



# Sustainable Forest Management Plan

North Island Timberlands

Cascadia Forest Products Ltd.

**August 22, 2005**

**Version 2.91**

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# INTRODUCTION

## About the SFM Plan

The North Island Timberlands' Sustainable Forest Management (SFM) Plan is a "road map" to current and long-term SFM performance objectives and management strategies in the North Island operating area, referred to here as the [Defined Forest Area](#) or DFA. The DFA is situated on the east central coast of Vancouver Island between Campbell River and the Eve River, encompassing the community of Sayward. It coincides with TFL 39, Block 2 and MF 19, Blocks 8 & 9.

In 2005, a portion of the TFL 39, Block 2, was removed from the DFA as part of the "20% take back" by the government. The area removed was primarily the area known as the Eve River operating area. Due to the takeover of the BCCG by Brascan, the private land portion of the DFA is subject to removal from the DFA before year end.

For the purpose of this 2005 SFM Plan, although it is not always mentioned, Island Timberlands Limited Partnership is responsible for carrying out identified activities and strategies on the Private Land portion of the DFA.

It is an adaptation of planning processes that have been in place for more than 35 years on the DFA. These planning processes include strategic and operational plans, analyses, standards, monitoring and public review. Management of forest lands in the Campbell River / Sayward area has continued to evolve over time in response to learning and to changes in society's values. Revised management plans, submitted at approximately five-year intervals, include objectives, management strategies and analyses of management impacts. Standards and operating plans have been updated as changes occur. Monitoring has included divisional reporting as well as Tree Farm License (TFL) 39 and corporate annual reports and compliance audits.

The results of the public participation processes over the past years have contributed to the development of the goals, indicators and objectives. Since 1998, the North Island Woodlands Advisory Group (NIWAG) has helped to further develop the SFM performance framework for the DFA. Ongoing public review and input is provided by NIWAG, TFL Management Plan and operational plan reviews, and through other processes related to specific land use issues such as landscape unit planning and community water supply.

North Island managers and employees understand and follow the values, goals, objectives and management practices for achieving SFM on the DFA, as described in this document. The SFM Plan is an evolving document, which is reviewed with NIWAG on an ongoing basis and revised to reflect changes in the forest and local community.

The SFM Plan includes this introductory overview and two sections:

[Section 1](#) North Island's Year 2005 SFM values, goals, indicators and objectives, with acceptable variances and management strategies. These are organized according to the Canadian Council of Forest Ministers' (CCFM) Criteria and Critical Elements for Sustainable Forest Management.

[Section 2](#) Coast Forest Strategy.

[Glossary](#) A glossary of acronyms and terms used in the plan.

The plan also includes two appendices:

[Appendix 1](#) A summary and full report of North Island's 2004 performance.

[Appendix 2](#) The DFA Data Set, including monitoring and reporting information for 2004, as well as historic trends for the indicators.

## The Process for Developing the Set of Criteria and Indicators

The DFA's regulatory and management systems — and the values that they address — have been developed over several decades and are responsive to Canadian Standards Association (CSA) SFM system criteria, including the requirements for public involvement and the elements of a continual improvement process.

This SFM Plan was originally developed in 1998-99 using two main strategies:

- 1) External: NIWAG proceeded largely from a “fresh perspectives” approach, developing statements of values, goals and indicators with minimal prior reference to existing strategies.
- 2) Internal: In contrast, company staff focused mainly on identifying the existing management elements that meet CSA system requirements.

The results of these two approaches<sup>1</sup> were then merged into one consensual document. (See [Appendix 1](#) for a report on 2004 results.)

This SFM Plan Version 2.91 is the seventh revision to the plan. It reflects the results of a management review of the operation's 2004 performance and of ongoing discussions with NIWAG and other stakeholders.

The review process ensures that the SFM Plan is a product of continual improvement. Consistent with the two strategic approaches mentioned above, this is occurring through performance reviews, re-assignment of plan elements to more appropriate sections of the SFM organizational scheme, and new public input. The latter finds legal expression in the TFL 39 Management Plan #8. Because of the dynamic nature of this process, the SFM Plan should be viewed as an illustrative snapshot, rather than as a final or static document. Through 2005, NIWAG will continue to further define their values and goals as well as moving the current indicators to the CSA-Z809-2002 standard. NIT will be compliant to the CSA-Z809-2002 standard by the end of 2006.

The indicators in the plan are numbered from (1) to (46). The same numbering is retained throughout the document and in its appendices.

Progress toward some goals could not be measured by quantifiable indicators. In those cases, current performance is evaluated through qualitative assessments of, for example, stakeholder processes, management programs, communications initiatives, etc.

## Links to Management Plans and Operational Plans

*Figure 1* shows the links between operational planning and TFL Management Plans with the BC Forest Practices Code (FPC). Similar processes and links occur in a less formal manner in the MF 19 portions of the DFA.

The SFM Plan is an umbrella plan that links higher level plans such as the Management Plan with operational plans. The SFM Plan reflects the objectives, management strategies and reporting structure of Management Plans. Likewise it is influenced by other higher level plans such as the Vancouver Island Land Use Plan and by legislation such as the FPC Act.

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<sup>1</sup> Despite the differences in the two strategies, neither was a pure approach. Most NIWAG members were well informed in the relevant concepts and issues as a result of their previous participation in land use and forest management decision-making processes. And, several of the Weyerhaeuser staff in the exercise were also key participants in the 1997-98 review of corporate forest management practices that led to creation of the “Forest Project.” Those circumstances are reflective of the extensive history of public involvement and continual improvement within the DFA.

Figure 1 shows the flow of input and direction to operational plans, including Forest Development Plans and Site Plans. It does not show the feedback loops of monitoring and adaptive management that occur from operations to the management plans and other higher level plans.

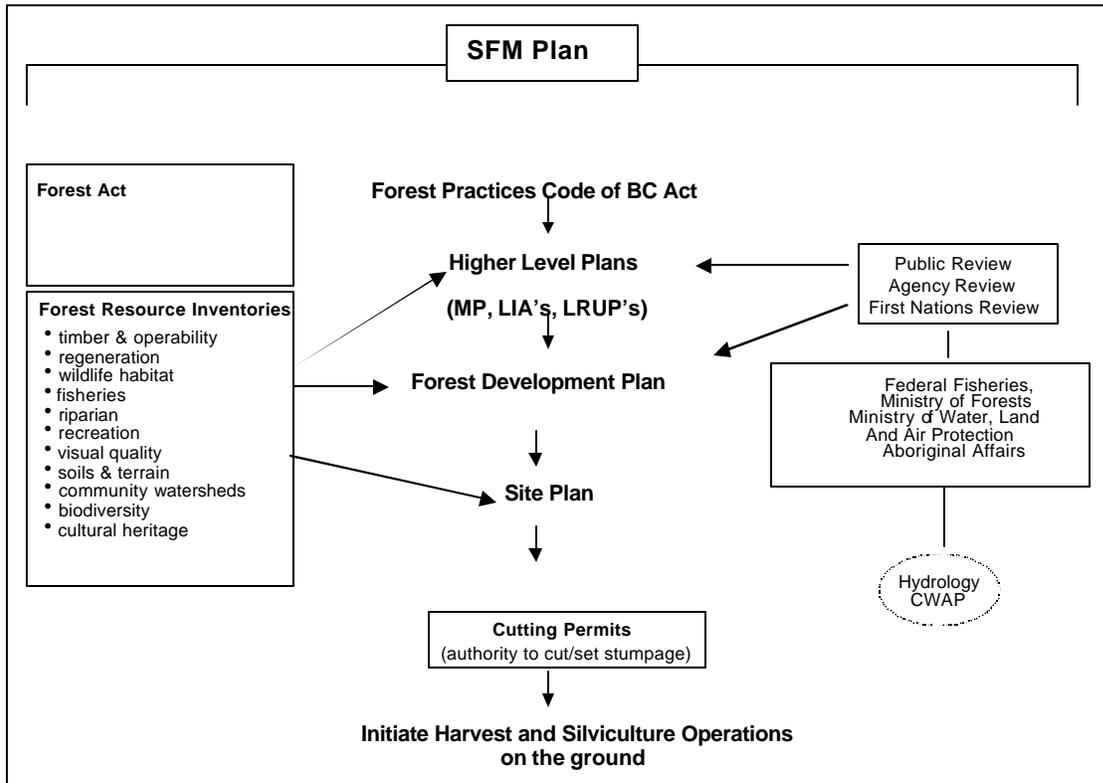


Figure 1: Links between Plans (TFL - with Forest Practices Code)

## SECTION 1

### Sustainable Forest Management Criteria and Indicators

This section of the SFM Plan describes North Island's SFM Values, Goals, Indicators and Objectives for the year 2005, as developed in conjunction with and approved by the North Island Woodlands Advisory Group (NIWAG). As appropriate, an acceptable variance is provided for each Objective. The section is organized according to the Criteria for Sustainable Forest Management, which was developed by the Canadian Council of Forest Ministers and incorporated into the Canadian Standards Association Sustainable Forest Management standard (CAN/CSA-Z809-96).

As further explanation of the organization of this section:

- The Criteria (e.g., below: [1.0: Criteria - Conservation of Biological Diversity](#)) and Critical Elements (e.g., [1.1: Critical Element - Ecosystem Diversity](#)) and their accompanying statements are derived from *Defining Sustainable Forest Management: A Canadian Approach to Criteria and Indicators* (Canadian Council of Forest Ministers, Ottawa, 1995).
- The subsidiary Values (e.g., [1.11: Critical Element - A healthy and ecologically productive forest](#)), Goals, Indicators, Objectives and Acceptable Variances were developed for this plan during discussions among NIWAG members, North Island Timberlands staff and other BC Coastal Group staff.

As used in this plan:

- Goals are the conditions that are desired to be sustained or attained in the long term.
- Indicators are the means by which performance relative to a Goal is measured. (A more detailed explanation of the Indicators in this section, as well as an explanation of the procedures for data collection and historic performance is in Appendix 2.)
- Objectives are the near term performance targets representing progress towards the Goals; they are frequently expressed as a level of an Indicator.
- Acceptable Variances specify the range of performance results (+ or – relative to the Objective) that is deemed to be an acceptable outcome. A result outside this range does not always indicate unacceptable performance. (For example, it could reflect: the impact of an uncontrollable event, such as a natural disaster; the fact that the objective was based on poor quality or inadequate data; the effects of a responsible choice between two competing objectives; or the progress toward a future level of performance.) A result outside the Acceptable Variance range does, however, require review, assessment and, possibly, a revision of either the objective or management practices.

North Island's performance against this plan is subjected to on-going monitoring and to annual review and assessment by North Island management and NIWAG.

## 1.0 Criteria – Conservation of Biological Diversity

Biological diversity is conserved by maintaining the variability of living organisms and the complexes of which they are part.

### 1.1 Critical Element – Ecosystem Diversity

Ecosystem diversity is conserved if the variety and landscape-level patterns of communities and ecosystems that naturally occur on the DFA are maintained through time.

#### 1.11 Value – A healthy and ecologically productive forest

Goals:

- Maintain ecosystem diversity at quantitative and qualitative levels that are adequate to support viable populations of existing species.

Indicators:

*The indicator set measures impacts on ecosystem diversity at the landscape level by examining changes in the forest's age class distribution and species composition, and at the harvest stand level by monitoring the quantity and distribution of retained forest area.*

**(1)** Percent of primary, secondary and tertiary species (2<sup>nd</sup> growth)

Objective: Maintain percentages of second growth species that are comparable to those in the historic baseline inventory.

Acceptable Variance: ± 20% by species.

**(3)** Percent of productive forest area more than 60 years old

Objective: Maintain a minimum of 36% forest area greater than 60 years of age.

Acceptable Variance: Greater than 36%.

This indicator will be refined as the Forest Project proceeds. The intent is to measure forest areas that will contribute structural diversity (including snags, coarse woody debris and variation in size) to the forest landscape.

**(11)** Forest age class distribution

Objective: Historically implicit in AAC and being redefined as part of BC Coastal Group Forest Project.

Acceptable Variance: Not applicable.

**(22)** Stand level retention in openings as a percent of total opening area (annual average for non-clearcut openings)

Objective: ≥ 10%.

Acceptable Variance: Greater than 10%.

**(23)** Percent of total opening area harvested with non-clearcut systems

Objective: 100% of opening area harvested (except where Cascadia does not have long term management responsibilities, catastrophic events and intensive management of hardwood crops).

Acceptable Variance: 5%.

(24) Percent of annual harvest area within forest influence

Objective: 50%, non-clearcut blocks, annual average.

Acceptable Variance: Greater than 50%.

(25) Percent of identified High Conservation Value (HCV) areas under special management.

Objective: 100% of HCV areas identified are under special management.

Acceptable Variance: None.

(26) Old growth (>250 years) representation by BEC variant (Crown Land only)

Objective: Meet Ministry of Forests biodiversity guidebook targets as defined by BEC variant and landscape unit.

Acceptable Variance: 0 (*see note on indicator page*).

## 1.2 Critical Element – Species Diversity

Species diversity is conserved if all native species found on the DFA prosper through time.

## 1.21 Value – Protection of ecological and economic productivity

## Goals:

- No known species shall become endangered or threatened as a result of Cascadia management activities.
- Maintain a mix of tree species similar to the current species mix.

## Indicators:

*An accurate inventory of all species in the DFA is not possible. The indicator set measures changes in the prevalence of commercial tree species and in the number of identified species at risk. Free growing commitments include reforestation with site appropriate species. The indicator set is supplemented by management programs that are designed to maintain the ecosystem diversity required for species diversity; and by effectiveness monitoring programs.*

(1) Percent of primary, secondary and tertiary species (2<sup>nd</sup> growth)

Objective: Maintain percentages of second growth species that are comparable to those in the historic baseline inventory.

Acceptable Variance: ± 20%.

(2) Gross volume by species of mature forest

Objective: Maintain percentages of mature species that are comparable to those in the historic baseline inventory.

Acceptable Variance: ± 20% within a species.

(4) Number of identified species at risk

Objective: Zero annual increase in number of species at risk and not increase the level of threat as a result of management activities in the DFA.

Acceptable Variance: None.

(8) Area that does not meet 'free growing' commitments

Objective: Zero hectares of free growing non-compliance.

Acceptable Variance: 0%.

## Programs:

- ✧ Cascadia has reviewed the habitat requirements of vertebrate species on its tenure and has used those as a guide for key ecological attributes in the implementation of variable retention. (See [Section 2](#))
- ✧ Cascadia is involved in monitoring pilot projects aimed at developing a comprehensive adaptive management and monitoring program in support of variable retention.

### 1.3 Critical Element – Genetic Diversity

Genetic diversity is conserved if the variation of genes within species is maintained.

#### 1.31 Value – Adaptability to change

## Goals:

- Improve commercial values in the Timber Zone through the use of naturally superior planting stock.
- Maintain natural levels of genetic diversity.

## Indicators:

*The indicator set tracks maintenance of genetic diversity by measuring reforestation according to the proportions that occur through natural regeneration and through the planting of ecologically compatible seedlings; by measuring the percentage of retention in harvested areas (retained trees are a genetically consistent seed source); and by measuring the percentage of High Conservation Value areas (potentially including genetically distinct species) that are accorded special management.*

[\(5\)](#) Percent of seed that is registered or certified

Objective: Indicator dropped in 2004.

Acceptable Variance: None.

[\(22\)](#) Stand level retention in openings as a percent of total opening area (annual average for non-clearcut openings)

Objective:  $\geq 10\%$ .

Acceptable Variance: Greater than 10%.

[\(25\)](#) Percent of identified High Conservation Value (HCV) areas under special management

Objective: 100% of HCV areas identified are under special management.

Acceptable Variance: None.

[\(27\)](#) Total number of trees at 'free growing' compared to planted total

Objective: Number of crop and competing trees is greater than number of trees planted (annual average).

Acceptable Variance: None.

## 1.4 Critical Element – Management Strategy

### 1.41 Value – Landscape level planning

Concern for sustainability of ecosystems has led to increasing demand for landscape level planning to ensure that ecosystem functioning and plant and animal habitats are conserved.

Substantial areas consisting largely of old growth forests have been reserved on inoperable or sensitive soil sites, and as riparian, wildlife and recreation reserves. These areas are described in Timber Supply Analysis reports (e.g., in the TFL 39 Management Plan).

The Forest Practices Code (FPC) requirements for landscape and stand level biodiversity have been applied within TFL 39. The Biodiversity Guidebook was issued in 1995. Direction from the MoF and the MoWLAP has emphasized old seral stage representation at the landscape level and on variation in stand structure, primarily through Old Growth Management Areas (OGMAs) and Wildlife Tree Patches (WTPs).

The Vancouver Island Land Use Plan (VILUP) is a higher level plan established under a Higher Level Plan Order for Regional plans and came into effect on December 1, 2000. The Sayward Landscape Unit Plan (SLUP) was effective July 2003. The SLUP falls within Resource Management Zone #31 of the VILUP. Under VILUP, this area was described as a General Management Zone for which there would be no specific Higher Level Plan direction and it was anticipated that general Forest Practices Code provisions would apply to this area.

Cascadia is continuing to develop a capability for landscape reporting and spatial forecasting. This includes reporting by BEC (Biogeoclimatic Ecosystem Classification) variant on reserved areas, seral (age) classes, and interior old growth and patch sizes. These reports will be useful for describing the current situation and as a basis for developing strategies to achieve landscape objectives when they are available. The recently developed spatial forecasting tool has been used to project at a strategic level the implementation of variable retention over the DFA for the next 60 years. This is being linked to a spatial habitat supply model to allow the assessment of landscape planning options on the provision of future habitat.

### 1.42 Value – Biodiversity conservation

In June 1998, BC Coastal Group (then MacMillan Bloedel) announced a new forest management strategy, formerly called the Forest Project, now the Coast Forest Strategy, which includes conservation of biodiversity as a primary objective. Key components include phasing out clearcutting in favor of 100% variable retention by the end of 2003 and an increase in conservation of old growth forests and wildlife habitat on BC lands managed by the company. Section 2 includes a fuller description of the Coast Forest Strategy.

Strategies include:

- Old-growth stewardship zones will include additional reserves of old-growth forest. Variable retention will ensure that a diversity of forest structure – including snags, wood debris and live trees of various sizes and in various patterns – is well distributed across the forest landscape.
- Variable retention and stewardship zones will provide additional means and flexibility for achieving and often exceeding government landscape objectives for old seral representation and Wildlife Tree Patches.
- The development and use of performance based procedures will be encouraged.
- Ecosystem mapping for most of TFL 39 is complete. This mapping has been funded by FIA (formerly known as FRBC) and is to the site series level at a scale of 1:20,000. The site series information will provide assistance in landscape unit planning and operational planning.

### 1.43 Value – Habitat conservation

Objectives are to minimize the impact of activities on wildlife habitat and to not knowingly jeopardize rare, endangered or threatened species.

Identified wildlife are listed by Forest District in the Managing Identified Wildlife Guidebook (February, 1999). The BC Conservation Data Centre (MoSFM) maintains lists of rare vertebrates, vascular plants and plant communities by Forest District.

It is recognized that the old growth stewardship zones and reserves for other reasons (e.g. inoperable areas, riparian and wildlife areas and sensitive soils) will not address all wildlife needs. These approaches might be described as coarse filter approaches.

A fine filter approach is necessary for species where the coarse filter is inadequate. Such additional measures will be applied as they are identified. Examples include the “Identified Wildlife” discussed below.

Strategies include:

- Develop and incorporate landscape level objectives for biodiversity including wildlife habitat. This will be achieved as part of the landscape unit planning process. MoWLAP will designate Wildlife Habitat Areas (WHA) that are approximately 200 hectares (total hectares not to exceed 2,400 – maximum 1% impact on the Timber Harvesting Land Base (THLB)).
- May 2004, Buck Tanner (MSRM) and Erica McClaren proposed four WHAs for Goshawks within TFL 39, Block 2 (Tlatlos/Russel Creek WHA [1-092], Tsitika WHA [1-093], Gerald Creek WHA [1-087], and Consort Creek WHA [1-085]). These WHAs may also function as UWRs and Old Growth Management Areas (OGMAs).
- May 3, 2004, the Minister of Water, Land and Air Protection established a category of species at risk – [http://wlapwww.gov.bc.ca/wld/identified/approved\\_order.html](http://wlapwww.gov.bc.ca/wld/identified/approved_order.html) (species that may be affected by forest or range management on Crown Land).
- During the appropriate season, wildlife features in cutblocks assessed for the presence of identified species have the appropriate conservation measures (i.e. nest tree/den reserves) prescribed.
- Species which potentially occur within TFL 39, Block 2, and which require future consideration when planning timber-harvesting activities, include the following: Marbled Murrelet, Queen Charlotte Goshawk and the Keen’s Long-eared Myotis.
- Keen’s Long-eared Myotis – Applying recommendations made in the Biodiversity Guidebook and the Riparian Management Area Guidebook will adequately manage and conserve this species.
- Queen Charlotte Goshawk – A qualified registered professional (R.P.Bio) will investigate all observations of goshawks or possible nests early in the nesting season (March – June). Active goshawk nests identified by these surveys will be protected through the establishment of interim measures as outlined in Managing Identified Wildlife: Procedures and Measures – Volume 1 (Ministry of Forests, 1999), or with Wildlife Habitat Areas (WHAs). Observations will be reported to the Ministry of Water, Land and Air Protection (MoWLAP). Interim measures will be considered on an ongoing basis for the establishment of WHAs.
- Marbled Murrelets – Within the Adam and Eve Landscape Units, Marbled Murrelets will be accommodated where possible by the delineation of Old Growth Management Areas (OGMAs) which target murrelet-nesting habitat.

- Apply stand treatments in specific situations to enhance and improve habitat. These treatments will be based on an assessment of benefits (habitat and timber) and cost. They include restoration of riparian habitat and recruitment of old seral forest conditions. A recent example includes trials in restoration of riparian habitat in Block 2.
- December 17, 2003, [7,109.2 ha] of Ungulate Winter Range (UWR) U1-004 (TFL 39, Block 2) for Black-tailed Deer and Roosevelt Elk were established.
- Critical Spring Forage (CSF) assessments are prepared as per the Standard Operating Procedure (SOP) "For the Management of the CSF adjacent to Black-tailed Deer Winter Ranges (UWRs) in TFL 39, Block 2, to determine potential Forage Production Areas (FPA).
- Scheduling the harvest of the FPA can provide early seral conditions conducive with physiological requirements for Black-tailed Deer over time.
- May 2004 Draft Old Growth Management Area (OGMAs) have been designed to maintain an ecological representation of old growth forests by biogeoclimatic variant across the landscape.
- Constrained areas, (terrain, riparian, UWRs, etc.) were incorporated to lessen the impact on harvesting areas.
- Where old growth is under represented, second growth stands, containing desirable ecological attributes are incorporated in a recruitment strategy.

## 2.0 Criteria – Forest Ecosystem Condition and Productivity

Forest Ecosystem condition and productivity is conserved if the health, vitality and rates of biological production are maintained.

### 2.1 Critical Element – Forest Health

Forest health is conserved if biotic (including anthropogenic) and abiotic disturbances and stresses maintain both ecosystem processes and ecosystem conditions within a range of natural variability.

#### 2.11 Value – Disturbance and stress

Goals:

- Minimize stress associated with harvesting activities.
- Track and minimize losses to fire, insects and disease.
- Recognize that natural levels of disturbance and stress may be beneficial.

Indicators:

*The indicator set tracks the rates of naturally occurring disturbance and stress (biologic, geologic and climatic) to establish a background rate; in comparison, it tracks the rates of operationally related disturbance and stress; it tracks reforestation success as a measure of the forest ecosystem's response to harvest related disturbance.*

(6) Percent of harvested area that is reforested

Objective: Reforest 100% of the harvested area within 3 years from harvest.

Acceptable Variance: 6%.

(7) Percent of opening area occupied by permanent access structures (road, landing, pit, etc.)

Objective: Less than 5% of the area in openings to be in permanent access structures (annual average).

Acceptable Variance: +0.5% (i.e. less than 5.5% of the area in the openings).

(8) Area that does not meet 'free growing' commitments

Objective: Zero hectares of 'free growing' non-compliance.

Acceptable Variance: 0%.

(9) Number and area of accidental operational caused forest fires

Objective: Zero accidental operationally caused fires.

Acceptable Variance: One per year.

(28) Number of reportable spills

Objective: 7 or less.

Acceptable Variance: +1.

(29) Natural wildfires by number and area

Objective: Less than 50 hectares.

Acceptable Variance: Fires exceeding 50 hectares are actively managed.

(30) Number of areas greater than 500 hectares at high risk of mortality due to insects or disease

Objective: Zero.

Acceptable Variance: Operation has previously identified high risk areas and implemented a strategy to manage risk prior to area exceeding 500 hectares.

(31) Naturally induced slides by area

Objective: Track area of natural slides

Acceptable Variance: Not applicable

(34) Area and percent of total slides from harvested areas or roads

Objective: Zero as a result of post-1995 activities

Acceptable Variance: None

## Programs:

- ✧ Annual fire pre-organization plan for responding to emergency fire situations. ([See 2.41 below](#)).
- ✧ Annual overview of insect and disease issues in the DFA. ([See 2.42 below](#)).
- ✧ Coast Forest Strategy. ([See Section 2](#)).

## 2.2 Critical Element – Ecosystem Resilience

Ecosystem resilience is conserved if ecosystem processes and the range of ecosystem conditions allow ecosystems to persist, absorb change, and recover from disturbances.

### 2.21 Value – Adequate regenerative capacity

## Goal:

- Maintain and enhance forest ecosystem condition and productivity.

## Indicators:

*The indicator set tracks reforestation success as a measure of sustained regenerative capacity.*

(6) Percent of harvested area that is reforested

Objective: Reforest 100% of the harvested area within 3 years from harvest

Acceptable Variance: 6%.

(8) Area that does not meet 'free growing' commitments

Objective: Zero hectares of 'free growing' non-compliance

Acceptable Variance: 0%.

(10) Area of regeneration failure

Objective: Current regeneration failure is less than 6% of the current area established.

Acceptable Variance: +5% (maximum 10%).

## 2.3 Critical Element – Ecosystem Productivity

Ecosystem productivity is conserved if ecosystem conditions are capable of supporting all naturally occurring species.

### 2.31 Value – Biologically productive forests

Goal:

- Maintain the habitat for identified species.

Indicators:

See indicator sets for [1.11 Ecosystem Diversity](#) and [1.12 Species Diversity](#).

## 2.4 Critical Element – Management Strategy

Cascadia's goals are to protect the forest and to maintain a healthy forest condition.

- Regenerate all harvested land promptly with appropriate species considering both silviculture characteristics and economic values.
- Limit the losses from fire through a rigorous program of fire prevention and suppression.
- Minimize losses to insects and disease through monitoring and appropriate control measures.

### 2.41 Value – Fire prevention and suppression

The fire protection strategy is addressed in the Management Plan for TFL 39 and the Managed Commitment for MF 19.

Prevention and control are governed by operating policies and procedures and a series of plans. Plans are prepared for MoF approval, and North Island Timberlands maintains and deploys its own fire suppression equipment.

Fire protection activities include hazard induced logging closures, aerial and ground patrols during periods of high risk and quick initial action using fixed wing aircraft, helicopters and ground crews.

Cascadia's primary objective is to prevent fires through good housekeeping, diligent equipment maintenance and strict control of operations as fire danger rises. Our goal is to contain all fires within 24 hours of detection.

Damage to established stands in TFL 39 has averaged less than 39 ha per year (less than 21 ha per year in mature stands) during the last 25 years.

### 2.42 Value – Forest insect and disease control

An insects and disease pest management strategy is included in TFL 39, MP #8. Insect infestations, disease outbreaks and associated management activities are reported in the TFL 39 Annual Report.

The objective is to minimize losses due to insects and disease through a vigilant program of detection and appropriate control measures.

Forestlands will be assessed on an ongoing basis to identify potential pest problems. Any suspect areas will be examined and monitored by helicopter or ground surveys. Federal or provincial experts will be consulted on appropriate actions if beyond the expertise of our own registered professionals.

Losses due to insect or disease epidemics will be minimized by:

- Expedient salvage of trees and stands already dead, dying or threatened by pest infestations, subject to environmental and economic considerations.
- Maintaining tight inventory control to keep the volume of logs susceptible to ambrosia beetle attack as low as practical.
- Trapping insects such as ambrosia beetles, where appropriate.
- Carrying out harvesting and sanitation activities in areas identified as disease centers.

The Cascadia FDP has guidelines addressing the following issues:

- To reduce the risk of future losses to *Abies* species from the Balsam Woolly Adelgid (*Adelges piceae*). The adelgid is present in the private land portion of the DFA and to a much lesser extent on the eastern portion of the TFL.
- For restricting planting of Sitka spruce in medium and high hazard zones for the Sitka spruce weevil (*Pissodes strobi*)

A conifer sawfly infestation (*Neodiprion* spp.) occurred in Block 2 during the mid 1990's. By 1999, sawfly populations had collapsed in high-risk areas.

### 2.43 Value – Wind damage

Activities are in place to minimize losses from wind damage. These include assessment of susceptibility to windthrow, cutblock design and management practices (treatment of edges where appropriate), monitoring of damage and recovery of downed trees where practical.

Small cutblock sizes and reserves within cutblocks (e.g., wildlife tree patches and riparian management areas) expose more timber edge to potential damage from strong wind events.

Although variable retention may create more exposed edges, the retention pattern could modify wind forces against edges and reduce windthrow relative to clearcuts.

The strategy to minimize losses from windthrow involves further development of practices already in place:

- Assessment of windthrow hazard and risk. This has been taken further in a FIA funded project at North Island Timberlands where current windthrow hazard models have been applied to produce windthrow hazard maps. These maps facilitate better prescriptions and choice of retention levels.
- Cutblock and retention patch design based on knowledge of historic wind patterns and assessments.
- Management practices such as tree pruning and/or topping (applied according to the assessment results).
- Monitoring. The company has designed a windthrow monitoring program. This program will document the amount of windthrow occurring in variable retention areas and provide a baseline against which to measure future windthrow management.
- Recovery of downed trees where practical. The increased use of helicopter grapple yarding should allow retrieval of small patches of windthrow and individual trees that were uneconomic to salvage in the past. Large rotting logs play an important role in forest ecosystems. Hence a variety of size classes of woody debris and damaged or rotten logs will be left behind to maintain natural cycles and habitats.

Refer to "Company Guidelines for Variable Retention" for more details on prescription options for wind damage.

A catastrophic windthrow event occurred in December 2001 at select areas on the DFA. The intensity and magnitude of this unpredictable wind event resulted in approximately 600,000 cubic metres of windthrow. Salvage of recoverable timber was completed by mid 2003.

#### 2.44 Value – Soil degradation

Roads, landings and other compacted areas remove area from the productive forest land base. These areas are measured in post harvest assessments. The data are compiled and reported annually for both TFL and MF harvest areas.

Management practices are in place to ensure that impacts meet or exceed current standards, including site restoration where appropriate.

Also refer to TFL 39, MP #8 and MF 19, Management Commitment.

#### 2.45 Value – Reforestation

Restocking standards (included in TFL, MP #8 and MF 19, Management Commitment) specify that depending on site, Not Sufficiently Restocked (NSR) area will be reforested within two to six years after completion of logging. A measure of success has been to manage the amount of NSR to be below three years of logging. These results have been reported in the TFL 39 Annual Report.

## 3.0 Criteria – Conservation of Soil and Water Resources

Soil and water resources and physical environments are conserved if the quantity and quality of soil and water within forest ecosystems are maintained.

### 3.1 Critical Element – Physical Environments

Physical environments are conserved if the permanent loss of forest area to other uses or factors is minimized, and if rare physical environments are protected.

#### 3.11 Value – Forest area

Goal:

- Maintain forests as highest and best use of forest land.

Indicators:

*Private forest lands sold from the DFA are subject to conversion to residential, commercial or other non-forest uses.*

[\(13\)](#) Area sold out of the DFA

Objective: Zero sales of land from MF 19.

Acceptable Variance: Under review.

### 3.2 Critical Element – Soil Resources

Soil resources are conserved if the ability of soils to sustain forest productivity is maintained within characteristic ranges of variation.

#### 3.21 Value – Soil productivity

Goal:

- Minimize soil degradation resulting from management activities.

Indicators:

*The indicator set measures negative impacts of management activities on soil productivity.*

[\(7\)](#) Percent of opening area occupied by permanent access structures (road, landing, pit, etc.)

Objective: Less than 5% of the area in openings to be in permanent access structures (annual average).

Acceptable Variance: + 0.5% (i.e. less than 5.5% of the area in openings).

[\(19\)](#) FPC contraventions related to road, soil, and water management

Objective: Zero.

Acceptable Variance: None

(32) Percent of openings harvested in which soil disturbance exceeds plan

Objective: Zero.

Acceptable Variance: None

(34) Area and percent of total slides from harvested areas or roads

Objective: Zero as result of post-1995 activities.

Acceptable Variance: None

## Programs:

- ◆ Deactivation of high risk roads using FRBC and FIA funding has occurred from 1998-2003 on the DFA. During that time 255 kilometres of road was deactivated.

### 3.3 Critical Element – Water resources

Water resources are conserved if water quality and quantity is maintained.

#### 3.31 Value – Stream water quality

## Goal:

- Maintain water quality.

## Indicators:

*The indicator set tracks changes to the current area of major water bodies. It also permanent access structures, which may pose a risk to water quality, the actual changes in water quality for selected watersheds, which could be attributable to management activities, and non-compliance with legal requirements, which could have a negative impact on water quality.*

(7) Percent of opening areas occupied by permanent access structures (road, landing, pit, etc.)

Objective: Less than 5% of the area in openings to be in permanent access structures (annual average).

Acceptable Variance: + 0.5% (i.e. less than 5.5%).

(12) Area of water bodies

Objective: No change in area of water bodies.

Acceptable Variance: None

(19) FPC contraventions related to road, soil and water management

Objective: Zero.

Acceptable Variance: None

(33) Water quality measurements for selected watersheds

Objective: Turbidity less than 5 Nephelometric Turbidity Units (NTU); temperature less than 15°C

Acceptable Variance: Plus 10%

(44) Hectares of brush treatments by method

Objective: Minimize the use of herbicides to less than 20% of the total brushing program.

Acceptable Variance: None.

(45) Allocation of resources from BCCT to the development and implementation of non-herbicide alternatives specific to current herbicide uses as reported to NIWAG quarterly

Objective: Research and implementation of options that reduce the need to use herbicide within the DFA.

Acceptable Variance: None.

Programs:

- ✧ Cascadia compliance monitoring program (# slides / occurrences).
- ✧ Fisheries programs: stream identification.
- ✧ Water quality measurements in the Oyster River – Island Timberlands.

### 3.4 Critical Element – Management Strategy

Forest management activities can increase rates of soil erosion and affect the flow of sediment into streams and the peak flow levels in streams.

Management practices are designed to minimize these impacts. They are based on regulatory guidelines and standard operating procedures. Operational staff receive training for these standards and procedures, and environmental audits of operations are conducted annually.

Strategies for protection of soil and water resources are described in the Management Plans.

Since helicopter yarding systems significantly reduce impacts on soils and water resources, they are increasingly being used to access timber in sensitive areas.

#### 3.41 Value – Soil conservation

Forest areas are mapped by either five-class terrain stability mapping or sensitive site (ES) mapping. This information is used to identify sensitive areas for operational planning. It is also used to estimate appropriate allowances in strategic analyses (e.g., refer to TFL 39, MP #8).

The overall objective is to sustain the productivity of the landbase.

Strategies include:

- Standard Operating Procedures have been developed and are maintained for road construction, maintenance and deactivation.
- Terrain stability field assessments (TSFAs) are conducted on steep and sensitive sites.
- Forest practices reflect the sensitivity of the soil.
- Internal and external audits on road building and harvesting practices.
- Minimize the amount of permanent site degradation due to roads.

Concern has been expressed that variable retention might increase road requirements. There will be situations with increased road requirements and others with reduced requirements. It is expected that in sum they will tend to offset one another. For example, there has been an increase in helicopter harvesting (and hence fewer roads) on steeper terrain. Significant increases in roads are not expected on flatter terrain because of gains in reduced adjacency constraints.

#### 3.42 Value – Water protection

Particular attention is focused on managing riparian areas. In the TFL, riparian reserve and management areas are implemented according to FPC requirements or better. Similar practices are applied in the MF, based on site-specific assessments and the Private Land Forests Practices Regulation. Higher order streams (smaller streams with limited regulatory protection) are used as priority anchor points for the location of retention patches within settings.

The objective is to sustain water quality and quantity.

Strategies include:

- Work closely with regional and community water boards regarding practices and standards in community watersheds. The Oyster River Watershed (in MF 19) and Newcastle Creek (in TFL 39) are water supply areas for local communities. MacMillan Bloedel and Weyerhaeuser have participated in the Oyster River Watershed Management Committee for the last decade and Island Timberlands will maintain participation. At the request of the committee in 2000, Weyerhaeuser and TimberWest completed and reviewed with the committee a watershed assessment on the Oyster River watershed.

- Coastal Watershed Assessment Procedures have so far been applied to more than 40 watersheds and basins in TFL 39 according to a priority list developed by the MoWLAP. Updates are completed as required and additional CWAPs will be undertaken as requested by District Managers. Assessments for the Tsitika and Memekay drainages have just been completed.
- Ensure that road construction and road maintenance are to required standards.
- Aerial yarding systems (helicopter) have increasingly been used in sensitive areas to minimize road density.
- Develop and implement road deactivation plans, and further reduce erosion through dry seeding, or hydroseeding and planting. Utilize FIA funding for watershed restoration work.
- Develop a water sampling program to collect baseline data associated with herbicide use areas.

## 4.0 Criteria – Forest Ecosystem Contributions to Global Ecological Cycles

Forest conditions and management activities contribute to the health of global ecological cycles.

### 4.1 Critical Element – Element Recycling Processes

This contribution is maintained if:

- the processes that are responsible for recycling water, carbon, nitrogen, and other life-sustaining elements are maintained;
- utilization and rejuvenation are balanced and sustained
- forests are protected from sustained deforestation or conversion to other uses.

#### 4.11 Value – Forest land supports ecological cycles

Goals:

- Maintain forests as highest and best use of forest land.
- Manage activities so as not to significantly change the total water surface in the DFA.

Indicators:

*The indicator set tracks reforestation success and changes in forested land area as measures of sustained ecological cycles; the area of water bodies is significant in maintaining hydrological cycles.*

##### (6) Percent of harvested area that is reforested

Objective: Reforest 100% of the harvested area within 3 years from harvest.

Acceptable Variance: 6%.

##### (7) Percent of opening area occupied by permanent access structures (road, landing, pit, etc.)

Objective: Less than 5% of the area in openings to be in permanent access structures (annual average).

Acceptable Variance: + 0.5% (i.e. less than 5.5% of the area in openings).

[\(8\)](#) Area that does not meet 'free growing' commitments

Objective: Zero hectares of free growing non-compliance.

Acceptable Variance: 0%.

[\(10\)](#) Area of regeneration failure

Objective: Current regeneration failure is less than 6% of the current area established.

Acceptable Variance: +5% (maximum 10%).

[\(12\)](#) Area of water bodies

Objective: No change in area of water bodies.

Acceptable Variance: None

[\(13\)](#) Area sold out of the DFA

Objective: Zero sales of land from MF 19.

Acceptable Variance: Under review.

## 4.2 Critical Element – Management Strategy

The uptake and storage of carbon by actively growing forests reduce global carbon dioxide levels.

North Island Timberland's forest management activities are focused on prompt reforestation of harvested areas with well stocked stands and on restricting the area that is removed from production by roads and landings ([See 2.44 above](#)).

Surface water area is a significant contributor to hydrological cycles. The current management strategy has had minimal adverse impact on the surface water area in the DFA.

## 5.0 Criteria – Multiple Benefits to Society

Forests provide a sustained flow of benefits for current and future generations if multiple goods and services are provided over the long term.

### 5.1 Critical Element – Extraction Rates

Multiple benefits are maintained if:

- extraction rates are within the long term productive capacity of the resource base, and
- forests provide a mix of market and non-market goods and services.

### 5.11 Value – Flow of benefits from the forest – non-timber resources

Goal:

- Sustain availability of commercial and non-commercial forest products (for example, berries, mushrooms, floral products, medicinal plants and aboriginal uses including cultural, spiritual and societal).

Indicators:

*Ecosystem diversity (See indicators under 1.11 Ecosystem Diversity) provides the basis for the sustained availability of non-timber resources, by providing the types of habitat and physical features those resources need. A sustainable harvest level and adequate conservation of old growth forest habitat are key factors in sustaining ecological diversity. Roads allow access for the use and enjoyment of non-timber products.*

#### (14) Annual harvest level

Objectives:	TFL: Harvest the AAC allocation over the five year cut control period. (2005 AAC is 1,229,411 m3.)
	MF: Achieve the annual plan. (2005 plan is 300,000 m3.)
Acceptable Variance:	TFL: $\pm 50\%$ of the AAC on an annual basis within the five year cut control period.
	MF: $\pm 20\%$ of plan.

#### (18) Kilometers of active road (*Indicator to be revised*)

Objective:	Retain active road network.
Acceptable Variance:	$\pm 20\%$

#### (26) Old growth (>250 years) representation by BEC variant (Crown Land only)

Objective:	Meet Ministry of Forests biodiversity guidebook targets defined by BEC variant and landscape unit.
Acceptable Variance:	An interim old growth deficit exists in some landscape units, as illustrated in the 1998 forest inventory.

## 5.12 Value – Flow of benefits from the forest – wildlife habitat

## Goal:

Maintain ecosystem diversity at quantitative and qualitative levels sufficient to support viable populations of existing species.

## Indicators:

*(See indicators under 1.11 Ecosystem Diversity)*

## 5.13 Value – Flow of benefits from the forest – recreation and tourism

## Goal:

- Forest management activities respect significant recreation and tourism features and user requirements.

## Indicators:

*The indicator set tracks forest access, company-maintained recreation sites and the special management of HCV areas, which may include important recreation and tourism features. An active and broadly representative advisory group will supply continuing input into tourism and recreational requirements.*

(17) Number of recreation sites maintained

Objective: Continue maintenance of existing sites.

Acceptable Variance: None.

(18) Kilometers of active road *(Indicator to be revised)*

Objective: Retain active road network.

Acceptable Variance:  $\pm 20\%$ .

(20) Advisory group active membership

Objective: All sectors are represented.

Acceptable Variance: None.

(25) Percent of identified High Conservation Value (HCV) areas under special management

Objective: 100% of HCV areas identified are under special management.

Acceptable Variance: None.

## 5.14 Value – Flow of benefits from the forest – timber resources and community stability

## Goals:

- The harvest level is based on the long-term productivity of the land base and contributes to long and short-term community stability.
- The community receives a fair share of benefits and participates in management planning.
- Maximize work year for employees harvesting the cut.

## Indicators:

*The “fairness” of shared benefits is not determinable by any set formula. North Island’s annual harvest and the subsequent distribution of sales revenues are tracked for assessment and discussion. Advisory group active membership and compliance with required public consultation processes track the opportunities for public participation in planning.*

(14) Annual harvest level

Objectives: TFL: Harvest the AAC allocation over the five year cut control period. (2005 AAC is 1,229,411 m3.)  
MF: Achieve the annual plan. (2005 plan is 300,000 m3.)

Acceptable Variance: TFL:  $\pm 50\%$  of the AAC on an annual basis within the five year cut control period.  
MF:  $\pm 20\%$  of plan.

(20) Advisory group active membership

Objective: All sectors are represented.

Acceptable Variance: None.

(35) Distribution of revenues by percentage

Objective: Track distribution.

Acceptable Variance: Not applicable.

(36) Compliance with required public consultation processes

Objective: 100%.

Acceptable Variance: None.

(37) Days haul wood

Objective: *Indicator not working as designed and was dropped in 2003.*

## 5.2 Critical Element – Resource Businesses

Multiple benefits are maintained if forests provide a mix of market and non-market goods.

### 5.21 Value – Economic viability of resource businesses

Goals:

North Island Timberlands:

- pays a fair economic rent to land owner;
- is profitable;
- produces products that satisfy market demand, and
- contributes to Cascadia's vision to be the best forest products company in the world.

Indicators:

*North Island's economic viability is tracked according to annual harvest, profitability and the distribution of sales revenues. Safety performance and an independently certified SFM system are key measures of responsible management.*

(14) Annual harvest level

Objectives: TFL: Harvest the AAC allocation over the five year cut control period. (2005 AAC is 1,229,411 m3.)  
MF: Achieve the annual plan. (2005 plan is 300,000 m3.)

Acceptable Variance: TFL:  $\pm 50\%$  of the AAC on an annual basis within the five year cut control period  
MF:  $\pm 20\%$  of plan

(15) North Island Timberlands margin

Objective: \$4.61 per m3 (crown production profit and private operating profit prorated).

Acceptable Variance: At least 100% of the previous year.

(16) Recordable Incident Rate (RIR)

Objective: 2.3 RIR for 2005 (combination of Cascadia employees and contractors).

Acceptable Variance: Less than or equal to the objective.

(35) Distribution of revenues by percentage

Objective: Track distribution

Acceptable Variance: Not applicable

(38) Maintenance of a certified SFM system

Objective: Maintain SFM certification.

Acceptable Variance: None

### 5.3 Critical Element – Management strategy

#### 5.31 Value – Recreation

North Island recognizes and supports the responsible use of forests for recreation activities. The DFA provides varied recreational opportunities for both local residents and visitors to the area. Recreation strategies are included in both TFL and MF management plans. Several recreation sites are maintained by Cascadia, and harvesting activities are restricted in some areas because of recreation and visual landscape values. Due to removal of area from the DFA, three established recreation sites are no longer part of the SFM Plan (Junction Pool, Montague Creek and Lower Tsitika Crossing).

Public access is available throughout the DFA. Some restrictions are applied, especially in active logging areas, for safety reasons and protection of equipment. Access is limited during periods of high fire hazard.

North Island's strategy is to:

- Continue to work with the MoF and local residents to develop appropriate strategies for public access to specific areas. Issues include road deactivation (environmental risk), road maintenance and safety.
- Cooperate with commercial tour operators where access is required.
- Develop and maintain recreation sites in concert with the MoF and subject to funding.
- With the MoF, develop strategies for recreation sites and trails and define objectives for management of these features.
- Continue to provide recreation maps showing recreation areas, roads and rules of access.
- Continue to cooperate with MoF and local caving groups in managing and protecting sensitive caves and karst resources. This includes undertaking surface inventories in karst areas prior to development. North Island Timberlands in cooperation with the Campbell River District (MoF) and local caving groups have developed Standard Operating Procedures for karst management.

### 5.32 Value – Visual impact

North Island's objective is to reconcile where possible the harvesting of trees with the visual landscape.

The strategy is to:

- Maintain visual landscape inventories.
- Recognize visual landscape objectives in plans and operations.
- Work with MoF specialists to manage for visual landscape objectives more efficiently. This includes improved visual landscape design (assisted by variable retention) and management practices to reduce the time for achieving visually effective green-up.

### 5.33 Value – Archaeological and Cultural Heritage Sites

North Island will respect known sites of historic and cultural significance and account for such sites in strategic analysis.

Strategies include:

- Review operational plans with local people to identify areas in which cultural resources of potential interest may be affected by forest development.
- Conduct assessments and implement management to protect cultural resources in accordance with the Forest Practices Code and the Heritage Conservation Act. This includes working with First Nations, the MoF and the Archaeology Branch (Ministry of Small Business, Tourism and Culture) to identify the appropriate assessment procedures.
- Review available inventories and operational information by December 31, 2004, to determine an appropriate accounting for cultural heritage sites in the MP #9 analysis.

### 5.34 Value – First Nations

Economic — The objective is to develop enduring business relationships with First Nations.

Strategies include:

- A First Nations Partnership Agreement exists at North Island with the Tlowitsis Mumtagila, Campbell River, Cape Mudge, Comox and Kwiakah First Nations.

Consultation – The objective is to improve communications and understanding by all involved and hence identify and solve concerns well in advance of planned operations.

Strategies include:

- Cascadia encourages review of operational plans.
- First Nations representatives participate in NIWAG and in other public review and input initiatives.

Cultural Heritage – See Part 5.33 on archaeological and cultural heritage sites.

### 5.35 Value – Local economic benefits

Employment in the DFA is important to the economic health of the local communities, particularly Sayward and Campbell River.

Community economic and employment strategies include:

- North Island managers are responsible for developing relationships with local communities, including First Nations.
- North Island will move towards achieving a work force that broadly reflects the demographics of local communities.
- Cascadia will continue the practice of managing TFL 39 on a Block basis in response to local economic concerns including economic opportunities. Block contributions are defined in MP #8 AAC.
- North Island is committed to tracking total forest sector jobs on the DFA. This will be reported and discussed quarterly with the public advisory group.

A comprehensive review of management strategies and operations in 1997-98 led the company to reaffirm its commitment to the solid wood products industry in British Columbia. Cascadia's goal is to be the best forest products company in the world. This includes attaining high standards in safety, environmental responsibility and business success.

Strategies to achieve these goals include:

- A dedicated effort to improve safety in the work place.
- Restructuring of operations to reduce overhead costs.
- The Coast Forest Strategy forest management strategy. Key components included phasing out of clearcutting over a five-year period to be replaced by variable retention, conservation of more old growth forest, and SFM certification. It is expected that a positive market response to the Coast Forest Strategy will help to stabilize short-term harvest and employment levels in local communities.

Cascadia will continue the practice of managing TFL 39 on a block basis in response to local economic concerns including employment opportunities. The current AAC for TFL 39 is allocated by block (including Block 2).

Economic benefits include employment, wages and payments to government, including stumpage fees and other taxes. Records for these are compiled monthly by North Island.

The financial health of the North Island Timberlands operation relates directly to the economic health of the local community. A measure of financial health is the margin (revenue minus costs) that the operation achieves.

The capacity for timber production is indicated by the AAC allocation to TFL 39, Block 2 and annual plans for MF 19 areas. Actual harvest can be compared to these numbers. Substantial variation can occur on an annual basis largely because of changes in market conditions.

## 6.0 Criteria – Society’s Responsibility for Sustainable Development

Society’s responsibility for sustainable forest management requires that fair, equitable and effective forest management decisions are made.

### 6.1 Critical Element – Social Goals

Sustainable forest management requires that:

- forests are managed in ways that reflect social values, and management is responsive to changes in those values;
- duly established Aboriginal and treaty rights be respected;
- the special and unique needs of Aboriginal peoples are respected and accommodated in forest management decisions;
- the decision making process is developed with input from directly affected and local interested parties;
- decisions are made as a result of informed, inclusive, and fair consultation with people who have an interest in forest management or are affected by forest management decisions, and;
- collective understanding of forest ecosystems, values, and management is increased and used in the decision making process.

#### 6.11 Value – Social equity

Goals:

- Ensure mechanisms are available to allow for fair and effective decision making.
- Respect treaty rights and meet legal requirements regarding aboriginal communities.
- Effectively facilitate participation of aboriginal communities in SFM.

Indicators:

*Advisory group active membership and compliance with required public consultation processes track the opportunities for public participation in planning. North Island has an information sharing program with First Nations in support of the Crown’s obligation for consultation. Where they exist, compliance with formally negotiated treaties and interim measures agreements is a legal obligation. Partnership agreements with First Nations are a measure of the effectiveness of relationship building.*

#### (20) Advisory group active membership

Objective: All sectors are represented.

Acceptable Variance: None.

#### (36) Compliance with required public consultation processes

Objective: 100% compliance.

Acceptable Variance: None.

#### (39) Compliance with treaty settlements and interim measures agreements

Objective: 100% compliance.

Acceptable Variance: None.

#### (40) First Nations information sharing and referrals program

Objective: Annually review forest development plan with First Nations.

Acceptable Variance: None.

(41) Existence of an effective First Nation partnership agreement

Objective: A signed partnership agreement is in place.

Acceptable Variance: None.

(41) Public education, communications and consultation program

Objective: 100% compliance.

Acceptable Variance: None.

## 6.12 Value – Peace and harmony

### Goals:

- Understand and respect aboriginal values as to management of the TFL.
- Ensure access to old growth cedar for traditional, cultural and ceremonial use in perpetuity.

### Indicators:

*The process for understanding and respecting aboriginal values is based on mutually agreed information sharing and referrals programs and in First Nations' participation in the advisory group. Sustained availability of old growth cedar is measured by the mature forest inventory and by planting.*

(2) Gross volume by species of mature forest

Objective: Maintain percentages of mature species that are comparable to those in the historic baseline inventory.

Acceptable Variance:  $\pm 20\%$  within a species.

(20) Advisory group active membership

Objective: All sectors are represented.

Acceptable Variance: Not applicable.

(21) Planting by species (compared to harvest)

Objective: Plant cedar in proportion to cedar harvest (average over a 10-year period).

Acceptable Variance:  $\pm 20\%$  of harvested cedar.

(40) First Nations information sharing and referrals program

Objective: Annually review forest development plan with First Nations.

Acceptable Variance: None.

### Programs:

- ◆ Seedling protection/ maintenance program for planted cedar and cypress where required.

## 6.13 Value – Better quality decisions

### Goals:

- Ensure mechanisms are available for fair and effective decision-making.
- Support forest education activities.
- Collect and communicate information that leads to better quality decisions.
- Support research activities.

## Indicators:

*The activities that lead to better quality decisions are tracked through advisory group active membership, North Island compliance with required public consultation processes, and other public education, communications and consultation programs. Support for research activities is described in appropriate documentation.*

(20) Advisory group active membership

Objective: All sectors are represented.

Acceptable Variance: None.

(36) Compliance with required public consultation processes

Objective: 100% compliance.

Acceptable Variance: None.

(42) Public education, communications and consultation program

Objective: 100% compliance with Plan.

Acceptable Variance: None.

(43) Corporate and Operational Research Program

Objective: Research programs linked to strategic ecosystem management and operational issues.

Acceptable Variance: Not applicable.

## Programs:

- ✧ Hamatla Partnership Agreement.
- ✧ North Island Woodlands Advisory Group.
- ✧ Public education programs.
- ✧ Research programs including:
  - ∞ The Montane Alternative Silvicultural Systems (MASS) project located in the MF 19 portion of the DFA.
  - ∞ Coast Forest Strategy.

## 6.2 Critical Element – Management Strategy

### 6.21 Value – Community, stakeholder and First Nations involvement

Public participation processes are central to achievement of SFM goals. The objective is to provide ready access for public input and stakeholder involvement in our management process.

- The North Island Woodlands Advisory Group (NIWAG) currently includes 13 community representatives who provide input on an ongoing basis. NIWAG plays a central role in the development of this plan by identifying local values and goals, participating in indicator selection, and reviewing and commenting on performance results. Regular meetings provide both input for local management issues and opportunities for all to learn about forest management and how these activities relate to the communities.
- There is a 25 year history of public involvement in the DFA. The process for developing management plans includes public review at different stages in preparation of the plan. Operational plans in TFL 39 are available for public review, and dialogue occurs with special interest groups such as cavers, other recreational users and the Oyster River Watershed Management Committee.

- Representatives of local First Nations are participating in NIWAG. The TFL 39 MP #8 process includes sending invitations to First Nation groups to discuss management issues, and Forest Development Plans are referred to local groups for input. North Island has a partnership agreement with First Nations for carrying out silvicultural work, training forest technicians, and supplying forest products for cultural uses.
- Operational planning to identify Cultural Heritage Resource sites and to develop appropriate management prescriptions occurs according to the FPC and the Heritage Conservation Act. The strategy is summarized in the Statement of Management Options, Objectives and Procedures for TFL 39, MP #8.

## 6.22 Value – Research

There are several monitoring and research projects underway, including:

- Nine “VRAM” (Variable Retention Adaptive Management) study sites are now established, with ongoing G&Y and other studies testing percentage group retention levels, and group removal under short/long cycles.
- Windthrow monitoring.
- Summer bird survey transects.
- Two bird studies looking at VR groups, types/levels of retention.
- Beetles.
- Amphibians.

## SECTION 2

### Coast Forest Strategy (Forest Project)

Key components of the Coast Forest Strategy (formerly the Forest Project) include phasing in variable retention over a five-year period (1999-2003) and increasing the conservation of old growth forests and wildlife habitat on the company's Crown tenures.

The variable retention approach to forest management is intended to address public concerns about sustainability, as expressed in international agreements, by retaining future options, sustaining healthy ecosystems (productivity), maintaining economic opportunities and sustaining biological diversity. Conserving more old growth and maintaining forest structural legacies important for habitat and ecological functioning of coastal forest ecosystems will enhance biodiversity and ecosystem values. Application of a range of variable retention silvicultural systems (depending on site characteristics and resource objectives) not only retains key biological legacies within harvested areas, but also provides flexibility for maintaining and dispersing forest structure across the landscape. These habitat elements include, for example, cavity sites, downed wood, shrubs, deciduous trees, riparian areas, and early and late seral stages.

In order to meet landscape objectives, the company divided its BC coastal forest lands into three distinct Stewardship Zones (old growth, habitat and timber), reflecting different management priorities. The requirements for each zone specify an appropriate minimum retention level and a range of silvicultural systems from selection to group retention. This strategy calls for a focused management approach that will deliver overall improved economic and environmental benefits.

Within harvest cutblocks (sometimes referred to as "openings"), the minimum retention levels are: 20% in the old growth zone; 15% in the habitat zone; 10% in the timber zone using group retention; and 5% in the timber zone using dispersed retention. At the landscape level, averaged across all zones, the overall retention within the productive forest area will be an estimated 36%.

The company's zoning approach builds on the zoning objectives developed in the Vancouver Island Land Use Plan. Final determination of the stewardship zone boundaries will be made in consultation with MoF and MoWLAP staff and other stakeholders.

Reporting procedures were implemented to show progress in the transition from clearcutting to variable retention and the amount of retention in harvest blocks.

A working group of specialists from the company, the MoF and the MoWLAP was formed to deal with the many issues that the Coast Forest Strategy raises and to ensure that the strategy is consistent with the Crown's objectives. The company is also working with both agencies in assigning and implementing an adaptive management and monitoring program to ensure that variable retention objectives are met and that the retained forest structures are effective in achieving desired outcomes. In addition, an expert panel of independent scientists was convened four times during the phase-in to review and comment on environmental aspects of the strategy's implementation. Summaries of the panel's comments are published and publicly available on request.

#### Adaptive Management and Monitoring

- The Adaptive Management (AM) and Variable Retention (VR) Working Groups developed a framework that includes criteria and indicators and both extensive and intensive approaches to monitoring. The AM Framework document was completed by F. Bunnell, L. Kremsater, D. Huggard, and G. Dunsworth and was peer reviewed by five panel scientists. This will form the basis for future monitoring of the biodiversity consequences of implementing variable retention. The framework is built around three key indicators:

- **Indicator 1 - Representation (Coarse Filter)**  
Ecologically distinct habitat types are represented across the tenure to maintain *lesser known species and ecological functions*.
- **Indicator 2 - Structure (Medium Filter)**  
The amount, distribution, and heterogeneity of habitat and landscape elements are maintained over time.
- **Indicator 3 - Species (Fine Filter)**  
Productive populations of species are well distributed throughout the tenure.

Monitoring and research projects in collaboration with BC government agencies and universities are ongoing. During 2004 the following were conducted as part of the AM program:

#### **VR Implementation Monitoring**

Symmetree Consulting completed special evaluations for 6 Large Patch VR and 7 Standing Stem Harvesting cutblocks and communicated the results to operations planners. The company completed over 90% of its coastal BC harvest in 2004 using VR. Symmetree monitored a random sample of 17% of the area harvested from 1999-2003 and provided feedback to operations.

#### **Variable Retention Adaptive Management (VRAM) Experimental Sites**

Installation of VRAM experimental sites continued. These sites provide a scientifically sound basis for comparison of retention systems focused on key uncertainties. Pre-harvest monitoring was completed for three study sites; logging was completed on 3 sites in 2004, bringing the total harvested to 6.5 and the total layout to 9 of the 15 planned sites. Current sites will be completed in 2005.

#### **VR Structural Monitoring**

This study documents the structural attributes (i.e., habitat) provided by variable retention harvesting in relation to benchmark natural forests. Thirty-six sites established in 1999 were re-sampled in 2004 to assess post-harvest changes. A report was completed summarizing the results of 5 years of monitoring.

#### **Variable Retention Windthrow Monitoring**

Windthrow monitoring of VR cutblocks continued. The windthrow database now consists of total of 2994 plots distributed throughout BC Coastal operations. A total of 98 harvested blocks are included in the sample, representing nearly 191 km of external setting boundaries, 27 km of larger patch edges, 112 ha of smaller retention patches and 352 km of riparian and other strip edges.

#### **VRAM Group Size Comparison Bird Study**

This study is a detailed examination of bird use of retention patches. Species presence, abundance and habitat use was documented using point-count stations.

#### **Summer Bird Surveys**

A fifth season of monitoring was completed on summer bird transects--51 routes and approximately 2500 stations throughout coastal BC. This study documents landscape-level trends in bird populations in forested landscapes.

#### **VRAM & Operational Bird Studies**

No additional field work was done in 2004 to compare bird use of different approaches to variable retention; however, a 5-year analysis and summary of previous work was prepared.

#### **Terrestrial Gastropod Study**

A five-year summary of pre-harvest and pilot study projects to monitor slugs and snails was completed.

### **Aquatic Breeding Amphibians**

Pre-harvest monitoring of 3 sites was completed. Different buffers widths will be assigned to wetlands to test the efficacy of retention patches for maintaining breeding populations.

### **Carabid Beetles**

A study of post-harvest beetle populations compared group and dispersed retention. Transects across different habitat conditions were monitored at intervals throughout the season.

### **Ectomycorrhizal Fungi**

A study was established to examine the abundance of ectomycorrhizal fungi on tree seedlings in relation to dispersed trees and cutblock edges.

### **Variable Retention and Small Streams**

Pre- and post-harvest monitoring of water flow and temperature continued. The two study areas were logged June-Nov 2004, and April 2003-April 2004. Data were downloaded from stream probes and weather stations, and litter samples were collected.

### **Growth and Yield — Edge Study**

This study examines the influence of forest edges (either adjacent stands or retention patches) on seedling growth.

### **Growth and Yield — VRAM Experimental Plots**

Permanent plots were established in experimental comparison areas to measure the impact of the amount and spatial distribution of retention on tree growth.

The growth and yield, windthrow monitoring, forest structure monitoring and summer bird surveys are funded through the Forest Investment Account (FIA), land-based investment program. Funding was received by the BC Forest Science Program (FSP) for 2005 and beyond for the beetle, amphibian, mycorrhizal fungi, gastropod and small streams projects.

## Glossary

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### Acronyms used in this document

AAC	Allowable Annual Cut
BEC	Biogeoclimatic Ecosystem Classification
CCFM	Canadian Council of Forest Ministers
CSA	Canadian Standards Association
CWAP	Coastal Watershed Assessment Procedure
DFA	Defined Forest Area
EMS	Environmental Management System
FDP	Forest Development Plan
FIA	Forest Investment Account
FPC	Forest Practices Code
FRBC	Forest Renewal British Columbia
GIS	Geographic Information System
HCV	High Conservation Value
ISO	International Organization for Standardization
MoWLAP	BC Ministry of Water, Land and Air Protection
MF	Managed Forest
MIR	Medical Incident Rate
MoF	BC Ministry of Forests
MP	Management Plan
NIWAG	North Island Woodlands Advisory Group
NSR	Not Satisfactorily Restocked
NTFP	Non-Timber Forest Product
NTU	Nephelometric Turbidity Unit
PSP	Permanent Sample Plot
RIR	Recordable Incident Rate
SFM	Sustainable Forest Management
SP	Silviculture Prescription / Site Plan
TFL	Tree Farm License
VR	Variable Retention
WTP	Wildlife Tree Patch

**Allowable Annual Cut (AAC):** The allowable rate of timber harvest from a specified area of land. The Chief Forester of British Columbia sets the AAC for timber supply areas (TSAs) and tree farm licenses (TFLs) in accordance with Section 8 of the Forest Act.

**Area Awaiting Restocking (AAR):** See Not Satisfactorily Restocked.

**At-risk species:** See Species at-risk.

**Biodiversity Emphasis Option (BEO):** The provincial government assigns low, intermediate or high BEOs to landscape units depending on a range of management priorities (i.e. timber production, wildlife habitat and biodiversity conservation). The main result is a designation of the area of old growth forest that should be maintained in the landscape unit.

**Biogeoclimatic Ecosystem Classification (BEC):** Developed in BC in 1965, the BEC System classifies areas of similar regional climate, expected climax plant communities and site factors such as soil moisture and soil nutrients. The subzone is the basic unit of this classification system. Within subzones, variants further identify more local climatic factors.

**Biogeoclimatic zone:** A geographic area having similar patterns of energy flow, vegetation and soils as a result of a broadly homogenous macroclimate.

**Biogeoclimatic variant:** See Biogeoclimatic Ecosystem Classification.

**Biological diversity:** The diversity of plants, animals, and other living organisms in all their forms and levels of organization, including genes, species, ecosystems, and the evolutionary and functional processes that link them.

**Blue listed:** Refers to plants, animals, and plant communities assessed by the BC Conservation Data Centre to be vulnerable.

**Clearcut:** An area of forest land from which all merchantable trees have recently been harvested.

**Canadian Standards Association (CSA) standard:** Refers to CSA Z809, a National Standard for Canada for a SFM System. It describes the components and performance objectives of a SFM system that when applied to a DFA will ensure that forest management objectives are set for the critical elements of the CCFM SFM criteria.

**Coastal Watershed Assessment Procedure (CWAP):** Assesses the impacts of forest practices on the hydrologic regime of a watershed. In particular, the potential for changes to peak stream flows, accelerated landslide activity, accelerated surface erosion, channel bank erosion and changes to channel morphology as a result of logging the riparian vegetation, and changes to the stream channel interaction from all these processes are assessed.

**Cutblock:** Defined in the Forest Practices Code of British Columbia Act as a specific area of land identified on a forest development plan, or in a license to cut, road permit, or Christmas tree permit, within which timber is to be or has been harvested. (Also see opening.)

**Cultural Heritage Resource (CHR):** An object, a site or the location of a traditional societal practice that is of historical, cultural or archaeological significance to the province, a community or an aboriginal people. Cultural heritage resources include archaeological sites, structural features, heritage landscape features and traditional use sites.

**Defined Forest Area (DFA):** A specific area of forest, land, and water delineated for the purposes of registration of a Sustainable Forest Management system.

**Ecological cycles:** Refers to the major nutrient cycles (i.e. carbon and nitrogen) and the hydrological cycle.

**Ecosystem:** A functional unit consisting of all the living organisms (plants, animals and microbes) in a given area, and all the non-living physical and chemical factors of their environment, linked together through nutrient cycling and energy flow. An ecosystem can be of any size – a log, pond, field, forest, or the earth's biosphere – but it always functions as a whole unit.

**Environmentally sensitive area (ESA):** Area requiring special management attention to protect important scenic values, fish and wildlife resources, historical and cultural values, or other natural systems or processes. ESAs include unstable soils that may deteriorate unacceptably after harvesting, and areas of high value to non-timber resources such as fisheries, wildlife, water and recreation.

**Environmental Management System (EMS):** A structured system for identifying and ranking the environmental risk associated with management activities; creating and implementing control methods to manage that risk; monitoring and assessing performance; and taking corrective action to address deficiencies under a continual improvement program.

**Forest Development Plan (FDP):** These plans explain resource values present in a specified area, how the values will be protected or maintained, where roads will be built and what areas are proposed for harvest. They are revised annually, advertised and presented for public review and comment before presentation to the Ministry of Forests for approval.

**Forest influence area:** The area within an opening that is within one tree height of a patch of retention or retained single tree.

**Forest Practices Code (FPC):** The Forest Practices Code of British Columbia Act, the regulations made by Cabinet under the act, and the standards established by the BC Chief Forester. The term is sometimes used to include guidebooks associated with the Code.

**Free growing:** A stand of healthy trees of commercially valuable species, the growth of which is not impeded by competition from plants, shrubs or other trees. Silviculture regulations further define the exact parameters (e.g., species, density and size) that a stand of trees must meet to be considered free growing.

**Green-up:** A reforested cutblock with a stand of trees that has attained the height specified in a higher level plan for the area or that, in the absence of a higher level plan, has attained a height of at least three meters is said to have achieved green-up (1.3 metres in the enhanced zone of the VILUP).

**Guidebook:** Guidebooks consist of guidelines and recommendations on how to best achieve the requirements of the Forest Practices Code. They are not legally enforceable. However, specifications and procedures recommended by the guidebooks may be incorporated into plans, prescriptions and contracts in which case those specifications and procedures may become legally enforceable.

**High Conservation Value (HCV) area:** An area in which the conservation of any of numerous social or ecological values is deemed to have an especially high priority. Harvesting in HCV areas is typically very restricted and depending on the nature of the identified value(s) may be precluded entirely. Identification of HCV areas may result from information supplied by First Nations, government agencies, company personnel or other stakeholders. (See Environmentally sensitive area.)

**Inoperable lands:** Lands that are unsuited for timber production by virtue of their: elevation; topography; inaccessible location; low value of timber; small size of timber stands; steep or unstable soils that cannot be harvested without serious and irreversible damage to soil or water resources; or designation as parks, wilderness areas, or other uses incompatible with timber harvest.

**ISO standard:** Refers to ISO 14001, a generic international standard approved by the International Organization for Standardization to provide any organization with the elements of an effective Environmental Management System to support environmental protection and prevention of pollution.

**Landing:** An area modified as a place to accumulate logs before they are transported.

**Landscape level:** A watershed, or series of interacting watersheds or other natural ecological units. This term is used for conservation planning and is not associated with visual landscape management.

**Landscape unit:** For the purpose of the forest practices code, landscape units are planning areas delineated on the basis of topographic or geographic features. Typically they cover a watershed or series of watersheds, and range in size from 5000 to 100 000 ha.

**Managed Forest (MF):** Forest land that is being managed under a forest management plan. North Island's MF 19 is an area of privately owned land designated for commercial forestry.

**Mature forest:** Generally, stands of timber where the age of the leading species is greater than the specified cutting age. Cutting ages are established to meet forest management objectives. In the North Island SFM Plan, mature is defined as forest areas established before 1864 and includes old growth.

**Medical Incident Rate (MIR also known as RIR):** Number of incidents per 100 workers that require a doctor's medical attention or result in lost work time. 
$$\frac{20,0000 \times \# \text{ Medical Incidents}}{\text{Exposure Hours}}$$

**Nephelometric turbidity unit (NTU):** Unit of measure for the turbidity of water. Essentially, a measure of the cloudiness of water as measured by a nephelometer. Turbidity is based on the amount of light that is reflected off particles in the water.

**Non-Timber Forest Products (NTFPs):** All forest products except timber, including other materials obtained from trees such as resins and leaves, as well as any other plant and animal products.

**Not Satisfactorily Restocked (NSR):** Productive forest land that has been denuded and has not yet been regenerated to the specified stocking standards for the site.

**Old growth:** Old growth is a forest that contains live and dead trees of various sizes, species, composition and age class structure. Old-growth forests, as part of a slowly changing but dynamic ecosystem, include climax forests but not sub-climax or mid-seral forests. The age and structure of old growth varies significantly by forest type and from one biogeoclimatic zone to another. As a rough measure, forests on the BC Coast that are aged 250 years or older and exhibit few or no signs of human intervention are generally termed old growth. (See also second growth and mature.)

**Opening:** Usually used synonymously with cutblock (see above) to include all of an area that has been harvested or is designated for harvesting, including the trees retained singly or in groups within the area. Less often, used to describe the actual cleared area(s) within a cutblock.

**Permanent access structure:** A built structure, including a road, bridge, landing, gravel pit, etc. It is shown expressly or by necessary implication on a forest development plan, access management plan, road permit or silviculture prescription as remaining operational after timber harvesting activities on the area are complete.

**Productive forest:** Forest land that is capable of producing a merchantable stand of timber within a defined period of time.

**Recordable Incident Rate (RIR):** Comparable to Medical Incident Rate, above. The former MacMillan Bloedel used MIR to measure safety performance; Weyerhaeuser Company used RIR.

**Red-listed:** Refers to plants, animals and plant communities assessed by the BC Conservation Data Centre to be extirpated, endangered or threatened.

**Reforestation:** Establishment of a new stand of trees after harvesting or natural disturbance by either planting or natural regeneration. Before receiving approval to harvest on crown lands, a forester must prepare a Silviculture Prescription describing, among other things, the manner and time frame within which reforestation will be conducted.

**Reserve zones:** Zones where timber harvesting is not permitted.

**Riparian:** An area of land adjacent to a stream, river, lake or wetland that contains vegetation that, due to the presence of water, is distinctly different from the vegetation of adjacent upland areas.

**S1-6 stream:** Stream classification system for riparian management. S1 to S4 streams are fish streams or streams in a community watershed. S5 and S6 streams are not fish streams and are not in a community watershed. Each class also denotes a range of stream width: S1 is >20m, S2 is >5-20m, S3 is 1.5-5m, and S4 is <1.5m; for streams that are non-fish bearing or not within a community watershed, S5 is >3m and S6 is <3m. Smaller streams are described as "higher order" streams.

**Second growth:** Typically younger (i.e., less than 120 years on the BC Coast) forests that have been established by planting and/or natural regeneration after removal of a previous stand by fire, harvesting, insect attack or other cause. (See mature and old growth.)

**Sensitive soils:** Forest land areas that have a moderate to very high hazard for soil compaction, erosion, displacement, landslides or forest floor displacement.

**Silviculture:** The art and science of controlling the establishment, growth, composition, health and quality of forests and woodlands. Silviculture entails the manipulation of forest and woodland vegetation in stands and on landscapes to meet the diverse needs and values of landowners and society on a sustainable basis.

**Silviculture Prescription / Site Plan:** A site-specific integrated operational plan to carry out one or a series of silviculture treatments.

**Silvicultural System:** A planned program of treatments throughout the life of the stand to achieve defined objectives. A silvicultural system includes harvesting, regeneration and stand-tending. It covers all activities for the entire length of a rotation or cutting cycle. In BC this includes seven major categories: clearcut, patch-cut, coppice, seed tree, shelterwood, retention and selection.

**Snag:** A large, standing dead tree.

**Species at-risk:** Species identified by the BC Conservation Data Centre as red or blue listed.

**Stand level:** Level of forest management at which a relatively homogenous (usually small) land unit can be managed under a single prescription, or a set of treatments, to meet well-defined objectives.

**Stewardship Zones:** Under the BC Coastal Group's Forest Project, all public and private forest lands have been (or will be) designated as a Timber, Habitat or Old Growth zone. Each zone has a distinct set of management priorities, targets for forest retention and allowable silvicultural systems. Management practices in each zone meet or exceed legal requirements.

**Sustainable Forest Management (SFM):** Management to maintain and enhance the long-term health of forest ecosystems, while providing ecological, economic, social, and cultural opportunities for the benefit of present and future generations.

**Timber Supply Analysis:** An assessment of future timber supplies over long planning horizons (more than 200 years) by using timber supply models for different scenarios identified in the planning process.

**Variable Retention (VR):** A relatively new approach to harvesting and silvicultural systems that follows nature's model by always retaining part of the forest after harvesting. Standing trees are left in dispersed and/or grouped patterns to meet objectives such as retaining old growth structure, habitat protection and visual quality. Variable retention retains structural features (snags, large woody debris, live trees of varying sizes and canopy levels) as habitat for a host of forest organisms and maintains forest and residual tree influences. There are two main types of variable retention: dispersed retention, which retains individual trees scattered throughout a cutblock, and aggregate (or group) retention, which retains trees in patches of intact forest.

**Visual Quality Objective (VQO):** An approved resource management objective that reflects a desired level of visual quality based on the physical and sociological characteristics of the area; refers to the degree of acceptable human alteration to the characteristic landscape.

**Wildlife tree:** A standing live or dead tree with special characteristics that provide valuable habitat for the conservation or enhancement of wildlife.

**Windthrow:** Trees uprooted as a result of wind events.

**Yarding:** In logging, the hauling of felled timber to the landing or temporary storage site from where trucks (usually) transport it to the mill site. Yarding methods include cable yarding, ground skidding, and aerial methods such as helicopter yarding.

# Appendix 1

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## NORTH ISLAND TIMBERLANDS

### 2004 SFM Performance Summaries



# NORTH ISLAND TIMBERLANDS Sustainable Forest Management Plan

2004 Summary Report

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# NORTH ISLAND TIMBERLANDS

## Sustainable Forest Management Plan

### 2004 Summary Report

In May 1999, North Island Timberlands became the first operation in Canada to be independently certified under the Canadian Standards Association's sustainable forest management standard. The certified area includes 225,000 hectares of public and private forest lands near the communities of Campbell River and Sayward on Vancouver Island, British Columbia. North Island was re-certified to the CSA Z809 standard in May 2002 and again in May of 2003 to the '96 standard.

As part of the certification program, North Island prepared a Sustainable Forest Management (SFM) Plan with input from a community advisory group. The SFM Plan includes goals related to North Island's social, economic and environmental performance. Progress towards the goals is measured by means of indicators and is reviewed annually with the objective of continually improving the operation's performance.

The North Island Woodlands Advisory Group (NIWAG) continues to play a key role in North Island's SFM program. In 2004, the group included members from: Campbell River Chamber of Commerce, Campbell River Environmental Committee, District of Campbell River, International Wood and Allied Workers of Canada, Hamatla Treaty Society, Regional District of Comox-Strathcona, Sayward Fish and Game Club, seniors' representative, Timberline Secondary School, and the Village of Sayward. In addition, the BC Ministry of Forests participated as a contributing observer; the perspective of Comox First Nation was incorporated through the Hamatla representative.

### **Economic Performance**

North Island Timberlands was a significant contributor to the regional economy in 2004. It directly employed 182 individuals.

At the time of putting this plan together, Weyerhaeuser was in negotiations to sell the BCCG, which North Island Timberlands is a part of, to Brascan. A "gag order" was in effect on the release of financial and economic information. This may be amended later in 2005. North Island Timberlands is now part of Cascadia Forest Products Ltd. These indicators have not been reported on.

The annual harvest volume is a general indicator of the level of economic activity. In 2004, North Island harvested 1.79 million m<sup>3</sup>. Of that, 1,487,346 m<sup>3</sup> – 121% of North Island's Annual Allowable Cut – was harvested on crown land. This is the fourth year of the 5 year cut control period.

North Island continued to expand the scope of its First Nations Partnership Agreement, which is designed to assist First Nation in creating economically self sufficient forest enterprises in silviculture.

### **Social Performance**

Safety is a core value for all Cascadia operations. North Island aimed to achieve a Recordable Incident Rate (RIR) of 1.9 or better in 2004. (RIR measures the number of incidents per 100 workers that require a doctor's medical attention or result in lost work time.) North Island's actual 2004 rate was 2.4 which included the full phase contractors.

The advisory group also set a goal of sustaining forestry as the "highest and best use" of forest lands in the North Island area. The area converted from forest management to other uses is a negative measure of performance against this goal. There was no sale of land from the Defined Forest Area.

North Island maintained six free-use recreational sites in 2004.

## Environmental Performance

The advisory group identified numerous environmental goals related to maintenance of biodiversity; protection of endangered species; sustaining soil and water qualities; regeneration of harvested areas, etc.

Two key indicators gauge the adequacy of reforestation:

- (1) Promptness of reforestation is measured by comparing the area in which reforestation is pending beyond three years from harvest. The 2004 result was areas awaiting reforestation beyond three years from harvest was 4% of the total areas awaiting reforestation.
- (2) The “area that fails to meet agreed reforestation targets” is a measure of reforestation success in the longer term. It is the area that fails to meet targets for stocking density or species mix at the time of the Free Growing declaration, which typically occur 11-14 years after harvest. This equaled 16 hectares (1.4% of area due) in 2004.

Trends in the age class distribution and relative percentages of dominant tree species offer measurable indicators of biodiversity attributes. About 46% of the North Island forest is mature (pre-1864). For the past three decades, timber harvesting has proceeded at an average rate of just under one percent per year of the productive forest area. Data for annual volume harvested by species, number of seedlings planted by species, and dominant second growth species by area indicate a balanced approach to harvesting and reforestation by species. In second growth forests, the trend since 1981 has been towards increases in the percentage of Western Red Cedar (5.7 to 7.0 percent), and Douglas fir (14.0 to 15.0 percent), offset by a decrease in the percentage of less commercially valuable hemlock (56.5 to 53.0 percent).

Permanent access structures (which include roads, landings, etc.) are the primary source of increased risk for sedimentation of streams. Reflecting the Forest Practices Code Soil Conservation Guidebook standards, North Island set an objective that less than 5% of the area in 2004 openings would be in permanent access structures. The result was 5.1%, consistent with a downward trend from the level of 5.8% in 1987.

The provincial Ministry of Sustainable Forest Management has responsibility for identifying and monitoring species at risk, and through the Conservation Data Centre it publishes an annually updated list of rare plant and animal species. North Island cooperates with government agencies in designing and implementing plans to protect habitat for identified at-risk species. The operation's objective is to place no species at risk as a result of management activities. The latest CDC list was reviewed by R.T. McLaughlin R.P.Bio. There have been no additions to the blue listed species found on the DFA.

## Review and Improvement

North Island's performance is subjected to quarterly management reviews. This includes re-assessment and revision of the risk profile considering new equipment or procedures, and internal and external audit results. (The “risk profile” is a measure of the relative possibility of an accidental environmental incident for each aspect of the operation). The review looks for opportunities to improve the environmental management system and performance on the ground.

2004 performance results were also reviewed and discussed with the North Island Woodlands Advisory Group. The advisory group had two indicator workshops to address a First Nations employment indicator, an herbicide indicator, a research into herbicide alternative indicator, a communication indicator, a proposed “no net loss of land from the Defined Forest Area” indicator, and a second safety indicator. NIWAG members emphasized the importance of sustaining local economic benefits.

An independent audit of North Island's environmental management system was done by Quality Management Institute in April 2004.

*This document is a summary of North Island's performance against its 2004 Sustainable Forest Management Plan. For further information, please contact the Division Forester, North Island Timberlands, 250-287-5000, or write to P.O. Box 6000, Campbell River, BC V9W 5E1.*



## Summary Reports on Performance

2004 Indicators and Objectives

CAN/CSA-Z809-96

&

ISO-14001

North Island Timberlands

As of December 31, 2004  
Reported June 2005

## CAN/CSA-Z809-96 Indicators Summary – 2004

#	Indicator	2004 Objective	Acceptable Variance	2004 Result	Comments
1.	Percent of primary, secondary and tertiary species weighted by hectare (for 2nd growth)	Maintain percentage of second growth species	± 20% 1997 inventory baseline	Objective met.	All species within range of variance except for cedar which is above the upper variance.  This is primarily due to the planting and protecting of cedar.  See CSA indicator performance review sheet.
2.	Gross volume by species of mature forest	Maintain percentage of mature species	± 20% 1997 inventory baseline	Objective met.	All species within range of variance except pine which is below.  % are insignificant and not visible on the ground.
3.	Percent of forest > 60 years old	36%	> 36%	Objective met. 51.1%	
4.	Number of identified species at risk	Zero annual increase as a result of mgmt activities	One	Objective met. 0	
5.	Pct of seed used that is registered or certified	100 %	None	Objective met. 100%	Will be dropped going forward from 2004.
6.	Pct of harvested area that is reforested	100% reforestation within 3 years	5% above 3 years old as a % of total NSR	Objective met.  The % of NSR area >3 years as a % of total NSR is 4%	
7.	Pct of openings' area occupied by permanent access structures	Less than 5%	+ 0.5%	Within allowable variance, therefore objective met.  5.1%	
8.	Area that does not meet free growing (FG) commitments	Zero hectares of FG non-compliance	2% of total area not FG	Within allowable variance, therefore objective met.  16 hectares of 1,123 hectares due.  1.4%	

#	Indicator	2004 Objective	Acceptable Variance	2004 Result	Comments
9.	The number of forest fires caused accidentally by industrial activity	0	1 per year	Objective met. 0	
10.	Area of regeneration failures	Current regen failure is less than 5% of current area established	Current regen failure is maximum 10% of current area established	Objective met. 6.3%	
11.	Forest inventory by percent of age class distribution	Historically implicit in AAC; to be redefined in Forest Project	Not applicable	Tracking only. See DFA Data Set report, Appendix 2.	Objective not clear, in parking lot to clarify.
12.	The area of water bodies	No change in area of water bodies	None	Objective met. No change from 2003.	
13.	Hectares sold out of DFA (MF19)	0	0	Objective met. 0	
14.	Harvest Levels	TFL: 1,229,411 m <sup>3</sup> MF: 318,544 m <sup>3</sup> Tot: 1,547,955m <sup>3</sup>	TFL: ± 50% MF: ± 20%	Within allowable variance, therefore objective met.  TFL: 1,487,346 m <sup>3</sup> = 121%  MF: 306,756 m <sup>3</sup> = 96%  Tot: 1,794,106 m <sup>3</sup> = 116%	Not all crown volume accounted for in cut control due to MoF system.
15.	North Island division margin	Not set		Not reported on due to Brascan takeover. May append post-takeover.	
16.	Recordable Incident Rate	1.9	Less than 1.9	Objective not met. 2.4 for Weyerhaeuser & major contractors.	See CSA indicator performance review sheet.
17.	Number of recreational sites maintained	6	Greater than 6	Objective met. 6	
18.	Km of active road	Retain the active network	± 20%	Objective met. 2,105 km main. 2,304 km non-maintained.	

#	Indicator	2004 Objective	Acceptable Variance	2004 Result	Comments
19.	Number of FPC contraventions related to road, soil and water management	0	None	Objective met. 0	
20.	Advisory group active membership	All sectors represented	None	Objective not met.	Contractor and supplier seats vacant most of the year.
21.	Planting by species compared to harvest	Plant cedar in proportion to harvest (10 year average)	± 20%	Objective met. Cedar planting is 0.4% above rate of harvest (avg 1995-2005).	<u>Indicator 1 shows cedar increasing as percent of 2nd growth species.</u> See comments regarding crown volume in indicator 14.
22.	Stand level retention in openings as pct of total opening area	≥ 10%	Greater than 10%	Objective met. 19%	
23.	Percent of total opening area harvested with non-clearcut systems	100% of total opening area harvested	Greater than 80%	Objective met. 99%	
24.	Percent of annual harvest area within forest influence	50% for non-clearcut blocks	> 50%	Objective met. 62%	
25.	Percent of identified High Conservation Value areas under special management	100% of HCV areas identified are under special management	None	Objective met. 100%	
26.	Old growth representation by BEC variant	Meet MoF biodiversity guidebook targets	Deficit exists as per 1998 inventory data for CWHxm2 in the Salmon and Sayward.	Objective met.	Strategy in the FDP.
27.	Total number of trees at 'free growing' vs. planted total	Trees at FG > planted total	None	Objective met. + 592 %, 700 sph planted with 4,144 sph at FG.	
28.	Number of reportable oil spills	≤ 7 spills	+ 1 (i.e., 8)	Objective met. 4 reportable spills.	
29.	Natural wildfires by number and area	< 50 hectares	Fires exceeding 50 ha are actively managed	Objective met. 2 lightning strikes < 0.2 hectares.	
30.	Areas > 500 hectares at high risk of mortality due to insects or disease	0	N/A	Objective met. 0	

#	Indicator	2004 Objective	Acceptable Variance	2004 Result	Comments
31.	Area of naturally induced slides	Track for baseline	N/A	2.5 hectares	Cumulative baseline number 198.6 ha.
32.	Percent of openings in which soil disturbance exceeds plan	0	None	Objective met. 0	
33.	Water quality measurements for selected watersheds	Turbidity < 5 NTU Temperature < 15° C	+ 10%	Objective met.	See CSA indicator performance review sheet.
34.	Area and percent of total slides from harvested areas or roads	Zero as result of post-1995 activities	None	8 slides totaling 2.2 hectares. Heavy rainfall event.	See CSA indicator performance review sheet.
35.	Distribution of revenues by percentage	Track distribution and report	None	Not reported on due to Brascan takeover. May append post-takeover.	
36.	Compliance with required public consultation processes	100%	None	Objective met.	
37.	Days haul wood			-----	Dropped in 2003.
38.	Maintenance of certified SFM system	Maintain SFM certification	None	Objective met.	
39.	Compliance with treaty settlements and IMAs	100%	None	Objective met.	There are no settlements or interim measure agreements in place.
40.	First Nations information sharing and referrals program	Annually review FDP with First Nations	None	Objective met.	
41.	First Nations partnership agreement	Partnership agreement in place	None	Objective met.	
42.	Public education, communications and consultation program	100% compliance to plan	None	Objective met.	
43.	Corporate and operational research program	Programs linked to strategic ecosystem management and operational issues	N/A	Objective met.	
44.	Hectares of brush treatments by method	Minimize the use of herbicides to less than 20% of the total brushing program	None	Objective met.	No herbicides used in 2004 on the DFA.

#	Indicator	2004 Objective	Acceptable Variance	2004 Result	Comments
45.	Allocation of resources from BCCT to the development and implementation of non-herbicide alternatives specific to current herbicide uses as reported to NIWAG quarterly	Research and implementation of options that reduce the need to use herbicide within the DFA	None	Objective met.	

## Appendix 2

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# NORTH ISLAND TIMBERLANDS

## 2004 SFM Indicators Data Set Report

June 2005

Defined Forest Area Data Set – June 2005  
Indicators

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**Indicator 1: Percent of primary, secondary and tertiary species (2nd growth)**

This indicator measures the diversity of commercial tree species, which may be an indicator of broader biodiversity attributes.

**History:** This indicator was developed in 1999.

**Objective:** Maintain percentages of second growth species that are comparable to those in the historic baseline inventory.

**Acceptable Variance:**  $\pm 20\%$ .

The 20% variance is against the inventory average derived from the DFA's 16-year database (1981-97). For example, the cumulative average percentage of Douglas fir within this time period is 14% of total second growth hectares. Thus, the cumulative total for Douglas Fir in future calculations should be between 11% and 16.8%.

**Forecast:** Harvest percentages are forecast in the Timber Supply Analysis and the 20 Year Plan for the TFL; and in the Strategic Timber Supply Analysis for MF 19. A 5 to 10 year forecast of seed requirements by species is maintained for the BC Coastal Group Timberlands.

**Data:**

Since the 1980s, the DFA forest inventory has described each second growth stand according to the area occupied by its three most prevalent commercial species. This data includes only second growth areas that have been established since 1981.

Total species percentages for these second growth stands within the DFA are calculated by multiplying species percentages by hectare for each contributing stand, summing the hectares so derived for each species, and expressing them as percentages of the total area in the data set.

In describing only the three dominant species within each stand, this data is in most cases an understatement of actual species diversity within any given stand.

**Inventory:** Forest inventories have been maintained for 30 to 40 years for the DFA, Block 2 of TFL 39 and Blocks 8 and 9 of MF 19. The inventory is maintained and annually updated by the Solid Wood Inventory Section. Nanaimo Woodlands maintains the forecast seed requirements by species.

**Reporting:** The GIS analyst compiles the data annually and reports on the indicator performance in the annual SFM Report.

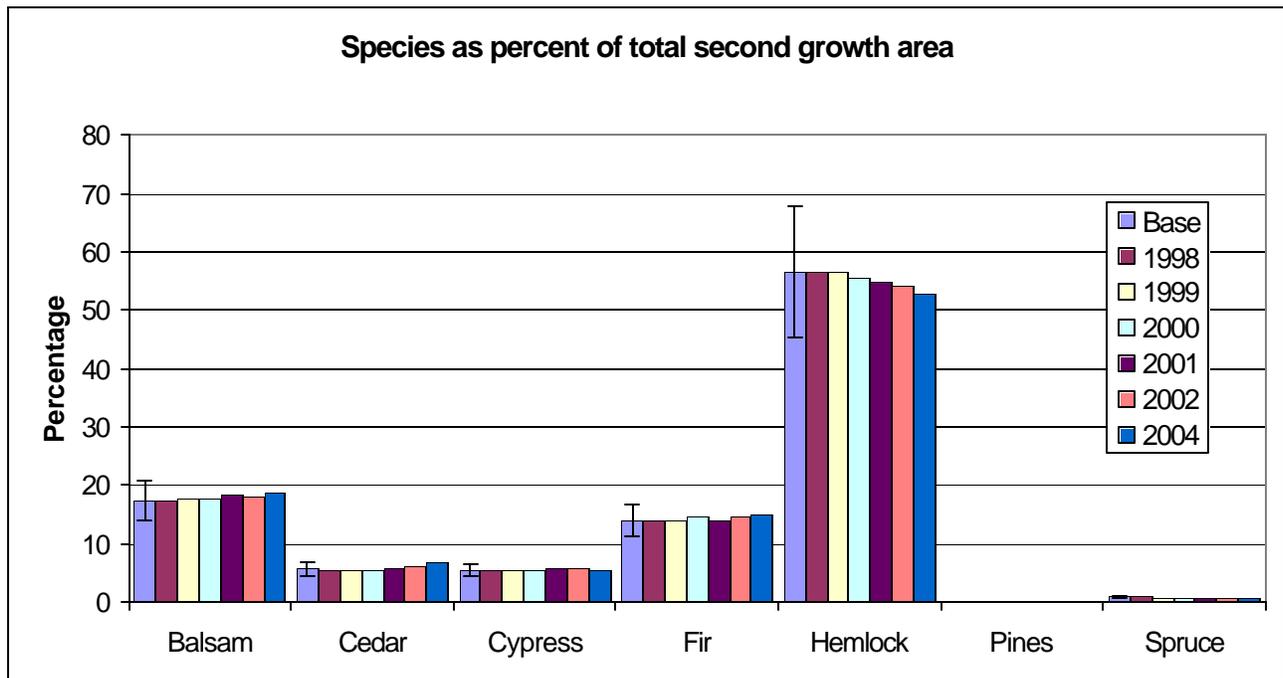
**Performance:**

The table below shows second growth species by area (in hectares) and the percent of total area represented by each species. The error bars on the graph following represent the  $\pm 20\%$  acceptable variance.

Cumulative Years		Second growth species area and percent by the three dominant species							
		Balsam	Cedar	Cypress	Fir	Hemlock	Pine	Spruce	Total
<b>B A S E</b>	1981-97	4,571	1,492	1,453	3,675	14,854	26	240	26,309
	Percent	17.4	5.7	5.5	14.0	56.5	0.1	0.9	100.0
	Variance: + 20% is	20.8	6.8	6.6	16.8	67.8	0.1	1.1	N/A
	- 20% is	13.9	4.5	4.4	11.1	45.1	0.1	0.7	
	1998	4,772	1,493	1,535	3,835	15,584	15	235	27,472
	Percent	17.4	5.4	5.6	14.0	56.7	0.1	0.9	100.0
	1999	5,080	1,562	1,579	4,046	16,247	16	238	28,766
	Percent	17.7	5.4	5.5	14.1	56.5	0.1	0.8	100.0
	2000	5,509	1,717	1,698	4,509	17,115	16	256	30,821
	Percent	17.9	5.6	5.5	14.6	55.5	0.1	0.8	100.0
	2001	5,822	1,869	1,859	4,463	17,291	16	253	31,573
	Percent	18.4	5.9	5.9	14.1	54.8	0.1	0.8	100.0
	2002	6,046	2,060	1,891	4,924	18,052	18	271	33,262
	Percent	18.2	6.2	5.7	14.8	54.3	0.1	0.8	100.0
	2003	6,592	2,312	2,005	5,199	19,430	19	299	35,856
	Percent	18.4	6.4	5.6	14.5	54.2	0.1	0.8	100.0
	2004	7,021	2,629	2,121	5,693	20,065	20	295	37,845
	Percent	18.6	7.0	5.6	15.0	53.0	0.1	0.8	100.0

*This indicator has been recompiled using NAD83 base map data.*

Areas without species data have been calculated using the species percentage pre-harvesting by year, except areas which have been planted in which case percent of species planted were used.



**Indicator 2: Gross volume by species of mature forest**

Diversity of tree species may be an indicator of broader biodiversity attributes.

History: This indicator was developed in 1999.

Objective: Maintain percentages of mature species that are comparable to those in the historic baseline inventory.

Acceptable Variance:  $\pm 20\%$  within a species.

The 20% variance is against the percentages of total volume by species as set forth in inventory data at December 31, 1997.

Forecast: Harvest percentages are forecast in the Timber Supply Analysis and the 20 Year Plan for the TFL; and in the Strategic Timber Supply Analysis for MF 19. A five to 10 year forecast of seed requirements by species is maintained for the BC Coastal Group Timberlands.

**Data:**

“Mature” is defined here as forest areas established before 1864. In this instance it also includes “old growth,” which is described in most MoF publications as older than 225 years for coastal forests. Gross volumes (which include a volume reduction for estimated decay) for the seven coniferous species within this category are established by timber cruises.

Inventory: There are 30 to 40 years of historic data maintained by the Solid Wood Inventory Section. Mature volumes are updated with each inventory revision, usually on an annual basis.

Reporting: The GIS analyst compiles the data annually and reports on the indicator performance in the annual SFM Report.

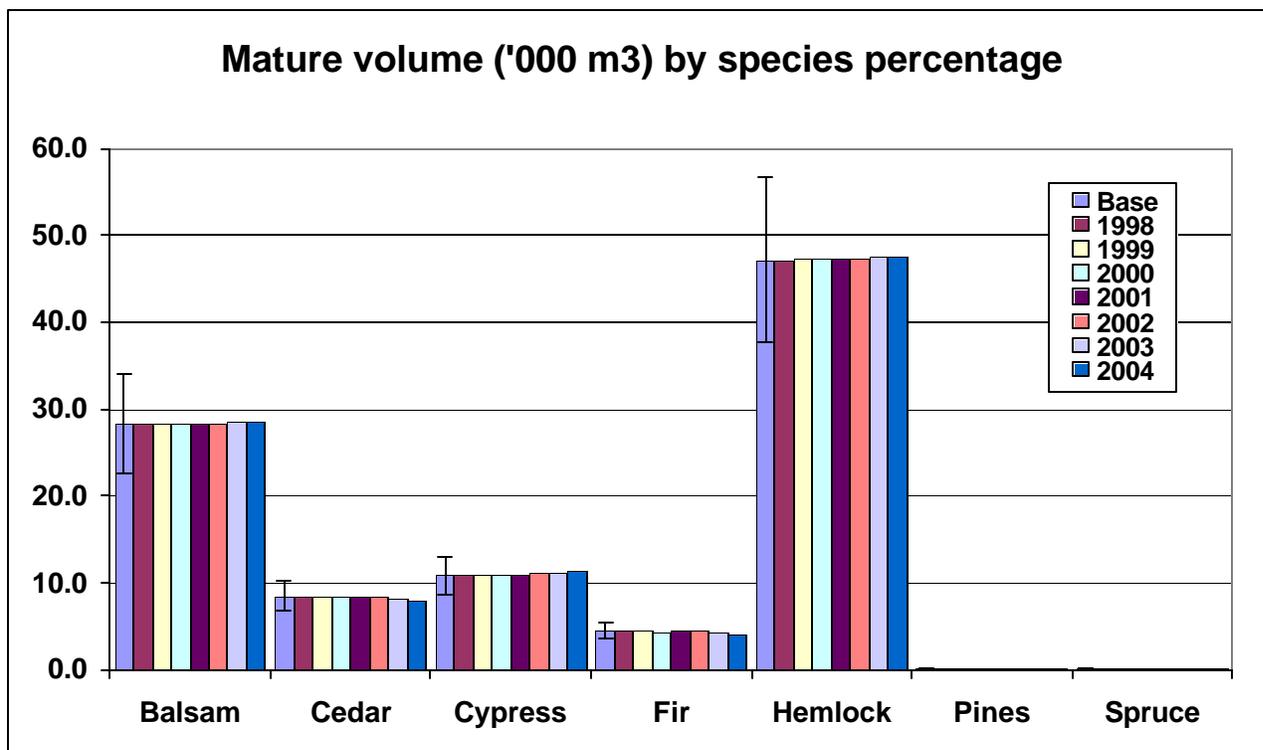
Note: In reference to the Pine and Spruce, the percentages are insignificant and not visible on the ground and will not be a concern for compliance.

**Performance:**

The table below shows mature volume (in m<sup>3</sup>) by species and the percent of total mature volume that figure represents. All species are being retained within the  $\pm 20\%$  variance from 1997 base. The error bars on the graph following represent the  $\pm 20\%$  acceptable variance.

Mature Volume (000m<sup>3</sup>) by Species

Cumulative Years	Species							
	Balsam	Cedar	Cypress	Fir	Hemlock	Pines	Spruce	Total
1997	20,313	6,117	7,788	3,265	33,839	112	176	71,647
Percent	28.4	8.5	10.9	4.6	47.2	0.2	0.2	100
B A S E	Variance							
	+ 20%	34.1	10.2	13.1	5.5	56.6	0.2	0.2
-20%	22.7	6.8	8.6	3.7	37.8	0.2	0.2	
1998	20,113	6,060	7,733	3,218	33,507	108	176	70,953
Percent	28.3	8.5	10.9	4.5	47.2	0.2	0.2	100
1999	19,850	5,940	7,632	3,118	33,077	106	172	69,934
Percent	28.4	8.5	10.9	4.5	47.3	0.2	0.2	100.0
2000	19,447	5,799	7,518	3,037	32,452	105	173	68,568
Percent	28.4	8.5	11.0	4.4	47.3	0.2	0.2	100
2001	18,922	5,636	7,381	2,982	31,688	103	173	66,922
Percent	28.3	8.4	11.0	4.5	47.4	0.2	0.2	100
2002	18,790	5,568	7,361	2,959	31,406	103	168	66,389
Percent	28.3	8.4	11.1	4.5	47.3	0.2	0.2	100
2003	18,283	5,289	7,209	2,729	30,471	72	152	64,206
Percent	28.5	8.2	11.2	4.3	47.5	0.1	0.2	100
2004	17,629	5,006	7,062	2,565	29,409	69	151	61,891
Percent	28.5	8.1	11.4	4.1	47.5	0.1	0.2	100



**Indicator 3: Percent of productive forest area more than 60 years old**

Forest age may be an indicator of broader biodiversity attributes. The 60-year age category is selected as a significant indicator because it is the minimum age at which management treatments can begin to create the structural elements that support old growth biodiversity.

**History:** This indicator was developed in 1999.

**Objective:** Maintain a minimum of 36% forest area greater than 60 years of age.

**Acceptable Variance:** 36% or greater.

The 36% minimum percentage is a reference to the productive forest area and does not include forests outside that area. Those so-called “non-productive” forests constitute some 14% of the DFA’s total forest area and are typically more than 150 years of age.

**Forecasts:** Age class distributions are forecast through the Timber Supply Analysis. Future forecast methodology for MP 8 will incorporate Forest Project targets for stand level retention.

**Data:**

DFA forest inventory includes age class distribution data by area for total productive forest lands. As revealed in the inventory data at December 31, 1997, more than 91% of the productive forest area greater than 60 years of age is also greater than 150 years of age. This latter category constitutes 51.8% of the total productive forest area.

**Inventory:** Forest inventories for TFL 39, Block 2, MF 19, Blocks 8 and 9 and MF 21 are maintained by the Solid Wood Inventory Section and are normally revised annually.

**Reporting:** The Nanaimo Woodlands Inventory Section tracks and reports the indicator as inventory updates are completed. Data will also be reported in inventory update summaries, Management Plan summaries and the Forest Project Analysis. The GIS analyst compiles the data annually and reports on the indicator performance in the annual SFM Report.

**Performance:**

The DFA’s forests remain well within the objective.

Year	Age (by pct of productive forest area)	
	> 60 Years	> 150 Years
1997	58.7	51.8
1999	55.3	50.2
2000	55.3	50.0
2001	54.8	49.4
2002	53.1	47.7
2003	52.5	47.3
2004	51.1	45.8

**Indicator 4: Number of identified species at risk**

Sustaining viable populations of extant species is a key requirement of sustainability.

History: This indicator was developed in 1999.

Objective: Zero annual increase in number of species at risk and not increase the level of threat as a result of management activities in the DFA.

Acceptable Variance: None

Forecast: MoWLAP is responsible for forecasting.

**Data:**

The provincial Conservation Data Centre (<http://srmwww.gov.bc.ca/cdc>) is responsible for identifying red and blue listed species extant within specific ecosections of each Forest District. The Ministry of Water, Land and Air Protection and the Ministry of Forests hold the responsibility for assuring that Forest Development Plans and individual cutting permits are designed to address the habitat requirements of species at risk. Procedures and measures for protecting red listed species, in particular, are set out in the Identified Wildlife requirements of the Forest Practices Code.

In the Appendix III to "An Ecological Rationale for Changing Forest Management on MacMillan Bloedel's Forest Tenure," prepared for MacMillan Bloedel by the UBC Centre for Applied Conservation Biology (published July 16, 1998), red and blue listed species within the DFA are those noted under Forest District 18.

Inventory: MoWLAP maintains the list of species at-risk. Based on a request from the MoWLAP, the Unit Engineer will contact a wildlife biologist to conduct an inventory.

Reporting: The Unit Forester reports on the indicator performance in the annual SFM Report, based on review by R.P. Bio.

**Performance:**

Year	Latest CDC list reviewed	Date reviewed	New species listed		MoWLAP requests
			Number	Listing linked to DFA management	
1999	Aug 17, 1999	June 4, 2000	0	N/A	No
2000	June 2000	Feb. 28, 2001	2	No	No
2001	April 2001	Feb. 2002	5	No	No
2002	R.T. McLaughlin, R.P. Bio.	Nov. 25, 2002	0	N/A	No
2003	R.T. McLaughlin, R.P. Bio.	Dec. 16, 2003	1	No	No
2004	R.T. McLaughlin, R.P. Bio.	Mar. 15, 2005	0	N/A	No

See binder in NIWAG Library.

Provincial Red and Blue Listed Species & Management within the North Island Timberlands Defined Forest Area.

*Excerpt from R.T. McLaughlin's, R.P. Bio, Wildlife Biologist, report entitled 'Provincial Red and Blue Listed Species Management within the North Island Timberlands Defined Forest Area':*

### **Discussion**

In reviewing the habitat requirements of the 4 Red-listed and 7 Blue listed taxa described above, resident in the North Island Timberlands operating area and possibly affected by forest management operations, nests of three bird species require particular attention – Northern Goshawk, Marbled Murrelet and Great Blue Heron.

Goshawks are widely, if sparsely, distributed across the forest landscape. Because their nest habitat selection is not determined by forest species composition, computer searches of likely areas will probably be unsuccessful. Moreover, there is no guarantee that broad habitat retention planning schemes such as OGMA's and ungulate winter ranges will adequately protect them. Nests will have to be protected individually, where and when they are found. Train crews to identify nests and protect them with appropriate buffers.

The situation is similar for Great Blue Herons except that most nests will be near foraging areas. If a nest is found, report it immediately to habitat protection authorities.

Identification of Marbled Murrelet nesting habitat is improving with results from the Desolation Sound research. These studies have shown that although murrelets in this heavily logged landscape did not have a definite forest preference, they did prefer higher elevations and steeper slopes. These topographic parameters should be considered if murrelet WHAs are proposed. Instead of building stick nests, Murrelets simply lay their eggs on moss pads of thigh-diameter old-growth limbs. Consequently we are unlikely to find nests after logging. If crews find suspicious eggshells on the forest floor or observe murrelets flying near or under the canopy, nesting is possible. Given the high-profile nature of this species, have these observations checked out prior to harvesting. Eggs are hen-sized, pale olive-green to greenish-yellow in background colour, with irregular brown, black and purple spots, more widespread at the larger end of the eggs (Nelson and Hamer, 1995).

Other species on the forestry-sensitive red and blue lists should be less of a concern. Red-legged frogs in lower elevation ponds and slow watercourses have identifiable habitat preferences and are amenable to habitat-specific protection. Observations of the two bat species, Keen's Myotis and Townsend's Big-eared Bat are unlikely, but they should be reported. Keen's Myotis may be dependent on tree cavities in old-growth or mature forests for roosting. Old-growth leave areas and smaller retention patches with snags should provide adequate protection. This is also true for Pygmy-Owls and Western Screech-Owls.

Additional habitat protection for re- and blue listed mammals is not warranted. The Vancouver Island wolverine is so scarce that forestry crews are most unlikely to see one. Mountainous, unloggable areas should provide adequate habitat reserves for the few animals which may be present. Riparian reserves and other leave areas will probably meet the habitat needs of ermine. In contrast, protecting reforestation from elk will probably be more important than protecting elk habitat requirements during forest management activities.

## Indicator 5: Percent of seed that is registered or certified

The origin of seed from which planted seedlings are grown is an indicator that individuals that may not be adaptable to the local provenance are not compromising the genetic diversity of new forests.

The MoF maintains the provincial seed registry and produces an annual report. The registration process ensures that seed zone guidelines are met and that each seed lot includes a minimum requirement for population diversity.

Certification applies to seed produced from a seed orchard. It documents the management of the seed orchard including the design and layout of the clones and parents that have contributed to the seed lot.

History: This indicator was developed in 1999, dropped in 2004.

Objective: 100% of seed used in reforestation is registered or certified.

The MoF requires that all seed used on Crown land is registered. North Island also follows this practice for seed destined for reforestation of private land. Some seed used on private land is registered from Weyerhaeuser's seed orchard.

Acceptable Variance: None.

Forecast: N/A

### Data:

The DFA Data Set includes examples from the seed registry and the Weyerhaeuser seed inventory (by seed lot number) in May of 1998.

The stock inventory summary shows all the seedling (stock) requests for planting in the late summer/fall (SU for summer under the heading of Seas) and in the spring of 1999 (SP for spring under the heading of Seas).

The Seedlot/Elev column shows the seedlot registration number and the elevation level (the seedlings may be planted in an elevation band about this height – the width of the elevation band varies with species).

The other columns include:

Nur:	Nursery
SPP:	Species – e.g. BA is <i>Abies amabilis</i> , CW is red cedar, FDC is Douglas fir, HM is mountain hemlock, HW is western hemlock and YC is yellow cypress.
Age:	The number indicates the age of the seedling (most are one year old in this summary) and whether it has been transplanted.
Type:	E.g. PSB – plug styro block.
Size:	Container cavity size.
Trees:	Numbers in thousands.

The reforestation records for each planted area include the seedlot registration number(s).

Inventory: The province maintains the provincial seed registry. The seed inventory for the DFA is also maintained by Nanaimo Woodlands and reported to MoF. The Silviculture Forester maintains a copy of the stock inventory.

Reporting: The Seed Planning and Registry System is maintained by the MoF, and an annual report is produced. Weyerhaeuser keeps a register of their seed orchard seed.

### Performance:

Year	Percent of seed that is registered or certified
1999	100
2000	100
2001	100
2002	100
2003	100
2004	100*

\* Indicator will not be reported on going forward from 2004.

**Indicator 6: Percent of harvested area that is reforested**

Prompt reforestation is required on all harvested land. This indicator examines the promptness of reforestation, as described below. It indicates utilization of the productive forest area of the DFA.

History: This indicator was developed in 1999.  
 Objective: Reforest 100% of the harvested area within 3 years from harvest.  
 Acceptable Variance: 5%  
 Forecast: The Timber Supply Analysis incorporates the 3-year target.

**Data:**

Recent timber supply analyses have included an assumption of a three-year regeneration delay. The reduction in average regeneration delay during recent years is largely because of more prompt planting after harvest.

The objective is expressed as the number of hectares of NSR greater than three years old and the percentage of this area of total NSR.

Inventory: The Silviculture Forester tracks unstocked areas in the Genus database.

Reporting: The Silviculture Forester compiles the data from the Genus database and reports on the indicator performance in the annual SFM Report.

**Performance:**

Year	Area of NSR > 3 years from harvest	Total NSR	% of area > 3 years as a % of total NSR
2000	129 hectares	2,180 hectares	6%
2001	131 hectares	3,172 hectares	4%
2002	434 hectares	3,880 hectares	11%
2003	274 hectares	3,893 hectares	7%
2004	156 hectares	3,948 hectares	4%

**Indicator 7: Percent of opening area occupied by permanent access structures**

This indicator measures the proportion of harvest areas that is removed from the productive forest area because of permanent access structures (roads, landings, etc.). It indicates the reduction in the potential productive area and the increased risk or potential for environmental impact, particularly sedimentation of streams.

History: This indicator was developed in 1999.

Objective: Less than 5% of the area in openings to be in permanent access structures (annual average).

This objective reflects the Forest Practices Code – Soil Conservation Guidebook standards.

Acceptable Variance: + 0.5% (i.e. less than 5.5% of the area in openings)

Forecast: The forecast is the objective.

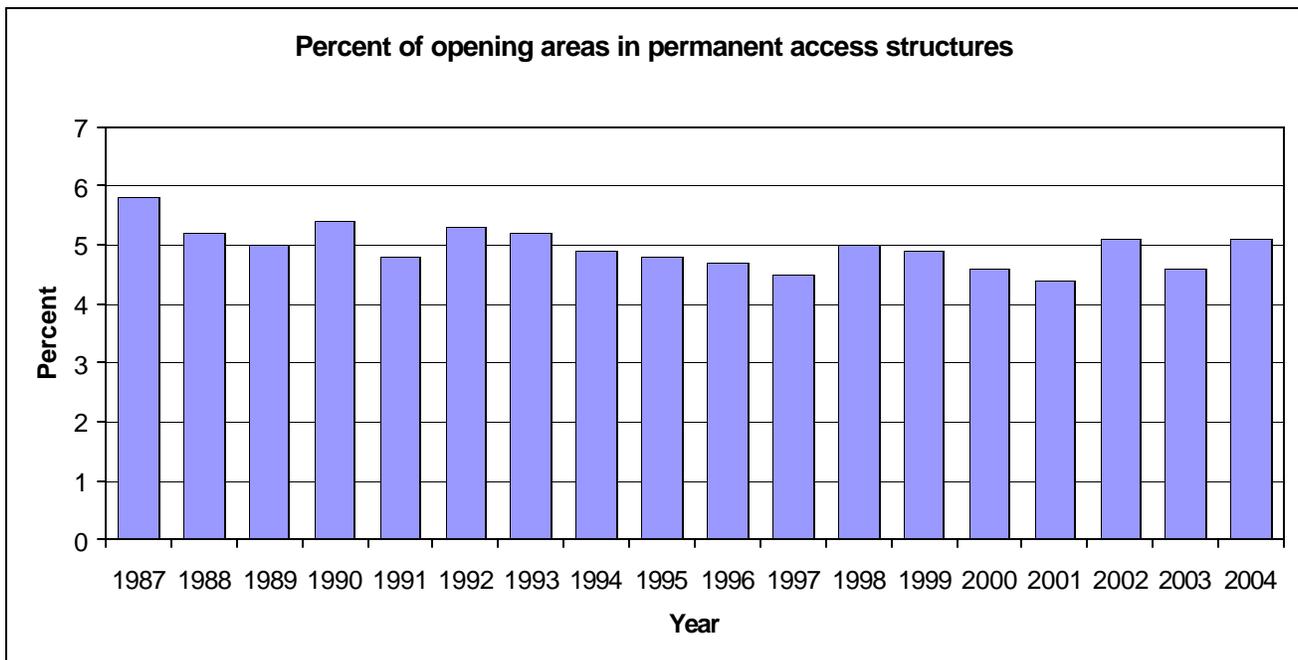
**Data:**

Inventory: The Genus database produces a site degradation report for blocks where logging has been completed.

Reporting: The Unit Forester tracks and reports on the indicator performance in the annual SFM Report.

**Performance:**

5.1%. Objective achieved.



**Indicator 8: Area that does not meet 'free growing' commitments**

This indicator measures the success at achieving free growing targets defined in Silviculture Prescriptions and Site Plans. It provides indications of regeneration success, of utilization of the productive area and of maintaining forest ecosystems on the DFA.

History: This indicator was developed in 1999.

Objective: Zero hectares of free growing non-compliance.  
This objective reflects requirements of the Forest Practices Code of BC.

Acceptable Variance: 2%

Forecast: The Timber Supply Analysis assumes the objective level is met.

**Data:**

Inventory: The Genus database lists free growing commitments by standard unit within an opening.

Reporting : The Unit Forester tracks and reports compliance with FG obligations in the annual SFM Report.

**Performance:**

One block (two standard units) totaling 46.2 hectares (2% of total area due – 2,054 hectares) did not achieve free growing status as defined by the FPC. Silviculture prescription amendments will be submitted to the MoF for approval addressing the FG issue. The main course of action is to extend the FG date. Our current SOPs and strategies address the issues.

Free Growing Non-Compliance				
Year	Openings/SUs	Hectares	Total hectares due	Non-compliant
1998	0	0.0	0	0 %
1999	2	17.6	236.8	7.4 %
2000	5	59.0	281.5	20.9 %
2001	12	62.0	735.2	8.4 %
2002	13	51.2	1,815.0	2.8 %
2003	1	46.2	2,054	2.0 %
2004	2 (SUs)	16	1123	1.4 %

**Indicator 9: Number and area of accidental operationally caused fires**

This indicator provides a measure of success at protecting the forest from damage by fire. Operationally caused fires are those that are initiated by management activities (e.g. operational or escaped slash fires).

History: This indicator was developed in 1999.

Objective: Zero accidental operationally caused fires.

Acceptable Variance: One per year. This variance is based on historical data.

Forecast: The objective is the forecast. This is assumed to be zero in the Management Plan forecasts. A small allowance for non-recovered timber from fire has been included in recent timber supply analyses.

**Data:**

The Unit Forester reports annually on the incidence and cause of fires and on the area burned. This includes fires resulting from operational activities. A historical record is available for TFL 39 areas. For MF 19 areas, tracking and reporting commenced in 1997.

Inventory: Fires are reported for entry into the Incident Tracking System (ITS).

Reporting: The Unit Forester compiles the data from the ITS and reports on the indicator performance in the annual SFM.

**Performance:**

Accidental Operational Fires

Year	Number	Total area burned (ha)
1983	1	
1984	2	
1985	2	
1986	1	
1987	4	
1988	3	
1989	0	
1990	1	
1991	1	
1992	1	
1993	3	
1994	7	
1995	8	
1996	1	
1997	2	
1998	1	2
1999	1	22
2000	1	0.01
2001	2	0.02
	1	0.01 public
2002	1	0.1
2003	0	
2004	0	

**Indicator 10: Area of regeneration failures**

This indicator measures the area of regeneration failure as a percentage of areas established (both by planting and naturally) each year. It is an indication of regeneration success and of utilization of the DFA's productive area.

History:	This indicator was developed in 1999.
Objective:	Current regeneration failure is less than 5% of the current area established.
Acceptable Variance:	Current regeneration failure is a maximum of 10% of the current area established.
Forecast:	Assumed to be zero in the planting forecast prepared by the unit and the Management Plan forecast.

**Data:**

Regeneration failures may also result in changes in the inventory update, a change in a polygon description from stocked to NSR.

Inventory: The area reforested and the area that fails a survival or regeneration performance assessment is entered into the Genus database.

Reporting: The Unit Forester tracks and reports the data to Nanaimo Woodlands for inclusion in the Annual Report.

**Performance:**

Year	Area established - ha (planted and natural)	Area of regen failures (ha)	Failed area as percent of established area	Comment
1980	1,691	208	11.0	
1981	2,617	204	7.8	
1982	2,061	0	0	
1983	1,352	152	11.2	
1984	1,301	416	32.0	
1985	1,257	96	7.6	
1986	1,462	140	9.6	
1987	2,278	61	2.7	
1988	2,278	134	5.9	
1989	2,188	68	3.1	
1990	1,704	28	1.6	
1991	2,105	287	13.6	
1992	2,544	96	3.8	
1993	1,687	51	3.0	
1994	2,345	56	2.4	
1995	1,852	221	11.9	
1996	1,875	94	5.0	
1997	1,554	93	6.0	
1998	1,448	18	1.2	
1999	1,195	130	10.9	
2000	1,500	133	8.9	
2001	1,639	48	2.9	
2002	1,640	214	13.0	
2003*	1,525	44	2.9	
2004	2,172	136	6.3	Browse/Brush/Drought

\* based on normal plant only.

## Indicator 11: Forest age class distribution

Age class distribution is an indicator of sustainability for ecological, social and economic considerations.

History: This indicator was developed in 1999.

Objective: Historically implicit in AAC and being redefined as part of BC Coastal Group Forest Project.

Acceptable Variance: N/A

Forecast: Age class distributions are forecast as part of the Timber Supply Analysis.

### Data:

Forest management in BC has proceeded in recent decades with the objective of converting the public forest from predominantly old growth to one with a large component of protected old growth and a commercially-accessible remainder distributed primarily among age classes up to the age of rotation.

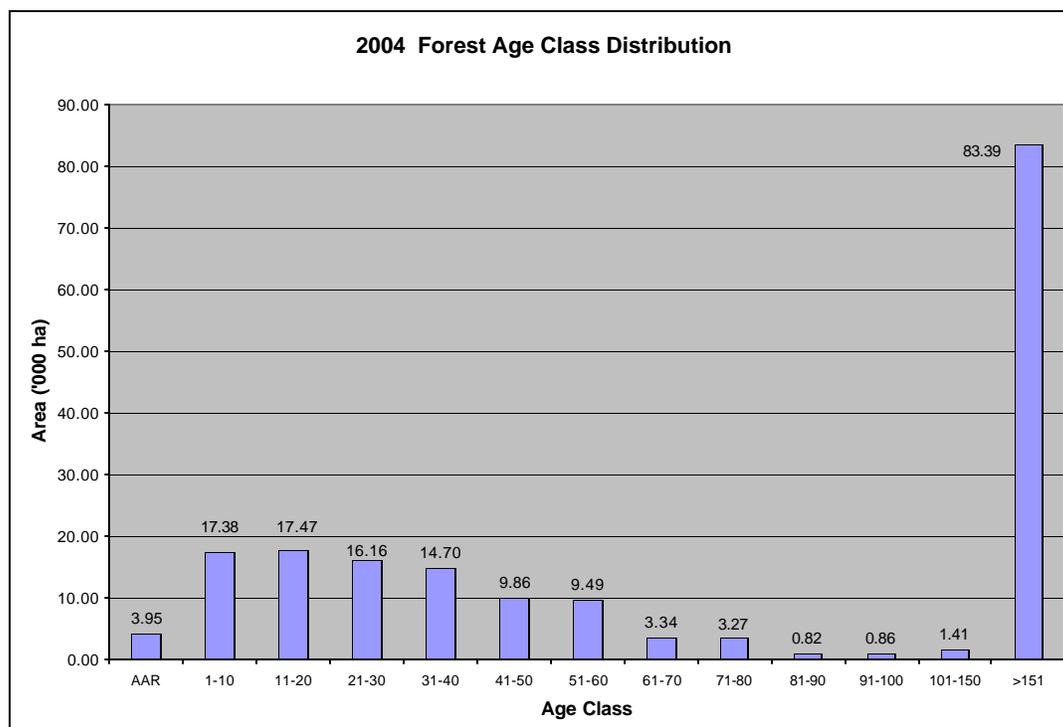
The primary instrument of this conversion has been the Annual Allowable Cut allocations established by the province's Chief Forester with consideration for various objectives.

In June 1998, the BC Coastal Group (then MacMillan Bloedel) announced its intention to pursue a new direction with respect to forest management practices on its public and private lands. Many aspects of this new approach on crown land are subject to discussions with and approval of the provincial government. The outcome of those discussions may result in significant revisions to the objectives driving future AAC determinations.

Inventory: Nanaimo Woodlands Inventory Section maintains 30 to 40 years of historic data on age class distribution by area for total productive forest lands. This is updated generally on an annual basis. This data is located in Forest Inventory for TFL Block 2 and Forest Inventory for MF Blocks 8 and 9.

Reporting: The GIS analyst compiles the data annually and reports on the indicator performance in the annual SFM Report.

### Performance:



## **Indicator 12: Area of water bodies**

This indicator measures the area of lakes, wetlands and large streams in the DFA. It provides an indication of the impact of forest management on water resources.

History: This indicator was developed in 1999.

Objective: No change in area of water bodies.

Acceptable Variance: None.

Forecast: No change in area is projected.

### **Data:**

Changes in mapping standards and in boundaries make historical comparisons difficult. Reporting was standardized in 1999 for future inventory updates.

Inventory: The Inventory Section reports (at the 1:20,000 scale) on the area of lakes, wetlands and large streams at each inventory update. This includes the inventory summaries in the TFL and MF Management Plans.

Reporting: The data is reported annually in the Forestry Inventory Revisions Report, the Management Plan and the DFA Data Set. The GIS Analyst compiles the data annually and reports on the indicator performance in the annual SFM Report.

### **Performance:**

2002 – 3,177 hectares.

2003 – 3,177 hectares.

2004 – 3,177 hectares.

**Indicator 13: Area sold out of the DFA**

This indicator measures the privately owned forest land that may be transferred to another use.

History: This indicator was developed in 1999.

Objective: Zero sales of land from MF 19.

The North Island objective is to retain forest land in forest production.

Acceptable Variance: Zero forest land removed from production.

Forecast: Timberlands and Properties department and Nanaimo Woodlands are responsible for future projections. The Timber Supply Analysis assumes that no land will be sold.

**Data:**

Inventory: The Timberlands and Properties department tracks all land transfers. The Nanaimo Woodlands Inventory Section is responsible for updating the forest inventory, usually on an annual basis.

Reporting: The data is reported annually in the Forestry Inventory Revisions Report, the Management Plan and the DFA Data Set. The Unit Forester will monitor and report on sales within the DFA.

**Performance:**

Year	Ha Sold	Comment
1998	78.9	District Lot 38 [78.9 ha] in Discovery Passage was removed and sold in 1998. This is waterfront property and was part of a small block that was isolated from the rest of the DFA.
1999	4.5	A small area [4.5 ha] of industrial land [the Campbell River Marine lease] was removed from MF 19 in 1999.
2000	0	In 1998, CEO Tom Stephens approved a land sales program that included a 169-hectare parcel in the Oyster Bay area. This area is currently for sale.
2001	0	In 1998, CEO Tom Stephens approved a land sales program that included a 169-hectare parcel in the Oyster Bay area. This area is currently for sale.
2002	0	In 1998, CEO Tom Stephens approved a land sales program that included a 169-hectare parcel in the Oyster Bay area. This area is currently for sale. Currently the Kelsey Bay Dryland Sort and Shop Yard are for sale.
2003	169	Sold parcel in Oyster Bay area.
2004	0	

**Indicator 14: Annual harvest level**

This indicator compares actual timber harvest with harvest targets. It provides an indication of sustainability and of contribution to the local and provincial economies. The area harvested also impacts the availability of other commercial and non-commercial forest products.

History:	This indicator was developed in 1999.
Objective:	For the TFL: Harvest the Allowable Annual Cut (AAC) allocation over the 5 year cut control period. For MF 19: Achieve the annual plan (318,544 m <sup>3</sup> for 2004).
Acceptable Variance:	For the TFL: $\pm 50\%$ of AAC on annual basis, and $\pm 10\%$ over the five year cut control period. For MF 19: $\pm 20\%$ on the annual plan.
Forecast:	The Timber Supply Analysis for the TFL and Strategic Timber Supply analysis for MF Blocks 8 and 9 forecast the harvest level.

**Data:**

The TFL AAC is determined every five years by the BC Chief Forester. The Vice President of BCCT determines the MF 19 plan harvest.

Inventory: Over 20 years of historic data for the DFA is maintained by the Solid Wood Inventory Section, located in the MoF Harvest database.

Reporting: Harvest volumes are reported annually in "Official MoF Scale Report and Weyerhaeuser Timberlands Units Production". The TFL 39, Block 2 harvest is also reported in the TFL 39 Annual Report and MF 19 harvest is reported in the Annual BCAA Report.

Harvest estimates for both the TFL and MF are from official MoF scale reports.

**TFL 39, Block 2:**

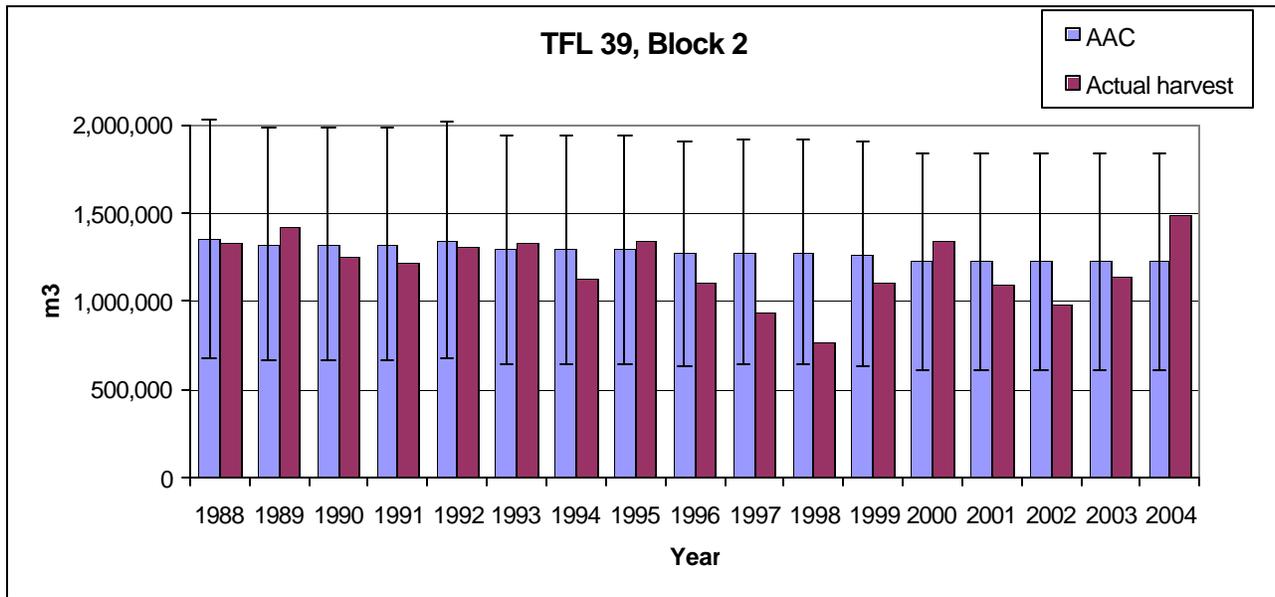
The AAC and harvest numbers exclude the SBFEP and the one mile reserve (from 1988 to 1991) allocations and cut. They include residue. The error bars on the graph below represent the  $\pm 50\%$  acceptable variance.

**Performance:**

Year	MF 19			TFL 39 Block 2			Total (includes residue)		
	Forecast	Actual	%	AAC	Cut	%	Plan	Cut	%
1996	115,000	110,000	95	1,271,900	1,110,190	87	1,386,900	1,220,190	88
1997	114,000	158,856	139	1,276,346	932,125	73	1,390,346	1,090,981	78
1998	200,000	218,220	109	1,276,346	770,941	60	1,476,346	989,161	67
1999	200,000	238,671	119	1,269,162	1,102,437	87	1,467,605	1,341,108	91
2000	153,200	181,601	118	1,223,902	1,337,240	109	1,377,102	1,518,841	110
2001	200,000	214,752	107	1,223,902	1,089,045	89	1,423,902	1,303,797	92
2002	200,000	212,235	107	1,229,411	977,354	79	1,429,411	1,189,589	83
2003	196,168	216,948	110	1,229,411	1,133,882*	92	1,425,575	1,350,830	95
2004	318,544	306,756	96	1,229,411	1,487,346*	121	1,547,955	1,794,102	116

The five year cut control period (1996-2000) for Block 2 resulted in 83% of the AAC being cut (includes residue).

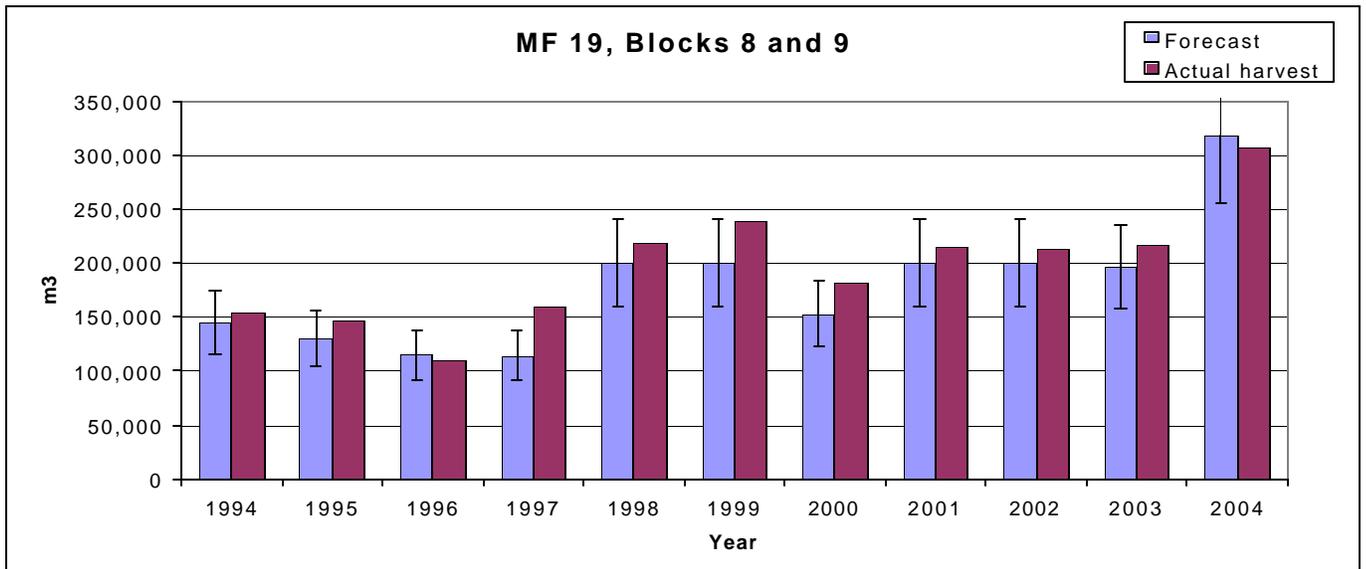
\* Difficulties with the MoF system did not account for all volume that was billed in the official cut control report. This volume (> 100,000 m<sup>3</sup> – predominately volume from road permits) will be included in the 2005 cut control report. Residue samples completed late in 2004 will also be included in the 2005 report.



**MF 19, Blocks 8 and 9:**

The MF 19 plan and harvest numbers exclude residue (water scale).

The intent is to harvest the DFA for long term sustainability, allowing year to year variations in harvest rates. Plan estimates for MF 19, Blocks 8 and 9, originally totaled 150,000 m<sup>3</sup> for 1998 but were increased to 200,000 m<sup>3</sup> because of poor market conditions and high costs on crown lands (TFL). The error bars on the graph below represent the ± 20% acceptable variance.



**Indicator 15: North Island Timberlands margin**

This indicator measures the difference between the average selling price and average costs for North Island Timberlands, including activities on both public and private lands. It provides an indication of the profitability of the operation and, implicitly, its economic contributions to the local and provincial economies.

History: This indicator was developed in 1999.

Objective: There was no objective set for 2004.

This indicator was not reported on due to Brascan takeover. It may be appended post-takeover.

Acceptable Variance: At least 100% of the previous year.

Forecast: The Vice President of Timberlands sets the annual target for each operation.

**Data:**

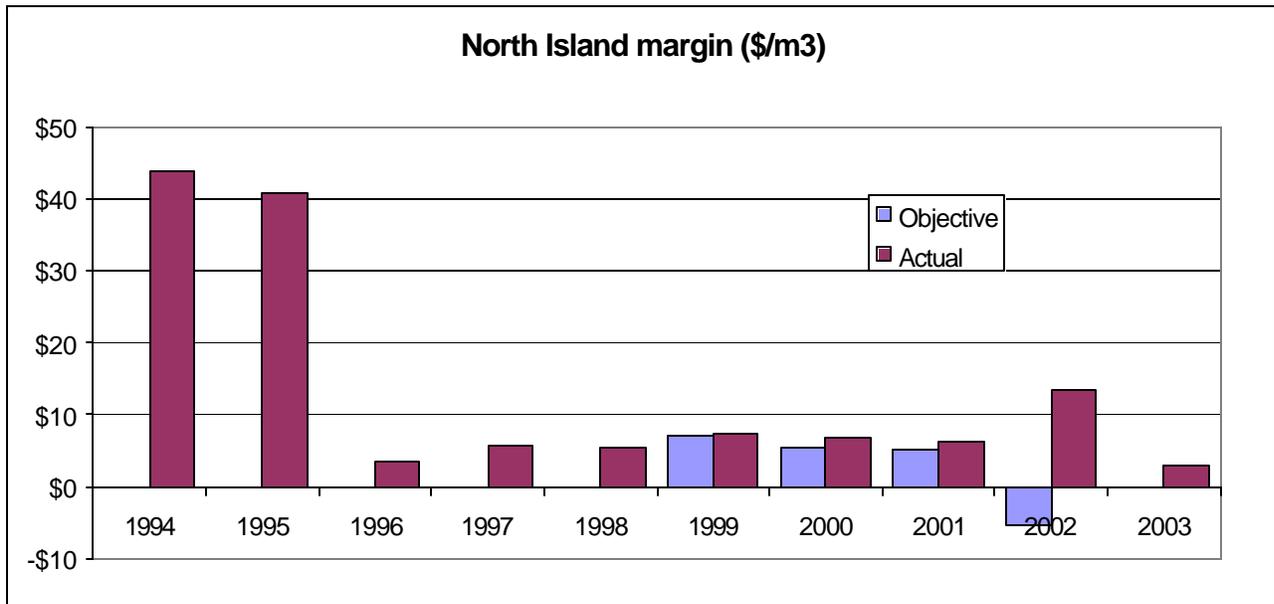
From 2003 forward, margin will be calculated using the production profit for crown land plus earnings for private land prorated \$/m<sup>3</sup>.

Inventory: The Decision Support Analyst tracks and reports this indicator.

Reporting: Data on this indicator is reported in the Unit Financial Statement.

**Performance:**

North Island actual margin was \$2.83 per m<sup>3</sup> for 2003 (used production profit for crown and earnings for private land).



**Indicator 16: Recordable Incident Rate (RIR)**

This indicator measures the number of incidents per 100 workers that require a doctor’s medical attention or result in lost work time. It provides an indication of the level of North Island Timberlands’ commitment to safe working conditions for employees.

History: This indicator was developed in 1999.

Objective: 1.9 RIR for combined Weyerhaeuser company crews and contractors crews.

The objective is based on continual improvement and takes into consideration the historic performance of the Unit and Weyerhaeuser corporate commitments.

Acceptable Variance: Less than or equal to the objective.

Forecast: The corporate objective is to improve the safety performance over time to have an RIR of zero.

**Data:**

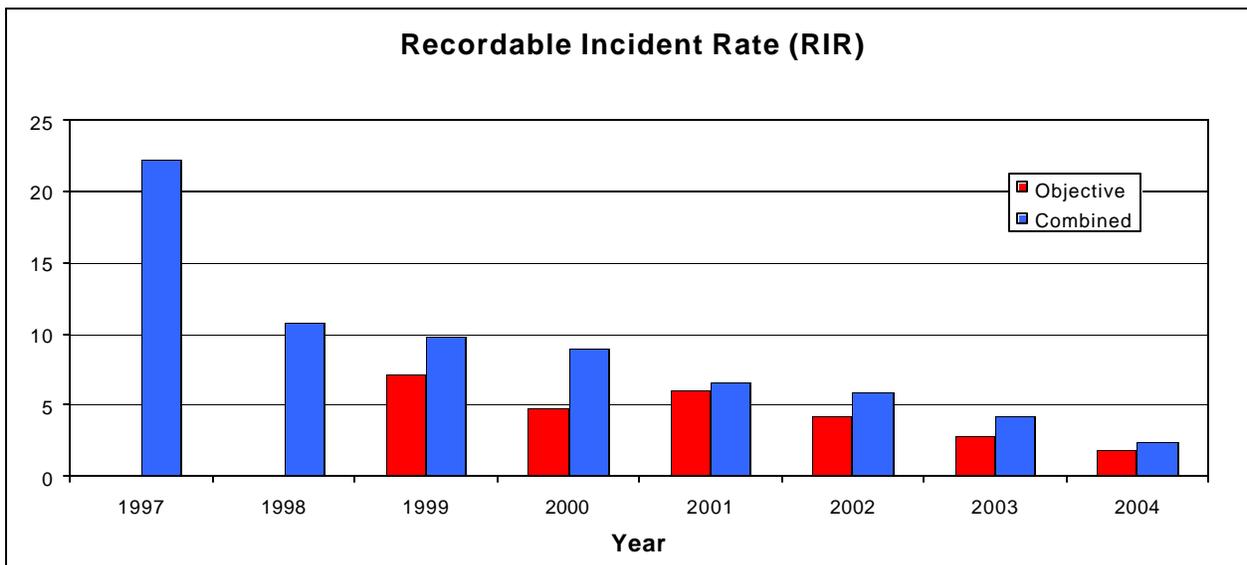
Inventory: North Island Timberlands collects information on all recordable incidents.

Reporting: The Financial Manager reports the indicator as part of the monthly financial statement.

**Performance:**

2004 RIR:

- 0.0 RIR – Weyerhaeuser company crews.
- 4.4 RIR – Contractor crews.
- 2.4 RIR – Combined Weyerhaeuser company crews and contractor crews.



**Indicator 17: Number of recreation sites maintained**

This indicator tracks the number of recreation sites (trails, campgrounds) maintained by North Island Timberlands. The indicator provides a measure of North Island's continued commitment to supporting some of the non-timber values on the DFA.

History: This indicator was developed in 1999.

Objective: Continue the maintenance of existing sites.

The objective is to ensure that existing recreation sites continue to be maintained in 2004.

Acceptable variance: None.

Forecast: Assumes same number of sites.

**Data:**

Inventory: The Unit Forester is responsible for maintaining recreation sites in the DFA. This includes tracking and reporting on the sites.

Reporting: The Unit Forester reports on the indicator performance in the annual SFM Report.

**Performance:**

The number of maintained recreation sites remained the same in 2004.

Year	Sites	Sites Maintained	Sites
1996	2	2	
1997	4	4	
1998	4	4	
1999	4	4	
2000	5	5	Montague Creek, Lower Tsitika Crossing, Junction Pool, Dalrymple Creek, Wowo Lake
2001	5	5	Montague Creek, Lower Tsitika Crossing, Junction Pool, Dalrymple Creek, Wowo Lake
2002	5	5	Montague Creek, Lower Tsitika Crossing, Junction Pool, Dalrymple Creek, Wowo Lake
2003	6	6	Montague Creek, Lower Tsitika Crossing, Junction Pool, Dalrymple Creek, Sgt. Randally, Wowo Lake
2004	6	6	Montague Creek, Lower Tsitika Crossing, Junction Pool, Dalrymple Creek, Sgt. Randally, Wowo Lake

**Indicator 18: Kilometers of active road**

This indicator estimates the length of roads in the DFA, including both maintained and non-maintained roads. Retaining a “balance” of roads is important for access for forest management, recreation and other resource uses while maintaining as much land in productive use as possible. Roads are added as new areas are developed and in some areas roads are removed through debuilding. Other roads that are not required for a period, are deactivated to minimize the risk of environmental damage.

History: This indicator was developed in 1999.

Objective: Retain the active road network.

The objective is to effectively manage the active road network resulting in little change in its size.

Acceptable variance:  $\pm 20\%$

Forecast: This indicator is forecast in the Management Plan.

**Data:**

Inventory: Data on the active road network (maintained and non-maintained roads) is maintained at a 1:20,000 scale at North Island in the Geographic Information System (GIS).

Reporting: The GIS Technician compiles the data from the GENUS System and reports on the indicator performance in the annual SFM Report. North Island also prepares an annual report on road development, summarized by the Inventory Section in the TFL 39 Annual Report.

**Performance:**

Year	Kilometers			Comment
	Maintained	Non-maintained	Total	
1997	1,566	1,718	3,284	NAD 27 map projection
2000	1,623	2,240	3,863	NAD 83 map projection
2001	1,751	2,396	4,147	NAD 83 map projection
2002	1,843	2,313	4,156	NAD 83 map projection
2003	1,950	2,304	4,254	46% maintained
2004	2,105	2,304	4,384	48% maintained

**Indicator 19: FPC contraventions related to road, soil and water management**

This indicator tracks the number of legislative non-compliance incidents on the DFA relating to road construction, soil and water. It provides a measurement, in particular, of the extent to which North Island Timberlands is effectively managing its road building practices and mitigating the potential effect of its operations on soil and water.

History: This indicator was developed in 1999.

Objective: Zero

The North Island objective is to be in legislative compliance and, therefore, to have no contraventions.

Acceptable variance: None

Forecast: The forecast is the objective.

**Data:**

Inventory: The Forest Legislation Compliance Database is maintained by the Weyerhaeuser legal department and is monitored on a daily basis.

Reporting: Contraventions are reported in the Forest Legislation Compliance Reporting Database, internal quarterly reports and MoF Compliance Reports.

**Performance:**

Year	Number of FPC contraventions	# of FPC determinations
1999	2	1 (1997)
2000	0	1 (1999)
2001	0	0
2002	1	1
2003	0	0
2004	0	0

**Indicator 20: Advisory group active membership**

This indicator tracks the active functioning of the North Island Woodlands Advisory Group (NIWAG). It provides one indication of the relative success of an ongoing mechanism to allow for meaningful input from all sectors of the local community into SFM planning on the DFA.

History: This indicator was developed in 1999.

Objective: All sectors are represented.

Acceptable variance: None

Any change in membership numbers must be assessed and remedied if it creates an effective gap in the adequacy of representation of the various interests on the DFA.

Forecast: Terms of Reference for the advisory group.

**Data:**

Inventory: The Unit Forester is responsible for supporting and monitoring participation in the advisory group. There is a membership list and Terms of Reference for the advisory group.

Reporting: Minutes are recorded for each meeting that include attendance. The NIWAG membership list is maintained by the NIWAG facilitator and posted on North Island Timberlands intranet site.

**Performance:**

Sector	NIWAG Membership at end of						
	1998	1999	2000	2001	2002	2003	2004
Fish and Game Club	1	1	1	1	1	1	1
First Nations	2	1	1	1	1	1	1
Ministry of Forests	1	1	1	1	1	1	1
District of Campbell River	1	1	1	1	1	1	1
Education/Youth	0	0	1	0	1	1	1
Contractor	1	1	1	1	1	1	0
Supplier	1	1	1	1	1	1	0
Village of Sayward	1	1	1	1	1	1	1
Regional District	1	1	1	1	0	1	1
Environmental Council	1	1	1	1	1	1	1
Member at Large	0	0	1	1	1	1	1
Labour	1	1	1	1	1	1	1
Chamber of Commerce	1	1	1	1	1	1	1
Senior	0	0	0	0	1	1	1
Total Sectors	12	11	13	12	13	14	12

## Indicator 21: Planting by species (compared to harvest)

This indicator tracks the planting of species (specifically Western Redcedar) relative to the proportions removed in harvest. The objective is to ensure a sustained supply of WRC over time. Old growth cedar has traditional, cultural and ceremonial uses for First Nations.

History:	This indicator was developed in 1999.
Objective:	Plant cedar in proportion to cedar harvest (average over a 10-year period).
Acceptable variance:	± 20% of harvested cedar.
Forecast:	Silviculture Plans and Harvest Plans forecast the planting and harvest.

### Data:

Planting of cedar is compared to harvest of cedar over an 10-year period to avoid year to year fluctuations that can occur and to average the delay that occurs between harvest and stocking.

Number of stems planted vs. harvested volume does not yield strictly comparable data. For example, the data does not include natural regeneration; which is a significant component of cedar reforestation in many areas; further, the average size (m<sup>3</sup> per tree) of harvested cedar trees is generally larger than that of other species. In association with other indicators, however, this data can be meaningful.

Inventory: The Unit Forester is responsible for development of silviculture prescriptions and site plans and for tracking all silvicultural treatments including planting by species. The number of trees planted is entered into the Genus database. Nanaimo Woodlands Inventory Section collects data annually on planting by species. Harvest by species is available in the MoF harvest database.

Reporting: The TFL 39 and MF 19 results are reported by management unit in the annual "Summary of Silvicultural Activities". The TFL 39 results are reported by block in the TFL 39 Annual Report. Scaled harvest volumes are reported by Solid Wood Inventory Section in Weyerhaeuser's official MoF Scale Report and in the TFL 39 Annual Report. Often this information has been aggregated by management unit in Weyerhaeuser's official MoF Scale Report.

### Performance:

The average variance for cedar 1995-2004 is within the acceptable variance. Indicator 1, however, suggests that the percentage of cedar is increasing slightly in the DFA's second growth forests.

Year	DFA Harvested (m <sup>3</sup> )			DFA Planted ('000 trees)			% variance (±) between planting & harvest
	Total	Cedar	% Cedar	Total	Cedar	% Cedar	
1995	1,409,766	187,189	13.3	1,568.2	108.5	6.9	-48.1
1996	1,177,515	143,340	12.2	1,650.5	86.5	5.2	-57.4
1997	1,051,199	130,104	12.4	1,351.0	106.4	7.9	-36.3
1998	964,851	100,711	10.4	1,444.4	162.1	11.2	7.7
1999	1,428,932	189,113	13.2	1,208.3	160.2	13.3	0.1
2000	1,518,840	213,705	14.7	1,567.9	170.5	10.9	-25.9
2001	1,209,212	162,597	13.4	1,858.0	281.4	15.1	12.7
2002	1,130,375	170,862	15.1	1,999.2	368.8	18.4	21.9
2003	1,350,830	248,476	18.4	2,132.8	345.6	16.0	-13.1
2004	1,794,102*	232,042	12.9	1,897.6	393.5	20.7	60.0
Avg.	1,303,562	177,814	13.6	1,390.0	182.0	13.1	0.4

\* See Indicator 14 for explanation of volume harvested in 2004.

## Indicator 22: Stand level retention in openings as a percent of total opening area (annual average for non-clearcut openings)

Stand level retention provides for diversity by increasing the range of habitat and stand structure retained. Retention also contributes to genetic diversity by increasing the range of parental genes.

- History: This indicator was developed in 2000.
- Objective:  $\geq 10\%$ .
- Acceptable Variance: Greater than 10%.
- Forecast: The objective describes the required minimum level of group retention in the Timber Zone only. The Forest Project forecast the following levels of retention for each of the three stewardship zones:
- Old Growth Zone 20% minimum
  - Habitat Zone 15% minimum
  - Timber Zone 10% minimum (group)  
5% minimum (dispersed)

### Data:

Openings are defined as non-clearcut if they meet or exceed the minimum standards for variable retention. Variable retention is achieved when more than half the total area of the opening is within one tree height from the base of a tree or group of trees, whether or not the tree or group of trees is inside the opening.

Stand level retention may include patches of trees (determined by estimating the area of the patches) and individual trees (area contribution is estimated by comparing the basal area of the trees to the average basal area of the initial stand).

Inventory: Stand level retention objectives are written into the Silviculture Prescription by the Area Forester during opening planning. The actual level of retention is then verified during the Post-Harvest Assessment by the Area Forester and entered into the Genus database.

Reporting: The Unit Forester compiles the data from the Genus database and reports on the indicator performance in the annual SFM Report.

### Performance:

Year	Total non-clearcut harvest area (ha)	Stand level retention	
		Hectares	% of total
2000	891.1	216.8	24.3
2001	1,032.5	258.0	25.0
2002	1,411.4	322.2	23.0
2003	2,819.3	774.9	27.5
2004	1,783.7	340.1	19.0

The total non-clearcut harvest area differs in Indicators 22, 23 and 24 due to indicator 22 only being concerned with the timber zone.

**Indicator 23: Percent of total opening area harvested with non-clearcut systems**

This indicator measures the proportion of opening area harvested annually that is not clearcut. Non-clearcut silviculture systems provide for diversity by increasing the range of habitat and stand structure that is retained.

History:	This indicator was developed in 2000.
Objective:	100% of opening area harvested.
Acceptable Variance:	Greater than 80%.
Forecast:	The forecast is an objective of the Forestry Project. In the year 2004, 100% of the openings harvested will be done with a non-clearcut silviculture system.

**Data:**

Openings are defined as non clear-cut if they meet or exceed the minimum standards for variable retention. Variable retention is achieved when more than half the total area of the opening is within one tree height from the base of a tree or group of trees, whether or not the tree or group of trees is inside the opening.

The total opening area includes areas (patches and individual trees) of retention that are within the opening.

Inventory: The silviculture system to be used is written into the Silviculture Prescription by the Area Forester during opening planning. The silviculture system of each opening is tracked in the Genus database. Compliance with the SP is verified during the Post Harvest Assessment by the Area Forester.

Reporting: The Unit Forester compiles the data from the Genus database and reports on the indicator performance in the annual SFM Report.

**Performance:**

Year	Total harvest area (ha)	Non-clearcut harvest area		Objective (%)
		(ha)	% of total	
1999	1,781.0	528.0	30.0	30
2000	1,953.7	977.9	50.1	50
2001	1,653.3	1,219.9	74.0	70
2002	1,527.9	718.2	65.0	80
2003	1,705.1	1,604.0	94.0	100
2004	2,314.4	2,290.8	99.0	100

**Indicator 24: Percent of annual harvest area within forest influence**

Areas within forest influence experience different growing conditions, including reduced light and wind and hence provide different microclimate and habitat types.

**History:** This indicator was developed in 2000.

**Objective:** 50%, non-clearcut blocks, annual average.

**Acceptable Variance:** Greater than 50%.

**Forecast:** The forecast is an objective of the Forestry Project. When the target of 100% variable retention is achieved in late 2004, more than half of the then current harvest area will then be within forest influence.

**Data:**

Forest influence is defined as the area within an opening that is within one tree length of a patch of retention or within one tree length of a single tree retained within the opening. By definition, at least half of the area harvested in non-clearcut openings must be within forest influence

The current approach is to estimate the area of forest influence by ocular examination of opening maps. Future estimates may be determined by applying buffers of appropriate width in the GIS.

**Inventory:** Forest influence objectives are written into the Silviculture Prescription by the Area Forester during opening planning. The actual level of forest influence is then verified during the Post-Harvest Assessment by the Area Forester and entered into the Genus database.

**Reporting:** The Unit Forester compiles the data from the Genus database and reports on the indicator performance in the annual SFM Report.

**Performance:**

Year	Total non-clearcut harvest area (ha)	Forest influence (%)	Objective (%)
2000	951.7	72.5	> 50
2001	1,219.9	74.0	> 50
2002	718.2	74.0	> 50
2003	1,604.0	66.0	> 50
2004	2,290.8	62.0	> 50

Note: The total non-clearcut harvest area differs in Indicators 22, 23 and 24 due to calculations of basal area equivalent for two single stem blocks and a dispersed retention block.

## Indicator 25: Percent of identified High Conservation Value (HCV) areas under special management

This indicator identifies areas of special value and describes the management for protecting these values.

History:	This indicator was developed in 2000.
Objective:	100% of HCV areas identified are under special management.
Acceptable Variance:	None.
Forecast:	The forecast is the objective.

### Data:

HCV areas include areas in which conservation of any of numerous social or ecological values is deemed to have an especially high priority. Identification of HCV areas may result from information supplied by First Nations, government agencies, company personnel or other stakeholders.

Inventory: A list of HCV areas is maintained by the Unit Forester. Any special management practices required for these areas will be noted or referenced. During the FDP review process this list will be reviewed to ensure forest management activities will not infringe upon or impact the value to be conserved.

Reporting: The Unit Forester will annually review the compliance with each special management plan and report on the indicator performance in the annual SFM Report.

HCV areas include:

- The basaltic pillar reserve in the Tsitika Watershed.
- The recreation fishing corridor in the Tsitika Watershed.
- Special Management Zone 07 – Johnstone Strait.
- Special Management Zone 08 – Tsitika River.
- Special Management Zone 11 – Schoen – Strathcona.
- Sgt. Randalley (Sayward Cypress Management Society)

### Performance:

Year	HCV areas		
	Number of HCV areas	Number under special management	Percent under special management
2000	5	5	100
2001	6	6	100
2002	6	6	100
2003	6	6	100
2004	6	6	100

### Special Management Zones (SMZ) 07, 08, 11

Measures to address higher level plan objectives for the SMZ's are outlined in the currently approved Forest Development Plan (FDP). The objectives are incorporated into block by block silviculture prescriptions and logging plans.

## **SMZ 7 – Johnstone Strait**

SMZ 7 Johnstone Strait extends along the mountain slopes facing Johnstone Strait southeast of Port McNeill up to the Lower Tsitika protected area. It is approximately 3,100 hectares in size.

The primary values identified are:

- Scenic values visible from the marine zone
- Old growth biodiversity values
- Shoreline recreational opportunities
- Coastal wildlife habitat

The primary special management objectives outlined are:

- To maintain the visual quality of known scenic areas in accordance with the visual landscape inventory recommendations, until the district manager has established visual quality objectives for the areas.
- To maintain, as a priority, a wide spectrum of recreation resource features and opportunities occurring in the zone, including scenic landscapes, semi-primitive recreation opportunity settings, cultural and heritage landmarks and developed recreation facilities, with particular emphasis on the areas included in the recreation resource description for the zone.
- To maintain, as a priority, the quality of resource values of high importance to tourism where identified as primary values in SMZ.
- To provide suitable habitat for wildlife species identified as primary values in SMZ.

Since the creation of the Tsitika Park direct access into the SMZ 7 Johnstone Strait area has been cut off from the other forestlands managed by Weyerhaeuser's North Island Timberlands. As a result of this restricted access, Weyerhaeuser's North Island Timberlands has not scheduled harvesting activities or caused any modifications to the condition of the SMZ(s) or to the values identified for management within the SMZ. There are presently no proposed harvest blocks within the SMZ 7 Johnstone Strait area with this submission.

## **SMZ 8 – Tsitika River**

The area identified as SMZ 8 follows the Tsitika River and connects the Lower Tsitika protected area and the Claude Elliott protected area, which is then linked by SMZ 9 to the Woss and Schoen Lake areas. It is approximately 5,200 hectares in size.

The primary values identified are:

- Old growth and connectivity functions.
- Fish and wildlife habitats and populations associated with riparian zone.

The primary special management objectives outlined are:

- Provide suitable habitat for wildlife species associated with the riparian corridor and pockets of ungulate (Deer / Elk) winter ranges.
- Maintain late-successional habitat elements and attributes of biodiversity in forested ecosystems with emphasis on regionally rare and under represented ecosystems, by retaining old seral forest at the site series/surrogate level of representation (late-successional elements and attributes of biodiversity should be retained in patches of variable size).

Weyerhaeuser has actively participated in the Tsitika Watershed Integrated Resource Plan (TWIRP) over the last twenty years. The plan no longer has status in legislation. The FPC, VILUP and landscape unit planning, now provide the framework for integrated resource planning in the Tsitika Watershed. Many of the results of the plan (TWIRP) including deer winter ranges, recreation areas and sensitive sites are still in effect and will contribute towards plans for the Tsitika SMZ and the Tsitika Landscape Unit.

The current values of old growth and connectivity functions, fish and wildlife habitats and populations associated with riparian zones are being maintained within the 28,512 hectares of the Tsitika watershed that Weyerhaeuser manages. Approximately 13,481 hectares are in the form of protected areas, ecological reserves, deer winter ranges, elk ranges, environmentally sensitive areas and recreational areas.

At the stand level biodiversity will be maintained through the retention of Riparian Reserve Zones, Wildlife Tree Patches and Variable Retention areas. A minimum of 15% of aggregated or dispersed retention will be retained in each harvest area through to rotation. This will contribute to the protection of existing habitat by ensuring that there will be vertical and horizontal structural diversity, future course woody debris and mature forest attributes maintained for the future stands.

Presently connectivity exists between the valley floor and the alpine in many areas using various routes. Some of these routes incorporate Deer Winter Ranges and leave blocks between existing harvested areas. Weyerhaeuser will continue to work with the various agencies to develop strategies that will maintain this connectivity.

A Standard Operating Procedure (SOP) was developed in conjunction with MoWLAP staff addressing the management of Critical Spring Forage (CSF) adjacent to all Black-tailed Deer Winter Ranges (DWRs) within the forest lands managed by Weyerhaeuser's North Island Timberlands. This strategy involves the assessment of currently available CSF, followed by intervention using any one of a number of potential forage production techniques, when required to maintain desired levels. This approach is detailed in the SOP.

### **SMZ 11 - Schoen-Strathcona**

The area identified as SMZ 11 Schoen-Strathcona extends along the height of land between Schoen Lake and Strathcona Park.

The primary values identified are:

- Old growth biodiversity and connectivity functions (particularly in Schoen Creek drainage).
- Wildlife and fish habitats and populations (upper White River, Consort Creek, Gold River).
- Visual qualities associated with Victoria and Warden peaks.

The primary special management objectives outlined are:

- Provide suitable habitat for wildlife species associated with the ungulate winter ranges, wetland habitats.
- Maintain late-successional habitat elements and attributes of biodiversity in forested ecosystems with emphasis on regionally rare and under represented ecosystems, by retaining old seral forest at the site series/surrogate level of representation (late-successional elements and attributes of biodiversity should be retained in patches of variable size).
- Maintain the visual quality of the sensitive viewshed associated with Victoria and Warden peaks.

The area presently identified as SMZ 11 began development in 1973 under a special use plan called the White River Plan (WRP). The plan no longer has status in legislation. The FPC; VILUP and landscape unit planning now provides the framework for integrated resource planning in the White River's Schoen Strathcona SMZ. Many of the results of the plan including the maintenance of recreation, water quality, fish and wildlife habitat are still in effect and will contribute towards plans for the Schoen Strathcona SMZ and the White River Landscape Unit.

The current values of biodiversity and connectivity, wildlife and fish habitat and populations are being maintained. Old growth biodiversity and connectivity is being maintained through a vast area of naturally occurring mature forest.

At the stand level, biodiversity will be maintained through the retention of Riparian Reserve Zones, Wildlife Tree Patches and Variable Retention areas. A minimum of 15% of aggregated or dispersed retention will be retained in each harvest area through to rotation (or longer). This will contribute to the protection of existing habitat by ensuring that there will be vertical and horizontal structural diversity, future course woody debris and mature forest attributes maintained for the future stands.

Presently connectivity exists between the valley floor and the alpine in many areas using various routes. Some of these routes incorporate Deer Winter Ranges and leave blocks between existing harvested areas. Weyerhaeuser will continue to work with the various agencies to develop strategies that will maintain this connectivity.

A Standard Operating Procedure (SOP) was developed in conjunction with MoWLAP staff addressing the management of Critical Spring Forage (CSF) adjacent to all Black-tailed Deer Winter Ranges (DWRs) within the forest lands managed by Weyerhaeuser's North Island Timberlands. This strategy involves the assessment of currently available CSF, followed by intervention using any one of a number of potential forage production techniques, when required to maintain desired levels. This approach is detailed in the SOP.

Past development under the WRP has helped maintain the visual quality of SMZ 11 by dispersing the pattern of harvest across the area of SMZ 11. Harvesting has occurred in harvest areas of less than 50 hectares since development began 26 years ago. Visual quality will be maintained through designing a landscape in which harvest areas and retention areas have a range in sizes and shapes. Visual quality assessments in visually sensitive units will be conducted at the Silviculture Prescription stage prior to being submitted for approval. Weyerhaeuser will continue its variable retention silviculture program and further explore partial cut and single tree methods of harvesting.

### **Recreation Fishing Corridor in the Tsitika Watershed**

Many of the results of the plan (TWIRP) including the recreation fishing corridor are still in effect and contribute towards plans for the Tsitika SMZ and the Tsitika Landscape Unit.

### **Basalt Pillars Reserve**

A 367 hectare reserve covering basalt cliffs northeast of Fickle Lake.

### **Sgt. RandAlly (Sayward Cypress Management Society)**

The Sgt. RandAlly will be managed by the Sayward Cypress Management Society (SCMS) in conjunction with Weyerhaeuser for the preservation of this tree and the surrounding area. There is a three-way agreement between the Ministry of Forests, SCMS, and Weyerhaeuser with regard to the recreation site and trail. However, the SCMS is responsible for the care, maintenance, and repair of the Sgt. RandAlly forest recreation site.

**Indicator 26: Old growth (>250 years) representation by BEC variant (Crown Land only)**

This indicator measures the amount of old growth forest in the DFA (Crown portion only) by broad ecological classification. Some species are specifically adapted to habitats found in old growth forest.

History:	This indicator was developed in 2000.
Objective:	Meet Ministry of Forests biodiversity guidebook targets as defined by BEC variant and landscape unit.
Acceptable Variance:	0.
Forecast:	The forecast is an objective set by the FPC Biodiversity Guidebook.
Note:	An interim old growth deficit exists in some landscape units, as illustrated in the 1998 forest inventory, due to historic harvest profile.

**Data:**

Old growth or old seral is defined by the MoF in the Biodiversity Guidebook as forests 250 years of age and older. Forest ages are determined from the forest inventory. For productive second-growth forest areas, age is determined by considering the difference between the current (or reference) year and the establishment year. For mature stands (established prior to 1864), age is determined by considering the current year, the year of cruise and the age class assigned at the time of cruise.

The map of BEC (Biogeoclimatic Ecosystem Classification) variants is obtained from the MoF and combined with the current forest inventory to generate the summary of old growth by variant within the DFA.

The FPC Biodiversity Guidebook defines the natural disturbance type and sets targets for retention of old seral stage forest by biogeoclimatic unit. Landscape units and biodiversity emphasis is set by Ministry of Forests Campbell River District through land use planning processes.

Inventory: The baseline data is compiled from the 1998 forest inventory. This report will be re-compiled when on an annual basis following the update of the forest inventory.

Reporting: The GIS analyst compiles the data from the GIS database and reports on the indicator performance in the annual SFM Report.

**Performance:**

As a result of past harvest history, BEC variants in three landscape units are short of the old growth targets. The Forest Development Plan has strategies for variant shortfalls.

**LSU\_NAME BECLABEL TARGET % OG AGE OG AREA BEC AREA AVAILABLE OG**

Adam-Eve	AT unp	85%	225+	136.49	152.84	89.3%
Adam-Eve	CWH vm 1	13%	225+	7727.31	28782.30	26.8%
Adam-Eve	CWH vm 2	13%	225+	11973.98	17785.14	67.3%
Adam-Eve	CWH xm 2	9%	225+	2.76	5.60	49.3%
Adam-Eve	MH mm 1	19%	225+	7473.48	8503.21	87.9%
				27314.02	55229.09	49.5%

Bonanza	CWH vm 1		225+	487.94	512.06	95.3%
Bonanza	CWH vm 2		225+	150.22	186.68	80.5%
Bonanza	MH mm 1		225+	231.29	252.53	91.6%
				869.45	951.27	91.4%

Salmon	AT unp	85%	225+	15.36	15.36	100.0%
Salmon	CWH mm 1	9%	225+	5979.19	23239.20	25.7%
Salmon	CWH mm 2	9%	225+	4157.92	8285.47	50.2%
Salmon	CWH vm 1	13%	225+	515.72	1140.61	45.2%
Salmon	CWH vm 2	13%	225+	327.60	460.73	71.1%
Salmon	CWH xm 2	9%	225+	1048.01	15994.86	6.6%
Salmon	MH mm 1	19%	225+	3072.71	3519.01	87.3%
				15116.51	52655.24	28.7%

Sayward	CWH mm 1	9%	225+	169.85	521.87	32.5%
Sayward	CWH mm 2	9%	225+	186.67	248.60	75.1%
Sayward	CWH xm 1	9%	225+	15.21	917.34	1.7%
Sayward	CWH xm 2	9%	225+	399.49	5495.26	7.3%
Sayward	MH mm 1	19%	225+	25.01	25.01	100.0%
				796.23	7208.08	11.0%

Tsitika	AT unp	85%	225+	137.98	139.76	98.7%
Tsitika	CWH vm 1	19%	225+	4564.52	8954.06	51.0%
Tsitika	CWH vm 2	19%	225+	5464.92	6609.46	82.7%
Tsitika	MH mm 1	28%	225+	2925.62	3045.65	96.1%
				13093.04	18748.93	69.8%

White	AT unp	85%	225+	93.22	93.22	100.0%
White	CWH mm 1	13%	225+	298.58	770.44	38.8%
White	CWH mm 2	13%	225+	366.29	495.12	74.0%
White	CWH vm 1	19%	225+	6015.91	15170.41	39.7%
White	CWH vm 2	19%	225+	6181.06	8602.68	71.9%
White	CWH xm 2	13%	225+	228.47	1555.35	14.7%
White	MH mm 1	28%	225+	4350.82	4699.29	92.6%
				17534.35	31386.51	55.9%

				74723.60	166179.12	45.0%
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**Indicator 27: Total number of trees at 'free growing' compared to planted total**

This indicator provides a broad measure of the genetic diversity of the regenerating forest by estimating contributions from both planted seedlings and natural regeneration.

History:	This indicator was developed in 2000.
Objective:	Number of crop and competing trees is greater than number of trees planted (annual average).
Acceptable Variance:	None
Forecast:	The number of crop and competing trees is modeled based on growth and yield data. This information is a key part of the Timber Supply Analysis.

**Data:**

A free growing stand is defined in the Forest Practices Code of BC Act as "a stand of healthy trees of commercially valuable species, the growth of which is not impeded by competition from plants, shrubs or other trees." A crop tree is defined as a species ecologically suited to the site, free from damage or disease, at least the minimum required spacing from another crop tree and judged capable of surviving to free growing. A competing tree is defined as a coniferous or deciduous tree that will continue to compete with crop trees until the standard unit is free growing.

The free-growing assessment (to determine whether free-growing status has been achieved) includes a tally of total trees per hectare. This total includes both planted and naturally regenerated trees and is compared to the number of trees planted per hectare (obtained from stand records). Total number of trees are determined by multiplying trees per ha by ha for each opening that has achieved free growing and summing across these areas.

Inventory: The Silviculture Forester carries out free growing surveys as per the SOP. Data collected during the assessment is entered into the Genus database.

Reporting: The Unit Forester compiles the data from the Genus database and reports on the indicator performance in the annual SFM Report.

**Performance:**

Year	FG Openings Due (late)	Stems per hectare		Percent Difference
		Planted	At free growing	
2000	13	306	15,697	+ 5,130 %
2001	27	971	3,780	+ 389 %
2002	50	472	3,565	+ 755 %
2003	62	626	3,761	+ 601 %
2004	66 (SUs)	700	4,144	+ 592 %

**Indicator 28: Number of reportable spills**

This indicator provides a measure of pollution from oil spills.

History: This indicator was developed in 2000.  
 Objective: 7 or less  
 Acceptable Variance: +1 (i.e., 8)  
 Forecast: This indicator can't be forecast.

**Data:**

The operation is legally required to immediately report to the Provincial Emergency Program (PEP) any hydrocarbon spill into water or in excess of 100 liters. North Island Timberlands' Spill Contingency Plan requires that all spills are reported to Unit Spill Coordinator, who in turn reports the spill to PEP.

Inventory: The Engineering Administrative Technician maintains a record of all spills in the file system.

Reporting: The Unit Forester compiles the data and reports on the indicator performance in the annual SFM Report.

**Performance:**

Reportable spills include fuel or lubricant spills that are over 100 litres or anything that enters a water body.

Year	Number of Reportable Spills			
	Objective	Actual	Volume (litres)	#/vol to water
1995	N/A	8		
1996	N/A	10		
1997	N/A	8		
1998	N/A	9		
1999	N/A	6	940.0	
2000	7	6	1,181.5*	
2001	7	10	1,233.0	
2002	7	2	2,232	
2003	7	3	1,208	
2004	7	4	300	2 / 21 litres

\* Note – 600 litres attributable to one contract operation spill.

**Indicator 29: Natural wildfires by number and area.**

This indicator provides a measure of success at protecting the forest from damage by fire. Natural wildfires are those that are initiated by lightning strikes. Refer to Indicator 9 for a similar measure on fires initiated by management activities.

History: This indicator was developed in 2000.  
 Objective: Less than 50 hectares.  
 Acceptable Variance: Fires exceeding 50 hectares are actively managed.  
 Forecast: This indicator can't be forecast.

**Data:**

The Unit Forester reports annually on the incidence and cause of fires and on the area burned. This includes fires resulting from lightning strikes and other causes not related to forest management activities.

A historical record is available for TFL 39 areas. For MF 19 areas, tracking and reporting commenced in 1997.

Inventory: Fires are reported for entry into the Incident Tracking System (ITS).

Reporting: The Unit Forester compiles the data from the ITS and reports on the indicator performance in the annual SFM Report.

**Performance:**

Year	Number	Total area burned (ha)
1983	0	
1984	1	Spot
1985	2	Spot
1986	0	
1987	0	
1988	0	
1989	2	Spot
1990	7	2.0
1991	0	
1992	1	Spot
1993	0	
1994	6	1
1995	1	Spot
1996	0	
1997	0	
1998	0	
1999	0	
2000	2	0.02
2001	0	
2002	7	0.2 (lightning)
2003	1	<0.01 (lightning)
2004	2	<0.2 (lightning)

### Indicator 30: Number of areas greater than 500 hectares at high risk of mortality due to insects or disease

This indicator measures the success of management strategies to limit the size (impact) of insect infestations and disease epidemics.

History:	This indicator was developed in 2000.
Objective:	Zero
Acceptable Variance:	Operation has previously identified high risk areas and implemented a strategy to manage risk prior to area exceeding 500 hectares.
Forecast:	This indicator can't be forecast.

#### Data:

Forests are assessed continuously, both on the ground and from the air, to identify potential insect infestations or disease epidemics. Suspect areas are further examined by helicopter or ground survey. Federal, provincial or independent experts are consulted on the need for preventative measures. Salvage occurs if there is significant mortality.

Inventory: Annually the Unit Forester, or designate, will carryout a Forest Health Overview assessment and report on forest health concerns. The Unit Forester, or designate, will implement a strategy to manage the risk prior to the area exceeding 500 hectares. The report is filed in the Forestry File system.

Reporting: The Unit Forester compiles the data and reports on the indicator performance in the annual SFM Report.

#### Performance:

Year	Forest threatened by insects or disease		Insects and disease observed in DFA during Forest Health Overview Assessment
	Number of areas greater than 500 hectares	Total area	
2000	0	0	Balsam wooly adelgid Sawfly
2001	0	0	Balsam wooly adelgid Sawfly (not aerial)
2002	0	0	Overall no new disease or insect outbreaks were detected.
2003	0	0	Overall no new disease or insect outbreaks were detected.
2004	0	0	Overall no new disease or insect outbreaks were detected.

**Indicator 31: Area of naturally induced slides**

This indicator provides a baseline measure of disturbance from naturally-induced slides.

History: This indicator was developed in 2000.

Objective: Track area of natural slides.

Acceptable Variance: Not applicable.

Forecast: This indicator can't be forecast.

**Data:**

Naturally-induced slides are slides that are not initiated by roads or other harvest activities and occur in areas of forest that are greater than 15 years of age. The documentation of any new slides is based on the frequent air and ground travel that occurs throughout the forest.

Inventory: Slides are reported to the Unit Forester. Slides larger than 2 hectares are entered into the forest cover GIS.

Reporting: The Unit Forester compiles the data from the file system and reports on the indicator performance in the annual SFM Report.

**Performance:**

The current known area of historic, naturally induced and non-reforested slides larger than two hectares.

Year	Natural slides (ha)	Current Year
2000	194.0	This is the baseline number.
2001	196.1	2.1
2002	196.1	0
2003	196.1	0
2004	198.6	2.5

**Indicator 32: Percent of openings in which soil disturbance exceeds plan**

This indicator measures the amount of soil disturbance that exceeds planned levels. Higher disturbance levels both reduce the productive area and increase the risk of environmental impact, particularly sedimentation of streams.

History: This indicator was developed in 2000.

Objective: Zero.

Acceptable Variance: None.

Forecast: The forecast is the objective.

**Data:**

Maximum allowable soil disturbance levels (soil disturbed within the net area to be reforested) are specified in the silvicultural prescription for each opening. During the post harvest assessment a determination is made as to whether soil disturbance exceeds the level specified on the plan. This indicator reports the proportion of openings in which the actual soil disturbance exceeds that specified in the silvicultural prescription.

Inventory: Soil disturbance limits are written into the Silviculture Prescription/Site Plan by the Area Forester during opening planning. The actual level of soil disturbance is then verified during the Post Harvest Assessment by the Area Forester and entered into the Genus database.

Reporting: The Unit Forester compiles the data from the Genus database and reports on the indicator performance in the annual SFM Report.

**Performance:**

Year	Blocks reported on			
	Total		Blocks with soil disturbance exceeding plan	
	Blocks	Hectares	Number	Percent
2000	72	1,998.4	0	0
2001	80	2,177.0	0	0
2002	64	2,068.8	7	11
2003	82	2,209.0	0	0
2004	73	2,648.3	0	0

**Indicator 33: Water quality measurements for selected watersheds**

Sediment and water temperature can impact fish and domestic water supply.

History: This indicator was developed in 2000.

Objective: Turbidity less than 5 Nephelometric Turbidity Units (NTU); temperature less than 15° C.

Acceptable Variance: Plus 10%.

Forecast: This indicator can't be forecast.

**Data:**

The Oyster River is designated as a water supply area. It is a source of domestic water and has a fish hatchery. Forest management can directly impact stream temperature and input sediment. Turbidity and temperature will be measured in the upper watershed, where the Oyster River leaves the DFA and near where it enters Georgia Strait. Samples will be collected during the spring flush in May, during low flow in late September and during high flow in late November.

Inventory: The Unit Forester will have the samples collected and analyzed as per schedule.

Reporting: The Unit Forester compiles the data and reports on the indicator performance in the annual SFM Report.

**Performance:**

Turbidity (NTU)	Flush							Low							High						
	98	99	00	01	02	03	04	98	99	00	01	02	03 <sup>1</sup>	04	98	99	00	01	02	03 <sup>1</sup>	04
Upper	N/A	N/A	N/A	0.13	0.26	0.26	<0.5	N/A	N/A	0.20	0.24	0.2*	N/A	<0.5	N/A	N/A	N/A	N/A	0.25	N/A	<0.5
Mid	0.52	0.95	0.67	0.20	0.89	N/A	3.0	1.59	0.16	0.30	0.09	0.76	0.73	1.0	0.87	0.80	0.56	3.9	0.99	N/A	0.8
Lower	0.70	1.35	0.74	0.31	1.0	0.6	0.8	2.2	0.34	0.39	0.26	0.38	0.4	1.7	1.68	1.22	1.15	5.9	1.61	N/A	0.8

<sup>1</sup> Grader just completed grading road.

Temperature (°C)	Flush							Low							High						
	98	99	00	01	02	03	04	98	99	00	01	02	03 <sup>2</sup>	04	98	99	00	01	02	03 <sup>2</sup>	04
Upper	N/A	N/A	N/A	7.4	8.0	5.0	7.0	N/A	N/A	8.0	9.0	9.0	N/A	9.0	N/A	N/A	N/A	N/A	5.0	N/A	5.0
Mid	12.5	4.5	7.0	8.9	8.0	N/A	10.0	9.0	9.5	9.0	6.7	13.0	13.0	10.0	3.5	3.0	1.0	5.9	5.0	N/A	5.0
Lower	18.0	6.5	10.0	10.0	10.0	9.4	N/A	10.0	11.0	12.0	13.1	13.3	13.4	N/A	4.0	3.5	1.0	5.5	4.8	N/A	N/A

<sup>2</sup> 2003 Note: The contractor that collects the water samples missed the late November (high) and fall (low).

2004 Note: NI labs collects the lower samples and did not collect the temperatures.

**Indicator 34: Area and percent of total slides from harvested areas or roads**

This indicator provides a measure of soil disturbance by slides caused by harvest activity. Such soil disturbance may reduce the productive area and increases the risk of environmental impact, particularly sedimentation of streams.

History: This indicator was developed in 2000.

Objective: Zero as result of post-1995 activities.

Acceptable Variance: None

Forecast: The forecast is the objective.

**Data:**

New slides are documented through the frequent forest assessments that occur both on the ground and from the air. Slides are classified as to whether they originated from harvest activity in areas harvested since the inception of the forest practices code.

Inventory: Slides are reported to the Unit Engineer. Slides larger than two hectares are entered into the forest cover GIS.

Reporting: The Unit Forester compiles the data from the Incident Tracking System (ITS) and reports on the indicator performance in the annual SFM Report.

**Performance:**

Year	Total slides (ha)	Historic natural slides (ha) (from Ind. 31)	Slides from harvested areas or roads		
			Number	Hectare	% by area
2000	194.8	194.0	3	0.8	0.4
2001	197.7	196.1	1	0.8	0.4
2002	199.6	196.1	5	1.9	1.0
2003	204.8	196.1	11	5.2	2.5
2004	209.5	198.6	8	2.2	1.0

**Indicator 35: Distribution of revenues by percentage**

The distribution of North Island revenues provides a measure of the operation's overall contribution to local, regional, provincial and national economies, and of the operation's financial viability.

History: This indicator was developed in 2000.

Objective: Track distribution.

This indicator was not reported on due to Brascan takeover. It may be appended post-takeover.

Acceptable Variance: Not applicable.

Forecast: This indicator can't be forecast.

**Data:**

The Cost Accountant began tracking the distribution of North Island revenues by wages (within company and contracted), government stumpage and fees, purchases (local and non-local) and corporate profit in 1999. This core information is collected and reported on during each financial month end and reported on in the North Island financial statement.

Inventory: The Decision Support Analyst collects and tracks financial information including wages (within company and contracted), government stumpage and fees, purchases (local and non-local) and corporate profit.

Reporting: This core information is reported on during each financial month end and reported on in the North Island financial statement. The information as presented here is expressed as a percentage of North Island total log sales revenues in order to address the question of equity with respect to economic benefits. Other expressions of the data are presented to NIWAG to establish absolute levels of benefits and to facilitate discussion regarding the impacts of such variables as annual harvest levels.

**Guidelines for Compiling Indicator 35:**

Contract Services covers payments to full phase (stump to dump) logging contractors, single phase contractors, general service contractors such as janitorial, electrical, and carpenters, etc. as well as consultants and professional services. These costs include the supply of equipment and materials costs required to execute the contract work and invoiced as one "job".

Own crew labour includes the gross payment of wages paid to both salary and hourly employees without deduction for statutory or contractual deductions. It includes all benefits costs paid by the employer for statutory and contractual benefits including Workers Compensation Assessments. Profit share and bonus payments are included. Payments made to cover employees under the Employee and Family Assistance Program (EFAP) and costs related to EFAP programs are not included. Includes only those people listed on the unit payroll systems and not contract personnel hired to perform work at the unit that would or would not regularly be performed by an employee.

Payments to Government includes only direct payments for stumpage and royalty fees, logging waste residue payments, fee in lieu charges for log exports, timber taxes and fees allocated by Head Office properties department (municipal and regional district property taxes, foreshore leases, etc), and amounts charged to licenses (e.g., subcode 920 radio licenses, highway crossing permits, etc.). No attempt has been made to estimate payments made for Goods and Services Taxes, provincial sales taxes, provincial motor fuel taxes, federal excise taxes, payroll related taxes (employee income tax with holdings) and assessments for EI or CPP, corporate income taxes, or corporate capital taxes, etc.

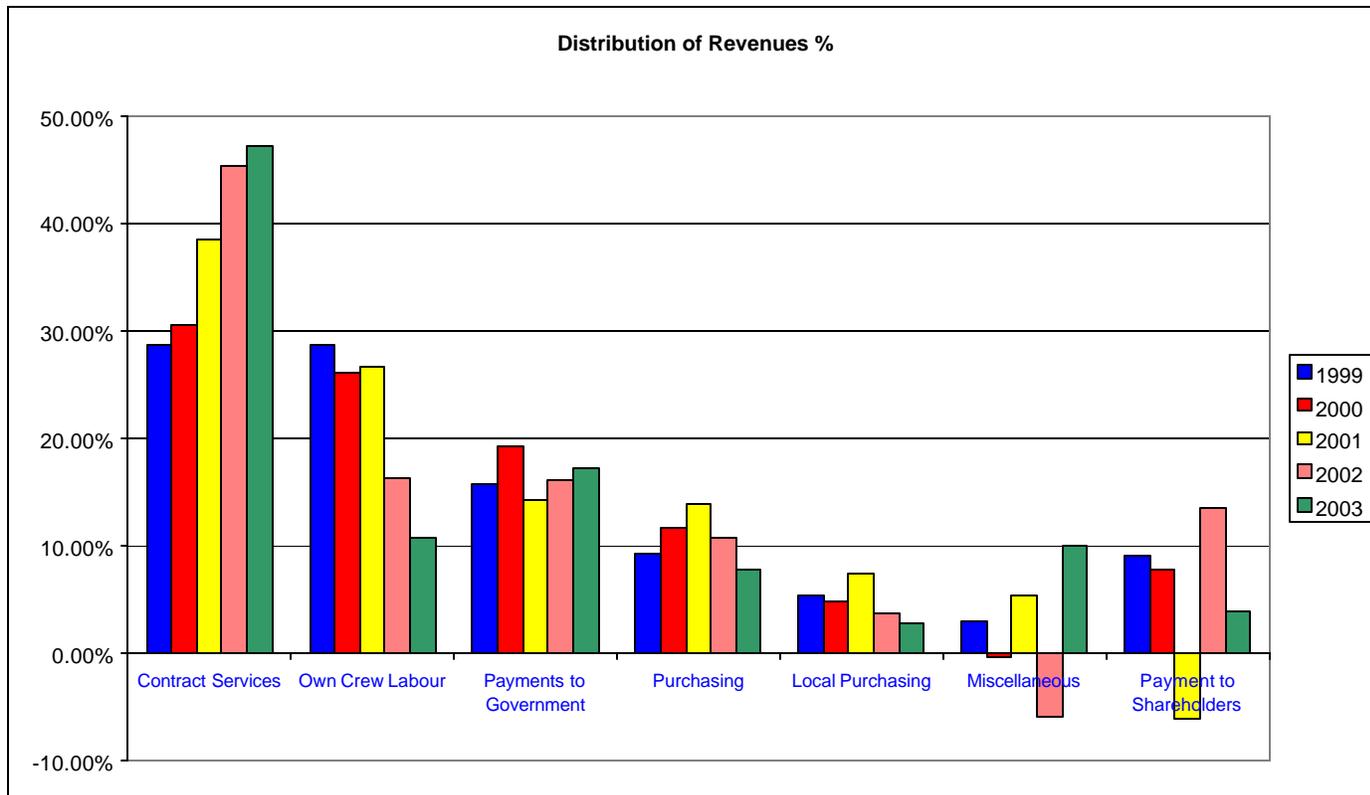
Purchasing includes all supplies, materials and services purchased that don't fit into a category listed above. Some of the services in this category would include Insurance coverage, road use charges, association dues, donations and repair supplies and services.

Local purchasing is derived by subtracting from total purchasing those amounts paid by local cheque and Central Accounts Payable to vendors north of Royston on Vancouver Island and the Northern Gulf Islands.

Miscellaneous is a forced number representing the difference between total log sales and those costs identified above and total unit profit. It includes, but is not limited to nor reconciles to the following: depletion on private timber, road amortization, silviculture liability change, inventory change/allocations, depreciation, and machine cost allocations.

Payments to Shareholders (profit) is the total unit profit including non-operating profit (includes gains on sale of land, timber and equipment).

**Performance:**



## **Notes to % Bar chart to be used in Certification report.**

### **Increase in contractor % as c.f. 1999**

In 2002 Ted Leroy Trucking was introduced to North Island Timberlands to fulfill his TFL 39 bill 13 cut obligations. This factor and continuous shift operation by stump to dump contractors pushed 2003 harvest to the highest level since the indicator began in 1999, surpassing the previous high in 2000.

The parent company crew production was 60,000 m3 over 2002 production and 38% above plan levels.

In September of 2003 the company concluded the sale of the falling business to KLM Industries and the company employees transferred to the new company, increasing the payments in this category.

Ted Leroy Trucking began operation of a contract sort yard at Menzies Bay.

### **Own Crew Labour**

The percentage of own crew labour was lower than previous years due in part to;

- Market related downtime
- Strike closures in November until year end
- Reduction of three salary positions and reduction of hourly crew.
- Transfer of high wage earning fallers to successor company

### **Payments to Government**

Stumpage rates have increased since 1999 but a large volume of private land production have kept the total cost per cubic meter and the cost as a percentage of sales much lower than would otherwise be indicated.

### **Purchasing and Local Purchasing**

The total dollar value of local purchases has increased slightly from 2002 and the new procedure is yielding more defensible numbers than was the case in the base line year. The large sales volume and low value in 2003 has created a slightly lower percentage than 2002 when the volume was much lower but the value significantly higher.

### **Miscellaneous**

Logs in Water inventories have decreased significantly from 2002 levels, drawing more dollars into cost of sales.

### **Payments to Shareholders**

North Island Timberlands posted a profit before, interest, taxes, and corporate fees. The private land generated a profit significantly larger than the distribution to shareholders shown here and covered a substantial loss on the crown side of the business. 2002 was the only year in the last six to show a breakeven or better performance since North Island Timberlands was formed in early 1998. On a cost of sales basis this unit has made significant in roads to improve profitability, however the decline in market share and value have out paced our efforts to date.

**Indicator 36: Compliance with required public consultation processes**

This indicator documents compliance with required public consultation processes. These public reviews are important for communication, including input into operational and strategic plans.

History: This indicator was developed in 2000.

Objective: 100% compliance

Acceptable Variance: None

Forecast: The forecast is the objective.

**Data:**

The Unit Forester tracks required public consultation processes, documenting requirements and achievements. The results are summarized and reported annually. The required public consultation processes include public review of Management Plans, Forest Development Plans, Pesticide Use Permits, First Nations Consultations and other reviews as required.

Inventory: A record of public participation is maintained with each process. A summary of public consultation is maintained in the Engineering Database.

Reporting: The Unit Forester compiles the data from the Engineering Database and reports on the indicator performance in the annual SFM Report.

**Performance:**

Public Consultation Process	Date of Review
Management Plan (MP)	Nov. 21 – 22, 2000
First Nations – FDP	Dec. 22, 2000
First Nations – MP	Oct. 30, 2000
Forest Development Plan (FDP)	Dec. 28, 2000 – Jan. 2, 2001
Pest Management Plan	Nov. 15, 2002
Pest Management Plan	Feb. 5, 2003
First Nations – FDP/Cedar	Feb. 14, 2003
Pest Management Plan	Feb 27, 2003
First Nations – FDP/Cedar	Mar. 10, 2003
Pest Management Plan	Mar. 19-28, 2003
First Nations – Cedar	Nov. 14, 2003
First Nations – Cedar	Nov. 28, 2003
Pest Management Plan	May 3, 2003
Pest Management Plan	May 21, 2003
Pest Management Plan	May 28, 2003
Pest Management Plan	June 19, 2003
Pest Management Plan	June 26, 2003
Forest Development Plan (FDP)	Jan. 30, 2004 – Mar. 30, 2004
Forest Development Plan (FDP)	May 7, 2004 – July 7, 2004
Forest Development Plan (FDP)	July 26, 2004 – Sept. 24, 2004

**Indicator 37: Days haul wood – dropped in 2003**

This indicator measures the extent of the work year for employees. A day in which wood is hauled usually indicates that all harvest phases are working. The attainment of maximum capacity may be effected by weather, market conditions or other constraints.

History: This indicator was developed in 2000, dropped in 2003.

Objective:

Acceptable Variance: Includes shutdown due to issues outside the control of the operation (including strike, lockout, weather, markets, etc.).

Forecast: The forecast is the objective.

**Data:**

Inventory: The number of days when wood is watered is reported on during each financial month end and reported on in the Unit financial statement by accounting.

Reporting: The Unit Forester compiles the data from the financial statement and reports on the indicator performance in the annual SFM Report.

**Performance:**

Year	Days Haul Wood		Comment
	Objective	Actual	
1995	N/A	178	
1996	N/A	166	
1997	N/A	172	
1998	N/A	203	
1999	N/A	229	
2000	233	230	8 days lost to labour dispute
2001	214	211	2 days lost to labour dispute
2002	221	221	
2003			Indicator dropped because it is not relevant.

**Indicator 38: Maintenance of a certified SFM system**

This indicator describes whether management in the DFA continues to meet the standards of defined forest certification systems.

History: This indicator was developed in 2000.

Objective: Maintain SFM certification.

Acceptable Variance: None.

Forecast: The forecast is the objective.

**Data:**

North Island Timberlands is audited to ISO 14001, CSA Z809 and CSA Plus 1163 standards annually. An external accredited auditor conducts the audit, and the results determine the status of the CSA certification. The results of the audits are reported to the Community Advisory Group and are entered into the DFA data set.

Inventory: The Unit Forester ensures that a copy of audit reports is filed in the centralized file at North Island.

Reporting: The Unit Forester reports on the indicator performance in the annual SFM Report.

**Performance:**

Audit	Date	Result
Application for ISO 14001 and CSA Z809 certification	April 6, 1999	Forest certification approved.
Surveillance audit for ISO 14001 and CSA Z809	October 18, 1999	Retained certification status.
Application for Chain of Custody CSA Plus 1163 certification	January 11, 2000	Chain of custody certification approved.
Surveillance audit for ISO 14001 and CSA Z809	August 2, 2000	Retained certification status.
Surveillance audit for ISO 14001 and CSA Z809	May 31, 2001	Retained certification status.
Chain of Custody certification	August 24, 2001	CSA COC certification approved.
Re-registration for ISO 14001 and CSA Z809 certification	April 15, 2002	Forest certification approved.
Surveillance audit for Chain of Custody CSA Plus 1163	December 11, 2002	Retained certification status.
Re-registration for ISO 14001 and CSA Z809 certification	May 23, 2003	Forest certification approved.
Surveillance audit for Chain of Custody CSA Plus 1163	Nov. 4, 2003	Retained certification status.
Surveillance audit for ISO 14001 and CSA Z809	April 26, 2004	Retained certification status.
Reverification audit Chain of Custody CSA Plus 1163	April 30, 2004	Retained certification status.

**Indicator 39: Compliance with treaty settlements and interim measures agreements**

This indicator measures compliance with treaty rights and legal requirements regarding First Nations communities.

History: This indicator was developed in 2000.

Objective: 100% compliance.

Acceptable Variance: None

Forecast: The forecast is the objective.

**Data:**

North Island Timberlands will implement measures to comply with treaty settlements or interim measures agreements that are imposed on the DFA.

Inventory: The Unit Forester will ensure that treaty rights and legal requirements are incorporated into the Environmental Management System (EMS). A summary of First Nations interactions is maintained by Ken Mackenzie.

Reporting: The Unit Forester reports on the indicator performance in the annual SFM Report.

**Performance:**

Year	Compliance	Comment
2000	N/A	There are no settlements or interim measures agreements in place. North Island Timberlands continues to monitor treaty negotiations and work with First Nations through the Kwakwaka'wakw Laich-Kwil-Tach Nations Treaty Society.
2001	N/A	There are no settlements or interim measures agreements in place. North Island Timberlands continues to monitor treaty negotiations and work with First Nations through the Kwakwaka'wakw Laich-Kwil-Tach Nations Treaty Society.
2002	N/A	There are no settlements or interim measures agreements in place. North Island Timberlands continues to monitor treaty negotiations and work with First Nations through the Kwakwaka'wakw Laich-Kwil-Tach Nations Treaty Society.
2003	N/A	There are no settlements or interim measures agreements in place. North Island Timberlands continues to monitor treaty negotiations and work with First Nations through the Hamatla Treaty Society.
2004	N/A	There are no settlements or interim measures agreements in place. North Island Timberlands continues to monitor treaty negotiations and work with First Nations through the Hamatla Treaty Society.

**Indicator 40: First Nations information sharing and referrals program**

This indicator documents opportunities for First Nations to review Forest Development Plans. These reviews are important for communication, including input into operational plans.

History: This indicator was developed in 2000.  
 Objective: Annually review forest development plan with First Nations.  
 Acceptable Variance: None  
 Forecast: The forecast is the objective.

**Data:**

Inventory: The Unit Forester documents Forest Development Plan reviews that occur with First Nations. A summary of First Nations information sharing and reviews is maintained in the Engineering Database.

Reporting: The Unit Forester reports on the indicator performance in the annual SFM Report.

**Performance:**

Year	Review	
	Date	Comment
2000	November 3, 1999	Reviewed by Kwakwilt Laich-Kwil-Tach Nations Treaty Society.
2001	December 22, 2000	Reviewed by Kwakwilt Laich-Kwil-Tach Nations Treaty Society.
2002	July 3, 2002	Reviewed by Hamatla.
	July 5, 2002	Further discussion with Rodney Arnold regarding FDP.
2003	Feb. 14, 2003	Referral subcommittee met to work on cedar needs and FDP process.
	Mar. 10, 2003	Referral subcommittee met to work on cedar needs and FDP process.
	Nov. 14, 2003	Cedar access issue for FDP amended blocks.
	Nov. 28, 2003	First Nations Cedar strategy review.
2004	Aug. 19, 2004	Reviewed by Hamatla Treaty Society.

**Indicator 41: First Nations partnership agreement**

This indicator provides a measure of participation by local First Nations in the SFM.

History: This indicator was developed in 2000.  
 Objective: A signed partnership agreement is in place.  
 Acceptable Variance: None  
 Forecast: The forecast is the objective.

**Data:**

The goal of the partnership agreement is to assist First Nation in creating economically self sufficient forest enterprises. This is done through training and support of a silviculture crew, support of students enrolled in technical or professional forestry programs, supporting feasible joint ventures, donations and communication.

Inventory: The Unit Forester will track participation, donations and partnership activities.

Reporting: The Unit Forester reports on the indicator performance in the annual SFM Report.

**Performance:**

Partnership Activities	Year						
	1998	1999	2000	2001	2002	2003	2004
Partnership Agreement signed	Yes	Yes	Yes	Yes	No (draft)	No (draft)	Yes
<u>Partnership Crew</u>							
RIR	N/A	39.7	0	0	0	0	
Person days	305.0	1,008.0	1,354.1	1,385.0	1,395.0	1,330.0	859
<u>Mentorship Program</u>							
Sponsored students	0	2	2	3	2	1	2
Summer students	0	3	4	3	2	1	0
<u>Participation</u>							
Review meetings	N/A	N/A	17	24	29	23	8
Joint venture projects supported	0	1	1	1	1	1	1
Donations program	yes	yes	yes	yes	yes	yes	yes
NIWAG participation	yes	yes	yes	yes	yes	yes	yes
Other support (programs)	N/A	N/A	4	N/A	N/A	N/A	N/A

Drop in person days is due to the changes in roadside brushing strategy and the tapering off of Riparian Restoration work.

**Indicator 42: Public education, communications and consultation program**

This indicator measures success at meeting commitments for public education, communications and consultation.

History: This indicator was developed in 2000.

Objective: 100% compliance to Plan.

Acceptable Variance: None.

Forecast: The forecast is the objective.

**Data:**

During the annual planning process that begins in October a public education program is developed and a budget put in place. The program may consist of tours, open houses, displays, appearances, sponsorships or communication. The objective is to complete all the activities listed in the program.

Inventory: It is the responsibility of the Unit Forester to develop the program and report on the completion of activities in the Indicator Data set.

Reporting: The Unit Forester reports on the indicator performance in the annual SFM Report.

**Performance:**

		2000		2001		2002		2003		2004	
		Plan	Achieved	Plan	Achieved	Achieved	Achieved	Plan	Achieved	Plan	Achieved
Tours	Programs	1	2	2	1	0	0	1	0		
	Stakeholder	1	5	1	2	3	3	2	3	2	2
	Other	As requested	20	As requested	2	2	2	1	0	37	37
Public Education	Open houses	2	5	0	0	As requested	As requested	As requested	As requested		
	School visits	0	0	4 classes	2 Children's Festival & Brownies	1	1	0	Brownies	Brownies	Brownies
	Presentations	N/A	4	1	1	1	1	1	0	1	1
Communication	Talks	As requested	0	As requested	As requested	As requested	As requested	As requested	As requested	1	1
	Stakeholder	10	26	17	26	18	18	14	17	18	18
Support	Programs	0	4	0	0	0	0	0	0	0	0
	Organizations	0	1	0	0	0	0	0	0	0	0
	Students	14	14	7	7	1	1	3	3	2	2

### Indicator 43: Corporate and Operational Research Program

This indicator provides a measure of how responsive research programs are to contributing to better quality decisions for Sustainable Forest Management.

History:	This indicator was developed in 2000.
Objective:	Research programs linked to strategic ecosystem management and operational issues.
Acceptable Variance:	Not applicable.
Forecast:	The forecast is the objective.

#### Data:

Research programs are summarized in individual reports and the "Reporting to Revenue Canada" document.

Inventory: Nanaimo Woodlands maintains the up to date documentation of Weyerhaeuser BC Coastal Group research activities. This documentation includes project plans, budgets, research activity progress, and actual dollars spent.

Nanaimo Woodlands also facilitates the transfer of "Best Practices" from Weyerhaeuser Corporate Research to the BC Coastal Group.

Reporting: The Manager of Nanaimo Woodlands is responsible for the overall program and reporting annually on this indicator.

#### Performance:

Year	Comment
1999	Current research programs are summarized in the "1999 Reporting to Revenue Canada", the "Forest Project Annual Report 1999 – 2000", Forest Renewal B.C. Summaries and the actual application of "Best Practices" on the ground.
2000	Current research programs are summarized in the "Reporting to Canada Customs and Revenue Agency," and in the "Forest Project Annual Report."
2001	Current research programs are summarized in the "Reporting to Canada Customs and Revenue Agency," and in the "Forest Project Annual Report."
2002	Current research programs are summarized in the "Reporting to Canada Customs and Revenue Agency," and in the "Forest Project Annual Report."
2003	Current research programs are summarized in the "Reporting to Canada Customs and Revenue Agency," and in the "Forest Project Annual Report."
2004	Current research programs are summarized in the "Reporting to Canada Customs and Revenue Agency," and in the "Forest Project Annual Report."

**Indicator 44: Hectares of brush treatments by method**

This indicator tracks the amount of brushing that is done on the DFA in order to meet our free growing obligations. Weyerhaeuser's intention is to minimize the use of herbicides. This indicator will track both herbicide and manual brush treatments to measure what proportion of the brushing program utilizes herbicides.

Weyerhaeuser is committed to:

- Advertise the location of treatment in Campbell River and Sayward.
- Provide NIWAG with detailed site assessments prior to treatment and post treatment assessments.

History: This indicator was developed in 2003.

Objective: Minimize the use of herbicides to less than 20% of the total brushing program.

Acceptable Variance: None.

Forecast: Brush control is essential for the establishment of new plantations and achieving our free growing obligations. Herbicides are used where manual methods are ineffective or economically impractical. We expect approximately one quarter of the brushing will utilize herbicides until other feasible alternatives are developed.

**Data:**

Herbicide use is summarized annually and reported to the Pesticide Control Branch. The Silviculture Forester is responsible for compiling this data.

**Performance:**

The table below shows percentage of use by both herbicide and manual brushing treatments.

Brushing Treatments

Year	Hectares Treated By Method						
	Manual Methods			Herbicide Methods			Grand Total Of All Methods
	Girdling	Brush Saw or Other Manual Method	%	Individual Tree	Ground Foliar	%	
2003	0	79.8	100	0	0	0	100
2004	0	52.8	100	0	0	0	100

**Indicator 45: Allocation of resources from BCCT to the development and implementation of non-herbicide alternatives specific to current herbicide uses as reported to NIWAG quarterly**

This indicator tracks the allocation of resources.

History: This indicator was developed in 2004.  
 Objective: Research and implementation of options that reduce the need to use herbicide within the DFA.  
 Acceptable Variance: None.  
 Forecast: Under review.

**Data:**

Under review.

**Performance:**

NIWAG to answer the question "Is Weyerhaeuser actively involved in researching and implementing alternatives to herbicide use?".

Year	Comment
2004	<ul style="list-style-type: none"> <li>▪ Development of a biological control strategy for management of weedy <i>Rubus</i> spp. in Conifer Regeneration Sites (Dr. Simon F. Shamoun).</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Development of a bioherbicide for control of Salal (<i>Gaultheria shallon</i>) in Conifer Regeneration Sites (Dr. Simon F. Shamoun). Pacific Forestry Centre.</li> </ul>

## **Indicator 46: Aboriginal Employment on the DFA**

This indicator tracks aboriginal employment on the Defined Forest Area.

History: This indicator was developed in 2005.

Objective: 6% of employment on the Defined Forest Area to be filled by local (Hamatla) Status First Nations people.

Acceptable Variance:  $\pm$  5%

Forecast: The forecast is the objective.

### **Data:**

Under review.

### **Performance:**

NIWAG to answer the question "Is the Aboriginal Employment Objective being diligently pursued?"

\* Note: Hamatla requested implementation of a tracking system.