SCOTT PAPER LIMITED

MANAGEMENT PLAN NO. 4

TREE FARM LICENCE 43

THE BROADLEAF TREE FARM LICENCE

INCLUDING

MANAGED FOREST #23

JANUARY 1, 2000 TO DECEMBER 31, 2004

SIGNED AND SEALED ON JULY 19, 1999

REGISTERED PROFESSIONAL FORESTER
PROVINCE OF BRITISH COLUMBIA
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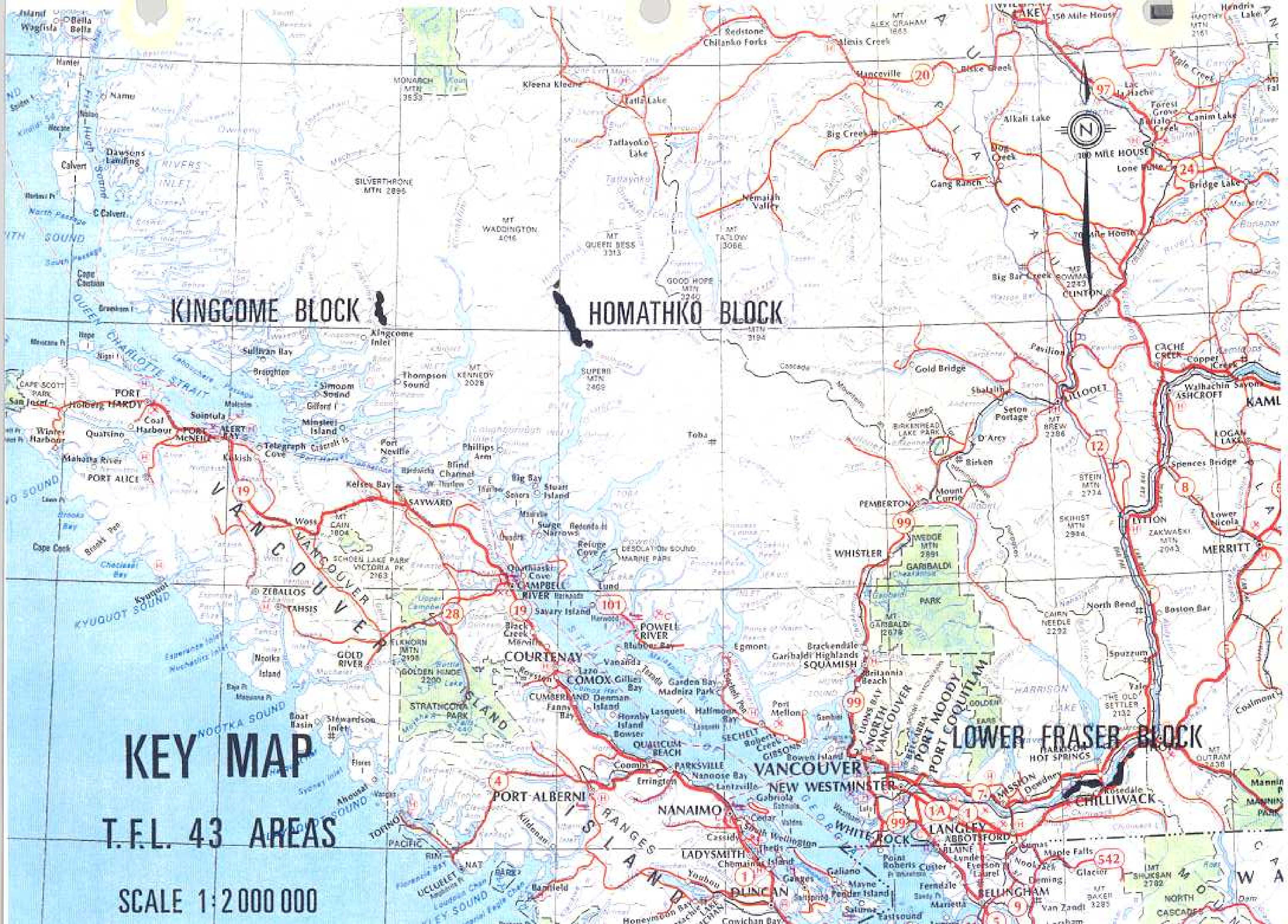
KINGCOME BLOCK
HOMATHKO BLOCK
LOWER FRASER BLOCK
KEY MAP
T.F.L. 43 AREAS
SCALE 1:2 000 000
VANCOUVER
NEW WESTMINSTER
NANAIMO
PORT ALBERNI
COURTENAY
COMOX
CAMPBELL RIVER
POWELL RIVER
CHILLIWACK
LILLOOET
CLINTON
100 MILE HOUSE
MERRITT
PEMBERTON
WHISTLER
SQUAMISH
MISSION
LANGLEY
ABBOTSFORD
BELLINGHAM
DUNCAN
LADYSMITH
PARKSVILLE
PORT HARDY
QUEEN CHARLOTTE STRAIT
VANCOUVER ISLAND
KYUQUOT SOUND
NOOTKA SOUND
Kingcome Inlet
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GARIBALDI PARK
HARRISON HOT SPRINGS

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EXECUTIVE SUMMARY

Tree Farm Licence (TFL) 43, the Broadleaf Tree Farm Licence, was awarded to Scott Paper Limited as of January 1985. The purpose of granting this licence was to allow the company to grow and harvest cottonwood timber, in support of the company's household, commercial and industrial tissue products manufacturing facilities located in New Westminster, B.C. Scott Paper Limited's employment in B.C., including Sales staff, is approximately 650 people.

Management Plan No. 4 for Tree Farm Licence 43 covers the period of January 1, 2000 to December 31, 2004. Management Plan No. 4 proposes to continue the conversion program of the existing mixed deciduous/coniferous timber stands to productive cottonwood/hybrid poplar stands in the Homathko and Kingcome supply blocks of the TFL, that commenced originally under Management and Working Plan No. 1. The Lower Fraser supply block is fully stocked with cottonwood/hybrid poplar stands although the conversion to the pulpwood management regime is still in progress. The company expects to attain at the end of the first rotation, a fully stocked cottonwood/hybrid poplar forest with a balanced age class distribution within all three supply blocks of the TFL. Scott Paper Limited's Managed Forest #23 will be managed as an integral part of TFL 43.

The company's forest development planning, harvesting, and silvicultural activities will be carried out in accordance with the *Forest Practices Code of BC Act* and other applicable legislation and regulations. Non-timber resource values have been protected and conserved through netdowns to the timber harvesting land base and where appropriate, integration of these values with the timber harvesting activities. The proposed Management Plan No. 4 allowable annual cut, based on area control is 108.2 hectares per year, and is projected to produce an average 39, 914 m^3 of timber per year. Reductions to the gross area available for harvest were

made for environmentally sensitive fish and wildlife areas, riparian retention reserves, protected areas, non productive brush, and inoperable stands.

The Small Business Forest Enterprise Program apportionment is 2, 803 cubic metres per year. Due to the difficulty of determining the amount of area corresponding to this volume, Scott Paper Limited will actively work with the Ministry of Forests to identify areas for Small Business Forest Enterprise Program timber sales within the TFL during the term of Management Plan No. 4.

The ownership of Scott Paper Limited was transferred from Kimberly-Clark Worldwide Inc. to Kruger Inc. in June, 1997. This transfer resulted in relatively little change to the daily operations of the Western Manufacturing Division in New Westminster and the company continues to pursue the objective of producing quality tissue products in a cost effective manner. The company intends to continue to use contractor supplied equipment for all timber harvesting, silviculture, and related activities.

Scott Paper Limited will offer for sale or trade all of the non-cottonwood species produced from the TFL in accordance with paragraph 16.06 of the TFL licence agreement.

1. INTRODUCTION

Scott Paper Limited was granted Tree Farm Licence (TFL) 43 in 1985 for the management of cottonwood (*Populus spp.*) in order to fulfill the fibre requirements of the Western Manufacturing Division's groundwood pulpmill. The cottonwood/hybrid poplar fibre is an essential furnish for the various household, industrial and commercial tissue products manufactured at this facility. This is the fourth management plan for TFL 43. The term of this strategic plan is the five-year period from 2000 to 2004. The plan outlines the company's management objectives and strategies for the timber and non-timber resources within TFL 43. In addition, the plan identifies commitments and obligations of Scott Paper Limited as the licence holder of TFL 43.

1.1. Description of the TFL

TFL 43 is located in 3 geographically distinct Blocks within the coastal mountains in the southern portion of British Columbia. The TFL lands are situated on the flood plains of the Lower Fraser, Homathko and Kingcome Rivers. The total area of the TFL is 10,106.2 hectares of which 8,882.4 hectares are Crown land and 1223.8 hectares are fee simple lands owned by Scott Paper Limited.

The Lower Fraser Block is situated between Chilliwack and Laidlaw along the Fraser River in the Chilliwack Forest District. The communities adjacent to this portion of the TFL are Agassiz, Chilliwack and Rosedale.

The Homathko Block is the largest in area and is located within the Homathko River valley at the head of Bute Inlet in the Sunshine Coast Forest District. There are no communities close to this Block except for the logging camps. The nearest population service centres are Powell River and Campbell River.

The Kingcome Block is the smallest in area and is situated beside the Kingcome River at the head of the Kingcome Inlet in the Port McNeill Forest District. The closest community is the native settlement at Gwa Yee Village in Kingcome Inlet while the nearest population service centre is Port McNeill.

All three Blocks of the TFL are located within Coastal Western Hemlock (CWH) biogeoclimatic zone. The CWH zone, on average, receives the highest amount of rainfall in BC. The climate within this zone is characterized by cool summers (although hot dry spells can be frequent) and mild winters. Specifically, the Lower Fraser Block is found within the dry maritime coastal western hemlock subzone (CWHdm) which is characterized by warm, relatively dry summers and moist, mild winters with little snowfall. Growing seasons are quite long with minor water deficits experienced by plants. The Homathko Block is located within the southern dry submaritime coastal western hemlock subzone (CWHds) which has climate that is transitional between the coast and interior, characterized by warm, dry summers and moist, cool winters with moderate snowfall. The Kingcome Block is situated within the most extensive biogeoclimatic subzone found on the coast, submontane very wet maritime coastal western hemlock variant (CWHvm1). It has a wet, humid climate with cool summers and mild winters featuring relatively little snow.

1.2 History and Use

TFL 43 was awarded to Scott Paper Limited on January 1, 1985 for the management of *Populus Spp.* to supply the needs of the groundwood pulpmill located in New Westminster. The groundwood pulp produced at the Western

Manufacturing Division in New Westminster is a fundamental component of the industrial, commercial and consumer tissue products manufactured at this facility. Therefore, a consistent supply of cottonwood timber is a vital requirement to the ongoing viability of this operation and the consequent social and economic benefits derived therefrom. All other species harvested by the company are sold or traded on the open market as part of it's contractual agreement with the Crown.

TFL 43 is the only tree farm licence in B.C. that permits the exclusive right to manage the Crown land for the purposes of harvesting and growing of deciduous species. The process of converting the existing stands to cottonwood/hybrid poplar leading stands is continuing in the Homathko and Kingcome Blocks while the Lower Fraser Block has been fully converted.

A number of boundary revisions have occurred since the issuance of TFL 43 but major changes in 1986 resulted in addition of 61.6 hectares of private land and 59 hectares of Crown land to the Fraser Block. In 1987 and 1992 instruments were issued that resulted in the conversion of Schedule "C" lands to Schedule "B" lands within the Kingcome Blocks of the TFL.

Prior to December 1995, Scott Paper Limited was controlled by Scott Paper Company of Boca Raton, Florida. On December 12, 1995 Scott Paper Company merged with Kimberly-Clark Corporation and, as a result Kimberly-Clark Corporation became the indirect owner of Scott Paper Limited. Because of Kimberly-Clark Corporation's own Canadian tissue operations, the Bureau of Competition Policy required Kimberly-Clark to agree to undertakings regarding Scott Paper Limited that prevented Kimberly-Clark from exercising control over Scott Paper Limited. On June 3, 1997 more than a year after it's original

announcement to sell, the ownership of Scott Paper Limited was transferred to Kruger Inc. of Montreal. The Minister of Forests gave his consent to the change in ownership.

1.3 Licence Holder and Administration

TFL 43 is held by Scott Paper Limited, a company registered under the *Company Act* of British Columbia. Scott Paper Limited owns and operates four paper mills across Canada. Scott Paper Limited is a 100% owned subsidiary of Kruger Inc., a privately held Canadian company based in Montreal. Kruger Inc. is engaged in the manufacture and sale of newsprint, groundwood specialties, coated and specialty paper, recycled paperboard, corrugated containers, lumber and wood products, 100% recycled newsprint and tissue products on a world-wide basis.

The Western Manufacturing Division is located in New Westminster and consists of a groundwood mill, 4 paper machines and assorted converting operations that produce the tissue products. A brochure describing the Western Manufacturing Division is included in Appendix XI. The operations within the three Blocks of TFL 43 are managed from the woodlands office located in New Westminster. The company uses a number of contractors (including First Nations) from communities in the vicinity of the TFL 43 supply blocks to carry out harvesting and silvicultural activities within the TFL.

TFL 43 is part of the provincial forest and as such, is administrated by the Ministry of Forests according to the *Forest Act* (FA), *Forest Practices Code of BC Act* (FPC) and their regulations. The FA primarily deals with forest use and

administration matters such as classification and management of forest lands, allocation of timber rights, allowable annual cut determinations, payments for Crown timber, timber scaling and marking requirements and other assorted items.

The FPC, which was proclaimed on June 15, 1995 is concerned with the regulation of forest practices, along with establishing strategic and operational planning requirements, and instituting forest and range protection provisions. It is the key legislation governing the harvesting, road building and silvicultural activities on TFL 43.

MANAGEMENT PLAN #4

STATISTICAL SUMMARY

THLB

(a) **Licence Area:**

Block Number	TFL Block Name	Total Area (ha)	Productive Area (ha)
1	Lower Fraser River Block	3,546.5	1,151.9
2	Homathko River Block	5,603.8	1,628.6
3	Kingcome River Block	955.9	474.7
Total		**10,106.2**	**3,255.2**

(b) **Close utilization volumes of mature timber:**

Species	Volume (m^3) in Operable & Available Area	Volume (m^3) in Inoperable & ESA Reserved Areas
Cottonwood	498,244	221,688
Alder	95,919	185,408
Other	2,820	4,534
Coniferous Species	112,329	312,571
Total	**709,312**	**724,201**

(c) **Proposed Rotation Lengths:**

Block Number	Block Name	Harvest Age	Regeneration Delay	Rotation Length
1	Lower Fraser	25	1	26
2	Homathko	30	3	33
3	Kingcome	30	3	33

(d) Proposed Allowable Annual Cut for MP #4:

Supply Block	Schedule "A"		Schedule "B"		Total	
	Area	Volume	Area	Volume	Area	Volume
Fraser	25.3	9,109.0	19.0	5,902.2	44.3	15,011.2
Homathko			49.5	16,485.8	49.5	16,485.8
Kingcome			14.4	8,416.8	14.4	8,416.8
Total	25.3	9,109	82.9	30,653.9	108.2	39,913.8

(e) The Small Business Forest Enterprise Program allowable annual cut apportionment is 2,803 m^3.

(f) Managed Forest #23 area within TFL 43 Fraser Block is 805.7 hectares.

2.0 RESOURCE INVENTORIES

A number of resource inventories are expected to be revised during the term of MP #4. The current status and the planned updates for each are described below.

2.1 Forest Cover

The original forest inventory for TFL 43 was completed in the 1980s to facilitate the issuance of the TFL. Since then, it has been maintained and updated by new operational cruises and other operational assessments. The forest cover data was updated to September 30, 1998 in preparation for the Timber Supply Analysis for MP #4 and reflects the changes in the land base as well as harvesting and reforestation (Appendix IV, Timber Supply Analysis Information Package contains a detailed description of the forest cover inventory of the TFL). The forest cover inventory was converted to NAD 83 base by using Terrain Resource Information Mapping (TRIM). The 1997 custom aerial colour photography flown at 1: 10 000 scale was used for making base map improvements within the flood plain of the large river systems in the TFL.

The current forest cover inventory meets the business needs of Scott Paper Limited and given that the company's objective is to convert the current mixed-wood stands to high-yielding cottonwood/hybrid poplar stands, a re-inventory is a low priority at this time. As the existing stands are replaced with fast-growing hybrid poplar/cottonwood stands, the inventory information will be updated through operational assessments.

The company will continue to use aerial photography to update land base changes within the flood plain at the start the next management plan planning process in

order to determine the land base. A review of site index assignments and the appropriateness of using a reference age of 25 years is planned during MP #4.

TABLE 2.1

Forest Cover Inventory Status and Planned Updates for MP #4

TFL Block	Date of Original Inventory	Standard	Date Updated to for MP #4	Updates planned during term of MP #4
Fraser	1984	MOF	September 30, 1998	Harvesting and Silviculture activities along with land base changes. SI review
Homathko	1985	MOF	September 30, 1998	Harvesting and Silviculture activities along with land base changes. SI review
Kingcome	1988	MOF	September 30, 1998	Harvesting and Silviculture activities along with land base changes. SI review.

The planned updates and current status of the forest cover in each Block of the TFL are discussed below.

Fraser Block

Practically all of the operable land base in this Block consists of cottonwood/hybrid poplar stands. Scott Paper Limited has a long history (since 1940s) of operating within this portion of TFL 43, thus the history and origin of stands is well known and documented. The inventory information for this Block reflects current harvesting and the establishment of new forests. The operational assessments of survival/regeneration and free growing have been used to update this information. In preparation of the management plan, a number of cruise plots were established in representative stands in the Fraser Block to generate volumes and update the forest cover information if necessary. Ongoing regeneration and free growing surveys will be used to update information on new forests established in this Block.

Homathko Block

The forest cover information is the original inventory that was done for the issuance of the TFL in the mid 1980s. Since then, this inventory has been updated through operational cruising and other field assessments. During each of the previous Management Plans, volumes have been compiled to close utilization standards.

In preparation for this Management Plan, the forest cover polygon boundaries and labels were modified to more accurately reflect vegetation cover and characteristics, as some of the original typing was quite broad. Coloured aerial photographs flown in 1997 at a scale of 1:10 000 and operational cruises were used in this polygon refinement. All regenerated areas will continue to be updated through the survival/regeneration and free growing surveys.

Kingcome Block

The original Kingcome inventory was completed in 1988; it has been maintained and updated through new cruises and operational assessments. A number of systematically established plots have been used to update both the forest cover and operability classification within this Block. In addition, this inventory has been updated to incorporate changes resulting from logging and silvicultural activities during the current management plan. Operational assessments and silviculture surveys will be used for updating the forest cover information during the term of MP #4.

Growth and Yield

A total of 20 permanent sample plots have now been established on the TFL. The plots were established and are re-measured in cooperation with the Ministry of

Forests. The location along with the establishment and measurement history is shown below:

TFL Block	Number of Plots	Date Established	Date Re-measured
Fraser	6	1988	1993, 1997
	4	1990	1992, 1997
Homathko	4	1988	1993, 1997
Kingcome	6	1999	

Scott Paper Limited is pursuing the installation of 3 additional permanent sample plots in the Fraser Block and 2 in the Homathko Block. All plots are re-measured on a 5 year cycle and planned for retention until age 40 to 50 years in order to develop localized yield tables for managed and unmanaged cottonwood/hybrid poplar. The development of localized yield tables will occur in consultation with the Research and Resources Inventory Branches of the Ministry of Forests.

Upon development of localized yield tables, volume-based timber supply analysis, and more precise rotation length planning will be possible for the stands established within the TFL. Scott Paper Limited anticipates that the volume-based analyses for the Homathko and Kingcome Blocks will be feasible in the years 2020 and 2030 respectively.

2.2 Range

There are no range resource values on the TFL, consequently no inventories have been carried out to date and none are planned.

2.3 Recreation

The recreation inventory for all Blocks of the TFL was completed in 1992. It conforms with the Ministry of Forests standards applicable at the time and is

considered adequate for managing and protecting recreation resource values on the TFL. The recreation inventory data was given to the Ministry of Forests for inclusion within the recreation rollover project. This rollover will lead to the separation of the recreation inventory into individual layers thus accommodating additional information and features. The company expected to receive the rolled-over inventory prior to the submission of MP #4 but unfortunately the data for TFL 43 had not been enhanced and the expected timeline for completion is difficult to predict. A detailed listing of the existing recreation inventory is included in the Appendix X, Recreation Analysis Report and shown on the recreation inventory maps included in the map atlas.

An updated inventory will be prepared during the term of MP #4 as per the current Ministry of Forests standards. This will consist of reviewing the existing inventory and making appropriate changes to address any inadequacies identified.

	Standard	Date Completed	Planned Update during term of MP #4
Recreation Inventory	MOF	1992	Re-inventory

2.4 Visual Landscape

The Fraser Block is the only visually significant area within TFL 43 as portions fall within the Highway 1 and Highway 7 scenic area. A visual landscape inventory was completed according to the Ministry of Forest standards in 1992 and is shown in the attached map atlas. The weakness of the current inventory is the assignment of Visual Quality Objectives to individual islands and/or distinct forest cover types within the Fraser Block. This type of assignment could lead to a subjective harvesting constraint on some of these islands, particularly for timber supply analysis purposes. A new visual landscape inventory will be completed

during the term of MP #4. This inventory will be prepared in accordance with the Ministry of Forests standards applicable at the time of the inventory and consider the unique attributes of the landscape within this Block of the TFL.

Due to the remoteness and lack of accessibility of the Homathko and Kingcome Blocks, visual landscape inventories are not necessary.

2.5 Fish and Wildlife

A report outlining the fish resources information of the TFL lands was prepared in 1994. This report is included in the Appendix VIII and describes the timing and locations of spawning, size of spawning populations, timing of migrations, and any information on rearing or overwintering habitats. The environmentally sensitive area (ESA) mapping along with riparian reserve zone area reductions have been delineated to account for fisheries sensitive areas in the TFL. The Timber Supply Analysis Information Package (IP) outlined the specific area reductions within each ESA category that were applied to the productive area. The existing fisheries sensitive area mapping and riparian reserve zone reductions will be reviewed and updated as part of company's ongoing operational planning assessments.

The wildlife resources information was also prepared in 1994 and provides an overview of wildlife species within the TFL area (Appendix IX). The key species within each Block were the focal point of this assessment. Sensitive wildlife habitat areas have been classified as environmentally sensitive areas and therefore removed from the timber harvesting land base at an appropriate level. In particular, the Homathko Block ESA mapping was delineated in cooperation with Ministry of Environment, Lands and Parks staff to accommodate grizzly bear habitat requirements. The wildlife sensitive area mapping is revised and updated

on an ongoing basis as part of the operational planning review and field assessments. The implementation of the Landscape Unit planning process may necessitate inclusion of other areas from a biodiversity perspective. Refinements and revisions of the ESA mapping will continue to occur through the review of the operational planning processes and a comprehensive re-inventory is not envisioned at this time.

2.6 Cultural Heritage Resources

A number of Archaeological Impact Assessments (AIA's) have been done in the Fraser Block. This extensive field sampling did not discover any cultural heritage resource values requiring protection from harvesting. The Archaeological Branch mapping has not identified any archaeological sites on the TFL 43 lands although several sites adjacent to the TFL have been catalogued.

An overview assessment in the Fraser Block will be done during the term of MP #4 to identify areas likely to contain cultural heritage values and provide direction for the management of the resource values. Furthermore, Scott Paper Limited will hold discussions with the appropriate First Nations in the Homathko and Kingcome Blocks to prepare a strategy that will lead to a better understanding of the cultural heritage resource values in these areas. Due to the shifting nature of the large river systems and extensive harvesting and cultivation history of the areas, it maybe difficult to ascertain the extent of these values through traditional inventory methodologies.

3.0 MANAGEMENT OBJECTIVES

The management objectives are described on a following pages in the individual sections and have been paraphrased from the Statement of Management Objectives, Options and Procedures (Appendix III). The management objectives have been expanded in most instances and are followed by strategies or measures that will enable Scott Paper Limited to achieve these objective.

3.1 MANAGEMENT AND UTILIZATION OF TIMBER RESOURCES

The lands within TFL 43 will be managed to maximize the production (growth) of *Populus Spp.* pulpwood on a sustained yield basis. This long term objective will be attained by adhering to the principles of integrated forest resource management under the regulatory framework of the *Forest Practices Code of B.C. Act and* the *Forest Act.* The determination of the long term timber harvesting land base of the TFL for MP #4 is shown below in Table 3.1.

The technical pulpwood timber characteristics sought by the company are a minimum 60-point photovolt reflectance-meter base wood fibre brightness, and an approximate average tree size of 35 centimeters diameter at breast height at rotation. The company anticipates a rotation age of 26 years in the Fraser Block and 33 years in the Homathko and Kingcome Blocks (including regeneration delay) in order to achieve the desired tree and fibre attributes.

Scott Paper Limited will harvest the AAC as determined by the Chief Forester of B.C. within the allowable limits for the licence. In addition, the company will cooperate with the Ministry of Forests to ensure that the Small Business Forest Enterprise Program allocation of the AAC is identified and harvested.

TABLE 3.1

LAND BASE SUMMARY FOR MANAGEMENT PLAN #4

Classification	Area (ha)			Mature Vol (m3)		
	Schedule A	Schedule B	Total	Schedule A	Schedule B	Total
Total Area	1223.8	8882.4	10106.2	111950	1,401,339	1,513,289
Less: Protected Areas	0.0	231.0	231.0	0	79,776	79,776
Less: Non Forest	426.1	3296.5	3722.6	0	0	0
Less: Non-Productive Forest Land	0.0	0.0	0.0	0	0	0
Total Productive Forest	797.7	5354.9	6152.6	111,950	1,321,563	1,433,513
Reductions to Total Productive Forest						
Non Commercial Land (NP BR)	114.0	640.6	754.6	0	0	0
Inoperable / Inaccessible	10.6	797.3	807.9	2231	222,917	225,148
Environmentally Sensitive Area 1 (98 %)	4.0	962.1	966.1	1759	392,786	394,545
Environmentally Sensitive Area 2 (50 %)	0.0	52.7	52.7	0	28,147	28,147
Riparian Reserves (RIP)	9.9	14.1	24.0	3152	3,546	6,698
Riparian Reserves (Buffer)	31.0	174.8	205.8	1800	49,286	51,086
Grizzly Bear Habitat	0.0	0.0	0.0	0	0	0
Heritage	0.0	0.0	0.0	0	0	0
Unclassified Roads, Trails and Landings	4.2	11.1	15.3	270	3,146	3,416
Total Reductions to Productive Forest	173.8	2652.7	2826.5	9,212	699,829	709,041
Less: Volume Reductions	0.0	0.0	0.0	0	0	0
Total Reduced Land Base	623.9	2702.2	3326.1	102,738	621,734	724,472
Less: Low Site Areas	0.0	0.0	0.0	0	0	0
Less: Not Sufficiently Restocked Areas	1.0	42.7	43.7	0	0	0
Additions to Reduced Landbase						
Add: Not Sufficiently Restocked Areas	1.0	42.7	43.7	0	0	0
Timber Harvesting Land Base	623.9	2702.2	3326.1	102,738	621,734	724,472
Less: Future Roads (1%)	0.0	21.7	21.7	0	5,347	5,347
Less: Future Site Degradation	0.0	0.0	0.0	0	0	0
Less: WTP retention Homathko Block (3%)		49.1	49.1		9,813	9,813
Total Long Term Land Base	623.9	2631.3	3255.3			
Total Long Term Volume				102,738	606,574	709,312

Due WEDNESDAY A.M.

3.1.1 Proposed AAC and Harvesting Planning

The calculation of the proposed allowable annual cut is described in detail in Appendix V, Timber Supply Analysis Report. A continuation of the area-based conversion control is proposed as specified in clause 9.01 of the TFL licence agreement. The proposed conversion area is 108.2 hectares per year for the period of MP #4. This annual conversion area was calculated by dividing the long term timber harvesting land base by the planned rotation age for each Block of the TFL and these were summed to obtain the total annual conversion area for MP #4. The planned outcome of this conversion program is to have the long term timber harvesting land base within TFL 43 occupied by cottonwood/hybrid poplar pulpwood stands by the end of the first rotation with as balanced an age class distribution as possible.

In carrying out the conversion program on the TFL, Scott Paper proposes to manage each supply block of the TFL as an individual operating unit. A proposed individual allowable annual area harvest has been calculated for each supply block taking into account it's net operable, productive, and available area and proposed rotation length as detailed in the Timber Supply Analysis report in Appendix V. This approach is considered by Scott Paper Limited to be the best approach in-so-far as protecting, conserving, and integrating other forest resource uses and values with timber harvesting activities, and it also balances wood supply costs and fibre qualities.

The proposed TFL allowable annual area cut for the period of Management Plan #4 of 108.2 hectares is projected to yield an average

39,762 m^3 of wood per year from the TFL. The proposed harvest level for each supply block is indicated in the Table 3.1.1 and was previously listed in the statistical summary section.

TABLE 3.1.1
PROPOSED CONVERSION AREAS AND PROJECTED VOLUME FOR MP #4

Block Number	Block Name	Harvest Area (ha)	Projected Average Volume (m^3)
1	Lower Fraser	44.3	15,011
2	Homathko	49.5	16,486
3	Kingcome	14.4	8,417
	Total	**108.2**	**39,914**

A separate volume-based analysis for the Fraser Block requested by the Chief Forester was prepared (see Timber Supply Analysis Report) and resulted in a harvest forecast of 13, 375 m^3 per year. However the company does not advocate the use of this approach to calculate the harvest level given the uncertainty of the growth and yield information as well as the progression of conversion process.

The company will harvest the full profile of the net available productive land base as defined by the approved operability assessments. The cottonwood/hybrid poplar timber harvested will be used by the company while all other species will be sold in accordance with the requirements in the TFL licence agreement. The harvesting operations will be planned to provide flexibility to benefit from market conditions, capital and resource allocations, and to salvage damaged timber within the cut control regulations.

20 Year Plan

A 20 year plan was prepared as part of the requirements for MP #4. This plan shows the timber harvesting areas over the period from 2000 to 2019 and is included in Appendix VI, 20 Year Plan. The plan illustrated that the proposed harvest level could be achieved for all Blocks of the TFL given the constraints included within the base case scenario of the timber supply analysis. A separate plan for each supply block is included in the map atlas providing a visual illustration of future harvest areas. The harvest area summary by period for each Block is shown in Table 3.1.1A.

TABLE 3.1.1A
SUMMARY OF HARVEST AREAS IN 20 YEAR PLAN

Period	Harvest Areas by Block				
	Fraser		Homathko	Kingcome	Total
	Sch. "A"	Sch. "B"	Sch. "B"	Sch. "B"	
2000-2004	127	98	251	70	**546**
2005-2009	89	138	248	72	**547**
2010-2014	116	109	252	73	**550**
2015-2019	165	58	278	77	**578**
Total	**497**	**403**	**1,029**	**292**	**2,221**
	ave 45/4e		51.45	14.6	111.25
	AR. 44.3		50.1	13.8	101.2

SAME AS 2. 4

3.1.2 SBFEP Apportionment

The current Small Business Forest Enterprise Program (SBFEP) apportionment is 2,803 m^3 per year. Due to the area-based nature of the allowable annual cut (AAC) calculation, it is difficult to determine the amount of area that will correspond with this volume. As such, Scott Paper Limited will cooperate with the Ministry of Forests to ensure that

the area harvested annually and periodically within the TFL, inclusive of the SBFEP is within the allowable limits for the licence.

None of the SBFEP apportionment has been harvested from the TFL to date. The accumulated SBFEP undercut will be approximately 16,000 m^3 at the expiry of MP #3. The planned sale within the Kingcome Block should reduce the amount of undercut volume. The company will cooperate with the appropriate Ministry of Forests to prepare a plan that identifies future harvesting areas for the SBFEP requirements.

If the MOF is unsuccessful in harvesting the SBFEP apportionment by the end of the MP #4 period, Scott Paper Limited will request a write down of the undercut to avoid a potentially serious age class distribution imbalance by carrying the undercut volume even further.

3.1.3 Silviculture Systems and Harvesting Methods

Clearcut is the predominant silvicultural system used on TFL 43 lands. This is largely influenced by the shade intolerant nature of cottonwood/hybrid poplar, the short rotation management regime, the existing mixed-wood low grade stand characteristics. The limited use of selection harvesting will be confined to sensitive areas for other resource values and this determination will be made during the management and operational planning stages. The retention of wildlife trees and immature coniferous species is a common practice on TFL 43 lands, particularly in the Kingcome and Homathko Blocks in order to maintain biodiversity and wildlife habitat.

Ground skidding is the predominant harvesting method used on TFL 43 with overhead cable systems and hoe forwarding used to a limited extent. The flat valley-bottom terrain and generally sandy textured soils of the TFL allow the use of fully mechanized harvesting machinery. This includes using mechanical feller bunchers, grapple-equipped rubber-tired skidders, and conventional loaders and logging trucks.

If soil types, stand characteristics, or particular resource value protection requires utilization of alternate harvesting methods, other acceptable cost effective harvesting methods will be used by Scott Paper.

3.1.4 Felling, Bucking and Utilization Specifications

The company will comply with the Ministry of Forests utilization standards as applicable to TFL 43. The current utilization standards practiced by Scott Paper Limited on the TFL, and those proposed for the period of Management Plan #4 are as follows:

TABLE 3.1.4
UTILIZATION LEVELS

Species Group	Utilization			Firmwood Standard
	Minimum DBH (cm)	Stump Height (cm)	Top DIB (cm)	(%)
Mature Conifer	17.5	30.0	15.0	50
Immature Conifers	12.0	30.0	10.0	50
Older Mature Deciduous > 40 years old	17.5	30.0	15.0	50
Younger Mature Deciduous > 24 years old but < 41 years old	12.0	30.0	10.0	50

3.1.5 Harvesting Pattern, Cutblock Size and Frequency of Passes

Harvesting patterns will be largely dictated by stand maturity, merchantability, natural boundaries, accessibility, the presence or lack of other resource values, species composition, or green-up adjacency restrictions. In all cases, Scott Paper Limited will ensure that the maximum size of cutblocks is limited to that allowed under the *Forest Practices Code of BC Act* and regulations. Scott Paper Limited plans to cut all environmentally harvestable areas on a 26-year rotation age in the Fraser Block and a 33-year rotation age in the Homathko and Kingcome Blocks.

3.1.6 Stand Cutting Priority and Harvest Profile

As part of the company's ongoing timber harvesting activities, the company will continue to harvest the full profile of the productive land base, and utilize or market the various species produced in accordance with the requirements in the TFL licence agreement.

Assuming normal operating conditions, harvesting of the older mature dark wood cottonwood stands, and economically merchantable mixed-species stands in the Homathko and Kingcome Blocks is seen as the highest priority during the conversion period of these Blocks. However, if economically-merchantable stands are threatened or damaged by natural causes such as river erosion, fire, insects, or disease, they will receive highest priority status consistent with access being available.

Scott Paper Limited realizes that its ability to utilize and market species other than cottonwood will fluctuate over time. Therefore, the company

intends to harvest stands of these other species when economic markets exist, and concentrate harvesting in primarily cottonwood stands when they do not exist.

3.1.7 Green-Up Period

The rapid early growth of cottonwood/hybrid poplar leads to the attainment of the 3 metre adjacency height requirement 3 years after planting. Harvesting of adjacent cutblocks will proceed once previously harvested cutblocks have reached 3 metres in height and the stocking and block coverage requirements specified in the operational planning regulations of the FPC have been met.

For the intensively managed, Short Rotation Intensive Culture (SRIC) plantations within the Fraser Block of the TFL, Scott Paper Limited will seek site-specific variance as the target stocking will be 700 stems per hectare. The reasons for seeking this variance is the management of deciduous species with uniform stocking (survival rates in excess of 90%) and uniform height growth. In addition, the lower stocking levels for these plantations are necessary in order to provide adequate growing space for individual trees with very rapid growth rates. Preliminary observations in the Fraser Block have shown that growing space is becoming a limiting factor in these intensively managed plantations.

3.1.8 Seasonal Logging Patterns

Where environmentally and operationally possible, logging will be scheduled for the late fall and early spring months, to promote natural regeneration of cottonwood by coppice, cloning, and seeding. In the Fraser Block the vast majority of harvesting is done in the September to April period to coincide with low water levels in the Fraser River. In comparison, practically all of the harvesting in the Homathko and Kingcome Blocks is done in the March to October period.

3.2 PROTECTION AND CONSERVATION OF NON-TIMBER VALUES

The company will continue to identify the non-timber values within the TFL, and plan timber harvesting activities to integrate, protect, and conserve these other resource values.

3.2.1 Visual Quality

Visual landscape values will be maintained at a level that is consistent with the prescribed Visual Quality Objectives (VQO's) for the area. Only the Fraser Block of TFL 43 is considered visually sensitive as both the Homathko and Kingcome Blocks are remote areas with limited public use. Portions of the Fraser Block are within the Highway 1 and Highway 7 known scenic areas. The existing visual landscape inventory will guide the management of visual resources through the established VQO's. Fraser Block

Harvesting operations will be conducted in a manner consistent with these established VQO's, however, the assignment of Partial Retention (PR) VQO's to small individual islands creates an overly restrictive harvesting constraint that is impractical from a visual quality and operational planning perspective. It is not practical to harvest these small islands in several passes given the logistics and costs of mobilizing equipment to these islands and nor does it result in a naturally occurring visual element within an active flood plain. Small islands (less than 25 hectares) with PR VQO will be clearcut as the mitigative features of retaining riparian buffers along the perimeter, the highly modified surrounding landscape consisting of agricultural, residential and utility corridors, gravel and sand

bars, and rapid visual green-up will satisfy the VQO. Furthermore, the total area classified as PR is less than 100 hectares and with the exception of one island, all are less than 12 hectares in size.

3.2.2 Biological Diversity

The objective is to maintain biological diversity at the landscape level consistent with the ecosystem and forest management requirements on TFL 43. The land base for biological diversity conservation will be primarily the non-contributing areas within and adjacent to TFL 43 given the objective of the licence is to manage for cottonwood/hybrid poplar on a short rotation.

Stand level biodiversity requirements will follow the current guidance policies of the Ministry of Forests and Ministry of Environment, Lands and Parks within the context of the unique characteristics of TFL 43, such as the limited amount of natural cottonwood within the Fraser Block of the TFL, relatively small size of TFL 43 land base, and the considerable existing reserve areas.

Scott Paper Limited is committed to working with the MOF and MOELP in implementing the impending Landscape Unit planning requirements on TFL 43. The company will take an active role in this process to ensure the unique attributes of TFL 43 are fully understood and considered. The implementation of landscape level biodiversity requirements is somewhat cumbersome due to the relatively small size and broken configuration of

the TFL and the planned short rotation management regime. The company's first priority will be to ensure that the non-contributing land base within and adjacent to the TFL is used to satisfy the old growth requirements. In addition, the previous joint planning initiatives such as the Forest Ecological Network (FEN) development in the Homathko and Kingcome Blocks should be incorporated properly in the LU planning. The specific biodiversity objectives and measures for each Block of the TFL are discussed below.

Fraser

The Fraser Block largely consists of islands within the Fraser River and is surrounded by the urbanization and agricultural development. There are limited opportunities for setting aside large areas to fulfill old growth requirements particularly since less than 10% of the stands are greater than 50 years old and are almost exclusively comprised of cottonwood/hybrid poplar species. The very existence of the TFL itself within this relatively highly developed area helps to provide additional forested lands within an otherwise non-forested landscape.

Fraser Lowlands Protected Area process has been given the mandate to set aside approximately 1,000 hectares of land in the Fraser River system from Mission to Hope including the Lower Harrison River and bay, the Chehalis River delta, TFL 43 land base, Hatzic Lake and the McGillivary and Sumas River estuaries. This will be part of the Lower Mainland Protected Area Strategy directed at protecting valley bottom land for conservation and recreation values that will assist in meeting the landscape level biodiversity requirements. The local stakeholder working group has

tabled a report that has recommended for protection an area almost equal to the timber harvesting land base of the TFL Fraser Block. The existing riparian retention reserves, environmentally sensitive areas, inoperable, and non-commercial brush types within TFL 43 are available for inclusion in the fulfillment of landscape level biodiversity requirements. The areas classified in each category are documented in the Timber Supply Analysis Information Package, Appendix IV.

Homathko

Planning for grizzly bear habitat for MP #3 resulted in setting aside critical areas. A substantial portion of this Block is reserved from harvesting (approximately 56% of the productive area, 2160 ha) through ESA's, protected areas, riparian retention zones and non-commercial cover type. A total of 10% of these reserves are composed of stands older than 121 years old. The use of these areas should be foremost in Landscape Unit planning, and the Forest Ecological Network developed for MP #3 should be incorporated in designating old growth management areas.

Two important areas from a biodiversity and wildlife perspective in this portion of the TFL have been substantially protected from harvesting. The declaration of the Lower Homathko Estuary Protected Area has resulted in preservation of this sensitive area within TFL 43. In addition, Cumsack Slough wetlands complex and identified old growth grizzly bear habitats have been reserved through the ESA designation. The amount of existing constrained areas should be sufficient to meet biodiversity requirements within this Block.

Kingcome

In relative terms, the Kingcome Block of the TFL is somewhat small and fragmented for landscape level biodiversity planning. The protection of identified fisheries and wildlife sensitive areas along with the inoperable areas will augment the Ecological Reserves 40A and 40B to fulfill landscape level biodiversity requirements. A Forest Ecological Network developed for MP #3 linked the reserved areas within the Kingcome Block to the Ecological Reserves. The size and characteristics of the area reserved from harvesting is documented in Appendix IV, Timber Supply Analysis Information Package.

3.2.3 Soils

The company will maintain the productive capacity of the soil by minimizing site degradation and limiting the amount of area occupied by permanent access structures. Rehabilitation measures will be employed to ensure that soil disturbance limits specified in the Silviculture Prescription are met. Furthermore, the company will seek to improve soils through the application of organic amendments where appropriate and desirable.

The company's regeneration and brush control objectives necessitate higher soil disturbance limits than those generally approved under current guidelines. These higher limits do not compromise other forest resource values, have not shown to reduce the long term productivity of the soils, provide a beneficial effect in establishing new forests.

3.2.4 Water

The dynamic nature of the large river systems that Scott Paper Limited operates within limits the company's ability to influence the water quality and quantity. Scott Paper Limited's objective will be to maintain the natural existing water quality on the TFL and strive to limit the introduction of deleterious materials from forest management operations. This will be primarily accomplished through the retention of reserve zones adjacent to stream channels and minimizing the number of stream crossings.

There are no designated community watersheds within TFL 43 at the present time.

3.2.5 Recreation Resources

The specific recreation features will be protected and conserved as required. The company will continue to provide for dispersed recreational use by maintaining access routes to various areas within and adjacent to the Fraser Block of the TFL (subject to the cooperation of other landowners). The remoteness of the Kingcome and Homathko Blocks, along with the limited access due to flooding of the Fraser River islands during the freshet, restricts the use of the TFL lands for recreation purposes.

Seasonal recreation activities that occur with the Fraser Block include fishing for salmon, steelhead and trout, geese and duck hunting, deer hunting, rock hunting, horseback riding, hiking, and all-terrain vehicle use. In most cases, these uses occur on a dispersed basis and are generally confined to non-forested areas, and are fully compatible with company's tree farming activities. Scott Paper encourages these social benefits to the public and intends to continue it's open-use recreation policy on all of the TFL lands. In keeping with this open-use policy and the continuance of recreational opportunities, recreation values will be integrated in harvest planning.

There are no formal recreation facilities or trails on the TFL, primarily due to the inaccessibility and remoteness of the upcoast Blocks, and the annual flooding and very heavy underbrush growth on the Fraser Block. There are no plans to construct any of these facilities during the period of Management Plan #4.

A Recreation Analysis Report and the recreation inventory included in Appendix X provide a thorough review of the recreation features and activities on all three Blocks of the TFL. A vast majority of the features are associated with fisheries and wildlife values. Previous area reductions for fisheries and wildlife will protect and conserve these features and associated activities.

3.2.6 Cultural Heritage Resources

Archaeological Overview Assessments and Archaeological Impact Assessments and/or other field surveys will be the basis for determining the extent of cultural heritage values within TFL 43 lands. Areas identified as important from these surveys will be protected from development. The Archaeological Branch and the appropriate First Nations groups will be consulted prior to implementation of the given course of action.

The dynamic nature of the eroding and accreting river systems combined with excessive development and cultivation in some portions of the TFL, reduces the likelihood of existence or of discovering archaeological values during normal forest harvesting and silviculture operations.

3.2.7 Range Land

There are no range values on TFL 43 lands due to the nature of the vegetation of the these alluvial sites.

3.2.8 Fish Habitats

Scott Paper Limited's objective is to protect fish habitats during forest management activities such as harvesting, road building and site preparation. In addition, Scott Paper Limited will participate in habitat

enhancement and restoration projects with cooperation and guidance from government agencies responsible for managing fisheries values.

TFL 43 encompasses three dynamic drainages which support several species of salmonids which utilize these drainages for the migration, spawning, incubation, and rearing phases of their respective life cycles (see Summary of Fish Resources, Appendix VIII). Consequently, the river systems encompass a myriad of fisheries-sensitive areas which must be recognized and protected during operational planning. Maintenance of stream integrity for fisheries production is one of the company's fundamental objectives.

Scott Paper Limited holds consultative meetings with Department of Fisheries and Oceans (DFO) and Ministry of Environment, Lands and Parks (MOELP) staff on an ongoing basis to seek guidance and approval of its forest management activities. From these consultative meetings, plus the experience gained during Scott Paper's tree farming activities over the last 35 years, the company expects to continue to manage the TFL for *Populus Spp.* timber production while avoiding degradation of fish habitat.

The sensitive fisheries areas have been protected with environmentally sensitive area designation and the delineation of riparian retention reserves adjacent to stream channels. The stream classification applicable to the Fraser, Homathko and Kingcome rivers is S1-Large River and, as such, a riparian management zone of 100 metres is specified within the Operational Planning Regulations (OPR). The company with input from

DFO and MOELP will use the following general practices to ensure maintenance of older hardwood trees adjacent to stream channels within the flood plain:

- retention of a minimum of 50% of the trees on the first harvest within 20 metres of the outer perimeter of the islands and along back channels, side channels and sloughs (referred to as the riparian retention zone). At the time of the next harvest a minimum of 10% of these larger trees will be retained and rest will be replaced with trees planted at the previous harvest in order to meet the 50% retention target.
- on smaller islands (less than 25 ha) within the flood plain Scott Paper will leave 2-3 large trees for every 25-30 metres length of island.

However, these practices have been further refined in each Block of the TFL taking into account the unique characteristics of land base, operational complexities and resource values. The following riparian habitat retention practices are used:

- In the Fraser Block a 10-20 metre riparian retention zone is maintained around the perimeter of the islands and along back channels, side channels and sloughs depending upon site specific conditions. In the case of small islands the minimum width of a riparian retention zone is reduced to 5 metres. Windows are cut within this riparian retention zone

to meet harvesting requirements for barge loading sites and/or dry/wet booming sites as approved by DFO.

- In the Homathko and Kingcome Blocks a 20 metre riparian retention zone is retained around the perimeter of the islands, along back channels, side channels and sloughs. This width of the riparian retention zone may be reduced if the area is at the risk of erosion and subject to DFO approval.

Harvesting adjacent to the riparian retention zone will be done in a manner that will protect the integrity of this leave strip in order to protect adjacent fish spawning and rearing sites as well as wildlife habitat. Protection of herbaceous and understory vegetation will be a priority. Other site specific variations may be used with DFO and MOELP approval, and this will be reflected in prescriptions that will be prepared for operational planning.

The company will seek DFO and MOELP approval for access and egress points along stream channels and ensure that any instream work required is carried out in the appropriate fisheries windows approved by these agencies (Fisheries Windows and Measures letter of June2, 1999 for Fraser Block). This will ensure protection of the streambank and avoid any streambank erosion due to timber harvesting.

One major advantage of *Populus Spp.* management along stream banks is that harvesting of the trees during the late fall and spring months does not result in death of the root systems. Consequently, streambank stability

associated with maintenance of live-root systems can often be maintained in a *Populus Spp.* management regime.

3.2.9 Wildlife Habitats

In consultation with MOELP the company will identify sensitive wildlife habitat areas and prepare management prescriptions that retain these wildlife habitat areas during forest management activities. In some instances important habitat areas may be included as WTP's. Where appropriate the company will seek to improve wildlife habitat in consultation with appropriate agencies.

The critical habitat requirements for Identified Wildlife will be protected and special management requirements will be implemented, as necessary, in order maintain or rebuild population levels or distribution of the species. A number of unique ecosystems have already been protected through the establishment of ecological reserves and protected areas adjacent to the TFL.

Populations of migratory and resident game birds, bald eagles, deer, black and grizzly bears, frequent sections of TFL 43 during all, or parts, of their respective life cycles. MOELP files and reviews of Canada Land Inventory maps, indicate that there are wildlife wintering and migrating areas within the boundaries of the TFL (refer to Summary of Wildlife Resources, Appendix IX). The important wildlife habitat areas will

receive an environmentally sensitive area classification consistent with the habitat values present.

In the case of highly sensitive wildlife habitat values, Scott Paper made an overall 98% exclusion from contribution to the AAC for all those forest cover types classified as Ew1 (bald eagle and grizzly bear wildlife sensitive areas). At the operational level up to 90% of the area within particular polygons classified as Ew1 could be removed for harvesting purposes, as agreed upon by MOELP. For moderately sensitive wildlife habitat values, a 50% reduction of contribution to the AAC has been made for areas designated as Ew2, which includes some potential grizzly bear habitat. This has resulted in the reservation of the majority of the small islands in the Homathko River and the swampy areas adjacent to Cumsack Creek and Waddington Harbour. A number of these have been combined with fisheries sensitive areas in this Block. In the Fraser Block, bald eagle roosting areas and perch trees are the main consideration in the exclusion of these areas. In the Kingcome Block, grizzly bear fishing was the key value used to reserve these areas. Ongoing field inspections with agency staff will lead to further refinements and identification of additional sensitive wildlife habitat areas. Harvest planning will be accomplished in a manner that protects these significant habitat areas.

To minimize the potential impact of Scott Paper's forestry operations on wildlife populations, the company proposes to continue managing each supply block of the TFL on an individual operating area basis. This will avoid aggregating the TFL harvest into any individual supply block, which would have significantly greater effects on wildlife habitat.

In cooperation with the Parks Canada/Canadian Wildlife Service, the company will continue the bald eagle habitat and productivity surveys program on the Fraser Block of the TFL (survey results included in Appendix IX). When harvesting adjacent to bald eagle nest sites, Scott Paper Limited will protect bald eagle nesting and roosting habitat, moreover ensure that the harvesting operations are planned to minimize disturbance to the bald eagles.

Joint on-site field inspections during operational planning will continue to identify sensitive wildlife habitat areas requiring protection during the TFL management and timber development planning processes.

3.2.10 Populus Trichocarpa Genetic Preservation

Preservation of the indigenous *Populus trichocarpa* gene pool will occur through the support of the current ecological reserves, maintaining riparian retention zones and sensitive wildlife habitat areas, and the collection and archiving of natural provenances of black cottonwood with the cooperation of other companies and government agencies. The following measure are proposed in order to preserve native black cottonwood (*Populus trichocarpa*) gene pool:

- Cooperate with other companies and agencies in the collection and archiving of natural provenances of black cottonwood for breeding purposes.

- Retention of native black cottonwood in the riparian retention zones and wildlife and fisheries habitat reserves.
- Continue support for appropriate ecological reserves and/or protected areas which include native black cottonwood as in the past (e.g., Ecological Reserve #76 and the Fraser Lowlands Protected Areas).

3.2.11 Land Erosion/Accretion Management

The company's objective is to document the erosion and accretion during each management plan process. This will be accomplished by updating the land base and forest cover changes due to river erosion and accretion.

The following methodology will be used to track and account for river caused land erosion/accretion:

- Every 5 years new aerial photography is flown by the company to update all land base and cover changes due to river erosion/accretion.
- Eroded areas are automatically withdrawn from the timber harvesting land base by the updated base mapping.
- Newly accreted areas are not included into the timber harvesting land base until the forest cover has reached 3 meters in height, and has 50% or greater crown closure, and are determined to be environmentally and economically operable.

3.2.12 Rafting of Logs

A minor amount (approximately 20%) of timber in the Fraser Block may be rafted (boomed at the harvesting site). Assembly areas for log rafting in the Fraser Block will be determined in consultation with fisheries officers from the MOELP and DFO so that raft building will not be located on spawning areas. For any wet booming that may be done, logging debris will not be allowed to enter any channel during booming. For dry booming, log manufacture will be done primarily on the actual harvesting site and any debris that is generated at the rafting site will be collected and returned onto the harvested area. Debris collection at dry booming sites will be done by the yarding and booming equipment and returned onto the harvested area.

The location of barge loading sites will be confirmed with DFO and MOELP and they will be located to minimize disturbance to the streambank.

River rafting of logs is not planned for either the Homathko or Kingcome Blocks.

3.3 INTEGRATION OF HARVESTING ACTIVITIES WITH NON-TIMBER USES

The company will work closely with other resource users and agencies by planning and integrating these other resource values with the forest management activities on the TFL. Scott Paper Limited will cooperate with non-timber users and integrate these activities with the harvesting of TFL lands. The remoteness of the Kingcome and Homathko Blocks, seasonal access restrictions in the Fraser Block and heavy underbrush limit the use of TFL lands by other users.

3.3.1 Trappers

There are no active trapping licence's within the TFL area. The public review process for the Forest Development Plan will provide the main opportunity to integrate any potential concerns with future trapping activities that may occur within the TFL area.

3.3.2 Guide Outfitters

The main activity is guided fishing and it occurs on a limited basis in the Fraser, Homathko and Kingcome Rivers. This activity is not likely to cause any conflict with the timber harvesting operations on the TFL. Scott Paper Limited will continue to monitor the level of activity occurring and give due consideration to any comments received with respect to the operations on TFL 43.

3.3.3 Range Tenure Holders

There are no range tenure holders within TFL 43.

3.3.4 Other Licenced Resource Users

The company will cooperate with other licenced resource users in the area. Currently Forest Development Plans are referred to other timber tenure holders in the area, as well as coordination of activities and sharing costs for projects is a common practice.

3.3.5 Aboriginal People

Scott Paper Limited has had an ongoing working relationship with aboriginal peoples in the vicinity of TFL 43. A number of First Nations groups have performed various harvesting and silviculture activities within TFL 43. The company has not identified any aboriginal sustenance or traditional use activities that take place on lands within TFL 43. Aboriginal fishing is not affected by the tree farming activities on TFL 43 as it occurs along sand and gravel bars outside of the TFL. The company will continue to consult with the Bands to identify sites or activities that may take place on the TFL. The type of activity or cultural site identified will determine the level of integration or mitigative measures required. This will be discussed with the appropriate Band prior to proceeding in a given direction.

3.4 FOREST FIRE

3.4.1 Prevention and Suppression

The company's objective is to prevent fires by using good fuel management practices, ensuring proper and well maintained equipment is available and following operational restrictions as the fire danger increases. Scott Paper Limited will comply with *the Forest Fire Prevention and Suppression* regulations of the *Forest Practices Code of B.C. Act.* The company will aim to control all wildfires by 10:00 a.m. on the day following discovery.

Due to the location of the TFL on moist valley bottom-lands, fire occurrence is rare. Generally, the fuel loading is low due to close utilization and deciduous slash. In addition, the company's operating policies are designed to ensure timely burning of landing slash accumulations thus minimizing fire hazard.

To date two forest fires in Bute Inlet have destroyed plantations, but only on a limited area (roughly 10 ha) and the affected area was replanted within one year.

Fire preparedness plans will be prepared in accordance with the *Fire Prevention and Suppression Regulations* and guidance from the Coastal Fire Centre. The company receives the fire danger class ratings on an ongoing basis from the Coastal Fire Centre. The company operations personnel and logging contractor crews will be advised of the fire danger

class and operations will be conducted in accordance with the requirements consistent with the danger class.

A fuel management plan will be prepared in conjunction with the Forest Development Plan submission. This plan will describe measures to reduce fire hazard, fire detection methods and the company's fire suppression strategies.

3.4.2 Prescribed Fire

The use of prescribed fire is irrelevant on TFL lands given the vegetation characteristics within the flood plain. Burning of landing slash piles is the only active use of fire carried out by the company.

3.4.3 Fuel Management

Although fire risk and fuel loading are generally very low, the company's main objective is to carry out regular and timely burning of landing slash piles, therefore reducing the amount of flammable material along roads. The other factors that assist in this regard are the limited public access to the TFL area during the fire season (high water levels in rivers), numerous natural fire breaks within the flood plain and rapid green-up of logged areas.

3.5 FOREST HEALTH

Forest health strategies that minimize losses from fires, insects, diseases and other abiotic damaging agents will be developed to protect and/or enhance the productivity of the forest resources. These strategies will be developed in consultation with MOF forest health specialists. Forest health issues will be managed in a manner that maintains, recovers, or enhances the short and long-term productivity of the forest resources.

3.5.1 Pest and Disease Management

Scott Paper Limited's objective is to minimize damage from pests and diseases on TFL 43. This will be accomplished by developing a strategy that monitors and detects pests and diseases on an ongoing basis, consulting with MOF in preparing remedial measures and implementing the control measures. A key element in avoiding and/or limiting damage is to select hybrid poplar clones that exhibit resistance and/or tolerance to pests and diseases.

Scott Paper Limited has an active monitoring and assessment plan to detect significant damage from pest and diseases. Annual aerial reconnaissance flights are used for harvest planning, silviculture monitoring, and pest detection. The small land base within TFL 43 is flown several times each year as a result of frequent site inspections, monitoring and surveys. Consequently, the majority of stands within TFL 43 are visited and monitored regularly throughout the year. Any pest

incidence observed during monitoring or operational activities will be investigated further using ground reconnaissance, approved survey techniques, and field sampling will be done in cooperation with both federal and provincial pest specialists. The intent is to identify pests and diseases causing damage and prepare appropriate strategies to reduce losses.

To a large degree, high fisheries resource values limit the amount of direct intervention for pest control that is feasible. For example, riparian management zone requirements have high pest management constraints, so very little direct intervention is feasible to control pest outbreaks within these zones. Removal of infected trees may be an option providing they can be felled away from the streams. Even then, no treatments will be carried out without the approval of government pest specialists and fish and wildlife agencies.

Scott Paper Limited's forest health management strategy is to work with natural stand development processes while accepting a normal and tolerable level of endemic pest agents in the forest crop, providing that these pest agents do not pose excessive risk of loss to the investments in forest management.

3.5.2 Historically Significant Pest Impacts

In the 40 years that Scott Paper Limited has been managing poplars on the coast of B.C., numerous pest agents have been encountered but none have reached epidemic levels to cause significant mortality or growth loss.

Poplars have a wide spectrum of pests that prefer the nitrogen-rich foliage and low-density wood. Fortunately, each pest is limited in its range, clonal specificity, plant part affected, and time of damage. Most pests occur at endemic levels and attack poplars for only a brief period (one or two weeks) in their life cycle, and the trees are able to recover easily with no apparent growth loss. Specific pests occurring on TFL 43 are described in the following table under section 3.5.4.

In the upcoast Blocks of TFL 43, where Scott Paper has been actively managing poplars for 14 years, only pest to cause appreciable damage was the willow borer in Homathko in the mid 1980's. The native leaf rust, *Melampsora occidentalis* is widespread on all native *Populus trichocarpa*, but has limited effect on most of the hybrid poplars in use. Damage by mammals such as deer (*Odocoileus Spp.*) and meadow voles (*Microtus Spp.)* is minor and of little consequence.

In the Fraser Valley, where Scott Paper Limited has been managing hybrid poplars and native black cottonwood for over 40 years, greater number of pest agents have been encountered. Stem damage caused by winter ice storms has affected tree form in some plantations, but the extent of damage has been limited to date. Plantations adjacent to river channels are

susceptible to beaver damage and stream bank erosion. These, too, are minor and acceptable losses. In addition, slash piles adjacent to beaver habitats restrict animal movement and thereby help to control plantation losses.

Several insect and disease occurrences have affected poplars in the Fraser Block of TFL 43 over the past 35 years, but none have developed to persistent epidemic proportions.

From 1991 to 1994, the larvae of the sawfly, *Nematus currani*, has defoliated larger native black cottonwood trees and also affected some of the hybrid poplar trees. The population levels of the sawfly peaked and has been decreasing naturally since 1994.

The shoot blight *Venturia populina* is common throughout the operating areas. Only in the Kingcome operating area does it pose a risk to the productivity of hybrid poplar plantations. Due to the moist climate of CWHvm1 the effects of the blight are the most pronounced. In an attempt to reduce or eliminate any adverse effects of the blight *trichocarpa* X *maximowiczii* clones are now primarily planted in Kingcome along with resistant *trichocarpa* X *deltoides* and *nigra* X *maximowiczii* . The *maximowiczii* parent confers blight resistance to the offspring thus reducing and/ or eliminating the effects of blight.

From 1997 to present the northern tent caterpillar has defoliated primarily the red alder in the Homathko area. The defoliation experienced by the red alder has for the most part has not extended to the hybrid poplar and

black cottonwood. In the current infestation only one hybrid poplar clone has shown susceptibility to damage. Approximately 2.0 ha. had to be replaced with a more resistant clone.

The potentially most severe pest out break to date has been the introduction of the rust *Melampsora medusa* to the Pacific Northwest. The introduced rust was first detected in our Harrison Mills nursery in 1993. Since that time the introduced rust has hybridized with *Melampsora occidentalis* to produce 9 varieties of *Melampsora columbiana* by the fall of 1998. Each of the varieties has a distinct geographical location and effects different clones. Also, new varieties of *Melampsora columbiana* are mutating each year. Prior to the introduction of the rust Scott Paper Limited had invested in laboratory screening trials and thus was able to remove all susceptible clones from production and deployment. Since 1994 Scott Paper Limited has been a member of the Poplar Molecular Genetics Cooperative, and through the cooperative's work the gene which confers resistance to the rust(s) as been located [Mmd1] and is in the process of being mapped and appropriate genetic markers will be developed. In the future all clones will be tested at a genetic level for resistance to the rust. Assuming governmental and societal acceptance, in the future promising clones may also be genetically engineered for rust resistance. Native Black Cottonwood has yet to show any adverse effect from the hybrid rust *Melampsora columbiana*.

3.5.3 Strategies for Achieving Forest Health Objectives

Standard silviculture surveys are carried out prior to logging, one growing season after logging, one growing season after planting, and at free growing (usually 3-8 years after logging). Any potential or developing pest problems would be noted and recorded during those surveys and follow-up aerial and ground surveys would be conducted, as needed.

Annual aerial reconnaissance as described in a previous section will also be used to detect pest outbreaks and to guide ground surveys.

Permanent sample plots located throughout TFL 43 and numerous clonal trials will provide data on growth impacts of insects and diseases as they occur. Periodic re-measurements within affected stands, when compared to unaffected stands, will provide quantitative loss estimates for affected stands.

Treatment priority will be given to current outbreaks in immediate danger of mortality, followed by outbreaks of a limited extent, but with the largest potential impacts on forest health. Pest occurrences at endemic levels will be monitored and tolerated. Ministry of Forests' health management strategies, standard procedures, and guidelines will be utilized on all TFL 43 lands.

No detailed schedule of forest health treatments or actions is proposed, since no stands with high treatment priority currently exist.

Scott Paper Limited's main strategy for controlling pest losses is to select planting material that is the most resistant or tolerant to the specific pests which can potentially cause losses. With over 3000 cultivars[1] of poplar in test, and a continuing series of pro-active disease screening tests, operational trials and research trials, Scott Paper has managed to keep ahead of damaging pest agents by switching to cultivars that are resistant to and/or tolerant of the threatening pests.

Because of the sensitivity of the TFL valley bottom sites and the proximity to valuable habitats of fish and wildlife species, Scott Paper intends to avoid using chemical pest control methods where possible. In instances where no alternate control measures are effective and significant timber values are threatened, biological or chemical control measures may be undertaken, but only with the required permits in place and under the direction and approval of qualified provincial and/or federal pest specialists, and with the approval of biologists charged with the protection of adjacent fish and wildlife resources.

[1] Cultivar = "cultivated variety" = plants arising by vegetative propagation or sexual reproduction from a single clone or group of closely related individuals.

Although Scott Paper Limited plants clonal materials which are potentially susceptible to epidemic pest outbreaks, the company minimizes the risk by deploying several (40+) clones operationally, and by planting these in small patches of one to five hectares to minimize pest buildup and dispersal. Furthermore, most stands are managed so that natural regeneration of native black cottonwood (*Populus trichocarpa*) is encouraged and reserved trees of other species are retained on logged sites for wildlife and biodiversity purposes.

Scott Paper Limited will use the Severity Index classification system to classify the degree of damage and Pest Impact Codes to determine the course of action required to control the pest. The Severity Index and Pest Impact Codes are described in F.R.D.A. report # 213 "Surveys of Forest Health in Managed Stands in British Columbia," 1992.

3.5.4 Forest Pests Occurring on TFL 43 and Control Measures

The various pests occurring on TFL 43 along with strategies for control are described in Table 3.5.6.

Table 3.5.4
Forest Pests and Control Strategies

CATEGORY	PEST AGENT	DAMAGE	CONTROL STRATEGY
INSECTS			
Defoliators	Nematus currani	Sawfly larva skeletonizes up to 100% of leaves in May.	Wait for population to crash in 2-3 year cycle (no mortality) no control required.
	Nematus spp. - leaf miners	Numerous endemic species	No control required
	Lymantria spp.	Gypsy moth defoliators	Select resistant clones
	Malacosoma californicum pluviale - Northern tent caterpillar	Defoliation by larvae	Natural controlled by parasites, diseases, predators and weather conditions. Select resistant clones.
stem borers	Cryptorhynchus lapathi	Poplar-and-willow borer	Select resistant clones
DISEASES:			
-leaf rusts	Melampsora spp.	Parasitic on poplar leaves with potential loss of foliage and mortality.	Select resistant clones. Fungicides may be used to control outbreaks; encourage a healthy proportion of tolerant *Populus trichocarpa* in Homathko and Kingcome stands.
-leaf and shoot blight	Venturia populina	Leaf necrosis and shoot die-back.	Select resistant clones
-stem canker	Septoria musiva	Stem cankering and breakage.	Very rare in B.C. Select resistant clones
MAMMALS:			
-deer browsing	Odocoileus spp.	Leaf browsing, shoot clipping, horn rubbing causing scarring and/or die back of main stem.	Plant larger stock, tolerate some proportion of brush (alternate browse) on susceptible sites. Select resistant clones.
-mouse/vole: girdling	Peromyscus spp. Microtus spp.	Girdling of bark around stem base of young trees causing disruption of vascular system and death of tree.	Vigorous weed control eliminates habitat for mice/ voles. Plastic collars protect the stems. Select resistant clones. Encourage hawk, owl, eagle, and coyote predation.
-beaver: harvesting	Castor canadensis	Falls trees adjacent to waterways and eats them. Builds dams and floods forested land, causing death of forest crop. (Minor localized problem.)	Expect some losses of trees/shrubs adjacent to water courses, pile debris outside plantations to restrict access. Fence. Trap. Select resistant clones.
ABIOTIC: AGENTS			
-frost		die-back	Select resistant clones.
-drought		mortality	Select tolerant clones.
-wind storms		windthrow	Salvage losses.
-ice storms/snow		stem damage	Salvage losses.
-flooding		mortality	Select resistant clones.
-fire		mortality	Control fire and limit damage

3.6 SILVICULTURE

Scott Paper Limited's silviculture objective is to promptly restock all productive areas with a high proportion (greater than 60% by volume) of poplar (including native black cottonwood and hybrid poplar) following denudation.

3.6.1 Stand Establishment, Species Selection and Stocking Requirements

The fundamental goal of the TFL silviculture program is to restock all productive and operable forest land with a high proportion (i.e. greater than 60% by volume) of poplar (including the native black cottonwood and hybrid poplars) following denudation. The company's harvesting is conducted to facilitate partial planting of cutblocks, if necessary. Harvested lands will be restocked within an acceptable regeneration delay period as per Table 3.6.1 and 3.6.1A. The standards in these tables will be adhered to unless special considerations warrant different standards and these are approved by the District Manager. On robust sites with rapid re-establishment, Ax and Ac can grow over 3 metres per year. On such sites it may be appropriate to conduct free growing surveys as early as the completion of the third growing season when trees are over 8 metres tall. Advantageously timed harvest and expeditious planting after denudation are carried out to establish new stands within TFL 43.

TABLE 3.6.1 : DECIDUOUS TREE SPECIES SELECTION AND FREE-GROWING STOCKING STANDARDS FOR T.F.L. #43

BGC SUB-ZONE & SITE SERIES #	T.F.L. BLOCK	BLOCK LOCATION	TREE SPECIES		STOCKING STANDARD WELL SPACED PER HA		REGENERATION DELAY (YRS) *(1)*	FREE GROWING ASSESSMENT			MINIMUM (m) ACCEPTABLE HEIGHT
			PREFERRED	ACCEPTABLE	TARGET	MIN.		EARLIEST	LATEST	% TREE HT OVER BRUSH	
CWH dm	1	Fraser	Ac, Ax	Dr, Mb	800	500	1	3	8	150%	4.0 for all species
#5, 7, 8, 9,											
13, 14											
SRIC Plantations		Fraser	Ac, Ax	Dr, Mb	700	500	1	3	8	150%	4.0 for all species
CWH ds1	2	Homathko	Ac, Ax	Dr, Mb	900	500	3	5	8	150%	3.0 for all species
#5, 6, 7, 8, 9											
CWH vm1	3	Kingcome	Ac, Ax	Dr, Mb	900	500	3	5	8	150%	4.0 for all species
#5, 7, 8, 9, 10											

CWH - Coastal Western Hemlock

SRIC Plantations - Short Rotation Intensive Culture plantations are intensively managed areas within the Fraser Block

(1) For minor site series (<5% by area), the regeneration delay may be longer, the free-growing window later, and the target minimum stocking standards lower, but these will be specified in the silviculture prescriptions.

(2) Ax = hybrid poplar, Ac = black cottonwood, Dr = red alder, Mb = bigleaf maple. Bigleaf maple will constitute less than 1% of the crop trees at Free Growing

Lower regeneration delay period will subsequently result in lower Free Growing period.

TABLE 3.6.1A : CONIFEROUS TREE SPECIES SELECTION AND FREE-GROWING STOCKING STANDARDS FOR T.F.L. #43

BGC SUBZONE & SITE SERIES #	TFL BLOCK	BLOCK NAME	TREE SPECIES		STOCKING STANDARD WELL SPACED PER HA		REGENERATION DELAY (YRS) *(1)*	FREE GROWING ASSESSMENT			MINIMUM (m) ACCEPTABLE HEIGHT	MAXIMUM DENSITY (STEMS/HA)
			PREFERRED	ACCEPTABLE	TARGET	MIN.		EARLIEST	LATEST	% TREE HT OVER BRUSH		
CWH dm	1	Fraser		Cw, Fdc, Hw	900	500	1	3	8	150%	3.5 For Bg	
#5, 7, 8, 9				Ss, Bg *(2)*							4.0 For Fdc, Ss, Hw	5,000
13, 14											2.0 for Cw	
CWH ds1	2	Homathko		Cw, Hw, Fdc,	900	500	3	3	8	150%	3.0 for Fdc	
#7, 8, 9				Bg, Se, Ss,							2.0 for Cw, Bg, Pw, Pl, Hw	5,000
				Pw, Pl							1.25 for Se, Ss	
CWH ds 1	2	Homathko	Fdc	Cw, Hw, Se	900	500	3	3	8	150%	2.25 for Fdc	
#5, 6				Ss, Pl							2.0 for Pl	5,000
											1.5 for Cw	
											1.0 for Se, Hw, Ss	
CWH vm1	3	Kingcome		Cw, Hw, Fdc,	900	500	3	3	8	150%	4.0 for Fdc, Hw, Ss;	
#7, 8, 9, 10				Ba, Ss							2.0 for Cw;	5,000
											2.25 for Ba	
CWH vm1 #5	3	Kingcome	Ba, Cw	Fdc, Ss, Hw	900	500	3	3	8	150%	3.0 for Fdc, Ss, Hw	
				Pl, Pw							2.5 for Pw	
											2.0 for Pl	5,000
											1.75 for Ba	
											1.5 for Cw	

CWH - Coastal Western Hemlock subzone

(1) For minor site series (<5% by area), the regeneration delay may be longer, the free-growing window later, and the target minimum stocking standards lower, but these will be specified in silviculture prescriptions.

(2) Fdc = Douglas fir, Cw = Western red cedar, Hw = Western hemlock, Ss - Sitka spruce, Bg = Grand fir, Ba = Amabilis fir, Pw = White pine, Se = Engelmann spruce

TABLE 3.6.1-2
DENUDATION AND REFORESTATION ON TFL 43 1985 - 1998, *(1)*

Year	Denuded Area (ha)	Reforested Area (ha)	
		Planted (+/- natural)	Natural Only
1985	67.6	16.0	67.6
1986	146.2	43.8	103.7
1987	87.3	96.1	61.3
1988	80.6	49.3	0.0
1989	127.2	72.4	29.5
1990	128.4	109.0	2.7
1991	125.4	85.8	3.7
1992	159.0	95.8	0.0
1993	128.1	82.9	27.4
1994	135.3	42.4	0.0
1995	107.0	108.6	0.0
1996	70.4	75.5	0.0
1997	101.7	49.8	0.0
1998	105.3	98.8	0.0

(1.) From TFL 43 Annual Reports 1985-1998

3.6.2 Reforestation Methods

Artificial regeneration is the predominant reforestation method used on the TFL. Natural regeneration of cottonwood is quite common particularly in the upcoast Blocks (Homathko and Kingcome) via stump coppice, cloning of stem and branch sections, and natural seeding.

Planting of unrooted cottonwood/hybrid "whips" (approximately 1.6 metres long) is the most common method of restocking denuded areas. On some higher productivity sites in the Fraser Block, a short rotation intensive culture (SRIC) management regime is used. It includes stumping and tilling the site after logging, and planting short (45 cm)

hybrid poplar cuttings to promote rapid juvenile growth. Cuttings in these plantations will be fertilized, weeded, and pruned during the first three growing seasons to promote high survival rate, rapid growth, minimize brush competition and achieve one year regeneration delay period.

Where appropriate on upcoast cutblocks, natural regeneration will be encouraged through early spring and winter logging along with site preparation. Natural regeneration is most effective when a stand containing a good stocking of poplar (over 200 well-spaced stems per hectare) is harvested in the dormant season using ground skidding techniques.

3.6.3 Planting Stock and Hybrid Poplar Clone List

Scott Paper Limited uses two types of planting stock in artificial reforestation on TFL 43. Typically hybrid poplar planting stock is grown at Scott Paper Limited's nursery in Harrison Mills. The panel beds are harvested every fall/winter and the appropriate amount of planting stock is produced. The other type of planting stock used is unrooted stem sections of native black cottonwood from adjacent naturally regenerated stands.

The hybrid poplars used in the production of planting stock at the nursery have been screened and tested for adaptability and declared suitable for use in the subzone. From the over 400 clones available to the company only 50 are currently used for planting on TFL lands and the acquisition

and testing of new clones is ongoing. The current capacity of the nursery is more than double the annual TFL planting requirement.

The list of hybrid poplar clones that have been tested and found suitable for pulpwood production and used operationally are listed below.

TABLE 3.6.3

Current hybrid poplar clones used for planting on TFL 43

Clone Name		Clone Name	
TxD	52 - 225	TxM	283 - 197
TxD	184 - 411	TxM	269 - 63
TxD	55 - 258	TxD	198 - 565
	NM - 4	TDxM	288 - 64
TxD	50 - 197	Donk	
TxD	50 - 331	TxD	50 - 178
TxD	44 - 143	TxM	282 - 188
TxD	49 - 177	TxM	265 - 28
TxD	15 - 29	TxM	265 - 31
	NM - 2	TxM	271 - 96
TxD	24 - 122	TxM	262 - 9
	Md - 1		NE - 41
TxN	302 - 9	TxM	271 - 287
TxD	15 - 23	TxM	267 - 264
TxD	50 - 184	TxM	270 - 86
	Hy - 11	TxN	311 - 100
	DTAC - 8	Blom	
TxD	44 - 135	TxM	272 - 101
TxD	17 - 50	TxM	271 - 286
	NM - 6		DTAC - 7
Robusta		TxM	268 - 270
	Hy - 8	TxM	263 - 30
TxD	52 - 226	TxM	272 - 290
TxD	20 - 64	TxM	275 - 135
MxTD	286 - 43	TxM	282 - 187
TxD	190 - 447	TDxTD	324 - 567
		TxD	53 - 242

T=*Populus trichocarpa*; D=*P. deltoids*; M=*P. maximowiczii*; N=*P. nigra*

Clonal testing is ongoing and new clones will be added or removed from this list after they have shown adaptability to the climatic conditions, pest and disease resistance and/or tolerance and good pulpwood growth characteristics. These clones plus additional clones have been tested by others such as the B.C. Ministry of Forests, Pacifica Papers, Skeena Cellulose, etc.

3.6.4 Regeneration, Survival and Free Growing Surveys

On areas where natural regeneration has been prescribed, Scott Paper Limited will carry out regeneration surveys within one year of harvesting to determine whether or not planting is required to supplement natural stocking of denuded lands and to meet target stocking standards. Regenerated stands will meet stocking standards within the regeneration delay period (Homathko and Kingcome Blocks) or before the early free growing date (Fraser Block).

Survival surveys will be carried out on all plantations within one year of planting to determine stocking levels, health, and performance of planted trees. The company's normal practice is to carry out surveys in the fall thus facilitating re-planting in the following spring, if necessary. Any stands not meeting acceptable standards will be treated quickly and before the late free-growing date to meet the target stocking goals.

Free growing surveys will be conducted on all reforested lands in accordance with the standards described in stocking standards tables.

Historically, denuded lands have achieved free growing status within or before the targeted time frame.

3.6.5 Brushing and Weeding

Poplars grow faster than most "weeds" thus only a small amount of brushing and weeding is required on a small percentage of reforested stands. Brushing and weeding will be carried out when necessary to relieve young poplar trees from brush competition that threatens survival, crop trees are being over-topped by other species (very rare) and significant growth losses are being experienced. Silviculture surveys will be basis for determining the need for brushing and weeding. In whip plantations trees usually remain above competing brush and eventually outgrow understory plants. On intensively managed Fraser Valley cutting plantations, timely hand and machine weeding (usually for 3 years after planting) will be carried out to control brush and weed species. In some instances machine roto-tilling is carried out in the early spring and late summer to ensure weed control and reduce mice and vole damage.

Scott Paper Limited has adopted a policy of not using chemical herbicides to control brush and weeds within TFL 43 lands.

TABLE 3.6.5

BRUSHING AND WEEDING SUMMARY FOR THE TFL

YEAR	TFL BLOCK	AREA (ha)	DESCRIPTION (Type)
1985	Fraser	30.0	Motor mechanical brushing
1986	Fraser	30.0	Motor Mechanical brushing
1986	Fraser	17.3	Manual weeding and tractor weeding
1987	Fraser	13.0	Manual weeding and tractor weeding
1987	Fraser & Homathko	50.0	Brush saw weeding
1992	Fraser	19.9	Manual weeding and tractor weeding
1993	Fraser	38.6	Manual weeding and tractor weeding
1993	Fraser	19.9	Brush saw weeding and tractor weeding
1994	Fraser	58.5	Brush saw weeding and tractor weeding
1994	Fraser	83.3	Manual weeding and tractor weeding
1995	Fraser	103.8	Manual weeding and tractor weeding
1996	Fraser	80.3	Manual weeding and tractor weeding
1997	Fraser	122.0	Manual weeding and tractor weeding
1998	Fraser	89.0	Manual weeding and tractor weeding

Note: Tractor and manual weeding may be done more than once in the same year

3.6.6 Site Disturbance and Rehabilitation

The soil disturbance limits recommended in The Soil Conservation Guidebook do not consider the unique nature of the conditions within TFL 43. Therefore, the company has obtained District Manager approval to exceed the maximum soil disturbance limits specified in this guidebook. The currently approved soil disturbance limit in the Fraser Block is 100% and for the Homathko and Kingcome Blocks it is 45%. The main factors for seeking higher limits were the variable and/or frequently lacking LFH layer within the flood plain, desire to reduce brush competition and the use of skidders during harvesting phase to prepare the site for planting by knocking down brush. Areas heavily disturbed near roads and landings will be rehabilitated to ensure

A seven-week old hybrid poplar cutting on Seabird Island. Area has been freshly roto-tilled and hand weeded.

Machine rotovating of a first year plantation on Seabird Island. Planting occurred in early spring followed by roto-tilling 5-6 weeks afterwards to reduce weed competition.

A 15 year old hybrid poplar plantation with an average height of 23 metres and DBH of 21 cm. One of the first intensively managed plantations established by Scott on Herrling Island.

A five-year old hybrid poplar plantation on Herrling Island. Erosion has resulted in the loss of 10-15 metres of riparian buffer established at the time harvesting (pre FPC).

compliance with the limits set out in the Silviculture Prescription and improve plantability of these areas.

3.6.7 Juvenile Spacing

The use of juvenile spacing to lower stocking of poplar stands has been used to a limited extent as it has been shown that this species is strongly self-thinning. In addition, the benefits of treatment do not outweigh the costs, especially considering the increased risk of loss through vole girdling or wind and storm damage after treatment. The company has established a small spacing trial in the Homathko Block to determine the response of a mixed hybrid poplar and native black cottonwood stand to juvenile spacing at various densities. This trial will be monitored over the next few years to understand the effects and consider the benefits of juvenile spacing treatment in order to determine the future use of this stand manipulation technique.

3.6.8 Fertilization

The company uses organic and/or inorganic fertilizers on all intensively managed cutting plantations, and on whip plantations only when the planting site is deficient in readily accessible macro and micro nutrients (e.g., sandy sites). A broad band inorganic fertilizer (e.g., 9-40-4 plus minors) is spot applied at a modest rate (50 kg/ha) several weeks following planting to boost the initial growth of the hybrid poplar crop. Where appropriate, intensively managed stands will be treated with one or

more applications of organic fertilizer during the rotation. Each organic fertilization application consists of a municipal sewage sludge (biosolids) with an application rate of 20-30 dry tonnes per hectare. Paper mill waste fibres may be mixed with the sewage sludge. All biosolid applications are covered under MOELP waste management permits to protect environmental quality.

3.7 FOREST ROADS

The company's road construction, maintenance and deactivation plans are based on the requirement for long term access for harvesting, protection and silvicultural purposes, while taking into consideration the relatively low risk and hazard potential of roads located on flat alluvial ground.

On a general basis, Scott Paper maintains an open road-use policy for the public's use of the TFL roads. Gating is done only where there is a high risk of intentional, or unintentional, vehicle damage to young cottonwood plantations. If gating is required, it will be done according to Ministry of Forests' standards.

3.7.1 Construction

Proposed road construction will be identified in the Forest Development Plans submitted to the MOF. Forest roads will be designed and constructed to create an efficient and safe transportation network while minimizing environmental impacts. All roads and bridges will meet or exceed MOF standards as established by the *Forest Practices Code of BC Act* and regulations. The company will seek DFO and MOELP approval for all bridges and major stream crossings. Stream and channel crossing structures will be constructed to avoid restriction of flow and/or fish passage. Where machine crossings are required, they will be planned to take advantage of firm approaches and rock/cobble sites where available and subject to MOF approval.

The company's use of the gravel bars in the Fraser Block of the TFL is quite extensive and as such any required grading, filling, or travel over gravel bars will be subject to MOF approval, after consultation with the MOELP and DFO.

Access and Infrastructure Development

Fraser Block

No major additional access developments are needed for the tree farming operations of the Fraser Block. Public highways and private access roads service the majority of the Fraser Block lands. For those tree farming islands that are inaccessible by truck year round, harvesting equipment is barged to and from the operating sites.

Booming of logs from the TFL is done at Cattermole's dryland sort yard in Sardis, B.C., or at Silvercreek dryland sort yard in Mission, B.C. Timber from islands which are inaccessible by truck year round, is either barged or wet boomed directly from the Islands into the Fraser River, or, with the approvals of the Department of Fisheries and Ministry of Environment, Lands and Parks, is dry-boomed on gravel bars during low water periods, then towed down river to New Westminster when the rising Fraser River freshet waters float the booms.

Homathko Block

In 1988, Scott Paper Limited, Terminal Forest Products Ltd., and International Forest Products Ltd. began construction on a road extension to the main Forest Service road on the west side of the Homathko River. This road extension was completed in 1990, and now provides access to deep water booming facilities located on Bute Inlet that all three companies process their timber harvests through.

All of Scott Paper's timber production from the Homathko Block during the term of Management Plan #4 will be harvested on the west side of the Homathko River, boomed at the head of Bute Inlet, and towed to Howe Sound or New Westminster.

Kingcome Block

In addition to the main Forest Service Road, Scott Paper Limited and International Forest Products Ltd. jointly constructed 5.5 kilometers of Hoodas mainline on the east side of the Kingcome River. These two roads together provide access to the majority of the timber stands in this Block of the TFL.

Scott Paper Limited intends to continue to process it's timber production through International Forest Product's dryland sort located at the head of the Kingcome Inlet. The company's timber production boomed at Kingcome Inlet is towed to Howe Sound or New Westminster.

3.7.2 Maintenance

Scott Paper Limited will carry out regular road maintenance to ensure proper functioning of the roads. The objective will be to protect the structural integrity of the roads, comply with safety provisions, ensure the drainage system is functional and minimize impacts on other resources. Road maintenance plans will be included within the Forest Development Plan submissions.

Scott Paper Limited will cooperate with other users of the forest roads to develop a strategy for the joint maintenance of the roads where required.

3.7.3 Deactivation

Generally a limited amount of deactivation occurs on TFL 43 due to the planned short rotations, and roads on flat terrain represent a minimal risk. Roads subject to temporary and permanent deactivation will be identified on the Forest Development Plans. Some roads may be deactivated in order to protect other resource values in the area.

3.8 RESEARCH

Since the pulpwood management regime employed on TFL 43 is relatively new and currently evolving, operational research is required and is being carried out continually. Operational research is being funded primarily by Scott Paper Limited.

During the next five-year management plan period, Scott Paper Limited plans to conduct or cooperate in the following research projects:

(i) Clonal screening trials to select the most productive and pest resistant clones from material generated by breeding programs at various establishments within Canada and the United States.

(ii) If funding is available, cooperate with the Ministry of Forests Research Branch and other organizations in the collection, testing, and eventual cross-breeding of the native B.C. *Populus trichocarpa* gene pool with other *Populus Spp.*

(iii) Collection and analysis of growth and yield information collected from the permanent sample plots established within TFL43.

Scott Paper Limited periodically provides support for poplar research undertaken by universities, government, or private agencies, where such research advances the state of knowledge in the management of poplar. Scott Paper is currently supporting breeding research carried out by the Poplar Molecular Genetics Cooperative located at the University of Washington. In addition, Scott Paper continues to monitor replicated clonal-adaptedness trials within TFL 43.

Furthermore, Scott Paper Limited in conjunction with the Greater Vancouver Regional District have undertaken a program of research into the use of organic fertilization of poplar stands on the Fraser Block of the TFL. This project involves beneficially reusing pulpmill waste fibers and sewage treatment plant biosolids as slow release organic fertilizers. This program is going forward under the appropriate permitting approvals of the Ministry of Environment, Lands and Parks, and is being closely monitored for effectiveness and any negative impacts on the environment.

4.0 CONSULTATION WITH OTHER RESOURCE USERS

Scott Paper Limited will consult at the strategic and operational forest management planning level with identified resource users groups such as aboriginal peoples, licenced trappers, guide outfitters, and other licenced resource users in the area. Information regarding the planned activities will be referred to the other resource users and other interested groups during the planning processes to seek comments and express concerns and ideas. The company will provide the information in a manner that is easily understood and allow adequate time to provide input.

The TFL management plan and the Forest Development Plan (FDP) will be the main plans used by the company for consultation with other resource users and the public.

The company will inform interested parties and resource users groups of the TFL management plan process to solicit input. A number of open houses will be held to allow these groups to view the information regarding the company's forest management on TFL 43. Certain groups will be notified through direct mailing of these public viewings. The company will place advertisements in local papers and ensure sufficient time is provided for interested parties to attend these open houses.

The company expects Forest Development Plan (FDP) public viewings will be the primary consultation stage to inform interested people and other resource users about development planning in the TFL. Currently the company refers these plans to other tenure holders in the area to inform them of the planned activities. A very limited response has been received from other resource users and the general public on its tree farming activities in the past. Any comments received will be addressed and plans revised if necessary and pertinent. Although communicating information and seeking

input is most likely to occur during the planning phases, the company's plans and staff are available at most times to discuss forest management activities and issues on TFL 43.

Scott Paper will consult with Bands who reside near proposed developments to review any protection requirements needed for aboriginal cultural artifacts or ongoing cultural uses. A number of meetings are held with the First Nation groups to discuss the planned activities on the TFL and review economic opportunities for band members. In particular, the members of First Nation groups adjacent to the Fraser Block and the Tsawataineuk Band in Kingcome Inlet have played an active role in the operations on TFL 43. Members of the Ohamil, Skwah, and Seabird Bands have participated in harvesting portions of the volume available in the Fraser Block and have been employed to carry out planting and other silvicultural activities.

In the Kingcome Block the majority of the harvesting operations and most of the silviculture activities are completed under contract to the Tsawataineuk Band.

In addition, the company will keep abreast of the treaty negotiation process for Bands who claim areas within TFL 43 as their traditional territory. The BC Treaty Commission established a six stage process for negotiations. A description of each stage of the treaty negotiation process is described below.

Stage 1	Statement of Intent to Negotiate is filed by the First Nation
Stage 2	Readiness to Negotiate of federal, provincial and First Nation
Stage 3	Negotiation of a Framework Agreement or a table of contents for a comprehensive treaty negotiation. Includes initial public consultation process

Stage 4	Negotiation of an Agreement in Principle is the actual treaty negotiation process identifying and defining rights and obligations.
Stage 5	Negotiation to finalize a treaty is where the treaty is formalized and technical/legal issues resolved
Stage 6	Implementation of the treaty

The current status of various First Nations claiming TFL 43 lands as traditional territory is as follows:

Fraser Block		
	Sto: Lo Nation Includes Seabird Island Band, Cheam, Scowlitz, Ohamil and Squila	**Currently at Stage 4 Agreement in Principle**
Homathko Block		
	Homalco Band	**Currently at Stage 4 Agreement in Principle**
Kingcome Block		
	Musgamagw Tsawataineuk Tribal Council Includes Tsawataineuk Band	**Not in the BC Treaty Commission Process**

5.0 IMPACT SUMMARY OF MP IMPLEMENTATION

The proposed level of harvest is 108.2 hectares per year for the period of MP #4. This represents a 16% or 20.2 hectare decrease from the current Allowable Annual Cut (128.4 ha/year) for MP #3. The projected volume decreases from 44 460 m^3/year to 39 763 m^3/year, an 11% decrease.

The amount of harvesting and silviculture work available to the contractors and employees will be reduced as a result of implementing the proposed harvest levels in MP #4. The level of reduction in workload and economic benefit will correspond to the individual contractor's reliance upon Scott Paper Limited operations. For the most part, Scott Paper is the secondary source of work for the contractors employed within TFL 43 thus the number of people employed is likely to remain the same. However, the lower harvest volume of approximately 5 000 m^3 will likely result in shorter duration to carry out operations within TFL 43.

The government revenues from stumpage and annual rental will decrease. Due to the variability in stumpage rates, species and volume harvested it is difficult to predict the amount of losses due to stumpage on a yearly basis. The annual rental charges based on the amount of AAC attributable to the Schedule "B" lands will be reduced by approximately $2000.00.

In the overall provincial context this reduction is probably insignificant particularly since the company does not anticipate curtailment of operations at the Western Manufacturing Division as a result of the reduced harvest levels. The current employment of approximately 650 people at this facility is expected to continue subject to technological changes, product demand and rationalization between capital and resources.

The company's purchase of cottonwood timber on the open market will likely increase to satisfy the demands of the groundwood pulpmill. In addition, Scott Paper Limited continues to pursue on an ongoing basis various strategies and options that utilize a greater proportion of groundwood pulp in the manufacture of various tissue products at the Western Manufacturing Division.

A number of resource inventories are proposed for revision and update during the term of MP #4, and this will provide economic opportunities for resource professionals in these areas. The improved resource information should lead to more appropriate management of these resource values on the TFL.

The overall planning and administration costs are significant for TFL 43 given the relatively small Allowable Annual Cut and as the harvest levels decline the costs per cubic metre increase. This is a serious concern to the company given that the traditional differences between TFL's and other tenures are becoming less apparent. This has implications to the company's overall cost structure and it's ability to compete in a very competitive consumer driven tissue products market. It is the company's intention to discuss the costs for preparation of MP #5 to eliminate any unnecessary expenses.

The size of the areas reserved for fisheries and wildlife values increases within this management plan. In particular, additional reductions have been applied to the timber harvesting land base for riparian reserves to ensure retention of this sensitive area for wildlife and fisheries purposes.

6.0 KEY SIMILARITIES AND DIFFERENCES BETWEEN THE CURRENT AND THE DRAFT/PROPOSED MP

The harvest level declines from 128.4 ha/year to 108.2 ha/year thus continuing the downward trend that began with MP #3. The projected volume declines by about 5,000 m^3/year. The most significant decrease is in the Homathko Block where the harvest level declines by 21% from 63.3 ha/year to 50.1 ha/year. The projected volume declines from 20, 350 m^3/year to 16, 686 m^3/year. This decline is largely attributable to the designation of approximately 546 hectares as economically inoperable within this Block for MP #4. Should cooperative funding become available for the infrastructure required to make these areas economically available, the company will propose inclusion of these areas for MP #5.

In the Kingcome Block the decline is about 12%, from 15.1 ha/year to 13.9 ha/year. The projected volume declines to 8, 066 m^3/year from 9, 197 m^3/year. Any further reductions will jeopardize the company's ability to administer this Block as an individual operating unit.

In the Fraser Block, the harvest declines from 49.4 ha/year to 44.3 ha/year. The projected volume actually increases by about 100 m^3/year mainly due to the harvesting of higher volume stands (old veneer plantations).

The current employment of approximately 650 people at the Western Manufacturing Division is not anticipated to be impacted as a result of this reduced harvest on the TFL. The proposed harvest level on TFL 43 will support approximately 16 jobs per 1,000 cubic metres at the Western Manufacturing Division, which is much higher than the provincial

average of 1.3 reported in the PricewaterhouseCoopers 1998 annual report on the industry. Scott Paper Limited will seek other sources of cottonwood timber in order to meet the fibre requirements of the groundwood mill.

All TFL timber harvesting and related work is contracted out either as full or phase contracts. The proposed harvest level will reduce the duration of work the contractor crews are employed to perform the activities on TFL 43. The employment levels are unlikely to fall unless other forest companies which utilize the same contractors experience substantial declines in harvest levels. The number of contractor employees varies but 15-30 people may be employed on a seasonal basis.

The company will continue to use members of First Nations to carry out harvesting and silvicultural activities on the TFL where appropriate. Depending on the season and harvesting activity, up to 15 out of a workforce of approximately 30 may be aboriginal. This is a significant number given the relatively small size of the TFL.

Under the requirements of the FPC enhanced reservation of riparian areas will retain additional larger and older trees on the TFL, at the expense of some foregone AAC.

7.0 PUBLIC REVIEW STRATEGY FOR NEXT MP

A review strategy is not included for MP #5 in this MP #4 submission. This is largely due to the lengthy duration until the inception of MP #5. A review strategy will be submitted at the start of the next management plan as per the requirements.

8.0 OTHER INFORMATION

Public review of the draft plan, planning initiatives for areas within or adjacent to TFL 43, and the Schedule B prorate follows.

8.1 PUBLIC AND AGENCY INVOLVEMENT

The draft MP #4 was forwarded to the government agencies, first nations and other interested parties listed on the submission letter of July 22, 1999. Open houses were held in the following locations as per the amended public review strategy:

Chilliwack - Holiday Inn August 5, 1999 from 2:00 PM to 9:00 PM

Campbell River - Anchor Inn August 11, 1999 from 2:00 PM to 9 PM

The attendance was limited to one person in Chilliwack and none in Campbell River. Scott Paper Limited did not receive any public comments on the draft plan.

Agency comments received were limited to Fish Wildlife and Habitat Protection Branch, MOELP in Rosedale and Powell River. The main focus of the comments was the inclusion of constrained areas in the impending Landscape Unit Planning and additional comments/concerns that may arise from this process. Minor revisions have been made to the proposed MP #4 to clarify the area reductions applicable to Ew1 polygons and reference has been added with respect to the Timing Windows and Measures letter (Fraser Block only).

8.2 PLANNING

8.2.1 Higher Level Plans

There are no approved higher level plans for areas within TFL 43. The Central Coast Lands and Resource Management Plan (CCLRMP) which encompasses the Kingcome Block of the TFL is underway and is expected to be forwarded for Cabinet approval as a higher level plan in the second half of year 2000. Scott Paper Limited does not foresee any impacts to the TFL management regime as a result of the approval of CCLRMP as a higher level plan.

8.2.2 Other Planning Initiatives

The government recently released the Landscape Unit Planning Guide to address the establishment of Old Growth Management Areas and Wildlife Tree Retention. The implementation is to occur in cooperation with the forest industry once the training requirements have been fulfilled. The anticipated completion date is March, 2002. The company is committed to being an active participant in this process given the unique attributes of the area within TFL 43. The potential implications and strategies for meeting old growth requirements and wildlife tree retention were described previously in Section 3.2.2, Biological Diversity. The Timber Supply Analysis Information Package and the Timber Supply Analysis report documented the amount of areas currently constrained to meet landscape unit planning requirements.

In 1998, a working group consisting of local stakeholders (Scott Paper Limited is a member of this group) recommended to set aside approximately 1,400 hectares of land in the Fraser Lowlands as part of the Lower Mainland Protected Area Strategy. The designation of the protected areas should not lead to any reductions in the land base within the Fraser Block of the TFL but the final outcome will not be known until cabinet has given approval.

8.3 SCHEDULE B PRORATE

The Schedule B prorate reflects the amount of timber harvesting landbase attributed to the Crown land within the total timber harvesting landbase of the TFL. The following formula is used to calculated the Schedule B prorate:

$$= \frac{\text{Current Timber Harvesting Landbase of Schedule B Land}}{\text{Current Timber Harvesting Landbase of the Total TFL}}$$

Schedule A Timber Harvesting Landbase = 624.0 ha
Schedule B Timber Harvesting Landbase = 2680.4 ha
Total TFL Timber Harvesting Landbase = 3304.4 ha

Schedule B Prorate	$\frac{2680.4}{3304.4}$	**=0.811**

9.0 LIST OF APPENDICES

I. LICENCE AREA, CROWN GRANTED LANDS, AND LAND OWNERSHIP STATUS MAPS

II. LIST OF AMENDMENTS TO TFL 43

III. STATEMENT OF MANAGEMENT OBJECTIVES, OPTIONS, AND PROCEDURES

IV. TIMBER SUPPLY ANALYSIS INFORMATION PACKAGE

V. TIMBER SUPPLY ANALYSIS REPORT

VI. 20 YEAR PLAN

VII. AGENCY AND PUBLIC REVIEW

VIII. SUMMARY OF FISH RESOURCES

IX. SUMMARY OF WILDLIFE RESOURCES

X. RECREATION ANALYSIS REPORT

XI. CULTURAL HERITAGE RESOURCES

XII. MAP ATLAS