SELKIRK TREE FARM LICENCE 55

MANAGEMENT PLAN 3

2001 – 2006

L-P Engineered Wood Products Ltd.

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2001-2006

L-P Engineered Wood Products Ltd.

Malakwa

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Management Plan 3 has been prepared by the staff of L-P Engineered Wood Products Ltd. (L-P), Eagle River Division. Stuart Macpherson, RPF of Sterling Wood Group Inc. assisted in its preparation and completed the inventory update while Steve Smith PhD, RPF completed the timber supply analysis and associated twenty year plan.

Professional Forester Certification

I certify that this work fulfilled accepted standards and that I did personally supervise the work.

B. Heuvelman, RPF
Area Superintendent

Submitted on Feb 23 ,2001

on behalf of L-P Engineered Wood Products Ltd.

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TABLE OF CONTENTS

Page

1.0 Introduction 1
- 1.1 Purpose 1
- 1.2 Location and Description 1
- 1.3 Licence Holder 2
- 1.4 Tenure Administration 4
- 1.5 Small Business Program 4
- 1.6 Forest Practices Code and Management Plan 3 5

2.0 Land Use Plan 6
- 2.1 Ministers Advisory Committee Plan 6
- 2.2 Landscape Units 7

3.0 Goals and Commitments 9
- 3.1 Summary of Goals and Commitment for MP 3 9
- 3.2 Similarities and Differences between MP 2 and MP 3 9
- 3.3 Status of Management Plan 2 15

4.0 Management Issues 16
- 4.1 Forest Inventory 16
- 4.2 Environmentally Sensitive Areas 16
- 4.3 Operability Mapping 17
- 4.4 Partitioned AAC 17
- 4.5 Problem Forest Types 18
- 4.6 Non-Recoverable Losses 18
- 4.7 Harvest Profile 19
- 4.8 Species Conversion 19
- 4.9 Reduced AAC 20
- 4.10 Small Business Operating Area 20
- 4.11 Forest Health 20
- 4.12 MAC Land Use Plan 21

5.0 Forest Management Objectives 22

6.0 Timber Management Goals, Commitments and Strategies 25
- 6.1 Proposed Rate of Harvest 25
  - 6.1.1 Annual Allowable Cut 25
  - 6.1.2 Timber Inventory 26
- 6.2 Harvesting 29
  - 6.2.1 Twenty Year Plan 29
  - 6.2.2 Harvest Planning 30
  - 6.2.3 Harvesting Methods and Season 34
  - 6.2.4 Harvesting Priority and Patterns 35
  - 6.2.5 Utilization Standards 37

6.2.6 Special Forest Products 38
6.3 Road Network 38
6.3.2 Road Maintenance 39
6.3.4 Road Deactivation 41
6.4 Silviculture 41
6.4.1 Basic Silviculture 42
6.4.2 Enhanced Silviculture 52
6.4.3 Western White Pine Management 53
6.5 Forest Health 54
6.5.1 Detection 55
6.5.2 Prevention 56
6.5.3 Control 56
6.6 Fire Protection 57
6.6.1 Fire Prevention 58
6.6.2 Fire Detection 58
6.6.3 Fire Control 59

7.0 Integrated Resource Management Goals, Commitments and Strategies 60
7.1 Visual/Landscape 60
7.2 Cultural and Heritage Values 61
7.3 Minerals 62
7.4 Biological Diversity 62
7.5 Soils 63
7.6 Water 63
7.7 Recreation 64
7.8 Wildlife Habitat 65
7.9 Fish Habitat 66

8.0 Public Consultation 67
8.1 Licenced Resource Users 67
8.2 First Nations 69
8.3 Review Strategy 69

9.0 Employment and Economic Opportunities 70
9.1 Current Employment 70
9.2 Recovery Plan 71

10.0 Resource Inventories 72

11.0 Annual Report 74

12.0 Revisions 74

13.0 Implementation 74

Appendices

I(a) TFL 55 Licence Agreement
I(b) History of TFL 55
II Resource Inventories
II(a) Timber Inventory Report
II(b) Timber Inventory Statistics
II(c) Status of Wildlife and List of Trappers/Guide Outfitters
II(d) List of Water Licences
II(e) Stream Information
II(f) Minerals
III Current and Projected Uses of Wood Supply
IV Statement of Management Objectives, Options and Procedures
V(a) Information Package for Timber Supply Analysis
V(b) Timber Supply Analysis Report
VI Twenty-year Development Plan
VII Recreation Inventory Update
VIII Excerpt from MAC Plan
IX Public Consultation Report

List of Figures

1 Overview Map 3
2 Landscape Units 8
3 Inventory Map Base 28
4 Biogeoclimatic Zones 32
5 Access / Recreation Features 40
6 Guide Outfitters 68

List of Tables

1-1 TFL 55 Landbase 2
3.1-1 Goals and Commitments 10
6.1.2-1 Productive Forest Area by Age Class 27
6.1.2-2 Productive Forest Volume by Age Class 27
6.2.1-1 20 year Plan Harvest Projection 29
6.2.2-1 Strategic and Operational Plans 33
6.2.2-2 Five-year Harvest Goals 33
6.2.5-1 Utilization Standards 38
6.4.1-1 Basic Silviculture Program Goals 44
6.4.1.1-1 Regenerated Species/Type Group Conversion 46
6.4.1.2-1 Seed Inventory 48
6.4.1.3 Silviculture Surveys 50
9.1-1 Current Employment 71
10-1 Status of Resource Inventories 73

Map Folio (under separate cover)

TFL 55 Net Timber Harvesting Landbase
TFL 55 Operability
TFL 55 Biogeoclimatic Zones
TFL 55 20 Year Plan

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of Management Plan 3 (MP3) is to outline the objectives, goals and resource management strategies for Tree Farm Licence 55 (TFL) for the next five years. It integrates the harvesting of timber with the management of other forest resource. The period of the plan is May 1, 2001 to May 1, 2006. Submission of this management plan fulfils the requirement of the tree farm licence document (Section 2) and the Forest Act (35 (1) (d)). (MP 2 approved by the provincial chief forester on April 18, 1996 covered the period from May 1, 1996 to May 1, 2001)

The management strategies and practices outlined in MP 3 are consistent with the legislative requirements of the tree farm licence, Forest Act, Forest Practices Code of BC Act and regulations and all other applicable legislation.

As part of the requirements for completing MP 3 the following planning documents were prepared by L-P Engineered Wood Products Ltd. (L-P) and have been approved by the Ministry of Forests (MoF):

- Statement of Management Objectives, Options and Procedures. (Appendix IV).
- Information package for timber supply analysis. (Appendix V (a)).
- Timber supply analysis report. (Appendix V (b)).
- Twenty year plan. (Appendix VI).

1.2 LOCATION AND DESCRIPTION

The gross area of the TFL is 55 is 92,700 hectares. Approximately 45,400 hectares of this or 49% is considered to be productive forest. (Table 1). The TFL is situated in the Selkirk Mountains north of Revelstoke National Park between Goldstream River and Mica Creek along the eastside of the Revelstoke Reservoir. The City of Revelstoke is the largest community in the region and is a service and government administrative centre for the local economy. Highway 23, which traverses along the eastside of the Revelstoke Reservoir to Mica townsite, provides the primary access to the tree farm licence. The southwest corner of the TFL at Goldstream River is 85 kilometres north of Revelstoke. The overview map (Figure 1) hilights the boundaries of the TFL in relation to the surrounding communities and regional features.

TFL 55 lies in the interior wet-belt and is covered in part by three biogeoclimatic zones: alpine tundra, interior cedar-hemlock and Englemann spruce-subalpine fir. The forests are mixtures of predominately hemlock, cedar, Douglas-fir types at lower elevations with balsam-spruce types at higher elevations. The climate is characterized by warm summers and cool winters, marked by characteristically heavy rainfall and high levels of winter snowfall.

Table 1-1: TFL 55 Landbase (hectares)

Gross area	**92,700**
Productive forest	
Conventional	22,223
Non-conventional	622
Marginal	873
Inoperable	21,683
Total productive forest	**45,400**
Non-productive forest	**47,300**

1.3 LICENCE HOLDER

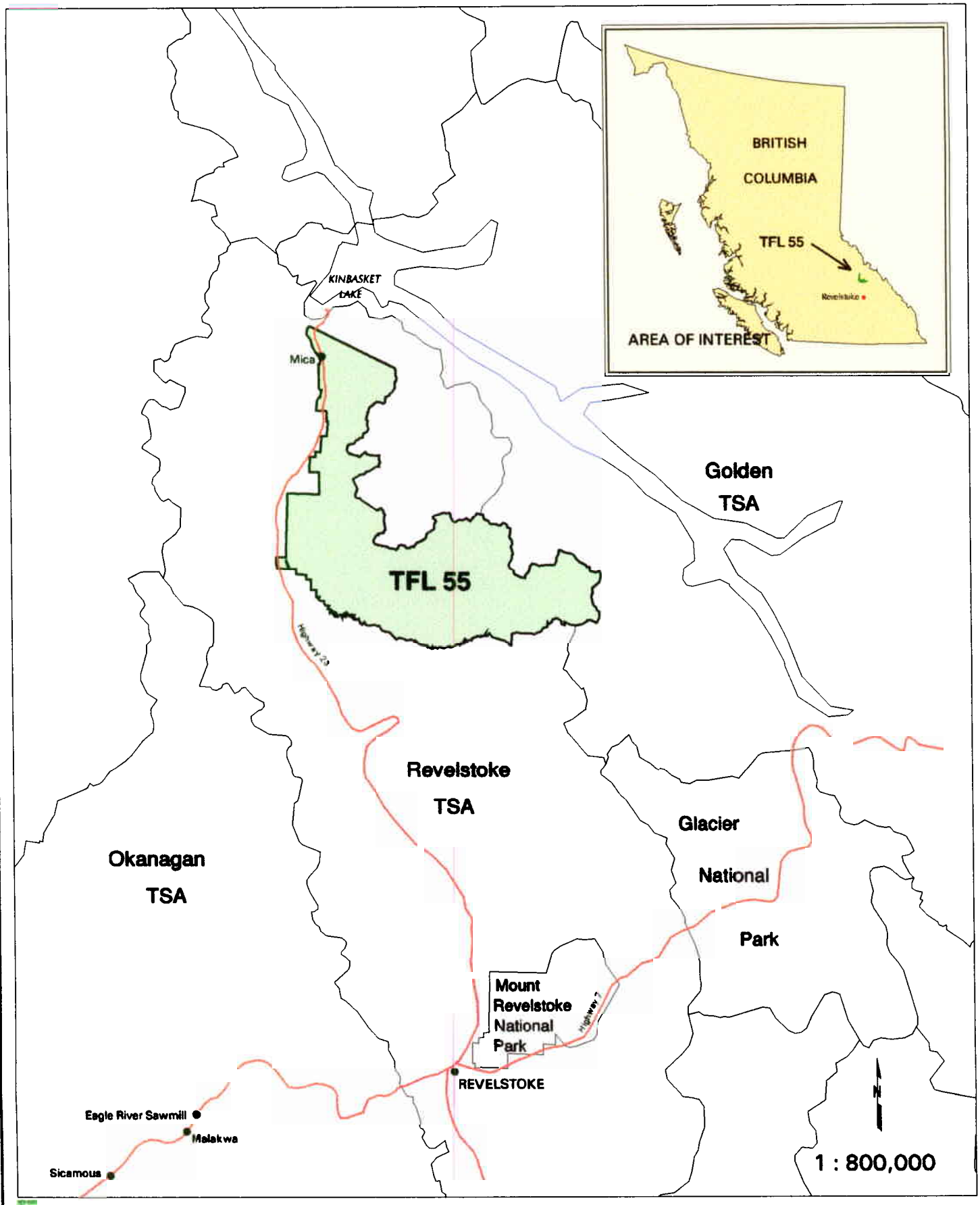
Evans Forest Products Limited acquired TFL 55 in June 1993. The TFL was originally created in 1992 from the subdivision of TFL 23 into two tree farm licences. The area north of Revelstoke was subdivided again into TFL 55 and TFL 56 while the area south east of Revelstoke became the remaining TFL 23. TFL 56 is held by the Revelstoke Community Forest Corporation.

Evans Forests Products Limited was incorporated in British Columbia in 1931 and remained under American ownership until 1986 when its Canadian subsidiary was sold and became 100 percent Canadian-owned. In 1996 an American financier, George St. Laurent, acquired control of the company through purchase of a majority equity position. The company undertook a major capital expenditure program with the construction of a laminated veneer lumber (LVL) plant at the Golden millsite. On November 30, 1999, Evans Forest Products Limited was acquired by Louisiana-Pacific Corporation of Portland, Oregon. The licence was transferred to L-P Engineered Wood Products Ltd. This resulted in a 5% reduction in AAC (4,416 m^3).

Today the company operates a cedar sawmill at Malakwa and a LVL plant and plywood plant at Golden. There is also an electricity co-generation plant associated with the plywood plant at the Golden site. In 1999 plywood sales were 95% Canadian, 5% export, while red cedar lumber sales were 50% Canadian, 2% export and 48% USA. The company's Eagle River Division operations at Malakwa employs 135 people, of which 12 are salaried.

Revisions were made to the TFL boundary in 1998 and 1999. The previous boundary was based on a manual interpretation of the metes and bounds description of the topographic features. Current government mapping standards use height of land line-work from the TRIM Watershed Atlas as well as Crown Lands (CDMS) cadastral mapping and TRIM planimetric features. The revisions to the TFL 55 boundary are the result of changes in mapping standards only; the intent of the boundaries and their true location on the ground has not changed. The revisions resulted in a change of gross area from 92,227 hectares to 92,700 hectares, an increase of 478 hectares.

TFL 55 Overview



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1.4 TENURE ADMINISTRATION

TFL 55 is in the Columbia Forest District of the Nelson Forest Region. Three government agencies share responsibility for the administration of TFL 55, the provincial Ministry of Forests (MoF), the Ministry of Environment, Lands and Parks (MELP), the federal Department of Fisheries and Oceans (DFO).

The MoF is the legislative authority responsible for the administration of the provincial forests through the Forest Act and the Forest Practices Code of BC Act and its regulations. MELP is mandated to administer provincial legislation pertaining to water, wildlife, fisheries resources and pesticide use on Crown lands primarily through the Wildlife Act, Water Act, Pesticide Control Act and Waste Management Act. The federal DFO is responsible for administering federal legislation regarding fish-bearing waters to ensure that aquatic habitat is protected. The Fisheries Act is the primary legislation for the protection of aquatic habitat. Parks Canada is an interested third party in the management of the TFL in view of the national parks in the Selkirk Mountains.

L-P administers the TFL from its Eagle River division office at Malakwa. Eight staff members are assigned to the managing the operational activities. All timber harvesting and road construction are undertaken by independent logging contractors. The company also retains forestry services contractors to provide a full range of forest engineering, forest management, silviculture and protection activities. Approximately 40 people are employed in the operation of the TFL.

1.5 SMALL BUSINESS PROGRAM

The MoF Small Business Forest Enterprise Program (SBFEP) has been operating in the Stitt Creek drainage of TFL 55 since 1991 with an assigned allowable annual cut (AAC) of 11,675 cubic meters.

L-P will be reviewing the remaining harvesting opportunities at Stitt Creek for the SBFEP during the summer 2000 with MoF. The company will also summarize the volume harvested by the SBFEP during the term of MP 2. Based on this information L-P will begin to develop a strategy and schedule for the allocation of a new SBFEP operating area within the TFL if this is required.

The MoF is responsible for fire control, reforestation, road maintenance and deactivation activities associated with the timber sale licences (TSL) in the Stitt Creek drainage. Although the MoF actively administers these TSLs, these areas remain within the tree farm licence. When harvesting and basic silviculture is completed, the TSL areas revert to the management of L-P.

A summary of SBFEP harvest volumes during the period of MP 2 to the end of 1999 is in the history section (Appendix Ib).

1.6 FOREST PRACTICES CODE AND MANAGEMENT PLAN 3

The Forest Practices Code of BC Act (Code) came into effect in July 1995. The legislation deals primarily with strategic and operational planning, forest practices and forest protection. The Code was subsequently amended in 1997 through Bill 47, the Forest Statutes Amendment Act. This act amended the Forest Act, the Forest Practices Code of BC Act and the Range Act. Four regulations were substantially amended in 1998. These were:

- Operational Planning Regulation
- Forest Road Regulation
- Timber Harvesting Practices Regulations
- Silviculture Practices Regulation

The Code, Forest Act and all relevant legislation and regulations are incorporated into the development of strategies and practices outlined in MP 3.

2.0 LAND USE PLAN

2.1 MINISTERS ADVISORY COMMITTEE PLAN

In November 1994, the Commission on Resources and Environment tabled the Kootenay-Boundary Land Use Plan to the provincial government, which recommended a land use zonation framework and management practices for biodiversity, caribou, ungulate winter range and other resource values. The plan predicted as much as a 40% reduction in timber supply for the Revelstoke area. The citizens of Revelstoke found the impacts of the CORE report to be unacceptable and demanded an opportunity to develop alternative land use strategies and recommendations. With government approval a Ministers Advisory Committee (MAC) was formed to develop a local land use plan.

Over a period of four years the MAC committee prepared recommendations concerning forestland zonation, harvesting guidelines for caribou habitat areas, biodiversity emphasis areas and ungulate winter range. The MAC plan attempts to balance environmental and socio-economic needs. Through a process of public consultation, the assistance of a technical and a economic team and representatives from the MELP, the MAC plan has developed guidelines and zoning to protect and balance key wildlife habitat, biodiversity and economic interests for the Revelstoke area.

Since the existing timber supply forecasts were questionable a detailed timber supply analysis using a spatial analysis model was carried out on TFL 56 to assess the timber supply impacts of the MAC recommendations. The results of this analysis were extrapolated to TFL 55. The report predicts that the implementation of the MAC plan would result in an immediate stepdown in AAC to 92,000 cubic meters in the first 10 year period and a further stepdown to 83,000 cubic meters in the next 10 year period.

The MAC report, which was submitted to the Minister of Forests in October of 1999, recommended that specific sections of the report be designated higher level plan status and that any AAC reductions for both tree farm licences (TFL 55 and 56) be borne, at least equally, if not fully, by the SBFEP AAC apportionments for these the licences. L-P supports the MAC committee in this initiative to ensure that the impacts of the implementation of the land use plan are appropriately distributed.

At the time of writing MP 3 (August 2000) the MAC land use plan has no legal status however caribou, ungulate and biodiversity emphasis options, zoning and harvesting guidelines are included in the Columbia Forest district manager's guidelines for forest development plans.

During this management plan period the focus will be to:

- Continue to incorporate the MAC plan as described in the district manager's forest development guidelines until such time as that plan, or portions of it, are designated higher level plan status.
- Should the MAC plan or portions of it become a higher level plan, incorporate the requirements of the higher level plan into L-P's planning and operating activities?

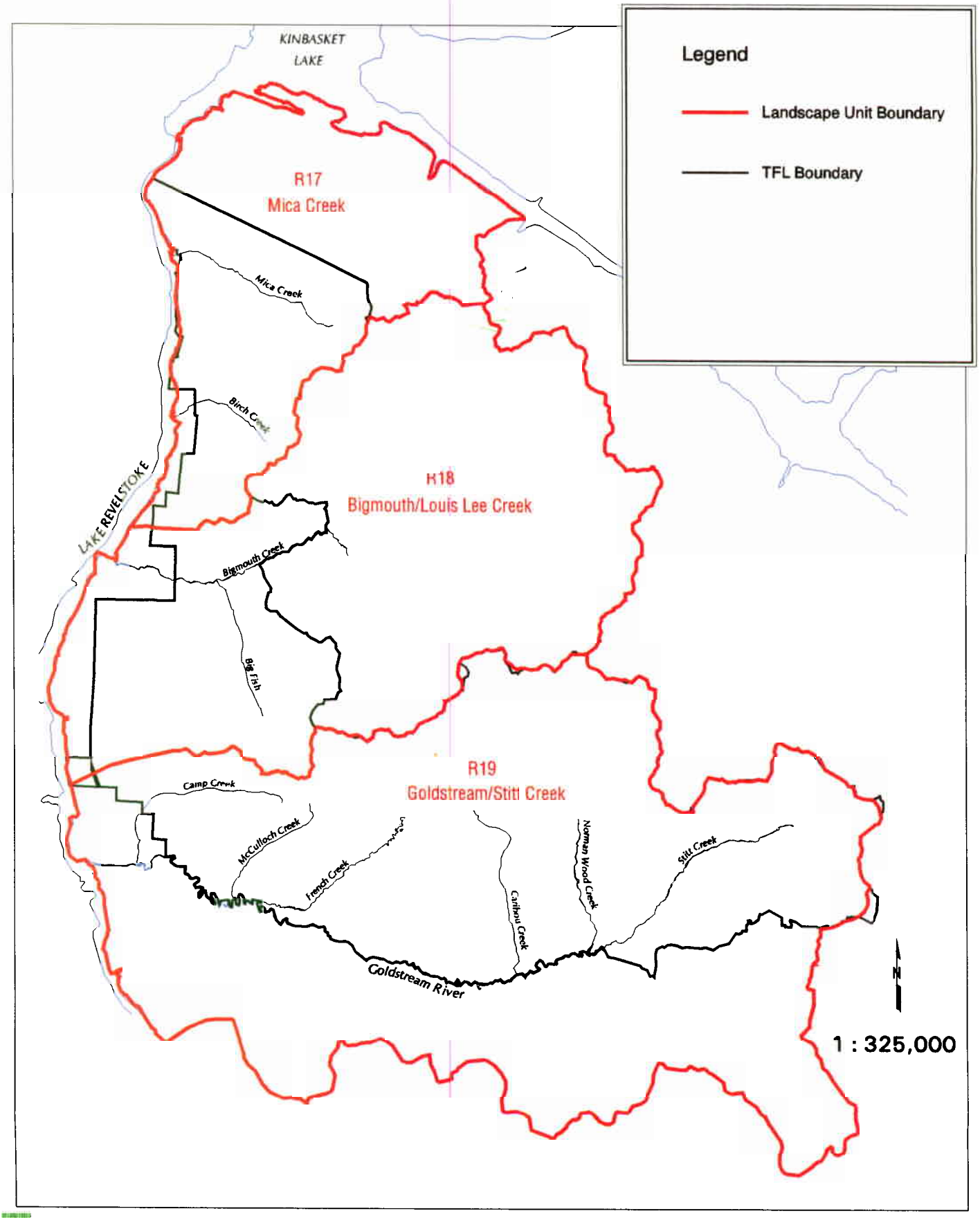
2.2 LANDSCAPE UNITS

TFL 55 is contained within, wholly or in part, by three landscape units as depicted in figure 2.

R17 – Mica Creek
R18 – Bigmouth / Louis Creek
R19 – Goldstream / Stitt creek

These landscape units are defined in the MAC plan.

TFL 55 Landscape Units



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3.0 GOALS AND COMMITMENTS

3.1 SUMMARY OF GOALS AND COMMITMENT FOR MP 3

Table 3.1-1 outlines the goals and commitments made in this plan.

3.2 SIMILARITIES AND DIFFERENCES BETWEEN MP 2 AND MP 3.

Harvest Level

L-P is proposing a reduction in the AAC to 90,000 m^3.

Land Base	MP 2	MP3
Gross area	92,227 ha	92,700 ha
Net operable	18,473 ha	19,783 ha
Long term harvest level	61,487 m^3/yr	64,410 m^3/yr
AAC	100,000 m^3	90,000 m^3

Economic Opportunities

The economic opportunities are anticipated to remain stable or decrease slightly due to the projected reduction in AAC.

Protection and Conservation of Non-timber Values

Improved inventories available for MP 3 has resulted in more information for integrated resource planning. Specifically timber, terrain, fisheries and recreation inventories have been updated for MP 3. The MAC plan has provided complete map coverage of caribou and ungulate winter range.

Employment and Contractors

L-P currently employs 544 people in its woodlands and manufacturing facilities in Malakwa and Golden. This employment level consists of both permanent employees and contractors / consultants. Employment should remain relatively stable, assuming no market-related shutdowns are required. A slight reduction in the contractor workforce at Malakwa is anticipated as a result of the decrease in AAC. Continued project funding from Forest Renewal BC should provide some short-term employment.

Table 3.1-1: Goals and Commitments in Management Plan 3 TFL 55

Section	Goals	Commitments
6.1.2 Timber Inventory	Periodically update the timber inventory to permit proper strategic and operational level planning.	• Ensure timber inventory database is updated for MP 4.
6.2.2 Harvest Planning	Develop strategic and operational level plans that permit the harvesting of timber in consideration of corporate economic goals, regulatory requirements, silvicultural systems, and integrated resource management strategies.	• Ensure that five year harvest goals are achieved. • Incorporate second pass cutting into harvest planning where possible. • Maintain 10% of the annual harvesting based on diameter limit cut primarily in the high elevation ESSF zone as available in the forest development plan. • Include some patch cutting in caribou emphasis areas of the TFL.
6.2.3 Harvest Methods in Season	Use a variety of harvest methods that are economically feasible, safe for workers and minimizes environmental impacts.	• Continue to investigate opportunities for a variety of harvesting systems that incorporate other integrated resource values and minimize soil disturbance.
6.2.4 Harvesting Priority and Patterns	Ensure harvesting priorities and patterns consider forest health and log profile objectives in order to create balanced age classes stands in the long term.	• Ensure harvesting schedules achieve long term stand structure objectives. • Continue to incorporate total resource planning into harvesting priorities and patterns.
6.2.5 Utilization Standards	Ensure that log utilization meets, manufacturing plant log profile needs, market conditions and coarse woody debris objectives.	• Meet government and company utilization standards.
6.2.6 Special Forest Products	Utilize special commercial forest products to create employment and business opportunities.	• Explore opportunities for maximizing fibre recovery.
6.3 Road Network	Develop and maintain a transportation network that minimizes environmental impacts and provides for safe industrial,	

Table 3.1-1: Goals and Commitments in Management Plan 3 TFL 55

Section	Goals	Commitments
	commercial and public use.	
6.3.1 New Construction		• Construct roads to ensure one year ahead of developed timber.
6.3.2 Road Maintenance		• Maintain all active road networks for company, commercial and public use • Minimize the environmental impacts of existing road and bridges.
6.3.3 Road Deactivation		• Ensure that the level of deactivation is consistent with future road use. • Ensure that road deactivation minimizes potential impacts on the environment. • Complete Forest Renewal BC funded road deactivation program in 2000.
6.4.1 Basic Silviculture	Establish and tend stands of ecologically suitable species that maintain site productivity and ensure sustainable timber production while meeting integrated resource objectives.	• Maintain a regeneration delay period of 2.5 years for appraisal blocks. • Continue to regenerate backlog NSR areas.
6.4.1.1 Reforestation Methods	Apply the most cost effective reforestation methods that ensure that all harvested blocks are restocked with ecologically suitable coniferous tree species.	• Maintain stand establishment strategies that focus on prompt reforestation following harvesting. • Evaluate alternative reforestation methods through experimental trials. • Evaluate the use of alternative ecologically suitable tree species such as western larch and deciduous.
6.4.1.2 Seed Supply	Maintain a 10 year inventory of ecologically appropriate seed to meet projected seedling requirements for those species not available from the seed orchard program.	• Annually determine the seed requirements for reforestation.
6.4.1.3 Site Preparation	Ensure that the most ecologically suitable methods of site preparation are used to prepare harvested areas for reforestation or to reduce fire hazard.	• Continue to use site preparation methods that are ecologically sound and economically viable to meet silvicultural objectives.

Table 3.1-1: Goals and Commitments in Management Plan 3 TFL 55

Section	Goals	Commitments
6.4.1.4 Silviculture Surveys	Monitor regenerated stands to ensure that the appropriate species and stocking standards are achieved by the free growing stage.	• Carryout applicable silviculture surveys to ensure that harvested cutblocks and backlog NSR areas are satisfactory regenerated and reach free growing stage with the regulatory timeframes.
6.4.1.5 Brushing	Temporarily control the growth of competing woody and herbaceous vegetation to ensure adequate survival and growth of preferred crop trees.	• Ensure that brushing methods used comply with legislative and regulatory requirements. • Continue to identify cutblocks with potential brush competition prior to harvesting.
6.4.1.6 Forest Renewal Initiative	Ensure that all backlog NSR area and industry outstanding NSR areas achieve free growing status.	• Complete reforestation of remaining NSR backlog areas.
6.4.2 Enhanced Silviculture	Enhance second growth stand quality and forest productivity to meet timber harvesting and other forest resource objectives.	• Identify potential candidate stands for an enhanced silviculture program.
6.4.3 Western White Pine Management	Establish disease resistant western white pine stands that meet timber production objectives.	• Continue the establishment of western white pine stands in the reforestation program for TFL 55.
6.5 Forest Health	Monitor incidence of insects and disease to protect and enhance short and long term forest productivity of the forest resource.	• Continue to assess annually the forest health of the TFL and take control action where required.
6.5.1 Detection	Ensure the early detection of forest pests and disease activity.	• Continue with an on-going stand level detection of forest health issues.
6.5.2 Prevention	Maintain their incidence of forest pests and disease at an endemic level by preventing conditions that favour disease build-up and spread.	• Continue forest practices that minimize the impact of forest pests and insects.
6.5.3 Control	Focus forest health efforts on stand level detection and control actions in the absence of a district-wide forest health plan.	• Continue on-going stand level control actions of pest and disease.
6.6 Fire Protection	Minimize the damage from fire in the working forest and to maximize salvage of	• Continue the fire protection program to protect the licence area from damage

Table 3.1-1: Goals and Commitments in Management Plan 3 TFL 55

Section	Goals	Commitments
	timber from fire-damaged stands.	caused by uncontrolled wildfires.
6.6.1 Fire Prevention	Maintain proper planning and training of employees and contractors to minimize the impact of wildfires.	• Continue on-going fire preparedness planning and training program.
6.6.2 Fire Detection	Ensure that all fires are detected and reported with a minimum of delay.	• Continue on-going measures for detection of fire.
6.6.3 Fire Control	Develop fire control strategies to minimize the spread of fire.	• Continue on-going fire control strategies.
7.0 Integrated Management Strategies	Maintain forest ecosystems and biological diversity that ensures harvest sustainability and long term forest productivity while incorporating the values of stakeholders and aboriginal people.	• Continue to complete and upgrade resource inventory information for the TFL.
7.1 Visual / Landscape	Incorporate visual management strategies within the TFL in the absence of designated visual quality objectives.	• Continue to assess visually sensitive viewscapes in consultation with commercial heli skiing operators.
7.2 Cultural and Heritage Values	To identify and protect previously unknown heritage sites through consultation with interested parties including aboriginal people.	• Protect sites of cultural and archaeological significance.
7.4 Biological Diversity	Maintain sustainable forest ecosystems throughout the TFL that will accommodate all native species.	• Complete a new timber inventory of TFL as part of a Revelstoke TSA initiative.
7.5 Soils	Minimize the impact of development and operations on forest soils.	• Complete terrain stability hazard mapping (level D) for operable areas.
7.6 Water	Maintain water quality and quantity of streams with the TFL.	• Minimize the impact of woodlands operational activities on water quality and quantity.
7.7 Recreation	Ensure that a range of recreational opportunities is available for public use and enjoyment.	• Co-operate with the MoF and commercial operators to enhance recreational opportunities.
7.8 Wildlife Habitat	Maintain a range of ecosystems and habitats necessary to sustain a diversity of	• Incorporate MAC caribou and ungulate winter range habitat guidelines into

Table 3.1-1: Goals and Commitments in Management Plan 3 TFL 55

Section	Goals	Commitments
	wildlife.	operational plans. • Maintain a harvestable level of furbearing mammals.
7.9 Fish Habitat	Ensure that the productive capacity of fish-bearing streams is maintained.	• Continue to co-operate with agency initiated fish habitat enhancement projects.
8.0 Public Consultation	Ensure that the stakeholders and First Nations have adequate opportunities for input into strategic and operational plans.	• Continue ongoing consultation processes.
9.0 Employment and Economic Opportunities	Provide stable sustainable economic opportunities for employees, contractors and communities.	• Maintain economic opportunities.

3.3 STATUS OF MANAGEMENT PLAN MP 2

The management issues that applied to TFL 55, which were a concern to the MoF at that time MP 2 was approved, in1996 have been largely resolved. A brief summary of the status is described below:

- All harvesting and road construction activities are being carried out by logging contractors in compliance with contractor clause obligations.
- Problem timber types continue to be harvested in accordance with targets.
- Pulplogs are being utilized through sales agreements with Georgia Pacific at Cache Creek and Asia Pulp and Paper Ltd. at Castlegar.
- Steep slope harvesting with cable systems is standard practice. Conventional harvesting systems are used on easier slopes. Helicopter and long-line systems are being used in areas inaccessible to other conventional logging methods.
- Planning is ongoing for the use of skyline and multi-span harvesting systems.
- Implementation of a silviculture plan for treating backlog NSR.
- Basic silviculture commitments are being met.
- The program for the deactivation of old road systems which was initiated in 1998 is scheduled for completion during the summer of 2000.
- Timber inventory had been updated to December of 1998 (Appendix II (a)).
- Terrain surveys intensity level D (TSIL D) was completed for the TFL in 1998.
- The recreation inventory was updated in 1999.
- The MAC completed its report on recommended land use allocation and submitted it to the Minister of Forests.
- Reconnaissance level stream surveys was completed in 1997.

More details of these accomplishments are listed in table 3 of Appendix I(b)

4.0 MANAGEMENT ISSUES

The list of issues outlined below were used to guide the assessment of strategies in preparing MP 3. The topic and action for each issue are as described in the SMOOP (Appendix IV), while the status outlines what has been completed since.

4.1 FOREST INVENTORY

Topic: The present inventory was completed in 1989 to MoF inventory standards at that time. The suitability of this current forest inventory for use in the timber supply analysis has been raised based on MoF comments in 1995 concerning the reliability of the volumes.

Action: *The inventory has been maintained and updated as at December 1998 and will be used for MP 3. An inventory audit completed by the MoF in 1998 reports that the inventory volumes predicted are reliable. It also reported that it does not conform with the new Vegetative Resource Inventory Standard, in part, as non-forested high elevation areas are not classified. The MoF Columbia forest district has prepared a strategic plan for a VRI update of the entire district. Implementation is dependent on funding availability and has not been scheduled at this time.*

Some doubt was raised on the site index assignment of immature polygons. A recent preliminary review by L-P showed this not to be an issue.

Status: The MoF has prepared a strategic plan for a VRI update of the entire Revelstoke TSA subject to FRBC funding availability. L-P will participate in the VRI update should funding become available. In the event that funding is not approved by May 1, 2003, L-P will implement the action plan requested by the provincial chief forester. The updated inventory will provide the basis for the timber supply analysis for Management Plan 4.

An old growth site index adjustment, approved by the MoF was used in the timber supply analysis for MP 3 (refer to section 6.1.2 and Appendix V).

4.2 ENVIRONMENTALLY SENSITIVE AREAS

Topic: The regional manager has requested that sensitive soils (Es) be accounted for in the yield analysis for MP 3, as well as strategy for managing ESAs.

Action: *ESAs were classified in the 1989 reinventory update. Es areas totalled 14497 hectares, some 15% of the gross area, mainly occurring on steep inoperable slopes. The company completed terrain sensitivity mapping in 1998. A comparison will be made of these two types of classification to help decide on the netdown strategy to use in the yield analysis. Wildlife, fish habitat and water will be covered through the Code rules for riparian classification and the MAC wildlife habitat mapping.*

Status: This comparison was completed and it was decided to use the terrain stability hazard mapping for area reductions for sensitive soils based on terrain hazard class IV and V.

4.3 OPERABILITY MAPPING

Topic: The operable cutline (OCL) has become outdated. Development planning and harvesting outside and above the OCL has increased considerably in the five past years.

Action: *Revised operability mapping is presently being undertaken for MP 3. This will be completed in co-operation with Columbia Forest District staff.*

Status: The new operability mapping has been completed. The OCL was adjusted to take into account areas above the current OCL where the company had demonstrated performance in harvesting these areas or was in an advanced stage of planning and felt confident enough to include the additional areas. The OCL was adjusted downwards where the review of existing cutblock locations indicated that harvesting up to the OCL would not likely be achieved or that further development in a drainage was not likely to occur (refer to Appendix III)

4.4 PARTITIONED AAC

Topic: The present AAC is partitioned, requiring 10,000 m3/year to be harvested from outside the OCL. Actual performance during MP 2 will be a consideration in reviewing whether a partitioned AAC is needed for MP 3.

Action: *Harvesting performance in the non-conventional operability area for the first three years is 286% of target and is projected to be 261% after 5 years. Most of this volume has been harvested using conventional ground and cable logging techniques. The revised operability mapping will increase the conventional operability area reflecting current practices. This may obviate the need for a partitioned AAC.*

Status: The decision on whether to have a partitioned AAC for MP 3 will be made by the provincial chief forester when approving this plan. L-P will provide technical results from the timber supply analysis and the 20 year plan to assist him in this decision. (refer to section 6.2.4.3)

4.5 PROBLEM FOREST TYPES

Topic: Presently with the exception of high elevation balsam stands, most timber types are considered merchantable in the timber supply analysis. This strategy needs to be reviewed taking into account current merchantability criteria and reforestation constraints.

Action: *The company will review its definition of unmerchantable stands and problem forest types. The current Revelstoke TSA strategy will be taken into consideration.*

Status: Unmerchantable stands are defined in the timber supply analysis. Problem forest types as defined previously are now considered to be merchantable. (refer to section 6.2.4.1)

4.6 NON-RECOVERABLE LOSSES

Topic: Unsalvaged losses, primarily from fire, insects and disease were estimated in MP 2 to be about 3,400 m^3/year. As there is considerable uncertainty with the estimate it needs to be reviewed for MP 3.

Action: *The company will assess losses experienced during the past five years and examine the approach used for the 1998 timber supply analysis of the Revelstoke TSA.*

Status: The rationale for estimating unsalvaged losses used was similar to that for the Revelstoke TSA. Losses assumed in the timber supply analysis for MP 3 are estimated to be 6840 m^3/year, of which 990 m^3/year would be unsalvaged. (refer to Appendix Va)

4.7 HARVEST PROFILE

Topic: The MoF has a perception that western red cedar leading stands and higher volume sites may be over-represented in the harvest, when compared to the harvest profile available.

Action: *A harvest profile analysis that incorporates data back to 1994 will be undertaken to determine species type group and inventory age classes harvested as well as the volume scaled by species. The actual harvest profile will be stipulated in a timber supply analysis* scenario *to test the impact on the long-term harvest level projected.*

Status : The harvest profile used in the timber supply analysis was based on the level of species harvested in the past five years, e.g., hemlock 38%, cedar 36%, spruce 20%, balsam 4%, Douglas-fir 2%. (refer to Appendix Va)

4.8 SPECIES CONVERSION

Topic: The MoF have requested the species choice for reforestation be examined. There is a perception that species conversion may have AAC and habitat impacts.

Action: *The benchmark for assessing reforested species needs to be at free growing rather than at the time of planting. Successful stocking results from a combination of planting and natural seeding. A change in reforestation strategy was made approximately five years ago with the abandonment of broadcast burning in favour of direct raw planting. This approach emphasizes recruitment of natural regeneration (eg Hw, Cw, Bl) and mixed species planting (e.g., Sx, Cw, Fdi, Pw). It is expected that this will result in regenerated stands of approximately the same species types as the undisturbed forest. The preliminary results of species diversity being achieved will be presented in the management plan*

Status: The regeneration strategy described above is covered in the management plan text. (refer to section 6.4).

4.9 REDUCED AAC

Topic: How will a change or reduction in AAC affect the TFL viability and what would be the implications of change in species profile harvested on the viability of the Malakwa sawmill?

Action: *TFL 55 supplies approximately 25% of the Malakwa sawmill's annual throughput of 210,000 m^3. The implications of a reduced AAC will be addressed in the text of MP 3 if necessary as a consideration in the rationale for the proposed AAC. Towards the end of the planning period late in 2000, the likelihood of an AAC reduction and/or a change in species profile will be clarified or become apparent.*

Status: To be assessed after the AAC determination has been made. (refer to section 3.1)

4.10 SMALL BUSINESS OPERATING AREA

Topic: The MoF have estimated that the available first pass volume in the SBFEP operating area in Stitt Creek will have been depleted within two years.

Action: *L-P will review the remaining harvest opportunities within the Stitt Creek drainage with the Columbia Forest District. Work will begin on a strategy and schedule for the allocation of a new SBFEP operating area, if required.*

Status: This review commenced in summer 2000 and is in progress. Present indications are that there is more volume accessible on the northside of the creek. (refer to section 1.5).

4.11 FOREST HEALTH

Topic: A forest health strategy is necessary to cover the major forest health agents on the TFL.

Action: *In MP 2 L-P had proposed a district-wide forest health plan be prepared so that there would be a common approach to management strategies and control options. In its absence the company continues to focus its forest health efforts on stand level detection and control actions.*

Status: An assessment of forest health is included in this plan and in the forest development plan each year (refer to section 6.5).

4.12 MAC LAND USE PLAN

Topic: The MAC continues to work on management implementation guidelines of the Kootenay-Boundary Land Use Plan for the Revelstoke area. The final recommendations are expected to be completed in late 1999. Present indications from this committee's deliberations are that there likely will be a timber supply reduction for TFL 55.

Action: *The role of the MAC guidelines and its impact on the management of TFL 55 will be examined and discussed in MP 3. Management strategies in the MAC that must be followed will be analyzed in the timber supply analysis and any downward pressure on the timber supply will be presented and discussed.*

Status: The final MAC report was presented to government in May 2000, a decision is pending. The impact of the MAC recommendations was assessed in the timber supply analysis. (refer to section 2.0).

5.0 FOREST MANAGEMENT OBJECTIVES

For this management plan L-P will continue with a commitment to responsible forestland stewardship. This corporate commitment reflects recognition of integrated resource management principles that apply to Crown forest land in the province. Forestland use has become a dynamic and increasingly complex issue. Public interest in management of forest resources and their expectation on how it should be managed has heightened although it remains diverse. The company will maintain an open communicative management style with the public.

Corporate Policy on Protection of Environment

Louisiana-Pacific is committed to a healthy environment worldwide by taking a leadership role in our communities to be good neighbours. Our Corporate Policy on Protection of the Environment is a statement of our environmental goals. We believe sound business practices and efforts to enhance the environment are compatible. Therefore, L-P strives to:

Meet or Surpass the Requirements of Environmental Laws and Regulations

- Ensuring that Louisiana-Pacific employees understand and adhere to all applicable environmental laws and policies.
- Educating and training employees and business partners to comply with workspace environmental laws and regulations and assume a role in protecting the environment.

Maintain a Responsible Role in Managing Natural Resources

- Committing to be environmentally conscious stewards of the land by using Best Management Practices* recommended to foster multiple-use and the sustainability of world forest resources.
- Committing to the wise use of energy, reducing waste and pollutants, conserving resources and recycling materials.

Conserve Non-renewable Resources Through Efficient Use and Careful Planning

- Researching and developing technologies, processes, and products that are environmentally sound and use renewable resources.
- Promoting recycling, source reduction, pollution prevention and waste minimization.

* BMP as defined in the US

Fully Account for Environmental Considerations in Corporate Planning and Decision-Making

- Incorporating environmental planning when evaluating and designing new facilities or changing existing operations.
- Managing the purchase and use of products that may be hazardous, undertaking an environmental review of products before purchase.
- Ensuring that Louisiana-Pacific operates safely and responsibly in our communities.
- Incorporating environmental costs into financial planning.
- Periodically assessing the Company's environmental performance and updating the Corporate Policy on Protection of the Environment.

Land Use

Committed to responsible forest stewardship of the tree farm licence and will manage the landbase by practising environmentally sound, balanced resource use within the context of the applicable laws, regulations and approved strategic level plans.

Implement sustainable forest management strategies that maintain the inherent biological diversity of the ecosystems, wildlife and aquatic habitats and landscape values.

The company will continue to be involved in any future planning land use specific to TFL 55 or the Revelstoke TSA in general.

Public Consultation

Be open and accessible to the public concerning management of the TFL and provide regular opportunities for them to comment on operational plans. Maintain an open working relationship with local first nations bands.

Timber

Harvest the AAC using logging techniques that comply with applicable utilization standards while accommodating non-timber resource values.

Adopt harvest and reforestation strategies to sustain the long-term timber supply and productivity of the working forest.

Co-operate with the Ministry of Forests in the administration of their small business program.

Forest Health

Maintain the forest in a healthy condition by reducing the activity and outbreaks of pest Infestations and disease.

Fire Protection

Maintain a fire protection program that minimizes losses from wildfires.

Silviculture

Maintain a basic silviculture program that reforests all logged areas in accordance with the Forest Practices Code.

Water Quality

Minimize the potential for any adverse effects of forestry practices on the stream network as it pertains to water quality, quantity, fish and wildlife habitat, recreation and designated water users.

Fish and Wildlife

Ensure that wildlife and fish habitat essential for maintaining and supporting existing species are protected as described by the Forest Practices Code.

Maintain the aquatic biological productivity of streams with resident fish.

Recreation

Ensure that the current broad range of recreational opportunities continue to be available to the public through consultation during the forest development plan review process.

Continue to co-operate with commercial back-country lodge operators in the delivery of their recreational program offerings.

6.0 TIMBER MANAGEMENT GOALS, COMMITMENTS AND STRATEGIES

This chapter outlines the goal(s), commitments and strategies for timber management. Goals represent the overall goals for each timber management program. The commitments represent the commitments planned to apply during the period of MP 3 while strategies represent the action plans for implementing program commitments.

6.1 PROPOSED RATE OF HARVEST

6.1.1 Allowable Annual Cut

The timber supply analysis completed for this management plan provides a basis for the AAC proposed to the provincial Chief Forester. It also shows a projection of timber availability from TFL 55 for the next 250 years. The specifics of the analysis approach including an explanation of the data inputs, yield curves and management assumptions are described in the data information package (Appendix V.1). The results are outlined in the timber supply analysis report. (Appendix V.2)

The net timber harvesting landbase under current management on TFL 55 is 19,783 hectares, or 44% of the productive forest area. The present AAC is 100,000 cubic metres (including the 4,415 m^3 transfer take-back, and SBFEP AAC).

From the gross productive forest landbase of 45,400 hectares it is biologically possible to achieve a sustainable, even flow harvest level of about 157,000 cubic metres per year. After landbase netdowns have been applied, and all the management requirements embodied in the Forest Practices Code and the recommendations from the Minister's Advisory Committee (MAC) report have been applied, the long run harvest level drops by 59% after 40 years to about 64,000 cubic metres per year. This is the long run harvest level projected by the current management option. In this option, the projected harvest in the first decade drops from the present AAC of 100,000 cubic metres per year to 90,000 cubic metres per year. If old growth site index (OGSI) adjustments are not made for regenerated stands, the long run harvest level drops from 64,000 cubic metres per year to 58,000 cubic metres per year.

In the current management option, when forest cover requirements from the previous timber supply review (Revelstoke TSA) are used instead of the MAC requirements, the present AAC of 100,000 cubic metres can be maintained for two decades, and the long term harvest level is about 81,000 cubic metres per year. Clearly, the effect of MAC requirements is to reduce the harvest in the first two decades by 15% and to reduce the long-term harvest level by 21%.

With this in mind and assuming that implementation of the MAC recommendations are approved by the government requirements; the recommended AAC for TFL 55 (net of non-recoverable losses) for the period 2001 – 2005 is 90,000 cubic metres per year.

6.1.2 Timber Inventory

The timber inventory has been maintained and updated to December 1998 and was used for the timber supply analysis for this plan. An inventory audit completed by the MOF in 1998 reported that the inventory volumes predicted are reliable. The timber inventory statistics used for this plan are in Appendix II(b). Volumes were compiled using VDYP for mature stands and TIPSY for regenerated stands and are net of decay, waste and breakage.

The MOF Columbia Forest District and Nelson Region forest staff have prepared a strategic plan for a VRI update of the entire district. The company will implement the TFL portion of the VRI strategic plan subject to the availability of FRBC funding. At this time the company anticipates that the VRI project will commence by the spring of 2001 as the FRBC has indicated that funding is available. The inventory fieldwork would be completed during the summer of 2002.

In the event that government funding does not materialise by June 2002 the company will take action to complete a standard update. This will require new aerial photographs and re-stratification and reclassification of the forest cover attributes. Work would be undertaken commencing in 2003 thereby ensuring that updated inventory database will be available for Management Plan 4.

Data on the productivity of second growth stands will continue to be compiled. Growth intercept measurements are routinely collected when undertaking free growing surveys. The company is also a member of the Southern Interior Growth and Yield co-operative.

Table 6.1.2 - 1 details the net productive forest area of 45,400 hectares by age class. As depicted in figure 2 there are fourteen 1: 20,000 scale mapsheets covering the TFL landbase. Table 6.1.2 - 2 summarizes the productive forest volume by age class. The age classes are MoF defined inventory age ranges.

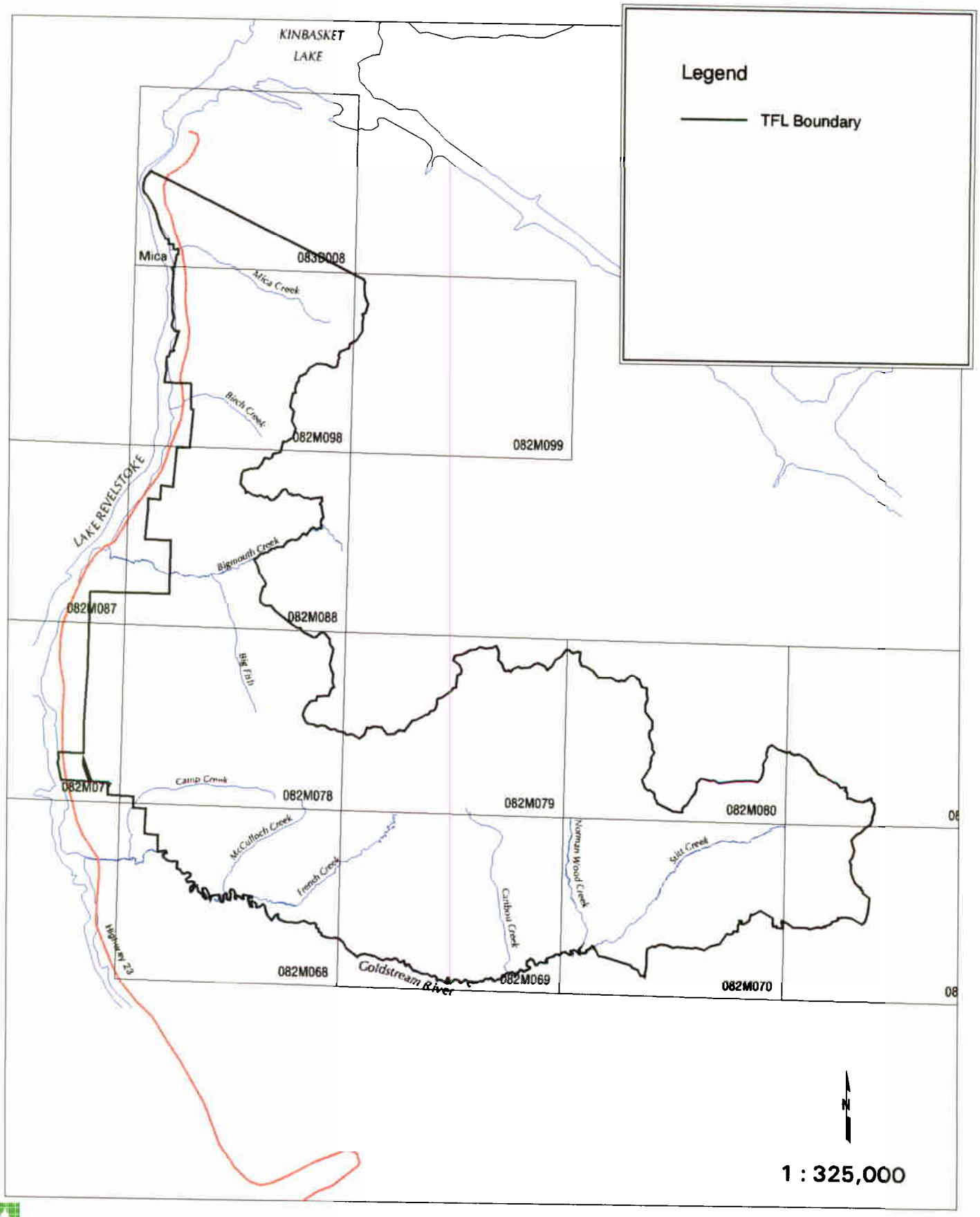
Table 6.1.2-1: TFL 55 Productive Forest Area by Age Class (hectares)

Leading Species	1 [1-20]	2 [21-40]	3 [41-60]	4 [61-80]	5 [81-100]	6 [101-120]	7 [121-140]	8 [141-250]	9 [>250]	Other	Total
Hemlock	118	575	119	201	146	361	246	6,986	629	0	9,381
Cedar	293	55	0	18	10	46	18	3,097	1,202	0	4,741
Douglas -fir	460	151	484	360	282	619	93	399	0	0	2,848
Spruce	3851	787	101	302	485	701	255	16,084	404	0	22,971
Balsam	151	763	121	131	105	137	179	2,070	0	0	3,655
Pine	0	0	44	0	2	0	0	0	0	0	47
Deciduous	113	0	19	56	0	53	20	0	19	0	279
NSR	0	0	0	0	0	0	0	0	0	1,479	1,479
Total	4986	2331	889	1067	1031	1917	811	28,636	2,254	1,479	45,400

Table 6.1.2-2: Productive Forest Volume by Age Class (m^3)

Leading Species	1	2	3	4	5	6	7	8	9	Other	TOTAL
Hemlock	0	4,337	13,409	36,808	41,479	130,677	91,528	3,330,056	300,725	0	**3,949,018**
Cedar	0			2,173	3,675	14,601	7,500	1,682,229	629,619	0	**2,339,797**
Douglas-fir	0	6,684	37,011	49,641	70,875	193,663	31,395	171,114		0	**560,385**
Spruce	0	2,226	11,497	66,964	122,712	183,943	87,064	5,703,243	180,514		**6,358,163**
Balsam	0	3,601	9,730	12,134	15,872	27,610	45,126	568,731		0	**682,804**
Pine	0		7,878		769					0	**8,648**
Deciduous	0		48	11,354		8,432	3,829		4,450	0	**28,113**
Total	**0**	**16,848**	**79,574**	**179,073**	**255,382**	**558,927**	**266,442**	**11,455,373**	**1,115,308**	**0**	**13,926,928**

TFL 55 Inventory Map Base



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6.2 HARVESTING

6.2.1 Twenty Year Plan

A twenty year plan has been completed for the period 2000 to 2020. It is a strategic level plan that illustrates spatially one feasible harvest option based on the results of the timber supply analysis. The plan includes the SBFEP volume.

It was prepared with the terms of reference submitted to the district manager. A target harvest level was set at the proposed AAC of 90,000 m^3 for the first 10 years and at 81,000 m^3 for the second 10 years. The plan provides a link between the non-spatial assumptions used in the yield analysis for MP 3 and the forest management practices, forest cover constraints and planning guidelines of the Forest Practices Code and the MAC recommendations.

The twenty year plan confirmed the results of the timber supply analysis for the current management option. The target volumes were successfully located while meeting adjacency and green-up rules. These volumes were achieved in addition to the volumes to be harvested from salvage blocks. The accompanying map illustrates by colour-code the spatial distribution of the proposed openings and the associated road development.

As described in the twenty -year plan report in Appendix VI, the results demonstrate that at the proposed AAC level there is sufficient flexibility to satisfy annual volume requirements and the planning guidelines of the Code. The harvested level illustrated is not constrained by the resource management factors addressed in the plan.

Table 6.2.1.-1: 20-year Plan Harvest Projection

Period	Landscape Unit			Total Volume (m^3)
	Mica Creek	Bigmouth / Louis Lee Creek	Goldstream / Stitt Creek	
1	70,214	159,185	225,206	454,605
2	87,849	45,765	320,409	454,022
3	47,563	72,742	289,412	409,717
4	65,622	218,790	125,068	409,480
Total	271,266	496,499	960,115	1,727,825

6.2.2 Harvest Planning

Goal

To develop strategic and operational level plans that permit the harvesting of timber in consideration of corporate economic goals, regulatory requirements, silvicultural systems, and integrated resource management strategies.

Commitments

- Ensure that five-year harvest goals are achieved.
- Incorporate second pass cutting into harvest planning where possible.
- Maintain 10% of the annual harvesting based on diameter limit cut primarily in the high elevation ESSF zone as available in the forest development plan.
- Include some patch cutting in caribou emphasis areas of the TFL.

Strategies

- Incorporate integrated resource management strategies into harvest planning.
- Maintain an open planning process that includes consultation with stakeholders and the public.
- Ensure that all operational plans are reviewed by the appropriate government agencies prior to being finalized.
- Ensure that planning meets the requirements of the Code and the specific requirements of the MAC plan as identified by the district manager.
- Ensure that strategic and operational level planning continues to meet harvesting and other resource objectives.
- Incorporate Natural Disturbance Type (NDT 1) planning objectives within the landscape units as per the biodiversity guidebook.

Harvest planning is carried out in co-operation with MELP to achieve a variety of cutblock sizes. The objective of NDT 1 disturbance type is to maintain a range of small to large (up to 250 ha) similarly aged forest patches on the landscape. The forest patch size distribution applies to both harvest units and the leave areas in the landscape units. Partial cutting and some small clearcuts can be used in NDT 1. Complete reliance on small,dispersed clearcuts and small leave areas, leads to excessive forest fragmentation. Therefore, some larger patches will be cut to create larger openings.

Currently the preferred silviculture system is clearcut with reserves, which represents approximately 90% of the harvest volume. The remaining 10% of the harvest volume is based on a diameter limit cut primarily in high elevation ESSF biogeoclimatic zone to facilitate natural regeneration.

The MAC plan contains specific guidelines for planning in the caribou, ungulate winter range, and intermediate biodiversity zones. Some of these guidelines have been tailored specifically for TFL 55 and 56. Summaries of the guidelines from the MAC plan are included in Appendix VIII.

Table 6.2.2-1 outlines the strategic and operational plans along with the purpose and renewal process.

TFL 55 Biogeoclimatic Zones

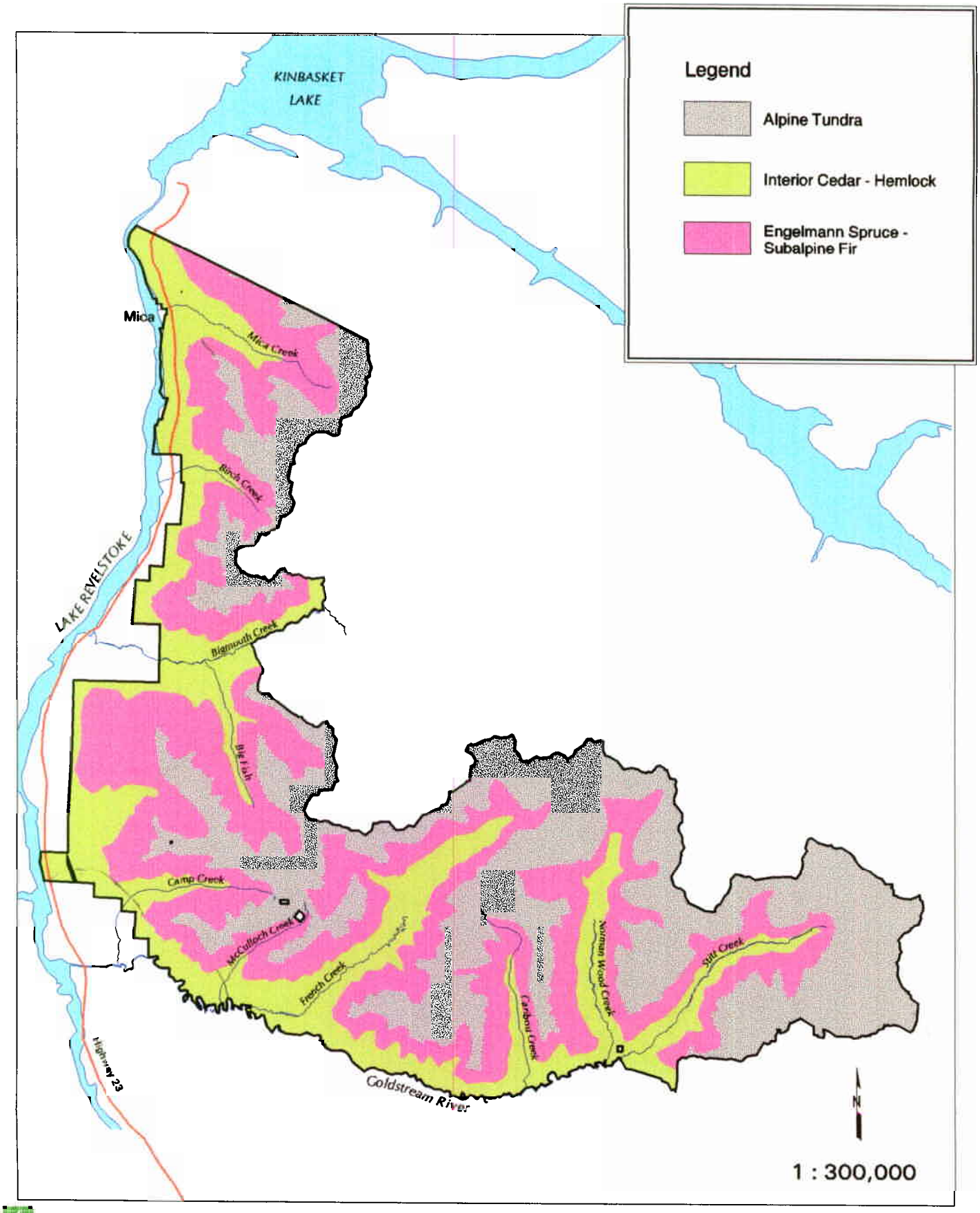

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Table 6.2.2-1: Strategic and Operational Plans

Type	Purpose	Renewal
Strategic Plans		
Ministers' Advisory Committee (MAC)	Address land use issues in Columbia FD	In draft format
Landscape Unit Plans	Defines boundaries, objectives and strategies	Status unknown
Management Plan	Details objectives, goals and strategies for managing TFL55	MP updated every five years
Twenty-Year Plan	Outlines the potental pattern of harvesting within TFL 55 for a 20 period	20yr plan updated every 5 years
Operational Plans		
Forest Development Plan	Indicated proposed harvest cutblocks and road construction scheduled for a five-year period	FDP upated annually or every two years in some cases
Road Layout and Design	Specifies road location and design parameters of a road section	Renewed and amended as needed
Road Permit	Authorizes new road constructionunder specific conditions	Renewed and amended as needed
Cutting Permit	Authorizes harvesting of cutblocks under specific tems and conditions	Renewed as needed
Deactivation Prescription	Describes level and type of deactivation work to be undertaken to deactivate a road section	Renewed as needed
Fire Preparedness Plan	Details the operational readiness to prevent, detect and suppress forest fires	Updated annually
Special Use Permit	Application to use or occupy Crown land for gravel pits or sortyard	Annually or as needed
Silviculture Prescription	Prescribes the silviculture system and regeneration plan for harvesting and reforesting a cutblock	Amended as needed

Table 6-6.2.2-2 summarizes the harvest goals planned for the period of MP 3.

Table 6.2.2-2: Five-year Harvest Goal (000's m^3)

Year	2001	2002	2003	2004	2005
	88325	88325	88325	88325	88325

* assumes 5% takeback is returned to L-P

6.2.3 Harvesting Methods and Season

Goal

To use a variety of harvest methods that are economically feasible, safe for workers and minimizes environmental impacts.

Commitment

- Continue to investigate opportunities for a variety of harvesting systems that incorporate other integrated resource values and minimize soil disturbance.

Strategies

- Continue to use the most appropriate harvesting method while considering terrain, operating season, economic feasibility and integrated resource values and regeneration requirements
- Continue to investigate opportunities for alternative harvesting systems such as multi-span and helicopter to access areas that are not otherwise economically accessible to harvest
- Harvest cutblocks sensitive to soil disturbance in the winter months

The introduction of helicopter and long-line systems has given the company an increased ability to log the variety of sites and terrain conditions on the TFL. This has provided planning and harvesting flexibility in matching logging systems with specific site requirements such as environmental protection and regeneration.

The allowable annual cut is harvested by logging contractors using various equipment configurations:

Ground based systems

- Tractor skidding, low ground pressure.
- Rubber-tired skidder.

Cable yarding systems

- Hilead tower
- Grapple yarding

Helicopter and Longline systems

- Helicopter
- Longline yarder

Most of the logging is a combination of handfalling and either log length or tree length yarding. Currently about 70 % of the annual harvest is logged by cable systems, 15 % by ground based systems, 10% from right-of-way logging and 5% by longline and helicopter systems.

The use of helicopter and cable systems harvesting systems is dependent on an evaluation terrain and timber values and stumpage appraisal allowance. Cutblocks which are more sensitive to soil disturbance are harvested during the winter season when the snow pack is deep.

6.2.4 Harvesting Priority And Patterns

Goal

To ensure harvesting priorities and patterns consider forest health and log profile objectives in order to create balanced age classes stands in the long term.

Commitments

- Ensure harvesting schedules achieve long term stand structure objectives.
- Continue to incorporate total resource planning into harvesting priorities and patterns.

Strategies

- Design cutblocks to minimize edge blowdown on adjacent leave areas.
- Continue to harvest areas of problem forest types of overmature hemlock/cedar during the term of MP 3.
- Disperse harvest operations throughout the TFL where possible.
- Priorize harvesting in areas with insect infestations, disease, fire and blowdown.
- Continue to harvest stands on steep slopes.

6.2.4.1 Problem Forest Types

Problem forest types are defined as age classes 8 and 9 leading species hemlock, as identified in the TFL inventory. These forest types range in age from 141 to over 250

years of age. When they are harvested, these stands yield a lower volume of sawlogs and a higher percentage of pulp logs than other stands.

A condition of approval of MP 2 required L-P to harvest 59 hectares per year from problem stands on TFL 55. L-P has demonstrated that it has far surpassed this target during 1995- 1999. As a result the district manager has relieved L-P from reporting PFT harvesting area in the TFL annual report.

The problem forest types will be represented in the five-year development plan. Performance can be monitored by the MoF as part of the development review process and assessed at the end of the management plan term. Annual reporting and tracking of problem stands harvested is not necessary.

6.2.4.2 Steep Slope Harvesting

Steep slopes are defined as terrain having slopes equal to or greater than 50%. As recently as 15 years ago, harvesting on the TFL with cable systems was considered an "alternate" harvesting system. Since that time cable harvesting has become a conventional system. Steep slope harvesting targets are no longer required for the TFL, The company has committed in the past to harvest 17 % of the annual volume from steep slopes.

L-P has demonstrated that it has far surpassed this target during the term of MP 2. Consequently the district manager has relieved L-P from reporting steep slope harvesting summaries in the TFL annual report. L-P will continue to harvest on steep slopes. Table 2 in Appendix I(b) shows annual harvest on steep terrain between 1996 and 1999.

6.2.4.3 Partitioned Cut

For MP 2 L-P was required to harvest a timber volume of 10,000 m^3 from above the operable cutline on TFL 55. By the end of the 1999 cut control period the company had harvested 106% of its five year partitioned cut requirement. For MP 3 the operable cut line has been revised to include areas where the company has demonstrated performance in harvesting above the 1994 OCL. L-P does not anticipate a partitioned cut obligation for MP 3.

6.2.5 Utilization Standards

Goal

Ensure that log utilization meets, manufacturing plant log profile needs, market conditions and coarse woody debris objectives.

Commitment

- Meet government and company utilization standards.

Strategies

- Ensure that log utilization standards are met in accordance with the Interior Scaling Regulation (BC Reg 563/78).
- Continue to make residual cedar logs below the minimum utilization level available to salvage cutters for shake and shingle, and post and rail manufacturing.
- Utilize hardwood species such as cottonwood, and birch if economically feasible.
- Conduct waste surveys of logged blocks to ensure that the utilization levels are met.

The MoF utilization standards are summarized in Table 6.2.5-1. It is assumed that the 50 percent firmwood rule will remain unchanged. These standards are used consistently for inventory compilation, allowable annual cut and for cutting permit cruise compilations. When variance to these standards may be justified it will be requested in the specific cutting permit application.

L-P will make spot sales of hardwood species when requested. Residue surveys will be conducted annually on cutblocks logged each year according to standards acceptable to the MoF. The avoidable and unavoidable waste volumes (based on utilization standards) will be reported to the MOF for cut control purposes.

Table 6.2.5-1: Utilization Standards

Parameter	Coniferous species
Maximum stump height	30 cm
Diameter stump height	20.0 cm
Diameter breast height	17.5 cm
Minimum top diameter	10.0
Minimum top diameter (Cw>140/year)	15.0
Minimum log length	3.0

6.2.6 Special Forest Products

Goal

Utilize special commercial forest products to create employment and business opportunities.

Commitment

- Explore opportunities for maximizing fibre recovery.

Strategies

- Continue to identify cutblocks and debris piles post harvest for the salvage of incidental cedar volumes suitable for shake blocks.
- Encourage local furniture makers to utilize incidental birch volume generated during regular harvesting.

6.3 Road Network

Goal

To develop and maintain a transportation network that minimizes environmental impacts and provides for safe industrial, commercial and public use.

6.3.1 New Construction

Commitment

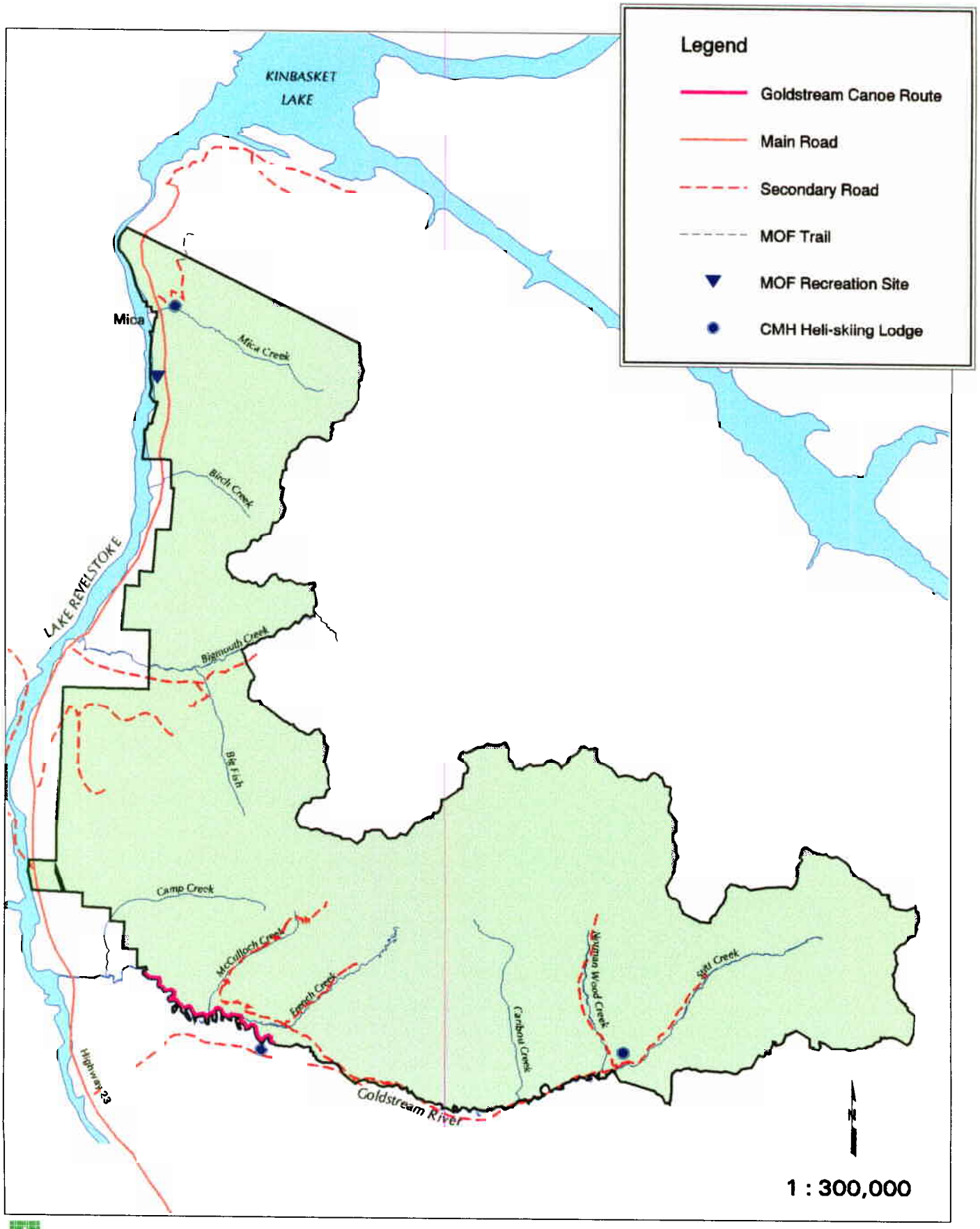
- Construct roads to ensure one year ahead of developed timber.

Strategies

- Ensure that road and bridge design and construction meet regulatory requirements
- Ensure that road and bridges are constructed with full consideration for riparian, hazardous terrain and other resource values
- Ensure proper construction techniques are applied to prevent soil erosion, maintain existing drainage patterns and protect other resource values

Main road access within the TFL has been largely completed except for the tributaries to Big Fish Creek and Old Camp Creek. During the past five years main roads were constructed into the French Creek, Caribou Creek, Stitt Creek and McCulloch Creek drainages. The existing road network and land features are depicted in Figure 3. The detailed locations of roads and bridges existing and planned are displayed on the 1:20,000 scale forest development plan maps that are updated annually. Logs are trucked from the TFL along Highway 23 to Revelstoke and the Trans-Canada highway to the sawmill at Malakwa.

TFL 55 Access & Recreation Features



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6.3.2 Road Maintenance

Commitments

- Maintain all active road networks for company, commercial and public use.
- Minimize the environmental impacts of existing road and bridges.

Strategies

- Continue to maintain a monitoring and inspection program for existing roads and bridges.
- Inspect temporary and semi-permanent deactivated roads annually or at a frequency based on an assessment of risk
- Ensure remedial maintenance work is scheduled to minimize environmental impacts and within designated in-stream timing windows
- Inspect bridges every two years using a qualified inspector

Maintenance includes grading road surfaces, clearing ditches and cleaning culverts to ensure adequate water flow, inspecting and maintaining bridge crossings, removing slide and slough material, brushing and stabilizing road banks. Frequency of road maintenance is dependent on the frequency of usage and weather conditions.

In compliance with the MOF open-road policy, public access and road usage is free and at one's own risk. Posted signs advise the public to take safety precautions when using active logging roads. There is a joint-use access agreement with Beaumont Timber, whose private timberlands adjoin the TFL boundary at several points.

6.3.3 Road Deactivation

Commitments

- Ensure that the level of deactivation is consistent with future road use.
- Ensure that road deactivation minimizes potential impacts on the environment.
- Complete Forest Renewal BC funded road deactivation program in 2000.

Strategies

- Ensure that temporary deactivation is carried out on roads that are planned to have regular use suspended for a period of less than three years.
- Ensure semi-permanent or permanent deactivation is carried out on roads which are not planned to have regular use for a period of greater than three years

- Ensure semi-permanent or permanent deactivation is carried out on roads that are located on terrain with a moderate or high likelihood of landslides and will not be used for more than a year.
- Permanently deactivate roads that have no future company use planned.
- Update deactivation status and plans annually in the forest development plan
- Review road deactivation plans with the MOF and MELP.

Deactivation plans are prepared specifically for each road system. A program to carry out semi-permanent and permanent deactivation on old road systems commenced with Forest Renewal BC funding in 1998. These road systems were constructed pre-Code and posed a risk to streams within the TFL and along Highway 23 north. This program is scheduled for completion during the summer of 2000.

6.4 SILVICULTURE

6.4.1 Basic Silviculture

Goal

Establish and tend stands of ecologically suitable species that maintain site productivity and ensure sustainable timber production while meeting integrated resource objectives.

Commitments

- Maintain a regeneration delay period of 2.5 years for appraisal blocks.
- Continue to regenerate backlog NSR areas.

Strategies

- Comply with the Silviculture Practices Regulation in meeting free growing
- regeneration standards.
- Continue to achieve regeneration delay within regulatory timeframes.
- Design and implement silviculture regimes to minimize the time required to meet green- up and free growing status, without compromising other goals.
- Establish regeneration with mixtures of species ecologically suited to the growing site.
- Use regeneration techniques and practices that will maintain or increase productivity.

Basic silviculture will be completed for all cutblocks harvested after October 1, 1987 in accordance with to the Silviculture Practices Regulation (BC Reg 179/95).

Reforestation costs for this program are paid by L-P. Silviculture treatments for cutblocks harvested prior to October 1, 1987 will be paid for by the MOF, through funding sources such as Forest Renewal BC.

Achievements of the basic silviculture program will be outlined in the TFL annual report. On completion of silviculture activities on an appraisal area, L-P will submit MLSIS reports to the MOF. Between 1996 and 1999 750 hectares were harvested and 888 hectares were planted.

Opening NSR balance at Dec 31, 1995: 779.7 ha.

Backlog:	304.2 ha
Appraisal:	475.5 ha

Closing NSR balance at Dec 31, 1999: 435.2 ha.

Backlog:	135.1 ha
Appraisal:	300.1 ha

The projected basic silviculture activity goals for the period (2000-2005) are in Table 6.4.1-1. These program goals are updated every year.

Table 6.4.1-1: TFL 55 Basic Silviculture Program Goals (hectares)

Activity	2000			2001			2002			2003			2004		
	MoF[3]	L-P	**Total**	MoF	L-P	**Total**	MoF	L-P	**Total**	MoF	L-P	**Total**	MoF	L-P	**Total**
Silviculture Surveys	415	1103	**1518**	513	1023	**1536**	350	1049	**1399**	71	1200	**1271**	324	1200	**1524**
Site Preparation Mechanical[1]															
Burning	6	67	**73**		105	**105**		109	**109**		125	**125**		125	**125**
Planting	22	116	**138**	14	366	**380**		462	**462**		219	**219**		211	**211**
Brushing[2]	97	345	**442**	39	350	**389**	42	389	**431**	30	420	**450**	20	485	**505**

[1] Includes site rehabilitation
[2] Includes conifer release
[3] Indicates Industry Outstanding funding responsibility

6.4.1.1 Reforestation Methods

Goal

Apply the most cost effective reforestation methods that ensure that all harvested blocks are restocked with ecologically suitable coniferous tree species.

Commitments

- Maintain stand establishment strategies that focus on prompt reforestation following harvesting.
- Evaluate alternative reforestation methods through experimental trials.
- Evaluate the use of alternative ecologically suitable tree species such as western larch and broad leaf.

Strategies

- Ensure reforestation scheduling is consistent with site series as identified in silviculture prescriptions.
- Ensure all cutblocks are planted to target stocking standards with a mixture of ecologically suitable coniferous species.
- Ensure cutblocks with significant potential brush competition are planted within one growing season of harvesting.
- Ensure all cutblocks are planted within two to three growing seasons following harvesting.
- Consider alternative reforestation trials such as include cluster planting or other non-uniform spacing.
- Evaluate district MoF western larch trials to determine if this species has potential for use on the TFL.
- Select planting stock based on an evaluation of site forest health condition such as spruce terminal weevil and Armillaria root disease.
- Prescribe broad leaf species in silviculture prescriptions where it is ecologically and biologically acceptable.
- Ensure that specific stock type selection is consistent with the *Nelson Region Seedling Stock Type Selection and Ordering Guidelines.*

Supplementary natural regeneration fill-in, which occurs on many sites, will be recognized providing that this regeneration consists of preferred or acceptable species. Alternative reforestation trials, which would involve cluster planting or other non-uniform spacing, would be experimental and would not be large enough to affect the status of any plantation. Experience gained from these trials may be implemented operationally.

A variety of conifer species will be planted to ensure that a mixture of species is reforested both by planting and through the recruitment of natural regeneration. It will result in a change in species order re-established in the regenerated stands compared to the natural stands. Generally, this species conversion is projected to result in a shift in type groups and a wider mixture of species in regenerated stands, as illustrated in Table 6.4.1.1-1

Table 6.4.1.1-1: Regenerated Species/Type Group

Natural stand	Regenerated stand	
	Planted	Natural regeneration
Fir/hemlock	Fir/Cedar/White Pine	Hemlock/spruce/ birch/aspen
Hemlock/cedar	Fir/Spruce/White Pine/Cedar	Hemlock/Cedar/Birch/Aspen
Balsam/spruce	Spruce/Balsam/Mountain Hemlock	Mountain Hemlock/Balsam
Cedar/hemlock	Spruce/Fir/White pine, or Spruce/Cedar	Hemlock/Cottonwood/Birch/Aspen

The distribution of tree species to be planted will be approximately: spruce 55%, red cedar 20%, Douglas-fir 10%, Western white pine 10%, balsam (subalpine fir) 5%. Natural regeneration of hemlock, subalpine fir and red cedar will continue to complement stocking in plantations. Western larch is currently being planted on a trial basis in the Columbia Forest District. L-P will review the results and participate in trial planting of larch if results seem favourable, and appropriate sites can be identified.

Reports of spruce terminal weevil *(Pissodes strobi)* damaging older spruce plantations suggest that extensive planting of homogeneous stands of spruce should be questioned. Species selection will also need to consider the presence of Armillaria root disease. Where root disease infection has been noted, preference will be given to planting species that are less susceptible. This includes, for example, practices such as planting Western larch (noted above) in mixture with other species, and microsite planting with Douglas fir in order to avoid areas of high risk. Broadleafs, specifically paper birch *(Betula papyifera)* will also be considered. When tree species to be planted deviate from the Nelson region stocking standards, the justification for this will be reviewed with the MOF. It is not intended to undertake wide scale planting of species not covered by the present stocking standards.

Broadleaf species grow extremely well in some site series in the interior cedar/hemlock subzones. The range of site series for which broadleafs are suitable is noted in the stocking standards. Black cottonwood, paper birch and trembling aspen can have an important role as a seral species in and around riparian zones. Other species may

be acceptable in silviculture prescriptions although they may not contribute to free growing density. Retaining or establishing broadleaf species, either as pure species groups or mixed in with conifer regeneration, contributes to maintaining vegetation diversity and wildlife habitat. It is not intended to re-establish cutblocks exclusively with broadleaf species.

Once a cutblock has met its regeneration delay milestone, the subsequent establishment and growth of the young regenerated stand will be monitored over a period of 5 to 15 years by silviculture surveys, until free growing status is reached.

6.4.1.2 Seed Supply

Goal

Maintain a 10 year inventory of ecologically appropriate seed to meet projected seedling requirements for those species not available from the seed orchard program.

Commitment

- Annually determine the seed requirements for reforestation.

Strategies

- Continue to purchase seed orchard seed from the MoF to meet the legal obligation to use the best seed available
- Monitor cone crops annually to determine abundance and seed viability
- Co-ordinate monitoring and collection with MoF and/or other licensees where complimentary programs can be identified
- Ensure cone collections are made in accordance with the Tree Cone and Tree Seed Regulation (BC Reg 284/82).
- Continue to use genetically improved seed for most spruce and Western White pine planting. Continue to make cone collections or seed purchases to ensure appropriate seed availability.
- Ensure that seed species collected is consistent with the annual seed needs and the viability of cone crops of individual species.

The seed supply goal will provide an adequate seed inventory to cover fluctuations in cone crops. Seed year periodicity varies from two to eight years depending on the species. Since 1996 almost all of the spruce seed has been supplied from Class A seed orchard. Douglas-fir seed orchard is expected to be available in about 3-5 years (2003-5), while Western larch seed became available initially in 2000. L-P will not attempt to keep an inventory of seed that duplicates a seed orchard supply. Currently,

monitoring is ongoing for balsam (Abies lasiocarpa), and higher elevation (1150m) Douglas fir.

Table 6.4.1.2-1 summarizes the seed inventory as of June, 2000 for Eagle River Division.

Table 6.4.1.2-1: Seed Inventory

Species	Elevation Range (m)	# Seedlots*	Potential Seedlings (000's)
Fd	600-1050	8	2,163
Cw	675-1100	7	3,081
Pl	650-1400	6	826
Pw	670- 775	2	750
Sx	450-1550	12	19,769
Bl	1400-1500	4	40
Hm	1300-1500	2	511
Ep	550	1	93
Total		**42**	**27,233**

6.4.1.3 Site Preparation

Goal

Ensure that the most ecologically suitable methods of site preparation are used to prepare harvested areas for reforestation or to reduce fire hazard.

Commitment

- Continue to use site preparation methods that are ecologically sound and economically viable to meet silvicultural objectives.

Strategies

- Incorporate a variety of site preparation methods such as spot burning, broadcast burning, mechanical site preparation or chemical treatments.
- Ensure that site preparation treatments consider forage species and other habitat attributes important for wildlife use are retained.
- Ensure that mechanical site preparation treatments comply with site disturbance guidelines prescribed in a silviculture prescription.

- Ensure that slash loading and distribution are properly evaluated when using burning (spot or broadcast) to meet silviculture objectives.
- Ensure that mechanical site preparation is done in accordance with Nelson regional *Site Disturbance Guidelines for Site Preparation.*

As a general practice, there has been a reduction in the use of burning on the licence area both to recruit natural regeneration and so that forage species and other habitat attributes important for wildlife use are retained. Some silviculture prescriptions now require that large woody or organic debris and wildlife trees, singly or in clumps, be retained and that hardwoods be left standing.

Mechanical site preparation creates plantable spots, breaks up woody debris and reduces the fire hazard. It will normally be used on clearcut sites considered sensitive to burning or where weather conditions negate burning. There are few sites on the TFL suitable for mechanical treatment due to slope constraints and sensitive site conditions prevalent in the interior wetbelt.

6.4.1.4 Silviculture Surveys

Goal

Monitor regenerated stands to ensure that the appropriate species and stocking standards are achieved by the free growing stage.

Commitment

- Carryout applicable silviculture surveys to ensure that harvested cutblocks and backlog NSR areas are satisfactory regenerated and reach free growing stage with the regulatory timeframes.

Strategies

- Ensure that the status and survey results for each cutblock are entered into the silviculture record management system to monitor the status and stocking of regeneration as well as progress towards completing basic silviculture obligations.
- Ensure that the attainment of regeneration delay and the fulfilment of freegrowing is reported to the MoF via the Integrated Silviculture Information System (ISIS) database.

Silviculture surveys will be done at various stages of the stand establishment phase. The survey results are also used to plan any additional treatments to ensure that

basic silviculture objectives are achieved. The following silviculture surveys will be undertaken to ensure that regenerated stands reach free-growing status.

Table 6.4.1.3 Silviculture Surveys

Survey	Purpose	Timing	Intensity
Plantability	Assess site prep needs, confirm or modify planting prescription	First season after harvesting	Walk through to estimate plantable spots
Regeneration	Assess natural regen species and stocking. All sites scheduled for natural regen.	At midpoint of regen delay	One plot / ha or > on small blocks
Regen/Survival	Assess survival and regen status of plantations to determine replanting and brushing.	6 months,1 year, 3 years after planting. 5 years	Walk through, modified plots Formal survey
Brushing	Determine brush competition oft pre-identified brush hazard sites.	Scheduled as necessary after regen/survival surveys.	Walkthrough in spring, minimum 5 plots/stratum
Regen Performance Assessment	Preliminary assessment of free growing status at all sites	Three years before early free growing date.	Variable
Free Growing	Determine free growing status.	Between early and late FG dates in SP	Minimum 5 plots/stratum and one plot/3ha.

Free Growing

This is the final survey used to assess free growing status of a cutblock. The dates for the earliest and latest possible free growing survey are given in each silviculture prescription. For TFL 55 this is usually between 9 to 15 years after harvesting. If free-growing standards have been met, the basic silviculture obligations have been completed. If not, further silviculture treatments may be prescribed. The results of free growing surveys will be reported to the MoF within six months of completion. A summary of free growing status will be included in the TFL annual report.

6.4.1.5 Brushing

Goal

Temporarily control the growth of competing woody and herbaceous vegetation to ensure adequate survival and growth of preferred crop trees.

Commitments

- Ensure that brushing methods used comply with with legislative and regulatory requirements.
- Continue to identify cutblocks with potential brush competition prior to harvesting.

Strategies

- Identify potential brush competition in the silviculture prescription.
- Conduct brushing surveys during the first three growing seasons after stand establishment of all potential cutblocks requiring brushing to develop timely brush control treatments.
- Develop strategies to reduce the potential need for brushing by:
    - Identification and monitoring of potential brush problem sites.
    - Immediate site preparation and planting.
    - Planting of large sturdy seedlings.
    - Use of 'time of planting' fertilizer, where appropriate.
- Experiment with vegetation management techniques and timing.
- Ensure brushing treatments near riparian areas are carefully planned.
- Incorporate community values and minimize chemical use when considering chemical herbicides.

The re-growth of hardwoods and woody brush species after harvesting can be considered as part of the natural vegetative diversity that occurs during the re-vegetation phase. The vegetation complexes also serve as preferred habitat and browse for wildlife, particularly bears, deer, moose and birds, and provide shade for fish streams. Shrub species, such as mountain box, red osier dogwood, willow and huckleberry, are important food sources for wildlife. Brush control prescriptions, to the extent possible, will allow for the retention of forage species that do not adversely affect the establishment of the conifer crop.

Brushing treatments commonly used include:

- Manual brushing and girdling
- Mechanical clearing
- Herbicide application by aerial and ground spraying

L-P prefers to use manual or mechanical treatments before selecting a herbicide treatment. However, it is recognized that the judicious use of herbicides has a role in vegetation management and is often the most efficient and effective treatment option. For the most part, herbicide treatment is more likely to be spot brushing within a cutblock, rather than a broadcast application.

6.4.1.6 Forest Renewal Initiative

Goal

Ensure that all backlog NSR area and industry outstanding NSR areas achieve free growing status.

Commitment

- Complete reforestation of remaining NSR backlog areas.

Strategy

- Continue to survey, and treat regenerated backlog areas.

The Forest Renewal Initiative started by Westar Timber Ltd in 1990 is essentially complete; all the outstanding backlog has been surveyed or regenerated by 1999. The current backlog NSR is 135 hectares. Planting in 2000 will reduce this area to 103 hectares. Most of this area is scheduled to be surveyed and reclassified, as wildlife/riparian constraints preclude expensive reforestation treatments that would be required to increase conifer stocking to target levels. Surveys and brushing will continue and diminish over the period of MP 3. Free growing survey results will be reported in the annual report as they are completed.

6.4.2 Enhanced Silviculture

Goals

To enhance second growth stand quality and forest productivity to meet timber harvesting and other forest resource objectives.

Commitment

- Identify potential candidate stands for an enhanced silviculture program.

Strategies

- Secure Enhanced Forestry Program funds that quality under the objectives of Forest Renewal BC.
- Identify candidate stands and develop potential stand tending treatments that can include:
- Spacing of juvenile stands less than 40 years of age to reduce excessive stocking level, improve subsequent growth and increase preferred species composition.
- Pathological pruning of white pine juvenile stands either as an independent treatment or in conjunction with other stand treatments, to minimize losses from white pine blister rust infestation *(Cronartium ribicola)*.
- Pruning of other coniferous species to increase stand value.
- Conifer release of competing deciduous growth to release and improve the growth of the conifer component in juvenile stands.

Enhanced silviculture refers to stand treatments that will shorten rotation age, increase volume harvested and increase quality beyond that achieved through basic silviculture. Stand treatments may include juvenile spacing, pruning, fertilization and tree improvement. These treatments are optional and are not required by the Silviculture Practices Regulation.

Projects will be undertaken subject to funding from Forest Renewal BC. Candidate stand information will be reviewed and updated as required in order to utilize the Enhanced Forestry Program funds in a manner which best meets the objectives of Forest Renewal BC, and follows regional guidance for enhanced forestry priority setting. The focus will be to determine benefits that can be realized at a stand level and that affect the long-term sustained yield positively. The mandate of Forest Renewal BC is also to consider social and employment implications of projects meeting the priority setting criteria based on forest management criteria. When a treatment is proposed for a stand, a stand management prescription will be prepared and submitted to the MOF for approval.

6.4.3 Western White Pine Management

Goal

Establish disease resistant western white pine stands that meet timber production objectives.

Commitment

- Continue the establishment of western white pine stands in the reforestation program for TFL 55.

Strategy

- Evaluate the availability and suitability of the white pine resistant seed from MOF and Canadian Forestry Service for the TFL reforestation program

Western white pine (*Pinus monticola*) is highly valued as a commercial conifer species. Trees regenerated from 'natural stand' seed are susceptible to white pine blister rust (*Cronartium ribicola*), which has limited its use in reforestation. Blister rust 'resistant' seed is currently purchased from Moscow, Idaho, and is being used in the reforestation program for the TFL. The MOF and Canadian Forest Service also have a white pine tree improvement program with 'resistant' trees in their seed orchard now nearing seed bearing age.

6.5 FOREST HEALTH

Status

A variety of insects and pests are found in the forests in the licence area. The incidence and level of endemic activity is higher in old growth stands. Periodic outbreaks have been a concern but, to date, TFL 55 has not suffered major volume losses from outbreaks of pests or disease. Spruce bark beetle attack of spruce stands has been problematic. Hemlock looper was active in the southern section of the Columbia Forest District during 1992-93 as well as in small areas in the Bigmouth River drainage of the TFL. Root disease, in particular Armillaria, is thought to be widespread throughout the Columbia district and is having an influence on operational practices. Douglas fir bark beetle has been noted in isolated areas in the Mica Creek drainage.

In regenerated forests there has been no noticeable increase in pests or disease. White pine blister rust infects western white pine regeneration and is the most notable pathogen. Root collar disease and black army cutworm have periodically caused mortality problems periodically in new plantations. Spruce terminal weevil is a potential problem in spruce plantations. It is recognized that, generally as regenerated stands get older, pest activity could increase.

Goal

Monitor incidence of insects and disease to protect and enhance short and long term forest productivity of the forest resource.

Commitment

- Continue to assess annually the forest health of the TFL and take control action where required.

Strategies

- Ensure that the forest health status is updated annually in the forest development plan and that control measures and activities planned are detailed.
- Continue to monitor forest health conditions in regenerated cutblocks.
- Ensure that forest health issues continue to be incorporated in the planning of harvesting activities.

6.5.1 Detection

Goal

To ensure the early detection of forest pests and disease activity.

Commitment

- Continue with an on-going stand level detection of forest health issues

Strategies

- Reconnaissance for blowdown damage will be made after major windstorms
- Co-operation and consultation with MoF specialist forest health staff. This will ensure pooling of knowledge, exchange of data and technology transfer.
- Conduct an annual assessment of the forest health condition in conjunction with other monitoring activities.
- Close monitoring annually of areas with known disease problems. Use the results to prepare action plans and control treatments.
- Initial reconnaissance of proposed cutblocks will include data collection on present and potential pest activity. The information will be used in preparing silviculture prescriptions and harvesting plans.

- Carry out surveys of infected area for monitoring pest activity or for use in preparing control plans and silviculture prescriptions. Silvicultural surveys will also include collecting information on the forest health status of cutblocks.

6.5.2 Prevention

Goal

To maintain their incidence of forest pests and disease at an endemic level by preventing conditions that favour disease build-up and spread.

Commitment

- Continue forest practices that minimize the impact of forest pests and insects.

Strategies

- Practising biological control techniques when available.
- Reducing inoculum potential through salvage logging and slash disposal.
- Reforestation with a mixture of species ecologically suited to the site.
- Sanitation spacing and density control in managed stands.
- Maintaining knowledge of advances in pest control technology.

6.5.3 Control

Goal

Focus forest health efforts on stand level detection and control actions in the absence of a district-wide forest health plan.

Commitment

- Continue on-going stand level control actions of pest and disease.

Strategies

- Control action plans will be drawn up in response to a build-up or outbreak of pest activity.
- Priority will be given to salvage harvesting or clean-up of blowdown patches since blowdown in mature stands can be the cause of outbreaks of bark beetle infestation or root rot.

- Establish plantations with mixed species rather than with pure spruce since spruce terminal weevil has the potential to become problematic in spruce plantations at lower elevations.
- Delay conifer release until spruce plantations has surpassed the height range considered most susceptible to attack.
- Identify high risk plantations and conduct surveys to monitor infestation levels.

Experience with techniques to control root rots in plantations is limited. Presently the company plants a mixture of species as well as planting more susceptible species further away from potentially infected stumps. L-P will refer to regional Armillaria root disease management guidelines when planning its harvesting and reforestation prescriptions.

6.6 FIRE PROTECTION

Historically the Columbia Forest District and the Upper Columbia region in general, have a high incidence of wildfires. The region experiences a high incidence of lightning associated with significant rainfall resulting in small average fire size.

A review of regional fire reporting system data for the period 1955 to 1977 revealed that of the 417 fires recorded for the period, the 10 largest fires accounted for 97% of the timber volume damaged. The data indicated that L-P would recover approximately 87% of the damaged timber if the fires were to occur in the same locations today. The fire protection program consists of fire prevention, detection and control.

Goal

Minimize the damage from fire in the working forest and to maximize salvage of timber from fire-damaged stands.

Commitment

- Continue the fire protection program to protect the licence area from damage caused by uncontrolled wildfires.

Strategies

- Ensure fire management and prevention measures are in accordance with the Forest Fire Prevention and Suppression Regulation (*BC Regulation 169/95)*

6.6.1 Fire Prevention

Goal

Maintain proper planning and training of employees and contractors to minimize the impact of wildfires.

Commitment

- Continue on-going fire preparedness planning and training program.

Strategies

- Ensure that an updated fire protection pre-organization plan is submitted to the South-East Fire Control Centre in Nelson by April 1 every year. The plan must include:
  - Organization and command of division and contract personnel.
  - Communication network, including the MOF.
  - Location of fire equipment and logistical support.
  - Company personnel weekend contact list.
  - Initial reporting action after being notified of a fire.
- Ensure that protection awareness and preparedness is reflected in all operational activities including planning, harvesting, road construction and silviculture.
- Continue the high standard of fibre recovery to minimize the build-up of woody debris.
- Fall dry, woody snags, unless they have been designated as wildlife trees, to minimize the risks associated with lightening strikes.
- Assess cutblocks for fuel loading and roadside accumulations following harvesting.
- Use prescribed burning as a fuel management tool.
- Ensure that burning is in accordance with the Columbia Forest District smoke management plan.

6.6.2 Fire Detection

Goal

Ensure that all fires are detected and reported with a minimum of delay.

Commitment

- Continue on-going measures for detection of fire.

Strategies

- Monitor the fire weather index and fire danger class (DGR) to track fire hazard conditions during the fire season.
- Conduct operations within danger classes according to regulations.

The MoF makes aerial patrols after heavy lightning storms or when the DGR reaches extreme and advises the company of the status. Forest closure and access restrictions may be applied on the advice of the district manager.

6.6.3 Fire Control

Goal

Develop fire control strategies to minimize the spread of fire.

Commitment

- Continue on-going fire control strategies.

Strategies

- Ensure fire tool caches are properly stocked.
- Ensure contractors carry the tools required by fire regulations.
- Ensure all fire equipment is maintained in good operating condition throughout the fire season.
- Ensure fire control efforts are co-ordinated with the MOF.

Fire warehouses are maintained in Malakwa and Golden, which store an array of pumps, hoses, tools and other fire fighting equipment. Prior to commencement of the fire season, each year the inventory will be checked and replenished, as necessary.

Initial fire attacks are handled by the MoF. At the request of the MoF, the company will assist with either initial attack or the continued fighting of an existing fire. Operational fires are attacked immediately by L-P and its contractors.

7.0 INTEGRATED RESOURCE MANAGEMENT GOALS, COMMITMENTS and STRATEGIES

Goal

Maintain forest ecosystems and biological diversity that ensures harvest sustainability and long term forest productivity while incorporating the values of stakeholders and aboriginal people.

Commitment

- Continue to complete and upgrade resource inventory information for the TFL.

Strategies

- Ensure that strategic and operational planning meet legislative and regulatory requirements
- Consider public and first nations values in strategic and operational planning
- Ensure that planning incorporates the most recent resource inventory information
- Plan woodlands operational activities minimize to impact on other forest resources

7.1 VISUAL/LANDSCAPE

Goal

Incorporate visual management strategies in specific locations of the TFL.

Commitments

- Continue to assess visually sensitive viewscapes in consultation with commercial heli skiing operators.

Strategies

- Design cutblocks visible from the heli-skiing lodges to minimize visual impacts.
- Continue consultation with commercial recreation businesses in the integration of timber harvesting with heli-skiing activities.
- Incorporate the use of forest landscape design computer simulation models into planning.

Most of TFL 55 is not visible from Highway 23. The MAC plan does not make recommendations for scenic area designations within TFL 55. The Goldstream valley and its side drainages continue to be popular for commercial heli-skiing.

7.2 CULTURAL AND HERITAGE

Goal

To identify and protect previously unknown heritage sites through consultation with interested parties including aboriginal people.

Commitment

- Protect sites of cultural and archaeological significance.

Strategy

- Notify the Heritage Conservation Branch, Ministry of Small Business, Tourism and Culture, in Victoria in the event that archaeological or historic sites are discovered.

Heritage values are associated with the activities of the native peoples that used the Upper Columbia area and the early exploration and settlement by Europeans. In the 1880's and 1890's a placer gold mine was operated at French Creek. There was other mining activity around the Groundhog Basin area. These sites are now attracting some local attention for their historic significance.

Sites of cultural and archaeological significance were identified as part of the original recreation inventory. However, it cannot be certain that all sites have been identified. Archaeological and historic sites are protected under the Heritage Conservation Act. The discovery of more unknown historic sites is possible.

7.3 MINERALS

Mining activity is cyclical and has been minimal. Recently placer gold mining has been active again in the French Creek area. There has also been renewed interest in gold mining in the Groundhog Basin area. The company does not receive referrals or information on mineral exploration or active mining from the Ministry of Mines and Energy. It is expected that the MoF will advise L-P on any new exploration, mining plans or proposed new mine road development. Historical mining activity is summarised in Appendix II(f)

7.4 BIOLOGICAL DIVERSITY

Goal

Maintain sustainable forest ecosystems throughout the TFL that will accommodate all native species.

Commitments

- Complete a new timber inventory of TFL as part of a Revelstoke TSA initiative.

Strategies

- Develop total resource plans for operational areas
- Incorporate the principles of the Biodiversity guidebook in operational planning
- Ensure planning and harvesting activities maintain large organic debris, wildlife tree patches (WTP) and snags where safe to do so
- Maintain a variety of silvicultural systems such as clearcutting with reserves
- Ensure planning and harvesting activities respect riparian habitats and maintain water quality
- Incorporate the recommendations of the MAC plan and district manager's FDP guidelines for caribou and wildlife habitat into forest planning
- Maintain diverse species in reforested cutblocks (natural and planted)

In the absence of approved landscape unit objectives L-P will continue to address biodiversity at a stand level through the development of operational plans that provide for wildlife travel corridors, riparian management areas and wildlife trees/patches within cutblocks.

7.5 SOILS

Goal

Minimize the impact of development and operations on forest soils

Commitment

- Complete terrain stability hazard mapping (level D) for operable areas.

Strategies

- Ensure that terrain stability field assessments are carried out for all unstable areas noted in the FDP and unstable areas identified in the field.
- Ensure that road design and construction provide adequate measures to stabilize cut and fill slopes using grass seeding, armouring or other stabilizing measures.
- Ensure operational activities meet the required soil disturbance guidelines.

7.6 WATER

Goals

Maintain water quality and quantity of streams with the TFL.

Commitment

- Minimize the impact of woodlands operational activities on water quality and quantity.

Strategies

- Install drainage structures concurrent with subgrade construction to maintain existing watercourses.
- Ensure techniques such as hay bales, silt fences and other sediment control methods are used in constructing roads where runoff may impact on fish streams.
- Curtail operational activities during periods of heavy precipitation where runoff may impact on streams.
- Ensure road systems in areas of moderate to high likelihood of landslides are properly deactivated
- Ensure culverts are properly installed with catch basins, ditch blocks and armouring of outflows fillslopes to minimize sediment transfer

- Ensure that installation of bridges and culverts that require in-stream construction work have agency approval
- Ensure that the road network is properly maintained
- Consult hydrologists and geotechnical specialists for areas where stream flow and water production may be affected by operational activities

There are no community watersheds or domestic water licence users within the TFL. There are four industrial use water licences adjacent to the TFL. (Appendix IId) Rivers and streams within the TFL at present are not important as domestic water supply sources nor are they popular for recreational fishing. Recreational fishing is concentrated along the Revelstoke Reservoir.

7.7 RECREATION

Goals

Ensure that a range of recreational opportunities is available for public use and enjoyment.

Commitment

- Co-operate with the MoF and commercial operators to enhance recreational opportunities.

Strategies

- Consider recreation values in planning development activities.
- Continue to maintain access to recreational sites and trails.
- Integrate timber harvesting with commercial heli-skiing operations.

The MOF provides and maintains all recreation sites within the TFL and the Revelstoke Forest District. L-P will continue to co-operate with the MoF in providing additional recreation facilities as demand increases.

The recreation opportunity spectrum was been updated for MP 3 to reflect increased in access and to incorporate changes in feature related recreational activities. (Appendix VII.)

Recreation use by local people has remained steady. The use of recreation sites and trails, and self-directed dispersed activities, is expected to increase modestly during the next five years. The most notable recreational use is by the commercial operator, Canadian Mountain Holidays who have lodges. Heli-skiing through the winter and heli-

hiking during the summer have increased substantially in popularity with international tourists. The growth of these activities will be monitored over the next five years. L-P will continue to involve the commercial operator operational planning.

7.8 WILDLIFE HABITAT

Goals

Maintain a range of ecosystems and habitats necessary to sustain a diversity of wildlife.

Commitments

- Incorporate MAC caribou and ungulate winter range habitat guidelines into operational plans.
- Maintain a harvestable level of furbearing mammals.

Strategies

- Continue consultations with MELP and registered trapline holders in preparing harvesting strategies that meet wildlife habitat management objectives
- Incorporate alternative harvesting systems into the protection and maintenance of wildlife management areas
- Ensure that silviculture systems contribute to wildlife management objectives
- Incorporate *Identified Wildlife Management Strategy* associated with endangered, threatened or regionally important species within the TFL.

There is an abundance of wildlife throughout the TFL that range from small rodents and furbearers to big game species. Registered trapline holders continue to be concerned with maintaining sustainable harvest levels of furbearing animals. L-P will continue to consult with trappers during the preparation of forest development plans. A list of registered trapline holders is in Appendix II(c).

Total resource plans will continue to be developed for planned operating areas. This will ensure that blocks are spatially and temporarily distributed with networks of mature timbered areas.

Low elevation areas along the Columbia face and higher elevation areas between Old Camp Creek and Big Fish Creek are part of the provincial core caribou conservation area. Development planning and operations within these areas will follow the MAC guidelines.

7.9 FISH HABITAT

Goal

Ensure that the productive capacity of fish-bearing streams is maintained

Commitment

- Continue to cooperate with agency initiated fish habitat enhancement projects.

Strategies

- Continue to upgrade stream classification and fisheries inventory information in areas planned for development.
- Incorporate alternative harvesting systems to protect and maintain riparian management areas
- Work with MELP to develop harvesting strategies that meet aquatic habitat management objectives
- Apply Riparian Management Area Guidebook strategies where appropriate
- Ensure in-stream timing windows are adhered to during construction of bridges or culverts

MELP and DFO are responsible for managing the fisheries resource. L-P will continue the co-operative working relationship with these agencies during the period of MP 3.

L-P completed the stream classification of main and secondary streams in 1998. Appendix II (e) summarizes the fisheries information collected by the company and provided by MELP for streams in the TFL.

8.0 PUBLIC CONSULTATION

Goal

Ensure that the stakeholders and First Nations have adequate opportunities for input into strategic and operational plans.

Commitment

- Continue ongoing consultation processes.

Strategies

- Maintain existing review and consult process for forest development plans and management plans.
- Maintain contact with community resource groups.
- Prepare long range public involvement plan during MP 3.
- Post signs on project sites funded by Forest Renewal BC.
- Participate in an educational liaison program with other forest companies.

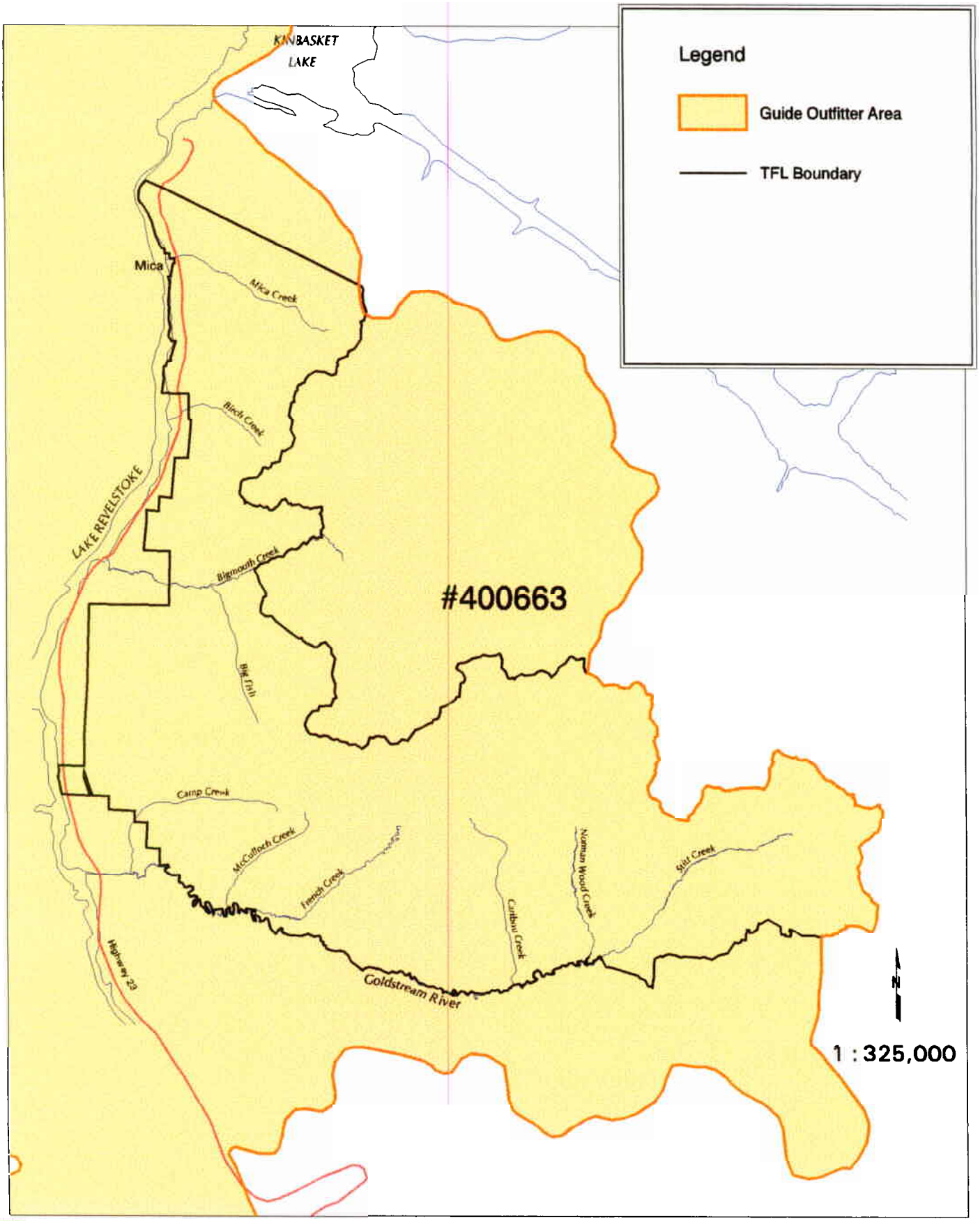
Community interest in the conduct of operational activities on TFL 55 has decreased during the past five years. To a large degree public interest has focussed on issues identified during the MAC planning process, which are applicable throughout the Revelstoke TSA and generally not unique to TFL 55.

L-P recognises the interest from the communities in the issues identified through the MAC and KBLUP planning processes. The company will continue to be open and accessible to the public concerning information on the management of TFL 55 and to hold public planning information meetings when needed.

8.1 LICENCED RESOURCE USERS

Non-timber crown tenure holders within the TFL include a commercial back-country lodge operator, trappers and a guide outfitter. These tenure holders are provided with an opportunity to review and comment on the five year development plan each year.

TFL 55 Guide Outfitter



AML f:\data2\efp\9874\amls\PLT_KEY_GUIDE, 29 Jan 01

8.2 FIRST NATIONS

The Upper Columbia area lies within the traditional lands claimed by the Shuswap Nation. The Ktunaxa/Kinbasket Tribal Council has submitted a comprehensive land claim covering the entire south-east corner of the province. At this point there is no firm timetable for either treaty negotiations or settlement. The MoF has undertaken to keep L-P advised of any progress on land claim talks or aboriginal issues which may affect the licence area.

8.3 REVIEW STRATEGY

A report on the public consultation for MP 3 is in Appendix IX. The public and stakeholders were provided an opportunity to comment on the implementation of MP2, the draft SMOOP and draft MP 3 before approval by the MoF.

Preparation of the next management plan, MP 4, would begin in 2004. At this time, the company intends to follow a similar review strategy and public consultation process as was followed for MP 3.

9.0 EMPLOYMENT AND ECONOMIC OPPORTUNITIES

Goal

Provide stable sustainable economic opportunities for employees, contractors and communities

Commitment

- Maintain economic opportunities

Strategies

- Employ local residents whenever a vacancy arises, provided applicants have the required skill set.
- Employ local forestry consultants except when specialized services are required.
- Provide employment for First Nations.
- Expand minor forest products harvesting program.
- Develop value- added manufacturing strategies for local mills.

9.1 CURRENT EMPLOYMENT

L-P is a major employer in the Revelstoke and Golden region. It is committed to stable employment and community well-being provided by its business activities. Its business provides employment in manufacturing and woodlands operations. L-P operates a sawmill at Malakwa. It is a speciality mill cutting red cedar. L-P has laminated veneer lumber, plywood and veneer plants and an electricity co-generation plant at Golden.

The TFL is an important source of logs for these plants. It supplies about 8% of the log requirements for the Malakwa sawmill. Another 17% is provided indirectly through log trades. About 5% of the logs used in the Golden plant come from the TFL.

New employment opportunities in the company's operations are generated primarily through employee turnover. Presently four first nations people are employed in road construction and logging. A total of 544 people are directly employed by L-P in manufacturing and TFL 55 woodlands operations .

Table 9.1-1: Current Employment

Job Category	Permanent	Contractors/ Consultants
Golden plant	321	2
Malakwa		
Eagle River sawmill	156	2
Construction, logging & hauling	0	36
Forest management	3	5
Silviculture	1	18
Subtotal	160	61
TOTAL	**481**	**63**

9.2 RECOVERY PLAN

Section 56 of the Forest Act requires a 5% Allowable Annual Cut reduction upon consent by the Minister of Forests to the transfer of a major licence to another company. On November 30 1999, TFL 55 was transferred from Evans Forest Products Limited to L-P Engineered Wood Products Ltd. Accordingly the AAC was reduced by 4,416 m^3.

L-P has since applied to the Minister of Forests to recover the 5% AAC as allowed for in Section 56.1 of the Forest Act. The Minister has provided L-P with the government's social and economic objectives, to be included in a job creation plan, for the area affected by the transfer of the licence.

The social and economic objectives to be included in the job creation plan include the following;

1. Enhance local employment and improve community stability.
2. Obtain auditable data from representative timber sales transactions that will support the functioning of a market-based pricing system.
3. Provide for the diversification of the forest-based economy by supporting the maintenance and possible expansion of existing local value-added manufacturing operations.
4. Provide new or enhanced opportunities for small-scale forest operators.
5. Have available significant uncommitted allowable annual cut volumes for use in future treaty negotiations.

The company has since prepared a job creation plan and has submitted it to the Minister of Forests in June 2000.

10.0 RESOURCE INVENTORIES

Resource inventories have been revised and updated by L-P during the past five years. The updating is a result of collating existing information and collecting new information. All resource inventories have been entered in the digital inventory database for use in the timber supply analysis. This section describes the present status of resource inventories. A summary of resource inventories is set out in table 10-1.

a) Timber
The current forest inventory was completed in 1989 to MoF inventory standards at that time. It has been updated for depletion to December 1998.

b) Terrain
Terrain stability hazard mapping (Level D) covering much of the operable, productive landbase was completed in 1998.

c) Environmentally Sensitive Areas
ESA mapping covering the entire TFL was completed in 1989. The ESA classification was to MoF standard inventory standards at that time.

d) Fisheries
Stream classification of main and secondary streams was completed in 1998. Remaining unclassified streams are generally greater than 20% gradient.

e) Wildlife
Complete coverage of caribou habitat and ungulate winter range maps has been provided by the MAC plan.

f) Visual Landscape Management
Since no scenic areas have been designated within the TFL under the MAC plan a visual landscape inventory is not required.

g) Recreation
The existing recreation inventory has been updated to reflect the change in the recreation opportunity spectrum and recreation features during the past five years

h) Cultural/Heritage
No cultural or heritage features have been identified within the TFL at this time. Mapping of archaeological sites was done within the Columbia River basin but many of these sites were later flooded by the creation of the Mica reservoir (Kinbasket Lake.

i) Range
There is no significant range use within TFL 55.

Table 10-1: Status of Resource Inventories

RESOURCE	HAVE?	COVER NAME	SPECIFICATION	DATA SOURCE	DATA FORMAT	COVERAGE%
Anadromous Fish	Yes	FISH_PTS		Mirkwood	A point coverage with attributes, not sure if its anadromous fish info	
Archaeological Overview	No					
Biogeoclimatic Classification	Yes	BIOGEO	Zones, subzones & variants	MoF	digital	100%
Community Watershed	No					
Environmentally Sensitive Area	Yes	in FIP files	MoF standard inventory	MoF	digital	100%
Forest Cover	Yes	FOREST	MoF standard inventory	1998 update by SWG	fip/fc1	100%
Guides / Trappers	Yes	TRAP	MELP		digital	100%
Landscape Units	Yes	MAC_LU		From the Mac coverage	digital	100%
Minerals	Yes		Ministry of Energy & Mines	MINFILE	digital	100%
Operability Classification	Yes	OPER	1:20 scale	Evans / digitally done by SWG	digital	100%
Planning Cells	Yes	PLANCELL	MoF standard inventory	MoF	digital	100%
Recreation Inventory Update	Yes	REC	MoF standard inventory	SWG 1999	digital	100%
Recreation Resource Inventory	Yes	REC	MoF standard inventory	SWG 1999		
Recreation Sites & Trails	No					
Streams	Yes	RIPARIAN	1:20 scale	Evans / digitally done by SWG	digital	100%
Terrain Hazard Classification	Yes	TERRAIN	Level D Terrain Stability Hazard			
TRIM Contours	Yes	CONTOUR	1:20 scale			
Visual Inventory	No					
Wildlife	Yes	MAC	UWR and Caribou	From the Mac coverages	digital	100%

11.0 ANNUAL REPORT

An annual report is prepared detailing the accomplishments for the calendar year. It describes harvesting, road construction, forestry and silviculture, resource assessments, protection, recreation. It also provides details of activities completed by the SBFEP in TFL 55.

Copies of the annual report are distributed to the provincial chief forester, MoF regional manager and Columbia Forest District Manager.

12.0 REVISIONS

During the period of MP 3, situations or events may arise that require a change to this management plan. The company may prepare amendments to the plan on its own initiative. Also, as provided for in section 2.34 of the tree farm licence document, the provincial chief forester may require amendments or revisions due to circumstances that render a management plan inadequate. This may include situations where there is:

- Damage to the timber from natural forces.
- Approval and/or replacement of a land and resource management plan.
- Serious or unforeseen damage to the natural environment.
- A change in AAC or other special circumstances.

13.0 IMPLEMENTATION

MP 3 provides guidance for a forest development plan, other operational plans and related resource projects. It is through these plans that the goals and strategies are delivered. Performance is monitored through the TFL annual report. Quality assurance concerning compliance with the Code is provided through L-P's internal forest practices audit program.

Listing of References

Some of the publications and references used in preparing management plan #3:

Ministry of Forests:

1999 Revelstoke and Area Land Use Planning Final Recommendations, October 1999. Minister's Advisory Committee
1998 Revelstoke Timber Supply Area - Public Discussion Paper, December 1998
1997 Revelstoke Timber Supply Area - Information Report, November 1997
1997 Revelstoke Timber Supply Area - Timber Supply Review (data package), November 1997
1998 Revelstoke Timber Supply Area - Analysis Report, December 1998
1993 Provincial Seedling Stock Type Selection & Ordering Guidelines
1999 TFL55 Inventory Audit (draft), February 1999
1997 TFL55 Inventory Audit & Results: overview, May 1997
1999 Tree Farm Licence No. 55 - Selkirk Tree Farm Licence (schedules A, B, C, & D), January 1999
1995 Site Index Conversion Equations for Mixed Species Stands (G. Nigh)
1998 Site Index Adjustments for Old-growth Stands Based on Veteran Trees in B.C. (G. Nigh)
1998 Site Index Adjustments for Old-growth Stands Based on Paired Plots in B.C. (A. Nussbaum)
1998
1998 Supplement to the Forest Development Plan Guidebook for the Nelson Forest Region and Columbia Forest District. 1999-2003 Forest Development Plan, December 1998
1998 Forest Recreation - Columbia Forest District Recreation map/pamphlet, February 1998
1995 Biodiversity Guidebook - Forest Practices Code of B C
1994 Revelstoke Timber Supply Area - Rationale for AAC determination (effective January 1st. 1995), October 1994

Ministry of Environment, Lands and Parks:

2000 Database of Hunters Harvest and Efforts (1976-1999). Wildlife Branch summary statistics for Management Unit #4-38
2000 Database of Wild Fur Harvest (1985-1999) Wildlife Branch summary statistics for Management Unit #4-38
2000 Guide Outfitters in British Columbia 2000-2001, for Management Unit #4-38, July 2000
2000 Hunting and Trappers Regulations Synopsis for 2000-2001
2000 Database of Water Licences for selected NTS map sheets

2000 Conservation Data Centre - Provincial List Status of CDC Ranks, May 2000
2000 Conservation Data Centre - Ranking the Plant Community Elements, May 2000

Ministry of Energy and Mines

2000 MinFile database for selected NTS map sheets

Others:

2000 Sterling Wood Group Inc.,
Tree Farm Licence 55 - Terms of Reference 20 Year Plan, May 2000
1994 The ARA Consulting Group Inc.,
Revelstoke TSA Socio-Economic Assessment, February 1994
1994 Commission on Resources and Environment,
Kootenay Boundary Land Use Plans, November 1994
1999 R.T. Banting Engineering Ltd.,
Reconnaissance Terrain Stability Report TSIL "D" Norman Wood Unit - TFL 55, January 1999
Reconnaissance Terrain Stability Report TSIL "D" Mica Unit - TFL 55, January 1999
1999 T.B. Geotechnical Ltd.,
Reconnaissance Terrain Stability Report TSIL "D" Camp Creek Unit - TFL55, February 1999
Reconnaissance Terrain Stability Report TSIL "D" French Creek Unit - TFL55, February 1999
1995 Mirkwood Ecological Consultants Ltd.,
TFL55 - Stream Inventory, 1995
1997 TFL55 - 1996 Reconnaissance Level Stream Inventory, June 1997
1999 Evans Forest Products Limited.,
TFL 55 Management Plan 3 Statement of Management Objectives, Options & Procedures, October 1999