The template for Information Packages for Tree Farm Licence analyses provides a framework for organizing relevant information.

Analysis is facilitated if communication between relevant ministry staff and the agreement holders regarding land base, growth and yield, and management inputs occurs as early as possible in the analysis process.

Other considerations include:

Model review and benchmarking. There are no specific requirements or limitations on which analysis models may be used. However, interpretation of results and confidence that timber supply effects can be attributed to innovative practices rather than model differences requires a detailed understanding of assumptions made in the model about relevant processes and features. The best method of gaining this understanding is to benchmark the model with FSSIM, or other models used and understood by Timber Supply Branch staff. This is not to imply that FSSIM is a better model, or produces more accurate results than other models. It is simply the case that Ministry of Forests staff understands how FSSIM works, and can therefore use it as a basis for understanding how other models work. If the model to be used has not been reviewed and benchmarked by Ministry of Forests staff, the agreement holder should develop a review process in cooperation with Timber Supply Branch or a regional timber supply analyst. If the model being benchmarked produces different results from FSSIM (or other models used and understood by Timber Supply Branch staff), the agreement holder or its representative should be responsible for explaining the differences in detail in a technical document.

Even with a benchmarked model, the potential to increase harvest levels should be evaluated using the same model for both current and innovative practices. For example, a timber supply forecast corresponding to an innovative management regime and generated with a model other than FSSIM should not be compared directly to a forecast derived using FSSIM and the current management regime. Using results generated with the same model will help ensure any timber supply increase is based on management not model differences.

Results and reporting. The analysis report and related appendices should include sufficient output information to allow understanding of the main factors determining timber supply, and if applicable, reasons behind timber supply changes due to proposed innovative practices. Management, land base and growth and yield assumptions are to be documented in an Information Package. The timber supply analysis should demonstrate how these assumptions affect timber supply. The outputs should allow for examination of all relevant forest management objectives; for example, areas in seral stages by landscape unit, or area achieving visually effective green-up in visual management zones. Outputs related to timber inventory levels, areas and average volumes harvested, average age of harvested stands, and age class distributions over time all assist in understanding timber supply dynamics and evaluating the feasibility and realism of analysis results.

Sensitivity analysis. The analysis report must include results of sensitivity analyses that examine a reasonable range of uncertainty around management, land base and growth and yield assumptions and proposed innovative practices. The implications of changes in available funding to undertake planned innovative practice may be an important consideration for sensitivity analysis.

Operational feasibility. The analysis should examine any issues that may affect the operational feasibility of harvesting at the levels indicated. The most common issue involves the ability to locate harvest opportunities spatially.

Interactions between IFPA area and the TSA. IFPA timber supply analysis should demonstrate that any harvest level increases related to IFPAs will not disadvantage timber supply at the TSA level, or timber supply available to other operators in the TSA. An IFPA area may not be representative of the forest and management conditions for the TSA, and hence analysis results for the IFPA area should not be extrapolated and assumed to apply to the whole TSA.

Administration of IFPAs is the purview of the regional manager, and it is the regional manager's prerogative to require or request any analysis that s/he believes will assist in clarifying matters regarding IFPA AACs. It may be appropriate to investigate, using timber supply analysis, the advantages and disadvantages of different approaches to administering timber supply in the IFPA in the context of the TSA. For example, benefits may be gained by administering timber supply flexibly at the TSA level (e.g., allowing for harvesting of an IFPA increase from throughout the TSA not only the IFPA area) rather than combining timber supplies that have been assessed separately for spatial sub-units of the TSA. Ultimately, the regional manager will decide on the administrative

approach, and the analysis must be consistent with that approach.

The intent here is to highlight that analysis must show that timber supply benefits for IFPAs will not come at the cost of supply at the TSA level or other operators in the area.

Harvest flow. Timber supply forecasts employing assumptions/estimates of both current and proposed innovative practices must follow reasonable flow patterns over time. In general, a reasonable flow pattern provides for a controlled and gradual transition from short-term to medium- and long-term harvests, and avoids large and abrupt disruptions in supply. Considerations include: rate of harvest level decline if any is necessary; the degree to which mid-term timber supply may appropriately drop below the long-term sustainable harvest level; and the timing of increase to the long-term sustainable timber supply if it is higher than mid-term levels.

A difference between mid-term and long-term levels may be justified because mid-term supply depends more on the existing stock of timber and the timing of availability of regenerated stands, while long-term timber supply is based on timber growth which is affected by site productivity and forest management practices. Maintaining mid-term levels above or equal to the long-term level could in some circumstances delay the achievement of, or lead to failure to achieve the maximum long-term level, or cause timber supply disruptions, because of limited supply of existing timber. Likewise, a decline in timber supply from a higher short-term supply to a lower mid-term may be appropriate if it can be shown that the associated harvests do not jeopardize or cause disruptions in long-term productivity.

The analysis should include different harvest flows that examine each of these considerations. A "base case" harvest flow for current practices must be chosen from the range of possibilities. The choice should be explained. In most cases this explanation can be brief, and consist primarily of reference to alternative harvest flow patterns. The IFPA base case harvest flow should reflect that used in the Timber Supply Review base case, if relevant. This will ensure that any change in short-term timber supply is due to changes in management, not harvest flow.

The analysis report should describe the criteria used to determine:

- the long-term harvest level and growing stock (criteria for sustainability);
- the harvest flow (e.g., maintain current harvest level for as long as possible, maximize volume harvested over a specified time frame, control the rate of decline);
- the minimum harvest level allowed in the medium term.

Allowable cut increases. Harvest forecasts for many management units in B.C. show declining timber supply over a period of decades. The general approach in cases of declining timber supply is that short-term allowable cuts are not usually increased unless there is a sound demonstrated forest management reason. This approach ensures that allowable cuts are not increased in the short term only to force reductions in the near future. There may be sound forest management reasons, such as existence of high risk of loss of stands to fire, insects or disease due to current or developing stand attributes (e.g., age or diameter distribution favourable to beetle attack, etc.).

An AAC increase in the short term should not decrease future timber supply below the

levels forecast without the increase, unless there is a documented and compelling reason to do so.

The general approach described above for TSA and TFL AAC determinations with respect to potential increases leads to some issues for IFPAs. One of the explicit aims of the IFPA initiative is to allow AAC increases for IFPA-holders. However, one stipulation of an increase is that other license holders will not be negatively affected by any AAC increases for the IFPA. In this context, important considerations in designing and interpreting an IFPA timber supply analysis would include:

- what are the forest management reasons that justify an AAC increase?
- what effects would an increase have on future timber supply?
- would a boost in AAC increase the sensitivity of future timber supply to uncertainties?
- if the forecast is for a temporary short-term increase (that is, timber supply is forecast to decline from the higher level) what actions will be taken to mitigate or avoid future socio-economic impacts? In other words: in the absence of a forest management objective for increasing the AAC, how will a temporary increase assist in strengthening the long-term role of timber harvesting and processing in the social and economic fabric of the area (capacity-building, diversification, etc.)?

Consistency with legislation and policy. The land base, growth and yield and management regime modeled in the analysis should be consistent with current legislation and policy. While the need for consistency with laws and policy is perhaps self-evident, it must be acknowledged that one of the goals of IFPAs is to move management in new directions. Therefore, it is imperative that modeling of proposed innovative management does not imply conflicts with legislation and policy. This analytical consideration differs from the approval of innovative management that is the regional manager's responsibility as part of Forestry Plan approval. The intent here is to highlight the need to evaluate analysis inputs and results to ensure that they do not create or imply conflicts. If a timber supply forecast is based on conflicts with designations or objectives that are the responsibility of other statutory decision makers under existing laws or policies, that forecast cannot reasonably be accepted as a basis for harvest level determination.

Relationship between chief forester (TSA) and regional manager (IFPA) determinations.

The concern has been raised that AAC determinations for TSAs under Section 8 of the *Forest Act* may conflict in some way with AAC determinations for IFPAs. Communication between the chief forester and regional manager will be necessary to avoid discrepancies or conflicts regarding AAC determinations. It is not possible to generalize about the relationship between TSA AAC determinations and related to IFPAs given the diversity of timber supply conditions across the province.

A guiding principle for TSA and TFL AACs is that the determination should reflect current or reasonably foreseeable practices. Use of the preceding method and considerations should ensure that practices approved under IFPAs will constitute current or reasonably foreseeable management, and will be considered as such in TSA AAC determinations.

Documentation of decisions. Documentation of reasons for decision is useful to ensure the basis for the decision is clear and understandable. Further, both the regional manager and the chief forester have AAC determination responsibilities under the *Forest Act*. Reasonably detailed decision documentation, referring to the technical considerations discussed in this methods document, would help ensure consistency between regional manager and chief forester determinations, particularly when the time period between the decisions is long.