



**CANADIAN FOREST PRODUCTS LTD.
VAVENBY DIVISION
TREE FARM LICENSE #18**

***PROPOSED* MANAGEMENT PLAN #10
FOR THE TERM**

September 28, 2005 to September 27, 2009

Dated for Reference: June 10, 2004

CANADIAN FOREST PRODUCTS LTD.
VAVENBY DIVISION

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1 INTRODUCTION

1.1 PURPOSE OF THE PLAN

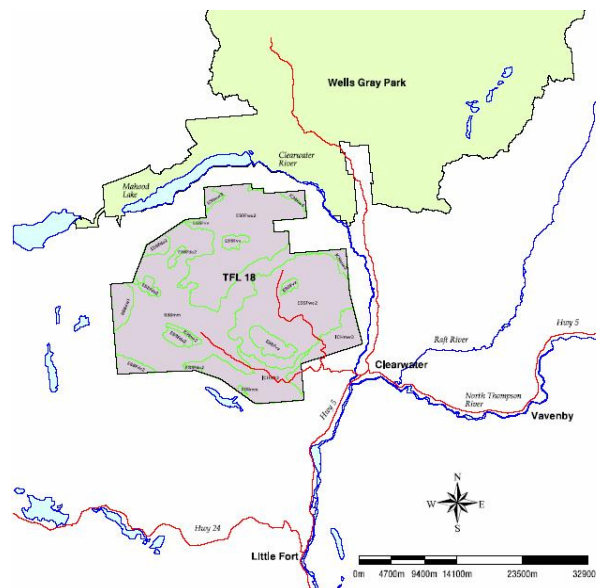
The purpose of this Proposed Management Plan is to:

- Propose management objectives and, as necessary, strategies for achieving objectives for all forest resources on Crown and private land within the Tree Farm License #18 (TFL 18), and
- Provide an opportunity for other agencies, the public and other interested parties to review and comment on the proposed objectives and strategies, and
- Include details regarding the status of various inventories.

1.2 DESCRIPTION OF TREE FARM LICENSE 18

Tree Farm License #18 (TFL 18 or the TFL) is situated immediately northwest of Clearwater B.C. and approximately 30 km west of the Canadian Forest Products Ltd. (Canfor) mill in Vavenby B.C. The license encompasses 74,545 hectares. This area differs slightly from the 74,620 hectares reported in MP #9 and the 74,609 hectares reported in MP #8. The difference can be attributed to revisions to the digital file for the legal boundary of TFL 18.

Figure 1 TFL 18 – Proximity to Vavenby and Surrounding Community¹



¹ Map from J.S. Thrower report. Growth & Yield of Residual Balsam Stands on TFL 18, October 2003.

The terrain is undulating, within an elevation range of 516 to 1,989 meters. The majority of the TFL is easily accessible by road. The land base contains numerous small lakes and swamp complexes. Biogeoclimatic zones are listed in Table 1.

Table 1 – Biogeoclimatic Sub-zones for TFL 18

BIOGEOCLIMATIC SUB-ZONE	AREA (HA)
ESSFdc2	3,465
ESSFvv	2,667
ESSFwc2	32,183
ICHmk2	6,262
ICHmw3	5,100
SBSdw1	1,674
SBSmm	23,194

1.3 HISTORY

TFL 18 was awarded as a Forest Management License (FML) on November 2, 1954 to Clearwater Timber Products Ltd. The FML was replaced by a TFL agreement on January 1, 1982. Slocan Forest Products Ltd. purchased Clearwater Timber Products Ltd. in 1987 and became the holder of the license. On April 1, 2004, Canadian Forest Products Ltd. purchased Slocan Forest Products Ltd. and is now the holder of the license for TFL 18. The current license document term began on January 1, 2001 and is for a 25 year term.

The area of the Tree Farm has remained essentially unchanged since its inception. The Taweel protected area, created as a result of the Kamloops LRMP, overlaps approximately 275 hectares in the southwest corner of the TFL. It is unclear if this overlap is consistent with Kamloops LRMP direction.

A legal description of the TFL boundary is provided in Appendix I

Since award, the allowable annual cut (AAC) for TFL 18 is as specified in Table 2

Table 2 – Historical AAC for TFL 18

YEAR OF DETERMINATION	AAC
1955	70,792 m3
1958	70,792 m3
1965	104,772 m3
1969	164,238 m3
1977	209,544 m3
1983	210,000 m3
1988	210,000 m3
1989	200,000 m3
1993	187,000 m3
1995	187,000 m3
2000	177,650 m3

1.4 COMMITMENTS

Commitments remaining in effect for Management Plan 10 and from the AAC Rationale are as follows, along with a summary of actions taken.

From Management Plan 9 Approval letter of September 28, 2000:

- *I encourage you to continue with data collection and the associated analysis of balsam intermediate utilization stands for site index mapping, yield productivity, and management strategy purposes. This work must be incorporated into MP No. 10 and the next timber supply analysis.*
 - Significant effort has been allocated to this request. Reference the timber profile section and Appendix X of this Management Plan, the associated Analysis, and the Information Package.

From Rationale for Allowable Annual Cut, effective October 25, 2000:

In the period following this determination and leading to the subsequent determination, I expect the licensee to:

- *Further investigate the growth and yield and stand dynamics of residual balsam stands that are proposed to be managed as future crops;*
 - As per Management plan commitment noted above.
- *Review and refine operational adjustment factors (OAF's);*
 - The OAF's were reviewed, and the use of terrestrial ecosystem mapping in identifying OAF components was considered for the information package. It was determined that the TEM mapping was not detailed enough for this purpose, and as indicated in Section 3.1, OAF's will be further reviewed during the term of Management Plan 10.
- *In cooperation with district and regional staff, clarify management practices and modeling assumptions for visually sensitive areas;*
 - Discussions have been on going with Ministry of Forest staff, and an approach has been agreed to for modeling sensitivities related to VQO polygons. In addition, changes are in process to define the area of TFL 18 subject to management for VQO's. Results of this work have been incorporated into the Timber Supply Analysis.²
- *Review assumptions for minimum harvest age;*
 - Minimum harvest age (MHA) has been reviewed for the timber supply analysis. Section 10.2.2.2 of the Information Package clarifies changes made as a result of this review.

1.5 SUSTAINABLE FOREST MANAGEMENT PLANNING

In July 2001 Canfor received a certificate of registration, under the ISO 14001 standard, for its Environmental Management System (EMS). Activities are conducted consistent with the six EMS programs that make up this system.

Canfor is a full participant in the Sustainable Forest Management Plan (SFMP) for the Kamloops TSA. The SFMP is the first step towards Z809 CSA certification. This SFMP includes TFL 18. The plan is reviewed annually, and can be found at

² While the results of lake specific polygons were modeled as agreed by the Lakes LRUP committee, an inventory which refined these polygons was conducted during 2004/05. The area is significantly reduced as a result of the inventory, however the new line work was not available in time to input into the analysis.

<http://www.for.gov.bc.ca/dka/TSA/SustainableForestry.htm>

Canfor is reviewing opportunities to proceed with Z809 CSA certification, and the SFM will provide a valuable first step in that direction.

1.6 LEGISLATION

At the time of writing this plan, the legislative environment governing forest practices in British Columbia is undergoing significant and rapid change. Commitments to specific acts, regulation and policy have been purposefully avoided to minimize the need to amend the plan in the future. Where legislative or regulatory commitments are specified, they are to be considered as applicable to the appropriate acts, regulations, and transition provisions governing forest resource management on TFL 18. Commitments made that are associated with such legislation are collectively called the “Acts and Regulations”.

Once the legislative environment has stabilized, the Management Plan will be reviewed for consistency with the Forest and Range Practices Act and other relevant legislation.

This Management Plan brings focus to the objectives, and leaves the flexibility on how they may be achieved to the discretion of the company.

1.7 DESCRIPTION OF LICENSE HOLDER

1.7.1 Corporate

Canfor is an integrated forest products company with the head office in Vancouver, British Columbia. With the recent purchase of Slocan Forest Products Ltd. in April 2004, the focus has been on the development of a new organizational structure through reorganization and rationalization of the larger forest and operations management teams. Canfor has company operations throughout North America with wood processing facilities concentrated primarily in Western Canada. Canfor – Vavenby Division is responsible for the management of activities on TFL 18.

1.7.2 Divisional

Canfor Vavenby sawmill and office are located approximately 24 km northeast of Clearwater B.C. along Hwy #5 in the North Thompson valley. Vavenby is a rural community of approximately 700 residents and is supported mainly by the forest industry. The division holds two tenure licenses, TFL 18 and Forest License (FL) A1868, having a current combined A.A.C. allocation of 436,788 m³. The two licenses provide access to a diverse timber profile in both size and species distribution.

Forest License volume will be reduced by 60,000m³ through the Bill 28 timber reallocation process. With this reduction in FL volume, maintaining the AAC on TFL 18 is of increased importance to the security of fiber supply to the division.

Vavenby division operations directly employ 260 people full time. This is subject to minor variations due to seasonal or market demands as Vavenby operates two to three shifts in the sawmill and planer mills. Canfor also employs approximately 130 full time equivalent contract personnel in logging and silviculture.

1.7.3 Mill Description

The Vavenby sawmill complex consists of a sawmill, planer mill and four dry kilns. The sawmill contains three production lines, one head rig line for large diameter wood and two other high speed lines for medium and smaller diameter wood. The planer mill was upgraded in 1997, making it one of the more efficient planer mills in Canada.

The mill processes approximately 875,000m³ of timber annually. The volume of timber processed over quota is obtained primarily from log purchases within B.C.

Figure 2: Vavenby Mill Site



1.7.4 Market Products

The mill produces dimension lumber in sizes from 1x4 to 2x12 and specializes in longer lengths of 18 to 24 feet, which are longer lengths than most interior mills produce. Species include Douglas fir, spruce, pine, and balsam fir. A specialty "J" grade is also produced for the Japanese market.

1.7.5 Community Involvement

Canfor - Vavenby supports numerous local non-profit organizations and societies through donations. Bursaries and scholarships are also provided to the local high school. The division also supports many local events put on by community interest groups. In addition, annual company sponsored events are held each year for company staff and other community members.

2 PLANNING

2.1 HIGHER LEVEL PLANS

The Kamloops Land and Resource Management (Kamloops LRMP) is a higher level plan approved by Order in Council on January 31, 1996. Amendments to the plan were approved in March 1996 and in August of 2001. Canfor is an active participant in the Kamloops LRMP, and involved in various implementation processes.

The Kamloops LRMP identifies seven Resource Management Zones (RMZ's) and details goals, objectives, and strategies within these zones. Of the seven RMZ's, those with a mapped boundary overlap TFL 18 as identified below:

- Protection Resource Management Zone P18 – Taweel
- Special Resource Management Zone H12 – Skwilatin Wildlife Habitat
- General Resource Management Zones for
 - Archaeology
 - Critical Moose Winter Range
 - Industrial and Metallic Mineral Potential
 - Agriculture Land Reserve

The Clearwater Forest District Lakes Local Resource Use Plan – Lakeshore Management Guidelines (Lakes LRUP) was approved by the District Manager of the Ministry of Forests on August 1, 2001. The plan provides guidance for resource activities within the lakeshore management zones of classified lakes. There are 66 classified lakes on TFL 18 that are subject to this guidance.

Canfor's objective is to conduct activities in a manner that is consistent with the "Acts and Regulations" as they apply to direction provided in the Kamloops LRMP and the Lakes LRUP.

2.2 OTHER PLANS

There are no other plans that directly affect management on TFL 18.

3 RESOURCE INVENTORIES

This section describes the status of current inventories associated with TFL 18, and any proposals to update the inventory information.

Table 3: Status of TFL 18 Inventories

Inventory Category	Description	Approval Date	Discussion
Forest Inventory	Base	1994	Audit completed 1997
	Depletions Update	-	Updated to Mar. 2004 – in info package
	Spatial Correction	2003	Reviewed by MSRM – Kamloops.
ESA's	Recreation, Regeneration, Avalanche	1994	Part of 1994 Forest Inventory
Operability	Timber/Terrain	-	Not Applicable
Recreation	Opportunity Spectrum	1998	
	Features	1998	
	Sites	2004	Reviewed with Headwaters District
Visual Inventory	TFL 18	1996	-
	Headwaters District	Draft	Draft VLI – 2002/03
	Blended	Draft	Reviewed blended inventory with Kamloops Forest Region and Headwaters District.
Terrain	Terrain Stability	2003	Terrain Survey Intensity Level “C”
Ecosystem	Terrestrial Ecosystem Mapping	2001	
	Old Growth Management Areas	Draft	Current Management
	Biogeoclimatic mapping	2001	Included with TEM
Fisheries	Lake Inventories	1996	Reconnaissance surveys
	Streams	1996	Local Area Agreement
Wildlife	-	-	-
Lakes	LRUP classifications	2003	Reviewed with Headwaters District
Cultural Heritage Resources	AOA Process & Model	1999	Revised & updated LRMP AOA model provided by AOA Sub-committee.
Range	-	-	-

3.1 Further Work

- Conclude process for determining lakes that will have a Lakes Visual Management Zone. Initiate update to Visual Landscape Inventory once this process is completed.
 - Work is completed and will be incorporated into Management Plan #11.
- Continue to review and revise OGMA locations to meet biodiversity objectives while minimizing impacts on timber supply.
 - Work in progress.
- Continue to monitor changes to the recreation resource, and update ROS information if required.
 - Work in progress.
- Continue work to review and refine OAF assumptions for input into Management Plan #11.
 - Work in progress.
- Initiate a review and develop a work plan for updating of stream classifications.
 - To be completed prior to Management Plan #11.
- Conduct cost/benefit analysis on completion of VRI sampling and the inclusion of Balsam IU results into the Forest Inventory.
 - To be completed prior to Management Plan #11.
- Review and update minor inconsistencies in Forest Cover attributes identified during Information Package preparation.
 - To be completed prior to Management Plan #11.
- Review and refine the automation of Forest Cover depletion and update processes
 - Work in progress.
- Continue to look for opportunities to develop new inventory or land use information that refines and better defines the productive forest land base.
 - Work in progress.

4 MANAGEMENT OBJECTIVES

4.1 MANAGEMENT AND UTILIZATION OF THE TIMBER RESOURCE

This section describes the management objectives, strategies, and considerations regarding the management and utilization of the timber resource on TFL 18.

Timber objectives will be achieved consistent with the “Acts and regulations” and Canfor’s Environmental Management System.

Management objectives for the timber resource are:

- *To maintain or increase the current harvest level of 177,650 cubic meters.*
- *To implement research, inventory, or other such programs to reduce the uncertainties affecting the mid and long term harvest level.*
- *To implement silviculture regimes that develop post harvest regenerating stands which maintain options for future species, wood quality and quantity requirements.*
- *To develop and maintain an efficient road infrastructure for the extraction of timber.*

4.1.1 Block Size and location

The emphasis for harvest planning during the term of Management Plan #9 was twofold. First, efforts were focused on planning and implementing a patch size distribution strategy consistent with direction from the Kamloops LRMP and Headwaters Forest District. The patch size strategy has been focused on reducing fragmentation by aggregating large numbers of small blocks into larger openings as well as creating fragmentation in more homogenous landscapes.

A second factor driving harvest planning has been the more recent mountain pine and spruce beetle outbreaks in the western and southern portion of the TFL. Large areas of susceptible timber have been harvested, resulting in a proportional distribution of large opening greater than the recommended patch size distribution targets. The mountain pine beetle management scenario described in the analysis has been used to develop the Twenty Year Plan.

4.1.2 Timber Profile

Emphasis on harvesting Mountain Pine and Spruce beetle infested timber will be an objective in planning harvest patterns over the term of Management Plan #10.

The TFL has a profile of tree species and timber size that is well suited to the requirements of the Vavenby mill. Harvest patterns during Management #9 reflected the entire timber profile, although there was a deliberate focus on the harvest of susceptible and beetle attack Lodgepole Pine and Spruce stands. Variations in the timber harvest profile occur annually to reflect priorities such as market values, stand economics, and forest health concerns.

As part of the Management Plan #9 and AAC Rationale, there was specific reference to management of intermediate utilization Balsam (Balsam IU) stands on TFL 18. There is a long history of programs and studies being implemented in an attempt to answer the outstanding questions concerning these stands, all with varying degrees of success.

During the term of Management Plan #9, a significant effort was made to develop information that would bring closure to this issue. The information developed from this work has been incorporated into the information package associated with this plan, and the recommendations for management of these stands will be considered for implementation as part of this plan. A copy of the final report is located in Appendix X.

Harvest performance in these stands includes:

- Since 1995, Balsam IU stand harvest has been 105,782³ m³
- Volume under Cutting Permit is 9,651 m³
- Volume in Operational Plan to be developed is 23,200 m³

The objectives for Balsam IU stand management for Management Plan 10 are to:

- *Continue to harvest and manage these stands as part of the TFL 18 forest land base.*
- *To convert Balsam IU stands to managed stands subject to the limitation of lumber markets and other harvest priorities (e.g. Beetle management). This may include modeling to forecast and prioritize stands for harvest.*

³ Based on Net Merchantable Volume – Cruise.

4.1.3 Deciduous Stands

Deciduous species on TFL 18 include Cottonwood, Birch, Aspen and Sitka Alder. There are a total of 586 ha of deciduous leading stands on the TFL.

One departure from Management Plan #9 is the decision in Management Plan #10 to include deciduous leading stands as part of the forested land base. On a total chance planning basis, deciduous leading stands are incorporated into cut blocks. Where favourable market conditions exist, deciduous material is shipped, usually to an oriented strand board (OSB) plant in 100 Mile House.

Table 4 – Deciduous Deliveries

YEAR	DELIVERIES ⁴ (M ³)
1998	1,709
1999	4,317
2000	310
2001	35
2002	1,088
2003	8,338

4.1.4 Operability

Operability lines represent the boundary of the operable and non-operable land area and are a function of economic, technological, environmental and social constraints. The gentle physiography of the TFL is such that operability lines are not required. The few and relatively small, isolated inoperable areas are identified in forest cover as alpine, alpine forest or rock.

4.1.5 Terrain Profile

TFL 18 is situated on a plateau with gently rolling terrain. 90% of slopes are less than 30% and all areas of the TFL are operable.

The objective during MP #10 will be to harvest the full range of terrain profiles.

⁴ Numbers based on “AS” stratum records.

4.1.6 Seasonal Flexibility

Harvest patterns may also be affected by seasonal constraints. Determining factors in selecting harvest season include harvest priority, site sensitivity due to soil and moisture, silviculture objectives and requirements of other resource values. Winter harvesting generally occurs in the higher elevation ESSF biogeoclimatic zone and in wetter ecosystems of the SBS and ICH.

4.1.7 Silviculture Systems

The specific silviculture system utilized on any given block will be determined by the prescribing forester in consideration of a host of stand level conditions and landscape level considerations; among them: stand structure, site condition, site ecology, forest health objectives, integrated resource management objectives, regeneration objectives, and the harvest system to be employed.

The primary silviculture system utilized on the TFL has been clear cutting combined with varying degrees of retention. Any retention strategy is determined in consideration of biodiversity objectives, wind throw risk, wildlife objectives, and other site specific management objectives.

4.1.8 Stand Harvest Scheduling Priorities

The objectives of harvest scheduling are:

- *To economically recover timber that is in imminent danger of being lost, degraded, or destroyed, or that should otherwise be harvested to control the spread of forest health insects;*
- *To plan salvage activities to minimize the likelihood of repeated stand entries as a result of similar forest health circumstances; and*
- *Where salvage as a result of forest health or natural disturbance events are not a priority, the objective is to schedule stands spatially and temporally in a manner that meets integrated forest resource management objectives and mill fiber requirements.*

Subject to the timing and availability of detection and management information, these objectives will be achieved through prioritizing harvest areas as follows:

- *Priority 1: Trees that are attacked by insects where the infestation will not only kill the infected trees but, if not harvested, the infestation will intensify and spread to a larger area. Lodgepole pine stands susceptible to attack by Mountain Pine Beetle.*
- *Priority 2: Wind thrown trees and other damaged trees that are highly susceptible to insect attack.*

- *Priority 3: Trees that are damaged but where pest control is not the objective.*
- *Priority 4: Susceptible non-Lodgepole Pine stands in close proximity to beetle infestations.*
- *Priority 5: Mature and/or Old stands.*

To achieve overall plan objectives, harvesting may incorporate undamaged timber adjacent to a priority salvage area, particularly where boundaries need adjustment to reduce further wind throw risk.

All harvest activities will be conducted consistent with the “Acts and regulations”.

4.1.9 Harvest Methods

Primary harvest method in TFL 18 is ground based, roadside conventional systems. In steeper terrain and in areas with sensitive soils, cable harvest system configurations are used that match site specific terrain conditions. Aerial based harvest systems are rarely used, however, they may be brought in where terrain or other resource values constrain access by ground based and cable systems.

4.1.10 Utilization Standards and Specifications

Utilization standards will be consistent with Schedule C of the TFL 18 license document dated for reference January 1, 2001.

4.1.11 Partitions

There is no partition license associated with TFL 18.

4.1.12 Proposed Harvest Rates

For the period of MP #10, Canadian Forest Products is proposing a harvest rate of 267,000 m³ on TFL 18. The Timber Supply Analysis Report, dated for reference May 27, 2005 provides the supporting information associated with the proposed harvest level.

4.1.13 Rationale for Recommending AAC

The rationale for the proposed harvest level is documented in detail in the Timber Supply Analysis Report, dated for reference May 27, 2005.

4.1.14 Timber Sales Program

The Timber Sales Program (TSP) has an allocated annual cut of 10,500 m³ AAC on the TFL as established in 1988. A specific operating area for TSP was finalized in 1997. This allows the TSP to carry out long term planning and limits conflict with Canfor operations on the remainder of the TFL.

During the term of this management plan, Canfor plans to work with TSP representatives to develop a data sharing agreement consistent with Canfor's silviculture and inventory data management systems.

4.2 PROTECTION AND CONSERVATION OF NON-TIMBER VALUES

4.2.1 Visual Quality

The area to be managed through established visual quality objectives is not defined for TFL 18. In 2001, Canfor initiated steps to clarify the linkages between visually sensitive areas (scenic areas) and visual quality objectives (VQO's) as set out in legislation, the Kamloops LRMP, and the Lakes LRUP. Canfor has managed visual inventory polygons on the TFL as being equivalent to having established VQO's while clarification has been sought on which specific polygons should be managed for established VQO's.

The Ministry of Forests – Headwaters Forest District has committed to resolving the VQO uncertainty by facilitating a process that defines which visual polygons should be put forward for public review and consideration for establishment of VQO's. This process is to conclude prior to the submission of the Timber Supply Analysis in November 2004. The resolution of where VQO's are to be managed on TFL 18 will bring much needed certainty to both timber supply and the expectation of the general public regarding visual resource management.

Appendix IV includes a copy of the Visual Landscape Inventory completed in 1996. A second map is also included, in Appendix V, which blends polygons currently being managed using the draft Visual Landscape Inventory polygons developed by the Headwaters Forest District with the Lakes LRUP LMZ visual classifications.

Once the visually sensitive areas (scenic areas) are defined and amended, it is Canfor's objective to manage the visual resource consistent with the "Acts and regulations".

4.2.2 Biodiversity

TFL 18 falls within the Clearwater Landscape Unit (LU 18), as defined by the Kamloops LRMP. The Clearwater Landscape Unit has been assigned a low biodiversity emphasis option as an outcome of the Kamloops LRMP.

To implement the biodiversity objectives of the Kamloops LRMP, and based on priorities set by Government, the Ministry of Sustainable Resource Management (MSRM) created a biodiversity working group in 2001. Canfor participated in this working group, which developed an implementation strategy to meet the LRMP objectives while limiting *the impact of landscape unit biodiversity emphasis options to no more than 4% of the level of timber harvesting in the LRMP over the short and long term.* As part of this process, it was concluded that

the 4% impact limitation specified in the Kamloops LRMP includes all elements of biodiversity as defined in the Biodiversity Guidebook.

During 2002 and 2003, the strategy was implemented to place Old Growth Management Areas (OGMA's) on the landscape. Canfor led this process for the Clearwater Landscape Unit and provided a product to MSRM in 2003. Canfor continues to work with MSRM to finalize OGMA placement and to define a wildlife tree patch (WTP) retention budget for the TFL. A draft OGMA location map, which will be used in the Timber Supply analysis, is included in Appendix II.

Also, during 2003, Canfor worked with licensees in the Headwaters Forest District to develop an approach to managing the biodiversity targets for Patch Size distribution. The result of this was a patch size distribution report, and this report was adopted in 2003 by the Headwaters Forest District as known information for operational planning.

Objectives for management for OGMA's, WTP placement, and patch size are, consistent with the Kamloops LRMP and implementation direction from MSRM to:

- *Finalize the OGMA placement and WTP retention budget on TFL 18,*
- *Within the framework of implementation direction, to review OGMA placement in light of any new information to refine the location and distribution of OGMA's while minimizing the impact on timber supply within TFL 18.*
- *Where not overridden by forest health management, continue implementation of a patch size distribution approach to management of the forest landscape.*

Objectives for Coarse Woody Debris (CWD) are:

- *In stands where harvesting activities are planned, manage the stand to retain coarse woody debris on site at volumes that consider the natural stand level dynamics in the Biogeoclimatic sub-zone being harvested.*
- *In stands where harvesting activities are planned, manage the stand for the recruitment of coarse woody debris material over time through stand level retention of stems and groups of stems distributed consistent with direction provided by the Kamloops LRMP.*

The CWD objectives will be achieved with due consideration given to the following constraints:

- Merchantable timber losses due to forest health will not be put at unacceptable risk through implementation of CWD retention strategies.

- Stands will not be placed at an unacceptable increased risk for wildfire as a result of implementation of CWD retention strategies.
- Regeneration objectives will not be compromised through implementation of CWD objectives.

4.2.3 Soils

Consistent with the Kamloops LRMP the objective is to maintain soil productivity and minimize the slope instability risk associated with industrial activities. This objective will be met through planning and conducting activities consistent with the applicable Acts and regulations and Canfor's EMS, and may include:

- Utilizing terrain mapping and soil sensitivity information in the harvest development planning;
- Conducting appropriate field assessments and incorporating recommendations into road construction and harvest prescriptions;
- Utilizing temporary access structures where long term permanent access is not required;
- Utilizing harvest systems appropriate for on-site soil conditions; and,
- Conducting harvest, road construction, and silviculture activities in a manner that minimizes soil productivity loss and addresses slope stability risk.

4.2.4 Water

TFL 18 contains an intricate network of lakes, wetlands, and streams. These drainage systems provide residents downstream with a supply of water for domestic and irrigation use. These systems also support a high value recreational fishery, and the adjacent riparian areas provide an important contribution to the old growth strategy in the Clearwater landscape unit.

Assessments for priority watersheds, listed in Management Plan 9, have been completed as required by Headwaters District staff. The recommendations developed have been used to prioritize and complete watershed rehabilitation activities. During Management Plan #9, Gill Creek was de-registered as a community watershed and as such, was amended out of the Kamloops LRMP.

At the time of writing the draft Management Plan, Headwaters District staff was in the process of reviewing the status of all watersheds relative to the "Act and Regulations". This process is expected to be concluded in June 2004 and the new direction provided will be incorporated into management on TFL 18.

Consistent with the Kamloops LRMP, and subject to natural seasonal and annual fluctuations, the objective is to maintain water quality and quantity. This

objective will be met through planning and conducting activities consistent with the applicable “Acts and Regulations” and Canfor’s EMS, and may also include:

- Utilizing terrain mapping and soil sensitivity information in the harvest development planning to manage the risks of sediment delivery to streams;
- Completing watershed assessments as required by the “Act and Regulations” or completing professional assessments in response to information needs identified by Canfor staff;
- Ensuring plans are consistent with the results and recommendations of professional assessments; and,
- Maintaining the expanded riparian protection provided by placement of Old Growth Management areas adjacent to lakes, wetlands, and streams.

4.2.5 Lakes, Wetlands, and Streams

Canfor commits to managing lake, wetland and stream resources consistent with applicable “Acts and Regulations”. In many cases, the riparian protection for streams, wetlands, and lakes has been significantly expanded due to their incorporation into the OGMA strategy for the TFL.

There are in excess of fifty lakes on TFL 18, and the stream and wetland features that connect them form an important component of the landscape ecology of the area. Where applicable, all lakes have been classified and managed consistent with the Lakes LRUP process. Non-classified lakes, streams, and wetlands are classified as outlined in the “Acts and Regulations”.

Canfor maintains ARCInfo coverage of the Headwaters local area agreement for stream classification. This agreement provides a default stream classification developed using local knowledge and inventory data. As streams are encountered during development activities, their classification is updated in the local area agreement database, and notation made on the sampling technique used to develop the classification, and any resulting revision to the stream class.

4.2.6 Recreation Management

A broad spectrum of recreation opportunities and activities exist across TFL 18. These activities are consistent with those generally associated with vehicle accessible back country including angling, boating, camping, hunting, cross country skiing, and snowmobiling. These activities tend to be concentrated around the 21 recreation sites that are established across the TFL.

Commercial recreation ventures are expanding in and adjacent to TFL 18 and include initiatives related to snowmobile touring and dog sledding.

One commercial fishing lodge, Moose Camp, is located on Rioux Lake in the middle of the TFL. A second resort called Star Lake Resort is located just outside the TFL boundary in the southern corner of the TFL.

The objective for recreation management on TFL 18 is, consistent with the “Acts and Regulations”, to maintain those recreation opportunities that exist and to support recreation initiatives that integrate timber resource management and recreation. To meet this objective, the following strategies will be considered:

- Utilize Old Growth Management area placement to support the lake and stream recreation experience.
- Cooperate with commercial and public recreation users in the integration of recreation uses and other forest resource objectives.
- Support and participate in the Lakes LRUP process and manage associated walk-in lakes to maintain this recreation opportunity.
- Schedule forest management activities to minimize potential conflicts with recreation resource user groups.
- Make available a recreation map to the general public that shows or describes recreation values and features. (See Appendix III).
- Manage forests adjacent to recreation sites in a manner that maintains the recreation user experience.

4.2.7 Cultural Heritage Resources

A Cultural heritage resource is defined by government as, “an object, a site, or the location of a traditional social practice of historical, cultural or archaeological significance to the province, a community or an aboriginal people. Cultural heritage resources include archaeological sites, structural features, heritage landscape features, and traditional use sites.”⁵

Canfor is committed to working with the affected First Nation communities to identify, describe, and integrate management for cultural heritage resources with other forest management objectives on TFL 18.

The TFL lies within the Canim Lake Indian Band and the North Thompson Indian Band traditional territories. As part of operational plan approval processes, Ministry staff identify and share any available traditional use information associated with proposed developments. This information is reviewed in the context of the proposed plan, and any revisions are put forward in the final plan. Canfor also openly refers proposed plans to the affected First Nations for their review and comment, and extends invitations to meet and discuss these plans. When comments are received, they are reviewed for incorporation into the final plan submission to the Ministry of Forests.

In addition, the Kamloops LRMP archaeological overview process is used to identify the potential for archaeological resource values in areas where blocks are

⁵ Page 87, Appendix 4, Landscape Unit Planning Guide. March 1999

proposed for harvest. Blocks that meet specific criteria are subject to an increased level of field review, culminating, as required, in an Archaeological Impact Assessment.

Canfor also assists the Crown, as required, in meeting their fiduciary responsibilities to First Nations. Canfor's participation in these activities is governed by provincial and agency specific consultation policy documents.

4.2.8 Range Land

There are currently two range tenure holders licensed to use rangelands on portions of Canfor's operating area in TFL 18.

Issues important to the management of the range resource and the interaction of range use and forest management include:

- The interaction between range and forest licensee activities, and how these activities maintain and enhance the range resource while minimizing damage to regeneration from concentrations of cattle;
- The removal of natural barriers to cattle movement as a result of forest operations;
- The management of range fencing, including the installation and maintenance of range fences and cattle guards;
- The invasion and spread of noxious weeds;
- Deactivation and/or rehabilitation of roads systems useful to range tenure holders for range operations; and,
- Harmonizing harvesting, grass seeding, and reforestation activities with grazing use.

Canfor commits to the Kamloops LRMP objective for the range resource applicable to this plan, which is to

- *Minimize tree/grass/cattle conflicts through integrated management practices.*

Canfor cooperates with range tenure holders in planning of activities to minimize conflict between forest operations and grazing activities. The operational plan public referral process is used to solicit comments from range tenure holders on issues associated with proposed development⁶. In addition, Canfor staff maintains on-going informal dialogue with range tenure holders on issues as they arise. Range Use Plans are also referred to Canfor for review and comment.

⁶ In the past Canfor has referred SP's, however, this practice has changed as outlined in referral letters to the ranching community.

Canfor employs the following strategies in managing expressed range concerns:

- Installation and maintenance of cattle guards and wing fences where natural barriers are removed as a result of forest management operations;
- Repair and/or replacement of range improvements damaged as a result of harvesting or silviculture activities;
- Block design strategies to assist in management of cattle movements;
- Timing grass seeding of roads, landings, and right-of-ways to control noxious weeds;
- Proposing harvest in areas where there is an identified benefit to the range tenure holder for short term use as rangeland; and,
- Contacting the range tenure holder when it is identified that cattle damage to plantations has reached levels unacceptable to Canfor, and working cooperatively to reduce the likelihood of continued damage.

4.2.9 Wildlife

Wildlife and their associated habitats are distributed throughout TFL 18. While wildlife resource values range from microscopic to large mammal species, forest management activities give specific consideration to the larger mammals and identified species at risk.

Within the framework of the “Acts and Regulations” and the Kamloops LRMP, Canfor will provide for the management, maintenance, and protection of habitats of naturally occurring species.

Within TFL 18, wildlife species identified in the Kamloops LRMP as the focus for forest management planning are red & blue listed species, regionally important species, and Moose. Species of interest locally that do not have management objectives specified through the LRMP include Northern Goshawk, Mule Deer and Moose (outside General Management Zones). Management for these species will focus on site-specific measures developed in consultation with the appropriate professionals.

Management prescriptions for those species associated with a management zone in the Kamloops LRMP are required to follow the strategies outlined in the LRMP document. Wildlife management strategies outside these areas are not similarly constrained, and the prescribing forester may develop alternative strategies to achieve wildlife management objectives.

At the time of plan development, no specific red or blue listed species management issues were noted. Where red or blue listed species are identified during field operations, prescriptions will be developed that incorporate scientifically defensible management strategies for that species. A listing of red

and blue listed species is available from the Conservation Data Center web site at <http://srmwww.gov.bc.ca/cdc/>

As part of the on-going OGMA review process, information from volume 1 and 2 of the Biodiversity Gap Analysis will be used to evaluate OGMA adjustments and their contribution to various wildlife habitats and feature representation.

For additional considerations on management for wildlife and their habitats, refer to the Fisheries, Riparian, and Biodiversity sections.

4.2.9.1 Wildlife Habitat Features

A wildlife habitat feature may include:

- A significant mineral lick or wallow;
- An active nest of a Bald Eagle, Osprey, or Great Blue Heron; or,
- Any other localized feature agreed to by the District manager and Designated Environment Official.

When a wildlife habitat feature is made known or identified in the field, management strategies will be developed consistent with level of protection required for the feature. To date, the strategies employed most frequently have been to incorporate the feature into the wildlife tree patch or old growth management retention strategy for the block or to adjust the road location to avoid the feature.

4.2.9.2 Identified Wildlife Management Strategy

The provincial Identified Wildlife Management Strategy has been implemented and provides direction for management of listed species. No Wildlife Habitat Areas (WHA's) have been established in TFL 18 that would require management in accordance with the Identified Wildlife Management Strategy.

Should a WHA be brought forward for establishment on TFL 18, timber supply impacts will be minimized, where possible, through the integration of OGMA's and WHA's.

4.2.10 Fisheries

Within the framework of the "Acts and Regulations", the Kamloops LRMP, and the Lakes LRUP, Canfor will manage for the maintenance, enhancement and protection of fish habitats. Forest management issues associated with management of the fisheries resource include management of riparian resources, sediment control, water quality, water quantity, water temperature, and timing of stream flow.

Fish species generally associated with the TFL include Rainbow Trout and Brook Trout. Downstream fisheries of importance include the Coho rearing habitat of Mann Creek, approximately 6 kilometers south of the TFL boundary. On May 3 2002, the federal Committee on the Status of Endangered Wildlife in Canada (COSEWIC) announced that the Interior Fraser Coho, which includes the Thompson Coho, have been listed as endangered.

4.3 INTEGRATION OF HARVEST ACTIVITIES WITH NON-TIMBER USERS

4.3.1 Trappers

There are three trapping licenses issued for areas overlapping TFL 18 tenure. These licensees are provided an opportunity to comment on operational plans, and plans governing forest management on TFL18 consistent with the “Act and regulations” or through participation in, or comment on agency led public processes.

4.3.2 Guide Outfitters

There are no guide outfitters operating on areas overlapping TFL 18 tenure.

4.3.3 Range Tenure Holders

There are two range tenure holders for areas overlapping TFL 18 tenure. These licensees are provided an opportunity to comment on operational plans and plans governing forest management on TFL18 consistent with the “Act and Regulations” or through participation in, or comment on, agency led public processes.

4.3.4 Licensed Water Users

There are no licensed water users with rights overlapping TFL 18 tenure.

4.3.5 Mineral Exploration

There are nine licensed mineral tenures overlapping TFL 18 tenure. There are no active mine sites. Licensees are provided an opportunity to comment on operational plans, and plans governing forest management on TFL18 consistent with the “Act and Regulations” or through participation in, or comment on agency led public processes.

4.3.6 Recreation Tenures

There are two recreation tenures for areas overlapping TFL 18 tenure and there are two with tenure applications pending. These tenure holders are provided an opportunity to comment on operational plans and plans governing forest management on TFL18 consistent with the “Act and Regulations” or through participation in, or comment on agency led public processes.

4.3.7 Aboriginal Community or Individuals

There are two aboriginal communities with interests associated with TFL 18. Both communities are provided an opportunity to comment on operational plans and plans governing forest management on TFL18 consistent with the “Act and Regulations” through participation in, or comment on, agency led public processes, or separately through arrangements between agencies and the aboriginal community involved.

4.4 FIRE SUPPRESSION

The “Acts and Regulations” will be complied with in all fire suppression activities. Canfor will ensure that initial attack and suppression crews take action all identified fires on the TFL.

4.4.1 Prescribed Burning

Prescribed burning activities on the TFL were substantially reduced over the term of Management Plan #9 from Management Plan #8. This practice will continue over the term of this plan. Prescribed burning will be generally limited to pile burning although broadcast burning will still be considered where appropriate.

Prescribed burning activities will account for appropriate burning conditions and proximity to adjacent fuels.

4.4.2 Fire Fuel Management

Slash levels will be minimized where not required for coarse woody debris/biodiversity. Coarse woody debris objectives take into account fire hazards created by slash and provide strategies for minimizing the hazard.

Logging debris piles are burnt as soon as possible after harvesting is completed.

4.4.3 Smoke Management

All prescribed burn activities, broadcast burn or pile burning, will follow the smoke management requirements specified in the “Act and Regulations”.

4.5 FOREST HEALTH

4.5.1 Detection and Treatment

The objectives of the forest health program on the TFL are to:

- *Detect and treat forest health concerns in a timely manner through an aggressive detection program.*
- *Minimize non-recoverable losses.*
- *Maintain productivity of the forested land base on the TFL*

At present, bark beetle salvage is the driving priority for the majority of forest development activity on TFL 18. The need for accurate and timely information is critical in implementing proactive and aggressive management action to salvage beetle damaged timber. Flights are conducted where a need is identified due to higher incidence levels of insects or disease. Detection flights are complemented by ongoing ground observations during timber development and silviculture activities.

The following sections identify insects, disease and related forest health concerns and provides strategies for treatment where applicable.

4.5.2 Insects

The following insects have been detected on the TFL or in the immediate vicinity during the term of Management Plan #10:

4.5.2.1 Spruce Beetle (*Dendroctonus rufipennis*)

An epidemic level of spruce beetle attack was detected in the southwest portion of the TFL in late 1997. A harvest and trap tree program was successfully conducted and the attack levels subsided; however a renewed threat was detected in 2003. Canfor is managing Spruce and Balsam dominant stands in the western and northern areas of the TFL as having high risk of infestation over the next few years.

The trap tree and survey program is on-going, however given the scale of the infestation, Canfor is relying on managing trap decks at a block level; using portions of blocks and road rights of way in place of small trap decks.

Figure 3. Spruce Bark Beetle – Deube Lake area of TFL 18



4.5.2.2 Mountain Pine Beetle (*Dendroctonus ponderosae*)

Figure 4 Mountain Pine Bark Beetle – Southwest Corner of TFL 18



In Management Plan #9, it was recognized that Mountain pine beetle populations were at epidemic levels to the south and west of TFL 18. These populations have expanded significantly and are now epidemic in the southern area of the TFL near Lolo Lake. Canfor has aggressively pursued harvesting of beetle infested stands in this area.

Susceptible pine stands are identified through our GIS and monitored during detection flights and in conjunction with ground activities. Areas showing increased activity will be surveyed to determine the extent and status of attack. Treatment will consist of salvage of infested timber, and a pheromone “bait to hold” program may be implemented where blocks cannot be harvested prior to flight.

4.5.2.3 Balsam Bark Beetle (*Dryocetes Confusus*)

Figure 5 Balsam Bark Beetle – John Lake area of TFL 18



Attack levels associated with this insect are on the rise in areas throughout the northern and central portions of the TFL. Three blocks have been recently approved in areas where the attack levels are considered high relative to adjacent areas. Susceptible stands are monitored annually and infested areas will be salvaged where feasible and practical. Where epidemic levels are identified or anticipated, appropriate control measures will be taken.

4.5.2.4 Spruce Budworm (*Choristoneura biennis*)

Figure 6 Spruce Budworm, IBS, and IBB attack – Mt. Mahood area of TFL 18



Spruce budworm activities were identified in the north, central, and southwestern portions of the TFL during 1998, and continue to be highly active; particularly in the north. Defoliation levels are moderate to high, and in some areas the initial defoliation is thought to be a precursor to attack by Spruce and Balsam beetle. High levels of mortality have been identified in stands subject to repeated attack, particularly in the understory regeneration and pole layers. Monitoring of susceptible stands will continue and salvage and control measures implemented as required.

4.5.2.5 White Pine Weevil (*Pissodes strobi*)

The white pine weevil is a species of concern in spruce plantations on the TFL. Historic planting of 100% spruce on blocks has resulted in many of these plantations being subject to infestation, especially below 1,400 meters, where spruce is most susceptible.

Through research and planting trials, Canfor has developed a strategy for the management of the white pine weevil.

- Avoid pure spruce plantations below 1,400 meters. Use caution at 1,400 to 1,500 meters.
- Delay spacing in stands with high percentages of spruce and no alternative leave species.
- Reduce the percentage of Spruce during stand tending in stands below 1,400 meters. Leave up to 800 well spaced deciduous trees per hectare.
- Plant genetically improved weevil resistant spruce where available. Encourage seed collection efforts and testing of resistant spruce seedlots.
- Interplant established weevil attacked spruce plantations with alternate species. Encourage natural deciduous species. Consider inter-planting in high risk areas where weevil attack is anticipated.
- Lower elevation seedlots generally have greater resistance to weevil. Move spruce seedlots up in elevation and avoid moving spruce seedlots down in elevation.

Projects implemented during the term of Management Plan #8 were discontinued during the term of Management Plan #9. The management and monitoring of spruce leader weevil infestation on TFL 18 requires a comprehensive strategy.

During the term of Management Plan #10 a strategic plan will be developed and implemented to clearly identify the issues and questions concerning spruce leader weevil, and outline a coordinated sampling approach to address them.

4.5.3 Disease – Root Rot

The protection of the timber resource from depletion due to root rot will accomplish the following objective:

- *Reduce the risk of growth loss in mature and regenerating stands that could be attributed to root rot infection.*

Management measures for root rot are directed by the current known probability of occurrence of root rot within local biogeoclimatic sub-zones. Table 5 below identifies these known probabilities. Operational plans provide biogeoclimatic information on new blocks that will be used with Table 5 to define an initial assessment of risk to the stand for root rot infection.

Table 5: Probability of Root Disease Occurrence

<i>Biogeoclimatic sub-zone</i>	<i>Probability of root disease occurrence</i>	<i>Biogeoclimatic sub-zone</i>	<i>Probability of root disease occurrence</i>
ICHmw3	High	SBS (all)	Moderate
ICHwk1	Moderate	MS (all)	Moderate
ICHvk1	Low	IDF (all)	High
ICHmk2	High	ESSF (all)	Low

The prescribing forester will use the above information in determining the need for a more detailed assessment of the likelihood that a stand is subject to root rot infection. Assessments may range from a cursory field review of a stand to identify larger scale indicators of root rot infection, to increasingly detailed and structured surveys where the expression of root rot infection is difficult to determine.

4.5.4 Wind Throw

The protection of the timber resource from depletion due to wind throw will accomplish the following objectives:

- *Manage activities in and adjacent to wind thrown stands to reduce the risk of endemic insect infestations reaching epidemic proportions; and,*
- *Minimize the risk of wind throw occurrence in new harvest openings.*

Wind throw is an on-going management concern on TFL 18. Management of this issue is important to meet forest health insect objectives, to minimize the cost of repeated stand entries, and to ensure other forest resource plan objectives can be met. Wind throw in this section includes stem breakage as a result of heavy snows followed by wind events.

The TFL is situated on a large plateau. The prevailing winds are known to be unpredictable and localized extreme wind events have occurred. As a result, wind throw was historically a naturally occurring event within mature stands; most evident on the wetter site series and in mature spruce stands. The risk associated with these stands blowing down is increased when openings are created.

Management measures to address wind throw are implemented at two different stages.

After wind throw has occurred detection of the event is critical to the timely implementation of control strategies. Canfor has combined detection of wind throw events into its annual forest health monitoring program.

The development of strategies to address wind throw events will consider provincial and regional direction, and will include an assessment of the risk to the timber and other forest resources for the array of possible treatment options. The assessment of risk to the timber resource will include consideration of the cost / benefit of treatment, the rate of spread of any associated forest health concern, and stand susceptibility to further wind throw.

In addition to identifying existing events, Canfor also assesses wind throw risk at the stand level. Wind throw risk is assessed and management strategies developed during development of operational plans.

4.5.5 Unsalvaged Losses

Unsalvaged losses are losses in timber volume due to natural or unnatural disturbances at the epidemic level. Endemic losses are accounted for in yield calculations for timber supply. These disturbances are usually due to fire, epidemic insect or disease incidence, or wind throw. This type of loss is kept to a minimum on the TFL due to excellent access on the extensive road network. Canfor will continue to take an aggressive approach to facilitate the timely harvest of damaged timber.

A summary of the assumptions made is included in section 9.0 of the Information Package.

4.6 SILVICULTURE

The silviculture program will be consistent with the requirements of the “Acts and Regulations” and meet the following objectives:

- *Maintain site production by regenerating all disturbed productive forestlands promptly to achieve species and stocking level targets at free growing.*
- *Monitoring and maintaining regenerating stands to ensure the free growing objective will be achieved consistent with the “Acts and Regulations”.*
- *Substantially eliminate Industry Outstanding (I/O) Non-satisfactorily restocked lands (NSR), and keep the level of current (I/A) NSR to a minimum.*

To ensure silviculture investments result in positive gains to timber supply, the following work will be completed during the term of Management Plan #10:

- *A Silviculture Strategy will be completed to review various silviculture regimes and their influence on timber supply.*

- *Ecologically based silviculture regimes will be developed that will guide future silviculture activities.*

4.6.1 History and Achievements

Silviculture activities over the term of Management Plan # 9 focused on:

- Reducing the amount of I/A NSR and eliminating I/O NSR.
- Minimizing the amount of current NSR through reducing time between harvest and planting.
- Implementation of a free growing survey and declaration program.

During the term of Management Plan #9, performance regarding silviculture activities was as follows:

- Regeneration delay, based on the time period between harvest completion and planting, varied by BEC sub-zone within a range of 1.5 and 2 years.
- Between 2000 and 2003, Canfor declared 1,849 hectares of I/A harvested area on TFL 18 as Free Growing.
- I/O NSR is estimated at 29.9 hectares, and measures are being taken to confirm it is now satisfactorily restocked. There are 1,552 hectares of I/A NSR on the TFL. There are 710 hectares scheduled for planting in 2004.

Table 6: I/A Performance (ha)

Activity	2000	2001	2002	2003 ⁷	Total
Site Prep	244.7	141.6	138.1	150.7	675.1
Planting	1,135.1	530.3	374.3	290.0	2,329.7
Brushing	0.0	23.1	90.4	6.0	119.5
Surveying ⁸	3,122.8	2,681.5	2,962.9	2,228.6	11,013.3

⁷ Brushing and site preparation activities were impacted by bush closure during 2003 fire season

⁸ The numbers include Regeneration, Walkthrough, and Free Growing surveys.

Table 6.1 Species Planted (no. of seedlings)

Year	B1	Cw	Fdi	Lw / Ls	Pli	Pw	Sx
2000	0	60,990	109,560	35,585	732,700	0	489,310
2001	21,130	14,492	114,510	2,005	196,029	7,605	348,450
2002	0	5,255	49,365	0	178,410	6,560	215,381
2003	2,970	1,305	70,051	0	158,164	1,995	129,925
% Dist.	0.8%	2.8%	11.6%	1.3%	42.9%	0.5%	40.1%

Table 6.2: Funded I/O Performance (ha)

Activity	2000	2001	2002	2003	Total
Site Prep	6.6	0.0	0.0	0.0	6.6
Planting	188.8	90.5	0.0	0.0	279.3
Brushing	34.5	1.3	0.0	0.0	35.8
Surveying ⁹	2,419.9	1,759.2	0.0	2,750.4	7,739.8

4.6.2 Basic Silviculture Activities

4.6.2.1 Seed Collection

Seed requirements are reviewed annually and any forecast deficit is managed to ensure a suitable inventory of seed is maintained. Seed collection and use will be managed consistent with the “Acts and Regulations”. *Class “A” seed use will be a variable considered in the development of a Silviculture Strategy.*

4.6.2.2 Site Plan

The site plan (SP) provides site specific strategies for integrating management for multiple forest resource objectives. The site plan will be completed consistent with the requirements as set out in the “Act and Regulations”.

4.6.2.3 Site Preparation

Objectives for site preparation will be to:

⁹ The numbers include Regeneration and Free Growing surveys.

- *Create favourable micro sites for planting where natural micro sites are insufficient.*
- *Reduce the likelihood of the infection of post-harvest regenerating stands by root diseases.*
- *Minimize the time lag between harvest and planting.*

Site preparation has now shifted wholly to selective mechanical site preparation. These treatments have been limited to mounding on wetter site series, and stumping treatments where identified in the site plan or silviculture prescription. The amount of "plant as is" ground has also increased as planting crews continue to develop expertise in appropriate microsite selection.

While not currently being used, the tools available for consideration in site preparation can include broadcast burning and mechanical methods including debris piling, scarification, mounding, stumping and disc trenching, and chemical methods.

The use of broadcast burning will continue to play a very minor role in site preparation due to its incompatibility with current harvest practices and the requirements for biodiversity and wildlife. Broadcast burning is still considered a valuable site preparation tool and will be utilized where appropriate.

4.6.2.4 Planting and Regeneration

The objectives of the planting program will include:

- *To ensure site production is maintained or enhanced over time.*
- *To mitigate potential future plantation risks by planting a mix of species suitable for post-harvest site conditions.*

All areas harvested on the TFL within the net area to reforest will be planted. Table 8.7 in the Information Package identifies how existing Analysis Units will be regenerated after harvesting, and the expected regeneration delay period.

Monitoring

- During the term of Management Plan #9, there was a commitment to conduct survival surveys and stocking surveys one and two years after planting respectively. This survey program is currently under review, and will be expanded to consider survey data integration with growth and yield information needs.

- *During the term of Management Plan #10, a revised survey program will be developed that meets monitoring requirements of the “Act and Regulations” and due diligence requirements of Canfor.*

4.6.2.5 Maximum Density Spacing

The objective of maximum density spacing will be to reduce stand suppression due to overstocking where the stems per hectare are greater than that specified in the “Acts and Regulations”. Where required, spacing will concentrate on leaving higher densities post treatment. The intent will be to provide for commercial thinning opportunities while minimizing forest health concerns such as root rot in root rot prone ecosystems. Spacing will concentrate on the most productive sites first.

4.6.2.6 Brushing

An effective brushing program is an essential component in meeting the described silviculture, timber, and integrated resource management objectives.

Treatments may be implemented to achieve site preparation objectives, to ensure regeneration survival, and to meet administrative requirements for free growing.

During the term of Management Plan #10, Canfor will review brushing treatments and their efficacy in light of on-going research into crop tree/brush competition, and longer term objectives regarding management for timber and biodiversity values. The results of this review will be considered in the development of silviculture regimes and free growing survey declarations.

4.6.3 Incremental Silviculture Activities

Incremental silviculture refers to treatments conducted during stand development for the purposes of maintaining or increasing stand yield, value, or to modify stand structure. These treatments are incremental to those required to meet basic silviculture activities as defined by the “Act and Regulations”, and may include spacing, pruning, fertilization, and conifer release.

Incremental activities may be carried out to meet silviculture, timber, or integrated resource management objectives where it is demonstrated that a positive net present value would result, and the returns would be sufficient to warrant the investment. Some of the information required to analyze the costs and benefits of silviculture activities will be an output from the silviculture strategy work to be completed during the term of this plan.

4.7 ROADS

Canfor commits to carrying out road construction, modification, maintenance, deactivation, and rehabilitation activities in accordance with the “Act and Regulations” and Canfor’s EMS.

4.7.1 Construction and Modification

Canfor has a well developed main and secondary road system which provides access to all areas of the TFL. As a result, no major access routes will be required over the term of Management Plan #10.

The objective of road construction and modification will be to propose, design, and construct or modify roads in a manner that:

- *Contributes to the safety of all road users.*
- *Provides an effective and cost efficient transportation network for timber extraction.*
- *Considers the potential risks associated with downstream and down slope forest resource values.*
- *Minimizes long term productive forest land removals due to permanent roads.*

During the term of Management Plan #9, Canfor replaced one large culvert on road 7A with a permanent bridge structure to make the upper stream reach accessible to fish. In addition, all known priority watershed restoration sites have been actioned by Canfor directly, or through Forest Renewal BC and Forest Investment Account funded projects.

Canfor undertook a project to improve the quality and reliability of the GIS data set used to manage spatial and attribute road information. The results of this work have been used in the development of the draft Information Package. A project was also undertaken to improve the quality of information used in the Timber Supply Analysis for reductions due to existing roads. This project is ongoing, and the information will be incorporated into the final Timber Supply Analysis.

During the term of Management Plan #10, Canfor will be reviewing opportunities to improve alignment of sections of the mainline road systems. Where this is determined by Canfor to be cost effective, any resulting road sections no longer required will be considered for rehabilitation.

4.7.2 Maintenance

The objective of road maintenance will be to inspect, monitor, and maintain roads in a manner and at a frequency that:

- *Contributes to the safety of all road users.*

- *Considers the potential risks associated with downstream and down slope forest resource values.*
- *Identifies and corrects any road prism stability concerns.*
- *Ensures drainage systems are functioning appropriately, and sediment production and transport is minimized.*

Where encountered, the maintenance program will identify and report any non-status and Forest Service Road (FSR) stability or drainage systems issues to the appropriate agency contact.

4.7.3 Deactivation

The objectives for deactivation in the TFL are to:

- *Contribute to the safety of resource users that may be impacted by deactivation activities.*
- *Ensure on-going stability of the road prism.*
- *Re-establish natural drainage patterns.*
- *Focus activities where risk assessments determine the need for action.*
- *Ensure public, agency and First Nations concerns are considered when determining level of and need for road deactivation.*

In Management Plan #9, a commitment was made to conduct deactivation activities consistent with a comprehensive access management plan. The forest health issues arising on the TFL, with their unpredictable nature, combined with the need for a long term road development plan, has limited the effective implementation of the access management strategy.

4.7.4 Rehabilitation

The objectives of rehabilitation in the TFL are to:

- *Maintain the long term productivity of the available forest land base.*
- *Minimize the area retained in permanent access where long term access to the land base is not required.*

To assist in achieving timber production objectives, Canfor has constructed a number of roads as temporary access structures where long term access is not required and the prescribing forester has determined a free growing stand can be achieved. As developed road access is in place for the majority of the TFL, an increase in rehabilitation activity is forecast.

Figure 7 Road Rehabilitation – Block D129, TFL 18



4.7.5 Access Management

As identified in the road deactivation section, the Management Plan #9 focus on coordinated access management planning has changed. Once the forest health outbreak has been contained, access management planning will be reconsidered.

Historically, access management concerns regarding wildlife have been addressed through road blockage commitments being incorporated directly into operational plans or through Forest Practices Code Act Section 105 closures. Agency mandates, resources, and related legislation is expected to evolve in coming months and years, and access management responsibilities also change. Changes are expected to result in more legislated closures and deactivation management, rather than physical road blockages.

4.7.5.1 Road Signs

All roads in use are numbered and have distances posted each kilometer. Radio frequencies are indicated at the beginning of each road and where frequencies may change on a road. Warning signs are posted where active logging is taking place. Where road deactivation has occurred signs are posted to indicate road conditions applicable to the level of deactivation.

4.7.5.2 Radio Usage

For safety, all actively used roads on the TFL are radio controlled. The entire TFL has radio reception, both within the TFL and to emergency services or the Vavenby office by radio repeater. Radio frequencies include:

Ch 1 - 152,390 Mhz; Ch 2 - 152.240 Mhz, and Ch 4 - 153.170 Mhz..

Vehicles equipped with radios systematically call out their location by kilometers. There are a number of mandatory call points indicated on mainlines at major road junctions, blind corners or narrow sections of road.

Due to the heavy recreational use and through traffic in the TFL, vehicles without radios are quite common. Signage encourages such vehicles to follow a radio-controlled vehicle or travel during inactive hours.

5 CONSULTATION WITH OTHER RESOURCE USERS

All licensed resource users and known public user groups with an interest in TFL 18 will be sent a letter notifying them when the plan will be available for review and comment. All correspondence, comments, and responses will be copied into Section 12 for submission with the proposed Management Plan.

A sample letter and a full list of referral groups and individual tenure holders are provided in Section 12.

6 SPECIAL PROJECTS

The following special projects were completed during the term of Management Plan #9.

Table 7 TFL 18 Special Projects

Project Category	Description	Completion
Ecosystem Mapping	Level 4 Terrestrial Ecosystem Mapping	March 2001
Silviculture Strategy	TFL 18 Type 1 Incremental Silviculture Strategy	December 2001
Wildlife Mapping	Biodiversity Gap Analysis and Habitat Suitability Assessment for TFL 18 – Vol. 1 & 2	October 2002
Site Index	Potential Site Index Estimates for the Major Commercial Tree Species on Tree Farm License 18	March, 2002
G&Y Gap Analysis	Gap analysis and strategic recommendations for a Growth & Yield Program for TFL 18	March 2003
OGMA Mapping	Selection and Mapping of Old Growth Management Areas (OGMA) Clearwater Landscape Unit	March 2003
Patch Size Analysis	A Biodiversity Patch Size Distribution Analysis for the Clearwater Forest District	April, 2003
Terrain Mapping	Detailed Terrain Stability Mapping Tree Farm License 18.	November 2003
Balsam IU	Problem Analysis of Preliminary Growth & Yield Issue for Residual Balsam Stands on TFL 18	March 2002
Balsam IU	Growth & Yield Sampling in Residual Balsam Stands on TFL 18: Work Plan	June 2002
Balsam IU	Growth & Yield of Residual Balsam Stands on TFL 18	October 2003
Road Netdowns	Sample Plan to Estimate Average Road Width and Total Road Area on TFL 18.	May 2004 (on-going)

6.1 PERMANENT SAMPLE PLOTS

Sixty-four permanent growth and yield plots were established on the TFL during MP #8. Canfor will continue to work with the MOF in determining future need for additional growth and yield plots, and developing an understanding of the value and long term management requirements for existing plots.

6.2 LANDING REHABILITATION AND INVENTORY

A landing inventory was initiated in 1997 to identify both backlog and appraisal landings that had potential for rehabilitation. The intent is to return these landings to productivity. Once identified, a plan was initiated for rehabilitation. All landings are ripped, topsoil replaced where available and planted. This project was completed during the term of MP #9.

6.3 VEGETATION RESOURCE INVENTORY (VRI)

In Management Plan #9, Canfor committed to participation in the Kamloops TSA based VRI initiative. Should this initiative move forward, Canfor will evaluate further participation in the TSA VRI initiative based on an assessment of any potential benefits that would be attributable to the TFL inventory. As identified in section 3, the costs and benefits of a stand alone VRI for TFL 18 will be assessed during the term of Management Plan #10.

7 CONTRACTING

In accordance with Part 14.0 of the replacement document for the TFL, at least 50% of the volume harvested each year must be harvested by persons under contract with the licensee. During MP #9 this legal commitment was achieved, with 100% of the volume harvested under contract.

Canfor will conduct activities associated with contracted timber volumes consistent with the “Acts and Regulations”.

8 AMENDMENT

Amendments to the Management Plan required by the Chief Forester shall be made in accordance with the conditions as set forth in Paragraph 2.38 of the Tree Farm License document dated for reference January 1, 2001.

Canfor may amend the management plan due to new or changed circumstance and will specifically review the management plan objectives once a Forest Stewardship Plan has been developed and approved for the TFL.

Any amendment to this plan will be submitted to the Chief Forester, with copies to the appropriate agency contacts. Such amendment submissions will occur only on completion of referrals to all affected users and a public review and comment period.

9 IMPACT SUMMARY OF MANAGEMENT PLAN IMPLEMENTATION

9.1 HARVEST LEVELS

Proposed management plan implementation will have short term positive effect on harvest levels and result in an increased long term harvest level.

9.2 ECONOMIC OPPORTUNITIES

Short term economic opportunities are maintained or enhanced by the effort to recover potential Mountain Pine beetle mortality.

9.3 EMPLOYEES AND CONTRACTORS

Implementation of Management Plan #10, as proposed, combined with the timber reallocation initiative, will have no impact on employment levels currently provided by harvesting operations. This includes contractors and direct employees of Canfor.

9.4 PROTECTION AND CONSERVATION OF NON TIMBER VALUES

Implementation of Management Plan #10 will provide positive results for the management, protection, and conservation of non-timber values. Values specifically benefiting from implementation of this plan will include:

- Visual resources, having established management objectives.
- Biodiversity values, having increased certainty in management for old growth management, wildlife tree retention, and patch size distribution.
- Water, lake, wetland, and riparian resources, having increased protection from implementation of the old growth management strategy.
- Soils and site productivity, having improved inventory information to guide decisions, and increased trends toward rehabilitation of sites to maintain long term production.
- Recreation resources, having increased certainty on the approach to visual resource management, protection and enhancement of the recreation experience adjacent to lakes and streams, and the commitment to work pro-actively on integration of timber and recreation values.
- Cultural heritage resources, having systems and communication mechanisms in place to identify, review, and subject to the findings, manage the resource value of importance.
- Range resources, through cooperative management of resource integration concerns.

- Fisheries and wildlife resources, through integration of wildlife resource values with lakeshore management, biodiversity, recreation, and access management.

10 SIMILARITIES / DIFFERENCES BETWEEN M.P. #9 AND Proposed MP 10

10.1 KEY SIMILARITIES

Key similarities between MP #9 and MP #10 include:

- Canfor proposes to continue with the strategies that provided for a healthy local economy during MP #9.
- Commitment to conducting activities consistent with the Kamloops LRMP and Lakes LRUP.
- The same timber inventory, approved in 1994, was used for both Management Plans.
- The strategies for the recreation resource, which proved successful during MP #9 remain similar for MP #10. The Recreation Inventories, although updated in 1996 to current standards, remain largely unchanged.
- Canfor will continue with the cooperative approach to range management practiced during MP #9.
- The apportioned cut for TSP is proposed to remain the same.
- The goal to eliminate backlog NSR remains the same.
- Utilization standards will remain consistent with the license document.
- Harvesting systems will remain similar while harvesting the full range of terrain profiles.
- MP #10 will continue with a similar aggressive approach in controlling forest health outbreaks.
- Use of innovative computer modeling techniques and GIS technology to provide more detailed and accurate information on the impacts and viability of various management practices.

10.2 KEY DIFFERENCES

Key differences between MP #9 and MP #10 include:

- An emphasis on timber mortality recovery.
- Change in total area of the timber harvesting land base from 74,620 hectares to 74,545 hectares.
- A large number of special projects completed in response to management issues arising from past Management Plans and Timber Supply determinations.
- An emphasis on the use of temporary access structures to maintain productive forest land base.
- Commitments to manage Balsam IU stands as part of the productive forest land base, and conduct a cost-benefit review of inclusion of this information in the forest inventory.
- Revisions to the area on TFL 18 to be managed for visual quality objectives.
- A revised approach to management for biodiversity, specifically patch size, old growth, and wildlife tree retention.
- Emphasis on resolution to outstanding visual resource management issues.
- Inclusion of deciduous leading stands in the productive forest land base.
- A significantly improved spatial data set for forest resources.

11 ANNUAL REPORT

An annual report will be submitted when required by the Regional Manager. The annual report outlines how management objectives and requirements of the management plan approval letter have been met over the year and specify goals for the next calendar year.

12 PUBLIC REVIEW

The public is strongly encouraged to participate in the review and comment process. As part of the management planning process, comments are specifically accepted with regard to the objectives proposed in this document.

The plan was advertised for public review and comment in the June 28th and July 5th editions of the North Thompson Times. No comments, other than from First Nations, were received during the comment period.

The plan was made available for review and comment at the Headwaters Forest District office and at the Canfor Woodlands offices in Vavenby.

Given the past attendance history for operational and management plans, no open house occurred for Management Plan #10.

Plan comments should be directed to:

Dave Dobi, RPF
Planning & Forestry Superintendent
Canadian Forest Products Ltd. – Vavenby Division
P.O. Box 39 - 2996 McCorvie Road
Vavenby, BC
V0E 3A0

AGENCY AND PUBLIC REVIEW

This section includes a sample referral letter and copies of advertisements, referrals and responses from the management planning process.

Table 8 Referral List for TFL 18

Rod and Gun Club Box 1972 Clearwater, B.C. V0E 1N0	Grizzly Anglers Box 4017 Clearwater, B.C. V0E 1N0	Wells Gray Outdoor Club RR #1, Box 1520 Clearwater, B.C. V0E 1N0
Mr. Meredith Taweel Lake Fishing Resort Box 179 Little Fort, B.C. V0E 2C0	Ralph Sunderman Sno-Drifters Box 231 Clearwater, B.C. V0E 1N0	John Jantzen Mahood Falls Community Society Mahood Lake, BC
Art Howatt Mountainview Trailer Park RR #2, Box 2928 Clearwater, B.C. V0E 1N0	Doug and Sandra Kirkby Star Lake Resort RR #2, Box 2648 Clearwater, B.C. V0E 1N0	John Meyers Moose Camp Fishing Resort Box 461 Clearwater, B.C. V0E 1N0
Steve & Tannis Mullen Alaskan Husky Ventures Dunn Lake Road Clearwater, BC V0E 1N0	Mr. Beier Nehallistion Fishing Lodge Box 69 Little Fort, B.C. V0E 2C0	Otto Oltmanns Sunset Trailer Park 851 Old N. Thompson Hwy Clearwater, B.C. V0E 1N0
BC Backcountry Ventures Clearwater, BC V0E 1N0	Dean Christenson – Timber Sales Program Ministry of Forests RR #2, Box 4501 Clearwater, B.C. V0E 1N0	Don and Dave Baxter RR #2, Box 2737 Clearwater, B.C. V0E 1N0
Ministry of Water, Land and Air Protection Attn: Phil Belliveau 1269 Dalhousie Dr. Kamloops, BC V2C 5Z5	BC Parks Attn: Lee Marchi 1210 McGill Road Kamloops, BC V2C 6N6	Dan McNeil Box 70 Canim Lake, B.C. V0K 1J0
Ministry of Sustainable Resource Management Attn: Ernie Meynard 1269 Dalhousie Dr. Kamloops, BC V2C 5Z5	Ministry of Forests – Clearwater Attn: Ron VanderZwan : Stewardship Forester Box 4501, RR #2 Clearwater, BC V0E 1N0	Kelly Austin Dept. of Fisheries and Oceans Box 610 Clearwater, B.C. V0E 1N0
Kim Heyman Clearwater Improvement District Box 157 Clearwater, B.C. V0E 1N0	North Thompson Indian Band Chief Nathan Matthew PO Box 220 500 Dunn Lake Road Barriere, BC V0E 1E0	Canim Lake Indian Band Chief Roy Christopher c/o Don Dixon PO Box 1030 100 Mile House, BC V0K 2E0
Trapper #0338T001	Trapper #0501T005	Trapper #0339T002
Mineral #379788	Mineral #379643	Mineral #379641
Mineral #379642	Mineral #379644	Mineral #390555
Mineral #390409	Mineral #390410	Mineral #390408

SAMPLE LETTER

June xx, 2004

Phil Johnston
RR #2, Box 3001
Clearwater, B.C., V0E 1N0

Dear Sir:

Re: TFL 18, Management Plan #10 - Public Review and Comment

Canadian Forest Products has initiated the planning process for Management Plan #10 for Tree Farm License 18. The current Management Plan #9 expires on September 27, 2005, by which time Management Plan #10 must be submitted and approved by the Chief Forester of the Ministry of Forests.

As part of the Management Plan development process, Canfor invites comment regarding forest management objectives as they pertain to the public and tenured resource users. Comments will be received regarding Management Plan #10 at the address noted above until July xx, 2004.

Management Plan #10, and the associated information package for the Timber Supply Review, will be available for review at Canfor's office in Vavenby and at the Headwaters Forest District offices for the period June 28 to July 26, 2004, between the hours of 8:00AM and 4:00PM, Monday to Friday. If these times are not suitable, special arrangements to review the Management Plan can be made by contacting the undersigned.

Comments should be made in writing and address to the attention of Dave Dobi, Planning & Forestry Superintendent.

Sincerely,
CANADIAN FOREST PRODUCTS LTD.
Vavenby Division

J. David Dobi, RPF
Planning & Forestry Superintendent

13 APPENDICES¹⁰

Appendix I	Description of TFL 18 Boundary
Appendix II	Draft Old Growth Management Areas for TFL 18
Appendix III	Public Recreation Map
Appendix IV	Visual Inventory
Appendix V	Visual Polygons for Management Consideration
Appendix VI	Terrain Mapping Overview – Level “C” ¹¹
Appendix VII	Forest Cover ¹²
Appendix VIII	Sample – Forest Health Digital Information
Appendix IX	Road Classification Map
Appendix X	Intermediate Utilization Balsam Report and Map
Appendix XI	Spatial Rectification Report
Appendix XII	Stream Riparian Classification
Appendix XIII	Copy of Twenty Year Plan
Appendix XIV	Copy of Referral Comment Submission to SIR
Appendix XV	Copies of Information Package, Analysis & TYP Acceptance

¹⁰ Recreation Features and Recreation Opportunity Spectrum unchanged from MP #9. Cultural heritage resource details available from Ministry of Forests – Headwaters District, and Kamloops LRMP AOA process.

¹¹ Original Inventory data set on file in the Kamloops Forest Regional offices.

¹² Specific Forest Cover data files included with timber supply Information Package.

APPENDIX I**DESCRIPTION OF TFL 18 BOUNDARY**

TFL 18 is bounded by Mahood Lake and Wells Gray Provincial Park to the north, Clearwater River Corridor Protected Area to the east, 100 Mile House Forest District to the west and Taweel Lake Protected Area to the south. The TFL is also approximately 5 kilometers northwest of the community of Clearwater B.C.

The area of the TFL is 74,545 hectares which is 100% crown (Schedule B) Lands. Table 6.1 in the Information Package provides a land base summary of the TFL.

LEGAL DESCRIPTION

All crown lands not otherwise alienated within the following described area lie within the Kamloops Division of the Yale Land District:

“Commencing at Mile-Post No. 14, being a point on the westerly boundary of Kamloops Land District situated in the vicinity of Canimred Creek; thence due east 3.218 kilometers; thence north 25 degrees East 5.632 kilometers; thence north 63 degrees east 6.862 kilometers, more or less, to the summit of Mount Mahood ; thence due east 2.815 kilometers; thence north 4.430 kilometers; thence east 6.838 kilometers; thence south 804 meters; thence east 5.897 kilometers, more or less, to a point due south of the south-east corner of Lot 3483, Kamloops Division of Yale Land District; thence south 3.957 kilometers, more or less, to a point due west of the north-west corner of Lot 3060; thence west 4.827 kilometers; then south 1.609 kilometers; thence east 2.011 kilometers; thence south 3.211 kilometers, more or less, to a point due west of the north-west corner of Lot 2178; thence east 8.045 kilometers; thence south 6.468 kilometers, more or less, to a point due west of the north-west corner of Lot 2167; thence south 9 degrees 30 minutes east 7.345 kilometers, more or less, to a point due west of the south-west corner of Lot 2161; thence south 77 degrees west 9.257 kilometers; thence south 5.177 kilometers, more or less, to a point due west of the south-west corner of Lot 4458; thence west 6.829 kilometers, more or less, to a point due north of the north-west corner of Lot 3429; thence North 50 degrees west 5.970 kilometers; thence north 67 degrees west 3.964 kilometers, more or less, to the highest point of the easterly summit of the Sentinel Mountains; thence north 88 degrees west 11.260 kilometers, more or less, to Mile-post No. 22, being a point on the aforesaid boundary between Kamloops Division of Yale Land District and Lillooet Land District; thence northerly along said land district boundary to aforesaid Mile-Post No. 14, the point of commencement.”

APPENDIX II

Draft Old Growth Management Areas for TFL 18

****** Refer to Attached Map**

APPENDIX III Public Recreation Map

****** Refer to Attached Map**

APPENDIX IV Visual Inventory

****** Refer to Attached Map**

APPENDIX V

Visual Polygons for Management Consideration

****** Refer to Attached Map**

APPENDIX VI

Terrain Mapping Overview – Level “C”

****** Refer to Attached Map**

APPENDIX VII Forest Cover

****** Refer to Attached Map**

APPENDIX VIII

Sample – Forest Health Digital Information

****** Refer to Attached Map**

APPENDIX IX Road Classification Map

****** Refer to Attached Map**

APPENDIX X

Intermediate Utilization Balsam Report and Map

****** Report enclosed – see attached map**

APPENDIX XI

Spatial Rectification Report

APPENDIX XII Stream Riparian Classification

****** Refer to attached Map**

APPENDIX XIII Copy of Twenty Year Plan

****** Report enclosed – See Attached Map**

APPENDIX XIV

Copy of Referral Comments Submission to SIR

APPENDIX XV

**Copies of Information Package, Analysis, and TYP
Acceptance**