

Appendix VIII

History and Management

Achievements

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1.0 CORPORATE AND BLOCK HISTORY

1.1 Corporate History

MacMillan Bloedel Ltd. is the result of a series of strategic mergers and acquisitions detailed in the corporate history, "Empire of Wood". Briefly, Bloedel, Stewart and Welch merged with H.R. MacMillan Export Company as MacMillan and Bloedel Ltd. in 1951. In 1960 a further merger, with Powell River Company, formed MacMillan Bloedel and Powell River Ltd., simplified in 1966 as MacMillan Bloedel Ltd.

Bloedel, Stewart and Welch started as a logging operation in 1911. They later expanded into solid wood products and in 1947 into pulp and paper. The Powell River Company, incorporated in 1911, pioneered newsprint manufacture at Powell River in 1912. Later they added solid wood products as well as pulp, container board and fine papers. The H.R. MacMillan Export Company incorporated in 1919 to sell lumber into world markets. Later sawmills and forest lands were acquired to ensure supply of product. In 1950, a Kraft pulp mill was built to improve overall wood utilization.

In 1952, Powell River Company acquired TFL #7, Salmon River. TFL #39 was granted to the Powell River Company in 1961. In December 1988, TFL #7 was merged with TFL #39 and is now part of Block II, simplifying management and administration.

TFL 39 comprises seven separate blocks; their development history is summarized below.

1.2 Block History

1.21 Block I, Powell River

Logging started in the 1890s and has been sustained for 100 years. The founders of the Powell River Company commenced logging in 1908. In 1909, they were successful bidders for the Powell River pulp lease and water rights to Powell Lake.

Bloedel, Stewart and Welch started logging in the Myrtle Point area in 1911 and later other companies logged in the first growth timber; these areas are now thriving new forests—some have already yielded a second harvest.

1.22 Block II, Adam River

Powell River acquired rights to the bulk of this block as pulp leases in 1910 to guarantee supply to the newsprint mill, but logging did not start till 1962 though the Tsitika Valley was engineered for logging railway in the early 1920s. In the southern portion of the block, however, logging dates back to 1910-20 with such historic companies as Hastings Logging Company; Merrill, Ring and Wilson; Bloedel, Stewart and Welch; and Salmon River Logging.

Following the merger of MacMillan and Bloedel with the Powell River Company, the MB holdings adjacent to Menzies Bay were added to TFL 7 in 1961 and in 1971 the Crown grant properties in the Salmon River valley were added..

Kelsey Bay Division started development in the Adam River and Eve River drainages in the 1960s. A new division, Eve River, was established in 1969; by 1972, development had reached the headwaters of the Adam River and White River, and the upper Tsitika watershed. This precipitated a proposal to dedicate Schoen Lake as a provincial park and the Tsitika watershed as an Ecological Reserve. A two-year moratorium followed to allow study of the proposal. It culminated in the creation of Schoen Lake Park and the Tsitika Watershed Integrated Resource Area. The Tsitika has been logged in accord with the Tsitika Watershed Integrated Resource Plan (TWIRP) since 1979.

1.23 Block III, Coast Islands

Most of the forests in this block were sold as pulp leases to Powell River Company before WW I. Logging started in the 1920s and much of the old forest had been logged before the TFL was granted.

Squamish Division logged here during the winter from 1969 to 1980 when jurisdiction passed to Port McNeill Division. Current logging is by contractors.

1.24 Block IV, Port Hardy

Pioneer Timber Company started logging here in the 1930s. Alice Lake Logging, a subsidiary of Powell River Company, started logging in the Alice Lake and Port Hardy areas in the 1940s. After the merger, this became Port Hardy Division and, in 1974, Port McNeill Division when development of the Raging and Benson River watersheds started.

1.25 Block V, Phillips River

Small scale logging started in the 1940s; later timber was logged into Phillips Lake by A-frame and carried down to Phillips Arm by a steel flume.

In 1969, MB developed the block in part fulfillment of the contractor commitment. Initially it was administered by Menzies Bay Division. In 1969, Stillwater Division took over.

1.26 Block VI, Queen Charlotte Islands

Some logging took place during WW I for high quality Sitka spruce for airplanes. In the mid 1930s, contractors Kelly Spruce and Allison Logging started logging timber adjacent to Cumshewa Inlet. During WW II, a Crown corporation acquired Allison Logging, renamed Aero Timber Products, to guarantee a supply of spruce for airplanes. After the war, Powell River Company acquired Aero and the remaining timber. Logging

subsequently expanded to Louise Island, Skidegate Lake, Juskatla Inlet, Peel Inlet, Kumdis Island, Masset Inlet, and Alliford Bay.

Administration has been by Queen Charlotte Division at Juskatla. Between 1975 and 1981 activities on the southern part of the block were administered by Hecate Division at Sandspit.

1.27 Block VII, Namu

Prior to the award of the licence, small volumes of timber were cut by handloggers. Port McNeill Division started development planning in 1980, but logging did not start till 1987. In 1990, the Koeve River watershed was reserved as a candidate for preservation as an untouched watershed under the Protected Area Strategy (PAS) programme of the Provincial government.

2.0 HISTORY OF LAND CHANGES AND INVENTORY DEVELOPMENT

2.1 Record of Property Status Changes to the Licence

Since the original Licences were awarded, there have been many additions and deletions of land. Examples include:

- the removal of lands for higher use or as parks or other reserves,
- the addition of purchased land or timber leases, and
- the reversion of expired timber sales held by others within the TFL boundary.

2.11 Changes to the Former TFL #7

The only significant change in TFL #7 occurred after the merger of MacMillan and Bloedel Ltd. and Powell River Company when MB temporary tenures were added in 1961. There were small additions and deletions due to purchase, sale or removal of Crown lands for higher use.

2.12 Changes to TFL #39

The largest changes have been change in status of lands within the TFL ; reversion to the Crown of MB temporary tenures and timber sales held prior to award of the Licence and deletion and later return of timber sales in the Thirty-Year Reserve.

Other significant changes were the deletion of lands for Schoen Lake Park and Ecological Reserves and the addition of six timber licences in 1963.

In 1987, TFL #7 was merged with TFL 39. All Schedule A and Schedule B lands were transferred.

Table VIII-1 shows the categories and the approximate areas involved.

TABLE VIII-1. Additions and Deletions to the Property Schedules
(hectares)

	1962-1987	1988-1993	TOTAL
CHANGES TO SCHEDULE A			
Additions			
• Purchases	2 562		2 562
• Returned by Amendment	3		3
Total Additions	2 565		2 565
Deletions			
• Expired Timber Sales	26 983		26 983
• Reverted Timber Licences	48 476	6 877	55 353
• Public & MoF R/W	130	57	187
• Park/Ecological Reserves	1	38	39
• Other Uses/Sales	257	32	289
Total Deletions	75 847	7 004	82 851
NET CHANGE (Reduction)	(73 282)	(7004)	(80 286)
CHANGES TO SCHEDULE B			
Additions			
• Reverted Timber Sales	26 983		26 983
• Reverted Timber Licences	48 476	6 877	55 353
• Reverted BCFP T.L.	327		327
• Expired 30-year Res. T.S.s	12 386	436	12 822
• Miscellaneous	2 552		2 552
Total Additions	90 724	7 313	98 037
Deletions			
• 30-year Res T.S.s	786		786
• Park, Ecological Reserves	7 840		7 840
• Public & MoF R/W	217		217
• Recreational	49		49
• Higher Economic Use	311		311
Total Deletions	9 203		9 203
NET CHANGE	81 521	7 313	88 834
TFL NET CHANGE	8 239	309	8 548

2.2 History and Maintenance of the Forest Inventory

2.21 The Old Growth Inventory

Prior to the award of the Licence, only portions of the forest had been cruised as part of the Provincial Inventory.

Between 1964-65, MB completed an inventory of the entire Licence.

The Old Growth cruise was designed to provide an estimate of volume of +/- 10% at the 95% level of probability. The overall sampling error was +/- 1.2%. The largest sampling errors were in Blocks III, V and VII at 9.6%, 9.1% and 7.7%. These are the three smallest Blocks in the TFL. The inventory is described in detail in WP #2, Volume 1, Pages 101-118.

Over the years, the inventory was recompiled to reflect the adoption of close utilization standards in 1966, metric measure in 1979, as well as changes in decay factors, volume equations, height curves, etc.

Portions of the old growth were recruised (called the operational cruise) more intensively in the late 1970s and early 1980s, to provide better data for short-term planning. This data was incorporated into the total inventory in 1988.

During 1993, portions of the 1964-65 inventory were checked by comparing new samples in Block II, 116 samples in 1992; Block IV, 69 samples in 1988; and Block VI, 200 samples in 1993. The comparison showed:

Block	Original Volume per Ha	Test Volume per Ha
II	784	816
IV	844	826
VI	749	616

While the volumes in Blocks II and IV are not significantly different, those for Block VI are. Reasons for the difference is ascribed to the height/diameter relationships used originally proving to be incorrect for Block VI and the large volume called "dead useless" (dead wood, standing or on the ground). This category was insignificant in the other blocks.

2.22 The Immature Forest Inventory

All the immature forest, defined as trees less than 100 years old at the time of the inventory, and recently logged lands (backlog NSR) were also inventoried and mapped as stands based on the distinguishing characteristics of age, species, site index and stocking.

2.23 Inventory Maintenance

The inventory has been updated annually to reflect changes in property status and forest cover due to logging, regeneration, and silvicultural treatments made in the new forest.

3.0 RECORD AND EXPLANATIONS OF SUCCESSIVE CHANGES IN AAC

Over the years the AAC has changed for many reasons. These are summarized in this chapter.

3.1 Record for TFL #7 1951 -1987

The first and all subsequent AACs were calculated using Hanzlik's formula and verified by an Area-Volume Allotment Check.

3.11 WP #1: 1951-1955 AAC 305 800 m³

3.12 WP #2: 1956-1960 AAC 305 800 m³

3.13 WP #3: 1961..... AAC 305 800 m³

3.131 WP #3 Amendment #1: 1962-1966 AAC 429 300 m³

- The AAC increased because:
 - ↳ 23 properties were added– 10 000 ha to Schedule A and 127 ha to Schedule B.

3.14 WP #4: 1967-1971 AAC 472 900 m³

- The AAC increased because:
 - ↳ The mature timber inventory was recompiled to Close Utilization standards (inclusive of waste and breakage) using MoF 1956 net factors.
 - ↳ Cruiser estimate of decay replaced by MoF net factors.
 - ↳ The AAC increase was offset by adoption of residue measurement and charging residue to AAC in cut control reports.

3.15 WP #5: 1972-1976AAC 538 000 m³

- The AAC increased because:
 - ↳ Mature inventory was again recompiled using MoF 1969 loss factors and revised height/diameter curves for hemlock based on new sample data.
 - ↳ Estimated yields from the new forests increased with use of new MB Natural Stand Yield Tables instead of MoF volume-age curves.

3.16 WP #6: 1977-1981 AAC 523 900 m³

- The AAC decreased because:
 - ↳ Mature inventory lower due to harvesting.
 - ↳ An allowance was introduced for sensitive sites.
 - ↳ The deduction of dead usable timber from the inventory increased with change to MB net factors instead of MoF factors.

3.17 WP #7: 1982-1987 AAC 544 000 m³

- The increase was because:

- ↳ Some timber volumes previously excluded as non-recoverable dead, uneconomic or unavailable sensitive sites were deemed harvestable based on new data.
 - ↳ The reduction for breakage in harvesting was reduced from 7.5% to 6.4%.
 - ↳ The average rotation age was reduced when recompilation of the MB Yield Tables and analysis showed the hemlock yield tables better reflected the growth of cedar than the Douglas-fir tables used previously.
- The increase was partially offset by:
 - ↳ Continuing decrease in mature timber inventory.
 - ↳ An increase in the allowance for gaps in stocking in the 1- to 20-year age class and the resulting impact on final yields.
 - ↳ Reduced yields and increased rotation ages due to soft conversion of site index to metric measure.

3.2 Record for TFL #39 Before Addition of TFL #7 in 1988

The first AAC was calculated using Hanzlik's formula to determine a starting point for an Area-Volume Allotment Check. The Area-Volume Allotment Check was used in all subsequent AAC calculations until 1986 when the more complex Timber Supply Analysis approach was used.

3.21 WP #1: 1962-1965 AAC 1 243 000 m³

The first AAC was calculated using an incomplete inventory compiled to Rough Utilization Standards.

3.22 WP #2: 1966-1967 AAC 2 039 000 m³

- The AAC increase was due to :
 - ↳ Completion of a new inventory compiled to Intermediate Utilization Standards.
 - ↳ Increased area of timber classed as accessible and loggable.
 - ↳ Addition of 2 245 ha of forest land.
 - ↳ Large area of NSR found to be stocked during the inventory.
- Several precautionary factors were introduced to limit the increase:
 - ↳ All stands with less than 25 Mfbm/acre and all C or Cy stands in Blocks VI and VII with <30 Mfbm/acre and of mostly pulp grades were excluded as possibly not economically loggable.
 - ↳ An extra decay allowance was made to more closely conform to MoF factors.
 - ↳ All dead usable volume except C and Cy was excluded.
 - ↳ An allowance was made for incomplete recovery.

3.221 WP #2 Amended: 1967-1970 AAC 2 860 000 m³

- The AAC increase was due to:
 - ↳ Recompiling the inventory to Close Utilization standards (inclusive of waste and breakage).
 - ↳ Eliminating extra decay allowance.
 - ↳ The AAC increase was offset by adoption of residue measurement and charging of residue to AAC in cut control reports.
 - ↳ Finding large areas previously classed as NSR to be reforested.
- The increase was partially offset by:
 - ↳ Increased volume of deductions with change to CU standards for stands and dead volumes removed previously.

3.23 WP #3: 1971-1975 AAC 3 540 000 m³

- The AAC increased due to:
 - ↳ Recompiling the inventory using MoF 1969 loss factors and height to diameter curves.
 - ↳ Reducing criteria for economic accessibility to <7.1 Ccf/acre in Blocks I-V and to <8.1 Ccf/acre in Blocks VI & VII.
 - ↳ Reducing average rotation age from 90 to 80 years– based on best current information on culmination ages.
 - ↳ Using newly compiled MB yield tables based on MB permanent sample plots.

3.24 WP #4: 1976-1980 AAC 3 339 000 m³

- The AAC decreased 201 000 m³ due to:
 - ↳ Reduction to mature inventory due to harvesting.
 - ↳ Exclusion of sensitive sites.
 - ↳ Allowance of 6.5% for breakage instead of adding measured breakage as residue.
- The decrease was partially offset by:
 - ↳ An increase to the remaining mature inventory due to use of new MB loss factors.
 - ↳ Reclassification of some uneconomic areas as economic based on experience and new technology.
 - ↳ Increased area of new forest.

3.25 WP #5: 1981-1986 AAC 3 339 000 m³

- The calculated AAC of 3 418 000 m³ was reduced by the Chief Forester to the WP #4 level. The proposed increase was the result of:
 - ↳ Reduction of average rotation age from 82.5 years to 75.8 years following recompilation of the MB yield tables.
 - ↳ Reducing the volume of dead timber deducted from the mature timber inventory.

- The calculated increase was partially offset by:
 - ↳ Continued reduction of the mature timber inventory.
 - ↳ Land withdrawals, notably Schoen Lake Park.
 - ↳ Marginal increase in volumes excluded as economically unrecoverable as a result of the switch to metric measure and a change in the stand criteria.
 - ↳ A smaller reduction for sensitive site withdrawals as a result of having collected more ground verified data to replace previous estimates.

3.26 MWP #6: 1987..... AAC 3 339 000 m³

For the first time the AAC, though unchanged from the previous plan, was selected following a Timber Supply Analysis rather than an Area-Volume Allotment Check.

3.3 Record for TFL # 39 after the Addition of TFL #7 in 1988

3.31 MWP #6 Amendment #1: 1988-1994 AAC 3 818 000 m³

- The AAC increase was due to:
 - ↳ The merging of TFLs 7 and 39.

4.0 HARVESTING AND CUTTING BALANCES

In the early operation of the TFL, harvesting was concentrated on the Blocks already developed and no attempt was made to harvest an AAC from each Block. The first attempt to balance actual harvest to AAC contribution by Block was made in MP #5 when the contribution to AAC by each Block was calculated and for Blocks II, IV and VI, a five-year harvest was projected in relation to the contribution of each Block. That was done in the interests of the stability of communities adjacent to these Blocks.

In MP #6, a harvest schedule was determined for the landbase in each of Blocks II, IV, and VI independently of the rest of the TFL and a commitment was made to harvest in each of these Blocks accordingly.

Tables VIII-2 and VIII-3 following compare the approved AAC with the actual volumes cut for former TFL #7 between 1951 and 1986 and for TFL #39 between 1962 and 1993. Table VIII-3a records SBFEP activity.

**TABLE VIII-2. Comparison of Approved and Actual Harvest for TFL #7
(000 m³)**

WP No.	Cutting Balance	Year	Approved Cut			Actual Cut					Cumulative Cutting Balance			Overall Cumul %
			Thinning	Mature	Total	Thinning	Mature	Residue	Total	Percent	AAC	Actual	Percent	
I	1	1951	-	283.2	283.2	-	244.3	-	244.3	86.2	283.2	244.3	86.2	86.2
		1952	-	283.2	283.2	-	193.8	-	193.8	68.4	566.4	438.1	77.3	77.3
		1953	-	283.2	283.2	-	208.9	-	208.9	73.7	849.6	647.0	76.1	76.1
		1954	-	283.2	283.2	-	285.4	-	285.4	100.8	1 132.8	932.4	82.3	82.3
		1955	-	283.2	283.2	-	264.7	-	264.7	93.5	1 416.0	1 197.1	84.5	84.5
II	2	1956	-	283.2	283.2	-	203.5	-	203.5	71.8	283.2	203.5	71.8	82.4
		1957	-	283.2	283.2	-	206.6	-	206.6	72.9	566.4	410.1	72.4	81.0
		1958	-	283.2	283.2	-	147.1	-	147.1	51.9	849.6	557.2	65.5	77.4
		1959	-	283.2	283.2	-	315.7	-	315.7	111.5	1 132.8	872.9	77.0	81.2
		1960	-	283.2	283.2	-	295.1	-	295.1	104.2	1 416.0	1 168.0	82.5	83.5
III	3	1961	-	283.2	283.2	-	281.0	-	281.0	99.2	283.2	281.0	99.2	83.2
		1962	-	345.5	345.5	-	423.6	-	423.6	122.6	628.7	704.6	112.0	87.1
		1963	-	345.5	345.5	-	375.6	-	375.6	108.7	974.2	1 080.2	110.9	89.0
		1964	-	345.5	345.5	-	309.1	-	309.1	89.5	1 319.7	1 389.3	105.3	89.0
		1965	-	345.5	345.5	-	366.6	-	366.6	106.1	1 665.2	1 755.9	105.4	90.3
		1966	-	345.5	345.5	-	379.9	-	379.9	109.9	2 010.7	2 135.8	106.2	91.7
IV	4	1967	-	443.2	443.2	-	423.9	110.5	534.4	420.6	443.2	534.4	120.6	94.1
		1968	-	443.2	443.2	-	358.8	41.0	399.8	90.2	886.4	934.2	105.4	96.8
		1969	-	443.2	443.2	-	422.6	42.4	465.0	104.9	1 329.6	1 399.2	105.2	94.6
		1970	-	443.2	443.2	-	370.8	21.2	392.0	88.4	1 772.8	1 791.2	101.0	94.2
		1971	-	443.2	443.2	-	271.1	57.3	328.4	74.0	2 216.0	2 119.6	95.6	92.9
V	5	1972	-	508.3	508.3	-	211.8	41.7	253.5	49.9	508.3	253.5	49.9	90.1
		1973	-	508.3	508.3	-	416.9	43.6	460.6	90.6	1 016.6	714.1	70.3	90.1
		1974	-	508.3	508.3	-	507.2	95.8	603.0	118.6	1 524.8	1 317.1	86.4	91.8
		1975	-	508.3	508.3	-	326.8	54.1	380.9	74.9	2 033.1	1 698.0	83.5	90.8
		1976	-	508.3	508.3	-	595.5	102.0	697.5	137.2	2 541.4	2 395.5	94.3	93.3
VI	6	1977	-	496.4	496.4	-	610.8	58.7	669.6	134.9	496.4	669.6	134.9	95.3
		1978	-	496.4	496.4	-	483.5	40.3	523.8	105.5	992.8	1 193.4	120.2	95.8
		1979	-	496.4	496.4	-	527.9	39.2	567.2	114.3	1 489.2	1 760.6	118.2	96.6
		1980	-	496.4	496.4	.7	346.1	38.9	386.1	77.8	1 985.6	2 146.7	108.1	95.8
		1981	-	496.4	496.4	-	271.7	21.9	293.3	59.0	2 482.0	2 440.0	98.0	95.0
VII	7	1982	-	496.4	496.4	-	456.0	27.5	483.5	97	496.4	483.5	97.0	95.0
		1983	-	520.4	520.4	-	594.6	54.3	648.9	125.0	1 016.8	1 132.4	111.0	96.0
		1984	-	529.1	529.1	-	613.9	46.5	660.4	125.0	1 549.9	1 792.8	116.0	97.0
		1985	-	528.0	528.0	-	351.8	31.5	383.3	73.0	2 073.9	2 176.1	105.0	96.0
		1986	-	520.4	520.4	-	278.7	27.8	306.6	59.0	2 594.3	2 482.7	96.0	96.0
Cumulative Cut		1951-86									14 676.4	13 938.7		95.0

Note: Although TFL #7 was officially amalgamated with TFL 39, December 31, 1987, the cut for 1987 is included in TFL 39 for cutting balance purposes.

- 1) Includes 8 700 m³ of additional AAC for rehabilitation of alder stands.
- 2) Includes 7 600 m³ of additional AAC for rehabilitation of alder stands.

TABLE VIII-3. Comparison of Approved and Actual Harvests for TFL #39 (000s m³)

WP No.	Cutting Balance	Year	Approved Cut			Thinning	Actual Cut				Cumulative Cutting Balance			Overall Cumul %	
			Thinning	Mature	Total		Thinning	Mature	Residue	Total	Percent	AAC	Actual		Percent
I	1	1962	-	1 243.5	1 243.5	-	-	958.1	-	958.1	77	1 243.5	958.1	77	77
		1963	-	1 243.5	1 243.5	-	-	1 310.6	-	1 310.6	105	2 486.9	2 268.7	91	91
		1964	28.3	1 243.5	1 271.8	26.4	-	1 371.2	-	1 397.7	110	3 758.7	3 666.3	98	98
		1965	56.6	1 243.5	1 300.0	60.7	-	1 457.0	-	1 517.7	117	5 058.8	5 184.1	102	102
II	2	1966	56.6	2 067.1	2 123.8	68.0	-	1 818.9	-	1 886.9	89	7 182.6	7 071.0	98	98
		1966										2 123.8	1 886.9	89	
Amend		1967 ⁽¹⁾	56.6	2 860.0	2 916.7	41.8	-	2 367.3	386.9	2 796.1	96	5 040.5	4 683.0	93	98
		1968	62.3	2 860.0	2 922.3	62.4	-	2 467.9	226.4	2 756.6	94	7 962.8	7 439.6	93	97
		1969	68.0	2 860.0	2 928.0	47.4	-	2 511.9	260.2	2 819.4	96	10 890.8	10 259.0	94	97
		1970	48.1	2 860.0	2 908.2	40.6	-	2 650.8	279.1	2 970.5	102	13 799.0	13 229.5	96	98
	3 ⁽²⁾	1967									2 916.7	2 796.1	96		
		1968									5 839.0	5 552.7	95		
		1969									8 767.0	8 372.1	96		
		1970									11 675.2	11 243.6	97		
III	4	1971	36.8	3 539.6	3 576.4	32.2	-	2 533.4	474.6	3 040.3	85	15 251.6	14 382.9	94	96
		1972	31.1	3 539.6	3 570.8	10.5	-	2 087.3	582.6	2 680.4	75	3 570.8	2 680.4	75	93
		1973	25.5	3 539.6	3 565.1	39.3	-	2 891.5	307.4	3 238.2	91	7 135.9	5 918.6	83	93
		1974	39.6	3 539.6	3 579.3	23.6	-	2 917.9 ⁽³⁾	443.8	3 385.1	95	10 715.2	9 303.7	87	93
		1975	39.6	3 539.6	3 579.3	20.6	-	2 918.3	486.1	3 425.0 ⁽³⁾	96	14 294.4	12 728.7	89	93
		1976 ⁽⁴⁾	-	3 338.6	3 338.6	12.7	-	3 467.6	260.0	3 740.3	112	17 633.0	16 469.0	93	95
IV	5	1977	-	3 338.6	3 338.6	-	-	2 696.9	270.6	2 967.5	89	3 338.6	2 967.5	89	94
		1978	-	3 338.6	3 338.6	-	-	3 421.9	394.7	3 816.6	114	6 677.2	6 784.1	102	96
		1979	-	3 338.6	3 338.6	0.8	-	3 048.4	326.2	3 375.4	101	10 015.8	10 159.5	101	96
		1980	-	3 338.6	3 338.6	-	-	2 964.8	329.9	3 294.7	95	13 354.4	13 454.2	101	96
V	6	1981	-	3 338.9	3 338.9	3.0	-	1 968.6	167.1	2 138.9	64	3 338.9	2 138.9	64	94
		1982	-	3 339.0	3 339.0	-	-	2 874.2 ⁽⁵⁾	136.6	3 010.8 ⁽⁵⁾	90	6 677.9	5 149.7	77	94
		1983	-	3 339.0	3 339.0	-	-	2 522.5	393.5	2 916.0	87	10 016.9	8 065.7	81	94
		1984	-	3 339.0	3 339.0	-	-	3 072.6	393.5	3 466.1	104	13 356.0	11 531.8	86	94
		1985	-	3 339.0	3 339.0	-	-	3 023.3	465.5	3 488.7	104	16 694.4	15 020.5	90	95
		1986	-	3 339.0	3 339.0	-	-	2 207.9	392.9	2 600.9	78	3 339.0	2 600.9	78	93
VI		1987 ⁽⁶⁾	-	3 859.4	3 859.4	-	-	3 733.3	439.2	4 172.5	108	7 198.4	6 773.4	94	95
		1988	-	3 715.8	3 715.8	-	-	3 319.2	328.4	3 647.6	98	10 914.2	10 421.0	95	95
Amend		1989	-	3 632.2	3 632.2	-	-	3 762.4	279.2	4 041.8	111	14 546.4	14 462.6	99	96
		1990	-	3 632.2	3 632.2	-	-	3 319.9	-(2-7)	3 319.9	91	18 178.6	17 782.5	98	95
Amend	8	1991	-	3 632.2	3 632.8	-	-	3 329.6	52.2	3 381.8	93	3 632.8	3 381.8	93	95
		1992	-	3 655.8	3 655.8	-	-	3 304.7	495.9	3 800.6	104	7 288.0	7 182.4	99	96
		1993	-	3 655.8	3 655.8	-	-	3 154.6	284.7	3 439.3	94	10 943.8	10 676.2	97	96
Cumulative Cut: 1962–1993											99 238.4	94 856.3			

(1) AAC revised to reflect Close Utilization Standards

(2) As the actual cut for the period 1967-1971 was within the allowable ten percent limit, a new cutting balance was adopted in 1972.

(3) Includes a credit of 957 000 m³ (338 000 Ccf) applied to the production on the basis that it was equivalent to production lost during the extended strike during 1975.

(4) Starting in 1976, AAC and Residue was based on Close Utilization volumes less decay and breakage. Prior to 1976, AAC and Residue included an allowance for decay only.

(5) Includes a credit of 1 312 847 to allow for low demand during recession.

(6) TFL 7 added.

(7) Residue rules changed– 1990 residue changed to 1991.

NB: Excludes Small Business Forest Enterprise Program and 1-mile limit cut from old TFL #7 for years 1987 to 1991 , inclusive when terminated.

TABLE VIII-3a. Record of SBFEP Cut
(000 m³)

Year	AAC	Cut	Residue	Total Cut
1988	81.1	-	-	-
1989	162.2	-	-	-
1990	162.2	-	-	-
1991	162.2	84.1	-	84.1
1992	162.2	224.3	-	224.3
1993	162.2	231.1	5.5	236.6
TOTAL	892.1	539.5	5.5	545.0

5.0 SILVICULTURAL ACCOMPLISHMENTS

The silvicultural work has been driven by:

- Firstly, the contractual agreement, especially the commitment to reforest all "backlog NSR",
- Secondly, the MB Intensive Forestry Programme (1962), and
- Thirdly, the Designed Forest System (1980)
- As well as various legislated changes to the industry's responsibilities, e.g., the silviculture regulations.

The 24 998 ha classed as backlog NSR in 1961 were all restocked by 1971. Reforestation by natural regeneration has always exceeded the area planted and averages about 65% since award of the Licence.

Spacing projects started in 1963, well in advance of other operators. Considerable commercial thinning was carried out between 1963 and 1975 as part of the Intensive Forestry Program in the accessible areas of older new forest in Block I.

5.1 Summary of Denudation and Regeneration

The area harvested since the award of the two licences plus the area of backlog NSR is 176 600 ha. Of this total, 8 437 ha is classed as rock, swamp, roads and other non-productive area, 61 585 ha are successfully planted and 103 032 ha have restocked naturally. At December 31, 1993, the area of NSR was 14 104 ha, equivalent to 2.9 years of logging— of this, 137 ha violated MB policy. Tables VIII-4 and VIII-5 below provide additional detail.

TABLE VIII-4. Record of Areas Denuded, Restocking Failures & Restocked (hectares)

	Backlog⁽⁵⁾	WP #1-4 1962-80	WP #5 1981-87	WP #6 1988-1993	TOTALS
Area Denuded ⁽¹⁾	37 370	77 905	31 946	29 379	176 600
Adjustments ⁽²⁾	(269)	(626)	591	447	143
Roads, Rock, etc. ⁽³⁾	(592)	(5 074)	(1 254)	(1 517)	(8 437)
Regen Failures ⁽⁴⁾	6	8 015	1 994	400	10 415
Net area to be reforested	36 515	80 220	33 277	28 709	178 721
Planted	6 806	35 131	11 368	8 280	61 585
Natural	29 694	45 089	21 861	6 388	103 032
Remaining NSR	15	0	48	14 041	14 104

(1) Areas logged, burned or otherwise denuded.

(2) Mapping errors, addition of lands, etc.

(3) Previously nonproductive areas– rock, swamps, slides, etc.– plus area taken up by roads, gravel pits, etc.

(4) Areas of plantation or natural restocking later found to have died and need reforestation again.

(5) Includes area of TFL 39 not stocked when licence awarded plus areas of old TFL #7 logged before 1951 and between 1951–1962.

TABLE VIII-5. Compliance with MB Restocking Policy

	I	II	III	IV	V	VI	VII	TOTAL
Av Ann Denudation 1989-1993	705	1 638	38	470	135	1 574	283	4 842 ha
NSR 93	2 308	3 940	15	895	247	6 216	485	14 104 ha
NSR Outside Policy ^o	61	28	0	4	3	41	0	137 ha
93 NSR as years of Denudation	3.3	2.4	0.4	1.9	1.8	3.9	1.7	2.9 years

^oOn sites scheduled for planting target is <3 years and for natural regeneration <5 years since start of felling.

5.2 Summary of Silvicultural Achievements

MB has always carried out an extensive array of projects designed to improve the stocking of the new forests and to maintain or improve their growth and yield.

Area summaries of all silvicultural achievements are provided in Table VIII-6 and VIII-7 (ex TFL #7) following.

5.21 Site Preparation and Reforestation

To aid or improve reforestation, sites have been prepared using prescribed and controlled fire, machine scarification, weed control– mechanical and chemical.

Planting has occurred where natural regeneration has not been successful within the MB waiting period policy, or on high sites and other areas where natural regeneration was considered unlikely or would be of an unwanted species.

5.22 Stand Tending Treatments

Once the new crop is established, tending may be necessary to protect the new trees from weeds or to thin out overly dense stands of natural regeneration.

Subsequent treatments are undertaken to improve the value of the new crop by pruning, and to increase yield and/or quality through thinning and/or fertilization. A considerable area of new forest over 80 years old has been thinned, primarily in the 1960s; only small areas have been fertilized or pruned.

Stand conversion, from alders to conifer, and rehabilitation of poorly stocked, older conifer stands resulted in harvest of 175 700 m³ and restocking of 457 ha. Thinnings yielded 492 700 m³ from 2722 ha. Area and volumes are shown in Table VIII-8 and VIII-9.

TABLE VIII-6. Summary of Silvicultural Treatments on TFL #39, 1962-1993
(hectares)**TOTAL TFL**

PROJECT	WP #1 1962-65	WP #2 1966-70	WP #3 1971-75	WP #4 1976-80	WP #5 1981-87	WP #6 1988-93	TOTAL
Site Preparation ⁽¹⁾	29	56	4	52	299	641	1 081
Site Rehabilitation ⁽²⁾	1	27	26	70	6	-	130
Reforestation Burns ⁽³⁾	635	33	-	71	2 237	528	3 504
Seed Tree Control	1 335	3 751	2 501	178	2 750	1 054	11 569
Sanitation Felling ⁽⁴⁾	-	-	218	292	759	5 687	6 956
Natural Regen	22 131	9 088	9 295	12 581	19 165	16 380	88 640
Planting	3 319	6 920	7 634	6 125	9 081	14 291	47 370
Fill Planting	73	217	472	519	721	2 645	4 647
Weeding ⁽⁵⁾	1 172	1 103	977	1 552	6 674	5 861	17 339
Spacing	1 445	2 206	963	1 148	3 233	6 446	15 441
Pruning	-	-	-	-	62	70	132
Fertilizing	-	28	-	-	957	979	1 964

BLOCK I— POWELL RIVER

Seed Tree Control	23	252	367	-	-	1	643
Site Preparation ⁽¹⁾	29	42	-	-	2	-	73
Site Rehabilitation ⁽²⁾	-	-	-	-	6	-	6
Reforestation Burns ⁽³⁾	64	-	-	-	1 036	446	1 546
Sanitation Felling ⁽⁴⁾	-	-	55	-	-	-	55
Planting	1 467	2 543	1 750	2 170	2 317	2 223	12 470
Fill Planting	73	93	96	19	213	502	996
Weeding ⁽⁵⁾	269	413	584	281	992	1 168	3 707
Spacing	991	1 671	773	241	90	415	4 181
Pruning	-	-	-	-	-	18	18
Fertilizing	-	-	-	-	-	185	185

TABLE VIII-6 Summary of Silvicultural Treatments on TFL 39, 1962-1993 continued**BLOCK II— ADAM RIVER**

PROJECT	WP #1 1962-65	WP #2 1966-70	WP #3 1971-75	WP #4 1976-80	WP #5 1981-87	WP #6 1988-93	TOTAL
Seed Tree Control	386	1 589	1 587	103	181	309	4 155
Site Preparation ⁽¹⁾	-	-	4	20	74	183	281
Site Rehabilitation ⁽²⁾	-	-	-	3	-	-	3
Reforestation Burns ⁽³⁾	29	-	-	71	1 021	-	1 121
Sanitation Felling	-	-	153	275	170	4 709	5 307
Planting	304	1 894	3 352	1 742	2 587	4 881	14 760
Fill Planting	-	100	317	423	344	1 719	2 903
Weeding ⁽⁵⁾	-	25	18	511	1 222	1 767	3 543
Spacing	36	6	87	199	1 208	3 142	4 678
Pruning	-	-	-	-	13	43	56
Fertilizing	-	-	-	-	50	393	443

BLOCK III— COAST ISLANDS

Seed Tree Control	-	-	12	-	-	-	12
Site Preparation ⁽¹⁾	-	-	-	-	4	3	7
Planting	45	-	4	26	-	393	468
Fill Planting	-	-	-	-	-	80	80
Weeding ⁽⁵⁾	-	-	-	-	351	162	513
Spacing	387	70	-	-	-	-	457
Pruning	-	-	-	-	-	-	-
Fertilizing	-	-	-	-	-	314	314

TABLE VIII-6 Summary of Silvicultural Treatments on TFL 39, 1962-1993 continued

BLOCK IV— PORT HARDY

PROJECT	WP #1 1962-65	WP #2 1966-70	WP #3 1971-75	WP #4 1976-80	WP #5 1981-87	WP #6 1988-93	TOTAL
Seed Tree Control	16	591	166	25	38	12	848
Site Preparation ⁽¹⁾	-	-	-	32	158	50	240
Site Rehabilitation ⁽²⁾	-	-	20	-	-	-	20
Reforestation Burns ⁽³⁾	18	-	-	-	403	-	421
Sanitation Felling	-	-	10	17	9	-	36
Planting	717	1 722	1 974	1 250	1 619	1 854	9 136
Fill Planting	-	-	52	70	7	43	165
Weeding ⁽⁵⁾	-	72	124	260	506	586	1 543
Spacing	19	429	70	210	889	434	2 051
Pruning	-	-	-	-	49	9	58
Fertilizing	-	-	-	-	-	61	61

BLOCK V— PHILLIPS RIVER

PROJECT	WP #1 1962-65	WP #2 1966-70	WP #3 1971-75	WP #4 1976-80	WP #5 1981-87	WP #6 1988-93	TOTAL
Seed Tree Control	-	-	-	-	-	-	-
Site Preparation ⁽¹⁾	-	-	-	-	-	-	-
Site Rehabilitation ⁽²⁾	-	-	-	-	-	-	-
Reforestation Burns ⁽³⁾	-	-	-	-	309	82	391
Planting	-	-	175	525	991	945	2 636
Fill Planting	-	-	-	-	35	88	123
Weeding ⁽⁵⁾	-	-	-	-	674	699	1 373
Spacing	-	-	-	-	-	152	152
Pruning	-	-	-	-	-	-	-
Fertilizing	-	-	-	-	-	-	-

TABLE VIII-6. Summary of Silvicultural Treatments TFL 39, 1962-1993 continued**BLOCK VI— QUEEN CHARLOTTE ISLANDS**

PROJECT	WP #1 1962-65	WP #2 1966-70	WP #3 1971-75	WP #4 1976-80	WP #5 1981-87	WP #6 1988-93	TOTAL
Seed Tree Control	910	1 319	369	50	2 551	783	5 982
Site Preparation ⁽¹⁾	-	14	-	-	-	378	392
Site Rehabilitation ⁽²⁾	1	27	6	67	-	-	101
Reforestation Burns ⁽³⁾	524	33	-	-	50	-	607
Sanitation Felling ⁽⁴⁾	-	-	-	-	580	978	1 558
Planting	786	761	379	412	1 567	3 363	7 268
Fill Planting	-	25	6	7	129	208	375
Weeding ⁽⁵⁾	913	593	251	440	2 989	1 336	6 522
Spacing	12	30	33	498	1 046	2 303	3 922

BLOCK VII— NAMU

PROJECT	WP #1 1962-65	WP #2 1966-70	WP #3 1971-75	WP #4 1976-80	WP #5 1981-87	WP #6 1988-93	TOTAL
Seed Tree Control	-	-	-	-	-	-	-
Site Preparation ⁽¹⁾	-	-	-	-	-	27	27
Site Rehabilitation ⁽²⁾	-	-	-	-	-	-	-
Reforestation Burns ⁽³⁾	-	-	-	-	-	-	-
Planting	-	-	-	-	-	632	632
Fill Planting	-	-	-	-	-	5	5
Pruning	-	-	-	-	-	4	4

(1) Scarification and brush control.

(2) Drainage improvement and slope stabilization.

(3) Broadcast burns. Note: Prior to WP #5, broadcast burns were classified as hazard abatement.

(4) Felling of damaged and diseased saplings following logging.

(5) Release of conifer from alder, maple, salmonberry and other weeds.

TABLE VIII-7. Summary of Silvicultural Treatments on TFL #7 1951–1987 (hectares)

PROJECT	WP #1 1951-55	WP #2 1956-60	WP #3 1961-66	WP #4 1967-71	WP #5 1972-76	WP #6 1977-82	WP #7 1983-87	TOTAL
Seed Tree Control	0	0	911	471	974	615	15	2 986
Site Preparation	0	0	0	0	10	132	76	218
Site Rehabilitation	0	0	0	0	43	0	0	43
Reforestation Burns	0	0	0	0	0	515	337	852
Brushing and Weeding	0	0	0	0	0	0	320	320
Sanitation Felling	0	0	0	0	362	205	151	718
Planting	2 604	678	1 709	3 051	1 770	2 880	1 380	14 072
Fill Planting	0	0	43	53	206	97	132	531
Natural Regeneration	1 234	3 327	3 038	1 437	1 369	1 608	2 220	14 233
Release	0	0	310	488	484	726	146	2 154
Spacing	0	0	1 065	1 970	916	565	266	4 782

TABLE VIII-8. TFL #39 Volume Produced from Thinning and Stand Conversion (000 m³)

TOTAL TFL #39

Project	WP #1 1962-65		WP #2 1966-70		WP #3 1971-75		WP #4 1976-80		WP #5 1981-87		WP #6 1988-93		TOTAL	
	Vol	Ha	Vol	Ha	Vol	Ha	Vol	Ha	Vol	Ha	Vol	Ha	Vol	Ha
Hardwoods	0	0	0	0	4	22	0	0	49	107	97	225	150	354
Rehabilitation	0	0	0	0	9	17	0	0	6	21	0	0	15	38
Thinning	87	656	259	1 403	126	573	17	69	3	15	0	0	492	2 716

BLOCK I— POWELL RIVER

Project	WP #1 1962-65		WP #2 1966-70		WP #3 1971-75		WP #4 1976-80		WP #5 1981-87		WP #6 1988-93		TOTAL	
	Vol	Ha	Vol	Ha	Vol	Ha	Vol	Ha	Vol	Ha	Vol	Ha	Vol	Ha
Hardwoods	0	0	0	0	4	22	0	0	49	107	95	213		
Rehabilitation	0	0	0	0	9	17	0	0	6	21	0	0	15	38
Thinning	87	656	250	1 386	115	543	0	0	0	0	0	0	452	2 585

BLOCK II— ADAM RIVER

Project	WP #1 1962-65		WP #2 1966-70		WP #3 1971-75		WP #4 1976-80		WP #5 1981-87		WP #6 1988-93		TOTAL		
	Vol	Ha	Vol	Ha	Vol	Ha	Vol	Ha	Vol	Ha	Vol	Ha	Vol	Ha	
Hardwoods	00	0	0	0	0	0	0	0	0	0	0	2	12	2	12
Rehabilitation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thinning	0	0	9	17	9	30	17	69	3	15	0	0	38	131	

**Conversion of hardwood or significantly understocked conifer stands.

TABLE VIII-9. Volume Produced from Thinning and Stand Conversion TFL #7
(000 m³)

Project	WP #1 1951-55		WP #2 1956-60		WP #3 1961-66		WP #4 1967-71		WP #5 1972-76		WP #6 1977-82		WP #7 1983-87		TOTAL	
	Vol	Ha	Vol	Ha	Vol	Ha	Vol	Ha	Vol	Ha	Vol	Ha	Vol	Ha	Vol	Ha
Alder	0	0	0	0	0	0	0	0	0	0	0	0	10.4	48	10.4	48
Rehabilitation	0	0	0	0	0	0	0	0	0	0	0.3	17	0	0	0.3	17
Thinning	0	0	0	0	0	0	0	0	0	0	0.7	6	0	0	0.7	6

6.0 HISTORY OF FOREST PROTECTION

6.1 Fire History

Since the award of the Licence, there have been no large fires. In Tables VIII-10 and VIII-11 is a record by cause of fires in old TFL #7 and in TFL #39 before and after addition of TFL #7. Despite an average of 14 fires per year, the majority of fires were <1 ha and few exceeded 100 ha.

The largest fire was in 1965 when 629 hectares burned on Mt. Kusam, near Kelsey Bay, after a hunter dropped a cigarette.

TABLE VIII-10. TFL #39 Summary of Fire History 1962–1993

WP No.	Period	Number of Fires					Total	Ha Burned
		Industrial	Public	Lightning	Slash Escapes	Other		
1	1962-65	15	2	15	11	-	43	1 235
2	1966-70	24	5	10	41	12	92	723
3	1971-75	26	20	23	11	4	84	822
4	1976-80	20	3	10	6	6	45	387
5	1981-87	14	14	18	7	0	53	261
6	1987-93	33	7	15	2	-	57	382
TOTAL		132	51	91	78	22	374	3 810

TABLE VIII-11. TFL #7 Summary of Fire History 1951–1987

WP No.	Period	Number of Fires					Total	Ha Burned
		Industrial	Public	Lightning	Slash Escapes	Other		
1	1951-55	10	1	1	-	-	12	53
2	1956-60	4	8	3	1	-	16	21
3	1961-66	7	8	4	17	1	37	1 237
4	1967-71	4	3	5	8	-	20	113
5	1972-76	8	3	1	3	-	15	23
6	1977-82	9	1	3	4	-	17	11
7	1983-87	6	2	2	-	-	10	-
TOTAL		48	26	19	33	1	127	1 458

6.2 History of Insect Presence and Control

Insect epidemics have played a major role historically in changes to the forest landscapes and are known to have resulted in the death of significant volumes of old growth trees in the Adam River, Port McNeill and Queen Charlotte Islands Blocks in this century.

The blackheaded budworm (*Acleris variana*) has been the most damaging insect. Since 1940, epidemics have caused death and growth loss in the Adam River watershed (1944-47), Port Hardy (1952-57), Alliford Bay, QCI (1955-60), Raging and Benson River watersheds, Port McNeill (1969-73) and Louise Island and Massett Inlet, QCI (mid 1980s).

Attempts were made to control the budworm only when it seemed probable that large scale mortality would occur. In 1957, DDT was sprayed on northern Vancouver Island in a cooperative control program involving other companies, the Ministry of Forests and the Canadian Forestry Service. A similar, smaller scale program was carried out at Alliford Bay in 1960, including a small scale, first time trial of the natural disease agent *Bacillus thuringensis*, a bacterium. In 1973, fenitrothion was the recommended insecticide when budworms were sprayed near Port Alice and Benson Lake.

In all projects, scientists attempted to measure the success of the sprays and their impact on other life forms. Conclusions reached at the time were that impacts were generally small and not likely to have long lasting effects.

Small scale infestations of other insects which have caused death and growth loss were as follows:

- The hemlock sawfly (*Neodiprion spp.*) has twice reached significant proportions in the Adam River Block. In 1962, some 2400 ha were infected and in 1977-80 some 500 ha were quite severely defoliated. In both cases, natural declines took place. Dead and dying trees were salvaged by Kelsey Bay Division.
- In 1963, the green striped forest looper (*Melanophia imitata*) severely defoliated a very large area of immature forest on eastern Graham Island resulting in three years of much reduced growth. The population collapsed in 1965. A small area was experimentally sprayed with Phosphamidon– a fast decaying insecticide– in cooperation with the MoF.
- In 1962, the seedling weevil (*Sterimnius carinatus*) was discovered girdling newly planted seedlings and necessitating replanting in some cases. Research has since shown that the attacks can be minimized by delaying planting a year after harvest.

The pine weevil (*Pissodes strobus*) has increased in numbers in Block IV with the increase in young and susceptible Sitka spruce. Further planting of spruce is being limited to sites believed to be ecologically unsuited to the weevil.

The ambrosia beetles, primarily *Trypodendron lineatum*, have caused significant degrade to high value logs in the past. Initially, attempts were made to limit damage by spraying booms of susceptible logs in the 1960s and by trying to limit the inventory of the most susceptible logs and by keeping logs wet using sprinkler systems. As a result of research initiated at Simon Fraser

University by Dr. Borden and supported by MB, pheromones now provide an additional assist and with the continuing emphasis on inventory control and use of trap bundles, losses are greatly reduced.

6.3 History of Disease Presence and Control

The most widespread and damaging disease is hemlock mistletoe (*Arceuthobium campylopodum f. tsugensis*); actually a parasitic plant, which can cause death when a tree breaks at an infection point on the main trunk, as well as degrading infected logs and reducing growth rates.

Attempts are made to limit occurrence in the new forest by slashing infected saplings left after logging and, in some cases, burning.

White pine presence has been greatly reduced by the exotic blister rust fungus (*Cronartium ribicola*) and MB does not intend to plant white pine for this reason. To encourage natural selection of resistant strains, any white pine present are left when stands are being spaced.

Laminated root rot (*Phellinus weirii*) is endemic in many Douglas-fir dominated stands and can cause significant losses.

A number of other diseases present may cause significant losses in the future. Potentially serious are *Heterobasidion annosum*, various *Fomes* spp, *Armillaria ostoyae* and *Ceratocystis wagnerii*

7.0 HISTORY OF FOREST RESEARCH

MB has had a significant forest research program since 1954 when pioneering work was commenced on forest nutrition and reforestation problems. This was subsequently extended to include a major program of growth and yield measurement and analysis, as well as projects in spacing and thinning, thinning equipment trials, forest ecology and efficacy of herbicides. Further program expansion took place in the 1970s when biologists, soils specialists and other post-graduate specialist staff were added. This work has all been detailed in the annual and other reports. In latter years, the program has been trimmed in response to the economic recessions of the 80s and 90s.

Recently, greater emphasis has been placed on cooperative research with other agencies and on obtaining funding from Federal and Provincial sources.

Results of this research have been applied to many aspects of MB's forest management program. Some examples are:

- Production of genetically improved seed for five species which has been proven to have greater genetic diversity than the natural seed with which it was compared.

- Cone induction in seed orchards.
- Much improved quality of nursery stock in nearly every aspect of seedling culture– from sowing to storage and shipping.
- Physiological testing of seedlings for frost hardiness and root regeneration capacity.
- Improved matching of stocktype to field condition.
- Timing of planting for best results– especially in fall.
- Improvements in control of brush– mechanically and chemically.
- Changes in stocking standards in planting and spacing based on growth studies, silvical characteristics, economics and desired wood properties.
- Landslide rehabilitation and stabilization of road casting.
- Yield forecasting and AAC derivation.
- Modeling of cutting constraints for 20-year and development plans.

8.0 HISTORY OF OTHER RESOURCE CONSERVATION

8.1 Soil and Terrain Conservation Record

8.11 Mapping Sensitive Terrain

In 1993, MB completed sensitive terrain mapping for TFL 39. This involved identifying and characterizing naturally unstable terrain, terrain which has a moderate to high likelihood of an increase in landslide frequency following logging or road construction, and terrain which may be affected by snow avalanche activity.

Before 1993, mapping existed for the Queen Charlotte Islands, Eve River Division, parts of Namu, the Memekay Valley, and a few other areas. The completion of sensitive terrain mapping provides all the operating divisions with another tool for long-term forest management including:

- Route selection and preliminary evaluation of new forest roads.
- Preparing harvesting plans and preliminary evaluation of terrain characteristics.
- Estimating potential timber reserves which might be unavailable for harvesting because of unstable terrain.
- Planning for alternative harvesting or road construction methods, where appropriate, to reduce the potential for post-logging instability in sensitive terrain.
- Identifying types of terrain where special forest management strategies may be appropriate.

8.12 Terrain Stability Assessments

Completion of the sensitive terrain inventory freed staff for greater involvement in site specific assessments. All Es1 and Es2 receive a site specific assessment by a professional engineer or geoscientist before logging or roading commences. The assessor checks the possibility logging or roading will destabilize the soil and recommends setting boundary changes, road relocation or

abandonment. The assessor recommends mitigative measures, special design criteria, special management techniques and construction constraints as appropriate to each site.

8.13 Road Deactivation

Recognition of the major role roads have had in site and habitat degradation has led to a program of deactivation of abandoned and inactive roads.

In 1993, MB began a planned deactivation program starting with the worst, or highest priority, roads. This may involve many or all of:

- Removal of culverts and bridges,
- Restoration of drainage channels,
- Replacing sidecast soil on the roadbed, and
- Planting or hydroseeding trees, shrubs, herbs, and grass to bind soil.

8.2 Fish Conservation Record

8.21 Fishery Conservation Activities

MB has substantially met its commitment to train and certify woods workers in the revised BC Coastal Fishery-Forestry Guidelines. Over 2,000 workers have attended courses and are registered with the Forestry Continuing Education Network at Malaspina College.

MB has carried out watershed inventories since 1975 classifying streams according to three levels of fish use. In 1993, an upgrade to the Class A stream records was completed.

Assessment and Action Plans have been completed for areas logged since 1988. Most rehabilitation work needed has been done.

Staff have assisted MoELP or Federal Fisheries staff in enhancement projects at Port McNeill, the Tsitika River and in the rehabilitation of Haans and Sachs Creeks.

8.22 Highlights of Fishery Values Present

■ ***Block I Powell River***

There are no major fish rivers in this block. Powell and Lois Rivers are inaccessible to anadromous fish because of dams built early in the century. Large cutthroat trout are caught in Powell Lake. Kokanee occur in Lois Lake.

Escapement records for smaller watersheds show that the main salmon runs are coho and chum with some small runs of odd-year pinks.

■ ***Block II Adam River***

The Salmon, Eve, and Tsitika Rivers are major salmon producing watersheds. The estuaries of the Salmon, Adam and Tsitika Rivers provide significant rearing areas for juvenile salmonids.

The major species are coho, chum, and pink. Chinook rear in the Salmon and Eve Rivers. Steelhead, mostly winter run, also rear in these rivers.

Resident trout and Dolly Varden are common and sea run Dolly Varden occur in the Salmon and Tsitika estuaries.

Robson Bight has been designated The Michael Biggs Ecological Reserve for killer whales.

■ ***Block III Coast Islands***

No major fish streams occur.

■ ***Block IV Port Hardy***

The Marble and Cluxewe watersheds are major salmon producers as well as providing habitat for anadromous and resident trout. Numerous smaller streams also support salmon runs. Chinook and sockeye use the Marble River; coho, pink and chum are widespread.

■ ***Block V Phillips River***

The Phillips River watershed supports large runs of all five salmon species as well as anadromous and resident trout and Dolly Varden.

■ ***Block VI Queen Charlotte Islands***

This is a valuable fish producing area and is home to sockeye, coho, pink, Chinook, and chum salmon as well as resident and anadromous trout and Dolly Varden. The most significant rivers and streams are:

- ↳ Yakoun River - chinook and even year pinks.
- ↳ Mamin, Awun, and Ain Rivers plus Dinan, McLinton and Datlamen Creeks, all draining into Massett Inlet, support all salmon except chinook, as well as anadromous and resident trout and Dolly Varden.
- ↳ Haans, Sachs, Skedans, and Mathers Creeks and many smaller streams host primarily coho, chum, and pink salmon. Mathers Creek has a sockeye run. Anadromous and resident trout and Dolly Varden are also frequently found.

The rugged western part of Moresby Island also hosts significant runs of coho, pink and chum salmon.

■ ***Block VII Namu***

This block also has significant fish habitat, especially important are the estuaries of the Koeye and Nootum Rivers.

The Koeye is the major fish producer, but also important are Namu and Nootum Rivers and Cold and Doc Creeks. Sockeye rear in lakes on the Namu and Koeye; all other species, except chinook, are common, as are the trout and Dolly Varden.

8.3 Wildlife Conservation Record

The Licence area provides habitat for a wide range of birds and other animals. Information continues to be collected about their ranges and critical habits. As the information and knowledge base has grown so have the attempts to plan and manage to conserve wildlife. Progress to date is summarized by block.

■ ***Block I Powell River***

Rocky Mountain goat in high elevation habitats and black-tailed deer are normal residents. Roosevelt elk were transplanted into the Lois Lake area in spring 1994. Grizzly bears have been sighted and may be taking up residence in the Upper Powell and Daniel River watersheds. At present there appear to be no conflicts with logging.

■ ***Block II Adam River***

Black-tailed deer, Roosevelt elk and Vancouver Island wolf are the dominant wildlife species. Between 1975-80, wolf predation reduced deer populations drastically, but they appear relatively stable now, down from a high count of 20 per kilometre of road to 6 to 14 in the various drainages and still higher than the rest of the island.

Elk populations appear relatively stable with estimates of 280, 190, 130, and 70 animals in the Salmon, Adam, White, and Eve-Tsitika watersheds.

Although Vancouver Island marmots have been reported in the past, a May 1994 aerial survey with MoELP staff failed to find any major colonies and concluded suitable habitat was rare.

Moderate number of Marbled Murrelets were observed during surveys of the major watersheds in summer, 1991.

Bald eagle are common, but numbers are much lower than in Block III.

The major management issue is the identification and protection of critical habitat, especially winter and calving areas for elk. 6648 ha are reserved as critical habitat for deer and elk; management to promote early spring forage around these areas is important.

■ ***Block III Coast Islands***

Bald eagle populations are high in these coastal islands. Black-tailed deer and Vancouver Island wolf are present in dynamic balance on the islands.

■ ***Block IV Port Hardy***

As in Block II, black-tailed deer populations were decimated by wolf in the 1970s and at present are in dynamic balance. Roosevelt elk in the Benson River watershed number about 50 and appear stable.

An elk winter range of 422 ha has been protected. It also provides forest habitat for the Marbled Murrelet.

■ ***Block V***

Populations of Rocky Mountain goat and grizzly bear are significant. Habitat set asides (Ew1) total 68 and 852 hectares, respectively. Deer population is low.

■ ***Block VI Queen Charlotte Islands***

Sitka black-tailed deer (1900s) and Rocky Mountain elk (1920s) are introduced species.

The deer multiplied rapidly in the absence of predators, but are now partially contained by hunting. Research has shown the deer to have significant impact on growth of the new forest, especially on cedar. After ten years, caged trees were up to 3 m tall; uncaged trees were only 0.2 m to 0.3 m tall.

The elk are established in marshlands and low lying forest near Tlell. Population is fairly stable at 50 to 100; poaching is a problem. To date there appears to be no conflict with logging.

Beaver were also introduced, in 1950, as a source for pelts. They are now widespread and create significant problems by damming culverts and flooding forest land.

■ ***Block VII Namu***

Grizzly bear are well established in the Koeye and Nootum watersheds. Favoured habitats are the estuaries and riparian forest and sedge meadows in the upper valleys.

Habitat units were mapped. Using criteria supplied by MoELP staff, 90% of high and 50% of moderate value habitat was netted out of the inventory for the purpose of timber supply analysis.

8.4 Biodiversity and Wilderness Conservation

In addition to Ecological Reserves, which are excluded from the Licence, MB has set aside areas of varying size to protect Old Growth Forest. In addition to the reserves around the golden spruce and golden hemlock and other special interest areas, there are four Old Growth reserves within Kelsey Bay Division. At Menzies Bay Division, a small reserve has been identified to protect a particularly old specimen of yellow cypress.

Recreational fishing corridors along the Tsitika River also serve to preserve old growth and enhance biodiversity. MB's emphasis on natural regeneration, about 63% of all the new forest, maintains local gene pools in the forest trees.

8.5 Forest Recreation History

Over the years, the opportunities and facilities for recreation within the Licence have improved in response to development of access, increases in population, increased leisure time and the demands and expectations of the public. Recreation inventories were made in Blocks I, II, IV and VI.

Queen Charlotte Division has developed a self-guided tour booklet which highlights natural areas of special interest and examples of forest management practices. Recreational guide maps are available for Blocks II and IV on northern Vancouver Island.

Special Reserves have been created to protect recreational features, such as the Basaltic Pillars Reserve in the Tsitika watershed or the Devil's Bath Reserve in Block IV Port Hardy, or the Candlestick Caves Reserve in Block II Adam River.

A considerable number of caves have been located in Block II and IV. MB attempts to protect the entrances to each cave and advises the MoF of the locations. Most sites are kept confidential to avoid vandalism and prevent inexperienced cavers from gaining access and possibly requiring rescue. Members of recognized caving clubs are granted access by the MoF.

An increasing number of guide and tourism operators are developing specialized recreational opportunities using the natural features found in the Licence. For example, ecotours are offered in Block I Powell River and caving in Blocks II and IV.

8.6 Heritage and Cultural Preservation

MB crews have found many examples of culturally modified trees and locations are recorded on operational maps. All sites are reported to the Ministry of Small Business, Tourism and Culture, Archaeology Branch. In 1993, a survey in Block III Coast Islands resulted in identification and mapping of many actual or suspected archeological sites. All details are recorded in a booklet for easy reference prior to any development. All these sites are protected from logging until such time

as the Archaeology Branch decide which shall be permanently protected, or withdrawn from the TFL.

8.7 The Water Resource

The following activities have been undertaken to minimize impacts on the water resource and associated fish habitats.

- Hydrotechnical bridging analyses have been conducted to assess flooding hazard and risk associated with bridge installation in the Yakoun River, Salmon River, White River, Blind Creek and Catherine Creek watersheds.
- Analyses for stabilizing disturbed channel reaches or the retraining sections of the river have been completed for Tsitika River, White River, Memekay River, Salmon River, Freda Creek, Catherine Creek and others.
- Watershed assessments have been carried out to evaluate impact of rates of cut in terms of integrated forest hydrology, terrain stability, soil and sediment budgets and peak flow cumulative effects in both community and other watersheds.

In addition to measures to maintain water quality for fish, increasing attention is being paid to management of watersheds providing domestic water. Domestic water is drawn from Powell Lake and Lang, Mirtle and Jefferd Creeks in Block I. A watershed plan is being finalized for Lang Creek. The Village of Sayward draws its water supply from Newcastle Creek.

8.8 Harvesting of Minor Forest Products

There is increasing recognition of the presence and value of other products of the forest. Harvesting of yew bark has occurred in at least three Blocks in recent years. In addition, unknown quantities and values of greenery for florists and mushrooms are being collected within the TFL.

9.0 RECORD OF PUBLIC FOREST MANAGEMENT FUNDING

Public funds contributed to the costs of silviculture on Crown lands since the initiation of the TFL system. Up to 1979, a system of forestry costs reimbursed part of the silviculture costs on Crown land. A rate per unit was derived by dividing the costs of silviculture by the volume of logs scaled that year. The resulting rate was applied as a reduction to the stumpage paid on Crown timber the following year. The rate was reduced to zero when stumpage reached the calculated minimum return to the Crown.

In 1979, a more equitable system was introduced. Section 88 of the Forest Act allowed reimbursement via a credit against stumpage of the cost of approved silviculture projects on Crown land. This was repealed in 1987 and basic silviculture costs were legislated an industry responsibility. Since then some costs have continued to be paid through payment of approved

costs on lands logged prior to October 1987 and various funds such as the Federal Resource Development Agreement, Forest Renewal Initiative Program, South Moresby Forest Replacement Account and other special or training funds. Costs credited to MB are shown in Table VIII-12 following.

**TABLE VIII-12. Public Funding of Forest Management
(dollars)**

TFL 7

WP Period	Year	Basic	Intensive	Other	TOTAL
1	1951/55				54,578
2	1956/60				247,141
3	1961/66				336,508
4	1967/71				757,042
5	1972/76				948,548
6	1977				245,977
	1978				216,701
	1979				58,090
	1980	73,438	28,159	4,600	106,197
	1981	165,178	62,501	1,357	229,036
7	1982	83,110	105,355	23,264	211,729
	1983	125,196	7,192	1,758	134,146
	1984	77,003		2,054	79,057
	1985	52,974		2,024	54,998
	1986		23,381	1,835	25,216
	1987	83,276	79,559	8,214	171,049
					3,876,013

TFL 39

WP Period	Year	Basic	Intensive	Other	Total
1	1962/65				692,653
2	1966/70				2,173,964
3	1971-75				2,275,939
4	1976/80				3,688,177
5	1981	414,894	515,377	40,785	971,056
	1982	677,455	627,202	55,939	1,360,596
	1983	715,861	177,728	39,660	933,249
	1984	856,817	38,828	17,546	913,191
	1985	490,547	95,479	34,156	620,182
	1986	1,061,712	53,450	158,104	1,273,266
	1987	1,079,789	726,307	428,704	2,234,800
6	1988	991,309	286,167	24,772	1,302,248
	1989	755,844	1,180,236	19,335	1,955,415
	1990	850,198	770,751	35,913	1,656,862
	1991	560,506	2,159,122	6,950	2,726,578
	1992	396,166	1,223,249	2,700	1,622,115

TFL #39 -- Stage #2

What You Wanted To Know

(Comments received at MacMillan Bloedel Stage #2 Open Houses)

COMMENTS - POWELL RIVER

- What are the future MB employment trends in Powell River?
- Will MB be freeing up more land for real estate development to diversify economic development?
- What would be the effect of no restraint on log exports?
- How much log export actually takes place?
- How is MB responding to the new draft biodiversity guidelines?
- Are you still treating Alder as a weed?
- Has MB thought of conducting a large public survey in local communities?
- Has any group identified the social/economic implications of land management decisions?
- What is MB's commitment to preserving old growth?
- Looking forward to MB formally committing to conserved status for Confederation Lake.
- Looking for preservation of small old-growth stands close to town.
- How will MB document their commitments to preserve or reserve special areas of interest?
- What are long-range opportunities for access to popular hiking areas?
- Individual old growth fir trees should be left when logging in second growth.
- Clean up debris in lakes faster.
- Would like to see a wider buffer around lake systems.

FORMAL PRESENTATION - POWELL RIVER

- Interested in harvesting methods for the future:
 - Grapple Yarding
 - Highlead Yarding
 - Balloon
 - Helicopter
 - New technologies
 - Banding cedar prior to falling
 - Motorized carriages
- Concerned about waste wood and breakage in areas. Can these areas be identified and recover some of the fibre?
- Can we keep some of old growth for future areas in specific places?
- Seven-day logging does not allow for recreational access to areas.
- Road is blocked at 4 or 5 mile on a Sunday.
- Would appreciate restricted access signs sooner than at the falling site.
- Need to ensure access to recreation in Powell River due to a high population in a small area with few options for access to the forest lands.
- Does MB plant only a single species?
- Concern over size of trees at harvesting age.
- Paradise Valley has thinning going on.

- The age in the TSA is estimated.
- Firs in Saltery Bay area are forking at 16 - 18 feet. What is the cause down by Rainy Day area? Possibly planted offsite?
- Possibly use alder for more purposes, such as pulp.
- Could we use exotic species in some of our lands?
- Theodosia River, Olsen Lake - appears to have been a problem with large pieces of wood coming down the river and blocking the river (1990).
- Need to ensure reasonable access to the Knuckleheads for cross-country skiing.
- Cross-ditching is too sharp, which causes erosion at the bottom -- possibly widen them and make these ditches more shallow.
- What are the current taxes being levied on the landbase in TF 19 and similar areas in the landbase?
 - Could a "one-way" be created on the Weldwood Road to MB Roads?
- Concerned about exporting logs, therefore, jobs.
- Old growth in MacMillan Bloedel's Goat Lake and Preservation Lake should have some pocket wilderness areas established with this MWP.
- Could these pocket areas be established in a system that would allow an extensive trail network to ensure a full-hiking opportunity?
- There is no longer any quality lumber available at the local lumber sales.

COMMENTS - SKIDEGATE

- Build a hockey arena.
- Continue logging, but stop clearcutting.
- Provide information on forestry issues in Employee Divisional Newsletters.
- Concerned about stream (size) of leavestrips.
- Should have meetings/discussions with a representative from community groups.
- Logging Grey Bay, Cumshawa Head is against the wishes of the First Nations.

FORMAL PRESENTATION - SKIDEGATE

- Will the Working Plan take into consideration any fall downs in the Annual Allowable Cut?
- If the Forest Service indicates a lower Annual Allowable Cut, will this be reflected in the MWP?
- Must listen to the Haida people. Need to ensure a communication flow.
- Concern over herbicide/pesticide usage in the Queen Charlotte Division.
- Haida Nation concerned with any harvesting within the Yakoun River and Yakoun Lake matters.
- Will MB participate in the Local Resource Use Plan for the Tlell River Watershed?
- Will the Tlell Watershed will be looked at holistically and not in fragments?
- There are several community groups that are concerned that the planning process needs to include the whole Tlell watershed, including one of the "most important parts", the Haida land use issues.
- How are you planning to incorporate stability of communities depending on employment in the forest industry?
- Some cutting permits, such as the West Coast of Moresby Island, are not being utilized and other cutblocks near communities are being cut at a high level.
- If an employee/contractor is working in the area, they should live in the Charlottes.

- What is the future in the reduction in the size of the cutblocks and how will this impact windfall planning in the working plans, etc.?
- Accelerated road building will have a major impact due to smaller cuts over a larger landbase.
- 3 - 4 times more area (perimeter) will be exposed due to the smaller openings.
- Due to the smaller cutblocks over a larger landbase, the 20-Year plans will be made more important.
- Public pressure is increasing to create smaller cut openings. Most of the cutblocks are still over 40 ha.
- Recovering the blowdown trees is extremely dangerous to the fallers.
- Need to spend more attention on the ditches and drainpipes.
- What plan is there for thinning in the Queen Charlottes or in other blocks within TFL 39?
- What is the difference between spacing and thinning?
- How many years before the thinning is viable in specific areas?
- Is there any cedar available for wood carving for the Haida Community?
- What is the company doing to ensure a comeback of yellow cedar in the future?
- How many trees were planted this year, 1993?
- Does MB replant all the settings?
- What will happen at Grey Bay, Cumshewa Head in harvesting? What parts will be harvested?
- A road built within the Grey Bay, Cumshewa Head area will encourage increased tourist activity and further desecration of graves may be the result.
- Could the full population of Skidegate be involved in decisions for harvest plans in the area?
- Big spruce along the south end of Grey Bay are dead due to "bug kill" and could be harvested.
- Why put the old logging roads to bed after harvesting? When a fire breaks out, how can fire fighters access the site?

COMMENTS - PORT CLEMENTS

- Should not leave so much timber for a buffer around small streams.
- You could harvest some of the trees that are blown down near a stream with "bridging".
- Provide more opportunity for small business.
- The company should initiate a cooperative fish enhancement program with local community groups on all spawning beds.
- Manage the forest in an ecologically sound manner, i.e., maintain an old-growth ecosystem and use "new forestry" techniques.
- Be more involved in community events and projects.
- Concerned about the debris resulting from the booming grounds.
- Can MB provide some funding for the communities to construct an "all weather" baseball or soccer field; if not from cash, could they donate a small timber sale?

FORMAL PRESENTATION - PORT CLEMENTS

- Is TFL 39 presently operating on a sustained yield basis?
- Is the area of Graham Island being overcut, while other parts of the TFL are being undercut?
- Is it better to leave blowdown in the streams, or clean the fallen trees out?
- If a faller accidentally falls a tree into a stream, should they leave it?
- Will the Ministry of Forests penalize the company for leaving any fallen trees across a stream?

- What should the company do if a large tree blows over and leaves a large root ball exposed?
- How is the Annual Allowable Cut adjusted to changes in policy or society's demands?
- What percentage of the timber being harvested on the Queen Charlotte Islands is old growth?
- When harvesting on the Queen Charlotte Islands changes to second growth, will it remain economic?
- Can second growth be economically harvested on Queen Charlotte Islands in the future?
- Will the Recreation Analysis include Forest Service Campsites, and what is the company doing to upgrade these sites?
- How would it be possible to acquire more money for the Forest Service to upgrade current facilities and include more of them?
- With integrated resource planning, shouldn't more recreation facilities be included in the land management?
- How does a group of people in a community make integrated resource planning a reality?
- If MB goes through the public input process and answers all the needs and concerns of an area (Cumshewa Head) and the cutting permits are still not released, how can the public influence the awarding of cutting permits?
- Is there any time frame for when the landbase will be released in the Grey Bay area?
- What plans are there for the Yakoun Lake area in terms of removal from the productive forest landbase?
- What is happening around Yakoun Lake in the viable area within the next year?
- What stage of the process is the company at with the Local Resource Use Plan in the Yakoun Lake area?
- Does some part of the landbase being incorporated into the MWP have to be taken out due to the area around Yakoun Lake?
- Will the Annual Allowable Cut be affected by a decision of the Yakoun Lake area?
- Are you finding any cedar in the second growth that is of reasonable quality?
- How was the evening advertised for these events?
- A campsite should be established at Pam Lake on the end of Branch 10 (Mamin 14 Block), Grey Bay, Cumshewa Head, Yakoun Lake (at the lake itself).

COMMENTS - MASSET

- How is logging affecting the Yakoun?
- Where does the gravel come from for road building?
- How much old growth is left in the Queen Charlottes?
- Does MB respect "culturally modified trees"?
- Worried about the supply of cedar logs for building totems and canoes.
- We need cedar and cypress wood for carvers -- for masks, small totems, etc.
- When areas are left for buffers, they should ensure the stand is windfirm.
- More research should be carried out on the potential uses for alder -- for pulp, lumber and other uses.
- Advertise the Open House on local TV.
- Hold meetings from 3:00 - 5:00 pm and 7:00 - 9:00 pm.
- Obtain and present more "facts" about the forest operation at all Public Meetings.

FORMAL PRESENTATION - MASSET

- Is the training for Fish/Forestry Guidelines open to non-MB employees?
- How is MB planning to incorporate biodiversity issues into the process?
- Has a scenario been produced to incorporate the biodiversity issue in the distribution of the cutblocks in Block 6?
- Where is Block 6?
- There should be a trial for a pure alder stand in a small Timber Supply Area and interactions with spruce for nitrogen fixing abilities.
- What is the main use of the poplar wood?
- You should advertise the Open Houses on a Bulletin Board Network, local news station (Channel 13), through mailouts and on CBC Radio Notice Board. And you should allow a workshop format for each resource.
- There is a sense of apathy for the Open House process. Does anything come out of the suggestions that are put forward?
- If MB listens closely to the suggestions for the MWP, there should be less problems when the plan is submitted.
- This is a positive process that should be maintained.
- It is good to see the information that is being displayed with this process.
- MB appears to have an appreciation to keep the communications open.
- The company and the Council of Haida nations should meet quarterly.
- Hand out pamphlets during the day.
- Use language in the invitation that will not intimidate people.

COMMENTS - PORT MCNEILL

- In the presentation of the MWP (maps), create a map at 1:250,000 that shows the data for the whole division (on the wall).
- Have an atlas at 1:20,000 with a legend, cross reference to 1:250,000.
- What is the company policy on managing second-growth stands that will create greater volume?
- The crews within each division should have the opportunity to attend the Open Houses.
- Would like to see road access to Hidden Cove.
- Concern for site degradation due to roads.
- How is site degradation, due to roads, accounted for in the AAC determination?
- Why is Block 4 called Port Hardy, why not Port McNeill?
- Ensure the forest industry is viable for the long term.
- Land management issues should be resolved in a responsible manner. They should include social/economic impacts.
- Concern for stability of the local employment workforce.
- Some 40 families would like to see "Beach Camp" harvested to allow views from their residences.
- Excellent! We need more public input!

FORMAL PRESENTATION - PORT MCNEILL

- Does the government and MB look at historically harvested sites, as old as 80 years?
- Do we really need to defend current logging practices?
- What has MB done to ensure the trust of the general public?
- Why not put more ads on TV and in newspapers?

- Spend more money on informing the public of current forest practices.
- Why not work on site specific problems and improve the image of the company by doing more thinning and silviculture.
- German/Swedish forest practices appear to have better relations with the public.
- Can MB drop the age of the second growth forests due to increased volumes?
- If you harvest the second growth sooner, MB could harvest old growth over a longer period of time.
- Can MB harvest less old growth, creating less "old- growth" products on the market, therefore, driving up the price of that product?
- The urban centers believe that all the old growth is gone.
- The people that really care will come from the cities to find out that harvesting trees is the same as farming.
- It does not matter what you say or do in urban centers, a part of the population will not see the harvesting.
- Good public relations comes down to each individual in the industry practicing good silviculture practices.
- It is up to the company, as well as the union, to go to the media--all participants in the industry should voice concerns.
- Is there something more that can be done to show the forest industry's credibility as a steward of the forest landbase?
- Have Michael J. Fox to do some ads on TV.

COMMENTS - SAYWARD

- You should do more advertising.
- Harvesting fire breaks through Kelsey Bay Division, including areas near the camp, should not be allowed.
- There should be a review of "Victoria Flats" before any further harvesting is carried out.
- Rooney Lake 121-A should not have been harvested so close to the road. With a narrow buffer, the area has windfall problems and is causing visual aesthetic problems.
- MB should create a map depicting all known old-growth areas requiring special consideration.
- MB should identify potential middens on the shoreline at Phillips Arm and up the river.
- Concern for long-term job stability.
- During "non-active" times, the road system should be available for recreation uses.
- There should be a larger buffer on Class 1, 2, 3 and 4 streams.
- More recreation facilities required.

COMMENTS - CAMPBELL RIVER

- Should hold some Open Houses in malls.
- The Koeye Estuary in Namu needs big buffers with no harvesting.
- Protect the swamps that feed the Koeye River to keep the water cool.
- Look at Elizabeth Lake area for a trade for Koeye.
- It's O.K. for some logging in the Koeye, as long as there is no impact on the stream.
- A good chunk of Koeye should be preserved.
- Prior to "Land Act Tenures" being issued, discussions should be held with forest land managers of the area.
- Concern for roadside view of logging. Suggest leaving roadside strip of timber to shield travelers from the view of logging.

FORMAL PRESENTATION - CAMPBELL RIVER

- What is the state of plan; has the SMOOP been approved?
- Was there prior input before the SMOOP was prepared?
- MB deserves credit for following Provincial guidelines and the International Guidelines, for making the statements on Page 14 of the SMOOP. Some caves may require harvest exclusion and some may not, depending on type of karst.
- Identify in advance of development any cave locations and mapping placement. We want to avoid disturbing significant features during harvesting. Become more proactive in initial steps including inventory of caves.
- Could the caving inventory be included with forest inventory currently underway?
- Recently, several areas of significant karst features were not identified in ongoing harvest areas due to lack of training.
- The clubs, organizations can provide maps for caves (GIS); however, the companies may be able to help in identifying these features.
- Is the AAC going to be proportioned by block or watershed?
- What is the general number of options that will be forwarded to the Ministry of Forests?
- Is there a training certificate for the fish/forestry trainees?
- The company needs to enhance their abilities in road maintenance and putting the road to bed due to impacts on the Fish/Forestry Guidelines.
- How much of the landbase is going into the buffers for ESA?
- Is MB involved in anything innovative in harvesting techniques?
- What happened to MB's Land Use Planning and Advisory Team? Do they still exist?
- How do you deal with second-growth harvesting in the MWP, and what is currently being done regarding this issue?
- How do the poplar plantations fit into harvest scheduling?
- When are the poplar areas going to be taken out of the TFL?
- What will the legal status of the poplar landbase be?

COMMENTS - VICTORIA

- Public should be regularly provided with up-to-date status of the road network. Public road maps should be complete for the entire road network. All roads should be signed (i.e.,: road name/designation) to help people find their way around.
- Timber which is set aside because of integrated resource management should not be considered for compensation.
- The Koeye must be made into a park.
- Why does MB send its trees to TF (??) Specialty sawmills instead of their own mills?
- MB must accept and adhere to the new Biodiversity Guidelines.
- How many cut blocks in the Tripp Report were MB's?
- Please read Herb Hammond's, Seeing the Trees Among the Forest.
- Yakoun Lake must be made into a park.
- The Annual Allowable Cut for TFL 39 must be at a sustainable level.
- Use new forestry techniques, such as shelterwood methods.
- Leave bigger stumps on stream banks.
- What percent of trees planted survive?
- There should be an "Implementing Report" on tasks completed resulting from the Public Input Process.
- Use the landbase along roadsides for crop trees.
- Why did Spruce from the Queen Charlotte Islands go to Powell River Pulp Mill in the 1950s?

- Why is MB not involved in more value-added products?
- Why did MB sell the timber rights to an absentee landlord in the Empire Valley?
- This is a really positive process and should be continued.
- Is there a road planned through or near Schoen Lake?
- There should be some secondary manufacturing at each block of major communities, such as the Queen Charlotte Islands.
- Document the public input that is finally implemented in Management Plans.
- Reserve enough of the old growth to ensure the full ecosystem of the area.
- Do not use grapple yarders!

FORMAL PRESENTATION - VICTORIA

- Does MB allow public input to their private lands like they do with TFL's?
- San Juan River Logging Streamside Management was extensive over years. Is that kind of cutting still taking place?
- Does MB still log down to streamside?
- 1600 direct jobs is not a motivating factor - - profit is. Mention profits in presentation.
- Is company faking numbers on plan?
- Loss of growth/loss of soil productivity is not taken into account.
- What are MB's growth capacity models for the next 100-200 years, re: erosion, acid rain, etc.
- How are the "What ifs" of growth rates being taken into account?
- Forest consultants Mazur and Franklin have made points on what crop rotations do to soil productivity -- how do they compare to yours?
- Are there percentages calculated for land losses for roads, etc.?
- Do you make allowances for future slides?
- What is extent of First Nations input?
- How do you protect non-timber values, which may or may not be in forest inventory?
- How do you deal with archeological resources?
- Does MB have any undisturbed (untouched) watersheds anywhere for research?
- How many MB logs are exported and to where?
- How many employees were in TFL 39 ten and twenty years ago?
- Where is the "mother lode" of research and development that helps MB operate?
- The Ministry of Forests is developing new forest management guidelines with new issues for future management. How committed is MB to these ideas?
- Is MB willing to help move the Ministry along in integrated resource management?
- Integrated resource management values conflict with employment values.
- Concerned with the effect of forestry decisions on community stability.
- Will MB do impact analyses on environment systems of harvesting/forest plans?
- Are there any marbled Murrelets in TFL 39?
- Why is it taking so long to replant clearcuts?
- Are you taking trees faster than they are growing?
- How many years of old growth are left?
- Are you doing any studies of groundplants in the forests -- re: medicinal/edible properties?
- Have you heard about the fungus that grows on yew trees that has taxol in it?
- Does MB use recycled products? Does MB have a recycling program?
- MB should do more forestry research outside of Canada.
- We can't continue to clearcut -- alternatives are needed.
- You should leave the old growth, but intensively manage the second growth.

COMMENTS - VANCOUVER

- Has anyone done a comparison between the damage to wilderness caused by tourism and the development tourism brings versus damage caused by logging?
- I like the venue of the Vancouver Art Gallery, and Friday is a good day for an Open House.
- You need to have more maps available to show various resource inventories.
- There should be a greater amount of auditing of harvesting.
- Four days is not enough notice for public consultation to advice groups.
- Why does logging continue to be done in areas that are supposed to be talked about? Concern that by the time talking is done, it will be too late. Short deferral period, quicker decisions, based at community level.
- There is a perception that it is a waste of energy to be part of this process.
- You should hold these venues on university/college campuses.
- The Yakoun, Cumshewa Head, Gray Bay of the Queen Charlotte Islands have special values and good potential for more tourism. Needs to be some control of access, balance against South Moresby (big park, but very limited access).
- You should hold these meetings at trade shows.
- Holding the meeting at the Vancouver Art Gallery will discourage a lot of people from attending.
- You should hold meetings in different economic areas of Vancouver.
- There appears to be more selective logging than in the last plan.
- You should ensure rapid reforestation where you clearcut.
- Ensure stable (long-term) streamside buffers.
- The company needs to listen to the advice of its forestry people.
- There should be more television promotion of this through local news.
- Some of your handouts are photocopied on one side only -- a waste of paper. Recycle. Use vegetable-based ink.
- Communities need more decision-making powers over forest harvesting in their areas (e.g. Kootenay Watershed).
- Need impartial review body (not the Ministry of Forests), accountable only to the public.
- The Yakoun should be preserved as a Provincial Park accessible from Queen Charlotte City and the Queen Charlotte communities; South Moresby is not.
- There should be more small protected areas close to communities, instead of large, remote parks.
- You should process some logs on the Queen Charlotte Islands, rather than shipping all the wood off the island.
- There needs to be rehabilitation and further protection of Mamin River.
- Public trust cannot be generated with recent photos of large clearcuts. Nothing has changed.
- You need to educate the public more.
- How much operable timber is left in the Queen Charlotte Islands - conventional and nonconventional?
- You must balance ecological aspects with resource use and harvesting.
- No clearcutting, longer rotations and selective logging only in the next plan.
- Larger proportion of the Annual Allowable Cut should be allocated to public auction.
- Present maps and slides of planned practices with presentation of MWP.
- MB should look at intensive forest management for maximum productivity in prime growing land (i.e.,: second growth on East Vancouver Island) and have selective logging only in other areas.
- "Sustainable development" needs whole ecosystem sustainability versus just timber sustainability.
- Downscale TFL to community forests with forest boards.

FORMAL PRESENTATION - VANCOUVER

- How was it decided to bring together such a wide geographic area under one TFL?
- You run models to project growth/sustainability. How accurate are they?
- Do you put in assumptions that some areas may never be logged?
- How well do you understand the processes of modeling? Some groups have different interpretations of "global warming".
- Do you have any information about waste on Queen Charlottes?
- We (Haida) have never given our consent for logging. We will not allow logging on the Queen Charlotte Islands.
- Concerned about remarks made at Native conferences by MB regarding natives.
- I'm concerned about tree spiking -- with people taking the law into their own hands.
- Publishing one newspaper per day for one community uses 80 trees, 40 years old. Is recycling going on? Or is used paper being stored?
- Will electronic technology save trees?
- This format of meeting is good, and there needs to be more public relations so the public knows about it.
- You should encourage recycling/electronic newspapers by charging more for new pulp.
- Define "higher land use" noted in the Long Range Sustained Yield in the SMOOP.
- Define the 10% decline in Annual Allowable Cut and Long Range Sustained Yield.
- The B.C. Government has strategy to set aside areas -- the Protected Areas Strategy. Have you run this through your modeling?

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