

**British Columbia
Ministry of Forests, Lands and Natural Resource Operations**

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

Innovative Forestry Practices Agreements

Issued to

Stella Jones Canada Inc. – Forest Licence A18666
Canoe Forest Products Ltd. – Forest Licence A18670
Gorman Bros. Lumber Ltd. – Forest Licence A18671
LP Engineered Wood Products Ltd. – Forest Licence A18669
Selkirk Timber Company – Forest Licence A18632
Tolko Industries Ltd. – Forest Licence A18672 and A18667
Weyerhaeuser Company Ltd. - Forest Licence A18674

Effective January 1, 2012

**Kevin Dickenson
Regional Executive Director
Thompson Okanagan Region**

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Executive Summary

Section 59.1 of the *Forest Act* enables the Ministry of Forests, Lands and Natural Resource Operations (FLNRO) Regional Executive Director (RED), as delegated by the Minister, 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 IFPA-holder documenting their innovative forestry practices or activities in a forestry plan approved by the Regional Executive Director and demonstrating the impacts of the practices on timber supply by methodology approved by the chief forester.

Although the *Forest Act* and its regulations refer to the Regional Manager as the decision maker, the Regional Manager is now known as the Regional Executive Director (RED), and therefore hereinafter, in all cases, I will refer to the decision maker as the RED.

Eight innovative forestry practices agreements have been entered into with forest companies operating in the Okanagan Timber Supply Area (TSA). These licensees work collaboratively through the Okanagan Innovative Forestry Society (OIFS) to develop and implement a consistent forestry plan. The Okanagan Columbia British Columbia Timber Sales office is also a member of the OIFS but does not hold an IFPA.

On July 26, 2012 the OIFS submitted their forestry plan and a request for an AAC increase of 600,000 cubic meters per year within the Okanagan TSA. To assist the application process, the OIFS was required to conduct a public review and provide information to First Nations about the application. The government has consulted First Nations around the application and the proposed allowable annual cut increase to the licences of the IFPA-holders.

On January 16, 2013, a determination meeting was held with the RED and government agency staff to discuss the technical merits, risks and uncertainties of the application and public and First Nations' input received.

After reviewing and considering all of the factors and associated uncertainties that are described in this document, I determine that 158,736 cubic metres is a justifiable allowable annual cut increase for the innovative forestry practices or activities of the eight IFPA-holders. Furthermore, I determine that this AAC increase is effective on January 1, 2012, and will end on December 31, 2015.

The 158 736 cubic metres AAC increase will be awarded under Section 59.1 of the Forest Act as follows:

Licence	Licensee	AAC Increase (m ³)
A18666	Stella Jones Canada Inc.	4 451
A18670	Canoe Forest Products LTD.	26 328
A18671	Gorman Bros. Lumber Ltd.	19 817
A18669	LP Engineered Wood Products Ltd	10 331
A18632	Selkirk Timber Company	1 109
A18672	Tolko Industries Ltd.	29 320

A18667	Tolko Industries Ltd.	51 741
A18674	Weyerhaeuser Company Ltd.	15 640

I note that the OIFS has outlined, in their AAC increase request, a licence apportionment distribution (share agreement) in Table 10 on page 5 of their request. Listed in the share agreement is Tolko's forest licence A74912, which does not have an associated IFPA. I cannot designate an AAC increase to licences that do not have an associated IFPA. Therefore, I have decided to allocate Tolko's FL A18672 an additional 8.2% of the total AAC increase available.

Objective of this Document

This document is intended to provide an accounting of the factors that I, as Regional Executive Director of the Thompson Okanagan Region, have considered and used in making my determination regarding the June 28, 2012 request for an increase in AAC of the replaceable forest licences A18667, A18674, A18670, A18672, A18671, A18666, A18632, and A18669 under Innovative Forestry Practices Agreements (IFPAs). My determination under Section 59.1 of the *Forest Act* is supported by the rationale that follows.

This document outlines the background of the Okanagan IFPAs, the statutory framework, guiding principles for the determination, the role of timber supply analysis in the process, the consideration of factors influencing the timber supply analysis, the impacts on other licensees, First Nations' considerations, the Reasons for Decision, the determination, conditions and recommendations. The appendices contain the IFPA legislation and memorandum from the chief forester on timber supply methodology. This rationale does not identify all the work completed by the IFPA-holders but is intended to address the AAC increase application and resulting determination considerations.

Okanagan Innovative Forestry Practices Agreements

In the Okanagan TSA, IFPAs were entered into on September 1, 2001 for a ten-year term to: Bell Pole Company – A18666; LP Engineered Wood Products Ltd.- A18669; Federated Co-operatives Limited – A18670; Gorman Bros. Lumber Ltd. – A18671; Tolko Industries Ltd. – A18672; Riverside Forest Products Ltd – A186671; Weyerhaeuser Company Ltd. - A18674; Selkirk Timber Company – A18632. Subsequently, Tolko Industries Ltd has acquired the Riverside Forest Products Ltd (A18667). The Okanagan Innovative Forestry Society (OIFS) acts on behalf of the above IFPA-holders.

Statutory Framework

Section 59.1 of the *Forest Act* enables the minister to increase the current AAC associated with the licence of an innovative forestry practices agreement holder. Prior to such approval, the

¹ Tolko Industries Ltd currently hold FL A18667

minister must have approved a forestry plan in which the innovative forestry practices or activities are identified. The minister has delegated these decisions to the RED.

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 the forestry plan approved by the minister.

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. This memorandum provides the general principles of the timber supply analysis methodology that is required to justify an increase in AAC to the licence of an innovative forestry practices agreement holder. Further, the collection and analysis of new data must be in accordance with the available specifications of the chief forester.

Under section 59.1 of the *Forest Act*, the minister can limit an AAC increase to a period of time, area of land, type of timber or any other condition. The minister 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. The minister can 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*.

On December 20, 2012 the minister has delegated authority for Section 59.1 to the regional manager with respect to the forestry plan approval and an AAC increase determination. The Regional Manager in this case is now called the Regional Executive Director (RED). In the remainder of this document, I will refer the RED in place of the minister.

Section 59.1 of the *Forest Act*, the Innovative Forestry Practices Regulation, and the memorandum on timber supply methodology from the chief forester are appended to this rationale.

Guiding Principles

I expect to make a number of determinations under section 59.1 of the *Forest Act* with respect to increases of AAC for licensees with Innovative Forestry Practices Agreements. To ensure administrative fairness and consistency in how I approach my decisions, I have outlined the guiding principles below. Under certain circumstances I may deviate from these principles but I will document my reasoning for such deviations.

Innovative Forestry Practices or Activity

For an innovative forestry practice or activity to be considered in a Section 59.1 AAC increase determination, 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 practices for some pilot IFPAs may be at the initiation stage rather than fully implemented.

Innovative forestry practices or activities identified in the approved forestry plan but which are not present in a Section 59.1 AAC increase application, may be considered in the Section 59.1 AAC increase determination if that practice or activity may significantly influence information presented in the application.

The benefits of innovative forestry practices and activities will not be considered under a Section 59.1 AAC increase determination from areas that are temporally excluded from the IFPA area (e.g., timber licences) or excluded from the IFPA holder's replaceable forest licence (e.g., certain timber types).

Changing Information

A Section 59.1 AAC increase determination requires the assessment of the timber supply implications of an innovative forestry practice or activity within the context of current (i.e., standard) practices at the time of my determination.

The benefits of an innovative forestry practice or activity may not be static. I must be mindful that the value of an innovative forestry practice or activity, such as an inventory, may decrease over time simply due to natural changes in the land base. Additionally, the value may change as the standard forestry practice or activity against which the innovative practice develops or improves over time.

Government Policy Considerations

A Section 59.1 AAC determination is made in the context of current government policy. In particular in the determination I will be mindful of the following:

1. The Chief Forester's Forest Act Section 8 AAC determination and the associated rationale provide the primary guidance around stewardship expectations and the state of forest management within an IFPA area. While my decision and the Chief Forester's Section 8 decision are different statutory decisions under the *Forest Act*, I recognize that a Section 59.1 AAC increase is a disposition decision and that it is inherently linked to the Chief Forester's Section 8 AAC determination.

Apportionment and disposition decisions under Section 10 and 12 of the *Forest Act* represent government direction that I should consider in making a Section 59.1 AAC increase. Further, I recognize that the apportionment and disposition decisions have been based on the guidance provided by the Section 8 AAC determination.

A Section 59.1 AAC increase determination will not be based on proposed policy changes. 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 I will 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.

Uncertainty and Risk

Uncertainty exists in the data and management practices presented and modelled in a review of timber supply. In my decision, I must consider this uncertainty and associated risks and, where necessary, I can account for such. One method to address risk is to maintain the currency of the determination. To ensure that the information with respect to the Section 59.1 AAC increase is current, I will specifically assign an expiration date to my decision with the expectation that a new application could be made if allowed by the term of the IFPA. Further, if prior to the expiration date, new information or an assessment of the innovative forestry practices indicates that the increment is not justified, or the licensee is not complying with conditions given to the IFPA-holder, I have the right to remove or decrease any increase that I may have determined.

The level of caution that I exercise in this determination will depend on the uncertainty of the timber supply increase being attributed to an innovative forestry practice or activity. This uncertainty may relate to issues about the practice or activity, about the knowledge of ecological dynamics and biophysical factors, about the impacts on future environment or timber supply sustainability, or about past success of IFPA-holders around the practices and conditions.

Stakeholders

With respect to First Nations' aboriginal interests, I am aware of the Crown's legal obligations resulting from recent court decisions. My determination should not in any way be construed as limiting the Crown's legal obligation, and in this respect it should be noted that my determination does not prescribe a particular plan of harvesting activity within an IFPA area.

In addition, a Section 59.1 AAC increase awarded must not cause what in my opinion is a significant negative impact on non-IFPA licensees operating within the IFPA boundaries. Furthermore, an increase in timber supply associated with innovative forestry 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 holder. Lastly, a non-IFPA holder is not eligible for any Section 59.1 AAC increase, as this is not permitted under legislation. This legislated restriction does not restrict the rights of an IFPA-holder from using an awarded AAC increase as they are permitted under their replaceable licence.

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, Lands and Natural Resource Operations as set out under the relevant legislation.

Forestry Plan

Prior to awarding an AAC increase under Section 59.1, the RED must have approved a forestry plan in which the innovative forestry practices or activities are identified. On behalf of the IFPA-holders, OFIS presented an updated forestry plan on June 26, 2012.

Ministry professional staff reviewed the OIFS forestry plan and have informed me that it meets the requirements under Section 59.1 of the *Forest Act* and identifies forestry activities that are considered “authorized innovative forestry practices and activities” under section 2 of the *Innovative Forestry Practices Regulation*. The OIFS Forestry Plan is hereby approved.

AAC Increase Application

The OIFS, on behalf of the IFPA-holders, submitted an initial AAC increase application on June 26, 2012. In the application, OIFS requested an AAC increase of 600,000 cubic metres that would be distributed among the IFPA-holders.

The forestry plan and the application provided information on the innovative forestry practices and demonstrated through a timber supply analysis how those practices increased the available timber supply. This application focuses on two innovative forestry practices; the Vegetative Resource Inventory (VRI); and, Site Index Adjustment (SIA) for managed stands.

The Role of Timber Supply Analysis

Section 59.1(7) of the *Forest Act* identifies that an increase in AAC 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 practices and activities. As such, the timber supply analysis provides separate forecasts without and with innovative forestry practices and activities.

For the current AAC increase application, I made use primarily of timber supply analysis provided by OIFS in their June 2012 application but also considered information from the analysis that supported the Chief Forester’s 2012 Section 8 AAC determination.

These timber supply analyses with which I am provided are integral components 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 numerous risks and uncertainties are weighed. Analytical tools such as forest estate models cannot incorporate all 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.

It should be recognized that I may view the information, uncertainty, and risks of the various analyses different from previous determinations in light of new information. I also note that I am not a registered professional forester and that I rely on my professional staff to provide assessments of the analysis and of the innovative forestry practices and activities.

In this rationale, I will not discuss in detail many of the timber supply analysis assumptions or factors where I am satisfied that such is appropriately considered and has not changed from the information presented within the application.

Consideration of Factors

In making a decision for an allowable annual cut increase under Section 59.1(7), I will consider a number of factors. These factors will include technical information such as the timber supply analysis and results of the innovative forestry practices presented to me by the IFPA-holders, administrative information such as allowable annual cut of current tenures with the TSA, government guidance and policy, and other considerations. Below I will first discuss the innovative forestry practices, then technical issues associated with the analysis and finally issues outside of the presented timber supply analysis.

Innovative Forestry Practices

The OIFS, on behalf of the IFPA-holders, has managed a wide range of projects as identified in their current and past forestry plans. The major projects that OIFS has identified as innovative forestry practices or activities and which influence timber supply fall under two categories: Site productivity or Vegetation Resource Inventory. Both these project categories, based on the *Innovative Forestry Practices Regulation 2(e)* can be considered as innovative forestry practices.

Site Productivity

In British Columbia, it is generally believed that site indices based on forest cover inventory are underestimated particularly in stands older than 140 years and stands less than 30 years that have been assigned the site index attribute of the original stand.

As an innovative forestry practice, the OIFS conducted studies to improve site index estimates for managed stands within the Okanagan TSA. Site productivity assessment projects were identified within the approved forestry plan. Due to differences in resources and available data for the wet-belt and dry-belt portions of the TSA, OIFS conducted two different projects for improving site indices

Wet Belt

In the wet belt zone, OIFS originally proposed a SIBEC (Site Index/Biogeoclimatic Ecosystem Classification) approach with a PEM (Predictive Ecosystem Mapping). In this approach, site indices correlated to site series information are used. The site index correlations are obtained based on standard sampling procedures and for which the data are stored within a provincial data base for use.

Due to time limitations, OIFS did not complete a SIBEC approach for earlier AAC increase applications, instead they completed a site index adjustment project. The site index adjustment (SIA) project consisted of developing a regression model of biophysical variables from which an initial estimate of site index could be obtained across the entire wet-belt zone. Secondly, a statistically based ground sample is conducted to provide an adjustment of the preliminary site indices.

The field sample consisted of 65 suitable plots in the ICH and IDF zones of the wet-belt. Ten percent of these plots were audited for their accuracy. The ESSF, which is 28% of the productive forest, did not have sufficient sampling opportunities as such no adjustments for the ESSF were made.

With the current IFPA timber supply analysis the site index adjustment results were used. The site index in the wet belt was increased from an average of 18.0 to 21.5 m.

Ministry professional staff identified several concerns around components of the SIA project such as the uncertainty of the sensitivity of the biophysical model to actual site index variability and the lack of field samples in the high elevation areas. Nevertheless, staff indicate that overall the project does represent an improvement over the use of forest inventory stand indices that were used in earlier timber supply reviews.

OIFS is in the process of completing a SIBEC approach with a PEM. The PEM in the wet belt was completed in 2006 and revised in 2008. In 2009, the PEM accuracy assessments were completed based on the Moon (2005) protocol with the accuracy identified as 63% to 72% at a 90% CI. The assessment suggested limiting application of the PEM to relevant BGC variants. Further, while the PEM has been completed there is still work to be completed to the final BEC classification.

During 2006 to 2009, an additional 151 SIBEC plots were established to complement a previously established 87 plots. In the 2012 forestry plan, a further 20 SIBEC plots are proposed. Ministry staff indicate that the SIBEC approach has been adopted as the preferred provincial standard for identifying potential site indices.

Dry Belt

In the dry-belt zone, OFIS completed a SIBEC approach with PEM to derive new site indices. The PEM mapping was completed in 2002 and an accuracy assessment was made based on Meidinger (2003) protocol. The ministry regional ecologist accepted the PEM for strategic use within the 2006 timber supply review. The PEM was updated in 2007 to reflect changed BGC variants.

In 2002, OIFS collected SIBEC information on 203 plots which included 345 acceptable trees. This data set was supplemented in 2009 with an additional 10 plots (14 trees). In 2002, the ministry's SIBEC data base applicable to the Okanagan TSA was 40% within the TSA and 60% for outside.

Ministry staff identified that the project met standards, however, about 31% of the stands still used forest inventory information given gaps in the SIBEC data base due to lack of sample opportunities. In the dry-belt zone based on the SIBEC project the average site index increased to 16.5 from the forest inventory based value of 14.6 m.

In consideration and acceptance of the professional opinions provided by my staff, I find that it is reasonable to accept the site productivity projects do result in increased timber supply, though there is some uncertainty.

Vegetation Resource Inventory

The OIFS have completed a Vegetation Resource Inventory Phase 1 and Phase 2 with NVAF sampling for the Okanagan TSA. The Phase 1 was completed in 2010 while the Phase 2 with NVAF was completed prior to the previous AAC increase application.

The VRI Phase 1, which was completed in 2010, replaced older inventories completed between 1962 and 1979. The majority (70%) of the classification was completed with 2001 or 2007 photography. The classification and quality assurance followed the standards at the time the work was completed. The project, which had several starts and stops between 2000 and 2010, involved many different contractors and ministry staff.

Several quality issues since the project's completion have been identified by ministry staff. These included a missing map sheet, identification of some forested areas as being harvested, and inconsistency in work on private lands. While these issues have been observed, Ministry staff note that the project had passed the standards in place.

The VRI Phase 2 consists of ground samples that are to provide an unbiased estimate for tree volume and characteristics (e.g., height and age). The Net Volume Adjustment Factor (NVAF) is obtained from detailed stump analysis simply to provide unbiased estimates of net merchantable tree volume. The initial VRI Phase 2 sampling completed in 2002 consisted of 110 plots and NVAF sampling of 93 trees. In 2007 an additional 50 Phase 2 plots were measured.

For the current application, given the new VRI Phase 1, OFIS contracted a new statistical adjustment analysis to replace that used in the previous Section 59.1 allowable annual cut

increase determination. The new analysis was to follow the Ministry of Forests and Range (2011) protocol.

The new adjustment focused only on non-pine leading stands. OIFS felt that due to the Mountain pine beetle infestation and recent harvest of the majority of pine-leading stands, an adjustment for pine-leading stands would have a high degree of uncertainty and low value. The 2011 summary of 103 plots found that age and height on average had been overestimated in the VRI Phase 1 while basal area, stems per hectare and stand volume were underestimated. Based on this analysis, the overall volume of the VRI Phase 1 volume was underestimated by 15% (32 m³/ha).

Ministry professional staff have reviewed the 2011 analysis and identified that the adjustment failed to properly use the NVAF and used an inappropriate utilization level. In response to this review, OIFS provided in March 2012 an update that indicated all the existing volume projections can be expected to be 20.2% lower.

Based on a consideration of my staff's professional opinion, I accept this recommendation of 20.2% lower projections and discuss the implications within my "Reasons for Decision".

Timber Supply Analysis

OIFS in their application have presented to me information on their innovative forestry practices and a timber supply analysis used to justify the proposed allowable annual cut increase. Ministry staff have reviewed this information and have provided to me their professional opinions. I discuss concerns that my staff have raised that may influence the determination of an allowable annual cut increase. I will not discuss information that was presented but found to be acceptable.

The timber supply analysis provides two harvest flows, one harvest flow that contains the results of the innovative forestry practices, a Vegetation Resources Inventory and improved site productivity estimates, and a second harvest flow that excludes the innovative forestry practices. The difference between these 2 harvest flows in the short term of 697,000 cubic metres per year is the amount upon which OFIS based their requested 600,000 cubic metres AAC increase.

As I noted above, I recognize that the models presented to me are a simplification which provide guidance but which cannot provide an absolute answer to the benefits of the innovative forestry practices. Below are factors for which I believe some discussion is necessary. Some of these factors are simply adjustments for differences resulting from model simplification, changed information, or errors. The innovative forestry practices are also discussed in more detail.

Low Productivity and Non-merchantable Stands

Low site and non-merchantable forest stands are those stands not likely to be harvested due to merchantability issues. For past *Section 8* timber supply review analyses, low productivity and non-merchantable stands were defined based on combinations of species, site index, height, crown closures, volume and age. Ministry staff have found low overlap with harvested blocks and the stands identified as low site and non-merchantable, as such, staff believed the exclusion of these stands from the timber harvesting land base was appropriate.

In the current IFPA analysis, the analyst suggested that in order to improve the accuracy of this net down and more closely reflect the intent of the land base removal, low productivity stands were identified as those stands not reaching 100 cubic meters per hectare merchantable volume by 140 years and having no harvest history. No specific analysis was conducted to determine the on ground appropriateness of the new definition relative to the previous definition. The resulting difference between the two definitions is that the current IFPA analysis includes about 9,000 hectares more timber harvesting land base.

The chief forester methodology for Innovative Forest Practice Agreements suggests that the IFPA base case should be reflective of the Timber Supply Review base case. For my determination I will accept that the previous criteria for low productivity and non-merchantable stands is the most appropriate to use for the current assessment. I will discuss my consideration of this difference further in my “Reasons for Decision”.

Wildlife Tree Retention

Wildlife tree patches are groups of wildlife trees (standing dead and live green trees) that are intended to maintain important stand-level structural elements during forest harvesting and silviculture. Current legal requirements for Wildlife tree patches (WTPs) as indicated in the licensees’ Forest Stewardship Plans (FSPs) are based on minimum percentages by biogeoclimatic ecosystem classification (BEC) zone.

In the Okanagan TSA, wildlife tree patch retention has been shown to average about 6.45% overall landscape units and biogeoclimatic ecosystem classification (BEC) subzones. In the 2012 *Section 8* allowable annual cut determination for the Okanagan TSA, the Chief Forester accepted a 6.2% accounting for wildlife tree retention based on results from the Forest and Range Evaluation Program less expected riparian management retention.

In the IFPA application analysis, a 3% reduction for wildlife tree patches was modelled. Given the above retention information, my staff believe that the timber harvesting land base and the identified harvest flow increase due to the innovative forestry practices are over estimated by 3.2%. I accept this recommendation and discuss the implications within my “Reasons for Decision”.

Culturally Important Sites

Many sites of cultural importance to First Nations exist within Okanagan TSA. In past consultations, First Nations have expressed concerns about the impacts of harvesting on spiritually sensitive areas. In particular, two areas of significance have been brought forward and specific measures developed to address these important sites.

The boundary associated with Mt Ida (Kela7scen) is known as the Magic Circle. Working under the provisions of the 1999 Mt Ida Protocol has identified that development plans prepared with input from the community and elders supports appropriate, small scale forestry operations by responsiveness to forest health agents. Large scale clearcuts are typically avoided in this area.

First Nations have allowed the boundary associated with the Wap Creek Cultural Heritage Feature to be shared with stakeholders. The 2010 GAR order package provides guidance to forest professionals as to primary forest and range management activities and the associated compatibility of those activities within the sacred area. The net result is that an estimated 50 ha

of mature timber on the timber harvesting land base, or approximately 17,500m³ would become severely constrained by this action.

My staff recommend that a small (<0.1%) downward impact on the harvest flow increase related to the innovative forestry practices be considered as the result of management considerations for culturally import sites. I accept this recommendation and discuss the implications within my “Reasons for Decision”.

Other considerations

The timber supply analysis that supports the AAC increase application provides reasonable identification of the contribution of the innovative forest practices to the timber supply. This analysis identifies that this new information is significant in supporting a level of harvest in the mid-term without a significant drop from expectations before the mountain pine beetle (MPB) outbreak or other changes that have occurred in forest management.

If MPB and other changes had not occurred, the timber supply based on the innovative forestry practices would have been higher. However, given these changes have occurred and are used to support existing tenure commitments, I need to consider the implications related to an allowable annual cut increase to IFPA-holders.

In the Chief Forester’s April 2001 methodology, concerns about an AAC increase impacted non-IFPA holders are identified and that there is an expectation that negative impacts should be avoided or minimized. I discuss two concerns I have that influence the AAC increase that I am willing to award.

Base Level Allowable Annual Cut

To justify an allowable annual cut increase, the IFPA-holder provided an analysis that had a scenario that excluded the innovative forestry practices. A comparison of the two scenarios, with and without innovative forestry practices shows the affects of the innovative forestry practices. While this comparison serves this purpose, I am mindful that this base scenario in effect also reflects the harvest flow that was to support the tenures present prior to the innovative forestry practices.

Increases in timber supply attributable to an innovative forestry practice may or may not result in an incremental harvest flow above the current AAC of existing licences. If the underlying available timber supply (not considering the innovative forestry practices) is decreasing, the impact of an innovative forestry practice might serve to maintain the current AAC of the IFPA-holder (i.e., licence holder’s benefit by not decreasing current volume allotments).

An example of this occurred in the Arrow TSA IFPA pilot area. The IFPA-holders in that TSA had completed innovative forestry practices that were seen as increasing the harvest flow but that increase only brought the decreasing timber supply to a level that could maintain current

allowable annual cut. As such, while the IFPA-holders did not gain an AAC increase, the IFPA-holders obtain the benefit of not having their allowable annual cuts reduced.

In the current analysis, the base scenario, given the harvest flow pattern associated with a mountain pine beetle uplift, initiates above the pre-MPB allowable annual cut level. However, following the step down after the uplift, the base scenario harvest flow drops below the harvest flow levels of earlier timber supply review base cases and drops below the allowable annual cut level that was present pre-MPB infestation.

This lower harvest flow level suggests to me that I need to recognize that some of the identified harvest flow increase due to the innovative forestry practices will be supporting some of the base allowable annual cut of the IFPA-holder's existing tenures.

Tenure Commitments

The Chief Forester's Section 8 AAC determination has considered information that included the innovative forestry practices. The Section 8 AAC level is recognized as a harvest limit that reflects a sustainable harvest level given biological, social, and economic considerations. In this Section 59.1 AAC increase determination, I will respect the Chief Forester's assessment given that in general the Chief Forester has similarly considered information about the innovative forestry practices.

Following the Chief Forester's Section 8 AAC determination for the Okanagan TSA, the minister apportioned the AAC to broad categories of licences. Within these categories the government has existing commitments for replaceable and non-replaceable forest licenses and has made specific commitments, but not yet awarded, to other types of licences. Given these commitments and given that I wish to respect the Section 8 AAC levels; I find that there is less than 185,000 cubic metres per year of non-committed volume available. I discuss the implications of such support within my "Reasons for Decision".

First Nations Consultation

First Nations who assert claims over the Okanagan Timber Supply Area (OK TSA) were identified using the Consultative Area Database (CAD) and Ministry of Forests, Lands and Natural Resource Operations Agreements held with First Nations including; Okanagan Nation Alliance (Sylx Nation) which includes Okanagan Indian Band, Osoyoos Indian Band, Penticton Indian Band, Upper Nicola Indian Band, Lower Similkameen Indian Band, Upper Similkameen Indian Band and Westbank First Nation. The Shuswap Nation Tribal Council (Secwepemc Nation) were also identified and includes; Adams Lake Indian Band, Little Shuswap Indian Band, Neskonlith Indian Band, Splotsin (Spallumcheen Indian Band) and Simpcw First Nation. Nlaka'pamux Nation Tribal Council was identified and includes Ashcroft Indian Band and Oregon Jack Creek. Nicola Tribal Association was identified and includes Cook's Ferry Indian Band. Esh-kn-am Cultural Resource Management Services includes Cooks Ferry Indian Band and there were unaffiliated First Nation communities includes Lower Nicola Indian Band and Lytton First Nation.

Communication Process

The consultation process was comprised of 3 main phases of engagement; information sharing completed by the proponent, initiation of the consultation process and active follow up and meetings with First Nations.

Based on input provided to the Okanagan Innovative Forest Society (OIFS) in 2009, the society amended its constitution to invite the Okanagan and Shuswap Nations to join the OIFS board of directors and technical working groups. This provided opportunity for both the Okanagan and Shuswap First Nations to have direct input to the Forestry Plan, and land based investment program(s).

The Crown initiated consultation on the Innovative Forestry Plan and AAC increase on March 14, 2012. The original consultation period was extended and expanded to include a comprehensive strategic forest decision package involving the minister's apportionment and regional executive director's disposition plan. The consultation period concluded on September 1, 2012.

FLNRO staff met with most of the local First Nation communities to discuss the proposed forestry decisions including the Innovative Forestry Plan and AAC increase. The following groups accepted invitation to meet with FLRNO staff: Okanagan Nation Alliance, Lower Similkameen, Osoyoos, Penticton, Upper Nicola and Westbank First Nation. FLNRO staff also met with members of the Lakes Division of the Shuswap Nation including Adams Lake, Neskonlith and Splatsh.

A detailed communication log is presented in the Consultation Record. Accommodation measures were identified during the consultation process.

Preliminary Assessment

Several sources of information were considered in developing the Preliminary Assessment for the OK TSA Innovative Forestry Plan and AAC Increase. These include available Anthropological and Historical Reports for the Okanagan and Secwepmec people and affidavit information available through the *Jules* and *Wilson* court proceedings. Information available through archaeological reports and traditional use studies was also considered. Information about aboriginal interests, sacred sites and cultural uses of the lands within the OK TSA, obtained through past consultations, was also considered.

The results of the General Review and subsequent preliminary assessment of the Okanagan and Shuswap people indicated, based on the strength of claims and the potential for adverse impact to those claims, the Crown's duty to consult fell within the normal consultation spectrum described in the SCC *Haida* decision.

Similarly, the results of the General Review and subsequent preliminary assessment of the Nlaka'pamux people indicated, based on the strength of claims and the potential for adverse

impact to those claims, the Crown's duty to consult fell at the lower range of the consultation spectrum described in the SCC *Haida* decision, associated with a notification process.

For more information regarding the preliminary assessments, refer to the Preliminary Assessment Table in the consultation record.

Accommodation of Economic Interests related to Aboriginal title

Under the First Nations Forest Strategy, the economic component of aboriginal title interests are accommodated through revenue-sharing, and provision of economic opportunities through direct award of forest and range tenure agreements.

There are two main forms of accommodation agreements: The Forest and Range Opportunity (FRO) and Forest Consultation and Revenue Sharing Agreement (FCRSA). All First Nations have been offered accommodation agreements.

Currently all First Nations have signed agreements with the exception of Upper Nicola, Upper Similkameen, Oregon Jack and Lytton First Nations.

Specific details about Agreements held with First Nations are available in the Consultation Record.

There are two prominent litigation cases within the Okanagan Shuswap District.

The first case, *HMTQ v Wilson* involves a dispute centred within the Browns Creek and surrounding watersheds, all located within TFL 49, outside the bounds of the OK TSA.

The *Wilson* case is however, closely linked to *HMTQ v Jules* which is a similar dispute centred near Harper Lake, in the Chase Creek watershed. The *Jules* case is within the bounds of the OK TSA.

The information provided to the Crown during the *Jules* case included affidavit submissions that have been considered during this consultation process.

In conclusion, First Nations consultation has been completed appropriately.

Reasons for Decision

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. Section 59.1 of the *Forest Act* requires that I justify an increase in allowable annual cut based on timber supply analysis methodology approved by the chief forester.

The chief forester, in his timber supply analysis considerations for IFPAs, identifies the types of information that should be included in an analysis. This includes information around land base,

inventory, growth and yield, and management objectives. This methodology also recognizes the need to consider operational feasibility, harvest flow patterns, consistency with legislation and policy, and the reflection of current and reasonably foreseeable practices.

In my considerations, I organize my thoughts around not simply the timber supply analysis provided with the application, but I also reflect on the implications to other stakeholders, past performance of the IFPA-holder, and the worthiness of the work completed as an innovative forestry practice.

The determination of an allowable annual cut increase is in part technical and in part based on reflection of a variety of non-technical issues. For technical professional forestry issues, I take into consideration the information and advice provided by my professional staff with respect to the innovative forestry practices and the timber supply analysis provided in support of an allowable annual cut increase.

My staff have reviewed the analysis in the context of current forest management and information and they determined that the modelled harvest flow increase needs to be adjusted for the below technical reasons. I concur with these identified adjustments to the modelled harvest flow increase.

The Phase II and NVAF compilation did not use the appropriate utilization levels. Appropriate utilization levels would have resulted in a 20.2% lower modelled harvest flow increase.

The low productive and non-merchantable stand criteria used to define the timber harvesting land base differed from criteria used in the current and previous timber supply reviews. These changed criteria had not been demonstrated more appropriate than the previous criteria that have been found not to contribute. Use of previous criteria would have resulted in a 1.6% lower modelled harvest flow increase.

Wildlife tree retention has been demonstrated based on FREP studies to be higher than the modelled reduction. Applying this operational level of retention would have resulted in a 3.2% lower modelled harvest flow increase.

Several First Nations culturally important areas are present and in general operational measures to protect important sites, such as Kela7scen (Mt. Ida) are in place. The Wap Creek Cultural Heritage Feature was not modelled and consideration would have resulted in a small (<0.1%) lower modelled harvest flow increase

My staff indicate that the timber supply analysis, with consideration to the above, used appropriately identifies the harvest flow increase value of the innovative forestry practices. However, my staff have identified two issues that I must consider with respect to an allowable annual cut increase to the IFPA-holders.

Changes to current management and the land base occur over time that affect timber supply and associated with these changes there likely would be changes in apportionment and disposition. In my determination, I am mindful that even with the information

provided about the innovative forestry practices, the identified harvest flow beyond two decades drops below the harvest flow predicted in pre-IFPA timber supply review. As such, beyond the initial periods, I find that the innovative forestry practices will be supporting existing tenure and that any allowable annual cut increase would result in less volume available for other tenures.

Current tenure commitments have been based upon expectations of timber supply that include information based on the innovative forestry practices. I am mindful of my obligation as steward of the forest land of British Columbia and as such I am not willing to increase the allowable annual cut associated with tenures above the sustainable level identified by the Chief Forester in Section 8, I am only willing to consider an allowable annual cut increase that is above the sum of existing commitments but is below the Section 8 allowable annual cut level.

In summary, I am satisfied that the information provided with the application is sufficient upon which for me to base a decision about an AAC increase on the IFPA-holder's licences.

Determination and Conditions

I have reviewed and considered all the factors and the associated uncertainties described in this document. I determine that a sum of 158 736 m³ per year from within the Okanagan IFPA boundaries can be awarded as an allowable annual cut increase to the innovative forestry practices of the IFPA-holders. This total increase is specifically awarded as

Licence	Licensee	AAC Increase (m ³)
A18666	Stella-Jones Canada Inc.	4 451
A18670	Canoe Forest Products Ltd.	26 328
A18671	Gorman Bros. Lumber Ltd.	19 817
A18669	LP Engineered Wood Products Ltd	10 331
A18632	Selkirk Timber Company	1 109
A18672	Tolko Industries Ltd.	29 320
A18667	Tolko Industries Ltd.	51 741
A18674	Weyerhaeuser Company Ltd.	15 640

The award on each license is subject to the following:

- (1) Submission of an annual report by April 30th of each year that summarizes the activities completed by the society in the past year, the expected activities in the upcoming year, management or land base changes to the assumptions of this determination, and how conditions and recommendations of this award have been addressed. The first report is due April 30, 2014, which shall cover activities up to that point.
- (2) IFPA-holders will work co-operatively with the Okanagan Shuswap District on addressing forest health issues, in particular for Mountain pine beetle. The harvesting profile of IFPA-

holders will reflect forest health needs. The IFPA-holders are to report within the annual report their total harvests associated with beetle damaged and non-beetle damaged stands.

This determination is effective January 1, 2012 and will remain in effect until December 31, 2015, the date at which the innovative forestry practices agreements expire.

Yours Truly,



Kevin Dickenson
Regional Executive Director
Thompson Okanagan Region

July 25, 2013

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.

Timber supply analysis methodology – IFPAs
Page 2

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 AAC 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 AAC 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, rather it 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.
- FLNRO, 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.

AAC 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 AACs are not usually increased unless there is a sound demonstrated forest management reason. This approach ensures that AACs 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.

Appendix 4: Information Sources

In making this decision, I have considered information from a variety of sources, many of which were used to compile a technical summary for this determination. The technical summary and references within were my primary sources for reviewing technical aspects of this decision.

- Ministry of Forests, Lands and Natural Resource Operations (unpublished). Okanagan Timber Supply Area Binder for Section 59.1 Allowable Annual Cut Increase Determination Meeting. January 16, 2013. Okanagan Shuswap District, Vernon, BC.

I have also reviewed previous determinations to assist in my understanding of the past considerations around this decision:

- Zacharatos, T.P. 2005. Okanagan TSA Innovative Forestry Practices Agreements Rationale for Increase in Allowable Annual Cut (AAC) Determination. Ministry of Forests, Lands and Natural Resource Operations, Southern Interior Forest Region, BC

I have also reviewed the previous Section 8 Allowable Annual Cut determinations to assist in my understanding of the current timber supply and stewardship considerations:

- Snetsinger, J. 2012. Okanagan Timber Supply Area – Rationale for Allowable Annual Cut (AAC) Determination. Ministry of Forests, Lands and Natural Resource Operations, Victoria, BC 32p..

OIFS since the last determination has provided a number of updated documents including the application, a new forestry plan, annual reports, and updates on their innovative forestry practices.

- Anon. 2010. Caribou and wolf monitoring in the Northern Columbia Mountains 2009/10 Progress report.
- Braumandl, T. And P. Dykstra. 2009. Okanagan TSA Wet belt PEM AA – final data analysis and results. Biome Ecological Consultants Ltd., Proctor BC.
- Dick, G. 2010. Okanagan TSA Predictive Ecosystem Mapping (PEM) compilation project final report – quality assurance report.
- Ecora Resource Group Ltd. 2012. Okanagan Innovative Forestry Society 2011/2012 Uplift Analysis. Kelowna BC 59p.
- Ecora Resource Group Ltd. 2011a. Okanagan Innovative Forestry Society 2011 Uplift Analysis. Kelowna BC 40p.
- Ecora Resource Group Ltd. 2011b. Okanagan Innovative Forestry Society Phase II VRI Statistical Adjustment Report. Kelowna BC 26p.

- Grace, J. 2010. Project completion report Phase 1 – Vegetation Resources Inventory (VRI) Photo interpretation and digital map production of the Okanagan TSA 2000-2010. Terrafor Resources Ltd., Coldstream, BC. 30p.
- Greenfield, J. 2012. Memo to Glen Dick re: Okanagan IFPA Phase II VRI adjustment – NVAF data. March 7, 2012. 3p.
- J.S. Thrower & Associates Ltd. 2007. Final report Mountain pine beetle impacts using VRI Phase II samples in the Okanagan TSA. Kamloops BC. 14p.
- Sullivan, T. 2009. Debris piles, small mammal prey, and cover: creation of marten habitat on clearcuts. Applied Mammal Research Institute, Summerland BC
- Terrafor Resources Ltd. 2012. Okanagan IFPA Forestry Plan 2012 for the Innovative Forestry Practices Agreements in the Okanagan Timber Supply Area. June 2012.
- Timberline Natural Resource Group Ltd. 2010. Okanagan TSA Predictive ecosystem mapping (PEM) compilation project final report. March 5, 2010. 61p
- Timberline Natural Resource Group Ltd. 2009. Site index and biogeoclimatic ecosystem classification (SIBEC) in Okanagan TSA 2009 Field Sampling Report. Kelowna, BC 6p
- Timberline Natural Resource Group Ltd. 2009. Site index and biogeoclimatic ecosystem classification (SIBEC) in Okanagan TSA 2009 Field Sampling Report. Kelowna, BC 6p
- Timberline Natural Resource Group Ltd. 2009. 2009 SIBEC Okanagan quality assurance report. Kelowna, BC. 4p
- Timberline Natural Resource Group Ltd. 2008. Enhanced Type 2 silviculture analysis Okanagan TSA analysis report. March 2008. Kelowna, BC. 9p

Documents that describe the initial work about the innovative forestry practices include:

- de Jong, R. and G. Lester. 2002. Memo to Glen Dick re: Okanagan IFPA- Natural stand yield table adjustment options. November 15, 2002. J.S. Thrower & Associates, Kamloops BC 4p
- de Jong, R., G. Lester and G. Therien. 2002. Memo to Glen Dick re: Okanagan IFPA- Natural stand yield table adjustment options. November 22, 2002. J.S. Thrower & Associates, Kamloops BC 3p
- de Jong, R. 2002. Memo to Gord Lester re: Impact of assessing VRI plots inside the THLB. December 5, 2002. J.S. Thrower & Associates, Kamloops BC 23
- J.S. Thrower & Associates Ltd. 2002. Site index adjustment for the wet belt portion of the Okanagan TSA. Sample plan (version 2.0). Kamloops BC. 24p.
- J.S. Thrower & Associates Ltd. 2002. Okanagan TSA Vegetation Resources Inventory Ground Sampling & Statistical Adjustment: final report. Kamloops BC. 20p.
- J.S. Thrower & Associates Ltd. 2002. Okanagan TSA Vegetation Resources Inventory further analysis report. Kamloops BC. 19p.

- Ketcheson, M. T. Dool, L. Bradley, G. Kernaghan, J. Shypitka, T. Roberson, K. Misurak, V. Lipinski, D. Ross. and S. Wilson. 2002. Okanagan TSA dry belt predictive ecosystem mapping (PEM) final report. JMJ Holdings Inc., Nelson, BC. 66p.
- Robinson, C. 2002. Operational adjustment factor 1 evaluation in the Okanagan TSA. Forsite Consultants Ltd., Salmon Arm, BC 24p.
- Therien, G. 2002. Memo to Albert Nussbaum and Jeff Stone. Re: Re-adjustment of the Okanagan IFPA VRI. November 6, 2002. J.S. Thrower & Associates Ltd. Vancouver BC. 3 p.
- Thompson Forest Management. 2002. Evaluation of net downs for roads, trails and landings in the Okanagan TSA. Summerland, BC. 28p.

I have also considered other information sources that include:

- Forest Analysis and Inventory Branch. 2012 Monitoring harvest activity across 28 mountain pine beetle impacted management units. BC Ministry of Forests, Lands, and Natural Resource Operations, Victoria BC. 35p.
- Ministry of Forests and Range. 2011. Vegetation Resources Inventory VRI Sample Data Analysis Procedures and Standards – Version 1 (June 2011)
- Province of British Columbia. 2007. TIPSYS version 4.1d. Research Branch, Ministry of Forests. Ministry Standard Database, October 2006.
- Province of British Columbia. 2007. RESULTS (Reporting Silviculture Updates and Land status Tracking System) version 04.02.01.

With respect to First Nations consultation my staff have prepared an internal summary of the consultation.

- Cormier, L. 2013. Consultation summary. Report to Regional Executive Director.

To assist me with my decision, I have had discussion with Ministry of Forest, Lands and Natural Resource Operations staff around the technical review and evaluation of current operating conditions including a meeting January 16, 2013 with district, regional and branch staff to review the allowable annual cut increase application in relation to current forest management and the activities of the IFPA-holders.