

**WOODLOT LICENCE #0097**  
**FOREST DEVELOPMENT PLAN**  
**Amendment #3**

Period

**August 15, 2001 to August 15, 2006**

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# 1. INTRODUCTION

The first Forest Development Plan (2001-2006 FDP) prepared for WL0097 was approved October 12, 2001. This major amendment to the 2001-2006 FDP for Woodlot Licence 097 is being submitted in order that the licensee can continue harvesting the 1600 m<sup>3</sup> allowable annual cut, ensuring he meets his cut control obligations, during his transition to the new Forest and Range Practices Act.

The intent and purpose of this FDP Amendment is to provide the public, First Nations, and government agencies with management information covering the remainder of the original FDP period. The FDP presents information on the location of proposed roads and cutblocks in a manner that demonstrates management for timber, biological diversity, soil conservation, cultural heritage, water, fish, wildlife, and other additional non-timber resources. The FDP also recognizes the economic and cultural needs of peoples and communities. The operating areas covered by this FDP Amendment include: Blocks A and B near Tralee Road, Block D near Palmer and Matterson Roads, and Block E near Pratt Road.

The stands proposed to be harvested under this FDP Amendment are predominantly root disease infection centers. A preliminary root disease survey was done and the proposed cutblocks are based on this survey.

## 1.1 Referral Summary

Activity	Date (yy/mm/dd)	Location (and media with respect to Public Review)	Comments Received	
			Y/N	Date (yy/mm/dd)
<b>Submission of FDP</b>				
MOF – South Island Forest District	May 2, 2005	Port Alberni Office		
Qualicum First Nations	May 2, 2005	Qualicum Bay		
<b>Other Referral Letters</b>				
RDN (Parks and Recreation)	May 2, 2005			
<b>Public Review</b>				
Advertising	May 3, 2005	The News (Parksville/Qualicum Beach)		
South Island District Office	May 2, 2005	4885 Cherry Creek Road. Port Alberni, B.C.		
Coastal Fire Centre	May 2, 2005	665 Allsbrook Rd. Parksville, B.C. V9P 2T3		
<b>Proposed Agency Meeting(s)</b>				
<b>Comments Deadline</b>				June 2, 2005
<b>Submission for approval</b>				June 15, 2005
<b>Anticipated Approval Date</b>				July 15, 2005

## 1.2 First Nation Consultation Process

The Woodlot Licence lies within the Qualicum First Nation traditional territory. The Qualicum First Nation will be consulted during the Forest Development Plan review period to discuss issues as they relate to the Woodlot Licence area.

## **2. STRATEGIC PLANS**

### **2.1 Higher Level Plans**

#### **2.1.1 List of Higher Level Plans**

The Vancouver Island Land Use Plan was implemented on December 1, 2000. The Vancouver Island Land Use Plan (VILUP) E&N South General Management Zone covers the area within the Woodlot Licence.

#### **2.1.2 Measures to Address Higher Level Plan Objectives**

The intent of the General Management Zone is to manage a wide range of resource values in accordance with the principles of integrated resource management, based on an ecosystem approach.

The area within the E&N South General Management Zone has significant timber values which are particularly suitable for enhanced silviculture; offers significant recreation/scenic and tourism opportunities associated with intensively managed, roaded resource lands; has significant wildlife and fish values; and because the area was intensively harvested and subjected to extensive fires in the past, has the potential for active biodiversity conservation/restoration. The objectives of the E&N South General Management Zone will be met through the legislated requirements of the *Forest Practices Code* and associated *Regulations* and the measures to protect each resource value is described in the following sections of this Forest Development Plan.

### **2.2 Other Plans**

The Management Plan covers the entire Woodlot Licence and was approved March 26<sup>th</sup>, 1999. This Forest Development Plan Amendment is consistent with the approved Management Plan. No other plans have influenced the development of this Forest Development Plan Amendment.

## 3. MEASURES TO PROTECT FOREST RESOURCES

### 3.1 Timber

#### 3.1.1 Management Issues

The licensee will use all commercially viable wood cut during logging operations subject to the need to leave large woody debris for wildlife habitat and with the need to leave organic matter for future forest rotations, where ecologically appropriate.

The licensee will employ harvest strategies that maximize the economic value of timber resources while maintaining forest productivity to ensure a sustainable long-term wood supply. Through sound forest practices the licensee will manage for other known resources and non-timber values.

Recent observations suggest the Balsam Woolly Adelgid (BWA) is causing mortality and/or reduced growth in some infested trees in WL 0097.

Western hemlock is not a preferred species in most of the area covered by WL 0097. Much of the existing western hemlock is infected with Hemlock Dwarf Mistletoe (*Arceuthobium tsugense*). Consequently, Western hemlock will not be replanted in significant numbers in most of WL 0097.

Laminated Root Rot (*Phellinus weirii*) is the predominant root disease and pest found within the plan area. There are minor amounts of other root diseases such as Annosus (*Heterobasidium annosum*), Armillaria (*Armillaria ostoyae*), Blackstain (*Leptographium wagneri*), and Tomentosus (*Inonotus tomentosus*). Each block within the woodlot has been or will be assessed for root disease using a grid survey system. The results of these surveys have driven the forest development pattern within the woodlot.

Windthrow is a periodic forest health factor that has caused some damage and has the potential to cause additional damage within the plan area. Overall, windthrow in the woodlot is not considered to be a significant forest health issue. However, it is a concern in areas where root disease is prevalent and in wetter areas where rooting is shallow.

Deer and elk browse has caused damage on nearby MoF and Weyerhaeuser plantations as well as plantations within WL 0097 Blocks B and F.

White Pine Blister Rust is an introduced pest that has caused, and will continue to cause, damage within the woodlot area to naturally regenerated white pine.

### 3.1.2 Measures to Protect

In order to minimize the damage done by the Balsam Woolly Adelgid, no more than 10% of well-spaced free growing crop trees may be Grand fir.

Mistletoe is first assessed during pre-harvest fieldwork. Prescriptions to minimize the spread of mistletoe are generally associated with removing or girdling infected trees, regenerating non-susceptible species, or leaving a vegetative or rock barrier between infected trees and susceptible regeneration. In areas with heavy infection, the perimeter of harvested areas will be planted with a high component of well spaced resistant species.

Selection of trees to retain within the second growth blocks will consider the presence and location of root rot areas. Single trees or groups of trees selected for retention will be resistant species or have no visible infections and will be at least 10 meters from any visually infected tree, unless their value as a Wildlife Tree takes precedence. Areas of concentrated root rot are generally felled.

Root rot areas with gentle topography may be stumped post harvest. Steeper areas and smaller dispersed centers are usually planted with alternate species that are more resistant to root rot than Douglas-fir. Maps outlining the incidence of root rot are kept on file once a detailed survey has been completed. Wildlife Tree Patches (WTPs) may still contain root disease centers as part of the natural biodiversity in forest stands.

Ambrosia beetle damage is controlled in the woods by minimizing inventories of susceptible logs during the flight periods.

Where windthrow is identified as a concern, such as near resource values requiring protection, a windthrow assessment will be completed as part of the Site Plan. Windthrow management strategies can include techniques such as locating falling boundaries along windfirm edges (open stands and rock bluffs) or modifying the edge by feathering, limbing, or topping trees along the edge.

Group selection and shelterwood silviculture systems may be used more extensively in high windthrow potential areas as there is evidence that the wind may not get down into these smaller openings.

Where deer and elk browse are a significant factor, trees will be protected by the appropriate browse control methods. These methods could be, but are not restricted to, caging trees or applying deer repellants.

Except as dictated by harvesting logistics and engineering constraints, white pine are not to be harvested in order to preserve genetic stock.

## 3.2 Water

### 3.2.1 Issues

Blocks A and B lie within the Whiskey Creek sub-basin of the Little Qualicum River Community Watershed (LQCW). Blocks D and E lie within the French Creek Community Watershed (FCCW). No water quality objectives have been made known for these Community Watersheds.

Water Licences are evident on French Creek downstream of Block E. The closest water licence is approximately 7 km from Block E.

Resource protection measures are centered on preservation of water quality for the area of operation proposed in this plan.

### 3.2.2 Measures to Protect

Terrain Soil Erosion Potential Assessments were completed for all Blocks (A-F) within Woodlot Licence 0097 in 2002.

To protect water quality on streams with water licences lying outside the woodlot, road construction will be carried out during periods of low flow and/or bottomless structures will be used at crossings.

The licensee will maintain water quality as per the legislation. Downstream water users will be notified when construction of any major culvert will occur.

Erosion control measures will be incorporated into harvesting, road construction, and deactivation activities. Protection measures will be determined based on site-specific conditions encountered, the presence of streams, and the time of year.

These measures will include:

- varying percentage of basal area retention within the Riparian Management Zone (RMZ);
- where required, using sediment traps at crossings and revegetating roadsides sloping into streams;
- planning and layout to avoid risk of windthrow;
- maintaining roads to ensure water is directed to ditch lines;
- inspecting and maintaining culverts on a regular basis to ensure they are open and adequate to deal with the water flows;
- where required, deactivating roads once harvesting and silvicultural operations are completed.

## **3.3 Fisheries**

### **3.3.1 Issues**

The licensee will maintain the aquatic biological productivity of all important anadromous and resident fish streams.

Inventoried class S1 to S4 streams and streams classed as fish bearing due to gradient are shown in red on the 1:5000 FDP maps. Non-Fish bearing S1 to S4 streams within the community watershed are shown in blue.

The licensee or his consultants will collect stream classification information including fish trap and electroshocking data.

A stream classification atlas will be maintained and updated with each subsequent block proposed for development. This information will be brought forward in the Woodlot Licence Plan.

The most common fisheries issues are around riparian management and the requirement for sediment management near fish streams or tributaries to fish streams. Riparian Management is addressed in section 3.4.

### **3.3.2 Measures to Protect**

This resource will be protected by carefully planning operations along waterways, by following the FPC, the WLFMR, Fisheries Act, and by referring to the appropriate professionals and government agencies.

Where road construction or harvesting is to be carried out, all streams will be identified and classified prior to road permit applications and site plan submissions to minimize any impacts. On fish bearing stream reaches the Ministry of Water, Land and Air Protection's Timing and Measures document, dated December 12<sup>th</sup>, 2001, will be followed when carrying out work associated with stream crossing (culverts, bridges, temporary stream crossings, etc.).

Sediment management practices may include:

1. Building roads near fish streams during the drier time of the year.
2. Removing or replacing old culverts when the stream is totally dry or, when removing or replacing an old wood culvert, inserting a steel culvert under the existing wood culvert and using sandbags to isolate the work area from fish bearing waters.
3. Use of filter fabric, hay bales and excavated sumps to trap sediment.
4. Utilizing coarse rock at culvert outlets to trap sediment and stop erosion.
5. Grass seeding all exposed mineral soil along roadsides.

## 3.4 Riparian Management

### 3.4.1 Issues

Riparian areas are critical habitat to a wide variety of plants, wildlife species, and insects. These areas are protected by way of specialized management zones along streams within RMAs. Generally, larger streams have greater levels of retention. Retention of trees may also occur where a stream is dependent on large woody debris for channel stability and/or streambank stability.

The Riparian Management Area (RMA) consists of a Riparian Management Zone (RMZ), and where required by regulation, a Riparian Reserve Zone (RRZ). The widths of the RMAs are determined by attributes of the adjacent riparian feature. Attributes such as gradient, fish presence, width of stream, size of wetland, and biogeoclimatic subzone may affect the size of the RMA and the requirement for a RRZ.

#### **The general objectives for RMAs are to:**

- Minimize or prevent impacts of forest uses on stream channel dynamics, aquatic ecosystems and water quality.
- Minimize or prevent impacts of forest use on the diversity, productivity and sustainability of wildlife habitat and vegetation adjacent to streams, lakes and wetlands with reserve zones or where high wildlife habitat values are present.

#### **To achieve RMA objectives, forest practices within the management zone should:**

##### **Where there is a RRZ as well as a RMZ:**

- Reduce the risk of windthrow within the RRZ.
- Retain important wildlife habitat attributes including wildlife trees, large trees, hiding and resting cover, nesting sites, structural diversity, CWD and food sources characteristic of natural riparian ecosystems.

##### **Where the RMA only has a RMZ:**

- Retain sufficient vegetation along streams to provide shade, reduce bank microclimate changes and maintain important attributes for wildlife.
- Adjacent to wetlands and lakes, retain key wildlife habitat attributes characteristic of natural riparian ecosystems.

Roads will be located, wherever possible, to avoid RMAs. Road locations within RMAs may be shown on the maps, but will only be proposed in the Road Layout and Design where no other option exists, or locating the road outside the RMA would create a higher risk of sediment delivery.

*The retention specifications for RMZs will vary according to site conditions. Professional assessments will be undertaken as necessary. The range of basal area retention is specified in the tables below. RMZ and RRZ widths are slope distance measurements.*

### 3.4.2 Measures to protect S1, S2 & S3 streams

In this case, the principle objectives for management of the RMZ are to reduce the risk of windthrow in the reserve zone and to protect important wildlife habitat values in the management zone.

The RMZ may have a partial cut. The **general** range of basal area to be retained within the RMZ is shown in the table below.

<b>Riparian class</b>	<b>S1 (except large rivers)</b>	<b>S2</b>	<b>S3</b>
Minimum RMZ width (m)	20	20	20
General range of basal area retention	25-100%	25-100%	25-100%

There are no large rivers or S1 streams in the area covered by this FDP Amendment. There are potential S2 and/or S3 streams within the area covered by this FDP Amendment.

Given the high degree of variability in site conditions it is not possible to provide a single prescription suitable for all conditions. Site-specific decisions will determine the appropriate level of retention and the type of trees to be retained within the RMZ. The level of retention will depend on:

1. The characteristics of the stream.
2. Presence or absence of fish and distance to fish habitat
3. The susceptibility of the area to windthrow.
4. The available sources of large woody debris (LWD) for streams that are LWD dependent for stability.
5. General retention levels for the cutblock.

The harvest of merchantable trees from the RMZ may be done where tree removal from the RMZ will not significantly affect the integrity of the RRZ, it is compatible with the overall prescription for the cutblock, and it can be done in compliance with the *Federal Fisheries Act*.

The selection of trees to retain will be based on the following criteria in order to reduce the risk of windthrow and to protect wildlife values:

1. Sound, well-rooted veteran trees.
2. Trees with small, open crowns.
3. Sound danger trees
4. Candelabra top cedar trees.
5. Broad leaved deciduous trees.
6. Trees with no signs of root or bole rot.

Where trees are to be retained and there are significant concerns about windthrow, the following measures will be considered:

1. Extending boundaries of the RMZ to a windfirm boundary.
2. Configuring the outer boundary of the RMZ smoothly, eliminating sharp corners or indentations.
3. Edge stabilization treatments including feathering, pruning, or topping.

### 3.4.3 Measures to protect S4 Streams

These streams only have a RMZ. The principle management objectives are to retain sufficient vegetation along streams to provide shade, reduce bank microclimate changes, maintain bank and channel stability and protect wildlife habitat. For S4 streams containing fish, protection of fish habitat is an important objective.

The **general** range of basal area to be retained within the RMZ is shown in the table below.

Riparian class	S4 (fish streams)	S4 (non-fish streams)
Minimum RMZ width (m)	30	30
General range of basal area retention	25-100%	0-100%

Given the high degree of variability in site conditions it is not possible to provide a single prescription suitable for all conditions.

#### 3.4.3.1 Measures to protect fish bearing S4 streams

The level of retention in the management zone of these streams will be selected with consideration of:

1. The characteristics of the stream.
2. Maintaining stream bank stability.
3. The susceptibility of the area to windthrow.
4. Protecting fish habitat.
5. Providing a source of future LWD so as to prevent downstream impacts to S1, S2, or S3 streams or fisheries sensitive zones.
6. General levels of retention in the cutblock.

The harvest of merchantable trees adjacent to the stream bank will be considered where:

1. The windthrow hazard is high and retention of large trees cannot be achieved.
2. The stream is not LWD dependent for stability.
3. The trees are not required to maintain stream bank channel stability.
4. It is compatible with the levels of retention and overall management prescription for the cutblock.
5. It can be done in compliance with the *Federal Fisheries Act*.

Where trees are to be retained and there are significant concerns about windthrow the following measures will be considered:

1. Extending boundaries of the RMZ to a windfirm boundary.
2. Configuring the outer boundary of the RMZ smoothly, eliminating sharp corners, or indentations.
3. Edge stabilization treatments including feathering, pruning, or topping.
4. As many windfirm trees as possible will be retained within 10 m of the channel.

Additional management practices may include:

1. Retention of all non-merchantable conifer trees, understory deciduous trees, shrubs, and herbaceous vegetation within 5 m of the channel to the fullest extent possible.
2. Retention of wildlife trees.
3. Falling and yarding away from fish bearing S4 streams.

4. Removal of woody debris deposited in the stream
5. Felling of shallow rooted, windthrow-prone leaners across the stream so that the butt clears the channel or the stem spans both stream banks. Stems will be removed from the stream if it can be done without damage to the channel or bank and in compliance with the *Federal Fisheries Act*.

#### **3.4.3.2 Measures to protect non-fish S4 streams**

These streams are not fish bearing and do not require a reserve under the FPC.

The level of retention in the management zone of these streams will be determined with consideration of:

1. The characteristics of the stream.
2. Maintaining stream bank stability.
3. The susceptibility of the area to windthrow.
4. Protecting wildlife habitat.
5. Provide a source of future LWD to prevent downstream impacts to S1, S2, S3, or S4 streams or fisheries sensitive zones.
6. General levels of retention in the harvest unit.

The harvesting of merchantable trees adjacent to the stream bank will be an acceptable practice where:

1. The windthrow hazard is high and retention of large trees cannot be achieved.
2. The stream is not LWD dependent for stability.
3. The trees are not required to maintain stream bank channel stability.
4. It is compatible with the levels of retention and overall management prescription for the harvest unit.

Where trees are to be retained and there are significant concerns about windthrow the following measures will be considered:

1. Extending boundaries of the RMZ to a windfirm boundary.
2. Configuring the outer boundary of the RMZ smoothly, eliminating sharp corners, or indentations.
3. Edge stabilization treatments including feathering, pruning, or topping.
4. As many windfirm trees as possible will be retained within 10 m of the channel.

Additional management practices may include:

1. Retention of wildlife trees.
2. Removal of woody debris deposited in the stream
3. Felling of shallow rooted, windthrow-prone leaners across the stream so that the butt clears the channel or the stem spans both stream banks. Stems will be removed from the stream if it can be done without damage to the channel or bank.
4. Retention of all non-merchantable conifer trees, understory deciduous trees, shrubs, and herbaceous vegetation within 5 m of the channel to the fullest extent possible.
5. Falling and yarding away from the streams.

### **3.4.4 Measures to Protect Wetlands**

RRZs and RMZs will be established as required by the WLFMR.

The level of retention in the management zone of these wetlands and lakes will be determined with consideration of:

1. The characteristics of the wetland (including presence or absence of fish).
2. Risk of windthrow.
3. Protecting wildlife habitat.
4. General levels of retention in the harvest unit.

The level of basal area retention within the RMZs will range from 0 to 100%.

### **3.4.5 Wildlife trees in RMZs**

Wildlife trees in management zones will be retained. Where wildlife trees are identified, a safe work zone will be established around them. Important wildlife features such as major game trails, denning sites, and other high use areas may be protected through the use of Wildlife Tree Patches.

## **3.5 Wildlife**

### **3.5.1 Issues**

There are no established Wildlife Habitat Areas (WHA) within the area covered by this FDP.

"Identified wildlife" which have been specified in the Nanaimo Lowland portion of the South Island Forest District, which encompasses Woodlot Licence 097, include the American bittern, Northern goshawk, marbled murrelet, and Keen's long-eared myotis. The Vancouver Island Water Shrew, a red-listed species found only on Vancouver Island, may exist in streams and wetlands within the woodlot. Because this shrew is protected by the Federal Species at Risk Act (SARA), their residences are also protected from destruction under Section 33 of the Act. The Red - legged Frog is a blue listed species considered to be Vulnerable in B.C., and is one of only two native species of frog on Vancouver Island. None of these species have been observed on the woodlot. Nor have any eagle nests been observed on the woodlot. There are also no Douglas-fir/Garry oak-onion grass plant communities within the woodlot licence area.

The forested and non-forested lands within the plan area provide a diverse range of habitats used by a variety of wildlife. This includes Columbia Black Tailed deer, Roosevelt elk, black bears, and numerous other vertebrates. The primary issues in wildlife management are:

1. Providing habitat for large mammals and other wildlife,
2. Biodiversity concerns related to conservation of animals and plants,
3. The maintenance of ecosystem processes.

Harvesting and silvicultural activities can have beneficial as well as detrimental effects on wildlife populations. An important objective is to detail how the management of timber and wildlife can be accommodated in the plan, and how positive effects can be utilized to promote suitable habitat.

### **3.5.2 Objectives for Known Ungulate Winter Ranges**

There are no known ungulate winter ranges within the area covered by the FDP.

### **3.5.3 Measures to Protect**

The Ministry of Water, Land and Air Protection (MWLAP) has developed guidelines for the protection of coastal bald eagle habitat and black bear habitat. If an active eagle nest or bear den is observed, these guidelines will be incorporated into the planning (site plans, reserves) of and operations (timing windows) within cutblocks to protect these species.

The RRZ associated with French Creek allows for a sheltered corridor for deer, elk and bear to utilize while moving up and down stream. The variety of harvesting patterns including small patch cuts and thinnings proposed in this amendment will allow for increased forage production while maintaining close timber boundaries for shelter. Wildlife tree patches (WTPs) provide additional protected shelter for wildlife. The licensee will retain some security cover for Roosevelt Elk around swamps and other wetlands, over and above what is required by the FPC.

The Ministry of Water, Land and Air Protection has also developed guidelines for the protection of Red-legged frogs. It is expected that if any Red-legged frogs are present in the woodlot, they would be protected within the RRZs adjacent French Creek and the wetlands in Block B. The currently unclassified wetlands included in some of the other WTPs also provide habitat and undisturbed coarse woody debris for the frogs and other amphibians. However, if Red-legged frogs are found within the woodlot, the MWLAP guidelines will be incorporated into the planning (site plans) of and operations (timing windows) within cutblocks and on roads to protect this species.

It is anticipate that if any Vancouver Island water shrews and their homes are present in the woodlot, they would be protected within the RRZs adjacent to French Creek and the RRZs and WTPs surrounding the wetlands as well.

If any of the red or blue listed or Identified Wildlife species are observed, the licensee will inform the Ministry of Water, Land and Air Protection.

## 3.6 Recreation

### 3.6.1 Issues

Roads and trails throughout the Palmer Road/Matterson Road area (Block D) are well used by local recreationists. Hunting, mountain biking, horseback riding and hiking are the prevalent recreation activities. Block A has some hiking trails, but these are generally short and used by the immediate neighbours in the Whisky Creek subdivision. Block E presently has significantly less recreational use, but as accessibility improves recreational use is anticipated to increase.

Block A lies adjacent to and east of a 40 acre parcel that the Regional District of Nanaimo leases from the Crown for community park purposes.

None of the conceptual Regional Trail Corridors proposed in the RDN Regional Parks & Trails System Plan – 2005 - 2015 lie within Woodlot Licence 0097. Chattsworth Road, which lies adjacent to Block B, is incorporated into one of the conceptual trail corridors

### 3.6.2 Measures to Protect

Harvesting operations are not expected to conflict with recreational activities. Recreation opportunities may be enhanced by the creation of additional access roads and trails. If impacted, local trails will be re-established upon completion of harvesting.

No harvesting is proposed immediately adjacent to the park during the term of this Forest Development Plan.

Harvesting activities are not anticipated to be visible from the proposed Chattsworth Road trail corridor.

## 3.7 Visual Resource Management

### 3.7.1 Issues

In a letter to licensees dated November 13, 1998, the MoF identified scenic areas as per the FPC. Scenic areas are any visually sensitive area or scenic landscape identified through a Visual Landscape Inventory (VLI) or planning process carried out or approved by the DM of the MOF. All new harvesting and road building within scenic areas with recommended *retention*, *partial retention* or *modification* visual quality classes as seen from viewpoints will require Visual Impact Assessments (VIAs).

Visual Quality Objectives (VQOs) have not been formally established in the scenic areas.

Areas within this FDP area that are designated as scenic areas include all visual

landscapes associated with views from the “Highway 4 from Parksville to Tofino” travel corridor.

### **3.7.2 Measures to Protect**

There may be some alterations to the forest canopy visible in Block A, but the cutblock itself will not be visible. The cutblocks within this FDP will not be visible to anyone from the “Highway 4 from the Parksville to Tofino” travel corridor. The topography is rolling to flat.

## **3.8 Botanical Forest Products**

### **3.8.1 Issues**

Botanical forest products such as salal, mushrooms, white pine cones, as well as white pine and cedar boughs are often harvested on areas of Crown land within the TSA.

### **3.8.2 Measures to Protect**

The variety of opening sizes proposed within the harvestable areas of the Woodlot Licence will maintain a diversity of botanical forest products and will increase the production of the less shade demanding species.

No specific measures are proposed to protect botanical forest products during the term of the FDP.

## **3.9 Range**

### **3.9.1 Issues**

There are no grazing leases or licenses with the FDP area.

### **3.9.2 Measures to Protect**

There is no grazing resource to protect in the area under the plan.

## **3.10 Biological Diversity**

### **3.10.1 Issues**

The maintenance of biodiversity has become an important objective in forest

management. The general objective is to protect, or at least mitigate the damage to, specific biological resources or ecosystems during forestry operations. Basing a biodiversity conservation strategy on the management of individual species is not feasible or effective because practices that benefit some species are often detrimental to others. The development of an ecosystem management approach that provides suitable habitat conditions for all native species will provide habitat diversity that in turn provides for species biodiversity.

A Wildlife Tree Patch (WTP) is an area of timber identified in the FDP that will be left to provide structural diversity. WTPs should maintain or restore structural attributes that provide critical wildlife habitat at the stand level, including denning, shelter, roosting, nesting and foraging habitat. WTPs should represent the forest structure, density and species composition of the cutblocks being harvested the majority of the time. They may also be composed of non-representative timber if they contain deciduous trees, rare species or have characteristics that could be considered as having favorable biodiversity values. Snags and danger trees are optimum candidates for WTP selection but may have to be felled within the WTPs to meet WCB requirements.

Blocks A and B lie within the draft Little Qualicum Landscape Unit which, under *The Forest Practices Code Act* and *Woodlot Licence Forest Management Regulation*, currently requires 11% WTP retention. Blocks D and E lie within the draft French Creek Landscape Unit which currently requires 12% WTP retention in the CDF Biogeoclimatic subzone (Block D) and 15% WTP retention in the CWH Biogeoclimatic subzone (Block E).

Current legislation under the *Forest and Range Practices Act* requires 8% WTP retention. The existing South Island Forest District Wildlife Tree Patch Policy does not address the reduced WTP requirements in the new *Woodlot Licence Planning and Practices Regulation*.

Because new legislation requires only 8% WTP retention and future Woodlot Licence Plans will be consistent with that requirement, a minimum 8% retention of the woodlot is currently identified on the FDP Amendment #3 maps as Wildlife Tree Patches. However, additional unharvested areas outside the cutblocks will continue to provide biological diversity.

Wildlife tree patches have been designated around wetlands, adjacent fish streams and non-fish stream channels, to protect these non-timber resources as well as habitat diversity. These wildlife tree patches will also protect potential red and blue listed plant and animal communities. Once better information is collected on the suitability of the current WTPs, and all streams within the woodlot licence area are classified, additional or replacement WTPs will be designated. The wildlife tree patches will be excluded from harvesting or managed on an extended rotation.

Within the CDF and CWH Biogeoclimatic subzones, a number of natural plant communities having specific structural classes are considered part of the Conservation Data Centre's red and blue (rare) lists (see Appendix 8). The ranking of these natural plant communities reflects the rarity of plant communities that have not been disturbed by humans or domestic animals and are in a natural or "climax" state. Although the woodlot licence area has been disturbed by humans and is currently not in a climax state, there may be some disturbed rare plant communities that are ecologically valuable if there are few or no natural, undisturbed occurrences left in the Province.

### 3.10.2 General Objectives - Coarse Woody Debris

CWD is defined in the Biodiversity Guidebook as "sound and rotting logs and stumps that provide habitat for plants, animals, and insects and a source of nutrients for soil development". For operational purposes CWD is defined as material greater than 8.0 cm in diameter, in all stages of decay and consists of above ground logs, exposed roots, and large fallen branches. Existing levels of coarse woody debris will be maintained in wildlife tree patches and riparian and other reserves.

Maintaining CWD after harvesting is a critical element of managing for biodiversity. It provides salamander and small mammal habitat and returns nutrient capital to the soil. CWD will be left on site following harvesting, provided it does not impede achieving the free growing standards and does not conflict with coastal utilization standards.

In all logging areas, there is a component of downed wood that is left as CWD. The allowable limit with the current (Feb.99) Utilization Standards for Coastal B.C. for post harvest residue that qualifies as harvestable, is 10m<sup>3</sup>/ha in second growth.

Some measures to assist in achieving these objectives include:

1. A portion of the post harvest allowable residue will form a component of the CWD.
2. Reducing the number and size of CWD accumulations at roadsides and landings and reducing the incorporation of large CWD pieces in the accumulations, leaving the CWD on the forest floor, not at roadside.
3. Leaving roadside debris untreated unless it interferes with reforestation or is deemed a fire hazard.
4. Rearranging slash to achieve stocking objectives rather than piling or burning.

### 3.10.3 General Objectives - Wildlife Trees

All raptor nesting trees and denning trees will be reserved as Wildlife Trees (WT). WTs are pre-selected in each cutblock using the following guidelines:

- Veteran trees of all species (generally greater than 40 years older than the surrounding stand).
- Trees of all species that are older than about 200 years.
- Western White Pine of all ages.
- Rare or poorly represented species of all ages.
- At least 10 trees/ha that are co-dominant or dominant to act as future wildlife or snag recruitment and coarse woody debris. These may be individual trees or groups of trees. In areas where stumps are to be removed, these trees will be

those that are resistant to root disease and therefore may not be co-dominant or dominant.

- Deciduous trees that can be girdled later to become short-term snags.

An important component of biodiversity management is stand level management. Structural diversity at the stand level is partially addressed by the establishment of one or more WTPs associated with each cutblock.

### 3.10.4 Measures to Protect

Wildlife tree patches and other reserve areas are identified on the Forest Development Plan Amendment #3 map and are established throughout the Woodlot Licence to protect wildlife trees and biological diversity. In delineating the WTPs, many older age classes (older immature and mature) and therefore larger diameter classes and various decay classes are included. The WTPs also include both mixed species conifer stands and mixed conifer and deciduous stands to provide a variety of habitats and vegetation types. The WTPs identified on the FDP Amendment map are described in more detail in Tables 1 and 2. WTPs previously described in the original FDP have not been altered and are not included again here.

Table 1: The area of WTP proposed in each new parcel of the Woodlot License covered by this FDP Amendment

Parcel	Size (ha)	Landscape Unit	Area of WTP Required (ha) (8% WTP)	Area of WTP Proposed (ha)
Block D	28	French Creek	2.24	5.3
Block E	78	French Creek	6.24	5.4

Table 2: A description of the values associated with each WTP/Reserve.

Parcel	Area	Description of Values
Block D	5.3	Wetland surrounded by mixed deciduous and coniferous forest cover.
Block E	1.0	Mixed older coniferous and deciduous forest cover

		within RRZ of French Creek.
Block E	4.4	Riparian area around potential S4 stream and adjacent sensitive ecosystems containing mixed coniferous and deciduous forest cover.

Designated wildlife tree patches, totaling 10.7 ha (10.1%), which include the RRZ area adjacent to French Creek, protect wildlife trees and biological diversity. Biological diversity will also be maintained through the protection of sensitive areas (wet areas, wetlands). Within these WTPs, many older age classes (older immature and mature) and therefore larger diameter classes and various decay classes are included. The WTPs also include both mixed species conifer stands and mixed conifer and deciduous stands to provide a variety of habitats and vegetation types.

These WTPs will form part of the commitment to create old-growth characteristics over part of the Woodlot.

Some wildlife trees and other reserves may be left in and adjacent to proposed blocks to provide additional wildlife habitat and structural diversity.

The retention of naturally occurring plant species at the cutblock level is important to ensure biodiversity at the landscape level. This can be accomplished by:

1. retaining a deciduous species component after harvesting if it existed in the previous stand;
2. regenerating the stand with a mixture of natural species; or
3. maintaining a component of minor tree species such as yew and cascara.

Although the woodlot licence area has been disturbed by humans and is currently not in a climax state, there may be some disturbed rare plant communities that are ecologically valuable. Moreover, if any rare plant communities with the appropriate structural class are identified during block and road layout or site plan assessment, these will be protected within WTPs and identified on site plans and/or future Woodlot Licence Plans.

The harvesting of small openings will create a mosaic of age classes throughout the woodlot, thereby adding diversity to the landscape.

## 3.11 Cultural Heritage Resources and Archaeological Sites

### 3.11.1 Issues

Cultural heritage resources are important to most First Nations people. First Nations are given the opportunity to be involved in the planning process at an early stage to identify potential areas of concern. Opportunities to participate continue throughout the operational planning stages, to ensure that identified cultural heritage resources are

managed appropriately. Although formal consultation is the responsibility of the government, a licensee can facilitate the process by providing the necessary information for a First Nation to understand proposed operations within their traditional area.

### **3.11.2 Measures to Protect**

Cultural heritage resources and archaeological sites will be protected by:

1. Complying with the Heritage Conservation Act.
2. Referring the relevant portions of the FDP to First Nations who have traditional territories covered by the area of this FDP.
3. Developing a CMT management strategy with First Nations on those cutblocks where resources are found.
4. Completing all archaeological inventory work and CMT alterations only with the necessary approved permits in place from the Archaeology Branch of the Ministry of Small Business, Tourism, and Culture.
5. Applying section 51 of the FPC Act if unidentified cultural heritage resource features are encountered. To ensure that the discovery of unanticipated archaeological resources are addressed, the licensee will inform all personnel and contractors engaged in working within this area of the following:
  - (a) archaeological resources in the Province of BC are protected from disturbance, intentional or inadvertent, by both the Heritage Conservation Act and Section 51 of the FPC Act;
  - (b) In the event that archaeological resources are encountered, all ground disturbance in the immediate vicinity must be suspended at once and inform the Ministry of Forests, the Archaeology Branch and the appropriate First Nation, as soon as possible, of the location(s) and type of archaeological resources and the nature of the disturbance.
6. Continuing the policy of open dialogue with the affected First Nations by providing the opportunity for:
  - (a) early involvement in the FDP to review proposed harvest areas;
  - (b) reviewing long term plans such as the Management Plan.

The FPC requires that Archaeological Impact Assessments (AIA) be done where required by the District Manager under Section 15(1)(b) of the WLFMR. FDPs are reviewed by the appropriate First Nations for potential harvesting impacts on traditional uses. They may then request the MoF District Manager to ask the licensee to complete an AIA. First Nations may share the information with the MoF (District Manager) who may make a determination on the degree of possible infringement on aboriginal rights.

## **3.12 Other**

### **3.12.1 Issues**

The Ministry of Water Land and Air Protection's (MWLAP) Sensitive Ecosystem Inventory (SEI) identifies wetland features as well as second growth conifer and older mixed forests within the Crown Portion of the Woodlot Licence.

Legal boundary lines include delineation of the Woodlot Licence from adjacent private lands.

### **3.12.2 Measures to Protect**

Wetland features (N1431A and N143B) are protected within previously identified WTPs in Block B. The wetland feature (N1084) lying within Block D is entirely protected with a WTP. Portions of the second growth coniferous feature (N1285B) are protected within WTPs lying within both Blocks A and B and will eventually become old growth recruitment areas. Portions of the older mixed forest (N1422) within Block E will be protected within the RRZ of French Creek.

Legal surveys have and will be used to determine field delineation when boundaries are not obvious and activities are proposed near legal boundaries. The 1:5 000 mapping reflects these areas as accurately as possible based on the best information available. Mapping has and will be updated as additional legal survey information becomes available.

## 4. HARVESTING SECTION

### 4.1 Cutblock Information Table

Basic Cutblock Information						
Cutting Permit:	Block Number:	A-1	Opening #:	92F.038-	Approximate Cutblock Area (ha):	3.3
Harvesting Method:	Ground-based					
Silviculture System:	Clearcut with reserves					
This cutblock proposes harvesting within a riparian management zone:			No	Harvesting is proposed within a riparian reserve zone:		No

Basic Cutblock Information						
Cutting Permit:	Block Number:	B-5	Opening #:	92F.038-	Approximate Cutblock Area (ha):	2.8
Harvesting Method:	Ground-based					
Silviculture System:	Intermediate Harvesting for minor/specialty forest products					
This cutblock proposes harvesting within a riparian management zone:			No	Harvesting is proposed within a riparian reserve zone:		No

Basic Cutblock Information						
Cutting Permit:	Block Number:	D-1	Opening #:	92F.028/029-	Approximate Cutblock Area (ha):	14.9
Harvesting Method:	Ground-based					
Silviculture System:	Patchcut/Selection harvest for salvage of windthrow and root disease					
This cutblock proposes harvesting within a riparian management zone:			No	Harvesting is proposed within a riparian reserve zone:		No

### Basic Cutblock Information

<b>Cutting Permit:</b>	<b>Block Number:</b> E-1	<b>Opening #:</b> 92F.028-	<b>Approximate Cutblock Area (ha):</b> 8.0
<b>Harvesting Method:</b> Ground-based			
<b>Silviculture System:</b> Clearcut with reserves			
<b>This cutblock proposes harvesting within a riparian management zone:</b> Yes		<b>Harvesting is proposed within a riparian reserve zone:</b> No	

### General Objectives for Riparian Management Zone

<b>Assumed Riparian Class of Stream, Wetland or Lake:</b>	S4	<b>Designation on Map:</b> Stream 1	
<b>Harvesting is proposed in a S4 to S6 stream that is a direct tributary to a known S1 to S4 temperature sensitive stream and currently has sufficient numbers and distribution of shade trees:</b>			No
<b>Harvesting is proposed in a S4 to S6 direct stream tributary to a S1 to S3 stream or a marine-sensitive zone with sufficient numbers and distribution of trees for stream bank or channel stability:</b>			Yes
<b>General Objective for Riparian Mgt. Zone</b>	Maintain stream bank integrity and minimize sediment entering the stream.		
<b>Riparian Class:</b> S4	<b>Basal Area Retention Range (m<sup>2</sup>/ha):</b>	See section 3.4.3	

### Basic Cutblock Information

Cutting Permit:		Block Number:	E-2	Opening #:	92F.028-	Approximate Cutblock Area (ha):	3.9	
Harvesting Method:		Ground-based						
Silviculture System:		Clearcut with reserves						
This cutblock proposes harvesting within a riparian management zone:				<b>Yes</b>	Harvesting is proposed within a riparian reserve zone:			<b>No</b>

### General Objectives for Riparian Management Zone

Assumed Riparian Class of Stream, Wetland or Lake:	S4	Designation on Map:	Stream 1
Harvesting is proposed in a S4 to S6 stream that is a direct tributary to a known S1 to S4 temperature sensitive stream and currently has sufficient numbers and distribution of shade trees:			<b>No</b>
Harvesting is proposed in a S4 to S6 direct stream tributary to a S1 to S3 stream or a marine-sensitive zone with sufficient numbers and distribution of trees for stream bank or channel stability:			<b>Yes</b>
General Objective for Riparian Mgt. Zone	Maintain stream bank integrity and minimize sediment entering the stream.		
Riparian Class:	S4	Basal Area Retention Range (m <sup>2</sup> /ha):	See section 3.4.3

## 4.2 Minor Salvage Operations

During the term of this FDP minor salvage operations may be undertaken to harvest timber that is dead or damaged as a result of wind, fire, insects, disease or other causes. These operations will be carried out in a manner that limits the removal of healthy timber, the creation of soil disturbance and damage to existing regeneration or residual standing timber. Minor salvage operations may involve the harvesting of single trees, small patches of timber or larger areas depending on the particular situation requiring salvage. In each instance the volume of timber to be salvaged, excluding any volume from a road clearing width that is required to facilitate the salvage shall not exceed 2,000 cubic meters. A map of any proposed minor salvage operation will be presented to the Ministry of Forests in order to confirm operational planning requirements and to request authority to harvest.

Upon approval of this FDP, timber meeting the requirements of the FPC Sections 10(3)(a)(b) and 19(1.3) will be harvested under the FDP without individual exemptions being approved by the DM.

### 4.2.1 General Description

The salvage portion of this FDP refers to the harvesting of minor volumes of timber that are in imminent danger of being lost or destroyed or that otherwise should be harvested to control the spread of forest pests. Generally, the timber has been infested, damaged, or killed by insects, disease, wind, fire, or some other cause.

### 4.2.2 Maximum Volumes

The maximum volume of timber for a given salvage situation under this plan is 2000 m<sup>3</sup>. Wherever practical, the timber will be recovered on a single-tree, selection basis, with the objective being to minimize the amount of healthy timber that is also removed or damaged.

### 4.2.3 Priorities

The first priority for salvage is trees that are attacked by root diseases. Infestations will not only kill the affected trees, but if un-treated, will spread to adjacent areas.

The second priority for salvage is blowdown trees and other damaged trees that are highly susceptible to insect attack. These trees will be harvested as soon as possible, and if infested by a bark beetle, will be scheduled for harvest before the next flight of the insect, where operationally possible.

The third priority for salvage is trees that are attacked by Balsam Woolly Adelgid. Infestation not only kills the affected tree, but also if un-harvested, will intensify and spread to adjacent balsam trees. These trees will normally be scheduled for harvest before the next flight of the insect, where operationally feasible.

The fourth priority for salvage is all remaining damaged timber where pest control is not an objective. These trees will be harvested, where possible, before significant deterioration of timber.

#### 4.2.4 Protection of Other Resources

All provisions of the Forest Practices Code of British Columbia Act will be followed during salvage operations to ensure that other values are adequately protected. Specific exceptions will be identified in individual salvage applications and subject to approval by the district manager. In addition, it is recognized that salvage logging should not lead to the complete sanitation of forests. A certain amount of dead and down and dead standing timber (e.g. wildlife trees), approximating normal endemic levels, will be maintained to contribute to wildlife habitat, stream stability, biological diversity and soil building processes.

Protection of other resources during salvage will also include:

- Salvage operations will not occur within any RRZ or within 5 metres of any stream other than the road right-of-ways.
- There will be no felling or damage to remaining trees and vegetation within a RMA. Boundaries of RRZs will be marked in the field before commencement of salvage operations.
- Standing healthy trees will only be felled to provide access within the salvage units. If snags or danger trees, as defined by the WCB Regulations, are present within or adjacent to the salvage units, a safe work zone may be established and the snags or danger trees may not be felled. Regenerating trees will be protected from damage resulting from salvage operations. Blown down trees from RMAs, timber reserves or outside the opening boundaries are reserved from salvage operations under this category of salvage. Previously stated conditions will apply to the salvage of this blown down timber. Where waste material from these salvage operations reduces productive growing site, the debris will be piled.
- A 20 metre “no work zone” will be established around known bear dens. MoELP Habitat Protection will be notified of these bear dens for inventory purposes.
- Known cultural heritage resources, including CMTs, will be protected from damage during salvage operations.
- Roadside material may be salvaged with skidder or excavators. Material beyond the roadsides will be salvaged by hand, overhead cable, or by helicopter unless otherwise approved by the MoF.

#### 4.2.5 Notice and Review

The salvage situations covered by this portion of the plan cannot be predicted in advance. However, to achieve pest control and utilization objectives, they must be harvested expeditiously. For these reasons, individual salvage patches are not shown in this plan, nor will there be any further notice before harvest.

No salvage operations are proposed with a RRZ or WTP.

### 4.3 Minor Harvesting Operations

During the term of this FDP minor harvesting operations may be undertaken to harvest up to

500 cubic meters (or 10 % of the volume specified for the 5 year cut control period) of “green” timber. This minor harvesting volume could include poles, boomsticks, building logs or an intention to expand an approved cutblock to take advantage of markets or overcome volume shortages at the end of the cut control period. Minor harvesting operations may involve the harvesting of special forest products, single trees, small patches of trees or larger areas depending on the particular situation. These operations will be carried out, providing the timber can be made accessible and harvested profitably without causing excessive soil disturbance, damage to existing regeneration or residual standing timber. A map of any proposed minor harvesting operation will be presented to the Forest Service before harvesting to confirm operational planning requirements and request authority to harvest.

## **4.4 Site Plans**

Site Plans are not included with the FDP.

## 5. ACCESS MANAGEMENT

### 5.1 Access Management Tables

#### 5.1.1 Road Construction, Major Culvert and Bridge Table

Road Name or Identification	Type of Work	Length (0.1 km)	Timing if critical	Bridge Type
Pratt Road Extension	Construction	0.6	Dry season over S4 creeks	Permanent Crossing
P100	Construction	0.3	N/A	N/A
T200	Construction	0.4	N/A	N/A

The roads in the above table are planned to be built during the term of this FDP and will be deactivated where indicated. Locations and distances are approximate and may vary upon fieldwork and final layout.

#### 5.1.2 Road Deactivation

All roads currently indicated on this FDP, will be permanent. No deactivation will occur during the remaining term of this Forest Development Plan.

## 5.2 Access Maintenance

In accordance with the WLFMR and in the interests of good forest stewardship, access management within the Woodlot License chart will provide for the following:

- User safety;
- Protection of forest resources;
- Maintain surface drainage patterns;
- Protect water quality; protect stream bank stability; for fish streams, ensure the safe passage of fish for the purposes of spawning, rearing or migration;

- Protect fish habitat;
- Protect structural integrity of the road and drainage structures;
- Maintain slope stability;
- Minimize surface soil erosion, and;
- Minimize sediment entering streams.

Following completion of construction, modification, or deactivation, the licensee will revegetate all exposed soil that will support vegetation in the following areas:

- Inactive borrow pits and waste areas;
- Cut slopes
- Fill slopes and;
- Other disturbed areas within the road clearing width.

Access maintenance will occur concurrent with the cessation of harvesting and following the various phases of road works.

## **6. APPENDICES**

### **6.1 Advertisement**

A copy of the advertisement will be included in the final submission.

## **6.2 Review and Comment / Documentation and Referral**

### **6.2.1 Written Comments Received from Public Review**

Comments provided by the public during the review period of the FDP Amendment will be included in the final submission.

## **6.2.2 First Nations**

Comments provided by the Qualicum First Nation during the review period of the FDP Amendment will be included in the final submission.

### **6.2.3 Agencies**

Comments provided by the review agencies during the review period of the FDP Amendment will be included with the final submission.

## **6.3 Summary of Revisions**

A summary of all revisions made to the FDP because of review and referral comments will be included with the final submission.

## **7. MAPS**

1 : 5 000 Forest Development Plan Maps of Blocks A, B, D, E

## **8. RED AND BLUE LISTED SPECIES**