



Doman-Western Lumber Ltd.

Tree Farm Licence 19

1999

ANNUAL REPORT



Western Forest Products Limited

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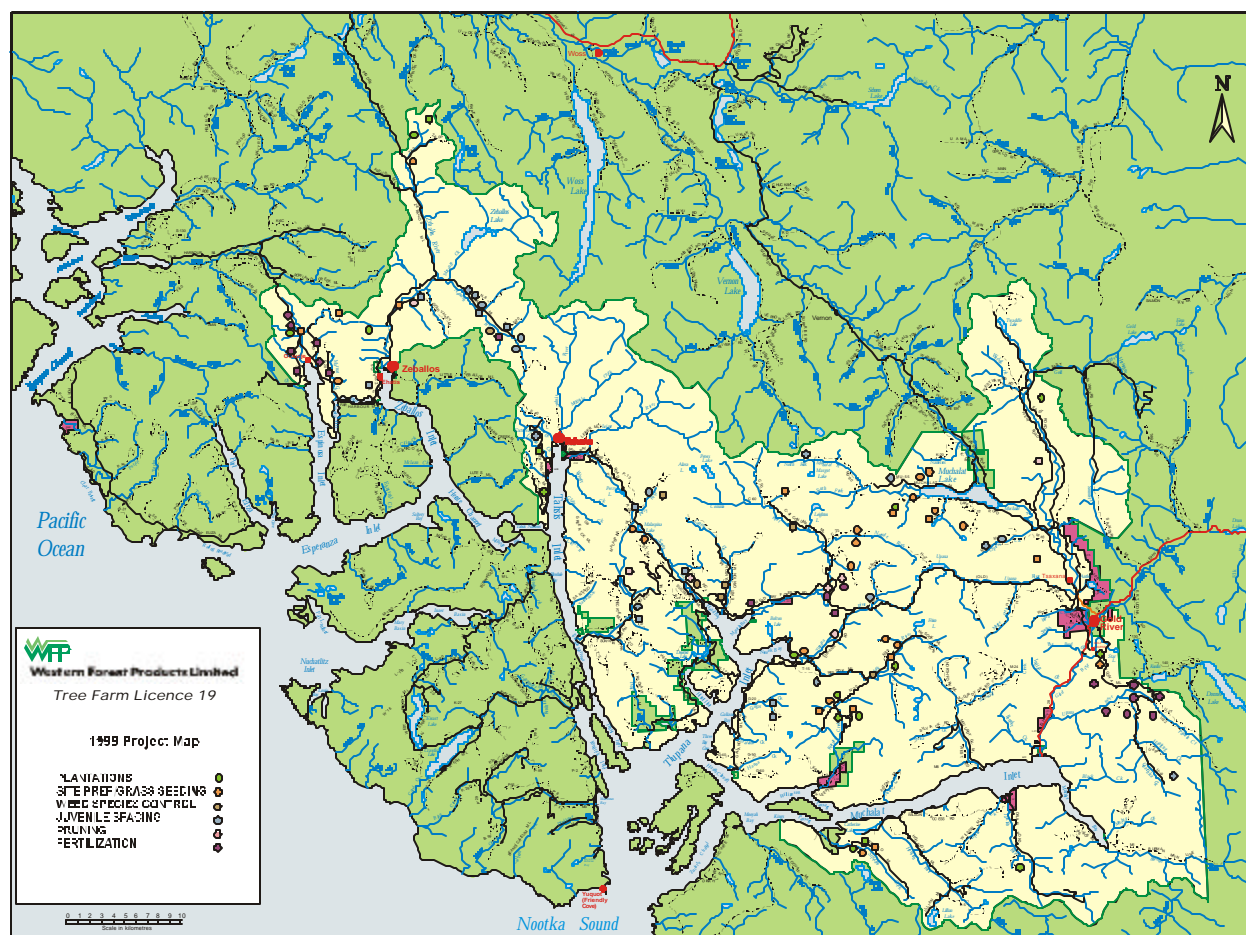
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SUMMARY OF ACTIVITIES AND ACCOMPLISHMENTS – 1999

Depletion	Scaled Volume (WFP only)	571 502	m ³
	Volume Charged to Annual Allowable Cut (WFP)	558 195	m ³
	Area Logged (Western Forest Products)	657.9	ha
	Area Logged (SBFEP)	64.5	ha
Reforestation	Silviculture Prescriptions	870	ha
	Site Preparation	8.8	ha
	Seedlings Planted	382 881	trees
	Seedlings Fertilized	358 233	trees
	Area Planted	263.8	ha
	Stocking Surveys	1 719	ha
	Plantation Survival Assessments	393	ha
	Free Growing Surveys	502	ha
Stand Management	Juvenile Spacing	303	ha
	Brushing and Weeding	26	ha
	Pruning	117	ha
	Broadcast Fertilization	764	ha
Inventory	Cutting Permit Cruising	1 009	plots
	Residue Assessment	261	plots
Engineering	Roads Built	54.2	km
	Roads Rebuilt	11.0	km
	Roads Maintained	415	km
	Roads Deactivated	204	km
	Site Stabilization	36	ha
Protection	Accidental Fires	1	
Contracting	Contractor Obligation	245 544	m ³
	Contracted	288 199	m ³
	Compliance	117.4	%
Minor Products	Shake and Shingle	3 097	m ³
	Cedar Cants	12	m ³
	Yew Bark	1 221	kg
Employment	Direct Employment	128 076	person-days

PROJECT MAP



1.0 INTRODUCTION

1.1 Statement of Stewardship

Tahsis Tree Farm Licence 19, held by Doman – Western Lumber Ltd. and managed by Western Forest Products Limited, is located on the west coast of Vancouver Island in the vicinity of Nootka Sound. The Licence was granted to the Company's predecessor, Tahsis Company Limited, as Tahsis Forest Management Licence 19 on December 23, 1954. Since the awarding of the Licence 45 years ago, about 31 million cubic metres of timber has been logged in TFL 19.

The total area of TFL 19 is 191 992 ha, of which 148 177 ha are considered productive forest land. More than 67 per cent of the total TFL forest area still remains in an old growth condition. About 95 195 ha are classed as operable (48 per cent of the total area).

Forestry and milling activities supported by logging in TFL 19 sustain about 500 direct jobs on Vancouver Island and are critical to the local economies of Gold River, Tahsis, and Zeballos. Campbell River and Comox Valley communities are also directly affected. Western Forest Products works with First Nations groups whose traditional territories lie with TFL 19 to create economic activities and build capacity for forest management.

Forest planning policies, practices, and activities in the TFL are prescribed in Western Forest Products' TFL Management Plans, Forest Development Plans, and silviculture strategies. These are developed regionally and implemented locally by a team of dedicated professional foresters and other planning specialists and operations staff. Western Forest Products maintains a comprehensive system of public opportunities for reviewing all plans and reports annually on TFL activities through this Annual Report.



The company installed new TFL entrance and operations signs during 1999 to signify the licensee change in TFL 19. The reflective aluminum signs provide visitors and others with information on licensee boundaries and activities.

The Company is proud of the level of forest management applied to TFL 19 that integrates the public interest in economic development and employment with environmental stewardship. Western Forest Products supports local salmon enhancement projects in Nootka Sound that are focused on four major watersheds in the TFL. In conjunction with the Ministry of Forests, the Company maintains four campsites plus a number of day-use picnic areas, trails, and karst viewing areas in the TFL. Western Forest Products welcomes public comment on all its practices. Further information is available on the Company's web site at www.westernforest.com.

1.2 Company Highlights

- Western Forest Products' parent company Doman Industries Limited had a slight improvement in its financial situation in 1999. Year-end results continued to be affected by depressed demand for hemlock lumber in Asian markets, low pulp prices and high stumpage and logging costs. Losses for the year were \$55,913,000 compared to a \$74,000,000 in 1998. Sales for the year were up almost \$100 million to \$873 million compared to \$779 million in 1998. Lumber sales were approximately \$500 million, pulp sales \$262 million and log and sawmill revenues approximately \$100 million. The outlook for 2000 was expected to be significantly better with improved pulp prices and demand by midyear. However, lumber prices and demand were not expected to be particularly robust.
- The Softwood Lumber Agreement with the United States continues to hamper the company's return to profitability by forcing the mills to operate at less than optimum level. The sawmill capacity for Doman Industries is 1.2 billion board feet of lumber but only 717 million board feet were produced in 1999, or 60 per cent of capacity.
- Total timber harvest for the year continued in an undercut position. A total of 3.3 million m³ or 74 per cent of available harvest volume was accomplished



The lumber ship Tolten loads hemlock squares for the Japanese market at the Tahsis sawmill. Sawmill operations were not continuous during the year due to serious market problems in Japan. The lack of any US lumber quota for the Tahsis mill contributes to the problem.

- Stumpage payments were \$84.7 million, an average of \$25.28 per cubic metre. This is slightly lower than in 1998 but still a significant cost factor on an average sales value of slightly over \$100 per cubic metre. Joint government/industry cost and administration action teams addressing stumpage and bureaucratic relief continued work in 1999. Appendix XVIII summarizes the operating statistics for the Doman Group of companies for 1999.

1.3 Forest Operations Highlights

- A total of 263 km of road were constructed and 535 km were deactivated, 116 permanently. More than 1960 km were maintained in the company's 30 logging operations.
- The unresolved land use situation in the Central and North Coast Region continued to attract international attention and a market action campaign continued against companies working in the region, including Western Forest Products. Discussions commenced with local and international environmental groups on a new conflict-free approach to attempting to design an ecosystem-based forest management model.
- The provincial government announced a major forest policy review under the direction of the Jobs and Timber Accord advocate, Gary Wouters. WFP provided a brief that outlined five major areas of much needed forestry reform for returning profitability to the coastal forest industry and sustaining environmental and social values.
- The company had an excellent year with respect to Forest Practices Code compliance with only 6 violations recorded out of a total of 721 inspections of company operations for a 99 per cent compliance record.
- In an effort to address the under harvest situation in various tenures and provide new opportunities for First Nations involvement in forestry activities, the company agreed to underutilized AAC being transferred to six coastal First Nations within their traditional territories. At year-end the specific mechanism of transfer was still to be worked out in conjunction with the Ministry of Forests. It is expected the company will recover most of this volume through log purchase and cooperative development agreements.

- Intensive work continued on developing the company's Environmental Management System and Forest Stewardship Council certification in the North Vancouver Island Region.
- More than 80 per cent of harvesting was patch clearcutting with reserves. Average openings were less than 30 ha in size. Approximately 91 per cent of the timber harvest was in mature stands older than 140 years and mostly 250 years or greater. A total of 4 216 ha were logged and 2 915 ha planted. Planting percent is normally higher, but snow disrupted planned planting. WFP also committed to establishing trials to assess variable retention potential in North Vancouver Island Region.
- Vandals cut and damaged over 1 000 orchard trees at the Saanich Forestry Centre due to an erroneous assumption that Western Forest Products was managing for genetically modified trees.
- A cut reduction was announced for the Strathcona Timber Supply Area, impacting FLA19231. Effective January 1, 2000, the AAC will be reduced by 42 118 m³, to 355 814 m³.

1.4 Specific TFL 19 Highlights

- A huge natural landslide occurred in the Nomash Valley, a tributary of the Zeballos River. The slide covers an area in excess of 37 ha. Geoscientists concluded that the slide was caused by natural processes and was not related to harvesting activities. The slide caused significant disturbance and siltation to the Nomash and Zeballos Rivers. The company completed aerial grass seeding and the planting of a portion of the disturbed area by year-end.



One of the largest landslides ever to occur in the TFL was on April 26, 1999 in the Nomash drainage of the Zeballos watershed. A total of 37.7 hectares were involved and rehabilitation of the site began immediately. The cause was due to natural events and resulted in damage downstream. In 1999, a total of 14.2 hectares and 24,530 trees were planted. The whole slide area was seeded by helicopter with 1400 kg of specially formulated grass and legume mixes to reduce continuing erosion.

- Total chance planning was started for the Zeballos Lake area. There is potential for approximately 450,000 m³ volume to be harvested conventionally in the TFL in this drainage.
- Forest tours were initiated in Zeballos Operation through the North Island Forestry Centre and were a successful addition to the program.
- An unusually heavy and long lasting snowfall occurred in the spring of 1999 which had serious impact on the logging and planting programs in TFL 19.
- Relations with the Ministry of Forests Compliance staff improved. Continued focus on better practices and field performance led to no violations of the Forest Practices Code in 1999 in the TFL. Another measure of compliance is the status of harvest inspections. Out of a total of 199 harvest inspections, 195 (98 per cent) were in full compliance.
- Personnel were given training in the newly developed WFP Environmental Management System and Environmental Policy.
- Construction began in the Leigh Creek Watershed, following four years of engineering. Intensive road building techniques will be employed to open up critical winter harvesting areas in an area once considered inaccessible for conventional harvesting methods.
- In November the Oktwanch River spawning channel, a tributary of the Gold River watershed, was completed and officially opened with instant use by spawning sockeye salmon.



Glenn Robertson, MLA; John Duncan, MP; Mowachat representatives and WFP's Chief Forester Bill Dumont, celebrated the opening of the Oktwanch River Habitat Restoration Project. This \$300,000 investment funded by FRBC and supervised by WFP created a spawning channel to improve the spawning habitat of this river. Within days of its opening sockeye salmon had moved in and spawning commenced. Phase II is planned in 2000.

- Keith Moore, Forest Practices Board Chairman, did a follow-up tour to the Forest Practices Board audit completed in August 1998. WFP received a clean audit from the review and Mr. Moore was impressed with riparian protection and lack of blowdown.
- As part of the Company-wide ISO 14001 audit for environmental certification, Nootka Contract Operation's Plumper Harbour, Tahsis, and Head Bay Contract Forest Operations were audited by QMI. The lead auditor was satisfied with WFP's Environmental Management System and compliance.
- An internal audit of the operations was conducted to review environmental and operating procedures, practices and accomplishments.
- WFP allocated \$410,000 for recreation projects in Strathcona Park and TFL 19 through the Gold River Futures Society (displaced area mill workers). In the Nootka Region, recreation sites and trails near Gold River and Tahsis to enhance the tourism potential in these areas, including picnic sites and trails at Antler Lake and Star Lake, development of the Gold River trail, and extended development of sites at Cougar Creek and Muchalat Lake.
- A bridge was constructed across the Perry River to access East Tahsis. Eight blocks are slated for harvest over five years, providing a major source of winter operating area.
- Three years of road and bridge development culminated in access to the Jacklah drainage.
- An estimated 58,000 visitors utilized the Company's major forest recreation sites in TFL 19 during the year.



WFP's Cougar Creek recreation site on Nootka Sound with 45 campsites, picnic tables, boat launch and dock is a popular recreation area for the public, particularly during high fishing season in August and September. More than \$120,000 has been spent upgrading the site in the past few years.

2.0 MANAGEMENT AND OBLIGATION PERFORMANCE

2.1 Volume

The scaled production for the year was 571 501 m³. Volumes by timber mark and Operation are summarized in Appendix I. The volume charged to the allowable cut was 558 195 m³. This includes the scaled production and the residue survey volumes (Appendix II).

2.2 Area

The Company harvested timber from 657.9 ha during the year. Appendix III summarizes the depletion by Operation. Road construction activities converted 54.2 ha from productive forest land to non-productive forest land. Road rehabilitation activities brought 11.3 ha back into productive forest land.

2.3 Contractor Compliance

Harvesting and forest management activities on TFL 19 during the year employed contractors and Company personnel. The volume harvested by full and phase contractors totalled 288 199 m³. The Contractor Clause performance for harvesting was 117.4 per cent (Appendix VI). Appendix VII lists the phase and full-harvesting contractors. Appendix VIII lists all contractors employed in harvesting, silviculture, and resources management on the TFL.

2.4 Planning

2.4.1 Land and Resource Management Plans

WFP staff participated in a provincial SMZ working group with a mandate to make recommendations to government on implementing SMZ objectives.

2.4.2 Landscape Unit Plans

The majority of work completed throughout the year focused on completing the Regional Landscape Unit Planning Strategy (RLUPS). The original RLUPS, completed in 1997, included the delineation of all landscape unit boundaries, the determination of biodiversity emphasis (lower, intermediate and higher) for each landscape unit and the scope and priorities then proposed for LU planning. The work completed in 1999 consisted of the review and update of the 1997 RLUPS, and revised land use planning strategies. The strategies include the follow information:

- a statement confirming the satisfactory completion of the review and compliance with the Chief Forester's Higher Level Plans: Policy and Procedures;
- a matrix confirming that each element of Chapter 5 of the higher level plans, policies and procedures has been reviewed;
- a summary of red flagged units and how these were addressed;
- a tabular summary of landscape units showing biodiversity emphasis options areas, and a proposed priority-based schedule to legally establish land use and priority biodiversity objectives within three years; and
- a summary of major changes and issues dealt with in the review and a description of the reason for the changes.

The next step in continuing landscape unit planning is for the development of priority biodiversity objectives within a three-year time period. Priority biodiversity planning is defined by the Landscape Unit Planning Guide to consist of retention of old growth forest; and stand structure through wildlife tree retention.

General information regarding the landscape units found within TFL 19 and the proposed timeline to complete the priority biodiversity objective are listed in Table 1.

Table 1 - Landscape Units

Landscape Unit	BEO	Gross LU Area (ha)	LU Area within TFL (ha)	Legal Establishment	Priority
Gold	High	90,527	52,378	March 2001	Medium
Tlupana	Intermediate	43,375	43,143	March 2001	Medium
Burman	Low	46,222	27,971	March 2001	Medium
Kleeptee	Low	15,704	14,768	March 2001	Medium
Tahsis	Low	42,324	29,693	March 2001	Medium
Zeballos	Low	19,237	19,237	March 2001	Medium
Port Eliza	Low	34,409	5,827	March 2002	Low

2.4.3 Management Plan

An operability review was completed in 1999 in preparation for Management Plan 9.

Costs for higher level planning were \$169,067.

2.4.4 Forest Development Planning

Gold River Forest Operation, Nootka Contract Operation and Zeballos Forest Operation each prepared a draft version of the 1999-2003 Forest Development Plan for public review. The Zeballos Forest Operation Forest Development Plan was approved late in the year for an eighteen-month period, and approval of the Gold River Forest Operation and Nootka Contract Operation plans is expected in 2000. A request was submitted to

extend the period covered by the Gold River Forest Operation plan to two years, to reduce the administrative expense and burden of plan preparation.

Costs of preparing, presenting and providing public viewings of the Forest Development Plans was \$164,739.

2.4.5 Silviculture and Harvest Planning

2.4.5.1 Cutting Permits and Cutting Permit Cruising

The number of active Cutting Permits in TFL 19 increased from 63 permits in 1998 to 79 permits in 1999. Table 2 lists the active Cutting Permits, expiration dates, and locations.

A total of 1 009 plots were established in TFL 19. Cruising costs totalled \$93,153.76, or \$92.32/plot. Cutting permits and cutting permit cruising costs totalled \$251,981.

Table 2 - Active Cutting Permits

CP	Expiry Date	Location	CP	Expiry Date	Location
1	Feb 28/00	Gold River	714	Mar 4/01	Nesook/Tahsis
14	Mar 15/00	Nesook	13	Aug 31/00	Houston
21	Apr 30/00	Gold River	23	Apr 30/00	Head Bay
22	Feb 29/00	Nesook	61	Sep 30/00	Head Bay
24	Mar 17/99	Gold River	62	Jun 26/00	Jacklah
28	Apr 30/00	Gold River	65	Oct 31/00	McCurdy
32	Jan 31/00	Gold River	66	May 14/99	Head Bay
33	Jul 31/00	Nesook	67	May 22/00	Head Bay
34	Dec 19/00	Gold River	68	Aug 20/00	Head Bay
35	Nov 17/00	Gold River	70	Jul 27/01	HB/Houston
36	Dec 12/00	Gold River	71	Sept 2/00	Head Bay
37	Oct 15/00	Nesook	73	Jun 5/00	McCurdy
38	Nov 28/00	Gold River	75	Feb 5/00	Head Bay
39	May 12/00	Nesook	76	Jul 31/00	McCurdy
40	Mar 31/00	Gold River	77	Oct 24/00	Head Bay
41	Feb 3/00	Nesook	78	Jun 16/00	Houston
42	Sep 18/00	Nesook	79	Jan 8/01	Jacklah
43	Sep 22/00	Nesook	89	Dec 12/01	GR/Nesook/HB
44	Apr 30/00	Gold River	700	May 26/00	Head Bay
45	Jul 15/00	Nesook	701	May 11/00	Tsowwin
46	Aug 29/00	Gold River	702	Apr 6/00	Head Bay
47	Mar 12/00	Nesook	703	Apr 22/01	Silverado
48	Jan 18/00	Nesook	704	Oct 13/00	Houston
49	May 22/00	Gold River	705	Nov 23/00	Houston
80	Jan 31/01	Nesook	706	Jan 19/01	West Tahsis
81	Dec 6/01	Gold River/Nesook	708	Dec 2/00	Silverado
82	Jan 21/00	Nesook	709	Jun 22/00	McCurdy
83	Aug 18/01	Gold River/Nesook	711	Apr 6/00	Silverado
84	Feb 15/01	Nesook	713	Aug 11/00	McCurdy
85	May 20/01	Gold River/Nesook	714	Mar 4/01	Nesook/Tahsis
86	Jul 6/01	Gold River	12	Jun 15/99	Zeballos
87	Aug 2/01	Gold River	26	Jun 30/00	Zeballos
88	Sept 16/01	Nesook	30	Aug 31/00	Zeballos
89	Dec 12/01	GR/Nesook/HB	50	Sep 30/99	Zeballos

CP	Expiry Date	Location
90	Feb 23/00	Gold River
90A	Dec 14/00	Nesook
91	Apr 16/00	Nesook
92	Feb 16/01	Nesook
99	May 9/00	TFL Salvage

CP	Expiry Date	Location
51	Apr 30/00	Zeballos
53	Sep 5/00	Zeballos
54	Jun 30/99	Zeballos
55	Jan 1/00	Zeballos

2.4.5.2 Road Permits

The Company maintained 11 Road Permits in 1999, as listed in Table 3, throughout TFL 19 Operations.

Table 3 - Road Permits by Operation

Road Permit	Operation	Road Permit	Operation
RO6780	Gold River	RO6865	Tsowwin
RO6863	Nesook	RO6866	West Tahsis
RO6860	Houston	RO80905	Silverado
RO7430	Jacklah	RO6862	Kleeptee
RO6861	McCurdy	RO6868	Zeballos
RO6864	Head Bay		

2.4.5.3 Silviculture Prescriptions

Thirty-four silviculture prescriptions were submitted to the Ministry of Forests in the year (Table 4). The total area for which new silviculture prescriptions were submitted was 870.1 ha. Average block size including reserve was 25.6 ha on the submitted prescriptions. Reserve area averaged 12 per cent of the blocks.

Amendments to silviculture prescriptions reflecting new information or objectives continue to occupy significant amounts of staff time. Forestry costs for new silvicultural prescriptions and amendments to previously submitted prescriptions totalled \$94,578 or \$109 per ha.



WFP sponsored a workshop on Regeneration in the Mountain Hemlock Forest Zone in November 1999. WFP staff from Northern Vancouver Island, the Central Coast and Ministry of Forests participated in this workshop conducted by Rob Scagel of Pacific Phytometric Consultants. WFP has a large area of mountain hemlock zone forest in TFL 19 and other tenures, which requires special management techniques. Seminar participants are in Block Z33 in the Gold River Forest Operation. Photo by Frank Hovenden.

Table 4 - Silviculture Prescription Statistics by Operation

Operation	Submitted SPs (#)	Total Area (ha)	Average Block Size (ha)	Minimum Block Size (ha)	Maximum Block Size (ha)	Average Reserve (%)
GRFO/GRCO	17	418.8	24.6	7.6	44.8	13
NCA	10	284.0	28.4	3.2	43.8	10
Zeballos	7	167.3	23.9	9.7	53.2	13
TOTAL TFL 19	34	870.1	25.6	3.2	53.2	12

2.5 Public Involvement

2.5.1 Forest Development Plan

All three operations hosted public reviews of Forest Development Plans (1999-2003) throughout the year. A total of nine information and review sessions were hosted for these Plans (Table 5). Concerns raised by participants and correspondents were addressed. Presentations were given to stakeholders, government organizations and, on request, to members of the general public. To improve access to the plan, Gold River Forest Operation changed the viewing process to have the plan available for a two-month period at the Gold River Forest Operation office. This allowed interested parties to be given in-depth one-on-one presentations of the plan.

Table 5 - Public Reviews

Operation	Plan	Location	Attendance	Written Responses
GRFO	GRFO Forest Development Plan 1999 - 2003	Gold River	9	2
		Tsaxana	20	0
NCA	Nootka Contract Forest Development Plan 1999 - 2003	Campbell River	4	1
		Zeballos	10	1
		Tahsis	8	1
Zeballos	Zeballos Forest Development Plan 1999 - 2003	Campbell River	1	0
		Zeballos	10	2
		Zeballos Board of Trade	10	1
		Zeballos Council	6	0
Nootka Region	Pest Management Plan	Campbell River	4	1
		Tahsis	8	1
		Zeballos	10	1
TOTAL	4	12	100	11

2.5.2 Pest Management Plan

A comprehensive Pest Management Plan for the Nootka Region Operations was drafted and public review held. The plan was reviewed one-on-one with local stakeholders: the three Nootka Region village councils (Gold River, Tahsis, and Zeballos) and four Nootka Region First Nations groups (Mowachaht/Muchalaht, Ehattisaht Tribe, Ka:'yu:'k't'h/Che:k:tles7et'h' Nation and the Nuchatlaht Tribe).

2.5.3 Forest Education and Public Relations

The in-school forestry education program continued. Grades three and five students from Ray Watkins Elementary School (Gold River) and Captain Meares School (Tahsis) each received ten forestry modules.

Western Forest Products Limited continued to raise the profile of forest stewardship in Coastal British Columbia with school and public tours throughout the year. Members of the public showed great interest in seeing forest operations and silviculture operations up close without being filtered through the media.



WFP supports a school forestry program for grade 5 students from the Ray Watkins Elementary School in Gold River. An annual woods tour is given as part of the 10-module forestry program.

Gold River Forest Operation hosted twenty-five tours for the general public and 3 tours for school groups during the year for a total of 142 participants. Nootka Contract Operation provided a school tour to ten students from Captain Meares School (Tahsis). Zeballos Forest Operation joined in the consortium of operations from numerous forest companies offering tours coordinated through the North Island Discovery Centre (Port McNeill). Nine tours with a total of seventy-eight participants toured the operation.



Zeballos operation held a safety picnic to reward and reinforce the importance of good, safe working practices to employees and their families. Staff prepared balloons and activities to make an interesting and fun day for participants.

Zeballos gave forestry presentations to thirty students at Zeballos Elementary Junior Secondary School. During Occupational Health and Safety Week

Zeballos Forest Operation hosted a picnic

to promote awareness of occupational health and safety to seventy employees and family members and Gold River Forest Operation hosted 100 employees at breakfast/lunch. Gold River Forest Operation offered a first-aid course to spouses that was attended by eight people. Gold River Forest Operation staff and summer students entered a float into the Gold River Days parade.

Forest education costs totalled \$48,653.

2.6 Inventories and Mapping

2.6.1 Geographic Information System and Electronic Mapping

Five GIS stations were used for corporate resource inventory mapping and analysis. WFP continues to use Pamap as its GIS system of choice; however the use of ArcView, Microstation GeoGraphics, FME and World Construction Set are being utilized to perform a multitude of analysis and data processing tasks.

Microstation (CAD) systems are utilized for operational mapping. Two new mapping technicians were hired, one for Nootka Contract Operation and one for Zeballos Forest Operation, bringing the total to three full time CAD operators in the Nootka Regional Office. The integration of digital data to and from the mapping contractor has greatly improved efficiencies within the mapping department.

Training opportunities and support provided by PCI Geomatics, Pacific Alliance Technologies and BCIT were used to advance the skills of GIS personnel.

Prorated TFL 19 GIS costs totalled \$39,970.

2.6.2 Forest Inventory

Reformatting of TFL 19 digital files was completed in 1999. Digital files now in the corporate GIS are undergoing updates to reflect past forestry activities. It is expected that the TFL will be updated to January 1, 2000 by May 2000. This update will incorporate changes to forest cover, roads and logging history that occurred during 1994 – 1999. Silviculture history was restructured within the GIS to allow each silviculture activity to be stored separately. This allows for easier tracking of the different activities on-going in the TFL and removes the need to generalize the data.

Cost for forest inventory and GIS mapping revision work totalled \$190,506.

2.6.3 Ecosystems

Two ecosystem-mapping projects were initiated in TFL 19 during 1999. The first project was an evaluation of whether it would be possible to use predictive ecosystem mapping (PEM) to classify the ecosystems within the TFL. Terrence Lewis conducted field checks to verify the model. Results from this project showed that although the PEM methodology was sound, there were some concerns with the bioterrain information that was being used to predict the ecosystems. Based on these results, the second project was initiated to classify the ecosystems within the TFL based on photo interpretations. The second project is to be completed in mid 2000.

Total cost for ecosystem work completed in the TFL was \$119,432.

2.6.4 Geotechnical Analyses

Engineering consultants completed geotechnical analyses of cutblocks and road construction projects throughout TFL 19. Geotechnical assessments are completed in areas where indicated by terrain stability class and engineered to protect sensitive areas. Table 6 presents a summary of analyses by Operation. Costs for geotechnical analyses are included in logging costs.

Table 6 - Geotechnical Analyses

Operation	Geotechnical Firm	Areas	Roads	Creek Crossings	Slides
GRFO	Thurber Engineering	22	7	2	2
	Golder & Associates		1		
NCA	Golder & Associates	12			
Zeballos	Arbour Tech	3			
	Aztec GeoScience	4			
TOTAL		41	8	2	2

2.6.5 Integrated Resource Management Inventories

Numerous inventories of non-timber forest resources were implemented during the year. Except where indicated, costs for these inventories to the Forestry Department totalled \$127,870. All costs were covered by reimbursements from Forest Renewal BC.

2.6.6 Archaeology

Archaeological Impact Assessments are conducted on all blocks which have been identified on the archaeological overview assessment as having moderate to high use potential or where features of cultural significance have been identified during layout and planning phases. Arcas Consulting Archaeologists assessed six areas of potential archaeological significance on a total of 146 ha. All defined archaeological resources were conserved in the final engineering of the areas.

2.6.7 Streams

Stream classification and inventories completed for the Forest Development Plan are reviewed and fine-tuned during block layout. Consultants were employed in six blocks (four in Gold River Forest Operation and 2 in Zeballos Forest Operation) where the presence of fish was uncertain. Based on the findings of the stream surveys, riparian areas were engineered to conserve valued resources.

Resource Inventory Committee stream mapping was completed for Zeballos Lake, Mamhant Creek and Borador Creek.

Stream inventory costs totalled \$22,473. Reimbursements from Forest Renewal B.C. totalled \$15,071.

2.6.8 Coastal Watershed Assessments

Coastal Watershed Assessments (CWAPs) were updated at Port Eliza (Nootka Contract Operation) and in four watershed in Gold River Forest Operation. The CWAPs examine the potential cumulative effects of past and proposed harvesting activities on watersheds. CWAP findings were incorporated into all planning processes as appropriate.

2.6.9 Wildlife

A wildlife habitat capability suitability project was initiated in the TFL. This project utilized newly classified ecosystem information to predict habitat capability/suitability for black bear, black-tailed deer, Roosevelt elk and marbled murrelet. Both maps and ratings tables were produced for this project.

A goshawk inventory continued in its second year in 1999. The inventory is to be continued in 2000 to assess goshawk territory reoccupancy, breeding distribution and nest habitat suitability, and to assess the effectiveness of current inventory methodology.

Total costs for this work came to \$102,538, of which \$95,333 was funded through Forest Renewal B.C.

2.6.10 Visual Impact Assessments

Western Forest Products' personnel undertook visual impact assessments on 16 areas covering 759 ha in Gold River Forest Operation and Nootka Contract Operation. The Company assesses visual quality concerns in all cutblocks that have an impact on publicly visible landscapes.

3.0 MANAGEMENT OBJECTIVE ACHIEVEMENTS

3.1 Management and Utilization of Timber Resources

3.1.1 Harvesting Methods

Five logging systems were used in TFL 19 in 1999 including grapple, supersnorkel, tower, hoe-forward, and skyline (Figure 1). Grapple and tower cable systems were the most common in all operations harvesting 67 percent of the volume harvested in the TFL.

Gold River Forest Operation employed a skyline system to harvest Block Z11. The skyline system was utilized to minimize site disturbance and overcome poor deflection.



A newly acquired Tahsis company Sparmatic yarder in July 1963, manufactured by Tyee Machinery Ltd. These 120 foot steel towers were new technology at the time and replaced wooden spar trees, dramatically changing coastal logging practices.

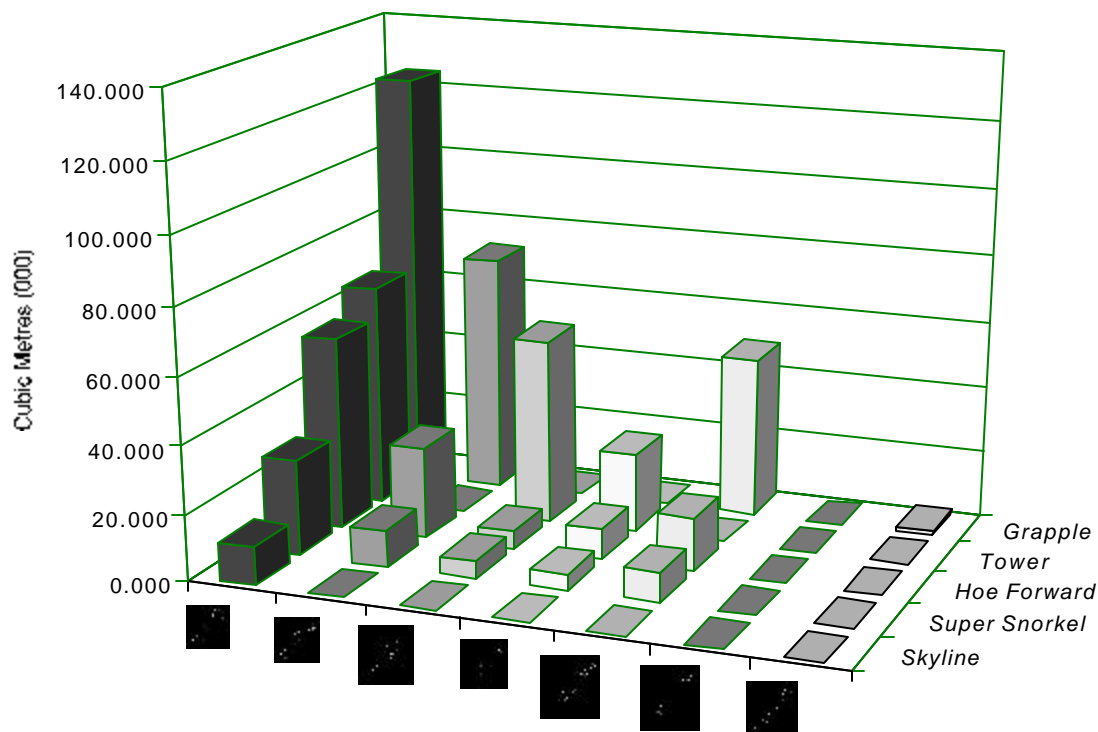


Figure 1 - Logging Volumes by Harvest System and Operation

3.1.2 Silviculture Systems

Company foresters prescribed the patch clearcut silviculture system with modifications for protection, utilization and conservation of timber and non-timber resources throughout all operations. Patch clearcut with reserve for wildlife, streams, and other resources is the dominant system (table 7). Eighty-one per cent of the blocks engineered in the year, and fifty-two per cent of those harvested included one or more reserve(s). Of the harvested blocks, an average of 12 per cent of the area was under reserve.



Patch cutting was common in the 1960's in the Gold River valley. This interesting picture reveals the licensee at the time had similar practices to those that were mandated in the recent Forest Practices Code. The goal was to maintain dispersed blocks on the landscape with a focus on extensive firebreaks and fire protection.

Table 7 - Silviculture Systems

System ENGINEERED BLOCKS	Blocks Engineered (#)	Average Block Size (ha)	Minimum Block Size (ha)	Maximum Block Size (ha)
Clearcut	7	30.4	17.9	53.2
Clearcut with Reserves	28	28.1	6.7	43.8
Partial Cut	1	73.5	73.5	73.5
TOTAL	36	29.8	6.7	73.5
System HARVESTED BLOCKS	Blocks Harvested (#)	Average Block Size (ha)	Minimum Block Size (ha)	Maximum Block Size (ha)
Clearcut	14	24.4	6.4	39.4
Clearcut with Reserve	14	34.4	18.5	50
Irregular Shelterwood	1	54.4	54.4	54.4
TOTAL	29	30.3	6.4	54.4

Potential for harvesting larger blocks was investigated to create disturbance patterns that better mimic a range of natural disturbance patterns and to reduce development costs.



Cutblock J113 in the Nesook drainage was logged in 1998 and 1999 followed by planting in the spring of 1999. A total of 24 ha are in the block of which 7.1 ha are reserves, 3.6 ha were logged by helicopter and 13.3 ha conventionally logged. The block has had extensive blowdown evident along the southerly (lower) boundary.

3.1.3 Felling, Bucking, and Utilization Specifications

3.1.3.1 Specifications

Utilization standards in cutting permits outline the obligatory and optional specifications for harvesting. Obligatory minimum standards in TFL 19 include the following:

- a. maximum stump height of 30 cm on the uphill side;
- b. all coniferous trees containing X grade logs or better will be utilized to a top diameter of 15 cm inside bark;
- c. all conifer logs exceeding 3 m in length which contain X grade logs or better will be removed (logs or parts of logs less than 3 m in length and broken at ends are classed as breakage); and
- d. logs will not be bucked or trimmed in a manner that reduces grade.

These obligations apply to all living and dead trees that meet the standards. These standards must be met to minimize waste unless unsafe to do so. Utilization of Y grade logs is optional. Achievement for felling, bucking, and utilization standards are measured using residue survey data.

3.1.3.2 Residue Assessments

The Ministry of Forests introduced a respite from the zero tolerance policy effective January 1, 1999. Blocks where primary logging was completed after January 1, with less than 35 m³/ha or 10 m³/ha residue level benchmarks for mature or immature stands (respectively) were not subject to billing. Billing is applied only to volumes over the benchmarks. Avoidable residue volumes remained low in TFL 19 despite the benchmark policy, averaging 10.7 m³/ha.

Western Forest Products continues to survey and report residue volumes on a calendar year basis for all cutblocks where logging was completed during the year. The official Ministry of Forests residue volume used for the Annual Allowable Cut depletion is determined by summing the volumes from the Scale and Royalty invoices billed during the calendar year. As a result, 1999 depletion includes residue volumes from 1998 and 1999 surveys as determined by the billing date. For 1999, the avoidable waste totalled 7 131.6 m³. All blocks were less than the 35 m³/ha benchmark, however, there was 335.3 m³ billed in 1999 in areas that had been logged prior to 1999 when the benchmark came into effect. The Annual Allowable Cut depletion 15 645.0 m³ (Table 8).

Total costs of residue assessments were \$42,735.

Table 8 - Residue Assessment Survey Summary

LOCATION	SURVEY AREA	AAC DEPLETION		AVOIDABLE WASTE		BILLABLE WASTE		NUMBER OF PLOTS				
	Net (ha)	m ³ /ha	m ³	m ³ /ha	m ³	m ³ /ha	m ³	Slash	Road Side	Pile & RMZs	Other	TOTAL
Gold River Conventional	363.0	22.5	8156.7	10.8	3909.0	0	0	52	75	12	3	142
Gold River Heli	22.4	35.1	786.3	15.0	335.3	15.0	335.3	12	0	0	9	21
Zeballos Conventional	18.6	18.6	346.3	11.4	212.5	0	0	6	2	1	1	10
Tahsis	46.5	6.3	293.7	6.1	283.7	0	0	6	6	0	0	12
Houston	33.4	70.3	2348.1	13.8	460.0	0	0	7	12	4	4	27
Head Bay	82.2	13.3	1097.3	10.6	873.1	0	0	11	25	0	0	36
Corrections*			2616.6		1058.0		0					
TOTAL	566.1	23.1	15645.0	10.7	7131.6	0.6	335.3	94	120	17	17	248

* Revised MOF invoices; not included in m³/ha calculations.

3.1.3.3 Minor Products

Minor products including cedar shake and shingle and yellow cedar cant timber volumes were harvested from TFL 19. Salvage timber materials totalled 3 097.3 m³ shake and shingle wood from all three Operations and 12.1 m³ cedar cants from Zeballos Forest Operation (Appendix XI). Additionally, 1 221.1 wet kg yew bark was salvaged from Zeballos Forest Operation.

3.1.4 Harvest Profile

An obligation of the Management Plan 8 is the comparison of the timber harvest by inventory height class compared to the inventory profile. During the year, the largest portion of timber was harvested from Height Class 3, and at 40 per cent of all timber harvested, was well above the inventory profile of 9 per cent. A total of 30 per cent was harvested from height class 4, which comprised of 38 percent of the inventory profile. A total of 23 per cent originated from Height Class 5; this Height Class comprises 34 per cent of the inventory profile. Height class 2, which comprises only 1 per cent of the inventory component, provided 7 per cent of the harvest. There was no harvest of Height Class 6, which has an inventory profile of 16 per cent, nor of Height Class 7, with an inventory profile of 2 per cent. (Appendix



An early fall view of the Rugged Mountain range west of Zeballos. As a result of terrain and forest productivity issues, less than 50% (95,000 ha) of the TFL 19 land area of 191,000 hectares is operable for forest management purposes.

IX). Some mixed immature/mature blocks were harvested in 1999, concentrating more harvest in the lower height classes.

Of the total harvest, 98.5 per cent was from the conventional operability land base, and 1.5 per cent was from the inoperable land base (Appendix IX). No timber was harvested from the heli-operable land base.

3.1.5 Allowable Annual Cut and Cut Control Performance

The Allowable Annual Cut for TFL 19 in 1999 was 838 132 m³. The AAC includes an annual undercut carry-over from the previous period of 35 581 m³ (Appendix IV). In the year, the chargeable cut was 558 195 m³ including scaled production and recognized residue survey volumes. After three years of the Current Cut Control Period, 38 per cent of the five year Allowable Cut has been utilized (Appendix IV).



Several loads of prime Douglas fir logs are hauled along the mainline near Gold River in this 1956 image, just after the TFL was granted on December 23, 1954. The TFL has been successful in creating stability of operations in comparison with pre-TFL tenures based on Timber Licences and short term Timber Sale Licences.

The Historical Cut Control Performance is included in Appendix V. Since the establishment of the Tree Farm Licence in 1951, the Allowable Cut Available to the Licencee totalled 33 502 618 m³. In that period, the Chargeable Cut was 31 844 607 m³ or 95 percent of the available volume.

3.1.6 Small Business Forest Enterprise Program

The TFL 19 Small Business Forest Enterprise Program (SBFEP) has been in place since 1988. To date, 573 105 m³ of timber has been allocated to the SBFEP (Appendix X). To the end of 1999 the scaled volume under the program was 462 214 m³ and the residue volume totalled 10 056 m³. In 1999 Mokko Manufacturing logged 80.1 ha.

3.2 Protection and Conservation Measures

Western Forest Products protected and conserved resource values throughout its area of operation during the year. The following discussions include 36 engineered blocks and 29 harvested blocks. Blocks for which amendments were submitted and blocks in which harvesting was not completed are not included. The Company reviews every cut block to ensure that legal and forest stewardship commitments are recognized in harvest planning.

3.2.1 Visual Quality

Visual quality was addressed for all cutblocks proposed in scenic areas. Five of the 36 blocks engineered during the year required special engineering to conserve visual landscape resources (Table 9). Three of the 29 blocks harvested during the year had been similarly modified. Modifications included movement of back lines and locating reserves to minimize the visual impacts of harvesting. Areas where visual qualities are of concern were identified in the current Forest Development Plan.



Block K502A near Gold River was harvested using an irregular shelterwood alternate silviculture system designed to provide a seed source on shallow soils and address visual concerns as this block is visible from the Gold River townsite. The Gold River community golf course is in the background.

Table 9 - Protection and Conservation Measures

Number of Blocks Requiring Special Consideration	TOTAL	Visual Quality	Soil Stability	Cultural Heritage	Fish Habitat	Wildlife Habitat	Windthrow	Caves
Blocks Engineered	18	5	9	1	0	0	1	2
Blocks Harvested	26	3	11	1	6	5	1	0

3.2.2 Soil Stability Maintenance

3.2.2.1 Conservation

Soil stability was addressed through engineering, harvesting, road building, and erosion control measures implemented throughout the year. Of the engineered blocks, 9 included additional soil conservation plans beyond Company Standard Operating Procedures. Of the harvested blocks, 11 received additional soil stability considerations (Table 9).

3.2.2.2 Operational Site Stabilization Program

Revegetation progressed with harvesting and road building operations throughout the TFL. Grass seeding was completed within acceptable biological windows.

Operational site stabilization costs were \$55,526.

3.2.2.3 Watershed Restoration Program

Backlog road deactivation funded through the Watershed Restoration Program was successfully completed in the Muchalat Lake watershed. Work was underway in the Upper Gold and Upper Zeballos watersheds. Road and fish habitat inventories have been completed for the Upper Gold, the Gold Valley, and the Spud Valley. Inventories were underway at year-end for the remainder of Nootka Island. Program costs including implementation and administration were \$486,731 and were fully refunded (Table 10).

Table 10 - Watershed Restoration Summary

1999 Project Progress					
Watershed	Level II	Road Deactivation	Hill slope Restoration	Fish Habitat Restoration	Spending
Muchalat Lake	-	11 km	-	In Progress	79 937
Twaddle		31 km	-		311 181
Upper Zeballos		6.5 km	-		157 924
Gold Valley, Nomash, and Upper Artlish	In Progress	-	13 ha		34 329
TOTAL		48.5 km	13 ha		\$583 371

3.2.2.4 Water Quality

Data from the monitoring station at Leagh Creek continued to be gathered to provide pre-harvest baseline information. The Leagh Creek watershed drains into the Conuma River above the Conuma River Fish Hatchery. The base line data gathered at the site will be used to determine if there are changes in the hydrological flow and turbidity in the drainage system during road building and harvesting. Development in the basin that effects the watershed will be implemented in 2004. Funding for the project and continued monitoring is from Forest Renewal BC.

A hydrological monitoring station continued collecting data at McKelvie Creek to record water levels and water quality. Funding to implement this project was provided jointly by WFP and Forest Renewal BC.

3.2.3 Recreation Resources

3.2.3.1 Public Recreation Sites

Western Forest Products maintained recreation sites co-operatively with the Ministry of Forests throughout TFL 19. Overnight facilities were maintained at Muchalat Lake, Cougar Creek, and Leiner River. The Company has also enhanced many day-use areas including fresh and salt-water fishing, caving, forest education walks, hiking, hunting, and landscape viewpoints.

Specific improvements implemented by the Company included the following:

- Tahsis New Forest Opportunity crews built trails to Coral Cave, started work on a trail to Mozino Point, upgraded West Bay and Malaspina Lake Trails, and developed six new sites at Cougar Creek. Funding for the work was provided by FRBC.
- Gold River Futures crews completed the Star Lake Trail, day-use area and wharf, completed the Antler Lake day-use area and trail, developed three new sites at Muchalat Lake, and rebuilt the stairs to the main cave at the Upana Cave day-use area. The Upana Cave stairs were extensively damaged in the winter of 1998/99 due to accumulated heavy, wet snows. Funding for the work was provided by FRBC.
- A Gold River New Forest Opportunity crew redecked the Muchalat Lake dock.



Star Lake Recreation Area was developed as an attractive new day use picnic and fishing area near Gold River in Compartment E along the Ucona Mainline. This project was undertaken and constructed by the Gold River Futures Society with funding from Forest Renewal B.C.



TFL 19 has a number of limestone caves which are accessible to the public. Crews rebuilt the stairs to the main Upana cave after they were destroyed by heavy snow during the winter of 1998. This project was completed by the Gold River Futures Society with funding from Forest Renewal B.C.

3.2.3.2 Recreation Use

A Visitors Guide was produced for the Nootka Region and roughly 6,500 maps were distributed to the public. The Company continued to promote the resources of TFL 19 for recreation use through signage, advertisements, and visitor maps. Estimates of annual use are presented in Table 11. These estimates are based on site monitoring, reports from site maintenance workers, and information from the tourism industry.



The company continues to upgrade recreational developments within the Tree Farm Licence. Over the past five years more than \$600,000 has been spent on upgrades and new sites. As part of cooperative work with the Gold River Futures Society a two year project is underway supported by Forest Renewal B.C. to improve the forest trail near the community of Gold River.

Table 11 - Recreation Use Estimates

Activity	User Days By Operation			Total
	Gold River	Nootka Contract	Zeballos	
Beach Use	200	200	60	460
WFP Sites and Trails	52 500	5 400	100	58 000
Hunting	5 000	2 100	500	7 600
Fishing (Freshwater)	2 000	100	120	2 220
Fishing (Saltwater)	45 000	11 500	3 500	60 000
Firewood Cutting	550	500	150	1 200
Food Gathering	50	50	35	135
Kayaking	500	6 000	1 000	7 500
Auto Touring	1 000	1 300	80	2 380
Hiking and Caving	2 400	2 500	100	5 000
TOTAL	109 200	29 650	5 645	144 495

3.2.4 Cultural Heritage Resources

One of the blocks engineered, and one of the blocks harvested in the year were modified for archaeological values (Table 9), based on inventories completed.

3.2.5 Fish Habitat

3.2.5.1 Conservation

Modifications in 6 harvested blocks reflected findings of stream classification inventories (Table 9).

3.2.5.2 Salmonid Enhancement Program

Western Forest Products assisted the Zeballos Hatchery by co-ordinating work with an Environmental Youth Team work crew. The Hatchery released 100 000 chinook salmon fry into the Zeballos River in 1999. Western Forest Products also assisted the Gold River Chinook Project by providing helicopter transportation for brood stock and fry to the Burman River. In the TFL, a total of 1 000 000 Chinook fry were released in the Burman and Gold Rivers. Costs for the program to the Forestry Department was \$6,435.



An aerial view of the Oktwanch River with the new salmon spawning channel to the left in the trees. The Oktwanch valley was logged by several companies many years ago. The logging caused significant destabilization of this important tributary of the Gold River. Phase I of the channel project has created quality, groundwater fed spawning habitat. Phase II will extend the channel.

3.2.6 Wildlife Habitat

Five harvested blocks were modified to conserve wildlife values (Table 9). Additional habitat was maintained through modifications for other resource values such as spacing, pruning and fertilization.

Roosevelt elk have expanded their range into areas not traditionally occupied by elk. Herds move into areas following harvesting. The elk take advantage of the increased browse availability in new cutblocks.

A Wildlife Habitat Designation was applied for Knoll Cave by a local Tahsis Group. The designation process is ongoing with the MOF, MOE and WFP. Proposed harvesting layout in the area has been modified to achieve WHA objectives.

3.3 Integration of Harvesting Activities

Timber development within TFL 19 has also created access for commercial and recreational users. Due to provisions in the Forest Practices Code Act, Western Forest Products is required to deactivate many roads following harvesting. Where possible, access is maintained while achieving forest site productivity and erosion control objectives. A summary of non-timber resource value stakeholders is included in Table 12.

The Company works with the Mowachaht/Muchalaht Band to ensure that culturally significant areas and culturally modified trees are identified. Harvesting proceeds when a mutually agreeable plan is developed.

Table 12 - Summary of Commercial Stakeholders

Commercial Stakeholders	#	Commercial Stakeholders	#
Trappers	12	Guide Outfitters	15
Mushroom Pickers*	27	Oyster Farms	2
Kayak Operations	5	Fishing Guides *	29
Marina	4	Caving	1
Mining Exploration	1	Fishing Camps*	12
Mining Claims	381		

* Estimates

3.4 Forest Fire Management

3.4.1 Prevention

Fire Preparedness Plans were updated to fulfil annual obligations. Ground and aerial patrols were undertaken during times of moderate, high, and extreme fire-weather hazard ratings. Patrols focused on areas with lightning strikes, active work areas, and recreation sites. Weather stations were monitored during the fire season and throughout the slash pile-burning program in October and November.

Gold River Forest Operation and Zeballos Forest Operation were not shut down for fire weather conditions in 1999, however, Houston was shut down for 40 days due to hazardous fire weather indices and Head Bay was shut down for seven days.

With a cooler summer than 1998, and a switch to heavier reliance on ground patrols over aerial patrols, Fire Management Costs were reduced to \$1,842.

3.4.2 Suppression

Due to a late October spell of hot, dry, windy weather, an accidental fire occurred in Gold River Forest Operation, in block J96. An escape from a slash pile burned 1.2 ha. Initial attack with a helicopter limited the spread of the blaze, and crews with four tankers, hand

tools, pumps, and hoses controlled the fire. Control, mop-up and monitoring required 32 person-days.

3.4.3 Fuel Management

Piling and burning roadside slash accumulations concurrent with area cleanup reduced fuel and fire hazards.

3.5 Forest Health Management

Forest health costs totalled \$67,231.

3.5.1 Disease Management

Forestry personnel routinely monitor forest health informally in conjunction with silviculture and adjacency (green-up) surveys.

A *Phellinus weirii* root rot survey was conducted in the Gold River Forest Operation. Root rot centres were plotted on a 30.2 ha block. The root rot centres on the predominantly Douglas-fir site will be planted with western redcedar and western white pine; species less affected by, or tolerant of *Phellinus weirii*.

3.5.2 Insect Management

No major insect damage was detected during the year.

3.5.3 Ungulate Management

In areas with high Roosevelt elk and black-tailed deer populations, seedlings were protected from browse and trampling with Tree Cone seedling protectors. On average, the seedling protectors are removed four years following establishment, when the seedlings are large enough to withstand browsing. Protectors require maintenance every one to two years. Tree Cones were established on browse-prone species on 68 ha in areas of heavy ungulate concentration, and were maintained on an additional 253 ha.

A new Tree cone design was developed in consultation with WFP foresters. The design is adapted to the local Nootka Region site conditions and browse factors.



Elk browse protection is an essential forestry practice in Block N18 in the Zeballos area of TFL 19. These plastic tree cones are reusable (normally 80%) and protect the planted cedar seedlings from severe browsing and elk damage. The additional cost per seedling to purchase and install protectors is about \$3.50/tree.

3.5.4 Abiotic Factors

Measures to reduce blowdown on areas assessed to be susceptible to blowdown included feathering cutblock edges, changing cutblock design, harvesting to wind-firm buffers, and aerial pruning. Blowdown specialists conduct assessments prior to harvest in areas that may be prone to blowdown.

Due to unusually deep, wet snow in the spring of 1999, damage caused by snow press was much heavier than usual. Moderate to heavy snow press damage was noted on 380 ha throughout the TFL. The majority of the damage was to juvenile stands. These areas will continue to be monitored.

3.6 Silviculture

3.6.1 Reforestation

3.6.1.1 Seed Acquisition

Western Forest Products owns seed orchards licensed by the Ministry of Forests to produce genetically superior seed and stocklings. These orchards are located at the Saanich Forestry Centre and the Lost Lake Field Operation on south Vancouver Island. Consolidation of the seed orchards to the Saanich Forestry Centre is continuing.

Seed orchards that were managed for crop production in 1999 included two western redcedar orchards, one western hemlock orchard, and one coastal Douglas-fir orchard. All other orchards are either too young for seed production, or adequate seed is stored for future use.

The 1999 western redcedar crop was among the largest on record for the Lost Lake orchards, despite significant frost damage. An estimated 14 million seedlings will be grown from the seed produced by 93 hl of cones harvested (Appendix XXI).

Supplemental mass pollination was applied to a portion of the redcedar where self-pollination was expected to be low. Funding for the supplemental mass pollination was received via the Forest Genetics Council's Operational Tree Improvement Program from Forest Renewal BC. Ongoing DNA studies will determine if the out-crossing rates confirm the projected volume gain at age 60. Seed from these collections is appropriate for reforestation in TFL 19 to elevations of up to 745 m.

The coastal Douglas-fir seed extracted from 50 hl of cones is projected to yield 0.8 million seedlings (Appendix XXI). The bulk of the crop resulted from supplemental mass pollination, which raised the projected volume gain at age 60 to 10 per cent. This seed is suitable for use in TFL 19 to elevations of 700 m.

Only the high-value clones from the low-elevation western hemlock orchard were included in the 1999 harvest of 8.5 hl of cones. The projected yield is 1.7 million seedlings that are suitable for reforestation on TFL 19 to elevations of 400 m (Appendix XXI). Harvest from the high-elevation western hemlock orchard produced 6.6 hl of cones for an estimated 1.2 million seedlings. This seed is appropriate for reforestation in TFL 19, between elevations of 436 m to 1036 m.

Cuttings from the yellow-cedar clonal hedges at the Lost Lake Field Operation yielded 197.8 thousand stecklings.

No wild stock seed collections were made within TFL 19 during the year. However, wild stock seed collections to fill seed needs within TFL 19 were made. Two western redcedar collections on central Vancouver Island will provide seed for an estimated 1.1 million seedlings at elevations up to 1300 m appropriate for use in TFL 19.

Future seed production for western hemlock was seriously set back when vandals severely damaged 71 per cent of the trees in the upcoming high-gain low-elevation orchard at the Saanich Forestry Centre. Attempts to salvage the orchard are underway.

The prorated share of seed acquisition costs for TFL 19 was \$144,387 including a prorated share of wild seed collections.



Vandals felled valuable orchard trees at WFP's Saanich Forestry Centre in late October. More than 1000 orchard trees, some producing cones already, were damaged or destroyed in the incident. This was a vain attempt to destroy what was believed were genetically modified trees. WFP's tree breeding program does not use genetic modification.

3.6.1.2 Tree Improvement and Orchard Consolidation

The Lost Lake orchards have been declared surplus as of December 1999. While the Company still owns the property, available crops of market value will be managed and harvested. Removal or replication of all stock of value in every species is now complete, with transplanting of numerous yellow-cedar hedges to Saanich Forestry Centre, and the collection of scion material from other species.

Replicates of 19 weevil-resistant Sitka spruce received from the Ministry of Forests have been established at the Saanich Forestry Centre replacing non-weevil resistant stock in orchard 172.

Evaluation of low-elevation western redcedar stock continued with breeding in the Lost Lake orchards for the Ministry of Forests breeder. Seed from the breeding work will be grown and outplanted in trials to determine the value of each parent. The Company was granted funds via the Forest Genetics Council's Operational Tree Improvement Program from Forest Renewal BC to replicate all western redcedar parents in trials through an extensive grafting project planned for 2000.

Breeding work continued in the high-elevation western hemlock orchard at Lost Lake. The Ministry of Forests' breeder has confirmed that progeny tests will be established to evaluate the gain at rotation delivered by each tested parent. Results from low-elevation parent progeny tests have led to the inclusion of additional selections for the low-elevation western hemlock orchard.

Evaluation of previously established yellow-cedar clonal trials continued. From these trials, the top performers will be identified and included in the advanced generation orchards. Rejuvenation of the top clones from phases 1, 2, and 3 selected after analysis of the 4-year data continued with the production of the second of three serial rejuvenations. Top clones from the Ministry of Forests' tests were received and established in hedges for future steckling production.

The share of costs for tree improvement for TFL 19 totalled \$39,433. The prorated share of reimbursements from Forests Renewal BC via the Forest Genetics Council's Operational Tree Improvement Program was \$38,797.

3.6.1.3 Site Preparation

Site preparation was implemented to improve regeneration by increasing the availability and distribution of planting spots. Costs for all site preparation in the TFL totalled \$67,049.

3.6.1.3.1 Broadcast Burning

No broadcast burning was undertaken in the TFL in 1999. At the time of hazard abatement burning, throughout the 1970s, annual broadcast burning was at 450 ha per year on average. In the 1980s this had dropped to 50 ha per year. In the current decade, annual broadcast burning in TFL 19 has averaged below 20 ha per year.

Changes in harvesting practices have reduced the availability of this significant silvicultural tool.

3.6.1.3.2 Pile Burning

Slash was piled in areas of heavy slash accumulations, along roadsides. A total of 5.5 ha of piles were burned in the TFL. In Gold River Forest Operation, 3.8 ha of roadside piles were burned in 22 harvest blocks. Nootka Contract Administration burned 1.2 ha in 8 harvest blocks, and Zeballos Operation burned 0.5 ha in 3 harvest blocks (Appendix XI). Piling and burning reduced the amount of slash and increased the number of plantable spots for increased regeneration.

3.6.1.3.3 Mechanical Site Preparation

An additional 3.3 ha of productive forest site was created for conifer regeneration by rehabilitating permanently deactivated spurs in the Gold River Forest Operation (Appendix XI).

3.6.1.4 Planting

The unusually heavy, late snowfall in the spring and summer of 1999 severely reduced the planting program, reducing planting numbers by close to 50 per cent.

Over 380 000 seedlings were planted throughout TFL 19. Original plantations totalled 263.8 ha (Appendix XI). As well, 187.2 ha of replant area required additional planting to meet the required stocking standards and 14.3 ha of roadside areas were planted following pile burning. The ratio of initial plant to replants increased over 1998 as many of the blocks scheduled for initial planting were under snow. Original and roadside plantings were credited to the Regeneration Balance (Appendix XII).

More than 27 million seedlings have been planted in TFL 19 since 1954 (Appendix XIII).

Fertilization at time of planting improves the competitiveness of conifers in areas of high brush hazard. Gold River Forest Operation fertilized 141 298 seedlings; Nootka Contract



The winter of 1998/1999 produced a very heavy snowfall accumulation that lasted well into the summer in some areas. The snow hampered harvesting and silviculture operations. The Bull Lake area near the Head Bay road provides a scenic backdrop of the heavy spring snowpack.

Administration fertilized 126 400 seedlings, and Zeballos forest Operations fertilized 90 535 seedlings at time of planting, for a total of 358 233 seedlings fertilized.

Western redcedar was planted most abundantly in 1999, followed by western hemlock and Douglas-fir. These three species accounted for 80 per cent of the planting program. The ratio of amabilis fir dropped dramatically in 1999 in comparison to previous years down to twelve per cent of the total number planted, due to snow limiting access to high elevation areas. In addition, yellow cedar, Sitka spruce, western white pine, grand fir, noble fir and mountain hemlock were planted, establishing diverse second-growth forests.

Costs for the planting program were \$696,250, including stock purchase, inspection, planting, and program co-ordination. Average costs were \$1,494 per ha, or \$1.82 per seedling. Costs were up in 1999 due to an increase in the proportion of replants to initial plants, due to the use of less experienced Company union crews employed to plant a portion of the program, and the inability to sell excess high elevation seedlings due to the extent of the snow-related reduced planting programs throughout mid- and northern-Vancouver Island.

3.6.1.5 *Plantation Survival Assessments*

Plantation survival assessments are designed to assess survival soon after planting. The first year is the most difficult for the newly planted seedlings and survival surveys provide early indications of potential problems. Gold River Forest Operation conducted survival assessments on 393 ha. Average one-year survival was approximately 90 per cent (Appendix XI). Nootka Contract Administration has a modified program, doing a full stocking survey two years following planting. The results of these assessments are summarized in the following section.

Costs of planting survival assessments were \$9,229 or \$23 per ha.

3.6.1.6 *Stocking Surveys*

Stocking surveys of enhanced regeneration took place in all Operations (Appendix XI). Gold River Forest Operation assessed 628 ha of which 516 were satisfactorily regenerated. Nootka Contract Administration assessed 983 ha of which 965 ha met stocking standards. Zeballos Forest Operation assessed 108 ha of which 100 per cent were satisfactorily restocked. Areas that did not meet the stocking standard were debited to the Regeneration Balance (Appendix XII). Areas not satisfactorily restocked were slated for replant unless natural regeneration was colonizing the site in sufficient

numbers, spaced adequately and of the appropriate species to ensure that silviculture prescription requirements would be met within one or two years.

Costs for implementing stocking surveys totalled \$61,522, an average of \$36 per ha.

3.6.1.7 Free Growing Surveys

Gold River Forest Operation conducted free growing surveys on 470 ha in 1999. Of this area, 304 ha met free growing standards (Appendix XI). Zeballos Forest Operation completed 32 ha, of which 100 per cent met free growing standards.

Costs for free growing surveys were \$15,740 or \$31 per ha. Forest Renewal BC reimbursed the Company for surveys of backlog areas.

3.6.1.8 Green-up Surveys

Green-up adjacency survey programs were implemented to ensure that adjacency requirements in the Forest Practices Code are followed for blocks slated for harvest on the Forest Development Plans in all Operations. Green-up surveys were conducted on a total of 282 ha in TFL 19. Gold River Forest Operation surveyed 121 ha, of which 91 ha were greened up, Nootka Contract Administration surveyed 133 ha, of which 119 were greened up, and Zeballos Forest Operation surveyed 28 ha, of which 100 per cent were greened-up.

3.6.2 Stand Management

3.6.2.1 Brushing and Weeding

Gold River Forest Operation manually treated 2.3 ha to reduce seedling competition by salmonberry adjacent to riparian areas. Nootka Contract Administration mechanically treated 14.2 ha, and Zeballos Forest Operation manually treated 9.9 ha.

Costs for brushing and weeding were \$45,901 or \$1,739 per ha. The Company funded the entire brushing and weeding program.

3.6.2.2 Juvenile Spacing

First Nations contractors completed 192.5 ha at Gold River and Zeballos Forest Operations out of the total 302.7 ha spaced in the TFL.

The spaced stands were in areas designated as industry outstanding (logged prior to 1987) and were funded by Forest Renewal BC (Appendix XI). Costs for spacing were \$718,776 or \$2,375 per ha.

3.6.2.3 Pruning

Silviculture contractors completed pruning on 116.7 ha (Appendix XI). First Nations contractors completed, 66.7 ha in the Gold River Forest Operation.

Costs for pruning were \$230,660 or \$1,977 per ha. Forest Renewal BC funded the pruning program.

3.6.2.4 Fertilization

An extensive 764 ha aerial broadcast fertilization program was completed despite cancelling approximately 250 ha from the original Gold River Forest Operation program due to heavy snow levels in early spring. The Gold River Forest Operation fertilized 408 ha and Zeballos Forest Operation fertilized 356 ha.

Costs for the program were \$222,337 or \$291 per ha, and were reimbursed by Forest Renewal BC.

3.7 Roads and Bridges

3.7.1 Construction

Road construction continued in 1999 with a total of 54.2 km of new road and 11.0 km of rebuilt road (Table 13). Ten bridges were constructed.

Table 13 - Road and Bridge Construction Summary

Operation	New Roads (km)	Rebuilt Roads (km)	Bridges (#)
Gold River Operation	26.3	2.9	3
Gold River Contract Operation	10.9	0.4	1
Houston Contract	4.9	2.8	2
Tahsis Contract	3.4	0	2
Head Bay Contract	5.7	4.9	1
Zeballos	3.0	0	1
TOTAL	54.2	11.0	10

3.7.2 Maintenance

The Operations maintained 415 km of road in TFL 19. Appendix XI provides a summary by Operation.

3.7.3 Current Deactivation

Road deactivation is completed to maintain site stability and increase forest productivity. Level of deactivation (temporary, semi-permanent, and permanent) is determined prior to harvesting and outlined in the block silviculture prescription. A total of 125 km was seasonally deactivated in the TFL. Semi-permanent deactivation of 33 km of road and

permanent deactivation of 46 km of road brought the road deactivation total to 204 km. Appendix XI summarizes the road deactivation program by type and Operation.

Road deactivation costs are included in harvesting costs.

3.8 Employment and Economic Opportunities

3.8.1 Direct Employment

Direct employment generated by TFL 19 activities in 1999 totalled 2 236 persons employed for 128 076 person-days (Appendix XV - A). Company-wide, 658 375 person-days were worked, equivalent to over 3 600 full-time positions based on 180 days per full-time equivalent (Appendix XV - B).

3.8.1.1 Planning and Development

Planning and development relating to TFL 19 occurred at each of the Operations and at the Company's corporate office in Vancouver. Engineering and road construction employed 124 people for an estimated 6 267 person-days. Contractors were responsible for just over 50 per cent of the operational person-days in planning and road construction (Appendix XV-A).

The mapping department in Vancouver provided planning and development support at the Operations. The Company moved towards independent internal mapping and hired one mapper for Nootka Contract Administration and one for Zeballos Forest Operations. Throughout the year seven WFP employees generated maps required for planning processes.

3.8.1.2 Harvesting

Nearly all direct harvesting employees, both contract and Company, resided on Vancouver Island, and the majority resided in the vicinity of the TFL. Work completed by contract employees comprised 43 per cent of the harvesting person-days. Harvesting person-days totalled 38 491 (Appendix XV-A).

3.8.1.3 Transportation

Transportation of logs from the log dump sites to processing facilities and log trade markets occurred by barge and boom. Log transportation generated roughly 4 602 person-days.

3.8.1.4 Processing

Eight processing facilities owned by Doman Industries received logs from TFL 19, and surplus logs were traded and sold. For purposes of analysis, it was assumed that

employment was generated within the vicinity of the processing facility. Facilities included the Tahsis, Cowichan Bay, Silvertree, Vancouver and Nanaimo Sawmills, the Port Alice and Squamish Pulp Mills and Nanaimo Log Merchandising.

Prorated direct employment based on wood flow and consumption estimates totalled 1 519 people employed for 7 754 person-days (Appendix XV-A).

3.8.1.5 *Silviculture and Integrated Resource Management*

Basic and enhanced silviculture and integrated resource management projects employed 246 people throughout TFL 19. Of these, close to 70 per cent were contract employees with 60 per cent of the person-days in silviculture. A total of 7 754 person-days of employment were generated in Silviculture and Integrated Resource Management (Appendix XV-A).

A prorated share of employment at the Saanich Forestry Centre was included for TFL 19. Fifty-five Company employees amassed 638 person-days of employment. The corporate office in Vancouver contributed 17 people for 638 person-days attributable to TFL 19.

3.8.1.6 *Administration*

Administrative employment occurred locally with the Regional staff, and in Vancouver, at the Company's corporate office. The prorated share of administrative employment included 49 Company personnel working 2 307 person-days in the year and four contract employees working 116 person-days.

3.8.2 *Indirect Employment*

Tree Farm Licence No. 19 supported indirect employment in the local communities of Gold River, Zeballos, and Tahsis, as well as in Campbell River and the Comox Valley. In the vicinity of the processing facilities supplied by TFL 19, significant amounts of indirect employment were likewise generated. Additional indirect and induced employment were supported province-wide through purchase of services and supplies.

The ratio of direct employment to indirect and induced employment used in this analysis is 1:2 (based on the Price-Waterhouse model). For every employee directly employed by TFL 19 activities, two additional people are indirectly employed through private and public sector agencies. The estimated indirect employment generated by TFL 19 in 1999 was 256 152 person-days. Based on an average of 180 days per full-time equivalent position, over 1 400 full-time positions were indirectly generated in the TFL.

3.8.3 First Nations Employment and Initiatives

The Company has a strong history of First Nations' involvement in Tree Farm Licence 19 activities. Spacing and pruning contracts in Gold River Forest Operation and spacing contracts in Zeballos Forest Operation were direct awarded to local First Nations silviculture crews.

WFP has an annual goal of achieving a minimum of 20 per cent First Nations employment in silvicultural contracting. In TFL in 1999, the goal was met and exceeded with 36 per cent First Nations silvicultural contracting; a total of 2 277 person-days out of the total 6 307 contractor person-days worked (Appendix XV - C). Company-wide, the rate of First Nations employment matched that of TFL 19 at 36 percent, or 180% of the goal (Appendix XV - C).

An estimated eleven of the Company's local logging employees are from First Nations Bands.

3.8.4 Displaced Forest Workers

A total of twenty-two displaced forest workers were employed in the Nootka Contract Administration juvenile spacing, pruning, and trail building programs, totalling 545 person-days.

3.9 Performance Monitoring

During the year, 199 harvest inspections were undertaken as part of Compliance and Enforcement activities in TFL 19. Of the total, 195 inspections (98%) confirmed full compliance with all requirements of the Forest Act and the Forest Practices Code. The compliance rate increased significantly over 1998.

Company employees and contractors were given Environmental Management training as part of the ISO 14001 certification process.

Nootka Region staff met with Ministry of Forests personnel to discuss forestry and compliance and enforcement issues and to promote co-operation between the two agencies.



Lonnie McMartin, one of the MOF Compliance Officers for TFL 19, undertakes regular inspections of roads and cutblocks. In 1999 a total of 199 inspections were undertaken in the company's Nootka Region operations, of which 195 (98%) were found to be in compliance.

An internal audit was conducted of the Gold River Forest Operation's Environmental Management System to the ISO 14001 standard. A total of eight non-conformance items were recorded. The issues pertained to Standard Operating Procedures and Petroleum and Hazardous Waste Management Standards. Corrective Action Plans were successfully implemented.



Keith Moore, Chairman of the Forest Practices Board, Ron Todd, Manager of Nootka Contract Administration, Gerry Fraser, former WFP Regional Forester and John Davies, Forest Practices Board auditor, followed-up on the TFL 19 audit. The company received a clean audit during the extensive review process.

4.0 TIMBER PROCESSING

Approximately 413,000 cubic metres of wood from TFL 19 were processed in Doman Industries' manufacturing facilities. As well, log trades and sales consumed 130 thousand cubic metres from TFL 19. Estimates of log flow and utilization are summarized in Appendix XVI and Table 14.

Table 14 - TFL 19 Log Processing Volume

Primary Processing Facility	Log Volume (m ³)	Portion of 1999 Processing (%)
Cowichan Sawmill	31 000	12
Silvertree Sawmill	61 000	21
Vancouver Sawmill	28 000	14
Tahsis Sawmill	165 000	50
Nanaimo Sawmill	30 000	6
Nanaimo Log Merchandizer	17 000	2
Port Alice Pulp Mill	81 000	14
Log trades/sales	130 000	(35)
TOTAL	543,000	

Estimates of log flow and wood consumption are summarized in Appendix XVI.



The Rivtow Hercules log barge loads hemlock pulp logs at the Wilson Creek – Muchalat Inlet loading site for barging to the company's Port Alice sulphite mill. Each grapple on the self-dumping Rivtow Hercules lifts 2 to 3 bundles of logs. It takes about 8 hours to load the roughly 14,000 cubic metre pulp log shipment.

5.0 RESEARCH

Western Forest Products continued to research a variety of forestry issues in 1999. Data collection and reports completed in the year are in the following sections. All active projects in TFL 19, including those not scheduled for monitoring in the year, are listed in Appendix XVII.

Forestry Department research costs for TFL 19 totalled \$78,147 including the prorated share of the Saanich Forestry Centre's tree improvement research program.

Reimbursements totalling \$41,818 were received from Forest Renewal BC via the Science Council of BC.

5.1 Silviculture and Stand Management Research

In 1999 the Company established fertilization screening trials for western redcedar and amabilis fir in TFL 19. Fourteen western redcedar and fifteen amabilis fir test plots, each containing five control replicates, five nitrogen-only replicates, and five blended fertilizer replicates, were installed. Objectives of this research are to determine if timber production in these species is improved through application of fertilizer, and, if so, to assess the costs relative to the production benefits. The intent of this trial is to improve Forest Renewal BC funding allocation among fertilization programs.

5.2 Genetics Research

Three replicates of the ninth and final phase of the yellow-cedar clonal evaluation trials were established in 1999. No trials were established in TFL 19, however, findings from all trials will lead to enhanced stock for regeneration of yellow-cedar. Top performers have been identified from the initial phases and rejuvenated in the Company's tree improvement program.

6.0 GOALS AND INITIATIVES

Western Forest Products manages TFL 19 according to objectives outlined in applicable higher level plans, including the Management Plan. Appendix XIX outlines the commitments and outstanding issues with regard to the Management Plan.

The major goals in TFL 19 for 2000 are as follows:

- Wildlife suitability and terrain ecosystem mapping resource inventories projects are to be continued.
 - FRBC Watershed Restoration Program projects, enhanced forestry projects (intensive silviculture) and backlog reforestation projects will continue.
 - The Company will work with the Ministry of Forests to implement an Identified Wildlife Management Strategy and to develop the Landscape Unit Planning Guidebook.
 - Work on updating inventories identified in Management Plan 8 will be continued.
 - A draft of Management Plan 9, the 20-year plan and timber supply analysis will be submitted.
 - The Nootka Region recreation inventory will be updated.
 - The Company and First Nations groups will cooperate to further develop forest management initiatives in the TFL.
 - The internal inspection program will be continued. Operational personnel will work to achieve 100 per cent compliance with the Ministry of Forest harvest inspections.
 - Work will continue towards achieving certification with the Canadian Standards Association (CSA) Sustainable Forest Management System. Monitoring audits will continue for ISO 14001.
-

7.0 ADMINISTRATION

The costs of supervision and overhead relating to specific operational projects are included in the reported project costs. However, many administrative costs are broadly defined as general management and overhead. These include Company prorated charges to the Forestry Department for rentals, services, salaries and expenses to perform administrative functions. Total costs for administration were \$468,850.

8.0 FINANCIAL STATEMENTS

8.1 Forest Management Costs

The following summary presents all TFL 19 forest management costs incurred or expended by Western Forest Products and other agencies at the field level. Planning, supervision, and overhead costs directly related to programs as well as program application costs are included before credits or reimbursements. A prorated share of head office forestry department and Saanich Forestry Centre costs are included as well.

Table 15 - Forest Management Costs

Program	Section	Section Cost (\$)	Sub-Total (\$)
Planning			48,653
	Higher Level Planning	169,067	
	Forest Development Planning	164,739	
	Cutting Permits and CP Cruising	251,981	
	Silviculture Prescriptions	94,578	
Public Involvement			48,653
	Forest Education	48,653	
Inventories and Mapping			510,421
	Geographic Information System	138,692	
	Forest Inventory	112,431	
	Ecosystems	120,733	
	Terrain Stability	10,695	
	Integrated Resource Management	127,870	
Utilization			58,868
	Residue Assessments	42,735	
	Minor Products	16,133	
	Commercial Thinning		
Conservation and Protection			327,226
	Operational Site Stabilization	55,526	
	Recreation Resources	187,383	
	Salmon Enhancement Program	6,435	
	Fire Management	1,842	
	Forest Health	67,231	
	Audits	8,809	
Silviculture			2,251,290
	Seed Procurement	144,387	
	Tree Improvement and Orchard Consolidation	39,433	
	Site Preparation	67,049	
	Planting	696,250	
	Stocking Surveys	61,522	
	Survival Assessments	9,229	
	Free Growing Surveys	15,740	
	Juvenile Spacing	718,776	
	Brushing & Weeding	45,901	
	Pruning	230,666	
	Fertilization	222,337	
Research			78,147
Administration			468,850
TOTAL			\$4,423,817

8.2 Forest Management Reimbursements

Western Forest Products Limited received funding from government agencies for silviculture enhancement, integrated resource management, research and tree improvement and salmonid enhancement projects. A summary of the reimbursements received is in Table 16.

Table 16 - Reimbursement Summary

Program		TFL 6	TFL 19	TFL 25
Forest Renewal BC	Surveys	36,054	1,360	3,826
	Planting	5,314	7,777	
	Brushing	384,514		52,914
	Species Conversion			3,624
	Site Stability		14,820	
	Juvenile Spacing	659,392	701,182	273,278
	Pruning	424,020	229,680	292,534
	Fertilization	1,466,258	213,410	601,519
	Research			1,915
	Ecosystems		107,910	31,479
	Cultural Heritage			31,347
	Streams	111,245	15,071	9,474
	Timber	87,182	7,549	188,980
	Wildlife	94,927	95,333	328,034
	Recreation	23,080	149,233	
	Public Relations	1,929	704	5,162
	Administration	147,284	73,670	83,149
	Operational Tree Improvement Program	53,374	38,797	14,654
	Research	123,126	41,818	26,594
	Recreation		62,902	
	Salmonid Enhancement Program	15,000		
	Juvenile Spacing			149,885
	Integrated Resources Management			
	Research			40,000
TOTAL		3,632,699	1,761,216	2,138,368

*MYA – Multi-Year Agreement

APPENDIX I

TREE FARM LICENCE 19
1999 Scaled Production

Cubic Metres

Operation	Mark	Volume	Total
Gold River Forest Operation	19/21	5 574	
	19/22	1 983	
	19/24	0	
	19/32	4 701	
	19/33	1 226	
	19/34	393	
	19/35	10 778	
	19/36	3 715	
	19/37	113	
	19/38	44	
	19/39	4 143	
	19/40	6 007	
	19/41	8 714	
	19/43	63	
	19/44	29	
	19/45	8 000	
	19/46	36 611	
	19/47	73 766	
	19/48	14 387	
	19/49	-15	
	19/80	5 847	
	19/82	13 562	
	19/83	24 940	
	19/85	29 322	
	19/86	9 761	
	19/90A	92	
	19/92	64	
	19/99	1 042	
	AZ002	2 549	
	T0472A	669	
	T0484	39	
	T0495A	72	
	T0536A	8	
			268 198
Gold River Contract	19/40	2 288	
	19/45	11 589	
	19/46	33 271	
	19/47	48	
	19/61	231	
	19/68	24 200	
	19/70	13 062	
	19/71	0	
	19/76	314	
	19/84	2 572	
	19/87	14 808	
	19/88	11 717	
	19/91	15 061	
	19/92	15 546	
	19/702	0	
	19/716	13 219	
	T0571B	16 000	
			173 927

Operation	Mark	Volume	Total
Houston	19/13	118	
	19/65	817	
	19/70	3 397	
	19/75	480	
	19/703	16 025	
	19/704	330	
	19/705	242	
	19/706	0	
	19/708	871	
	19/709	3 879	
	19/711	22 934	
	19/713	13 435	
			62 752
Kendrick Island	19/701	167	
			167
Port Eliza	19/62	670	
	T0397A	40	
			710
Tahsis	19/61	80	
	19/68	21 247	
	19/714	12 651	
			33 978
Zeballos	19/12	597	
	19/30	649	
	19/55	1 574	
			2 820
Total Company Tenures			19 376
Total Crown			523 174
Grand Total			542 550

APPENDIX II

TREE FARM LICENCE 19
1999 Volume Charged to Allowable Cut

Cubic Metres

Mark	Crown Grant	Licences	Crown	TOTAL
19/12			597	597
19/13			118	118
19/21			5 574	5 574
19/22			1 983	1 983
19/24				0
19/30			649	649
19/32			4 701	4 701
19/33			1 226	1 226
19/34			393	393
19/35			10 778	10 778
19/36			3 715	3 715
19/37			113	113
19/38			44	44
19/39			4 143	4 143
19/40			8 296	8 296
19/41			8 714	8 714
19/43			63	63
19/44			29	29
19/45			19 589	19 589
19/46			69 882	69 882
19/47			73 814	73 814
19/48			14 387	14 387
19/49			-15	-15
19/55			1 574	1 574
19/61			311	311
19/62			670	670
19/65			817	817
19/68			45 446	45 446
19/70			16 459	16 459
19/71				0
19/75			480	480
19/76			314	314
19/78			224	224
19/80			5 847	5 847
19/82			13 562	13 562
19/83			24 940	24 940
19/84			2 572	2 572
19/85			29 322	29 322
19/86			9 761	9 761
19/87			14 808	14 808
19/88			11 717	11 717
19/90A			92	92
19/91			15 061	15 061
19/92			15 611	15 611
19/99			1 042	1 042
19/701			167	167
19/702				0
19/703			16 025	16 025
19/704			330	330
19/705			242	242
19/706				0
19/708			871	871
19/709			3 879	3 879
19/711			22 934	22 934

Mark	Crown Grant	Licences	Crown	TOTAL
19/713			13 435	13 435
19/714			12 651	12 651
19/716			13 219	13 219
AZ002	2 549			2 549
T0397A		40		40
T0472A		669		669
T0484		39		39
T0536A		8		8
T0571B		16 000		16 000
Grand Total	2 549	16 827	523 174	542 550
Residue				
Recognized residue survey volumes associated with 1999 MOF S&R invoices				15 645
Total Chargeable				558 195

APPENDIX III

TREE FARM LICENCE 19
Area Denuded – 1999

Hectares

OPERATION	CROWN GRANT	CROWN / LICENCE	TOTAL
Gold River Forest Operation	4.3	434.2	438.5
Nootka Contract Operation	0	217.4	217.4
Zeballos Forest Operation	0	2.0	2.0
TOTAL WFP	4.3	653.6	657.9
SBFEP	0	64.5	64.5
TOTAL TFL 19	4.3	718.1	722.4

APPENDIX IV

TREE FARM LICENCE 19
Current Cut Control Period
Annual Allowable Cut

Cubic Metres

Year	Allowable Cut Available to Licencee ¹	Chargeable Cut ²
1997	938 132	825 328
1998	938 132	509 018
1999	938 132	558 195
2000		
2001		
TOTAL		1 892 541

¹ THE ALLOWABLE CUT AVAILABLE TO LICENCEE FOR 1997 AND 1998 WAS PREVIOUSLY ADJUSTED TO REFLECT THE 5 PER CENT TAKE-BACK EFFECTIVE DECEMBER 22, 1997 WITH THE DOMAN PURCHASE OF THE PACIFIC LICENCES. AN AGREEMENT WAS MADE TO REPEAL THE REDUCTION, RETURNING THE CUT AVAILABLE TO 938 132.

² THE CUMULATIVE VOLUME CHARGED BY THE END OF THE SECOND YEAR OF THE CUT CONTROL PERIOD IS 1 892 541 M³ OR 38 PER CENT OF THE FIVE-YEAR ALLOWABLE CUT. THE FIVE YEAR CHARGEABLE CUT INCLUDES AN ANNUAL UNDERCUT OF 35 581 M³ FROM THE 1992 TO 1996 CUT CONTROL PERIOD. THE 1997 AND 1998 CHARGEABLE CUTS HAVE BEEN ADJUSTED. THIS REFLECTS THE APPROVAL BY THE VANCOUVER REGION MANAGER OF THE MINISTRY OF FORESTS ON AUGUST 27, 1998 OF A TOTAL CARRY FORWARD OF 177 906 M³.

APPENDIX V

TREE FARM LICENCE 19
Historical Cut Control Performance
1951 - 1999

Cubic Metres

Period	Allowable Cut Available to Licencee	Chargeable Cut
1954/55 – 1956	566 336	601 910
1957 – 1961	1 551 762	1 694 946
1962 – 1966	1 993 506	1 861 360
1967 – 1971	3 296 078	3 393 928
1972 – 1976	4 275 840	4 043 233
1977 – 1981	4 820 935	4 714 734
1982 – 1986	4 901 672	4 472 702
1987 – 1991	4 729 462	4 730 242
1992 – 1996	4 660 660	4 367 849
1997 - 1999 ¹	2 814 396	1 892 541 ²
TOTAL	33 610 647	31 773 445

¹ COMPLETED PORTION OF THE 1997 - 2001 CUT CONTROL PERIOD.

² INCLUDES ALLOWABLE CUT AND CHARGEABLE CUT BEFORE CARRY-FORWARD ADJUSTMENTS TO END OF 1998.

APPENDIX VI

TREE FARM LICENCE 19
Coastal Contractor Clause Performance Report

Calendar Year 1999

REFERENCE	DESCRIPTION		SOURCE
1)	TOTAL AAC OF TFL APPROVED BY CHIEF FORESTER (CF) THAT IS AVAILABLE TO LICENCEE	932 132 M ³	CF'S APPROVAL LETTER FOR MANAGEMENT AND WORKING PLAN
2)	AAC ATTRIBUTABLE TO SCHEDULE "B" LANDS THAT IS AVAILABLE TO LICENCEE	843 716 M ³	DERIVED FROM THE APPROVED MWP
3)	VOLUME OF TIMBER HARVESTED	542 551 M ³	OBTAINED FROM THE REGIONAL TIMBER OFFICER OF DISTRICT MANAGER ; THE TOTAL VOLUME OF TIMBER THAT IS BILLED TO THE LICENCEE UNDER THE LICENCE DURING THE CALENDAR YEAR (SECTION 49.1 OF FOREST ACT)
4)	HARVESTED VOLUME ATTRIBUTED TO SCHEDULE "B" LANDS	491 088 M ³	CALCULATED: (#2/#1) X #3
5)	TOTAL VOLUME CONTRACTED UNDER FULL AND PHASE CONTRACTS	288 199 M ³	LICENCEE RECORDS
6)	TOTAL VOLUME CONTRACTED EXPRESSED AS A PER CENT OF COMPLIANCE REQUIRED	117.4 %	CALCULATED: (#5/(#4 X 0.5)) X 100

LICENCEE NAME: WESTERN FOREST PRODUCTS LIMITED

COMPLETED BY: WILLIAM DUMONT, R.P.F.

DATE REPORT COMPLETED: JUNE 21, 2000

APPENDIX VII

TREE FARM LICENCE 19
Phase and Full Contractors - 1999

Contractor	Phase
Frank Beban Logging Limited	Full Heli yarding
Cypress Logging Ltd.	Yarding
Cypress Creek Logging Ltd.	Falling Loading Yarding
Friell Lake Logging Ltd.	Full
Lemon Point Logging (1990) Ltd.	Falling Loading Yarding
Onion Lake Logging	Full
Russell & Lily Limited	Full
Spirit Lake Timber Limited	Full
Stan McLean Trucking Ltd.	Hauling
Totem Bar Contracting Ltd.	Road
Westside Roadbuilding Ltd.	Road
Upland Excavating	Road

APPENDIX VIII

TREE FARM LICENCE 19
CONTRACTORS - 1999

Name	Work	Operation
A.H. Jackson Corporation	Hauling	Gold River
Access Forest Management	Engineering, Cruising, Silviculture	Zeballos
Accurate Locations Surveys	Site Surveys	Zeballos
All-Brawn Industries	Shake/Shingle Cutters	Zeballos
All-Span Eng. and Construction	Bridge Design	Gold River
Arbour Tech	Terrain Assessments	Zeballos
Arcas Consulting Archaeologists	Archaeological Assessments	Gold River, NCA
Aztec GeoScience	Terrain Assessments	Zeballos
B.A. Blackwell and Associates	Fertilization Trial	Nootka Region
B.C. Conservation Foundation	Goshawk Inventory	Nootka Region
Beban Logging	Full Phase Logging	Gold River, Port Eliza
Black Creek Mechanical	Vehicle Maintenance	NCA
Bruce Contracting	Excavator, Deactivation	Gold River
Butch Carroll Trucking	Hauling	Gold River
Cala Creek Construction	Trucking	Gold River
Calverley Forestry Services	Silviculture	NCA
Cave Management Services	Cave Assessments	NCA
Chapman GeoScience	CWAP	Zeballos
Coast Forest Management	Silviculture, Engineering, Cruising	Zeballos
Coastal Business Services	Engineering/Clerical	Gold River
Conuma Excavating	Road Maintenance, FRBC Recreation	Nootka Region, Gold River
Coon Creek Log Scaling	Log Scaling	NCA
Cory J Salvage	Chunk Truck (salvage)	Gold River
Cypress Creek Logging	Falling, Yarding, Loading	Gold River
Dobson Engineering	Watershed Assessment	Gold River, NCA
Donner Lake Logging	Skidder	Gold River
Doulyn's Contracting	Deactivation, FRBC WRP/Recreation	Nootka Region, Gold River
DR Systems	Silviculture Data Management	Gold River, NCA
Eureka Excavating	Road Building - Rock Hammer	Gold River
Extreme Forestry	Silviculture	Gold River, Zeballos
Fishfor Contracting	Fish Surveys	Zeballos
French Creek Contracting	FRBC Coordinator	Nootka Region
Friell Lake Logging	Full Phase Logging	Houston
Geosoft Systems Inc.	Digital Mapping	Zeballos
Glen Wilson	FRBC Coordinator	Nootka Region
Gold River Contracting	Construction	Gold River
Gold River Futures Society	FRBC Recreation Site Construction	Nootka Region
Gold River Marine Service	Marine Repairs	Gold River
Gold River Property Management	Recreation Maintenance	Gold River
Gold River Rainbow Services	Trucking	Gold River, NCA
Golder and Associates	Terrain , Windthrow Assessments	NR, GR, NCA, Zeballos
Gower, Yeung and Assoc.	Bridge Design	Gold River
Grief Point Construction	Bridge Installation Supervision	Gold River
Gurney Contracting	Road Building/Deac, WRP/Recreation	Nootka Region, GR, NCA
H.W.Argent P.Eng	Engineering, Bridge Designs	Zeballos
Howard Larsen	FRBC Stream Assessments	Nootka Region
Hues Forest Management	Silviculture	NCA
Island Green For. Services Ltd.	Silviculture/NFO Training	Zeballos
Islands West Scaling	Residue Surveys	Gold River, Zeballos
Jack and Son's Silviculture	Silviculture, Creek Cleaning	Zeballos
Kelsey Forest Engineering	Engineering, Forestry	Gold River, NCA
Ken's Contracting	Shop Foreman	Gold River
L.G. Hall Engineering	WRP Supervision	Gold River
Lemon Point Logging	Falling, Yarding, Loading	Gold River
M&L Holdings	Tree Planting	NCA

Name	Work	Operation
Madrone Consultants Ltd.	LRAP, Slide Evaluation	Zeballos
Mt. Leighton	Silviculture/Creek Cleaning	Gold River
Nootka Sound Service	Freight delivery	NCA
Norm Hinch	Fire Training	NCA
North Mountain Helicopters	Aerial Fertilization	Gold River
Northwest Hydraulic Consultants	WRP Site Supervision	Gold River
NTS Trucking	Trucking	Gold River
Partners in Grime	Janitorial	Zeballos
Peter Bruce & Associates	Fisheries Assessments	NCA
Quinsam Excavating	Excavator, Deactivation	Gold River
R. Forrest Contracting	Silviculture	NCA
R.A.S. Roots	Public Education	Gold River
R.G. McCredy Forest Consulting	Cruising, Residue Surveys	Gold River, NCA
Rain Forestry	Silviculture	NCA, Zeballos
Richard Dennison	Recreation Maintenance	Gold River
Ridinger & Cooke Log Scaling	Log Scaling	NCA
Rugged Mountain Contracting	Silviculture, Engineering	Nootka Region, Zeballos
Russell & Lily	Full Phase Logging	Tahsis
S.R.K. and Associates	Mapping	NCA
Sentry Forestry	Silviculture, Creek Cleaning	Zeballos
Shawn Hamilton and Associates	FRBC Spawning Channel Assessments	Nootka Region
Shawn Verhagen	Engineering Data Program	Gold River
Simard Trucking	Trucking	Gold River
Sitka Silviculture	Planting	Gold River, Zeballos
Spirit Lake Lumber	DLS Services, Full Phase Logging	Head Bay
Stan McLean Trucking	Hauling	Zeballos
Stonecroft Project Engineering	Engineering	Gold River, NCA
Sure Span Construction	Bridge Construction	Gold River, Port Eliza
Symbiotic Silviculture	Silviculture	Tahsis
T.M.R. Enterprises	Engineering	Gold River, NCA
Taylor Contracting	Cedar Salvage	NCA
Thomas Hart Contracting	FRBC Recreation Site Construction	Nootka Region
Thurber Engineering	Terrain Assessments	Nootka Region, Gold River
Timberline Forest Inv Consultants	Mapping	NCA, Zeballos
Totem Bar Contracting	Road Construction	Zeballos
Tripp Biological Consultants	FRBC Spawning Channel Assessments	Nootka Region, GR, Zeballos
Upland Excavating	Road Building	Head Bay
Watson Forest Services	Timber Cruising	Nootka Region, Gold River
West Side Roadbuilding	Road Building	Gold River, Port Eliza
West Side Roadbuilding	Road Building	Gold River, Port Eliza
Westwood Contracting	Road Maintenance/Deactivation	Zeballos
Wolf Snare Contracting	Road Deactivation	Nootka Region

APPENDIX IX

TREE FARM LICENCE 19
Timber Harvesting Operability Report - 1999

Operation	Volume by Height Class Actual (%)						Total Scaled Volume (M ³)	Volume by Operability (% OF TOTAL SCALED VOLUME)		
	HC 2	HC 3	HC 4	HC 5	HC 6	HC 7		Conv	Heli	Inop
GOLD RIVER	7	40	30	23	0	0	361 500	97	0	3
NOOTKA CONTRACT	7	39	29	22	3	0	175 158	100	0	0
ZEBALLOS	1	54	45	0	0	0	1 485	100	0	0
TOTAL - NOOTKA REGION	7	40	30	23	0	0	538 143	99	0	0
INVENTORY PROFILE	1	9	38	34	16	2				

APPENDIX X

TREE FARM LICENCE 19
Small Business Forest Enterprise Program
Harvesting Report – 1999

YEAR	VOLUME AVAILABLE TO SBFEP m ³	LICENCE No.	LICENCEE	AREA LOGGED ha	VOLUME SCALED m ³	RESIDUE m ³	CHARGEABLE VOLUME m ³
1988	22 934			0			
1989	45 868			0			
1990	45 868			0			
1991	45 868			0			
1992	45 868	A3880	Dorman Logging	59.5	46 179	2 207	48 386
1993	45 868	A39588	Coulson Heli	43.4	25 996	283	26 279
		A34814A*	Coulson Heli	50.0	45 000		45 000
1994	45 868	D72095	CR Mills	3.2	2 240		2 240
		A34814A*	Mokko Manufacturing	56.9	49 387	966	50 353
		A34814C	Mokko Manufacturing	54.7	44 009		44 009
1995	45 868	A34814C	Mokko Manufacturing	76.8	59 351	1 341	60 692
		A34814D	Mokko Manufacturing	62.2	58 013	2 679	60 692
1996	45 868						
1997	47 085	A43314	Hayes	14.0	14 297	692	14 989
		A34814H	Mokko Manufacturing	17.4	15 151	569	15 720
1998	90 274	A34814B	Mokko Manufacturing	32.4	23 592	1 319	24 911
1999	45 868	A34814	Mokko Manufacturing	54.9	55 345		55 345
		A34814J	Mokko Manufacturing	25.2	23 654		23 654
TOTAL	573 105			550.6	462 214	10 056	472 270

APPENDIX XI

PROJECT SUMMARY – 1999

PROJECT			GOLD RIVER	NOOTKA CONTRACT ADMINISTRATION	ZEBALLOS	TOTAL
Denudation	Total Company	ha	438.5	217.4	2.0	657.9
	Crown / Licence	ha	434.2	217.4	2.0	653.6
	Crown Grant (MF)	ha	4.3			4.3
	SBFEP	ha		61.9		64.5
	TOTAL	ha	366	281.7	2.0	722.4
Accidental Fires		No.	1			1
		ha	1.2			1.2
Site Preparation	Prescribed Burning	ha				0
	Pile Burning	ha	3.8	1.2	0.5	5.5
	Mechanical	ha	3.3			3.3
	Crown / Licence	ha	6.9	1.2	0.5	8.6
	Crown Grant (MF)	ha	0.2			0.2
Planting	Original	ha	98.8	116.4	48.6	263.8
	Replants	ha	129.2	34.5	24.1	187.8
	Roadsides	ha	5.8		8.5	14.3
	Total	ha	233.8	150.9	81.2	465.9
	Crown / Licence	ha	233.8	150.9	81.2	465.9
	Crown Grant (MF)	ha				
	Number of Seedlings	Ow	37,940	52,500	28,786	119,226
		Hw	49,035	30,100	24,691	103,826
		Ba	18,740	20,200	8,085	47,025
		Fdc	43,310	23,600	23,673	90,583
		Yc	2,070		4,600	6,670
		Ss	7,640		295	7,935
		P	640			640
		Misc	6,571		405	6,976
	Total		165,946	126,400	90,535	382,881
Stocking Surveys	Plantation Regeneration	ha	628.1	983.2	108.2	1719.5
	Sufficiently Restocked	ha	515.7	964.6	108.2	1588.5
	Crown / Licence	ha	515.7	964.6	108.2	1588.5
	Crown Grant (MF)	ha				
	Not Sufficiently Restocked	ha	112.4	18.6		131.0
	Crown / Licence	ha	106.4	18.6		125.0
	Crown Grant (MF)	ha	6.0			
Silviculture Prescription		ha	418.8	284.0	167.3	870.1
		No.	17	10	7	34
Plantation Survival Assessments		ha	393.1			393.1
		%	89.0			89.0
Free Growing Surveys	Total	ha	470.0		32.1	413.2
	Free Growing	ha	304.3		32.1	336.4
	Crown / Licence	ha	304.3		32.1	336.4
	Crown Grant (MF)	ha				
	Not Free Growing	ha	165.7			165.7
	Crown / Licence	ha	165.7			165.7
	Crown Grant (MF)	ha				
Green-up Surveys	Total	ha	120.7	133.0	28.4	282.1
	Greened-up	ha	90.5	119.0	28.4	237.9
	Crown / Licence	ha	90.5	119.0	28.4	237.9
	Crown Grant (MF)	ha				
	Not Greened-up	ha	30.2	14.0	0.0	44.2
	Crown / Licence	ha	30.2	14.0	0.0	44.2
	Crown Grant (MF)	ha				
Brushing and Weeding	Total	ha	2.3	14.2	9.9	26.4
	Manual	ha	2.3		9.9	12.2
	Mechanical	ha		14.2		14.2

PROJECT			GOLD RIVER	NOOTKA CONTRACT ADMINISTRATION	ZEBALLOS	TOTAL
	Stem Injection	ha				
	Aerial Foliar	ha				
	Ground Foliar	ha				
	Crown / Licence	ha	2.3	14.2	9.9	26.4
	Crown Grant (MF)	ha				
Juvenile Spacing	Total	ha	84.1	110.2	108.4	302.7
	Crown / Licence	ha	84.1	110.2	108.4	302.7
	Crown Grant (MF)	ha				
Pruning	Total	ha	66.7	24.1	25.9	116.7
	Crown / Licence	ha	66.7	24.1	25.9	116.7
	Crown Grant (MF)	ha				
Fertilization	Total	ha	408.0		356.4	764.4
	Crown / Licence	ha	408.0		356.4	764.4
	Crown Grant (MF)	ha				
Residue Assessment Plots			163	75	10	248
CP Cruising Plots			743	133	133	1009
Minor Products	Cedar Shakes	m ³	604.1	821.3	1285.0	2710.4
	Cedar Shingles	m ³	224.0	76.8	86.1	386.9
	Cedar Cants	m ³			12.1	12.1
	Yew Bark (wet kg)	kg			1221.1	1221.1
Engineering	Roads Constructed (New)	km	37.2	14.0	3.0	52.2
	Roads Rebuilt	km	3.3	7.7		11.0
	Roads Maintained	km	223.3	147.0	45.0	415.3
	Roads Deactivated					
	Temporary	km	34.5	75.3	15.0	124.8
	Semi-Permanent	km	26.4	4.0	3.0	33.4
	Permanent	km	38.4	7.8		46.2
Roadside Treatments	Mechanical Brushing	km				
	Chemical Spraying	km				
	Hydro and Dry Seeding	km	64.8	11.8	2.5	79.1
Site Stabilization		ha	1.3		35.0	36.3

Appendix XII

**Western Forest Products
Regeneration Balance Sheet
to December 31, 1999**

ITEM	TFL 6		TFL 19		TFL 25		TOTAL
Opening Balance (NSR at 1999/01/01)	1601	ha	1188	ha	2116	ha	4905 ha
Debits							
1999 Denudations	1607	ha	588	ha	619	ha	2814 ha
1999 Surveys	44	ha	131	ha	40	ha	215 ha
Credits							
1999 Planting	984	ha	452	ha	358	ha	1794 ha
1999 Surveys (Natural Regeneration)	190	ha	0	ha	48	ha	238 ha
Other	0	ha	0	ha	0	ha	0 ha
CLOSING BALANCE (NSR at 1999/12/31)	2078	ha	1525	ha	2730	ha	5972 ha

APPENDIX XIII

TREE FARM LICENCE 19
Historical Summary of Activities

Year	Denuded (ha)	Planted (ha)	No. Trees Planted	Juvenile Spaced (ha)	Brushed (ha)	Prescribed/ Pile Burned (ha)	Mechanical Site Prep. (ha)	Fertilized (ha)	Pruned (ha)
Pre 1965	5 065	4 731	3 502 000	83	70	3 089	0	0	0
1965	420	483	425 000	28	5	577	0	0	0
1966	585	790	726 000	12	49	382	37	0	0
1967	547	564	434 000	140	178	616	0	0	0
1968	683	639	539 000	155	98	545	0	0	0
1969	683	744	474 000	204	92	340	0	0	0
1970	825	682	535 000	274	0	594	0	0	0
1971	1 205	1 533	1 123 000	57	16	588	0	0	0
1972	623	1 411	912 000	56	15	299	0	0	0
1973	1 241	995	699 000	99	28	377	0	0	0
1974	885	1 499	1 324 000	90	38	333	0	0	0
1975	469	1 307	942 000	29	33	300	0	0	0
1976	1 055	1 009	709 000	30	0	831	0	0	0
1977	1 236	1 085	631 000	30	48	963	0	0	0
1978	1 178	889	494 000	52	176	113	0	0	0
1979	1 108	1 181	524 000	314	310	111	0	0	0
1980	1 296	955	473 000	424	190	17	0	1 296	0
1981	922	1 195	579 000	564	10	295	56	1 042	0
1982	800	1 228	735 000	235	54	71	0	990	0
1983	1 116	792	566 000	804	184	102	0	1 052	0
1984	1 136	562	325 000	397	877	0	3	0	0
1985	1 190	973	452 000	554	311	16	0	0	0
1986	953	742	346 000	114	358	0	0	0	0
1987	1 446	1 304	686 000	874	302	0	0	0	14
1988	966	930	563 000	467	435	6	0	0	24
1989	889	1 252	755 000	473	165	0	0	0	43
1990	1 068	1 122	707 000	140	80	0	0	0	0
1991	1 297	784	439 000	608	77	0	0	0	0
1992	976	1 346	757 000	300	113	1	19	0	0
1993	887	1 221	683 000	161	153	10	36	0	0
1994	856	967	674 000	266	57	39	80	0	137
1995	923	1 665	1 040 000	226	292	15	20	0	39
1996	1 071	1 772	1 140 000	249	61	51	28	188	20
1997	1 000	1 512	1 067 000	163	88	8	14	0	111
1998	631	719	675 550	165	5	14	2	0	40
1999	722	466	382 881	303	26	39	3	764	117
TOTAL	37 953	41 049	27 038 431	9 140	4 994	10 742	298	5 332	545

APPENDIX XIV

Western Forest Products
Tree Planting History

Number of Seedlings

Year	TFL 6	TFL 19	TFL 25	WFP Misc. Properties	Other Properties	TOTAL
Pre 1965	701400	3502000	2531100	3782450		10516950
1965	361500	425000	298500	247700		52231500
1966	325300	726000	432800	0		50975062
1967	422950	434000	547650	285800		50541100
1968	444900	539000	645250	46700		49299212
1969	989650	474000	446100	327300		48304050
1970	751700	535000	341450	136500		47534562
1971	529350	1123000	586700	158250		45906750
1972	912650	912000	295300	407000		45007612
1973	600500	699000	772450	162000		43672800
1974	459350	1324000	363850	57950		42802462
1975	777700	942000	199450	67950		41685700
1976	777050	709000	807250	58250		40450912
1977	553900	631000	757550	172350		39570900
1978	493950	494000	555600	38800		38868562
1979	662850	524000	749000	12300		37622750
1980	491500	473000	493650	24150		37386262
1981	1047600	579000	803900	29900		35162350
1982	1198300	735000	827700	16900		34608362
1983	888000	566000	669050	55450		32983850
1984	882400	325000	809000	102700		32489262
1985	701800	452000	522050	69550		31238450
1986	1347100	346000	630950	57000		30108212
1987	2256650	686000	1297750	329300		26668750
1988	1844050	563000	982850	172950		26545362
1989	1169250	755000	735600	287750		23721150
1990	1405700	707000	712350	354150		23366162
1991	1491100	439000	842850	60150		20888050
Pre 1992					5268800	18097362
1992	1550900	757000	673900	95700	232850	17577700
1993	1574650	683000	639750	240600	377550	14581812
1994	1712150	674000	546000	226200	790600	13628750
1995	2003400	1040000	853050	160400	894500	9630462
1996	2110950	1140000	1089750	579400	3550	8705100
1997	1944750	1067000	951900	52150	0	5614662
1998	1473600	675550	652250	1522400	28750	4352550
1999	1088000	382881	413000	901550	21900	2807331
TOTAL	148597500	96372724	93420400	33108150	30474000	1135152835

TFL 6 Summary amended to include the former TFL 25 Block 4

TFL 25 Summary amended to include the former TFL 24, and exclude the former TFL 25 Block 4

APPENDIX XV – A

DIRECT EMPLOYMENT SUMMARY – TFL 19

OPERATION	HOME REGION	CONTRACTOR PERSONNEL		COMPANY PERSONNEL		TOTAL	
		PEOPLE	PERSON DAYS	PEOPLE	PERSON DAYS	PEOPLE	PERSON DAYS
Planning and Development							
Head Office	Lower Mainland			1	36	1	36
Gold River	Gold River	16	1453	18	3461	34	4914
	Tahsis	1	91	0	0	1	91
	Campbell River	9	1195	1	167	10	1362
	Courtenay	5	674	7	1333	12	2007
	Vancouver Island	10	626	0	0	10	626
	Lower Mainland	4	21	0	0	4	21
	BC (Other)	3	49	0	0	3	49
NCA	Gold River	4	338	8	704	12	1042
	Tahsis	4	358	0	0	4	358
	Campbell River	9	574	1	66	10	640
	Courtenay	2	182	0	0	2	182
	Lower Mainland	6	333	0	0	6	333
Zeballos	Zeballos	1	167	3	200	4	367
	Gold River	5	315	1	100	6	415
	Campbell River	3	50	1	100	4	150
	Vancouver Island	0	0	1	100	1	100
SUBTOTAL		82	6426	42	6267	124	12693
Harvesting							
Gold River	Gold River	23	2325	79	14361	102	16686
	Tahsis	0	0	1	167	1	167
	Campbell River	23	3256	16	2998	39	6254
	Courtenay	11	1805	16	2998	27	4803
	Vancouver Island	5	551	5	686	10	1237
	Lower Mainland	0	0	1	167	1	167
NCA	Gold River	1	66	4	214	5	280
	Tahsis	16	1645	0	0	16	1645
	Campbell River	25	3780	0	0	25	3780
	Courtenay	22	3046	0	0	22	3046
	Vancouver Island	0	0	1	76	1	76
	Lower Mainland	1	150	0	0	1	150
Zeballos	Zeballos	0	0	3	120	3	120
	Campbell River	0	0	2	80	2	80
SUBTOTAL		127	16624	128	21867	255	38491
Silviculture and Integrated Resource Management							
Head Office	Lower Mainland	12	498	5	140	17	638
Saanich	Vancouver Island	0	0	55	1319	55	1319
Gold River	Gold River	17	1181	10	1010	27	2191
	Campbell River	5	56	0	0	5	56
	Courtenay	5	73	0	0	5	73
	Vancouver Island	8	82	0	0	8	82
	Lower Mainland	6	30	0	0	6	30

OPERATION	HOME REGION	CONTRACTOR PERSONNEL		COMPANY PERSONNEL		TOTAL	
		PEOPLE	PERSON DAYS	PEOPLE	PERSON DAYS	PEOPLE	PERSON DAYS
NCA	BC (other)	8	24	0	0	8	24
	Gold River	7	58	1	33	8	91
	Tahsis	19	307	0	0	19	307
	Campbell River	17	349	2	190	19	539
	Courtenay	7	174	0	0	7	174
	Vancouver Island	14	286	0	0	14	286
	Lower Mainland	1	63	0	0	1	63
	BC (other)	4	95	0	0	4	95
Zeballos	Zeballos	15	836	2	290	17	1126
	Campbell River	15	450	0	0	15	450
	Tahsis	10	100	0	0	10	100
	Nanaimo	0	0	1	110	1	110
SUBTOTAL		170	4662	76	3092	246	7754
Transportation							
Head Office	Lower Mainland	34	4459	5	143	39	4602
SUBTOTAL		34	4459	5	143	39	4602
Processing							
Port Alice Pulp Mill	Vancouver Island			451	17006	451	17006
Squamish Pulp Mill	Lower Mainland			344	14336	344	14336
Tahsis Sawmill	Tahsis			200	13173	200	13173
Cowichan Bay Sawmill	Vancouver Island			95	2307	95	2307
Silvertree Sawmill	Lower Mainland			118	2888	118	2888
Vancouver Sawmill	Lower Mainland			83	2834	83	2834
Nanaimo Sawmill	Vancouver Island			152	6558	152	6558
Log Trading and Sales	Lower Mainland			40	2076	40	2076
Nanaimo Log Merchandizer	Vancouver Island			36	935	36	935
SUBTOTAL				1519	62113	1519	62113
Administration							
Head Office	Lower Mainland	0	0	31	1114	31	1114
Gold River	Gold River	2	56	4	404	6	460
	Campbell River	0	0	2	167	2	167
NCA	Gold River	2	60	6	369	8	429
	Campbell River	0	0	3	163	3	163
Zeballos	Gold River	0	0	1	75	1	75
	Campbell River	0	0	2	15	2	15
SUBTOTAL		4	116	49	2307	53	2423
Summary – By Home Region							
	Gold River	77	5852	132	20731	209	26583
	Tahsis	50	2501	201	13340	251	15841
	Zeballos	16	1003	8	610	24	1613

OPERATION	HOME REGION	CONTRACTOR PERSONNEL		COMPANY PERSONNEL		TOTAL	
		PEOPLE	PERSON DAYS	PEOPLE	PERSON DAYS	PEOPLE	PERSON DAYS
	Campbell River	106	9710	30	3946	136	13656
	Courtenay	52	5954	23	4331	75	10285
	Vancouver Island	37	1545	797	29097	834	30642
	Lower Mainland	64	5554	628	23734	692	29288
	BC (Other)	15	168	0	0	15	168
TOTAL		417	32287	1819	95789	2236	128076

APPENDIX XV - B

WESTERN FOREST PRODUCTS
DIRECT EMPLOYMENT SUMMARY - 1999
(PERSON-DAYS*)

	Planning and Development	Harvesting	Transportation	Processing	Silviculture and Integrated Resources Management	Administration	TOTAL
TFL 6	13297	60961	6981	129818	13883	4261	229201
TFL 19	12693	38491	4602	62113	7754	2423	128076
TFL 25	5765	21262	6082	43376	7294	1431	85210
MF 61	456	1310	23	**	36	121	1946
FL 16845	1124	7749	847	11675	890	843	23128
FL 16847	1148	10599	655	28332	1665	936	43335
FL 19205	28	**	63	4812	418	125	5446
FL 19216	33	**	90	9992	367	171	10653
FL A19221	8	**	**	**	66	13	87
FL 19228	203	**	91	6802	400	159	7655
FL 19231	3938	25949	3420	46321	1884	1907	83419
FL 19240	586	2251	253	3845	245	122	7302
FL 53746	70	1725	**	**	295	25	2115
Other Tenures	378	1507	170	27450	939	358	30802
TOTAL	39727	171804	23277	374536	36136	12895	658375

* Includes Company and Contract Personnel.

** See Other Tenures

WESTERN FOREST PRODUCTS FIRST NATIONS SILVICULTURE CONTRACTS EMPLOYMENT SUMMARY - 1999

Tenure	Operation							
	Holberg	Jeune Landing	Port McNeill	Mainland Islands Region	Zeballos	Gold River	Nootka Contract Admin	Total
TFL 6	52	0	2105					2157
TFL 19					886	969	99	1954
TFL 25				1668				1668
MF 61								0
FL A16845				108				108
FL A16847				180				180
FL A19205				46				46
FL A19216				12				12
FL A19221								
FL A19228								
FL A19231					243		80	323
FL A19240								
FL A53746								
Other Tenures								
River's Inlet				147				147
Mathieson Channel				292				292
Campbell Island				74				74
TOTAL	52	0	2105	2453	1129	969	179	6887
Total Contractor Days	1673	1681	3681	6257	2775	1483	2049	19599
% FN employment	3	0	!Zero Divide	!Zero Divide	!Zero Divide	!Zero Divide	!Zero Divide	35
% WFP Goal	15	0	0	0	0	0	0	175

APPENDIX XVI

WESTERN FOREST PRODUCTS - WESTERN PULP - DOMAN INDUSTRIES - DOMAN WESTERN LUMBER
1999 LOG FLOW AND WOOD CONSUMPTION

(Approximate)

SAWMILL PULPMILL	TENURE / SOURCE (THOUSAND CUBIC METRES)											Inventory / Purchase	Total Consumption	Chips to Woodfibre (Thousands Units)
	TFL 6	TFL 1	TFL 2	FL A19231 Strathcona	FL A19240 Kingcome	FL A16845 Mid Coast	FL A16847 Mid Coast	FL A19205 Fraser	FL A19228 Sunshine	FL A19216 Soo	Other Tenures			
Duke Point	460				14						3	-183	294	45
Chemainus											1	113	114	
Ladysmith	237		54		5	14		2	4	1	6	30	353	0
Cowichan	33	31	53	32	2	9	5	2	17	2	6	56	248	
Silvertree	143	61	58	91	7	25	19				10	-121	293	44
Vancouver		28	34	20		25		9		7	14	56	193	28
Tahsis	50	165		117							13	-17	328	48
Saltair			34				24			18	5	426	507	
Nanaimo	5	30	15	10			60	2	4	6		346	478	0
Log Merchandizer	16	17	33	12		16	2	12	21	7	8	630	774	360
Port Alice Pulp Mill	263	81	17	57	8		23				5	114	568	
Trades / Sales	169	130	63	100	9	32	22	4	1	4	17	76	627	(3)
Squamish Pulp Mill Chips														
• Purchased														222
• Consumed														734
OTAL LOGS	1376	543	361	439	45	121	155	31	47	45	88	1526	4777	

APPENDIX XVII

WESTERN FOREST PRODUCTS LIMITED
FOREST RESEARCH SUMMARY - 1999
PERMANENT PLOTS AND TRIALS

Trial (Year Established)	Location	Measurements	Reports
Forest Nutrition			
Western Redcedar and Amabilis Fir Screening Trials (1999)	Gold River, Nootka Contract, Zeballos	1999	Establishment Report (2000)
Western Hemlock and Western Redcedar Screening Trials (1996)	Galiano	1997	Establishment Report (1998)
Amabilis Fir Fertilization Trial (1996)	Saunders	1996, 1997, 1998, 2000	Establishment Report (1997)
Growth and Yield Monitoring			
Growth and Yield Surveys (1991)	Gold River	1991, 1996	
Other			
Planting Technique Trial (1997)	Gold River	1997, 1998	

APPENDIX XVIII



**Doman Forest Products Limited
Western Pulp Inc.
Western Forest Products Limited
Doman – Western Lumber Ltd.**

Operating Statistics

Productive Forest Land Managed	885 000 ha
Operable Forest Land	550 000 ha
Forest Tenures	3 Tree Farm Licences 7 Forest Licences 5 Managed Forests 127 Timber Licences
Logging Operations	30
Employees and Contractors	4 200 people (est)
Annual Timber Harvest	4 200 000 m ³
Annual Timber Purchase	800 000 m ³
Mills	2 Pulp Mills – 1 Kraft, 1 Sulphite 9 Saw Mills 1 Value Added Plant 1 Log Merchandizer
Products: Lumber and Solid Wood	800 000 000 board feet
Pulp	400 000 tonnes
Annual Product Sales	over \$800 million
Annual Roads Construction	335 km
Annual Roads Maintenance	2 100 km
Annual Logging	5 500 ha
Annual Planting	5 100 ha
Annual Natural Regeneration	400 ha
Annual Number of Seedlings Planted	5 000 000 trees
Average Survival of 3-year Old Plantations	90 %
Annual Site Preparation	700 ha
Annual Brushing and Weeding	2 300 ha
Annual Juvenile Spacing	1 600 ha
Annual Pruning	1 000 ha
Annual Fertilization	3 000 ha
Annual visitors to Forest Lands	over 300 000 visitors
Annual Salmon Enhancement Production (4 hatcheries)	750 000 fry
Recreation Sites and Trails	45
Forest Enhancement Person-Days	over 40 000

APPENDIX XIX

**Tree Farm Licence 19
Status Report
Summary of Obligations and Commitments – Management Plan 8**

OBLIGATION	TARGET COMPLETION DATE	CURRENT STATUS
Harvest performance reporting: Volume harvested by: ➤ Height class ➤ Operability type ➤ Harvest system	April – Annual Submission	Part of TFL Annual Report submitted in 2000
Review and update operability mapping	Completed April 1999	Revised operability status completed by WFP in 1999
Explore commercial thinning opportunities	During term of MP	Roughly 1 000 ha identified on 1998 FDPs. Economic conditions have precluded any CT initiation to date.
Develop a detailed strategy for wildlife habitat	2000	EW1 areas made 'known' as ungulated winter ranges Nov. 1998. EW2 areas to be covered under MoF/MoELP MoU. WFP active in development of VILUP, LU planning, and IWMS. Implementation of biodiversity strategies identified in higher level plans and/or landscape unit planning will be used to manage wildlife in the TFL. Wildlife habitat assessment started in 1999 to be completed in 2000.
Biodiversity planning	Submit with draft MP 9	Planning for biodiversity at the landscape level will be done as part of Landscape Unit Planning. Stand level biodiversity is currently managed as per Regional Manager's letter dated May 22, 1996 which recommends 10 % of the area in each cutblock be set aside as wildlife tree patches.
Recreation strategy including review of cover, constraints, and/or land base deductions	Submit with draft MP 9	Maintenance and upgrading has taken place at several campsites and other recreation sites. New facilities have been constructed at Little Espinosa and Santiago Creek.
Non-recoverable losses	During term of MP	Non-recoverable losses are being monitored and recorded for the TFL. Minor blowdown events (i.e. within riparian areas) are being recovered where practical and/or allowable under the FPC
Terrain Stability Mapping	December, 1996	Mapping completed November 1996 and is now being used in operational planning. Updated mapping will be used in preparation of MP 9.
Visual Quality Objectives	During Term of MP	Recommended visual quality objectives are used to guide management of scenic values. WFP staff have worked with MoF staff to revise some visual polygons as part of VQO buy-back project completed in 1998. Updated visual inventory to be included in MP 9.

APPENDIX XX

Saanich Forestry Centre
Seedling Production Report - 1999

SPECIES	SIZE	SEEDLINGS PRODUCED			TOTAL BY SPECIES	%
		SPRING	FALL	TOTAL BY SIZE		
Cw	313B	423 710	12 800	436 510		
Cw	410A	215 450	0	215 450		
Cw	415C	524 750	16 620	541 370		
Cw	615A	17 030	80	17 110		
Subtotal					1 210 440	49.58
Dr	313B	3 780	0	3 780		
Dr	415B	1 770	0	1 770		
Subtotal					5 550	0.23
Ds	313B	4 120	0	4 120		
Ds	415B	1 060	1 128	2 188		
Subtotal					6 308	0.26
Fc	410A	83 760	0	83 760		
Fc	415C	443 280	0	443 280		
Fc	615A	5 930	603	6 533		
Subtotal					533 573	21.85
Hm	410A	1 440	1 850	3 290		
Hm	415C	10 380	0	10 380		
Subtotal					13 670	0.56
Hw	313B	90 880	0	90 880		
Hw	410A	71 280	0	71 280		
Hw	415C	390 440	18 890	409 330		
Hw	615A	9 750	0	9 750		
Subtotal					581 240	23.81
Plc	313B	4 480	50	4 530		
Plc	410A	2 690	0	2 690		
Subtotal					7 220	0.30
Pw	410A	4 240	0	4 240		
Pw	415C	12 640	0	12 640		
Subtotal					16 880	0.69
Ss	313B	2 800	0	2 800		
Ss	415C	19 010	240	19 250		
Subtotal					22 050	0.90
Sx	415C	21 270	21 180	42 450		
Subtotal					42 450	1.74
Yc	410A	0	1 650	1 650		
Subtotal					1 650	0.07
Misc	415C	0	500	500		
Misc	615A	0	90	90		
Subtotal					590	0.02
Total		2 365 940	75 681	2 441 621	2 441 621	100.00

APPENDIX XXI

SAANICH FORESTRY CENTRE
SEED PRODUCTION REPORT

SEEDLOT	SPECIES	ORCHARD	ZONE	BV VOL 60 ¹ (%)	ELEVATION (M)	LATITUDE	LONGITUDE	VOLUME (HL)	SEED WEIGHT (Kg)	SEEDLINGS (000s)	COMMENTS
61023	Fdc	166	M/GL	10	359	49°14'	124°11'	41.82	23.632	716.3	SMP Crop
61024	Fdc	169	M/GL	5	259	49°05'	123°52'	5.14	2.214	86.8	
61030	Hw	127	M	2	736	50°33'	127°18'	6.64	5.960	1,236.9	
61031	Hw	126	M	8	85	50°34'	127°02'	3.55	2.457	755.4	
61032	Hw	126	M	5	110	50°35'	127°11'	4.98	4.861	933.6	
61025 ²	Cw	155	M	10	241	52°41'	131°37'	3.56	1.708	374.2	SMP Crop
61026 ²	Cw	155	M	5	244	52°42'	131°38'	9.83	6.502	1,653.8	
61027	Cw	155	M	2	239	52°41'	131°38'	31.71	21.363	5,056.2	
61028 ²	Cw	128	M	10	164	50°45'	127°34'	10.64	5.666	1,479.4	SMP Crop
61029	Cw	128	M	2	162	50°46'	127°32'	33.87	20.667	4,877.4	
60699	Cw	155	M	2	345	52°46'	131°45'	3.10	2.062	480.9	
Total:									97.092	17,650.9	

1 Expected % gain in volume over wild seedlots at age 60.

2 Breeding Value volume 60 (% gain at age 60) estimated, awaiting confirmation from DNA out-crossing studies.