



100 Mile House TSA Timber Supply Analysis Public Discussion Paper

**Forest Analysis and Inventory Branch
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January 2013



Ministry of
Forests, Lands and
Natural Resource Operations

Photo courtesy of:
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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 fourth for the 100 Mile House 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 100 Mile House 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 100 Mile House TSA. Details about the information used in the analysis are provided in a January 2012 Data Package 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 inputs received during this review process.

^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 maximum 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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In May 2012, a Special Committee on Timber Supply was appointed by the BC Legislature to make recommendations to address the reduction of mid-term timber supply due to mountain pine beetle (MPB) 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 related to the provincial timber supply review program include:

- Review marginally economic forest types within each timber supply area (TSA) and quantify the types and areas of forest that might justifiably be included in a partition within the timber harvesting land base (THLB), while respecting resource objectives for other values, such as wildlife and water.
- Examine the potential for including more fibre in the AAC for the 100 Mile House TSA by expanding utilization standards.
- Where feasible and appropriate, provide information from the timber supply review to enhance public discussion of resource management objectives.

Based on these FLNR commitments, the 100 Mile House TSA timber supply review will examine the potential of marginally economic forest types to contribute to fibre supply (see 'marginally economic stands') and for the inclusion of more fibre in the AAC (see 'increase utilization') in the 100 Mile House TSA.

Timber supply reviews undertaken in support of AAC determinations are based on current resource management objectives. For the purposes of the 100 Mile House TSA timber supply review, resource management objectives are provided by the Cariboo-Chilcotin Land Use Plan (CCLUP), as specified in the Cariboo-Chilcotin Land Use Order, issued in accordance with the *Land Act*. 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). In keeping with current practice, this information as well as other products of the timber supply review, are 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 100 Mile House TSA

Prior to the rapid expansion of the mountain pine beetle (MPB) epidemic (2006), the allowable annual cut (AAC) for the 100 Mile House TSA was 1.344 million cubic metres. In 2006, following an urgent timber supply review the AAC was increased by 666 000 cubic metres (50 percent) to the current level of 2.0 million cubic metres.

In January 2012, a data package documenting information requirements and assumptions for the timber supply analysis was released for public review and to assist with First Nations consultation. This public discussion paper is being released to provide an overview of the timber supply review process and to highlight the results of the timber supply analysis, including harvest forecasts for the 100 Mile House TSA.

Before setting a new AAC, the chief forester will review all relevant information, including the results of the timber supply analysis, socio-economic information, 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 AAC determined by the chief forester during this timber supply review may differ from the harvest projections presented in this analysis, as the chief forester must consider a wide range of information including the social, economic and environmental implications associated with a given harvest level. His considerations are ultimately a 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.

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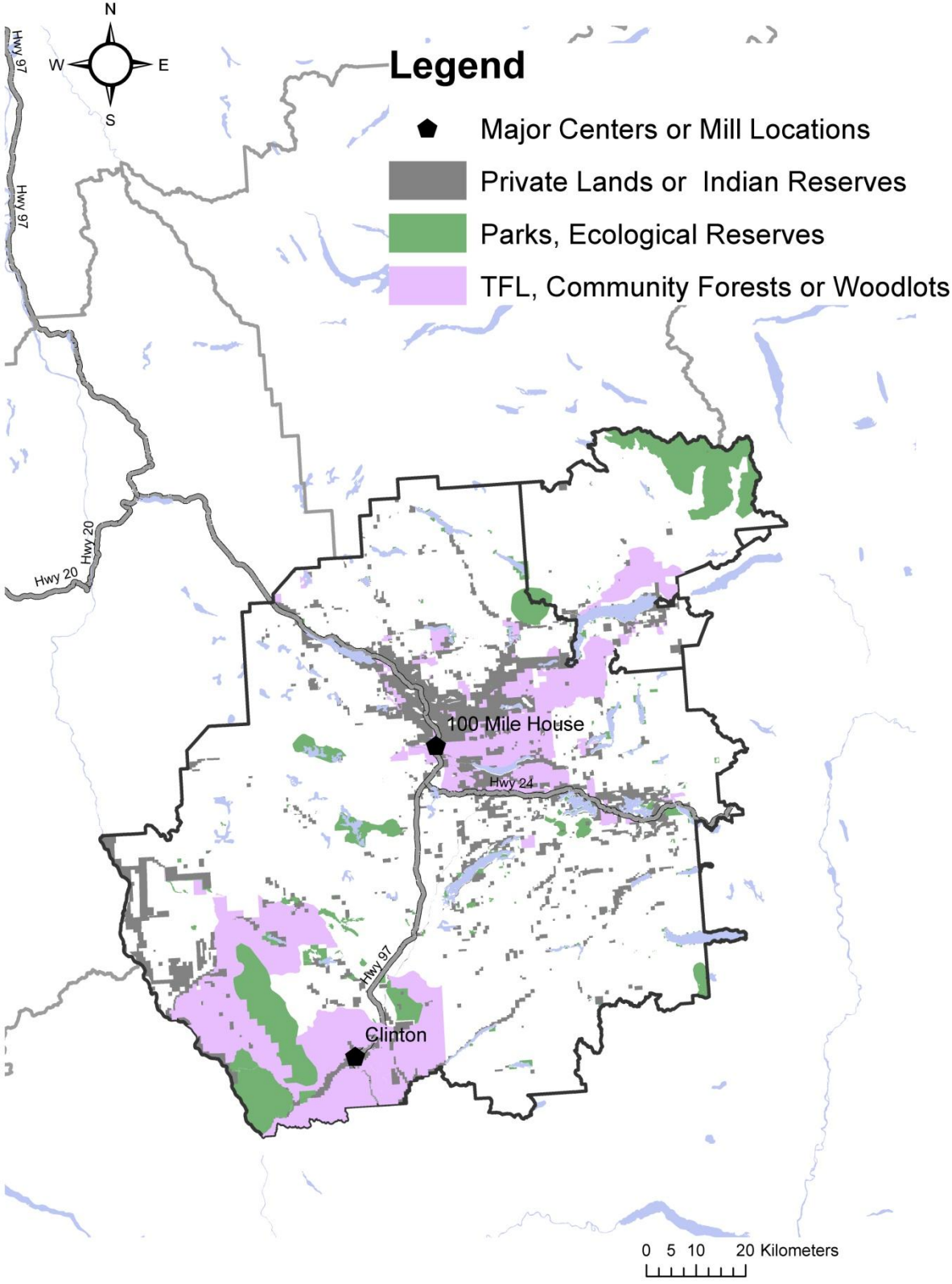


Figure 1. Map of the 100 Mile House TSA.

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Description of the 100 Mile House TSA

The TSA is bounded on the west by the Fraser River, on the east by the Cariboo Mountains and Wells Gray Provincial Park, and TFL 18, on the north by the Williams Lake TSA, and on the east and south by the Kamloops TSA. The boundary of the TSA includes several protected areas and parks (e.g., Mahood Lake, Flat Lake, Schoolhouse Lake), private land and Indian Reserves, and area-based tenures such as, community forests, woodlots and First Nations woodland licences. These areas do not contribute to the TSA timber supply. Although the agreement is not yet finalized, the area associated with the Clinton Community Forest Agreement was also excluded from the TSA.

Natural resources

The 100 Mile House TSA has varied topography and climate. The flat, dry interior plateau separates two mountain ranges – the Marble Range to the southwest and the Quesnel Highlands to the northeast. The western part along the Fraser River has a hot, dry climate, while the Cariboo Mountains to the east have a wetter climate and steep slopes.

The dominant tree species in the TSA are lodgepole pine and Douglas-fir. Several other tree species occur including: spruce, subalpine fir (balsam), western redcedar, western hemlock and various deciduous (hardwood) species.

The 100 Mile House TSA provides habitat for a wide variety of wildlife including: mule deer, moose, black bear, lynx, marten and owls, as well as many fish species. Species at risk in the TSA include: mountain caribou, grizzly bear, bighorn sheep, and the prairie falcon.

The forests of the 100 Mile TSA are very diverse and provide a wide range of resources including timber, forage, non-timber forest products, fish and wildlife habitat, water, and recreation and tourism opportunities. Residents and tourists enjoy outdoor recreation activities such as cross-country skiing, snowmobiling, mountain biking, hiking, camping, fishing and hunting.

Forest management

Current forest management must be consistent with the requirements of the *Forest and Range Practices Act* 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 forested land base (see next section).

Timber harvesting land base

As part of the process used to define the timber harvesting land base (THLB) in the timber supply analysis, a series of deductions are made from the productive forest land base. These deductions account for the factors that effectively reduce the suitability or availability of the productive forest area for harvest, for ecological, economic or social reasons.

The total area within the boundaries of the 100 Mile House TSA is 1 237 626 hectares. After accounting for areas that are not Crown-owned or are under area-based forest licences, 934 841 hectares are forested lands managed by the Crown – Crown forested land base (CFLB). Approximately 13 percent of the CFLB is excluded from harvesting because it occurs in parks, recreational areas, or reserves for biodiversity (see Table 1). Another three percent of the area is excluded from harvesting because it is uneconomic or on terrain unsuitable for timber harvesting. This land continues to provide for other values.

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Table 1. Timber harvesting land base – area netdowns

Factor	Total area (ha)	Area removed*(ha)
TSA boundary	1,237,626	-
Non-Crown	211,150	211,150
Woodlots	47,891	5,026
Clinton Community Forest	65,446	65,232
FN Woodlands Licence	21,473	21,377
Crown Managed	934,841	
Non-forest (rock)	23,320	23,320
Non-forest (water)	50,400	50,400
Non-forest (vegetated)	58,593	58,593
Roads	16,224	14,811
Crown Forest Land Base	787,717	-
Non-commercial	548	536
Old growth management areas	80,615	79,832
Park	2,891	2,749
Steep slope (inoperable)	4,084	2,949
Steep slope (cable operable)	6,274	4,672
Low site productivity	16,392	11,755
Wildlife habitat areas	12,616	6,859
Lakeshore management zone riparian management and reserve zone	1,827 13,935	614 13,823
Recreation trails	2,252	1,713
Timber harvesting land base	662,225	-

For the 100 Mile House TSA, a total of 662 225 hectares were assumed to be available for timber harvesting. In Table 1, the areas removed under each factor are net any overlap with the factors listed above them in the table. The gross area associated with the factors may be significantly larger.

Land base and forest management changes since 2000

The last AAC determination for the 100 Mile House TSA came into effect on September 6, 2006. This urgent decision was made using an updated version of the July, 2001 timber supply analysis. Since then, several changes have occurred to the land base and forest management information and these changes are reflected in the timber supply analysis. The major changes are:

- improved site productivity estimates based on ecosystem mapping;
- new natural stand yield projections using Variable Density Yield Projection (VDYP) model version 7 without adjustments;
- the most recent estimates of pine mortality using the BC Mountain Pine Beetle (BCMPB) model version 9; and
- removal of area from the TSA for recently established Clinton Community Forest (63 584 hectares) and the pending Canim Lake First Nations Woodland Licence (21 377 hectares).

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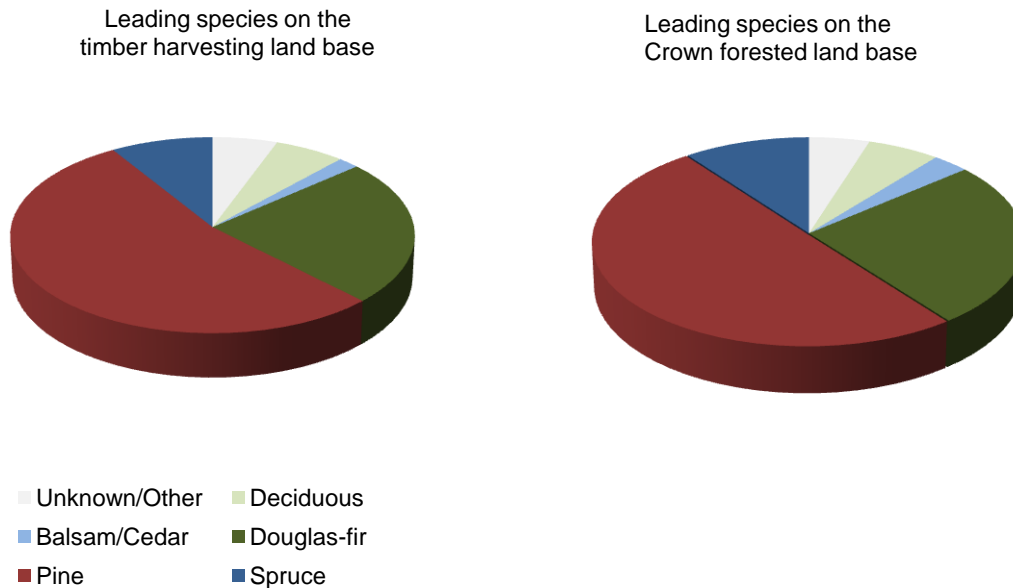


Figure 2. Proportion of leading species for the Crown forested land base^e and timber harvesting land base^f of the core area of the 100 Mile House TSA.

^e **Crown Forested 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 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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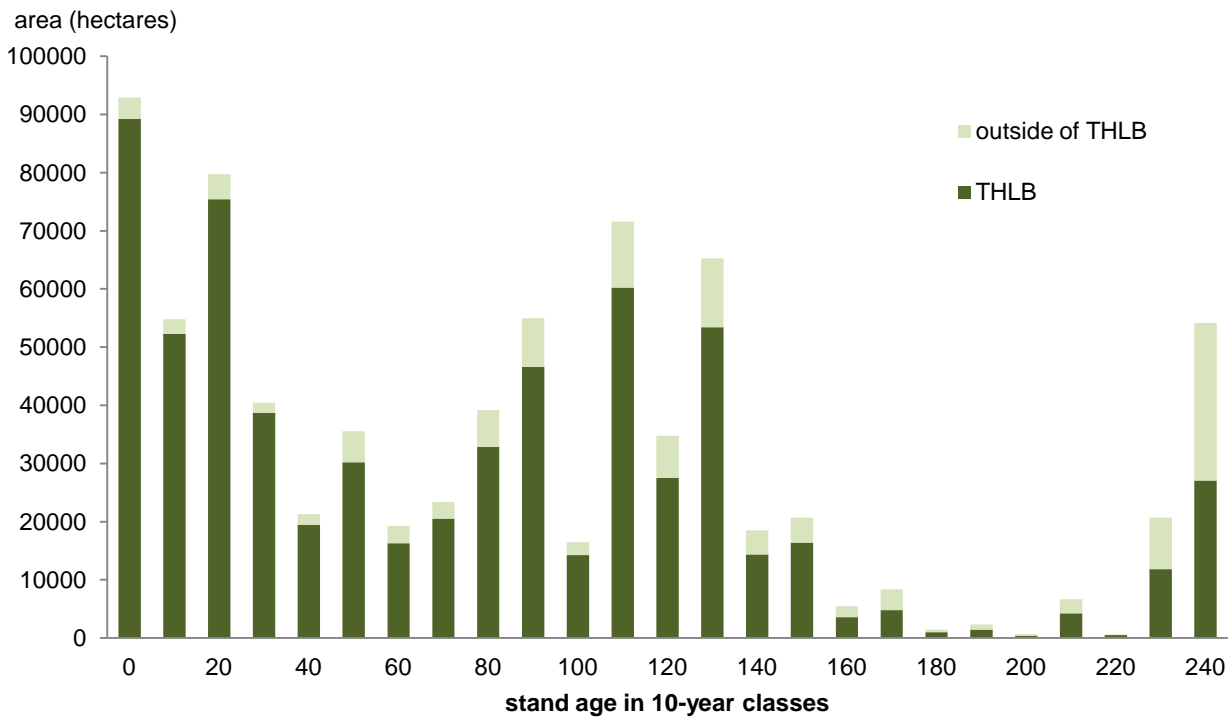


Figure 3. Age class distribution of stands in the Crown forested land base.

Socio-economic information

The main communities within the TSA are 100 Mile House (including 108 Mile Ranch) and Clinton; smaller communities include Lac la Hache, Forest Grove, 70 Mile House, Lone Butte and Bridge Lake. According to the 2011 Census, the population of 100 Mile House Municipality was 1886 persons.

Based on the report *2006 Economic Dependency Tables for Forest Districts*, in the 100 Mile House District, the forest sector accounts for 26 percent of total basic employment. Other sectors providing employment in the 100 Mile House District include: public sector (26 percent); tourism (16 percent); construction (16 percent); agriculture and food (8 percent); and mining and mineral production (2 percent).

Prior to 2006, when the AAC was increased to facilitate the salvage of dead pine and before establishment of the Clinton CFA, there were 1488 person-years of direct, indirect and induced employment associated with the 100 Mile House TSA. Based on the average harvest from 2007 to 2011, employment increased to 1757 person-years. The magnitude of the potential increase in employment due to increased harvesting was partially offset by efficiency gains by industry. About 31 percent of the total forest sector jobs were associated with harvesting and silviculture, 45 percent with timber processing and 24 percent were indirect plus induced jobs generated by the forest sector.

Mills using timber from 100 Mile House TSA include: West Fraser Mills Limited's 100 Mile Lumber and Chasm Sawmills, Ainsworth Lumber Company Limited's 100 Mile House Oriented Strand Board Plant, Tolko Industries Limited's Williams Lake Sawmill, West Fraser Mills Limited's Williams Lake Plywood Plant, and Interfor's Adams Lake Lumber Mill. A number of log home builders in the area also rely on timber from the timber supply area.

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In his *Rationale for the Allowable Annual Cut Determination for the 100 Mile House TSA* (2006) determination, the chief forester indicated that he expected the entire 2.0 million cubic metre AAC would be harvested. He also indicated that 90 percent of the harvest should come from stands with more than 70 percent pine volume, which equates to 63 percent of the total harvest. In accordance with these directions, forest licensees have, on average, harvested the full AAC of 2 000 000 cubic metres over the last five years (actual harvested volumes varied between 1 700 000 cubic metres and 2 470 000 cubic metres per year). During this period an average of 77 percent of the total harvest was pine.

In his apportionment decision, the minister apportioned 112 000 cubic metres of AAC to a pulpwood agreement timber sale licence. This licence, PA 16, was awarded to Ainsworth Lumber Company Ltd. and will expire in 2015.

First Nations

Four First Nations (including tribal councils and associations) have asserted territories in the core area of the 100 Mile House TSA: Tsq'escen (Canim Lake), Xatl'tem/Stwecem'c (Dog Creek/Canoe Creek), Bonaparte Indian Band, and High Bar First Nation. First Nations with aboriginal interests that overlap the TSA but who do not have communities located within the TSA include: Tk'emlups Indian Band, Williams Lake Indian Band, Tsilhqot'in Nation, St'at'imc Nation, Lower Nicola Indian Band, Ts'kw'aylaxw First Nation, T'it'q'et Administration, Oregon Jack Creek Band, Skeetchestn Indian Band, Lytton First Nation, Nlaka'pamux Nation Tribal Council, Nicola Tribal Association, Simpcw First Nation, Ashcroft Indian Band, Coldwater Indian Band, Esketemc First Nation, Siska Indian Band, Bridge River Indian Band, Cook's Ferry Indian Band, and Whispering Pines/Clinton Indian Band.

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 100 Mile House TSA lies within the area subject to the Cariboo-Chilcotin Land Use Plan (CCLUP). Forest development is required to be consistent with the land use objectives specified in the Cariboo-Chilcotin Land Use Order established under the *Land Act*.

Ungulate winter ranges for mule deer and wildlife habitat areas for caribou and species at risk have been established within the TSA in accordance with the Government Actions Regulation established under the *Forest and Range Practices Act* (FRPA).

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). The MPB infestation within 100 Mile House TSA peaked in 2006 and has subsided quickly since then. At the time of the 2006 timber supply analysis the rate of MPB infestation reached its highest level. At this time, the BCMPB model forecast that approximately 47 million cubic metres or about 81 percent of the mature pine volume in the THLB would be killed by the time the outbreak subsided.

The current BCMPB forecast projects that there will be no significant new pine mortality in the 100 House TSA and that the infestation has collapsed. This has been confirmed by three years of aerial forest health survey data. The total actual MPB-killed pine volume is about 42 million cubic metres or about 72 percent of the mature pine volume in the THLB. Given that there is no significant new infestation, these values are expected to remain at about these levels (see Figure 4).

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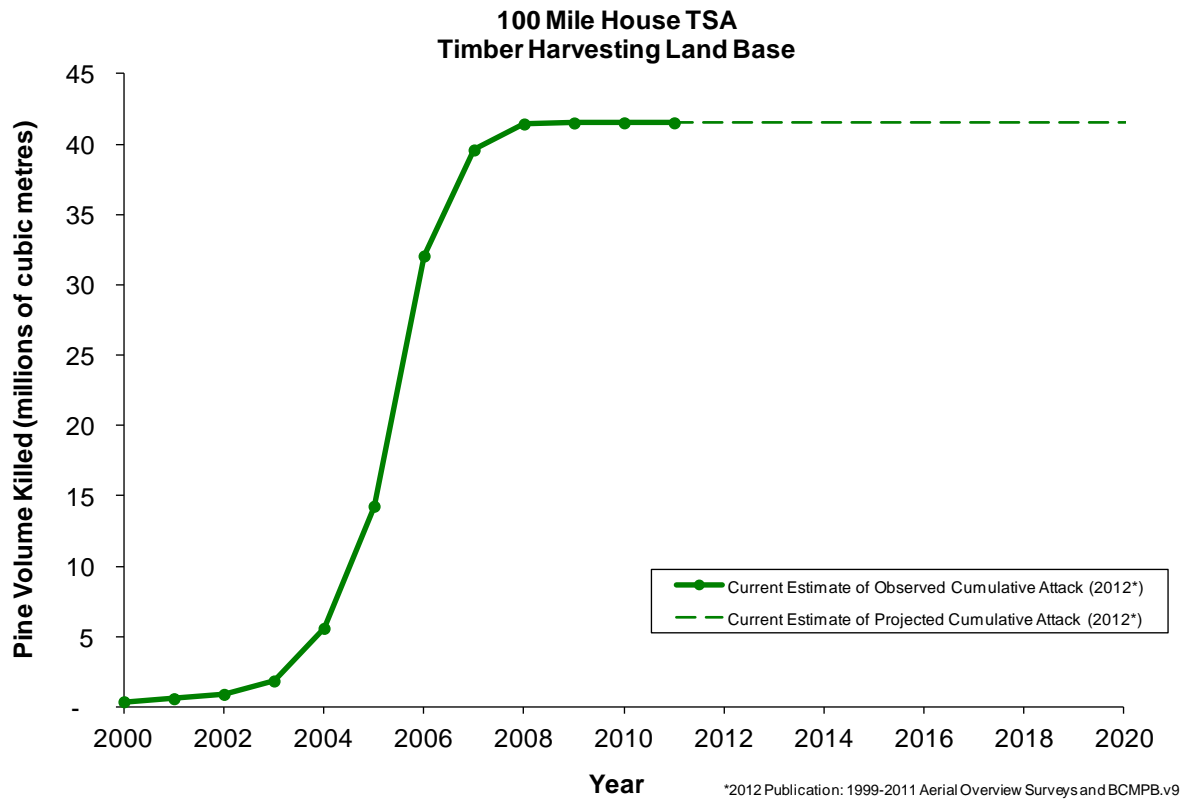


Figure 4. Current estimate of observed and projected cumulative volume of MPB-killed pine in the THLB.

Timber supply analysis

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 the regeneration after 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. 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 forecast in the base case.

The base case (Figure 5) shows that the current AAC of 2.0 million cubic metres can be maintained for seven years. During this time, 500 000 cubic metres per year of the total harvest comes from trees that were alive at the time of harvest ('live trees') and the remaining 1.5 million cubic metres per year of the total harvest comes from salvaged dead trees. Of the 500 000 cubic metres per year attributable to live trees, 300 000 cubic metres per year comes from spruce-leading stands prioritized for harvest in the model to manage the spruce bark beetle infestation in the northeast of the TSA. The remainder of the live volume, 200 000 cubic metres, is the live component of dead pine-leading stands. Starting in year eight, the harvest decreases to a mid-term level of 865 000 cubic metres per year. Sixty years from now, the harvest in the base case is projected to increase to the long-term level of 1.4 million cubic metres per year, which is slightly higher than the pre-MPB epidemic AAC of 1.334 million cubic metres in effect prior to 2006.

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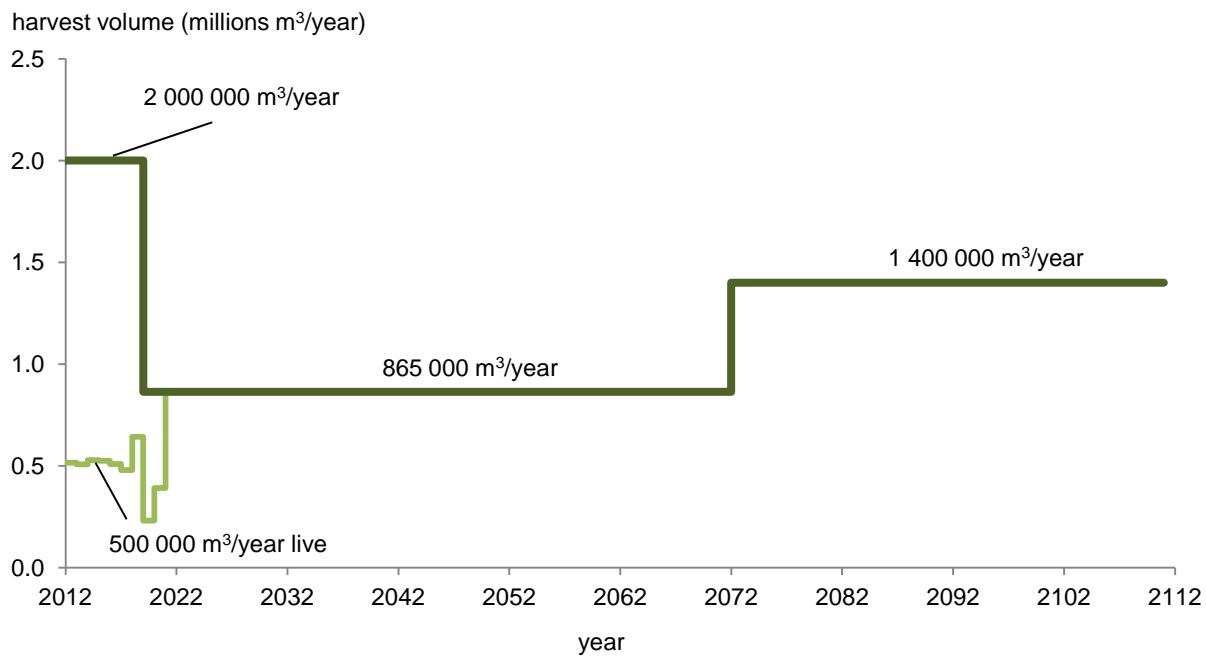


Figure 5. Base case timber supply forecast for the 100 Mile House TSA.

Due to the harvest rule in the model that places a priority on high-volume stands, harvesting shifts between a variety of stand types resulting in fluctuations in the annual area and volume harvested. In general, during the first nine years of the base case, the average volume of harvested stands decreases from 370 cubic metres per hectare to 161 cubic metres per year. In order to maintain the initial harvest level, the average area harvested increases from 5600 hectares to 13 000 hectares, as harvesting transitions to lower volume stands.

The area forecast to be harvested from visually sensitive areas represents an average of about six percent of the total harvest. No harvesting occurs within mule deer winter range or caribou habitat during the first 15 years of the base case. After 15 years, there may be some harvesting within these areas; however, the level never exceeds two percent of the total harvest for the remainder of the base case.

The length of time that a MPB-killed tree remains an economically-viable source of wood fibre ('shelf life') varies depending on the type of product being manufactured. It is generally accepted that the quality of wood gradually diminishes after death from dimensional lumber quality through to pulp and secondary product (e.g. biofuel) quality. Shelf life values are uncertain because they depend on several factors, such as market access and conditions, and available milling technology.

The estimates used in the base case regarding the extent and severity of the MPB infestation, including year of death and proportion of stands killed, are based on the BC Mountain Pine Beetle Model (BCMPB) (see "Mountain pine beetle"). In this analysis, dead pine was assumed to remain an economically-viable source of fibre for some form of wood product for 15 years. After 15 years it was assumed that the tree had deteriorated to the point of collapse and the wood fibre had no further economic value. However, in order to examine the possible impacts and contribution to the base case of volume from dead trees, stands were divided into four categories based on the number of years since death (YSD): two years or less, three to five years, six to ten years, and eleven-plus years. These classes can be used to approximate the amount of volume available within the shelf life period for a variety of wood products (see Figure 6).

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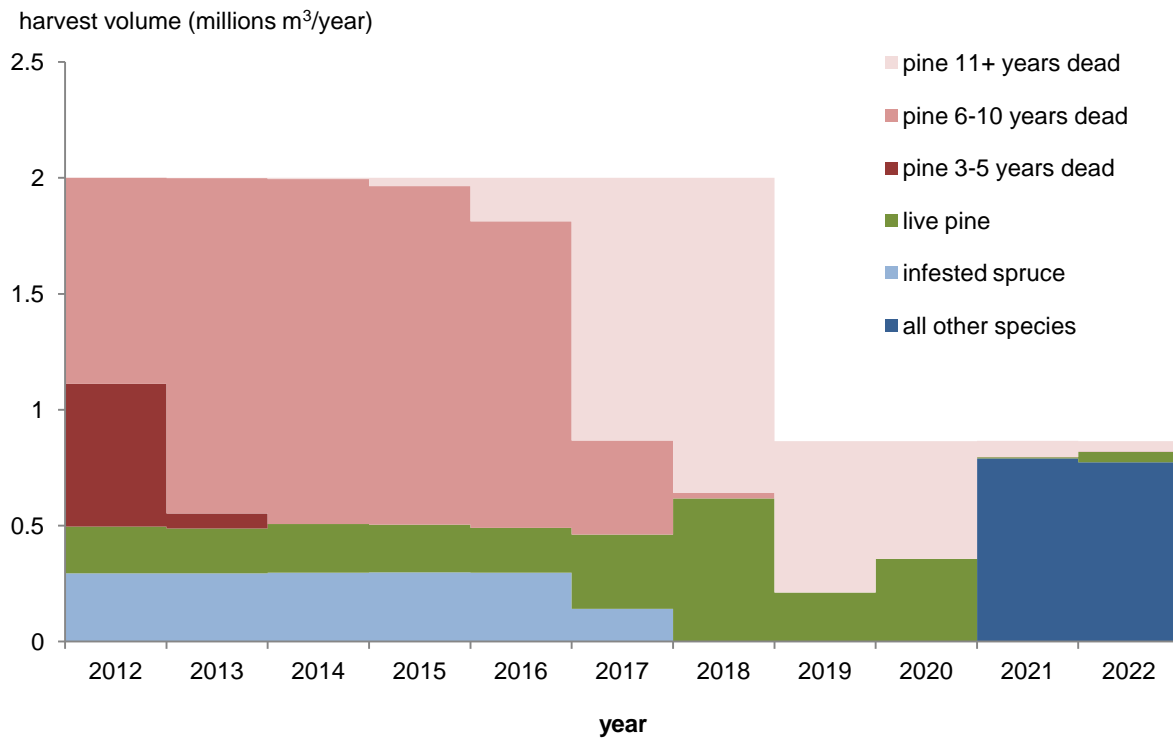


Figure 6. Base case initial harvest categorized by years since death.

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 2 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.

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Table 2. *Select sensitivity analyses for the 100 Mile House TSA.*

Short term = decade 1, Mid term = decades 2 to 5, Long term = decades 6 to 15

What	Change	Percent impact		
		Short term	Mid term	Long term
Managed stand yields	Replace PEM/SIBEC site indices used in the base case with inventory based site indices.	0	-13	-43
Limit harvest to conifers	Exclude the deciduous volume from all stands.	0	-16	-11
Increase utilization	Replace standard values with close utilization values.	+7	+4	+9
Rate of pine decomposition	Pine decomposes faster, falls over after 10 years instead of 15 years.	-10	-6	-4
	Pine decomposes slower, falls over after 20 years instead of 15 years.	+5	0	+3
Initial harvest level	Immediately reduce the initial harvest level to the mid-term level, no regulation of the amount of 'live' trees harvested.	-44	8	-7
Total volume of MPB-killed pine	Increase total dead pine volume by 10%	0	-2	0
	Decrease total dead pine volume by 10%	0	+3	0

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

Managed stand yields

Site index – the height of a tree at a given age (usually 50 years) – is used as a measure of site productivity. In general, in British Columbia, site indices determined from younger stands (i.e., less than 31 years old), and older stands (i.e., over 140 years old) may not accurately reflect potential site productivity. This has been verified in several areas of the province where studies suggest that actual site indices may be higher than those indicated by existing data from old-growth forests.

In the base case, site index estimates for existing stands less than 50 years of age and future harvested stands were estimated using Predictive Ecosystem Mapping (PEM) and Site Index Biogeoclimatic Ecosystem Classification System (SIBEC) information. Replacing these site index estimates with ones based on the forest cover inventory in a sensitivity analysis resulted in a 13 percent and 43 percent decrease in the mid-term and long-term harvest levels, respectively.

Limit harvest to conifers

Using vegetation resources inventory (VRI) data, the total live volume available for harvest at the start of the base case is about 48 million cubic metres. Of this volume about five million cubic metres, or 10 percent of the total harvest, is from deciduous trees. The base case includes both the deciduous volume from deciduous-leading stands and the deciduous component of coniferous-leading stands in the THLB. In the 100 Mile House TSA, forest licensees have, on average, harvested the full 2.0 million cubic metre AAC. During this same period, deciduous volume accounted for between 0.5 percent and two percent of the total harvest.

In order to assess the effect on the base case of not harvesting deciduous trees, a sensitivity analysis was prepared in which only coniferous trees contributed to the harvest. This change had no effect on harvest levels during the first seven years of the forecast. Thereafter, exclusion of deciduous volume results in 16 percent and 11 percent decreases in the mid- and long-term harvest levels, respectively.

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Increase utilization

Utilization standards define the species, dimensions and quality of trees that are harvested and removed from an area during harvesting operations. In the base case, a 30-centimetre maximum stump height and 10-centimetre minimum top diameter was assumed for all species. In addition, for lodgepole pine, a 12.5 centimetre minimum diameter at breast height (DBH), and for all other species, a 17.5 centimetre DBH, was modelled.

As indicated earlier in this discussion paper, FLNR has committed to examining the effect on timber supply of increasing the recovery of fibre during harvest operations (see page 2). Table 3 includes both the standard and close utilization dimensions by species.

Table 3. Standard and close utilization standard definitions by species

Analysis unit	Standard utilization		
	Minimum dbh (cm)	Maximum stump height (cm)	Minimum top dib (cm)
Pine	12.5	30	10
Non-pine coniferous	17.5	30	10
Deciduous	17.5	30	10
	Close utilization		
Pine	10	15	4
Non-pine coniferous	10	15	4
Deciduous	10	15	4

A sensitivity analysis showed that if it is possible to use more wood from every tree harvested, by using the close utilization standards, the results are seven-percent, four-percent and nine-percent increases in the initial, mid- and long-term harvest levels, respectively.

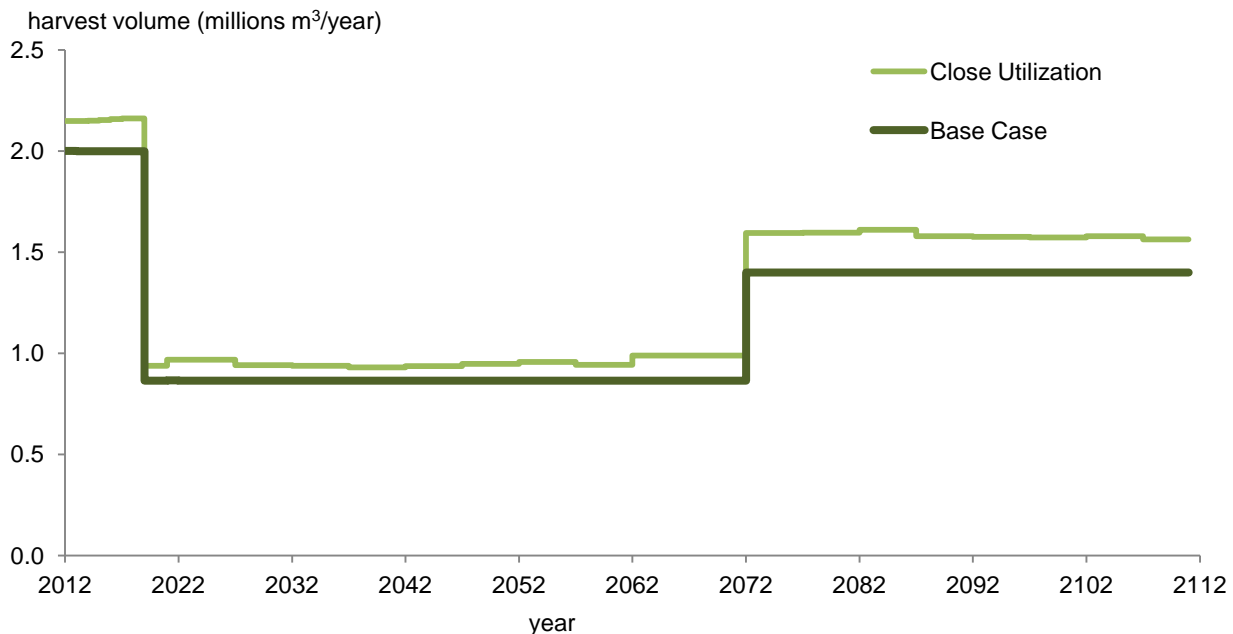


Figure 7. Base case compared to base case with close utilization standards.

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Rate of pine decomposition

The economic viability of pine that has been dead for more than 10 years is uncertain. However in the base case, dead pine trees were assumed to provide useable wood fibre until they collapsed after 15 years. Between the second and fifth years in the base case, the majority of the pine salvage consists of trees that have been dead for between six and ten years. In the remaining four years, the pine salvaged has been dead for more than ten years.

In sensitivity analyses, decreasing the length of time dead pine remains standing by five years decreased the initial, mid-term and long-term harvest levels by 10 percent, 6 percent and 4 percent, respectively. Increasing the length of time that dead pine remains standing by five years, increased the initial- and long-term harvest levels by five percent and three percent, respectively and the mid-term level was unchanged.

Reduce initial harvest level

In 2006, the AAC was increased by 50 percent to allow for the accelerated harvest of the mountain pine beetle (MPB) killed trees. The increased AAC has allowed for a large proportion of the dead pine to be salvaged. However, as the salvage of dead pine nears completion, it is uncertain if an accelerated harvest level is still possible.

In a sensitivity analysis, immediately reducing the initial harvest by 44 percent to the maximum sustainable mid-term level while continuing to salvage dead pine resulted in an eight percent increase over the base case mid-term harvest. However, this approach also increased the volume of unsalvaged dead pine during the first 15 years in the base case from about 11 million cubic metres to about 15 million cubic metres during the same period. In addition, the decrease in salvage decreased the area of stands re-established as managed stands. This resulted in a seven-percent decrease over the base case long-term harvest level.

Marginally economic stands

It was indicated earlier that Pulpwood Agreement 16 (PA16) will expire in 2015. In previous timber supply reviews, the stands that comprised the harvest for PA16 were identified as problem forest types (PFT) since conventional licensees had limited performance in them. With the collection of new forest inventory information, PFTs are no longer identifiable directly using unique attributes (e.g., stocking class) in the forest inventory. In addition, these historically poor forest types are now being harvested by both conventional sawlog and non-sawlog licensees. As a result, for this timber supply review these stands were treated as part of the THLB if they met the minimum merchantability requirements defined in the data package. To demonstrate the contribution of this profile to the base case, the historic delineation of PFTs was approximated using attributes available in the current inventory. It is estimated that these stands contributed an average of 84 000 cubic metres per year over the full forecast horizon.

As indicated earlier in this discussion paper, FLNR has also committed to reviewing the potential contribution of marginally economic stands to timber supply. In this TSA it may be possible to harvest some sites with low productivity. Sites may have low productivity either because of inherent limiting site factors (nutrient availability, exposure, excessive moisture, etc.) or because they are not fully occupied by commercial tree species. Typically, these stands are inter-mixed with other stands within the forested land base. Based on current practices, these stands are not considered to be economically harvestable; therefore, they were excluded from the THLB used in the base case. An examination of these areas in the 100 Mile House TSA showed that it may be possible to add 7244 hectares of low site stands to the THLB without affecting the contribution of these areas to other values. The total volume associated with this area is approximately 1.1 million cubic metres.

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Summary

The base case harvest forecast indicates that the current AAC of 2.0 million cubic metres can be maintained for seven years before declining to the mid-term harvest level. Therefore, the current AAC cannot be sustained for the full 10 years of the determination period. Sensitivity analysis results show that a continued priority on the salvage of beetle-killed stands and a limit on the harvest of live volume are necessary to minimize the decline in timber supply when salvage is complete.

The provincial chief forester's AAC determination is a judgement 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 any of the harvest forecasts, including the base case, described in this PDP.

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 100 Mile House TSA. Ministry staff would be pleased to answer questions to help you prepare your response. Please send your comments to the district manager at the address below.

Your comments will be accepted until March 9, 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
100 Mile House District
Ministry of Forests, Lands and Natural Resource Operations
300 S Cariboo Highway
100 Mile House, British Columbia V0K 2E0

Or call:

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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/>