Sustainable Forest Management Plan

North Island Timberlands Unit

BC Coastal Group

Weyerhaeuser Company

July 1, 2000

Version 2.5

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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.

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. In particular, this plan will evolve to incorporate the Weyerhaeuser BC Coastal Group's forest management strategy directed at phasing in new Variable Retention silviculture systems[(1)].

The SFM Plan includes this introductory overview and four sections:

Section 1 North Island's Year 2000 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 Summary description of the BC Coastal Group's "Forest Project," a new (1998) forest management strategy with significant implications for evolving definitions of sustainable forest management in the DFA.

Section 3 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 1999 performance.

Appendix 2 The DFA Data Set, including monitoring and reporting information, as well as historic trends, for the indicators.

[1] The BC Coastal Group's "Forest Project" strategy, announced in June 1998, is on schedule to meet its target of a five-year transition from clearcutting to variable retention silviculture systems. Final definition of stewardship zones referenced in the strategy is awaiting further guidance from provincially established land use planning processes. See Section 3.

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, Weyerhaeuser staff focused mainly on identifying the existing management elements that meet CSA system requirements.

The results of these two approaches[2] were then merged into one consensual document. (See Appendix 1 for a report on 1999 results.)

This SFM Plan Version 2.5 is the first major revision to the plan. It reflects the results of a management review of the operation's 1999 performance and of ongoing discussions with NIWAG and other stakeholders. The most significant change in this revision is the addition of 21 new SFM indicators and corresponding objectives with which to better gauge North Island's performance against previously defined and some new goals.

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 will find legal expression in the TFL 39 Management Plan, which is now undergoing its scheduled five-year review and revision. 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.

The indicators in the plan are numbered from (1) to (43). The same numbering is retained throughout the document and in its appendices.

Progress towards 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.

[2] 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 Silviculture Prescriptions. 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.

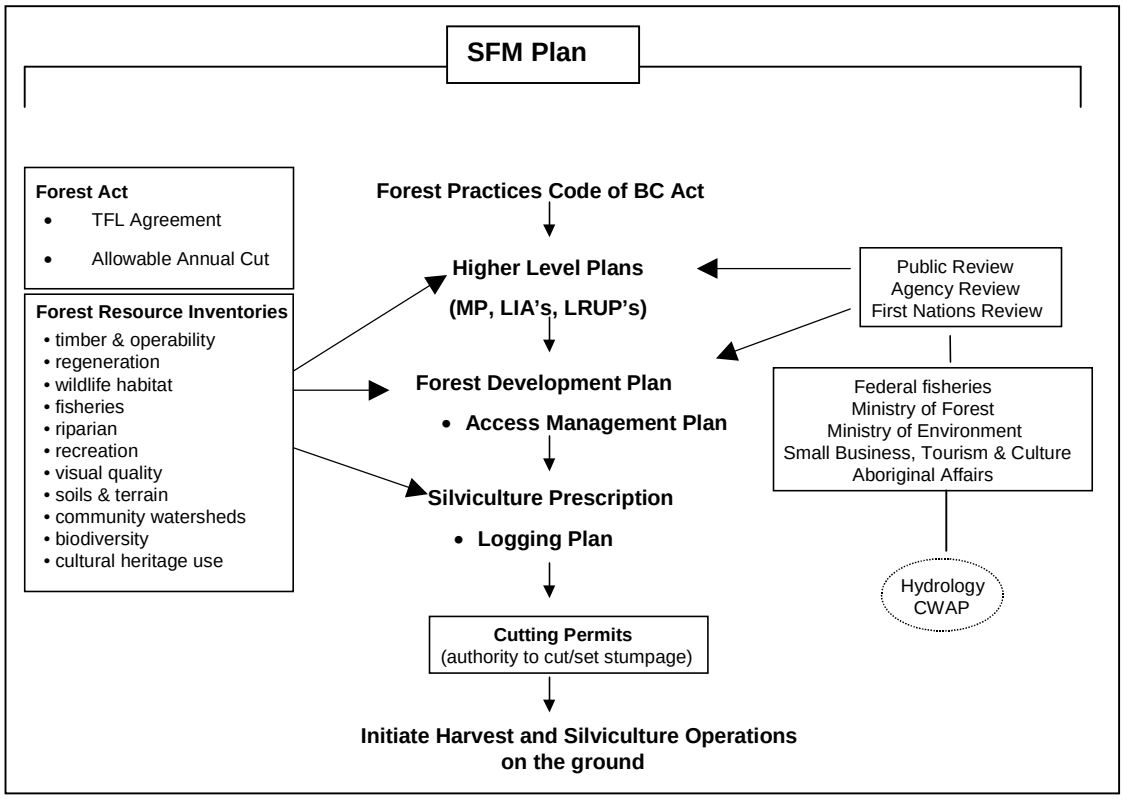


Figure 1: **Links between Plans (TFL - with Forest Practices Code)**

SECTION 1

SFM Criteria and Indicators

This section of the SFM Plan describes North Island's SFM Values, Goals, Indicators and Objectives for the year 2000, 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: Conservation of Biological Diversity) and **Critical Elements** (e.g., 1.1: 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: A healthy forest that is ecologically and economically productive), **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 steps taken in the short term towards the Goals; they are frequently expressed as a level of an Indicator.
- **Acceptable Variances** specify the range of performance results (+ and/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 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 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 A healthy forest that is ecologically and economically productive

Economic productivity is not addressed by goals or indicators in this section nor does it directly relate to ecosystem diversity.

Goals:

- Maintain ecosystem diversity at quantitative and qualitative levels to support viable populations of existing species.
- Maintain the diversity of tree species and age classes distributed across scales from landscape-level to stand-level.

Indicators:

(1) Pct of primary, secondary and tertiary species (2nd growth)

Objective: Maintain the percentage of second growth species.

Acceptable Variance: ± 20% by species.

(3) Pct of forest area more than 60 years old

Objective: A minimum of 36%.

Acceptable Variance: ±20% of the 36%.

This indicator will be refined as the Forest Project (See Section 3) 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: The forest age class distribution has historically been implicit in the AAC determination. It is now being redefined through the 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 silviculture systems

Objective: 50% of opening area harvested

Acceptable Variance: Greater than 50%

(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 within the DFA under special management

Objective: 100%

Acceptable Variance: Zero.

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

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

Acceptable Variance: Variance defined by level of old growth present in 1997 forest inventory.

1.2 Species Diversity

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

1.21 Protection of ecological and economic productivity

Goals:

- No known species shall become extinct as a result of Weyerhaeuser management activities.
- Maintain a mix of tree species similar to the current species mix.

Indicators:

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

Objective: Maintain the percentage of second growth species.

Acceptable Variance: ± 20% within a species.

(2) Gross volume by species of mature forest

Objective: Maintain the percentage of mature species.

Acceptable Variance: ± 20% within a species.

(4) Number of identified species at risk

Objective: Zero. annual increase in number of species at risk as a result of management activities in the DFA.

Acceptable Variance: Zero.

Programs:

Weyerhaeuser has reviewed the habitat requirements of all vertebrate species on its tenure and has used those as a guide for key ecological attributes in the implementation of variable retention. Weyerhaeuser is involved in monitoring pilot projects aimed at developing a comprehensive adaptive management and monitoring program in support of variable retention by 2003.

1.3 Genetic Diversity

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

1.31 Adaptability to change

Goals:

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

Indicators:

(5) Pct of seed that is registered or certified

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

Acceptable Variance: Zero.

(6) Pct of harvested area that is reforested

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

Acceptable Variance: Zero.

(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%

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

Objective: 100%

Acceptable Variance: Zero.

(27) Total number of trees at "free to grow" compared to planted total

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

Acceptable Variance: Zero.

1.4 Management Strategy

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

Substantial areas, largely old growth, 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 Plans).

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. Recent direction from the MoF and the MELP has placed emphasis on old seral stage representation at the landscape level and on variation in stand structure, primarily through Wildlife Tree Patches (WTPs).

The MoF and MELP have developed a Regional Landscape Unit Planning Strategy. Draft landscape units have been defined and biodiversity emphases have been assigned to these units. These plans have yet to be approved.

Weyerhaeuser is continuing to develop a capability for landscape reporting and spatial forecasting. This includes reporting by biogeoclimatic 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.

At a more general level, age class distributions are reported for major forest units (e.g., units or blocks) in Management Plans.

In June 1998, BC Coastal Group (then MacMillan Bloedel) announced a new forest management strategy (commonly called the Forest Project). Key components include phasing out clearcutting in favor of variable retention over a five-year period and an increase in conservation of old growth forests and wildlife habitat on BC lands managed by the company. Section 3 includes a fuller description of the Forest Project.

2.0 Maintenance and Enhancement of 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 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 Ecological and economic productivity of ecosystems

Goal:

Maintain and enhance forest ecosystem health and productivity.

Indicators:

(6) Pct of harvested area that is reforested

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

Acceptable Variance: Zero.

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

Objective: Less than 7% of the area in openings to be in permanent access structures (annual average).

Acceptable Variance: + 1% (i.e. less than 8%).

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

Objective: Zero fires and Zero hectares.

Acceptable Variance: One fire and 5 hectares

2.12 Healthy forest condition

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:

(6) Pct of harvested area that is reforested

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

Acceptable Variance: Zero.

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

Objective: Less than 7% of the area in openings to be in permanent access structures (annual average).

Acceptable Variance: +1% (i.e., 8% total).

(8) Area that does not meet free to grow commitments

Objective: Zero ha. FTG non-compliance.

Acceptable Variance: Zero.

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

Objective: Zero fires and Zero hectares.

Acceptable Variance: One fire and 5 hectares.

(28) Number of reportable oil 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

Programs:

Annual fire pre-organization plan for responding to emergency fire situations.

Annual overview of insect and disease issues in the DFA.

BC Coastal Group Forest Project.

2.2 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 Adequate regenerative capacity

Goal:

Maintain and enhance forest ecosystem condition and productivity.

Indicators:

(8) Area that does not meet free to grow commitments

Objective:	Zero ha FTG non-compliance.
Acceptable Variance:	Zero.

(10) Area of regeneration failure

Objective:	Regeneration failure on less than 5% of the current unstocked area.
Acceptable Variance:	Up to 10% of the area established (by planting and natural regeneration).

2.22 Balanced distribution of forest types and age classes

Goal:

Maintain the distribution of different age classes and species.

Indicators:

(1) Pct of primary, secondary and tertiary species (2nd growth)

Objective:	Maintain the percentage of second growth species.
Acceptable Variance:	± 20% by species.

(11) Forest age class distribution

Objective:	The forest age class distribution has historically been implicit in the AAC determination. It is now being redefined through the 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%

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

Objective:	MoF biodiversity guidebook targets defined by variant and landscape unit.
Acceptable Variance:	Variance defined by level of old growth present in 1997 forest inventory.

2.23 Forest health

Goal:

Maintain the ecological suitability of reforested species to sites.

Indicator:

(5) Pct of seed that is registered or certified

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

Acceptable Variance: Zero.

2.3 Ecosystem Productivity

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

2.31 Biologically productive forests

Goal:

Maintain the habitat for identified species.

Indicators:

(4) Number of identified species at risk

Objective: Zero annual increase, in number of species at risk, as a result of management activities in the DFA.

Acceptable Variance: Zero.

(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 silviculture systems

Objective: 50% of opening area harvested.

Acceptable Variance: Greater than 50%

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

Objective: MoF biodiversity guidebook targets defined by variant and landscape unit.

Acceptable Variance: Variance defined by level of old growth present in 1997 forest inventory.

2.4 Management Strategy

2.41 Forest protection and health

Weyerhaeuser's goals are to protect the forest and to maintain a healthy forest condition. The SMOOP for TFL 39, MP #8, page 4 describes forest protection and health goals as to:

- 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.

The fire protection strategy is addressed in the Management Plans for both TFL 39 and Managed Forest (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.

The statistics on area burned and the cause of fires is reported in TFL annual reports.

An insects and disease pest management strategy is attached to TFL 39, MP #7 and will be updated for inclusion in MP #8. Reference to parts of this strategy is also included in MF 19, MP #2. Insect infestations, disease outbreaks and associated management activities are reported in the TFL 39 Annual Report.

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. Refer to the SMOOP for TFL 39, MP #8.

2.42 Soil degradation

Roads, landings and other compacted areas remove area from the productive forest landbase. These areas are estimated in post harvest assessments. This data will be compiled and reported annually for both TFL and MF harvest areas.

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

Also refer to TFL 39, MP #7 and MF 19, MP #2.

2.43 Reforestation

Restocking standards (included in TFL, MP #7 and MF 19, MP #2) 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 compare the NSR area with the average harvest area of recent years; the objective has been to manage the NSR to be below three years of logging. These results have been reported in the TFL 39 Annual Report.

3.0 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 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 Water quality supports aquatic life and/or community use

Soil quality supports forest productivity

Goal:

Conserve (maintain and restore) the productive capacity of water and soil.

Indicators:

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

Objective:	Less than 7% of the area in openings to be in permanent access structures (annual average).
Acceptable Variance:	+ 1% (i.e. less than 8%).

(12) Area of water bodies

Objective:	No change in area.
Acceptable Variance:	Zero.

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

Objective:	Zero.
Acceptable Variance:	Zero.

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

Objective:	Zero.
Acceptable Variance:	Zero.

(33) Water quality measurements for selected watersheds

Objective:	Turbidity less than 5 NTU; temperature less than 15^{o}C.
Acceptable Variance:	+ 10%.

Program:

Compliance Monitoring Database.

3.2 Soil Resources

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

3.21 Protection of ecosystem health and productivity

Goal:

Minimize soil and water degradation resulting from management activities.

Indicators:

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

Objective: Less than 7% of the area in openings to be in permanent access structures (annual average).

Acceptable Variance: + 1% (i.e. less than 8%).

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

Objective: Zero.

Acceptable Variance: Zero.

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

Objective: Zero.

Acceptable Variance: Zero.

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

Objective: Zero as result of post-1995 activities.

Acceptable Variance: Zero.

3.3 Water resources

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

3.31 Stream water quality

Goal:

Maintain water quality.

Indicators:

(12) Area of water bodies

Objective: No change in area.

Acceptable Variance: Zero.

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

Objective: Zero.

Acceptable Variance: Zero.

(33) Water quality measurements for selected watersheds

Objective: Turbidity less than 5 NTU; temperature less than $15^{o}C$

Acceptable Variance: Plus 10%

Programs:

Weyerhaeuser compliance monitoring program (# slides / occurrences).

Fisheries programs: stream identification.

Water quality measurements in the Oyster River and the Tsitika River.

3.4 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, the Coast Fish/Forestry 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.

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 #7).

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

The Coastal Watershed Assessment Procedure (CWAP) has been applied to a number of watersheds according to a priority list developed by the MELP.

The Oyster River Watershed (in MF 19) and Newcastle Creek (in TFL 39) are water supply areas for local communities. Weyerhaeuser has participated in the Oyster River Watershed Management Committee for the last decade. In 2000, Weyerhaeuser in cooperation with Timber West completed a watershed assessment on the Oyster River watershed at the request of the Oyster River Watershed Management Committee.

4.0 Forest Ecosystem Contributions to Global Ecological Cycles

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

4.1 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, and
- forests are protected from sustained deforestation or conversion to other uses.

4.11 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:

(6) Pct of harvested area that is reforested

Objective:	Reforest 100% of the harvested area within 3 years on average from harvest.
Acceptable Variance:	Zero.

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

Objective: Less than 7% of the area in openings to be in permanent access structures (annual average).

Acceptable Variance: + 1% (i.e., less than 8%).

(8) Area that does not meet free to grow commitments

Objective: Zero ha of FTG non-compliance.

Acceptable Variance: Zero.

(10) Area of regeneration failure

Objective: Current regeneration failure is less than 5% of the current area established.

Acceptable Variance: Less than 10% of the current area established.

(12) Area of water bodies

Objective: No change in area.

Acceptable Variance: Zero.

(13) Area sold out of the DFA

Objective: Zero.

Acceptable Variance: Zero.

4.2 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 2.42 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 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 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 Flow of benefits from the forest – non-timber resources

Goal:

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

Indicators:

(14) Annual harvest level

Objectives:	TFL: Harvest the AAC allocation over the five year cut control period. (2000 plan is 1,247,000 m^3.)
	MF: Achieve the annual plan. (2000 plan is 153,000 m^3.)
Acceptable Variance:	TFL: ±50% of the AAC on an annual basis within the five year cut control period.
	MF: ±20% of plan.

(18) Kilometers of active road

Objective:	Retain active road network.
Acceptable Variance:	±20%

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

Objective:	Ministry of Forests biodiversity guidebook targets defined by variant and landscape unit.
Acceptable Variance:	Variance defined by level of old growth present in 1998 forest inventory.

5.12 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:

(3) Pct of forest area more than 60 years old

Objective:	36%
Acceptable Variance:	± 20% of the 36%

(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%

(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%
Acceptable Variance:	Zero.

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

Objective:	Ministry of Forests biodiversity guidebook targets defined by variant and landscape unit.
Acceptable Variance:	Variance defined by level of old growth present in 1997 forest inventory.

5.13 Flow of benefits from the forest – recreation and tourism

Goal:

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

Indicators:

(17) Number of recreation sites maintained

Objective:	Continue the maintenance of existing sites.
Acceptable Variance:	Zero.

(18) Kilometers of active road

Objective:	Retain active road network.
Acceptable Variance:	±20%

(20) Advisory group active membership

Objective:	All sectors are represented.
Acceptable Variance:	Not applicable.

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

Objective:	100%
Acceptable Variance:	Zero.

5.14 Flow of benefits from the forest – community stability

Goals:

- Community receives a fair share of benefits and participates in management planning.
- Maximize work year for employees harvesting the cut.

Indicators:

(14) Annual harvest level

Objectives:	TFL: Harvest the AAC allocation over the five year cut control period. (2000 plan is 1,247,000 m^3.)
	MF: Achieve the annual plan. (2000 plan is 153,000 m^3.)
Acceptable Variance:	TFL: ±50% of the AAC on an annual basis within the five year cut control period.
	MF: ±20% of plan.

(20) Advisory group active membership

Objective:	All sectors are represented.
Acceptable Variance:	Not applicable.

(35) Distribution of revenues by percentage

Objective:	Track distribution
Acceptable Variance:	Not applicable

(36) Compliance with required public consultation processes

Objective:	100%
Acceptable Variance:	Zero.

(37) Days haul wood

Objective:	233 days.
Acceptable Variance:	Includes shutdown due to issues outside the control of the operation (including strike, lockout, weather, markets, etc.).

5.15 Flow of benefits from the forest – timber resources

Goal:

The harvest level is based on the long term productivity of the landbase and contributes to long and short term community stability.

Indicator:

(14) Annual harvest level

Objectives:	TFL: Harvest the AAC allocation over the five year cut control period. (2000 plan is 1,247,000 m^3.)
	MF: Achieve the annual plan. (2000 plan is 153,000 m^3.)
Acceptable Variance:	TFL: ±50% of the AAC on an annual basis within the five year cut control period.
	MF: ±20% of plan.

5.2 Resource Businesses

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

5.21 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.
- contributes to Weyerhaeuser's vision to be the best forest products company in the world.

Indicators:

(14) Annual harvest level

Objectives:	TFL: Harvest the AAC allocation over the five year cut control period. (2000 plan is 1,247,000 m^3.)
	MF: Achieve the annual plan. (2000 plan is 153,000 m^3.)
Acceptable Variance:	TFL: ±50% of the AAC on an annual basis within the five year cut control period.
	MF: ±20% of plan.

(15) North Island Timberlands margin

Objective:	\$5.33/m^3 for 2000.
Acceptable Variance:	Greater than 100% of \$5.33/m^3.

(16) Recordable Incident Rate

Objective:	4.8 for 2000.
Acceptable Variance:	Less than target.

(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 Management strategy

Employment in the DFA is important to the economic health of the local communities, particularly Sayward and Campbell River. In 1999 North Island Timberlands operations provided more than 457 person years of employment.

A comprehensive review of management strategies and operations occurred in late 1997 and early 1998.

The company reaffirmed its commitment to the solid wood products industry in British Columbia. Weyerhaeuser'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 are being developed to achieve these goals. The strategies include:

- A dedicated effort to improve safety in the work place.
- Restructuring of operations to reduce overhead costs.
- A new forest management strategy (the Forest Project) was announced in June of 1998. The strategy is in response to market and general public concerns. Key components include phasing out of clearcutting over a five-year period to be replaced by variable retention and conservation of more old growth forest.

It is expected that a positive market response to the Forest Project will help to stabilize short-term harvest and employment levels in local communities.

Weyerhaeuser 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), and analysis for MP #8 will similarly be on a block basis.

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. North Island reports this measure monthly.

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. For example, poor market conditions in Japan and increased costs of regulation and additional stumpage charges resulted in reduced harvest levels in the TFL during 1997 and 1998.

An inventory of approvals (in the TFL) for road development and harvesting provides flexibility to take advantage of changing market opportunities. Weyerhaeuser in conjunction with the Ministry of Forests has developed such Standing Timber Inventory (STI) targets.

The DFA provides varied recreational opportunities for both locals residents and visitors to the area. Recreation strategies are included in both TFL and MF management plans. Several recreation sites have been developed and maintained by Weyerhaeuser, and harvesting activities are restricted in some areas because of recreation and visual landscape values.

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.

Recognition and management of Cultural Heritage Resource sites is discussed in Criterion 6.2 below.

6.0 Accepting Society's Responsibility for Sustainable Development

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

6.1 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 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 the SFM.

Indicators:

(20) Advisory group active membership

Objective:	All sectors are represented
Acceptable Variance:	Not applicable

(36) Compliance with required public consultation processes

Objective:	100% compliance.
Acceptable Variance:	Zero.

(39) Compliance with treaty settlements and interim measures agreements

Objective:	100% compliance.
Acceptable Variance:	Zero.

(40) First Nations information sharing and referrals program

Objective:	Annually review forest development plan with First Nations.
Acceptable Variance:	Zero.

(41) Existence of an effective First Nation partnership agreement

Objective:	100% acceptance of practices and management by First Nations.
Acceptable Variance:	Zero.

6.12 Certainty of tenure

Goal:

Accept decisions of the treaty process.

Indicator:

(39) Compliance with treaty settlements and interim measures agreements

Objective:	100% compliance.
Acceptable Variance:	Zero.

6.13 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:

(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 (over a 10-year period).
Acceptable Variance:	±20% within old growth frequency

(40) First Nations information sharing and referrals program

Objective:	Annually review forest development plan with First Nations.
Acceptable Variance:	Zero.

6.14 Better quality decisions

Goals:

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

Indicators:

(20) Advisory group active membership

Objective:	All sectors are represented
Acceptable Variance:	Not applicable

(35) Distribution of revenues by percentage

Objective:	Track distribution
Acceptable Variance:	Not applicable

(36) Compliance with required public consultation processes

Objective:	100% compliance.
Acceptable Variance:	Zero.

(42) Public education, communications and consultation program

Objective:	100% compliance with Plan
Acceptable Variance:	Zero.

(43) Corporate and operational research activities

Objective:	Program linked to strategic and operational issues.
Acceptable Variance:	Not applicable.

Programs:

Kwakiutl Laich-Kwil-Tach Nations 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.
- The Enhanced Forest Management Pilot Project (EFMPP) project located in the TFL portion of the DFA.
- The Weyerhaeuser Growth and Yield program includes installations in the DFA.

6.2 Management Strategy

Public participation processes are central to achievement of these goals. An SFM advisory group provides input on an ongoing basis. There is a 25 year history of public involvement in the DFA. The process for developing MP #8 for TFL 39 is under way. This 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 the advisory group. 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, developing joint ventures and supply 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.

These major research projects are located in the DFA:

- The Montane Alternative Silvicultural System (MASS) Project located in the MF 19 portion of the DFA is a multi-agency cooperative testing new approaches to harvesting and regeneration. Overall objectives are to test alternative silvicultural systems for coastal montane forests, document the operational costs and feasibility and study the biological and silvicultural impacts. There are 21 integrated research studies investigating many aspects of this long-term experiment.

- Weyerhaeuser has been actively involved in the provincially endorsed Enhanced Forest Management Pilot Project (EFMPP) in Block 2 of TFL 39. The EFMPP, funded by FRBC, focuses on spatial forecasting and analysis of variable retention and the development and implementation of an adaptive management and monitoring program. The results of this initiative will assist in projecting the impacts of management and in developing management strategies.

Other issues regarding sustainability and quality of life for local communities are covered in 5.2 above.

SECTION 2

Summary of BC Coastal Group Forest Management Strategy

(The Forest Project)

Key components of the Weyerhaeuser BC Coastal Group's Forest Project strategy include phasing out clearcutting over a five-year period (to end 2003), to be replaced by variable retention (VR) harvesting, and increasing the conservation of old growth forests and wildlife habitat on BC lands managed by the Coastal Group.

The VR forest management system is intended to directly address the underlying public concerns as expressed in international agreements (often referred to as new values) 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, and riparian and early and late seral stages.

In order to meet landscape objectives, BC Coastal Group is dividing forest lands into three distinct Stewardship Zones (old growth, habitat and timber), reflecting distinctly different management priorities. The requirements for each zone specify an appropriate level of minimum retention and a range of silvicultural systems from group selection to aggregated (grouped) retention. This strategy allows 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 timber zone areas using group retention, and 5% in timber zone areas 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 Coastal Group'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 MELP staff and other stakeholders.

Reporting procedures have been developed to show progress in the transition from clearcutting to variable retention and the amount of retention in harvest blocks.

Two working groups of specialists from Weyerhaeuser, the MoF and the MELP has been formed to deal with the many issues that the Forest Project strategy raises, and to ensure that the strategy is consistent with the Crown's objectives. Weyerhaeuser 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 is convened annually to review and comment on environmental aspects of the Forest Project implementation. A summary of the panel's comments is published and publicly available on request.

Forest Project 1999 Results

The Coastal Group's goal is to phase-in variable retention over five years, increasing the amount by 20% per year (i.e., 100% VR in 2003). Table 1 illustrates the progress towards this goal. Coastal Group completed 35% of the harvested area using variable retention in 1999 the first full year of implementation. The phase-in is proceeding more quickly on private land, which does not bear the longer planning and approval process required on public land. Timberlands Divisions accomplished this with an improved safety record over 1998 becoming the safest forest operations in coastal BC.

TABLE 1. Progress on implementation of variable retention.

Variable Retention		Hectares	%
Group Retention		2 303	25
Dispersed Retention		643	7
Shelterwood, Selection, Other		286	3
	Subtotal	***3 232***	***35***
Conventional			
Clearcut		4 341	47
Clearcut with reserves		1 642	18
Seed tree, patch cut		25	<1
	Subtotal	***6 008***	***65***
TOTAL		**9 240**	

Most of the variable retention cutblocks used the retention silvicultural system, leaving trees in groups (over 0.25 ha in size), or as dispersed individual trees or small groups of a few trees. Overall, 28% of the variable retention harvesting was done with Group Retention, 20% with Dispersed Retention and 43% with a combination of both approaches (included with Group in Table 1). The average cutblock retention level in 1999 was 19%, which includes other reserves (e.g., riparian, wildlife tree patches) within the cutblock boundaries. Shelterwood and selection systems with reserves were used for a minor portion of the harvest. Half of the Dispersed Retention was done at the 5% basal area minimum level. Roughly equal amounts of second growth and old growth forests were logged using variable retention. The company continued to develop an experimental harvesting technique for single stems, whereby a helicopter removes a cut and limbed tree without its falling to the ground. This technique has applications on very sensitive terrain, or as a first pass removal of high value stems prior to conventional yarding.

Introduction of variable retention systems poses the potential for higher safety risks in the falling and yarding phases of logging. However, thanks to an increased emphasis on employee safety, safety performance in timberlands operations has continued to improve during VR phase-in. To date, about 250 people have completed a 3- or 4-day training course covering safety, objectives, prescriptions and layout for VR.

In addition to the company's own internal monitoring programs, the Coastal Group also retained an independent consulting firm to evaluate 1999 VR cutblocks in order to monitor performance and to identify areas for improvement. This included assessment of 38 VR cutblocks, representing 1,147 hectares or 35% of total VR harvesting in 1999.

The review and assessment of monitoring results include internal divisional review, public review through the TFL Management Plan process, periodic government review and annual scientific review by an external panel of experts.

The company has established two special working groups to assist in Forest Project implementation:

- The VR Working Group is an internal team of foresters, forest engineers and biologists. Its mandate is to develop policies, guidelines and tools for VR implementation, to share learning experiences, and to review performance.
- The Adaptive Management Working Group consists of a group of respected scientists from the MoF, MELP, the UBC Centre for Applied Conservation Biology and Weyerhaeuser. The group's objective is to have a fully functional adaptive management and monitoring program in place by 2003.

Monitoring programs are a key component in assessing the effectiveness of practices in meeting management goals. Special monitoring fieldwork in 1999 included assessment of 55 cutblocks (22% of all harvested areas) for structure, birds, bryophytes (e.g., mosses and liverworts) and terrestrial gastropods (e.g., snails and slugs).

Variable retention covers a wide range of treatment options (i.e., including silvicultural systems that run the gamut from single tree removal to single tree retention). The recent large-scale introduction of many of these systems on the BC Coast raises many questions that can not be resolved by reference to research from other areas. Those questions relate to such subjects as growth and yield, regeneration, forest organisms, habitat attributes, forest health, windthrow and economic costs.

Responsive to the need for better information, the Coastal Group over the next four years will establish a series of 15 experimental cutblocks. Each block, covering an area of 80 to 100 hectares, will feature a random allocation of four or five treatments: clearcut, uncut (old growth or 2nd growth), and two or three variable retention alternatives. The key questions to be addressed in this long-term experiment are:

1. What is the effect of the amount and pattern of retention relative to the questions identified above? and
2. What is the effect of size of opening and timing of adjacent openings relative to those questions?

SECTION 3

Glossary

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
FPC	Forest Practices Code
FRBC	Forest Renewal British Columbia
HCV	High Conservation Value
ISO	International Organization for Standardization
MELP	BC Ministry of Environment, Lands and Parks
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
PSP	Permanent Sample Plot
RIR	Recordable Incident Rate
SFM	Sustainable Forest Management
SP	Silviculture Prescription
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.

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 to grow: 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.

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): Number of incidents per 100 workers that require a doctor's medical attention or result in lost work time. (See Recordable Incident Rate.)

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 failed, partially or completely to regenerate either naturally or by planting or seeding to the specified or desired free growing 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.

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

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

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.

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 (SP): 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

WEYERHAEUSER

NORTH ISLAND TIMBERLANDS UNIT

1999 SFM Performance

NORTH ISLAND TIMBERLANDS UNIT

Sustainable Forest Management 1999

Summary Report

In May 1999, North Island Timberlands became the first operation anywhere to be independently certified under the Canadian Standards Association's sustainable forest management standard. The certified area includes 230,000 hectares of public and private forest lands near the communities of Campbell River and Sayward on Vancouver Island, British Columbia.

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

North Island Woodlands Public Advisory Group (NIWAG) continues to play a key role in North Island's SFM program. In 1999, the group consisted of members from: Campbell River Chamber of Commerce, Campbell River Environmental Council, District of Campbell River, Dyer Logging Co., International Wood and Allied Workers of Canada, Kwakuitl / Laich-Kwil-tach First Nation, Regional District of Comox-Strathcona, Sayward Fish and Game Club, T-Mar Industries, and the Village of Sayward. In addition, the BC Ministry of Forests participated as a contributing observer, and the perspective of Comox First Nation was included through a separate dialogue.

The following summarizes key points from North Island's 1999 SFM report:

Economic Performance

North Island Timberlands was a significant contributor to the regional economy in 1999. It directly employed 457 individuals and paid out $37.7 million in salaries, wages and benefits. This comprised 28% of total North Island revenues. Of the remainder, 26% went to contract operations, 16% to stumpage and other government taxes, 14% to the purchase of various goods and services (the majority spent locally), 8% to operating profit, and 8% to various other costs.

One SFM Plan goal was to maximize the work year for employees. Improved market conditions allowed North Island to provide almost 100 thousand days direct employment in 1999, a one-third increase over 1998.

North Island's profitability is a key measure of the its economic sustainability. The operation earned an average $7.35 per cubic metre ($m^3$) harvested in 1999. These earnings were entirely due to the company's profitable operations on private land. Operations on crown land incurred a loss of $3.16 per m^3.

The annual harvest volume is a general indicator of the level of economic activity. In 1999, North Island harvested 1.3 million m^3. Of that, 1.1 million m^3 – 87% of North Island's Annual Allowable Cut – was harvested on crown land.

Social Performance

Safety is a core value for all Weyerhaeuser operations. North Island aimed to achieve a Recordable Incident Rate (RIR) of 7.2 or better in 1999. (MIR measures the number of incidents per 100 workers that require a doctor's medical attention or result in lost work time.) North Island's 1999 rate was 9.9. Although short of the target, this is an improvement from the rates of 10.8 in 1998 and 22.3 in 1997.

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. In 1999, total area under management remained unchanged, excepting the sale of a 4.5 hectare parcel that was previously leased for industrial purposes.

North Island maintained four free-use recreational sites in 1999, unchanged from the previous year.

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) The "area awaiting restocking" measures promptness of initial reforestation. It consists of the total area in which reforestation by either planting or natural regeneration has not been confirmed. To make this number meaningful, it is compared to the average annual area harvested. North Island's objective is that the un-reforested area should be smaller than the area harvested in the previous 3 years. The 1999 total was equal to 1.9 years' harvest area.

(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 so-called free to grow assessment, which typically occur 12-13 years after harvest. This equaled 17.6 hectares in 1999 vs. an objective of 0 hectares.

Trends in the age class distribution and relative percentages of dominant tree species offer some measurable indicators of biodiversity attributes. Just over 50% 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.

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 7% of the area in 1999 openings would be in permanent access structures. The result was 4.9%.

The provincial Ministry of Environment, Lands and Parks 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. No new species were identified in 1999.

Review and Improvement

North Island's performance is subjected to an annual management review. 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.

1999 performance results were also reviewed and discussed with the North Island Woodlands Advisory Group. As a result, a number of substantial changes and additions to performance indicators were proposed for inclusion in the SFM Plan for 2000. The failure to achieve profitability on crown lands remains a continuing concern. NIWAG members emphasized the importance of sustaining local economic benefits.

An independent audit of North Island's environmental management system by Quality Management Institute identified four minor non-conformances and two areas for improvement. All were addressed and incorporated into the system.

This document is a summary of North Island's performance against its 1999 Sustainable Forest Management Plan. For further information, please contact Division Forester, North Island Timberlands Unit, 250 287-5000, or write to P.O. Box 6000, Campbell River, BC V9W 5E1.

Report on Performance of
1999 Indicators and Objectives
CAN/CSA-Z809-96
ISO-14001

North Island Timberlands Unit

As of December 31, 1999
Reported on June 6, 2000

CAN/CSA-Z809-96 Indicators

Indicator	#	Objective	Acceptable Variance	1999 Result	Summary and discussion of results outside range	
Pct of primary, secondary and tertiary species weighted by hectare (for 2nd growth)	1	Maintain percentage of second growth species	± 20% 1997 inventory baseline	All species fall within range of variance		
Gross volume by species of mature forest	2	Maintain percentage of mature species	± 20% 1997 inventory baseline	All species fall within range of variance		
Pct of forest greater than 60 years old	3	36%	More than 36%	55.3%		
Number of identified species at risk	4	Zero. annual increase	None	The annual revision to MELP vertebrate animal tracking list was not available at June 4,2000.		
Pct of seed used that is registered or certified	5	100%	Zero.	100%		
Pct of harvested area that is reforested (years of equivalent NSR)	6	3 years	Zero.	1.9 years		
Pct of openings' area occupied by permanent access structures	7	Less than 7%	Less than 8%	4.9%		
Area that does not meet free to grow (FTG) commitments	8	Zero. hectares of FTG non-compliance	Zero.	17 hectares	17	Non-compliance due to regeneration failures. Fourteen hectares are expected to be FTG by 2001 and three hectares by 2002.
The number of forest fires caused accidentally by industrial activity	9	0	1 per year	1		
Area of regeneration failures	10	Current regen failure is less than 5% of current area established	Current regen failure is maximum 10% of current area established	10.9% of current area established	0.9	130 ha of regen failures, combined with a heavy snow pack that impeded planting, contributed to the variance.
Forest inventory by percent of age class distribution	11	Historically implicit in AAC and being redefined as part of the Forest Project	Not applicable	Tracking only		
The area of water bodies	12	No change in area of water bodies	Zero.	Zero.		

Indicator	#	Objective	Acceptable Variance	1999 Result	Summary and discussion of results outside range	
Hectares sold out of DFA (MF19)	13	0	0	4.5 hectares	4.5	Area previously leased to and used for barge access by Marine Link
Harvest Levels	14	TFL:1,267,605 m^3 MF: 200,000 m^3 TOTAL: 1,467,605 m^3	TFL: ± 50% MF: ± 20%	TFL: 1,102,437 m^3 = 87% MF: 238,671 m^3 = 119% Tot: 1,341,108 m^3 = 91%		
North Island division margin	15	$7.14	Minimum of $5.37	$7.35		
Medical Incident Rate	16	7.2	Less than 7.2	9.9	2.7	
Number of recreational sites maintained	17	4	Zero.	4		
Km of active road	18	Retain the active network	± 20 %	Data not available due to GIS system migration issues.		
Number of FPC contraventions related to road, soil and water management	19	0	Zero.	1	1	Contravention related to an event that occurred in 1997.
Advisory group active membership	20	12 sectors	Not applicable	11	-1	Comox Indian Band now represented by the Treaty Society
Planting by species compared to harvest	21	Plant cedar in proportion to harvest (10 year average)	± 20%	Planting is 21.1% below rate of harvest (avg 1993 -1999)	1.1%	

ISO-14001 Indicators

Indicator	Objective	1999 Result	Summary and discussion of results outside range	
Recordable incident rate	7.2	9.9	2.7	
Public safety incidents	0	0		
Number of reportable spills	7	6		
Number of buried fuel lines failing an inspection	0	0		
Number of sediment basins and oil/water separators not sampled as policy	0	0		
Proportion of time when Kelsey burner not operating to temperature specs	0	0		
Number of days in which Eve burn pile is operated without the forced air	0	0		
Number of landfills that did not receive annual inspection	0	0		
Number of non-licensed waste disposal/recycle companies used	0	0		
External non-compliance (tickets, fines)	0	1	1	Contravention related to an event that occurred in 1997.
Internal non-compliance not addressed within time frame of the action plan	0	Shop = 1 Eng = 4 Forest = 9 Prod = 0 HR = 0	14	All issues were addressed within the appropriate environmental time frame. The feedback system was reviewed June 2, 2000 and actions to avoid this situation prescribed.
Road maintenance non-compliance not addressed within time frame of the action plan	0	0		
Number of logging or road related landslides impacting a fish stream	0	0		
Number of openings at regeneration delay that exceed site degradation limit	0	3	3	3 of 51 openings had site degradation that exceeded the limit specified on the plan at the expiry of regeneration delay. One opening has had the plan amended. Two openings are pending final deactivation and re-measurement of site degradation.

Appendix 2

WEYERHAEUSER

NORTH ISLAND TIMBERLANDS UNIT

Defined Forest Area Data Set

October 2000

Table of Contents

Indicator 1: Percentage 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 percentage of second growth species.

Acceptable Variance: ± 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 14.2% of total second growth hectares. Thus, the cumulative total for Douglas Fir in future calculations should be between 11.36% and 17.04%.

Forecast: Harvest percentages are forecasted in the Timber Supply Analysis and the 20 Year Plan for the TFL; and in the Strategic Timber Supply Analysis for MFU 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 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.

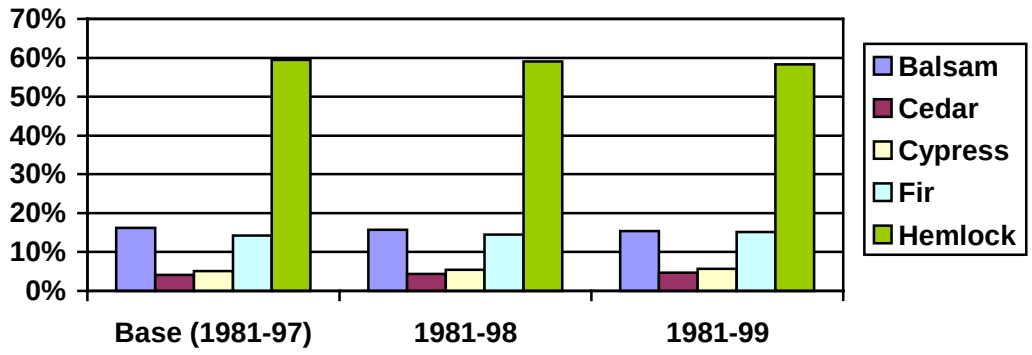
Reporting: The Indicator Data Coordinator compiles the data annually and reports on the indicator performance in the annual SFM Report.

Performance:

The table below shows area (in hectares) by species and the percent of total area that it represents. All species are being retained within the ±20% variance from 1997 base.

Cumulative Years		Species							
		Balsam	Cedar	Cypress	Fir	Hemlock	Pines	Spruce	Total
BASE	1981-97	4,260	1,073	1,349	3,748	15,644	32	202	26,308
	Percent	16.2	4.1	5.1	14.2	59.5	0.1	0.8	100.0
	Variance	19.4	4.9	6.2	17.1	71.4	0.1	0.9	120.0
	+ 20% is	13.0	3.3	4.1	11.4	47.6	0.1	0.6	80.0
	- 20% is								
1981-1998		4,329	1,213	1,485	4,000	16,279	36	208	27,550
Percent		15.7	4.4	5.4	14.5	59.1	0.1	0.8	100.0
1981 - 1999		4,380	1,330	1,624	4,283	16,569	36	210	28,432
Percent		15.4	4.7	5.7	15.1	58.3	0.1	0.7	100.0

Second Growth Species (by relative percent area)



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 percentage of mature species.

Acceptable Variance: ± 20%.

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 forecasted in the Timber Supply Analysis and the 20 Year Plan for the TFL; and in the Strategic Timber Supply Analysis for MFU 19. A 5 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 250 years for coastal forests. Gross volumes (which include a volume reduction for estimated decay) for the seven extant coniferous species within this category are established by timber cruises.

Inventory: There is 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.

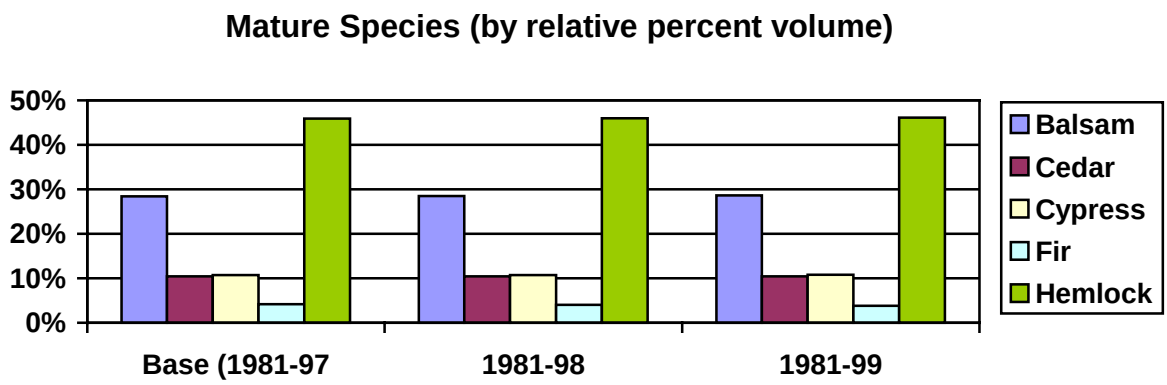
Reporting: The Indicator Data Coordinator compiles the data annually and reports on the indicator performance in the annual SFM Report.

Performance:

The table below shows mature volume (in m^3) by species and the percent of total volume that figure represents. All species are being retained within the ±20% variance from 1997 base.

Mature Volume ($000m^3$) by Species

Cumulative Years		Species							
		Balsam	**Cedar**	**Cypress**	**Fir**	**Hemlock**	**Pines**	**Spruce**	**Total**
BASE	1981-97	19,411	7,126	7,283	2,847	31,367	46	190	68,269
	Percent	28.4	10.4	10.7	4.2	45.9	0.1	0.3	100.0
	Variance	34.1	12.5	12.8	5.0	55.1	0.1	0.3	120.0
	+ 20%	22.7	8.4	8.5	3.3	36.8	0.1	0.2	80.0
	-20%								
1981-1998		19,161	7,025	7,202	2,708	30,980	45	188	67,308
Percent		28.5	10.4	10.7	4.0	46.0	0.1	0.3	100.0
1981 - 1999		18,844	6,869	7,135	2,505	30,426	44	180	66,003
Percent		28.6	10.4	10.8	3.8	46.1	0.1	0.3	100.0


Mature Species (by relative percent volume)
50%
40%
30%
20%
10%
0%
Base (1981-97
1981-98
1981-99
Balsam
Cedar
Cypress
Fir
Hemlock

Indicator 3: Percentage 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 percentage 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 forecasted 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 and MF 19, Blocks 8 and 9 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 Indicator Data Coordinator 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.

Percentage of the productive forest area (1999 inventory):

Year	Age	
	>60 Years	**>150 Years**
1999	55.3 %	50.2 %

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 as a result of management activities in the DFA.

Acceptable Variance: None

Forecast: MoELP is responsible for forecasting.

Data:

The provincial Conservation Data Centre is responsible for identifying red- and blue-listed species extant within specific ecosections of each Forest District. The Ministry of Environment Lands and Parks 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: MoELP maintains the list of species at-risk. Based on a request from the MoELP, the Division Engineer will contact a wildlife biologist to conduct an inventory.

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

Performance:

The annual update to the Ministry of the Environment vertebrate animal tracking lists was not available at June 4, 2000.

Indicator 5: Percentage 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.

Objective: 100% of seed used 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.

Acceptable Variance: Zero

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 Abies amabalis, CW is redcedar, 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 provincial seed registry is maintained by the province. 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 in the forestry file system

Reporting: The Seed Planning and Registry System is maintained by the MoF and an annual report is produced.

Performance:

Objective achieved in 1999.

Indicator 6: Percentage of harvested area that is reforested

This indicator examines the promptness of reforestation. 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 on average from harvest.

Acceptable Variance: Zero

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 "equivalent years of NSR" is calculated by dividing the unstocked areas (NSR) by the average harvest area for the last five years.

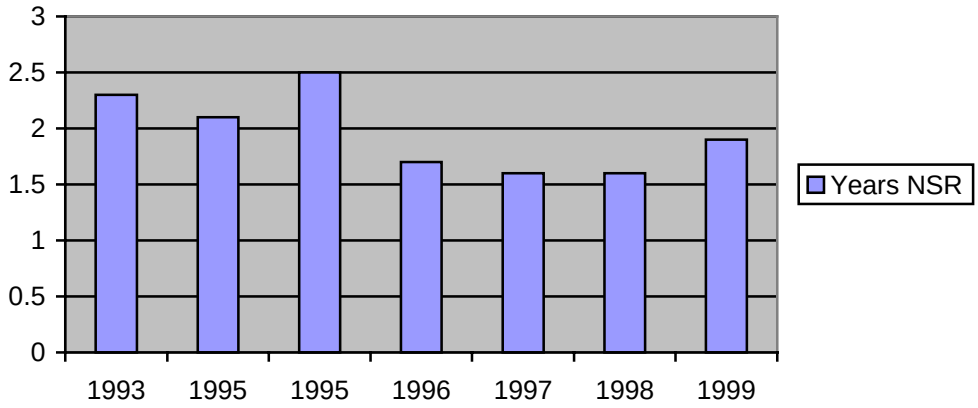
Inventory: The Silviculture Forester tracks unstocked areas in the Silviculture Database.

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

Performance:

Objective achieved.

	NSR Expressed as Number of Years of Harvest	
Year	**Objective**	**Actual**
1999	No more than 3 years	1.9
1998	No more than 3 years	1.6
1997	No more than 3 years	1.6
1996	No more than 3 years	1.7
1995	No more than 3 years	2.5
1994	No more than 3 years	2.1
1993	No more than 3 years	2.3



Indicator 7: Percentage 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 7% 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: +1% (i.e. less than 8% of the area in openings)

Forecast: The forecast is the objective.

Data:

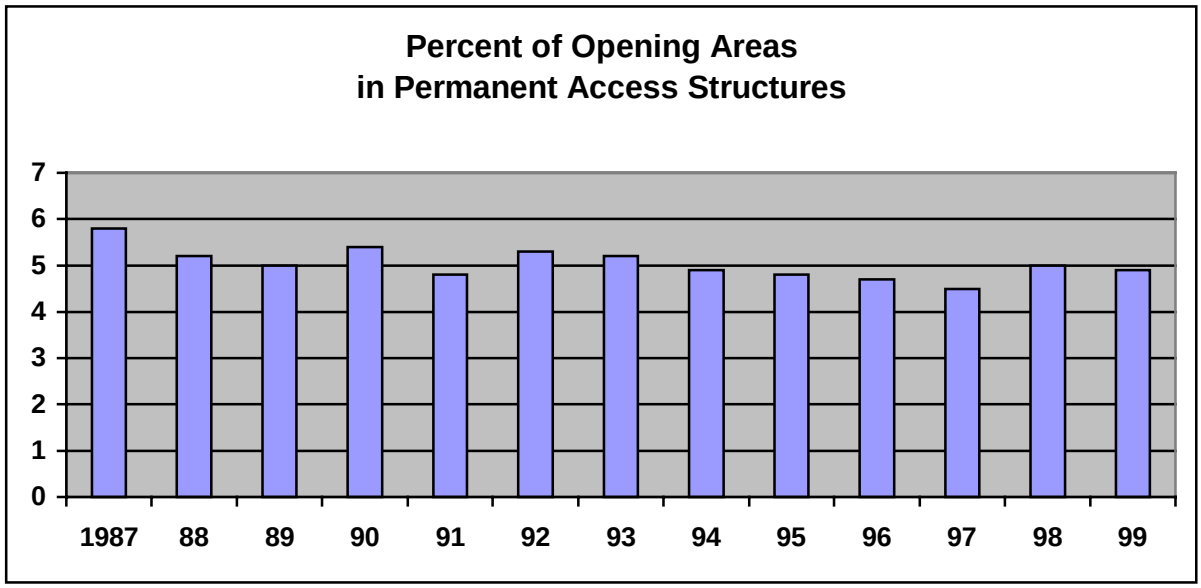
Inventory: The forestry record keeping system includes statistics on the percentage of each opening that is occupied by roads and landings. The percentage is compiled from all the openings in a given year for the DFA Data Report.

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

Performance:

Objective achieved.

	Percent of opening areas in permanent access structures
1987	5.8
1988	5.2
1989	5.0
1990	5.4
1991	4.8
1992	5.3
1993	5.2
1994	4.9
1995	4.8
1996	4.7
1997	4.5
1998	5.0
1999	4.9


Percent of Opening Areas
in Permanent Access Structures
7
6
5
4
3
2
1
0
1987
88
89
90
91
92
93
94
95
96
97
98
99

Indicator 8: Area that does not meet 'free to grow' commitments

This indicator measures the success at achieving free to grow targets defined in Silviculture Prescriptions. 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 to grow non-compliance.

This objective reflects requirements of the Forest Practices Code of BC.

Acceptable Variance: Zero

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

Data:

Inventory: The Silviculture Database lists free to grow commitments by standard unit within an opening.

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

Performance:

Free to Grow Non-Compliance		
Year	**Openings**	**Ha**
1999	2	17.6
1998	0	0

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 Division 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: The Production Superintendant reports fires to the Division Forester for entry into the Silviculture Database.

Reporting: The Division Forester compiles the data from the Silviculture Database and reports on the indicator performance in the annual SFM.

Performance:

Accidental Operational Fires

Year	Number	Total area burned
1999	1	22
1998	1	2
1997	2	
1996	1	
1995	8	
1994	7	
1993	3	
1992	1	
1991	1	
1990	1	
1989	0	
1988	3	
1987	4	
1986	1	
1985	2	
1984	2	
1983	1	

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 division 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 Silviculture Database.

Reporting: The Division 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	Failed area as percent of established area
1999	1195	130	10.9
1998	1448	18	1.2
1997	1554	93	6.0
1996	1875	94	5.0
1995	1852	221	11.9
1994	2345	56	2.4
1993	1687	51	3.0
1992	2544	96	3.8
1991	2105	287	13.6
1990	1704	28	1.6
1989	2188	68	3.1
1988	2278	134	5.9
1987	2278	61	2.7
1986	1462	140	9.6
1985	1257	96	7.6
1984	1301	416	32.0
1983	1352	152	11.2
1982	2061	0	0
1981	2617	204	7.8
1980	1691	208	11.0

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 MFU Blocks 8 and 9.

Reporting: The Indicator Data Coordinator compiles the data annually and reports on the indicator performance in the annual SFM Report.

Performance:

The inventory is normally revised annually. However, due to a change in map projections, this has not been possible. An inventory revision will be available for year 2000.

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: Zero.

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 Indicator Data Coordinator compiles the data annually and reports on the indicator performance in the annual SFM Report.

Performance:

Against 1997 inventory: figure of 3,754 ha

1999 – No draining or flooding on the DFA

1998 – No draining or flooding on the DFA

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 objective is to retain forest land in forest production.

Acceptable Variance: Zero forest land removed from production.

Forecast: Timberlands and Properties department and Corporate Forestry 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 Division Forester will monitor and report on sales within the DFA.

Performance:

Year	Ha Sold	Comment
1999	4.5	A small area [4.5 ha] of industrial land [the Campbell River Marine lease] was removed from MF 19 in 1999.
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.

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 minor commercial and non-commercial forest products.

History: This indicator was developed in 1999.

2000 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.

Acceptable Variance: For the TFL: ± 50% of AAC on annual basis, and ± 10% over the five year cut control period. For MF 19: ± 20% on the annual plan.

Forecast: The Timber Supply Analysis for the TFL and Strategic Timber Supply analysis for MFU Blocks 8 and 9 forecast the harvest level.

Data:

The TFL AAC is determined every five years by the BC Chief Forester. The MF 19 plan harvest is determined by North Island.

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.

Performance:

	MF 19			TFL 39 Block 2			Total		
Year	**Forecast**	**Actual**	**%**	**AAC**	**Cut**	**%**	**Plan**	**Cut**	**%**
1999	200,000	238,671	119	1,267,605	1,102,437	87	1,467,605	1,341,108	91
1998	200,000	218,220	109	1,276,346	770,941	60	1,476,346	989,161	67
1997	114,000	158,856	139	1,276,346	932,125	73	1,390,346	1,090,981	78

Indicator 14: continued

Data:

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 Chief Forester will re-determine the AAC for Management Plan #8, beginning in 2001.

Year	AAC	Harvest	Harvest as % of AAC
1999	1,267,605	1,102,437	87
1998	1,276,346	770,941	60
1997	1,276,346	932,125	73
1996	1,271,346	1,110,190	87
1995	1,291,489	1,346,339	104
1994	1,291,489	1,128,797	87
1993	1,291,489	1,332,606	103
1992	1,345,346	1,305,950	97
1991	1,321,746	1,215,073	92
1990	1,321,746	1,249,102	95
1989	1,321,746	1,423,462	108
1988	1,350,900	1,325,877	98

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, were 150,000 m^3 for 1998 and then increased to 200,000 m^3 for 1999 because of poor market conditions and high costs on crown lands (TFL). The current plan is for the MF 19 (Blocks 8 and 9) harvest to decrease to 150 000m^3 in 2000.

Year	Forecast	Harvest	Harvest as % of Forecast
1999	200,000	238,671	119
1998	200,000	218,220	109
1997	114,000	158,856	139
1996	120,000	110,792	92
1995	130,000	146,260	113
1994	145,000	153,773	106

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.

2000 Objective: $5.33 per m^3

The objective is determined on the basis of market expectations and the historic performance of the operating unit.

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

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

Data:

The margin is the difference between the average selling price and the average costs for the operation.

Inventory: The Divisional Financial Manager tracks and reports this indicator.

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

Performance:

Year	Actual	Objective
1999	7.35	7.14
1998	5.37	
1997	5.73	
1996	3.50	
1995	40.73	
1994	43.83	

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.

2000 Objective: 4.8 RIR for North Island crews.

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

Acceptable Variance: Less than or equal to the objective.

Forecast: The objective is the forecast.

Data:

Inventory: The Human Resources Department at North Island collects information on all recordable incidents.

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

Performance:

Year	Actual RIR	Objective
1999	9.9	7.2
1998	10.8	
1997	22.3	

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 2000.

Acceptable variance: Zero

Forecast: Assumes same number of sites.

Data:

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

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

Performance:

Year	Sites	Sites Maintained
1999	4	4
1998	4	4
1997	4	4
1996	2	2

Indicator 18: Kilometers of active road

This indicator estimates the length of roads in the DFA, including both maintained and un-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: ± 20%

Forecast: This indicator is forecasted in the Management Plan.

Data:

	1997
Maintained roads	1,566 km
Non-maintained roads	1,718 km
Total	3,284 km

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 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:

1999 data is unavailable at this time due to conversion of GIS information to the Genus System. Data will be available at the end of 2000.

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 Zero contraventions.

Acceptable variance: Zero

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:

1999: 2

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: Not Applicable

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 Division 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 secretary and posted on the SFM Website.

Performance:

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

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 a 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^3 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 Division Forester is responsible for development of silviculture prescriptions and for tracking all silvicultual treatments including planting by species. The number of trees planted is entered into the Silviculture 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 Activites". 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 1993-1999 is outside the forecast estimate.

Year	DFA Harvested (m^3)			DFA Planted ('000 trees)			% variance (±) between harvest & planting
	Total	Cedar	% Cedar	Total	Cedar	% Cedar	
1999	1,428,932	189,113	13.2	1,208.3	160.2	13.3	0.2
1998	964,851	100,711	10.4	1,444.4	162.1	11.2	7.5
1997	1,051,199	130,104	12.4	1,351.0	106.4	7.9	-36.4
1996	1,177,515	143,340	12.2	1,650.5	86.5	5.2	-56.9
1995	1,409,766	187,189	13.3	1,568.2	108.5	6.9	-47.9
1994	1,236,079	145,774	11.8	2,341.2	253.0	10.8	-8.4
1993	1,347,407	183,538	13.6	1,453.5	212.8	14.6	7.5
Avg.	**1,230,821**	**154,253**	**12.5**	**1,574**	**156**	**9.9**	**-21.1**

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: 10%.

Acceptable Variance: Greater than 10%.

Forecast: The forecast is the objective for stand level retention in the Timber Zone. The Forestry Project forecast the following level 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 SFM Indicator Tracking Database.

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

Performance:

There is no historical data for this indicator. Collection of data will begin in 2000.

Indicator 23: Percentage 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: 50% of opening area harvested.

Acceptable Variance: Greater than 50%.

Forecast: The forecast in an objective of the Forestry Project. By the year 2003 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 Silviculture Database. Compliance with the SP is verified during the Post-Harvest Assessment by the Area Forester.

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

Performance:

Year	Total harvest area (ha)	Non-clearcut harvest area	
		(ha)	% of total
1999	1 781	528	30

Indicator 24: Percentage 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 2003, 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 SFM Indicator Tracking Database.

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

Performance:

There is no historical data for this indicator. Collection of data will begin in 2000.

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%

Acceptable Variance: Zero

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 Division 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 Division 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.

Performance:

There is no historical data for this indicator. Collection of data will begin in 2000.

Indicator 26: Old growth (>250 years) representation by BEC variant

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

History: This indicator was developed in 2000.

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

Acceptable Variance: Variance defined by level of old growth present in 1998 forest inventory.

Forecast: The forecast is an objective set by the FPC Biodiversity Guidebook.

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) 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 landuse 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 Division Forester compiles the data from the GIS database and reports on the indicator performance in the annual SFM Report.

Performance:

Landscape Unit	BEC	Old Growth Target (%)	Available OG 1998 (%)	Available OG 2000 (%)
Adam-Eve	AT p	85	88%	
Adam-Eve	CWH vm 1	13	30%	
Adam-Eve	CWH vm 2	13	70%	
Adam-Eve	CWH xm 2	9	49%	
Adam-Eve	MH mm 1	19	90%	
Salmon	AT p	85	50%	
Salmon	CWH mm 1	9	17%	
Salmon	CWH mm 2	9	28%	
Salmon	CWH vm 1	13	23%	
Salmon	CWH vm 2	13	35%	
Salmon	CWH xm 2	9	3%	
Salmon	MH mm 1	19	46%	
Sayward	AT p	85	0%	
Sayward	CWH mm 1	9	32%	
Sayward	CWH mm 2	9	69%	
Sayward	CWH xm 2	9	8%	
Sayward	MH mm 1	19	97%	
Tsitika	AT p	85	96%	
Tsitika	CWH vm 1	19	68%	
Tsitika	CWH vm 2	19	85%	
Tsitika	MH mm 1	28	94%	
White	AT p	85	100%	
White	CWH mm 1	13	39%	
White	CWH mm 2	13	74%	
White	CWH vm 1	19	44%	
White	CWH vm 2	19	78%	
White	CWH xm 2	13	15%	
White	MH mm 1	28	95%	

Indicator 27: Total number of trees at 'free to grow' 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 from 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: Zero

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 to grow. A competing tree is defined as a coniferous or deciduous tree that will continue to compete with crop trees until at least 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 to grow 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 silviculture database

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

Performance:

There is no historical data for this indicator. Collection of data will begin in 2000.

Indicator 28: Number of reportable oil 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 Division 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 Division Forester compiles the data and reports on the indicator performance in the annual SFM Report.

Performance:

Year	Number of Reportable Spills	
	Objective	Actual
1995	N/A	8
1996	N/A	10
1997	N/A	8
1998	N/A	9
1999	N/A	6
2000	7	

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 Division 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: The Production Superintendant reports fires to the Division Forester for entry into the Silviculture Database.

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

Performance:

Year	Number	Total area burned (ha)
1999	0	
1998	0	
1997	0	
1996	0	
1995	1	Spot
1994	6	1
1993	0	
1992	1	Spot
1991	0	
1990	7	2
1989	2	Spot
1988	0	
1987	0	
1986	0	
1985	2	Spot
1984	1	Spot
1983	0	

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 Division Forester will carryout a Forest Health Overview assessment and report on forest health concerns. The Division Forester 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 Division Forester compiles the data and reports on the indicator performance in the annual SFM Report.

Performance:

There is no historical data for this indicator. Collection of data will begin in 2000.

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 Division Forester. Slides larger than 2 hectares are entered into the forest cover GIS.

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

Performance:

Collection of data will commence in 2000.

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: Zero.

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 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 Silviculture Database.

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

Performance:

There is no historical data for this indicator. Collection of data will begin in 2000.

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 NTU; temperature less than 15^{o}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 Division Forester will have the samples collected and analyzed as per schedule. The data will be entered into the SFM Indicator Tracking Database.

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

Performance:

Turbidity	Flush				Low				High			
	98	99	00	01	98	99	00	01	98	99	00	01
Upper	N/A	N/A			N/A	N/A			N/A	N/A		
Mid	0.52	0.95	0.67		1.59	0.16			0.87	0.80		
Lower	0.70	1.35	0.74		2.2	0.34			1.68	1.22		

Temperature	Flush				Low				High			
	98	99	00	01	98	99	00	01	98	99	00	01
Upper	N/A	N/A			N/A	N/A			N/A	N/A		
Mid	12.5	4.5	7.0		9.0	9.5			3.5	3.0		
Lower	18.0	6.5	10.0		10.0	11.0			4.0	3.5		

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: Zero.

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 Division Forester. Slides larger than 2 hectares are entered into the forest cover GIS.

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

Performance:

Collection of data will commence in 2000.

Indicator 35: Distribution of revenues by percentage

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

History: This indicator was developed in 2000.

1999 Objective: Track distribution.

Acceptable Variance: Not applicable.

Forecast: This indicator can't be forecast.

Data:

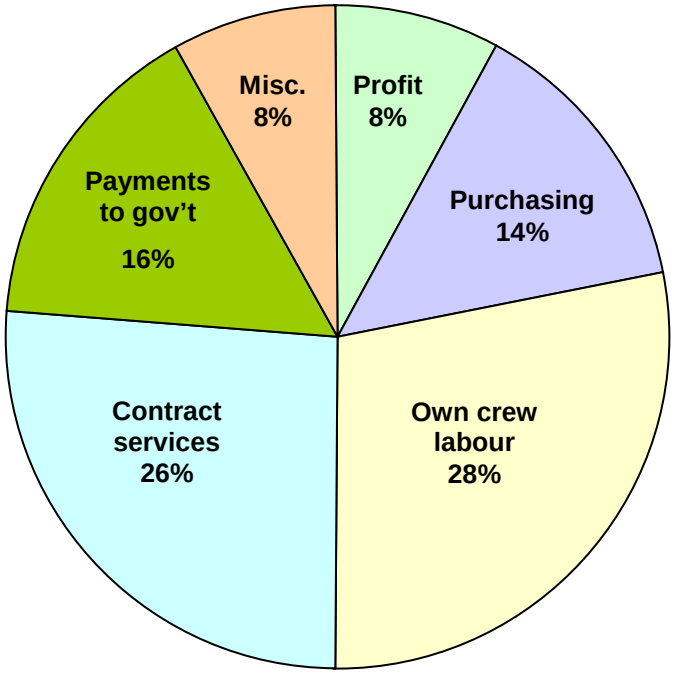
The Cost Accountant began tracking the distribution of North Island revenues by wages (within company and contracted), government stumpage and fees, purchases (local and non-local) and corporate profit in 1999. This core information is collected and reported on during each financial month end and reported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

Inventory: The Cost Accountant 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.

Performance:

North Island Distribution of Revenues - 1999



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%

Acceptable Variance: Zero

Forecast: The forecast is the objective.

Data:

The Division 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 SFM Indicator Tracking Database.

Reporting: The Division Forester compiles the data from the SFM Indicator Tracking Database and reports on the indicator performance in the annual SFM Report.

Performance:

Collection of data will commence in 2000.

Indicator 37: Days haul wood

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.

Objective: 233 days for 2000.

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 the Cost Accountant.

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

Performance:

Year	Days Haul Wood
1995	178
1996	166
1997	172
1998	203
1999	229

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: Not applicable.

Forecast: The forecast is the objective.

Data:

North Island Timberlands is audited to ISO 14001 and CSA Z809 standards annually. The audit is conducted by an external accredited auditor and the results determine the status of the CSA certification. The results of the audits are reported to the Public Advisory Group and hence are entered into the DFA data set.

Inventory: The Division Forester will ensure that a copy of audit reports are filed in the centralized file at North Island.

Reporting: The Division 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.
Surveillance audit for ISO 14001 and CSA Z809	August 2, 2000	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: Zero

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 Division 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 in the SFM Indicator Tracking Database.

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

Performance:

There are currently no treaty settlements or interim measure agreements that apply to the DFA.

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: Zero.

Forecast: The forecast is the objective.

Data:

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

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

Performance:

Collection of data will commence in 2000.

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 Division Forester will track participation, donations and partnership activities in the SFM Indicator Tracking Database.

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

Performance:

Collection of data will commence in 2000.

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: Zero

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 Division Forester and Human Resources Manager to develop the program and report on the completion of activities in the SFM Indicator Tracking Database.

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

Performance:

		2000 Plan	Achieved	2001 Plan	Achieved
Tours	Programs	**1**			
	Stakeholder	**1**			
	Other	**As requested**			
Public Education	Open houses	**2**			
	School visits	**0**			
Communication	Talks	**As requested**			
	Stakeholder	**10**			
Support	Programs	**0**			
	Organizations	**0**			
	Students	**14**			

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:

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.