# MANAGEMENT PLAN 9

## TREE FARM LICENCE 30

Period October 1, 2001 to September 30, 2006

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Prince George Operations

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## ACKNOWLEDGMENTS

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# 1.0 INTRODUCTION

## 1.1 Purpose

The purpose of the Management Plan (MP) is to define the objectives, goals, commitments, and strategies for TFL 30 for the period 2001 to 2006, consistent with the requirements of the Licence agreement for Tree Farm Licence 30 and the Forest Act of British Columbia.

This Management Plan is written to satisfy the content requirements of the Ministry of Forests "Tree Farm Licence Management Plan Guidelines (March 2001)".

## 1.2 Overview

This Management Plan is now submitted to the Chief Forester, Ministry of Forests for approval. Coincident with the approval of the MP, the Chief Forester will make an independent determination of the Allowable Annual Cut (AAC) for TFL 30.

Canfor has committed to obtaining Sustainable Forest Management (SFM) Certification through the Canadian Standard Association (CSA) certification process. The CSA certification process on TFL 30 began in December of 1999 with a Readiness Review. The SFM plan is complete and now has been accepted by the CSA Registrar.

## 1.3 Planning Requirements

A management plan is a legal requirement of a Tree Farm Licence. The MP is submitted by the Licensee (Canfor) and is approved by the Ministry of Forests for a five-year period. In this case, MP 8 (the current management plan) expires in September 2001, at which time the licensee must have another management plan ready for replacement / approval.

The management plan, associated timber supply analysis, and 20 Year Plan are the primary sources of information for the Provincial Chief Forester to make an independent determination of the AAC for Tree Farms. The AAC determination occurs at approximately the same time as approval of the MP.

The AAC determination and management plan processes are a requirement of the Forest Act of British Columbia. Other day-to-day Forest Act requirements on TFL 30 include road permits and cutting permits which both allow for the legal right to harvest or develop a specific site.

Prior to applying for either a road permit or cutting permit, the specific site proposed for harvest / development must be part of an approved Forest Development Plan (FDP). The FDP is a detailed operational plan identifying proposed harvesting and development for a minimum five-year period. The FDP is submitted by the Licensee and approved by the Ministry of Forests for a maximum two-year term.

Once approved on a Forest Development Plan, one (or more) of several site-level plans are required prior to harvest / development. Site-level plans must be consistent with the FDP and include the following plans:

- Silviculture Prescription
- Treatment Regime
- Deactivation Prescription
- Road Layout and Design / Bridge Site Plan

FDP's and the site-level plans are a requirement of the Forest Practices Code of British Columbia Act.

Other plans include:

- Pest Management Plan: Prepared by the Licensee to detail the types of treatments that will be applied, including the use of chemicals, to control weeds and other pests. This plan is submitted to the Ministry of Environment Lands and Parks for approval and is approved for a five-year term.

- Fire Preparedness Plan: Prepared by the Licensee annually prior to each fire season, and outlines procedures in the event of a fire, and equipment requirements.

- Stand Management Prescriptions: Prepared by the Licensee as part of our Forest Renewal BC program to detail treatments that will be applied to backlog forest and incremental silviculture areas. These plans are submitted to the District Manager for approval.

- Logging Plans: Prepared by the licensee to detail harvesting practices.

The above planning documents are lower in hierarchy than the management plan. All lower level planning will be consistent with the objectives in MP 9. Higher-lever plans and other strategic documents are discussed in Section 3.0.

# 2.0 BACKGROUND

## 2.1 Description of Tree Farm Licence 30

TFL 30 is located just northeast of Prince George in the Prince George Forest District (Figure 1). The TFL stretches from its western boundary near Summit Lake on Highway 97, eastward across the western foothills of the Rocky Mountains to slightly northeast of Sinclair Mills. The total land base for TFL 30 is 182,298 hectares, with a productive forest land base of 159,385 hectares or about 87 % of the total area. Forests in the area consist of spruce, balsam, lodgepole pine, Douglas-fir, cedar, hemlock and deciduous species.

During the preparation of the spatial data for the Information Package it was that reveled that the area proposed for analysis in MP 9 was smaller than the gross area for MP 8. Although this does not affect the total area of TFL 30 it has resulted in a 2,047 hectare reduction to the Timber Harvesting Land Base (THLB) in area identified as "unclassified lands". A detailed description of the unclassified lands is provided in Section 5.1 of the Information Package.

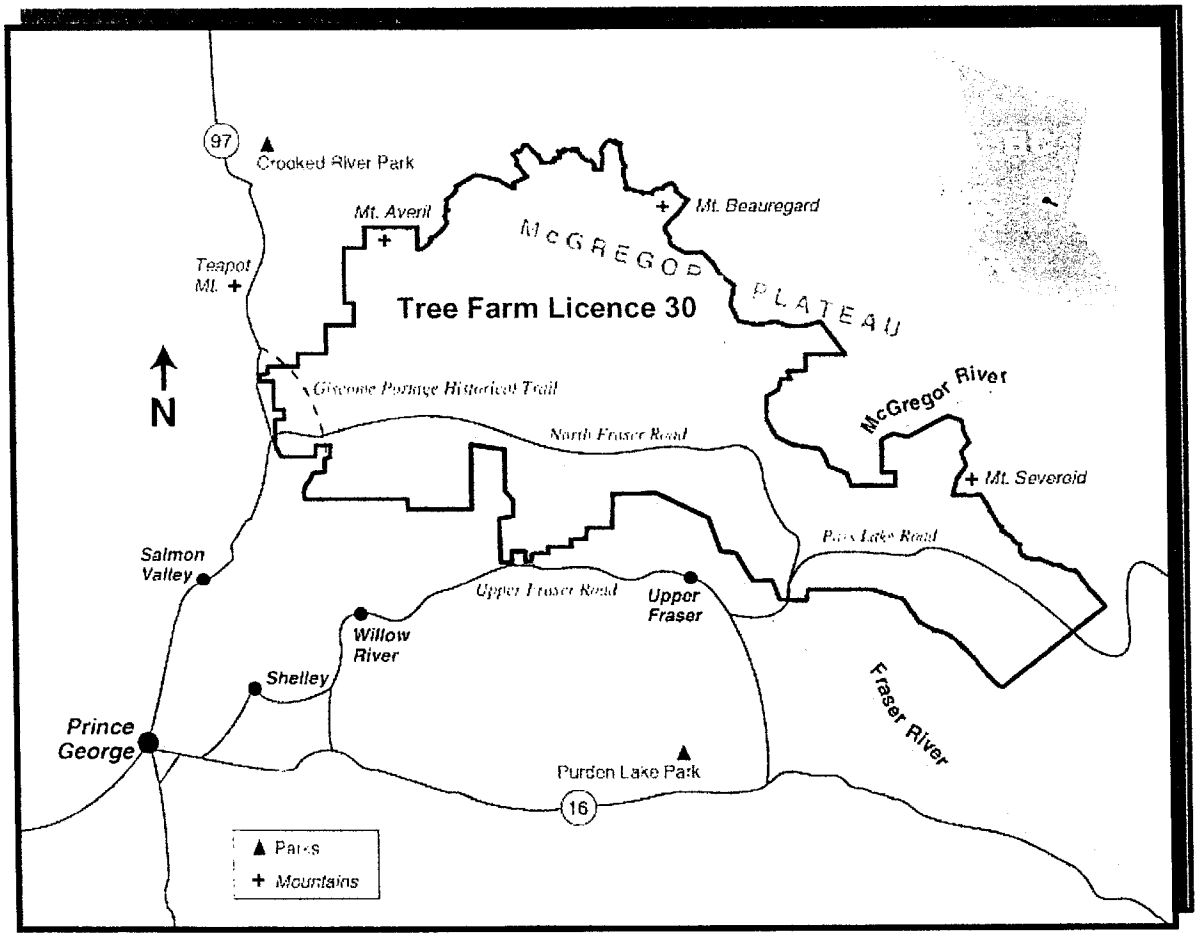


Figure 1. Location map for Tree Farm Licence 30.

## 2.2 Land Status: Schedule B Prorate

TFL 30 consists of Provincial Crown Land (Schedule B Lands) and private lands owned by Canfor (Schedule A lands). Other ownership statuses also exist within the boundaries of TFL 30.

| Ownership Status | Area (ha) | Area (%) |
|---|---|---|
| Private (non Canfor) | 429 | 0.23 |
| Parks (Giscome trail) | 93 | 0.05 |
| Schedule B | 181045 | 99.32 |
| Schedule A | 731 | 0.40 |
| Gross Area | 182,298 | 100 |

## 2.3 Licence Holder and Administration

Canadian Forest Products Ltd. is a leading Canadian integrated forest products company with a corporate office located in Vancouver, BC. Canfor employs approximately 6,550 people, 5,800 directly, and 750 through affiliated companies.

The majority of Canfor's woodlands operations and manufacturing facilities are in British Columbia and Alberta. The company is a producer and supplier of lumber, plywood, kraft pulp and kraft paper. Canfor also produces remanufactured lumber products, hardboard paneling and a range of specialized wood products, including baled fibre and fibre mat.

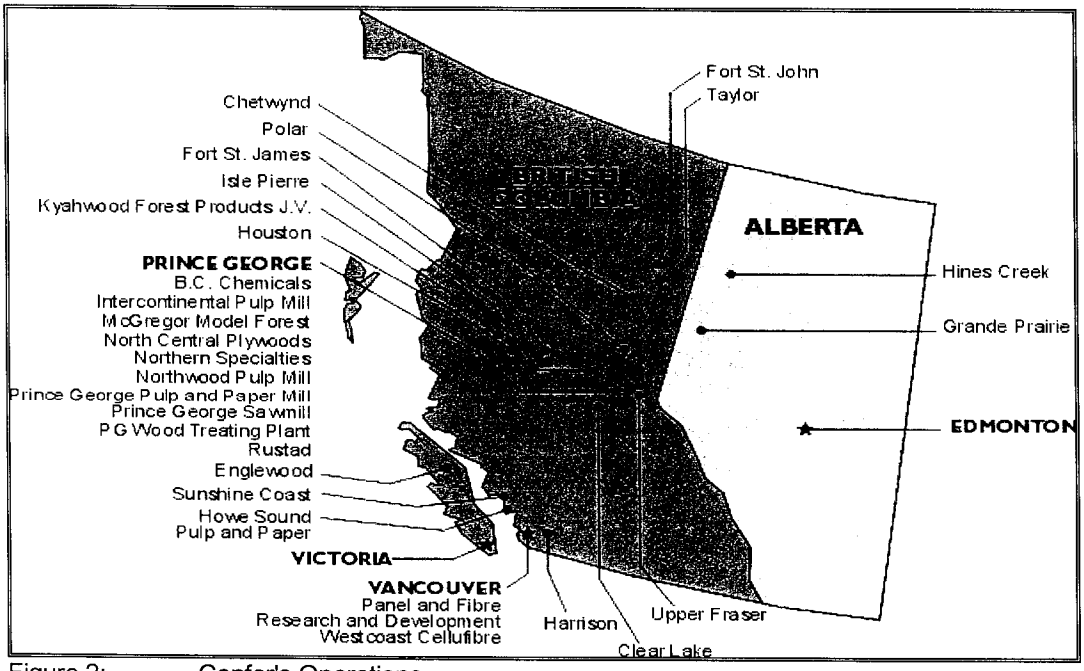


Figure 2: Canfor's Operations

The day-to-day management of TFL 30 is administered from Prince George by Prince George woodlands operations. TFL 30 is the only area-based tenure managed by the Prince George operation and represents approximately 9 % of the annual wood volume currently managed from Prince George.

Canfor (CFP) is listed on the Toronto Stock Exchange. The main operating company is Canadian Forest Products Ltd., from which the name Canfor is derived.

## 2.4 History of TFL 30

Tree Farm licence 30 is an amalgamation of five smaller TFL's that were originally granted in 1959 to the following companies:

- TFL 28: Shelley Development Ltd.
- TFL 29: Eagle Lake Sawmills Ltd.
- TFL 30: Sinclair Spruce Lumber Co. Ltd.
- TFL 31: Upper Fraser Spruce Mills Ltd.
- TFL 34: Church Sawmill Ltd.

Subsequent corporate acquisitions during the 1960's resulted in combining these TFL's into the present-day TFL 30. The chronology of events were:

- **1960:** Midway Terminals (later National Forest Products) purchased Sinclair Spruce Lumber Co. Ltd. and Upper Fraser Spruce Mills Ltd.

- **1961:** Noranda Mines Ltd. purchased Sinclair and Upper Fraser in addition to other National Forest Products' holdings in southern British Columbia and formed a new company called Northwood Mills Ltd.

- **1963:** Eagle Lake Sawmills Ltd. purchased Shelly Development Ltd.

- **1964:** Northwood Mills combined with Mead Corporation of Dayton Ohio to construct a new pulpmill at Prince George. The name of the new company was changed to Northwood Pulp Limited.

- **1964:** Northwood purchased Church Sawmills Ltd.

- **1966:** Northwood purchased Eagle Lake Sawmills Ltd.

The schedule by which the individual Tree Farm Licences were amalgamated into TFL 30 varied only slightly from the corporate acquisitions. In 1965 TFL's 30, 31 and 34 were consolidated, and in 1967 TFL's 28, 29, and 30 were further consolidated into the present-day TFL 30.

During 1998 Northwood Pulp and Timber Ltd. changed its name to Northwood Inc.

During 1999, Canadian Forest Products Ltd. purchased Northwood Inc. There were no changes to the administrative boundaries of TFL 30 as a result of this acquisition.

## 2.5 Current and Projected Uses

TFL 30 supports a wide variety of resource uses including, recreation, fiber extraction, cultural/heritage, trapping and guide/outfitting. Specific management objectives related to the integration of both timber and non-timber uses are identified in section 6.0.

### 2.5.1 Timber

The current AAC for TFL 30 is 350,000 cubic metres, effective October 1, 1996. The Provincial Chief Forester will conduct a determination of a new AAC by September 27, 2001. The current AAC was apportioned as follows:

- 327,288 m3 (94 %) Canfor, Schedule B Lands
- 21,312 m3 (5 %) Small Business Forest Enterprise Program (SBFEP), Schedule B Lands
- 1,400 m3 (1 %) Canfor, Schedule A Lands

Forecasting has indicated that the current AAC can be maintained for the short-term (5 to 15 years) and then stepping down by 5 % to 250,000 m3/year in the mid-term. The long-range forecast predicts that the AAC will be enhanced to as much as 490,000 m3/year within 100 years as future managed stands become fully available (this information is based on results of the scenario planning project 1999). The species profile from TFL 30 is dominantly a spruce/balsam mix with minor components of other coniferous species. To date, minor amounts of deciduous species have been utilized from TFL 30. Deciduous species are not managed as a crop tree species but will remain as optional utilization. The majority of the mature deciduous species are contained within high conservation value forests (large reserves) or retained as wildlife trees.

The primary timber demand is for coniferous sawlogs for use as dimension lumber, with residual grades utilized for kraft pulp. A small percentage of logs meeting peeler/veneer standards are used for plywood.

### 2.5.2 Recreation / Tourism / Scenery

There is a wide range of recreational opportunities on TFL 30 including hunting, fishing, boating, caving, skiing, snowmobiling, and camping. Commercial tourism activities include five guide/outfitting tenures and boating/rafting on the McGregor and Fraser Rivers.

There are 5 Ministry of Forests Campsites located within TFL 30, which include:

- Amanita Lake - 6 km on the Church FSR
- Averil Creek - 53 km on the North Fraser FSR
- Boundary Lake - 43 km on the North Fraser FSR
- Freya Lake - Freya Lake, North of the North Fraser FSR
- Pass Lake - 36 km on the Pass Lake FSR

These sites provide two-wheel drive vehicle access and offer camping, boating, picnicking, hiking and fishing experiences.

Woodall and Bear Paw Ridges provide quality back country recreational experiences, which include hiking, skiing, snow-shoeing, wildlife viewing and hunting. Management

of this resource relies on the preservation of natural environments and exclusion of access. To support this intent large areas in the Woodall / Bear Paw Ridge areas have been designated as high conservation value forests. These include the Woodall recreation emphasis area and high value caribou habitat. Other large reserve areas across the TFL that will supply backcountry experiences are the McGregor River management area, the Horseshoe recreation emphasis area, and the Tri-Lakes Recreation emphasis area. The Woodall recreation emphasis area contains the Farm Trail, which provides hiking access to the sub-alpine and alpine ecosystems. A cabin exists on this trail and is located just outside the TFL boundary. Local recreation user groups maintain both the trail and cabin.

The majority of TFL 30 contains good quality road access, and as such provides ample opportunity for motorized recreational experiences such as day trips for hunting, fishing, snowmobiling, and skiing.

Several local recreation user groups have identified themselves as active users of TFL 30 and include, but are not limited to:

- UNBC Caving Club
- Caledonia Ramblers Hiking Club
- McGregor Wilderness Society
- Sons of Norway Ski Club

To assist in maintaining quality recreational experiences, scenic areas have been designated across TFL 30. Scenic areas are established by the District Manager, Ministry of Forests, and are based on a visual landscape inventory conducted by Canfor. Management objectives for block design and amount of allowable visual impact from harvesting are also established (Visual Quality Objectives) by the District Manager.

One provincial park exists within the TFL boundary: the Giscome Portage Trail. This trail is a designated heritage area and provides hiking and cultural experiences. The Park consists of a 200 metre wide strip of forests (100 metres either side of the trail) and bisects the westerly tip of the TFL.

Caving has been identified as a relatively new and growing recreation experience on TFL 30. The most prominent areas of karst formations / caving activity are the Woodall and Bear Paw Ridge areas. To date, several small cave locations have been identified within the TFL. The Fang Cave, which lies within Fang Provincial Park, on the northeast corner of the TFL, is one of the largest known caves in Northern BC.

A recreation features inventory, visual landscape inventory, and recreation opportunities spectrum have been completed during the summer of 1999. These inventories document recreation and aesthetic values and are used in management plans to assist in setting management objectives.

As society's demands for out-door recreation experiences increase, the demand for visitor days, quality of experience, and variety of experiences is expected to increase as well. There are adequate facilities and range of experiences to support the current demand.

### 2.5.3 Wildlife and Biodiversity

TFL 30 contains a wide range of habitat types, from mountainous terrain to rolling plateau, to large winding rivers flanked by wetlands and kettle lakes. This diverse landscape supports a wide variety of flora and fauna and is inhabited by indigenous species representative of those found throughout north central BC. The Prince George Land and Resource Management Plan identifies martin, moose, grizzly bear and mountain caribou as key wildlife species for management on TFL 30. The District Manager has identified medium value caribou habitat as ungulate winter range (made "known" under the Operational Planning Regulation), and has identified specialized harvest and road maintenance practices to protect caribou.

To conserve biodiversity and wildlife habitats, the following areas have been identified as large-scale reserves (no-harvests zones):

- McGregor River Management Zone
- Horseshoe Recreation Emphasis Area
- Tri Lakes Recreation Emphasis Area
- Woodall Recreation Emphasis Area
- Seebach River Management Area
- High Value Caribou Habitat Areas

### 2.5.4 Fisheries and Water

The watersheds within TFL 30 are tributary to the Fraser River and provide valuable habitat for migratory salmon as well as many other native fish species. The Seebach River Management Area is designated to protect salmon habitat.

Commercial or residential water infrastructures do not occur within TFL 30. The demand for such infrastructures is unlikely in the short term.

### 2.5.5 Guide Outfitting and Trapping

There are eleven trapping licences and five guide / outfitter licences overlapping the boundaries of TFL 30 and cover 100% of the TFL area. The Ministry of Environment, Lands and Parks (MOELP) administers both licences. As per an agreement with the MOELP, the contact information for trapline licensees is maintained as confidential. As the entire TFL is currently occupied by trapping and guide licences, expansion of further tenures is unlikely.

### 2.5.6 Cultural, Heritage and First Nations

An important cultural feature on TFL 30 is the Giscome Portage Historic Trail. To conserve the integrity of the heritage value associated with the trail, it is flanked by a 200 metre (100 metres either side) reserve area. The trail, including the reserve area was

designated by the Prince George Land and Resource Management Plan as a protected area and has recently become a provincial park (as a result of Bill 17) and is now administered by MOELP.

Sustenance resources within TFL 30 have been utilized for centuries by the people of the Lheidli T'enneh First Nation, and as such historical / archeological values exist and are scattered throughout the TFL. As per provincial policy, archeological features and their locations are maintained in confidence. Predominant archeological features located within TFL 30 include culturally modified trees and cache pits.

Current uses of the TFL by the Lheidli T'enneh people include, but are not limited to, berry picking and medicinal herb gathering, fishing, hunting, and firewood gathering. Traditional and contemporary uses of the TFL landbase and its timber and non-timber resources will continue to be important aspects of the Lheidli T'enneh people and their culture.

The Lheidli T'enneh have an unresolved land claim with the provincial government that extends over the entire TFL area, and beyond.

### 2.5.7 Minerals

The Prince George Land and Resource Management Plan indicates that the TFL has extensive potential for development of the mineral resource, but as of yet large-scale demand or mining operations do not exist.

### 2.5.8 Range

Range resource demand or tenures currently do not exist on TFL 30. The development of the range resource appears unlikely in the foreseeable future.

### 2.5.9 Botanical Forest Products

To date, botanical forest products permits have not been issued within TFL 30.

## 2.6 Overview of Current Management Practices

### 2.6.1 Harvest Methods and Seasonal Distribution

Conventional ground-based harvesting methods utilizing crawler tractors and rubber tired skidders is the prime logging method in the Licence area. Cable harvesting is generally conducted on slopes exceeding 40 % and has accounted for approximately 10 % of the areas harvested over the past few years. Aerial logging has been conducted on a very small percentage of the area on TFL 30.

During the course of this Management Plan, harvest schedules will be developed to maximize the timber volume that will be harvested in the summer period. This is presently estimated to be 20 to 30 % of the annual volume.

### 2.6.2 Silviculture Systems

The majority of the area on TFL 30 is harvested using the clear-cut with reserves silviculture system. Approximately 95 % of the area over the term of MP 8 has been harvested using clear-cut with reserves while 5 % of the area has been harvested using partial cutting systems. Partial cutting systems are utilized more often as a method of managing riparian management zones and ungulate winter range. As resource objectives become increasing complex, so will the design of silviculture systems. The 20 Year plan provides a forecast of silviculture systems that are anticipated to occur.

### 2.6.3 Basic Silviculture

As per the terms of our Licence Agreement and the Forest Practices Code, Canfor is required to reforest and produce free growing stands on all areas harvested after 1987. Once free growing status is achieved the requirement for basic silviculture is complete Free growing status is approved by the District Manager and based on the results of a free growing survey completed by the licensee. Generally, a reforested stand must have a sufficient number of trees and be free of potentially deleterious brush to be declared as "free growing".

A number of field practices are employed to achieve free growing stands. These practices include but are not limited to:

- Seed and Growing Seedlings: See section 2.6.4.

- Reforestation: To ensure a minimum regeneration delay and complete stocking, nearly all harvested sites are reforested using artificial regeneration techniques. Natural reforestation methods are used to augment planted stock in special cases where unique silviculture systems are employed. These are mostly restricted to higher elevation forests and ungulate winter range.

- Site Preparation: Mechanical and chemical site preparation are primarily used as site preparation techniques for artificial regeneration. The use of broadcast burning has been reduced significantly as a site preparation tool on TFL 30. Raw planting without site preparation has also been applied to appropriate sites. Site preparation treatments are completed on all areas where deemed necessary to achieve acceptable stocking within specified time frames, as defined in the Silviculture Prescription for the area.

- Brushing and Weeding: Canfor has completed a Pest Management Plan that details the types of treatments to be applied, including the use of chemicals, to control weeds. Canfor utilizes the chemical herbicide glyphosate during brush and weed and site preparation programs. TFL 30 is situated in a brush prone climate where vegetative competition, if uncontrolled, can have a severe impact on plantation survival and performance. In order to reduce dependency on herbicides, Canfor utilizes other measures such as, mechanical treatments, prompt reforestation, site preparation techniques, larger stock types, brush mats, and faster growing species. Experimental mulching and girdling projects have also been used.

- Silvicultural Surveys: Surveys are conducted on all sites to determine regeneration performance and assessment of Free Growing criteria. Surveys are also conducted as necessary to determine the level of brush competition prior to a brushing treatment.

### 2.6.4 Nurseries and Seed Orchards

Canfor requires an adequate supply of high quality seedlings of appropriate stock types for reforestation of harvested areas. To ensure this seedling supply, the company operates a nursery, the J. D. Little Forest Centre, and has seedlings grown under contract at other nurseries. The J. D. Little Forest Centre has an annual capacity of approximately eight million container seedlings.

Canfor, along with Weldwood of Canada Ltd., The Pas Lumber Company Ltd. and West Fraser Mills Ltd. comprise the members of the Vernon Seed Orchard Company (V.S.O.C.). The VSOC is involved in the tree breeding program and orchards are developed to realize the maximum genetic gain. The partnership in VSOC has allowed Canfor to access a secure seed supply. Currently Canfor is able to meet all spruce seed requirements for TFL 30 from the seed orchard. Orchards are established that are anticipated to supply all Douglas-fir and pine seed for TFL 30 within seven years.

### 2.6.5 Enhanced Forestry Projects

Enhanced forestry projects are normally administered through Canfor's Forest Renewal Program.

Watershed rehabilitation projects have been undertaken to repair riparian areas that were damaged from historic harvesting or road building practices. Each watershed was assessed through the Interior Watershed Assessment Procedure (IWAP) and a Sediment Source Survey. This information is being used to prioritize further detailed assessments and subsequent treatments.

Converting non-commercial brush (NcBr) alder thickets to productive forest cover has been an established forest practice since 1979. Conversion is generally accomplished by mechanical or chemical site preparation or manual slashing followed by planting. During the term of MP 7 an average of 122 hectares were treated annually. The timber supply analysis for MP 8 assumed an average of 125 ha of conversion per year for 50 years for a total of 6250 ha. This practice is currently under review for its long-term timber benefits and economic and environmental costs. A program of NcBr conversion is planned for the summer of 2001 but further commitments will depend upon the results of the analysis and public input.

### 2.6.6 Areas Harvested Prior to 1987

Our Forest Renewal BC program is responsible for all pre 1987 stands that are not yet free growing. In the last five years, a program of surveys, classification, and rehabilitation was undertaken that resulted in a total of 2000 ha of pre 1987 stands achieving free growing status during the summer of 1999. These treatments will continue until all pre 1987 stands achieve free growing status or are reclassified as not part of the working forest.

## 2.7 Inventories

The following inventories were conducted on TFL 30 over the past five years and are used to support resource objectives in this plan. All but the recreation resource inventories (RFI, VLI and ROS) were funded by Forest Renewal BC. Further detail on all inventory and data layers is available in the Timber Supply Analysis Information Package (Appendix 2).

1) Terrestrial Ecosystem Mapping (TEM): TEM was completed in the spring of 2000 for the entire TFL. The TEM is used for site index adjustments and habitat modeling, and is now with the Provincial Agencies for final quality control and approval. The extent of this inventory does not entirely cover the total TFL area and together with the VRI inventory has resulted in a reduction in THLB. Section 5.1 of the Information Package provides a detailed account of this discrepancy.

2) Vegetation Resources Inventory (VRI): A VRI was completed in the spring of 2000 for the entire TFL. This inventory replaces the existing forest cover inventory, and was a

commitment made by the licensee to resolve a volume overestimation problem in MP 8. The project involved a re-delineation of forest cover polygons (Phase I) and ground sampling to verify forest cover and structure (Phase II). These Phase II ground plots will serve as the foundation for a long-term growth and yield monitoring project. This inventory will be updated every five years in support of the timber supply analysis. The extent of this inventory does not entirely cover the total TFL area and together with the TEM inventory has resulted in a reduction in THLB. Section 5.1 of the Information Package provides a detailed account of this discrepancy.

3) Visual and Recreation Inventories: Three recreational inventories were completed in 1999: Recreation Features Inventory (RFI); Recreation Opportunities Spectrum (ROS); and Visual Landscape Inventory (VLI). These inventories are replaced each five year period in preparation for the next management plan.

4) Site Index - Biogeoclimatic Ecosystem Classification Project (SIBEC): The SIBEC project was completed in the spring of 2000 and is used to provide a correlation between site index and biogeoclimatic ecosystem or TEM. This project will be adjusted from time to time as better information becomes available on the relationship of ecological sites and tree growth. There are no plans to conduct further analysis in the near future.

5) White Pine Weevil (*Pissodes Strobi*): In association with the SIBEC project, samples of weevil intensity in regenerating spruce stands were taken. This information is used to help define the area at risk from spruce terminal weevil attack and is also used to assess impacts to timber supply. The Growth and Yield Report (Appendix 2) identifies yield reductions attributable to white pine weevil. This project will be adjusted from time to time as better information becomes available on the relationship of ecological sites and tree growth. There are no plans to conduct further analysis in the near future.

6) Site Index Adjustment Project: The objective of this project was to develop reliable potential site index estimates in post-harvest regenerated stands for the major commercial tree species and ecosystems on TFL30. The project was completed in three phases. Phase 1: Preliminary site index estimates were developed for spruce on TFL30. Phase 2: Field random sampling on 61 plots was completed to estimate actual site index estimates for spruce in post-harvest regenerated stands. Phase 3: Final potential site index estimates were developed using statistical adjustments. A final report and map was created and distributed to the Ministry of Forests in the spring of 2000. This project will be adjusted from time to time as better information becomes available on the relationship of ecological sites and tree growth. There are no plans to conduct further analysis in the near future.

7) Interior Watershed Assessment Procedure (IWAP): An IWAP and sediment source survey was completed for the entire TFL area in December of 1998. The IWAP is used to support watershed level management criteria. The sediment source survey and IWAP are also used to prioritize watershed rehabilitation projects. This project will be adjusted from time to time as better information becomes available on the relationship of ecological sites and tree growth. There are no plans to conduct further analysis in the near future.

8) Level D Terrain Mapping: Level D terrain mapping was completed in 1997 and classifies the entire TFL into polygons of stable, unstable and potentially unstable terrain. This coverage replaces the ESA soil coverage that was used for previous timber supply analysis and management plans. No updates are planned to this inventory.

9) Bird Inventory / Survey: An inventory / survey of small migratory song birds was conducted within TFL 30 during 1996 and was funded by the McGregor Model Forest and FRBC. Although this information was not collected in support of a Management Plan objective it may provide future benefits with regards to verifying assumptions made for the management of biodiversity at the stand and landscape levels. Further work or updating of this inventory is not planned at this time.

## 2.8 Conditions for Approval of Management Plan 8

Approval of Management Plan 8 was subject to three conditions that were required to be addressed prior to approval of Management Plan 9. The following actions have been taken to address each of the three conditions.

1) Inventory over-estimation:

- In cooperation with the McGregor Model Forest Association, The Ministry of Forests Inventory Branch, and Forest Renewal BC, a comprehensive Vegetation Resource Inventory (VRI) was completed for the entire TFL. The inventory replacement was a commitment by the company to resolve the inventory overestimation problem and is now available for use in the timber supply calculations for Management Plan 9.

2) Damage to young spruce stands from white pine weevil:

- A hazard area map is complete. The map divides the TFL into two zones; high and low attack potential, and is based on field data collected during the site index adjustment project (summer 1999), local scientific literature, and local knowledge.

- Management strategies such as shifting planting stock to mixed species on newly regenerated stands and managing brush and deciduous species differently are being considered during silviculture implementation.

- A predictive model has been developed for application in this MP that assess impacts to timber supply from white pine weevil.

- White pine weevil resistant stock has been developed at the Vernon Seed Orchard and is scheduled for trial establishment during the summer of 2001.

3) Analysis of timber supply impacts from conservation of biodiversity:

- An in-depth and comprehensive analysis of the effects of landscape and stand-level biodiversity strategies have been analyzed via a scenario planning project starting in September of 1998 and ending in July of 1999. Conservation and management of biodiversity is further addressed in this management plan and plays a fundamental role in Canfor's vision of sustainable forest management.

## 2.9 Impact Summary of Management Plan 9

**Harvest Levels** - Initial forecasting for MP 9 has indicated that the current AAC can be maintained for the short-term (5 to 15 years) and then stepping down by 5 % to 250,000 m3/year in the mid-term. The long-range forecast predicts that the AAC may be enhanced to as much as 490,000 m3/year within 100 years as future managed stands become fully available (this information is based on results of the scenario planning project 1999).

**Economic Opportunities & Persons Employed** - The southern boundary of TFL 30 is within 5 km of Canfor's Upper Fraser Sawmill and as such supplies a significant amount of fibre for this operation. TFL 30 also supplies wood to Canfor's Polar Mill, in Bear Lake, the Prince George Sawmill in Fraser Flats, and the Rustad Sawmill in Prince George. Logs meeting the peeler standard are shipped to North Central Plywood in Prince George, and residual pulp grades contribute to the chip supply for Canfor's three pulpmills also located in Prince George. The timber supply from TFL 30 has a direct and significant contribution on the fibre requirements for the Upper Fraser Sawmill and to a lesser degree the remaining facilities within and surrounding the city of Prince George. The Upper Fraser Sawmill employs approximately 235 people directly, and has an annual requirement of approximately 800,000 m3. The current Canfor AAC apportionment for TFL 30 therefore supplies 30 to 40 % of the fibre needs of the Upper Fraser Sawmill. TFL 30 represents approximately 9 % of Canfor's fibre supply within the Prince George woodlands operation.

Canfor contracts almost all services on TFL 30 including, harvesting, road construction / maintenance / deactivation, silviculture, Forest Renewal work, technical forestry services, and assessments and inventories. Based on a 1993 Price Waterhouse report there were 1.94 jobs supplied in the Prince George Timber Supply Area per 1000 cubic metres (direct and indirect). The proportion of that number directly attributable to harvesting, hauling, roads, forest administration and silviculture is approximately 0.186 jobs per 1000 cubic metres. This equates to an estimated 65 person-years of jobs on TFL 30 at the current rate of harvest.

**Protection and Conservation of Non-Timber Values** - Since the last management plan was approved a number of changes to what is recognized as forest values have occurred i.e. the LRMP was approved and caribou ungulate winter range was "made known". These changing values have led to a significant change in the over-all direction of objectives for protecting and conserving non-timber values. Specific differences between MP 8 and MP 9 are accounted for in the next section (Section 2.10). The over-all impact of MP 9 is a future forest condition that takes into account biodiversity and watershed management. Measures to implement these protection / conservation objectives are provided throughout Section 6.0.

## 2.10 Key Similarities and differences Between MP 8 and MP 9

The primary differences between MP 8 and the proposed MP 9 are:

- The traditional forest cover has been replaced with a Vegetation Resource Inventory.
- With the completion of SIBEC and TEM site indices have been adjusted.
- Level D terrain mapping has replaced ESA soil reductions.
- Reductions to the timber supply from impacts of the white pine weevil are taken into account.

- Ungulate winter range has become a resource management objective for the management of "red-listed" mountain caribou.
- The Prince George Land and Resource Management Plan has been approved and objectives and strategies are addressed in MP 9.
- A higher level plan for the management of recreation sites is approved.
- Visual and recreation inventories are updated.
- The Tri Lakes Recreation Emphasis Area is reduced in size and is now fully excluded from the harvest.
- The McGregor River Management Zone is now fully excluded from the harvest.
- The IWAP has been used to develop watershed management objectives that are accounted for in the timber supply analysis.
- A scenario planning project has been completed in association with the McGregor Model Forest Association to evaluate broad forest policy decisions and is used to develop the initial base case in MP 9.
- The McGregor's spatially explicit forecasting model is used to conduct the timber supply analysis and produce the 20 Year plan.
- Current practices regarding management of biodiversity and riparian management are included in the timber supply analysis.
- The full implementation of the Biodiversity Guidebook is analyzed in the timber supply analysis.
- The practice of converting NcBr alder to coniferous plantations is being reviewed in light of environmental and economic costs and benefits.

The primary factors to consider when comparing the impacts of MP 8 and MP 9 is the number of values considered as a forest resource and the level at which they are considered. The factor having the single most influence over the difference in the MP's is the approval of the PG LRMP which explicitly identifies biodiversity (landscape and stand level) and watershed management as key resource values for sustainable forest management on TFL 30. Other influences that have had a significant impact on MP 8 vs MP 9 includes the Chief Forester's approval letter and the production of a number of improved inventory information layers (TEM / VRI and SIBEC).

# 3.0 CANFOR'S OBJECTIVES

## 3.1 Company Policies

In the past few years, Canfor has released a number of public statements that define the mission, vision, policies and guiding principles for the company. They include ***Canfor's Mission Statement***, ***Environment Policy*** and ***Forestry Principles***. These commitments are being used to guide the development of our Sustainable Forest Management Plan. They commit us to the continual improvement of our performance in implementing the plan under the principles of adaptive management.

### Canfor's Mission

We will be a highly successful competitor in the global forest products industry, managing with integrity the resources entrusted to our care.

We will be characterized by:

- Employing and developing highly motivated, empowered and committed people who enjoy their work.
- Consistently satisfying customer needs with quality products and services
- Enhancing the forest resource, ensuring responsible stewardship of the environment, and protecting human health and safety.
- Encouraging, recognizing and rewarding excellence in all our endeavours, with an emphasis on innovation and results.
- Increasing value for shareholders.

We will be guided by the core values of integrity, trust, openness and respect for people.

Figure 3: Canfor's Mission Statement

## Environment Policy

We are committed to responsible stewardship of the environment throughout our operations.

We will:

- Comply with or surpass legal requirements.
- Comply with other environmental requirements to which the company is committed.
- Set and review environmental objectives and targets to prevent pollution and to achieve continual improvement in our environmental performance.
- Create opportunities for interested parties to have input to our forest planning activities.
- Practice forest management that recognizes ecological processes and diversity and supports integrated use of the forest.
- Promote environmental awareness throughout our operations.
- Conduct regular audits of our environmental management system.
- Communicate our environmental performance to our Board of Directors, shareholders, employees, customers and other interested parties.

**D.L. Emerson**
*President and Chief Executive Officer*

**P.J.G. Bentley**
*Chairman*

CANFOR

*July 21, 1999*

Figure 4: Canfor's Environment Policy

***CANFOR'S FORESTRY PRINCIPLES***

***Ecosystem Management***
*We will use the best available science to develop an understanding of ecological responses to natural and human-caused disturbances. We will incorporate this knowledge into higher level and operational plans by applying ecosystem management principles to achieve desired future forest conditions.*

***Scale***
*We will define objectives over a variety of time intervals (temporal scales), and at spatial scales of stand, landscape and forest.*

***Adaptive Management***
*We will use adaptive management to continually improve forest ecosystem management. This will require the development and implementation of collaborative research and monitoring programs.*

***Old Growth***
*We will include old growth and old growth attributes as part of our management strategies and philosophy in the forests where we operate.*

***Timber Resource***
*Canfor will ensure a continuous supply of affordable timber in order to carry out its business of harvesting, manufacturing and marketing forest products. Canfor will strive to maximize the net value of the fiber extracted for sustained economic benefits for employees, communities and shareholders.*

***Forest Land Base***
*We advocate the maintenance of the forest land base as an asset for the future.*

***Health and Safety***
*We will operate in a manner that protects human health and safety.*

***Aboriginal Peoples***
*We will pursue business partnerships and cooperative working arrangements with aboriginal people to provide mutual social, cultural and economic benefits and address mutual interests.*

***Communities***
*We will engage members of the public, communities and other stakeholders in the delivery of the Forestry Principles. The process will be open, transparent and accountable.*

***Accountability***
*We will be accountable to the public for managing the forest to achieve present and future values. We will use credible, internationally recognized, third party verification of our forestry operations as one way of demonstrating our performance.*

Figure 5: Canfor's Forestry Principles (Appendix 1).

## 3.2 Corporate Objectives

- Canfor's management goals for TFL 30 reflect our strong commitment to our employees, shareholders, community, and the environment.

- We provide attractive investment returns to our shareholders. Our overall business strategy is to maximize profitability by reducing costs, improving efficiencies, developing new market opportunities, and merchandising products according to our customers' specific needs.

- We maintain a stable employment base and contribute to the development of our local communities.

- We protect existing forest values as we grow our future forests to sustain a maximum supply of quality timber to processing facilities in British Columbia.

- When developing longer-term management strategies and shorter-term operational plans, we balance economic, social and environmental objectives.

## 3.3 Customer Objectives

- We will ensure a continuous supply of affordable timber in order to carry out our business of harvesting, manufacturing and marketing forest products.

- We will strive to maximize the net value of the fiber extracted for sustained economic benefits for employees, communities and shareholders.

- We will seek and maintain certification under the International Organization for Standardization, Environmental Management System Standard (ISO 14001), and Canadian Standards Association Sustainable Forest Management System Standard (CAN/CSA-Z809-96).

## 3.4 Higher Level Plans

Higher Level Plans (HLP) are established by statutory decision-makers and prevail over all other plans, including management plan 9. All relevant objectives and/or strategies from HLP's must be integrated into plans lower in hierarchy (including MP 9). Canfor is committed to meeting or surpassing all legal requirements, including achieving the objectives of HLP's.

The only applicable HLP is the Objectives for Recreational Sites and Trails for five recreation sites within TFL 30. The District Manager, Ministry of Forests, established the HLP for these recreation sites on May 12th, 1997. The objectives for these sites have been integrated into the recreation resource objectives in section 6.0.

## 3.5 Prince George Land and Resource Management Plan

The Land and Resource Management Plan (LRMP) was approved by cabinet on January 25, 1999 and provides strategic direction for planning and resource development within the Prince George Forest District. The LRMP provides specific resource management direction for individual Resource Management Zones (RMZ) and provides general resource management direction that is applicable to all RMZ's. TFL 30 contains two RMZ's: RMZ 31 which is the main body of the TFL and RMZ 32 which consists of a 200 m strip of forest flanking the Giscome Portage Trail.

RMZ 32 is a protected area under the LRMP and is now designated as a provincial park under Bill 17-2000.

The LRMP process was a community-based effort for land-use planning, of which Canfor was a participant. We are committed to the implementation of the objectives and strategies within the LRMP. Section 6.0 identifies resource management objectives for implementation of applicable LRMP objectives and strategies.

## 3.6 McGregor Model Forest Association

TFL 30 is shares a common boundary with the McGregor Model Forest, which is one of 11 model forests across Canada (part of the Canadian Model Forest Program). Each of the Model Forests have an association which is funded by the Federal Government to develop innovative process and tools in support of advancing Sustainable Forest Management (SFM) across Canada. The McGregor Model Forest Association is an independent non-profit organization, which is administered by a board of directors, of which Canfor is a managing member. The association consists of Canfor, provincial and federal managing agencies, and various community groups and institutions from the Prince George area. Canfor, is a major sponsoring partner as we have supplied the landbase (TFL 30) where much of the technology and process developed by the association is tested. Canfor is committed to working with the MMFA to continue developing and testing tools / processes which support adaptive management, criteria and indicators, and Sustainable Forest Management.

Our Forestry Principles state:

- *Adaptive Management: We will use adaptive management to continually improve forest ecosystem management. This will require the development and implementation of collaborative research and monitoring programs.*

To date the McGregor Model Forest Association (MMFA) has participated in delivery of the Vegetation Resources Inventory, Terrestrial Ecosystem Mapping as well as other inventories. The MMFA has developed advanced spatial forecasting tools and SFM processes. Figure 6 identifies the SFM process (the McGregor Approach to SFM) developed by the MMFA. To date, the scenario planning portion of that process has been completed in a joint project with Canfor. The results of the scenario planning project was used to develop the initial base case in the timber supply analysis for this MP. As we move forward with the implementation of our Forestry Principles and forest certification, we will be required to maintain systems that will support the adaptive management cycle. To this end, the tools and processes developed by the MMFA (the McGregor Approach to SFM) will be an asset.

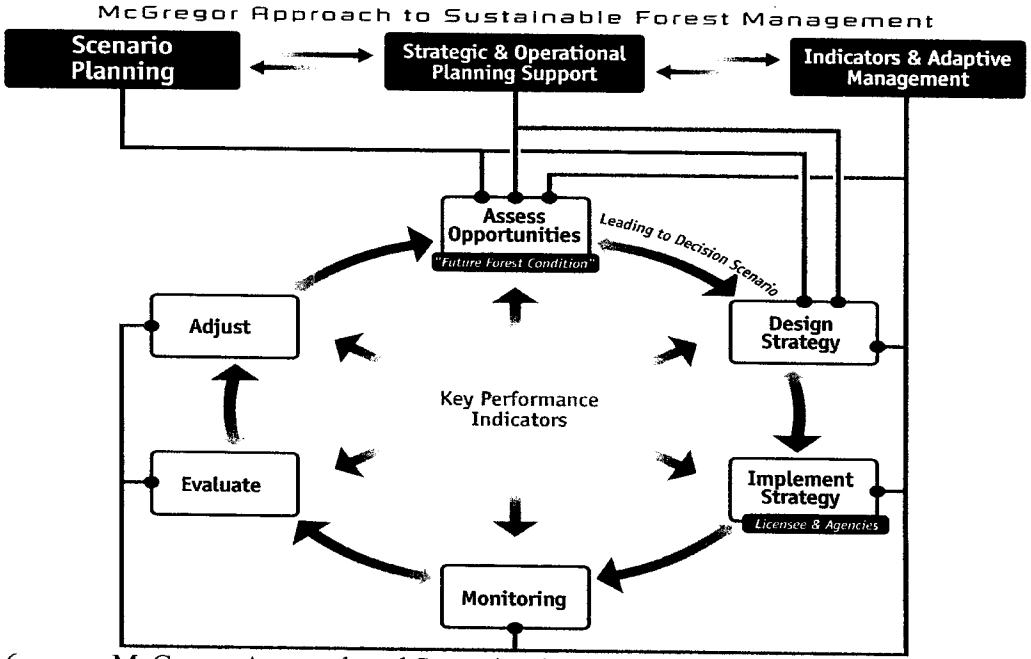


Figure 6: McGregor Approach and Scenario Planning

## 3.7 Sustainable Forest Management Certification

In July of 1999 Canfor formally announced its commitment to seek Sustainable Forest Management (SFM) certification of the company's forestry operations under the Canadian Standards Association (CSA) Sustainable Forest Management System standard CAN/CSA-Z809-96. Since the acquisition of Northwood Inc. in November of 1999, this certification objective has been applied to TFL 30.

The CSA criteria include the development of a Sustainable Forest Management Plan that is based on the SFM System Standard of establishing values, goals, indicators and objectives (VGIO) for 6 criteria and 21 elements of sustainability. The process also requires that the VGIO be developed in association with a Public Advisory Group (PAG), which was initiated in September of 2000. The VGIO developed by the PAG were then used by Canfor to develop a Sustainable Forest Management Plan for TFL 30. The CSA Registrar accepted the SFM plan in July on 2001.

CSA SFM System Standard Criteria

1) *Conservation of Biological Diversity*
2) *Maintenance and Enhancement of Forest Ecosystem Condition and Productivity*
3) *Conservation of Soil and Water Resources*
4) *Forest Ecosystem Contributions to Global Ecological Cycles*
5) *Multiple Benefits to Society and*
6) *Accepting Society's Responsibility for Sustainable Development*

A requirement of the SFM plan will be monitoring and evaluation of performance towards meeting the objectives as established in the SFM plan. Monitoring and evaluation of performance indicators and objectives will be conducted in association with the PAG. The annual report will be the main vehicle to report-out on SFM performance.

The SFM plan will be written in the context of adaptive management and therefore the annual evaluation of the indicators / objectives will be used to adjust future SFM plans as they are replaced. It is expected that the SFM plan replacement period will eventually coincide with the replacement schedule of management plans and timber supply determinations.

## 3.8 Integrated Resource Management (Timber and non-Timber Values)

Canfor is committed to providing integration of timber and non-timber management objectives. These objectives are identified in section 6.0.

## 3.9 Small Business Forest Enterprise Program (SBFEP)

Canfor will include in the Forest Development Plan a sufficient volume of timber to meet the Small Business Forest Enterprise Program apportionment. Cutblock design, and other integrated management objectives in the SBFEP forest development plan and silviculture prescriptions will be consistent with the objectives of this management plan. Wherever possible, the harvesting of these cutblocks will be scheduled along with operations on other cutblocks in the area to maximize efficiencies in operational logistics.

# 4.0 PUBLIC INVOLVEMENT

## 4.1 Opportunities for Public Involvement

Canfor's Environment Policy includes a commitment to "*Create opportunities for interested parties to have input into our forest planning activities.*" The CSA standard requires that sustainable forest management planning be carried out in consultation with those directly affected by or interested in forest management on the defined forest area. The legal/contractual obligations of a Management Plan also provide for opportunities for interested parties to have input into development of forest management objectives / strategies on TFL 30.

Canfor's Forestry Principles state:

- *Communities: We will engage members of the public, communities and other stakeholders in the delivery of the Forestry Principles. The process will be open, transparent and accountable.*

- *Accountability: We will be accountable to the public for managing forests to achieve present and future values. We will use credible, internationally recognized, third party verification of our forestry operations as one way of demonstrating our performance.*

Our Environment Policy commitment has been interpreted and extended to include the involvement of the public to assist in the establishment of local Values, Goals, Indicators and Objectives (VGIO). This includes Aboriginal peoples with respect to their rights and interests.

To fulfil these requirements we will provide for the following opportunities for interested parties to become involved:

- Establish a Public Advisory Group (PAG) that includes a broad range of interests, including First Nations, to assist in the establishment of VGIO's in support of a Sustainable Forest Management Plan (part of the CSA process).

- Continue the PAG to monitor and evaluate performance towards meeting objectives in the SFM plan, and to provide suggestions for continuous improvements for replacement plans.

- Provide a public forum to present results of the Annual Report and gather input.

- Conduct information gathering sessions with all interested parties prior to creation of Forest Development Plans.

- Send notification letters requesting input from all known interested parties during key phases in the Management Plan, Forest Development Plan and Pest Management plan processes.

- Advertise in a local newspaper to request input from all interested parties during key phases in the Management Plan, Forest Development Plan and Pest Management Plan processes.

Further details regarding opportunities for interested parties to provide input are identified in the Review Strategy in Appendix 4.

## 4.2 Summary of Comments

Three processes have been completed to solicit public involvement:

1. Solicitation of comment on the Draft Management Plan.

2. Solicitation of comment on Management Plan 8 performance.

3. Solicitation of public comment as part of the Recreation Features Inventory (RFI).

**Draft Management Plan** - As required by our Review Strategy (Appendix 4), the Draft Management Plan was advertised in the Prince George Citizen over the period February 10th, 2001 to February 23, 2001. Notification letters were sent to all individuals on the Key Contact List attached to the Review Strategy. The public review and comment period was held from February 23, 2001 to March 30, 2001.

The term of the review period for the Draft MP was determined to be inadequate and a subsequent review and comment was provided. An advertisement was issued in the Prince George Citizen on May 3rd, 2001 to begin a second review and comment period. This review period was held from May 3rd to July 2nd, 2001. A summary of comments received is provided in Table 1. Appendix 4 contains the Public Involvement Summary Reports, copies of all comments received, and copies of the advertisements.

**Management Plan 8** - Management Plan 8 was advertised in the Prince George Citizen to solicit public comment regarding performance in meeting the objectives of MP 8. Six advertisements were run between the dates of May 17 to 28, 1999. Notification letters were sent to all individuals identified on the Key Contact List attached to the Review Strategy. The review and comment period for this process began one week after the last advertisement (June 5, 1999) and was in effect for a one-month period, ending on July 2, 1999.

**Recreation Features Inventory** - As part of the Recreation Features Inventory (RFI), notification letters were sent to all recreational user groups known to operate within the Prince George area. This process was necessary to collect comments from recreational users regarding new areas of interest or new activities occurring within TFL 30. These new features or activities were then added to the inventory files and thus integrated into the management plan process. The RFI began in May of 1999 and was completed in September 1999.

The following table identifies the comments received as a result of these processes.

Table 1: Summary of Public Comments Received.

| **Comments for Draft MP 9** | | | |
|---|---|---|---|
| **Name** | **Organization** | **Medium and Date** | **Comments and Follow-up** |
| Ministry of Forests, Prince George Regional Office | Ministry of Forests, Prince George Regional Office | Written Comment Received on April 27, 2001. | ▪ A number of comments relating to matters of legal / contractual content of a Management Plan as specified in the letter of April 27, 2001. All changes requested by the Regional Manager were completed and are reflected in this document. |
| Dave King | Caledonia Ramblers Hiking Club & PG Backcountry Recreation Society | Written Comment and Meeting March 28, 2001. | ▪ Indicates that the Woodall Recreation Emphasis Area and surrounding areas are of high value for skiing. Would like to see the Woodall REA expanded to the east to include the old burn on the boundary and the steep slopes facing Pass Lake. Responded verbally on the 28th of March and letter sent on July 10th, 2001. Section 6.5.3 was updated to include a communication commitment. The response letter to Dave King, dated July 10, 2001 provides a rationale for not reducing the TFL landbase / increasing the Woodall REA. |
| Sandra Kinsey | Prince George Naturalists Club | Written Comment and Meeting March 28, 2001. | ▪ Would like to see a bird inventory conducted by the MMFA included in the management plan text (Inventories) and indicates that a Herptile inventory was completed for the entire PG district. Verbal response at the meeting on the 28th and written response on July 10th, 2001. Section 2.7 was updated as requested. No further action required. |
| Jeff Boeckler | Student interested in forestry planning | Written Comment and Meeting April 6, 2001. | ▪ Would like to see Information Package once completed and would like to know more about tactical solutions regarding the management of bark beetles. Verbal response was given on April 6, 2001 with a written response provided on July 10th, 2001. No changes to the document were required. Letter response extended an invitation to view the Information Package and the FDP. |

| **Comments for MP 8 Performance** | | | |
|---|---|---|---|
| **Name** | **Organization** | **Medium and Date** | **Comments and Follow-up** |
| Ann Tobin, Msc. RPBio., CSTC Natural Resource Manager | Carrier Sekani Tribal Council (CSTC) | Letter: June 10, 1999 | ▪ States that TFL 30 does not fall within CSTC traditional territories.<br>▪ No further comment.<br>▪ No follow-up required. |
| Doreen Dery, Recording Secretary | City of Prince George | Post Card: May 27, 1999 | ▪ Statement that the Notification Letter was received and discussed at the Council meeting.<br>▪ Considering this as "received for information"<br>▪ No further comment<br>▪ No follow-up required |
| Finlay Sinclair, Planner | Regional District of Fraser - Fort George | Phone Call: July 6, 1999 | ▪ Would like to arrange a meeting to discuss management planning process<br>▪ Followed-up with a meeting |
| | | Meeting: July 12, 1999 | ▪ Discussed management plan process.<br>▪ No specific comments regarding MP#8 performance.<br>▪ No further follow-up required. |
| **Comments for Recreation Features Inventory** | | | |
| **Name** | **Organization** | **Medium and Date** | **Comments and Follow-up** |
| Ghislain Demers | Prince George Dog Sled Club | Phone Call: June 8, 1999 | ▪ Generally interested in scope of management plan process. No specific concerns.<br>▪ No required follow-up |
| Jack McGee | Alpine Club | Meeting : June 9, 1999 | ▪ Interested in seeing the trail through the Woodall Recreation area (Farm Trail) preserved as much as possible. I told him that the Woodall would remain a Recreation Reserve.<br>▪ The trail was an existing recreation feature. No further action required. |

| **Comments for Recreation Features Inventory** | | | |
|---|---|---|---|
| **Name** | **Organization** | **Medium and Date** | **Comments and Follow-up** |
| Ben VanNort and Bob Rutherford | UNBC Caving Club | Meeting: June 18, 1999. | ▪ Discussed potential cave sites on the TFL; Woodall and Bearpaw ridges are very important potential sites. Discussed Fang cave.<br>▪ Agreed to have another meeting to discuss further. |
| | | Meeting: August 16, 1999 | ▪ Discussed how to integrate potential cave locations into MP process and getting cave source data to Timberline (completing RFI).<br>▪ Cave information was delivered to Timberline (confidential) and RFI polygons have karst and cave potential identified.<br>▪ The UNBC Caving Club will be invited to participate in the setting objectives for cave/karst management in MP 9. |
| Dave King | Caledonia Ramblers | Meeting: June 23, 1999 | ▪ Discussed the importance of the Woodall area for hiking and skiing. The Farm Trail is of importance.<br>▪ All information has been included in the RFI. No further action. |
| Steve Johnson | PG Snowmobile Club | Meeting: July 9, 1999 | ▪ Interested in snowmobile trails over the TFL in general. The TFL is used as a day-outing, not a long trip due to the fact that the Fraser River blocks access for them. Concerned about watershed rehabilitation and general deactivation that would lead to removal of key access bridges.<br>▪ Agreed that Canfor will notify during deactivation planning. |

## 4.3 Changes to the Draft Plan as a Result of Public Comment

The following is a summary of the changes made to the Draft Management Plan as a result of comments received:

- **Ministry of Forests, letter dated April 27, 2001** - A number of comments relating to matters of legal / contractual content of a Management Plan as specified in the letter of April 27, 2001. All changes requested by the Regional Manager were completed and are reflected in this document.

- **Caledonia Ramblers Hiking Club & PG Backcountry Recreation Society Written Comment March 28, 2001** - A paragraph was added to Section 6.5.3 to include a communication commitment.

- **Prince George Naturalists Club Written Comment March 28, 2001** - The bird inventory / survey was added to the list of available information in Section 2.7.

# 5.0 FORECASTS AND SCENARIO PLANNING

## 5.1 Future Forest Condition

An important component of ecosystem management is the need to forecast or predict future forest conditions. By integrating our understanding of ecosystems and natural disturbance patterns with human uses and values, an array of future forest conditions can be modeled and projected. The outcomes can be tested against an ecological baseline of what could occur naturally to ensure that our influence on the ecosystem is within the range of ecological variability. This must be an ongoing process that will continually input new data and will adapt or adjust to changes in the ecosystem and to changing human values and uses. If successful, the result will be a future forest condition that will best meet the needs and wants of interested or involved communities while maintaining ecosystem structure and social benefits.

## 5.2 Scenario Planning

To forecast future forest conditions we have relied on the processes and tools developed by the McGregor Model Forest Association. This process applies scenario planning and spatially explicit forecasts to demonstrate how a set of management criteria (scenarios) affects the evolution of future forests (Table 2, Figure 7). Once forecasted, each scenario is then compared to expected outcomes and other scenarios, across a common set of performance indicators. The managing partners of TFL 30 (Ministry of Forests; Ministry of Environment, Lands and Parks; Department of Fisheries and Oceans; and Canfor) were involved to help describe desired future forest conditions, develop indicators, and analyze the results. The scenario planning project (SPP) began in September of 1998 and was completed in July of 1999. Canfor has used the results of the SPP to select management options that can best achieve the array of timber and non-timber benefits (future forest condition) as described by higher-level plans, the Prince George LRMP, and the Biodiversity Guidebook. The primary result or product of the SPP was a set of management options that is used as the initial "base case" scenario for timber supply forecasts for management plan 9.

Scenario planning is defined as:

- A facilitated process to assess opportunities and design management strategies.
- A participatory approach to define desired future forest(s) and explore what strategies will achieve them.
- A method to consider "what's possible" in an uncertain future.
- A gathering of people's knowledge in designing mutually acceptable and workable strategies.

The purpose of the scenario planning project was:

- *In association with managing agencies, develop, analyze, and report on various management scenarios for resource objectives for TFL 30 in preparation for Management Plan 9.*

The steps for scenario planning included:

- Discerning participants and data needs.
- Collecting and compiling data sets.
- Agreeing upon resource management objectives (describing future forest conditions).
- Developing key indicators directly linked to objectives and set threshold or target values.
- Developing **Intermediate or Learning Scenarios** by collating objectives into common themes.
- Forecasting the learning scenarios and analyzing / interpreting the results across the common set of indicator values.
- Selecting management options / objectives that best achieve the array of desired benefits and then develop **Decision Scenarios**.
- Forecasting the decision scenarios and again analyzing / interpreting the results across the common set of indicator values.
- Selecting one of the decision scenarios for implementation in management plan 9.

Table 2: Scenario Themes from the Scenario Planning Project

| **Intermediate Scenarios** |
|---|
| *"The Way It Is" Management Plan 8:*<br><br>Under this scenario data gathered under MP#8 is updated with:<br><br>✓ the most recent inventory information available,<br>✓ forest management assumptions and current practices being utilized,<br>✓ FPC legislative requirements,<br>✓ and incorporates the forest management issues identified by the Chief Forester during the last AAC determination.<br>✓ This scenario will present the short and long term implications for resource values if current management strategies and planning requirements are rolled forward into next management plan. This scenario will also form the basis for comparison with the other scenarios. |
| *"Loggers R Us" Intensive Forestry:*<br><br>Under this scenario, timber resources are paramount over all other forest values. Harvest priorities are given to those stands with the greatest susceptibility to bark beetle infestations. In an effort to increase timber supply, intensive forestry practices are employed that include; conversion of all NCBR to conifer plantations, improved utilization, conversion of deciduous leading stands to conifer, and incremental silviculture treatments within the beetle management zone. |

## Intermediate Scenarios

*"Leave It For The Critters" Biodiversity/Wildlife:*

Under this scenario, landscape units are considered established under an approved LRMP. The full range of biodiversity targets (seral, patch, and WTPs) are implemented according to the FPC Biodiversity Guidebook. The FENs used under MP8 are discarded and new wildlife connecting corridors are implemented. Access, harvest scheduling, and stand management practices are all focused towards meeting the requirements of grizzly bear and caribou populations.

*"Fish Rule" Watershed/Fish:*

Under this scenario, targets and recommendations from completed IWAPs are implemented on all watersheds. Access, harvest scheduling, and stand management practices are all focused towards meeting the requirements of salmon and bull trout populations.

*"Recreation All The Way": Scenic Areas/Recreation:*

Scenic and recreational areas are managed to balance both social and timber objectives. The provincial "buy back" strategies within visual areas are implemented. Alternative strategies are used within designated recreational areas to facilitate timber production without degrading non-timber values. Access is managed across the TFL to maintain existing front country zones and preserve existing back country recreational opportunities.

## Decision Scenarios

*Decision Scenario 1: Biodiversity Guidebook*

Under this scenario, landscape units are considered established under an approved LRMP. The full range of biodiversity targets (seral, patch, and WTPs) are implemented according to the FPC Biodiversity Guidebook. The FENs used under MP8 are discarded and new wildlife connecting corridors are implemented. Access, harvest scheduling, and stand management practices are all focused towards maintaining caribou and grizzly bear habitats, existing backcountry and frontcountry recreation opportunities, watershed resources, and scenic areas. Harvest priorities are given to those stands with the greatest susceptibility to bark beetle infestations. In an effort to enhance timber supply, areas of NCBR are converted to conifer plantation.

*Decision Scenario 2: Priority Biodiversity Planning*

Under this scenario, landscape units are also considered established however only targets for priority biodiversity elements (OGMAs and WTPs) are implemented according to the FPC Landscape Unit Planning Guidelines. Access, harvest scheduling, and stand management practices are also focused towards meeting the requirements for wildlife habitat, recreation, watershed resources and scenic areas but with a less restrictive emphasis in some zones. Harvest priorities remain consistent, however enhancement of future timber supplies are pursued more aggressively by conversion of all NCBR areas over time.

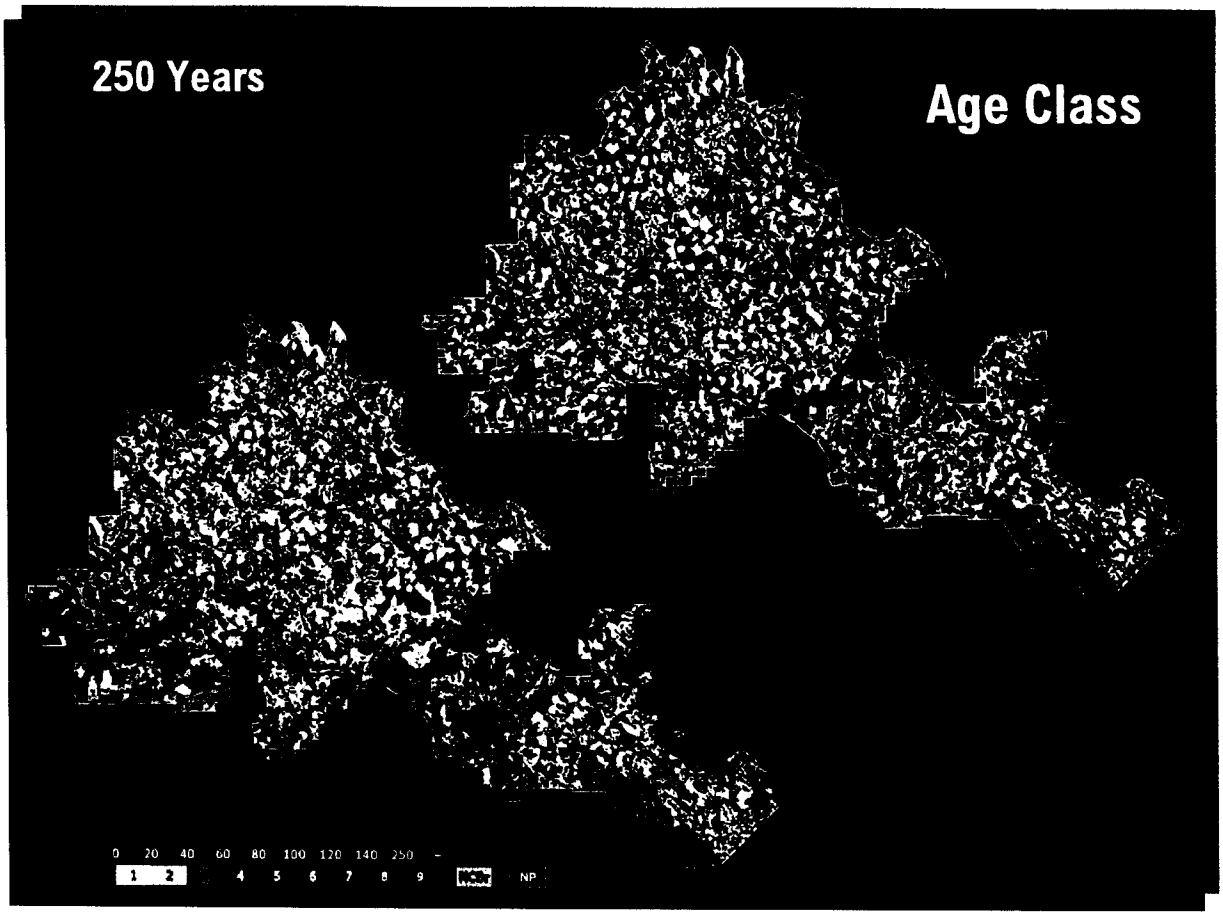


Figure 7: Future forest conditions demonstrating the difference between the results of the management objectives under MP 8 and MP 9.

## 5.3 Timber Supply Forecasting

Decision Scenario # 1 "the Biodiversity Guidebook" was chosen as the scenario for implementation in this management plan and forms the "initial base case" in the information package and timber supply analysis report (Appendices 2 and 3 respectively). All data inputs and assumptions are included in Appendix 2.

# 6.0 RESOURCE MANAGEMENT OBJECTIVES

## 6.1 Biodiversity and Wildlife

Canfor's management principles for maintenance of biodiversity and wildlife resources focus on *Ecosystem Management*, *Scale* and maintenance of *Old Growth* forests. These principles state:

- *Ecosystem Management: We will use the best available science to develop an understanding of the ecological responses to natural and human-caused disturbances. We will incorporate this knowledge into higher level and operational plans by applying ecosystem management principles to achieve desired future forest conditions.*

- *Scale: We will define objectives over a variety of time intervals (temporal scales), and at spatial scales of stand, landscape and forest.*

- *Old Growth: We will include old growth and old growth attributes as part of our management strategies and philosophy in the forests where we operate.*

Consistent with the above principles, several aspects of biodiversity have been addressed in this management plan. This management plan will implement the intent of the full implementation of the Biodiversity Guidebook. The following sections outline the aspects of the Biodiversity Guidebook, as supported by the LRMP and Canfor Forestry Principles, which will be implemented on TFL 30.

The following sections identify the elements of Canfor's biodiversity management approach.

- Seral Stage Distribution
- Patch Size Distribution
- Interior Forest Condition
- Landscape Connectivity
- Wildlife Trees

Measurable objectives and indicators have been identified for each of these elements in the SFM Plan. We will implement, measure and report on our performance via annual reports and through the development plan.

### 6.1.1 Seral Stage Distribution

The LRMP contains several objectives that identify the importance of maintaining a pattern of mature and old growth forests on the landscape. Maintenance of old forests and management of the distribution of seral stages is a cornerstone of the Canfor Forestry Principles. Our objective is to maintain mature & old, and old forests across the various landscapes of TFL 30. This will be achieved by:

- Establishing targets for mature & old, and old forests for each biogeoclimatic subzone within each landscape unit.

- Demonstrating consistency with the established targets or demonstrating a trend towards the targets in the Forest Development Plan.

### 6.1.2 Patch Size Distribution

Management for patch size distribution is consistent with the LRMP objective in that it moves the landscape towards a more natural distribution of forest stands and avoids landscape fragmentation. This is also consistent with the Canfor principles of *Ecosystem Management* and *Scale*. Our objective is to achieve percentages of < 20 year-old forest patches in a variety of size classes for each landscape unit. This will be achieved by:

- Establishing targets for each patch size category for each landscape unit.
- Demonstrating consistency with the established targets or demonstrating a trend towards the target values within FDP's.

### 6.1.3 Interior Forest Condition

Maintaining old growth attributes in forest patches, which supply an interior forest condition, is a key objective in the LRMP. Conservation of larger patches of old growth is consistent with the Canfor principles of *Ecosystem* and *Old Growth* Management. Old growth management is also part of a recent initiative of the provincial government to implement priority landscape unit planning in the form of Old Growth Management Areas (OGMA's).

Our objective is to maintain the availability of old forest patches that supply an interior forest condition throughout TFL 30. This will be achieved by:

- Working with the provincial government agencies to establish OGMA targets and locations.
- Presenting the OGMA's in the Forest Development Plan demonstrating that the targets have been met.
- Working with the government agencies to provide recruitment areas and demonstrating a trend towards the target in the FDP, if necessary.
- Aggressively monitoring forest health problems in established OGMA's and responding quickly with appropriate treatments.
- Providing for replacement during the Forest Development Plan process, with agency approval.

### 6.1.4 Landscape Connectivity

The LRMP identifies a need to maintain connectivity across the landscape at two levels: all-purpose connectivity as part of a general biodiversity strategy; and connectivity corridors specifically for the management of mountain caribou migration. Canfor has retained a Registered Professional Biologist to develop a general connectivity network throughout the TFL. The corridor network is currently being implemented in our FDP.

The corridors are designed to be flexible, moving over time as harvesting continues. Our objective is to maintain connectivity across TFL 30. We will achieve this by:

- Reviewing general corridor locations and adjusting them as necessary within replacement forest development plans.
- Maintaining connectivity throughout the caribou corridors within forest developments.

### 6.1.5 Wildlife Trees

The LRMP identifies the need to maintain structural forest attributes, such as wildlife trees, within forest stands. Maintenance of wildlife trees is also consistent with our principles of *Ecosystem Management, Scale*, and *Old Growth* management. Wildlife trees are part of the Provincial Governments Priority Biodiversity Implementation policy.

Our objective is to maintain the amount and characteristics of wildlife trees consistent with provincial / district policy or, as the case may be, landscape unit objectives. We will achieve this by:

- Working with the agencies to develop WTP targets that are supported by timber supply forecasts.
- Until LU targets are established, maintaining consistency with the district or provincial policy in place.
- Demonstrating in silviculture prescriptions that the amount of prescribed WTP is within the allowable variance as described by the SFM plan.

Tree patches will be a valuable contribution to our over-all strategy for implementation of our ecosystem management principle. General principles for prescribing WTP's include:

- Wildlife trees and tree patches will be prescribed so that windthrow risk is minimized. Windthrow hazard will be assessed during silviculture prescription fieldwork.
- Where infection from damaging agents is anticipated, prescribing younger and/or less insect/disease prone leave trees will minimize the risk of damage.
- Where prescribed tree patches are infected, consider treating with minor salvage or other single tree treatments without affecting the integrity of a patch.
- Standing dead trees (snags) will be maintained where consistent with Workers Compensation Board regulations, as required.
- Balancing all other objectives, leave trees will be prescribed representative of the ecology of the harvest area.
- Balancing all other objectives, leave trees will be arranged so that the distance between standing tree cover does not exceed 500 metres and preferably less than 250 m.
- Balancing all other objectives, high valued wildlife trees will be retained which include trees with obvious defects, trees in excess of 50 cm diameter, veteran trees, Douglas-fir, or trees with obvious signs of wildlife use.
- To enhance the shape complexity of large and mid-sized cutblocks, considering tree patches that bisect the cutblock, are internalized and/or exceed 2.0 hectares

in size. WTP's will generally follow natural features such as gullies, timber type changes, and riparian features.

### 6.1.6 Douglas-fir Management

The LRMP identifies the need to maintain a component of Douglas-fir as a species on TFL 30. Our objective is to maintain Douglas-fir, especially old and mature trees, within the natural limits of its range. We will achieve this by:

- Maintaining mature and old Douglas-fir as a residual part of a regenerating stand, where practical.
- Planting Douglas-fir where ecologically suitable.
- Consider partial cutting in Douglas-fir stands where ecologically suitable.
- Remaining consistent with applicable district policy on the management of Douglas-fir in the Prince George District.

### 6.1.7 Caribou Habitat

The LRMP identifies mountain caribou as one of the key species for management on TFL 30 and recommends that high value caribou habitat is reserved from harvest until management practices are confirmed. Mountain caribou has also been identified as a red-listed species within BC. The District Manager has identified medium value caribou habitat as ungulate winter range with special management practices.

Canfor's objective is to maintain suitable caribou habitat within TFL 30. We will achieve this by:

- Reserving from harvest all high value caribou habitat within TFL 30.
- In medium valued caribou habitat, minimize snow plowed road and minimize the amount and duration of access to high and medium valued habitat. Development plans will provide for long-term access management with the goal of restricting permanent access over time to caribou habitat.
- In medium valued caribou habitat implement partial cutting silviculture systems that are consistent with the provincial and district policies.
- Continuing to work with the University of Northern British Columbia on a research trial in the Caribou medium habitat to test arboreal lichen response to various opening sizes.

### 6.1.8 Marten Habitat

The LRMP identifies marten as one of the key species for management on TFL 30. Marten have been identified as good indicator of sustaining old growth structural attributes. Maintenance of marten habitat is consistent with the Canfor's principles of *Ecosystem Management, Scale*, and *Old Growth* management.

The availability of marten habitat is a function of maintenance of old growth attributes across the landscape. Our objective for the maintenance of marten habitat is to maintain suitable habitat distributed across the landscape to allow to martin to persist within TFL 30. This will be achieved by:

- Implementing targets in the Forest Development Plan for the maintenance of seral stage and patch size distribution, interior forest condition, and landscape connectivity.
- Maintaining coarse woody debris (CWD) within harvested cutblocks. CWD maintained on site will not conflict with the utilization requirements. Preference will be given to random distribution of CWD where piling is not required for reforestation purposes.
- Maintaining wildlife tree patches within harvested cutblocks that contain characteristics of old growth habitat.
- Balancing all other objectives maintaining WTP's that are in excess of 2 ha.

### 6.1.9 Moose Habitat

The LRMP identifies moose as one of the key species for management on TFL 30. Our objective is to maintain moose habitat across TFL 30, with emphasis on reserving habitat critical to calving. We will achieve this by:

- Reserving from harvest, the Horseshoe Recreation Emphasis Area and the McGregor River Management Zone, which includes deciduous stands and wetlands.
- Avoiding construction of roads in riparian habitats, and where this cannot be avoided minimize the length and duration of the road within the riparian habitat.
- Maintain riparian reserves around wetland areas that meet or exceed the requirements of the forest practices code.
- Recognizing high-value habitat along the McGregor River in the Development Plan and prescribing measures to protect the habitat. Two area have been identified by District Habitat Specialists in the area of the "McGregor Bend". These sites will be protected in future development plans.
- Maintaining WTP's, management of riparian areas and implementation of Canfor's biodiversity management objectives.

### 6.1.10 Fisheries and Aquatic Habitat

Canfor's objectives for the conservation of the fisheries resource and aquatic habitat include planning at the watershed level to minimize impacts to hydrological systems from forest harvesting and road construction; through the maintenance of riparian management areas along riparian features. Specific management objectives are included under section 6.2.

## 6.2 Soil and Water Conservation

Management of watersheds and hydrologic systems is accomplished through managing the rate of harvest in each watershed (water quantity regulator), the amount of road construction (water quality regulator) and by establishing riparian management areas along riparian features (water quality and quantity regulators). Through the management of these three attributes, the quality and quantity of water within each watershed will remain within the limits of natural variation over time, and the species utilizing riparian / aquatic habitats will be maintained. We are relying on these three watershed attributes in this management plan to effectively manage and conserve the water resource. Appendix 2 contains the inputs and assumptions for watershed management.

### 6.2.1 Water Quantity: Peak Flow

The LRMP identifies water as an important resource on the landbase. The structure (age) of forest stands within each watershed affects the timing and rate of snowmelt and run-off. There are 26 watersheds on TFL 30, of which 6 were identified during previous analysis as sensitive to harvesting.

Canfor's objective is to minimize the impacts of forest operations to hydrologic regimes (timing and magnitude of spring run-off). This will be achieved by:

- Maintaining the Regenerating Forest Area (RFA see Appendix 2 for definition) below the maximum threshold when prescribing cutblocks in Forest Development Plans for sensitive watersheds.
- Demonstrating a long-term trend towards the minimum level in forest development plans, where the maximum threshold is currently exceeded for sensitive watersheds.

| Sensitive Watershed | RFA Target |
|---|---|
| Barney Creek | < 30 % |
| D - Woodall | < 30 % |
| East Olsson | < 30 % |
| Horn Creek | < 30 % |
| Residual B | < 30 % |
| West Torpy | < 30 % |

### 6.2.2 Water Quality: Riparian Management

Riparian management areas are a requirement of the Forest Practices Code. Canfor's objective is to minimize the impact of forest operations on stream quality and associated aquatic habitat. This will be achieved by:

- Prescribing strategies within the riparian managemnt zone to ensure windfirmness and protection of the reserve zone, if any.
- Enhancing the width of the riparian reserve and/or management zones with wildlife tree patches, where applicable.

- Allocating FRBC funds to repair riparian management areas significantly damaged by previous harvest practices where practical.

### 6.2.3 Water Quality: Sedimentation

The LRMP identifies water quality as an important aspect for forest management. Development of access to the timber landbase exposes mineral soil, which may cause increased sediment loads in watercourses beyond the natural limits of variation.

Canfor's objective is to minimize the impact of forest operations on water quality and associated aquatic habitat. To achieve the objective we will:

- Establish road density thresholds for each watershed and maintain the density of roads below the maximum threshold, or trend towards the threshold, within FDP's.
- Prescribe deactivation as soon as possible on all non-essential roads, with focus on roads in the watersheds sensitive to road development.
- Use FRBC funds to restore watersheds damaged by past road building and harvesting practices.
- Avoid road development within riparian habitat, and where this is not possible minimize the length and duration of roads.
- Utilize existing stream crossings wherever practical.
- Re-vegetate exposed mineral soil as soon as practical.
- When constructing and maintaining forest roads, utilize sedimentation control measures such as straw mats, straw bales, rock armor, settling ponds and diversion ditches to minimize sediment.
- Minimize the exposure of mineral soils by altering construction techniques in sensitive areas.

### 6.2.4 Soil Conservation

Our objective is to conserve the productive capacity of forest soils and minimize losses to the forest landbase from human activity. Canfor's Forestry Principle's state:

- *Forest Land Base: We advocate the maintenance of the forest land base as an asset for the future.*

The following measures will be taken to ensure the soil resource is conserved:

- Minimize the amount of permanent road accessing the timber resource.
- Maintain the amount of on-block disturbance within the limits as established in the silviculture prescription.
- Maintain regular routine maintenance, or deactivate roads that are the responsibility of the licensee.
- Use FRBC funds to restore watersheds damaged by past road building and harvesting practices and deactivate all non-essential, non-status roads.
- Re-vegetate exposed mineral soil as soon as practical.

- When constructing and maintaining forest roads, utilize sedimentation control measures such as straw mats, straw bales, rock armor, settling ponds and diversion ditches to minimize sediment.
- Perform terrain stability field assessments on all area proposed for development in areas identified as having potentially unstable or unstable terrain on the Level D Terrain Overview Mapping.

## 6.3 Sustained Timber Supply

Canfor's Forestry Principles state:

- *Timber Resource: Canfor will ensure a continuous supply of affordable timber in order to carry out its business of harvesting, manufacturing and marketing forest products. Canfor will strive to maximize the net value of the fibre extracted for sustained economic benefits for employees, communities and shareholders.*

### 6.3.1 Forest Products

Canfor's forest product objectives are to produce coniferous sawlogs, with pulp chips as residual by products, within an ecologically suitable rotation age. Veneer logs will be extracted if they are available, but as of yet there are no plans to specifically grow stands for peeler (veneer) quality on TFL 30. Rotation ages will be consistent with those modeled in the timber supply analysis. Due to the implementation of seral stage objectives it will be necessary to extend the rotation ages of portions of the landbase beyond the optimal rotation age for volume production (Appendix 2).

### 6.3.2 Silviculture Treatments: Stand Management

Canfor will utilize treatments that are compatible with integrated resource management while producing free growing stands that are consistent with the long-term timber management objectives for TFL 30. For administrative and funding reasons silviculture investments on managed stands are divided into three categories: Basic Silviculture, Pre 1987 Silviculture, and Incremental Silviculture.

Basic silviculture applies to all managed stands harvested after 1987 and not free growing. Canfor's objectives for basic silviculture include:

- Reforesting harvested areas within 2 years or less.
- Prescribing appropriate treatments to produce free growing stands within a minimum timeframe consistent with ecological capability and integrated resource value objectives.
- Establish stands consistent with the regeneration assumptions modeled in the timber supply analysis for TFL 30.
- Utilizing 100 % class A seed for all planted spruce.
- Working towards having class A seed available for all planted pine and Douglas-fir.

- Reducing the incidence of white pine weevil attack in high hazard areas by prescribing mixed plantations, varying brushing techniques, and utilizing resistant stock as it becomes available.
- Maximizing the use of ecologically suitable planted stock in all areas of the TFL except for the caribou medium management area, where utilization of natural stock will play a greater role in reforestation.
- Conduct operations as prescribed in the Pest Management Plan.

Pre 1987 and enhanced silviculture applies to non-free-growing areas harvested prior to 1987 and all free growing stands, respectively. Canfor's objectives for pre 1987 and enhanced silviculture include:

- Conducting an analysis of the amount of and the total investment required to achieve free growing status on these sites. This analysis is being conducted concurrent with the timber supply analysis for MP 9 and will yield a detailed treatment program to abate the backlog stands within a specified period of time.
- Conducting an analysis of the types of treatments that may enhance the productive capacity of TFL 30, consistent with the ecological capability, long term fibre management goals, and integrated resource management objectives. This analysis is being conducted concurrent with the timber supply analysis for MP 9 and will yield potential treatments that are cost effective, and compatible with the timber and non-timber resource objectives of TFL 30.
- The above analysis will specifically analyze the practice of converting non-commercial brush (NcBr alder thickets) to managed stands. The practice of NcBr conversion will be reviewed in light of the benefits to timber supply and economic and environmental costs. The review may yield a reduction, enhancement or elimination of this practice in parts or all of the TFL.
- Prescribing appropriate treatments to produce free growing stands within a minimum timeframe consistent with ecological capability and integrated resource value objectives.
- Utilizing 100 % class A seed for all planted spruce.
- Working towards having class A seed available for all planted pine and Douglas-fir
- Reducing the incidence of white pine weevil attack in high hazard areas by prescribing mixed plantations, varying brushing techniques, and utilizing resistant stock as it becomes available.
- Achieving the employment and management goals of the FRBC program consistent with the terms of the agreement.
- The goals of the FRBC program will also be a consideration during the selection of potential treatments.

### 6.3.3 Growth and Yield

The LRMP identifies the need to maintain or enhance the productive capacity of the TFL. Canfor's forestry principles identify a desire to ensure a continuous supply of affordable timber. Over the past four years we have been replacing the forest cover inventory with a Vegetation Resources Inventory (VRI), which has included establishing dozens of vegetation sample plots across the TFL. Our objectives for growth and yield are:

- Utilize the VRI plots and any other existing sample plots to establish a network of permanent sample plots (PSP's) that will monitor and track the productivity of the land base and compare to forecasted expectations.
- Implement basic, pre 1987, and incremental silvicultural practices to maximize yield, within the limits of ecological capability, and consistent with timber and non-timber resource values.
- Maintain or enhance the productive capacity of the forest by the selecting appropriate silviculture systems. The dominant silviculture system throughout TFL 30 (except for caribou medium habitat) will be variations of evenaged management through clear-cutting with leave trees for structural diversity. Alternate systems will be applied as required to facilitate management of non-timber resource values. Partial cutting systems will be applied to the caribou medium management areas. Douglas-fir stands may also be treated with partial cutting where ecologically appropriate.

### 6.3.4 Allowable Annual Cut

The Chief Forester for the Province of BC determines the Allowable Annual Cut (AAC). The LRMP and the Canfor Forestry principles promote the need for maintenance of a sustained timber flow on TFL 30. *The timber supply projection is forecast in the timber supply analysis and discussed further in the analysis report.* Our objectives for management of the AAC include:

- Harvest the AAC allocation over a five-year cut control period within a 10 % variance for the five-year period.
- Minimize non-recoverable losses through aggressive sanitation of pests and retrieval of salvage where operationally feasible.
- Minimize the amount of waste during harvesting operations.
- Over the long-term, normalize the age class structure within one rotation.
- Arrange seasonal harvest schedules so that damaged timber is given highest priority.
- When prescribing healthy, undamaged stands for harvest prioritize the oldest and/or the most susceptible stands to damage.

### 6.3.5 Utilization of Timber

Specific utilization standards for felling and bucking will be as defined in the cutting authority and licence document. Additional utilization specifications include:

- Timber harvested which exceeds utilization standards defined above, will not be attributed as part of the AAC purposes or cut control.
- Utilization of stands that are not included in the calculation of the AAC will be at the option of the licensee.
- Timber in excess of the above utilization standards may be utilized at the discretion of the Licensee and does not contribute to the AAC for the purposes of the cut control regulation.

Waste assessments will be conducted after harvesting operations in accordance with conditions of the Licence Agreement.

## 6.4 Protection of Timber from Damaging Agents

TFL 30 has a "gapped" forest age-class structure composed of young and mature to over-mature age classes. The area is dominated by spruce / balsam stands with small components of many other species. Although, a variety of species are reforested, the dominant species traditionally regenerated on TFL 30 is spruce. As a result of the species composition and age class structure, two forest pests have historically caused significant problems for forest resource management: spruce bark beetle; and spruce terminal weevil, also known as white pine weevil (*Pissodes strobi*). These agents continue to present the primary threat to timber values on TFL 30. Over the past couple of decades the TFL has had epidemic outbreaks of spruce bark beetle in mature to over-mature spruce / balsam stands. Subsequent harvesting to control beetle populations and recover salvageable volume has resulted in large openings across the southern part of the TFL. Although the population is now under control, spruce bark beetle persists at endemic levels (see strategies in Section 6.4.1).

White pine weevil is currently infesting regenerating spruce stands at unacceptable levels in the southern part of the TFL, generally below 800 m elevation. Continued reforestation of leading spruce stands in this area will further escalate this problem (see strategies in Section 6.4.2).

Three other species of bark beetle: mountain pine bark beetle, Douglas-fir bark beetle, and balsam bark beetle, are known to exist within TFL 30. A variety of other pests that infect regenerating and mature forests, including Tomentosus Root Rot (*Inonotus tomentosus*), Lodgepole Pine Dwarf Mistletoe (*Arceuthobium americanum*) are also present within the planning area but exist at endemic levels and are not considered significant threats to identified resource values.

### 6.4.1 Bark Beetle

The Company's bark beetle management objective is to manage, protect and conserve the forest resource from significant damage, or potential damage, while protecting the Company's ability to return an investment to shareholders. Other Primary Forest Management Objectives Include:

- To generate effective forest management strategies that minimize environmental risk
- To maximize and prioritize beetle wood harvested
- To develop effective beetle management plans in consideration of other resource values
- To provide the tools, operational limitations and management objectives for formulating sound beetle management prescriptions
- To minimize the spread of bark beetles and subsequent damage to the forest resource
- To balance forest health decisions with economic realities

Detection, Evaluation and Planning

To detect and evaluate occurrences of the four species of bark beetles (mountain pine, Douglas-fir, spruce and balsam bark beetle), an aerial overview flight is conducted each year by the Ministry of Forests in conjunction with the Company. From this flight, beetle occurrences are recorded on overview flight maps completed by the Ministry of Forests and utilized by the Company to support decisions. To reduce the potential of infection from spruce and Douglas-fir bark beetles, noticeable patches of spruce and windthrown timber are also recorded for subsequent management action.

With agency input and in consideration of the Prince George District Policy, each beetle occurrence is then evaluated with respect to the hazard of further spread and potential impact on associated resource values. One of the following actions will be decided upon after evaluation of each beetle occurrence:

- A more detailed flight of a specific area;
- A forest health assessment to collect more detailed information;
- A treatment decision, or;
- No action.

Based on the results of the forests health assessment and/or overview flight, the Company will assess the risk to identified resources, and if necessary prescribe treatments to mitigate those risks. Where harvesting is prescribed to control beetle infestations the sites are scheduled as priority harvests, considering other resource assessment and access requirements.

Measures to Protect

The Company will employ two basic strategies to reduce risk of damage from bark beetles:

- The *direct strategy*, which employs a variety of techniques that target active populations to reduce or eliminate their numbers, and thereby reduce risk to resource values and;
- The *indirect strategy*, which employs harvesting of susceptible stands to reduce the potential of future spread and thereby reduces risk to forest values.

Consistent with the above strategies, the Company will prescribe one or more of the following protection measures to reduce the risk of damage from bark beetle populations:

- Applying population reduction treatments such as harvesting, trap trees, and other single tree treatments as necessary.
- Deploying pheromone baits where harvesting is not planned prior to the spring flight.
- Complete beetle hazard mapping for the planning area and use that information to help guide the harvest planning, considering all other resource values and limitations.
- Stands will be prioritized based on the intensity of beetle attack, considering access limitations, operational feasibility, and Company targets.

- Stands with isolated patches of attack spread throughout a susceptible stand may be targeted for large block harvesting, considering stand level biodiversity, stand susceptibility, and other resource objectives. Within large cut-blocks, stands with the highest levels of beetle attack will be subject to the earliest possible harvesting.
- In stands where endemic levels of beetle population occur, epicenters will be targeted for harvesting to maintain populations at or below endemic levels.
- Susceptible stands will be targeted for harvesting early in the harvest schedules as it is likely that during the term of this plan that they will become infested.
- Retrieval of windthrown spruce and Douglas-fir where possible.
- Continued monitoring of infestations where action treatments are not applied immediately.
- Continued monitoring of beetle treatment areas to ensure treatment success and to react as necessary to further problems.
- Annual submission to the District Manager of a *Hauling Plan* for beetle infested timber that is based on current beetle population dynamics and operational and wood flow constraints.
- Maintaining a milling plan for the Licensee's processing facilitates that will track infested timber and give highest priority to process beetle infested timber as quickly as possible and prior to the onset of beetle flight.

### 6.4.2 White Pine Weevil

Based on the most recent information, the area most at risk from existing and continued weevil attack are regenerating spruce stands below 800 m elevation. Detection and evaluation of current populations are ongoing via Company and FRBC funded silviculture surveys. This information is being used to help co-ordinate silviculture treatment options. Canfor's objective is to minimize the damage from white pine weevil by implementing a mitigation strategy within areas identified as high hazard areas (Appendix 2). Our mitigation strategy includes:

- For all newly reforested stands establish mixed plantations.
- Utilizing weevil resistant planting stock as it becomes available.
- Managing deciduous and brush cover to provide impediments to weevil flight, on existing and new stands.
- Adjusting stocking standards to tolerate a greater percentage of deciduous and brush species.

Continued assessment of this problem will be conducted in conjunction with PSP measurements. Silviculture survey information may also be used to monitor and report-out on levels of attack.

### 6.4.3 Uncontrolled Fire

We are committed to minimizing the impact on forest resources resulting from uncontrolled fire. To achieve this we will apply the following fire prevention and suppression strategies:

- Ensure that an annual fire preparedness plan is prepared prior to each fire season and distribute to all appropriate staff and contractors.
- Provide fire-fighting training to appropriate staff.
- Incorporate periodic fire equipment checks into inspections.
- Maintain and service fire pumps and other related fire-fighting equipment to address an uncontrolled fire event on TFL 30.
- Maintain a fire duty officer on-call throughout the fire season.
- Conduct controlled burning operations within appropriate burning windows.
- Minimize fuel build-up by burning slash piles (unless they are prescribed for coarse woody objectives) within two years of harvest and usually the following autumn after harvest.
- Maintaining a network of weather stations that can be accessed daily by all personnel working on the TFL to regulate their activities during fire season.

### 6.4.4 Disease

There are no other forest health factors currently causing, or are expected to cause significant threats to forest resources within the licence area. Should an unexpected significant forest health issue occur, it will be identified and recorded via the annual over flight or silviculture surveys, and addressed appropriately.

## 6.5 Recreation and Scenery

### 6.5.1 Scenic Areas

The LRMP identifies the need to integrate management for scenery into resource management plans. The District Manager has established known scenic areas and related visual quality objectives throughout TFL 30. Our objective for the scenery resource is to manage establishes scenic areas so that current and future recreational experiences are maintained. We will achieve this by:

- Maintaining consistency with the established visual quality objective.
- Utilizing the principles of visual landscape design to soften the visual impact of harvesting within scenic areas.
- Consider partial cutting silviculture systems, where practical, for management of scenic areas.
- Conducting visual impact assessments when designing development proposals within scenic areas.
- Considering visual landscape rehabilitation where practical and acceptable.

### 6.5.2 Recreation Sites and Trails

A higher level plan exists over the five Ministry of Forests recreation sites within TFL 30. Operational plans and forest operations will be consistent with and not prevent the

objectives identified for these sites. The objectives for the recreation sites are identified below.

| Higher Level Plan Objective | Pass Lake | Boundary Lake | Amanita Lake | Averil Creek | Freya Lake |
|---|---|---|---|---|---|
| Provide opportunities for modified roaded recreation experiences. | ✓ | ✓ | ✓ | ✓ | ✓ |
| Maintain summer gravel, two-wheel-drive access. | ✓ | ✓ | ✓ | ✓ | ✓ |
| Camping | ✓ | ✓ | ✓ | ✓ | ✓ |
| Picnicking | ✓ | ✓ | ✓ | ✓ | ✓ |
| Hiking | ✓ | | | | |
| Boating | ✓ | | | | |
| Angling | ✓ | ✓ | ✓ | | ✓ |
| Canoeing | | ✓ | | | |
| Wildlife Viewing | | ✓ | | | |
| Beach Activities | | | ✓ | | |
| Observation and Use of a Historic Route | | | | ✓ | |
| Maintain trail access to the lake from the campsite. | | | | | ✓ |

Several recreation user groups have identified the Farm Trail as a significant resource feature during the Recreation Features Inventory. This trail will be identified on operational planning maps. Where operations are prescribed adjacent to the trail, operational plans will prescribe site-specific measures to minimize impacts to the trail.

### 6.5.3 Back-country Recreation

The LRMP identifies the need to maintain the integrity of areas suitable for backcountry recreation. Canfor's objective is to provide for large reserve areas (no-harvest areas) and special management zones that will maintain back-country recreation opportunities. Large reserve areas include:

- Woodall Recreation Emphasis Area
- Horseshoe Recreation Emphasis Area
- McGregor River Management Zone
- Tri Lakes Recreation Emphasis Area
- High Value Caribou Habitat Areas

Special management areas that will help preserve the integrity of back-country recreation areas include:

- Scenic Areas
- Ungulate Winter Range (medium value caribou habitat)

Consistent with our Public Involvement objectives, recreation user groups will be contacted during the Forest Development Planning Process for involvement as to levels of access and management of recreation values on TFL 30.

Two local recreation interest groups have identified the Woodall Recreation Emphasis Area and the steep slopes facing Pass Lake surrounding the Woodall REA as an area of high use for back-country skiing. To accommodate this interest Canfor will provide for information updates on any activities in the Woodall / Bearpaw portion of the TFL prior to each winter season. If there are concerns with a particular activity Canfor will work with the recreational user groups to develop mutually agreeable solutions.

### 6.5.4 Karst / Cave Features

The UNBC Caving Club has provided comment as part of the public involvement process for this management plan. The following process has been agreed upon to manage the karst / cave resource on TFL 30:

- All development proposals within areas on the recreation features inventory that are identified as containing a cave feature, will be documented during the FDP process. The exact location of the cave will then be determined. If the proposed development could potentially affect the cave feature, the UNBC caving club will be contacted and measures to mitigate any impact will be jointly developed. Mitigation measures will be documented in the forest development plan and the silviculture prescription.

- The FDP will document proposed development in areas identified as karst potential on the recreation features inventory. Forestry field crews will be aware of this potential as fieldwork is undertaken and report any cave feature discovered. Should a new cave be discovered, the UNBC caving club will be contacted immediately and mitigation measures jointly agreed upon. Mitigation measures will be documented in the forest development plan and the silviculture prescription.

## 6.6 Archeological Features

Canfor's objectives for the management of archeological features consist of minimizing the impact of forest operations of this resource by developing and implementing a management process. This process includes:

- Identifying all development proposals within areas of high archeological potential based on overview mapping.

- Conducting detailed ground assessments with qualified archeological specialists on all sites within high potential areas.
- Developing mitigation measures for the impact of forest operations on this resource.
- Documenting mitigation measures in the silviculture prescription.
- Maintaining forest operations consistent with the mitigation measures identified in the silviculture prescription.
- Archaeological sites detected during development will be immediately reported to the Archaeological Branch of the Ministry of Small Business, Tourism and Culture (and District Manager - MOF); the sites will be protected; operations in the immediate vicinity will be stopped until the sites have been assessed and approved for further operations.

## 6.7 Culture Heritage Values

The Giscome Portage Heritage Trail is the most significant heritage value on TFL 30. The trail area was identified as a protected area in the LRMP and has recently become a provincial park. Canfor will work with the parks department to ensure that all forest operations are conducted in a manner that protects the integrity of this special area. Development proposals adjacent to the park boundary will ensure that that location of the boundary is identified in the field and that measures are taken to minimize wind damage, if necessary. All development within 400 m of this boundary will be referred to BC parks as part of the FDP referral process.

## 6.8 Guide Outfitters and Trappers

The LRMP and the Canfor Forestry Principles identify the need to interact with the guide outfitting / trapping community as well as the public in general.

The Canfor Forestry Principles state:

- *Communities: We will engage members of the public, communities and other stakeholders in the delivery of the Forestry Principles. The process will be open, transparent and accountable.*

- *Accountability: We will be accountable to the public for managing forests to achieve present and future values. We will use credible, internationally recognized, third party verification of our forestry operations as one way of demonstrating our performance.*

Consistent with our Public Involvement objectives Canfor will ensure that the Guide Outfitters and Trappers on TFL 30 have opportunities to become involved in all aspects our planning and forest operations. We will work with each Guide Outfitter and Trapper to discuss access management, harvest practices and timing, and other resource management issues as they are identified. We will rely on our principles of ecosystem management to preserve opportunities for the Guide Outfitting and Trapping businesses to prosper.

## 6.9 First Nations Traditional Uses

The Canfor Forestry Principles and the LRMP both advocate that we provide for a cooperative working relationship with First Nation's people so that mutual benefits are achieved.

The Canfor Forestry Principles state:

- *Aboriginal People: We will pursue business partnerships and cooperative working arrangements with aboriginal people to provide mutual social, cultural and economic benefits and to address mutual interests.*

Consistent with our Public Involvement objectives we will provide First Nations with opportunities to become involved in all aspects of our planning and operations. We will work with First Nations to jointly develop measures to conserve traditional uses where they are identified. This will be achieved through the involvement and active participation of First Nations in the Public Advisory Group (PAG) for TFL 30.

## 6.10 Engineering and Access Management

Canfor's objectives for construction, maintenance, and deactivation of access structures include:

- Constructing and maintaining safe, environmentally sound, and adequate access to the resources on TFL 30.
- Continuously reviewing and assessing the level of access required and semi permanently or permanently deactivating roads that are not required for future access to resources.
- Meeting with the public and government agencies during each FDP process to determine access requirements and/or access that should be removed to accommodate other resource / environment interests.
- Maintaining / constructing stream crossing structures which provide for safe fish passage.
- Restoring the natural hydrology of water systems wherever semi-permanent or permanent deactivation is proposed.

## 7.0 ANNUAL REPORT

An annual report will be completed each year to report-out on Canfor's performance towards meeting the objectives in the SFM plan. The annual report will be presented at the annual Public Advisory Group meeting and will be made available to all those who request a copy. In addition, a calendar year report may be completed, at the request of the Regional Manager, consistent with the Licence Document for TFL 30.

## 8.0 GLOSSARY OF TERMS

**Aboriginal** – "aboriginal peoples of Canada" [which] include Indian, Inuit, and Métis peoples of Canada (Constitution Act 1992, Subsection 35(2)). (CSA Z808-96)

**Adaptive Management** – a systematic, rigorous approach to improving management and accommodating change by learning from the outcomes of management interventions. (BC Ministry of Forests - Forest Practices Management Branch)

**Age Class** – any interval of time into which the age range of trees, forests, stands or forest types is decided for classification and use. (BC Ministry of Forests)

**Allowable Annual Cut (AAC)** – the allowable rate of timber harvest from a specified area of land. British Columbia's Chief Forester sets AACs for timber supply areas (TSAs) and tree farm licences (TFLs) in accordance with the BC Forest Act. (BC Ministry of Forests)

**Allowable Annual Cut Renewal** - the chief forester must make an allowable annual cut determination for the timber supply area or tree farm licence within 5 years after entering the license agreement and at least once every five year after the last determination. (BC Ministry of Forests, Forest Act, Section 8).

**Biodiversity (or biological diversity)** – the variability among living organisms from all sources including *inter alia* terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (Canadian Biodiversity Strategy 1995) (CSA Z808-96)

**Biogeoclimatic ecosystem classification** – a hierarchical classification system scheme having three levels of integration: regional, local and chronological; and combining climatic, vegetation and site factors. (BC Ministry of Forests)

**Biogeoclimatic zone** – a large geographic area with a broadly homogenous macroclimate. Each zone is named after one or more of the dominant climax species of the ecosystems in the zone, and a geographic or climatic modifier. British Columbia has 14 biogeoclimatic zones. (BC Ministry of Forests)

**Catastrophic** – catastrophic damage or destruction of timber that occurs in the vicinity of the cutblock, as a result of which harvesting the cutblock, as planned, no longer adequately manages and conserves the forest resources. (BC Ministry of Forests)

**Connectivity** – a qualitative term describing the degree to which late-succession ecosystems are linked to one another to form an interconnected network. The degree of interconnectedness and the characteristics of the linkages vary in natural landscapes based on topography and natural disturbance regime. (BC Ministry of Forests)

**Crown Land** – land that is owned by the Crown; referred to as federal land when it is owned by Canada, and as provincial Crown land when it is owned by a province. Land refers to the land itself and the resources or values on or under it. (BC Ministry of Forests)

**Current Allowable Annual Cut** – The allowable rate of timber harvest from a specified area of land. The chief forester sets AACs for timber supply areas (TSAs) and tree farm licences (TFLs) in accordance with Section 8 of the Forest Act. (BC Ministry of Forests)

**Ecologically Suitable Tree Species** – coniferous or deciduous tree species that are naturally adapted to a site's environmental conditions, including the variability in these conditions that may occur over time (BC Ministry of Forests)

**Environment** – the surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation. (CSA Z808-96)

**Forest** – a plant community of predominantly trees and other woody vegetation growing more or less closely together, its related flora and fauna, and the values attributed to it. (CSA Z808-96)

**Forest Land** – land supporting forest growth or capable of so doing, or, if totally lacking forest growth, bearing evidence of former forest growth and not now in other use. (CSA Z808-96)

**Forest Resources** – resources and values associated with forests and range including, without limitation, timber, water, wildlife, recreation, botanical forest products, forage and biological diversity. (Forest Practices Code of British Columbia Act)

**Fragmentation** - A process of transforming large continuous patches into one or more smaller patches surrounded by disturbed areas. In forest management, this occurs naturally through such agents as fire, landslides, windthrow, and insect attack. In managed forests, harvesting and related activities have been the dominant agents that create fragmentation (BC Ministry of Forests Landscape Unit Planning Guidebook).

**Higher Level Plans** – Defined in the Forest Practices Code of British Columbia Act as:
a plan formulated pursuant to Section 4(c) of the Ministry of Forests Act and designated as a higher level plan by the district manager in accordance with direction from the chief forester;
a management plan designated as a higher level plan by the chief forester for tree farm licences and by the regional manager for other agreements under the Forest Act,
an objective for a resource management zone;
an objective for a landscape unit or sensitive area;
an objective for a recreation site, recreation trail or interpretive forest site, and;
a plan or agreement declared to be a higher level plan by:

i) the ministers or;

ii) the Lieutenant Governor in Council under this or any other act.

(BC Ministries of Forests)
Note: For this project, the PG-LRMP is considered a higher-level plan

**Indicator** – a measurable variable used to report progress toward the achievement of a goal. (CSA Z808-96)

**Landscape** – a spatial mosaic of several ecosystems, landforms and plant communities intermediate between an organism's normal home-range, size and its regional distribution. (Canadian Council of Forest Ministers). A watershed or series of similar and interacting watersheds, usually between 10,000 and 100,000 hectares in size. (BC Ministry of Forests Biodiversity Guidebook pp76.)

**Mean Annual Increment** – the total volume increment for a given area to a given age in years, divided by that age ($m^3$/ha/year).

**Natural Disturbance Type** – An area that is characterized by a natural disturbance regime. (BC Ministry of Forests Biodiversity Guidebook pp76.)

**Patch** – A stand of similar-aged forest that differs in age from adjacent patches by more than 20 years. When used in the design of landscape patterns, the term refers to the size of either a natural disturbance opening that led to an even-aged forest of an opening created by cutblocks. (BC Ministry of Forests Biodiversity Guidebook pp76.)

**Productive** – forest land that is capable of producing a merchantable stand within a defined period of time. (BC Ministry of Forests)

**Seral Stages** – the stages of ecological succession of a plant community, e.g., from young stage to old stage. The characteristic sequence of biotic communities that successively occupy and replace each other by which some components of the physical environment becomes altered over time. The age and structure of seral stages varies significantly from one biogeoclimatic zone to another. (BC Ministry of Forests Biodiversity Guidebook)

**Silviculture Prescriptions** – a site-specific operational plan that describes the forest management objectives for an area. It prescribes the method for harvesting the existing forest stand, and a series of silviculture treatments that will be carried out to establish a free growing stand in a manner that accommodates other resource values as identified. (B.C. Ministry of Forests)

**Site Index** – an expression of the forest site quality of a stand, at a specified age, based either on the site height, or on the top height, which is a more objective measure. (BC Ministry of Forests)

**Sustainable Forest Management Plan** – A forest management plan to maintain and enhance the long-term health of forest ecosystems, while providing ecological, economic, social, and cultural opportunities for the benefit of present and future generations (Canadian Council of Forest Ministers, 1992).

**Watershed** – An area of land, which may or may not be under forest cover, draining water, organic matter, dissolved nutrients, and sediments into a lake or stream. The topographic boundary, usually a height of land that marks the dividing line from which surface streams flow in two different directions. (Dictionary of Natural Resource Management, Julian and Katherine Dunster, 1996)