

Kootenay Lake Timber Supply Area

Information Report
December 2008



Timber Supply Review

Kootenay Lake TSA

Introduction

The British Columbia Forest Service is required by law to formally review the timber supply* in all timber supply areas* and tree farm licence* areas in the province. Ideally, a review of each area is completed at least once every five years. The main objectives of the five-year reviews are:

- to identify the economic, environmental and social information that reflects the current forest management practices — including their effects on the short- and long-term timber supply;
- to identify where improved information is required for future timber supply forecasts;
- to provide the chief forester with information to make any necessary adjustments to the allowable annual cuts* for the next five years.

* Throughout this document, an asterisk at the end of a phrase or word indicates that a definition can be found in a box at the foot of the page.

Objective of this document

The objective of this document is to provide an opportunity for public review of the draft data and management assumptions that will be applied in reviewing the timber supply for the Kootenay Lake timber supply area. This document represents the initial stages of the timber supply review process

and is intended to provide a non-technical overview of the draft data and management assumptions that will be used in the *Kootenay Lake Timber Supply Area Analysis Report*.

The *Kootenay Lake Timber Supply Area Analysis Report* will be one of the documents that the chief forester will consider in making the allowable annual cut determination under Section 8 of the *Forest Act*. Public input is encouraged to ensure the best information is used in determining allowable annual cuts.

This report contains a general description of the data assumptions and current forest management practices related to timber supply for the Kootenay Lake timber supply area. For the purpose of this timber supply review, current practices can be defined as the set of land-use decisions and forest management practices that are currently implemented and enforced. Future forest management objectives that may be developed but are not currently implemented and enforced are not included.

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 area (TSA)

An integrated resource management unit established in accordance with Section 7 of the Forest Act.

Tree farm licence (TFL)

Provides rights to harvest timber and outlines responsibilities for forest management in a particular area.

Allowable annual cuts (AAC)

The rate of timber harvest permitted each year from a specified area of land, usually expressed as cubic metres of wood per year.

Timber Supply Review process

In British Columbia, a process of determining allowable annual cuts has been in place since the late 1940s. However, the process has changed significantly over the years.

Currently, timber supply review process has three main stages: (1) data package preparation, (2) timber supply analysis and (3) AAC determination. First Nations and the public are encouraged to review and comment on the draft documentation prepared for the first two steps. All comments and information obtained from First Nations and the public during the formal review

processes will be summarized and presented to the chief forester for his consideration in the AAC determination.

Figure 1 illustrates the current status of the timber supply review for the Kootenay Lake timber supply area. The process for reviewing the timber supply and establishing the allowable annual cut for tree farm licence areas is based on similar principles.

Figure 1: approximate timelines for the timber supply review for the Kootenay Lake timber supply area.

Information Report & Data Package													
						Public Review							
							Analysis Report						
									Public Review				
											AAC Decision & Rationale		
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	
2008												2009	

The chief forester's responsibility

Determining the allowable annual cuts for Crown forest lands in British Columbia is the responsibility of the province's chief forester. It is one of the chief forester's most important responsibilities since it affects the local and provincial economies and environment—now and in the future. Section 8 of the *Forest Act* requires the chief forester to consider the following factors to determine allowable annual cuts for timber supply areas and tree farm licence areas:

- a) the rate of timber production that may be sustained from the area, taking into account:
 - the composition of the forest and its expected rate of growth;

- the time in which the forest will become re-established;
 - silvicultural treatments, including reforestation;
 - standards of timber utilization;
 - constraints on the amount of timber produced from the area due to use of the forest for purposes other than timber production;
 - any other information which relates to the capability of the area to produce timber.
- b) the short- and long-term implications to the province of alternative rates of timber harvesting from the area.

- c) the economic and social objectives of the Crown for the area, the region and the province, as expressed by the Minister of Forests and Range.
- d) abnormal insect or disease infestations and major salvage programs planned for the timber on the area.

Some of these factors can be measured and analyzed—others cannot. Ultimately, the chief forester's determination is an independent, professional judgement based on the best available information. Information that is relevant to the factors listed above is provided to the chief forester by government agencies, the Minister of Forests and Range, and the public.

One of the objectives of the timber supply review is to incorporate changes arising from new information, new practices and new government initiatives that may have an impact on timber supply. In the event of significant change, the allowable annual cut may be reviewed in less than the required five years. Following the release of the allowable annual cut determination by the chief forester, the Minister of Forests and Range apportions the cut to the various licences and programs.

Principles of the timber supply review

In determining allowable annual cuts—in addition to the requirements outlined in Section 8 of the *Forest Act*—the following principles have been developed.

The Timber Supply Review:

- is a decision-making process for establishing the allowable annual cut for timber supply areas and tree farm licence areas by the chief forester on a five-year cycle, as required under Section 8 of the *Forest Act*; it is not intended to be a process for making land-use decisions;
- incorporates the best information available including all relevant current practices, and identifies where new information is needed;

- reflects the results of implemented plans and land-use decisions;
- involves other agencies, affected groups the public and consultation with First Nations.

Kootenay-Boundary Land-Use Plan

In 1995, government released the Kootenay-Boundary Land-Use Plan and declared a number of new parks, including Lockhart, Kianuko, West Arm and the Goat Range.

On July 8, 1997, the Kootenay-Boundary Land-Use Implementation Strategy was approved by government. The strategy provides details on innovative forest practices and making the most of available timber. It also provides an expression of the government's commitment to achieve the Crown's social and economic objectives for the region, including the Kootenay Lake timber supply area.

In 2001 (revised in 2002) the provincial government passed the Kootenay-Boundary Higher Level Plan Order, establishing resource management zones and resource management zone objectives within the area covered by the Kootenay-Boundary Land Use Plan as a higher level plan. A number of changes, or "variances" have been made to the Order in recent years.

Land-use planning decisions regarding forest practices and protected areas that have been established by government will be reflected in this timber supply review.

Description of the timber supply area

The Kootenay Lake timber supply area covers approximately 1.2 million hectares in south-eastern British Columbia. 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.

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The Kootenay Lake timber supply area is administered by the Kootenay Lake Forest District office located just north of Nelson.

The communities

The major population centres in the Kootenay Lake timber supply area are Creston, Nelson and Kaslo. There are numerous other smaller communities, including Lardeau and Yahk.

According to the 2006 Census, the population of the Kootenay Lake timber supply area was approximately 34,000.

The economy

The economy of the Kootenay Lake timber supply area is diversified with forestry, agriculture, tourism and the public sector predominating.

The forest sector continues to provide a significant source of employment including timber harvesting and silviculture activities, as well as timber processing by the area's lumber, and shake and shingle mills.

The upcoming analysis report will include a socio-economic assessment (SEA) of the Kootenay Lake timber supply area. The SEA will provide the chief forester with a socio-economic profile of the timber supply area and an understanding of the potential socio-economic implications to communities and the province of changes in the timber supply.

First Nations

The First Nations groups which have identified traditional territories within the Kootenay Lake timber supply area are: Ktunaxa/Kinbasket, Shuswap, Okanagan and Sinix't. The Lower Kootenay Band (a band within the Ktunaxa/Kinbasket) is the only First Nations group that has a reserve and/or community located within the timber supply area (at Creston).

In 2003, the Ktunaxa/Kinbasket Tribe entered into a forest tenure agreement outside the Kootenay Lake TSA. The Ktunaxa/Kinbasket First Nation has submitted a comprehensive land claim that covers the southeast corner of the province, including the Kootenay Lake TSA. If this land use claim is finalized prior to the AAC determination, the chief forester will account for it in his decision.

The forest land resources

Numerous natural resources are associated with the forest land base. Forest products, recreation and tourism amenities, and a variety of wildlife habitat highlight the wide range of values and uses found in the Kootenay Lake timber supply area.

Recreational values and uses of the forests in the Kootenay Lake timber supply area are high due to the proximity of numerous provincial parks and exceptional natural scenery. The mountainous terrain and lakes provide a wide range of opportunities for recreation including hiking, mountain biking, fishing, and boating.

The environment

There are four biogeoclimatic zones* in the Kootenay Lake timber supply area. The distinct ecological features and the unique nature of the area contribute to high biodiversity values. The diverse forests of the Kootenay Lake timber supply area host a wide variety of wildlife species including black bear, grizzly bear, moose, deer, elk, mountain goat and caribou.

The Kootenay Lake timber supply area overlaps the range of three herds of mountain caribou. Due to heavy snowfall in the area, these caribou require sufficient forest cover—which mature forests provide—to move between feeding areas. The caribou also depend on mature lichen-bearing forests for feeding.

Biogeoclimatic zones

A large geographic area with broadly homogeneous climate and similar dominant tree species.

The mountain pine beetle is at epidemic levels in much of the Kootenay Lake TSA. Approximately 20 percent of the timber in the TSA is lodgepole pine and is likely to be killed over the next ten years or so.

Wildfire hazard near communities is becoming a major forest management issue, due in part to recent wildfires in the TSA.

History of the allowable annual cut

On March 10, 1995, the chief forester reduced the allowable annual cut to 700,000 cubic metres from 900,000 cubic metres; a reduction of approximately 22 percent. The current AAC for the Kootenay Lake TSA, effective January 2001, is 681,300 cubic metres.

As part of the 2001 determination, the chief forester gave direction to resolve uncertainties with respect to the timber supply in the Kootenay Lake timber supply area. In preparation for the next allowable annual cut determination, the following issues were examined:

- **operability** — during the last timber supply review there was concern that the operability mapping did not reflect current harvesting activities. Approximately five percent of the area harvested from 1998 to 2001 was located in areas classified as inoperable. District staff, along with licensee input, have reviewed operability linework and have made changes to reflect current practice.
- **unmerchantable forest types** — during the last timber supply review, the chief forester indicated that the range of uncertainty in unmerchantable stands could represent an overestimate of the timber harvesting land base of up to 2.5 percent. Since then, district forest service staff have undertaken a review of the definition of unmerchantable stands, particularly hemlock-leading stands greater than

140 years of age. This definition will better reflect the ability to harvest older hemlock stands and will reduce the uncertainty in the timber supply analysis.

- **forest diseases** — during the last timber supply review, the chief forester recommended that district staff evaluate existing and projected impacts of various forest health agents, in particular, develop possible mitigative strategies that might reduce potential impacts from armillaria root disease (*Armillaria ostoyae*). In 2005, 2006 and 2007, staff published a Forest Health Strategy intended to guide the forest health program in the Kootenay Lake Forest District. The report consists of several sections and includes an assessment of the overall trends for the key forest health factors in the District.
- **roads, trails and landings** — in the previous timber supply review, there were several uncertainties surrounding roads, trails and landings and how to account for the area they occupy on the land base. Licensees, district staff and public comment show uncertainty around right-of-way width assumptions, the permanent versus temporary status of some roads and the lack of accounting for unmapped roads. The chief forester recommended field examinations to provide more accurate estimates of the extent of existing roads, trails and landings. District staff are conducting a sampling project to determine road widths of various categories and a consolidated digital road layer is being created to better reflect road data.

Note: For more information on these points, please refer to the Kootenay Lake timber supply area Rationale for Allowable Annual Cut Determination, November 6, 2001.

Current timber supply review

Public forest lands in British Columbia provide recreational enjoyment, fish and wildlife habitat, water supplies, timber resources and many other benefits. The Ministry of Forests and Range manages the timber, range and recreation resources on public lands, while the Ministry of Environment is responsible for the management of fish, wildlife, water resources and parks. Both agencies subscribe to the principle of integrated resource management*, where all resources are considered when making forest management decisions.

The *Forest and Range Practices Act (FRPA)* and its regulations took effect on January 31, 2004. Current forest management practices follow the legislation and guidelines set in *FRPA*. The statute sets the requirements for planning, road building, logging, reforestation, and grazing.

The data and management assumptions that will be used in the timber supply analysis will be based on the existing land use designations and current resource management practices that are approved and implemented in the Kootenay Lake timber supply area. The chief forester will also consider any new information, based on implemented changes, at the time of the allowable annual cut determination.

Draft data and management assumptions for public review

The public is encouraged to review the data and management assumptions for completeness and accuracy. In determining an allowable annual cut, the chief forester will consider these assumptions as required by Section 8 of the *Forest Act*. The following general outline contains some of the more pertinent information that will be used in the timber supply analysis and, subsequently, in the chief forester's allowable annual cut determination for the Kootenay Lake timber supply area. More detailed information can be found in the data package. This document is available upon request from the Ministry of Forests and Range offices listed at the end of this report.

Land base factors

- **operable area** — the forested area in the Kootenay Lake timber supply area has been assessed for operability based on economic attributes, timber types and physical accessibility. Only those areas that are considered operable will contribute to the timber harvesting land base.
- **low productivity sites** — forest types that are not considered fully available for harvesting due to characteristics such as low timber volumes or low growth productivity will not contribute to the timber harvesting land base.

Integrated resource management (IRM)

The identification and consideration of all resource values, including social, economic and environmental needs, in resource planning and decision-making.

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- **environmentally sensitive areas*** — an evaluation of the environmental concerns and the past level of harvesting within these areas was used to determine their contribution to the timber harvesting land base. In the Kootenay Lake timber supply area, portions of the timber harvesting land base are classified as environmentally sensitive due to hydrology, sensitive soil, or critical wildlife habitat and will be considered unavailable for harvesting.
- **forest roads** — harvesting and road construction follow regional and provincial guidelines. In the timber supply analysis, reduction factors will be applied to the productive land base to reflect losses due to existing roads, trails and landings in the Kootenay Lake timber supply area. Also, factors will be applied to reflect the area lost over time to future roads and landings.
- **New area-based tenures** — the size of the Kootenay Lake TSA has been reduced by the creation of new area-based tenures such as woodlots and community forests.

Inventory factors

- **forest inventory** — the forest cover inventory has been updated to October 2007 to take into account recent harvesting and silviculture activities. The dominant tree species in the Kootenay Lake timber supply area are interior Douglas-fir and lodgepole pine at lower elevations, and Engelmann spruce and subalpine fir at higher elevations. Other tree

species found in the timber supply area include western hemlock, western redcedar and western larch.

- **forest growth rates** — the most up-to-date information regarding growth projections for regenerated forest stands will be used for the analysis.
- **minimum harvestable ages** — for the purposes of the timber supply analysis, the minimum harvestable age is reached when forest stands achieve both a minimum merchantable volume per hectare and an annual rate of growth that is near the maximum average.

Forest re-establishment factors

- **basic silviculture** — Provincial legislation requires that harvested areas that are expected to produce timber in the future must be reforested with ecologically acceptable species within a specified time frame. The most common silvicultural practice is to harvest; then if necessary prepare the site for reforestation; reforest by planting a mix of species or by relying on natural regeneration; and control competing vegetation.

In the Kootenay Lake timber supply area, reforestation is achieved predominantly by planting a mixture of acceptable coniferous species and, when present, often retaining other tree species for wildlife and biodiversity. In the timber supply analysis, it is assumed that areas will be reforested two to five years after harvesting has begun.

Environmentally sensitive areas

Areas with significant non-timber values, fragile or unstable soils, impediments to establishing a new tree crop, or high risk of avalanches.

Timber utilization factors

- **Timber utilization** — volume estimates will be based on the utilization of all trees which meet or exceed the following standards: a maximum 30-centimetre high stump (for all species); a minimum 10-centimetre top diameter (inside bark) and a minimum 12.5-centimetre diameter at breast height (1.3 metres above the ground) for lodgepole pine, a minimum 15-centimetre top diameter (inside bark) and a minimum 17.5-centimetre diameter at breast height for redcedar older than 140 years, and a minimum 10.0-centimetre top diameter (inside bark) and a minimum 17.5-centimetre diameter at breast height for all other species.

Infestations, devastations, and salvage of timber

Each year portions of the forests in the Kootenay Lake timber supply area are damaged by natural agents such as fire, wind, insects and disease. It is anticipated that some of the damaged timber will not be salvaged due to road access and economic limitations. The unsalvaged volume is currently estimated to be 30,965 cubic metres annually of which more than 16,000 cubic metres per year is attributed to mountain pine beetle infestation.

Mountain pine beetle is the most damaging insect that attacks lodgepole pine in Western Canada. The beetle larvae cut off the supply of nutrients, eventually killing the tree. Warm winters, such as those experienced over the past several years in the Kootenay Lake timber supply area, allow larger numbers of beetles to survive the winter. Consequently, mountain pine beetle populations have reached unprecedented levels in British Columbia. Based on current information, approximately 78 percent of the province's lodgepole pine is expected to be killed by 2018, when the provincial infestation is forecast to end.

Cutblock

A specific area, with defined boundaries, authorized for harvest.

In the Kootenay Lake timber supply area, approximately 20 percent of the timber is lodgepole pine, which is mountain pine beetle's preferred host. Sensitivity analysis, in which all mature lodgepole pine is assumed to be unavailable for harvest after 10 years, will be used to assess the potential effects of mountain pine beetle infestation on timber supply. To ensure protection of the non-pine resource, the chief forester has partitioned the AAC in some MPB management units specifying that no more than a certain volume of the harvest can be non-pine. This action ensures that the mid-term timber supply is not compromised by over-harvesting non-pine in the short term, ensuring good stewardship of the forest resource.

Factors to be considered for purposes other than timber production

Forest management guidelines used to manage forest resources such as biodiversity, scenic values, wildlife habitat and water quality will be included in the timber supply analysis through the use of forest cover requirements, and volume and land-base reductions.

- **general forest cover requirements** — under current forest management practices, cutblocks* must achieve green-up* before adjacent areas are permitted to be harvested. For example, to account for forest cover requirements in the integrated management area, a maximum of 25 percent of the timber harvesting land base will be allowed to have forests less than two metres tall at any time. As well, considerations for maintaining areas of old-growth forests will be accounted for in the timber supply analysis.

Green-up

The time needed after harvesting for a stand of trees to reach a desired condition (usually a specific height) — to ensure maintenance of water quality, wildlife habitat, soil stability or aesthetics — before harvesting is permitted in adjacent areas.

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- **visually sensitive areas** — these are areas, often adjacent to major travel corridors and waterways, where the maintenance of scenic landscapes is a priority for recreation and tourism. In visually sensitive areas in the Kootenay Lake timber supply area, timber harvesting and road construction are managed to limit the amount of visible activity. Limitations on harvest activity vary according to visual sensitivity and these constraints will be reflected in the timber supply analysis.
- **wildlife habitat** — these are areas which have been identified as important habitat for caribou and other ungulates. To reflect the management of these species in the timber supply analysis, a percentage of the forested land base—within the designated caribou habitat and ungulate winter range areas—will be maintained as older forests.
- **riparian habitat** — to meet the requirements of the *Forest and Range Practices Act*, a portion of the timber harvesting land base will be considered unavailable for timber harvesting to account for riparian habitat areas along water bodies.
- **biological diversity** — or biodiversity, is the full range of living organisms, in all their forms and levels of organization, and includes the diversity of genes, species, and ecosystems, and the evolutionary and functional processes that link them. Leaving wildlife tree* patches

and coarse woody debris* for stand-level biodiversity is current practice in the Kootenay Lake timber supply area. Generally, coarse woody debris objectives can be met by the contributions of non-merchantable timber left on site after harvesting. Current wildlife tree patch management requires that, in most cases, a percentage of each cutblock be retained as standing timber to provide for stand-level biodiversity requirements. This requirement can be partially met by riparian areas and other areas outside of the timber harvesting land base. In the timber supply analysis, the percentage of the timber harvesting land base that will be considered unavailable for harvesting will vary by location.

Considerations for landscape-level biodiversity will be accounted for in the timber supply analysis by applying seral stage* targets to each landscape unit according to the established biodiversity emphasis as outlined in the Kootenay-Boundary Higher Level Plan Order.

- **community and domestic watersheds** — approximately 40 percent of the timber harvesting land base falls within watersheds which provide water for human consumption. The priority for these areas is to protect water quantity and quality. Forest cover requirements which reflect these practices will be included in the timber supply analysis.

Wildlife tree

A standing live or dead tree with special characteristics that provide valuable habitat for conservation or enhancement of wildlife.

Coarse woody debris

Logs and stumps that provide habitat for plants, animals and insects, and a source of nutrients for soil development.

Seral stages

Sequential stages in the development of plant communities that successively occupy a site and replace each other over time.

Implications of alternative rates of harvesting

- **alternative rates of harvesting** — there are many alternative harvest forecasts that can be produced for a given set of forest conditions and management assumptions. Each alternative usually represents a trade-off between the harvest level in the short term and the subsequent rate of decline to the long-term harvest level. For the projected base case forecast*, the initial harvest forecast will be based on trying to achieve the current rate of harvest in the short-term without compromising the long-term harvest level. The implications of alternative short-term rates of harvest will be tested in sensitivity analyses.
- **implications related to community dependence** — the impact of timber supply adjustments on local communities and the provincial economy is an important consideration in the timber supply review.

The upcoming socio-economic analysis will review the role of the forest sector in the Kootenay Lake timber supply area. The analysis will also investigate the potential implications of alternative rates of harvest on employment levels now and in the future.

Economic and social objectives of the Crown

The Minister of Forests and Range has expressed the economic and social objectives of the Crown for the province in a letter to the chief forester. The letter stresses the importance of a stable timber supply to maintain a competitive and sustainable forest industry while being mindful of other forest values.

The letter also references the current provincial mountain pine beetle epidemic and emphasizes the importance of recovering the greatest value from dead timber, while conserving long-term forest values identified in land use plans. The Minister has also requested that the chief forester examine the factors that affect the demand for beetle-killed timber and products manufactured from it, the time period over which it can be utilized and opportunities to maintain or enhance mid-term timber supply consistent with the Minister's stated objectives.

Base case harvest forecast

The timber supply forecast which illustrates the effect of current forest management practices on the timber supply using the best available information, and which forms the reference point for sensitivity analysis.