



Bulkley TSA Timber Supply Analysis Public Discussion Paper

**Forest Analysis and Inventory Branch
Ministry of Forests, Lands and Natural Resource Operations
727 Fisgard Street
Victoria, B.C.
V8W 1R8**

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Ministry of
Forests, Lands and
Natural Resource Operations

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Introduction

The British Columbia Ministry of Forests, Lands and Natural Resource Operations regularly reviews the timber supply^a for all timber supply areas^b (TSA) and tree farm licences^c (TFL) in the province. This review, the third for the Bulkley 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^d (AAC) for the Bulkley TSA.

According to Section 8 of the *Forest Act* the chief forester must regularly review and set new AACs for all 38 TSAs and 34 TFLs in the Province of British Columbia (BC).

The objectives of the timber supply review are to:

- examine relevant forest management practices, environmental and social factors, and input from First Nations, forest licensees and the public;
- set a new AAC; and
- identify information to be improved for future timber supply reviews.

This public discussion paper provides a summary of the results of the timber supply analysis for the timber supply review of the Bulkley TSA. Details about the information used in the analysis are provided in a data package (updated October 2012) and the technical details of the analysis are available on request from the Ministry of Forests, Lands and Natural Resource Operations, 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 input received during this review process.

In May 2012, a Special Committee on Timber Supply (special committee) was appointed by the Legislative Assembly of British Columbia to make recommendations to address the loss of mid-term timber supply due to mountain pine beetle in the central interior of BC. Following its review of technical information and public, stakeholder and First Nations input, the committee issued a report entitled *Growing Fibre, Growing Value* (August 2012). As described in *Beyond the Beetle: A Mid-term Timber Supply Action Plan* (October 2012), the Ministry of Forests, Lands and Natural Resource Operations (FLNR) has responded to the committee’s recommendations. Key ministry responses relating to the provincial timber supply review program include:

1. Review marginally economic forest types within each TSA and quantify the types and areas of forest that might be justifiably included in a partition within the timber harvesting land base (THLB), while respecting resource objectives for other values, such as wildlife and water.

^a **Timber supply**

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

^b **Timber supply areas (TSAs)**

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

^c **Tree farm licences (TFLs)**

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

^d **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.

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2. Where feasible and appropriate, provide information from the timber supply review to enhance public discussion of resource management objectives and practices.

With regard to the special committee's recommendation regarding marginally-economic stands, the current AAC for the Bulkley TSA includes a partition for marginal sawlog/pulpwood stands. The contribution of these stands to timber supply has been examined in the current timber supply analysis as discussed under 'marginally-economic stands' and this information will be provided to the chief forester for consideration in determining the new AAC.

Timber supply reviews undertaken in support of AAC determinations are based on current forest management objectives and management. For the purposes of the Bulkley TSA timber supply review, resource management objectives are provided by the Bulkley Land and Resource Management Plan (LRMP) described in more detail under 'Land Use Plans'. Information to support public discussion of resource management objectives, such as the land base associated with each of the legally-established land use objectives or requirements for non-timber resource values have been provided in this discussion paper (Table 1). This information, as well as other products of the timber supply review, can be made available to support land-use planning activities, as required. In the event that resource management objectives and practices change, these changes can be reflected in future timber supply reviews.

Timber supply review in the Bulkley TSA

The AAC for the Bulkley TSA, effective January 1, 2002 was 882 000 cubic metres, including partitions of 520 000 cubic metres and 362 000 cubic metres for sawlog and marginal sawlog/pulpwood stands, respectively. When the Wetzink'wa Community Forest was established in 2002, the AAC for the Bulkley TSA was decreased by 30 000 cubic metres to 852 000 cubic metres. The AAC partitions were decreased to 499 661 cubic metres and 352 339 cubic metres for sawlog and marginal sawlog/pulpwood stands, respectively.

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*, the completion and implementation of land use plans, a new community forest, a new forest inventory including improved site productivity information and infestations of *Dothistroma sp.* needle blight and mountain pine beetle.

Before setting a new AAC, the chief forester will review all relevant information, including the results of the timber supply analysis and input from government agencies, the public, licensees and First Nations. Following this review, the chief forester's determination will be outlined in a rationale statement that will be publicly available. The actual AAC that is determined by the chief forester during this timber supply review may differ from the harvest projections, including the base case, presented in this public discussion paper as the chief forester must consider a wide range of information, some of which cannot be quantified. Ultimately, the chief forester's AAC determination is an independent, professional judgement based on the legal requirements set out in Section 8(8) of the *Forest Act*.

Once the chief forester has determined the new AAC, the Minister of Forests, Lands and Natural Resource Operations 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 Bulkley TSA

The Bulkley TSA (Figure 1) covers about 762 734 hectares in north-western BC of which 283 510 hectares are available for timber harvesting. The TSA is bounded by the Hazelton Mountains to the west, the Telkwa River watershed to the south, the Babine Mountains to the east, and extends north to the headwaters of the Nilkitkwa River. The Bulkley TSA is administered by the FLNR, Skeena Stikine District office located in Smithers.

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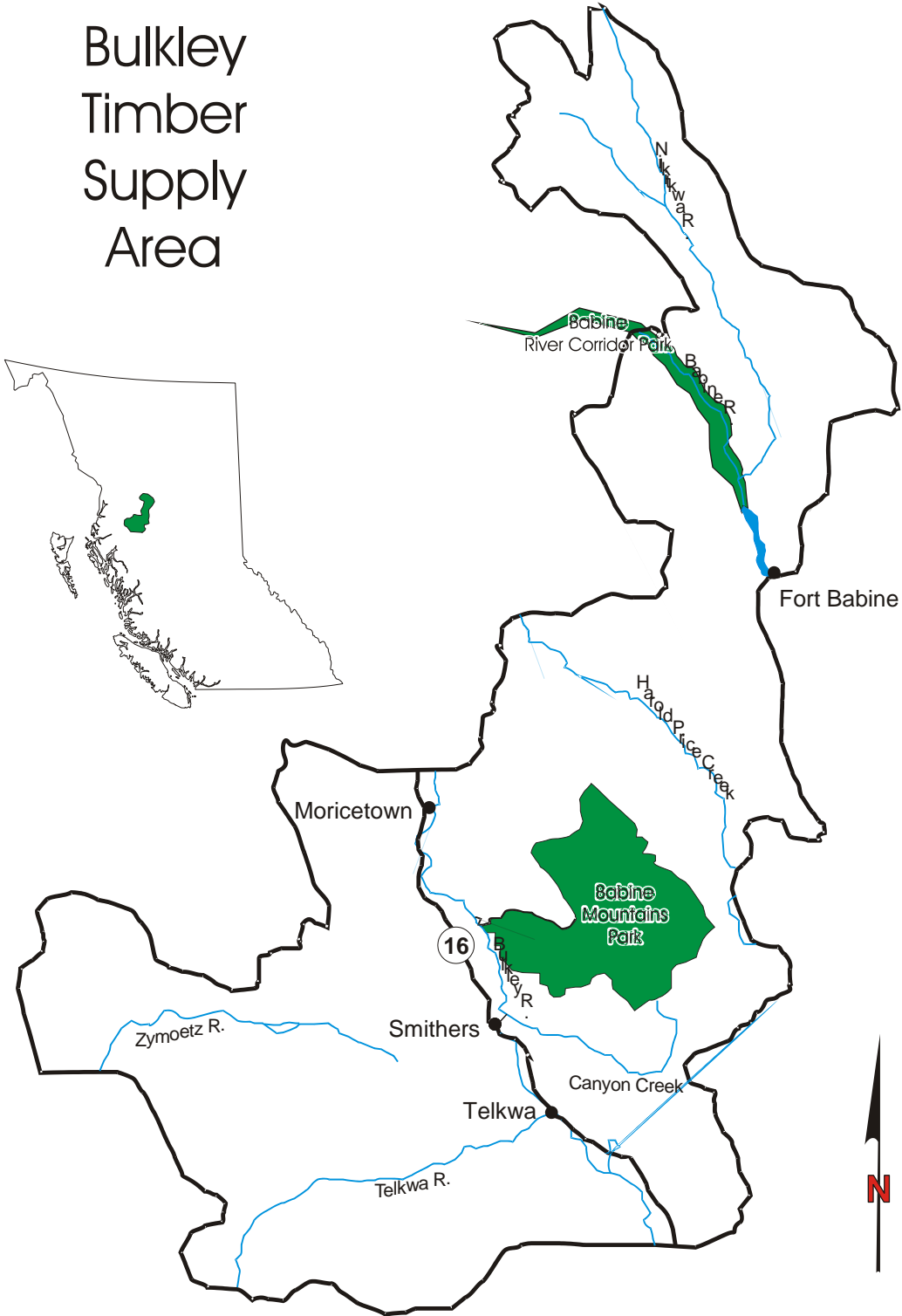


Figure 1. Map of the Bulkley TSA.

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Natural resources

Due to its location between interior and coastal climates, the Bulkley TSA includes diverse ecological features. It lies primarily within the Sub-Boreal Spruce and Engelmann Spruce-Subalpine Fir biogeoclimatic zones. There are smaller components of the Interior Cedar-Hemlock, Coastal Western Hemlock, Mountain Hemlock, Boreal Altai Fescue Alpine, and Coastal Mountain-heather Alpine biogeoclimatic zones.

Figure 2 shows that the dominant tree species in the TSA are subalpine fir (balsam), spruce, and lodgepole pine. Hemlock occurs in areas of coastal influence and at high elevations.

Figure 3 shows the current age class distribution of the Crown forest land base. Natural stands are mostly older than 100 years, while managed stands are under 45 years. Stands between ages 45 and 80 years occupy only a small area of the TSA.

Both residents and visitors enjoy the varied recreational opportunities available in this TSA. The mountainous terrain, lakes, and rivers of the area provide a wide range of recreational opportunities, including: hunting, fishing, climbing, mountaineering, camping, wildlife viewing, kayaking, canoeing, rafting, horseback riding, snowmobiling, and cross-country and downhill skiing. Several areas within the TSA offer high-quality wilderness recreation opportunities and attract visitors from the United States of America and overseas.

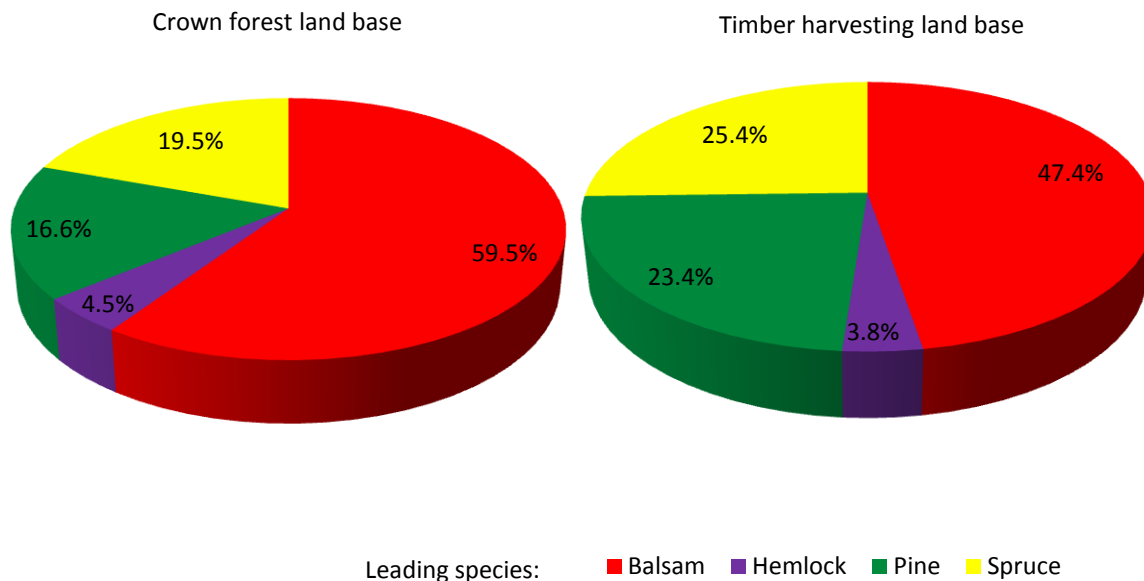


Figure 2. Proportion of leading species for the Crown forest land base^e and timber harvesting land base^f of the Bulkley TSA.

^e Crown Forest Land Base (CFLB)

The forested area of the TSA that the provincial government manages for a variety of natural resource values. This excludes non-forested areas (e.g., water, rock and ice), non-productive forest (e.g., alpine areas, areas with very low productivity), and non-commercial forest (e.g., brush areas). The CFLB does include federal protected areas because of their contribution to biodiversity.

^f Timber Harvesting Land Base (THLB)

The portion of the forest management land base (CFLB) that is managed for timber supply by the Ministry of Forests, Lands and Natural Resource Operations where timber harvesting is considered both acceptable and economically feasible, given objectives for all relevant forest values, existing timber quality, market values and applicable technology.

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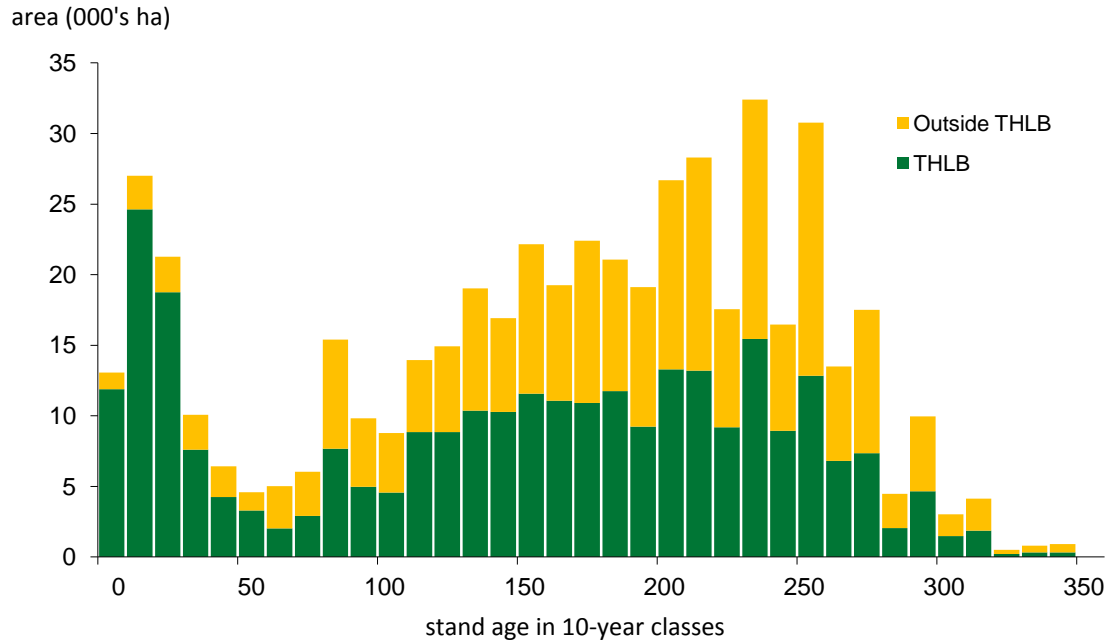


Figure 3. Age class distribution for the Crown forest land base of the Bulkley TSA.

Socio-economic information

The Bulkley TSA lies within the Bulkley-Nechako Regional District, which is part of the Nechako Development Region (NDR). The NDR, which also includes the Stikine Regional District, encompasses about one-fifth of BC's total land base. With a population of about 40 000 residents, the NDR is the least populated development region in the province.

The bulk of the economic activity in the NDR takes place in the Bulkley-Nechako Regional District, where about 97 percent of the NDR population lives. The major economic sectors in the district include: forestry, mining, tourism, and agriculture. The forest sector in the Bulkley TSA has been impacted by the decrease in lumber prices, but the emergence of new markets in China has allowed manufacturing of forest products to remain the leading industry in TSA.

The four main communities of the Bulkley TSA are Smithers, Telkwa, Moricetown, and Fort Babine. Of these communities, Smithers, with a population of about 5,350 (2011 BC Stats) is the largest community in the TSA.

Pacific Inland Resources, a division of West Fraser Mills Limited, operates a large sawmill in Smithers. It employs approximately 350 full-time equivalent employees in two shifts per day, and produces about 21 million board feet of lumber per month. Northern Engineered Wood Products operates a particleboard and melamine plant in Smithers. It employs approximately 50 full-time equivalent employees in two shifts per day and produces about 4.5 million square feet of panel product per month. Several small sawmills and log home builders are also present in the area.

Since the last AAC determination in 2002, the average volume harvested has been about 330 600 cubic metres per year or about 39 percent of the 839 306 cubic metres per year apportioned to replaceable and non-replaceable forest licences and BC Timber Sales.

One of the main reasons for under utilization of the AAC is that several licences were transferred to the Morice and Prince George TSAs from 2001 to 2007 in order to harvest areas severely affected by mountain pine beetle infestation. These licenses were transferred back to the Bulkley TSA in 2008. Harvest levels have also been less than the AAC in recent years due to poor lumber markets.

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First Nations

Four First Nations have asserted traditional territories in the Bulkley TSA: the Gitksan, Kitselas, Wet'suwet'en, and Lake Babine Nation.

The Ministry of Forests, Lands and Natural Resource Operations has been communicating with First Nations about this timber supply review and intends to continue to fulfill its legal obligations to consult with First Nations in conjunction with the release of this public discussion paper.

Land use plans

The Bulkley Land and Resource Management Plan (LRMP) received final approval in 1998. Strategic planning processes to establish legal objectives include the Bulkley Resource Management Zone Higher-Level Plan Order (2000), the Bulkley Valley Sustainable Resource Management Plan (SRMP) (2005), and Bulkley LRMP Objectives Set by Government (2006). Legal objectives have been established for landscape and stand-level biodiversity, wildlife habitat, visual quality, fish-sensitive areas and special management zones. These objectives define current forest management requirements and have been incorporated in the base case.

Strategic land use planning processes presently underway include: the Gitsegukla SRMP and Wildlife Habitat Area Order #6-333 for Northern Caribou in Bulkley and Morice TSAs. If there are new or revised legal objectives that differ significantly from those used in the base case prior to the AAC determination, sensitivity analyses can be used to assess the potential impacts. Any changes in legal objectives that occur following the determination can be addressed in subsequent timber supply reviews.

Forest management

Current forest management must be consistent with the requirements of the *Forest and Range Practices Act* (FRPA) and associated regulations, which are designed to maintain a range of biodiversity and wildlife values. All forested lands, whether they contribute to timber supply or not, help to maintain critical habitats for many species. Therefore, the timber supply analysis includes constraints or forest cover requirements for biodiversity, visual quality, wildlife habitat, community watersheds, recreation features, riparian management and protection of environmentally sensitive areas. These requirements are applied to the Crown forest land base (CFLB).

The Crown forest land base in the Bulkley TSA is about 500 000 hectares. However, not all of this area is available for timber harvesting. Areas excluded from harvest include:

- protected areas or Special Resource Management zones (9 percent);
- parts of various reserves or areas of unstable terrain (14 percent); and
- uneconomic stands or areas otherwise unsuitable for timber harvesting (21 percent).

Although these areas are not assumed to contribute to timber supply, they continue to provide for other important natural resource values.

The timber harvesting land base (THLB) is estimated to be about 283 500 hectares or about 17 percent smaller than in 2001. Of this decrease, 12 percent is attributable to the establishment of the Wetzink'wa Community Forest, while the remaining 5 percent is due primarily to differences in area reductions for sensitive soils and operability.

Land base and forest management changes since 2001

The current AAC determination came into effect in January 2002. Several changes have occurred to the land base and forest management information since then and these changes are reflected in the timber supply analysis. The major changes are:

- the new *Forest and Range Practices Act*;
- new or refined forest management requirements, including: legal objectives and targets for seral stage distribution, old forest retention, wildlife tree retention, temporal and spatial distribution of cutblocks,

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landscape connectivity, rare and endangered plant communities, wildlife habitat, fisheries sensitive watersheds and community watersheds;

- the new Wetsink'wa Community Forest Agreement;
- updated mapping for roads, riparian areas, terrain stability and timber harvesting operability;
- the new vegetation resources inventory;
- improved site productivity information and mapping; and
- infestations of *Dothistroma sp.* needle blight and mountain pine beetle.

Mountain pine beetle

The BC Mountain Pine Beetle model (BCMPB) was developed by FLNR to project the annual volume of mature pine killed by mountain pine beetle (MPB).

Recently this model has been found to overestimate pine mortality, particularly for those areas of the province on the periphery of the MPB infestation. In peripheral areas, it is believed that marginal climate suitability, which decreases MPB survival, and the presence of more mixed-species forests, in conjunction with protection by geographic barriers and prevailing wind patterns limits MPB infestation in the Bulkley TSA.

The 2012 mortality projection indicates that the TSA is currently experiencing the peak of its MPB attack and that by 2022 a total of 65 percent of the mature pine volume in the TSA may be killed. However, if the current trend continues, that is if mortality projections continue to overestimate actual occurrence of MPB in the TSA (Figure 4), actual total pine mortality for the Bulkley TSA may be significantly less than the current projection of 65 percent.

The report also indicates that, since its peak in 2005, the provincial infestation has been subsiding faster than projected.

These two effects are reflected in the differences between the MPB forecasts for 2010 and 2012 shown in Figure 4.

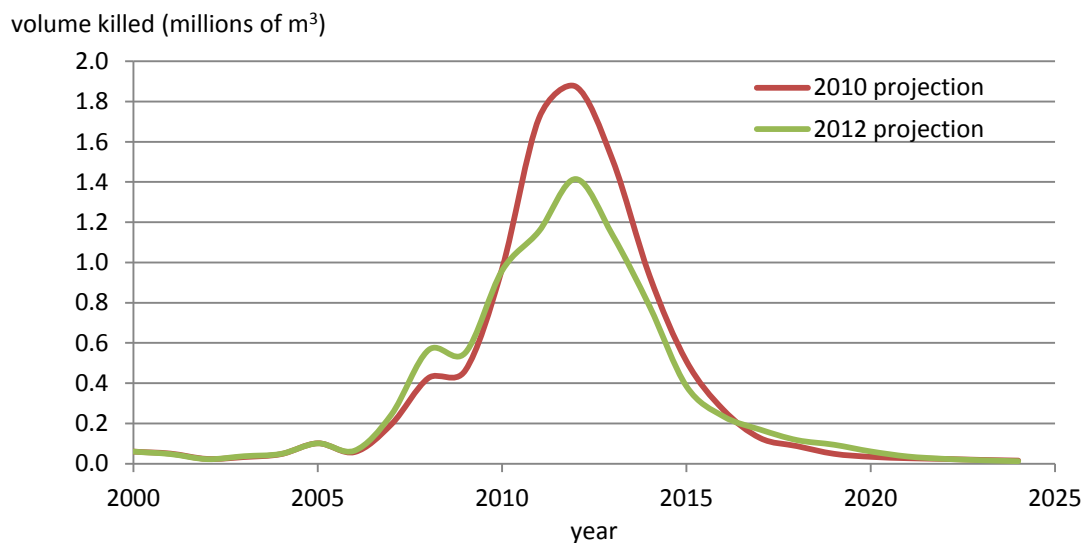


Figure 4. Projection of annual volume of pine killed by mountain pine beetle for the Bulkley TSA.

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Timber supply analysis

In order to determine an AAC, 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

A timber supply analysis provides an assessment of the existing land base and forest management information. This assessment includes a timber supply forecast that FLNR staff believe reflects the best available data and current forest management practices and requirements. This timber supply forecast is called the 'base case'. The base case 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.

In the base case, the volume of MPB-killed pine is assumed to remain static (i.e., there will not be future waves of attack from the epicentre of the outbreak) and that dead pine remains merchantable for two decades after the tree was killed by MPB. It is also assumed that any additional volume killed in the next two decades will be recovered by small scale salvage and regular harvesting. With the exception of a few infestation pockets, infestation levels – and therefore unsalvaged losses – are assumed to return to the previous endemic levels after two decades.

The initial harvest level in the base case (Figure 5) of 802 470 cubic metres per year – about six percent lower than the current AAC – can be maintained for one decade before decreasing by six percent to 752 400 cubic metres per year. After 11 decades, the harvest level increases by 17 percent to the long-term level of 881 290 cubic metres per year.

The difference between the base case initial harvest level and the current AAC is proportional to the decrease in the area available for harvesting since the current AAC was determined.

In the first decade of the base case, the average area of forest stands harvested in the Bulkley TSR is about 3000 hectares per year. These stands are harvested at an average age of 205 years and an average volume of 265 cubic metres per hectare.

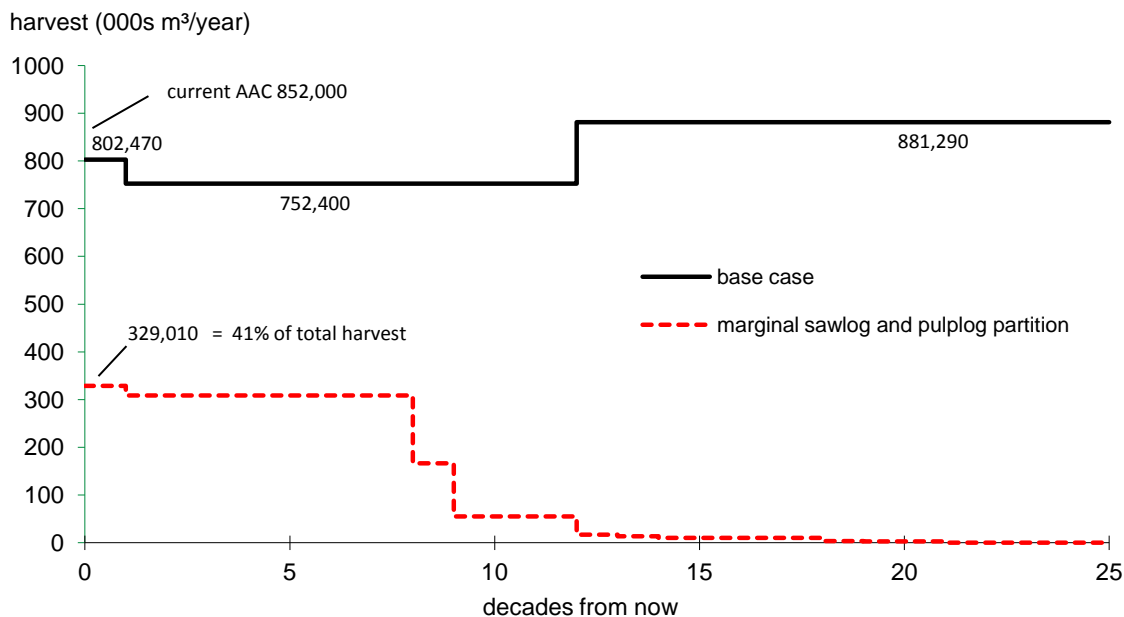


Figure 5. Base case timber supply forecast for the Bulkley TSA, 2012.

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In addition to the base case, a harvest forecast was completed to test the effect of using the more pessimistic MPB mortality projected by the BCMPB model (2012). The results of this test – referred to as a sensitivity analysis – are presented under ‘Key Sensitivity Analyses’ in this PDP.

Marginally-economic stands

The current AAC includes a partition for marginal sawlog and pulpwood stands. These marginally-economic stands occupy 41 percent of the THLB. Assuming that the contribution of these stands to the base case harvest levels is proportional, the initial harvest level attributable to marginal sawlog and pulpwood stands is 329 010 cubic metres per year. The red-dashed lines in Figure 5 show the contribution of these stands to the base case harvest forecast. The contribution of these stands to the harvest declines over the forecast period because it is assumed that these stands become sawlog-quality stands when they are re-established after harvesting.

Since the time of the last AAC determination (2002), approximately one-third of the marginal sawlog and pulplog partition in the AAC has been harvested. Given appropriate economic conditions, these stands could provide significant opportunities for harvesting.

Key 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. Sensitivity analysis is used to examine the effect on timber supply of uncertain information or known differences in the assumptions used in the base case.

Table 1 provides a summary of the key issues that were explored using sensitivity analysis. It provides the percent change in the short-, mid- and long-term harvest levels compared to the base case harvest forecast. The key sensitivity analyses tested the effect of:

- the no-harvest area and special seral stage requirements of a wildlife habitat area proposed of the Telkwa Caribou Recovery area, as this area may be finalized prior to the AAC determination;
- Vegetation Resource Inventory Phase II adjustments based on ground sampling;
- increased operational adjustment factors for timber yield tables in managed second-growth stands; and
- worst-case scenario estimates of pine mortality caused by the mountain pine beetle.

*Table 1. Select sensitivity analyses for the Bulkley TSA
Short term = decade 1, Mid term = decades 2 to 12, Long term = decades 13 to 25*

What	Change	Percent Impact		
		Short term	Mid term	Long term
Telkwa Caribou Recovery Area	proposed wildlife habitat area (WHA)	- 1	- 2	- 3
Timber yields	existing stands: apply VRI Phase II inventory adjustments	+ 11	+ 15	- 1
	managed stands: increase operational adjustment factors	- 1	- 1	- 13
Mountain pine beetle	apply BCMPB estimates of losses	0	- 11	0

Technical details and the complete set of sensitivity analyses are available on request from Forest Analysis and Inventory Branch, Ministry of Forests, Lands and Natural Resource Operations.

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Summary

The base case harvest forecast indicates that the current AAC of 852 000 cubic metres cannot be maintained. The first decade harvest level is six percent lower than the current AAC. The difference between the base case initial harvest level and the current AAC is proportional to the decreased size of the Bulkley TSA.

Economically-marginal stands (marginal sawlog/pulpwood) stands are assumed to contribute to the base case harvest levels in proportion to the area of the timber harvesting land base occupied by these stand types (41 percent). The current AAC includes a partition for these stand types and the chief forester will review this partition at the time of the determination.

Some of the key issues tested in sensitivity analysis affect the short-term harvest level of the base case. The application of inventory adjustments increases the short-term harvest level. Both the proposed wildlife habitat area for caribou and adjustments to managed stand yield tables decrease the short-term harvest level. Higher estimates for losses to mountain pine beetle do not affect the short-term harvest level.

The provincial chief forester's AAC determination is a judgment based on his professional experience and his consideration of a wide range of information as required under Section 8 of the *Forest Act*. An AAC is neither the result of a calculation nor limited to the results of timber supply analysis; therefore, the new AAC may not be the same as the harvest level in the base case.

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Your input is needed

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

Your comments will be accepted until February 7, 2013.

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 or to send your comments, contact:

District Manager
B.C. Ministry of Forests, Lands and Natural Resource Operations
Skeena Stikine District

Mail: Bag 6000, 3333 Tatlow Road
Smithers, B.C.
V0J 2N0

Phone: (250) 847-6300 Fax: (250) 847-6353

Electronic mail: Glen.Buhr@gov.bc.ca

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 at <http://www.for.gov.bc.ca/hts>.