FOREST ANALYSIS AND INVENTORY BRANCH

Kootenay Lake TSA Timber Supply Analysis Discussion Paper

Forest Analysis and Inventory Branch
Ministry of Forests and Range
727 Fisgard Street
Victoria, B.C.
V8W 1R8

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Ministry of Forests and Range

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Kootenay Lake TSA Discussion Paper

Introduction

The British Columbia Ministry of Forests and Range regularly reviews the timber supply* for all 37 timber supply areas (TSA)* and 34 tree farm licences (TFL)* in the province. This review, the third for the Kootenay Lake TSA, examines the impacts of current forest management practices on the timber supply, economy, environment and social conditions of the local area and the province. Based on this review the chief forester will determine a new allowable annual cut (AAC)* for the Kootenay Lake TSA.

By law, the chief forester must review and set new AACs for all of the TSAs and TFLs that are within the Province of British Columbia at least every five years. The chief forester can postpone a timber supply review for up to five more years if the AAC is not expected to change significantly. The chief forester may also set a new harvest level earlier than five years to deal with abnormal situations such as damage from severe wildfires or catastrophic insect infestations.

The objectives of the timber supply review are to:

- Examine the available timber supply with respect to relevant forest management practices, public input, and economic, environmental and social factors;
- Set a new AAC for the next five years; and
- Identify information to be improved for future timber supply reviews.

This discussion paper provides a summary of the timber supply analysis for the timber supply review of the Kootenay Lake TSA. Details about the information used in the analysis are provided in a July 2008 data package and further the technical details of the analysis are available on request from the Ministry of Forests and Range, Forest Analysis and Inventory Branch.

The timber supply analysis should be viewed as a "work in progress". Prior to the chief forester's AAC determination for the TSA, further analysis may need to be completed and existing analysis reassessed as a result of inputs received during this review process.

Timber supply review in the Kootenay Lake TSA

The current AAC for the Kootenay Lake TSA effective January 1, 2002 is 681 300 cubic metres. Since 2002, a number of changes have occurred in the TSA that may affect the AAC. These changes include the introduction of the *Forest and Range Practices Act*, establishment of community forests, updated operability information, and new mountain caribou management requirements.

In September 2008, an information report with a draft data package was released for public review and to assist with First Nations consultation. This discussion paper is being released in order to provide an overview of the timber supply review process and to highlight the results of the timber supply analysis, including harvest level forecasts for the Kootenay Lake TSA.

Before setting a new AAC, the chief forester will review all relevant reports, including the timber supply analysis technical report, and input from government staff, the public and First Nations. Following this review, the chief forester's determination will be outlined in a rationale statement that will be publicly available.

Throughout this document, an asterisk after a word or phrase indicates that it is defined in a box at the foot of the page.

Timber supply
The amount of timber that is forecast to be available for harvesting over a specified time period, under a particular management regime.

Timber supply areas (TSAs)
An integrated resource management unit established in accordance with Section 7 of the Forest Act.

Tree farm licences (TFLs)
Provides rights to harvest timber and outlines responsibilities for forest management in a particular area.

Allowable annual cut (AAC)
The rate of timber harvest permitted each year from a specified area of land, usually expressed as cubic metres of wood per year.

Once the chief forester has determined the new AAC, the Minister of Forests and Range will apportion the AAC to the various licence types and programs. Based on the minister's apportionment, the regional executive director will establish a disposition plan that identifies how the available timber volume is assigned to the existing forest licences and, where possible, to new opportunities.

Description of the TSA

The Kootenay Lake TSA, as shown in Figure 1, is located in south east British Columbia and covers approximately 1.2 million hectares of the Southern Interior Forest Region. It is bounded by Glacier National Park to the north, the U.S.A. to the south, and the Purcell and Selkirk mountains to the east and west respectively.

The major population centres in the Kootenay Lake TSA are Creston, Kaslo, and Nelson, in which about half the population live. There are other numerous smaller communities including, Lardeau and Yahk. According to the result of the 2006 Census, the population of the Kootenay Lake TSA is approximately 34,000.

The Kootenay Lake TSA is administered from the Kootenay Lake Forest District office located just north of Nelson.

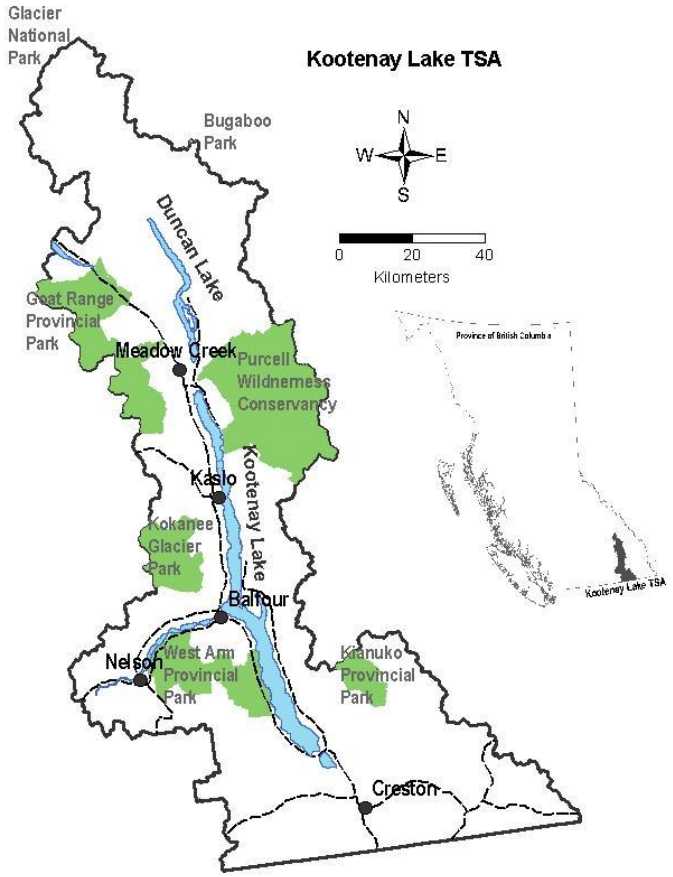

Figure 1. The Kootenay Lake TSA.

Land use planning

In 1995, after extensive public involvement, the government released the Kootenay-Boundary Land Use Plan and established a number of new parks, including Lockhart, Kianuko, West Arm and the Goat Range. The Kootenay-Boundary Land Use Plan Implementation Strategy was approved by government in 1997. The strategy provides details on the forest practices related to the plan.

In 2001, the government issued the Kootenay-Boundary Higher Level Plan Order, which established legal objectives for old and mature forests, mountain caribou, domestic watersheds, and several other resource values. Since that time the order has had a number of changes or "variances".

The land-use planning decisions in the order regarding forest practices and protected areas established by government are reflected in the timber supply review.

The forest land resources

The distinct ecological features and the unique nature of the Kootenay Lake TSA contribute to high biodiversity values. The diverse forests host a wide variety of wildlife species including: black bear, grizzly bear, moose, deer, elk, mountain goat and mountain caribou.

In addition to these values, the numerous natural resources associated with the TSA provide a range of forest products, including timber; recreation, and tourism. Recreational values and uses of the forests in the Kootenay Lake TSA are high due to the presence of numerous provincial parks and the exceptional natural scenery. The mountainous terrain and lakes provide a wide range of opportunities for recreation including hiking, mountain biking, fishing, and boating.

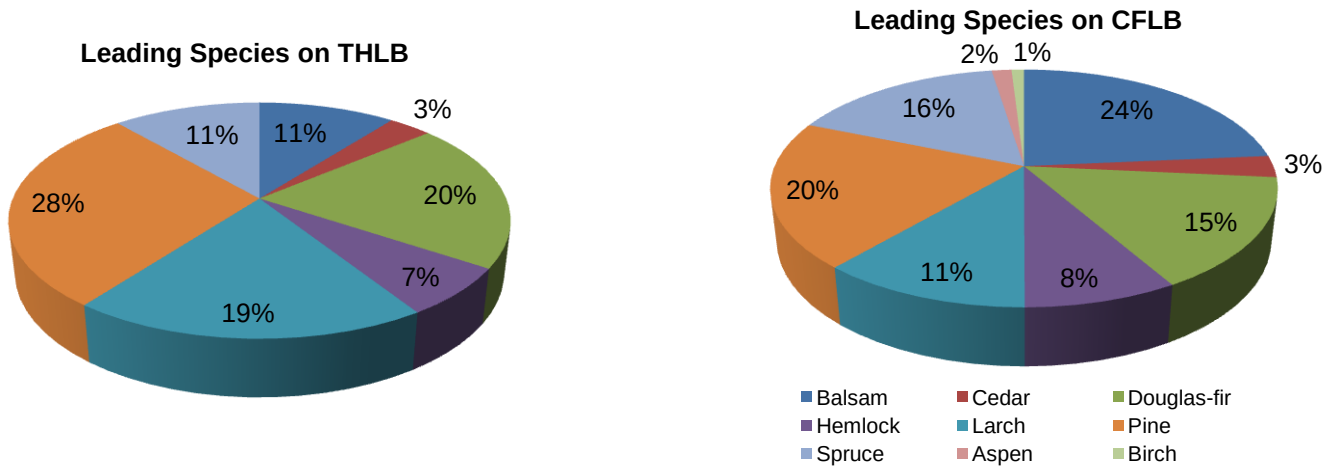

Figure 2. Species composition of forests that comprise the timber harvesting land base (THLB) and the crown forested land base (CFLB).

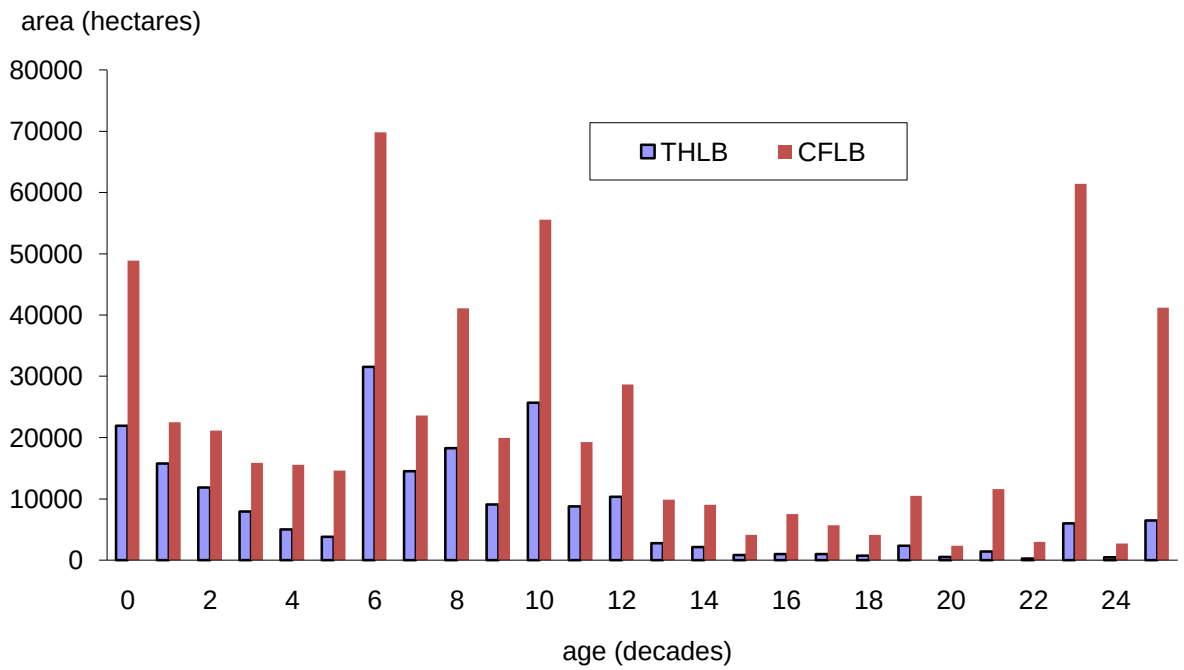

Figure 3. Age class distribution of the timber harvesting and crown forested land base in the Kootenay Lake TSA.

Land base and forest management changes since 2001

Since the last AAC determination, numerous changes in forest management and available information have occurred in the Kootenay Lake TSA. Some of these changes, reflected in the timber supply analysis, are listed below:

Community forests — Two community forests (Kaslo and Creston) have been established since the last AAC determination. Community forests are not considered within the AAC decision for a TSA and are excluded from the timber supply analysis. The Harrop Proctor Community Forest was considered in the last determination but was not modelled in the 2001 timber supply analysis.

Old growth management areas — Old growth management areas have been identified in the TSA. This enabled spatially-explicit modelling of landscape biodiversity objectives.

Operability — District staff, with licensee input, have reviewed all operability linework. Changes have been made to reflect current practice.

Mountain caribou — In February 2009, new ungulate winter ranges for mountain caribou management were established. These zones, which are primarily no harvest, replace existing management objectives under the Kootenay-Boundary Higher Level Plan Order.

Unmerchantable forest types — A review by forest district staff resulted in an updated definition of unmerchantable stands, particularly hemlock-leading stands greater than 140 years.

Timber supply analysis and forecasts

For the AAC determination, the chief forester reviews many sources of information including a timber supply analysis that models the development of the forest through time and its response to harvesting while respecting government's many timber and non-timber objectives. This section highlights some of the important findings from the timber supply analysis.

The base case scenario

A timber supply analysis provides an assessment of the existing land base and forest management information. This assessment includes a timber supply forecast that Ministry of Forests and Range staff believe reflects current forest management. This timber supply forecast is called the 'base case scenario'. The base case scenario is not an AAC recommendation, but rather one of many sources of information the chief forester will consider when setting the AAC. The AAC determined by the chief forester may be greater or less than the initial level forecasted in the base case.

Figure 4 shows the base case forecast of the current 2009 analysis and the base case presented in the 2001 analysis used for the last AAC determination. The current base case scenario reflects a lower harvest level, as would be expected given the changes in information and forest management practices. It should be noted that the starting point of the 2001 base case scenario is higher than the current AAC of 681 300 cubic metres per year.

In the first three decades in the base case, the average area harvested is 1977 hectares with a mean volume of 343 cubic metres per hectare and a mean age of 162 years. When averaged over the 400-year harvest projection, the averages are 2049 hectares, 293 cubic metres per hectare, and 101 years, respectively.

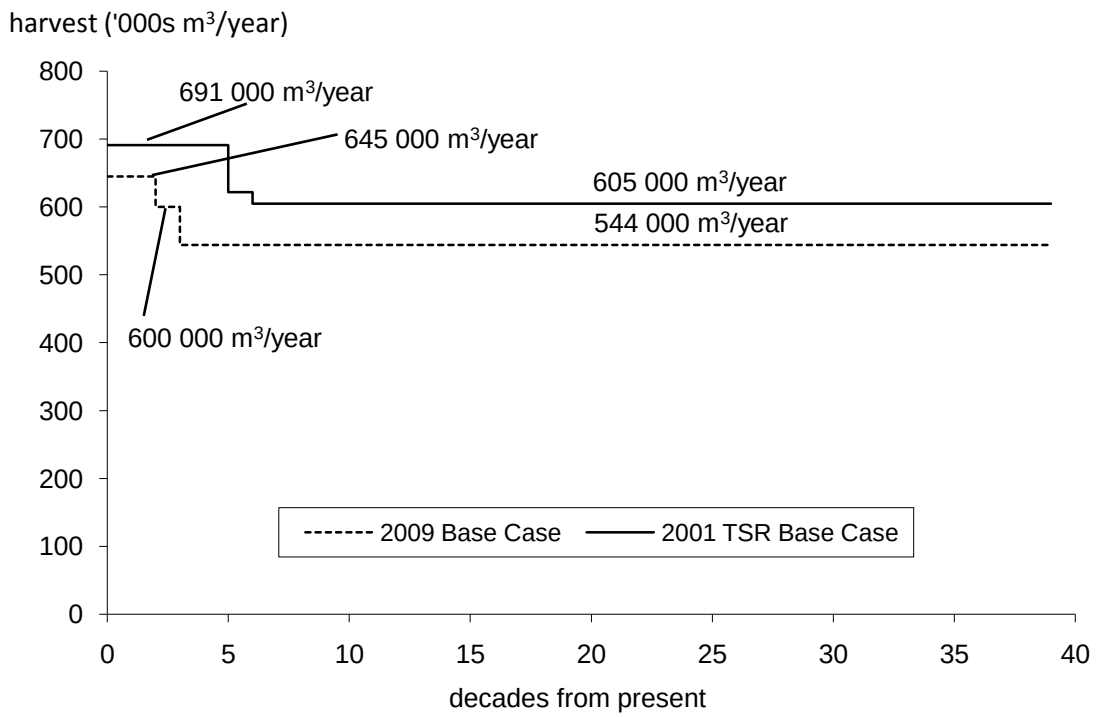

Figure 4. Base case harvest forecast for the Kootenay Lake TSA, 2009.

Sensitivity analyses

The base case uses a specific set of available data and forest management assumptions that attempts to capture current forest composition and management. However, in order to examine the effect on timber supply of uncertainty or known differences in the assumptions used in the base case, sensitivity analyses or alternative harvest forecasts are prepared.

Table 1 provides a summary of a select number of sensitivity analyses. The table reports the percent change in the short-, mid- and long-term harvest levels as compared to the base case harvest projection.

Table 1. Select sensitivity and issue analyses.
Short = decades 0-3, Mid = decades 4-9, Long = decades 10-40

What	Change	Percent Impact		
		Short	Mid	Long
Managed stand yields	+10%	0	0	11
	-10%	0	-4	-11
Existing stand yields	+5%	5	5	0
	-5%	-5	-5	0
Minimum harvestable age	+10 yrs	-16	-3	-3
	- 10 yrs	0	0	0
Timber harvesting land base (THLB)	-10%	-10	-11	-11
	+5%	6	6	6
Stand productivity	+3 m site index	0	38	38
	-3 m site index	0	-18	-29
Harvest priority	Random instead of relative oldest	-10	0	0
Alternative harvest flow	Similar shape to previous TSR base case	-6	3	0
Mountain caribou	Replace GAR order with KBHLPO	3	8	8
Higher incidence of root rot	Model high incident for root rot in volume tables	0	0	-9

Only 11 percent of the stands included in the base case THLB are older than 140 years. In addition, the number of stands between 40years and 59 years of age is low.

When the minimum harvest age is increased by 10 years or the harvest rule is changed from relative oldest first to random harvest priority, it is the age class distribution that results in a pinch point between decades 6 and 9, as harvesting transitions from existing stands to managed (second growth) stands.

The results of all of the sensitivity analyses indicate that the modelled timber supply is consistent with other timber supply analyses.

The initial harvest level projected in the base case, which was based on the current allowable annual cut less the current allowable annual cut associated with the new Community Forests was maintained for two decades.

In the base case prepared for the previous timber supply review an initial harvest level of 691 000 cubic metres per year could be maintained for five decades. In order to maintain the initial harvest level in the current base case for five decades, the initial harvest level had to be decreased by six percent to 590 000 cubic metres per year.

Concerns have been expressed about the timber supply implications of the ungulate winter ranges established in 2009 for mountain caribou.

A sensitivity analysis in which caribou management was based on the previous KBHLPO management regime resulted in increases of three percent and eight percent in the short-term and long-term harvest level projections, respectively.

The technical details of the other sensitivity analyses described in Table 1 are available on request from Forest Analysis and Inventory Branch, Ministry of Forests and Range.

Your input is needed

Public input is a vital part of establishing the allowable annual cut. Feedback is welcomed on any aspect of discussion paper or any other issues related to the timber supply review for the Kootenay Lake TSA. Ministry staff would be pleased to answer questions to help you prepare your response. Please send your comments to the forest district manager or the stewardship officer at the address below.

Your comments will be accepted until November 5, 2009 for consideration in the AAC determination.

You may identify yourself on the response if you wish. If you do, you are reminded that responses will be subject to the *Freedom of Information and Protection of Privacy Act* and may be made public. If the responses are made public, personal identifiers will be removed before the responses are released.

For more information contact and/or mail your comments to:

District Manager
B.C. Ministry of Forests and Range
Kootenay Lake Forest District
Site address: 197 Ridgewood Road, Nelson, B.C.

Mail Address: RR1 S22 C27, Nelson, B.C.
V1L 5P4

Phone: (250) 825-1100. Fax: (250) 825-9657

Or electronically mail to:
Dale.W.Anderson@gov.bc.ca

For further information regarding the technical details of the timber supply analysis are available on request by contacting
Forests.ForestAnalysisBranchOffice@gov.bc.ca

Visit the Forest Analysis and Inventory Branch web site.