

**Timber
Supply
Review**

Bulkley Timber Supply Area

P u b l i c D i s c u s s i o n P a p e r

April 2001



**BRITISH
COLUMBIA**

Ministry of Forests

Introduction

The British Columbia Forest Service is reviewing the timber supply for all timber supply areas (TSAs) and tree farm licences (TFLs) in the province. This review 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 may, if necessary, adjust the allowable annual cut (AAC) for the Bulkley TSA.

The chief forester reviews and sets new AACs for all TSAs and TFLs every five years. The objectives of the Timber Supply Review are:

- to identify relevant current forest management practices and assess their effects on short- and long-term timber supply, and identify related economic, environmental and social factors
- to identify where improved information is required for future timber supply forecasts
- to provide the chief forester with information to use when making AAC determinations that will apply for the next five years

Timber Supply Review in the Bulkley TSA

The *Bulkley TSA Data Package* and *Information Report* were released in June 1998. Following the release, the documents were reviewed by licensees, the public and government agencies. The B.C. Forest Service has now completed the *2001 Bulkley TSA Analysis Report*, which is summarized in this discussion paper. The objectives of this document are to provide British Columbians with an overview of the Timber Supply Review process and harvest level forecasts for the Bulkley TSA and to encourage them to provide comments during the 45-day public review period. Public comments will be accepted until June 4, 2001.

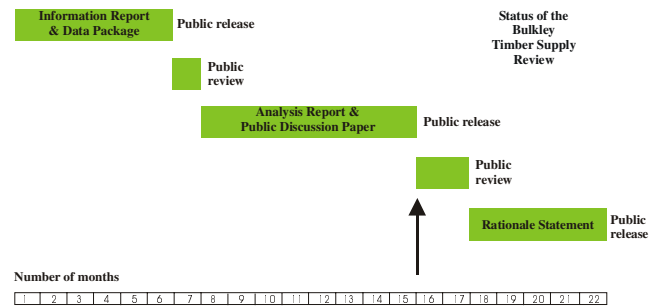
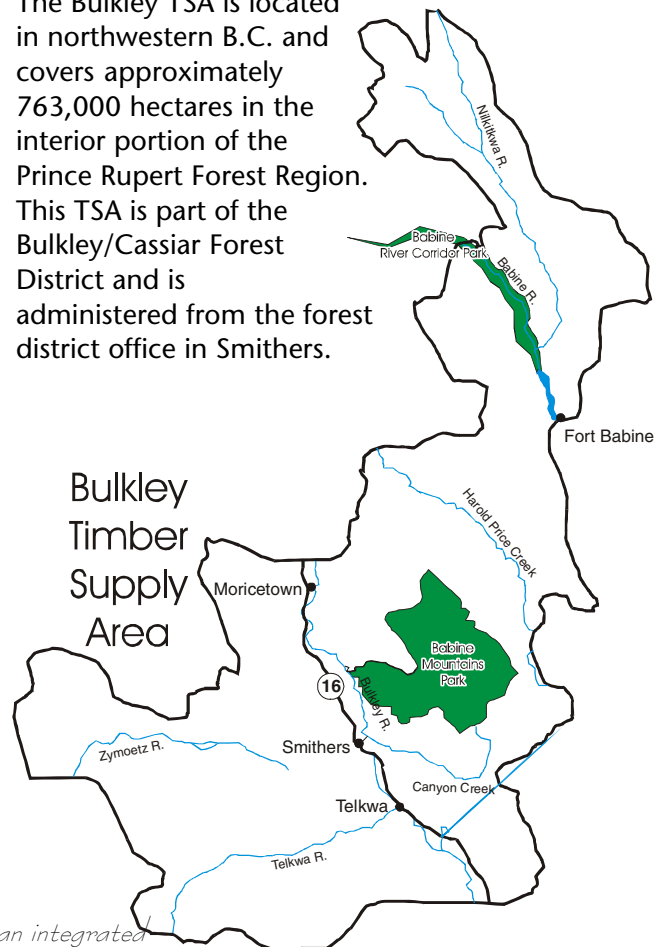


Figure 1. Review process for the Bulkley TSA

Before setting a new AAC, the chief forester will review all relevant reports and public input. The chief forester's determination will be outlined in a rationale statement that, along with the summary of public input, will be available to the public upon release. Following the release of the AAC determination by the chief forester, the minister of forests will apportion the AAC to the various licences and programs.

Description of the TSA

The Bulkley TSA is located in northwestern B.C. and covers approximately 763,000 hectares in the interior portion of the Prince Rupert Forest Region. This TSA is part of the Bulkley/Cassiar Forest District and is administered from the forest district office in Smithers.



** A timber supply area is an integrated resource management unit established in accordance with section 7 of the Forest Act.*

According to the 1996 census, the population of the Bulkley TSA is 13,107, an increase of 14 per cent since 1991. The major community is Smithers, home to about 43 per cent of the TSA population. Other communities include Telkwa, Moricetown and Fort Babine.

The natural resources

Numerous natural resources are associated with the forests in the Bulkley TSA. These include forest products, agriculture, minerals, significant fish and wildlife habitat, and recreation and tourism amenities.

The Bulkley TSA is located on the eastern drainage of the Skeena River where it is bounded in the west by the Hazelton Mountains, in the south by the Telkwa River watershed and in the east by the Babine Mountains. The TSA extends north to the headwaters of the Nilkitkwa River, while the Bulkley River runs through the southern portion of the TSA. The terrain generally varies from wide river valley bottoms to high mountains.

Because of its location in a transition zone between coastal and interior climates, this TSA includes significant ecological diversity, reflected by the presence of six biogeoclimatic subzones. Forests are dominated by subalpine fir, spruce, hemlock and lodgepole pine. The amount of land considered suitable for timber production in this TSA is limited by the mountainous terrain and high elevations. About 69 per cent of the productive forest land, or 45 per cent of the total TSA land base, is considered available for harvesting under current management practices.

The Bulkley TSA supports an abundance of wildlife, including grizzly bear, mountain goat, deer and moose. The Babine River watershed supports a provincially significant population of grizzly bears. The Telkwa Caribou Herd Recovery Area provides protection to the only remaining herd of local caribou through special management measures, landscape corridors and core ecosystem areas.

The Bulkley TSA contains three internationally or provincially significant angling rivers (the Babine, Zymoetz or Copper, and Bulkley rivers). These rivers and their tributaries provide important migration routes and spawning habitat for sockeye, Chinook, pink and coho salmon and steelhead trout. Angling is also popular in smaller

lakes, particularly for Dolly Varden, char and cut-throat trout.

Recreational use of the forests in the Bulkley TSA is high. The mountainous terrain, lakes and rivers provide a wide range of front- and back-country recreational opportunities including climbing and mountaineering, hiking, hunting, fishing, camping, wildlife viewing, kayaking, canoeing, rafting, horseback riding, snow-mobiling, and cross-country and downhill skiing.

Land use planning

The Bulkley Land and Resource Management Plan (LRMP) covers almost all of the Bulkley TSA. The plan was given ministerial approval in April 1998 and includes recommendations regarding future management of public forest lands in the TSA. Seven new provincial parks, one ecological reserve and a special resource management zone created by the LRMP have been reflected in the timber supply analysis. The LRMP contributes to maintaining biodiversity; conserving old-growth forests, wildlife corridors, scenic landscapes and watersheds. As of 2000, components of the LRMP are now part of a higher level plan, as provided by the *Forest Practices Code of British Columbia Act*. The chief forester will consider this land-use planning and strategy information in the upcoming allowable annual cut determination.

Environmental Implications

Current forest management follows the standards set out by the Forest Practices Code. These standards are designed to maintain a range of biodiversity and wildlife values. In addition, the Bulkley LRMP provides direction on a range of environmental considerations. In the Bulkley analysis area, about 55 per cent of the total TSA land base is not considered available for timber harvesting and will provide for many environmental values. Forested area both inside and outside of the timber harvesting land base will help to maintain critical forest habitats for many species. Forest cover requirements for wildlife areas, biodiversity, visual quality and community watersheds were included in the analysis.

First Nations

The Gitksan, Wet'suwet'en, the Nat'oot'en and the Tsimshian First Nations have asserted traditional lands within the Bulkley TSA. Moricetown and Fort Babine are First Nations communities. These First Nations have submitted comprehensive land claims covering portions of the TSA. The impacts of any treaties on the Bulkley TSA land base are unknown at this time. When the impacts are known, they will be considered in future AAC determinations.

Traditional Use Studies have been completed for about 50 per cent of the TSA (in Wet'suwet'en traditional territory) and others are underway in Gitksan territory. Also, since 1995 the forest district has been working on a Cultural Heritage and Archaeological Resource Inventory (CHARI) at a mapping scale appropriate for operational use. This inventory identifies known archaeological sites and traditional use areas, and predicts the likely locations of other site. Neither the traditional use studies or the CHARI were complete in time for inclusion in this timber supply review.

Archaeological impact assessments are done as part of operational planning. A culturally modified tree district manager policy was established in 1999 which has increased awareness of cultural heritage features, and when used in combination with the CHARI should lead to more frequent recommendation and completion of archaeological impact assessments. These assessments will aid in the development of a more accurate predictive model for future archaeological overview assessment updates. The effects of this culturally modified tree policy will be considered in the next timber supply review.

Current allowable annual cut

In 1995, the chief forester set the AAC for the Bulkley TSA at 895,000 cubic metres. This maintained the previous AAC, and included a partition of 367,000 cubic metres for the harvest of marginally economic forest types.

Socio-economic profile

Regional economy

Although resource-oriented, the economy of the town of Smithers is well-diversified and dominates the economy of the Bulkley TSA. Four major timber processing facilities are located in Smithers, and the community is a base for a myriad of popular outdoor recreational activities.

As Figure 2 illustrates, at 27 per cent of the labour force forestry is the largest contributor to private-sector employment in the Bulkley TSA. Tourism ranks second in terms of private-sector employment, providing about 16 per cent of the total employment. The public sector is the TSA's largest employment sector at 29 per cent.

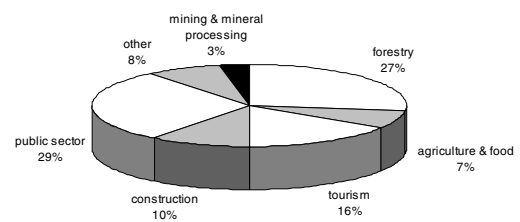


Figure 2. Bulkley TSA - Estimates of Employment by Sector, 1996

Source: 1996 Forest District Tables, B.C. Ministry of Finance and Corporate Relations

The forest sector supports numerous other jobs in the area through companies and employees purchasing goods and services from local businesses. Each 100 full-time direct forestry jobs in the Bulkley TSA are estimated to support another 35 to 64 indirect and induced jobs, depending on the type of forestry activity (harvesting or timber processing) and the associated level of income. In comparison, 100 direct jobs in the tourism sector support an additional six jobs, 100 direct jobs in the mining sector support 55 additional jobs, and 100 public sector jobs support 18 additional positions.

Forestry's importance to the economy is demonstrated by the fact that 26 per cent of all basic, after-tax income in the TSA is forestry-dependent (including direct and indirect jobs).

Table 1 illustrates the potential contribution of the forest industry associated with the Bulkley TSA timber harvest to both the regional and provincial economies. Figures in this table are based on the base case harvest level of approximately 882,000 cubic metres (the current AAC less 13,000 cubic metres per year that has been allotted to new woodlot licences).

	TSA	Provincial
Direct employment (person years)	607	828
Total employment (person years)	891	1,796
Total employment income (\$1998 millions/year)	29.5	55.7
Provincial gov't revenues (\$1998 millions/year)	N/A	28.4

Table 1. Summary of local and provincial economic information associated with the average 1998-2000 annual harvest.

Timber supply forecasts

A timber supply computer model was used to project several possible timber supply forecasts for the next 250 years. One of these forecasts is the base case forecast, which illustrates the effect of current forest management on timber supply. 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 base case forecast is presented in this report for discussion and comparison. Due to areas of uncertainty, the AAC determined by the chief forester may be greater or less than the level forecast in the base case.

The base case timber supply forecast for the Bulkley TSA indicates that a harvest level of 882,000 cubic metres—the current AAC adjusted to account for 13,000 cubic metres transferred to woodlot licences—can be maintained for one decade before declining by 10 per cent per decade to the long-term harvest level of 554,945 cubic metres per year.

The base case timber supply forecast examines the existing partition of 367,000 cubic metres per year for marginal sawlog and pulplog stands. These stand types can contribute 367,000 cubic metres per year for the first two decades and then rapidly decline as they are converted to more productive stands after 100 years. Since the previous AAC determination, harvest levels within the partition have been monitored and found to be reasonable. After harvesting, these areas are considered to be improved by planting spruce and pine species and are no longer considered marginal.

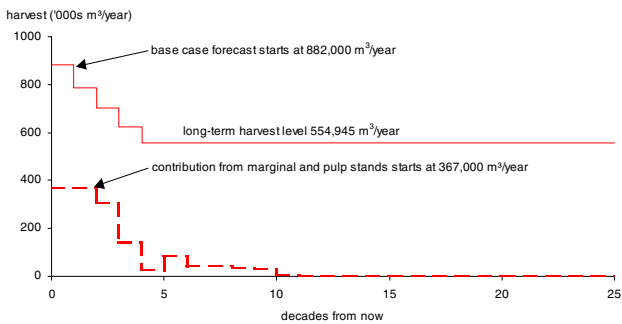


Figure 3. Base case timber supply forecast—Bulkley TSA, 2001

The base case forecast indicates a transition from the current harvesting level to the long-term harvest level over the next 40 years. Since the last timber supply analysis, a number of factors have influenced timber supply, including new parks and increases for riparian reserves, wildlife tree patches, visually sensitive areas and forest cover requirements for biodiversity protection. However, these have been offset by a 22 per cent increase in the size of the timber harvesting land base due to new inventory information and changes in the definition of operability.

Sensitivity analyses: examining uncertainty

Because forests are complex and constantly changing, timber supply analysts assess how their timber supply forecast results might be affected by uncertainties in the inventory information and management practices. These uncertainties are generally examined in what are called sensitivity analyses, which the chief forester will consider in determining an AAC. The sensitivity analyses are useful for assessing how any changes in

information or any uncertainties and risks might affect timber supply.

In the Bulkley TSA, a number of sensitivity analyses were conducted to examine the stability of the timber supply in light of uncertainties about factors like the land base available for timber harvesting and management requirements in visually sensitive areas. Several key sensitivity analyses are listed below. For a complete listing, please refer to the *2001 Bulkley TSA Analysis Report*.

Uncertainty about estimates of timber volumes in existing stands

Timber volume estimates for existing stands are subject to uncertainties in the forest inventory. An inventory audit showed that volumes may be overestimated by 12 per cent for the Bulkley TSA. A sensitivity analysis was performed to test the potential effect on timber supply of this uncertainty in volume estimates.

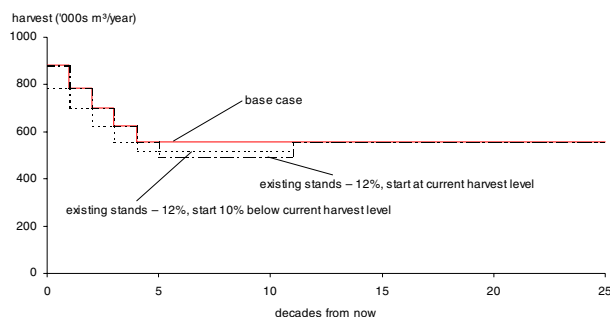


Figure 4 Harvest forecast showing the effects of increased and decreased volume estimates for existing stands—Bulkley TSA, 2001.

Figure 4 shows that if stand volumes are decreased by 12 per cent, the forecast could be similar to base case for five decades before declining to a mid-term level about 11 per cent below the base case. An alternative forecast shows if existing volumes are decreased by 12 per cent then the initial harvest level could immediately decline by 10 per cent and reach a mid-term level about six per cent lower than the base case.

Uncertainty in the size of the timber harvesting land base

Determining the size of the timber harvesting land base—after reflecting environmental objectives—involves complex considerations and projections about the future. For the Bulkley TSA, there is some uncertainty about the size of the timber harvesting land base due to factors such as fluctuations in timber prices and changes in global markets. As Figure 5 shows, if lower quality timber found on low productivity sites are removed from the timber harvesting land base, the medium- and long-term harvest level would be 4.3 per cent lower than the base case forecast. If markets are high and areas suitable for cable logging are included in the timber harvesting land base, the medium- and long-term harvest level would increase by 5.7 per cent.

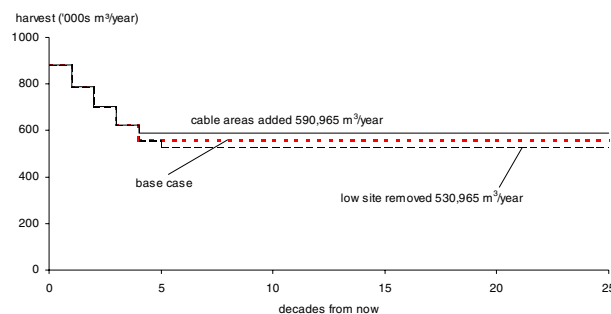


Figure 5 Harvest forecasts showing the effects of removing low productivity sites from the timber harvesting land base and of including areas suitable for cable logging in the timber harvesting land base—Bulkley TSA, 2001.

Site Productivity

Old-Growth Site Index Research

The results of two recent provincial studies suggest that the productivity of sites currently occupied by old-growth stands may be underestimated. The research shows that the measured productivity of existing second-growth stands is higher than the productivity estimates using measurements from old-growth stands growing on ecologically similar sites. These results are based on the maximum potential site productivity that might be achieved under ideal conditions. However, in the field, regeneration and subsequent growth does not

always occur under ideal conditions due to factors such as competition from brush or overstocking. Therefore, some stands may not reach the potential productivity suggested by this research.

The results of these studies are of interest in the Bulkley timber supply area, as stands older than 140 years make up about 64 per cent of the timber harvesting land base. The old-growth site index adjustments from provincial studies indicate that the long-term harvest level could be as much as 32 per cent higher than the base case forecast. While there is little local data to verify the application of the results of the provincial studies to the Bulkley timber supply area, the results of the sensitivity analysis indicate that the long-term timber supply could be higher than estimated in the base case forecast.

Operational Adjustment To Site Index Study (OASIS)

In an effort to provide more reliable local estimates of site productivity, the Ministry of Forests Research Branch staff proposed the OASIS method, which was tested in the Bulkley TSA. The OASIS method correlates site productivity to the bio-physical characteristics of the site, such as soil moisture and nutrients. Whereas the old-growth site adjustments are only applied to stands older than 140 years, the OASIS site index adjustments are applied to stands of all ages. The results for the Bulkley TSA indicate that the long-term harvest level could be nearly 37 per cent higher than the base case forecast.

Implications of changes in the AAC

Community Implications

The implication of changes in the AAC for local communities is an important consideration in the Timber Supply Review. The base case harvest forecast for the Bulkley TSA suggests that a harvest level of 882,000 cubic metres could be maintained for 10 years. The average 1998-2000 harvest levels were eight per cent below the base case forecast.

The timber supply forecast also shows a series of reductions starting in 10 years that could lead to a long-term harvest level 37 per cent lower than the initial harvest level. If the harvest level declines, then employment and economic activities associated with timber harvesting could similarly decline.

The Bulkley TSA is economically well-diversified and the communities within the TSA may expand other development opportunities, which could promote further diversification and stability for the local economy.

Your input is needed

Establishing the AAC is an important decision that requires well-informed and thoughtful public input. Feedback is welcomed on any aspect of this discussion paper, the 2001 Bulkley TSA Analysis Report and other issues related to the timber supply in the Bulkley TSA. Forest Service staff would be pleased to answer questions or discuss concerns that would help you prepare your response. Please send your comments to the forest district manager at the address below. Your comments will be accepted until June 4, 2001.

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.

A summary of public comments will be attached to the AAC rationale and will be available from the district office when the chief forester's AAC determination is announced.

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

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

or electronically mail to
Glen.Buhr@gems3.gov.bc.ca

Visit our website at
<http://www.for.gov.bc.ca/tsb>

Background Information Regarding TSR

The Chief Forester's Responsibility

Determining the allowable annual cuts (AACs) for public forest lands in British Columbia is the responsibility of the province's chief forester. In this lengthy and complex process, the chief forester considers technical reports, analyses and public input, as well as government's social and economic objectives.

This responsibility is required by legislation in the Forest Act, Section 8. It states that the chief forester shall specifically consider the following factors:

1. 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 that it will take the forest to become re-established
 - silviculture treatments, including reforestation
 - standards of timber utilization
 - constraints on the amount of timber that may be produced due to use of the forest for other purposes.
2. The short- and long-term implications to the province of alternative rates of timber harvesting from the area.
3. The nature, production capabilities and timber requirements of established and proposed processing facilities.
4. The economic and social objectives of the Crown for the area, region and province—as expressed by the minister of forests.
5. 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 judgment based on the best available information. By law, the chief forester is independent of the political process, and is not dictated to by the minister of forests when determining AACs. In these determinations, the chief forester considers relevant information from all sources.

Why the current AAC may be higher than the long-term harvest level.

Some concern has been expressed that the AACs are higher than the long-term harvest level. There are two main factors that explain this difference:

- In the short term, harvesting takes place in older forests that have accumulated high timber volumes by growing for a long time. Future harvesting on the same sites will take place in second-growth forests at younger ages, often yielding lower volumes per hectare.
- Where the long-term harvest level is significantly below the current AAC, the chief forester's strategy is to gradually reduce AACs in a managed transition to the lower level over several decades (provided the long-term harvest level is not jeopardized). This allows communities that rely on the forest sector to avoid sudden economic disruptions and to plan for the future.