
Management Plan #4 Tree Farm Licence #44 2003 to 2007

Embracing lands tributary to the communities of Port Alberni, Ucluelet, Nitinaht,
Bamfield, Lake Cowichan and Anacla

Peter J. Kofoed, RPF, Supervising Forester

Signed and Sealed on September 5, 2002

Approved by the Authorized Signatory
at Weyerhaeuser BC Coastal Group

S.J. Coleman, RPF
Manager, Nanaimo Woodlands

P.J. Kofoed, RPF



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BC Coastal Group
65 Front Street, Nanaimo, B.C. V9R 5H9

Management Plan #4 consists of four parts:

- Part I Management Plan Text
- Part II Compact Disc 1 which includes the Management Plan text and supporting appendices and other documents.
- Part III Compact Disc 2 which includes a digital presentation of maps.
- Part IV Paper Atlas of Overview maps

Summary

Management Plan (MP) #4 for Tree Farm Licence (TFL) 44 conforms to the requirements of the Ministry of Forests under the terms of the Licence Agreement. It acknowledges the overall authority of the Forest Practices Code and applicable Provincial Acts and Regulations.

The plan recognizes Weyerhaeuser's commitment to sustainable forest management and responsible stewardship. Two recent initiatives are central to the management strategies for MP #4.

- The Forest Project includes an increase in conservation of old-growth forests and wildlife habitat and a commitment to phase in variable retention by the end of 2003. The retention of more trees across the landscape, is consistent with public expectations and provides a more flexible basis for meeting wildlife, biodiversity, visual landscape and other resource objectives. It also has implications for timber harvesting, silvicultural and forest health strategies.
- Weyerhaeuser is committed to achieving third party forest certification to provide the public and customers with assurance that forest management systems meet or exceed specified standards. In 2000 West Island Timberlands (includes TFL 44) achieved certification to the ISO (International Organization for Standardization) 14001 Environmental Management System standard and the CSA (Canadian Standards Association) Z809 Sustainable Forest Management system standard.

The plan also highlights the importance of economic sustainability. It is not possible to sustain the timber harvest and related social and economic benefits with a continuation of recent financial losses. Innovative changes in policy and in the ways we do business are required to restore competitiveness in the global marketplace.

More specific management objectives and strategies are grouped into three main headings; working with the community, integrated resource management and timber resource strategies.

"Working with the Community" describes objectives and strategies that recognize the economic importance of TFL 44 to various coastal communities including First Nations. A significant development in community involvement is the CSA Z809 standard's requirements for public involvement and stakeholder input.

The section on Integrated Resource Management highlights our commitments to the conservation and protection of non-timber resources. These include soils, water, cultural heritage, wildlife, biodiversity, recreation and visual landscapes.

Timber resource management strategies are directed towards achieving a sustainable production of wood and fibre and maintaining or enhancing the productivity of the forest. This includes:

- Forest establishment and tending strategies that emphasize high volumes, while recognizing other resource values. Wood quality characteristics such as narrow and even-ring widths, small knots and a low proportion of juvenile wood are associated with higher stocking. A wide diversity of stand conditions results from the natural range of sites and a variety of management requirements.
- Forest protection strategies that focus on preventing fire and on minimizing damage from insects, disease, wind damage and animal browse.
- A continuation of the MP #3 harvest strategy for second-growth (forest that generally is less than 100 years of age) that includes more flexibility than in the past for harvesting stands at different ages. This contributes to meeting varied management objectives and assists in achieving a gradual transition to long term harvest levels.
- A proposed Allowable Annual Cut (AAC) of 1,763,000 m³ for TFL 44 is consistent with the strategy of gradually adjusting harvest levels towards the estimated long term harvest level. Recommendations include separate allocations of:
 - 28,000 m³ for the Clayoquot Working Circle. Management as guided by the Clayoquot Sound Scientific Panel recommendations is quite different from the rest of the TFL.
 - 60,000 m³ for the Ucluelet Working Circle. Removal of this area from TFL 44 was announced on August 2, 2002. The process for this change is expected to be complete by early 2003.
 - 1,675,000 m³ for the combined Alberni East and Alberni West Working Circles, the larger portion of TFL 44.
- The Small Business Forest Enterprise Program (SBFEP) annual cut is 81 608 m³. In addition the recent (1999) transfer of TFL 44 from MacMillan Bloedel Ltd. to Weyerhaeuser has resulted in a 5% reduction in the crown contribution to the company AAC, an annual harvest volume of 48 994 m³.

Weyerhaeuser is committed to the many regional and sub-unit (e.g. landscape unit) planning processes now under way. This includes the Scientific Panel recommendations in the Clayoquot Sound portion of TFL 44.

Resource inventories contribute to strategic analyses of timber supply and to operational planning. The plan includes a description of current inventories and commitments for review and update of these inventories during the next five years.

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The following people contributed to this Management Plan:

- C.H. Acosta, Graphics Art Specialist, Nanaimo Woodlands
- E.A. Badesso, Planning Team Coordinator, West Island Timberlands
- R.J. Bartram, Engineer, West Island Timberlands
- W.J. Beese, Forest Ecologist, Nanaimo Woodlands
- M. de Bellefeuille, Audit forester, Nanaimo Woodlands
- J.M. Chung, GIS Technician, West Island Timberlands
- S.J. Coleman, Manager, Nanaimo Woodlands
- R.A. Crossley, Contractor
- M.J. Davis, FDP Team Leader, West Island Timberlands
- D.M. Drayton, Contractor
- B.G. Dunsworth, Ecophysiologicalist, Nanaimo Woodlands
- G.F. Farris, Area Forester, West Island Timberlands
- W.D. Fitzgerald, Head Office, Vancouver
- W.A. French, Development Planner, West Island Timberlands
- S.M. Hermant, Operational Silviculturalist, West Island Timberlands
- S.L. Higman, Terrain Specialist, Nanaimo Woodlands
- M.K. Hooper, Planning Coordinator, Nanaimo Woodlands
- B.A. Knight, Secretarial Supervisor, Nanaimo Woodlands
- P.A. McDonald, Project Assistant, Nanaimo Woodlands
- R.T. McLaughlin, Contractor
- D.R. Medves, Nanaimo Woodlands
- P.D. Partee, GIS Administrator, Nanaimo Woodlands
- R. Pettit, Contractor
- N.J. Smith, Biometrician, Nanaimo Woodlands
- I.G. Turner, Inventory Analyst, Nanaimo Woodlands
- W.A. Waugh, Operations Forester, Nanaimo Woodlands
- B.T. Whitehead, Network/Systems Analyst, West Island Timberlands
- T. Zhao, GIS Database Administrator, Nanaimo Woodlands

Distribution List
Management Plan No. 4 For Tree Farm Licence No. 44

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- * 1. The report includes a paper copy of the Management Plan text and Appendices, as well as the text and map CDs.
2. The report includes a paper copy of the Management Plan text (excludes Appendices) and map and text CDs (includes Appendices) .
3. Copy of the map and text CDs.
4. Copy of the covering letter only. The Management Plan may be accessed over the Company intranet.

TABLE OF CONTENTS

PART I: Text

1.0	INTRODUCTION	1
1.1	General Description of Tree Farm Licence 44.....	1
1.2	Purpose of the Management Plan	2
1.3	Administration and Management of Tree Farm Licence 44.....	2
1.4	Highlights of the Plan	3
2.0	GOALS AND MANAGEMENT OBJECTIVES.....	3
2.1	Corporate Goals.....	4
2.2	Forest Stewardship Principles	4
3.0	FOREST STEWARDSHIP INITIATIVES	5
3.1	The Forest Project – A New Forest Management Strategy.....	5
	3.1.1 Retention and Variable Retention	5
	3.1.2 Stewardship Zones	6
	3.1.3 Adaptive Management and Monitoring	7
	3.1.4 Implementation	9
3.2	Forest Certification	9
4.0	WORKING WITH THE COMMUNITY	11
4.1	Social and Economic Interests.....	11
4.2	Economic Sustainability.....	12
4.3	Community and Stakeholder Involvement	13
4.4	First Nations	13
4.5	Cultural Heritage Resources.....	17
4.6	Other Forest Users.....	18
4.7	Public Review for MP #4.....	18
5.0	INTEGRATED RESOURCE MANAGEMENT	18
5.1	Water Resources and Habitat Protection	18

5.2	Soil Conservation	20
5.3	Biodiversity.....	21
5.4	Wildlife Habitat	22
5.5	Visual Impact.....	23
5.6	Recreation.....	24
6.0	TIMBER RESOURCE MANAGEMENT.....	25
6.1	Timber Harvesting	25
	6.1.1 Analysis and Allowable Cut	25
	6.1.2 Harvest Strategies	32
	6.1.3 Fibre Supply Agreements	36
6.2	Establishing and Managing the New Forest	36
	6.2.1 Silvicultural Objectives	36
	6.2.2 General Silvicultural Strategy	37
	6.2.3 Silviculture Funding	38
	6.2.4 Basic Silviculture	39
	6.2.5 Incremental Silviculture	41
6.3	Forest Protection and Forest Health.....	43
	6.3.1 Fire Prevention and Suppression	43
	6.3.2 Forest Insect and Disease Control	44
	6.3.3 Wind Damage	47
	6.3.4 Browse Damage to Seedlings	48
7.0	PLANNING.....	48
7.1	Introduction	48
7.2	Higher Level Plans.....	48
7.3	Vancouver Island Land Use Plan (VILUP)	49
7.4	Landscape Unit Planning	51
7.5	Planning in Clayoquot Sound.....	53
7.6	Franklin Forest Products (FFP)	54
7.7	Internal and Third Party Audits.....	54
8.0	RESOURCE INVENTORIES AND RESEARCH	55
8.1	Introduction	55
8.2	Forest (Timber) Inventory	56

8.3	Operability Mapping	56
8.4	Terrain	56
8.5	Recreation.....	57
8.6	Visual Landscape.....	57
8.7	Wildlife	57
8.8	Riparian.....	58
8.9	Terrestrial Ecosystem Mapping (TEM)	58
8.10	Cultural Heritage Resources.....	58
8.11	Old Growth Management Areas (OGMAs).....	58
8.12	Forest Research	58
9.0	SUMMARY OF CHANGES AND IMPACTS.....	60
9.1	Lands Within TFL 44.....	60
9.2	Harvest Levels.....	61
9.3	Public Review	64
9.4	Economic Opportunities	65
9.5	Protection and Conservation of Non-timber Values	65
9.6	Planning.....	65
10.0	MANAGEMENT PLAN ADMINISTRATION	66
10.1	Managed Forest No. 74.....	66
10.2	Revision to MP #4	66
10.3	TFL Annual Report.....	66
	Glossary.....	67

List of Tables

Table 5.1	Community Watersheds in TFL 44 (September15/2001)	19
Table 5.2	Completed CWAPs as required by OPR 14.....	19
Table 6.1	Summary of Timber Supply Analysis Options for Alberni East and West.....	27
Table 6.2	Summary of Timber Supply Analysis Options for Clayoquot.....	28
Table 6.3	Recommended AAC Contributions for MP #4	30
Table 6.4	Calculation of the Schedule B Prorate	31
Table 7.1	Comparison of Landscape Unit Draft Biodiversity Emphases and Forest Project Stewardship Zones.....	53
Table 9.1	Comparison of MP #4 and MP #3 Harvest Levels	61
Table 9.2	Summary of Major Analysis Assumptions — a Comparison of MP #4 with MP #3	62
Table 9.3	Alberni East and West: Visual Landscape Constraints — a Comparison of MP #4 with MP #3	63
Table 9.4	Ucluelet: Visual Landscape Constraints — a Comparison of MP #4 with MP #3	64

PART II: Compact Disc 1 – Text

Contains the following documents: Refer to Instructions on the inside of the CD cover.

- ❑ **Management Plan** text
- ❑ **Appendix I** – Information Package
- ❑ **Appendix II** – Current Resource Inventories
- ❑ **Appendix III** – Relationships with First Nations
- ❑ **Appendix IV** – Forest Health – Establishment Guidelines and Allowances for Strategic Analysis
- ❑ **Appendix V** – Detailed Discussion of Forest Stewardship Zones
- ❑ **Appendix VI** – Coastal Watershed Assessment Procedures (CWAPS) Recommendations and Strategies
- ❑ **Appendix VII** – Timber Supply Analysis
- ❑ **Appendix VIII** – Twenty-Year Plan
- ❑ **Appendix IX** – Management Plan Review
- ❑ An Ecological Rationale for the Forest Project
- ❑ Guidelines for Designing Variable Retention – Layout and Silviculture Prescriptions
- ❑ Adaptive Management to Refine Forest Practices on Weyerhaeuser BC Coastal Tenures
- ❑ PDF files of main map themes

PART III: Compact Disc 2 – Digital Maps

Software and files are available to view resource themes for TFL 44. Plot files are also available. Refer to Instructions on the inside of the CD cover.

PART IV: Paper Atlas of Overview Maps

Maps include:

- ❑ TFL 44 location map
- ❑ Terms of Reference for maps
- ❑ Separate maps at a scale of 1:125,000 for areas to the east and west of the Alberni Canal:
 - Forest Tenure
 - Recent Tenure Changes
 - Operability and Forest Cover
 - Guiding, trapping and mineral claims
 - Visual landscape and recreation
 - Terrain and snow avalanche
 - Community watersheds and streams, lakes and wetlands
 - Wildlife
 - Biogeoclimatic variants
 - Resource Management zones and Forest Stewardship zones
 - Landscape Units

1.0 INTRODUCTION

1.1 General Description of Tree Farm Licence 44

Tree Farm Licence (TFL) 44 is located in west-central Vancouver Island in the vicinity of the communities of Port Alberni, Ucluelet and Bamfield. It extends from Strathcona Park in the north to Walbran Creek in the south, including land from the Pacific Ocean to the Beaufort Range and Mount Arrowsmith. Refer to Figure 1.

Figure 1 TFL 44



TFL 44 covers over 320 000 ha, approximately five-sixths of which is productive forest land. The major tree species include western hemlock, western redcedar, Balsam (Amabilis fir), Douglas-fir and yellow cypress.

TFL 44 operations contribute significantly to the BC coastal economy, particularly to the Port Alberni area. Of the 2,700 plus jobs directly attributable to timber harvesting in TFL 44, processing of the logs and management of the lands, approximately 2,300 occur in the Port Alberni area.

1.2 Purpose of the Management Plan

The TFL 44 Licence Agreement requires a Management Plan to be submitted and approved every five years. Management Plan (MP) #4 is a continuation of this process.

MP #4 defines our objectives and management strategies for the five-year period January 01, 2003 to December 31, 2007. It provides a strategic framework for operational planning and a connection to higher level plans

1.3 Administration and Management of Tree Farm Licence 44

TFL 44 is managed by Franklin and Sproat Lake operations, both part of Weyerhaeuser BC Coastal Group's West Island Timberlands. The TFL is administered by the Ministry of Forests' South Island Forest District, based in Port Alberni.

The TFL originates from the awarding of Forest Management Licences (FMLs) No. 20 (Tofino) and No. 21 (Alberni) to MacMillan Bloedel's predecessor companies in 1955. The crown granted properties included in these FMLs were certified as Tree Farms (TFs) 13 and 14 respectively. Forest Management Licences were later renamed Tree Farm Licences (TFLs) and TFs became Managed Forest Units (MFUs).

In 1984, the two TFLs were combined as Tree Farm Licence No. 44, and the two MFUs were combined to form Managed Forest Unit 74.

Most of the Clayoquot Sound portion of TFL 44 was transferred to TFL 57 and hence to Iisaak Forest Resources, effective from October 27, 1999. Iisaak Forest Resources is a new company owned 51% by Ma Mook Natural Resources Ltd. (owned by five First Nations of the Nuu-chah-nulth Central Region) and 49% by Weyerhaeuser.

On November 1, 1999, MacMillan Bloedel became part of Weyerhaeuser. The coastal operations are now known as the Weyerhaeuser B.C. Coastal Group (BCCG).

On August 2, 2002, it was announced that the Ucluelet Working Circle (also known as the Barkley Block) would be removed from TFL 44. It is expected that this change will be complete by early 2003. The AAC recommendations include a separate allocation for the Ucluelet Working Circle to facilitate adjustments to the TFL AAC for the change in landbase.

The TFL is granted for a 25-year period. The licence is replaced every five years, subject to satisfactory performance. The current Tree Farm 44 licence was signed in December of 1999 and is for the 25-year period to August 1, 2024. This licence is due to be replaced in 2004.

1.4 Highlights of the Plan

MP #4 builds on almost 50 years of management and demonstrates Weyerhaeuser's continuing commitment to manage the forests of TFL 44 in accordance with the current expectations of the people of British Columbia.

Major initiatives that occurred during MP #3 reflect this ongoing process of changing and adapting forest management to meet public expectations.

- The Forest Practices Code of British Columbia (FPC) is now fully implemented, forming a baseline for all forest management activities and an integral component of MP #4.
- In June of 1998, Weyerhaeuser BC Coastal Group announced the Forest Project. Key components include phasing in variable retention over a five-year period and an increase in conservation of old-growth forests and wildlife habitat. It also includes a commitment for achieving third party forest certification to provide customers and the public with assurance that Weyerhaeuser's forest management systems meet or exceed expectations. These Forest Project initiatives are central to the forest management strategy for MP #4.
- Weyerhaeuser recognizes the importance of TFL 44 to local people. They play a significant role as contributors and critics in the Management Plan and other planning processes, while also sharing in the benefits the harvest of timber and other resources offer. For TFL 44, MP #4 includes a greater commitment to public and community input in forest planning. The CSA Z809 Standard for a Sustainable Forest Management System contains a strong requirement for public participation in the forest management planning process. In addition, public input contributes to the various regional and sub-unit planning processes that are occurring throughout TFL 44.

2.0 GOALS AND MANAGEMENT OBJECTIVES

West Island Timberlands has a Sustainable Forest Management (SFM) plan as part of certification to the CSA Z809 Standards. The SFM plan provides a comprehensive structure of management goals and objectives and indicators to measure success at meeting these goals.

This planning framework is new to the company and is still under-going considerable review and change. The intent is to develop a planning framework that could more generally be applied to meet SFM, TFL MP and other planning requirements. It is expected that with these changes, over time the TFL 44 MP will incorporate more of the West Island Timberlands SFM plan.

For MP #4, management objectives are guided by the Weyerhaeuser corporate goal and by Weyerhaeuser's Canadian Forest Stewardship Principles. These are set out as follows:

- Section 2.1 presents the overall corporate goals.
- Section 2.2 outlines Weyerhaeuser's Canadian Forest Stewardship Principles.
- Section 3 describes two major strategies that are central to achieving the goals and meeting the stewardship principles:
 - The Forest Project
 - Forest Certification
- Sections 4, 5 and 6 describe more specific resource objectives and issues and strategies to meet these objectives and concerns.

2.1 Corporate Goals

The Weyerhaeuser Corporate Vision is to be the best forest products company in the world.

In the context of forest management, the corporate goal is to practice sustainable forest management and responsible stewardship while providing a safe work place for employees.

2.2 Forest Stewardship Principles

Weyerhaeuser is committed to working with all stakeholders to maintain an appropriate balance between society's ever growing demands for various forest products and the need to conserve forest ecosystems.

Forest management in TFL 44 is guided by the following Forest Stewardship Principles.

Forest Stewardship Principles:

- Provide Opportunities for Community and Stakeholder Involvement (Section 4)
- Furthering Relationships with First Nations (Section 4.4)
- Minimize Impacts on Water Resources and Habitat Protection (Section 5.1)
- Conservation of Soil Productivity (Section 5.2)
- Management of Wildlife Habitat (Section 5.4)
- Recognize and Consider Visual Impact and Recreation (Sections 5.5 and 5.6)
- Responding to People's Needs (sections 5.3 and 6)
- Actively Support Research and Practical Science (Section 8)

Section 3 describes two major initiatives in sustainable forest management and responsible stewardship.

3.0 FOREST STEWARDSHIP INITIATIVES

3.1 The Forest Project – A New Forest Management Strategy

In June of 1998, MacMillan Bloedel (now part of Weyerhaeuser), announced a new forest management strategy – the Forest Project for its BC Coastal lands. Key components include phasing in variable retention over a five-year period and an increase in conservation of old-growth forests and wildlife habitat.

Other important elements of the strategy include the Forest Certification process (refer to section 3.2) for assuring the public and customers that Weyerhaeuser's forest management systems meet or exceed specified standards and an adaptive forest management and monitoring system to ensure a process of continual improvement in forest management.

The Forest Project has two broad but interrelated objectives:

First: Ensure that our forest management strategy retains future options, sustains healthy ecosystems, maintains economic opportunities, and sustains biological diversity.

Second: Learn from our actions and refine them.

The goals of this new forest management strategy are to retain social license to harvest in original forests, improve work safety and to improve competitiveness and economic performance.

The remainder of this section provides a summary of the main elements and process of the Forest Project. For more information refer to:

- Appendix V – “Detailed Discussion on Forest Stewardship Zones”
- Copies of the following documents are included in the Compact Disc attached to the Management Plan.
 - “Guidelines for Designing Variable Retention – Layout and Silviculture Prescriptions”. August 1999, revised March 2002. This is subsequently referred to as “Company Guidelines for Variable Retention”
 - “An Ecological Rationale for Changing Forest Management on MacMillan Bloedel's Forest Tenure”, 1998 – prepared for MB by the Centre for Applied Conservation Biology at UBC.
 - A description of the Adaptive Management Framework.

3.1.1 Retention and Variable Retention

The term variable retention describes the overall approach, to follow nature's model by always retaining part of the forest after harvesting. It recognizes the role of structural complexity in forest ecosystem function and biological diversity. Variable retention can be implemented with a wide range of harvesting systems and can be combined with traditional silvicultural systems, such as shelterwood or selection to meet forest regeneration objectives. Various levels of retention

can be used with different types, amounts and spatial patterns of structure. Retention can be dispersed throughout a cutblock (individual trees or small groups) or aggregated (larger groups) depending on the objectives.

Retention is recognized as a silvicultural system under BC forest law (Operational Planning Regulation [March 29, 1999]):

“retention system” means a silvicultural system that is designed to:

- retain individual trees or groups of trees to maintain structural diversity over the area of the cutblock for at least one rotation, and
- leave more than half the total area of the cutblock 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 cutblock.

The retention system is included in the list of “partial cutting” silvicultural systems. The retention system normally uses a one-pass harvesting approach, but may also be prescribed with several harvesting entries. For more information on the implementation of variable retention and retention systems (and other silvicultural systems such as shelterwood and selection) refer to the “Company Guidelines for Variable Retention”.

3.1.2 Stewardship Zones

Weyerhaeuser BCCG is classifying its managed forestlands into three distinct stewardship zones in order to meet landscape, landuse and biodiversity objectives. The zones are named old-growth, habitat and timber with decreasing levels of landscape and stand-level retention (from old growth to timber) and a range of silvicultural systems from group selection to group retention. The zones allow for a focused management approach that will deliver overall improved environmental benefits, often with improved economic efficiencies.

Assessment of and revisions to the Stewardship Zones are still occurring. During 2000 and early 2001 consultation with government agency staff and operational engineers resulted in some changes. The Information Package for MP #4 includes a June, 2001 draft of the Stewardship Zones. A complete ecological analysis of the zones was completed in 2001.

Stewardship zones and variable retention are part of Weyerhaeuser’s strategy for meeting land-use objectives including landscape unit planning and the Vancouver Island Land Use Plan. Generally there is a good fit between the stewardship zones and government land-use objectives. In all areas, these land-use objectives will be achieved, and often they will be exceeded, particularly in habitat and old-growth-zones.

The following is a summary of the three zones. For a more detailed description refer to Appendix V. The landbase percentage targets apply to the total area of Weyerhaeuser BCCG’s tenures. They may differ for TFL 44 alone.

- **Old-Growth Zone:** Approximately 10% of Weyerhaeuser BCCG’s landbase will be in the “old-growth” zone. This will include areas of high

biodiversity and/or environmental sensitivity. High cultural and recreation values are also priority criteria. The primary management objective is the conservation of old-growth values. About two-thirds of the landscape will be retained as old-growth reserves. Harvesting on the remaining third, will include uneven-aged management including group selection and irregular shelterwood systems. Minimum stand-level, long-term retention is 20%.

- **Habitat Zone:** This zone will comprise approximately 25% of Weyerhaeuser BCCG's landbase. It will include areas that have high biodiversity values and a moderate amount of old growth. The primary management emphasis is maintenance of wildlife habitat diversity. Silviculture systems utilized in this zone will include various types of shelterwood, group selection and group retention and a mix of even and uneven-aged management. Minimum stand-level, long-term retention is 15%.
- **Timber Zone:** Approximately 65% of Weyerhaeuser BCCG's landbase will be included in this zone. It will include both private and public land designated as low biodiversity emphasis. The primary management objective is commercial timber production built on a solid forest stewardship base. Silvicultural systems used here will include group retention and various types of shelterwood with even aged management. Minimum stand-level, long-term retention is 10% for group retention and 5% for dispersed retention.

The above describes the general strategy for applying silvicultural systems in each stewardship zone. Within this general structure, there is flexibility to assign the most appropriate silvicultural system according to site specific factors such as species, topography, and forest health.

3.1.3 Adaptive Management and Monitoring

Although well reasoned, the consequences of the new practices (of the Forest Project) are unknown. The Weyerhaeuser BC Coastal Group is committed to refining and improving the new practices through a program of adaptive management. Adaptive management is a formal process for continually improving management practices by learning from the outcomes of operational programs.

An adaptive management working group has been meeting for the past two years to develop a framework, methodology and pilot protocols for a wide range of organisms. The group includes members from Weyerhaeuser, MoF, MoWLAP/MoSRM, The Centre for Conservation Biology at the University of British Columbia and private contractors.

A broad goal and a criterion and major indicators of success have been defined. Planned refinements will be focusing on implementation of a scoring and management action threshold system (when a change in management is indicated). The linking of monitoring back to management action is a fundamental component of an effective Adaptive Management program.

- The broad goal is to sustain healthy, biologically diverse forests.

- The criterion for success is that biological richness and its associated values are sustained within Weyerhaeuser BC Coastal Group's tenures.
- The three main indicators of success are:
 - Indicator 1 – Representation (Coarse Filter)
Ecologically distinct habitat types are represented across the tenure to maintain lesser known species and ecological functions. Reserved areas are evaluated for providing adequate representation at the variant and site-series level. Management feedback includes adjusting variable retention to overcome representation shortfalls.
 - Indicator 2 – Structure (Medium Filter)
The amount, distribution and heterogeneity of habitat and landscape elements important to sustain biological richness are maintained over time. Evaluation includes assessment of the amount and type of ecological attributes retained in operational variable retention. Management feedback includes adjusting ecological anchors to capture attribute types that are deficient.
 - Indicator 3 – Species (Fine Filter)
Productive populations of species are well distributed throughout the tenure. Indicator species abundance and distribution are evaluated over time. Management feedback where significant negative trends are identified, includes evaluation of biological causes and modification of variable retention or landscape reserves.

The evaluations (monitoring) include both "active" (intensive) and "passive" (extensive) components and will occur at both the stand and the landscape level.

The active (intensive) adaptive management framework will include five designed comparisons that will be replicated three times and implemented by 2006. The treatments will be a minimum size of 20 ha. Each of the comparisons is designed to address a focused question, such as what happens when retention is held constant and group size is changed or what happens when group size is kept constant and variable retention levels are changed? As of August 2002, two of the installations have been completed and a further four are in process.

The extensive or passive adaptive management framework includes monitoring of structure, organism presence or absence, windthrow and forest health in variable retention openings. Between 1999 and 2001, sampling of forest structure (including snags, coarse woody debris, live trees and stand structure) occurred at 204 sites throughout the company's coastal tenures. Further sites (including benchmark sites and variable retention sites) are being sampled in 2002. In addition, surveys of species have included birds, bryophytes and lichens, terrestrial and aquatic amphibians, terrestrial gastropods, salamanders, and squirrels.

The monitoring and adaptive management program also includes growth and yield (refer to section 8.2), regeneration, forest health and wind damage.

For more detail on the adaptive management strategy refer to the summary document on Adaptive Management, included on the attached text compact disc.

3.1.4 Implementation

The Variable Retention Working Group facilitates on-going development of planning and policies. This group of foresters, engineers and biologists representing the BC Coastal operations meet on a regular basis.

Scientific panels are convened to review progress and provide input on the Forest Project. To date, annual meetings have been held in 1999, 2000 and 2001. On each occasion, scientists were invited to the workshop to act as an expert panel. One third of the scientists were nominated by environmental organizations, one third by the company and the remainder represent government agencies. Also attending were representatives from environmental organizations and Weyerhaeuser.

Reporting and evaluation occurs annually. The results for 2001 show that the transition to variable retention is ahead of schedule. For all Coastal Operations, variable retention was applied to 75% of the area harvested and for TFL 44 it was 72%. These results compare to the target of 60% variable retention by the end of 2001.

A sample of variable retention blocks is evaluated annually to monitor performance and identify areas for improvement.

Emphasis has been placed on training. More than 250 people have taken a training course covering safety, objectives, prescriptions and layout for variable retention. A video has been produced to introduce employees to the rationale and basic elements of the VR approach. Two additional 50-minute training videos cover the detailed contents of the courses – they are available for new employees or to reinforce training on specific topics. A companion computer-based training CD has also been developed.

3.2 Forest Certification

Forest certification provides structure and discipline to achieve responsible forest stewardship including an emphasis for on-going improvement. It provides customers and the public with third party verification that Weyerhaeuser's forest management systems meet or exceed specified standards.

The Weyerhaeuser BC Coastal Group is currently involved in three main forest certification standards:

- ISO 14001 standard for Environmental Management Systems (EMS)—ISO stands for the International Organization for Standardization.
- Canadian Standards Association (CSA) Z809 standard for a Sustainable Forest Management System (SFM).
- Forest Stewardship Council (FSC). Weyerhaeuser BCCG is participating in developing the BC Regional Standards for FSC.

West Island Timberlands operations (including TFL 44) were certified to the ISO 14001 and CSA Z809 standards in November 2000.

In summary, the Weyerhaeuser BC Coastal Group certification as of August 2002 included:

Unit	CSA Z809 Sustainable Forest Management	ISO 14001 Environmental Management System	Chain of Custody
Timberlands			
North Island	Certified	Certified	Certified
West Island	Certified	Certified	Certified
Port McNeill	Certified	Certified	Certified
Stillwater	Certified	Certified	Certified
Queen Charlotte Islands		Certified	
South Island		Certified	
Manufacturing Facilities — Primary			
Chemainus		Certified	Certified
Somass		Certified	Certified
Alberni Pacific		Certified	Certified
New Westminster		Certified	Certified
Island Phoenix			Certified

Chain of custody registration assures customers that products originated in a Certified Forest.

Major components of the ISO and CSA certification include:

- The ISO 14001 EMS provides a framework for actively managing environmental risks. Policies, procedures, responsibilities, monitoring and training are all clearly defined.
- The CSA Z809 Sustainable Forest Management Plan (SFM) provides a framework of forest management goals, criteria, indicators and objectives. The criteria are based on those developed by the Canadian Council of Forest Ministers and are aligned with the internationally recognized Montreal Process criteria and indicators for Sustainable Forest Management. The specific SFM indicators and objectives for each operation are developed through input from the local community.
- The achievement and maintenance of both ISO and CSA standards are verified by annual third party audits.
- Both ISO and CSA procedures are based on processes that deliver continual improvement.

CSA Z809 certification applies to a defined forest area. Weyerhaeuser will work with the MoF, and the Small Business Forest Enterprise Program (SBFEP) to encourage consistency in environmental programs and management systems.

4.0 WORKING WITH THE COMMUNITY

Relationships between Weyerhaeuser and local communities are important. Forests contribute significantly to the social, economic and recreational opportunities of these communities.

4.1 Social and Economic Interests

The significance of the contribution of the TFL 44 forests to both local economies and the provincial economy is indicated by statistics on direct employment and government revenues.

Timber harvesting in TFL 44 results in approximately 2,700 direct jobs in timber harvesting, silviculture, transport, processing and government. Of these jobs, approximately 2,300 occur in harvesting, forestry and mills in the Port Alberni area.

In 2000, close to 60% of the logs from TFL 44 went to company sawmills and the NorskeCanada paper mill in Port Alberni. A further 20% were directed to company sawmills on the east-side of Vancouver Island and on the Lower Mainland. Of the remaining 20%, half was delivered to sawmills on Vancouver Island. These external sales are offset to a large extent by mill purchases as logs are traded to better suit mill requirements.

Using average coastal industry figures from the Price Waterhouse Coopers report, "The Forest Industry in BC 1999", the TFL 44 timber harvest generated \$120 million in total government (Federal and Provincial) revenues in 1999. This includes \$40 million in direct government revenues (from stumpage, rents and corporate taxes). It also includes direct and indirect employee income taxes and payments for unemployment insurance, Canada Pension Plan and the Workers Compensation Board.

Stumpage rates (payment to the provincial government for crown timber) have averaged significantly higher in TFL 44 than for the coast as a whole in recent years. For example, the average stumpage paid by West Island Timberlands (primarily TFL 44) during the calendar year 2000 was \$34.58/m³ compared to an average stumpage of \$15.69/m³ for the coast (Ministry of Forests Annual Report for 2000/2001, Table C-1). Similarly for 2001, the TFL 44 average of \$32.10/m³ compares with an average of \$14.50/m³ for the coast.

Objectives include supporting the communities in which operations are located, providing employment, recreational opportunities and educational activities.

Community economic and employment strategies include:

- Local Weyerhaeuser managers are responsible for developing relationships with local communities, including First Nations.
- Moving towards achieving a work force that broadly reflects the demographics of local communities in which operations are located.

Weyerhaeuser has a track record of making logs available to local processors. Local initiatives include working with other local companies such as Franklin Forest Products, Coulsen Forest Products and Nagaard Sawmills, where a common approach is to direct fibre to the most appropriate mill. The participants benefit from this more efficient use of the timber resource.

4.2 Economic Sustainability

Management of TFL 44 forests confers significant social and economic benefits to Coastal B.C., particularly to the Alberni – Clayoquot Regional District. Refer to the discussion above. Sustaining these benefits depends on:

- Managing for a sustained flow of timber supply over time. This is addressed in the management plan process by:
 - The Timber Supply Analysis (refer to section 6.1.1 — and to Appendices I, VII and VIII).
 - The determination of the Allowable Annual Cut (the harvest rate for the next five years) by the Chief Forester of the province.
- A local forest industry that is efficient in a globally competitive industry.

Weyerhaeuser operations in TFL 44 have lost money in four of the last five years (1997-2001). The combined financial performance of the company's two sawmills in the Alberni Valley has also been very poor.

Reasons for this poor financial performance include:

- Poor market conditions for much of this period, combined with low cost competition from other regions of the world.
- High costs that increased significantly in the late 1990s with introduction of the Forest Practices Code requirements.
- A stumpage system (payments to the crown for timber harvested) that is poorly related to market conditions.

It is not possible to sustain the timber harvest and related social and economic benefits with a continuation of these financial losses. To regain competitiveness, costs have to be reduced and stumpage needs to be market based.

- Weyerhaeuser employees have focused on a number of initiatives during the last four years to improve worker safety, reduce costs and improve performance. These include restructuring and downsizing of staff and crew. The company is continuing to look at different ways of doing its business – to achieve lower costs and enhanced performance.
- Some changes have been introduced to the FPC to improve efficiency (reduce planning delays and cost). Although these have helped a little,

there are still opportunities for significant improvements without sacrificing environmental protection. The Stillwater Pilot Project (involves Weyerhaeuser's Stillwater Timberlands and the Sunshine Coast Forest District) is a good example. This pilot brings many of the harvest planning documents together, allows the operator more flexibility in meeting customer demands, encourages public input early in the planning process and shifts government focus from office approvals to field results. Current proposals for changes to the FPC include similar ideas. Weyerhaeuser supports these initiatives.

- A more direct link between stumpage and markets is required. Recent statements by government on market based stumpage are encouraging in this regard.
- Cut control regulations that require minimum harvest levels reduce the flexibility to respond to poor market conditions and may help to prolong market difficulties and add to financial losses at such times. A review of these cut control requirements is recommended.
- The provision for export of logs (given that the log surplus criteria are met) has been positive, in allowing the TFL 44 operations to market timber not needed in BC. This flexibility is particularly important during periods of poor markets.

4.3 Community and Stakeholder Involvement

The objective is to provide ready access for public input and stakeholder involvement in our management process.

Strategies include:

- Public review of operational plans (Forest Development Plans) and Management Plans. Local and other involved public interest groups, local governments, First Nations and interested individuals are identified and advised of opportunities for input to the various planning processes.
- Development of public involvement and stakeholder participation as part of the CSA Sustainable Forest Management System. Membership of the West Island Timberlands Community Advisory Group is from a broad cross-section of the community and the regular meetings provide both input for local management issues and opportunities for all to learn about forest management and how these activities relate to the community.

4.4 First Nations

Overview

Weyerhaeuser is committed to continuing the development of mutually beneficial relationships with all First Nations whose communities are within the TFL 44 operating area. Aboriginal communities are an integral part of the overall community, a source of employees, suppliers, customers and contractors, and represent a growing business sector.

There are thirteen First Nations that have traditional territory within TFL 44. These are the:

- Pacheedaht First Nation
- Ditidaht First Nation
- Cowichan Tribes
- Lake Cowichan First Nation
- Huu-ay-aht First Nation
- Uchucklesaht Tribe
- Hupacasath First Nation
- Tseshaht First Nation
- Qualicum First Nation
- Ucluelet First Nation
- Toquaht First Nation
- Tla-o-qui-aht First Nation
- Ahousaht First Nation

Weyerhaeuser recognizes and respects Aboriginal rights and culture and understands that cultural heritage resources are very important to all First Nations people. Weyerhaeuser continues to develop a better understanding of special areas and forest management issues that are considered to be of high cultural sensitivity. Central to that understanding are the Nuuchahnulth concepts of:

- Ha'wiih – Hereditary Chiefs of a First Nation
- Ta'yii Hawilth – Head Chief
- Ha'houlthee – Traditional Territory of a First Nation
- Hishuk Ish Tsawalk – Everything is one or all things/processes are connected.

Economics

Weyerhaeuser will continue the development of long-term business relationships with Aboriginal partners that economically benefit both parties.

Strategies include continuing existing viable business relationships and exploring other feasible opportunities with First Nation partners in TFL 44.

Discussion

Weyerhaeuser has supported a number of economic initiatives. These include:

- The development of independent Aboriginal contract logging businesses through the allocation of timber volumes for harvesting.
- Business alliances with several First Nations in salvage and minor forest product recovery programs.
- Employment in silvicultural work.
- Employment in archaeological assessment work.
- Working with First Nations on stream rehabilitation, watershed restoration and fishery projects.

Refer to Appendix III for a fuller description of economic co-operation and business relationships between Weyerhaeuser and First Nations.

Communication and Information Sharing

Weyerhaeuser and First Nations participate in a number of information-sharing forums. This good information sharing and communication is largely responsible for the excellent working relationships that have developed. More detail on information exchange forums is included in Appendix III. In summary they include:

- Several committees with government agencies and specific First Nations to share information, discuss forest management issues and encourage planning input and participation in the forest industry.
- Business meetings – Weyerhaeuser and First Nations that have business partnerships meet regularly to discuss the status of current projects and to identify potential initiatives.
- Operational meetings – Weyerhaeuser operational planners meet with CMT survey crews to discuss cutblock survey priorities and cultural heritage resource management strategies.
- First Nations Timber Access Committee (FNTAC) – This government sponsored committee developed strategies for licensees and First Nations to form partnerships to provide First Nations with access to timber. Weyerhaeuser, in partnership with the Tseshah and Uchucklesah developed a successful FNTAC program and harvested approximately 80,000 m³. The FNTAC has been discontinued by the Provincial government, but the employment and training attributable to this program will have long-term benefits to the participating First Nations.
- West Island Regional Advisory Committee (WIRAC) – Weyerhaeuser participated in WIRAC for many years as a forest industry representative to provide advice to treaty negotiators and to receive updated information on treaty negotiations. This committee has since been discontinued – Weyerhaeuser will participate in future similar initiatives.
- West Island Timberlands Public Advisory Group – First Nations' representatives sit on this independent advisory committee, formed as part of

the process for CSA Z809 certification, to provide recommendations on forest resource stewardship

- Forest Development Plan Reviews – Each First Nation is given a copy of the portion of the FDP that covers their traditional territory to review for potential impacts on their traditional uses of the forest and on cultural heritage resources. This review determines the extent of surveys for cultural heritage resources. First Nations participation continues throughout operational planning to ensure that identified cultural heritage resources are managed appropriately.

Cedar for Traditional and Cultural Uses

Issue:

Concern has been expressed by First Nations groups regarding short-term and long-term access to red and yellow cedar, particularly old-growth for traditional and cultural uses.

Cedar Access Task Team:

In January 2002, a Cedar Access Task Team was formed to examine the issue and make recommendations. The team includes representatives of the South Island Forest District -Ministry of Forests, the Huu-ay-aht and Uchucklesaht First Nations and Weyerhaeuser. Considerable progress has been made in meetings during the first half of 2002. The traditional and cultural uses of cedar have been discussed and summaries of the current inventory of cedar by age class and net-down classes (e.g. in riparian management areas, wildlife areas etc.) have been provided. A start has been made on discussing possible management strategies and the following commitment was jointly drafted (reflecting general agreement) for inclusion in this management plan.

Commitment:

It is acknowledged and affirmed that red and yellow cedar is an essential and fundamental necessity in the continued maintenance of the culture, history and traditions of certain coastal BC First Nations. Therefore, Weyerhaeuser Company Limited shall, in partnership with such First Nations, develop short and long-term strategies to ensure that an ongoing supply of old growth cedar to meet traditional or cultural activities by the applicable First Nation is available on an as-needed basis.

Accordingly, Weyerhaeuser Company Limited Management Plans (which are subject to the approval of the Ministry of Forests) will provide for management planning strategies to respond to the red and yellow old growth cedar requirements of First Nations. This will be accomplished by identifying First Nation cedar requirements, assessing the inventory, distinguishing specific characteristics, identifying appropriate areas and assisting with access*.

*Access refers to providing information on road status and other details that could assist in identifying potential areas where red and yellow old growth cedar is available. It also includes providing administrative

assistance to promote Ministry of Forests approval of the removal of selected trees.

Next Steps:

Next steps in this process include refining the information needed for establishing clear management strategies. This includes more clearly defining the needs and establishing a better match between the inventory and timber characteristics required for traditional and cultural uses.

Treaty Settlements

Weyerhaeuser strongly supports the treaty process and believes that resolution should ultimately bring more community and investment stability to BC. As the treaty process develops, Weyerhaeuser will discuss with Government how any negotiated agreement will affect TFL 44 in terms of employment, fibre supply and access, and how to mitigate impacts.

4.5 Cultural Heritage Resources

The objective is to identify and manage known sites of historic and cultural significance and to account for these sites in strategic analysis.

Strategies include:

- Reviewing operational plans with First Nations and local interest groups/individuals to identify areas where cultural or historic resources may be affected by forest development.
- Conducting cultural heritage resource assessments in accordance with the Forest Practices Code and the Heritage Conservation Act. Management of identified cultural heritage resource features will be done in conjunction with First Nations, the MoF and the Ministry of Sustainable Resource Management.
- Continuing the compilation of cultural heritage information. Stand level cultural heritage resource information is compiled in Weyerhaeuser's GIS database and is used in conjunction with various overview inventories to determine the potential for cultural heritage resources to be present in proposed cutblocks. This information is used at the FDP stage to determine appropriate survey methodology to identify and manage cultural heritage resources. Refer to Appendix III for a summary of the various inventories that have been completed.
- Approximately 8,000 ha of proposed cutblocks in TFL 44 have been intensively surveyed at the stand level for Culturally Modified Trees (CMTs).
- Reviewing available inventories and operational information, by December 31, 2004, to update and refine where possible the accounting for cultural heritage sites in the MP #5 analysis.

4.6 Other Forest Users

Other resource users include recreationists, trappers, guides, tour operators and other recreation businesses and plant and mushroom gatherers.

Weyerhaeuser interacts and responds to the various forest users in a number of ways:

- Input is sought from recreation groups and the public when revising recreation inventories.
- Opportunities to review Forest Development Plans (FDPs) and Management Plans are advertised in local papers. Mailing lists are also maintained and used to notify interested people and groups of opportunities to review plans. These include those identified by the MoF as being involved in a specific area or issue; for example guiding or recreation use.
- Informal discussions are held with groups and individuals who may have concerns regarding our nearby activities.
- Approaches for communicating with the public also include open houses for FDPs and MPs, public invitations to be involved in cutblock layout in contentious areas, and tours to review specific areas with special interest groups.

The MoF is informed of any input received and any resulting changes to FDPs or the MP.

Harvesting of salal, mushrooms and tree boughs occurs on an informal basis. Operations respond to requests, providing information and locations of timber harvesting activity.

Registered trapper and guide outfitter licences are shown in the map atlases attached to the MP. The MoWLAP list of names for these licences is confidential. Participation in FDP and MP preparation and review is elicited through advertisements of such opportunities.

Mineral claims occur throughout TFL 44. Apart from advertisements, Mineral Tenure holders are individually contacted regarding opportunities to review and comment on FDPs.

4.7 Public Review for MP #4

A written report on the results of the public review of the draft Management Plan has been submitted to the Manager of the Vancouver Forest Region. A summary of the report is included in Appendix IX.

5.0 INTEGRATED RESOURCE MANAGEMENT

5.1 Water Resources and Habitat Protection

Objectives are to minimize our impact on water resources and to respect riparian values associated with streams, lakes and wetlands.

Strategies include:

- Work closely with regional and community water boards regarding practices and standards in community watersheds. The thirteen community watersheds in TFL 44 are listed in Table 5.1.

Table 5.1 Community Watersheds in TFL 44 (September 15, 2001)

Working Circle	Community Watershed Name	MoWLAP Ref. #
Alberni East	Little Qualicum (Cameron R. portion)	920.039
	China Creek (Basins 0, 1 & 2)	930.004
	Cold Creek (Basin 2 of the Somass R)	930.005
	Cousteau Creek	930.006
	Malachan Creek (Caycuse Watershed Basin 8)	930.013
	McFarland (Bainbridge L Basin – Basin 5 of the China Creek Watershed)	930.014
	Sugsaw Lake	930.023
Alberni West	Haggard Lake	930.009
	Puntledge River	920.054
	Sproat Lake	930.021
Ucluelet	Itatsoo Creek	930.010
	Mack Creek	930.012
	Mercantile Creek	930.016

- Coastal Watershed Assessment Procedures have been completed in fourteen watersheds and the resulting recommendations are an integral part of FDPs. As of August 2002, the following CWAPs have been completed as required by the Operational Planning Regulation (OPR) 14.

Table 5.2 Completed CWAPs as required by OPR 14

Watershed	Date of CWAP
Cameron River portion of the little Qualicum Community Watershed (CWS)	April 2001
China Creek CWS	April 2001
McFarland (Bainbridge Lake) CWS	April 2001
Rogers Creek CWS — delisted as a CWS in September, 2001	December 1998
Klanawa River	May 1999 and interim update July 2001
Hatton Creek	April 2001
Sproat Lake CWS	August 2000
Macktush Creek	August 2000
Cous Creek	August 2000

In addition, a CWAP for the Nahmint Watershed is scheduled for completion by the end of 2002.

CWAPs have not yet been completed for the following community watersheds This is consistent with the District Manager's approval under the OPR - that CWAPs are not required for a defined period or until road construction or Category A cutblocks are proposed within these watersheds.

- Sugsaw Lake

- Cold Creek
- Cousteau Creek
- Malachan Creek
- Puntledge River
- Haggard Lake

In addition to CWAPs required by regulation, CWAPs have been completed for the following watersheds – to address questions raised during the review of earlier FDPs:

- Sarita River
- Wolf Creek
- Henderson Lake
- Coeur d’Alene Creek

In 2002, overview assessments were completed for the Walbran, Franklin and Corrigan Watersheds. This information will provide a base for future comparisons of these watersheds.

Weyerhaeuser does not plan on updating CWAPs for the Itatsoo Creek, Mercantile Creek and Mack Creek community watersheds in the Ucluelet Working Circle as it is likely this area will be transferred to the Arrowsmith TSA. Refer to the introduction.

Refer to Appendix VI for a summary of the CWAP recommendations and the corresponding management actions or responses.

- Standard Operating Procedures have been developed and are maintained for road construction, maintenance and deactivation.
- Aerial yarding systems (helicopter) have increasingly been used in sensitive areas to minimize road density.
- Maintain standard operating procedures for work shutdowns for environmental and safety reasons.
- Develop and implement road deactivation plans and further reduce erosion through dry seeding, or hydroseeding and planting. Utilize Forest Investment Account (FIA) or other available government funding for watershed restoration work.

5.2 Soil Conservation

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

Strategies include:

- Maintain Standard Operating Procedures for road construction, maintenance and deactivation.
- Terrain stability field assessments (TSFAs) are conducted on steep and sensitive sites.
- Forest practices reflect the sensitivity of the soil.

- Internal and external audits on road building and harvesting practices.

Concern has been expressed that variable retention might increase road requirements. The average density of roads per unit of gross area is not expected to increase because of variable retention. Changes in harvest method can have a more significant impact on road requirements and this can be important in sensitive areas. For example, helicopter harvesting has resulted in fewer roads in areas with steep terrain.

5.3 Biodiversity

The broad objective is to sustain healthy biologically diverse forests.

Strategies include:

- Substantial areas of forest throughout the landscapes in TFL 44 are reserved. Approximately 29% of the productive forest is reserved as inoperable, as sensitive sites (unstable soils and riparian areas) and for non timber values such as wildlife and recreation. In addition 15, 000 ha is retained as it is non-productive for timber production purposes.
- The Forest Project (refer to section 3.1).
 - Old-growth stewardship zones include additional reserves of old-growth forest. Variable retention ensures that a diversity of forest structure, including snags, wood debris and live trees of various sizes, is well distributed across the forest landscape.
 - Variable retention and stewardship zones provide additional means and flexibility for achieving and often exceeding government landscape objectives for old seral representation and Wildlife Tree Patches.
- The development and use of performance based procedures will be encouraged. Refer to the discussion of the TFL 39 Block 2 Enhanced Forest Management Pilot Project in section 8.12.
- Ecosystem mapping for most of TFL 44 will be complete by the end of 2002.. This mapping has been funded by FRBC and is to the site series level at a scale of 1:20,000. Refer to section 8.9. The site series information will provide assistance in landscape unit planning and operational planning.
- Monitoring and adaptive management is an integral part of the strategy as there is uncertainty about the outcomes of new practices (variable retention). Ongoing efforts in this field are overseen by a working group with members from government agencies, the University of British Columbia and Weyerhaeuser. A criterion and indicators of success have been defined. The monitoring (evaluation) includes sampling of forest structure and species occurrence (commenced in 1999) and installation of field comparisons of variations in variable retention (e.g. amount and distribution of retention). Refer to section 3.1.3 for more detail.
- Connectivity. Forest Ecosystem Networks (FENs) were established in TFL 44 during the early 1990s. The purpose was to maintain natural connectivity in the area. FENs are recognized in current operational plans.

FENs were intended to be a temporary measure until landscape planning was completed. They are scheduled to expire on June 15 2003 (refer to Definition in Part 1 of the Operational Planning Regulation).

Further direction is provided in a letter from the Chief Forester, dated June 6, 2001 and titled "FENs and Landscape Unit Planning in TFLs 44 and 46". FENs are defined as part of the "non-contributing" landbase for the purpose of landscape unit planning. Non-contributing refers to areas that are priority areas for the establishment of Old Growth Management Areas.

Other planning approaches and management options that are now available, will provide the tools to achieve the habitat and biodiversity objectives that were initially sought from FENs. These include:

- Landscape unit planning in which FENs will be considered as non-contributing (priority) areas for the creation of Old Growth Management Areas.
- The Forest project adds to regulatory reserves by providing reserved areas in old-growth stewardship zones and in additional stand-level retention (habitat) distributed across the forest landscape. Increased flexibility to respond to local conditions and objectives (e.g. connectivity) is provided by varying silvicultural systems and amount and distribution of retention to meet such objectives.

A further strength of this strategy is the monitoring and adaptive management program directed at our goal of sustaining healthy, biologically diverse forests. Refer to section 3.1.3 for a summary of the three major indicators of success for this program.

5.4 Wildlife Habitat

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

Strategies include:

- Track rare and endangered species. Identified wildlife species are listed by Forest District in the Managing Identified Wildlife Guidebook (February 1999). The BC Conservation Data Centre (MoWLAP) maintains lists of rare vertebrates, vascular plants and plant communities by Forest District. These lists may be accessed at the Conservation Data Centre web site, www.clp.gov.bc.ca/rib/wis/cdc/index.htm.
- Weyerhaeuser's adaptive management program uses a coarse, medium and fine filter approach with ecological representation, structure and species respectively.
- It is recognized that the old growth stewardship zones and reserves for other reasons (e.g. inoperable areas, riparian and wildlife areas and sensitive soils) will not address all wildlife needs. These approaches might be described as coarse filter approaches.

Our medium filter (structure) is intended to meet the needs of many species, and the fine filter approach is necessary for species where the coarse or medium filters are inadequate. Such additional measures will be applied as they are identified. Examples include the "Identified Wildlife" discussed below.

- Develop management prescriptions for marbled murrelets goshawks and other identified wildlife according to the procedures set out in the Managing Identified Wildlife Guidebook (February 1999). Sites including nests that are located as part of the operational assessment process will be identified to district MoWLAP and MoF staff. Management prescriptions are then developed and included in operational plans. Wildlife tree patches and variable retention provide additional flexibility for providing protection

A Wildlife Habitat Area has been declared on Mclaughlin Ridge to protect known goshawk nests.

Inventories of marbled murrelets and their habitat have occurred in TFL 44 since 1994. This work will continue to assist in refining the location of areas reserved as habitat for marbled murrelets.

- Develop and incorporate landscape level objectives for biodiversity including wildlife habitat. This will be achieved as part of the landscape unit planning process (refer to Section 7.4).
- Apply stand treatments in specific situations to enhance and improve habitat. These treatments will be based on an assessment of benefits (habitat and timber) and cost. For example, a recent FRBC-funded project was directed at old-growth restoration. This involved spacing selected riparian areas to increase the rate of development of old-growth characteristics including large sized trees and varied stand structure.
- Review grand-parented ungulate winter ranges with MoWLAP and MoF District staff prior to October, 2003.
- Retain old-growth timber of sufficient size for black bear denning requirements.
- Protect coastal bald eagle and osprey populations.

5.5 Visual Impact

The objective is to reconcile where possible the harvesting of trees with the visual landscape.

Weyerhaeuser's strategy is to:

- Maintain a visual landscape inventory. The inventory was updated during MP #3. Refer to Section 8.6.
- Incorporate visual landscape objectives in plans and operations. This includes recognition of known scenic areas.
- Work with MoF specialists to manage for visual landscape objectives more efficiently. This includes improved visual landscape design (assisted by

variable retention) and management practices to reduce the time for achieving visually effective green-up.

5.6 Recreation

The objective is to integrate forest management activities with recreation values.

Weyerhaeuser's strategy is to:

- Continue to work with the MoF and local residents to develop appropriate prescriptions for public access to specific areas. Issues include road deactivation (environmental risk), road maintenance and safety.
- Provide road signs to assist the public in accessing the forest and using forest roads safely.
- Co-operate with commercial tour operators where access is required.
- Develop and maintain recreation sites and trails in concert with the MoF and subject to funding.
- With the MoF, develop strategies for recreation sites and trails and define objectives for management of these features.
- Continue to provide recreation maps showing recreation areas, roads and rules of access.
- Continue to cooperate with MoF and local caving groups in managing and protecting sensitive caves and Karst resources. This includes undertaking surface inventories in Karst areas prior to development and utilizing the existing MoF cave/karst management handbook for the Vancouver Forest Region as an interim measure until the new management guidelines have been finalized and approved for general use. Cave locations are not shown on generally distributed maps to assist in protecting these sensitive features.

Discussion:

- An example of Weyerhaeuser's commitment to identifying and protecting new recreation features is the discovery of the Blue Moon Cave during MP #3. After the opening was located, operational plans were changed to ensure that harvesting does not take place near the cave entrance and that the feature will be conserved.

- West Island Timberlands has significantly improved road information available to the public, during MP #3. This has included:

An increase in the number of road signs and the installation of more "Industrial Road" signs to explain rules for road use.

"Road Blocks" – in which the traffic is stopped to explain to drivers the rules of the road and to distribute maps and pamphlets.

Ensuring that deactivated roads are marked to communicate the condition of the road ahead and that bridges are marked with delimiters.

A start has been made on colour coding kilometer signs according to mainline and showing these colour mainline references on the recreation map. Also in some areas, kilometer signs have been GPS referenced to enable a faster response to accidents and other incidents.

6.0 TIMBER RESOURCE MANAGEMENT

Major objectives include:

- Manage the forest land in TFL 44 for the sustainable production of wood and fibre.
 - Section 6.1.1 describes the analysis that projects long-term harvest levels and provides information to assist the Chief Forester of the province in determining the harvest level for the next five years (allowable annual cut).
 - Section 6.2 includes strategies for reforestation after harvest.
- Maintain and/or enhance the productivity of forests.
 - Section 6.2 outlines strategies for re-establishing and managing the new forest (after harvest).
 - Section 6.3 describes strategies for protecting the forest

6.1 Timber Harvesting

6.1.1 Analysis and Allowable Cut

6.1.1.1 Analysis Procedure

The process of providing information to assist the Chief Forester in determining an AAC for the next five years involves three main components:

- Information Package. Refer to Appendix I for details.

The Information Package documents the assumptions and describes the modeling procedures that are used in the Timber Supply Analysis. This includes details on:

- Options that will be tested in the analysis
- Netdowns that will be applied to derive the Timber Harvesting Land Base (THLB)
- Silvicultural and yield (forest growth)
- Harvesting
- Integrated resource management
- Timber Supply Analysis (TSA). Refer to Appendix VII for details.

The TSA examines alternative timber supply strategies by incorporating assumptions on land base, productivity, forest management and integrated forest management in projecting forest growth and timber harvest over 250 years.

The TSA includes analysis of a number of options (refer to Tables 6.1 and 6.2) to test the impact of various timber supply issues and to provide information on the sensitivity of timber supply to uncertainties regarding the available land base, forest growth and integrated forest management.

- Twenty-Year Plan (TYP). Refer to Appendix VIII for details.

The TYP is intended to show the spatial feasibility of initial harvest levels proposed in the Timber Supply Analysis.

Harvest projections were developed for the twenty-year period 2001 to 2020 using the Cash6 model developed by Timberline Forest Inventory Consultants. The software places harvest blocks at specific spatial locations in such a way as to meet volume targets and comply with all applicable constraints.

Three portions of TFL 44 were analyzed separately:

- The major portion of TFL 44, the Alberni East and Alberni West Working Circles, was analyzed (in both the Timber Supply Analysis and the Twenty-Year Plan) and reported on as a single unit. The two areas are geographically contiguous and similar management constraints apply.
- The area remaining in the Clayoquot Working Circle (Upper Kennedy / Marion Creek and private lots mostly in the Kennedy Lake / Lower Kennedy River area). The timber supply analysis of this area recognized additional management requirements defined in the report by the Clayoquot Sound Scientific Panel (1995). These include rate of cut constraints by watershed basin and a minimum requirement for forest of 140 years of age and older. Watershed plans have not been completed for these areas. Consequently, Twenty-year Plan projections are summaries of projected harvest by watershed basin and five-year period. The actual harvest footprint will be light compared to other areas and adjacency and other spatial constraints will not be an issue.
- The Ucluelet Working Circle (also known as the Barkley Block). Weyerhaeuser and the MoF are discussing the removal of this area from TFL 44. The Minister of Forests made a public announcement of this initiative on August 2, 2002. It is expected that this process will be completed before the end of MP #3. A timber supply analysis base option and a twenty-year plan projection have been completed for the Ucluelet Working Circle. Additional timber supply options were not analyzed for this area because of the expected tenure change.

The Base Option is central to the analysis. It models current forest management guidelines and practices. This includes estimates of current net-downs for sensitive sites (unstable soils and riparian areas), inoperable areas and areas reserved for non-timber values (e.g. wildlife and recreation). It also includes a portrayal of current management practices for landscape biodiversity, visual landscape and community watersheds as well as current inventory estimates and standard practices for forest management and for

projecting future yields. The base option in this analysis includes the Forest Project, incorporating draft stewardship zones as a basis for assumptions on timber supply impacts of variable retention.

In the TSA, the base option harvest schedule is a "base" against which the harvest schedules for all other options are compared. The base option assumptions also form the basis for the Twenty-Year Plan.

The following tables summarizes the TSA options and how they vary from the base option.

Table 6.1 Summary of Timber Supply Analysis Options for Alberni East and West

Issue	Description of Variance from the Base Option
	Base Option
Changes to the Timber Harvesting Landbase (THLB)	THLB increased by 5%
	THLB decreased by 5%
	Exclude marginally economic mature timber
	Exclude 3 First Nations interest areas
Inventory and Growth and Yield Assumptions	Increase mature volumes by 10%
	Decrease mature volumes by 10%
	Increase second-growth yields by 10%
	Decrease second-growth yields by 10%
	Apply inventory site indexes.
Forest Project	Exclude Stewardship Zones and Variable Retention
	Increased incremental area impact of VR from 5% to 10% in Timber Zones and from 7.5% to 12.5% in Habitat Zones
Biodiversity	Remove old seral constraints
	Exclude Forest Ecosystem Networks (FENs) from the THLB
	Exclude FENs and remove old seral constraints
Visual Landscape	Apply maximum disturbance in scenic area 1 (c.f. mid-point)
	Apply alternative Visually Effective Green-up (VEG) heights
Adjacency	Apply 3m green-up for adjacency in EFZs (c.f. 1.3m)
Minimum Harvest Ages	Minimum harvest ages based on 400 m ³ /ha (c.f. 350 m ³ /ha)
	Apply longer rotations in scenic area 1, partial retention areas
Harvest Flows	Harvest the undercut during the first ten years
	Attempt to maintain the current AAC for 20 years
	Apply higher harvest levels for the first 50 years
	Establish a non-declining even flow (NDEF) harvest level

Table 6.2 Summary of Timber Supply Analysis Options for Clayoquot

Issue	Description of Variance from the Base Option
	Base Option
Harvest Flows	Maximize annual harvest for 50 years
	Apply watershed constraints based on the operable landbase (c.f. the total area)

6.1.1.2 Results

Base Option

The base option Alberni East/West harvest schedule starts at 1,675,000 m³/year, 49,000 m³/year less than the contribution of this area to the MP #3 AAC. The harvest rate then declines by 50,000 m³/year (3%) per five-year period to reach a Long Term Harvest Level (LTHL) of 1,555,000 m³ after fifteen years. This result is consistent with the strategy of gradually adjusting harvest levels towards the estimated LTHL.

For the Clayoquot Working Circle the base option harvest schedule is an even-flow of 28,700 m³/year. Reasons for the significant increase from the 6,200 m³ AAC allocation for MP #3 are mainly procedural. In MP #3, the simple calculation considered only the net available area when applying watershed rate of cut constraints. In addition, recent harvest area had a significant impact on the calculation. By contrast, the total area was the basis for considering watershed rate of cut in the MP #4 timber supply analysis and there has been no harvest during the last five years.

For the Ucluelet Working Circle, the initial harvest level of 60,400 m³/year is maintained for 20 years before increasing to the LTHL of 69,300 m³. Both the initial harvest rate and the LTHL are significantly higher than for MP #3. Refer to the discussion in section 9.2. In summary, recent harvests that have been lower than expected, the availability of timber in areas that have been classified as Forest Ecosystem Networks (FENs) and a revised visual landscape inventory contributed to higher mid-term harvest levels in the MP #4 analysis. Major contributors to the higher long-term harvest rate include a larger timber harvesting landbase, the revised visual landscape inventory and higher projected yields for some sites.

In total, the TFL 44 initial harvest level of 1,764,000 m³ is similar to the MP #3 AAC of 1,766,200 m³. A decrease of 49,000 m³ attributed to the Alberni East/West Working Circles is almost matched by increases indicated for Clayoquot and Ucluelet. Refer to Section 9 for a discussion of the major changes in assumptions between MP #3 and MP #4.

Timber Supply Analysis – Options

Alberni East / Alberni West

Initial harvest levels are robust across all the options analyzed.

Several factors are shown to have a significant effect on medium-term and/or long-term timber supply. In situations that reduce future harvest opportunities, the harvest rate can adjust gradually from the base option initial harvest rate to lower medium-term and long-term harvest levels. In the option with inventory site index estimates the adjustment was 6% per five-year period. In all other such options the necessary adjustment over time could be met by a 50,000 m³ (approximately 3%) reduction in harvest per five-year period. Factors that had a substantial impact on medium-term and/or long-term harvest included:

- +/- 10% sensitivity analyses on mature volumes (note that mature volume estimates are supported by recent inventory audits).
- +/- 10% sensitivity analyses on second-growth yield projections.
- +/- 5% sensitivity analyses on the timber harvesting landbase area.
- Inventory site index estimates compared to revised company biophysical site index estimates.
- Estimates of the impact of variable retention and old-growth stewardship zone reserves.
- Exclusion of Forest Ecosystem networks from the timber harvesting landbase.

Analysis of different harvest flows show that the base option projection is only one of a range of possible harvest schedules. For example, the initial harvest level could be maintained for fifty years at a cost of a 3% reduction in the long term harvest level. Conversely, a sustainable non-declining even-flow harvest is estimated to be only 3,000 m³/year more than the base option long-term harvest level. The base option harvest strategy of gradually reducing to the estimated long-term harvest level provides a good balance of providing a gradual transition from the current AAC and maintaining long-term harvest options.

Clayoquot

A reduced set of two sensitivity options was run for the Clayoquot Working Circle. Overall retention levels and harvest rate constraints go well beyond landscape-unit planning and the Forest Project. Most of the harvest for the first 50 years is from mature and hence changes in mature volume estimates will mainly effect harvest during this period and changes in projected second-growth yields will affect long-term harvest

levels. Reductions to the timber harvesting landbase will tend to have a proportional impact on harvest.

One of the options shows that harvest for the first fifty years could be 17% higher (33,700 m³) than the non-declining even-flow base option rate of 28,700 m³ without impacting the longer-term harvest level. Earlier harvest of mature forest areas (assumed static – no growth) adds forest growth and hence harvest over the long-term.

The second option shows the timber supply impact of applying the Clayoquot watershed rate of cut constraints on the timber harvesting landbase (net area) rather than on the gross area as applied in the base option. As expected, the result is a significant reduction in harvest, by 33% in the medium-term and by 43% in the long-term, compared to the base option.

The AAC recommendation for the Clayoquot Working Circle reflects the base option results, the increased level of net-downs observed with watershed planning in TFL 57, a conservative view of harvest flow and a total area basis for watershed rate of cut constraints.

Twenty-Year Plan

The spatial harvest schedules are equivalent to the base option harvest projections in the Timber Supply Analysis. These results, therefor support the AAC recommendations presented in Section 6.1.1.3. For details on the twenty-year plan projections refer to Appendix VIII.

6.1.1.3 Allowable Annual Cut Recommendations

AAC recommendations include AAC partitions for each of the three areas examined. The Ucluelet Working Circle is currently (August 2002) part of TFL 44, but it is expected that this area will be removed from the TFL within the next six months. It is therefor useful to consider the TFL 44 AAC both including and excluding the contribution from the Ucluelet area.

It is recommended that the AAC contribution of the portion of TFL 44 in Clayoquot Sound is also a separate partition. From a management perspective (the Clayoquot Sound Scientific Panel recommendations) this area is quite different from the rest of TFL 44.

Table 6.3 Recommended AAC Contributions for MP #4

Geographic Area	Recommended AAC for MP #4 (000 m ³)
Alberni East and West	1,675
Clayoquot	28
Subtotal	1,703
Ucluelet	60
Overall Total	1,763

The contribution of crown (Schedule B) lands to the AAC is based on the proportion of productive forest land that is Schedule B. The calculation in Table 6.4 is based on the productive forest areas in Table 6.1 of the Information Package (Appendix I).

Table 6.4 Calculation of the Schedule B Prorate

	TFL 44 excluding Ucluelet	Total TFL 44
1. Productive forest area (ha)	258,201	268,187
2. Schedule B productive forest area (ha)	153,171	161,038
Schedule B prorate (ratio of 2 to 1)	0.593	0.600

Harvest performance for each of the three areas will be included in the TFL annual report.

6.1.1.4 Allocation of the Recommended AAC

Allocation of Recommended AAC (m³) for TFL 44	
SBFEP ⁽¹⁾	81,608
Tenure transfer – 5% ⁽²⁾	48,994
Weyerhaeuser	1,632,398
Total	1,763,000

⁽¹⁾ The SBFEP share of the AAC is fixed at 81,608 m³ in the License Agreement.

⁽²⁾ TFL 44 was transferred from MacMillan Bloedel to Weyerhaeuser in November 1999. Under section 56 of the Forest Act the licensee (company) AAC attributable to crown land is reduced by 5% following a tenure transfer. This amounts to 48,994 m³ for TFL 44.

6.1.1.5 Contractor Portion of AAC

The TFL Licence Agreement requires a minimum timber volume to be harvested by independent contractors. This minimum requirement is based on 50% of the proportion (often termed the Schedule B prorate) represented by the Crown (Schedule B) contribution to the AAC. The calculation of the minimum contractor harvest volume also includes allowances for the SBFEP and other non-company allocations of the AAC.

The AAC determination will define the AAC and confirm the Schedule B prorate for use in this calculation.

Weyerhaeuser will ensure that the contractor proportion of the cut is harvested using both full and phase contractors.

6.1.2 Harvest Strategies

6.1.2.1 *Small Business Forest Enterprise Program (SBFEP)*

The AAC for TFL 44 includes 81,608 m³ that is allocated to the Small Business Forest Enterprise Program (SBFEP).

The objective is for SBFEP harvest operations to approximate the forest profile.

The strategy includes reviewing candidate SBFEP cutblocks with MoF Small Business Foresters and including the cutblocks in Forest Development Plans.

Options for managing the allocation of SBFEP harvest are reviewed periodically. An alternative option is to remove area from the TFL that is equivalent to all or a portion of the SBFEP allocation. Any changes to the management of the SBFEP in TFL 44 will be done in consultation with the MoF and will be subject to approval by the MoF.

In 2000, Weyerhaeuser attained ISO and CSA certification for its West Island Timberlands operation. The CSA certification applies to a defined forest area, including SBFEP operators as well as Weyerhaeuser. Weyerhaeuser will work with the MoF and the SBFEP to meet the certification requirements for consistency in environmental programs and management systems.

6.1.2.2 *Harvesting Systems and Procedures*

There are essentially three approaches to harvesting: ground-based machines, cable and aerial. All harvesting system options can be used in partial cutting operations. The choice of system is based on slope, terrain conditions, yarding/skidding distance and piece size. The importance of other resources, accessibility and road costs, future management considerations and the necessity to keep production costs within economic limits are other essential factors in determining harvesting systems. The actual methods to be used for each opening are described in the FDP.

Harvest systems have been classified as conventional and non conventional. Conventional systems comprise all systems except the true aerial and longline yarding systems. The mature (greater than age 130 years) forest inventory has been classified according to broad economic operability class (uneconomic, marginally economic or economic) as well as conventional or non conventional systems.

The TFL 44 Annual report will report on harvest volumes classified according to the current operability classification.

The non-conventional and marginal mature timber types will become less significant over the next 20 years as harvest occurs in these types and

substantial volumes of younger conventional second-growth become available for harvest.

Measures are taken to distribute unutilized timber throughout the setting, rather than concentrating accumulations at roadside. In helicopter settings, scalers mark non-merchantable timber to ensure that it is left in the setting. Crews have been trained to leave non-merchantable timber in the setting in conventional harvesting areas.

Variable Retention and Cutblock Harvest Profile

Concerns have been expressed regarding the potential to high-grade stands with variable retention.

Weyerhaeuser is applying variable retention to achieve both economic and ecological values. Stands are not high graded (i.e., leaving only low value trees with no plans for regeneration). A variety of trees and groups of trees are retained in a landscape. Stands are regenerated (Section 6.2.4) and forest health issues (Section 6.3) attended to. Within this framework there are opportunities to retain trees with high habitat and ecological values but poor timber values. Refer to Section 5, "Partial-Cutting to Avoid Highgrading", in the "Company Guidelines for Variable Retention."

The issue of high-grading is monitored during annual assessments of variable retention harvest blocks.

Opportunities for Low Impact Timber Harvesting

Large areas have been reserved from logging because of difficult logging chance, protection issues and non-timber values. Recent developments provide opportunities for accessing some of this timber.

Individual tree and small patch logging by helicopter can enable removal of some trees without interfering with primary protection (soils and riparian) or non-timber (wildlife, recreation etc.) values. Developments include a harvesting technique for single stems, whereby a helicopter removes a cut-and-limbed tree without it falling to the ground.

Further development of harvest opportunities in constrained areas is planned for MP #4. Such projects will be developed with MoF and MoWLAP staff and will only occur where primary site values will not be adversely impacted

6.1.2.3 Infrastructure and Access Development

Locations of new log handling facilities, roads, and bridges, etc., are shown in operational plans.

Dryland Sorts and Log Dumps

Installations will be maintained to ensure conformance with environmental protection regulations. No new dryland sorts or log dumps will be built unless

an environmental and heritage site assessment has been made and the appropriate approvals, including those for proposed ameliorative actions, received.

Road Building and Maintenance

The annual road building and maintenance plan will be reviewed at the Forest District as part of the Forest Development Plan Process. All permitted roads and bridges will meet the requirements of the Forest Road Regulations.

Where existing non-permitted roads are required for harvesting, they will be permitted and brought up to standard.

Site Restoration

Roads and landings will be maintained or deactivated according to the permits and plans approved. The decision will be based on road status, evaluation of environmental risk, and further use. All decisions will be based on the prescription and/or plans approved for the specific sites.

Commercial and Public Use of Roads and Facilities

The public has free right of access and use of Weyerhaeuser roads on the TFL, subject to safety, security and environmental considerations.

Weyerhaeuser will enter into agreements, including clearly stated charges and responsibilities, with other commercial operators wanting to use Weyerhaeuser roads and infrastructure.

6.1.2.4 *Second-Growth Harvest Strategy*

The second-growth harvest strategy introduced in MP #3 will be continued in MP #4.

Harvest from second-growth has increased significantly in recent years from a negligible amount in 1996 to 20% of the harvest in 1999 and 2000.

The increased focus on second-growth harvest reflects the reduced harvest opportunities in mature timber and spatial constraints in second-growth areas. More emphasis on second-growth harvest opportunities distributes the harvest more fully across the landbase. The result is a reduced cost of transition (reduced negative impact on short-term and medium-term harvest rates) of moving from the historical pattern of development to the spatial forest pattern implied by recent regulations.

The strategy, in the timber zone, is to plan for first pass harvest opportunities in second growth at earlier ages than considered prior to MP #3. "Minimum harvest ages" based on calculations of financial rotations in recent stand level analyses are used as a guide. These suggested first-pass "minimum harvest ages" vary between 40 and 70 years depending on site productivity and species as shown in

the following table. In practice, the first pass harvest entry age will vary with stand situation (timber type, silvicultural system etc) and markets. In some situations harvest ages may be younger than those in the table. Later harvest passes in similar aged timber will by definition occur at older ages.

Species Association	Site Index Range (m)	Minimum Harvest Age Guidelines (years)
Douglas-fir	<27	70
Douglas-fir	>=27	50
Western Hemlock	<27	60
Western Hemlock	>=27	40

This approach takes advantage of the considerable variability in stand conditions in many places and assists in the transition to the desired forest spatial pattern while helping to reduce impacts (of this transition) on timber supply in the medium-term.

The strategy assists in providing an initial focus for harvest planning. Collection of more detailed information from inventories and site visits will then indicate priority areas for harvest (e.g., forest health) and areas that must be deferred because of non-timber resource issues or because of harvest economics.

The variation in species, site productivity, terrain, stewardship zones, silvicultural systems and management concerns such as visual landscapes will result in a wide range of stand types and rotation ages across the forest.

The current age class distribution in TFL 44 includes substantial areas that may contribute candidate first harvest pass areas. Refer to the following table.

	Timber Harvesting Landbase (ha)		
	Total	Age Class 61 plus (second-growth)	Age Class 41 to 60
TFL 44	178,000	12,500	29,800

The second-growth harvest strategy will assist in smoothing the forest age class distributions as well as spatially dispersing the harvest.

Second-growth harvest volumes will be summarized by age classes in TFL 44 Annual Reports.

Commercial Thinning

Relatively little commercial thinning is forecast to occur during MP #4.

Thinning is not expected to increase yield, but may however, contribute towards achievement of non-timber management objectives and may provide medium-term harvest opportunities in deferred areas. More specifically these situations include:

- Thinning before financial rotation where removing less than 25% of the stand volume from below (the smallest trees) is practical.
- Thinning if final harvest is delayed beyond financial rotation. For example, visual landscape and recreation areas that have a restrictive rate-of-cut constraint. The thinning should remove the maximum value contingent on meeting cover requirements, windfirmness, etc.
- Thinning to meet a non-timber management objective such as the creation or enhancement of wildlife habitat. In addition, thinning in areas otherwise reserved, to accelerate development of old-growth characteristics as part of an old-growth recruitment strategy.

Thinnings should be financially attractive. If not, then costs should be offset by strategic harvest flow benefits.

6.1.3 Fibre Supply Agreements

The Weyerhaeuser BC Coastal Group sold its Harmac pulp mill in 1994 and exited the paper business by selling the Powell River and Port Alberni mills in early 1998. Weyerhaeuser has agreements with the resultant companies, Harmac Pacific and NorskeCanada to supply fibre to these mills. It is Weyerhaeuser's intention to continue to supply fibre in the form of both logs and chips to Harmac Pacific and NorskeCanada pursuant to these fibre supply agreements.

6.2 Establishing and Managing the New Forest

6.2.1 Silvicultural Objectives

Silvicultural objectives are to:

- Implement the silvicultural system best suited to achieve objectives for each harvest area according to regulations, land use designation, forest values, silvicultural needs, and economic feasibility.
- Regenerate all harvested land promptly (Rapid Early Establishment Strategy) with appropriate species considering silviculture characteristics, economic values and non-timber values.
- Set stocking targets to provide a high, sustainable yield of timber.
- Treat the newly regenerated forest as needed to control or encourage understory vegetation or to reduce tree density to meet special habitat goals.
- Prune, fertilize, or thin the new forests when these treatments are economically advantageous or when warranted to achieve non-timber values.
- Develop and implement a management strategy for hardwoods.
- Vary the scale and intensity of silviculture treatments considering:
 - likelihood and magnitude of growth or value response,
 - magnitude of impact on and importance of other values present,
 - availability of funding.

- Manage losses from wind damage through assessments of consequence and risk, cutblock design and appropriate management practices.

The following sub-sections describe the silviculture strategy in the context of these objectives.

6.2.2 General Silvicultural Strategy

Weyerhaeuser accepts the responsibility for establishing and managing the new forest as set in law and in conformance with the TFL Agreement and the approved objectives of management listed above.

The economic objective is to realize the highest net value of timber from the forest on a sustainable basis while meeting the requirements for protection and/or conservation of the other forest-based resources and values.

Volume per Hectare

The primary criterion for the future crop is merchantable volume yield per hectare. In general, the more attractive available silviculture investment opportunities are those that produce additional timber volume at relatively low cost. Typically, higher volume is obtained with more complete stocking. Analysis of permanent sample plot data and in-depth reviews of trends in markets and technology have led to the conclusion that it is unrealistic to target specific log or tree sizes. Rather, it is better to allow tree size to be dictated by management or natural constraints with the expectation that technology will exist to make best use of whatever is grown.

Diversity

Although the focus is on volume production, variations in site conditions, silvicultural systems and requirements for different forest resources will ensure a diversity of stand conditions and hence a wide range of species, ages and size of logs. Factors that contribute to this variability across the forest include variations in site productivity and ecological type. They also include variations in stewardship zone and silvicultural system and other specific management requirements for different forest values; for example, longer rotations in visual landscapes.

Wood Quality

The emphasis on volume per hectare is synonymous with wood quality; the wood characteristics most associated with higher price are narrow and even-ring widths, no or small knots, and a small proportion of juvenile wood. All of these are a function of higher stocking.

We expect the premium for piece size to decrease over time as technical developments continue to reduce the cost advantage of size. Mechanized systems for processing and harvesting (on flatter ground) are increasingly designed for the size and other characteristics of the available resource. In addition, product developments are trending more towards re-engineered

structural wood products and extending the use of quality features (e.g. application of thin veneers).

Type 1 Analysis

A "Type 1" silvicultural analysis for TFL 44, funded by FRBC was completed in March of 2001. This forest level analysis of silvicultural options is intended to provide direction for investment in incremental silviculture in TFL 44. Priority incremental silvicultural treatments (given the objectives described earlier in this section) include vegetation treatments to reduce both above ground and below ground competition, fertilization prescriptions and riparian wide spacing. Fertilization treatments include late rotation fertilization in Douglas-fir stands, treatment of Salal-Cedar-Hemlock sites(as identified by the Salal-Cedar-Hemlock Integrated Research Program (SCHIRP)) and fertilization at time of planting on selected sites (particularly where mitigation of spatial constraints such as adjacency or visual landscapes may be realized). Riparian wide spacing is beneficial where treatments occur in reserved areas and assist in recruitment to meet old seral targets and thereby allowing release of alternative reserve areas for harvest. The analysis also supports the management emphasis on regeneration activities such as initial stocking, tree improvement and stand maintenance (e.g. weed control).

Age-class distributions are not a major issue for timber supply in the medium-term. Spacing and pruning should be directed more towards treatments that provide non-timber benefits (e.g. structural diversity and habitat) as well as timber benefits. Often the more significant timber benefits are indirect resulting from a change in harvest scheduling, for example due to meeting landscape biodiversity or habitat requirements.

6.2.3 Silviculture Funding

Funding for silviculture activities is based in legislation. There are two levels of silvicultural activities:

1. **Basic Silviculture**: activities associated with reaching free-to-grow status.
 - a) blocks on crown land logged prior to October 1,1987—costs are the responsibility of the Crown and met through government funding mechanisms (recently FRBC, currently the Forest Investment Account (FIA)).
 - b) blocks logged after October 1,1987—costs are the responsibility of the licensee.
2. **Incremental Silviculture**: activities on stands that have met free-to-grow-status (intensive silviculture).
 - a) Crown land - costs are the responsibility of the Crown through government funding mechanisms (currently FIA).
 - b) Private land – costs are the responsibility of the company.

6.2.4 Basic Silviculture

Weyerhaeuser maintains a basic silviculture program on all areas harvested with the goal of reaching free-to-grow status, consistent with the FPC.

Weyerhaeuser's basic silviculture program includes activities that establish and tend new forest crops that suit the ecological and productivity estimates of each site.

Basic silviculture initiates the future diversity and productivity of the forest.

Seed Procurement

Weyerhaeuser maintains an active (3-year) even-flow inventory of seed and hedge materials to reach its reforestation requirements. These materials are ecologically suitable to Weyerhaeuser Crown lands and have some of the highest breeding values in the Provincial tree improvement program.

Where no breeding program exists for a species, collections of natural seeds will fulfill reforestation requirements.

Nurseries and Stock Allocations

Weyerhaeuser uses many different private nurseries to grow container seedling and stecklings for reforestation. The stock is audited for growth performance and health. The specifications of stock quality standards assure Weyerhaeuser of maximum survival and growth of its forest plantations.

Species and Stock Selections

Weyerhaeuser bases species selection on the silvics of the individual species and their adaptability to the particular site, including forest health considerations. The second criterion for selections is species value ranking. This is based on the company view of the wood qualities and desirability at harvest.

Species selection will be consistent with the Establishment to Free Growing Guidebook for the Vancouver Forest Region, recognizing that exceptions to the guidebook are permitted on a site-specific basis when an acceptable rationale is provided. Acceptable species may be coniferous and/or deciduous (a hardwood strategy is been developed that will focus mainly on red alder – refer to section 6.2.5) depending on the site, the company's market strategy requirements and an approved hardwood strategy for the TFL.

Weyerhaeuser has guidelines for the establishment of defined species in specific situations. These include:

- Guidelines for restricting planting of Sitka spruce in medium and high hazard zones (includes TFL 44) for the Sitka spruce weevil (*Pissodes strobi*). Refer to Appendix IV.
- Guidelines for *Abies* species (refer to Appendix IV) to reduce the risk of losses from the Balsam Woolly Adelgid.

Stock selections are governed by the objective of maximum survival and performance in balance with cost. Larger stock sizes are generally allocated to brush sites, rehabilitation sites and fill plants. Other factors that are considered for stock type selection are soils, climate, species characteristics and season of plant.

Site Preparation

Anticipated site preparation necessary to renew the forest is prescribed in the Silvicultural Prescriptions and confirmed in the post harvest survey. Site preparation methods that may be prescribed include mechanical piling or dispersal of slash, broadcast or accumulation burns, and mechanical or chemical control of brush or unwanted vegetation.

Each potential method is considered in terms of economics, environmental impact and government regulation—e.g., for smoke control, use of herbicides, or protection of fish habitat—before the optimal solution is prescribed.

Regeneration Methods

Natural regeneration will be emphasized in Old Growth zones under multi-aged silvicultural systems. In Habitat zones, where there are greater retention levels and more use of shelterwood and selection systems, there will be greater reliance on natural regeneration than in Timber zones. Supplemental fill planting or planting at lower densities will be used in these zones to meet stocking or stand composition objectives.

Weyerhaeuser analysis shows that prompt establishment and full stocking give the best return among silvicultural investments.

In the Timber zone, it is expected that planting will occur on the majority of cutblocks. The emphasis will be on prompt achievement of stocking standards that are consistent with the Free Growing Guidebook for the Vancouver Forest Region. Genetically improved planting stock will be used whenever available. Weyerhaeuser will use fertilization at time of planting, on some sites, to give the stock a boost over competing vegetation and help with establishment onto the site.

Variable retention provides additional flexibility for managing sites that are difficult to regenerate. The amount and distribution of retention can be varied to encourage natural regeneration and to provide additional shelter for young seedlings.

Surveys and Monitoring

Formal surveys, to MoF standards, will be undertaken to declare regeneration and free-growing status. Monitoring (usually walk-through inspections) to check progress towards regeneration or free-growing, will vary according to stand conditions (e.g. brush, mortality, etc.).

Regeneration Maintenance

Whenever a new tree crop is in danger of not meeting its free-growing requirements, regeneration maintenance will be carried out. The method of maintenance prescribed will be dependent on brush species, growth habits, suitability and cost of mechanical or manual means, availability and suitability of herbicide, and ecological considerations including the provisions of the Riparian Management Area Guidebook.

Brush control by non-herbicide methods will be favoured where results and costs are comparable.

When unacceptable animal damage occurs, protection measures and/or larger stock types and increased planting densities will be practiced.

6.2.5 Incremental Silviculture

Weyerhaeuser maintains an incremental/intensive silviculture program on specific areas harvested, with the goal of adding timber volume and value, other resource values and social benefits to the forest.

Weyerhaeuser's intensive silviculture program includes activities that tend established forest crops. The activities are selected based on economics, social benefits and suitability to the sites.

Tree Improvement

Weyerhaeuser has a long history of being active in the field of tree improvement. The Tree Improvement strategy focuses on:

- ensuring a secure supply of improved Fdc, Hw, Cw, Cy, Pw, and Ss seed;
- securing reforestation materials with the highest improvements available in volume, value and /or pest resistance;
- deploying the best materials to be utilized on the highest sites where return on investment will be the greatest;
- maintaining and enhancing genetic diversity across the landscape;
- continuing to participate in the Provincial Forest Genetics Council and other affiliated organizations.

Weyerhaeuser views tree improvement as one of the largest gain factors to high-yield forestry.

Spacing

Analysis of Weyerhaeuser's data suggests that conventional spacing strategies reduce merchantable stand volumes and that minimal stand value gains are expected from density control alone. It is recognized that additional value may be achieved by spacing for other objectives in specific stand circumstances. Such situations may include selection of the preferred crop tree species (e.g.

Douglas-fir, redcedar or yellow cypress), the establishment of windfirm boundaries and development of habitat.

Maximum density requirements for TFL 44 will be reviewed. Sources of information include results of the Type 1 analysis and earlier analyses. Depending on the results of this review, an application may be made to specify maximum density requirements for TFL 44 that are different from the 10,000 sph rule in the Silvicultural Regulations.

Weyerhaeuser will continue to do spacing operations using available public funding and will cooperate with provincial initiatives to provide opportunities for spacing investments, particularly those directed towards enhancement of timber value (e.g. species selection), non-timber resources and social objectives.

One such opportunity for using public funding to further public objectives is to apply variable density spacing to develop old-growth, riparian and ungulate forage attributes more rapidly than without treatment. Of particular value, are treatments that occur in otherwise reserved areas, and so assist in meeting landscape objectives at no or minimal cost to timber objectives.

Pruning

Pruning increases the volume of clear wood, can reduce the amount of juvenile wood and hence may increase log value. The economic return on pruning is uncertain considering the high costs of the activity, the long investment period and the reliance on a high premium for clearwood.

Weyerhaeuser will participate in funded pruning activities for social benefit, visual quality and habitat enhancement.

Fertilization

Weyerhaeuser recognizes fertilization as a major contributor to high yield forestry. Opportunities for gains occur in fertilization at time of planting and mid-late rotation fertilization. Funding (currently FIA) for fertilization treatments on crown land will be sought.

Selected sites will be fertilized at time of planting. Benefits include giving young trees a boost on poor and brush-prone sites and increasing medium term harvest opportunities by shortening the time needed to reach free-to-grow.

Fertilization of Douglas-fir sites have shown a positive response. Yield gains and financial benefits are proven with up to three fertilizer applications spaced 7-10 years apart and before harvest for Douglas-fir sites. Recommendations are to fertilize medium- and good site (Site Index 24 to 35) candidate stands.

Fertilization of Hw and Cw salal sites also show a response (SCHIRP study). Weyerhaeuser will follow the guidelines from this report for these sites.

Hardwood Management Strategy

TFL 44 includes more than 3 000 ha of stands with a deciduous (primarily red alder) leading species.

In aggregate, these deciduous stands contribute to both landscape biodiversity and timber production objectives.

Many deciduous areas will be retained for biodiversity (e.g. habitat and riparian) values. Variable retention provides additional flexibility for leaving deciduous trees (individual and patches) across the forest landscape.

Other deciduous areas will be managed for timber production. Management of areas for red alder will be contingent on approval by the Regional Manager of a hardwood management proposal. Development and submission of this strategy will occur by December 31, 2002. In the interim, establishment of alder on suitable sites may occur on a small scale.

The hardwood management proposal will outline the overall strategy and provide direction on establishment and stand management of red alder stands. This will include guidance on regenerating harvested areas to alder or conifer species depending on site characteristics. Species selection will be consistent with the Establishment to Free Growing Guidebook for the Vancouver Forest Region.

In some areas, considerable volumes of alder have regenerated and grown in disturbed areas such as adjacent to roads and landings. Opportunities for utilizing some of this resource will be examined during MP #4.

6.3 Forest Protection and Forest Health

6.3.1 Fire Prevention and Suppression

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

Damage to established stands has averaged 24 ha per year (11 ha per year in mature stands) during the last 25 years. The impact during the last 10 years has been significantly less with an annual average of 6 ha of established stands damaged (3 ha of mature).

Fire prevention and control are governed by operating plans and procedures:

- Unit pre-suppression plans are prepared and submitted to the Coast Fire Centre and to the MoF District Office before April 1.
- Unit and Regional plans exist for fires not controlled within 24 hours.
- Ground and aerial patrols are made as required by regulation.
- Each operation maintains and uses its own fire suppression equipment. If needed, further equipment can be obtained from a central cache at the

Weyerhaeuser Aviation base at Sproat Lake and from other units or the MoF. All operations may call out Weyerhaeuser's Aviation for water drops, patrols and crew transport.

- Each division is connected to the MoF Fire Weather Information Network. In addition Weyerhaeuser sets up strategically located fire weather stations to monitor weather in the various operating areas. Data from these stations are used to modify or cease operations according to hazard rating risk and fire danger rating.

When necessary to meet the fuel management or regeneration goals, slash is dispersed or burnt in accordance with the prevailing regulations and the terms of the burning permit.

Debris from dryland sorts is not currently being burned. If burning becomes necessary, it will be done according to conditions of a permit.

6.3.2 Forest Insect and Disease Control

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

6.3.2.1 General Strategy

The insect and disease pest management strategy includes:

Detection

Forestlands will be assessed on an ongoing basis to identify potential pest problems. This includes helicopter tours and reconnaissance flights. West Island Timberlands currently undertakes an annual survey flight, specifically for forest health concerns including windthrow and insect and disease infestations. Any suspect areas will be examined and monitored by helicopter or ground surveys and federal or provincial experts will be consulted on appropriate actions.

Application of Pesticides

In cases where control using a pesticide is recommended, we will:

- Develop an action plan.
- Discuss the planned activities with the public.
- Implement the plan according to specifications of the pesticide permit issued by the MoWLAP.

Minimize Losses

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

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

Adaptive Management and Monitoring

Forest Health is part of the adaptive management and monitoring program (refer to Section 3.1.3).

Training

Forest health training programs offered through the provincial and federal governments will be reviewed periodically. Company personnel will be sent to appropriate sessions.

Guidelines

Weyerhaeuser has issued guidelines (for further details refer to Appendix IV):

- To reduce the risk of future losses to *Abies* species from the Balsam Woolly Adelgid (*Adelges piceae*). The "Guidelines for *Abies* Species" will be reviewed during MP #4.
- To restrict planting of Sitka spruce in medium and high hazard zones (includes TFL 44) for the Sitka spruce weevil (*Pissodes strobi*).

Allowances for the Impacts of Forest Pests in Strategic Analyses

Losses caused by insects or disease will be accounted for in strategic analysis (e.g. the Timber Supply Analysis). Current procedures are discussed in Appendix IV.

6.3.2.2 Recent Insect Infestations

Balsam Woolly Adelgid (*Adelges piceae*)

A 1998 study by McNab and Piggot found that infestations of the Balsam Woolly Adelgid (BWA) are localized, with the most severe in the Cameron Valley CWHxm2 variant. Mortality is generally found in advanced and old-growth stands of *Abies amabilis* and *Abies lasiocarpa*. The study noted that:

- Some trees previously infected with BWA are recovering.
- The quarantine has not been effective. BWA is becoming endemic.
- It is unlikely that all *Abies* trees in the TFL will be infested by BWA.

The strategy is to take a cautious approach (refer to the guidelines in Appendix IV). This approach allows *Abies* seedlings to become a component of the crop trees while ensuring that minimum standards are met by alternative species. This reduces reliance on *Abies* seedlings while allowing them to be part of the future stand, should the severity of future BWA infestations decrease.

Sitka Spruce Weevil (*Pissodes strobi*)

TFL 44 is in the medium hazard zone for the Sitka spruce weevil. Rules for planting Sitka spruce are followed to reduce damage by the weevil. Refer to Appendix IV. Weyerhaeuser is involved in trials with seedlings from weevil resistant provenances.

Ambrosia Beetles

Weyerhaeuser has had an active damage prevention program for over 30 years to minimize the significant financial loss that these beetles can cause. After early trials and operational spraying with a number of insecticides, damage is now controlled by careful management of inventories of susceptible logs and the use of pheromones and trap logs around log sort and storage areas.

6.3.2.3 Forest Diseases and Variable Retention

Concern has been expressed over variable retention and the management of dwarf mistletoe and root rot, particularly where occurrence of these diseases is widespread.

Refer to the "Company Guidelines for Variable Retention" for more details on prescription options. In general:

- Variable retention will be prescribed to remove groups of trees that are most severely infected with hemlock dwarf mistletoe (*Arceuthobium tsugense*). For example, where risk is high, lighter levels of aggregated retention will be practiced; if low then group shelterwoods, group selection or dispersed retention could be used. Heavily infected trees along the boundaries of retention can be removed or girdled (creating snags). Mistletoe spreads slowly (1 m to 1.5 m per year) so group shelterwoods and group retention should not pose a great risk, and planting non-susceptible species in a 15m-20m buffer along infested edges can be effective. In some areas, felling residual hemlock saplings after harvest will reduce mistletoe in the new crop.
- A number of parasitic fungi can kill trees and/or degrade log quality and value. Most significant is the laminated root rot (*Phellinus weirii*) which occurs in pockets in Douglas-fir stands. Strategies for addressing these infections include surveys to map the infected areas, planting of resistant species (e.g., western redcedar, alder) or stumping where appropriate and monitoring the results of earlier initiatives and other research to determine appropriate treatments.

Root rot can be managed effectively under variable retention by removing vulnerable species or high infection centres. Alternatively, in some situations, leaving some infection centres and planting resistant species around them may add to the diversity in the stand while not posing a major threat to the remainder of the stand.

6.3.3 Wind Damage

Objectives:

- Limit the amount of operationally related windthrow (occurring within five years of adjacent harvest activity) to 5% of the area harvested in a given year.
- Salvage at least 30% of the merchantable, operationally induced windthrow within two years of occurrence.

Recent experience:

Surveys indicate that on average, in recent years, operationally related windthrow has occurred on an area equivalent to 2.8% of the harvested area. It is expected that the current strategy of more windthrow management treatments will reduce operationally induced windthrow to within 2% of the area harvested

The strategy includes:

- Each area is assessed for consequence. The focus is on protecting high consequence areas where windthrow will potentially impact management objectives. An example of a high consequence area is a small group of trees that is holding soil, that if blown down will cause a slide into a S1 stream.
- Each area is assessed for windthrow hazard and risk. This includes assessment of exposure, soil properties, stand characteristics, boundary orientation, and whether expected windthrow would be above acceptable limits.
- If it is determined that the level of expected windthrow is unacceptable then prescriptions may include:
 - Leaving larger buffers and allowing natural feathering (with a plan to salvage windthrown trees).
 - Increase in patch size
 - Topping
 - Partial cutting
 - Locating reserves and edges to reduce the risk of windthrow,
- Downed trees will be recovered where practical and subject to management objectives and economic considerations.
- Windthrow Monitoring – Variable Retention

Concern has been expressed that variable retention will increase the incidence of windthrow. Although variable retention may create more

exposed edges, the retention pattern could modify wind forces against edges and reduce windthrow relative to clearcuts.

The company has initiated a project to design and implement a windthrow monitoring program. Development and testing of the monitoring design has occurred during the period 2000 to 2002. Implementation is scheduled for 2003. This program will document the amount of windthrow occurring in variable retention areas and provide a baseline against which to measure future windthrow management. The design will account for the variability and character of residual stands and stand edges created by variable retention.

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

6.3.4 Browse Damage to Seedlings

Deer and/or elk browse of seedlings has a significant impact on reforestation in some areas. Measures to protect seedlings from browse damage are costly. The impact is greatest on redcedar and yellow cypress, as these species are most palatable to deer.

Less palatable species will be planted where appropriate (as indicated in the "Establishment to Free Growing Guidebook Vancouver Forest Region") in areas that are highly susceptible to browse. Measures to protect red cedar and yellow cypress seedlings in areas of high browse hazard continue to evolve. Current practices include shielding devices such as vexar tubing and the use of approved chemical repellents. Larger planting stock can make a difference in some areas.

7.0 PLANNING

7.1 Introduction

Management is according to the Regulations and Guidelines issued under the Forest Practices Code legislation and other applicable legislation.

This includes operational planning requirements (Forest Development Plans, Road Permits, Silvicultural Prescriptions and Cutting Permits). Weyerhaeuser will work with MoF and MoWLAP staff to improve the efficiency and effectiveness of the operational planning process.

Most of this section summarizes the many regional and sub-unit planning processes that are occurring and Weyerhaeuser's commitment to these processes.

7.2 Higher Level Plans

As of July 01, 2001 there was one higher level plan in place in TFL 44.

A higher level plan has been established for the Resource Management Zones (and objectives) of the Vancouver Island Land use Plan (VILUP).

Landscape unit planning is proceeding (refer to section 7.4). This is expected to result in the declaration of landscape unit plans as higher level plans during MP #4. The objectives and Old-Growth Management Areas (OGMAs) defined in these plans will then be incorporated into operational planning and future strategic analyses.

7.3 Vancouver Island Land Use Plan (VILUP)

The Vancouver Island Higher Level Plan (HLP) took effect on December 1, 2000. The HLP makes some components of the VILUP enforceable under the FPC. These involve the Resource Management Zones and objectives including specified variances from the general provisions of the FPC for some of these zones.

Protected areas had earlier been established on more than 9 000 ha of what was TFL 44. This includes areas in the Upper Carmanah and Walbran Watersheds, now part of the Carmanah Walbran Park and the addition of the McBride Watershed to Strathcona Park. It also includes smaller areas in the Nitnat and Klanawa Watersheds.

Resource management zones include Special Management Zones (SMZs), Enhanced Forestry Zones (EFZs) and General Management Zones (GMZs)

Special Management Zones (SMZs)

SMZs are areas for which conservation of one or more resource values, such as biodiversity, wildlife, cultural, recreation or scenery have been defined as a priority.

Five SMZs occur in TFL 44. The Nahmint (SMZ #13) and Strathcona-Taylor (SMZ #17) SMZs are largely in TFL 44 and the Barkley Sound (SMZ #14), Alberni Canal (SMZ #18) and Walbran Periphery (SMZ #21) SMZs are partially within the TFL.

The VILUP HLP objectives for these SMZs include:

- Sustaining forest ecosystem structure and function. The emphasis is on creating or maintaining stand structure and forest attributes associated with old forests. The target for mature seral forest is set at between one quarter and one third of the forest area. A variety of silvicultural systems are required and the maximum cutblock size varies with silvicultural system.
- FDPs in the Nahmint, Strathcona-Taylor and the Walbran SMZs require the joint approval of both the MoF District Manager and the designated environment official (MoWLAP).
- In the Nahmint SMZ, emphasis is on regionally rare and underrepresented ecosystems, by retaining old seral forest at the site series/surrogate level of representation.
- Emphasis on the management of visual landscapes in the Nahmint, Barkley Sound and Alberni Canal SMZs.

Other planning classifications are consistent with this conservation direction. The following table shows the correspondence of draft landscape unit Biodiversity Emphasis Options (BEOs) and Weyerhaeuser's draft forest stewardship zones with the five SMZs.

Special Management Zone	Draft Biodiversity Emphasis (BEO) in Corresponding Landscape Units	Forest Stewardship Zone
Nahmint	High	Habitat and Old-growth
Strathcona-Taylor	Intermediate	Habitat and Old-growth
Walbran Periphery	Intermediate	Habitat
Alberni Canal	Intermediate and Low	Timber and Old-growth
Barkley Sound	Low	Timber

The high and intermediate biodiversity emphasis in the Nahmint, Strathcona-Taylor and Walbran SMZs include higher targets for old-growth forest than the low biodiversity emphasis.

Similarly the same three SMZs are mainly in habitat stewardship zones with portions of the Nahmint and Strathcona-Taylor SMZs in old-growth stewardship zones. Goals for old-growth stewardship zones include reserving two thirds of the area from harvest activity and applying uneven aged silvicultural systems in the other third. Habitat areas have higher levels for minimum stand-level retention than timber zones (15% compared to 10%).

The Nahmint, Barkley Sound and Alberni Canal SMZs are referred to as having primary visual values. All three areas are in known scenic areas and recommended visual quality classes are recognized in the visual landscape inventory.

A Local Resource use Plan (LRUP) was established in the Nahmint Watershed in 1975 and reviewed in 1991. As a result of this process, objectives were defined and planning requirements including visual landscape management, river and lake buffers, forest ecosystem networks and greenup conditions have been implemented in the Nahmint Watershed.

On March 27, 1997, the District Manager directed Weyerhaeuser to begin stepping down the rate of cut in the Nahmint Watershed and established an expected rate of cut for the years 1997 to 2003. For the years 1997 to 2001 the total harvest is estimated at 326,000 m³ compared to a target (total for the five years) of 440,000 m³. Unless otherwise directed, Weyerhaeuser will continue to harvest on average within the directed rate of cut for the period to 2003. As in 2000, individual year harvests may be relatively high, but that will be balanced by low harvests in other years (e.g. 1997 to 1999 and 2001) to result in an average that does not exceed the target average.

Enhanced Forestry Zones (EFZs)

The Corrigan, Cous, Klanawa, Maggie and Sarita EFZs are largely within TFL 44. The Effingham EFZ is partially within the TFL.

VILUP HLP objectives for the EFZs include increasing the short-term availability of timber by allowing cutblocks larger than 40 ha and greenup to be achieved at an average stand height of 1.3m (rather than 3m). This is conditional on maintaining the FPC's requirements for environmental protection.

The VILUP HLP allows for variation of old seral constraints in the Corrigan and Sarita EFZs. In the Corrigan (with an intermediate BEO) CWHvm1 variant, up to one third of the old seral target may be recruited from second-growth, provided specific conditions are met. In the Sarita (with a low BEO) there may be additional retention requirements for marbled murrelet habitat. The extent of these variations will be clearer as landscape unit planning proceeds.

The remaining areas, primarily in the Ash Valley and the Great Central, Sproat, Henderson, Cameron, China Creek and Nitinaht Watersheds are classified as GMZs.

Weyerhaeuser is committed to:

- The VILUP, including the Resource Management Zones (and objectives) of the Higher Level Plan.
- The Landscape Unit Planning Process. Refer to Section 7.4. More specific management objectives and direction for each management zone will be determined during the next two to three years through the landscape planning process.

7.4 Landscape Unit Planning

The MoF and MoWLAP have developed a Regional Landscape Unit Planning Strategy. This initiative has defined draft landscape unit boundaries and assigned biodiversity emphases to these units.

The current priority is the establishment of objectives for old-growth and wildlife tree retention for each landscape unit (refer to the landscape Unit Planning Guide (1999)). The intent is to provide a foundation for representation of different habitat types and a distribution across the forest landscape of a range of structural (habitat) elements.

For TFL 44, the initial Ministry (MoSRM) focus is to complete a plan for the Corrigan Landscape Unit. The process will then be applied elsewhere in TFL 44, with an expectation that plans for the other landscape units will be completed during MP #4.

Weyerhaeuser will continue to work with MoF, MoSRM and MoWLAP staff to develop plans for landscape units that coincide with company tenures. This includes:

- Providing data on forest cover and existing reserves for lands managed by Weyerhaeuser.
- Assisting in locating and defining Old Growth Management Areas. A spatial inventory of OGMA's will be developed and maintained for use in both operational and strategic planning.
- Integrating variable retention into landscape unit planning. This includes recognizing the contribution over time of variable retention to meeting old seral targets.

In general, there is a good correspondence between the Weyerhaeuser stewardship zones and draft biodiversity emphasis options. The Nahmint high biodiversity landscape unit is mainly a habitat stewardship zone, with some in old-growth zones. The old-growth zone portions will on average have 66% of the forest area reserved from harvest.

The low biodiversity emphasis landscape units are predominately in timber stewardship zones.

Some of the intermediate biodiversity emphasis landscape units correspond at least in part to either habitat or old-growth stewardship zones. Designation as a timber zone will not limit fulfillment of the landscape unit planning requirements for intermediate biodiversity emphasis (refer to the discussion in Section 3.1.2). Variable retention provides further flexibility to meet and often exceed landscape unit objectives.

The following table summarizes stewardship zones for high and intermediate biodiversity emphasis landscape units in TFL 44.

Table 7.1 Comparison of Landscape Unit Draft Biodiversity Emphases and Forest Project Stewardship Zones

Draft Landscape Unit	Draft Biodiversity Emphasis Option	Weyerhaeuser Stewardship Zone
Nahmint	High	Habitat and old-growth
Ash	Intermediate	Timber
Cameron	Intermediate	Timber with small area in habitat and old-growth
Caycuse	Intermediate	Habitat
China	Intermediate	Timber
Corrigan	Intermediate	Timber
Effingham	Intermediate	Old-growth and Timber A small area in TFL 44
Great Central	Intermediate	Timber, Habitat and Old-growth
Klanawa	Intermediate	Timber, small area of old-growth
Nitinaht	Intermediate	Predominately Timber with a small area of Old-growth
Rosewall	Intermediate	Timber – small area in TFL 44
Sproat	Intermediate	Habitat and small area of Old-growth
Walbran	Intermediate	Habitat

Areas of productive forest by landscape unit and variant, are summarized in the Information Package (Appendix I).

7.5 Planning in Clayoquot Sound

On October 27, 1999, TFL 57 was created by a subdivision and transfer of the historic Kennedy Lake/Estevan Crown and Timber Licence tenures within the Clayoquot Working Circle of TFL 44. TFL 57, "The Clayoquot TFL", is managed by Issaak Forest Resources (IFR) a joint venture between Ma Mook Development Corporation (51%) and Weyerhaeuser (49%). The remaining portion of TFL 44 within Clayoquot (13,000ha) is made up of 2 general areas, 11,500ha within the Upper Kennedy Planning unit, in the upper Kennedy/Snag Lake and Marion Creek Portion administered by Sproat Operations. The remainder is in Kennedy Lake Basin Planning unit and contains crown granted lots primarily in the Kennedy Flats adjacent to the Lake and outlet portion of the Kennedy River towards Tofino Inlet

Weyerhaeuser closed its traditional Clayoquot Operations January 31, 1998 and planned for future harvest for IFR until tenure subdivision, transfer and the creation of TFL #57. During this time interim Watershed Level Plans were created and presented for Flores Island, Cypre and Bedingfield planning units. Also, future openings in this area were engineered for timber harvest.

Weyerhaeuser is committed to the Clayoquot Sound planning process. This includes working in cooperation with the Central Region Board, the Clayoquot Sound Planning Committee, implementation of the Clayoquot Sound Scientific Panel (1995) recommendations, and working with IFR. Weyerhaeuser prepared a Joint "2000 - 2004 Minor Salvage Operation Forest Development Plan for TFL 44, TFL 57, TL's T0834, T0837, T0840, T0843, T0846 within the Clayoquot Operating Area" with IFR to manage and provide the opportunity for minor forest products removal.

Formal Watershed plans have not yet been completed in the remaining TFL 44 portions of Clayoquot Sound. In the absence of such plans, interim watershed plans will be developed and submitted before proceeding with operational planning. The Scientific Panel recommendation of a minimum of 40% of the forest greater than age 140 years may restrict harvest opportunities in the Kennedy Lake Basin planning unit.

The MP #4 Timber Supply Analysis of the Clayoquot Sound portion of TFL 44 is similar to other recent analyses of timber supply of Clayoquot Sound tenures. The analysis recognizes major recommendations of the Scientific Panel such as rate of cut constraints and minimum requirements for older (greater than 140 years of age) forest. For more detail refer to the Information Package (Appendix I) and the Timber Supply Analysis report (Appendix VII).

7.6 Franklin Forest Products (FFP)

Weyerhaeuser is committed to the current Job protection Commissioner's Economic Plan which was signed on July 6, 2000 and extends to 2003. The plan provides FFP with access to as much as 40 000 m³ of marginally economic timber per year. This timber is to be processed at FFP's mill in Port Alberni. During 2000 and 2001, this harvest has averaged 15 152 m³/year.

The marginally economic timber is as defined in the Information Package (Appendix I) and as described in Weyerhaeuser's inventory. The marginally economic timber is identified within the proposed cutblocks submitted in the FDP and is harvested under cutting permits issued to Weyerhaeuser pursuant to TFL 44. Areas classified as marginally economic may change in MP #4 because inventory volumes have been recompiled and the classification relies largely on estimated volumes per hectare along with main species and classification of conventional or non-conventional (aerial) harvesting systems.

7.7 Internal and Third Party Audits

Internal systems and compliance audits are conducted by trained staff and consultants to evaluate the effectiveness of environmental management systems and to verify compliance with applicable legislation as well as Weyerhaeuser criteria and operating procedures. Compliance audits are conducted biennially and encompass all harvesting related activities, planning, silviculture and fire preparedness. System audits are done on an annual basis and relate to the requirements of specific certification standards.

Audit results are communicated to the management of the relevant timberlands unit who prepares action plans to address any deficiencies. A report is prepared that contains all audit findings and the related action plans and is submitted to senior management.

The TFL 44 operations are certified under the ISO 14001 standard for Environmental Management Systems and the CSA Z809 standard for a Sustainable Forest Management System (refer to Section 3.2). Both require regular third party verification of adherence to the requirements of the standards to obtain and maintain certification.

8.0 RESOURCE INVENTORIES AND RESEARCH

8.1 Introduction

Resource inventories are used in various phases of harvest planning, particularly in the strategic analyses (Timber Supply Analysis and Twenty-Year Plan) of the Management Plan. They are also an important component of Forest Development Plans. These resource inventories are reviewed and updated on a regular basis. This section describes plans for improving inventories during MP #4. Current inventories (used in the MP #4 analyses) are described in Appendix II.

Inventory review and updates are reported in the TFL 44 Annual Report.

Weyerhaeuser BC Coastal Group has initiated changes in data management and planning procedures that will update many of the inventories in a more timely and efficient manner.

- Beginning in 1999, the management of Geographic Information Systems (GIS) has been moved from a central location to each Timberlands Operation. Emphasis is shifting from the 1:20,000 scale traditionally used in strategic planning to collecting and building spatial data sets over a range of spatial resolutions, varying according to theme. For example roads and harvest blocks might be entered at a 1:5,000 scale while recreation features might be mapped at a scale of 1:20,000. In addition, Timberlands Operations are adopting spatial planning software such as Canfor's GENUS system. When these initiatives come together during the next five years, many of the resource inventories will be more directly updated, by processing spatial and attribute data sets entered during operational planning and recording of assessments.
- For example the forest inventory may be directly updated as roads are built, areas harvested and silvicultural treatments and assessments completed. Similarly stream classifications, riparian areas, changes to wildlife areas, wildlife tree patches etc. will be recorded and available for updating the various inventories as they occur. The growing proportion of inventory data collected operationally will provide an increasingly useful sample for testing forest wide net-downs for strategic analyses. In this way, estimates can be improved of net-downs for example on Class IV soils and allowances for wildlife tree patches, culturally modified trees and variable retention.

8.2 Forest (Timber) Inventory

Recent accomplishments include audits and a recompilation of the mature (greater than 130 years) inventory. Also during MP #3 a substantial area of older second-growth (31 years plus) was cruised. Refer to the description in Appendix II, Section 1.

The TFL 44 forest inventory will be maintained and updated (to reflect changes due to harvesting, silvicultural activities, property additions or deletions and changes in property tenures) by West Island Timberlands.

During the next two years, inventory update procedures will be developed and implemented for variable retention systems. Information on reserves, residual timber available for future harvests and prescriptions are required for planning and monitoring.

Forest Growth and Yield Plan

Plans for MP #4 include:

- The establishment of several large scale (100 ha) and small scale (<20ha) experiments examining the effects of different amounts and patterns of variable retention on growth of the next crop. In addition, planted transects established during 1999 to 2001 with various species will be measured and used to examine the impacts of edge effects on growth of the next crop.
- A small pilot project will be undertaken to monitor (through random samples) the effects of variable retention on growth.
- A core of treated and natural permanent sample plots will be measured on a 10-year cycle.
- Existing models (Y-XENO) will be supported in the near term with adjustments for the effects of variable retention. In the longer-term, alternative modeling endeavours will be undertaken.

8.3 Operability Mapping

The status of the operability mapping relative to operational experience will be reviewed by December 31, 2004. The results of this review will determine the need and location of any updating, to be completed by December 31, 2005, in time for the MP #5 analysis.

8.4 Terrain

Most of TFL 44 has been mapped for terrain stability. However, the mapping in different areas, has occurred at various times during the past 25 years, at various levels of detail and to different standards.

A three-year project was initiated in 2000. Funding was initially from FRBC and is now from FIA. The purpose of this project is to ensure that Crown land and Timber Licences in TFL 44 will have terrain stability mapping which conforms to

current RIC standards, satisfies the BC Forest Practices Code Regulations and meets operational planning needs.

The assessment report completed after the first year provides a review of the existing mapping, identifies gaps and includes a work plan for the following two years (2001/2002 and 2002/2003 financial years).

8.5 Recreation

The TFL 44 recreation inventory was completed in 1995, to MoF 1991 standards. The MoF have recently completed a “rollover” of the TFL 44 recreation inventory data to MoF 1998 standards. This data conversion was not completed until after data preparation for the MP #4 analysis.

A Recreation Analysis and Management Strategy Report (RAMS report) for the TFL 44 area was completed in August of 2002.

During MP #4, Weyerhaeuser will work with MoF staff to review the converted data (resulting from the inventory rollover) and will proceed with agreed upon revisions or updating that results from this review. The RAMS report provides up-to-date information for use in this review process.

8.6 Visual Landscape

During MP #3, the visual landscape inventory was updated to MoF 1997 standards.

A further major revision to this inventory is not expected during MP #4. It will be reviewed with MoF District staff by December 31, 2004, prior to MP #4.

Scenic areas have been made known by the South Island Forest District. Recommended Visual Quality Classes (RVQCs) have been identified in the visual landscape inventory. Visual Quality Objectives (VQOs) have not yet been made known. The scenic areas and the RVQCs were utilised in the MP #4 analysis (refer to the Information Package — in Appendix I).

8.7 Wildlife

Ungulate winter ranges in TFL 44 were grandparented in 1998. These habitat areas will be reviewed with MoWLAP and MoF District staff prior to October 2003.

Inventories of Identified Wildlife management areas will be developed and updated as areas are identified. The first Wildlife Habitat Area (WHA) in TFL 44 was established and made known in May 2001. This WHA area provides protection around Queen Charlotte Goshawk nests on McLaughlin Ridge in Alberni East.

Marbled Murrelet areas have been identified in TFL 44. It is expected that changes to these will occur as landscape unit planning proceeds.

8.8 Riparian

Each operation maintains an inventory of stream classifications and occurrence of fish at a scale of 1:20 000. When the data base and operational planning tool developments (discussed in the introduction on inventories) are in place fish, stream, wetlands and small lake inventory updates will occur more directly by processing operational assessments reported at a scale of 1:5,000.

Over time this more direct link to operational planning assessments will provide an increasingly better (larger and more representative) sample of actual riparian net-downs compared to assumptions based on zone widths and retention levels described in the Riparian Guidebook. This will include recognition of streams that are mapped at a scale of 1:5,000 but are too small to be reported in current 1:20,000 strategic inventories.

TFL 44 is involved in a local Area Agreement for fish inventories and stream classification. This process provides opportunities for meeting fish and stream inventory requirements more efficiently.

8.9 Terrestrial Ecosystem Mapping (TEM)

The objective is to map ecosystems (site series) at 1:20,000 for all Weyerhaeuser BC Coastal Group tenures. This inventory will provide data for strategic and operational planning, including forest level analysis, landscape-level planning and silviculture prescriptions. Funding has been provided by Forest Renewal BC. All projects are being done on the TRIM (NAD 83) base and follow the provincial Resource Inventory Committee (RIC) mapping and database standards.

TEM mapping for most of TFL 44 is expected to be complete in 2002.

8.10 Cultural Heritage Resources

Inventories of cultural heritage resources will be added to during MP #4.

A considerable number of landscape level inventories have been completed. These include traditional use studies, Archaeological Overview Assessments and Archaeological Inventories Studies. For more detail, refer to Appendix III.

The database of cutblocks (currently 8,000 ha) that has been intensively surveyed for CMTs will be expanded as more assessments are completed.

8.11 Old Growth Management Areas (OGMAs)

Spatial inventories of OGMAs will be developed as Landscape Unit Planning proceeds. These inventories will be maintained and used in both operational and strategic planning.

8.12 Forest Research

Objectives are to:

- Actively support forest research, inventory and technological advancement and where appropriate adopt innovative practices and technologies.
- Have a research program aligned with forest stewardship principles

The strategy is to:

- Identify and recommend basic and applied research needs to the organizations that have the specific mandate to undertake the work.
- Prepare and submit research proposals for outside funding for projects of particular or strategic concern to the Licence area.
- Cooperate with these organizations in conducting basic and applied research.
- Test and develop practical applications and uses of published basic research that are relevant to Weyerhaeuser BCCG management goals and responsibilities.

Weyerhaeuser BCCG is an active partner in a number of major research projects. These include:

- The **Montane Alternative Silviculture Systems (MASS)** research project near Campbell River was begun in 1992 as a partnership between Weyerhaeuser BCCG, Canadian Forest Service, BC Ministry of Forests, University of BC, University of Victoria, Forest Engineering Research Institute of Canada and Industry Canada. MASS was formed to test non-clearcut harvest approaches on high-elevation sites. This long-term experiment has included 21 studies investigating many ecological and silvicultural aspects.

Final reports for FRBC were completed in 2000, representing the completion of FRBC funding for 5-year post-harvest measurement. A workshop presenting findings to operational foresters was held February 7-8, 2001 in Nanaimo. A summary of project results and publications is maintained on the Canadian Forest Service's MASS website at:

www.pfc.cfs.nrcan.gc.ca/silviculture/mass/. Although many studies are completed, the site will continue to be monitored for long-term impacts on forest growth and biological diversity.

- Weyerhaeuser together with the MoF and MoWLAP was involved in an **Enhanced Forest Management Pilot Project (EFMPP)** in Block 2 of TFL 39 between September of 1995 and March 2001. The project was funded by FRBC and focused on developing a working group process and an analytical tool kit for identifying silvicultural investment opportunities spatially. Emphasis during 1999 and 2000 was on developing and applying spatial planning tools to variable retention systems and developing and implementing an adaptive management program to support operational implementation of variable retention. The analysis of this second phase was completed in 2001 and the project came to a close March 31, 2001.
- **The Salal-Cedar-Hemlock Integrated Research Program (SCHIRP).** Weyerhaeuser BCCG has participated in the multi-agency SCHIRP program since 1986. The objective is to determine the processes causing poorly performing plantations in salal-dominated cedar-hemlock sites, and to

develop appropriate silvicultural prescriptions. Results have been communicated by a synthesis report, a field guide and field tours.

A field trial funded by FRBC was established near Ucluelet within TFL 44 in March 1996 to test optimum combinations of species (Cw, Hw and 50-50 mix), fertilization (7 grams N and P), mechanical site preparation (excavator spot scarification) and density (1,000 and 2,000 sph) for CwHw-Salal sites. This trial will help us extrapolate the SCHIRP results from northern Vancouver Island to a wider range of sites. Five-year tree growth, vegetation cover and foliar nutrition measurements were completed in fall 2000 and a report was completed in April 2001. The research site will continue to be maintained. The next scheduled measurement is 10 years post-treatment (2005).

- **The Adaptive Management and Monitoring Working Group** includes members from Weyerhaeuser, MoF, MoWLAP, The Centre for Conservation Biology at the University of British Columbia and private contractors. The objective is to monitor growth and yield, regeneration, forest organisms, habitat attributes, forest health, windthrow and costs for a range of variable retention treatment options. For more detail refer to section 3.1.3.
- Weyerhaeuser BCCG has been actively involved in conservation efforts for the endangered Vancouver Island Marmot. In addition the company has continued to participate in funded projects (FRBC and now FIA) for inventory and research of Northern Goshawks and Marbled Murrelets.

9.0 SUMMARY OF CHANGES AND IMPACTS

This section summarizes some of the key similarities and differences between MP #3 and MP #4, and so describes impacts that are anticipated with implementing MP #4. It is recognized that external events such as changes in law and markets may affect these projections.

9.1 Lands Within TFL 44

Effective October 1999, most of the Clayoquot Sound portion of TFL 44 was transferred to TFL 57 and hence to Lisaak Forest Resources. The total area of TFL 44 was consequently reduced by 88,000 ha and the AAC was reduced from 1,890,000 m³ to 1,766,200 m³. The discussion in section 9.2 refers to MP #3 statistics that apply after these changes.

On August 2, 2002, it was announced that the Ucluelet Working Circle would be removed from TFL 44. It is expected that this process will be complete by early 2003. The impact will be to reduce the total area of the TFL by approximately 11,000 ha — from 322,000 ha to 311,000 ha. The MP #4 AAC recommendations identify the contribution of the Ucluelet Working Circle to facilitate the expected change.

9.2 Harvest Levels

Table 9.1 Comparison of MP #4 and MP #3 Harvest Levels

	Volumes (000 m ³)				
	Alberni East & Alberni West	Clayoquot	Subtotal	Ucluelet	Total
MP #3 AAC Contribution	1 724	6.2	1 730.2	36	1 766.2
MP #4 AAC Recommendations	1 675	28	1 703	60	1 763
Difference	- 49	+ 21.8	- 27.2	+ 24	- 3.2
MP #3 LTHL ⁽¹⁾	1 516	NA ⁽²⁾	NA	55	NA
MP #4 LTHL ⁽¹⁾	1 555	28.7	1 583.7	69.3	1 653
Difference	+ 39			+ 14.3	

(1) LTHL – Long Term Harvest Level

(2) The LTHL excludes any contribution from Clayoquot Sound as it was not estimated in the MP #3 analysis.

The recommended MP #4 harvest level for the Alberni East and Alberni West Working Circles, the main portion of TFL 44, continues the strategy of gradual transition towards the long-term harvest level.

If the expected removal of the Ucluelet Working Circle is recognized, then the recommended AAC for MP #4 is 1,703,000 m³, 3.5% less than the 1,766,200 m³ for MP #3.

Changes in the results of the analysis between MP #3 and MP #4 vary by working circle. It is useful to start the discussion by referring to the following table.

Table 9.2 Summary of Major Analysis Assumptions – a Comparison of MP #4 with MP #3

	Working Circle		
	Alberni East / Alberni West	Ucluelet	Clayoquot
THLB	- 2.1%	+8.7%	-22%
Available Mature Volume (2001)	+ 17%	+ 52%	- 10%
Projected Yields	Higher for some analysis units – e.g. planted high and good site D.fir		
Site Index	Similar – both analyses used the Biophysical Site Index Model (BSIM)		
Visual Landscape Constraints	Less restrictive		Not applied in MP #3
Procedure	Similar		Significant Change

Alberni East and Alberni West Working Circles

The MP #4 results show slightly higher harvest levels in the medium term and in the long term (the LTHL of 1,555,000 m³ is 2.6% higher than the 1,516,000 m³ of MP #3).

The timber harvesting landbase is 2.1% lower than for MP #3. Additional net-downs for the Forest Project (Old-Growth stewardship zones and variable retention) and larger net-downs for unstable soils and riparian areas — and to a lesser extent for marbled murrelet areas and uneconomic timber — more than offset reduced net-downs for recreation and the area netted-down for Forest Ecosystem Networks (FENs). The FENs are not recognized in the MP #4 base option as they are scheduled to expire in 2003 and will be functionally replaced by riparian areas, Old-growth Management Areas, other reserves and variable retention.

The increase in available mature volume in the MP #4 analysis (compared to MP #3) contributes significantly to the higher harvest levels in the medium term. Most of this increase is from the change in the location of net-downs — more net-downs in MP #4 occur in second-growth with the shift in net-downs from FENs to variable retention, riparian and unstable soils. Almost one-third of the increase in mature volume is from lower-than-expected harvest levels between 1996 and 2000, and higher harvests in second-growth during the same period.

The less restrictive visual landscape constraints contribute to more harvest flexibility in the medium term and help to increase longer-term harvest levels.

Table 9.3 Alberni East and West: Visual Landscape Constraints — a Comparison of MP #4 with MP #3

RVQC ⁽³⁾	Scenic Area	% of the THLB ⁽¹⁾		Maximum (on average) % THLB less than VEG ⁽²⁾	
		MP #3	MP #4	MP #3	MP #4
Retention	NA ⁽⁴⁾	0.6%		3.7%	
	1		0.1%		7.8%
	2		0.1%		9.9%
Partial Retention	NA ⁽⁴⁾	12.1%		10.7%	
	1		9.0%		16.5%
	2		7.2%		22.1%

- (1) THLB – Timber Harvesting Landbase
- (2) VEG – Visually Effective Green-up
- (3) RVQC – Recommended Visual Quality Class
- (4) NA – Scenic Areas were not defined for MP #3

Higher yields (compared to MP #3) in some second-growth types, particularly good and high-site Douglas-fir, more than offset the impact of a smaller THLB on the longer term harvest level. Good and high-site Douglas-fir yield classes occupy one-third of the THLB. Higher gains from second generation tree improvement (most of these areas are planted) contribute to the higher yield projections in the current analysis.

Clayoquot Working Circle

The recommended AAC allocation of 28,000 m³ for MP #4 is substantially greater than the 6,200 m³ assigned in MP #3. This occurs even though the THLB is 22% less in the MP #4 analysis (due to adjustment based on the results of watershed plans in TFL 57).

The difference in indicated harvest levels results from changes in procedures used in the analysis:

- The MP #3 calculation applied the watershed rate of cut constraint relative to the THLB, while the MP #4 base option applied the same constraint relative to the total area within each watershed unit. The impact of this difference is substantial. Refer to the analysis of options in Appendix VII.
- The MP #3 calculation was a static analysis — it did not recognize changes that occur in the age class distribution (i.e. the changing impacts of recent harvest on watershed rate-of-cut requirements) over the first five-year period, or over a

longer time frame. Recent harvest had negligible impact on the MP #4 analysis, as there has been no harvest activity in this area in recent years.

The results in MP #3, Appendix III, the section on the Clayoquot Working Circle show the significant sensitivity of indicated harvest levels to these changes in procedure.

Ucluelet Working Circle

The harvest levels in the MP #4 analysis are significantly higher than the MP #3 results. The reasons are similar (but of greater relative extent) to those discussed for the Alberni East and Alberni West Working Circles.

The change in net-downs has increased the Ucluelet THLB by 8.7% and the available mature volume by almost 500,000 m³ relative to MP #3. Much of the increase comes from areas that were classified as FENs. Lower than expected harvest levels between 1996 and 2000 also contribute to the higher available mature volume.

Another significant impact on short-term and medium-term harvest levels is the change in the visual landscape classification and constraints, in particular the reclassification of a large retention RVQC. Refer to the following table.

Table 9.4 Ucluelet: Visual Landscape Constraints — a Comparison of MP #4 with MP #3.

RVQC ⁽³⁾	Scenic Area	% of the THLB ⁽¹⁾		Maximum (on average) % THLB less than VEG ⁽²⁾	
		MP #3	MP #4	MP #3	MP #4
Retention	NA ⁽⁴⁾	9.1%		1.2%	
	1		0.3%		3.4%
	2		0.1%		5.6%
Partial Retention	NA ⁽⁴⁾	24.9%		9.3%	
	1		2.3%		14.5%
	2		24.3%		20.9%

(1) THLB – Timber Harvesting Landbase

(2) VEG – Visually Effective Green-up

(3) RVQC – Recommended Visual Quality Class

(4) NA – Scenic Areas were not defined for MP #3

The larger THLB, higher projected yields for high-site Douglas fir types (29% of the THLB) and less restrictive visual landscape constraints contribute to the higher long-term harvest levels in MP #4.

9.3 Public Review

A significant initiative in public review and input that will continue to develop in MP #4 is public involvement and stakeholder input associated with the CSA Forest Certification process.

The Community Advisory Group, with a broad representation from the local community, is proving effective for communicating community input and concerns and for developing joint understanding of forestry planning and issues.

9.4 Economic Opportunities

The groundwork for business relationships between Weyerhaeuser and First Nations has been developed in recent years. Further growth and development of these relationships and business opportunities are expected during MP #4.

The Forest Project is not expected to result in significant changes in employment during the next five years. The distribution of work is changing somewhat. The proportion of harvesting by helicopter has increased and is expected to level off at around 20%. Employment in operational planning has increased to service the additional requirements of the FPC, variable retention and forest certification.

9.5 Protection and Conservation of Non-timber Values

Several major initiatives that commenced during MP #3 and are continuing in MP #4 will have a significant impact on non-timber values. They include:

- Landscape unit planning. It is expected that landscape unit plans will be completed during MP #4. Landscape unit objectives and Old-Growth Management Areas will be clearly defined. Increased clarity as to timber available for harvest will also assist operational planning.
- The Forest Project is on schedule for achieving variable retention targets. Forest Stewardship Zones will be clearly defined.
- ISO 14001 Environmental Management Systems (EMS) and CSA Z809 Sustainable Forest Management System (SFM) forest certification was achieved for TFL 44 timberlands operations in 2000. Changes will occur in these systems reflecting Weyerhaeuser's commitment to the ongoing improvement processes.

9.6 Planning

Much of the FPC has been implemented during MP #3. This has included recent changes to streamline operational planning.

Management Plan #4 has been prepared according to the recently revised schedule. The new process is more streamlined and occurs over a 20-month time-frame rather than 30 months-plus for MP #3.

The Management Plan #4 process has benefited from computer technology. A computerized planning tool was used to prepare the Twenty-Year Plan, resulting in substantial savings in cost and operational planning resources. The main presentation of maps has been presented in a digital form, resulting in a more useful product (user can choose scale, combinations of themes, etc.) at a much reduced cost. Similarly, the Management Plan text, and particularly the appendices have mainly been distributed digitally.

It is expected that significant changes proposed for strategic plan requirements for TFLs will be passed by the provincial legislature in late 2002. Weyerhaeuser is committed to these changes which are likely to occur in the early part of MP #4. It is recognized that there are opportunities for rationalizing the planning processes to better bring together tenure, sustainability and investment requirements at a strategic planning level.

10.0 MANAGEMENT PLAN ADMINISTRATION

10.1 Managed Forest No. 74

Managed Forest #74, which comprises land privately owned by Weyerhaeuser in the TFL, is managed as an integral part of the licence and to the same standards.

10.2 Revision to MP #4

The MP will be revised or updated to conform to any legal changes, or a notice received from the Chief Forester. In the event of changes to company objectives or management plans necessitated by the business climate or other factors identified by the company, Weyerhaeuser will consult with the Chief Forester about revising the MP.

10.3 TFL Annual Report

An annual report will be submitted each year as requested by the Manager of the Vancouver Forest Region. It will meet the requirements of the Regional Manager and record progress in routine management as well as progress towards meeting the commitments made or implied in the MP. One or more copies will be made available for public review.

Specific commitments which will be reported upon include:

- Progress towards achieving variable retention targets.
- Harvest volumes by the current operability classification.
- Progress in landscape unit planning and other regional and sub-unit planning processes.
- Progress in reviewing and updating inventories.

Glossary

Acronyms used in this document

AAC	Allowable Annual Cut
BCCG	British Columbia Coastal Group (Weyerhaeuser)
CMT	Culturally Modified tree
CSA	Canadian Standards Association
CWAP	Coastal Watershed Assessment Procedure
CWS	Community Watershed
EFMPP	Enhanced Forest Management Pilot Project
EFZ	Enhanced Forestry Zone
FDP	Forest Development Plan
FIA	Forest Investment Account
FPC	Forest Practices Code
FRBC	Forest Renewal British Columbia
FSC	Forest Stewardship Council
GIS	Geographic Information System
GMZ	General Management Zone
HLP	Higher Level Plan
ISO	International Organization for Standardization
MF	Managed Forest
MoF	BC Ministry of Forests
MoSRM	BC Ministry of Sustainable Resource Management
MoWLAP	BC Ministry of Water, Land and Air protection
MP	Management Plan
NAD	North American Datum (27 and 83 refer to years of map projection in 1927 and 1983)
NSR	Not Satisfactorily Restocked
OGMA	Old Growth Management Area
PSP	Permanent Sample Plot
RIC	Resource Inventory Committee
SBFEP	Small Business Forest Enterprise Program
SCHIRP	Salal Cedar Hemlock Integrated Research Program
SFM	Sustainable Forest Management

SI	Site Index
SMZ	Special Management Zone
SP	Silviculture Prescription
TEM	Terrestrial Ecosystem Mapping
TFL	Tree Farm License
THLB	Timber Harvesting Land Base
TSA	Timber Supply Analysis
TYP	Twenty-Year Plan
VILUP	Vancouver Island Land Use Plan
VR	Variable Retention
WTP	Wildlife Tree Patch

Adjacency: The desired spatial relationship among cutblocks. Most adjacency restrictions require that recently harvested areas must achieve a desired condition (green-up) before nearby or adjacent areas can be harvested.

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.

Basic silviculture: Silviculture treatments used to establish a free-growing crop of commercial trees on a logged area.

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 (Biodiversity): 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.

Brushing: A silviculture activity done by chemical, manual, grazing or mechanical means to control competing forest vegetation and reduce competition for space, light, moisture and nutrients with crop trees or seedlings.

Clearcutting: A harvesting method whereby all trees that meet utilization standards are harvested. The harvested site is then regenerated to acceptable standards by appropriate means including planting and natural seeding.

Coarse woody debris: Logs and stumps that provide habitat for plants, animals and insects, and a source of nutrients for soil development.

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.

Commercial thinning: A silviculture treatment that 'thins' out a stand by removing trees that are large enough to be sold as products such as poles or fence posts (see also, Juvenile spacing).

Conifer: Cone bearing trees having needles or scale like leaves, usually evergreen, and producing wood known commercially as "softwoods".

Conventional harvesting areas: Includes timber productive, physically operable land that is loggable by conventional ground based methods; i.e. grapple, high-lead, hoe-chuck, skidder etc.

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.

Deactivation: Measures taken to stabilise roads and logging trails during periods of inactivity, including the control of drainage, the removal of side-cast where necessary, and the re-establishment of vegetation for permanent deactivation.

Deciduous: Perennial plants which are normally leafless for some time during the year.

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 timber edge.

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.

Geographic Information System (GIS): A computerized system designed to allow users to collect, manage and analyse large volumes of spatially referenced (map) information and associated attribute data.

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.

Incremental silviculture: silviculture treatments applied after a stand has reached free-growing.

Information Package: A TFL licensee submits a timber supply analysis information package which details the technical information and assumptions to be included in the timber supply analysis. Includes inventories, net-downs (area and volume), expected timber growth rates and other resource management assumptions. The package is reviewed by the MoF.

Inoperable lands: Physically inoperable refers to timber on productive land that is so steep and/or rocky that it cannot be safely felled or yarded or a significant proportion of the volume could not be recovered. Economically inoperable refers to timber of low value and/or high cost such that logging would occur at a financial loss.

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.

Integrated resource management: The identification and consideration of all resource values, including social, economic and environmental needs, in resource planning and decision-making.

Karst: Karst features include fluted rock surfaces, vertical shafts, sinkholes, sinking streams, springs, complex sub-surface drainage systems and caves. Karst is a distinctive topography that develops as a result of the dissolving action of water on carbonate bedrock (usually limestone, dolomite or marble).

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.

Long Term Harvest Level (LTHL): A harvest level that may be maintained in the long term given a defined timber harvesting land base, estimates of forest growth and description of management for timber and non-timber resources.

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 TFL 39, mature is defined as forest areas established before 1864.

Non-conventional harvesting areas: Includes timber on productive, physically operable land that is loggable only by “non-conventional” aerial methods. These include helicopter and long-line cable systems.

Not Satisfactorily Restocked (NSR): Productive forest land that has been denuded and has not regenerated 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.

Partial harvesting (cutting): A general term referring to silviculture systems other than clearcutting, in which only selected trees are harvested. Includes seed tree, shelterwood, selection and retention systems.

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.

Pruning: The manual removal of the lower branches of crop trees to a predetermined height to produce clear, knot-free wood.

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

Reforestation (regeneration): 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 submit a Silviculture Prescription describing, among other things, the manner and time frame within which reforestation will be conducted.

Reserve zones: Zones where harvesting is not permitted.

Retention system: Defined in the BC Operational Planning Regulation as a silvicultural system designed to retain individual trees or groups of trees to maintain structural diversity over the area of the cutblock for at least one rotation and leave more than half the total area of the cutblock 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 cutblock.

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.

Rotation: The planned number of years between establishment of a tree crop and its final harvest. Can be based on physical, biological, pathological or economic criteria.

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.)

Selection: A silviculture system that removes mature timber either as single scattered trees or in small groups at relatively short intervals, repeated indefinitely, where the continual establishment of regeneration is encouraged and an uneven-aged stand is maintained.

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

Shelterwood: A silviculture system in which trees are removed in a series of cuts designed to achieve a new even-aged stand under the shelter of the remaining trees.

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.

Site Index (SI): A measure of site productivity. Site indices in British Columbia are based on heights of free-growing dominant trees of a given species at a reference age of 50 years above breast height. Site index curves have been developed for British Columbia's major commercial tree species.

Small Business Forest Enterprise Program (SBFEP): This program permits the MoF to sell Crown timber competitively to individuals and corporations who are registered as SBFEP

Snag: A large standing dead tree.

Spacing: A silvicultural treatment to reduce the number of trees in young stands, often carried out before the stems removed are large enough to be used or sold as a forest product. (see Commercial thinning).

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.

Stocking: The proportion of an area occupied by trees, measured by the degree to which the crowns of adjacent trees touch, and the number of trees per hectare.

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 Harvesting Land Base (THLB): The portion of the total area of a management unit considered to contribute to timber supply. The THLB is defined by reducing the total land base according to specified management assumptions.

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.

Tree farm Licence (TFL): Provides rights to harvest timber, and outlines responsibilities for forest management, in a particular area.

Variable Retention (VR): A relatively new silvicultural system 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. 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 clumps or clusters. The main objectives of variable retention are to retain a natural range of stand and forest structure and forest influence.

Visual Landscape Management: The identification, assessment, design and manipulation of the visual features or values of a landscape, and the consideration of these values in the integrated management of forest areas.

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, Wildlife Tree Patch (WTP): 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.