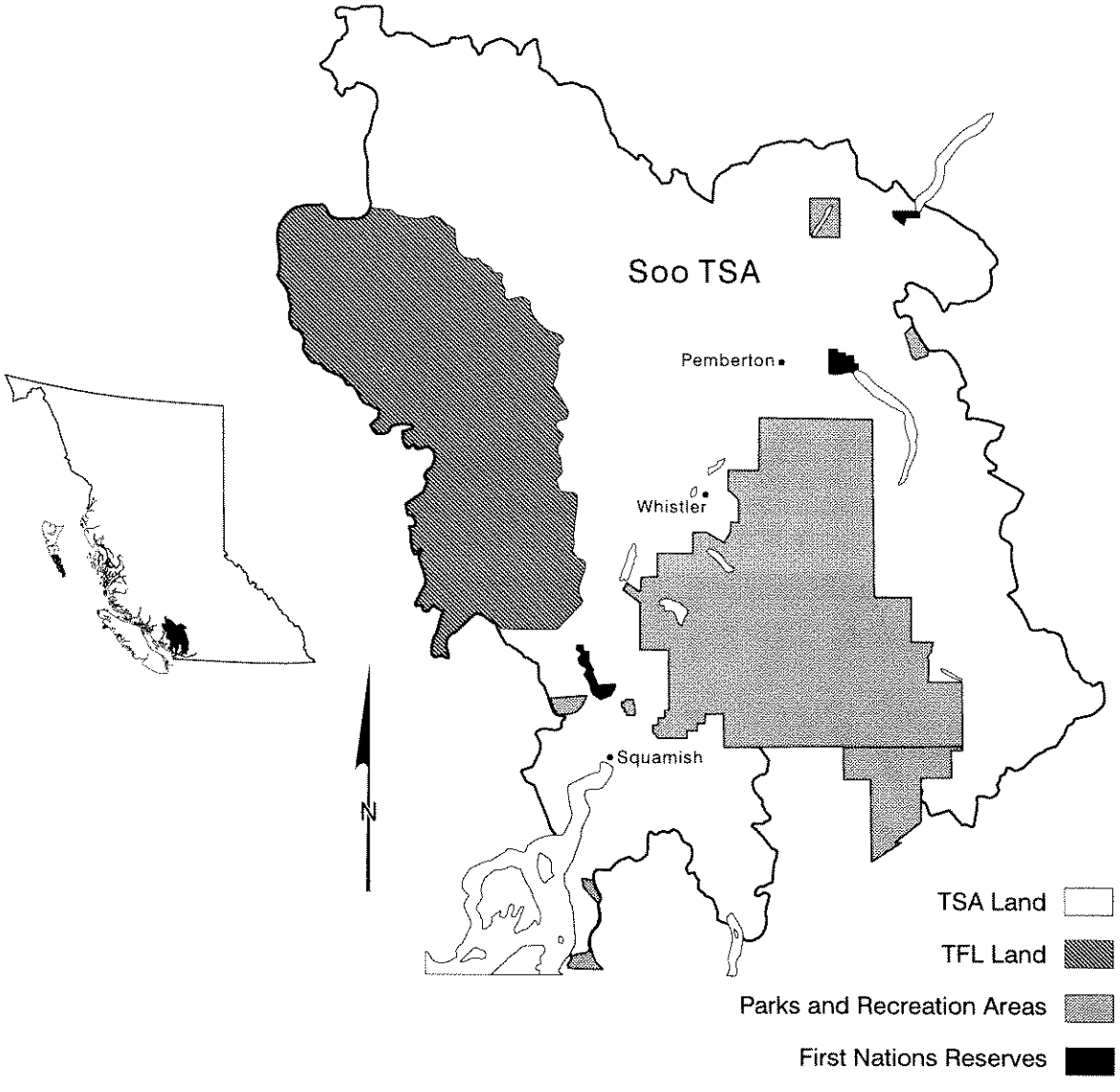
MINISTRY OF FORESTS

Soo Timber Supply Area

Timber Supply Review Discussion Paper December 1994



Province of British Columbia
Ministry of Forests

Soo Timber Supply Area

Timber Supply Review Highlights

- The British Columbia Forest Service is reviewing the timber supply in all the timber supply areas* and tree farm licence* areas in the province. The review examines the impacts of current integrated resource management* practices on the timber supply*, economy and environment of the local area and the province. Based on the results of this review, the chief forester may decide to adjust the allowable annual cut* for the Soo Timber Supply Area.

- The present allowable annual cut in the Soo Timber Supply Area generates a total of 549 person-years of employment within the area, mainly in timber harvesting, and an additional 1,274 person-years outside the area. Approximately 95 per cent of the timber processed in the local area comes from outside of the Soo Timber Supply Area (page 5).

- The allowable annual cut in the Soo Timber Supply Area was reduced by 18 per cent in 1992 to 580,000 cubic metres per year. At that time further reductions were forecast to occur in the next few years. The timber supply analysis completed for this review indicates that harvests must decline to a sustainable level within 20 years to avoid subsequent timber supply shortages (page 8).

- Several factors suggest the short-term supply may be even lower than initially predicted:
  - there may be less merchantable timber in the older forests than has been estimated
  - it may not be possible to build roads to access a portion of the land base
  - the area of viewscapes requiring special practices is expected to increase which may restrict timber harvesting
  - implementation of the coastal biodiversity guidelines may restrict timber harvesting
  - the area with cultural heritage values where timber harvesting is restricted may be larger than estimated (page 8).

- There may be opportunities to partially offset projected short-term timber supply reductions by:
  - developing suitable harvesting and reforestation practices for sites where traditional practices have failed
  - harvesting areas that are not currently considered economical or feasible to harvest
  - reducing the minimum harvesting ages
  - developing more accurate estimates of timber productivity
  - implement commercial thinning (page 9).

- Although the economy of the area has developed greatly in recent years, it is predicted that Squamish and Pemberton would be substantially impacted by further timber supply reductions, particularly since the 1992 reduction has not yet been fully implemented by the timber companies due to allowed annual flexibility. Opportunities do exist for alternative employment and economic diversification, especially through the Forest Renewal Plan (page 11).

- Several alternatives exist for the chief forester to adjust the short-term allowable annual cut as part of a strategy to achieve the long-term timber supply reduction:
  - the current allowable annual cut could be maintained for 10 years followed by a 30 per cent reduction to below the long-term level
  - the current allowable annual cut could be maintained for up to 30 years, with severe timber supply reductions well below the long-term level
  - small reductions could be implemented now, with larger reductions in the future
  - a consistent decline could occur throughout the transition period, or,
  - large reductions could be made now, with smaller reductions in the future (page 13)

- The timber supply in this area could be affected in the future through decisions from other government initiatives such as the Forest Practices Code*, the Protected Areas Strategy*, First Nations land claims and Land-Use Plans, none of which could be fully accounted for in this review.

- The allowable annual cut will be re-assessed within five years to reflect decisions from other processes and, if one has been completed, the choices made in a Land and Resource Management Plan, as well as changes in economic conditions, available information and analytical techniques.

* **Throughout this document, an asterisk at the end of a phrase indicates the phrase is defined in the definition section on the back of this page.**

Definitions

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

Base case forecast
The timber supply harvest forecast that illustrates the effects of current forest management practices on the timber supply using the best information that was available when the data package was prepared.

Current management practices
Forest practices that were being approved and implemented in the timber supply area when this review was initiated. These practices are described in this paper starting on page 6.

Forest licence
A licence which grants the licensee the right to harvest a specific volume of wood each year from land within a timber supply area.

Forest Practices Code
A draft *Forest Practices Code for British Columbia Act* was recently passed in the British Columbia Legislature. The final code will be proclaimed into law in early 1995.

Integrated resource management
The identification and consideration of all resource values, including social, economic and environmental needs, in land use and development decision-making.

Land and Resource Management Plan
A consensus-building process involving a cross-section of the public, interest groups and government agencies to establish resource management objectives and strategies for a management area (usually a timber supply area).

Person-year
One person working the equivalent of one full year. If someone works full time for six months, he or she accounts for 0.50 person-years.

Protected Areas Strategy
A provincial government initiative to protect representative areas within each ecological region of the province. This may result in some areas in the Soo Timber Supply Area being protected from timber harvesting.

Riparian area
The stream bank and flood plain adjacent to streams or water bodies.

Timber management land base
Crown forest land which is economical and environmentally feasible to access and harvest.

Timber supply
The volume of timber available for harvesting over time, under a particular management regime.

Timber supply area
An area of Crown land defined by an established pattern of wood flow from the forest to the primary timber-using industries.

Tree farm licence
An agreement entered into with the provincial government which provides for the establishment, management and harvesting of timber by a private interest on a described area of Crown land.

Soo Timber Supply Area

Introduction

The British Columbia Forest Service is reviewing the timber supply in all timber supply areas* and tree farm licence* areas in the province. The objectives of this three-year review are:

- to identify the economic, environmental and social consequences of existing forest management practices including their impacts on the short- and long-term timber supply
- to identify where improved information is required to make reliable forecasts
- to provide the chief forester with information to make necessary adjustments to the allowable annual cuts for the next five years

This discussion paper summarizes the technical reports from the Timber Supply Review in the Soo Timber Supply Area and encourages British Columbians to comment on the findings. Public comments will be accepted until March 16, 1995. You will find a response form at the end of this paper to help you provide input.

Background to the Timber Supply Review

For at least 20 years, governments have known that British Columbia's timber supply would decline in the future—we could not keep cutting at the rate we've been going. Now there is an urgent need for up-to-date information to review the timber supply and allowable annual cuts throughout the province.

A 1991 study completed by the Forest Service, *A Review of the Timber Supply Analysis Process for British Columbia*, examined the procedures which led to the determination of allowable annual cuts, and confirmed the need for change.

The study found that:

- existing allowable annual cuts were based on outdated information and management practices
- procedures failed to take into account integrated resource management practices and protection of non-timber values
- the procedures were far too time consuming
- analytical techniques had to be strengthened

As a result, very few timber supply analyses had been completed since the early 1980s with few allowable annual cut adjustments.

The Forest Service acted quickly on the study's recommendations. The Timber Supply Review was initiated to assess short- and long-term timber supplies in light of current forest practices and integrated resource management.

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 economy and environment—now and in the future. Section 7 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 non-timber resource management objectives
   - any other information which relates to the capability of the area to produce timber

Towards a sustainable future

British Columbians agree there is a need for sustainable resource management to ensure a strong forest economy, viable communities and a healthy environment—today and always. The Timber Supply Review is one of several government initiatives designed to help achieve sustainability:

- The *Forest Renewal Plan* is a partnership of all the forest interests, working together to invest in increasing the value of the forests and strengthening the forest sector economy.
- The *Forest Practices Code* creates a single enforceable law to require better forest practices, with heavy penalties for violators.
- The *Timber Supply Review* is providing the information needed to adjust allowable annual cuts to ensure the sustainability of British Columbia's forests.
- The *Commission on Resources and Environment*, the *Protected Areas Strategy*, and *Land and Resource Management Plans* are moving to integrate all values into land-use planning in an effort to end confrontation and valley-by-valley battles.
- The *B.C. Treaty Commission* is moving us toward fair and equitable settlements of treaties which can create long-term social and economic stability for aboriginal and non-aboriginal British Columbians.

b) the short- and long-term implications to the province of alternative rates of timber harvesting from the area
c) the nature, production capabilities, and timber requirements of established and proposed processing facilities
d) the economic and social objectives of the Crown, for the area, the region and the province, as expressed by the minister of forests
e) 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 information that is available. By law, the chief forester is independent of the political process and is not directed by the minister of forests when determining allowable annual cuts. In these determinations the chief forester considers relevant information from any source, including interest groups. However, the chief forester cannot be inappropriately influenced in these determinations by the advocacy efforts of any group.

Timber supply review process

The Timber Supply Review is an improvement over past methods, with better information and superior analytical techniques. The process was designed to stimulate public discussion through the release of reports and this discussion paper, and to accommodate new information, techniques and ideas. Figure 1 illustrates the five-step process that has been developed for the Timber Supply Review in timber supply areas. The diagram also indicates the status of the Timber Supply Review for the Soo Timber Supply Area, and the estimated time required to complete each step in the process.

As the legal mandate for allowable annual cut determinations for tree farm licence areas is the same as for timber supply areas, the Timber Supply Review process for tree farm licences is based on similar principles, but it has been designed to reflect the management role of these licensees.

A commitment to incorporate change

A *Forest Practices Code Act* for British Columbia was passed in the Legislature in July, 1994. This law requires better forest practices throughout the province, and establishes heavy penalties for violators. When the Code is fully implemented, forest management practices will be changed to meet its requirements. These new practices may influence both short- and long-term timber supply. Practices which have recently been implemented based on current understanding of the intentions of the Code are identified in this discussion paper. Information will be provided to the chief forester on the timber supply impacts of these practices for consideration in this allowable annual cut determination. In most cases, however, further implementation and experience with the Code will be required before the timber supply effects of new practices can be properly assessed, making it necessary to incorporate these factors in future allowable annual cut determinations.

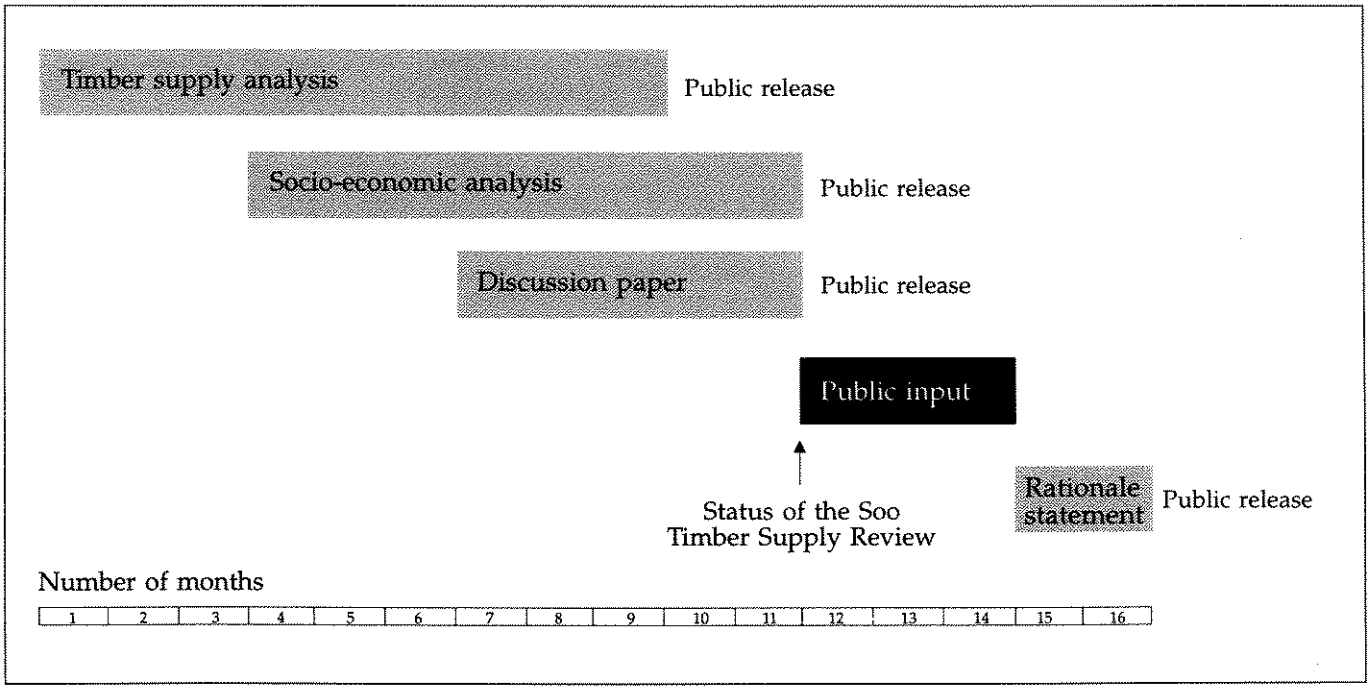


Figure 1 Steps in the Timber Supply Review process

The *Forest Act* requires the chief forester to reassess the allowable annual cut for each timber supply area and tree farm licence at least every five years after this review is completed to incorporate new information, new practices and new government policies. Implementation of major government initiatives such as the Protected Areas Strategy, Land-Use Plans, Land and Resource Management Plans and the Northern Spotted Owl Recovery Project may have significant impacts on the timber supply in specific timber supply areas and tree farm licence areas. In these cases, the chief forester may decide to determine the allowable annual cuts more frequently than every five years.

Timber Supply Review in the Soo Timber Supply Area

The data package used for the timber supply analysis in the Soo Timber Supply Area was finalized by Forest Service staff in December 1993. The Forest Service then conducted and released a short- and long-term timber supply analysis (*Soo TSA Timber Supply Analysis,* July 1994). A consultant also completed a socio-economic analysis of the timber supply forecasts (*Soo TSA Socio-Economic Analysis,* December 1994). Both reports are available from the Squamish Forest District office and the Vancouver Forest Region office in Nanaimo.

This discussion paper summarizes these two reports and highlights critical factors the chief forester must consider to determine the allowable annual cut for the Soo Timber Supply Area.

In conjunction with the release of this discussion paper and the socio-economic analysis, Forest Service staff will actively solicit public input to ensure the information in the Timber Supply Review for the Soo Timber Supply Area is correct. Input will be accepted until March 16, 1995 and will be summarized in a report to the chief forester and the minister of forests.

After weighing all the available information, the chief forester will determine the allowable annual cut for the Soo Timber Supply Area during the summer of 1995. This determination and a *Rationale Statement* for the determination will be released along with a *Summary of Public Input.*

Throughout this discussion paper, the page numbers from the technical reports are provided so you can refer to them for additional information (*TSAR* is the *Timber Supply Analysis Report; SEA* is the *Socio-Economic Analysis*). Both reports are available from the Squamish Forest District office and the Vancouver Forest Region office in Nanaimo.

Description of the Soo Timber Supply Area

The Soo Timber Supply Area lies in the southeast portion of the lower mainland area of British Columbia, extending along the Lillooet River to Harrison Lake and the Cheakamus River to Howe Sound. It is bounded by Tree Farm Licence 38 on the west and surrounds Garibaldi Provincial Park. The timber supply area encompasses approximately 880,000 hectares and includes the communities of Lions Bay, Britannia Beach, Squamish, Whistler, Pemberton, Mount Currie and D'Arcy. It is administered from the Squamish Forest District office located in Squamish.

The Soo Timber Supply Area is characterized by the rugged terrain of the Coast Mountains and valley bottom floodplains of the area. It is ecologically diverse, due to the range of climate (from coastal to interior) and elevation (from sea level to 2 700 metres) with five ecological zones represented in the area.

Forest resources

Timber

Figure 2 shows that most of the land base in the timber supply area is either not available or not suitable for timber harvesting. Areas not managed directly by the Forest Service, such as private lands and provincial parks, represent 24 per cent of the area. Of the remaining 76 per cent, 42 per cent is non-forest (rock, swamp, alpine) and 22 per cent is Crown forest land that is not currently considered feasible or economical to harvest due to steep or sensitive terrain, poor-quality timber or non-commercial species. Only 12 per cent of the total area within the Soo Timber Supply Area is considered feasible and economical to harvest and reforest and is included in the timber management land base (*TSAR* page 6).

Soo Timber Supply Area

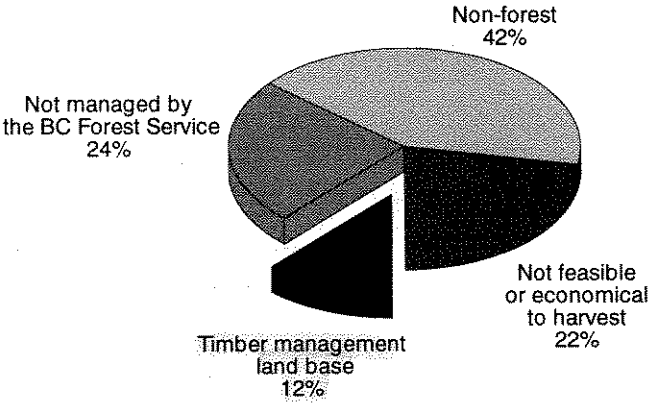


Figure 2 Classification of area within the Soo Timber Supply Area

Notes: Total area: 880,000 hectares (including Garibaldi Park)

Approved study areas for the Protected Areas Strategy and the Interim Conservation Strategy for the Northern Spotted Owl have not been subtracted from the timber management land base for this analysis.

Figure 3 shows the current age range of the forests within the timber management land base. The land base contains a substantial proportion (50 per cent) of younger, regenerated forests less than 40 years old. About 34 per cent contains forests more than 140 years old and the remaining 16 per cent ranges between 40 and 140 years. This distribution is a result of the historical harvesting levels. The relatively small amount of the middle age classes has a significant impact on timber supply. The existing mature forests must last until the younger stands become old enough to harvest to avoid future timber supply shortages (*TSAR* page 8).

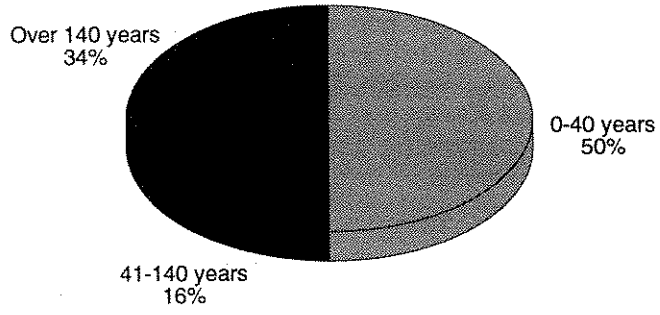


Figure 3 Current forest ages within the timber management land base

Botanical forest resources

Harvesting or collecting forest vegetation such as pine mushrooms, ferns, mosses, salal and cedar boughs has recently increased in this timber supply area (*SEA* page 35).

Wildlife

The Soo Timber Supply Area contains a rich and diverse array of wildlife due to the variety of habitats in the area. Native mammals include blacktail deer, moose, mountain goat, grizzly bear, black bear, cougar, wolf, coyote, muskrat, beaver, marten and other fur-bearing species. The area supports a number of plants and animals, such as the bald eagle, that require special consideration due to their rarity, restricted ranges or special significance. Threatened or endangered species include the northern spotted owl and marbled murrelet. Preservation of habitat for the recovery of the northern spotted owl has received international attention (*SEA* page 32).

Fisheries

Four major river systems (Squamish, Lillooet, Indian and Gates) that support salmonid fish species lie within the Soo Timber Supply Area. The fisheries potential is somewhat limited due to the steepness of streams, extreme flow variation, low temperatures and nutrients, and habitat loss due to industry and urbanization. Salmon hatcheries are located on the Cheakamus and Gates rivers. Lakes in the area were originally barren but stocking programs have established rainbow trout and cutthroat in many of them (*SEA* page 34).

Recreation and tourism

A large number of residents and visitors use the Soo Timber Supply Area for recreational activities. Skiing is internationally known, and rock climbing, windsurfing and hiking opportunities are remarkable. It is expected that both tourism and recreation will continue to grow in the future. Management of viewscapes in the main transportation corridor, the Sea to Sky Highway, has become a high priority (*SEA* page 36).

Current allowable annual cut

The allowable annual cut for the Soo Timber Supply Area was set in 1992 at 580 000 cubic metres per year, an 18 per cent reduction from the previous level. At that time the chief forester indicated further allowable annual cut reductions were to be expected in 1995.

Approximately 78 per cent of the harvest is allocated to nine long-term renewable licences with greater than 10 000 cubic metres of allowable cut per year, and seven smaller licences. The Small Business Forest Enterprise Program, which is administered by the Forest Service, has the largest allowable cut with 21 per cent of the total cut. A small volume (one per cent) of the allowable annual cut is allocated to a

temporary licence for the harvesting of cottonwood stands.

Socio-economic profile

Communities

In 1991 the population of the Soo Timber Supply Area was estimated to be about 18,100 with approximately 11,700 people (65 per cent) living in Squamish. Significant seasonal increases in population occur because of the Whistler resort area. Currently, the population growth rate is more than double the provincial average. The average age of the regional population is increasing, a trend which is expected to continue well into the next century (*SEA* page 7).

An examination of health, crime, income and education indicators for the communities in the Soo Timber Supply Area indicate that, compared to averages for British Columbia, these communities have a relatively stable social fabric. However, unemployment is high, suggesting these communities, particularly Pemberton, may have difficulty adjusting to further employment reductions (*SEA* page 55).

There are seven First Nations (or bands) with reserve lands and traditional territory in the Soo Timber Supply Area. The Mt.Currie Band (Stl'atl'imx) and Anderson Lake Band (N'Quatqua) have well-established communities where the majority of the band members live. The Douglas, Samahquam and Skookumchuck reside in the Lillooet River valley in several small communities, and the Squamish Nation (Skxwumish7ulh) has a small community near Squamish. Other members live off the reserves in other population centres. The Burrard Band (Tsleil-Waututh) has traditional territory and one small reserve in the timber supply area.

Employment and revenues

Between 1981 and 1991, declines in employment in the primary and manufacturing sectors within the timber supply area were offset by significant increases in service sector activity, especially in the hospitality industry where the proportion of workers almost doubled. This reflects the growing tourism sector in the region, which has also driven the area's strong population growth. The Port of Squamish and BC Rail are among the largest employers in the area and rely heavily on the forest industry for business.

In 1991 approximately 11 per cent of the total labor force was directly employed in the forest sector. Harvesting activity within the timber supply area provides substantial local employment, but only about 13 per cent of the timber currently harvested in the timber supply area is processed within the area (*SEA* page 46). The ultimate location of processing is often not known because the movement of logs and by-products (such as chips and hog fuel) to their final processing point can be quite complex involving private trades, sales agreements and distribution through the Vancouver Log Market.

It is estimated that approximately 95 per cent of the wood processed within the Soo Timber Supply Area is harvested outside the area (*SEA* page 10). A sawmill in Squamish is one of the larger employers in the area, with 175 employees. The pulpmill in Woodfibre, employing 300 people, partially relies on wood from the timber supply area. Log home construction and the manufacturing of poles and custom log products employ small numbers of people in the area and uses some of the timber harvested in the timber supply area.

The estimated current direct and indirect employment in the province resulting from harvesting and processing the current allowable annual cut from the Soo Timber Supply Area is shown in figure 4. Harvesting and silviculture employ 303 person-years and wood processing employs 64 person-years, for a total of 367 person-years locally within the timber supply area. Outside the area, Soo Timber Supply Area wood supports another 322 processing jobs, primarily in lower mainland and coastal pulpmills. The total direct provincial employment attributable to the Soo Timber Supply Area is 689 person-years.

The forest industry creates indirect employment through service industries which provide goods and services to the forest industry and their employees. The estimate for indirect employment is based on the assumption that each direct person-year of employment creates a total of 2.5 person-years of employment both within and outside the timber supply area (*SEA* page A14). Provincially, 1,034 person-years of indirect employment are attributable to Soo Timber Supply Area wood, of which 182 person-years exist within the timber supply area. The total direct and indirect employment generated by harvesting and manufacturing the current allowable annual cut from this timber supply area is 1,723 person-years.

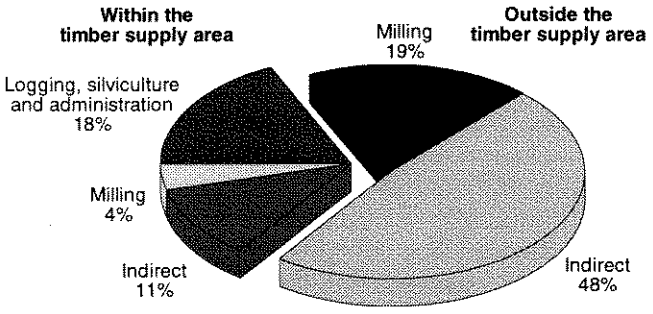


Figure 4 Total employment from the Soo Timber Supply Area harvest

Approximately $12.6 million in provincial revenues are projected to be generated annually by timber harvesting at the current allowable annual cut level. This figure is based on fees of $4.8 million for the harvesting of public timber, estimated personal income tax revenues of $5 million, plus other tax revenue of $2.8 million. These estimates are lower than the revenue historically generated from timber harvesting in the Soo Timber Supply Area in the 1980s because they are based on the current allowable annual cut level of 580,000 cubic metres per year, rather than the previous allowable annual cut level of 705,000 cubic metres per year.

In addition, these estimates were developed before the new Forest Renewal Plan was announced and do not include increased stumpage revenue which will be generated through this initiative. While stumpage revenues are expected to increase by as much as 80 per cent, it will not be possible to accurately estimate the impact of this change until this plan has been in place for a period of time.

Current management practices

Public forest lands in British Columbia provide recreational enjoyment, fish and wildlife habitat, water supplies, timber resources and many other benefits. The Forest Service manages the forest, range and recreation resources on public lands. The Ministry of Environment, Lands and Parks is responsible for the management of fish, wildlife and water resources. Both agencies subscribe to the principle of integrated resource management, where all resources are considered before management decisions are made.

The timber supply analysis was based on existing land-use designations and current management practices—practices that were actually being approved and implemented in the Soo Timber Supply Area in 1993 when this analysis was initiated.

The current integrated forest management practices in the timber supply area are described in the Soo Timber Supply Area Forest Management Strategy and are briefly summarized below. Readers are encouraged to review the *Timber Supply Analysis Report*, pages 10-12 and Appendix A, for more details.

- **Basic silviculture** - By law, all harvested areas in British Columbia that are expected to produce timber in the future must be reforested with ecologically appropriate species within a specified time frame (*TSAR* page 46). The most common silvicultural practice is: clearcut harvesting, followed by site preparation if necessary, reforestation by planting with a mix of species or by relying on natural regeneration and control of competing vegetation. It is assumed that areas will be restocked within three to six years of harvesting.

  Reserves and buffers may be left in clearcuts, and partial cutting techniques are required to be practised on a minimum of 10 per cent of harvest areas beginning in 1994.

- **Forest health and unsalvaged losses** - Forest losses due to wildfire, insects, diseases and blow down are minimized as much as possible. Annual losses of timber to insects and fire damage are estimated to be 34,000 cubic metres. This is damaged timber which cannot be salvaged.

- **Minimum harvest ages** - Minimum harvest age is defined as the time it takes for stands to grow to harvestable size. The minimum harvest ages used in the timber supply analysis vary by tree species and site productivity. For existing forests, 65 years for cottonwood and a range from 95 to 135 years for conifers was used. For managed coniferous forests, a range from 70 to 130 years was used.

- **Viewscapes** - Maintaining the visual quality of the forest landscape is an important priority, particularly in major travel corridors such as the Sea to Sky highway and the area surrounding the Resort Municipality of Whistler. Road construction and logging are planned and implemented to minimize visual impacts. Recent studies have shown that trees harvested in visually significant areas must reach a minimum height of five metres before a visually acceptable landscape will be restored.

  Eleven per cent of the timber management land base has been classified into two levels of visually sensitive areas:
  - very highly sensitive areas - (retention) 1,065 hectares where no more than 11 per cent of the timber management land base can have trees less than five metres tall at any time.

- highly sensitive areas - (partial retention) 10,635 hectares where no more than 21 per cent of the timber management land base can have trees less than five metres tall at any time.

- **Fish and wildlife habitat** - Streamside or riparian areas are protected and maintained under the Coastal Fisheries/Forestry Guidelines. Approximately three per cent of the timber management land base was deducted from the data base to represent these areas.

  Suitable deer winter range must have sufficient forest cover to reduce snow depth, and provide thermal and security cover. Approximately 17,000 hectares of potential deer winter range have been mapped. For the timber supply analysis approximately five per cent of the timber management land base was deducted from the database for critical deer habitat. For the remaining area, it was estimated that at least 65 per cent of this area would remain in forests more than 80 years old, and no more than 25 per cent of this area could be covered by forests less than four metres tall. The areas that currently provide winter range are primarily Douglas-fir and it was assumed they will eventually be harvested when alternate habitats in close proximity are developed. A comprehensive deer winter range management plan is being jointly prepared by the Forest Service and the Ministry of Environment, Lands and Parks.

- **Community watersheds** (6,400 hectares) - Licensed community watersheds require special forest management practices to ensure water quality is maintained. After harvesting has occurred on an area in this zone, no further harvesting is allowed in adjacent forested areas until the previously harvested area is covered by trees at least five metres tall. In addition, the rate of harvesting is restricted so that, at any given time, a maximum of 17 per cent of the timber management land base of this zone may be harvested and occupied by trees less than five metres tall.

- **Mushroom areas** (1,000 hectares) - Pine mushroom harvesting has become an important economic activity in the Pemberton area. The relatively small area involved is primarily forested with Douglas-fir and suitable mushroom production conditions are expected to be maintained by using partial cutting harvesting techniques. For the timber supply analysis, it was estimated that at least 50 per cent of this area would have to be covered with forests greater than 80 years old and no more than 20 per cent could be covered by forests less than five metres tall at any time.

- **Cottonwood area** (1,000 hectares) - A temporary licence in the timber supply area has been issued to harvest cottonwood. No more than 33 per cent of the land base in this area may be occupied by forests less than three metres tall at any one time.

- **Integrated resource management area** (77,935 hectares) - The remainder of the timber management land base lies within this area. After harvesting has occurred in an area, no harvesting is permitted in adjacent forested areas until the previously harvested area is covered with free-growing trees (generally at least three metres tall). In addition, the rate of harvesting is restricted so that, at any given time, no more than 33 per cent of the timber management land base is covered by trees less than three metres tall.

Timber supply forecasts and critical factors

It is important to note that the timber supply forecasts presented in the analysis report and in this paper do not represent either a short-term allowable annual cut determination or a long-term strategy to adjust harvests to sustainable levels. These forecasts are part of the information that will be used by the chief forester to determine the allowable annual cut for the next five years.

Base case timber supply forecast

To complete a timber supply analysis, the analyst attempts to generate a base case timber supply forecast which meets all of the following conditions:

- the current allowable annual cut is maintained as long as possible, or if this is not possible, the maximum initial harvest rate is found, then
- the projected timber supply is reduced within a defined range, usually eight to 12 per cent per decade, until the long-term level is reached, and
- the projected timber supply is maintained at or above the predicted long-term level at all times

In the Soo Timber Supply Area it was not possible to define a base case timber supply forecast that met all of these conditions. As figure 5 illustrates, although it is predicted that the current allowable annual cut could be maintained for up to 30 years, this is followed by severe timber supply shortfalls. Also, both of the initial forecasts indicate the timber supply will drop below the long-term level. This was confirmed in a test where the timber supply was reduced to the long-term level immediately—even in this test a reduction below the long-term level occurred.

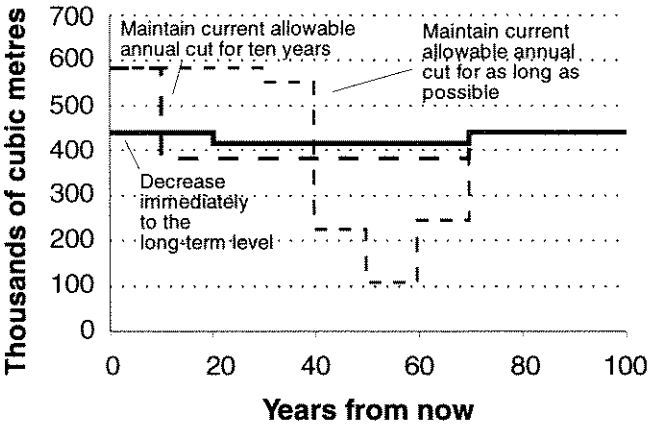


Figure 5 Initial timber supply forecasts

The base case forecast for the Soo Timber Supply Area was developed to balance the short- and long-term impacts identified in the initial tests. This forecast indicates the need for an immediate reduction in timber supply to 506,000 cubic metres per year, 13 per cent below the present allowable annual cut of 580,000 cubic metres per year. This reduced rate of harvest can be maintained for 10 years before the timber supply is projected to decline approximately 12 per cent per decade for the next 10 years, to 394,000 cubic metres per year, approximately 11 per cent below the projected long-term level. This level is expected to continue for 50 years before rising to the long-term timber supply level of 442,000 cubic metres per year (*TSAR* page 14).

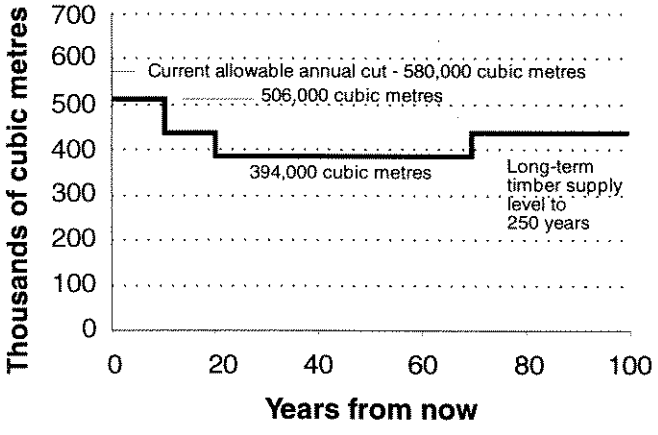


Figure 6 Base case timber supply forecast for the Soo Timber Supply Area

Examining critical factors

Since 1993 when the data was prepared for the timber supply analysis, Forest Service staff have been collecting more information for some of the factors in the analysis. Also, tests completed during the timber supply analysis identified which factors had the greatest effect on the timber supply forecasts. These critical factors are discussed in this section.

The chief forester must carefully evaluate this information to determine the allowable annual cut and identify where improved information is needed for the next timber supply review. We encourage you to do the same.

Critical factors indicating a further reduction in the short-term timber supply below the base case

- **Amount of mature timber**
  In the short term, the majority of the harvest will be from existing mature forests that are more than 250 years old. Experience indicates that many of the trees in these forests are likely to have a higher incidence of decay than the average used in the timber supply analysis, especially in the Pemberton area. Also, the existing mature forests generally occur on poorer than average growing sites. These factors lead to the possibility that the estimates for merchantable timber in the existing mature forests that were used in the timber supply analysis may be optimistic. Figure 7 illustrates the timber supply impacts of this factor (*TSAR* page 28).

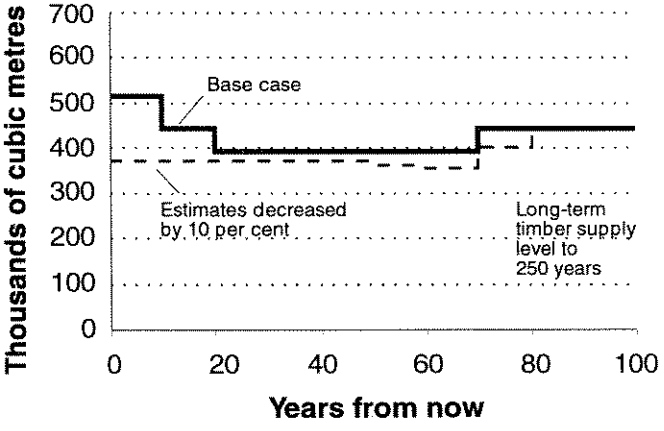


Figure 7 Impacts of changes in estimates of mature timber

- **Uncertainty over road access throughout the timber management land base**
  In the timber supply analysis it was assumed that road access to the area included in the timber management land base would be possible when required. In some cases, private land, Native

Reserves, awkward highway junctions and opposition to log hauling by community groups impedes and may restrict road access. Because of these issues, Sockeye Creek and the lower areas of East Howe Sound were deducted from the land base for this analysis.

Forest Service staff estimate that in addition to the deductions made in the analysis, approximately 10 to 15 per cent of the timber management land base may not be accessible if these issues cannot be resolved. If these areas cannot be accessed, and harvesting continues at projected levels, there may be further timber shortages as illustrated in figure 8.

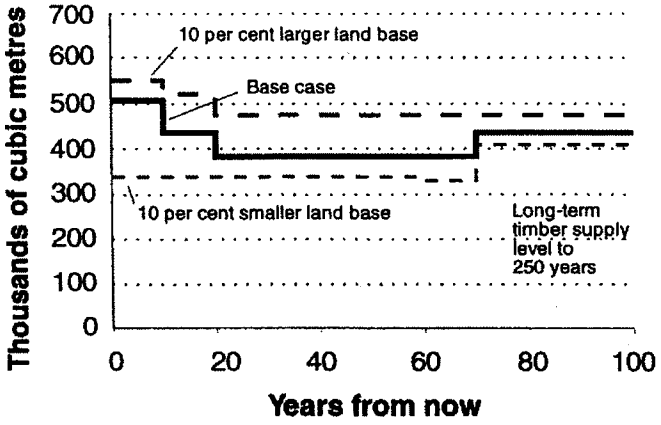


Figure 8 Impact of changes in the size of the timber management land base

- **Management practices in visually sensitive areas**
  In the timber supply analysis, special management practices were defined for most of the visually sensitive areas within the timber supply area. It is expected that the amount of visually sensitive area within the timber management land base will increase, and management practices that are more restrictive to timber harvesting may be required in visually sensitive areas. This could reduce timber availability in the short term by limiting the amount of harvesting that is permitted in visually sensitive areas at any one time.

- **Coastal biodiversity guidelines**
  The *Coastal Biodiversity Guidelines* are expected to be implemented in the coming months as required under the Forest Practices Code. The impacts of these guidelines on timber supply is not clear at this time. It is possible that harvesting costs will increase, which could reduce the area that is economical to harvest. It is also anticipated that additional areas will be reserved from harvesting including small patches of timber, specific trees which provide wildlife habitat and selected areas of ecosystems which provide important habitats (forest ecosystem networks). These factors are likely to result in a smaller timber management land base than was estimated in this analysis.

  These guidelines were partially accounted for in the timber supply analysis through the deduction of three per cent of the timber management land base from the data base for riparian areas where the Coastal-Fisheries/Forestry Guidelines do not permit timber harvesting.

- **First Nations cultural heritage values**
  Comprehensive inventories of First Nations cultural heritage values (modified trees, petroglyphs, etc.) and areas of traditional use have not been completed. As inventories are completed and management practices are defined, areas may be removed from the timber management land base and harvesting may be modified. This is expected to impact the short- and long-term timber supply.

Possible opportunities to partially offset the projected reductions in short-term timber supply

- **Harvesting forests that are currently difficult to reforest**
  Because of the difficulty of re-establishing acceptable reforestation, 20,970 hectares of relatively poor quality growing sites that are not capable of growing 25-metre trees in 150 years were considered unsuitable for conventional clearcut harvesting and were deducted from the timber management land base for this review. Improved markets for the lower quality timber from these forests and use of appropriate partial cutting harvesting practices may make it possible to economically harvest and successfully reforest these areas. This may increase the short- and long-term timber supply in the Soo Timber Supply Area.

- **Harvesting areas that have been uneconomical to harvest**
  The timber management land base is defined as the area that is currently economically feasible to harvest and reforest. Generally, it includes sites where the cost of harvesting and reforesting is less than the value of the timber extracted. To date, very little logging has occurred outside of the area defined as the timber management land base for this analysis.

  It is possible that with alternative harvesting methods such as helicopters, and with a possible increase in timber values as wood supplies become limited, more of the timber on the rugged mountainous terrain and lower quality sites in the

area could become economical to harvest. This may lead to an increase in the timber management land base and possibly an increase in the short- and long-term timber supply.

- **Minimum harvest ages**
  Defining minimum harvest ages for a timber supply analysis requires balancing the timber volume and the timber value desired from a forest. In this review, the minimum harvest ages were based on the objective of growing the most valuable log grades possible from each area, without reducing the total timber volume by more than five per cent from the maximum. This resulted in slightly older ages than would have been defined if maximizing timber productivity was the main objective. The intent is to achieve the greatest financial return from forest management activities on the timber management land base.

  Figure 9 illustrates the impact of this objective on the timber supply forecast. Reducing the minimum harvest ages is projected to increase the timber supply. If other strategies cannot be implemented to improve the short-term timber supply, reducing the emphasis on timber quality may improve the timber supply for the next several decades.

Figure 9 Impact of changing minimum harvest ages

However, a reduction in minimum harvest ages could impact non-timber values that are associated with older forests, as well as timber values and opportunities for value-added manufacturing, with associated employment benefits. Also, maintaining a higher allowable annual cut by harvesting younger, lower volume forests will require more area to be harvested at any time, which may make it difficult to meet integrated resource management objectives.

The 1994 Soo Timber Supply Area Forest Management Strategy, which was developed with extensive public input, allows for early harvest in some areas to help create a more even distribution of forest ages, to disperse the harvest throughout the timber supply area, to reduce harvesting of old-growth forests, to harvest damaged forests and to provide opportunities for harvesting during the winter.

- **More accurate estimates of timber productivity**
  The timber productivity of forest areas is defined by comparing the height and age of trees growing on the area. Accurate estimates are difficult to obtain for areas with very old trees because their age is often impossible to determine and measuring their real height is often complicated by dead or broken tops. For these reasons, Forest Service staff suspect timber productivity may be underestimated in the forest inventory for the Soo Timber Supply Area.

  If timber productivity has been underestimated, more second-growth timber will be available sooner than predicted in the timber supply analysis. In the short-term this could mean that smaller reductions in harvest levels than predicted will be needed to prevent future shortages of timber. The long-term timber supply level may also increase.

- **Increasing the amount of commercial thinning**
  Commercial thinning is not a common practice in the Soo Timber Supply Area because there are few forests that are currently suitable. However, as areas that were harvested in the past grow older, this practice will become more feasible. As commercial thinning is not a current practice, and analytical limitations made it difficult to assess the potential impacts of implementing a commercial thinning program in the future, the potential impacts of commercial thinning were not examined in the timber supply analysis.

  If a commercial thinning program was implemented, harvesting may be possible in areas where visual and other non-timber resource values restrict the use of clearcutting. Commercial thinning may also offset the projected short-term timber supply reductions, although the impact on long-term timber supply must also be considered.

  Further operational experience with commercial thinning is needed, as well as examination of the impacts on short- and long-term timber supply, before this practice is widely implemented.

Environmental and socio-economic impacts

Environmental impacts

All of the projected timber supply forecasts will have an impact on the environment. The difference between them is how quickly the changes occur and how widespread they will be. A reduction in the harvest level in the short term will improve the options for addressing environmental impacts.

Under the projected timber supply forecasts, the age-class distribution of the timber management land base would shift as the remaining old-growth forests are converted to younger-managed forests. The requirements for protection of wildlife habitat and visual quality would ensure a certain proportion of older forests would always remain.

Wildlife species that can adapt to a wide range of habitat types and species which occupy young forests would likely increase in numbers. Most of these species are not of specific management concern. Populations of species dependent on old forest or old-growth attributes, or which reach their maximum abundance in older forests, are expected to decline. The greatest declines would occur among species which require specific forest conditions such as the northern spotted owl or marbled murrelet. Most of these species are of significant management concern in setting management practices (*SEA* page 61).

The Ministry of Environment, Lands and Parks supports many of the current management practices used in the Soo Timber Supply Area to protect fish and wildlife habitats and water quality. Efforts have been made to identify critical habitat types (such as old-growth, wetlands and riparian areas) and to link them in a system of reserves called forest ecosystem networks. Biodiversity is also being addressed through these initiatives. Current management practices have been designed to ensure that recognized fish habitats which are sensitive to harvesting are not disrupted. Forest Service district staff believe that the new forest practices and the watershed restoration program will lead to an improvement in overall environmental and habitat quality compared to the practices of the previous several decades.

Environmental concerns related to visual quality and aesthetics are important, as they may affect the recreation and tourism industry. The management requirements for viewscapes were incorporated in the timber supply analysis.

First Nations impacts

First Nations within the Soo Timber Supply Area were invited to provide comments on the potential impacts to their people of a reduction in the allowable annual cut.

The In-SHUCK-ch do not perceive lower timber supply levels as having a negative economic impact on their members or their traditional communities, due to their present low involvement in the forest industry. In fact, lower timber supply levels are seen as beneficial to the In-SHUCK-ch because they will slow the consumption of the forest resource in advance of land claims negotiations and settlements. Another area of concern is the impact of logging on water and fishery resources, heritage resources and spiritual ceremonial sites (*SEA* pages 18 and 58).

The In-SHUCK-ch are attempting to gain forest tenures in advance of claims negotiations. Currently they are also negotiating with two local forest companies to identify economic development opportunities. They understand that lower timber supply levels will heighten competition for cutting rights, however less harvesting may better protect the cultural forest values that are important to them.

The involvement of the Anderson Lake Band (N'Quatqua) in forestry is currently greater in the Lillooet than the Soo Timber Supply Area, so it is unlikely that a reduction in the allowable annual cut in this timber supply area will result in an employment impact. However, the N'Quatqua perceive any reductions as a threat to their vision of a self-governing, economically sustainable community, especially if access to timber tenures by aboriginal organizations must continue under present rules.

Other bands in the area did not provide information on the potential impacts to their communities.

Community impacts

The timber supply analysis indicates the current allowable annual cut for the Soo Timber Supply Area cannot be maintained in the short- and long-term with current management practices. The ability of communities within the timber supply area to adapt to changes in the timber supply is an important factor that the chief forester considers when determining the allowable annual cut.

Total local employment within the timber supply area that is supported by the current allowable annual cut is about 549 person-years, with associated employment income of approximately $16 million annually (*SEA* page 51). It is assumed that

employment and income will decline approximately in proportion to the decline in the timber supply over time. If the allowable annual cut is reduced by 13 per cent immediately as in the base case forecast, the annual direct and indirect forest sector employment is projected to decline by 70 person-years to 479 person-years, with employment income estimated to fall by $2 million to $14 million.

Recent responses to employment changes in the area indicate there would be a negligible, short-term impact on population size due to the employment effects of the base case forecast. This is true even for the communities of Squamish and Pemberton which are dependent on the forest industry, because the population in the region has been growing rapidly.

The impact of an allowable annual cut adjustment on particular timber companies will depend on how the minister of forests apportions the adjustment. Small mills with a high level of dependency on wood from the timber supply area would be at most risk of closure. This is especially true because the price of logs on the open market is expected to rise.

It should be noted that historically a large number of smaller operators come and go. It is unlikely that a 13 per cent reduction, distributed among the existing forest companies, would by itself, result in the closure of a mill. However, further reductions which may be necessary to reach the long-term timber supply level, combined with reductions in other timber supply areas and reduced harvesting from other types of licences, are more likely to cause the closure of some mills (*SEA* page 52).

The projected reduction in timber supply in this review may have a more substantial impact than estimated because it will be combined with the economic impact of the 1992 allowable annual cut reduction, which has not fully impacted local communities. Because timber companies are permitted to vary their harvest levels by as much as 50 per cent above or below the allowable annual cut in their licence in any year, as long as the total amount harvested over the five-year cut control period is within 10 per cent of the total allowable annual cut, the economic impact of the 18 per cent reduction in the allowable annual cut which was made in 1992 has not been fully implemented. This will require significant reductions to be implemented during the remaining years of the cut-control period which may compound the impacts of allowable annual cut reductions resulting from this review.

Squamish and especially Pemberton, where reliance on harvesting activity is highest, would likely bear the greatest strain of a reduction in timber supply, both due to lack of alternative employment opportunities and inadequate adjustment services. Although the region has good growth prospects, it will be difficult for laid-off forest industry workers to move into the available service industry jobs. Skill requirements, service sector income levels and personal interest present barriers (*SEA* page 58).

The effects of job losses on communities and families will depend to a large degree on the alternative economic strategies that are adopted. Opportunities exist within the forestry sector to reduce employment losses by encouraging value-added manufacturing in high employment milling operations, improved utilization practices, enhanced silviculture, by harvesting stands not currently considered merchantable, and commercial thinning programs.

Additional opportunities are expected to be created through the new Forest Renewal Program and environmental restoration activities. The proximity of these communities to the large lower mainland population should be an advantage if diversifying the economy is an objective. Also, the expected increases in tourism use of the timber supply area could provide some economic opportunities. The challenge for these communities is to develop economic strategies that respond to local opportunities.

Individual forest workers can take advantage of various employment development programs delivered by governments to upgrade skills or to assist in career planning and job searches. The Howe Sound Community Futures Society, based in Squamish, oversees the operation of a local Enterprise Centre which provides assistance to those who want to start a business

The impact of the base case forecast on tourism is difficult to estimate, given the lack of research about the relationship between harvest levels and tourism impacts. It seems certain, however, that the demand for recreation opportunities in the timber supply area will continue to increase.

Impact on the timber industry

The timber industry faces several challenges in adapting to a number of changes in the timber supply situation. Projected reductions indicated in the timber supply reviews for individual timber supply areas are in addition to those expected to result from the Protected Areas Strategy and Spotted Owl Recovery Plan. The overall impact of these reductions may have a larger collective impact on the industry than each one considered separately. The effect on the coastal log market is unknown, but it is likely that prices will rise as supply declines. The opportunities to move operations into other areas on the coast are rare, and are likely to become even more limited. Small mills without a secure wood supply are expected to have the most difficulty adjusting.

Regardless of timber supply reductions resulting from this review, the timber industry faces the challenge of adapting to a different quality of timber as harvesting shifts from the existing mature high-value forests to younger second-growth forests. The appropriate balance of continuing to produce higher value speciality products from older forests as well as lower value commodity pulp and timber products from younger forests must be examined. The Soo Timber Supply Area Forest Management Strategy specifies minimum goals for timber products by growing larger, higher quality trees for a slightly longer time than would be required for commodity products.

Provincial impacts

At the provincial level, the direct and indirect employment attributable to harvesting in the Soo Timber Supply Area is estimated to be 1,723 person-years. If the base case timber supply forecast is implemented, this employment would fall immediately by 220 person-years to 1,503 person-years. The long-term timber supply is estimated to support a total of 1,313 person-years of direct and indirect employment (*SEA* page 60).

If the allowable annual cut was reduced immediately as in the base case forecast, and current taxation procedures were maintained, provincial government revenues are projected to decline from $12.6 million to $11 million. These estimates do not include increased stumpage revenue from the recently announced Forest Renewal Plan.

Notes: The impacts of the alternative timber supply forecasts are discussed in the *Socio-Economic Analysis*

Chief forester's determination

The base case timber supply forecast is not the only pattern the chief forester could chose to adjust the short-term allowable annual cut as part of a strategy to achieve the long-term timber supply level. Several alternatives exist:

- the current allowable annual cut could be maintained for 10 years followed by a 30 per cent reduction to below the long-term level
- the current allowable annual cut could be maintained for up to 30 years, with severe timber supply reductions well below the long-term level
- small reductions could be implemented now, with larger reductions in the future
- a consistent decline could occur throughout the transition period, or,
- large reductions could be made now, with smaller reductions in the future

Factors to be examined in other processes

Other processes currently under way or planned for implementation in the future will affect the timber management land base and forest management practices in the Soo Timber Supply Area. Although the impacts from these processes are not yet clear, they are listed here for information:

- **Forest Practices Code**
  A *Forest Practices Code Act* for British Columbia has been passed by the legislature, with implementation to occur in the coming months. The Code will require increased environmental protection during forest management activities, with tough standards and enforcement. Current practices in the Soo Timber Supply Area will be adjusted to be consistent with the standards in the Code. These adjustments may impact the short- and long-term timber supply.

- **Protected Areas Strategy**
  At this time, most of the Soo Timber Supply Area is being evaluated to identify candidate areas for the Protected Areas Strategy. Until final decisions are made on the designation of these areas, they are included in the land base for timber supply assessments.

  Since activities associated with harvesting, such as construction of roads and log dumps, may not be permitted in protected areas, more land may be removed from the timber management land base than simply the protected area. Adjacent areas may not be feasible to harvest due to lack of access or increased costs of road building.

- **First Nations treaty/land claims negotiations**
  First Nations have identified the Crown land in the Soo Timber Supply Area as 'traditional territory.' A process has been initiated to negotiate treaties with First Nations to clarify their role in the management or use of these lands. As negotiations proceed, Interim Measures Agreements are anticipated, which may impact harvesting operations.

- **Spotted owl recovery plan**
  Large areas of mature- and old-growth timber in the Soo Timber Supply Area are under consideration for some sort of habitat protection for the northern spotted owl. These areas were included in the timber supply analysis as the outcome of the recovery plan is unknown. If these areas are not available for timber harvesting, both short- and long-term impacts on the timber supply are expected.

It is important to note that the spotted owl conservation areas are included in the areas of interest list for the Protected Areas Strategy. Although the spotted owl and protected areas processes are separate, protection of spotted owl habitat would influence the protected areas process.

- **Resource use conflicts**
  In many areas of the timber supply area which have not already been mentioned, opposition to timber harvesting is experienced due to a number of local or special interests. If improved planning and forest practices fail to resolve these conflicts, considerably more forest may be unavailable for harvesting in the future.

Your input is needed

The allowable annual cut determination is an important decision requiring well-informed and thoughtful public input. We ask you to answer the questions on the response form at the back of this paper. We encourage you to add any additional comments you feel are relevant. If you prefer, additional comments or a detailed submission may be written on separate pages.

Feedback is welcomed on any aspects of this *Discussion Paper*, the *Timber Supply Analysis Report*, the *Socio-Economic Analysis* and other topics related to the timber supply in the Soo Timber Supply Area. Forest Service staff would be pleased to discuss questions or concerns that would help you prepare your response.

Please mail the completed questions and your comments to the forest district manager at the address below. Your comments will be accepted until March 16, 1995.

You may identify yourself on your 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 requested, personal identifiers will be removed before the responses are released.

A summary of public comments will be available from the district manager when the chief forester's allowable annual cut determination is announced.

For more information, contact:

Paul Kuster
District manager
Squamish Forest District
42000 Loggers Lane
Squamish, B.C.,
V0N 3G0
Phone: (604) 898-2100

Soo Timber Supply Area
Timber Supply Review

Discussion Paper Response Form

The *Forest Act* requires the chief forester to consider the following factors to determine the allowable annual cut for timber supply areas and tree farm licence areas:

- the rate of timber production that can be sustained from the area
- the short- and long-term implications for the province of alternative rates of timber harvesting from the area
- the timber requirements of established and proposed timber processing facilities
- the economic and social objectives of the Crown, as expressed by the minister, for the area, the general region, and the province
- abnormal pest infestations in the timber on the area and major salvage programs that are planned

The technical reports that have been prepared for the Timber Supply Review of the Soo Timber Supply Area provide information on these factors. We welcome further input from the public to ensure the best available information is used in the allowable annual cut determination. Please provide your comments on this form, or in another format by March 16, 1995.

A. Economic and social objectives

Please use the space below to provide your comments regarding the economic and social objectives you believe should be considered in determining the allowable annual cut for the Soo Timber Supply Area.

B. Technical forestry factors and impacts of alternative rates of harvest

Please use the space below to provide any information which you believe may assist the chief forester in considering the technical factors to determine the allowable annual cut for the Soo Timber Supply Area. Further information on the critical factors outlined on pages eight to 10 in this paper would be most helpful.

Which community sector listed below best describes your interests?

- ☐ local business
- ☐ outdoor tourism
- ☐ general public
- ☐ First Nation
- ☐ timber industry
- ☐ environmental conservation
- ☐ other (please define)_____
- ☐ government agency (please identify)

Name (optional) _____

Address (optional) _____

Mail your comments to:

Paul Kuster
District manager
Squamish Forest District
42000 Loggers Lane
Squamish, B.C.,
V0N 3G0
Phone: (604) 898-2100