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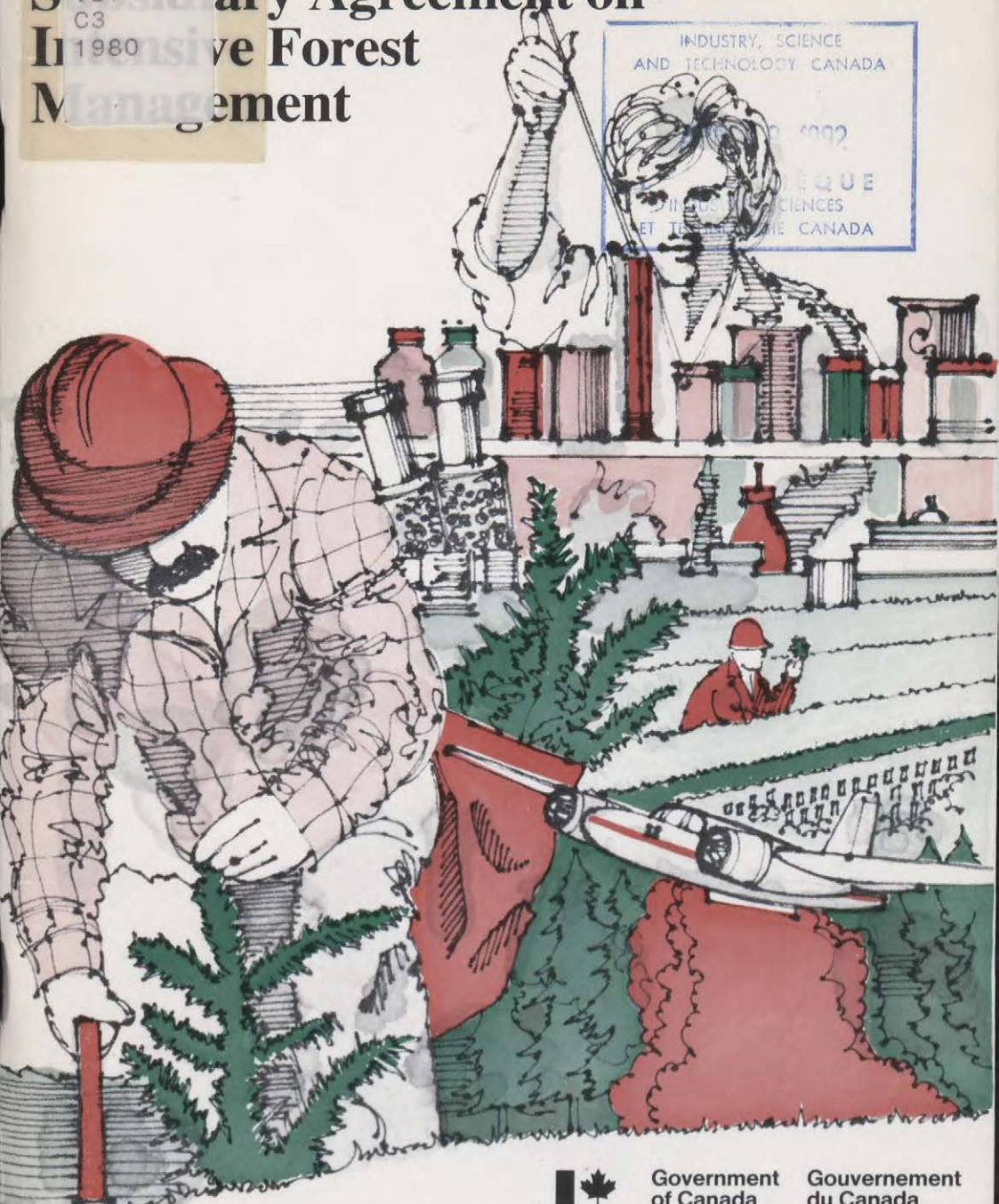
Canada-British Columbia Secondary Agreement on Intensive Forest Management

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Province of British Columbia Ministry of Forests



Government of Canada
Gouvernement du Canada
Regional Economic Expansion
Expansion Économique Régionale

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**CANADA - BRITISH COLUMBIA
SUBSIDIARY AGREEMENT
ON INTENSIVE FOREST MANAGEMENT**

THIS AGREEMENT made this 17th day of May, 1979.

BETWEEN: THE GOVERNMENT OF CANADA (hereinafter referred to as "Canada") represented by the Minister of Regional Economic Expansion and the Minister of the Environment,

OF THE FIRST PART,

AND: THE GOVERNMENT OF THE PROVINCE OF BRITISH COLUMBIA (hereinafter referred to as "the Province"), represented by the Minister of Economic Development and the Minister of Forests,

OF THE SECOND PART.

WHEREAS Canada and the Province, on March 28, 1974 entered into a General Development Agreement (hereinafter referred to as "the GDA") for the purpose of facilitating joint co-operation in respect of economic and socio-economic development in British Columbia; and

WHEREAS in pursuit of these objectives, Canada and the Province have agreed to seek a co-ordinated application of relevant federal and provincial policies and programs; and

WHEREAS Canada and the Province have identified a development opportunity that includes intensive forest management initiatives for ensuring the long-term economic viability of the forest sector of the British Columbia economy; and

WHEREAS the Governor in Council by Order in Council P.C. 1979-1/1474 of the 17th day of May, 1979, has authorized the Minister of Regional Economic Expansion to execute this Agreement on behalf of Canada; and

WHEREAS the Lieutenant Governor in Council by Order in Council No. 1293 of the 15th day of May, 1979, has authorized the Minister of Economic Development and the Minister of Forests to enter into this Agreement on behalf of the Province;

NOW THEREFORE the parties hereto mutually agree as follows:

SECTION 1: DEFINITIONS

1.1 In this Agreement:

- (a) "capital project" means any project, as determined by the Management Committee, in which construction or related activities are involved;
- (b) "development opportunity" means the initiatives outlined in Schedule "A" attached hereto and forming part of this Agreement;

- (c) "eligible costs" means those costs defined in section 6.5 of this Agreement;
- (d) "Federal Ministers" means the Minister of Regional Economic Expansion and the Minister of the Environment and, unless the context otherwise requires, anyone authorized by either of them to act on their behalf;
- (e) "fiscal year" means the period commencing on April 1 of any year and terminating on March 31 of the immediately following year;
- (f) "Management Committee" means the committee established pursuant to section 4.1;
- (g) "Ministers" means the Minister of Regional Economic Expansion and the Minister of the Environment for Canada, the Minister of Economic Development and the Minister of Forests for British Columbia;
- (h) "program" means a group of related projects;
- (i) "project" means a specific activity or activities forming a self-contained unit or units within a program;
- (j) "Provincial Ministers" means the Minister of Economic Development and the Minister of Forests for British Columbia and, unless the context otherwise requires, anyone authorized by either of them to act on their behalf.

SECTION 2: PURPOSE AND OBJECTIVES

2.1 The purpose of this Agreement is to undertake initiatives to intensify forest management in the Province so as to encourage the long-term economic viability of the forest sector of the provincial economy.

2.2 The objective of this Agreement is to enhance the forest resource base of the Province through the implementation of intensive forest management programs.

2.3 Specifically, the objectives of this Agreement are to:

- (a) strengthen the job creating potential of the provincial forest resource;
- (b) increase the wood yield from provincial forests beyond that secured by the basic forestry program of the Ministry of Forests; and
- (c) ensure that the annual rate of harvest of this renewable resource is sustained and increased.

SECTION 3: SUBJECT MATTER

3.1 This Agreement shall commence on and take effect from the date on which it is signed by the Ministers and shall terminate on March 31, 1984 or such earlier date as may be agreed to in writing by the said Ministers. No project may be approved after the termination of this Agreement and no project completion date shall extend beyond March 31, 1984, and no claim shall be paid by Canada unless it is received by Canada within six months following the applicable project completion date.

3.2 The Province shall undertake the implementation of the development opportunity either directly or through agencies of the Province, in accordance with operational guidelines to be established under Section 4.4 (c) of this Agreement.

3.3 The financing by Canada of the programs to be implemented under this Agreement shall not confer upon Canada any proprietary interest in the physical assets constructed or acquired pursuant to this Agreement.

3.4 The Province or its agencies shall take over or arrange to take over on completion, each capital project undertaken under this Agreement. British Columbia agrees to save Canada free and harmless from any claims that may be made against it arising out of the operation, maintenance or repair of any project funded pursuant to this Agreement.

3.5 All activities to be undertaken pursuant to this Agreement shall be consistent with the objectives and intent stated herein and all programs, before being implemented, shall be authorized in writing by the Management Committee.

3.6 Each party agrees to strictly adhere to the environmental laws of Parliament and of the Provincial Legislature.

SECTION 4: MANAGEMENT

4.1 The parties shall promptly establish a joint federal-provincial Management Committee comprised of at least two representatives from Canada and two representatives from the Province.

4.2 The Provincial Ministers shall each appoint one regular member to the Management Committee from the Ministry of Economic Development and the Ministry of Forests. The Federal Ministers shall each appoint one regular member to the Management Committee from the Department of Regional Economic Expansion and the Department of the Environment. Other non-voting representatives may be invited to the Management Committee if agreed to by the regular members of the Management Committee.

4.3 A representative of the Department of Regional Economic Expansion and the representative of the British Columbia Ministry of Economic Development shall act as Co-Chairmen of the Management Committee.

4.4 The Management Committee shall be responsible to the Ministers for the administration of this Agreement and in particular for the following:

- (a) the approval of the programs to be undertaken pursuant to this Agreement;
- (b) the approval of changes as may be required from time to time in Schedule "B" of this Agreement;
- (c) the approval of operational guidelines for the administration of this Agreement;
- (d) submission for the approval of the Ministers annually, and no later than September 30, of the projected budget required for the subsequent fiscal year;
- (e) reporting annually to the Ministers on the progress of this Agreement and its recommendations with respect to the progress of implementation;
- (f) recommending to the Ministers amendments to be made to this Agreement; and
- (g) performing any other functions that may be assigned to it by the parties hereto.

4.5 If, at any stage in the implementation of a program, it appears to the Province that the costs thereof will exceed the estimated costs specified for that program in Schedule "B", the Province shall promptly so inform the Management Committee and state the reasons for such increase.

4.6 Upon being so informed, the Management Committee shall consider the circumstances which have contributed to the increase in the estimated costs and shall prepare and present a report to the Ministers in respect of the action proposed to be taken.

4.7 The Management Committee may, subject to subsection 4.6, make adjustment in and between program allocations specified in Schedule "B" to this Agreement, provided, however that such adjustments do not increase the total amount of the Agreement.

4.8 Decisions of the Management Committee shall be acted upon only if its regular members are unanimous. In those cases where the regular members of the Management Committee are unable to reach an unanimous decision, the relevant matter shall be referred to the Ministers, whose decision shall be final.

4.9 The signatures of the Co-Chairmen of the Management Committee shall be sufficient verification for the purpose of this Agreement of any recommendation or decision made, or approval given by the Management Committee.

4.10 The Department of Regional Economic Expansion, through its representation on the Management Committee, shall be responsible for liaison among the departments and agencies of Canada interested in programs implemented pursuant to this Agreement.

4.11 The Ministry of Forests shall be responsible for:

- (a) the development of projects for implementing all cost-shared programs under this Agreement, and the ensurance of the provision of the staff and administrative mechanisms for the implementation of projects under this Agreement;
- (b) the liaison between the agencies of the Province administering the programs included in this Agreement or whose activities affect the implementation of this Agreement; and
- (c) the provision of quarterly progress reports on the implementation of programs to the Management Committee.

4.12 All programs to be undertaken pursuant to this Agreement shall be jointly approved by Canada and the Province by a program approval issued by the Management Committee and shall be consistent with the objectives set forth in subsections 2.2 and 2.3.

4.13 Canada and the Province agree to provide the Management Committee with all information necessary for the performance of its responsibilities as set out in subsection 4.4.

SECTION 5: IMPLEMENTATION PROCEDURES

5.1 In submitting program proposals under this Agreement, the Province shall provide a program document containing sufficient information for the adequate assessment of the suitability of the program, including the purpose, the cost, the anticipated completion date, the cash flow, the expected benefits, the expenses and assessments of the economic significance of each of the parts of the program, design and construction standards where applicable, and where applicable:

- (a) other physical data, such as plans, maps, and description of development works;
- (b) such financial details as the cost-sharing between the parties involved, expected revenues, and like data;

- (c) a description of any development works proposed, the authority that will be responsible for undertaking, operating and maintaining the works, the expected revenues, user charges or any other like considerations;
- (d) the proposed plan of cost-sharing between all parties taking part in the program including charges, if any, to persons to whom any of the benefits will accrue;
- (e) relationship of the proposed program to other federal and provincial government programs and activities; and
- (f) any other information which the Management Committee may require.

5.2 All contracts for approved activities shall be let pursuant to tenders invited by public advertisement and awarded to the qualified and responsible tenderer submitting the lowest evaluated bid, unless otherwise recommended by a designated senior official of the Ministry of Forests and approved by the Management Committee.

5.3 All contracts under this Agreement shall be undertaken in accordance with procedures to be approved by the Management Committee, and reports, documents, plans, maps and other materials produced by consultants or resulting from such contracts shall become the property of both parties.

5.4 In the awarding of contracts pursuant to the recommendation of the Management Committee, the Province shall retain the services of Canadian firms or individuals where practical and consistent with economy and efficiency.

5.5 Any announcements of contract awards shall be made jointly by Canada and the Province.

5.6 Canadian material, machinery and equipment, and consulting and other professional services shall be used in respect of all work under this Agreement to the extent to which it is procurable and consistent with economy and efficiency as determined by the Management Committee.

5.7 The following conditions relevant to employment and the award of contracts shall apply in respect to all activities carried out under this Agreement:

- (a) recruiting of labour shall be conducted through the offices of Employment and Immigration Canada unless the Management Committee considers that this service cannot reasonably be provided;
- (b) in accordance with Human Rights Legislation of Canada and the Province, there shall be no discrimination by reason of race, sex, age, marital status, national origin, colour, religion or political affiliation in the employment of persons; and
- (c) with regard to the applicability of labour standards, the parties agree as follows:
 - (i) rates of pay shall be those prevailing in the area of employment for each classification of work, subject to the minimum wage specified in provincial legislation;
 - (ii) in building construction, the rates of pay for overtime shall be time and one-half the specified prevailing rate of pay after the hours stipulated for purposes of overtime payment in the relevant provincial standards, which shall in no case be more than 48 per week;

- (iii) in road and heavy construction, the rates of pay for overtime shall be time and one-half the specified prevailing rate of pay after the hours stipulated for purposes of overtime payment in the relevant provincial standards, which shall in no case be more than 50 per week; and
- (iv) labour conditions shall be specified in all tendering documents and shall be posted conspicuously in the work place;

it being expressly understood and agreed that to the extent to which there are higher provincial standards applicable to particular occupations or regions, these higher provincial standards shall apply.

SECTION 6: FINANCIAL PROVISIONS

6.1 Canada shall contribute to the Province a maximum of 50 per cent of the eligible costs of programs implemented pursuant to the terms and conditions of this Agreement.

6.2 The implementation of this Agreement is subject to the Parliament of Canada and the Legislative Assembly of the Province of British Columbia having provided funds for such purpose for the fiscal year in which such financing is required.

6.3 Notwithstanding anything in this Agreement, the maximum contribution by Canada in respect to jointly-approved programs shall not exceed \$25 million.

6.4 Subject to legislative restrictions, the Province shall acquire or arrange for the acquisition of any lands and interests therein, in the name of the Crown or otherwise, that may be required for programs approved for implementation pursuant to this Agreement.

- 6.5
- (1) Subject to paragraph 6.5(3) and 6.5(4), the eligible costs of capital projects undertaken pursuant to this Agreement are all direct costs which, as determined by the Management Committee, have been reasonably and properly incurred and paid by the Province, in the implementation of the projects. Direct costs include costs relating to public information, survey, engineering and architectural design, but do not include administration costs.
 - (2) Subject to paragraph 6.5(3) and 6.5(4), the eligible costs of non-capital projects undertaken pursuant to this Agreement are all costs, which as determined by the Management Committee have been reasonably and properly incurred and paid by the Province for the supply of goods or the performance of work or services for the implementation of any such projects, but do not include the remuneration of any employee of the Province or its Agencies.
 - (3) Eligible costs do not include any costs relating to the acquisition of land or any interest therein or costs arising from conditions of acquisitions.
 - (4) Eligible costs do not include work for which there is a compensatory offset against payments or charges due to the Province.

SECTION 7: PAYMENT PROCEDURES

7.1 Subject to subsections 7.2 and 7.3, payments by Canada shall be made to the Province promptly on the basis of progress claims setting out the eligible costs actually

incurred and paid, certified by a senior officer of the Province, bearing a provincial audit certificate and submitted in a form satisfactory to the Federal Ministers.

7.2 In order to assist with the interim financing Canada may, if the Province so requests, make interim payments on a quarterly basis to the Province of up to 100 per cent of Canada's share of claims submitted, based on estimates of costs actually incurred and paid, as certified by a senior officer of the Province and in a form satisfactory to the Federal Ministers.

7.3 The Province shall account for each quarterly interim payment received by submitting to Canada within the following quarter, a detailed statement of the actual expenditures incurred and paid, submitted in a form and verified in a manner satisfactory to the Federal Ministers and certified by a senior officer of the Provincial Ministry of Finance. Any discrepancy between the amount paid to the Province and the amount actually payable, shall be promptly adjusted between Canada and the Province.

7.4 No interim payment shall be made in a fiscal year until any interim payment made in the previous fiscal year has been liquidated by claims for expenditures actually incurred and paid, certified by a senior officer of the Provincial Ministry of Finance and bearing a provincial audit certificate, and any outstanding balance of the payment has been repaid or accounted for in a form or in a manner satisfactory to the Federal Ministers.

7.5 The Province shall maintain proper and accurate accounts and records relating to the costs of programs undertaken pursuant to this Agreement and shall make sure accounts and records available at all reasonable times for inspection and audit by Canada.

7.6 Any discrepancy between the amounts paid and amounts actually payable as disclosed by any such audit shall be promptly adjusted between the parties.

SECTION 8: MONITORING

8.1 Any member of the Management Committee or his representatives shall be permitted to inspect any project at all reasonable times for the purpose of verifying claims and obtaining any other information concerning the project which may be required by the Ministers.

SECTION 9: PUBLIC INFORMATION

9.1 Canada and the Province agree to co-operate in the development and implementation of a program of public information respecting implementation of projects under this Agreement, and further agree to supply, erect and maintain on the direction of the Management Committee:

- (a) for jointly funded projects, a project sign or signs consistent with Federal-Provincial Identity graphics guidelines, and in both official languages, specifying that the relevant project is a Canada-British Columbia Regional Development Project, financed by contributions from the Department of Regional Economic Expansion of the Government of Canada and the Ministry of Forests of the Government of British Columbia (and any other federal or provincial agency where relevant), or such wording to the like effect as may be agreed upon by the Ministers; and
- (b) where relevant upon completion of each project, a permanent sign or a plaque to the effect set forth in (a).

9.2 Any public announcement of the measures covered and of the products generated by this Agreement, as well as any official opening ceremony for any jointly funded project under this Agreement, where such ceremony is indicated and appropriate, shall be arranged jointly by the Ministers.

SECTION 10: GENERAL

10.1 Subject to the prior approval of the Lieutenant Governor in Council this Agreement may be amended in writing, personally executed by the Federal Ministers and the Provincial Ministers. It is expressly understood and agreed, however, that any amendment to subsections 6.1 and 6.3 shall require the approval of the Governor in Council in addition to that of the Lieutenant Governor in Council.

10.2 No member of the House of Commons of Canada shall be admitted to any share or part of this Agreement or to any benefit to arise therefrom.

10.3 The Province may make payments to any person, firm or corporation for the carrying out of any work or the performance of any service in respect of any project authorized pursuant to this Agreement, provided that no member of the Legislative Assembly of the Province of British Columbia has a significant beneficial interest therein or will receive a direct payment arising therefrom.

10.4 The terms and conditions of the GDA shall apply to this Agreement.

SECTION 11: EVALUATION

11.1 During this Agreement, the Province shall prepare for consideration and review by the Management Committee assessments of the programs listed in Schedule "A" with regard to the stated objectives.

11.2 Annual progress reports shall be submitted by the Management Committee to the Ministers on or before the annual meeting of the Ministers as prescribed under subsection 9.1 and section 10 of the GDA.

11.3 Canada and the Province shall singly or jointly effect an evaluation of this Agreement with respect to the general economic and socio-economic development of British Columbia.

IN WITNESS WHEREOF this Agreement has been executed on behalf of Canada by the Minister of Regional Economic Expansion and the Minister of the Environment, and on behalf of the Province by the Minister of Economic Development and the Minister of Forests.

IN THE PRESENCE OF

GOVERNMENT OF CANADA

Witness

Minister of Regional
Economic Expansion

Witness

Minister of
the Environment

IN THE PRESENCE OF

GOVERNMENT OF THE
PROVINCE OF
BRITISH COLUMBIA

Witness

Minister of
Economic Development

Witness

Minister of Forests

**CANADA - BRITISH COLUMBIA
SUBSIDIARY AGREEMENT
ON INTENSIVE FOREST MANAGEMENT**

SCHEDULE "A"

1. INTRODUCTION

The forest resources of British Columbia are a vital element of the economy of the Province. The industry makes a substantial contribution to the economic and social well-being of the people of British Columbia both directly and indirectly through the stimulation of a wide variety of associated manufacturing and service enterprises. On the national level, exports of forest goods contribute significantly to Canada's balance of payments.

The future of the forest industry is dependent on a wide variety of factors. International market conditions, the efficiency of the industry, technological innovation and the prudent husbandry and management of the resource base are all important. The central consideration at this time in British Columbia is the enhancement of intensive forest management techniques.

The harvesting of the British Columbia forests has progressed to the point where many of the old growth stands are disappearing or becoming remote and costly to use. At present the Province of British Columbia carries out a silviculture program which is in part oriented to the tending and improvement of young forests. However, increasing demands on the resource have led to a recognition that greater efforts are needed in this area.

This agreement is intended to allow the Governments of Canada and British Columbia to undertake initiatives required for the implementation of programs that are designed to enhance the ongoing intensive forest management activities of the Province.

2. THE FOREST SECTOR: CANADA AND BRITISH COLUMBIA

2.1 THE INDUSTRY AND ITS IMPACTS

The forest industry consists of a primary sector involved in the growing and harvesting of trees and a manufacturing sector dependent on these harvests for its raw material input. Attention is frequently concentrated on the industry's manufacturing activity, which has a major impact both directly and through its demands for transportation, construction, and a variety of services. It must not be forgotten, however, that it is the primary sector, the forest resource, that accounts for the industry's presence in and its importance to Canada.

2.1 (a) ECONOMIC SOCIAL IMPACT

The forest industry is one of Canada's leading industrial sectors. It is a major factor in Canadian employment, export earnings and manufacturing activity, and in recent years has accounted for:

- direct employment of more than 300 000 persons throughout the country and even more than this number in related industries;
- more than 15 per cent of Canada's export earnings, estimated at \$7 billion in 1978, a record;
- about 15 per cent of the value-added in Canadian manufacturing industries and nearly one job in eight in these sectors; and
- nearly 15 per cent of shipments of all manufacturing industries.

In a world context, Canada is the largest producer of newsprint and is second only to the United States as a producer of wood pulp. Our lumber exports exceed those of any other country. Canada's forests contribute approximately 10% of the world's annual forest harvest.

The British Columbia forest industry accounts for:

- more than 50 per cent of the wood volume annually harvested in Canada;
- more than 90 per cent of Canadian softwood plywood production; and
- approximately 50 per cent of Canada's total export of forest industry products.

The forest industry is the largest single contributor to the British Columbia economy and is the economic mainstay of numerous single industry communities located throughout the Province. The industry operates about:

- 25 pulp and paper mills;
- 650 sawmills;
- 30 veneer and plywood mills;
- 100 shingle mills; and
- numerous other wood using plants.

These industries harvest nearly 70 million cubic metres of timber annually and produce products with a sales value of over \$4 billion.

Through its operations the forest industry:

- directly employs nearly 10 per cent of the provincial labour force;
- indirectly employs another 5 per cent of the labour force in industries supporting the production and distribution of forest products; and

- stimulates employment opportunities for another 10 per cent of the labour force in service-type industries.

The forest industry contributes:

- 50 per cent of all value-added in manufacturing industries;
- 15 per cent of all capital and repair expenditures throughout the Province;
- 60 per cent of the value of provincial exports; and
- 15 - 25 per cent of provincial revenues.

The provincial forest industry developed to take advantage of international demand for forest products. Table 2.1 and Figure 2.1 illustrate the market destinations for the Province's most important forest industry products in 1977.

Table 2.1 Destination of B.C. Forest Products

| | Canada | U.S.A. | E.E.C. | Japan | All Others |
|--|--------|--------|--------|-------|---------------|
| | % | % | % | % | % |
| Lumber ¹ | 21 | 65 | 6 | 6 | 3 |
| Veneer/Plywood ¹ | 82 | — | 17 | — | 1 |
| Pulp ² | 18 | 29 | 30 | 11 | 12 |
| Paper (including newsprint) ³ | 22 | 49 | 11 | 3 | 15 |

Source:

¹ COFI Annual Report, 1977.

² Report of Royal Commission on Forest Resources, 1976.

³ Ministry of Economic Development.

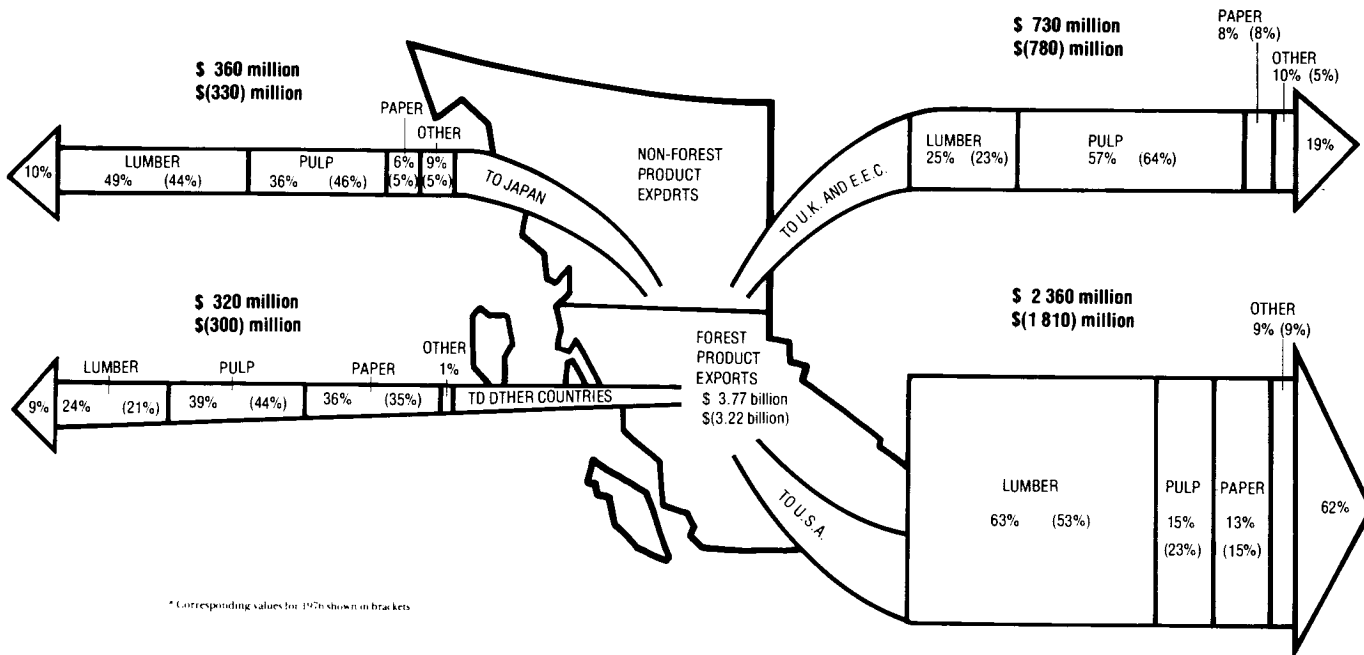
Note: Percentages are based on volume of shipments.

It has been estimated that the forest industry and its employees contributed over \$800 million to federal revenues in 1977, and that in 1978 these revenues exceeded \$1 billion.* The B.C. industry and its employees account for nearly 40 per cent of this total. The major federal revenue sources are personal and corporate income taxes.

The industry is also a major contributor to provincial revenues in British Columbia with collection from the industry and its employees in 1977 estimated at nearly \$400 million and 1978 figures considerably higher. In addition to personal and corporate income taxes, major provincial revenue sources include sales taxes on the industry and its employees, the provincial tax on logging income, and most important, stumpage and royalty charges for the harvest of Crown timber.

* *Forest Management in Canada and Forest Sector Revenue*, prepared for the Canadian Pulp & Paper Association by F.L.C. Reed & Associates Ltd., December, 1978.

Figure 2.1 Value of Forest Product Exports from British Columbia in 1977*



* Corresponding values for 1976 shown in brackets

2.1 (b) GEOGRAPHICAL IMPACT

The forests of British Columbia and the industry processing this wood are normally divided into two segments: Coastal and Interior. The Coastal portion is that west of the coast mountain range, with the Interior that portion to the east.

The Ministry of Forests divides the Province into six Regions for administrative purposes as shown in Figure 2.2. The Vancouver Forest Region includes the south coast and Vancouver Island. The Kamloops and Nelson Regions cover the southern interior; the Cariboo, the central interior; the Prince George Region, the north central and northeastern portion of the Province; and the Prince Rupert Region, the northwestern interior of the Province and the north coast.

Forest industry employment figures for the six Forest Regions are shown in Table 2.2 to illustrate the geographic dispersion of the industry. Table 2.2 shows only the direct employment in the industry itself. The true importance of the forest industry in sustaining the economic base in these Regions is better appreciated if it is remembered that at least as much additional employment is generated within most Regions in industries serving the forest industry or its employees as is generated directly in the forest industry.

**Table 2.2 Estimate of Employment in Forest Industries
by Forest Regions**

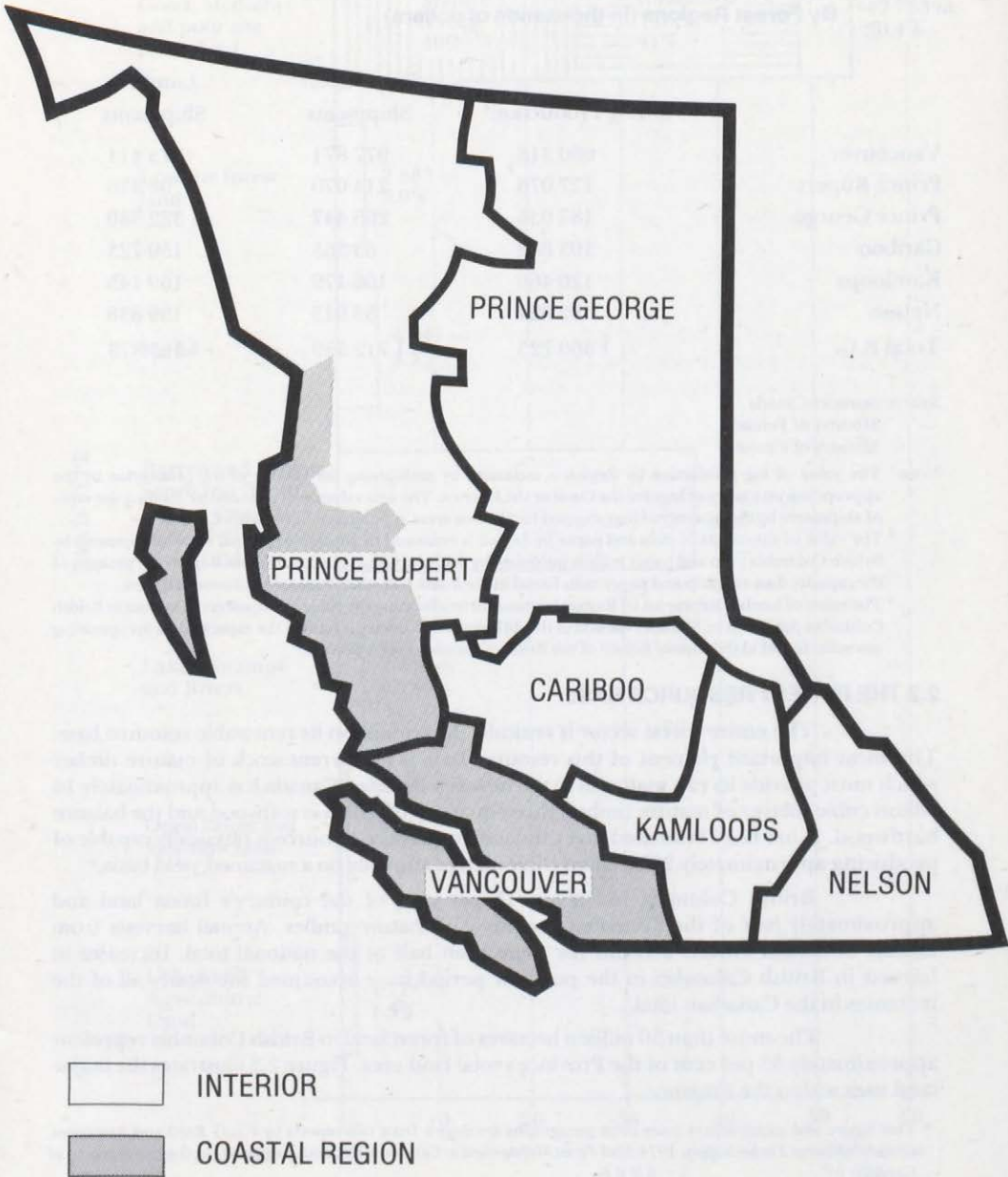
| | |
|---------------------|--------|
| Total B.C. | 82,800 |
| Vancouver | 42,000 |
| Prince Rupert | 6,800 |
| Prince George | 11,800 |
| Cariboo | 5,600 |
| Kamloops | 9,300 |
| Nelson | 7,300 |

Source:
Ministry of Forests. Forest Region Reports.

Note:

- The forest industry is defined to include logging, sawmills, pulp and paper mills, and plywood mills.
- Statistics Canada figures show slightly higher forest industry employment for the Province.

Figure 2.2 Forest Region and Coast - Interior Boundaries



The value of production of logs and of the more important manufactured wood products are shown in Table 2.3. This too serves to illustrate the geographic distribution of the industry activity across the Province.

**Table 2.3 Estimate of Value of Production
By Forest Regions (in thousands of dollars)**

| | Log Production ¹ | Pulp/Paper ² Shipments | Lumber ³ Shipments |
|---------------|-----------------------------|--------------------------------------|----------------------------------|
| Vancouver | 680 318 | 977 871 | 675 411 |
| Prince Rupert | 177 076 | 214 070 | 98 376 |
| Prince George | 187 036 | 265 447 | 322 380 |
| Cariboo | 103 808 | 63 365 | 150 723 |
| Kamloops | 120 466 | 106 179 | 169 145 |
| Nelson | 92 021 | 83 915 | 139 838 |
| Total B.C. | 1 360 725 | 1 712 559 | 1 555 873 |

Source: Statistics Canada
Ministry of Forests
Ministry of Finance

Note:¹ The value of log production by Region is estimated by multiplying the volume of log production by the appropriate unit value of logs for the Coast or the Interior. The unit values are calculated by dividing the value of shipments by the quantity of logs shipped for the two areas as published by Statistics Canada.

² The value of shipments of pulp and paper by Region is estimated by allocating the total value of shipments by British Columbia pulp and paper mills as published by Statistics Canada to the different Regions on the basis of the capacity data for pulp and paper mills found in the *British Columbia Financial and Economic Review*.

³ The value of lumber shipments by Region is estimated by allocating the value of shipments of lumber in British Columbia published by Statistics Canada to the different Regions on the basis of the capacity data for operating sawmills, found in the *Annual Reports* of the British Columbia Forest Service.

2.2 THE FOREST RESOURCE BASE

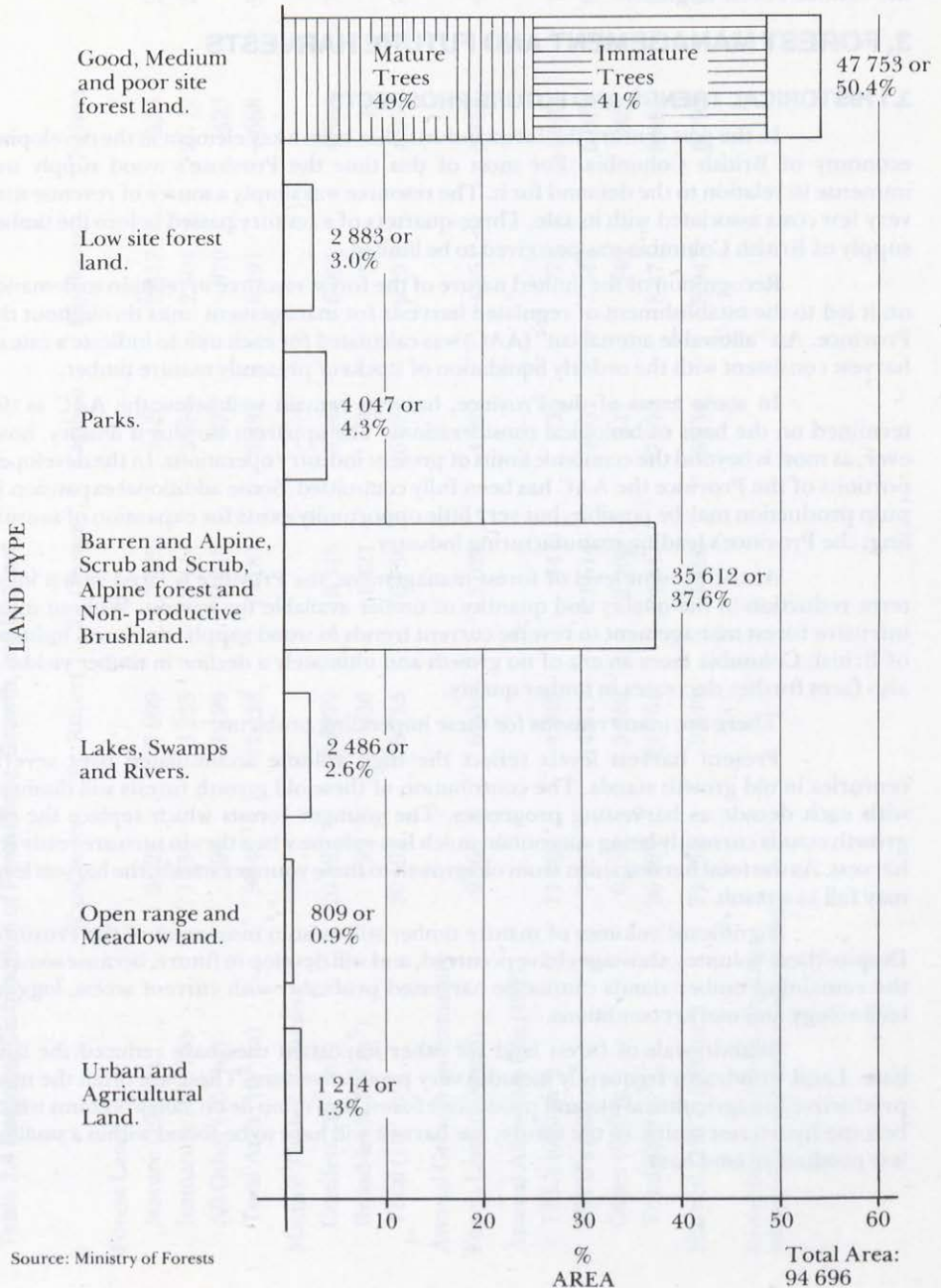
The entire forest sector is critically dependent on its renewable resource base. The most important element of this resource base is its current stock of mature timber which must provide its raw materials in the next few decades. Canada has approximately 14 billion cubic metres of mature timber, three-quarters of which is softwood and the balance hardwood. It has been estimated that this land and timber resource is physically capable of producing approximately 225 million cubic metres annually on a sustained yield basis.*

British Columbia has about 15 per cent of the country's forest land and approximately half of the Canadian inventory of mature timber. Annual harvests from British Columbia Forests account for more than half of the national total. Increases in harvest in British Columbia in the post-war period have accounted for nearly all of the increases in the Canadian total.

The more than 50 million hectares of forest land in British Columbia represent approximately 53 per cent of the Province's total land area. Figure 2.3 illustrates the major land uses within the Province.

* This figure and many others from these paragraphs are drawn from two reports by F.L.C. Reed and Associates, *Canada's Reserve Timber Supply*, 1974, and *Forest Management in Canada*, 1978, both prepared for the Government of Canada.

**Figure 2.3 Composition of Land Area in British Columbia
(in thousands of hectares)**



The forest land, timber stock and harvests are widely distributed throughout the Province. Table 2.4 provides information regarding the forest resource and harvest for the various Forest Regions.

3. FOREST MANAGEMENT AND FUTURE HARVESTS

3.1 HISTORICAL TRENDS AND FUTURE PROSPECTS

In the past century the forest industry has been a key element in the developing economy of British Columbia. For most of this time the Province's wood supply was immense in relation to the demand for it. The resource was simply a source of revenue with very few costs associated with its sale. Three-quarters of a century passed before the timber supply of British Columbia was perceived to be limited.

Recognition of the limited nature of the forest resource in relation to demands on it led to the establishment of regulated harvests for management units throughout the Province. An "allowable annual cut" (AAC) was calculated for each unit to indicate a rate of harvest consistent with the orderly liquidation of stocks of presently mature timber.

In some areas of the Province, harvests remain well below the AAC as determined on the basis of biological considerations. The apparent surplus is illusory, however, as most is beyond the economic limits of present industry operations. In the developed portions of the Province the AAC has been fully committed. Some additional expansion in pulp production may be possible, but very little opportunity exists for expansion of sawmilling; the Province's leading manufacturing industry.

At the present level of forest management, the Province is faced with a long-term reduction in the quality and quantity of timber available for harvest. Without more intensive forest management to reverse current trends in wood supply, the forest industry of British Columbia faces an era of no growth and ultimately a decline in timber yields. It also faces further decreases in timber quality.

There are many reasons for these impending problems.

Present harvest levels reflect the high volume accumulated over several centuries in old growth stands. The contribution of these old growth forests will diminish with each decade as harvesting progresses. The younger forests which replace the old growth stands currently being cut contain much less volume when they in turn are ready for harvest. As the total harvest shifts from old growth to these younger stands, the harvest level may fall as a result.

Significant volumes of mature timber still exist in most areas of the Province. Despite these volumes, shortages have occurred, and will develop in future, because some of the remaining timber stands cannot be harvested profitably with current access, logging technology and market conditions.

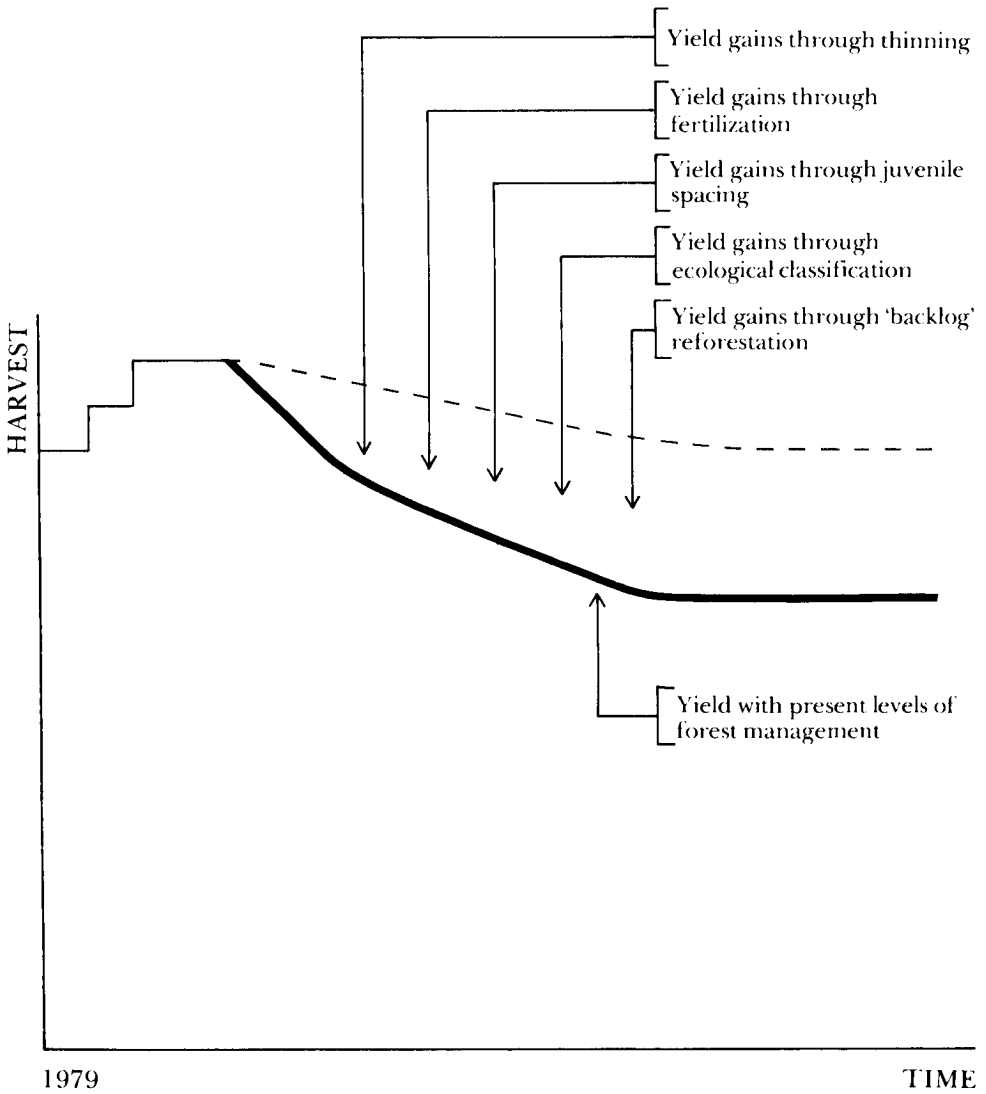
Withdrawals of forest land for other important uses have reduced the land base. Land withdrawn frequently includes very productive sites. These are often the most productive for agricultural use and productive forest sites often lie on valley bottoms which become hydro reservoirs. In the future, the harvest will have to be found within a smaller, less productive land base.

Table 2.4 Regional Distribution of Forest Area, Growth, and Harvest

| | Vancouver | Pr. Rupert | Pr. George | Cariboo | Kamloops | Nelson | B.C. |
|--|-----------|------------|------------|---------|----------|--------|--------|
| Forest Land | | | | | | | |
| Mature (10^3 ha) | 3 021 | 7 999 | 7 525 | 3 156 | 2 417 | 1 533 | 25 651 |
| Immature (10^3 ha) | 1 730 | 3 235 | 8 444 | 2 956 | 2 404 | 2 712 | 21 482 |
| All Other (10^3 ha) | 395 | 1 199 | 2 212 | 370 | 370 | 423 | 4 968 |
| Total Area (10^3 ha) | 5 146 | 12 433 | 18 181 | 6 482 | 5 191 | 4 668 | 52 101 |
| Mature Timber Volumes | | | | | | | |
| Conifers (10^5 m ³) | 20 492 | 26 279 | 15 315 | 5 943 | 6 095 | 4 588 | 78 712 |
| Broad-leaf (10^5 m ³) | 99 | 456 | 1 421 | 84 | 36 | 15 | 2 111 |
| Total (10^5 m ³) | 20 591 | 26 735 | 16 736 | 6 027 | 6 131 | 4 603 | 80 823 |
| Annual Growth on Immature Forest Land (000 m³) | | | | | | | |
| Forest Land (000 m ³) | 9 366 | 6 334 | 13 624 | 4 129 | 4 951 | 5 758 | 44 162 |
| Annual Allowable Cut (1977) | | | | | | | |
| TFL's (000 m ³) | 11 602 | 4 845 | 441 | 135 | 774 | 1 603 | 19 400 |
| PSYU's (000 m ³) | 7 751 | 14 617 | 21 614 | 7 061 | 7 348 | 6 028 | 64 419 |
| Other (000 m ³) | 6 652 | 5 289 | 2 286 | 117 | 349 | 829 | 15 533 |
| Total (000 m ³) | 26 005 | 24 761 | 24 341 | 7 313 | 8 471 | 8 461 | 99 352 |
| Harvest (1977) (000 m³) | | | | | | | |
| Harvest (1977) (000 m ³) | 24 355 | 9 640 | 13 490 | 6 744 | 8 947 | 6 795 | 69 971 |

Source: Ministry of Forests, *Annual Report*
 Ministry of Forests, Forest Inventory Statistics

Figure 3.1 Yield Gains From Intensive Forest Management Programs



Future harvest levels depend on the level of forest management in practice today. Simply protecting the integrity of the growing sites, sometimes a costly undertaking in itself, assures a subsequent harvest in nature's own due course. Planting greatly speeds the availability of a subsequent commercial crop, and thereby increases the level of harvest available over time from the forest land base. Other actions can shorten further the waiting period for a subsequent crop, or can increase the volume or value of this harvest.

Favourable market trends, changes in logging or processing technology, and other such factors can assist or increase the problem of wood supply. Market trends can be very uncertain and largely uncontrollable. Forest management, however, is one important element that can be controlled to affect the yields from future forests and the resulting commercial viability of industrial operations based on them.

Without greatly intensified forest management, future harvests from British Columbia's forest land base will almost certainly be below those of today. Unless this intensified management commences soon, allowable cuts and annual harvest will have to decline, and with them the employment, exports, and government revenue that are dependent on those harvests.

3.2 GAINS FROM FOREST MANAGEMENT

Figure 3.1 illustrates the potential effects of forest management on timber supplies.

The heavy line in this figure depicts a situation where annual harvests continue to increase for the next several years. In the early years the rate of harvest is constrained only by the cut permitted by the provincial government. As the present stock of mature timber is harvested, the availability of merchantable stands imposes the effective limit on annual harvests. The decline in the heavy line in Figure 3.1 reflects a decreased availability of such stands with present levels of forest management.

Managing the forests more intensively than at present, would increase the availability of merchantable timber in future years. This is illustrated by the dashed line in Figure 3.1. The arrows indicate the approximate sequence in which the effects from various treatments would be felt.

Figure 3.1 provides a hypothetical illustration of the amount by which the future harvests provided by present levels of forest management fall short of potential, or even present, rates of harvest. By implementing programs to intensify forest management, it will be possible to reduce such shortfalls and may even increase present and future levels of production in some cases.

Forest management actions taken today have little effect on the immediate availability of merchantable timber. Projections of future timber supplies, however, must influence the provincial government in determining the rates of harvest to be allowed from the stocks of timber presently available. Increasing or maintaining rates of harvest, which are expected to greatly deplete the forest resource available to future generations of British Columbians, is not acceptable policy. Indeed, the recently passed provincial Forest Act requires that the Chief Forester, when determining allowable annual cut levels, consider both the silviculture treatments to be applied in the area and the short and long-term implications of alternative rates of timber harvesting.

In managing the forest, it is essential to recognize the time which passes between the execution of management practices and the effect on the supply of merchantable timber. It would be very misleading, however, to ignore the link between present levels of management action and the present rates of harvest which are permitted from areas of forest land managed on a sustained yield basis.

Greater management effort results in larger harvests than would otherwise be possible. To illustrate the importance of larger harvests, an extra cubic metre of wood harvested currently leads to roughly the following:

- well over \$35 in increased exports;
- \$25 or more in increased incomes in forest and related industries in Canada;
- \$12 in increased government revenues readily attributable to the forest industry (\$5 to the federal government, \$7 within British Columbia).

To prevent or alleviate a shortfall in future harvest, action is required well in advance. A major shortfall can only be offset through planting superior trees and rehabilitating inadequately restocked forest land. Therefore, if the problem is not treated 60-100 years in advance, the options become limited. Smaller medium-term or short-term deficits can be offset through thinning, spacing and fertilization.

3.3 ANALYSIS OF FOREST MANAGEMENT EXPENDITURES

Extensive analyses are currently underway for all Regions of British Columbia to determine the rates of harvest which may be possible from the forests of the future. Such analyses will provide the basis for allocating future silviculture and protection expenditures on the Province's forests.

In 1978, the British Columbia legislature passed three acts affecting forest management in the Province: The Ministry of Forests Act, the Forest Act, and the Range Act. These acts represent the first major revision of forest legislation in the Province in over 60 years. The Ministry of Forests Act provides an explicit statement of the purposes and functions of the Ministry in managing British Columbia's forests.

These new acts require that intensive forest management plans be formulated with due consideration for their economic effects, that they be updated regularly in the light of changes in economic circumstances and in the light of our improved knowledge of the effects of such programs on the resource, and finally, that they be evaluated regularly to ensure that the expected productivity improvements are in fact being obtained. Economic analysis is clearly central to this entire process. The results of these new forest management initiatives will be used in carrying out the intent of this agreement.

4. BRITISH COLUMBIA MINISTRY OF FORESTS

4.1 ORGANIZATION AND ACTIVITY

The Ministry of Forests is responsible for the 95 per cent of forest land in British Columbia held by the provincial Crown. The Ministry of Forests Act requires that the Ministry "... manage, protect and conserve the forest and range resources of the Crown, having regard to the immediate and long term economic and social benefits they may confer. ..." To fulfill these resource stewardship responsibilities, the Ministry of Forests employs over 3,000 people, including many professional foresters, agrologists, economists, biologists, engineers, and other specialists.

The Ministry manages the forests of the Province through a strong regional structure with general policy direction and some staff support provided by the provincial headquarters in Victoria. Each of the six Forest Regions has a head office staffed with professionals and technicians to meet the needs of the area. Each Region is further subdivided into Districts with personnel in the District to effectively manage and monitor the local forests. Regional and District staff are responsible for administration of the many contracts under which Crown timber is harvested and for the administration of silviculture activities on provincial lands.

The Province's Silviculture Program is directed toward the establishment, tending and improvement of the next crop of trees for the Province. The Program includes basic and intensive forest management practices such as:

- nursery operations
- seed operations
- cone collection
- planting operations
- site preparation
- stand tending
- field surveys and examinations
- correction camp operations
- administration

In 1977, nearly 66 million seedlings were planted on an area of over 60 000 hectares by all agencies — approximately 25 million by the Forest Service and 41 million by various companies. The Forest Service awarded 233 contracts to independent planters, and undertook 139 planting projects itself.

Some 25 000 hectares were prepared for planting and over 23 000 hectares were prepared for natural regeneration. To maintain suitable stocking levels and promote faster growth of immature stands, 2 827 hectares were brushed out and juvenile spacing was implemented on 6 811 hectares — in addition, 95 hectares were thinned for commercial-size timber. To control tree-damaging dwarf mistletoe, 2 667 hectares were treated by removing infected trees.

Forest Service crews in all Forest Regions examined 131 126 hectares of logged or burned forest land and found that 78.5 per cent were satisfactorily stocked. Various companies similarly examined 40 975 hectares and found that 54.3 per cent were satisfactorily stocked, indicating that 72.7 per cent of the area examined was restocked.

To determine survival of planted seedlings, 13 395 new plots were established and 24 407 plots were remeasured. Maintenance was carried out on 133 kilometres of access roads leading to reforestation projects and a further 6.75 kilometres of new roads suitable for four-wheel drive access were constructed.

With the increasing realization of the importance of forest management the Silviculture Program is expanding with higher targets for seedling production, increased planting, increased stand tending, and other activities.

4.2 INTENSIVE FOREST MANAGEMENT PROGRAMS

The provincial intensive forest management programs were initiated in 1978 with a commitment of \$10 000 000. These funds were used to finance stand tending operations, reforestation of inadequately restocked (backlog) forest land, tree improvement and some research operations. Table 4.1 gives a summary of the stand tending operations on Crown land in 1978. It is hoped that spending on intensive forest management programs will increase from this level.

In addition to budgeted funds, credits against provincial lands could channel millions more in this direction.

Table 4.1 Standing Tending on Crown Lands, 1978¹

| | Forest | | Total |
|------------------------------|---------|-----------------------|----------|
| | Service | Licensee ² | |
| Conifer Release (Brushing) | 727.6 | 2 826.4 | 3 554.0 |
| Juvenile Spacing | 5 474.2 | 6 933.0 | 12 407.2 |
| Thinning | 2.0 | 23.1 | 25.1 |
| Mistletoe Control | 1 878.0 | 506.3 | 2 384.3 |
| Residual Falling/Site Rehab. | 1 468.8 | 846.6 | 2 315.4 |
| Fertilization | 2 642.0 | 4 807.5 | 7 449.5 |

¹ The provincial intensive forest management program also includes planting and rehabilitation of the backlog of inadequately stocked lands. It is not possible, at this time, to separate the backlog planting from the total planting (51 423 ha) in 1978.

² In 1978, licensees were reimbursed for most of these expenditures through reductions in stumpage payable. Under the new Forest Act, such costs are eligible for full reimbursement through credits against stumpage payable.

5. PROGRAMS FOR FEDERAL-PROVINCIAL FUNDING

Major segments of the Province's intensive forest management programs affecting Crown lands managed by the Ministry of Forests, together with some complementary activities, will be eligible for cost-sharing under this Agreement. The Province's basic silviculture programs will continue to be funded by British Columbia. Silviculture activity, whether basic or intensive, undertaken by private companies in conjunction with licences to harvest Crown timber, will also be excluded from this Agreement. These will be covered by credits against provincial stumpage payments or by other arrangements between the companies and the Province.

Although British Columbia is already committed to the intensive management programs proposed for cost-sharing, financial assistance from Canada will permit their implementation at a greatly expanded level.

The B.C. Ministry of Forests has the geographically dispersed organization and the experience in the administration of forest lands required to undertake these expanded forest management programs. Programs under this Agreement will be planned, directed and monitored by the Ministry as an integral, but identifiable, part of the total forest management effort on the Crown Lands of the Province.

Programs proposed for cost sharing under this Agreement and the tentative program budgets over the five years of the Agreement are as follows:

| | | |
|----|---|----------------|
| 1. | Reforestation of inadequately restocked lands | \$11.5 million |
| 2. | Juvenile spacing | 30.0 " |
| 3. | Fertilization | 5.0 " |
| 4. | Increased protection of treated areas | 1.0 ;; |
| 5. | Implementation contracts | 2.5 " |
| | | \$50.0 million |

Details regarding these programs are discussed in the subsections which follow. Budget information for Forest Regions is given in Schedule "B".

5.1 REFORESTATION OF INADEQUATELY RESTOCKED (BACKLOG) FOREST LAND

As a result of past fires and logging, there is a substantial backlog of forest land in the Province which is inadequately restocked. Estimates of the backlog on Crown forest land at the end of 1978 are given in Table 5.1.

Table 5.1 Inadequately Restocked Crown Forest Land, December 31, 1978

| Forest Region | Site Class | | | | Total |
|---------------|------------|---------|------------|---------|-----------|
| | Good | Medium | Poor | Low | |
| | | | (Hectares) | | |
| Vancouver | 19 396 | 61 111 | 13 595 | 149 | 94 251 |
| Prince Rupert | 15 603 | 82 874 | 237 996 | 82 620 | 419 093 |
| Prince George | 82 108 | 210 247 | 518 916 | 12 435 | 823 706 |
| Cariboo | 30 403 | 80 046 | 61 868 | 2 052 | 174 369 |
| Kamloops | 21 246 | 85 783 | 42 835 | 525 | 150 389 |
| Nelson | 20 943 | 153 259 | 85 086 | 3 518 | 262 806 |
| Total | 189 699 | 673 320 | 960 296 | 101 299 | 1 924 614 |

These estimates include inadequately restocked lands on both Tree Farm Licences (TFL's) which are managed by licensees, and on Public Sustained Yield Units (PSYU's) which are managed by the Ministry of Forests. Estimates for PSYU's alone are not readily available, but inadequately restocked lands on TFL's should be a relatively low proportion of the totals given.

Reforestation of the backlog will be expensive. Preliminary estimates indicate site preparation costs in the range of \$150 - \$300 per hectare. The total planting cost is estimated to be \$300 - \$400 per hectare. Therefore the total cost of restocking these lands is estimated to be \$450 - \$700 per hectare.

Reforestation of the total backlog would cost about one billion dollars. In view of the costs involved and the productivity of the poor and low sites, effort will be directed toward the good and medium sites. Attention will focus particularly on the substantial areas of good and medium site characteristics in the Prince George and Nelson Regions.

Table 5.2 gives estimates of the annual yield increases that could be anticipated from reforestation of the areas detailed in Table 5.1.

Site preparation prior to planting is a costly and capital intensive undertaking. Planting is relatively labour intensive.

Table 5.2 Potential Annual Yield¹ Increase From Restocking Inadequately Restocked Crown Forest Land

| Forest Region | Site Class | | | | Total |
|---------------|----------------|-----------|-----------|--------|-----------|
| | Good | Medium | Poor | Low | |
| | (Cubic Metres) | | | | |
| Vancouver | 197 434 | 379 399 | 38 615 | 223 | 615 730 |
| Prince Rupert | 89 829 | 287 324 | 286 890 | 37 020 | 701 063 |
| Prince George | 279 200 | 473 864 | 553 418 | 4 571 | 1 311 053 |
| Cariboo | 103 551 | 158 659 | 58 795 | 654 | 321 659 |
| Kamloops | 74 903 | 193 059 | 54 089 | 245 | 322 296 |
| Nelson | 79 581 | 343 764 | 119 800 | 1 914 | 545 059 |
| Total | 824 557 | 1 836 069 | 1 111 607 | 44 627 | 3 816 860 |

¹ Calculated as MAI (at culmination age) multiplied by area (from Table 5.1).

5.2 JUVENILE SPACING

The objective of juvenile spacing, also known as stocking control, is to concentrate growth at an early age in the life of a stand on a predetermined number of stems that have been selected for superior growth and form. Juvenile spacing, therefore, places future crop trees in possession of a site at an early age of the stand development by eliminating their less desirable competitors.

This treatment has the effect of:

- reducing the time necessary for the stand to reach merchantable size by augmenting diameter growth;
- improving the quality of the stand;
- increasing the proportion of larger trees, and thus value, at final harvest;
- providing a measure of control over species composition;
- reducing the incidence of losses to insects, disease, snow breakage, windthrow, and brush composition;
- reducing the cost of subsequent thinning and final harvest; and
- reducing the cost of manufacture of forest products.

Although all of these benefits are important, quantitative estimates for the main commercial tree species are lacking. Recent research on juvenile spacing and fertilization by the Pacific Forest Research Centre indicates large gains in volume and stem diameter following treatment. Estimates based on this research, simulation modelling and experience suggest that juvenile spacing will increase final harvest yields by about 5 - 30 per cent. For Coastal douglas-fir and western hemlock, studies by Crown Zellerbach Canada Ltd. indicate gains in volume of about 15 per cent with increases in the average tree size of 40 - 80 per cent. Since larger trees are more valuable, the stand value is increased considerably. For dense lodgepole pine in the Interior of the Province, juvenile spacing may increase ultimate yields by 50 per cent; otherwise these stands could well stagnate.

Table 5.3 indicates the estimated increases in timber volumes expected to result from spacing and from other silviculture treatments. Relative value increases are also shown.

The results given in Table 5.3 are for single treatments only. The response to some combinations of treatments is more than the sum of the responses to the treatments done individually. Treatment regimes might include:

- spacing with concurrent fertilization; and
- thinning and fertilization.

With the diverse benefits from spacing listed above and its usefulness in combination with other treatments, it is clear that figures such as these in Table 5.3 can give only partial explanation of spacing's major role in the budget planned for this Agreement.

Timely spacing of young stands greatly enhances future management options. Many stands in both Coastal and Interior regions of the Province have reached the most appropriate ages for this treatment and a large portion of the intensive management budget will be devoted to juvenile spacing. Preliminary estimates indicate that juvenile spacing costs \$300 - \$600 per hectare and frequently requires four or more man-days per hectare.

Table 5.4 gives the area of good and medium site land in each Forest Region of the major forest types to be treated. Spacing is most beneficial for the younger stands in the first two age classes. Because of location and other reasons, all of these younger stands will not warrant treatment. It is clear however that sufficient suitable stands are available on which to usefully employ the proposed spacing budget.

Juvenile spacing efforts will be heavily directed to the Vancouver Forest Region since there are significant areas of young douglas-fir and western hemlock on good and medium sites. In addition, effort should be directed toward the Interior area where there is great potential for "releasing" young, dense lodgepole pine.

Table 5.3 Effects of Silviculture Treatments

| Treatment | Yield Increase (Estimated Total) ¹ | | | Value Increase |
|------------------------------|--|--------|-------|-------------------|
| | Good | Medium | Poor | |
| | Site | Site | Site | |
| | (Cubic Metres-Hectares) | | | |
| Juvenile Spacing: | | | | |
| Douglas-fir | 120-150 | 55-85 | 15-50 | High |
| W. Hemlock | 125-200 | 55-85 | 15-50 | Medium |
| Lodgepole Pine | 55- 85 | 25-35 | 5-15 | Low |
| Other | n.a. | n.a. | n.a. | |
| Fertilization ² : | | | | |
| Douglas-fir | 8 | 10 | 10 | Medium |
| W. Hemlock | 7 | 8 | 8 | Medium |
| Sitka Spruce | n.a. | 11 | 12 | Medium |
| Lodgepole Pine | 3 | 3 | 3 | Low |
| Other | n.a. | n.a. | n.a. | |
| Thinning ³ : | | | | |
| Douglas-fir | 0-200 | 0-175 | 0-130 | High |
| W. Hemlock | 0-205 | 0-170 | 0-125 | High |
| Other | n.a. | n.a. | n.a. | |

¹At culmination age.

²Per application.

³A significant portion of the volume is obtained earlier than the culmination age.

**Table 5.4 Areas of Forest Types in Public Sustained Yield Units
Good and Medium Site Only**

| Type | Age | | | | |
|------------------------------------|---------|---------|---------|---------|---------|
| | 0-20 | 21-40 | 41-60 | 61-80 | 81-100 |
| (Hectares) | | | | | |
| VANCOUVER FOREST REGION | | | | | |
| Fir | 36 569 | 50 962 | 32 482 | 18 105 | 23 662 |
| Hemlock | 34 135 | 46 053 | 30 595 | 24 494 | 18 603 |
| Spruce | 4 177 | 2 457 | 3 504 | 3 475 | 3 820 |
| Pine | 4 040 | 5 581 | 7 068 | 7 415 | 7 124 |
| PRINCE RUPERT FOREST REGION | | | | | |
| Fir | 644 | 1 649 | 422 | 784 | 787 |
| Hemlock | 10 503 | 3 261 | 2 936 | 7 989 | 10 077 |
| Spruce | 13 724 | 4 622 | 16 241 | 15 159 | 37 460 |
| Pine | 17 032 | 16 191 | 61 605 | 67 686 | 389 333 |
| PRINCE GEORGE FOREST REGION | | | | | |
| Fir | 374 | 1 132 | 3 178 | 4 051 | 7 199 |
| Hemlock | 397 | 53 | 285 | 587 | 304 |
| Spruce | 27 082 | 31 470 | 80 462 | 130 119 | 216 138 |
| Pine | 425 806 | 103 581 | 283 605 | 360 736 | 440 510 |
| CARIBOO FOREST REGION | | | | | |
| Fir | 12 491 | 6 224 | 17 789 | 28 250 | 52 045 |
| Hemlock | 2 627 | 298 | 896 | 549 | 0 |
| Spruce | 9 356 | 2 164 | 12 421 | 28 439 | 41 956 |
| Pine | 15 318 | 16 570 | 99 530 | 146 416 | 330 457 |
| KAMLOOPS FOREST REGION | | | | | |
| Fir | 18 950 | 31 708 | 69 958 | 123 223 | 132 821 |
| Hemlock | 7 200 | 2 144 | 3 691 | 3 360 | 3 447 |
| Spruce | 13 624 | 6 674 | 8 381 | 14 244 | 41 258 |
| Pine | 19 848 | 80 692 | 83 586 | 170 329 | 179 234 |
| NELSON FOREST REGION | | | | | |
| Fir | 3 984 | 30 524 | 47 975 | 72 523 | 81 565 |
| Hemlock | 1 596 | 2 696 | 3 361 | 6 252 | 4 219 |
| Spruce | 6 782 | 7 713 | 7 896 | 21 516 | 17 999 |
| Pine | 31 280 | 201 064 | 108 726 | 148 195 | 89 392 |

5.3 FERTILIZATION

Fertilization stimulates tree growth. Almost all of the operational and research work undertaken in British Columbia has been in the south Coast Region because of the potential for tree growth and the nitrogen deficiency of some soils in this area.

Table 5.3 gives some indication of the range of volume increases that may be expected to result from a single application of fertilizer.

Fertilization is estimated to increase yields at maturity in douglas-fir and sitka spruce by 1 - 3 per cent per treatment. For other species, the increase in yield is estimated to be 0.8 - 2.4 per cent per application. Response on poor and medium sites is expected to be as high or higher than on good sites.

Studies by the Pacific Research Centre show that the growth effects of juvenile spacing and fertilization are more than additive. Therefore, much of the fertilization effort will be combined with juvenile spacing treatments.

Fertilization costs range from \$125 - \$175 per hectare for each application.

5.4 FOREST PROTECTION

Experience has established that fire hazard increases dramatically in the years immediately following juvenile spacing operations. In overstocked and dense stands, several thousand young trees may be cut during the spacing operations and fire hazard increases as the cut trees dry and decay.

To reduce the hazard to acceptable levels, two options appear to be available. The cut stems could be removed from the stand but the costs would be prohibitive. Disposal would also be a problem. The logical solution is to station initial attack crews in locations for immediate suppression of any fire that might develop.

Forest protection expenditures are necessary to protect investments in intensive forest management.

5.5 IMPLEMENTATION CONTRACTS

To implement the above forestry initiatives, the Province will have to supplement its capacity to carry out the program. At present a wealth of experience and ability exists in the private forest sector in British Columbia. Therefore, the Province will use these professionals for contracting development and supervision of the projects where Forest Service expertise is not available.

Implementation contracts will be of value in ensuring the work is done in a systematic, cost effective and professional manner as well as involving many small firms and private foresters in the programs.

6. RATIONALE FOR PROPOSED AGREEMENT BUDGET

The annual budget in Schedule "B" represents a recognition of the need for silviculture programs and is in line with last year's \$10 million expenditures by the Province.

As indicated earlier, a number of major reports are in preparation to satisfy the requirements of the Province's new Ministry of Forests Act. These reports will improve the understanding of the potential harvest in future decades and of the effect that expanded silviculture programs can have on these harvests. As a result, these reports should provide guidance regarding the Regions of the Province where silviculture effort is required to sustain the established industry and the employment base dependent on it. They will also indicate where silviculture efforts will make possible the expansion of the present industry.

By providing better information on the timing and magnitude of future timber supply problems and opportunities, these reports will indicate the types of silviculture effort required in the various Regions of the Province.

The reports required by the Ministry of Forests Act will be completed for the first time in the fall of 1979. They will be repeated at regular intervals thereafter. The results of these first reports will thus be available for planning the expenditures under the second year of this Agreement and subsequent versions of these reports will be of assistance in later years. In recognition of the improved information which will be available in the near future, there will be considerable scope for the Management Committee to redirect as required expenditures among programs in future years.

Expenditures proposed for the first year of this Agreement are based on the present ability of the various Forest Regions to manage effectively these expanded programs. The proposed expenditures reflect the experience gained through executing forest management programs in the past, particularly in 1978. They also reflect the intimate knowledge the Ministry's regional staff have of local forest management opportunities. In short, the expenditures proposed for the first year of this agreement represent the most informed judgement presently possible on how to get the largest improvement to the Province's forest resource with the funds available.

Forests in the Vancouver Region have been exploited over a longer time period and more intensely than forests in other Regions. For this reason, and because the forest land is quite productive, silviculture and artificial reforestation have been practised on a large scale for many years. Harvesting and reforestation have created many stands of fir, hemlock and spruce which are now suitable for juvenile spacing. If spacing is not done when these stands are of the appropriate age, spacing gains and future opportunities for further improvement of stand characteristics through thinning will be lost. Consequently, effort in the Vancouver Forest Region will be directed primarily toward juvenile spacing.

In some respects, the Prince Rupert Forest Region is similar to the Vancouver Forest Region. The backlog of unsatisfactorily restocked lands is not large because of natural reforestation following logging. Stands suitable for spacing and fertilization are present. However, because large areas of young fir are absent and logging activity in the past has not been as intense, the Prince Rupert Region expenditure in these programs will be small relative to the Vancouver Region.

In the past three decades, the harvest from forests in the Prince George Forest Region has continually increased. Natural reforestation on spruce sites following logging has not appeared and the Region now has substantial areas which are unstocked. Effort in this Region must be directed to restocking these lands and the level of reforestation program expenditure reflects this fact.

The Kamloops and Cariboo Forest Regions contain large areas of dense, immature lodgepole pine. Some stands contain a proportion of older trees which were not harvested initially and these trees are now diseased with mistletoe or are gradually falling down and thereby hindering the development of the younger trees. Since, in the future, the industry will be critically dependent on these stands, sanitation and juvenile spacing followed by fertilization will be necessary.

The Nelson Forest Region is unique. Reforestation following fire or logging in areas of high rainfall has been inadequate. Consequently, large areas of very productive forest land are now stocked with brush. In the dry areas of the Region, natural reforestation following fire or logging has resulted in overstocked pine stands which now require juvenile spacing. In this Region, the emphasis will therefore be directed to both reforestation and juvenile spacing with fertilization.

Reforestation of backlog areas, juvenile spacing and fertilization are expected to remain the major programs under the Agreement in future years. This is reflected in the allocation of funds in Schedule "B"

SCHEDULE "B"

Canada-British Columbia 1979-1984 Intensive Forest Management Subsidiary Agreement

Programs (in thousands of dollars)*

| | |
|-----------------------------------|--------|
| 1. Reforestation | 11 500 |
| 2. Juvenile Spacing | 30 000 |
| 3. Fertilization | 5 000 |
| 4. Forest Protection | 1 000 |
| 5. Implementation Contracts | 2 500 |
| Total | 50 000 |

* The above programs will be cost-shared 50 per cent federal and 50 per cent provincial.

SCHEDULE "B"

Canada-British Columbia 1979-1980 Program Expenditure Estimates* by Forest District

| Programs | Vancouver | Pr. Rupert | Pr. George | Kamloops | Nelson | Cariboo | H.Q. | Total |
|-----------------------------|------------------------|------------|------------|----------|--------|---------|------------------|--------|
| | (Thousands of Dollars) | | | | | | | |
| 1. Reforestation | 250 | 200 | 1 050 | 150 | 450 | 200 | — | 2 300 |
| 2. Juvenile Spacing | 3 200 | 400 | 250 | 750 | 500 | 900 | — | 6 000 |
| 3. Fertilization | 400 | 50 | 100 | 150 | 100 | 200 | — | 1 000 |
| 4. Forest Protection | — | — | — | — | — | — | 200 ¹ | 200 |
| 5. Implementation Contracts | 150 | 50 | 100 | 50 | 50 | 100 | — | 500 |
| | 4 000 | 700 | 1 500 | 1 100 | 1 100 | 1 400 | 200 | 10 000 |

¹ To be allocated by Headquarters relative to build up of hazard.

* Actual program expenditures may vary due to field conditions.

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