

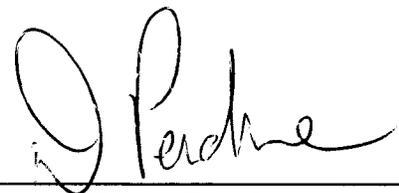
DUNKLEY LUMBER LTD.

**NAVER
TREE FARM LICENCE #53**

MANAGEMENT PLAN #4

(For the period January 1, 2005 - December 31, 2009)

**Submitted by:
DUNKLEY LUMBER LTD.**

A handwritten signature in black ink, appearing to read "D Perdue", written over a horizontal line.

Doug Perdue, R.P.F.,

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1.0 Introduction

1.1 Description of Tree Farm Licence #53

Tree Farm Licence #53 (TFL #53) is an area based forest tenure granted by the Ministry of Forests (MOF) to Dunkley Lumber Ltd (Dunkley). Dunkley is entrusted with the management responsibilities for the area in exchange for the harvesting rights. Given this form of tenure, the benefits of good management of all the forest resources can be realized with the reward of a secure and expanding wood supply for the company.

The TFL is located in the Prince George Forest District south of the community of Hixon and north of Ahbau Creek on the east side of Highway #97. The eastern border of the TFL is located near the features of Ahbau Lake, Lodi Lake, and Stony Lake. Figure 1 (on page 2) presents a general location map of the TFL.

The landscape of the area is characterized by gently rolling plateaus intersected by stream networks, primarily within the Ahbau Creek and Naver Creek watersheds. The land is tree covered from the valley bottom to the top of the hills. Spruce and pine trees are the most common tree species, representing about 80% of the forest cover. Subalpine Fir contributes about 15% of the tree cover. Minor amounts of Douglas fir, aspen, birch and cottonwood make up the remainder of the common tree species found on the TFL land base.

Streams, lakes, beaver ponds, and wetlands make up most of the 6% of the TFL land base not covered by trees. Stream gradients are generally less than 20%. Rainbow trout is the fish species identified most frequently in fish and fish habitat inventory work on the TFL. Ten other fish species were also identified in the inventory work.

Most (84%) of the TFL is located in the Sub Boreal Spruce (SBS) biogeoclimatic zone. Biogeoclimatic zonation is a Provincial level classification that defines ecosystems of similar regional climate. The SBS zone is generally found at elevations below 1200 meters. The climate consists of cool, snowy winters, and warm summers. The remaining portion of the TFL is in the Engelmann Spruce Subalpine Fir (ESSF) biogeoclimatic zone. This zone defines the higher elevation areas on the TFL generally above 1200 meters in elevation. The climate in this zone consists of long, cold winters and short, cool summers.

The biogeoclimatic zones are further subdivided into variants that reflect variations in local climatic conditions. The variants are distinguished based on differences in the plant communities found on similar soil and moisture conditions.

Table #1 TFL #53 Biogeoclimatic Variants

| Biogeoclimatic Variants | | Area (ha) |
|---|----------|------------------|
| Horsefly Dry Warm Sub-Boreal Spruce | SBS dw1 | 2,670 |
| Moist Warm Sub-Boreal Spruce | SBS mw | 17,678 |
| Mossvale Most Cool Sub-Boreal Spruce | SBS mk1 | 26,448 |
| Willow Wet Cool Sub-Boreal Spruce | SBS wk1 | 26,795 |
| Cariboo Wet Cool Engelmann Spruce-Subalpine Fir | ESSF wk1 | 14,076 |
| Cariboo Wet Cold Engelmann Spruce-Subalpine Fir | ESSF wc3 | 25 |
| Total TFL #53 | | 87,693 |

1.2 History and Commitments

1.2.1 Major Area Revisions

There have been no major changes to the boundaries of TFL #53 during the term of MP # 3. Minor changes to land classification used in determining the timber harvesting land base are detailed in the Information Package included as Appendix # 1.

1.2.2 Changes in AAC and Ownership

The lands that now make up TFL #53 have had a relatively long history of activity related to its natural resources. Mining boomed in the late 1800's and again in the 1930's. Logging and milling operations commenced in the 1930's and continue today. The forestry operations have consolidated over time. Small portable bush mills have gradually given way to larger, modern operations capable of supporting the needs of a forest industry that includes sawmilling, pulp and paper production, and value added manufacturing. This has been realized through more efficient utilization of the timber resource.

Dunkley set up operations at Strathnaver in 1951 and has been an active member of the Hixon-Strathnaver community ever since. Since the mid-

1960's, Dunkley's quota position has been insufficient to meet its mill demands. Currently, the allowable annual cut satisfies approximately 30% of the sawmill requirements. It was for these reasons that Dunkley decided in 1978 that a TFL would be the most effective form of tenure to provide a secure timber base. A TFL would also provide a greater incentive to manage the forestlands and increase allowable cut levels, thereby maintain the employment base in the Hixon and Strathnaver area. Dunkley's forest licence was converted into a TFL, and TFL #53 came into existence in 1989.

The TFL is an essential component of the vision at Dunkley to improve the secured wood supply from the current level of 30% to 60% of the logs needed to run the sawmill. This level of security then allows Dunkley to be highly competitive in accessing the remaining log supply on the open market needed to maintain a two-shift operation at the mill. Attainment of this vision will provide long-term security to Dunkley, the employees, and to the local communities. To achieve this, Dunkley has undertaken a mandate to manage the forest resources with commitment and innovation.

During the term of the first management plan (MWP #1): 1989-1994, a forest inventory specific to the TFL was completed and programs were implemented to reforest previously logged areas with the goal of increasing the amount of second growth forest (backlog NSR reforestation). In addition harvesting operations focused on salvaging stands damaged by fire, insects or windthrow (reducing non-recoverable losses). These activities resulted in a modest increase in the allowable annual cut on the TFL.

For Management Plan #2 (MP #2): 1995-1999, strategies were developed and implemented to both maintain the area of productive forestland on the TFL, and to increase the growth of the trees on that land.

In addition to these programs, the Forest Practices Code (FPC), biodiversity guidelines, and riparian management were implemented during MP #2. These initiatives ensure the management of timber and non-timber resources are carried out to a high environmental standard. Again, the positive result of the stewardship of the TFL was realized in a modest increase in the AAC.

During the term of Management Plan # 3 (MP #3): 2000-2004, the successful programs initiated in previous management plan eras were continued and improved upon. A Biodiversity Plan was completed to address stand level, landscape level biodiversity, and wildlife management on the TFL.

It was also during the term of MP #3 that one issue, the mountain pine beetle (MPB) infestation, has increased in magnitude to become the focus of most of the management and planning on the TFL. MPB infestations are natural events, however due to a combination of an abundance of suitable hosts (mature lodgepole pine trees), and favourable climatic conditions, the infestation has grown exponentially throughout the Central Interior of British Columbia.

Dunkley has utilized all possible resources in an effort to control the MPB on the TFL. In spite of the company's best efforts, the beetle infestation has continued to grow on the TFL. In the fall of 2002 the size of the infestation was so large that the AAC of 239,500 m³/yr, established in 2000, was insufficient to enable harvesting of all of the infested trees. Harvesting of currently infested stands is the most proactive approach that is available to control the MPB epidemic.

In order to continue an aggressive control program, Dunkley requested an AAC uplift. This AAC uplift was granted by the Chief Forester in June 2003. The AAC was increased to a level of 500,000 m³/yr until December 2004, when the next regularly scheduled AAC determination is due in conjunction with Management Plan # 4 (MP #4).

As a result of these programs, the harvest level for TFL #53 has increased over the term of the past three management plans:

| MP # | Year | Allowable Annual Cut Level |
|-------------|----------------------|-----------------------------------|
| 1 | 1989 – 1993 | 187,630 m ³ /yr |
| 2 | 1994 – 1999 | 204,700 m ³ /yr |
| 3 | 2000 – May 2003 | 239,500 m ³ /yr |
| 3 | June 2003 – Dec 2004 | 500,000 m ³ /yr |

1.2.3 Dunkley History

Dunkley was established in 1951 at Strathnaver, British Columbia (BC) by the Dunkley family. The extension of the BC Railway past Strathnaver in 1953 enabled Dunkley to improve the manufacturing facilities and concentrate on timber development. During the late 1950's and early 1960's, Dunkley purchased a number of small operations and acquired additional Crown timber positions in the former Naver II and Big Valley I Public Sustained Yield Units (PSYU).

Dunkley redesigned and modernized the sawmill starting in 1964 and was one of the first to take advantage of the Close Utilization policies that were introduced in 1969.

By 1972, Dunkley had converted its Crown timber holdings to Timber Sale Harvesting Licences and the Third Band tenures to Timber Sale Licences. In 1972 Dunkley's total allowable annual cut was 168,160 m³. Additional timber was purchased from private sources to augment the mill requirements.

In June of 1977 the Novak family, through Novak Bros. Contracting Ltd., bought all the shares of Dunkley Lumber Ltd., from the Dunkley family. Ownership has been retained by the Novaks to the present day.

At the time of purchase, Dunkley also embarked on an active program of private timber purchases and a search for timber quota positions. This resulted in the purchase of quota from R. Sindia in the Carp and Parsnip PSYUs in 1980 that increased Dunkley's quota to 183,620 m³.

The apportionment of the allowable cut of the Prince George Timber Supply Area in April 1982 reduced Dunkley's quota to 167,380 m³ per year.

In 1984, Dunkley continued a wide-ranging mill modernization program. The program began with the construction of a new maintenance and machine shop. In 1985, the large wood side was replaced with a highly efficient sawmilling system. During the period 1986 through 1987, a new dry kiln was installed. Lumber and log yard improvements, including blacktopping and equipment acquisitions, were ongoing. Commencing in 1988, improvements were made to the small wood side and the trimmer with the installation of optimizing equipment. A new planer mill complex was opened in 1989 as part of the continuing investment in Dunkley's future.

The constant upgrading of sawmill and planer facilities has continued into the new millennium. Frequent upgrades of equipment are used to take advantage of new technology to improve plant efficiency. The recovery of value-added material through such improvements as an expanded J-bar sorting system, cut-in-two programs, precision end trimming, and trim block retrieval have also been implemented. Dunkley continues to have one of the most modern, efficient and flexible mill complexes in the Interior of BC.

A major expansion was started in 2003 with the addition of a new two-line sawmill. The mill construction was initiated in response to forest policy changes, which are meant to make more logs available for purchase on the open market. The new mill has started production in 2004. Construction has begun on new dry kilns in 2004 and this is expected to be followed by a new planer mill.

1.2.4 Other Relevant Items

Dunkley's TFL #53 Woodlands Operations have attained ISO¹ 14001 Environmental Management System Certification. The Environmental Management System (EMS) is designed to identify environmental risks and provide control mechanisms to minimize the occurrence and damage of environmental impacts. The EMS also sets measurable objectives and targets related to environmental management. The Environmental Policy developed in compliance with the ISO 14001 standards includes commitments to prevent pollution, comply with all applicable laws and regulations, and to continually improve environmental management practices. Independent auditing is used to monitor and ensure that Dunkley meets the ISO 14001 standards.

1.2.5 Commitments Still in Effect

There are no outstanding commitments resulting from the TFL application and award of the licence.

The implementation section of the document *Tree Farm Licence #53 Rationale for Allowable Annual Cut Determination, December 15, 1999* identified five initiatives that the Deputy Chief Forester recommended. These projects are intended to help reduce the risk and uncertainty associated with the key factors that affect timber supply on TFL #53. These factors and the actions taken to address them are as follows:

- ❖ *That the licensee staff obtains better information on the expected forest cover for the backlog NSR areas.*

Action: The backlog NSR areas were surveyed to update their status and forest cover information. They are either stocked, can be treated to increase stocking, are not fully stocked but are best left in their current condition given other resource values, or have been reclassified as non-productive area or non-commercial cover. This information is included in the data to be used for the timber supply analysis carried out in conjunction with MP #4. A separate analysis unit for the backlog NSR polygons will be established. The input variables for the analysis unit will be derived from the area-weighted average of the NSR polygons.

- ❖ *That BCFS staff monitor performance in the residual balsam leading stand partition.*

Action: A partitioned cut of 4,100 m³/yr in balsam residual stands was approved in MP #3. As of December 16, 2002, four years into the cut

¹ ISO is the International Organization for Standardization.

control period, the residual balsam volume harvested was 16,236 m³ or 99% of the balsam cut in the four-year period. This program was suspended in the winter of 2002/2003 due to the escalating MPB infestation on the TFL.

- ❖ *That BCFS staff monitor performance in the deciduous leading stand partition.*

Action: A partitioned cut of 2,000 m³/yr in deciduous leading stands was approved in MP #3. As of December 16, 2002, four years into the cut control period, the deciduous leading block volume harvested was 9,175 m³ or 115% of the partitioned cut level. This program was suspended in the winter of 2002/2003 due to the escalating MPB infestation on the TFL.

- ❖ *That the licensee work with BCFS staff to monitor managed stand yields, in particular with regard to the yields attributed to genetic gain and site productivity estimates as projected in the analysis.*

Action: Dunkley has kept informed on the developments that have been occurring regarding this issue. The approach described in "A results-based system for regulating reforestation obligations" by P.J. Martin, S. Browne-Clayton and E. McWilliams seems to a promising development to address this concern.

The uncertainty with the managed stand yields is one of the cumulative effects of various silviculture interventions. The concern is that the cumulative impact of various treatments such as genetic gain, fertilization, and site productivity estimates may not be additive, or that the effects might not be consistent over age of a stand. Dunkley will continue to investigate methodologies to compare actual yields of managed stands to the predicted yield of the managed stands. Dunkley intends to implement a monitoring program during the term of MP #4.

- ❖ *That the licensee work with BCFS and WLAP staff to prepare a detailed set of objectives and strategies for deciduous management on the TFL.*

Action: The Dunkley Biodiversity Plan (Biodiversity Plan) for TFL #53 contains detailed objectives and strategies to manage for a sustainable seral stage distribution of deciduous leading stands. The forest cover inventory is monitored to compare the deciduous leading stands on the TFL with the targets in the Biodiversity Plan.

The Regional Manager in a letter dated July 2, 2003 requested an update on Dunkley's performance in regards to five additional

commitments/strategies outlined in MP #3. These factors and the actions taken to address them are as follows:

Management Objective 3.6.1.1: Backlog NSR: Please report on the status of the remaining 826 ha of NSR.

There are currently 563 ha of backlog NSR on the TFL, a reduction of 304 ha from that reported in MP #3. The 304 ha can be broken down into an increase of 13 ha in non-productive forest, an increase of 7 ha in non-commercial cover, and an increase of 284 ha into stocked forest land. These changes are a result of treatments to increase stocking on NSR areas and surveys undertaken to update the forest cover inventory.

It is not anticipated that most of the remaining backlog NSR will be treated due to the value of most of this area for other resource values. As a result, it is managed as a separate unit in the timber supply modelling. The analysis unit reflects the existing stocking on these areas. Areas of backlog NSR that are treated in the future will be reflected in inventory updates after treatment has occurred.

Management Objective 3.6.2.1: Plantation Enhancement: Is the Licensee still committed to manual brushing for plantation success? Report available for fertilizer monitoring success? Did the licensee proceed with stand tending activities during MP #3?

Dunkley remains committed to using manual brushing as part of the integrated pest management strategies to control competing vegetation. From January 1, 2000 to December 31, 2003 Dunkley will have completed 448 ha of manual brushing, 412 ha of manual girdling and at least 686 ha of aerial broadcast fertilization.

The fertilization monitoring project has been established with ten paired plots. The initial fertilization treatment occurred in 2000 and the year one post treatment measurement occurred in 2001. The next scheduled activities are a year five post treatment measurement in 2005, followed by a second fertilization application. This information is available upon request.

Management Objective 3.1.5: Small Business Forest Enterprise Program (SBFEP): provide brief comments on your contribution to the small business program and the effectiveness of Appendix 8, Memorandum of Understanding, SBFEP.

A SBFEP contribution summary is included in the Forest Development Plan for TFL #53. The Memorandum of Understanding, SBFEP continues to be a successful mechanism for managing the program on the TFL.

Dunkley supports the continuation of a volume based BCTS contribution on the TFL and the continued implementation of the Memorandum of Understanding to administer the program.

As of December 31, 2002, the period for which the data is available, the required SBFEP contribution on the TFL was 400,680 m³ (14 years @ 28,620 m³/yr). The actual contributions to the program were 482,074 m³. The contributions include volume that has been sold under the SBFEP or that has been accepted as per the Memorandum of Understanding.
Management 3.2.1:

Visual Quality: please discuss your commitment to managing visual resources during MP #3 as described in your strategy.

Managing visual quality in areas with known Visual Quality Objectives is regulated by the Forest Practices Code. Dunkley completes Visual Impact Assessments when planning forest development activities in known scenic areas.

In addition, Dunkley follows the direction given in the Prince George LRMP for scenic areas without visual quality objectives. These scenic areas without VQOs, include visually sensitive areas as seen from the recreation sites on the TFL.

Dunkley completed an update of the Visual Landscape Inventory on TFL #53, which was submitted to the District Manager in December 2002.

Management Objective 3.2.2: Biological Diversity: in view of Dunkley's biodiversity plan submitted in March 2000 and subsequent letters from the district manager and Dunkley on biodiversity issues, please discuss your performance in regards to managing biodiversity during MP #3.

The Biodiversity Plan, includes both landscape level and stand level strategies to manage for the biodiversity. The Biodiversity Plan also includes strategies to manage habitat for the LRMP identified wildlife species.

The stand level strategies have been implemented both in the Forest Development Plan and at the Silviculture Prescription/Site Plan level.

The FDP is an operational plan that outlines proposed road construction and harvesting activities throughout the TFL. It also outlines measures to protect other resource values. The strategies in the Biodiversity Plan are given consideration in designing the measures to protect other resource features. Distance to cover, mature forest retention and coarse woody debris are addressed in the FDP. A summary of retention by

biogeoclimatic sub zone variant, and a distance to cover update has been submitted to the District Manager as part of the ongoing monitoring of these biodiversity characteristics.

Silviculture Prescription/Site Plans detail site-specific management objectives for each harvest block. These plans contain the on-the-ground strategies designed to manage for biodiversity.

At the landscape level, the FDP does not incorporate all of the landscape components of the biodiversity plan. The last TFL FDP was prepared in 2000. Since that time, all of the harvesting amended into the FDP has been in reaction to forest health beetle control and windthrow salvage programs. This reactive process does not enable the full implementation of landscape level strategies contained in the Biodiversity Plan. The reactive harvesting caused by the mountain pine beetle infestation has precluded the full implementation of landscape level planning for characteristics such as patch size, old forest retention and cut block placement.

However, forest health harvest planning does attempt to maintain options to achieve the targets for these characteristics in the future. For example, potential old growth areas are managed using a gap replacement forest health harvesting strategy. This is an attempt to maintain structural old growth characteristics on these areas while at the same time responding to the beetle epidemic.

Dunkley is currently conducting analysis on the potential impact of the mountain pine beetle infestation on landscape level biodiversity characteristics. This analysis will identify mitigation strategies to maintain functional landscape level biodiversity in response to the infestation. Patch size analysis of the stands at risk, and a retention strategy of lower risk stands are key concepts in this strategy.

2.0 Planning

2.1 Higher Level Plans

There are five gazetted recreation sites on the TFL. The objectives for these recreation sites are higher level plans.

Strategy:

The Forest Development Plan/Forest Stewardship Plan will outline actions to deal with any interactions between the recreation sites and forest development activities.

2.2 Other Plans

The Prince George LRMP (March 1999) has been approved by the Minister of Forests, the Minister of Energy and Mines and the Minister of Water, Land and Air Protection. Dunkley supported the development of this strategic plan through active participation as a member at the LRMP table and continues to support its implementation. The TFL was designated as a single Enhanced Resource Management Zone (RMZ) in the LRMP. The management intent for the zone is the development and enhancement of the timber resource consistent with the objectives of the RMZ.

Strategy:

- Some of the LRMP objectives and strategies are addressed by existing legislation, regulation and policy. Operational plans will be consistent with these requirements.
- The LRMP contains objectives and strategies for wildlife such as moose, marten and grizzly bear in the case of the TFL. Management strategies for these species have been addressed in the Dunkley Biodiversity Plan for TFL #53. The Biodiversity Plan includes both landscape and stand level strategies to manage the habitat for the LRMP identified wildlife species. This plan will be updated to reflect the changing conditions brought on by the mountain pine beetle epidemic and to incorporate new research into the management strategies for biodiversity management.
- Dunkley supports the concept of zonation that was brought forth in the LRMP. The company will reiterate the support for this concept in providing comments on new policy and regulations that apply to the forest land base.

- Dunkley has joined as a member of the Community Natural Resources Council that has recently been established in the Prince George Forest District to further landscape level planning.

3.0 Resource Inventories

3.1 Inventory Status

Dunkley has carried out inventories for a wide range of forest resources found on TFL #53. These inventories enable us to plan forest operations that take into consideration the variety of values found on the TFL. Table #2 outlines the inventory status for the various forest resources.

Table #2 Forest Resource Inventory Status

| Forest Resource Inventory | Standard | Date Completed | Date Approved | Proposed Activities |
|---|------------|---------------------------------|----------------------------------|---|
| Forest Cover | MOF(1) | February 1993 | June 1993 | Annual update. |
| Recreation, Rec Sites | MOF-1998 | April 2003 | | None planned |
| Fisheries Ahbau, and Willow watersheds Naver watershed | RIC(2) | November 1998 April 2001 | September 1999 April 2001 | Annual sampling for operational planning |
| Wildlife | RIC | March 1999 | April 2002 | Update management strategies. |
| Terrestrial Mapping Ecosystem | RIC | March 1999 | April 2002 | None planned |
| Visual Landscape | MOF | December 2002 | | Update in final year of MP #4 |
| Range | N/A(3) | N/A | N/A | None planned |
| Cultural Heritage Resources | FRBC | February 2002 | April 2002 | Annual sampling for operational planning |
| Terrain Stability | Level D(4) | July 1995 | - | Refine broad based level IV and V polygons |

- (1) Ministry of Forests (MOF)
- (2) Resource Inventory Committee (RIC)
- (3) Not applicable as no inventory work has been carried out (N/A)
- (4) Air photo interpretation with limited ground samples (Level D)

3.2 Forest Cover Inventory

During 1991-1993 the first forest inventory specific to TFL #53 was carried out. The inventory project resulted in a complete classification of the TFL land base on a TRIM I mapbase. This inventory has been updated on an annual basis for harvesting and silviculture activities. These updates are submitted to the MOF.

The MOF carried out an audit of the inventory in 1997. The audit results indicate that a comparison of volume estimates of inventory polygons is not significantly different from the audit volume estimates for mature stands. The audit also

found that the inventory tended to underestimate the stand height for immature stands. This finding is consistent with the low site index applied in the inventory for many of these stands. The third finding of the audit was that non-forested polygons are not classified to current MOF standards. This does not affect the results of the Timber Supply Analysis and is not a priority for Dunkley to correct.

3.2.1 Annual Update

During the term of MP #4 Dunkley will continue to update the inventory on an annual basis. Dunkley will submit the updated inventory in the MOF's digital format as required by government policy.

3.2.2 Forest Cover Update Projects

Two inventory projects were completed during the term of MP #3. The first project updated the immature inventory to correct the inventory label for specific stands. This was undertaken where silviculture treatments have reduced the deciduous component of a stand or where the indicated site index of a stand had been identified as incorrect.

The second project involved an update of the forest inventory for non-recorded disturbances such as windthrow, fire and beetle damage. This project will provide a quantitative value of Non Recoverable Losses (NRL's) that have occurred on the TFL from the time of the last inventory. The update also identified changes in inventory attributes such as gravel pit development and mining activity that have occurred since the time of the last inventory.

During the term of MP# 4 Dunkley will investigate methods to monitor the productivity of managed stands in comparison to the predicted yields used in growth and yield modelling. This project is intended to improve the certainty around the cumulative effects of managed stand yield factors such as genetically improved seedlings, planting density, fertilization treatments and forest health influences.

3.3 Recreation Inventory

The TFL Recreation Inventory was completed in 2003 to comply with 1998 inventory standards. The inventory is expected to have a relevant usefulness of at least ten years. No additional recreation inventory work is anticipated during the term of MP #4.

3.4 Fisheries Inventory

A reconnaissance Fish and Fish Habitat Inventory has been completed for the Ahbau and Willow Watershed portions of the TFL. A reconnaissance Fish and Fish Habitat Inventory for the Naver Watershed is also complete. These inventories provide strategic planning level information. Dunkley will continue to gather site specific information at an operational level scale to assist in management of the fisheries resource.

3.5 Wildlife Inventory/Terrestrial Ecosystem Mapping

The Terrestrial Ecosystem Mapping project on the TFL contains a wildlife component. This information has been utilized in developing strategies to manage wildlife, rare species and to meet the Prince George Land And Resource Management Plan objectives as they apply to the TFL. These strategies are contained in the *Dunkley Biodiversity Plan for TFL #53*.

3.6 Visual Landscape Inventory

The Visual Landscape Inventory was revised in December 2002. This inventory will be updated during the later stages of MP #4 to reflect minor changes that have occurred since the last inventory.

3.7 Sensitive Soils

The Environmentally Sensitive Area - Soils (ESA's) Inventory was completed as part of the 1993 forest inventory project. A Level D Terrain Stability Assessment was completed on the TFL in 1995. The terrain stability inventory has succeeded the ESA inventory for use in operational planning. No further activity is planned to update the ESA inventory.

Detailed terrain stability field assessments conducted for operational planning indicate that some areas of potential instability are smaller than the Level D inventory indicates. There are also areas that have been identified during operational planning that may be more sensitive than the Level D inventory indicates. The terrain stability inventory will be updated during the term of MP #4 to refine sensitive polygons.

3.8 Range

Range is a very minor component of TFL activity and is not actively managed. No range inventory projects are planned during MP #4.

3.9 Cultural Heritage Resources

Archaeological impact assessments are conducted on high potential areas identified by an Archaeological Overview Assessment (AOA) provided by the Prince George Forest District.

4.0 Management Objectives

Dunkley has developed a set of objectives to provide focus for activities and planning on the TFL. These objectives provide the overall direction in the management of TFL #53.

Overall Objectives

- To maintain Dunkley as a viable entity capable of providing a secure source of employment and economic benefits to local communities.
- To manage the forest lands as a "working forest" where the primary resource activity is timber harvesting and where forest management practices are aimed at the provision of a continuous and expanding timber supply within the framework of integrated multi-resource planning.
- To conduct management practices and to develop new procedures, which will maintain and enhance the productivity of the forest land base through which increases in the allowable annual cut will be achieved.
- To integrate the use of TFL forests for timber, range, recreation, fish and wildlife and other user groups.
- To conduct operations in an environmentally sound manner.

4.1 Management and Utilization of the Timber Resource

4.1.1 Harvest Method

Objective:

Dunkley's objective is to ensure that harvest methods are prescribed on a site-specific basis and that operations are conducted so as to minimize soil disturbance, soil compaction and other environmental concerns.

Discussion:

Planning, scheduling, logging systems, and monitoring are all important components in meeting this objective. Conventional ground based harvesting, overhead cable systems and helicopter yarding are all utilized in the harvest program. Specific details regarding harvesting systems to be employed will be determined on a site-specific basis.

Strategy:

Harvest planning will incorporate site-specific information such as soil types, slope, soil moisture, and the desired state of the post harvest area

in terms of tree retention. These factors will be considered when determining the harvest method on a site-specific basis.

The designation of summer and winter harvesting will be determined in consideration of environmental factors, specialized harvesting equipment abilities, and other site-specific criteria.

Logging methods will continue to be prescribed on a site-specific basis and carried out so as to minimize soil disturbance, soil compaction and other environmental concerns.

Dunkley will continue to use and develop innovative harvesting systems.

Logging methods will be planned on a site-specific basis to minimize soil disturbance, soil compaction and other environmental concerns.

Information and training will be provided to our logging contractors to keep them up to date on efficient and effective equipment and methods of logging in an environmentally sound manner.

Training and monitoring activities will continue to be used to ensure operations are conducted with the intent of minimizing soil disturbance.

4.1.2 Utilization Standards

Objective:

Harvesting will be conducted to the felling, bucking, and utilization specifications as defined in Section 4.00 and Schedule C of the TFL #53 licence document.

4.1.3 Allowable Annual Cut Partitions

4.1.3.1 Balsam Intermediate Utilization (IU)

Objective:

Dunkley's objective is to continue to rehabilitate low volume residual balsam stands.

Discussion:

The total area of Balsam IU stands requiring rehabilitation originally identified was 1,819 ha.

A partitioned cut of 4,100 m³/year for Balsam IU stands was established for the term of MP #3. As of December 16, 2002 16,236 m³ of Balsam IU stand volume has been harvested under this partition, on 115 ha.

During the term of MP #2, Dunkley treated 152 ha of Balsam IU stands. This leaves 1,552 ha of balsam IU to be treated.

In December 2002 the Balsam IU harvesting was suspended due to the increase in mountain pine beetle harvesting on the TFL. The size profile of Balsam IU and MPB salvage is similar, and the MPB program is a priority.

The Balsam IU program will be re-instated when the MPB epidemic subsides.

Strategy:

To schedule Balsam IU blocks in the later half of the twenty-year plan to reflect the short-term emphasis on MPB harvesting as a priority.

4.1.3.2 Deciduous Stands

Objective:

To improve Dunkley's deciduous fibre supply.

Discussion:

A partitioned cut of 2,000 m³/yr in deciduous leading stands was approved in MP # 3. As of December 16, 2002, four years into the cut control period, the deciduous leading block volume harvested was 9,175m³ of cut. This program was suspended in the winter of 2002/2003 due to the escalating MPB infestation on the TFL.

The gross area of deciduous leading stands on the TFL totals 3,188.3 ha. Of this, there are approximately 1,100 ha of deciduous leading stands older than 40 years that have more than 20% of the volume in coniferous trees. Many of these stands would eventually convert to leading conifer stands as natural succession takes place, as shown by our Permanent Sample Plot (PSP) data. The aspen would die out to be replaced by the longer-lived conifers.

The deciduous harvest will be re-instated when the MPB epidemic subsides.

Strategy:

To schedule deciduous blocks in the later half of the twenty-year plan to reflect the short-term emphasis on MPB harvesting as a priority.

4.1.4 Proposed Allowable Annual Cut

Objective:

The short term AAC objective is to ensure the allowable annual cut level is sufficient to enable Dunkley to deal with the current and forecast level of mountain pine beetle infestation. Dunkley's long-term objective is to increase the allowable annual cut to supply at least 60% of the mill capacity.

Discussion:

The mountain pine beetle epidemic in the Central Interior of British Columbia has increased in magnitude to the point where it is the single overwhelming factor in AAC determinations. This is also the case on TFL #53. The mountain pine beetle epidemic has spread onto the TFL and current indications see the epidemic continuing to expand exponentially over the next few years.

In 2002 the infestation had reached levels on the TFL that rendered the AAC set in 1999, insufficient to manage the situation. In order for Dunkley to have the tools necessary to deal with the current and forecast level of infestation, a timber supply analysis focusing solely on the implications and management options to address the mountain pine beetle (MPB) was carried out in the winter of 2002/2003. As a result of this analysis the AAC was increased to 500,000 m³/year. This AAC increase is an interim measure until the regularly scheduled full timber supply analysis can be completed by December 2004.

In September of 2004 the level of infestation has again rendered, even the elevated AAC of 500,000 m³/year, insufficient to address the extent of MPB on the TFL. At this time, MPB harvesting has moved beyond a control effort and into a salvage mode. Dunkley is concerned that the AAC set for MP #4 be set high enough to allow for timely salvage of the infested beetle stands on the TFL without leaving the company in an overcut situation at the end of the cut control period.

In anticipation of the need for an increased harvest level, Dunkley modelled on AAC of 800,000 m³/year for the TSA process and in the Twenty Year Plan prepared in support of the TSA. This harvest level was

analyzed in the context of meeting biodiversity requirements and other non-timber objectives on the TFL, while at the same time salvaging damaged stands and returning the landbase into productive forests.

At this time, the level of infestation is such that Dunkley is proposing the AAC be set at 800,000 m³/year for the next cut control period. This will address Dunkley's concerns regarding a sufficient AAC to enable timely salvage of infested stands without producing a severe overcut situation.

Without an increase in AAC, the rate at which timber is either lost or is unsuitable for the manufacture of lumber will increase. The elevated AAC would remain in effect until the MPB epidemic is brought under control by a cold weather event, and the salvage of damaged stands is complete or until additional salvage harvesting is no longer feasible due to environmental or economic constraints.

The long term AAC objective is a critical objective in order to maintain Dunkley as a viable entity, capable of providing a secure source of employment and economic benefits to the local communities. The 60% figure allows Dunkley to secure one shift, and be highly competitive in accessing the remaining wood for the second shift. From this base, Dunkley would also be able to continue to be an aggressive purchaser of logs from the BCTS Program in the future.

In order to achieve the long term goal Dunkley has developed programs that incorporate two major strategies:

1. To maintain the productive forest land base
2. To maximize fibre production (tree growth and full site occupancy)

To maintain the productive forestland base, methods to minimize soil disturbance such as the conversion of ground based logging to roadside harvesting and an expansion of the cable and helicopter-logging systems has taken place. An expansive road rehabilitation program has been implemented to maintain the productive land base on the TFL.

Fibre production is maximized by high density planting targeting 1,800-2,000 sph and a one-year regeneration delay to promote full site occupancy. Large stock types, genetically improved seed and mixed plantations, using pine where ecologically appropriate, favour good survival and growth of plantations. Follow up treatments to maintain the growth potential of a site in future crop trees are used to promote full site occupancy.

4.1.5 British Columbia Timber Sale Program

The BCTS Program and its predecessor, the Small Business Forest Enterprise Program has operated within TFL #53 since the inception of the program. The MOF and Dunkley have worked in concert in developing a continuous five-year plan for this program.

During the term of MP #4 the BCTS program will continue to be administered as per the "Memorandum of Understanding for the Administration of the BCTS Program" (Appendix 6).

Dunkley will ensure that the BCTS receives the same harvest profile and similar logging chance as Dunkley. The Forest Development Plan will continue to provide estimates of the total species profile, and similar logging chance applicable to both Dunkley and the BCTS program.

4.2 Protection and Conservation of Non-Timber Values

4.2.1 Visual Quality

Objective:

The objective for visual management on the TFL is to plan and conduct forest operations to meet the Visual Quality Objectives (VQO's) as determined by the District Manager for known scenic areas and to minimize adverse visual impact through proper visual design in known scenic areas without established VQO's.

Discussion:

As required by legislation, a visual impact assessment will be carried out when proposing to harvest timber or construct/modify roads, or when proposing visually modifying operations in known scenic areas with established VQO's. Visual simulations will be carried out when proposing to harvest timber or construct/modify roads, or when proposing visually modifying operations in known scenic areas without established VQO's, as required by the District Manager.

In December 2002, Dunkley completed an update to the Visual Landscape Inventory to identify visual areas on the TFL from viewpoints along Highway 97 and from the recreation sites on the TFL. The inventory update was submitted to the District Manager upon completion of the inventory. Changes to the known scenic areas have not yet been made in response to the inventory update.

Strategy:

During the term of MP #4 Dunkley will continue discussions with the District on how to manage the visual resources within the context of integrated resource management.

4.2.2 Biological Diversity

Objective:

Dunkley's objective is to manage and conserve biological diversity on TFL #53. Dunkley will strive to meet results for landscape objectives made known by government as part of the Forest Stewardship Plan process.

Discussion:

Dunkley will strive to comply with the Provincial Legislation to manage and conserve biological diversity. District policy and guidebooks also provide direction on the management of biological diversity.

While Dunkley supports the intent of the policy and guidebooks, we have concerns that the prescribed methodologies at times does not reflect the local conditions on the TFL and, as a result, may not be the best way to meet the biological diversity objective. To address this concern Dunkley produced the Dunkley Lumber Ltd., Biodiversity Plan for TFL #53. The Biodiversity Plan outlines strategies and methodologies for maintaining biodiversity on TFL #53.

The Biodiversity Plan takes direction from the Prince George Land Resource Management Plan (LRMP; Province of BC 1997), the Landscape Unit Planning Guide (LUPG; Province of BC 1999), the Biodiversity Guidebook (BGB; Province of BC 1995) and the Identified Wildlife Management Strategy (IWMS).

The Biodiversity Plan uses a two level approach. A coarse filter level addresses representative habitats using both landscape level and stand level objectives to maintain ecosystem viability. A fine filter process identifies species at risk, assesses the adequacy of LRMP and BGB guidelines to protect those species, and developed species-specific management strategies. The strategies were developed in the context of the LRMP designation of the TFL as an enhanced resource management zone with a stated management intent of development and enhancement of the timber resource consistent with the objectives of the RMZ. The LRMP objectives stated for the TFL that are addressed in the biodiversity plan include:

- Management of grizzly bear habitat to provide an opportunity for population levels to be maintained,
- Management of marten habitat to provide an opportunity for population levels to be maintained,
- Management of moose habitat to provide an opportunity for population levels to be maintained, and,
- maintenance of the Douglas-fir component in managed stands.

In addition to the TFL specific objectives, the Biodiversity Plan addressed general management objectives from the LRMP as follows:

- Manage for biodiversity by maintaining a pattern of mature and old growth forest at the landscape level,
- maintain structural forest attributes on harvest blocks and,
- maintain rare and uncommon habitats, plants and/or animal species.

The MPB outbreak has made it difficult to provide certainty in the long range planning required to implement some of the characteristics of biodiversity management. Harvesting in response to the MPB outbreak is largely reactive to the beetle infestations. Planning for features such as old growth management areas and patch size distribution is difficult to implement in this reactive process.

Strategy:

Revise the landscape level components of the Biodiversity Plan to reflect the changes that are occurring as a result of the MPB outbreak.

Develop strategies to maintain structural features of potential old growth management areas with respect to beetle management activities.

Revise the Biodiversity Plan to address the management objectives anticipated with the enabling of Forest Stewardship Plans.

4.2.2.1 Deciduous Leading Stands

Objective:

To maintain deciduous leading stands on the TFL over time.

Discussion:

Deciduous leading stands contribute to biodiversity and are a component of the variety of habitat types found on the TFL.

The amount of deciduous leading stands by 20-year age class ranges between 190 and 410 ha in stands up to 100 years old. The exception to this is 1,520 ha of 61 to 80 year old fire-origin deciduous stands. Deciduous leading stands older than 100 years are rare as natural succession leads to an increasing conifer component of the stands.

The majority (80%) of deciduous leading stands occur in patches less than 10 ha in size. 15% occur in patches 10.1 to 20.0 ha in size and 5% in patches greater than 20.1 ha. Most of the deciduous stands occur in the western third of the TFL.

The current amount and patch size characteristics of the deciduous leading stands have been considered when deriving the strategies for managing these stands on the TFL. The deciduous management strategies are detailed in the Biodiversity Plan. The strategies are designed to maintain a sustainable seral stage distribution of deciduous leading stands throughout the TFL, while at the same time allowing harvesting in a portion of the deciduous leading stands.

Strategy:

To maintain 150-200 ha of deciduous leading stands by 20-year age class on the TFL, up to age 80.

Harvest priority should be in age class 5 stands.

To mimic the existing patch size distribution of deciduous leading stands over time.

To distribute the new deciduous leading stands throughout the TFL.

Leave deciduous trees as wildlife trees in a combination of stub trees and green trees.

During manual brushing leave up to 40 stems per hectare of deciduous for future mature recruitment.

Monitor deciduous leading retention every five years to assess performance in meeting the retention targets.

4.2.3 Soils

Objective:

Dunkley's objective is to protect soils and soil fertility by minimizing activities that cause soil degradation and by rehabilitating damaged sites.

Discussion:

Maintaining soil productivity is a key factor in producing successive high yield forest crops. Maintaining the productive forest land base will enable us to increase the harvest level on the TFL over time. In order to meet our soil conservation objective we have implemented programs to prevent detrimental soil disturbance. This had led to a shift to roadside harvesting systems to reduce the area disturbed to process and truck logs. The elimination of broadcast burning has reduced disturbance from fireguard construction. Site preparation activity is carried out in such a manner that leaves the forest floor intact, to preserve the nutrient bank and organic matter for the forest soils.

Where temporary access structures such as roads and trails are required, Dunkley has implemented soil rehabilitation programs to restore forest productivity on these sites. In addition to the environmental benefits, this program will increase the long term growing stock on the TFL.

Strategy:

The management of the soil resource on TFL #53 is provided through the following strategies:

Terrain Stability Mapping has been completed for the TFL. This work identifies "potentially unstable" (Class IV) and "unstable terrain" (Class V) on the TFL. When considering harvesting or road building activities on Class IV or V terrain, a detailed terrain stability assessment is carried out by a qualified consultant to assess if logging can take place and to prescribe harvesting and road construction methods required to minimize the risk of soil degradation. Dunkley ensures that these prescriptions are implemented.

Sensitive sites are addressed both in the planning and Silviculture Prescription/Site Plan process to ensure that logging equipment and season of operation is compatible to the site and soil conditions (i.e., winter versus summer, cable versus conventional).

Soil disturbance surveys are conducted both after harvesting and silviculture operations to monitor soil disturbance and to provide feedback to our contractors.

Appropriate equipment is used on sensitive soil types to minimize equipment disturbance.

Soil exposed during road and trail construction or deactivation is grass seeded to minimize the risk of soil erosion.

Roadside logging systems have been implemented to reduce losses to the net productive forestland base.

Dunkley has fully implemented rehabilitation of temporary roads and skid trails on the TFL. This strategy is designed to restore productive forest growth on these areas.

Contractor training is conducted to relay the importance of soil protection measures.

Monitoring of harvesting and silviculture activities are conducted to provide feedback on disturbance levels.

4.2.4 Water

Objective:

Dunkley's objective is to protect the quality and quantity of ground and surface water.

Discussion:

The water resource and the associated fisheries values will continue to be a major focus during the term of MP #4. The watersheds in the TFL have been studied using the Interior Watershed Assessment Procedures (IWAP) to determine the health of the watersheds. An Interior Watershed Restoration Plan has also been completed to direct water quality management on the TFL. These studies help to plan forest management activities such as harvest scheduling and watershed restoration projects to maintain water quality and fish habitat on the TFL.

Planning for water quality is also assisted by Terrain Stability mapping that Dunkley has completed for the TFL. This mapping identifies, in part, potentially unstable and unstable areas. These areas are generally associated with the steep valley slopes on a few of the streams on the

TFL. Detailed assessments are completed on these areas to ensure any planned operations are conducted with minimal risk to the environment.

Site specific planning for water quality takes place at the Site Plan level. Provincial legislation outlines measures to protect streams, wetlands and lakes through riparian management areas surrounding these features. Dunkley incorporates these areas into plans to manage and conserve water quality.

Road construction, maintenance and deactivation activities are also a key factor related to water quality. Dunkley has implemented a road deactivation program to ensure roads ren in an environmentally stable condition. Sediment control measures and erosion control plans are conducted during construction and deactivation activities, and during work in and around streams to protect water quality. Grass seeding of exposed soil is carried out to minimize soil erosion.

Road maintenance and monitoring activities are used to ensure drainage structures and water flow function as intended.

Strategy:

During the term of MP #4, Dunkley will protect water quality when undertaking forestry operations by implementing the following:

Level A Terrain Stability Assessments will be completed when considering road building or cut block design activities in the potentially unstable or unstable areas.

Site-specific erosion control plans will be formulated for all major culverts, bridges, and road construction as well as deactivation or other engineered works on high terrain hazard areas ("unstable" or "potentially unstable").

Contractors will be trained in the requirements of the Forest Legislation as it relates to stream, wetland and lake management. Activities will be monitored to ensure plans and prescriptions are adhered to.

Timely and effective road deactivation works will be carried out.

Adequate buffer zones will be used to ensure that the integrity of pesticide free zones are maintained during herbicide applications.

4.2.5 Recreation Resources

Objective:

Dunkley's objective is to manage the TFL recreation resources within the framework of developing and enhancing the timber resource.

Discussion:

In 1997 Dunkley completed a Recreation Use Survey on TFL #53. The survey identified that fishing and camping are the most popular recreation activities. There are five gazetted recreation sites on the TFL.

Maintenance of the recreation sites and the road access to the sites were identified in the survey as the area most needing improvement. Dunkley will maintain roads on which we are conducting operations. This often includes the majority of the main roads accessing the recreation sites. maintenance of the recreation sites and the minor access roads to these sites is the responsibility of the MOF.

Strategy:

To maintain the road network on which we are conducting operations to provide recreation access.

4.2.6 Cultural Heritage Resources

Objective:

To maintain the cultural heritage resources on TFL #53.

Discussion:

Cultural heritage values will be managed according to the protocol agreement on the Management of Cultural Heritage Resources dated July 15, 1994 between the MOF and the Ministry of Small Business, Tourism and Culture (MSBTC) and as directed by the FPC.

Strategy:

Dunkley will conduct Archaeological Impact Assessments where required by the District Manager of the Prince George Forest District.

The site-specific strategies to manage cultural features as recommended in archaeological impact assessments will be incorporated into site plans.

4.2.7 Range Land

Objective:

It is Dunkley's objective to not adversely impact range values at their present level of use (272 Animal Unit Months), while allowing for expansion should the need be identified.

Discussion:

Range is and will likely continue to be a minor component of the TFL resources.

Strategy:

It is Dunkley's intent to identify any potential interaction between planned forestry activities and the range tenures at the Forest Development Plan stage. Where the forestry activities could adversely impact range values, Dunkley will work with the range tenure holder in an attempt to find a solution to ameliorate the impact.

4.2.8 Fish and Wildlife Habitat

Objective:

It is Dunkley's objective to conserve and enhance the fisheries and wildlife resources and associated habitats. We strive to plan and manage the land so as to reduce conflicts between wildlife and resource development activities.

Discussion:

The TFL specific biodiversity plan contains a wildlife habitat component. The plan details management strategies to manage for wildlife. The species selected include those identified in the Prince George Land and Resource Management Plan. Fish habitat will be managed on a watershed basis.

Strategy:

In general, the requirements for biodiversity contained in the FPC contain provisions that will manage and conserve fish and wildlife habitat.

Dunkley will implement the strategies from the TFL Biodiversity Plan to manage for the species identified in the LRMP.

4.3 Integration of Harvesting Activities with Non-Timber Uses

Objective:

Dunkley will integrate the timber, range, recreation, fish, wildlife, mining, and other uses of the TFL forests through ongoing integrated resource management planning processes.

4.3.1 Trappers and Guide Outfitters

Discussion:

Dunkley maintains regular contact with registered trappers and guide outfitters who operate within the TFL. Dunkley invites these licensed users to provide input into this Management Plan and also encourages their input into the Forest Development Plan, the Access Management Plan, and Pesticide Use Permits. The intent of these referrals is to identify potential interaction between forestry activities and the activities of the trappers and guides. Most of the concerns identified by the trappers and guides relate to access management.

Strategy:

To continue regular communications to maintain a good relationship with the registered trappers and guide outfitters.

4.3.2 Range Tenure Holders

Discussion:

Dunkley has invited the range tenure holders to provide input into the Management Plan and encourages their input into the Forest Development Plan.

Strategy:

To deal with site specific range issues through the Forest Development Plan referral process.

4.3.3 Mining

Discussion:

Mining activities have been and continue to be active in portions of the TFL. Most of the mining activities involve placer technology and are generally smaller operations.

Dunkley has an excellent relationship with the mining community. We regularly provide companies with resource materials such as maps and aerial photographs. In return, Dunkley is kept informed of mining activities, which may impact our planning or operational activities. Dunkley will continue to foster the relationship we have with the mining community.

Strategy:

To continue to foster a good relationship with the mining community through sharing of information regarding each other's operations.

4.3.4 Aboriginal People

Discussion:

The TFL is located within the statement of intent area of the Lheidli T'enneh Band for treaty negotiations. The Red Bluff Indian Band also identifies the southern portion of the TFL as within their traditional use area. In addition to the consultation activities carried out by the MOF, Dunkley refers the Forest Development Plan and information on other planned activities to native groups to enquire if proposed activities conflict with traditional practices or cultural features.

Strategy:

To assist the Crown in their fiduciary responsibility to consult with the First Nations by referring plans and permits to first nations bands that may have traditional interests in the TFL area.

4.3.5 Hixon Community Association

Discussion:

Dunkley's operations, both woods and mill, have been part of the Hixon Community since 1951. While other companies have shut mills and moved operations, a very close relationship has developed between

Dunkley and the community. We are the only major employer in this community and almost half of our work force lives in Hixon and surrounding area. The remaining employees reside either in Quesnel or Prince George. This unique situation makes us a corporate citizen in all three communities.

Strategy:

To maintain a regular exchange of information with the Hixon Community through avenues such as the Hixon Community Association meetings.

4.4 Forest Fire

4.4.1 Fire Prevention

Objective:

It is Dunkley's objective to conduct its operations in accordance with MOF Policy and Regulations.

Discussion:

The responsibility for the prevention and control of wild fires and the initiation of prescribed burns are embodied in the MOF's fire policy and regulations. Dunkley will conduct its operations in accordance with MOF Policy and Regulations.

Strategy:

Dunkley will maintain appropriate fire equipment at the mill site. All contract crews and Dunkley crews will maintain prescribed fire equipment at the location of their operations. Dunkley will carry out periodic inspections of operations, both Company and contractor, to audit compliance with the Forest Fire Prevention and Suppression Regulation.

Public access to hazardous areas, or the entire TFL area, may be controlled during periods of extreme fire danger at the direction of the MOF.

A Fire Pre-Organization Plan will be prepared annually and will be submitted to the MOF Fire Centre in Prince George prior to the commencement of industrial operations on the TFL each year. The Plan will include a duty roster and a list of available equipment. Prior to fire season, all fire tools, equipment, and pumps will be inspected.

A program of fire weather index calculations has been implemented. Weather stations will be maintained to provide data for fire weather index calculations.

4.4.1.1 Fire Suppression

Objective:

The objective of suppression will be to work in conjunction with the MOF to ensure fast initial action and to control any fires by 10:00 a.m. of the day following detection.

Discussion:

Wildfires on the TFL tend to be small, occur infrequently, and result mostly from lightning strikes. Dunkley frequently undertakes patrol activities in periods of high and extreme fire hazard to reduce the risk of an undetected fire. Staff and contractors also respond to and undertake control and mop-up activities of fires on the TFL when assistance is requested by the MOF.

Strategy:

Dunkley forestry staff and contractor employees will continue training to ensure that there are trained fire fighters available to respond to a wildfire.

4.4.2 Prescribed Fire

Objective:

To carry out prescribed burning activities in accordance with an approved burning plan and burning permit as required.

Discussion:

Prescribed fire activities foreseen during the term of MP #4 are expected to be restricted to hazard reduction activities such as roadside debris and site preparation slash pile burning.

Strategy:

To be familiar with prescribed burning regulations and requirements and to conduct operations accordingly.

4.4.3 Fuel Management

Objective:

To reduce the fire hazard resulting from forestry operations.

Discussion:

Fuel hazard and risk assessments and hazard/risk reduction activities will be carried out as required by the FPC. Fuel management activities will be carried out in a timely manner as required.

Strategy:

To carry out fire hazard reduction activities, when assessments indicate the need, on recently harvested areas.

To conduct hazard reduction activities along public access corridors when silviculture activities such as spacing create a fire hazard.

4.5 Forest Health

Objective:

The objective of the forest health program is to minimize endemic losses to forest stands through preventative measures and to minimize non-recoverable losses of the timber inventory.

Discussion:

The forest health program on the TFL can be divided into two components:

- 1) those designed to maintain the mature forest stands, and
- 2) those that are designed to optimize growth of the second growth forests by reducing losses to insects, disease and abiotic factors.

4.5.1 Disease Management

Strategy:

Disease management strategies are directed primarily at the second growth stands on the TFL.

The risk of unacceptable long-term losses is reduced by the silviculture strategies of mixed species planting at densities of 1,800-2,000 sph. Mixed species planting reduces the chance that all the trees in the stand

are equally susceptible to disease organisms. The higher density plantation reduces the consequences of individual tree losses within the plantation.

Manual brushing programs are used in part to reduce the incidence of infested trees within young stands. By removing infested trees the inoculation source of diseases such as rusts and cankers can be reduced.

4.5.2 Pest Management

Discussion:

Spruce bark beetle and mountain pine beetles are serious threats to the mature timber stands in the TFL area. At the present time spruce bark beetle populations are at endemic levels. Mountain pine beetle populations have reached epidemic levels in the forests in and surrounding the TFL and are a major concern. Where infestations occur on the TFL, single tree or patch logging may be applied in combination with trap trees and/or baits to control the problem. Where more serious outbreaks occur, harvest scheduling will be adjusted to control the pest damage and spread.

The importance of the following strategies to the continued success of Dunkley's TFL management is paramount. The results of the strategies to meet these objectives is reflected in the low level of non-recoverable losses calculated for the TFL. The inventory audit conducted by the MOF also can be taken as an indication that endemic or minor losses occurring within the forest stands are at a low level, so that the stand volume is maintained at the amounts predicted by the growth and yield models.

Strategy:

In managing endemic pest and other forest health factors, Dunkley employs the following strategies:

Harvesting of the oldest stands as a priority removes the stands most at risk to endemic and epidemic losses. This strategy is carried out within the confines of integrated resource management considerations.

An aggressive salvage program on the TFL identifies stands damaged by factors such as insects, wind throw and fire, and harvests these as a priority. This strategy protects the mature forests on the TFL by preventing the spread of insects through their removal and by reducing the wind throw habitat that is beneficial to spruce bark beetles.

Trap tree and bait tree programs will be continued to monitor fluctuations in the insect populations. The size and distribution of the trapping program will be adjusted on an annual basis in response to the monitoring program.

Dunkley will comply with the current Prince George Forest Region Standard Operating Procedure on bark beetle responsibility and funding matrix. A minimum of one annual overview flight of the TFL in order to identify areas of insect attack, and indications of disease or other infestations will be done. These flights will also identify wind throw areas or other damage from which insects could become established and spread.

Where changes in stand appearance are identified, ground surveys will be initiated to more precisely identify the problem, map the affected areas, and plan the most effective control measure.

Establish a short term allowable annual cut level sufficient to enable salvage and control harvesting of the MPB outbreak.

4.6 Silviculture

Objectives:

Dunkley's silviculture program has been guided by a set of objectives included in the first TFL management plan and repeated below. These objectives focus on enhancing the productivity of the forestland base.

- To obtain maximum timber harvest for TFL #53 within the land capability and economic and social limitations.
- To maintain and enhance productivity of the forestland base with a view to increasing allowable annual cuts.
- To restock and achieve free-to-grow status on all cutover lands to targeted stocking levels, with desired species and within a minimum time period to maximize fibre production.
- To restock all current and feasible backlog NSR lands and maintain a "steady-state" silviculture program over time.
- To convert problem forest stands (excluded) into timber stands (contributing) with commercially acceptable species capable of maximizing yields.
- To enhance growth potential on the TFL by improving site occupancy through increased stocking levels and effective plantation maintenance.

4.6.1 Silviculture Strategy

Discussion:

The silviculture strategy for MP #4 will address two components in order to achieve the silviculture objectives. These components are:

1. MOF funded obligations (Pre-October 1, 1987) - Backlog NSR
2. Basic Silviculture (Post October 1, 1987)

For both components, the silviculture objectives will be met by applying sound basic forestry practices.

4.6.1.1 Backlog NSR

Discussion:

There are currently 563 ha of backlog NSR on the TFL, a reduction of 304 ha from that reported in MP #3. The 304 ha can be broken down into an increase of 13 ha in non-productive forest, an increase of 7 ha in non-commercial cover, and an increase of 284 ha into stocked forestland. These changes are a result of treatments to increase stocking on NSR areas and surveys undertaken to update the forest cover inventory.

It is not a high priority to treat the remaining backlog NSR on the TFL. Much of the area classified as NSR consists of lower levels of crop trees that have established through natural ingress and from understory trees that remained intact after harvesting. These areas however, tend to have patchy distribution of crop trees more consistent with natural regeneration rather than managed plantations. As a result, the NSR will be analysed as a separate unit in the timber supply modelling. The analysis unit reflects the existing stocking on these areas. Areas of backlog NSR that are treated in the future will be reflected in inventory updates after treatment has occurred.

Much of the remaining Backlog NSR consists of areas of high wildlife habitat. It is also extremely difficult to treat, given environmental factors such as proximity to, and distribution of, watercourses throughout the areas. The established vegetation communities require a heavy treatment regime such as mechanical site preparation followed by one or more brushing treatments to produce conditions favourable for establishing additional conifers. The heavy treatment regime may not always be the best course of action, given the other resource factors.

Strategy:

Dunkley will continue to monitor the remaining Backlog NSR to verify the need for increasing the stocking density on these areas. Those areas not needing additional stocking or that will not be treated in consideration of other resource values will be reclassified in the inventory. The classification will reflect the stand attributes, but no longer label the area as NSR. For those areas needing additional stocking, a treatment prescription will be prepared and implemented upon availability of funding.

4.6.1.2 Basic Silviculture Activities

Discussion:

The basic silviculture program will focus on enhancing the productivity of the forest land base. This is achieved by directing the productive capacity of the forest stands into potential crop trees. During the term of MP #3 the results of these programs include:

- Maintaining a regeneration delay of one year. This minimizes the area of current NSR.
- Planting densities of 1,800-2,000 sph.
- Purchasing seed orchard stock for all the spruce seedling requirements.
- Planting a higher component of pine, where ecologically appropriate.
- Using effective and timely vegetation management, where needed, to promote better survival and growth of the seedlings.

These achievements work towards meeting both short-term objectives of meeting free growing requirements and long-term objectives of enhancing the growth potential and increasing allowable annual cut levels.

Under policies established by the MOF, the licensee will meet all responsibilities for basic silviculture on lands cut after October 1, 1987. Costs of basic silvicultural activities will be allowed for in the appraisal system.

Basic silviculture activities covered by appraisal costs and conducted by Dunkley are:

- Seed collection
- Silviculture Prescriptions
- Site preparation
- Reforestation via natural, seeding, or planting methods
- Assessments
- Stand tending treatments to ensure plantations reach a free growing state. This phase may involve brushing and weeding and other treatments to prevent invasion of undesirable competition.

4.6.1.2.1 Seed Collection

Discussion:

The seed supply must follow the seed transfer guidelines produced by the MOF to ensure that the seedlings planted for an area are properly adapted to grow under local conditions.

The seed supply comes from two sources: natural stands and seed orchards. Seed orchards are designed to produce seed that will produce trees with better than average growth and pest resistance. Dunkley will use genetically improved seed orchard seed in the reforestation program, as it becomes available. Currently, Dunkley has a supply of orchard seed for spruce. It is anticipated that all spruce planted in the future will be seed orchard stock. The render of seed requirements will come from natural stands until such time as adequate supplies of orchard seed becomes available.

Strategy:

To ensure that a seed supply is maintained to meet planting requirements.

To use genetically improved orchard seed, as it becomes available.

To maintain an adequate supply of seed to meet reforestation requirements.

4.6.1.2.2 Silviculture Planning

Discussion:

The Site Plan outlines the objectives and standards that an area will be managed for. It is prepared before harvesting an area. The Silviculture Plan outlines the treatment method that will be used to meet the targets outlined in Site Plan. Both of these documents are based on site-specific factors such as ecosystems, soils, and potential brush problems. Consideration of these factors allows treatments to be carried out that have a high probability of success and that ensure the protection of environmental resources.

Harvesting carried out under the Bark Beetle Regulation of the FPC is conducted without the completion of a Site Plan prior to harvest. These sites will be planted, if appropriate, when they are greater than one hectare in size. The pre-harvest species mix will be used to guide the reforestation mix.

Strategy:

Prepare Site Plans and Silviculture Plans that will meet the objectives of the silviculture program and the FPC.

Reforest Bark Beetle regulation harvesting sites greater than one hectare in size with a species mix appropriate to the site.

Develop a Bark Beetle Harvesting Information System to track silviculture obligations on harvesting areas conducted under the Bark Beetle Regulation.

4.6.1.2.3 Site Preparation

Discussion:

Site preparation activities are undertaken to make plantable spots available to meet the planting density target of 1,800-2,000 sph, to improve the rooting conditions for the seedlings, and also to reduce the fire hazard where heavy slash conditions warrant treatment.

Mechanical site preparation has become the most common site preparation method on the TFL. This method allows more site-specific management of stand level biodiversity retention than does site preparation treatments such as broadcast burning. Mechanical site preparation methods on the TFL consist primarily of excavator piling of debris to create plantable spots and mounding where soil warming or improved drainage is required to establish seedlings.

Significant portions of harvested areas on the TFL are also raw planted or in other words, planted without site preparation after harvesting. This strategy allows us to minimize regeneration delay on appropriate sites. It also reduces or delays the establishment of herbaceous competition such as fireweed and grasses that have the potential to impact seedling growth.

Strategy:

To conduct site preparation activities in an environmentally sound manner to promote seedling establishment and growth.

4.6.1.2.4 Reforestation

Discussion:

Dunkley's silviculture program utilizes a pine component in the planting program, wherever ecologically suitable. This is done to achieve faster green-up of harvested sites as well as to potentially increase the on the regenerated stands as compared to pure spruce plantations.

The increased pine component used in the silviculture strategy needs to be considered in the context of the mountain pine beetle epidemic that is having severe impacts on the BC forests, including TFL 53. The pine component of second growth forests is at an increased risk of mortality due to the epidemic. This risk is higher in older plantations as there is a positive relationship between larger diameter pine and MPB attack. There are isolated pockets of attack in the 20-40 year old second growth pine on the TFL.

The TFL reforestation strategy addresses this risk, in part, by mixing in a spruce and Douglas-fir component into plantations when ecologically appropriate, The mixed

species planting has been a part of the higher density planting program, using a higher pine component, since its inception. The higher initial density also provides a buffer against individual tree mortality.

The planting to be conducted during the term of MP#4, given the age and size of the trees, will be at lower risk than the older plantations. Hopefully, the extraordinary MPB epidemic will have subsided before these trees reach a size putting them at increased risk to MPB.

Dunkley has increased initial planting densities to 1,800-2,000 sph. This increased planting density is used to target first year survival of 1,600 sph. The reasons for this strategy are threefold:

1. By establishing a higher density plantation the site is more fully occupied with potential crop trees, which directs the growth potential of the site into wood fibre.
2. A spin-off benefit is a reduced risk of plantation failure and the subsequent need to fill plant.
3. This strategy will result in the creation of the option of commercial thinning. With higher densities, intermediate stand entries may be possible to ameliorate minor timber availability constraints that are forecast to occur 50-60 years in the future.

Strategy:

The Forest Development Plan details the stocking standards and species selection by site series proposed for both initial stocking and for target levels at free growing. The minimum stocking standards follow the Correlated Guidelines for Tree Species Selection and Stocking Standards for the Ecosystems of British Columbia (July 1993). The target stocking standards reflect the initial planting densities used on the TFL.

The minimum stocking standards remains unchanged in recognition that there is likely to be small areas in most plantations that will not achieve the target stocking. These areas are beneficial from an integrated resource management perspective, as they allow for increased vegetation diversity at the stand level. At the minimum stocking standards proposed, the integrated resource

management objectives can be met without major impacts on sawlog production objectives.

The licensee will grow seedlings at selected private nurseries, with stock types and species selected according to the site requirements. In general, large PSB 415B or 412A stock will be used for spruce seedlings and PCT 313 stock for lodgepole pine.

Dunkley is committed to planting essentially all of the areas logged (exclusive of the BCTS areas).

A portion of harvested areas require some form of stand retention to achieve management objectives for riparian management zones, visually sensitive areas, or areas of important wildlife habitat. Stocking in these areas is maintained through a combination of existing stocking and fill planting where gaps in the retention canopy occur.

4.6.1.2.5 Assessments

Discussion:

Dunkley, as a guideline, schedules stocking surveys one and three years after planting to monitor plantation performance. The first year survey confirms the stocking status of the unit. The third year survey provides a measure of performance of the plantations, as well as information for proposed future treatment that may be required to meet basic silviculture objectives as outlined in the Silviculture Prescription.

Strategy:

Dunkley will adhere to the MOF's policies and procedures regarding surveying and monitoring of plantation performance.

A pre-free growing assessment will be scheduled three years before the earliest free growing date to assess the plantation and to provide information for any additional treatments that may be required to ensure a free growing plantation in the minimum possible time frame.

4.6.1.2.6 Stand Tending

Discussion:

In general, Dunkley plans the judicious use of herbicides for vegetation management. This treatment has minimal impact on the soil resource. Through timely treatment, lower application rates of active ingredient per hectare can be used to achieve Silviculture obligations. Biodiversity and green corridors are maintained on treated units with the application of Pesticide Free Zones and non-treated buffer strips.

Strategy:

Brushing will be done by mechanical, biological or chemical means, as required, to meet our obligations of establishing a free growing stand within the time period specified in the Silviculture Prescription. Any herbicide application will be done in strict compliance with the *Pesticide Control Act*.

The impact of herbicide treatments on growth response and treatment efficacy will be monitored through the plot systems developed by the Northern Interior Vegetation Management Association, of which Dunkley is a member.

4.6.2 Intensive Silviculture

Objective:

The objective of the intensive silviculture program on the TFL is to increase the long run sustainable yield.

Discussion:

Intensive silviculture includes stand treatments that will secure wood yields and values superior to those possible from basic silviculture alone. Activities are designed to increase the usable fibre available from the land base. The gains realized through intensive forest management practices such as conifer release (cleaning), juvenile spacing, site rehabilitation, fertilization and the use of genetically superior seed will increase the long run sustainable yield.

4.6.2.1 Plantation Enhancement

Discussion:

The Timber Supply Analysis prepared in support of MP #3 indicates that the harvest flow for the TFL is most constrained in the period 50 to 60 years from present. This is not expected to change in the timber supply analysis conducted in support of MP #4. At this point in time, the stands harvested are changing from primarily natural stands to second growth plantations as they reach a merchantable age. It is very important that the plantations established between 1972 and 1982 produce the yields predicted for these stands to minimize the impact on harvest flow. There are 6,686 ha of managed stand plantations established in the 1972-1982 period. The majority of these stands are expected to grow to final harvest without any further silviculture interventions to achieve their predicted yield. This has been assisted by a large manual brushing program conducted through FRBC and later through the Forest Investment Account.

Forest fertilization also holds much potential to increase the yield from these sites over and above that predicted by the growth and yield model. Dunkley has treated 986 ha of target plantations with an operational fertilizer program since 1997. We will need to collect more data on the treatment effect of fertilization on our plantations. Dunkley is co-operating with the MOF in a fertilization response trial on the TFL.

Strategy:

During MP #4 Dunkley plans to remeasure fertilizer monitoring plots to quantify the growth response of plantations to fertilizer applications.

Operational fertilization programs will be implemented, contingent upon beneficial results in response monitoring and available funding.

Areas that could benefit from manual brushing will be completed during the term of MP #4 contingent upon available funding.

4.6.2.2 Road Reclamation

Discussion:

In 1993 Dunkley began operational trials in the reclamation of non-productive road grades no longer needed for access, as part of the road deactivation program.

Site preparation treatments included ripping, ripping with organic matter enhancement, and complete re-contouring of the former road surface. Planting of these areas commenced in 1994.

This program will enhance the timber resource for future generations by keeping more of the land base as productive forest. It also has immediate benefits in meeting environmental and water quality objectives. Surface erosion is reduced and soil stability is enhanced by re-establishing a forest on these rehabilitated surfaces.

Strategy:

To continue the road and trail rehabilitation program to minimize losses to the productive forest land base.

4.7 Roads

4.7.1 Road Construction/Maintenance

Objective:

The objective of road construction and maintenance is to provide access for forest management activities.

Discussion:

The majority of the main and secondary road systems on the TFL are in place.

In response to the expansion of the mountain pine beetle population, the south portion of the TFL has been accessed through road development. Road development for MPB access will continue during MP #4.

During the term of MP #3 the use of culverts to cross fish habitat streams was mostly replaced with bridges. This will have a lower impact of the fish habitat.

Strategy:

Road and access planning, construction, maintenance and deactivation will continue to meet the requirements of applicable legislation.

All roads used in forestry operations by Dunkley will be maintained when active. Routine maintenance will be conducted as and when necessary.

All bridges in the TFL will be inspected regularly and maintained as required.

4.7.2 Road Deactivation

Objective:

The objective of road deactivation is to maintain and enhance water quality, soil conservation and forest productivity.

Discussion:

Roads constructed for current harvesting operations are deactivated when maintenance is no longer required to support anticipated forest activities. Consideration is given to range, guide outfitting, fish and wildlife, and other user groups in deactivating roads.

Strategy:

Road deactivation strategies within TFL #53 include the following:

- Temporary deactivation: Upon completion of harvesting operations, on-block and access roads will be temporarily deactivated. This treatment is intended to minimize erosion by controlling surface drainage and establishing a back-up system for ditches and culverts. This will include constructing water bars, cross drainages, cleaning ditch lines, and crowning or outsloping road surfaces. Although temporary deactivation is now included under road maintenance the strategy is still valid for the TFL to help meet the road deactivation objective.
- Rehabilitation: This work may include restoring natural surface drainage patterns, outsloping/insloping the surface of logging roads, pulling backside cuts where appropriate, ripping and tilling, and re-establishing vegetation including tree seedlings. Rehabilitation work is designed to restore forest productivity to the

road area. The rehabilitation strategy includes activities required to meet permanent deactivation status of a road.

In addition to current roads, Dunkley has initiated access management planning and road deactivation activities on the entire TFL road network. Dunkley has deactivated roads no longer needed for forest management or other resource activities on the TFL.

5.0 Consultation with Other Resource Users

Dunkley maintains regular contact with people using the TFL for purposes other than timber production. As people or groups are identified that express an interest in TFL activities, they are added to our "TFL User List" for future referrals (Appendix 9). Dunkley also places advertisements in local newspapers to invite comments on proposed activities from interested parties that we are not otherwise aware of.

Consultation takes place as regulated by the FPC and the Forest Act. This includes the Forest Development Plan and the MP process as well as other required referral documents. In addition, Dunkley maintains an open door philosophy for informal discussions with TFL users to keep each other up-to-date on TFL activities. This informal process extends to meetings with the Hixon Community Association. Dunkley also recognizes the Crown's fiduciary responsibility to consult with First Nations people. To assist in this responsibility, Dunkley refers Plans and Permits to the aboriginal groups identified to us by the Crown agencies to initiate the consultation process.

Dunkley has become a member of the Community Natural Resources Committee in the Prince George Forest District. This group will facilitate an exchange of information with a large cross-section of public interest groups.

6.0 Impact Summary of MP Implementation

The mountain pine beetle outbreak is an overwhelming factor that is expected to dominate management activity, for at least the first years, of MP #4. The impacts of MP #4 implementation are closely tied to the management response to the mountain pine beetle. The short term AAC uplift implications were documented in a *Public Discussion Paper Regarding a Temporary Allowable Annual Cut Uplift Due To A Mountain Pine Beetle Epidemic Within TFL #53* (Dunkley; February 2003). The implications are as follows:

6.1 Environmental Implications

Prior to extensive fire suppression and timber harvesting, BC's central interior forests naturally underwent large-scale stand-replacing events brought on by wildfire and insect outbreaks. With improved fire suppression, the high proportion of older lodgepole pine trees has increased. The TFL has followed a strategy of harvesting the oldest, highest risk stands as soon as possible, given environmental and social considerations. This strategy has in the past focused attention on windthrow damaged and spruce bark beetle infested stands. Lodgepole pine stands were, for the most part, less at risk to damaging events than were older spruce-balsam stands. The MPB infestation has changed the focus to pine stands, although a harvest component for other stands remains necessary to deal with forest health issues. Windthrow salvage, spruce bark beetle control and fire salvage in all stands must still be addressed.

The epidemic beetle population will affect the structure of the TFL's forests by killing large numbers of mature pine trees, and consequently impacting the supply of various kinds of natural habitats. This will happen whether harvest levels are increased or not. The epidemic will affect the older habitats either by insect attack followed by eventual blowdown or wildfire, or by harvesting to control the rate of spread or to salvage the attacked timber.

It must be recognized that these older habitats are being fundamentally altered from their current state by the beetles. It has been estimated that implementing the aggressive salvage harvest rate for 5 years would result in the conversion of approximately 9,375 ha to younger and more open forms of habitat, that is, just over 13% of the 72,000-ha timber harvesting land base. However, recent trends indicate that even with the additional harvest, many live and dead stands unaltered by harvesting will remain on the landscape. Over 33% of the pine inventory may not be harvested, even at a short term AAC level of 500,000 m³/yr.

The impact on habitat can be mitigated through the planned retention of stands whether they are attacked or not. Areas with higher habitat value such as stands next to streams, wildlife tree patches and potential old growth management areas can utilize strategies that result in less removal of infected timber or even no

removal of infested timber. As the intensity of attack increases on the TFL, retention strategies can be developed to accommodate habitat requirements.

To-date, harvesting efforts targeted at the MPB have focused on small scale removal methods. The application of silvicultural systems, such as partial cuts and small patch clearcuts are aimed at removing the infested trees while preserving some of the current diversity of habitats. However, as the level of infestation expands, the proportion of clearcut with reserve harvesting will increase. Additional road access may affect some habitats, at least temporarily until road deactivation.

Without harvest treatments there is a tangle of dead trees that eventually present obstacles and a wildfire hazard for wildlife. On the other hand, harvesting could reduce denning habitat for some small prey species that help to support other larger species.

Overall, the impact of the infestation on the ecology of the forest is dependent on the amount of mortality, which in turn depends on the intensity of the infestation and on the proportion of susceptible trees in each stand. Likewise, the impact of increased harvesting will depend on the evolving nature and extent of the infestation and on the applied silvicultural systems. Reforestation efforts will also increase in response to the level of harvest required to address the mountain pine beetle.

6.2 Market and Mill Implications

Long term markets developed by Dunkley need to be taken into consideration. Dunkley has a well-established customer base in Japan. The company exports among the highest proportion of mill production to Japan of any single mill in the northern interior. This market, where appearance is of utmost importance, does not tolerate any stain as is found in the lumber produced from mountain pine beetle attacked trees. If Dunkley were to be excluded from the Japanese market, even for a short time, regaining a foothold would be extremely difficult, if not impossible.

The customer base in North American markets is also well established. Dunkley produces high quality, wide dimension lumber (i.e. 2x10, 2x12) for sale into this market. Mountain pine beetle trees do not provide enough large diameter logs for the mill to meet the wide dimension lumber demand.

The sawmill that Dunkley operates consists of two lines, a large log line and a small log line. The large log line is designed to mill logs with a top diameter of 11 inches or larger. The small log line handles logs with a top diameter up to 11 inches. Mountain pine beetle trees do not provide enough large diameter logs to supply the large side of the mill. This is especially concerning as the beetles migrate to attacking younger, smaller pine stands. Given the nature of the

processing facility, and the need for wide lumber production, it is not possible to mill mountain pine beetle attacked stands exclusively.

Thus, mountain pine beetle infested timber cannot make up the entire timber supply used to run the sawmill. Dunkley will use as much of the short term AAC as possible to address mountain pine beetle. However, some harvesting of other stands on the TFL will occur. It will be used to meet the mill needs and to enable Dunkley to maintain customers and to compete for market share.

In an effort to utilize more of the MPB infested timber from the TFL and surrounding area, Dunkley has started construction of a sawmill expansion project. The expansion is expected to begin processing timber in mid 2004. The new equipment is designed to mill logs of medium and small diameter typical of MPB infested timber.

6.3 Regional Implications

Dunkley operates a sawmill at Strathnaver BC that utilizes the entire conifer harvest on the TFL. The TFL harvest does not meet all of the log supply needed to run the sawmill. The remainder of the log supply is purchased on the open market. The company obtains more than 70% of its log supply from sources other than the TFL.

As discussed under Market and Mill Implications, mountain pine beetle attacked stands do not provide enough large diameter logs to supply the large side of the mill. The large log supply, primarily from spruce-balsam stands, comes from TFL #53, two Dunkley held non-replaceable forest licences and, purchased wood. Logs are purchased from BCTS, woodlots, and private lands. The purchase supply of large logs is especially at risk during the MPB epidemic, as BCTS directs a greater portion of their program to beetle salvage.

The sawmill expansion will maintain Dunkley's position as a major purchaser of timber of all sizes on the "open market". The increased log supply needs will offset the impact that short term AAC uplift from the TFL would otherwise have on Dunkley's log purchase program.

In the mid-term, once the short-term AAC uplift is removed, the purchase program will increase even further to meet mill requirements.

6.4 Community Implications

Community dependence remains tied to the timber supply. Increases to the timber supply would have a positive benefit; just as any reductions to timber supply would have a negative impact. Salvaging and milling beetle-attacked timber provides more economic benefit than dead trees left in the bush. If the short term AAC is established at 500,000 cubic meters per year, this could support

approximately 168 person-years² of direct employment in the harvesting, silviculture and lumber sector above the initial AAC of 239,500 cubic meters per year set initially for MP#3.

² Based on the ratio of 1,552 m³ /person/year of employment used in the Ministry of Forests- “Prince George AAC Uplift Discussion Paper.”

7.0 Key Similarities and Differences between MP #3 and MP #4

The current Management Plan (MP #3) has been proven to be a successful guide for achieving the overall objectives for the TFL. The harvesting, silviculture, protection, and planning strategies have shown continued success in managing the TFL as a working forest within the context of integrated resource management. These strategies are continued in this proposed Management Plan (MP #4). Small changes to strategies reflect the evolution of forestry knowledge and the policy framework within which our activities take place. These adjustments are more "fine-tuning" to optimize performance rather than a change in direction for the programs.

The draft Management Plan #4 has been submitted at a time when major changes to the legislation that governs forest management in BC are being developed. Many of the objectives and strategies outlined in this plan may need to be revisited under the new regulatory regime to meet objectives set by government in the form of a Forest Stewardship Plan. The requirements of the new legislation are expected to be available early in 2004. The uncertainty in the information requirements needed to meet the anticipated legislation has made it difficult to set a clear path through the strategies of MP #4 to guide future direction.

The Biodiversity Plan developed during MP #3 has been a valuable tool in managing biological diversity on the TFL in a way that reflects local conditions. These conditions are now undergoing a period of rapid change at the landscape level due to the mountain pine beetle. The Biodiversity Plan will need to be updated to incorporate the changing conditions and to account for new information requirements. This will increase the chance of success that the objectives of biological diversity will be achieved. Dunkley will continue to develop strategies that meet the objectives of biodiversity management while reflecting the local conditions of the TFL.

8.0 Scheduled B Prorate

There is no Schedule A lands incorporated into TFL #53. The initial timber harvesting land base of TFL #53 as described in the Information Package supporting the Timber Supply Analysis Report is 68,644 ha in the base case.

9.0 Public Review Strategy

This review strategy will give the public opportunity to provide comments and become involved in the MP process. Public input will be collected during the review period for incorporation into the final submission of MP #4. Any submission will receive replies and copies will be provided to the MOF.

9.1 Advertising of the draft Management Plan

Advertisements will be placed in local newspapers inviting comments and on the draft MP #4. An advertisement will describe the purpose of MP #4, the unapproved status of the draft version, and the opportunity for public input. The advertisement will be published twice over a two-week period in the Prince George and Quesnel newspapers. The draft plan will be made available for viewing at the Dunkley Forestry Office during normal office hours for 30 days.

Letters will be sent to the TFL referral group inviting comments on the draft Management Plan. The referral group includes trappers, guides, and other known tenure holders, aboriginal bands with a potential interest on the TFL and members of the public who have expressed an interest in the TFL.

In addition, a notice will be posted in the community of Hixon regarding a scheduled one-day open house, to be held at the Dunkley forestry office, to allow for public participation and comment in the review of the draft management plan.

10.0 Conclusion

MP #4 has been designed to achieve the overall objectives for TFL #53. The TFL strategies also recognize that the TFL is managed as an enhanced resource management zone, primarily focused on producing a continuous and expanding timber supply. These strategies are designed in an environmentally sound manner to ensure all of the forest resources are managed on a long-term sustainable basis. Considerable effort is expended to ensure that water quality and the soil resources are a focus of attention in resource management activities. Consideration of these and other resource values occurs as a normal business practice, as directed by the FPC and the strategies in MP #4. Communication with the other resource users is also a component of standard practice on the TFL. Through these activities, care and consideration of the multitude of values found on the TFL occurs. Dunkley is proud of the fact that we can meet our objectives in the context of sound and sustainable forest resource management.

