

SUSTAINABLE FOREST MANAGEMENT PLAN

2001 STATUS REPORT

*Canadian Forest Products Ltd.
Coastal Operations — Englewood DFA*



Canadian Forest Products Ltd.
Englewood Logging Division
Woss, BC V0N 3P0

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1 INTRODUCTION & OVERVIEW

Canadian Forest Products Ltd. (Canfor) achieved registration under the Canadian Standards Association CAN/CSA Z809-96 Sustainable Forest Management Standards for Tree Farm Licence (TFL) 37's forestry operations in August 2000. In partial fulfilment of achieving that registration, a public group — The Nimpkish Woodlands Advisory Committee (NWAC) — was formed at the beginning of 2000 to help Canfor identify quantifiable local-level Indicators and Objectives of sustainable forest management. Initially, 49 Indicators and Objectives identified by the NWAC were detailed with associated forest management practices to achieve those objectives in a Sustainable Forest Management Plan (SFMP) for the Englewood Defined Forest Area (DFA, Deal *et al.*, July 2000). These indicators and objectives were increased to 54 and are detailed in the 2001 SFMP for the Englewood DFA (Deal *et al.*, Dec. 2001).

This report is prepared as part of the second (1 year) periodic assessment to confirm Canfor's continued implementation of the registered CSA Sustainable Forest Management. As such, it provides a status to the end of 2001, of the 54 Indicators and Objectives of the SFMP (Deal *et al.*, Dec. 2001). In this report, each Indicator is reiterated, and a brief CURRENT STATUS AND BACKGROUND COMMENTS report is provided. In some cases, a RECOMMENDATIONS section is provided relative to specific Indicators or Objectives.

A **useful summary format** of the 54 indicators and objectives, and their current status and relevant personnel, is also presented in Appendix 1. For further reference to the intent of the Indicators and Objectives and the forest management practices and forecasting involved, or for background information on Canfor's ecosystem-based management principles and ecosystem management units (EMU), the reader should refer to the Sustainable Forest Management Plan for the Englewood DFA (Deal *et al.*, 2001; Deal and Setterington, 2000; and Deal 2000).

1.1 OVERVIEW

Generally, the status of many of the Indicators have changed little since they were first reported in the July 2000 SFMP. Given the long-term nature of forest management and forest management practices, these small changes are not surprising. Continued harvesting and growing forests have resulted in some changes to the seral stage and old growth representation, but generally either the Objectives are still being met, or results are expected in the long-term.

Significant progress has been made on some Objectives, such as developing management strategies for Queen Charlotte goshawk (Objective 11), designating the area managed as ungulate winter range (Objective 10), identification of polygons for old forest representation (Objective 1), classification of strategic-level streams (Objective 46), and involvement of the First Nations in the Nimpkish Woodlands Advisory Committee (Objective 51).

The Ministry of Forests Small Business Forest Enterprise Program (SBFEP) did not have any SPs written and approved for harvest blocks in TFL 37 during 2001. However, 3 blocks were partially harvested in 2001 (harvesting incomplete as of Dec. 31, 2001), totalling approximately 45 ha in area. Since these blocks have not yet been completed, associated SFM Objectives have not yet been measured. All other SFM Objectives where applicable, including tree species diversity (#14), riparian area protection (#15), disease control (#17), fire, insect, windthrow and flood salvage (#19-23), regeneration and free growing success (#24, 25), and consideration of special habitat features (#27), were either within objective targets or did not occur in 2001.

The format of the remainder of this document and the detailed status of each indicator are provided below. *This document is subject to review by the Nimpkish Woodlands Advisory Committee.*



1.2 2001 EXTERNAL AUDIT SUMMARY

KPMG conducted an ISO/CSA periodic assessment on Feb 12-14, 2001. They identified three ISO 14001 nonconformances (one major nonconformance and two minor nonconformances). Minor nonconformances are isolated incidents that are not critical to the achievement of Environmental Management System (EMS) or SFM objectives, while major nonconformances are not isolated incidents and are critical to the achievement of EMS or SFM objectives. The major focused on operational controls around stream classification. The first minor was around monitoring and inspections, and the second was on bridge inspections. Canfor prepared an action plan that was intended to address the root causes of these nonconformances. Changes were implemented where appropriate to improve our environmental performance. KPMG evaluated our performance in making the required improvements on August 27-28, 2001. They found that all actions were taken as outlined in the action plan and cleared the three nonconformances.



2 SFM INDICATORS AND OBJECTIVES

This document is presented in a format similar to the 2000 and 2001 SFMP documents, with each Indicator identified in a second-order heading. The text provides a simple report of the status of the Indicator/Objective to the end of 2001, and relevant background information/comments. For further details on the Indicators and Objectives, the reader should refer to the December 2001 SFMP (Deal *et al.*, Dec. 2001).

The format of each status report is described below:

X.X INDICATOR NAME

Indicator:	Objective:
#. A reiteration of the Indicator as identified in the SFM matrix.	A reiteration of the Objective as identified in the SFM matrix.

CURRENT STATUS AND BACKGROUND COMMENTS This section provides an update on the status of each Indicator and Objective, as well as additional background comments which provide contextual information useful in understanding the current status of the objective.

The best information available up to and including January 31, 2002 was used for the preparation of this status report.

RECOMMENDATIONS

This section is only included with some Indicators, and provides recommended changes to the wording or content of that particular Indicator or Objective.

2.1 OLD GROWTH RETENTION

Indicator:	Objective:
1. Percent cover old growth by Landscape Unit (LU) and Biogeoclimatic Ecosystem Classification (BEC) variant	Submit for government approval, old growth management area (OGMA) objectives ($\pm 10\%$) by LU and BEC variant by March 31, 2003.

CURRENT STATUS AND BACKGROUND COMMENTS

Old Growth Management Areas (OGMAs) have not been finalized yet for the DFA. There are 4 main steps in the OGMA process (i) identification of potential OGMAs; (ii) clean polygons, merge polygons, consider other resources, analyze; (iii) verify; and (iv) submit for government approval. Stage ii has been completed for the Lower Nimpkish Landscape Unit. Stage i is complete for the Upper Nimpkish Landscape Unit and Tsitika Landscape Unit.

All potential OGMAs will be verified by an aerial photograph interpretation. Field verification (aerial survey and ground-truthing) of random polygons may be conducted as part of biological and operational analyses.

To view the current state (1999) of the old seral stage by BEC variant within the Englewood DFA, see the Sustainable Forest Management Plan (Deal et al. 2000).

2.2 SERAL STAGE DISTRIBUTION

Indicator:	Objective:
2. Seral stage representation by LU and BEC variant	Achieve seral stage representation objectives ($\pm 10\%$) by LU and BEC variant, within three rotations with focus on old seral until January 2004. Review every 5 years.

CURRENT STATUS AND BACKGROUND COMMENTS

Seral stage representation will focus on old seral retention (see Indicator 1 above) in the short-term. Forecasting AAC impacts of full seral stage management will be modelled by January 2004. Seral stage representation guidelines are a component of the BC Forest Practices Code Biodiversity Guidebook (BC Ministry of Forests and Ministry of Environment, Lands and Parks 1995).

Approximately 40% of the timber harvesting land base is covered by stands more than 250 years old, thus representing the most abundant age class on TFL 37 (Pedersen 1999). The seral stage representation by Landscape Unit and BEC variant within the DFA was determined by summarizing Canfor's spatial forest cover and terrestrial ecosystem mapping database. The most recent seral stage analysis is described in the Sustainable Forest Management Plan (Deal *et al.* 2000).

2.3 FOREST INTERIOR

Indicator:	Objective:
3. OGMA forest interior representation by LU and BEC variant	Maintain variable percentages ($\pm 5\%$) of the OGMA objective as forest interior habitat by LU and BEC subzone (see SFMP for specific details), by January 1, 2005. Review amount of interior old growth forest habitat every 5 years.

CURRENT STATUS AND BACKGROUND COMMENTS

This indicator is closely linked to Indicator 1. Once the OGMA's are approved by government, they will be analysed for percent forest interior by January 1, 2005.



2.4 PATCH SIZE REPRESENTATION

Indicator:	Objective:
4. Patch size representation by LU and BEC zone	Maintain percentages of the forest that is ≤ 20 yrs old in variable patch sizes by LU and BEC zone (as indicated in SFMP). Review every 5 yrs

CURRENT STATUS AND BACKGROUND COMMENTS

This indicator is not planned to be reanalysed until 2005. See the SFMP for results of the most recent analysis.

2.5 WILDLIFE TREE RETENTION

Indicator:	Objective:
5. Percent wildlife tree retention by LU and BEC subzone	Maintain variable percentages ($\geq -5\%$) of the Harvest Area as representative wildlife tree areas (patches and individual trees) by LU and BEC subzone.

CURRENT STATUS AND BACKGROUND COMMENTS

Canfor's objective is to maintain variable percentages (Table 1) of the harvest area as representative wildlife tree areas by LU and BEC variant. The objective percentage for wildlife tree retention will be applied at the landscape level rather than the stand level to provide the flexibility to capture more areas with high biodiversity values, such as riparian management areas around wetlands.

Forty-three Silviculture Prescriptions were approved in 2001 (29 in the Lower Nimpkish LU; 13 in the Upper Nimpkish LU; 1 in the Tsitika LU). Pre-LU target percentages for wildlife tree retention have been established by LU and subzone and are described in the SFMP (Canfor, Dec. 2000). Of the 43 approved SPs in 2001, actual wildlife tree retention levels exceeded the minimum targets identified in the SFMP in all cases (Table 1) for target and actual/current WTP percentage area values.

In 1993, Canfor began retaining wildlife tree patches (WTP) in areas where wildlife inventory/research data indicated that it was appropriate. With the introduction of the Forest Practices Code in 1995, Canfor began leaving WTPs in all cutblocks. Most were located on the edge of the harvest area in constrained timber such as riparian reserve zones, gullies, inoperable or uneconomic areas. Between 1995 and 1998, under the direction of MoF, Canfor retained 7% of the total area under prescription in each harvest block as wildlife tree patches. In 1998, Canfor conducted a landscape level analysis to determine the level of wildlife tree patch retention required by Table 20(b) of the *Biodiversity Guidebook*. On April 6 1998, Canfor received approval from MoF to apply the variable percentages from Table 20(b) to all new cutblocks being engineered in the draft Lower and Upper Nimpkish Landscape Units. Therefore, Canfor's specific WTP stand-level objectives until Landscape Unit objectives are established, and after they are established, are found in Table 1.



Table 1. Objective and current percent harvest area as wildlife tree retention for the Englewood DFA (current as of Dec. 31, 2001).

Landscape Unit	BEC subzone	Pre-LU Objective	Post-LU Objective	Current % (n=43) ¹
Tsitika (High biodiversity emphasis)	CWHvm	10%	8%	18.1% (1)
	MHmm	10%	2%	n/a (0)
Upper Nimpkish (Intermediate biodiversity emphasis)	CWHxm	14%	11%	14.4% (3)
	CWHvm	13%	10%	15.1% (8)
	MHmm	9%	6%	14.0% (2)
Lower Nimpkish (Low biodiversity emphasis)	CWHxm	14%	11%	19.3% (10)
	CWHvm	13%	10%	18.8% (19)
	MHmm	9%	6%	n/a (0)

¹ Current = Summary of the results from 43 Silviculture Prescriptions that were approved by MoF in 2001 only (based on combined areas for all prescriptions).

2.6 FOREST INFLUENCE

Indicator:	Objective:
6. Percent forest influence by ecosystem management unit	Achieve forest influence objectives detailed in the SFM plan, by ecosystem management unit. Objectives will be met over a 5 year period on 90% (≥5%) of the total area under prescription by ecosystem management unit. Monitor annually after the implementation date of January 1, 2006.

CURRENT STATUS AND BACKGROUND COMMENTS

Achievement of percent forest influence targets is linked to implementation of the ecosystem-based harvesting practices outlined in the Forestry Principles Implementation Plan – Coastal Region (Deal 2000). As of January 1, 2001, new block layout in the Special Management Zones was done to meet Forestry Principles criteria (see Table 2). SPs have been prepared for 5 harvest blocks (NS050, KA040, KC170, CE014, KA202) which conform to Forestry Principles for forest influence, number of individual trees/ha (see Objective 7), and internal patch retention targets (see Objective 8). These blocks are scheduled for harvest in 2002.



No blocks were harvested to Forestry Principles criteria during 2001. By June 1, 2003, all new block layout in the DFA will meet Forestry Principles targets for percent forest influence, individual trees/ha, and internal retention patch. During 2005, $\geq 50\%$ of the blocks approved for harvest will conform to Forestry Principles targets, with full implementation by 2006. The first block to be harvested according to Coastal Principles targets is scheduled for harvest in early 2002 (Block #NS050, near Nimpkish)

The term forest influence has been adopted from Kimmins (1992) and refers to the total area of a cutblock that is within 1 tree height from the base of a tree or group of trees, whether or not the tree or group of trees is inside the cutblock. A combination of individual tree retention and group retention (patches) will be used to achieve forest influence objectives. For example, a single 40 m tall tree, 1 tree length from the block edge, represents 0.5 ha of forest influence.

The amount of forest influence, expressed as a percentage of the harvest area (NAR + permanent roads) for each harvest block, is summarized in Table 2 as a target range based on the Ecosystem Management Unit. The forest influence percentages in Table 2 range from a minimum of 50% in the EFZ Management Unit, to at least 70% in the SMZ. Forest influence objectives will be met over a five year period on 90% ($>5\%$) of the total area under prescription by Ecosystem Management Unit.

Table 2. Summary of targets recommended for forest influence, single tree retention and within-stand patch retention for each Ecosystem Management Unit on the Englewood DFA.

Ecosystem Management Unit	% Forest Influence	Range of Single Trees/ha ¹	Proportion of WTP target as Internal Retention Patch
SMZ_Fire	$\geq 70\%$	12-18	$\geq 40\%$
SMZ_Gap	$\geq 70\%$	*	$\geq 50\%$
GMZ_Fire	$\geq 60\%$	6-10	$\geq 25\%$
GMZ_Gap	$\geq 60\%$	*	$\geq 35\%$
EFZ_Fire	$\geq 50\%$	2-5	$\geq 15\%$
EFZ_Gap	$\geq 50\%$	*	$\geq 25\%$

¹ the recommended target for mature/overmature trees/ha to be retained refers only to slopes $<30\%$ where trees can be safely retained.

* Single tree retention is encouraged in gap dynamic forests where low economic quality trees with high biodiversity values can be safely retained, however, targets have not been set.

Using forest influence target percentages for an entire Ecosystem Management Unit (as described above) facilitates block-specific target variations due to site variables such as slope, topography, type of harvesting and yarding equipment, presence of forest health agents (e.g., dwarf mistletoe, root rot centres), and worker safety factors.

2.7 NUMBER OF RETAINED TREES

Indicator:	Objective:
7. Number of individual trees per hectare retained by ecosystem management unit	Achieve objectives for number of individual trees per ha as detailed in the SFM plan, by ecosystem management unit. Objectives will be met over a 5 year period on 90% (\geq -5%) of the total area under prescription by ecosystem management unit. Monitor annually after the implementation date of January 1, 2006.

CURRENT STATUS AND BACKGROUND COMMENTS

See Objective 6 above.

The lower elevation and drier subzones (CWHxm2, and CWHmm1) within the DFA have been historically impacted by wildfire. In these ecosystems, ecologically appropriate forest management should involve emulation of wildfire. Emulating fire will require leaving individual live trees and some undisturbed groups of trees (patches) to provide habitat diversity.

Retention targets will depend on the Resource Management Zone (see Table 2). Within the SMZ, single tree retention targets will be 12-18 mature/overmature trees per ha on slopes $<30\%$. Single tree retention levels in the GMZ will be 6-10 mature/overmature trees per ha as on slopes $<30\%$. The lowest level of single tree retention will be in the EFZ, where 2-5 trees per ha will be retained on slopes $<30\%$. The single trees are intended to be spaced at various distances across the cutblock. The targets are block-level and therefore, every hectare does not require the target number of trees. For example, a 30 ha opening (excludes right-of-way area and area of root disease pockets) would require a range between 60 and 150 trees in the EFZ_Fire EMU.

The targets outlined in Table 2 for fire-adapted ecosystems were derived using 1999 and 2000 marbled murrelet habitat transect data from TFL 37, which showed an average of 37 trees >80 cm dbh/ha. The intent is to capture large trees as single trees and within retention patches as well. Also, trees with a large dbh are beneficial to a number of other wildlife species such as woodpeckers if a decay column is present in the bole. Rare tree species and trees with unique features for wildlife <80 cm should be retained as well, if possible.

Additional information about single tree retention requirements in each EMU can be found in the 2001 SFMP (Deal *et al.* 2001).

2.8 INTERNAL RETENTION PATCH

Indicator:	Objective:
8. Percent wildlife tree patch requirement that is an internal retention patch by ecosystem management unit.	Achieve objectives for internal retention patch percent as detailed in the SFM plan, by ecosystem management unit. Objectives will be met over a 5 year period on 90% (\geq -5%) of the total area under prescription by ecosystem management unit. Monitor annually after the implementation date of January 1, 2006.

CURRENT STATUS AND BACKGROUND COMMENTS

See Objective 6 above.

The mid to high elevation subzones (CWHvm1, CWHvm2 and MHmm) within the DFA are continually impacted by natural disturbance agents such as windthrow, root disease and stem heart rot which create canopy openings and gaps. In these gap dynamic ecosystems, ecologically appropriate forest management should more closely emulate these types of natural openings than clearcutting with external reserves. This will require leaving undisturbed groups of trees (WTPs) in harvest openings to provide habitat diversity. Patches have the advantage of helping maintain forest understory, coarse woody debris, forest floor diversity, as well as wildlife trees. While patches will be the main retention strategy in harvest blocks in these subzones, individual tree retention can also be employed on slopes $\leq 30\%$ in the CWHvm2 and MHmm1 (see section 2.7).

Retention of internal mature forested patches allows more forest ecosystem components to be retained than single trees. Patches of trees can provide “stepping stones” for organisms to cross an opening and thus enhance habitat connectivity. Retaining small patches of mature/old growth trees will allow organisms to colonize the harvest area in the future. Many organisms are naturally adapted to the structural complexity of old forests and will be lost if an area is entirely clearcut (Franklin *et al* 1997).

Internal patch retention targets will also depend on the EMU. Generally, higher levels of internal patch retention are required in a gap dynamic adapted ecosystem when compared to a fire-adapted ecosystem due to the ecosystem’s adaptation to a high degree of forest influence from intact forests. Patch retention allows more forest ecosystem components to be retained than single tree retention.

An analysis of 3 historic wildfires in TFL 37 showed the minimum internal patch size was 0.35 ha. This may be a function of minimum mappable polygon size at a scale of 1:20,000. The size of the internal retention patches should be ≥ 0.1 ha for EFZ, ≥ 0.2 ha for GMZ, and ≥ 0.25 ha for SMZ, however, the size may vary according to the following site specific variables:

- the quantity and habitat quality of wildlife trees in the patch;
- presence of rare forest elements, i.e. Pacific yew;
- evidence and type of wildlife use in or near the patch (e.g., cavity nesters, black bear denning, etc.);
- presence of habitat features associated with the patch such as riparian areas, rocky outcrops or gully complexes, or upland hardwood stands;
- slope or terrain constraints which affect cutblock design, choice of silvicultural system, and type of harvesting and yarding methods; and
- other management objectives such as visual quality, forest health, windthrow hazard, and Identified Wildlife (e.g., presence of a Queen Charlotte goshawk nest).

Treed patches should be well distributed across the opening. According to B.C. Ministry of Forests and Ministry of Environment, Lands, and Parks (1995), the maximum distance between patches should not exceed 500 m. An analysis of 3 historic wildfires in TFL 37 showed that the average inter-patch spacing is $224.0 \text{ m} \pm 171.1 \text{ m}$. In the EFZ’s, the Biodiversity Guidebook’s recommendation of 500 m between treed patches (including non-contributing area along an edge, e.g., physically and economic inoperable, ungulate winter range, etc) that are intended to be retained for at least a rotation will be adopted in the short-term. In the GMZ’s, the spacing between treed patches that are intended to be retained for at least a rotation should not exceed 250 m. In the SMZ’s, consideration will be given to reduce the maximum distance between treed patches that are intended to be retained for at least a rotation to 150 m ($\sim 1/2$ a standard deviation) on slopes $< 30\%$, however, this distance will be site specific depending on worker

safety concerns, tree species composition, and terrain. In the SMZ, internal retention patches should be consistent with the VILUP higher level plan objectives.

Additional information about internal retention requirements in each EMU can be found in the 2001 SFMP (Deal *et al.* 2001).

2.9 BLACK BEAR HABITAT

Indicator:	Objective:
9. Area in LU and BEC variant managed for black bear habitat.	Identify areas of high and moderately high suitability for black bear denning habitat and seasonal foraging habitat, by March 31, 2003.

CURRENT STATUS AND BACKGROUND COMMENTS

A proposal was submitted to Habitat Conservation Trust Fund for 2001/02 funding to conduct habitat suitability mapping for black bear. The project made the alternate list that means that if money becomes available, the project could receive funding. The proposal was revised and resubmitted in November 2001 for 2002/03 funding consideration.

In 2001, 25 black bear den trees (17 in redcedar; 4 in yellow cedar; 4 in western hemlock) were identified and reserved from harvest, where worker safety permitted. An adaptive management strategy for managing black bear den trees will be developed during 2002.

A joint MELP/Canfor study was conducted between 1992 to 1995 to examine the seasonal habitat requirements of black bears. Sixty-seven dens were located during the study. All dens were in or beneath large diameter trees or wooden structures. The average dbh of den trees was 140 cm. Most dens were in yellow-cedar or western redcedar.

Black bears selected dens at a number of spatial scales. At the patch scale, bears selected for structural complexity: coarse woody debris, stocking densities of trees, percent vegetation cover, horizontal visibility and slope. Results at the stand scale were similar, but they avoided early seral stages. At the landscape level, bears avoided low elevations for denning. Black bear winter denning habitat potential can be modelled by using forest cover and tree species composition of stands.

The most limiting factor to a stable black bear population may be long term forage supply across the four distinct feeding seasons; early spring, late spring, summer and fall. Based on the research in the DFA, forage potential (habitat suitability) can be modelled by using forest age and biogeoclimatic variant/site series. The model will be verified by using nearly 2,700 relocations of radio-collared bears.

RECOMMENDATION

Revise Objective 9 as follows: “Identify and manage areas of high and moderately high suitability for black bear denning habitat and seasonal foraging habitat, by March 31, 2003.”



2.10 UNGULATE WINTER RANGE

Indicator:	Objective:
10. Area in DFA managed for black-tailed deer and Roosevelt elk critical winter range	Maintain a minimum 6000 ha as winter range for ungulates. Develop a strategy by July 1, 2001.

CURRENT STATUS AND BACKGROUND COMMENTS

Section 69 of the Operational Planning Regulation (OPR) of the Forest Practices Code came into effect on October 15, 1998. It provided for the establishment of ungulate winter ranges (UWR's) under the Forest Practices Code (Code). An ungulate winter range (UWR) is described in the OPR as *“an area that is identified as being necessary for the winter survival of an ungulate species”*.

Mapped winter ranges that were part of a wildlife management plan and/or strategy and were managed as UWR were grandparented on October 15, 1998. Since TFL 37 had a winter range plan approved before October 15, 1998, the ranges were grandparented as UWR's. Under the OPR, grandparented UWR's cease to be an UWR under the Code on October 15, 2003 unless confirmed before that date by the Chief Forester and Deputy Minister of Environment, Lands and Parks.

Canfor conducted an extensive review of 76 grandparented UWR's (including a grandparented winter range partially within Claude Elliot Lake Provincial Park, and 3 grandparented winter ranges totally within Provincial Parks: Schoen Lake, Woss Lake, and Nimpkish Lake) and 10 areas of interest (AOI) as UWR within TFL 37 on northern Vancouver Island between the fall of 1998 and spring of 2001. Results of these assessments were used to prepare this report.

Canfor conducted 39 deer and elk winter range field assessments on pre-selected sites and the remainder was assessed through Geographic Information System analysis, aerial photograph interpretation and/or aerial assessments. The main purpose of the assessments was to objectively evaluate the habitat quality of grandparented UWR's and AOI's as potential UWR within TFL 37. Data from these assessments allowed Canfor to make an informed modification of the existing landscape level UWR plan for TFL 37. The assessment procedure assisted in directing trades of current poor quality UWR for proposed higher quality UWR. This allowed more effective ungulate management and adds some flexibility to future forest development planning in the area.

As a result of assessing all 73 grandparented winter ranges and 10 areas of interest, modifications were made to most of the grandparented winter ranges including deleting 11 poor quality grandparented winter ranges and adding 17 new ranges. There are 59 deer winter ranges and 20 elk winter ranges proposed. Winter ranges were mapped on the basis of: (i) combination of topographic and vegetative features defining high quality winter ranges; and/or (ii) documented historic and current use. Mapping was based on the best available digital information. Where appropriate, proposed UWR boundaries are intended to follow logical engineering boundaries; i.e. streams, old growth/second growth edge, 30 m from road centerline (to allow guyline clearance) and terrain breaks; to minimize the cost of establishing the boundaries in the field and minimize risk of windfall. Minor boundary alterations are expected over time to reflect more accurate digital contour, stream location, and forest cover data.

In the author's opinion, all 79 proposed UWR's are currently necessary for the winter survival of ungulates and are distributed in the most effective way for maintaining ungulates across the natural range. Every attempt has been made to ensure the biological principles behind establishing UWR's, outlined on page 1 of the May 11, 2000 Memorandum of Understanding, have been adhered to.



The proposed winter range plan totals 6,205.5 ha, compared to 6,099.3 ha of grandparented winter ranges (excluding parks).

The average volume, average site index, age class distribution, slope class, and physical operability between the grandparented UWRs and the proposed UWR plan are similar. Generally, the lower elevation boundaries of grandparented winter ranges were too low and experienced topographic shading during the winter months. The upper elevation boundaries of the grandparented winter ranges also tended to be too low in elevation as well. Therefore, the proposed winter range plan results in more area in the CWHvm2 while less in the CWHxm2. If this plan is approved, more low elevation forest will be available for harvesting during the winter months, therefore, increasing the length of the work year for forest workers. The proposed UWR plan has a higher proportion of Class IV terrain and a higher proportion of area which if not constrained would be harvested by an aerial system. Therefore, more area that could be logged by a conventional harvest system will be available for harvest.

The overall impact on TFL 37’s current Allowable Annual Cut (AAC), based on Management Plan 8 data, is expected to be minimal. Twenty-eight percent of the forest within grandparented UWR’s and proposed UWR’s is constrained forest (non-contributing landbase). The analysis indicated a slight downward pressure on the current AAC. The grandparented winter ranges constrains 4,397 ha of Timber Harvesting Landbase, while, this plan constrains 4,451 ha. The difference of 54 ha equates to 0.05% of the TFL 37’s current Timber Harvesting Landbase.

The ungulate winter range plan (including boundaries and practices associated with UWR) was ready for government review on July 3, 2001 and was submitted to government on July 17, 2001. The strategy received government approval on September 13, 2001 under section 69 of the BC Forest Practices Code Operational Planning Regulation.

Monitoring of UWRs will be limited to monitoring windthrow. Minor windthrow was observed along the edge of UN-MU-04 on January 15, 2002.

2.11 QUEEN CHARLOTTE GOSHAWK

Indicator:	Objective:
11. Area in DFA managed for Queen Charlotte goshawk	Submit for government approval, ≥100 ha Wildlife Habitat Areas within each of the following goshawk territories by March 31, 2002: Loon, Toad, Rona, Claude Elliot, Lukwa, John Road, Klaklakama and Vernon.

CURRENT STATUS AND BACKGROUND COMMENTS

In 1993, Canfor began recording sightings of all raptors. In 1994, Canfor assisted the Ministry of Environment, Lands, and Parks in conducting the first formal goshawk surveys on the DFA. One territory was located. Between 1995 and 2001, Canfor partnered with Western Forest Products, Weyerhaeuser, TimberWest, and MELP to conduct inventory and research on Queen Charlotte Goshawks. In 1996, Canfor inventoried all proposed blocks shown on the 1996-2001 Special Management Zone forest development plan for goshawks on TFL 37.

Thirty-two nest sites (11 potential territories) have been identified to date on the TFL. In 2001, Ministry of Water, Land and Air Protection (MWLAP) monitored each known nest site through the joint project described above and conducting inventories in new areas throughout the TFL.

Canfor's objective is to submit for government approval, wildlife habitat areas >100 ha in size by March 31, 2002. This objective is linked closely to the implementation of a goshawk adaptive management strategy for TFL 37 which was completed by Canfor (February 2002) that (i) assesses the problems and uncertainty with the IWMS approach to goshawk management; (ii) sets objectives; (iii) designs a strategy and an implementation plan to achieve the objectives; (iv) monitoring goshawk productivity at the stand-level and habitat at the landscape level; (v) evaluates the outcome; and (vi) adjusts the strategy. Throughout the strategy development, efforts were made to minimize the AAC impacts of goshawk management on the DFA in order not to jeopardize other SFMP indicators. The strategy will be presented to government for review by March 31, 2002 (see RECOMMENDATIONS below).

An application for 2002 funding to develop a goshawk habitat model was submitted to the federal Habitat Stewardship Program (HSP) in December 2001.

RECOMMENDATIONS

- Add "Prepare Queen Charlotte goshawk adaptive management strategy by March 31, 2002" to objectives
- Add "Goshawk habitat suitability mapping for the DFA to be completed by December 31, 2002" to objectives.

2.12 KEEN'S LONG-EARED MYOTIS

Indicator:	Objective:
12. Area in DFA managed for Keen's long-eared myotis	Establish a management area around Keen's long-eared myotis hibernacula within 1 month of discovery.

CURRENT STATUS AND BACKGROUND COMMENTS

To date, no Wildlife Habitat Areas (WHAs) have been proposed or established in the DFA for Keen's long-eared myotis. Old Growth Management Areas are proposed for 2 cave systems where long-eared myotis were detected by December 31, 2002. The bats in these caves were not confirmed as Keen's long-eared myotis.

In 1995, Canfor initiated a one-year project to inventory bats on the DFA. The research questions resulting from this inventory formed the basis of a three-year habitat study on bats that began in 1996. During the study, only two long-eared bats were captured. In 2000, Canfor inventoried two cave systems that had the potential as long-eared bats habitat. Long-eared bats were detected in both of the caves, but at this time it is not known if the bats were Keen's long-eared myotis or Western long-eared myotis, as the morphological characteristics are very similar.

As more research data are collected on Keen's long-eared myotis, a habitat model and associated mapping will be developed. This will allow better management planning in areas in the DFA where high suitability Keen's myotis habitats may be found. As well, management areas will be proposed around documented Keen's long-eared myotis hibernacula.

2.13 MARBLED MURRELET NESTING HABITAT

Indicator:	Objective:
13. Percent of area in LU managed for marbled murrelet	Maintain $\geq 10\%$ of the original suitable marbled murrelet habitat by LU. Develop strategy by December 2004

CURRENT STATUS AND BACKGROUND COMMENTS

Canfor's objective is to maintain $\geq 10\%$ of the original suitable marbled murrelet habitat (i.e., before disturbance by humans on the DFA). Suitable habitat for marbled murrelet is currently defined as "forest in Coastal Western Hemlock (CWH), Coastal Douglas-fir (CDF) and Mountain Hemlock (MH) biogeoclimatic zones within 85 km of saltwater in age class 9 and 8 (structural stage 7) and height class ≥ 5 in CWH and height class ≥ 4 in MH" (IWMS 1999; p. 69). Original suitable habitat can be defined as site index $> 15\text{m}$ (T. Chatwin (MWLAP) pers. comm.) Natural disturbance patterns (temporal and spatial), such as wildfire, will be to be factored into the calculation of original suitable habitat. In 1999, Canfor produced a map identifying approximately 50,000 ha of potential nesting habitat for marbled murrelets in the DFA. Based on the general criteria, there are currently 15,804 ha of potential marbled murrelet habitat in the Lower Nimpkish LU; 30,191 ha in the Upper Nimpkish LU; and 5,637 ha in Canfor's portion of the Tsitika LU. These areas were derived from a summary of Canfor's spatial forest cover, terrestrial ecosystem, and landscape unit databases.

Nesting habitat suitability field verification was completed in the Lower Nimpkish LU in 2000. The Upper Nimpkish LU was completed in 2001. Habitat suitability mapping was updated in 2001 based on field data. Six potential murrelet WHAs were evaluated in 2001 to determine if they were being used by Marbled Murrelet. Five of the six showed signs that marbled murrelets were using the area for nesting.

Thirty marine radar sites for monitoring landscape level murrelet populations were also evaluated in 2001. Ten of these rated as high suitability for monitoring. Evaluation of this technique is planned for 2002 if external funding is approved.

Canfor will develop a management strategy to conserve suitable marbled murrelet nesting habitat in the Upper and Lower Nimpkish LU by December 1, 2004. Monitoring the use of potential WHAs will be part of the development and implementation of this strategy.

An application for 2002 funding to develop the murrelet management strategy was submitted to the federal Habitat Stewardship Program in December 2001 and to the Endangered Species Recovery Fund (ESRF) in January 2002.

2.14 TREE SPECIES DIVERSITY

Indicator:	Objective:
14. Percent of harvested areas regenerated with more than one tree species, as indicated on free growing surveys	100% of harvested areas to be reforested with tree species that are suited for the site. Evaluated every 5 years.

CURRENT STATUS AND BACKGROUND COMMENTS

Canfor's objective is to ensure that 100% of harvested areas are reforested with tree species that are suited for the site. All appraisal blocks assessed for free growing date in 2001 were assessed for their species composition and compared to the SP preferred and acceptable species. MP 8 1998 stocking standards reflect this strategy and outline preferred and acceptable species and recommend preferred species mixes. Table 3 outlines the tree species status of each cutblock with the latest free growing date of 1999.

In addition, in 2001, all cutblocks were reforested with tree species suited for the site, as recommended in Silviculture Prescriptions.

RECOMMENDATIONS

Change the objective to be consistent with the target. Presently the indicator is based on free to grow, and the objective is based on a 5 year analysis we do for MPs. We should base the objective on inventory labels determined by free to grow surveys completed in each calendar year.

Table 3. Forest cover (inventory labels) within all blocks which were surveyed in 2001 for free to grow status.

Block	SU	Inventory label %	SP preferred/acceptable
AH005	S1/3	Fd30,Hw50,Cw20	Hw,Fd,Cw
	S5/3	Fd35,Hw45,Cw20	Fd,Cw,Hw
	S5	Fd24,Hw40,Cw36	Fd,Cw,Hw
CA004	M1/3	Ba36,Hw45,Yc16,Cw2,Fd1	Ba,Hw,Cw,Ss,Yc,Fd
	S1/3	Hw58,Ba23,Fd9,Cw10	Ba,Hw,Cw,Ss,Yc,Fd
CU007	M2/1	Ba40,Hw42,Yc15,Cw3	Ba,Hw,Cw,Yc,Fd
	M1/3	Ba40,Hw40,Yc20	Ba,Hw,Yc,Cw,Fd
CU030	A1/5	Fd35,Hw49,Cw14,Pw3	Cw,Fd,Hw,Pw
KA010	S2	Hw53,Ba20,Cw20,Dr3,Fd3,	Ba,Cw,Hw,Fd
	S1/5	Hw71,Ba14,Cw11,Fd4	Ba,Cw,Hw,Fd
	S1/2	Hw72,Ba17,Cw10,Fd2	Ba,Cw,Hw,Fd
KO051	A1/5	Hw58,Fd28,Cw12,Pw2	Cw,Fd,Hw,Ba,Pw
	A2/4	Fd30,Hw55,Cw15	Fd,Hw,Cw,Ba,Pw
NW074	S1/2	Ba26,Hw60,Cw14,	Ba,Hw,Cw,Fd,Yc
	S2/3	Ba27,Hw63,Cw10	Ba,Hw,Cw,Fd,Ss
NW076	S5/3	Hw60,Ba30,Cw10	Ba,Hw,Cw,Fd,Ss,Pl
	S2	Hw52 Ba28,Cw10,Ss10	Ba,Cw,Hw,Ss,Fd
	S1/2	Hw65,Ba22,Ss4,Cw9	Ba,Hw,Cw,Fd,Ss
NE036	M1/3	Yc40,Ba40,Hw20	Ba,Yc,Hw,Cw
	M2/3	Hw60,Ba20,Cw20	Ba,Yc,Hw,Cw
CE002	S2/1	Hw50,Ba30,Ss10,Pw10	Fd,Cw,Ba,Hw,Pw,Ss
	M1	Ba40,Hw40,Yc20	Ba,Hw,Cw,Yc,Bn,Fd
	S1/4	Hw70,Ba30	Fd,Cw,Ba,Hw,Pw,Ss
	S1	Fd26,Hw51,Cw9,Ba11,Yc1	Fd,Cw,Hw,Ba,Pw,Ss
HR048	S1/5	Hw69,Ba18,Cw13	Ba,Hw,Cw,Fd
KH079wfC	A1	Hw60,Fd30,Cw10	Fd,Hw,Cw,Pw
KH079wfP	A1	Fd50,Hw30,Cw20	Fd,Hw,Cw,Pw
Q099	A1	Fd53,Hw27,Cw10,Dr10	Fd,Hw,Pw,Cw
TS006	M3	Y30,Ba33,Hw37	Yc,Ba,Hw
	M3/1	Ba40,Yc34,Hw26	Ba,Yc,Hw
WK010A	S1/5	Fd35,Hw45,Cw20	Fd,Hw,Cw,Ba
K172	S2/3	Hw65,Ba30,Cw5	Cw,Ba,Hw,Fd
KT126	S1/2	Ba20.Cw30,Yc5,Hw30,Dr5	Hw,Ba,Cw,Fd,Yc
	M1/2	Hw20,Ba50,Cw30	Ba,Yc,Hw,Cw,Hm,Fd
KT117	S1/3	Cw26,Hw48,Ba26	Ba,Cw,Hw,Fd,Ys,Ss
SW051	S2/1	Fd40,Cw20,Hw40	Fd,Hw,Cw,Ba
	S1	Fd40,Hw42,Cw18	Fd,Hw,Cw,Ba
	S1/5	Hw60,Fd30,Cw10	Fd,Hw,Cw,Ba,Pl
NE035	M5	Hw60,Ba25,Yc10,Cw5	Ba,Hw,Yc,Cw,Ss



2.15 RIPARIAN AREA PROTECTION

Indicator:	Objective:
15. Percent of harvested areas adjacent to streams, lakes and/or wetlands that have riparian management areas that are suited to protection of the associated aquatic habitat.	100% of cutblocks adjacent to streams, lakes and/or wetlands must meet or exceed regulatory requirements for riparian management unless the District Manager approves a variance.

CURRENT STATUS AND BACKGROUND COMMENTS

During the February 12-14, 2001 audit, KPMG identified three harvest blocks where the stream classification assessments related to the presence or absence of fish, were not performed to the required standard. No destruction of fish habitat resulted from this classification. All other riparian-related regulatory management requirements were met on the DFA in 2001.

The BC Forest Practices Code defines riparian management areas (RMAs), riparian reserve zones (RRZs) and riparian management zones (RMZs). The RMA is a combination of the RRZ and the RMZ. The purpose of the RMA is to provide protective cover, shade, stability, diversity, small organic debris, and large organic debris depending on the requirements of the individual RMA for the stream, river, lake or wetland. The RRZ is the area adjacent to a stream, wetland or lake and the width is determined by the stream width and whether the stream is a fish stream or in a community watershed. The RRZ is a reserve where no timber harvesting is permitted without authorization from the District Manager. The RMZ is an area outside the RRZ that restricts timber harvest. Where the RMZ is not required to protect the integrity of the RRZ, the RMZ may be harvested. In riparian areas where no RRZ is required, consideration will be given to debris management and water quality, if the RMZ is not required it may be harvested. Where the RMZ is required to protect the integrity of the RMA, harvesting may be restricted or prohibited as the case may be. The primary objective for RMA management is windfall protection, stream bank integrity, and water quality, and secondly to provide additional wildlife trees.

Riparian Management Area Classification is based on the guidelines of the *Riparian Management Area Guidebook*. The classification is dependent on a number of factors including the presence of fish, whether the water body is part of a community watershed, size of the water body, and the ecological setting (BEC subzone). The prescription for each RMA is site specific and could range from total removal of the RMZ to total retention of the RMZ. A description of RMA classifications is provided in Table 4.

Table 4. Riparian Management Area classifications from the Riparian Management Area Guidebook.

Riparian class	Fish present or community watershed	Average stream width (m)	Lake or wetland size (ha)	BEC subzone	RRZ (m)	RMZ (m)	RMA (m)
S1 (large)	Yes	≥ 100	n/a	n/a	0	100	100
S1	Yes	>20 – <100	n/a	n/a	50	20	70
S2	Yes	>5 – <20	n/a	n/a	30	20	50
S3	Yes	1.5 – <5	n/a	n/a	20	20	40
S4	Yes	<1.5	n/a	n/a	0	30	30
S5	No	>3	n/a	n/a	0	30	30
S6	No	<3	n/a	n/a	0	20	20
W1	n/a	n/a	>5	All	10	40	50
W2	n/a	n/a	1–5	CWHxm	10	20	30
W3	n/a	n/a	1–5	*	0	30	30
W4	n/a	n/a	0.5–1	CWHxm	0	30	30
W5	n/a	n/a	complex	n/a	10	40	50
L1	n/a	n/a	>5		10	0	10
L2	n/a	n/a	1–5	CWHxm	10	20	30
L3	n/a	n/a	1–5	*	0	30	30
L4	n/a	n/a	0.5–1	CWHxm	0	30	30

* all BEC subzones except CWHxm

2.16 SEED STOCK

Indicator:	Objective:
16. Percent of Ministry of Forests (MoF) registered seed used	100% of the seed and seed sources used for reforestation must be MoF registered

CURRENT STATUS AND BACKGROUND COMMENTS

In 2001, 100% of the seed used for reforestation was MoF registered.

Each year, Canfor completes an analysis of seed requirements for reforestation (current to June 2000, see Table 5). This analysis is based on site types and elevations projected in forest development plans. This allows Canfor to adjust seed purchase and/or collection strategies accordingly.

**Table 5.** Seed Inventory for TFL 37 (15 June 2000).

Seedlot	Species ¹	GW ²	Seeds/ gram	Year collected	Location collected	Lat.	Long.	Elev. (m)	Expected germin- ation (%)	Grams	Seed-lings (³ 000s)
39702	Ba	B	31	1993	Vernon Lake	50° 00'	126° 24'	305	68	83,495	550.7
39710	Ba	B	33	1996	Karmutsen River	50° 22'	127° 04'	525	61	37,679	231.4
46195	Ba	B	37	1996	Karmutsen River	50° 22'	127° 04'	525	52	3,941	23.5
39713	Ba	B	30	1996	Kiyu Creek	50° 06'	126° 27'	730	72	60,448	1082.4
45789	Ba	B	29	1996	Club Creek	50° 07'	126° 19'	930	78	33,156	244.1
7871	Ba	B	37	1988	Naka Creek	50° 24'	126° 26'	950	66	23,594	176.0
2308.1											
46188	Bn	B	34	1991	Red Mt.	50° 00'	125° 00'	1143	42	12,490	60.1
46220	Bn	B	25	1978	Skykomish	50° 00'	125° 00'	1067	70	7,241	39.5
99.6											
60267	Cw	2			139 Sechelt			200	212		200.0
60268	Cw	10			139 Sechelt			200	217		100.0
39708	Cw	B	800	1995	Lukwa Creek	50° 12'	126° 30'	810	81	8,631	1888.4
40448	Cw	B	734	1995	Cowichan River	48° 48'	123° 54'	200	78	2,816	525.2
2713.6											
60660	Fdc	5	94	1999	996 Rochester	48° 30'	121° 54'	322	91	10,029	340.6
61064	Fdc	5	81	1999	116 Sechelt	49° 08'	123° 28'	608	85	7,328	181.2
409	Fdc	B	102	1959	Nimpkish Lake	50° 20'	126° 53'	61	92	37,278	1373.8
982	Fdc	B	116	1966	Woss Camp	50° 14'	126° 32'	274	87	15,670	600.6
1048	Fdc	B	95	1966	Garrett Lake	50° 03'	125° 37'	396	92	877	30.0
61059	Fdc	2	85	1999	116 Sechelt	49° 52'	125° 56'	691	88	37,653	1057.2
7410	Fdc	B	96	1985	Mount Hall	49° 54'	123° 53'	850	95	4,999	200.2
3783.6											
6883	Hw	2	505	1990	133 Sechelt	50° 00'	124° 30'	300	86	6,576	1014.3
60106	Hw	8	438	1993	133 Sechelt	50° 12'	125° 08'	300	94	9	1.5
60379	Hw	16	414	1999	133 Sechelt	50° 00'	126° 00'	300	93	2,169	356.3
61007	Hw	16	406	1999	133 Sechelt	50° 00'	125° 00'	300	88	2,657	356.4
60376	Hw	17	460	1996	133 Sechelt	50° 00'	124° 30'	300	91	322	53.5
60377	Hw	13	406	1996	133 Sechelt	50° 00'	124° 30'	500	90	104	14.5
6517	Hw	2	454	1992	130 Mt. Newton	49° 19'	126° 37'	525	83	568	75.8
60174	Hw	2	446	1993	130 Mt. Newton	49° 13'	125° 20'	661	90	6	0.9
3309	Hw	B	542	1978	TFL 37	50° 22'	126° 52'	350	59	194	19.0
3915	Hw	B	459	1979	TFL 37	50° 07'	126° 37'	580	72	415	42.8
1935.0											
4728	Ss	B	385	1966	Kingcome River	50° 58'	126° 11'	0	88	1,353	172.1
40437	Ss	B+	438	1993	Big Qualicum	49° 22'	124° 36'	25	92	435	68.8
240.9											
32454	Yc	B	214	1990	Vernon Area	49° 56'	126° 20'	670	67	11	0.5



Seedlot	Species ¹	GW ²	Seeds/ gram	Year collected	Location collected	Lat.	Long.	Elev. (m)	Expected germin- ation (%)	Grams	Seed-lings ('000s)
39706	Yc	B	223	1995	Surprise/Lukwa	50° 00'	126° 17'	925	26	1,079	26.3
39711	Yc	B	202	1996	Gold / Lukwa	50° 15'	126° 35'	850	54	2,180	72.6
45788	Yc	B	200	1996	Tahsish River	50° 15'	127° 05'	800	49	1,035	32.4
46243	Yc	B	212	1998	Klakkakama Lake	50° 09'	126° 25'	1067	43	8,293	244.5
46244	Yc	B	222	1998	Lukwa	50° 17'	126° 31'	762	40	11,391	349.3
46245	Yc	B	214	1998	Lukwa	50° 17'	126° 31'	1067	28	1,318	31.9
46246	Yc	B	219	1998	Gold Creek	50° 16'	126° 35'	1067	31	1,114	29.8
											787.3

NOTES:

- Species: Ba = amabilis fir (*Abies amabilis*), Bn = noble fir (*A. procera*), Cw = western redcedar (*Thuja plicata*), Fdc = coastal Douglas-fir (*Pseudotsuga menziesii*), Hw = western hemlock (*Tsuga heterophylla*), Ss = Sitka spruce (*Picea sitchensis*), Yc = yellow-cedar (*Chamaecyparis nootkatensis*).
- GW (Genetic Worth): B = Wild seed (non-improved); numeric values = expected genetic gain from genetically improved seed, presented in % of volume gain achieved by rotation age.

2.17 DISEASE CONTROL

Indicator:	Objective:
17. Percent of cutblocks in compliance with disease control measures identified in Silviculture Prescriptions (SPs).	100% of cutblocks in compliance with disease control measures in SPs, unless the District Manager approves a variance.

CURRENT STATUS AND BACKGROUND COMMENTS

All cutblocks in 2001 were in compliance with disease control measures as identified in SPs. There were 4 blocks planted in 2001, which required root rot management as indicated in the SPs (i.e., planting disease resistant species or mechanically pulling stumps of infected stems). These are listed in Table 12.

Table 6. Forest health prescription compliance summary for blocks planted in 2001 on TFL 37 where the SP indicated a Forest Health concern.

Block	Planted	Comment
MK009	2001	Root rot areas managed as per SP
KA101	2001	Root rot areas managed as per SP
CU050	2001	Root rot areas managed as per SP
NI020	2001	Root rot areas managed as per SP

2.18 FIRE CONTROL

Indicator:	Objective:
18. Time to control an accidental industrial or recreational fire	All accidental industrial and recreational fires extinguished or under control by 10 am the day after the fire started (\pm 20% of the reported fires).

CURRENT STATUS AND BACKGROUND COMMENTS

No accidental fires occurred in 2001.

Canfor's objective for fire control is that all accidental industrial fires must be extinguished or under control by 10 am the day after the fire started. A summary of fire occurrences is provided in the TFL 37 annual reports.

2.19 FIRE SALVAGE

Indicator:	Objective:
19. Volume of timber salvaged from accidental fires	100% of timber is salvaged from fire outbreak where economically and ecologically appropriate.

CURRENT STATUS AND BACKGROUND COMMENTS

Canfor's objective is to salvage 100% of the timber from a fire, where economically and ecologically appropriate. No timber was damaged by fire in 2001, therefore no timber volume was salvaged from accidental fires in 2001.

2.20 INSECT CONTROL

Indicator:	Objective:
20. Number of hectares/yr of forest lost to insect outbreak	Forest area lost due to insect outbreak not to exceed historical levels.

CURRENT STATUS AND BACKGROUND COMMENTS

There was no loss of timber due to insect outbreaks on the DFA in 2001. Reports of insect attacks submitted by Canfor staff and the public are immediately followed up. Records of findings are recorded in Forest Health files.

A number of pest species exist on TFL 37 and populations are monitored and/or managed to reduce the risk of spread and impact on the timber resource. Descriptions of insect pest outbreaks that are of concern to Canfor are described in TFL 37 MP 8 (1998). Canfor's objective is to ensure that forest area losses due to insect outbreaks do not exceed historic levels. According to MP 8 (Timber Supply Analysis Information Package), since 1960, there has not been an epidemic insect outbreak on the DFA.

2.21 INSECT DAMAGE SALVAGE

Indicator:	Objective:
21. Volume of timber salvaged from severe insect outbreaks.	100% of timber is salvaged from severe insect outbreak where economically and ecologically appropriate.

CURRENT STATUS AND BACKGROUND COMMENTS

There was no net loss of volume due to insect outbreak on TFL 37 in 2001, therefore no volume of timber was salvaged in 2001 due to insect outbreaks. However, Canfor's objective is to salvage 100% of timber damaged by severe insect outbreak, when and where economically and ecologically appropriate.

2.22 WINDTHROW SALVAGE

Indicator:	Objective:
22. Volume of timber salvaged from severe windthrow events.	100% of timber is salvaged from severe windthrow events within 2 years of discovery, where economically and ecologically appropriate.

CURRENT STATUS AND BACKGROUND COMMENTS

In 2001, Canfor did not salvage any timber from recent severe windthrow events.

Windthrow damage in 2001 was estimated to be approximately 65,000 m³. The majority of the volume affected by the windstorms is not concentrated in a particular area, but spread over the entire DFA. The following two blocks experienced significant windthrow:

- Vernon: AL021wf – approx. 4,000 m³
- Kilpala: NW055wf – approx. 3,000 m³

Where appropriate, these volumes are planned to be salvaged by 2004.

Canfor's objective is to salvage 100% of timber from severe windthrow events where economically and ecologically appropriate.

2.23 FLOODING

Indicator:	Objective:
23. Volume of timber salvaged from severe flooding events.	100% of timber is salvaged from severe flooding events where economically and ecologically appropriate.

CURRENT STATUS AND BACKGROUND COMMENTS

No timber was damaged by flooding in 2001, therefore no timber volume was salvaged in the DFA due to flooding.

Timber losses due to flooding events are not of major concern in the DFA. Often when flooding is caused by beavers altering drainage structures, the flooded area becomes fish habitat and it would not be ecologically appropriate to salvage the timber.

2.24 REGENERATION SUCCESS

Indicator:	Objective:
24. Percent of successfully regenerated cutblocks.	Regeneration success on $\geq 95\%$ ($\pm 5\%$) of cutblocks. Ongoing evaluations.

CURRENT STATUS AND BACKGROUND COMMENTS

The regeneration status of each block surveyed in 2001 indicated that 100% of the cutblocks were satisfactorily restocked (SR, see Table 7). Canfor's objective is to ensure regeneration success on $\geq 95\%$ ($\pm 5\%$) of cutblocks within the regeneration delay period specified in the silviculture prescription for each cutblock.

Table 7. Regeneration status of blocks surveyed in 2001 on TFL 37.

BLOCK	STOCKING STATUS	BLOCK	STOCKING STATUS
AR221	SR*	WB018	SR
AR222	SR	WB020	SR
AT297	SR	BC004	SR
CU060H	SR	CH003	SR
DL010WF	SR	NW066	SR
DL013	SR	NW094	SR
DL025	SR	NW455	SR
DR025	SR	NW754	SR
HG014	SR	M037	SR
HI036	SR	MC042WF	SR
HR053	SR	GC015	SR
HR081A	SR	HR089	SR
KA036	SR	TS041	SR
KH058	SR	WR013	SR
KH071H	SR	Y025	SR
KH073	SR	CA021	SR
KT023	SR	CU012	SR
MK019	SR	CU020	SR
MK021A	SR	CU025	SR
MK033	SR	NE018	SR
MK033WF	SR	NE024	SR
NE019	SR	KT054	SR
Q024	SR	KU030	SR
Q027	SR	KU040	SR
Q032	SR	KX038	SR
TK030	SR	SW060	SR
TR297	SR	SW063	SR
W028	SR	VR061	SR

* SR = Satisfactorily restocked



2.25 FREE GROWING SUCCESS

Indicator:	Objective:
25. Percent of cutblocks that achieve free growing status as specified in SPs.	100% (-5%) of cutblocks will achieve free growing status within the free growing assessment period specified in SPs.

CURRENT STATUS AND BACKGROUND COMMENTS

By the end of 2001, 10 out of 13 (77%) blocks with a late free growing date of 2001, had reached free growing status (see Table 8). Two blocks (Y047, MK005) had not achieved free growing (due to brush competition) by the end of 2001, while KX106 had an incomplete survey. Consequently, these three blocks will require an SP amendment (currently in progress) in order to extend the free growing date and thereby meet the objective of 100% free growing status.

Table 8. Free Growing Status of Blocks with a Late Free Growing Date of 2001.

Block	Survey Year	Area (ha)	FG Area* (ha)	NFG Area* (ha)	Comments
KT106	2000	41.7	41.7		
KT117	2001	34.3	34.3		
KX106	1999	50.3	44.7	5.6	Needs amending for late date
KX055	2000	29.3	29.3		
SW050	2000	46.9	46.9		
Y047	2000	28.7	25.4	3.5	Needs amending for late date
Q201	2000	84.6	84.6		
MK005	2000	74.7	71.1	3.6	Needs amending for late date
NE038	2000	34.7	34.7		
NE035	1999/2000	90.2	90.2		
PW001	2000	1.6	1.6		
NE-53B	2000	26.6	26.6		
NW038	2000	23	23		

* FG – free growing. NFG – not free growing

2.26 SITE DEGRADATION

Indicator:	Objective:
26. Percent of harvest areas at or below site degradation specifications identified in SPs	95% ($\pm 5\%$) of harvest areas in compliance with site degradation objectives specified in SPs.

CURRENT STATUS AND BACKGROUND COMMENTS

In 2001, 45 of 46 harvest areas (98%) were in compliance with site degradation objectives specified in SPs. Only one block (# M045) exceeded the site degradation objective --- this was by less than 10% so an amendment to the SP or rehabilitation was not required (Table 9).

Table 9. Site Degradation Compliance (%) for Blocks Harvested in 2001 on TFL 37.

BLOCK	% Specified		COMMENTS	BLOCK	% Specified		COMMENTS
	in SP	ACTUAL %			in SP	ACTUAL %	
NI042	2.2	0.7		DL055	4.4	3.6	
NW066	5.4	4.6		VR059	7.6	5.2	
M060	5.2	4.4		TS018	5.7	5.7	
SP026	6.1	4.7		KU022A	7	5.7	
CU054	7	6.6		KX038	2	2	
NW029	6.6	5.4		NW062	4.7	3.8	
M045	4.8	4.9	within 10%	WT018	3.5	3.5	
K303	6.2	4.7		KA172H	2.6	0.4	
AC191	4	3.1		TR312	6.9	5.4	
CU050	6.3	5.2		TR274	5	4.1	
KT156	5.7	3.8		TS054	7.9	6.6	
SP031	6.9	5.6		P056	4.4	3.2	
NW040	7.4	6		SP030	8	6	
NR003	5.5	5.4		SP030A	7.6	6.6	
NR002	13.7	10.5		TR261	8	4.2	
KU022A	19.9	19.4		KA171H	1.3	1.2	
KT161	5.7	5.5		CT042WF	8.7	7.7	
NW754	5.1	4.9		HT017	4.6	3.5	
MCI009	9.1	6.9		DL027	5.2	4.1	
NE072	6.6	6.6		CE032H	3.1	3.9	

2.27 SPECIAL HABITAT FEATURES

Indicator:	Objective:
27. Area set aside for special management associated with known habitat features as they are discovered.	Establish management zones around special habitat features, as they are located, and where worker safety will not be compromised.

CURRENT STATUS AND BACKGROUND COMMENTS

Bear den trees, large stick nests, and great blue heron colonies are retained as they are located and where worker safety will not be compromised. Active nests of other bird species are also protected, as they are located.

In 2001, the following special habitat features were documented and procedures implemented:

- 25 black bear dens were identified at the planning level (see sec. 2.9). These den trees will be reserved from harvest, where worker safety will not be compromised.
- one tree containing two bald eagle nests was tagged and a management area was placed around the tree (Block # CB001)
- one new active goshawk nest (Rona territory) was discovered by the Ministry of Water, Land and Air Protection field crew.

2.28 AREA LOST TO FOREST ROADS

Indicator:	Objective:
28. Percent of future and existing roads by productive forest area in the DFA	Future and existing roads must occupy $\leq 3.5\%$ ($\pm 2\%$) of the productive forest land base. Five year summary analysis.

CURRENT STATUS AND BACKGROUND COMMENTS

The next review of percent of future and existing roads which occupy productive forest land base will be done up to Dec. 31, 2004. This analysis will occur by 2005 in conjunction with the development of Management Plan 9.

Canfor's objective is to ensure that future and existing roads do not occupy more than 3.5% ($\pm 2\%$) of the productive forest land base.



2.29 TERRAIN STABILITY ASSESSMENTS

Indicator:	Objective:
29. Operational plans are consistent with terrain stability assessments.	100% of the operational plans are consistent with the terrain stability assessments.

CURRENT STATUS AND BACKGROUND COMMENTS

Terrain stability assessments are completed on an ongoing basis for all terrain requirements. In 2001, 36 blocks with terrain >60% slope and/or Class IV and V terrain, were field assessed. Operational plans were 100% consistent with the results of those assessments.

Canfor's objective is to ensure that operational plans are consistent with terrain stability assessments. Terrain stability assessments are completed for Class IV, IVR and V terrain types, or slopes >60%, as they are encountered in areas proposed for harvest or road construction. These assessments are ongoing and Canfor has retained the services of a terrain specialist.

2.30 ROAD DEACTIVATION

Indicator:	Objective:
30. Number of activities related to restoration of significant erosion hazards resulting from road and railways built prior to 1995.	Fix significant erosion hazards on pre-1995 roads on a priority basis. Critical hazards to be fixed within one week of discovery or as soon as seasonal conditions permit.

CURRENT STATUS AND BACKGROUND COMMENTS

Canfor's objective is to restore or fix significant erosion hazards on pre-1995 roads on a priority basis. Significant erosion hazards are defined as high or critical hazards. All critical hazards must be fixed within one week of discovery. Critical hazards would include those areas with an extreme risk of erosion that are near public highways, fish streams, human habitation or power lines. Low erosion hazard ratings are not likely to be dealt with because most of these sites have been naturally revegetated.

In 2001, 14 pre-1995 roads totalling 21.7 km were permanently deactivated. This included removing all structures and fixing all associated terrain instability and erosion concerns. Maintenance and yearly inspections are not required. The 2001 road deactivation activities are summarized in Appendix 2.

All critical erosion hazards were fixed within a week of discovery or as soon as possible as season conditions permit. All significant erosion hazards were treated between 1994 and 2001 inclusive.



2.31 CAVE AND KARST FEATURES

Indicator:	Objective:
31. Area managed for cave and karst features, as they are located	Establish management areas for cave and karst features, as they are located.

CURRENT STATUS AND BACKGROUND COMMENTS

Canfor’s objective is to establish management areas for cave and karst features as they are located within the DFA. Canfor considers the protection and management of caves and karst features to be an essential part of integrated resource management on TFL 37. Specific cave and karst sites are investigated as they are encountered on a site-by-site basis throughout the DFA. When necessary, cave and karst feature management guidelines are included on SPs --- these are subject to audit compliance inspections.

2.32 CONTAMINANT SPILLS

Indicator:	Objective:
32. Number of contaminant spills per year that enter a waterbody	Zero contaminant spills per year that enter a waterbody.

CURRENT STATUS AND BACKGROUND COMMENTS

Twenty accidental spills occurred in 2001 – these were primarily diesel fuel and hydraulic oil spills, which were cleaned up and recorded. One spill entered a waterbody in 2001. This occurred when a bilge pump accidentally activated on a boom boat at Beaver Cove. This resulted in 4 litres of diesel spilling into Beaver Cove. A summary of the 2001 spill log is found in Table 10.

Canfor's objective is to have zero contaminant spills that enter a waterbody. However, it is recognized that fuel spills will occur. Any contaminant spill must be documented and preventative and corrective action implemented immediately.

RECOMMENDATION

Change the Indicator and Objective to read “reportable spills”.



Table 10. 2001 Spill Log Record for TFL 37.

Date	Number	Spilled	Spilled (L)	Cause
Jan 29 2001	0422	diesel fuel	23	blown hose
Feb 12 2001	0434	hydraulic oil	136	Main hydraulic hose from travel pump blown
Feb 6 2001	DL020 - loader	hydraulic oil	90	main hydraulic hose blown
March 20 2001	Y4	hydraulic oil	25	roto seal failed on yarder
Apr 1 2001	not known	hydraulic oil	90	travel motor hose blown
Apr 2 2001	0446	hydraulic oil	20	swing hose blown
Apr 7 2001	6415	hydraulic oil	23	cracked hydraulic cooler
Apr 10 2001	0434	hydraulic oil	190	blown travel motor hose
Apr 19 2001	boom boat	diesel fuel	4	bilge pump accidentally activated
May 14 2001	not known	diesel fuel	18	worker left nozzle unattended
June 11 2001	0445	hydraulic oil	68	swing hose blew
July 5 2001	0422	hydraulic oil	40	blown o ring on swing hose
Aug 20 2001	0946	antifreeze	27	blown radiator hose
Aug 21 2001	6612	hydraulic oil	65	blew main hydraulic hose from pump to valve bank
Sept 20 2001	0434	hydraulic oil	114	blown hose from pump to travel motor
Oct 15 2001	not known	diesel fuel	900	fuel filter damaged
Oct 04 2001	0427	hydraulic oil	23	log knocked off fitting on top of boom
Oct 24 2001	0419	hydraulic oil	68	blown hose between valve bank and pump
Oct 25 2001	6627	hydraulic oil	60	main boom hydraulic hose blown
Oct 26 2001	6627	hydraulic oil	80	main boom hydraulic hose blown, faulty coupling
Total 2001			2064	

2.33 WATERSHED ASSESSMENTS

Indicator:	Objective:
33. Operational Plans are consistent with Watershed Assessments	Operational plans are 100% consistent with watershed assessments, unless the District Manager approves a variance.

CURRENT STATUS AND BACKGROUND COMMENTS

No watershed assessments were conducted in 2001. All operational plans in 2001 were 100% consistent with prior watershed assessments (see Canfor SFMP, Deal et al. 2001).

2.34 PERCENT OF AREA REFORESTED

Indicator:	Objective:
34. Percent of area reforested.	Reforest 100% of the cutblocks with preferred and acceptable species as specified within SPs.

CURRENT STATUS AND BACKGROUND COMMENTS

Canfor’s objective is to reforest 100% of the cutlocks with preferred and acceptable species as specified in the SP. All blocks in 2001 were reforested with preferred and acceptable species as specified in SPs.

2.35 ALLOWABLE ANNUAL CUT

Indicator:	Objective:
35. Allowable Annual Cut (AAC) as predicted through long-term harvest level projection and determined by the Chief Forester.	Harvest the AAC allocation over the 5 year cut control period ($\pm 10\%$ over 5-yr period).

CURRENT STATUS AND BACKGROUND COMMENTS

2001 is the beginning of a new 5 year cut control period. The cut [JAD1]control record update for 1996-2001 [JAD2]is summarized in Table 11.

Table 11. TFL 37's actual recorded and Allowable Annual Cut summary for 1996-2001.

Year	Actual Recorded Cut (m ³)*	Allowable Annual Cut (m ³)*	% Recorded Cut of AAC (%)	5 Year Cut Control Compliance (%) (for 1996-2001 only)
1996	1,010,359	1,024,816	98.6%	
1997	982,675	1,024,816	95.9%	
1998	801,725	1,024,816	78.2%	99.9%
1999	1,118,764	1,024,816	109.2%	
2000	1,207,318	1,024,816	117.8%	
2001	885,525	1,024,816	86.4%	

* not including SBFEP

2.36 NON-FOREST DEVELOPERS

Indicator:	Objective:
36. Documented communications with non-forest developers on the DFA.	In all referrals that have potential to remove significant land from the DFA, stress the minimisation of losses to the forest land base.

CURRENT STATUS AND BACKGROUND COMMENTS

In 2001, no referrals were received that had the potential to remove significant lands from the DFA. Canfor's objective is to ensure that non-forest developers on the DFA are made aware of the potential for the cumulative effects of loss of forest land, and the effects on habitat and timber production.

Currently, the largest non-forest developer within TFL 37 is BC Hydro. BC Hydro operates and maintains a number of transmission lines within the DFA. Any concerns regarding the exact location or activities within the proximity of these lines need to be referred to BC Hydro.



2.37 HARVEST PROFILE

Indicator:	Objective:
37. Harvest profile by: economic operability, physical operability, technical operability (conventional/unconventional harvest systems), season, and second growth.	Up to 25% variance with any harvest profile established for TFL 37 MP 8 over its term.

CURRENT STATUS AND BACKGROUND COMMENTS

Canfor's goal is to ensure that sustainable harvest levels are maintained on forest lands in the DFA. These will be harvested by profile based on: i) economic operability (market prices, planning, engineering and logging costs, government stumpage, etc.); ii) physical operability (slope, terrain); iii) technical operability (silviculture system, type of harvesting and yarding methods); iv) seasonal constraints; v) amount of second growth forest available for harvest (stand type); and vi) structural stage and tree species. Management Plan 8 only set targets for harvest season, conventional and unconventional, tree species and second growth harvest.

The updated harvest profile summary for the DFA is shown in Table 12.

RECOMMENDATION

Add tree species to indicator and objective.

Table 12. Harvest Profile for TFL 37 (1999-2001 *Harvest Profiles Relative to MP 8 Inventories*).

Profile	Indicator	1999		2000		2001		TOTAL		Targets	Variance
		Total Harvest Area	1187.0	Total Harvest Area	1410.9	Total Harvest Area	1203.6	Total Harvest Area	3801.5		
		Amount	% of Total Harvest	Amount	% of Total Harvest	Amount	% of Total Harvest	Amount	% of Total Harvest		
		(ha)		(ha)		(ha)		(ha)			
BEC Variant	CWHmm1		0%	55.6	4%	26.5	2%	82.1	3%		
	CWHxm2		0%	122.3	9%	308.6	26%	430.9	16%		
	CWHvm1		0%	519.9	37%	374.0	31%	893.8	34%		
	CWHvm2		0%	553.1	39%	341.9	28%	895.0	34%		
	MHmm1		0%	160.2	11%	152.7	13%	312.9	12%		
	MHmmp		0%	0.0	0%	0.0	0%	0.0	0%		
Terrain	Class I	46.0	4%	186.1	13%	162.5	14%	394.6	10%		
	Class II	356.8	30%	320.0	23%	280.8	23%	957.6	25%		
	Class III	581.1	49%	676.8	48%	575.2	48%	1,833.1	48%		
	Class IV	191.3	16%	198.9	14%	175.9	15%	566.1	15%		
	Class V	11.9	1%	29.2	2%	9.2	1%	50.3	1%		
	Colluvium	102.5	9%	38.7	3%	37.6	3%	178.9	5%		
Logging Type	Conventional	1133.2	95%	1285.1	91%	1106.0	92%	3,524.3	93%	87%	6%
	Unconventional	53.8	5%	125.8	9%	97.6	8%	277.2	7%	13%	-6%
Silviculture System	Selective	11.6	1%	34.2	2%	16.8	1%	62.6	2%		
	Clearcut	1175.4	99%	1410.9	98%	1203.6	99%	3,789.9	98%		
	Commercial Thin *	0	0%	0	0%	0	0%	-	0%		



Table 12 con't

Profile	Indicator	1999		2000		2001		TOTAL		Targets	Variance
		Total Harvest Area	1187.0	Total Harvest Area	1410.9	Total Harvest Area	1203.6	Total Harvest Area	3801.5		
		Amount	% of Total Harvest	Amount	% of Total Harvest	Amount	% of Total Harvest	Amount	% of Total Harvest		
		(ha)		(ha)		(ha)		(ha)			
Seasonal	Winter	538.3	45%	782.0	55%	534.0	44%	1,854.3	49%	22%	27%
	Intermediate	371.7	31%	212.4	15%	216.0	18%	800.1	21%	21%	0%
	Summer	277.0	23%	416.6	30%	453.5	38%	1,147.1	30%	57%	-27%
Economic Operability	Economic	1,049.9	88%	1,178.1	83%	975.5	81%	3,203.5	84%	82%	2%
	Marginal	109.1	9%	185.4	13%	193.2	16%	487.7	13%	18%	-5%
	Uneconomic	22.5	2%	37.1	3%	25.9	2%	85.5	2%		
	NP or NF **	5.7	0%	10.4	1%	8.9	1%	25.0	1%		
Physical Operability	Operable	1169.9	99%	1364.1	97%	1160.8	96%	3,694.8	97%		
	Inoperable	17.2	1%	46.8	3%	42.8	4%	106.8	3%		
Stand Type	Mature	1,097.9	92%	1,142.1	81%	931.7	77%	3,171.7	83%	90%	-7%
	Second Growth	35.8	3%	200.4	14%	240.0	20%	476.2	13%	10%	3%
	Immature	47.8	4%	58.1	4%	22.9	2%	128.8	3%		
	NP or NF **	5.7	0%	10.4	1%	8.9	1%	25.0	1%		



Table 12 con't

Profile	Indicator	1999		2000		2001		TOTAL		Targets	Variance
		Total Harvest Area	1187.0	Total Harvest Area	1410.9	Total Harvest Area	1203.6	Total Harvest Area	3801.5		
		Amount	% of Total Harvest	Amount	% of Total Harvest	Amount	% of Total Harvest	Amount	% of Total Harvest		
		(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)		
Structural Stage	Not Applicable	0.2	0%	9.9	1%	5.8	0%	15.9	0%		
	Sparse	1.5	0%	0.6	0%	1.2	0%	3.3	0%		
	Shrub/Herb	16.8	1%	13.3	1%	9.2	1%	39.3	1%		
	Pole/Sapling	5.3	0%	5.8	0%	5.2	0%	16.3	0%		
	Young Forest	16.9	1%	174.1	12%	230.0	19%	421.0	11%		
	Mature Forest	134.0	11%	127.4	9%	123.8	10%	385.2	10%		
	Old Forest	1,011.4	85%	1,079.7	77%	828.4	69%	2,919.5	77%		
Species (Total Basal Area)	Hw/Hm	446.6	48%	582.3	53%	488.9	52%	1,517.8	51%	51%	0%
	Ba	163.2	17%	201.4	18%	120.0	13%	484.6	16%	18%	-2%
	Cw	148.8	16%	117.0	11%	111.3	12%	377.1	13%	13%	0%
	Fd	128.9	14%	98.8	9%	120.2	13%	347.9	12%	8%	4%
	Yc	48.5	5%	84.4	8%	80.7	9%	213.6	7%	9%	-2%
	Other	3.0	0%	10.5	1%	11.6	1%	25.1	1%	1%	0%
	AAC	Volume charged (m3 or m3/ha)	1,118,764 m3	942.5 m3/ha	1,207,318 m3	855.7 m3/ha	865,180 m3	718.8 m3/ha	3,191,262.0 m3	839.5 m3/ha	
* Estimated area											

** Areas classified as Non-Productive or Non-Forest

2.38 SHAREHOLDER VALUE

Indicator:	Objective:
38. Return on shareholder value (\$/m ³)	Harvest AAC with a profit as indicated by a positive contribution to shareholder value (\$/m ³)

CURRENT STATUS AND BACKGROUND COMMENTS

In 2001, the AAC was harvested with a negative contribution to shareholder value of \$13.95/m³. This represented a -8.3% return on capital employed, and a drop from the 2000 shareholder value of \$5.82/m³.

Canfor's Coastal Operations calculates shareholder value (\$/m³) for its entire coastal operations. The Englewood (including Timber Licences and FLA19233 outside the DFA) contribution to shareholder value for the past six years has ranged from a loss of \$7.00/m³ in 1998 to a gain of \$15.05/m³ in 1999 (see Table 13).

Table 13. Englewood contribution to shareholder value from 1996 to 2001 (\$/m³).

Year	Englewood contribution to shareholder value (\$/m ³)
2001	(\$13.95)
2000	\$5.82
1999	\$15.05
1998	(\$7.00)
1997	\$2.29
1996	\$12.74

RECOMMENDATION

Review indicator with NWAC to determine if there is a better economic indicator.

2.39 VOLUME AVAILABLE FOR LOCAL PURCHASE

Indicator:	Objective:
39. Volume of harvest made available for local purchase at fair market price.	A minimum of 50,000 m ³ /year will be available for local purchase at fair market price.

CURRENT STATUS AND BACKGROUND COMMENTS

Most of the timber volume harvested from TFL 37 leaves north Vancouver Island for processing in the BC Lower Mainland area. This supports substantial employment opportunities in that area. Two major processing facilities located in the Lower Mainland are dependent on volumes from TFL 37 — Howe Sound Pulp and Paper and Westcoast Cellulose. Canfor's ability to distribute logs to their highest potential use is largely determined by the market conditions and trade agreements in place at the time.



In 2001, although at least 50,000 m³ was available for local purchase, only 25,751 m³ was sold under local log sales (Table 14). For the purposes of this Objective, local is defined as the North Island (includes Courtenay and all communities north of Courtenay). This volume reduction was due primarily to the bankruptcy of one of our local customers, and market curtailment at Englewood Division.

Table 14. Summary of Local Sales by Customer and Log Sort – 2001.

Customer	Sorts	Volume (m³)
Broughton Forest Products	CE Poles	118.5
	FI Gang	107.1
	FI Peeler	15.9
	FI Poles	90.5
Builders Warehouse	FI Emperor	15.1
Delwin Nelson Logging	FI Poles	15.7
Edgrain Forest Products	CE Pole Ends	279.3
	FI Emperor	11.5
	FI Lumber	23.2
	HE Waste	101.3
	ME Metal	425.6
Hi-Knoll Cedar Inc.	CY Ties	35.7
John Karsten	FI Cabin Logs	100
Long Haueser Ent. Canada Ltd.	MS Misc	15.2
Miscellaneous	FI Shop	56.1
	FI Utility	8.3
Port McNeill Forest Products	CE Shingle	16,935.8
	CE Utility Shingle	6,805.8
Sierra Cascade Resources	CE Poles	63.3
Teamwood Traders	CY Cant	447.3
	HE High Grade	38.9
	HE Standard	33.9
Woss Recreation Association	CE Gang	6.8
Grand Total		25,750.8

2.40 TIMBER WASTE

Indicator:	Objective:
40. DFA-scale billable waste remaining in cutblocks.	Over the DFA, billable waste < 50 m ³ /ha in old growth timber, and < 25 m ³ /ha in second growth.

CURRENT STATUS AND BACKGROUND COMMENTS

In 2001, the average billable waste from old growth timber blocks was 27.38 m³/ha (Table 15), and thus the objective for this age class was met. The average billable waste from second growth blocks harvested in 2001 was 48.79 m³/ha (Table 16). As the Objective for second growth was less than 25 m³/ha of billable waste, it was not met. The reason for this was market conditions. Under normal market conditions, second growth can be utilized to a four-inch top. Under difficult market conditions, as we have experienced since 2000, Canfor could not generate profitable sales for second growth manufactured to this specification. If utilization was restricted to a five-inch top, sales were possible --- this approach was taken in 2001. Consequently, second growth was manufactured to a five-inch top which resulted in the quantity of waste as shown in Table 16. From a positive perspective, non-utilized tops and other pieces provide ecologically beneficial coarse woody debris habitat values. If markets improve, utilization may return to normal specifications and the level of waste could be reduced to the Objective targets.

Table 15. Results of waste surveys for old growth blocks harvested in 2001 on TFL 37.

Blocks	Area (ha)	Billable Waste (m ³ /ha)	Blocks	Area (ha)	Billable Waste (m ³ /ha)
KU022	23.8	34.9	OL015	27.9	27.8
NI042	27	36.4	NW045	26.4	34.3
NW040	24.2	16.1	NW040A	11.1	28.7
NW055WF	25.4	17.3	CH024	28	11.8
NW111	29.6	15.4	NI040 (private)	29.8	17.2
VR059	26	28.9	SC010	20.9	34.9
P056	23.9	26.4	MCI013	38.5	33.6
DL027	41.2	28.2	SB409H	16.8	25
W032	41.9	10.5	ST019	44.5	17.5
WT018	33.3	24.3	AL021WF(exempt)	9	34.9
K303	14.2	21.6	KU022A(exempt)	3	34.9
KT161	38.9	23.1	TH001(exempt)	4.3	47.6
MCI015	14.9	12.3	NR001(exempt)	3.7	45.6
NW029	23.8	21.6	NW090WF(exempt)	0.9	21.6
NW056D	17.8	37.5	M045	35.2	40.6
NW754	35.7	25.4	M053	39.3	17.7
HT018B (exempt)	5.5		MK037	37.1	37.5
WT042	40.4	44.1	GC017	42.6	46.2
GC015	38.4	27.5	HR068	33.4	22.3
M051	41	22.1			
KT057	40.8	28.8	Weighted Average		27.38
TS054	43.7	41.9			

Table 16. Results [JAD3]of waste surveys for second growth blocks harvested in 2001 on TFL 37.

Blocks (second growth)	Area (ha)	Billable Waste (m³/ha)
SP030A	7.6	44.2
SP031	61.9	46
WE001	31.7	59.9
WE003	24.9	47.4
CT031	39.6	62.1
CU054	40.3	33
Weighted Average		48.79

2.41 RECREATION SITES

Indicator:	Objective:
41. Area managed for recreation sites	Maintain the eight campsites on the DFA between June 15 and September 15 each year.

CURRENT STATUS AND BACKGROUND COMMENTS

In 2001, all campsites were maintained between June 15 and September 15, 2001. This included routine garbage pickup, removal of some danger trees at Nimpkish campsite, posting of fire hazard ratings, and campsite visits by Canfor staff.

Canfor incorporates a proactive recreation program, which maintains and monitors the use of sites and trails within the DFA. Canfor maintains eight campsites containing one hundred eighty-three camper units with overflow capacity to two hundred ten units (Table 17). Each campsite is supplied with tables, garbage cans, fire rings, and toilet facilities. There is also garbage collection and site maintenance twice per week. This is increased to at least three times per week during peak periods or during extremely hot weather. These sites represent a total of 62 ha, which were temporarily removed from the harvest land base as part of MP 8. With the exception of two of the interpretative trails and one campsite, these sites are located within areas that were once harvested. The sites are provided free of charge to the public.

Table 17. Recreational campsites maintained by Canfor in the Englewood DFA.

Recreation Site	Features
Nimpkish Lake	20 pads; pebble beach; windsurfing
Kinman Creek	40 pads; pebble beach; windsurfing
Anutz Lake	20 pads; sandy beach; boating; hiking
Atluck Lake	10 pads; pebble beach; boating; hiking
Woss Lake	30 pads; sandy beach; fishing; boating; walking
Lower Klaklakama (North)	6 pads; rocky beach; fishing
Lower Klaklakama (South)	10 pads; rocky beach; fishing
Vernon Lake	40 pads; sandy beach; fishing; boating

The Regional District of Mount Waddington maintains Huson Regional Park (karst area) and the Mount Cain Regional Park (skiing and winter recreation area). In addition to the above sites, fully protected areas within and adjacent to TFL 37 consisting of parks and ecological reserves are managed and maintained by the BC Parks. These areas consist of 11,422 ha within TFL 37 and 8,170 ha adjacent to TFL 37 (i.e., Schoen Park). These protected areas provide considerable recreation opportunities for the public.

2.42 INTERPRETIVE TRAILS

Indicator:	Objective:
42. Area managed for interpretative forest trails	Maintain the three interpretative trails on the DFA between June 15 and September 15 each year.

CURRENT STATUS AND BACKGROUND COMMENTS

The 1,770 m Hoomak Trail, constructed in 1984 provides access to an intensive forestry demonstration area. In 1993, Canfor developed two forest interpretation trails, one at Lower Klaklakama Lake and the other at Siding Four (Table 18).

Table 18. Interpretative trails maintained by Canfor in the Englewood DFA.

Trail	Features
Hoomak	1,770 m trail with interpretative signs
Siding Four	400 m trail with interpretative signs
Lower Klaklakama (South)	250 m trail with interpretative signs

The Lower Klaklakama Lake Trail is a 250 m long trail through a 700 year old stand. The Siding Four Trail is a 400 m easy trail through a 170 year old stand and 25 year old second growth. The 1,770 m Hoomak trail partially follows an old railroad grade through second growth forest.

The three interpretative trails were inspected on the following dates in 2001:

- Lower Klaklakama Lake – April 25. Signs along this trail had been vandalized and were replaced on July 4
- Siding Four Trail – April 26
- Hoomak Lake – May 4

RECOMMENDATIONS

Change the wording for the Indicator and Objective as follows:

Indicator – Number of annual inspections of interpretative trails on the DFA

Objective – Annually inspect and maintain where necessary the three interpretative trails on the DFA

2.43 RECREATION FEATURES

Indicator:	Objective:
43. Area managed for recreational features, as the District Manager identifies them.	Establish management areas for recreational features, as the District Manager identifies them.

CURRENT STATUS AND BACKGROUND COMMENTS

Canfor's objective is to be cooperative in establishing a management area around known recreational features as they are identified by the District Manager. To date these efforts have focused on cave and karst features within the DFA, and have been addressed on a site-by-site basis.

Consideration of recreational features is ongoing as operational plans are developed and submitted for approval.

2.44 ARCHAEOLOGICAL SITES

Indicator:	Objective:
44. Damage to known archaeological sites.	Zero known archaeological sites damaged as a result of Canfor's harvesting activities, unless approved through a permit process.

CURRENT STATUS AND BACKGROUND COMMENTS

No damage to known archaeological sites occurred in 2001.

Canfor actively investigates and plans for the protection of cultural heritage values. Cultural heritage resources include archaeological values that pre-date European influence and more recent historic values. An archaeological overview assessment (AOA) was conducted for Vancouver Island by the Archaeology Branch, Ministry of Small Business, Tourism and Culture and was provided to Canfor through the Port McNeill MoF district office. Based on the archeological classification, Canfor can discern where archaeological impact assessments (AIA) may be required for all archaeological site types, including Culturally Modified Trees (CMTs). The assessment determined that most of the culturally sensitive areas are situated within or adjacent to existing land base reserves such as riparian areas.

2.45 CULTURAL FEATURES

Indicator:	Objective:
45. Management of cultural features, as they are located (i.e., control on accidental harvest of known CMTs)	In consultation with First Nations, establish management zones around cultural features as they are located, and where worker safety is not compromised (i.e., zero known CMTs accidentally harvested.)

CURRENT STATUS AND BACKGROUND COMMENTS

No archaeological impact assessments were conducted in 2001 and no CMTs were harvested.

The ‘Namgis First Nation was contracted to conduct CMT surveys in 2001 on 15 blocks identified as high in archaeological overview. These blocks were: BC012, BC014, BC016, BC018, CH100, CH101, CT032, CT059, CT069, KH500, LG001, ME001, NA200, NS002 AND NS050. All CMTs that were located will be managed in consultation with ‘Namgis First Nation.

2.46 KILOMETRES OF STREAMS CLASSIFIED

Indicator:	Objective:
46. Kilometres of streams classified	Determine the classification of 1,032 km of unclassified strategic-level streams on Canfor's operational base by December 31, 2003

CURRENT STATUS AND BACKGROUND COMMENTS

Approximately 10,200 km of streams are identified on Canfor’s operational base map (strategic-level streams). Of these, 1,032 km of strategic-level streams are unclassified. Classification of mapped, but unclassified strategic-level streams was initiated during the summer of 2000, and will be completed by December 31, 2003.

Two hundred ninety-seven [JAD4] kilometres of streams were classified in 2001 and 142 km in 2000. Five hundred three kilometres of strategic-level streams remain to be classified in order to meet the Objective. Approximately 400 km are planned for classification in 2002. A summary of stream classifications conducted in TFL 37 during 2001 is shown in Table 19 (current as of Feb 1, 2002).



Table 19. Length of strategic-level streams by riparian class in TFL 37.

Riparian Class	Pre-assessment Length (km)	Length as of Feb 1, 2002 (km)
S1	213	223
S2	351	397
S3	123	305
S4	10	72
S5	503	562
S6	8,023	7,923
FSZ*	0	90
NCD**	0	73
Unknown	1,032	503
Total	10,256	10,148

* Fisheries Sensitive Zone

** Non-classified Drainage

2.47 ACCESS TO BOTANICAL FOREST PRODUCTS

Indicator:	Objective:
47. Access to harvest non-timber botanical forest products	Provide safe access to forest through routine maintenance of roads in the DFA required for forest harvesting.

CURRENT STATUS AND BACKGROUND COMMENTS

The access management plan in the DFA is being updated in the 2001-2006 Forest Development Plan. This will help provide safe access to the forest for non-timber botanical forest product users (i.e., honey producers; harvest of cedar boughs, salal and mushrooms), through improved scheduling and conductance of road maintenance.

2.48 VISUAL QUALITY

Indicator:	Objective:
48. Block layout conformance with Visual Quality Objectives identified in SPs.	Block layout is 100% in conformance with visual quality objectives as identified in SPs, unless the District Manager approves a variance.

CURRENT STATUS AND BACKGROUND COMMENTS

In 2001, Canfor completed 5 Visual Impact Assessments on proposed blocks that are located within known scenic areas or sensitive viewsapes (Block # BC016, KA020, KA040, NS050, LG001). In all cases, block layout was in conformance with Visual Quality Classes as identified in the SPs.



Recently, through consultation with the district recreation officer, a draft set of line work depicting scenic areas was developed. The draft linework of known scenic areas was accepted as “known” by MoF in February 1999. Thus, the scenic areas will be displayed on the FDP submission maps.

RECOMMENDATION

Change Indicator and Objective to “Recommended Visual Quality Class”

2.49 PUBLIC ADVISORY GROUP (NWAC)

Indicator:	Objective:
49. Creation and maintenance of a public advisory group.	Create opportunities for public input by creating and maintaining the Nimpkish Woodlands Advisory Committee to provide effective community based input into sustainable forest management.

CURRENT STATUS AND BACKGROUND COMMENTS

Three Nimpkish Woodlands Advisory Committee (NWAC) meetings were held in Port McNeill or Woss on April 23, May 30 and Dec. 13, 2001. These provided an opportunity for community based input into sustainable forest management on the DFA. Minutes [JAD5] were recorded from each meeting and were subsequently distributed to NWAC members.

2.50 FIRST NATIONS CONSULTATION

Indicator:	Objective:
50. Documented opportunities provided to local First Nations for review of Forest Development Plans and Management Plans.	100% of Forest Development Plans and Management Plans are accessible for review by local First Nations.

CURRENT STATUS AND BACKGROUND COMMENTS

Opportunity for First Nations to review forest development plans was provided in 2001. A major amendment to the 2001-2006 TFL 37 FDP was submitted to First Nations on November 7, 2001. On December 10, 2001 Canfor met and discussed the major amendment with Tlowitsis/ Mumtagila First Nation. On December 13, 2001 Canfor met and discussed the major amendment with Namgis First Nation. On December 19, 2001 Canfor met and discussed the major amendment with Mowachaht/Muchalaht First Nation.



2.51 PROMOTING FIRST NATION'S PARTICIPATION

Indicator:	Objective:
51. First Nations participation in the Nimpkish Woodlands Advisory Committee (NWAC).	100% opportunity for the three local First Nation's participation in the NWAC.

CURRENT STATUS AND BACKGROUND COMMENTS

The NWAC Terms of Reference specifically identifies the three Local First Nations as invited participants in the Public Advisory Committee. 'Namgis First Nations representatives attended all three NWAC meetings held in 2001 (see Objective 49 above). Mowachaht/Muchalaht and Tlowitsis/Mumtagila First Nations were invited but were not able to attend.

2.52 REPLY TO PUBLIC COMMENTS

Indicator:	Objective:
52. Percent of public inquiries to which Canfor responds.	Respond to 100% of public inquiries within 30 days of receipt of comment.

CURRENT STATUS AND BACKGROUND COMMENTS

Canfor intends to respond to 100% of public inquiries within 30 days of receipt of those comments, and this was the case for the two public inquiries that occurred in 2001.

The first inquiry was a direct contact to the Manager Operations Planning by a mining contractor concerning the colour of boundary flagging tape. Canfor advised that he use a colour other than orange in marking his survey boundaries.

Secondly, interpretative signs at Klaklakama Lake campsite/trail were vandalised during the winter of 2000/2001. These were replaced on July 4, 2001 and the incident was recorded in the Incident Tracking System (ITS) database.

2.53 RESEARCH AND INVENTORY PROJECTS

Indicator:	Objective:
53. Number of forest based research and inventory projects	Conduct at least three research and inventory projects per year designed to improve Canfor's knowledge base of forest ecosystems.

CURRENT STATUS AND BACKGROUND COMMENTS

Four research and/or inventory projects were conducted in TFL 37 during 2001. These included projects on marbled murrelet, Queen Charlotte goshawk, terrestrial salamanders, and Vegetation Resource Inventory (VRI) Ground Sampling. See the SFMP (Deal *et al.*, 2001) for summary details on marbled murrelet, Queen Charlotte goshawk and terrestrial salamanders.

The VRI Phase II Ground sampling was a continuation of a project that began in 2000. Forty samples were completed in 2000 and an additional 40 in 2001. The objective was to install an adequate number of Phase II samples to adjust the existing forest cover inventory to achieve a sampling error of +/- 10% (95% probability) for net timber volume in the High Priority areas in TFL 37. The ground samples included VRI Timber Emphasis Plots and coarse woody debris sampling transects. In concert with these samples, Net Volume Adjustment Factor sampling was conducted (but not completed), and Change Measurement Installations (growth and yield monitoring) were installed.

RECOMMENDATION

Change objective to reflect research and inventory for external partners such as universities, provincial government, Canadian Forest Service, and Canadian Wildlife Service.

2.54 ECOSYSTEM KNOWLEDGE BASE

Indicator:	Objective:
54. Additions to ecosystem knowledge base	Continuous updating through collection of technical bulletins and research articles related to DFA issues.

CURRENT STATUS AND BACKGROUND COMMENTS

The current research library consists of nearly 1,700 technical articles, 500 reports on wildlife and ecosystem management, a subscription to Journal of Wildlife Management and the Wildlife Society Bulletin, and a subscription to ABSEARCH (a database of ecological and wildlife abstracts).

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DRAFT

Appendix 1. Current Status for SFM Indicators and Objectives, and Personnel Responsible

DRAFT

Indicator	Objective	Actions/Monitoring	Frequency	Status of Objective to Date	Responsibility
1. Percent cover old growth by Landscape Unit (LU) and Biogeoclimatic Ecosystem Classification (BEC) variant	Submit for government approval, old growth management area (OGMA) objectives ($\pm 10\%$) by LU and BEC variant by March 31, 2003	GIS-based exercise. Assess in conjunction with seral stage targets. Use ground truthing or aerial surveys to monitor status/disturbance to OGMA (e.g., windthrow events)	5 Years for GIS-based (with MP).	OGMA objectives not yet completed. However, identification of candidate OGMA coverage area is underway as follows: <ul style="list-style-type: none"> i. Lower Nimpkish LU – polygons for constrained landbase (e.g., terrain, identified wildlife, UWR) and old seral have been identified and analyzed ii. Upper Nimpkish LU – database query for constrained landbase is completed iii. Tsitika LU – database query for constrained landbase is in progress. Field verification (aerial survey and on-ground) of polygons will be required to confirm old forest coverage – this will permit analysis of old forest representation in order to meet LU and BEC variant objectives (by Jan. 31, 2003), and submission for government approval of OGMA objectives by March 31, 2003. 	Ecosystem Management Forester
2. Seral stage representation by LU and BEC variant	Achieve seral stage representation objectives ($\pm 10\%$) by LU and BEC variant, within three rotations, with focus on old seral until Jan. 2004.	GIS-based exercise	Review every 5 Years (with MP)	Seral stage representation will focus on old seral retention. See objective #1 above.	Ecosystem Management Forester
3. OGMA forest interior representation by LU and BEC variant	Maintain variable percentages ($\pm 5\%$) of the OGMA objective as forest interior habitat by January 1, 2005.	GIS-based exercise. Ground truthing over extended time period	5 Years (with MP)	No change since 2000.	Ecosystem Management Forester



Indicator	Objective	Actions/Monitoring	Frequency	Status of Objective to Date	Responsibility
4. Patch size representation by LU and BEC zone.	Maintain variable percentages of the forest that is ≤ 20 yrs old in variable patch sizes by LU and BEC zone. Review every 5 yrs.	GIS-based exercise	5 Years (with MP)	No change since 2000. The next review of patch size representation will be on forest conditions as of Dec. 31, 2004. This analysis will occur in 2005.	Ecosystem Management Forester
5. Percent wildlife tree retention by LU and BEC subzone.	Maintain variable percentages (≥ -5%) of the Harvest Area as representative wildlife tree areas (patches and individual trees) by LU and BEC subzone.	Monitor all approved SPs	Annual	43 SPs were approved in 2001 (29 in the Lower Nimpkish LU; 13 in the Upper Nimpkish LU; 1 in the Tsitika LU) Pre-LU target percentages for wildlife tree retention have been established by LU and subzone and are described in the SFMP (Deal et al. 2001). Of the 43 approved SPs in 2001, actual wildlife tree retention levels exceeded the minimum targets identified in the SFMP	Ecosystem Management Forester



Indicator	Objective	Actions/Monitoring	Frequency	Status of Objective to Date	Responsibility
<p>6. Percent forest influence by ecosystem management unit (EMU)</p>	<p>Achieve forest influence objectives in the SFM plan, by EMU. Objectives will be met over a 5 year period on $\geq 90\%$ ($\geq -5\%$) of the total area under prescription (TAUP) by EMU.</p>	<p>Monitor individual tree numbers per ha and internal retention patch percentages which conform to forest influence objectives on all TAUPs – this will be a spreadsheet/database exercise</p>	<p>Annual, after the January 1, 2006 implementation date</p>	<p>Achievement of percent forest influence targets is linked to implementation of the ecosystem-based Coastal Forestry Principles (Canfor, Oct. 2000)</p> <p>As of January 1, 2001, new block layout in SMZ's was done to meet Forestry Principles criteria</p> <p>SPs have been prepared for 5 harvest blocks (NS050, KA040, KC170, CE014, KA202) which conform to Forestry Principles for forest influence, number of individual trees/ha (see objective #7), and internal patch retention targets (see objective #8) --- these blocks are scheduled for harvest in 2002</p> <p>No blocks were harvested to Forestry Principles criteria during 2001</p> <p>By June 1, 2003, all new block layout in the DFA will meet Coastal Principles targets for percent forest influence, individual trees/ha, and internal retention patch</p> <p>During 2005, $\geq 50\%$ of the blocks approved for harvest will conform to Coastal Principles targets, with full implementation by 2006</p> <p>The first block to be harvested according to Coastal Principles targets is scheduled for harvest in early 2002 (Block #NS050, near Nimpkish)</p>	<p>Ecosystem Management Forester</p>
<p>7. Number of individual trees per hectare by EMU</p>	<p>Achieve objectives for number of individual trees per ha as detailed in SFM plan, by EMU. Objectives will be met over a 5 year period on $\geq 90\%$ ($\geq -5\%$) of the TAUP by EMU.</p>	<p>Monitor number of individual trees per ha on all TAUPs – this will be a spreadsheet/database exercise</p>	<p>Annual, after the January 1, 2006 implementation date</p>	<p>See Objective #6 above</p>	<p>Ecosystem Management Forester</p>



Indicator	Objective	Actions/Monitoring	Frequency	Status of Objective to Date	Responsibility
8. Percent wildlife tree patch (WTP) requirement that is an internal retention patch by EMU	Achieve objectives for internal retention patch percent as detailed in the SFM plan, by EMU. Objectives will be met over a 5 year period on $\geq 90\%$ ($\geq - 5\%$) of the TAUP by EMU.	Monitor the proportion of the TAUP which conforms to internal patch retention objectives – this will be a spreadsheet/database exercise	Annual, after the January 1, 2006 implementation date	See Objective #6 above	Ecosystem Management Forester
9. Area in LU and BEC variant managed for black bear habitat.	Identify areas of high and moderately high suitability for black bear winter denning habitat and seasonal foraging habitat. Develop management strategy (including habitat model) by March 31, 2003	GIS exercise based on habitat model. Ground truthing over extended time period	5 Years (with MP)	Submitted proposal to Habitat Conservation Trust Fund for 2001/02 funding to conduct habitat suitability mapping for black bear -- - this made the “alternate list” --- the proposal was revised and resubmitted in Nov. 2001 for 2002/03 funding consideration 25 black bear den trees (17 in redcedar; 4 in yellow cedar; 4 in western hemlock) were identified in 2001 and reserved from harvest where worker safety permitted An adaptive management strategy for managing black bear den trees will be developed during 2002	Ecosystem Management Forester
10. Area in the Defined Forest Area (DFA) managed for black-tailed deer and Roosevelt elk critical winter range	Maintain ≥ 6000 ha as ungulate winter range (UWR). Develop a strategy by March 31, 2001.	Monitor loss of wintering habitat due to natural catastrophes (e.g., windthrow, fire, etc.)	Annual	An ungulate winter range strategy (including boundaries and practices associated with UWR) was ready for government review on July 3, 2001 and was submitted to government on July 17, 2001. The strategy received government approval on Sept. 13, 2001. In total, 6,205 ha of ungulate winter range was approved. Minor windthrow occurred along the edge of UN-MU-04 in 2001 (most recent survey flight January 15, 2002)	Ecosystem Management Forester



Indicator	Objective	Actions/Monitoring	Frequency	Status of Objective to Date	Responsibility
<p>11. Area in the DFA managed for Queen Charlotte goshawk</p>	<p>Submit for government approval, ≥100 ha Wildlife Habitat Areas (WHA) within each of the following territories by March 31, 2002: Loon, Toad, Rona, Claude Elliot, Lukwa, John Road, Klaklakama and Vernon</p>	<p>Continue with participation in regional goshawk nest surveys and monitor nesting territories for annual use patterns. At landscape scale, use GIS to evaluate seral stage distribution, forest interior habitat and forest patch size distribution with 800 m, 1500 m and 3500 m from each territory center.</p>	<p>Annual for nest territory use patterns. 5 Years (with MP) for GIS-based exercise.</p>	<p>11 goshawk territories and 32 nests have been identified in the DFA to date</p> <p>A draft adaptive management strategy for Queen Charlotte goshawk on TFL 37 was completed on Dec. 31, 2001. This strategy will be presented to government for review by March 31, 2002.</p> <p>The proposed goshawk strategy include provisions for a conservation area within each of the 11 territories --- 8 of these conservation areas will be treated as reserves, while 3 will have opportunities for single tree selection (e.g., 1% volume removal every 10 years for gap-dynamic forests) outside of the core nest area</p> <p>An application for 2002 funding to develop a goshawk habitat model was submitted to the federal Habitat Stewardship Program in Dec. 2001.</p>	<p>Ecosystem Management Forester</p>
<p>12. Area in the DFA managed for Keen’s long-eared myotis</p>	<p>Establish a management area around Keen’s long-eared myotis hibernacula within 1 month of discovery</p>	<p>Monitor use of WHAs by Keen’s long-eared myotis</p>	<p>Every 5 years, once WHAs are established</p>	<p>To date, no WHAs have been established in the DFA for Keen’s long-eared myotis. OGMA’s are proposed around 2 cave systems where long-eared bats were detected.</p>	<p>Ecosystem Management Forester</p>

Indicator	Objective	Actions/Monitoring	Frequency	Status of Objective to Date	Responsibility
13. Percent of area in LU managed for Marbled Murrelet	Maintain $\geq 10\%$ of the original suitable marbled murrelet habitat by LU. Develop a strategy for managing murrelet habitat by December 2004	GIS-based exercise, plus ground truthing for Marbled Murrelet nesting habitat suitability. Landscape level population monitoring using marine radar is proposed for evaluation in 2002/2003	5 Years (with MP) for GIS-based exercise. Annual monitoring of a random selection of murrelet WHAs once they are designated.	Nesting habitat suitability field verification was completed in the Lower Nimpkish LU in 2000. The Upper Nimpkish LU was completed in 2001. Habitat suitability mapping for these LU's is complete. 6 potential murrelet WHA's were evaluated in 2001 --- more will be evaluated in 2002 30 marine radar sites for monitoring landscape level murrelet populations were evaluated in 2001. 10 of these rated as high suitability for monitoring. Evaluation of this technique will occur in 2002/2003 A landscape level marbled murrelet management strategy to conserve suitable murrelet nesting habitat in the Upper and L. Nimpkish LU will be developed by Dec. 1, 2004 --- monitoring the use of potential WHA's will be part of the development & implementation of this strategy. An application for 2002 funding to develop a murrelet management strategy was submitted to the federal HSP and ESRF in Dec. 2001.	Ecosystem Management Forester
14. Percent of harvested areas regenerated with more than one tree species, as indicated on free growing surveys	100% of harvested areas to be reforested with tree species that are suited for the site.	Standardized free-growing surveys.	5 Years (with MP)	In 2001, all cutblocks were reforested with tree species suited for the site, as recommended in the SPs	Silviculture Forester
15. Percent of harvested areas adjacent to streams, lakes and/or wetlands that have riparian management areas that are suited to protection of the associated aquatic habitat.	100% of harvested areas adjacent to streams, lakes and/or wetlands must meet or exceed regulatory requirements for riparian management unless the District Manager approves a variance.	<ul style="list-style-type: none"> • Internal audits • Compliance records • External audits 	Annual	During the February 12-14, 2001 audit, KPMG identified three harvest blocks where the stream classification assessments related to the presence or absence of fish, were not performed to the required standard. No destruction of fish habitat resulted from this classification. All other riparian-related regulatory management requirements were met on the DFA in 2001.	Manager Operations Planning

Indicator	Objective	Actions/Monitoring	Frequency	Status of Objective to Date	Responsibility
16. Percent of Ministry of Forests (MoF) registered seed used	100% of the seed and seed sources used for reforestation must be MoF registered	All seed ordered through MoF SPAR system ensures seed is registered.	Annual	In 2001, 100% of the seed was MoF registered	Silviculture Forester
17. Percent of cutblocks in compliance with disease control measures identified in Silviculture Prescriptions (SPs).	100% of cutblocks in compliance with disease control measures in SPs, unless the District Manager approves a variance.	Annual aerial surveys and summarizing results in SFM annual report.	Annual	All cutblocks were in compliance with disease control measures as identified in SPs. There were 4 blocks planted in 2001 (MK009, KA101, CU050, NI020) that required root rot management as indicated in the SPs. This included either planting resistant species, or mechanically pulling stumps of infected stems	Silviculture Forester
18. Time to control an accidental industrial or recreational fire	All accidental industrial and recreational fires extinguished or under control by 10 am the day after the fire started (\pm 20% of the reported fires).	Summaries of fire reports in SFM annual report.	Annual	No accidental fires occurred in 2001	Manager Operations Planning
19. Volume of timber salvaged from accidental fires	100% of timber is salvaged from fire outbreak where economically and ecologically appropriate.	Monitor volume of salvaged timber and summarize results in SFM annual report.	Annual	No timber was damaged by fire from 01 January to 31 December 2001, so salvage operations were unnecessary	Manager Operations Planning
20. No. hectares/yr of forest lost to insect outbreak	Forest area lost due to insect outbreak not to exceed historical levels.	Annual aerial review of DFA. File results and report area in the SFM annual report. Canadian Forest Service staff will monitor Canfor's operation when they have been alerted to a potential pest problem.	Annual	Reports of insect attacks submitted by Canfor staff and the public are immediately followed up. Records of findings are recorded in Forest Health files There was no loss of timber due to insect outbreaks on the DFA during 2001	Silviculture Forester
21. Volume of timber salvaged from severe insect outbreaks.	100% of timber is salvaged from epidemic insect outbreak where economically and ecologically appropriate.	Annual aerial review of DFA to determine volume losses due to forest health hazards. Summarize results in the SFM annual report.	Annual	No timber was damaged by insects during 2001, so salvage operations were unnecessary	Manager Operations Planning

Indicator	Objective	Actions/Monitoring	Frequency	Status of Objective to Date	Responsibility
22. Volume of timber salvaged from severe windthrow events.	100% of timber is salvaged from severe windthrow events within 2 years of discovery, where economically and ecologically appropriate.	Annual aerial survey where sections of the TFL are flown. Salvage operations and the volumes extracted are summarized in the SFM annual report.	Annual	2 areas experienced major windthrow in 2001, as follows: Vernon: AL21wf – approx. 4000 m ³ - Kilpala: NW055wf – approx. 3000 m ³ Where appropriate, these volumes will be salvaged by 2004	Operations Planning Foresters
23. Volume of timber salvaged from severe flooding events.	100% of timber is salvaged from severe flooding events where economically and ecologically appropriate.	Annual aerial surveys to determine timber volume losses due to flooding. These are summarized in the SFM annual report.	Annual	No timber was damaged by flooding in 2001, so salvage operations were unnecessary	Manager Operations Planning
24. Percent of successfully regenerated cutblocks	Regeneration success on \geq 95% (\pm 5%) of cutblocks. Ongoing evaluations.	Standardized regeneration surveys and monitoring summary report for regeneration success.	Annual	The regeneration status of each block surveyed in 2001 indicated that 100% of the cutblocks were satisfactorily restocked	Silviculture Forester
25. Percent of cut blocks that achieve free growing status as specified in SPs.	100% (\pm 5%) of appraisal cutblocks will achieve free growing status within the free growing assessment period specified in SPs.	Standardized free growing surveys.	Annual	By the end of 2001, 10 out of 13 (77%) blocks with a late free growing date of 2001, had reached free growing status Two blocks (Y047, MK005) had not achieved free growing (due to brush competition), while KX106 had an incomplete survey. Consequently, these three blocks will require an SP amendment (in process) in order to extend the free growing date and thereby meet the objective of 100% free growing status	Silviculture Forester
26. Percent of harvest areas at or below site degradation specifications identified in SPs	95% (\pm 5%) of harvest areas in compliance with site degradation objectives specified in SPs.	Post-harvest site degradation surveys.	Annual	In 2001, 45 of 46 harvest areas (98%) were in compliance with site degradation objectives specified in SPs Only one block (# M045) exceeded the site deg. objective --- this was by less than 10%, so an amendment to the SP or rehabilitation was not required	Silviculture Forester

Indicator	Objective	Actions/Monitoring	Frequency	Status of Objective to Date	Responsibility
27. Area set aside for special management associated with known habitat features as they are discovered.	Establish management zones around special habitat features, as they are located, and where worker safety will not be compromised.	Reviewed on a site-specific and species-specific basis.	As required	Site-specific and species-specific procedures and documentation, in 2001 as follows: i) 25 black bear dens were identified and will reserved from harvest if worker safety permits ii) 1 tree containing two bald eagle nests was tagged and a management area was placed around the tree (Block # CB001) iii) 1 new active goshawk nest (Rona territory) was discovered by the Ministry of Water, Land and Air Protection field crew	Ecosystem Management Forester
28. Percent of future and existing roads by productive forest area in the DFA	Future and existing roads to occupy $\leq 3.5\%$ ($\pm 2\%$) of the productive forest land base.	Five-year summary analysis.	5 years (with MP)	The next review of percent of future and existing roads by productive forest area will be done up to Dec. 31, 2004. This analysis will occur in 2005 in conjunction with the development of Management Plan 9	Silviculture Forester
29. Operational plans are consistent with terrain stability assessments.	100% of the operational plans are consistent with the terrain stability assessments.	Ongoing as unstable terrain or slopes $> 60\%$ are encountered in operational areas	As required	Terrain stability assessments are done on an ongoing basis for all terrain requirements. In 2001, approximately 36 blocks with terrain $> 60\%$ and/or Class IV and V terrain were field assessed. Operational plans were consistent with the results of those assessments	Operations Planning Foresters
30. Number of activities related to restoration of significant erosion hazards resulting from road and railways built prior to 1995.	Fix significant erosion hazards on pre-1995 roads on a priority basis. Critical hazards to be fixed within one week of discovery or as soon as seasonal conditions permit.	Annual overviews of the DFA identify areas of new slides or other destructive events. Canfor's Incident Tracking System is used to monitor sites identified as high risk to erosion, to ensure work is completed on time.	Annual	The completion of each restoration project is prioritized and documented on an ongoing site-specific basis, considering factors such as erosion risk rating and fish concerns In 2001, 14 roads totalling 21.7 km were permanently deactivated	General Manager Coast Logging
31. Area managed for cave and karst features, as they are located.	Establish management areas for cave and karst features, as they are located.	Use Canfor's SOP for Surface Activity Management while operating in the proximity of type "B" karst features.	As required.	When necessary, cave and karst feature management guidelines are included on Silviculture Prescriptions – all SPs are subject to audit compliance inspections.	Operations Planning Foresters

Indicator	Objective	Actions/Monitoring	Frequency	Status of Objective to Date	Responsibility
32. Number of reportable contaminant spills per year that enter a waterbody	Zero reportable contaminant spills that enter a waterbody.	Monitor summary of spill log	Monthly	Results of 2001 spill log in prep. No spills have knowingly entered a waterbody in 2001	Regional Compliance Manager
33. Operational Plans are consistent with Watershed Assessments	Operational plans are 100% consistent with watershed assessments, unless the District Manager approves a variance.	Conduct new, or review existing watershed assessments.	As required.	No watershed assessments were conducted in 2001 All operational plans in 2001 were consistent with prior watershed assessments	Operations Planning Foresters
34. Percent of area reforested	Reforest 100% of the cutblocks with preferred and acceptable species as specified within SPs.	Standardized free growing survey.	Annual	In 2001, 100% of cutblocks were satisfactorily restocked with preferred and acceptable species as specified within SPs	Silviculture Forester
35. Allowable Annual Cut (AAC) as predicted through long-term harvest level projection and determined by the Chief Forester.	Harvest the AAC allocation over the 5 year cut control period ($\pm 10\%$ over 5-yr period).	Update cut control records annually. Supply future harvest levels to division. Results are reported for the calendar year in the SFM annual report.	Annual	Canfor harvested 84.4% of the AAC in 2001. This was the first year in the 5 year cut control period.	Manager Operations Planning
36. Documented communications with non-forest developers on the DFA.	In all referrals that have potential to remove significant land from the DFA, stress the minimisation of losses to the forest land base.	All referrals to be reviewed by Manager Operations Planning. A central file is created where referrals and responses are maintained.	As required.	In 2001, no referrals were received that had the potential to remove significant lands from the DFA	Manager Operations Planning
37. Harvest profile by: economic operability, technical operability (conventional or unconventional harvest systems), season, and second growth.	Up to 25% variance with any harvest profile established for TFL 37 MP 8 over its term (5 years).	All harvest and development plans are reviewed by the Manager of Operational Planning. Harvest profile targets are monitored annually.	Annual monitoring and reporting every 5 years.	Blocks harvested according to profiles	Manager Operations Planning
38. Shareholder Value(\$/m ³ /yr)	Maintain AAC with a profit as indicated by a positive contribution toward shareholder value	Calculate AAC and shareholder value employed, and review.	Annual	In 2001, the AAC was harvested with a negative contribution to shareholder value of \$13.95/m ³ .	Divisional Controller

Indicator	Objective	Actions/Monitoring	Frequency	Status of Objective to Date	Responsibility
39. Volume of harvest made available for local purchase at fair market price.	A minimum of 50,000 m ³ /year will be available for local purchase at fair market price.	Log sales tracking from TFL 37. Summary of year-end results of market sales in the SFM annual report	Annual	In 2001, although at least 50,000 m ³ was available for local purchase, only 25,751 m ³ was sold under local log sales. This volume reduction was due primarily to the bankruptcy of Mill Creek, and market curtailment at Englewood Division	General Manager Coast Logging
40. DFA-scale annual billable waste remaining in cutblocks.	Over the DFA, annual billable waste < 50 m ³ /ha in old growth timber, and < 25 m ³ /ha in second growth.	Standardized waste surveys. Summarized billable waste levels in the SFM annual report.	Annual	In 2001, the average billable waste from old-growth timber blocks was 27.38 m ³ /ha, thereby meeting the objective for this age class. However, the average billable waste from second growth blocks harvested in 2001 was 48.8 m ³ /ha, thus exceeding the second growth waste objective. This was due to utilization specifications for second growth and low market conditions	Valuation Forester
41. Area managed for recreation sites	Maintain the eight campsites on the DFA between June 15 and September 15 each year.	General maintenance. Posting of fire hazards. Campsite maintenance activities are summarized in the SFM annual report.	Seasonal Annual	All campsites were maintained seasonally. This included routine garbage pickup, removal of some danger trees at Nimpkish campsite, posting of fire hazard ratings, and campsite visits by Canfor staff	General Superintendent Englewood Company Operations
42. Area managed for interpretative forest trails	Maintain the three interpretative trails on the DFA between June 15 and September 15 each year.	Walk trails annually and ensure upkeep. Identify new interpretative features on an opportunistic bases	Annual	The 3 interpretative trails were inspected on the following dates in 2001: i) Lower Klaklakama Lake – April 25. Signs along this trail had been vandalized and were replaced on July 4 ii) Siding 4 Trail – April 26 iii) Hoomak Lake – May 4	Ecosystem Management Forester
43. Area managed for recreational features, as the District Manager identifies them.	Establish management areas for recreational features, as the District Manager identifies them.	Prepare Forest Development Plans with consideration for recreational features. Areas managed for recreation features will be reported in the SFM annual report.	Annual, or as required.	Consideration of recreational features is ongoing as operational plans are developed and submitted for approval	Operations Planning Foresters

Indicator	Objective	Actions/Monitoring	Frequency	Status of Objective to Date	Responsibility
44. Damage to known archaeological sites.	Zero known archaeological sites damaged as a result of Canfor's harvesting activities, unless approved through a permit process.	Culturally Modified Tree or Archaeological Impact Assessments/monitoring are conducted on a cutblock-by-cutblock basis, as required.	As required.	No damage to known archaeological sites occurred in 2001	Manager Operations Planning
45. Management of cultural features as they are located (i.e., control of accidental harvest of known CMTs).	In consultation with First Nations, establish management zones around cultural features as they are located, and where worker safety is not compromised (i.e., zero known CMTs accidentally harvested).	Review identified cultural features with the appropriate First Nations group. Annual summary of cultural features and archaeological assessments is reported in the SFM annual report.	Annual	No archaeological impact assessments were conducted in 2001 The Namgis First Nation was contracted to conduct CMT surveys in 15 blocks identified as high in archaeological overview	Manager Operations Planning
46. Kilometres of streams classified	Determine the classification of 1,032 km of unclassified strategic-level streams on Canfor's operational base by December 31, 2003	Field classification of unclassified streams. Monitor progress of the stream classification project.	Annual	142 km were classified in 2000 297 km were classified in 2001 503 km of strategic-level streams remain to be classified --- approx. 400 km of this are planned for classification in 2002	Ecosystem Management Forester
47. Access to harvest non-timber botanical forest products	Provide safe access to forest through routine maintenance of roads in the DFA required for forest harvesting.	The Access Management Plan component of Forest Development Plans will be used to monitor road access throughout the DFA. The harvest of botanical forest products will not be directly monitored.	As required. Not applicable.	The access management plan is being updated in the 2001-2006 Forest Development Plan. This will improve access for non-timber botanical forest product users (e.g., cedar boughs, salal, mushrooms)	General Manager Coast Logging
48. Block layout conformance with Visual Quality Objectives identified in SPs.	Block layout is 100% in conformance with visual quality objectives as identified in SPs, unless the District Manager approves a variance.	Visual Impact Assessments (VIA) as requested by the District Manager on a block-by-block basis, based on the review of Forest Development Plans	As required.	In 2001, Canfor completed 5 VIAs on proposed blocks that are located within sensitive viewscapes (Block # BC016, KA020, KA040, NS050, LG001). In all cases, block layout was in conformance with Visual Quality Classes as identified in the SPs	Operations Planning Foresters

Indicator	Objective	Actions/Monitoring	Frequency	Status of Objective to Date	Responsibility
49. Creation and maintenance of a public advisory group.	Create opportunities for public input by creating and maintaining the Nimpkish Woodlands Advisory Committee (NWAC) to provide effective community based input into sustainable forest management.	NWAC meets on a semi-annual basis. Meeting minutes are recorded and maintained, including any revisions to SFMP Values, Goals, Indicators and Objectives, and a list of meeting invitees and participants.	At least twice yearly.	3 NWAC meetings were held in Port McNeill or Woss on April 23, May 30 and Dec. 13, 2001. Minutes were recorded and distributed to NWAC members.	NWAC coordinator
50. Documented opportunities provided to local First Nations for review of Forest Development Plans and Management Plans.	100% of Forest Development Plans and Management Plans are accessible for review by local First Nations.	Review Forest Development Plans with First Nations. Document invitations for review of plans and document comments received.	Ongoing and as plans are developed	Opportunity for First Nations to review forest development plans was provided in 2001. A major amendment to the FDP was submitted on Nov. 7, 2001 and Canfor consulted each First Nation on the plan.	Manager Operations Planning
51. First Nations participation in the Nimpkish Woodlands Advisory Committee (NWAC).	100% opportunity for the three local First Nation's participation in the NWAC.	Notification of meetings as per NWAC Terms of Reference	Meeting-by-meeting	First Nations representatives attended all three NWAC meetings held in 2001 (see Objective #49 above)	NWAC coordinator
52. Percent of public inquiries to which Canfor responds.	Respond to 100% of public inquiries within 30 days of receipt of comment.	Incident Tracking System (ITS) Database.	Annual	Interpretive signs at Klaklakama Lake campsite/trail were vandalized during the winter of 2000/2001. These were replaced on July 4, 2001 and the incident was recorded in the ITS database	Regional Compliance Manager
		Responses to written comments on Management Plans and Forest Development Plans.	Every five years.	Two public inquiry occurred in 2001. This was a direct contact to the Manager Operational Planning by a mining contractor concerning the colour of boundary flagging tape. The second was a comment that the interpretative signs at Klaklakama Lake Trail were vandalized.	Manager Operations Planning
53. Number of forest based research and inventory projects	Conduct at least three research and inventory projects per year designed to improve Canfor's knowledge base of forest ecosystems.	Coordination of inventory and research projects as required. Project summaries described in the SFM annual report.	Annual	4 research and/or inventory projects were conducted in TFL 37 during 2001. These included projects on marbled murrelet, Queen Charlotte goshawk, terrestrial salamanders and Vegetation Resources Inventory. See the SFMP (Deal et al. 2001) for additional details on these projects	Ecosystem Management Forester



Indicator	Objective	Actions/Monitoring	Frequency	Status of Objective to Date	Responsibility
54. Addition to ecosystem knowledge base.	Continuous updating through collection of technical bulletins and research articles related to DFA issues.	Collection, review and entry of summary information in database (includes hard copy articles and publications as well as a cross-referenced electronic bibliography for future reference).	Not applicable.	Maintain subscription to Journal of Wildlife Management and updated ABSEARCH.	Ecosystem Management Forester

Appendix 2. Summary of 2001/02 Port McNeill Forest District FRBC Road Deactivations



**2001/02 Port McNeill Forest
District FRBC Deactivation**

2001 June 14, June 20, , 2002 Jan15
Aug 25

Sorted by RMP #

Layout by	Given Name	Map 1:20	Map 1:05	Proper Name	Area No.	Road m	2001 Work	RMP #	Level of Planned Deactivation	Fish Con- cern	Risk Rating	Mines Br. Notified	Commen ts	Deactivated m
Vernon Lake														
	YOOK 1	13	81	LY 200		515		3	Permanent		Low	Yes		
	2	13	81	PrtLY0300&LY03 10		1165	1,165	3	Permanent		HIGH	Yes		
	6	13	81			1122		3	Permanent	YES	Moderate	Yes		
	7	13	81	LY 500		899		3	Permanent	YES	Moderate	Yes		
	7A	13	81			50		3	Permanent	YES	Moderate	Yes		
	8	13	81			256		3	Permanent	YES	Moderate	Yes		
	9	13	81			515		3	Permanent	YES	Moderate	Yes		
	SB 2	15	97	SB7300	KT118	1190		3	Permanent		Low	Yes		
	2C	15	97	7330	KT118	602		3	Permanent		Low	Yes		
	3	15	97	SB7200	KT117	400		3	Permanent		Low	Yes		
	3A	15	97	7210	KT117	266		3	Permanent		Moderate	Yes		
	8	15	97	Upper Sebalhall	KT151- 154	2244		3	Permanent		Moderate	Yes		
	21	15	90	SB 5430	KT108 WF	867		3	Permanent		Low	Yes		
	22	15	90	SB 5410	KT109	642		3	Permanent		Low	Yes		
	25	15	90	WSB 1005	KT125, 106	738	738	3	Permanent		HIGH	Yes		
	29	15	90			760		3	Permanent		Low	Yes		
	31	15	90	WSB 1001	KT125	360		3	Permanent		Low	Yes		
						12591								
Muchalat														
	7	16	95	OK 0400	KX34	1473		10	Permanent	Yes	Medium	Yes		



					WF SB !									
	8	16	92			1815		10	Permanent		Low	Yes		
	9	16	85	NW1001 & NW1000	AW11	792		10	Permanent		Low	Yes		
	9A	16	85	NW 1000	AW11	248		10	Permanent		Low	Yes		
	10A	16	92	KX 0115		315		10	Permanent		Low	Yes		
	14	16	92,95	N.Kla- anch Rd	KX106, 107	2211		10	Permanent		Medium	Yes		
	14A	16	92	SCN 3040	KX106	143		10	Permanent		Low	Yes		
	14C	16	92	SCN 3003	KX106	450		10	Permanent		Low	Yes		
	14D	16	92	SCN 3030	KX107	285		10	Permanent		Low	Yes		
	15	16	92	OK0110& OK0100	KX7-22	1283		10	Permanent		Medium	Yes		
	15A	16	92	Part of OK 0100		351		10	Permanent		Medium	Yes		
	15B	16	92	OK 0120		126		10	Permanent		Low	Yes		
	20	16	92	CN 5200	KX103 WF	448		10	Permanent		Low	Yes		
	20A	16	92	CN 5150	KX103 WF	201		10	Permanent		Low	Yes		
	21	16	92	CN 5100		700		10	Permanent		HIGH	Yes		
	22	16	92	SK 0200		1910		10	Permanent		Medium	Yes		424
	22A	16	95			27		10	Permanent		Low	Yes		
	23	16	95	SK 0220	KX52,5 3	1535		10	Permanent		Medium	Yes		1111
	24	16	95	SK 0200	KX52,5 3	2220		10	Permanent		Medium	Yes		
	24A	16	95		KX53	261		10	Permanent		Low	Yes		
Canfor RG	R/R Spur	16	92	NS0020	K116- 118	1754		10	Permanent	Yes	HIGH	Yes		1754
Acres	Oktw 8,R/R	16	92			1815		10	Permanent	Yes	Medium	Yes		1855



	Spur												
						20363							
									Woss Lake				
	TK 1	9	68	Black Dog Rd	WF12,1 2A	1205		341	Permanent		Low	Yes	
	2	13	68	TK1000	WF75	795		341	Permanent		Moderate	Yes	
	3	13	68	TK2000	WT1,2, 20	1050		341	Permanent		Low	Yes	
	11	13	68	Torback	WT6A, 8	1843		341	Permanent		Low	Yes	
						4893							
									Davie				
	Spur PR A	9			HR79	335		342	Permanent		Low	Yes	
	A1	9		HR1000	HR 80 & 100	710		342	Permanent		Low	Yes	
	A2	9				553		342	Permanent		Low	Yes	
	A3	9			HR79	225		342	Permanent		Low	Yes	
	Spur B	9			HR80	140		342	Permanent		Low	Yes	
	Spur E	9		PL0006	HR82	560		342	Permanent		Low	Yes	
	Spur F	9		PL6000	HR92	610		342	Permanent		Low	Yes	
	Spur G	9			HR92	100		342	Permanent		Low	Yes	
	Spur H	9		Prt of PL7000	HR92	215		342	Permanent		Low	Yes	
	H1	9		Prt of PL7000	HR92	725		342	Permanent		Low	Yes	
	I1	9			HR94	100		342	Permanent		Low	Yes	
	Hapush Rd	9			Mc101 to HT20	210		342	Permanent		Low	Yes	
		9		Road not built	Mc101 to HT20	720		342	Permanent		Low	Yes	



		9			Mc101 to HT20	2475		342	Permanent		Low	Yes		
	Spur A	9		HA3000	Mc125	1497		342	Permanent		Low	Yes		
	A1	9			Mc125	180		342	Permanent		Low	Yes		
	A2	9			Mc125	150		342	Permanent		Low	Yes		
	Spur B	9			HT20	128		342	Permanent		Low	Yes		
	Spur C	9			HT20	90		342	Permanent		Low	Yes		
	Spur D	9			HT20	165		342	Permanent		Low	Yes		
	Spur E	9			HT21	165		342	Permanent		Low	Yes		
	Spur F	9		EC4000		320		342	Permanent		Moderate	Yes		
		9	32	HA2100		1231		342	Permanent		Low	Yes		
						11604								
									Maquilla					
LG		13,14	74	Maquilla Rd		2195		344	Permanent	YES	HIGH	Yes		2195
							2,195							
DM		13	74	S. Maquilla Rd		2301		344	Permanent	YES	HIGH	Yes		2570
							2,301							
DM		13,75	82	Kaypea Rd.		4855		344	Permanent	YES	HIGH	Yes		4855
							4,855							
DM		13	82	Kaypea Rd, Sp.1		219		344	Permanent	YES	Moderate	Yes		
							219							
T L		13	74	AM1000		809		344	Permanent	YES	Moderate	Yes		898
							809							
T L		13	74	AM2000		135		344	Permanent	YES	Moderate	Yes		160
							135							
CFP		13	74	MQ0300*		832		344	Permanent	YES	HIGH	Yes		832
							832							
							11,346							
									Atluck					
	Atluck 1	5	38	Br. 5A	R,H	2608		346	Permanent	Yes	Moderate	Yes		
	1A	8	38	Br.	H, 50	608		346	Permanent	Yes	Moderate	Yes		



				5A1,5A2										
	2	5	38	Br. 5A7	52	540		346	Permanent		Low	Yes		
CFP LG		8	45	ZW0010	104, 105	683		346	Permanent		Low	NO		
	Bambi	7				1391		346	Permanent		Low	Yes		
LG		7		TA 0100		1614		346	High			Yes		150
						7444								
									Kilpala					
LG		2		KP6900	NW28, 32	2633		347	Permanent		Moderate			
								2,633						
LG		2		KP6930	NW28, 32	239		347	Permanent		Moderate			
						2872		239						
									Middle Nimpkish					
	Marion	5	38	AT 2000	O-W, 73-79A	1347		348	Permanent	Yes	Moderate	Yes		
	Marion 1	5	38	Not on map	R,H	800		348	Permanent	Yes	Moderate	Yes		
	Marion 1B	5	38	Ma1000, Marion Rd		4356		348	Permanent	Yes	Moderate	Yes		
	N1	5,8	38,45	Marion		4615		348	Permanent	Yes	Moderate	Yes		
	Q Road	7	45	AH 0001,0002		700		348	Permanent		Low	Yes		
	Y1	8	45	Lower Larch	LM20, LM23	1100		348	Permanent		Moderate	Yes		
								1,100						
	Y18	8	45,46	Not on map	81, 100	930		348	Permanent		Low	Yes		
	Y9	8	46	CA 0100	KA100	1427		348	Permanent		Low	Yes		
	Y9A	8	37,46	CA 0400	KA100	618		348	Permanent		Moderate	Yes		
								618						
	P1	8	61	ZP 0010	P26	1204		348	Permanent		Low	Yes		
	Y11	8	36	KA 0020	23, 175	2927		348	Permanent	YES	Low	Yes		
	Y12	8	36	KA 0021	150,	750		348	Permanent	YES	Moderate	Yes		

