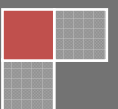


2007

# Woodlot Licence 2043 Management Plan # 1

Licensee: Lyackson First Nation

Term: 2007 to 2027



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**Woodlot Licence 2043**  
**Management Plan No.1**

Licensee:

Lyackson First Nation

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**Submitted by:**

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Chief Rick Thomas  
Lyackson First Nation

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**Approved by:**

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**Date Approved:**

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## PREFACE

This is the first Management Plan for Woodlot 2043 (WL 2043). This Management Plan describes the forest values and associated management objectives for Woodlot licence 2043. The woodlot is licensed to the Lyackson First Nation of Chemainus, British Columbia. The Woodlot has a total area of 290 hectares in two blocks. The northern block consists of approximately 160.5 ha. (155.7 ha. of forest land and 4.8 ha. of openings). It is bounded in the north by the Wakes Cove provincial Park and the south by the Lyackson IR 3. The southern block consists of 129.9 ha. and is bounded on the north, west and south by Island Timberlands private forest lands. On the east it is bounded by private cottages properties.

About 70% of the stands are age 60-81 or older with Douglas Fir consisting 62% of the leading species. Western Red Cedar (22%), Lodge pole Pine (9%), Red Alder (4%), Balsam (2%) and Maple (1%) are minor species. Grand Fir and the hardwood species occupy the moister richer sites while scattered Arbutus grows amongst the Fir in the drier areas.

As a result of the diversity of the stands, ecosystem units, age distribution, past logging practices, and the occurrence of root disease, the woodlot requires a variety of silviculture and management regimes. This includes small patch cuts of less than 1 hectare (where forest health is a concern), shelter wood systems, selection systems and intermediate entries such as commercial thinning. Except for old vets scattered throughout the woodlot, the area consists predominantly of stands between 21 and 120 years of age (age classes 2, 3, 4, 5, & 6).

Access into the woodlot is by water. This Woodlot is located on Valdes Island in the Gulf Islands which is about 40 minutes by boat from Chemainus harbour. Access to most areas of the woodlot is through the private forest lands owned by Island Timberlands Ltd. All wood from the Woodlot has to be hauled through these private lands to the only log dump on the Island at Blackberry Point. The hauling distance is about 8 kilometers from the Northern block and 6 from the southern block.

This area has been sporadically logged over the last 100 years and there are old grades throughout the licence. Much of this old road system needs to be upgraded. The successful management of this woodlot will require the maintenance and rehabilitation of this network of roads. Another challenge regarding forest management of this woodlot is the management of root disease which is quite prevalent throughout the stands. Approximately 10-30% of the Fir leading stands are infected with root disease.

In the early 70s, a large portion (41.8 ha) of the northern block was clearcut and planted with lodge pole pine. This stand needs to be clearcut and planted with the appropriate species for the site.

It is the desire of the licensee to apply a variety of silviculture systems in the management of the stands depending upon stand structure, species, ecosystem units, treatment strategy and economic viability.

The Woodlot has been divided into four management units in order that the specific management strategies are initiated. These are Management Unit 1 (MU1), Management Unit 2 (MU2), Management Unit 3 (MU3), and Management Unit 4 (MU4).

The calculated Allowable Annual Cut (AAC) is 1,673 m<sup>3</sup> per year. The total volume harvestable during the 5-year cut control period is 8,365 m<sup>3</sup> (plus or minus 10%).

The Management Plan is consistent with the British Columbia *Forest Act* and associated regulations, and the *Forest and Range Practices Act (FRPA)* and associated regulations. Other relevant legislation is also referenced in this plan.

## **2.0**

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### **AREA DESCRIPTION**

#### **2.1 Licensee**

The licensee of Woodlot 2043 is the Lyackson First Nation

#### **2.2 Location**

The woodlot is located on Valdes Island in the Gulf Islands.

#### **2.3 Terrain**

##### **2.4.1 Terrain**

The terrain in the woodlot is predominantly flat with some areas with higher elevation. Geographically this area is known as the Nanaimo Lowland and is largely underlain by tilted sedimentary rocks. Generally speaking, soils in the area are gravelly sandy loams or gravelly loamy sands of fluvial or glacial till origin. The soils in general are Dystric Brunisols with moder to mull organic surface types. Some colluvial material is evident at the base of the sandstone bluffs.

The western portion of the northern block is predominantly occupied by the bluff which runs north-south of Valdes Island.

Where there are rock outcrops and bluffs, the soils are generally shallow (less than 0.5 metre rooting depth).

#### **2.4 Ecosystem Classification**

The woodlot is located within the Nanaimo Lowlands (NAL) Ecosection, within the Coastal Douglas Fir moist maritime (CDFmm) subzone. The elevation ranges from 20 to 80 metres.

#### **2.6 Higher Level Plans**

There are no higher level plans covering the woodlot licence area.

### 3.0

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#### MANAGEMENT GOALS

1. To practice integrated forest management, recognizing all the forest values.
2. To create representative stands of old-growth over time.
3. To improve the productivity of the forest within the woodlot.
4. To provide the Band's children with future opportunities to become involved in "hands on" forest management.
5. To manage the area on an even level of timber flow basis by conducting harvesting operations in an environmentally sound manner, ensuring basic silviculture is being conducted on a current basis, and rehabilitating areas that are currently classified as non-productive.
6. To allow for reasonable recreational use of lands within the woodlot by tourists and members of the general public. This includes maintaining hiking and nature trails within the woodlot. Public use may be restricted for reasons of safety, fire hazard or the need to protect archaeological sites.
7. To market sawlogs, poles, pilings, pulp, and sawlogs and other forest products, such as firewood and shake blocks in such a manner as to realize the highest possible utilization of the timber resource. Timber objectives include the production of both pulp and sawlogs.
8. To create and maintain employment opportunities and other social benefits for band members.
9. To identify and address environmental protection concerns on an on-going basis during the term of this Management Plan. This particularly pertains to:
  - The preservation of ecologically sensitive sites.
  - The protection of fisheries, wildlife habitat, streams and wetlands.
  - Visual Quality Objectives (VQO) considerations for all areas around the woodlot.
10. To maintain and protect traditional use areas of the forest within the Woodlot; such activities may include gathering of berries, and grasses and cedar bark for basket making.
11. To maintain and enhance biodiversity within the woodlot area.
12. To identify, protect heritage and archaeological sites important to the Lyackson First Nation.
13. To increase the current levels of timber harvest over the long term by the conversion of the current unmanaged deciduous stands to coniferous types, rehabilitating NSR sites, and the application of intensive silviculture treatments to the appropriate stands.

14. To allow the Woodlot to be used for demonstration purposes and public education. WL 2043 will be available for public tours and educational programs related to forest management upon request.

## 4.0

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### FOREST RESOURCES

#### 4.1 Wildlife

No wildlife study has been conducted on the woodlot. However, wildlife resources are typical of the CDFmm and CwHxm1 biogeoclimatic subzones. Large mammals in this woodlot would include black-tailed deer and cougar (one cougar sighting has been reported over the last 5 years). Small mammals present would include raccoons, squirrels and rodents. There are no bears on Valdes Island.

Due to the high potential of deer browse, all seedlings will be required to be protected to ensure regeneration success and the need to meet free growing requirements.

Field visits have confirmed the presence of woodpeckers, eagles and various other bird species. Woodpeckers utilize much of the area, especially ecosystems with deciduous tree patches and/or western red cedar.

There are three species of identified wildlife within the NAL Ecosection that could potentially occur in WL 2043. These are the Northern Goshawk, Marbled Murrelet and Keen's Long-eared Myotis. To date, none of these species have been observed within the woodlot licence.

Common amphibians and reptiles include the Pacific tree frog, Western red-backed salamander, north-western salamander and the north-western garter snake. The Red-legged frog, a blue listed species, is likely present in any wetlands that may be within the woodlot. The Pacific Water Shrew and the Great Blue Heron, red-listed (threatened) species, may exist in streams and riparian areas within the woodlot.

Suitable habitat for these and other wildlife species will be provided within the woodlot area which includes the establishment of protected areas (WTP's and RRZ's), harvest rates and patterns. In addition, RRZ's will protect potential Pacific Water Shrew and Red-legged frog habitat.

There are operational guidelines in place for bald eagles, black bear and red-legged frogs that have been developed by MOE.

#### 4.2 Rare Plants

As is the case with wildlife, no rare plant species inventory study has been conducted on the woodlot.

The licence area lies entirely within the CDFmm biogeoclimatic subzone. In the CDFmm, a number of natural plant communities are considered part of the Conservation Data Centre's (CDC) red and blue (rare) lists. The conservation status ranking of these natural plant communities reflects the rarity of a plant community occurrence at the national and provincial level. The CDC considers all successional stages of plant communities on these lists valuable for conservation.

### 4.3 Biodiversity

Biodiversity is the diversity of plants, animals and other living organisms in all their form and level of organization. In order to maintain biodiversity, the licensee will endeavor to manage the ecosystems within the licence area to provide suitable habitat conditions for all native species. Specifically, the licensee will maintain the overall diversity of the woodlot by:

- Using a variety of opening sizes and silvicultural systems to create a greater diversity of age classes
- Retaining some deciduous forest types
- Where possible, retaining some veteran trees and some larger diameter second growth for their wildlife values and opening structures
- Retaining wildlife tree patches (WTPs) throughout the licence area.

Current legislation requires that 8% of the Woodlot Licence be protected as Wildlife Tree Patches (WTPs) to maintain biodiversity. WTPs will be designated around wetlands, adjacent streams and channels and in sensitive areas to protect these non-timber resources and maintain habitat biodiversity. These WTPs will also protect representative areas of red and blue listed plant and animal communities.

Old growth attributes may also be maintained or created within younger stands that already exhibit characteristics of older stands. This may not exclude harvesting within these stands, but may require longer rotations and/ or single tree selection systems to create uneven aged stands.

### 4.4 Water

Water resources are administered by the, Water Management Branch. A water licence issued under the authority of the *Water Act* is required for the use of surface water in British Columbia. The *Ground Water Protection Regulation* regulates ground water use or groundwater well development.

**Community Watersheds:** There are no community watersheds within the licence area. However, a number of creeks in the southern block function as water intake sites for some of the cottage properties. Water quality is a value which must be considered in the management of this woodlot.

### 4.5 Minerals and Petroleum

There are no active mineral or petroleum resources within WL 2043.

## 4.6 Fisheries

The woodlot has four streams and a number of non-classified drainages within the southern block of the licence area. Most of these streams are class S6 with the possibility of one creek being class S3. The northern block has no streams but has a number of wet depressions.

These classifications were estimated for AAC purposes only and further work will need to be done through the operational planning process.

The estimated appropriate riparian management areas have been identified on the Woodlot Licence 2043 map attached to this document.

## 4.7 Archaeological Resources and Traditional Use

### 4.7.1 Archaeological Resources

The woodlot is within the core traditional territory of the Lyackson First Nation. This area has had an unbroken chain of use and occupation by the Lyackson people and related Hul' Qumi' Num tribes for thousands of years. There are numerous archeological sites identified on Valdes Island. There are most probably many more which remain to be discovered.

Within the woodlot area, there are three known sites: DgRv-21 and DgRv-38 in the southern block and DgRw-073 in the northern block.

Aboriginal rights are recognized and affirmed within the *Constitutional Act* of Canada and these rights cannot be unduly infringed upon.

All heritage resources are protected by the *Heritage Conservation Act* of BC.

No archaeological overview assessments have been conducted on the woodlot area. Where required, prior to any development activities, archaeological impact assessments (AIA) will be conducted on proposed cut blocks and roads.

Should there be any additional previously unrecorded sites identified during forest management activities, the licensee will cease any operations immediately that may impact the site.

### 4.7.2 Traditional Use

The coastal First Nation people have historically used the forest within their traditional territory for the following uses:

- **Traditional Medicines:** Hardwoods such as Pacific yew, maple, cascara, and wild cherry are used for traditional medicines, such as the use of cascara as a digestive aid. A variety of species of plants and shrubs have also been traditionally used as medicines. Wild rose and Labrador tea leaves were diffused and drunk as tea.
- **Traditional Foods:** A variety of berries and wild fruit were picked as a source of food. This includes wild blackberries, thimbleberries, salal, and wild blueberries.
- **Arts and Crafts:** A number of trees and shrubs were used in various crafts. To this day, red cedar bark is used in the making of baskets and mats. Red cedar, yellow

cedar, and red alder wood is used in the production of carvings, including totem poles. Certain grasses are still being used to make baskets, bedding and mats.

- **Traditional Clothing:** Cedar bark, certain grasses and shrubs were used to make traditional clothing, including capes and hats.
- **Building Materials:** A variety of tree and plant species were used for building traditional homes, canoes, paddles, etc.
- **Tools:** Tools such as cooking utensils, spears, and hooks, were made from trees and certain shrubs.
- **Fuel:** Red alder wood to this day is being used for smoking salmon. Traditionally, other tree species such as maple, hemlock and cedar were used for cooking and warmth.
- **Spiritual and Ceremonial Uses:** Red and yellow cedar are to this day important in the spiritual and ceremonial activities of the Lyackson peoples.

When required, a Traditional Use Study (TUS) will be completed for the areas proposed for development.

#### 4.8 Recreation

The eastern portions of both blocks of the woodlot have cottage properties on them. These are mostly used in the summer months. Island Timberlands Ltd is also putting up for sale most of its ocean-view holdings on the eastern part of the Island. This will bring more residents to Valdes Island.

Two roads provide access to the newly-created Wakes Cove Provincial Park. Both run through WL 2043 and Lyackson IR 3 (note that the access into Lyackson IR 3 is gated and the First Nation does not allow the unauthorized use of its lands). The eastern portion of the licence area can also be accessed by boat or kayak.

Any improvement to the existing trails within the woodlot, through harvesting activities, will increase the recreational use of the area. The licensee will not restrict public access to any portion of the WL 2043. An exception to this may occur when management operations may endanger public safety or during periods of extreme fire hazard. Appropriate signage will be posted to warn the public of such dangers. Limited gating of access points during such times may also be an option.

#### 4.9 Sensitive Ecosystems

The Sensitive Ecosystem Inventory project has not identified any sensitive ecosystems (SEI polygons) within the licence area.

However, as mentioned previously, an L2 lake lies outside the licence area on Island Timberland Ltd private lands. This lake is classified as a wetland on the SEI map.

There are a number of wetter sites within the woodlot that will restrict harvesting activities to the drier months. There are also a number of openings within the licence area which are rocky moss covered outcrops that could contain unique and/or rare plant

species. If such species are identified through the operational planning process, they will be protected from operational activities.

In areas identified through the operational planning process as having a moderate to high likelihood of landslide initiation as a result of harvesting or road building activities, the licensee will engage the services of a qualified person to assess the areas prior to any development activities.

#### **4.10 Visual Landscape Resource**

Both the eastern and western parts of the woodlot are bounded by the ocean. Some of the polygons, located on ridge tops and upper slopes (polygons 3,13, 21, 28, 41, 44, 45, & 47) may be visible from the water.

Small craft use this area frequently, particularly during the summer months.

The licensee recognizes that aesthetics must be given adequate consideration. Through careful planning, utilization of small cutblocks, some partial harvesting, maintenance of timbered screens and prompt reforestation, the licensee expects that the scenic values will be maintained.

#### **4.11 Botanical Forest Products**

There are a number of botanical forest products that the public may collect from the licence area. This includes the salal, mushrooms, and blackberries.

There are no regulations that deal with the collection of these products. However, the licensee will monitor these harvesting activities to ensure that the environment is not being damaged.

## 5.0

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### TIMBER INVENTORY

#### 5.1 Timber Inventory Data

This inventory data is based upon the reconnaissance work done by Islands West Forestry Ltd, in March 2005 of the woodlot licence area. The forest inventory of the woodlot was derived by air photo interpretation and ground truthing. Timber inventory cruise plots were established for representative polygon types, with 1 or 2 plots placed per polygon type. Forest cover data pertaining to the woodlot area was derived from this information.

The licensee is committed to conduct further forest inventory work during the term of this first management plan.

All of the woodlot licence is located within the CDFmm biogeoclimatic subzone and the terrain is moderately sloped. Within the woodlot licence area there a number of voids which are dominated by either mossy rocky outcrops or salal. Root disease centres are also prevalent throughout. There are no lakes or swamps within the licence area although there are a number of wet depressions.

Zonal sites are predominantly occupied by Douglas-fir with the occasional alder in the disturbed areas or arbutus in the drier areas. Red cedar is mostly restricted to the moister areas and is also evident in the root disease prone sites.

About 70% of the stands are age class 60-81 or older with Douglas Fir consisting 62% of the leading species. Western Red Cedar (22%), Lodge pole Pine (9%), Red Alder (4%), Balsam (2%) and Maple (1%) consisting of the minor leading species. Grand Fir and the hardwood species occupy the moister richer sites while scattered Arbutus grows amongst the Fir in the drier areas.

Only one area within the licence contains trees which are older than 120 years (polygon 25). This polygon contains Western Red Cedar as the leading species with Douglas fir as a secondary species.

As discussed in Section 1.0, the woodlot has been divided into four management units, so that the appropriate management strategies be conducted

**Management Unit 1 (MU1): Older Immature Coniferous Leading Stands:** These stands cover approximately 158.9 hectares or 54% of the licence area. The average stand age is 90 years (age class 5, 6 and 7).

- **Management Unit 2 (MU2): Younger Immature Coniferous Leading Stands.** These stands cover approximately 115.3 hectares or 39% of the licence area. The average stand age is 51 years (age classes 2, 3 and 4).
- **Management Unit 3 (MU3): Deciduous Leading Stands.** These are stands with 50% or greater of the species composed of deciduous species, primarily big leaf maple and red alder. These stands cover approximately 13.5 hectares or 6% of the licence area. The average stand age is 30 years (age class 2).
- **Management Unit 4 (MU4): Ecological Sensitive or Unproductive Sites.** Areas comprised of rock outcrops, large voids or steep broken terrain. These areas

comprise 4.5 hectares or 1% of the licence area and have been excluded from harvesting.

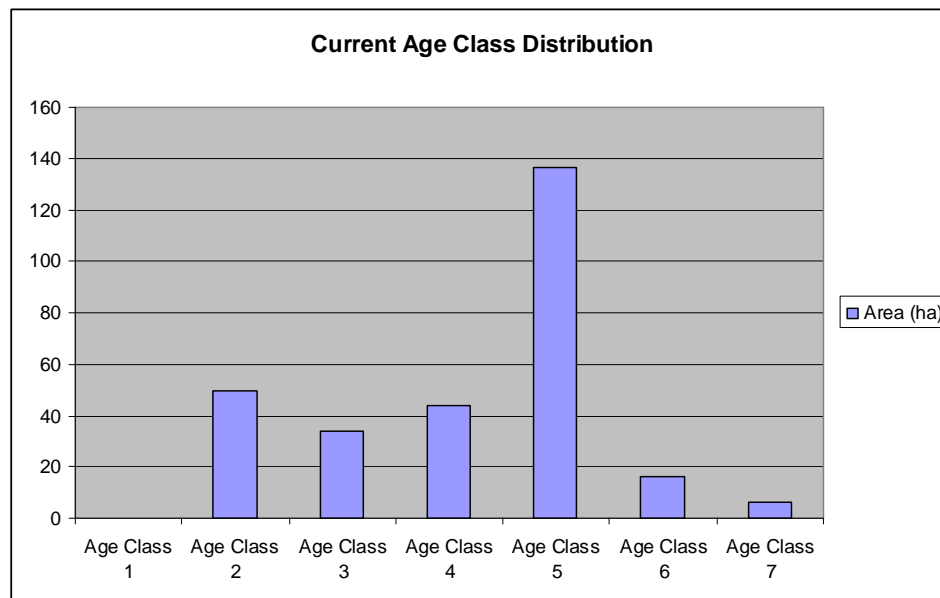
## 5.2 Age Classes

The age class distribution is derived from the inventory data table for WL 2043. Only the currently operable polygons have been included in the Current Age Class Distribution table. The age classes are based on the table below:

Age Class	Age Class Limits
1	1 - 20 years
2	21 - 40 years
3	41 - 60 years
4	61 - 80 years
5	81 - 100 years
6	101 - 120 years
7	121 - 140 years
8	141 - 250 years
9	251+ years

### 5.2.1 Age Class Distribution

Age Class	1	2	3	4	5	6	7
Area (ha.)	0	49.3	33.7	43.8	136.4	16.0	6.5



The age class distribution for WL 2043 is relatively unbalanced with age class 5 (81 - 100 years) comprising about 50% of the Woodlot area. The youngest age class (1-20 years) is not represented. Silviculture systems such as patch cuts in root rot infested and blowdown centres, and in deciduous-leading polygons can start to address the imbalance by introducing younger age classes through planting and natural regeneration. Intermediate entries such as commercial thinning and poling can also assist in age class distribution.

## 6.0

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### TIMBER MANAGEMENT

#### 6.1 Silviculture Systems

As a result of the existing variety of stand structures, site conditions, the high incidence of root disease, the invasion of salal in these root disease openings and an imbalance in age classes, a variety of silviculture systems will be employed. The preferred systems will include:

- *Patch Cuts*: In root disease and blowdown centres or in deciduous leading areas that are being converted to coniferous stands, patch cuts will be the preferred system. This will be followed by planting or natural regeneration. Where salal invasion is severe, site preparation with a brush rake prior to planting will be required.
- *Clearcut Systems*: This system will be appropriate in polygon 10 which will be converted from a PI leading stand to species which are appropriate for the site series.
- *Retention Systems*: In areas not infected by root disease, a retention system would be appropriate, leaving either single trees or in groups.
- *Seed Tree and Shelterwood Systems*: On the higher more visible slopes with easterly or southern aspects, shelterwood or seed tree systems will be used to maintain visual quality.

The particular system applied in a cutblock will be described in the Site Plan (SP), and will depend on a number of factors including site characteristics, species composition, stand structure, and forest health considerations. The primary management goal is to maintain a permanent forest cover by applying the appropriate silviculture system for the specific site.

#### 6.2 Management Units

As mentioned in Section 5.1, the woodlot has been divided into four Management Units, in order to apply the management strategies described below

### **6.2.1 Management Unit 1 (MU1)**

*Description:* Older Immature Coniferous Leading Stands. These stands cover approximately 158.9 hectares or 54% of the licence area. The average stand age is 90 years (age class 5, 6 and 7).

*Management Strategy:* Harvesting activities will be focused on these stands. Application of patch cuts within root disease and blowdown centres, followed by either stumping or planting of Cw and/or Pw. Retention systems, leaving single trees or in groups, will be applied in the remaining portions of the healthy stands within these units.

### **6.2.2 Management Unit 2 (MU2)**

*Description:* Younger Immature Coniferous Leading Stands.

These stands cover approximately 115.3 hectares or 39% of the licence area. These stands are 80 years or younger (age classes 2, 3 and 4).

*Management Strategy:* Harvesting of these stands will not take place in the immediate future. However, they may provide good opportunities for intermediate entries such as commercial thinning.

Polygon 10, PI leading, will be converted by the removal of the PI and planting with Fd on the drier/zonal and Cw on the wetter microsites. This work will be done pending the availability of funds to carry out this work.

In addition, where opportunities exist, consideration will be given to increase productivity on these stands through enhanced treatments.

### **6.2.3 Management Unit 3 (MU3)**

*Description:* Deciduous Leading Stands. These are stands with 50% or greater of the species composed of deciduous species, primarily big leaf maple and red alder. These stands cover approximately 13.5 hectares or 6% of the licence area. The average stand age is 30 years (age class 2).

*Management Strategy:* As they cover only 6% of the licence area, these stands will be retained. This will contribute towards the objective of retaining 10% of the area under deciduous species in order to maintain biodiversity, visual quality, wildlife and stand stability values. Silviculture systems such as patch cuts or clearcut with reserves offer excellent opportunities to achieve this objective.

#### **6.2.4 Management Unit 4 (MU4)**

*Description:* Ecological Sensitive or Unproductive Sites.

*Management Strategy:* These are environmentally sensitive areas and are reserved from cutting. These include moss covered rocky outcrops, wet depressions with fluctuating water tables, riparian areas around fish bearing streams and the shoreline.

### **6.3 Forest Products**

The licensee will utilize and promote maximum use of timber within the woodlot. This will include, but not be limited to:

- Wood Products
  - peelers and sawlogs
  - pulp logs
  - log home logs
  - piling & pole logs
  - fence posts
  - firewood

- Botanical Products
  - salal
  - herbs
  - mushrooms/truffles
  - cones
  - mosses
  - berries
- Traditional Medicinal Products
  - cascara bark
  - cedar bark
  - Pacific yew
  - maple
  - wild cherry
  - wild rose
  - Labrador tea
- Traditional Use Products
  - cedar logs for canoes
  - fir for paddles
  - sage grass for baskets
  - Red cedar, yellow cedar, and red alder wood for carvings, including totem poles
- Christmas Trees

#### **6.4 Allowable Annual Cut (AAC)**

Timber growth and yield was based on the report *Reconnaissance of Provincial Crown Land on Valdes Island for Suitability as Woodlot Licence* prepared by Islands West Forestry Ltd (March 2005). A copy of their report is attached as Appendix II.

The model to calculate the AAC was the “Woodlot Program”. The Woodlot software was developed by the Ministry of Forests and Range (MoFR) especially for their Woodlot Program. The program uses VDYP, TIPSy, and Area Volume Allotment Check methodology. An initial harvest rate is chosen, and the model proceeds to project this harvest rate over time; cutting and planting the polygons that have been selected, and in the order selected, over time. This series of interactions continues until the harvest rate reaches a non-declining even flow.

TIPSy is used to estimate volumes in managed stands (second and subsequent rotations) and VDYP is used to project existing and managed stand volumes. VDYP incorporates losses due to decay, waste and breakage. In TIPSy, Operational Adjustment Factors (OAFs) are applied to account for losses in timber volume due to unproductive areas (OAF1) and age dependent factors such as

disease, decay, waste, and breakage (OAF2). OAF1 was set at standard 15%; OAF2 was set at standard 5%.

**Table 5: AAC of Woodlot Licence 2043**

AAC in m <sup>3</sup> /year	All Stands
<b>Total Woodlot</b>	<b>1,673</b>

## **6.5 Harvesting Methods**

In selection of a harvesting method it is understood that the system utilized will best suit ground conditions and environmental constraints. Ground based harvesting will generally be carried out during the drier months of the year to minimize soil compaction and scouring. Opportunities exist within the woodlot for the use of ground based harvesting equipment throughout the entire area, as much of the terrain is flat or gently rolling with less than 40% slopes. Hoe-forwarding is a viable alternative to ground-based skidders in many of the areas. In the steeper slopes, cable systems will be employed. The selected harvesting method will be described in the Site Plan.

## **6.6 Utilization Standards**

Timber utilization will reflect the objectives of maximum recovery and accounting of all waste. All commercial timber will be harvested to the minimum utilization standards in effect at the time of harvest. Utilization standards will be stipulated in the Cutting Permit or Licence document.

The licensee will conduct waste and residue measurements on all openings once harvesting operations are complete. If utilization levels are unacceptable, monetary and/or cut control billings will follow. Waste includes timber left on harvested areas that should have been utilized (X grade or better) whereas that timber left for which utilization is optional is classed as residue.

## **6.7 Road Access and Engineering Development**

### **6.7.1 Road Access**

There is no road access to the woodlot on Valdez Island. The only way to reach the island is by air or water. It takes approximately 15 minutes by air to reach Valdez from either Chemainus or Nanaimo, and about an hour by speedboat. Once on Valdes Island, vehicular access to the woodlot licence area will have to be negotiated by the Licensee with private land owners.

### **6.7.2 Engineering Development**

A good network of roads will be of primary importance in the successful management of this woodlot. During the term of this Management Plan, a complete road plan will be developed. The woodlot has a good network of roads and trails from previous logging activities. All roads will be developed to minimize environmental impacts.

### **6.7.3 Road Maintenance and Deactivation**

During the term of this Management Plan, all access roads within the woodlot for harvesting and/or silviculture activities will be upgraded and maintained as required. Surface and drainage structures will be repaired, cleaned and maintained as necessary. All snags, danger trees and other obstructions posing potential hazards along the main lines will be removed.

Temporary logging trails and spur roads will be deactivated fully and the original drainage pattern(s) restored by the construction of water bars. These deactivated areas will be replanted. Semi-permanent roads will also be deactivated by the construction of water bars at the conclusion of operations.

## **6.6 Harvest Priorities and Salvage Operations**

Merchantable stands which are diseased or have been damaged by fire, insects or windthrow will be given priority for early harvesting. This will however, depend on the extent of the damage and accessibility into the site.

## 7.0

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### SILVICULTURE

#### 7.1 Basic Silviculture

The Licensee will carry out basic silviculture activities consistent with the *Forest Act*, *FRPA* British Columbia and associated guidelines.

##### 7.1.1 Seed Collection and Tree Seedlings

The Licensee will purchase seedlings to meet reforestation needs. All stock will originate from registered seedlots and will conform to the *FRPA's* Chief Forester's Standards for Seed Use. Genetically superior A Class seed, from seed orchard seed will be used if available.

No seed collections are anticipated; however the Licensee will cooperate with the MoFR if requested.

##### 7.1.2 Site Preparation

The purpose of site preparation is to reduce the fire hazard, reduce or delay brush problems and to ensure achievement of target stocking standards.

In most areas of the woodlot there should be no need for site preparation. The exception to this will be in root disease centres that require destumping treatment or areas with high salal invasion. In most cases scattering of the slash concurrent with the yarding operation should be adequate. However, in situations where excessive slash is a problem, consideration will be given to bunching and piling the slash throughout the setting. Burning the slash in small piles could be considered an option. Another alternative could be the chipping of slash.

##### 7.1.3 Reforestation

Selection of tree species for restocking will be determined an ecological evaluation and will be guided by *A Field Guide for Site Identification and Interpretation in the Vancouver Forest Region* (*Land Management Handbook No. 28*). Harvested areas will be restocked to the standards set in the WLP.

Planting of the harvested areas will be the most common reforestation method within the licence area. It is anticipated that Douglas fir and western red cedar will be the most common planted species, with minor amounts of Western white pine and Grand fir planted, dependent on nutrient and moisture regimes. Other species may be planted on a trial basis. On high brush hazard sites, large tree seedlings and bigger size plugs may be used in

order to improve the competitive ability to overcome brush encroachment.

In an effort to exceed the regeneration delay, the licensee will plan to carry out planting within one year of harvesting. In some cases, and dependent on the silvicultural system utilized, there may be an opportunity to utilize natural regeneration to enhance stocking levels. In all cases, openings will be restocked to meet legal requirements.

#### **7.1.4 Surveys**

In order to ensure a plantation reaches free-to-grow status in an optimum timeframe, it is important that the Licensee be aware of seedling survival and performance. Under normal conditions, a walk through survey will be carried out one season after planting and a formal survey completed after the second growing season. If the plantation is Not Satisfactorily Restocked (NSR), it will be fill planted immediately and another survey will be conducted the following season.

All Free Growing Surveys will be conducted to MoFR standards and the results will be submitted as a component of the annual report.

#### **7.1.5 Brushing and Weeding**

Free-to-Grow (FTG) is achieved when a minimum number of well spaced preferred and acceptable trees are 150% of the height of the competing vegetation.

The Licensee will perform these treatments, as necessary, to ensure plantations become FG within the timelines specified in the legislation. Any brushing treatments that are required will be done manually. The use of herbicides will be avoided.

### **7.2 Incremental Silviculture**

The goals of incremental silvicultural activities are to improve forest health, and to improve the overall productivity and value of the future forest products

#### **7.2.1 Fertilization**

Increased yields and a reduction in rotation length are possible as a result of fertilization which can be especially beneficial to sites of low productivity. Fertilization can also accelerate the development of specific age classes which could fill gaps in an age class profile. Fertilization at the time of planting may help to ensure seedling performance and provide for them to out-compete surrounding vegetation.

### **7.2.2 Spacing**

The objective of juvenile spacing is to concentrate growth on fewer stems which results in a lower technical rotation age of crop trees. In addition to managing stand densities, spacing will be used to improve species composition and the phenotypical characteristics of the stand. Spacing may be undertaken on stands that will benefit from such a treatment. There may be some opportunities, pending the results of field assessments, to space stands during the term of this Management Plan.

### **7.2.3 Pruning**

Pruning will improve forest values by increasing the amount of clear wood and reducing the size of the knotty core, reducing stem taper and resulting in an increased final product value. Pruning will be carried out where opportunities exist.

### **7.2.4 Site Rehabilitation**

Site rehabilitation involves the removal of existing non-commercial stands and subsequent regeneration of the site to commercial species.

Inventory data shows that there are some deciduous leading stands within the licence area and there may be an opportunity for this type of enhancement. There is also one area planted with PI, which is an off-site species, that could benefit from this type of treatment

### **7.2.5 Backlog Reforestation**

Backlog reforestation will be undertaken on any site it is deemed to be necessary with the intent being to bring all such sites into production as quickly as possible.

## **7.3 Commercial Thinning**

Commercial thinning, an intermediate cut entry in a stand, is defined as a partial cut in immature stands where trees have reached a merchantable size. The timber removed during commercial thinning is sold. Under certain stand conditions, commercial thinning can marginally increase merchantable timber volume production, increase the final financial value of timber, and recover potential mortality. Other non-timber objectives may also be achieved by commercial thinning. Commercial thinning can also be used to mitigate any age class imbalance that exists in a stand.

## 8.0

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### FOREST PROTECTION

#### 8.1 Pests and Diseases

The licensee will monitor the woodlot for insects and diseases and notify the MOFR if any out breaks or infections are found.

##### 8.1.1 Root Rot

The occurrence of root disease within the woodlot is quite significant. Infestations range from 10-30% of the stands. Laminated root disease, *Phellinus weirii*, appears to be the most common, followed by small pockets of *Armillaria*. This disease, if left unchecked, will have a significant effect on the future inventory of the forest. While *Phellinus* root rot can be controlled by breach tree removal and conversion to tolerant species, *Armillaria* is more difficult to eradicate.

Destumping, push falling or the planting of resistant species are some of the strategies by which root disease can be controlled. The appropriate method will be determined based on site assessments.

##### 8.1.2 Hemlock Dwarf Mistletoe (DMH)

Hemlock dwarf mistletoe (DMH) is a parasitic disease that creates stem or branch swelling and multiple branching on hemlock trees. Due to its slow spread, mostly from overstory trees, DMH can be controlled effectively by early sanitation thinning, and the removal of affected trees. Given the licensee does not generally plan to utilize Hemlock as a preferred species; this is not considered an issue.

The infection rate in this woodlot is significant, and is currently considered a threat to the forest inventory. Where DMH is found, treatments will be prescribed in site plans or treatment prescriptions.

##### 8.1.3 White Pine Blister Rust (DSB)

Western white pine is a suitable minor species for some sites in the CDFmm. It is particularly suitable for the control of root disease. In situations where western white pine is an acceptable species, white pine blister rust resistant stock will be planted. To reduce the risk of infection, trees will be pruned. Wherever white pine is encountered within the woodlot, it will be retained, for biodiversity values and its root disease resistant properties.

##### 8.1.4 Balsam Woolly Adelgid (BWA)

The Balsam Woolly Adelgid is a sucking insect that most often attacks large true firs. Attack can occur on the stem or crown and

while trees can survive most attacks, growth can be impaired. Recognizing that this pest occurs on Vancouver Island, the planting of any Grand Fir will be limited to a minor stand component.

#### **8.1.5 Engraver Beetle (*Scolytus ventralis*)**

*S. ventralis* (Le Conte) has killed some small grand fir on Southern Vancouver Island and caused extensive damage to true firs in Oregon and California. Small trees may be killed, but damage is usually confined to tree tops, limbs and logging slash. They may develop likely due to the recent drying trend during spring and summer in British Columbia.

#### **8.1.6 Ungulates**

Local deer populations browse plantations on Valdes Island. The licensee will ensure seedling survival and growth by using browse protection.

#### **8.1.7 Invasive Plants**

Invasive plants are defined as any invasive plant species that have the potential to pose undesirable or detrimental impacts on humans, animals or ecosystems. Because invasive plants have the ability to establish quickly and easily on new sites, they pose a threat to our environment and economy.

Invasive plants have a great ability to out-compete native species for resources that they require for survival; water, sunlight and nutrients. This crowds out the native species.

Invasive plant species are identified in the *Invasive Plant Regulation*. The licensee will meet *FRPA* requirements to reduce the introduction and spread of invasive plants that may result from the licensee's forest practices.

### **8.2 Climatic Factors**

#### **8.2.1 Wind**

One of the management objectives is to establish windfirm stands that are suited for any type of wind exposure.

In stands where windthrow susceptibility is likely to be moderate to high, field assessments will be conducted and prescriptions formulated that will minimize the potential for windthrow. Factors affecting windthrow susceptibility include: rooting depth, soil depth, soil drainage, terrain, tree height, and topography.

Windthrow strategies, especially important along fish streams, will be determined during operational planning. These may include boundary alternation, edge-feathering, pruning and topping.

### **8.2.2. Snow Damage**

Snow damage on advanced regeneration has the greatest effect on stand management. However, due to its location, WL 2043 does not receive substantial amounts of snow during the winter. There have been cases where sizable amounts of snow have fallen, however. Therefore, future treatment regimes will have to consider higher residual stand densities in these areas that may be prone to snow and ice hazards.

### **8.3 Fire**

The main fire risks in the woodlot are lightning, human activities, sparks caused by logging and vehicles. The area has a moderate climate, with a low fire history.

The licensee will comply with the *Wildlife Act* and regulations regarding fire suppression equipment required, work hours and preventive measures. When operating on the licence during fire season, the licensee will contact the South Island Forest District to determine the current Fire Danger Class for the area.

To minimize the buildup of fuels from timber harvesting and silviculture activities, the licensee must assess areas to determine if a fire hazard is present once harvesting is complete. The licensee will abate any hazards that are created.

## **9.0**

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### **INFORMATION GATHERING AND REVIEW**

#### **9.1 Public Review**

This management Plan is being advertised and made available for public review from July 01 to July 31, 2007

#### **9.2 Resource Agencies and Interested Parties**

In addition to the MoFR, the resource agencies and interested parties that will be consulted during the preparation of this Management Plan and will be consulted during the subsequent Woodlot Licence Plan are:

1. Ministry of Environment
2. Islands Trust
3. Island Timberlands Ltd
4. BC Parks
5. Chemainus First Nation
6. Snuneymuxm First Nation

## 10.0

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### REVISION

Revision, amendment and updating of the Management Plan will be done periodically. The licensor reserves the right to require that this Management Plan be revised at anytime. It is understood that any variations from this Management Plan in effect will require prior consent from the District Manager.

## 11.0

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### ANNUAL REPORT

An annual report will be submitted to the MoFR by April 30 of each year, covering the previous calendar year.

## **LIST OF APPENDICES**

- Appendix I: Forest Inventory
- Appendix II: Allowable Annual Cut: Report by Islands West Forestry Ltd (March 2005)
- Appendix III: Red and Blue Listed Species
- Appendix IV: Agency and First Nations Comments and Response
- Appendix V: Advertisement, Public Comment and Response
- Appendix VI: Legal Exhibit Map A: Woodlot Licence 2043
- Appendix VII: Forest Management Map: Woodlot Licence 2043

## **Appendix I: Forest Inventory**

**Appendix II:** Allowable Annual Cut: Report by Islands  
West Forestry Ltd (March 2005)

### **Appendix III: Red and Blue Listed Species**

## **Appendix IV:** Agency and First Nations Comments and Response

## **Appendix V: Advertisement, Public Comment and Response**

No public comments have been received

## **Appendix VI: Legal Exhibit Map: Woodlot Licence 2043**

**Appendix VII:** Forest Management Map: Woodlot  
Licence 2043