

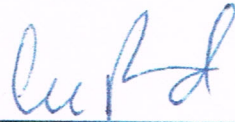
# WOODLOT LICENCE W1678

## WOODLOT LICENCE PLAN #3

Term  
2018 to 2028

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Authorised Licensee Signature:



Print Name

Lee Pond

Keith Hall

Date

Dec 21/17

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Romona Blackwell

Date

## DISCLAIMER

- Recognising the special nature of management on a woodlot licence, this disclaimer forms part of the Woodlot Licence Plan (WLP) for Woodlot Licence Number 1678 (W1678) and advises that:
  - the decision to operate under one or more of the Default Performance Requirements provided in the Woodlot Licence Planning and Practices Regulation (WLPPR) is the sole responsibility of the woodlot licence holder, and involved no detailed oversight or advice from the prescribing registered professional forester. This disclaimer is signed on the explicit understanding and information provided by government that, the use and achievement of a Default Performance Requirement, meets the expectations of government with respect to the management of woodlot licences;
  - the undersigned Registered Professional Forester has been retained to provide advice on the practice of professional forestry with regard to items such as alternative performance requirements, applicable results and strategies and other required measures that do not have a default performance requirement provided in the WLPPR.

Signed \_\_\_\_\_

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Seal:



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## **I. CONTENT FOR A WOODLOT LICENCE PLAN (WLP)**

### **PLAN AREA**

☒ This plan covers the entire Woodlot Licence W1678 area of 1667.1 hectares (ha).

This woodlot licence plan has been prepared as a direct result of the purchase and transfer of W1679 and its consolidation into W1678. In addition, there have been new private land parcels included into the woodlot.

Woodlot Licence W1678 is now composed of one Crown parcel of approximately 770.2 hectares (ha) and three private properties of 896.9 ha, covering a total estimated area of 1667.1 ha. The Schedule 'B' land (Provincial Forest Crown) is at Quinsam Lake southwest of Campbell River and is accessed off the Elk River Mainline. The Schedule "A" land (Forest Private) has the first parcel which is near Black Creek north of Courtenay and is accessed off the North Island Highway and Sturgess Road. The second and third parcels are adjoining located off Hwy 29 south of Campbell Lake.

The areas for each parcel are noted within Table 1 and on the Woodlot Licence Plan (WLP) maps in Appendix I.

**Table 1: W1678 Property Summary**

<b>Description</b>	<b>Area (ha)</b>	<b>Ownership</b>	<b>Biogeoclimatic Subzone</b>	<b>Road Access Name</b>
Quinsam Lake	770.2	Crown	CHWxm1	Elk River Main
Total Crown	<b>770.2</b>			
Sturgess road	94	Private	CHWxm1	Sturgess Road
Lot 1	400.7	Private	CHWxm2	Hwy 29
Lot 2	402.2	Private	CHWxm2/mm2	Hwy 29
Total Private	<b>896.9</b>			
Total Crown/Private	<b>1667.1</b>			

Vehicle access to all the blocks is via roads listed in Table 1. All access roads are public or industrial forest roads.

## MAP AND INFORMATION

Section 8 of the Woodlot Licence Planning and Practices Regulation (WLPPR) lists the information required in the WLP to describe the woodlot resource features and some management implications. The chart below shows the Section 8(1) data required and if it is mapped and/or discussed in the text. The applicable information is shown on the WLP maps in Appendix I. This information is based on map data available from the Geo BC Data Distribution website, or field surveys and riparian classification completed for the woodlot.

**Table 2. The map and information required in Section 8(1) WLPPR.**

Information Item	Map	Text	N/A
Forest cover	x		
Topography; (unless exempted by DM)	x		
Location of streams, wetlands and lakes as shown on forest cover maps, terrain resource inventory maps and fish and fish habitat inventory maps.	x		
Riparian classification of streams, wetlands and lakes <u>if shown on maps</u>	x		
Identification of fish streams	x		
Biogeoclimatic zones and subzones (unless exempted by DM)	x	x	
Public utilities (transmission lines, gas & oil pipelines, and railways)	x		
Existing roads	x	x	
<b>Special Situations that may not Apply to the WL area</b>			
Resource Management Zones, Landscape Units or Sensitive Areas	x	x	
Wildlife Habitat Areas (unless exempted by DM)		x	x
Scenic Areas		x	x
Ungulate Winter Ranges		x	x
Community Watersheds		x	x
Fisheries Sensitive Watersheds		x	x
Community and domestic water supply intakes that are licensed under the Water Act and any related water supply infrastructures		x	x
Contiguous areas of sensitive soils		x	x
Temporary or permanent barricades to restrict vehicle access	x	x	
Private property within or adjacent to the woodlot licence area	x	x	
Resource features other than wildlife habitat features and archaeological sites (unless the location of the resource feature is not to be disclosed)		x	x

### **Biogeoclimatic zones and subzones:**

The woodlot areas, both crown and the Sturgess private unit, are located within the Coastal Western Hemlock Very Dry Maritime (CWHxm1). Lots 1 and 2 are in portions of CWHxm2 and CWHmm2 (Coastal Western Hemlock Montane Moist Maritime) Biogeoclimatic Subzone (BEC).

### **Resource Management Zones, Landscape Units or Sensitive Areas:**

The woodlot is in an Integrated Resource Management Zone. The Crown land is in the Quinsam Landscape unit, Lots 1 and 2 are the Upper Campbell and the Sturgess private land is in the Tsolum Landscape units. The woodlot is not in a designated sensitive area.

The applicable higher-level plan is the Vancouver Island Land Use Plan (VILUP) which covers the Sturgess private land but not the Crown land at Quinsam Lake or private land at Campbell Lake. VILUP does not cover the Quinsam Lake or Campbell lake units

because they are surrounded by large areas of private forestlands. Since the overall directions and strategies within the VILUP are compatible and promoted at the woodlot level the summary is included. The overall management direction of Resource Management Zone #33 is *"second growth timber values and particular suitability for enhanced silviculture and growth and yield management; recreation/scenery and tourism opportunities associated with intensively managed, roaded resource lands; high fish and wildlife values; biodiversity conservation/restoration is recommended with emphasis on retention, and where required, active restoration of mature and old seral forest attributes and age classes"* In addition forest management strategies should promote *"retention of scattered veteran trees, wildlife tree patches, diversity of tree species and ages, and partial cutting silvicultural systems"*.

The VILUP has stated objectives related to retention of old forest attributes, seral stage distribution and diversity. This WLP provides results and strategies that are connected to the sustainable growth rate calculation derived within the Management Plan, which meet the VILUP objectives. The VILUP covers the private unit and is considered compatible with the WLP for W1678.

There are two community plans that include the W1678 area:

- the Oyster Bay - Buttle Lake Electoral Area D Official Community Plan (OBOCP) which covers the Crown land and Campbell Lake private land.
- the Rural Comox Valley Official Community Plan (RCVOCP) which covers the Sturgess private land.

The forestry objectives and policies in the OBOCP support socially and environmentally responsible forest practices, and recognise the significance of the forest industry.

The community values described by forestry resources in the RCVOCP are compatible with the practices proposed in the WLP. The forest resources in the RCVOCP are valued as natural green space to counter density development on other land parcels.

#### **Wildlife Habitat Areas:**

There are no known Wildlife Habitat Areas (WHA) within W1678.

#### **Scenic Areas:**

There are no known Scenic Areas within W1678.

#### **Ungulate Winter Ranges:**

There are no known Ungulate Winter Ranges within W1678.

#### **Community Watersheds:**

There are no known Community Watershed intakes located within W1678.

#### **Fisheries Sensitive Watersheds:**

There are no known Fisheries Sensitive Watersheds within W1678.

#### **Community and domestic water supply intakes that are licensed under the Water Act and any related water supply infrastructures:**

There are no known community or domestic water supply intakes that are licensed under the Water Act and any related water supply infrastructures inside the boundaries

of W1678. A waterline (not registered against title and not for domestic use) crosses the Campbell Lake private forest with points of diversion for Strathcona lodge water supply.

**Contiguous Areas of Sensitive Soils:**

*“sensitive soil” means an area with one or both of the following:  
a slope greater than 60% or indicators of potential slope instability.<sup>1</sup>*

There are known areas of sensitive soils on the woodlot. When an area of sensitive soil is identified during harvest planning, a geotechnical assessment will be completed and any recommendations followed. A map of steep slopes is available to identify potential sensitive soil areas.

**Existing Roads:**

An agreement is prepared for use of Timber West roads, replacing the previous licensees' agreement.

**Temporary or permanent barricades that restrict vehicle access:**

Temporary or permanent barriers to restrict vehicle access are identified on the WLP Map in Appendix I. The private land gates will be kept locked and the Crown gate will be locked when the Fire Danger Rating is Extreme, or for safety when logging is occurring.

**Private property within or adjacent to the woodlot licence area:**

The location of adjacent property owners (private or crown) are outlined on the WLP Map. The Crown and Campbell Lake private portions of W1678 are surrounded by privately owned industrial forestland (Timber West and individual owners), and Quinsam/Campbell Lake edges. The Sturgess private land is surrounded by privately owned land, either farm land or forest. Consultation will occur when necessary to ensure activities and treatments are co-ordinated between private and Crown property interests.

**Resource features other than wildlife habitat features and other features where the location must not be disclosed:**

At the time of preparing this WLP map, no resource features have been established within the WL area under the Government Actions Regulation. There were also no resource features within the WL area that were made “known” by the district manager under the regulations of the Forest and Range Practices Act (previously *Forest Practices Code of BC Act*).

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<sup>1</sup> WLPPR, Part 1, BC Reg 21/2004

## **AREAS WHERE TIMBER HARVESTING WILL BE AVOIDED**

There are no specific areas where timber harvesting will be avoided on W1678.

## **AREAS WHERE TIMBER HARVESTING WILL BE MODIFIED**

### **Wildlife Tree Retention Areas (WTRA)**

WTRA will have harvest modified as described in the WTRA Strategy.

### **Riparian Management Zones**

Harvesting will be modified within the area of the Riparian Management Area's (RMA's), including the Riparian Reserve Zone (RRZ) and the Riparian Management Zone (RMZ). The "Performance REQUIREMENTS" are specified for riparian areas starting on page 18 of this plan. The proposed alternative performance includes variations from the default requirements in WLPPR for restrictions in riparian reserve and management zones.

The alternative performance option allows for harvesting in the RMA for a road clearing width, or for commercial thinning, single tree selection, or intermediate cut treatments where it is possible to maintain or improve riparian function by harvesting and silvicultural or other treatments. This modification allows for flexibility on a small land base to maximize productivity for timber harvest potential along with careful management and improved knowledge of the function of riparian areas within the woodlot.

Unless exempted by the district manager a plan and prescription will be created in consultation with a qualified professional to specify the treatments in the RRZ and RMZ. Generally, in the RMZ, the WL holder will retain the post harvest stand structure noted in Table 3. Variation from the retentions levels noted in Table 3 can occur based on a rationale and site specific plan by a qualified professional where the specified objectives are enhanced. In the RRZ, the percentage removal of the basal area will be limited to 80% of selected individual trees (70% of the selected individual retention trees will be comprised of mature canopy trees) unless there is an objective specified that requires a higher percentage removal. Objectives such as stream temperature modification, forest health or flood management reasons, to achieve the management intent for the stream, wetland or lakeshore RMZ, are examples where a higher percent removal could apply.

The retention level within an RMA will be determined based on field assessments considering the site classification, species composition, age classes and riparian and wildlife values of stratified units where there is a potential to modify harvesting. The assessment will consider the condition of the riparian area along both sides of the stream and the length of the stream within the woodlot and immediately downstream. It is expected that retention of residual dominant trees will be highest for an S2-4 stream classification, similar to the percentages specified in Table 3. Streams classified as S5/6 will have a standard of management to minimise debris transportation to lower reaches of the streams. One objective will always be to retain small trees and brush in the RMA.

For the purposes of forest health (root disease treatment) and windthrow abatement (or recovery) harvesting in the RMA will consider the results of a windthrow assessment and forest health survey.



The measurement for the determination of percent basal area retention will be along 150m length or the portion of the stream within the harvest block. Natural gaps in stocking may mean that the retention is not continuous.

**Table 3: RMZ Basal Area retention by Riparian Class.**

Riparian Class	Basal Area to be Retained in RMZ (%)	Management Intent	Retained Species <sup>2</sup>
S1 streams	≥20	Maintain Riparian and Wildlife values	Fd, Dr, Mb, Cw, Hw, Act, Ss, Pw
S2 stream	≥20		
S3 stream	≥20		
S4 stream	0-10	Maintain Stream bank integrity	
S5 stream	0-10	Minimize Debris Transportation	
S6 stream			
All wetland classes	≥10	Maintain RRZ, Wildlife Habitat, Coarse Woody Debris	

<sup>2</sup> Tree species labels are listed within Appendix III footnotes section.

## CONSERVING AND PROTECTING CULTURAL HERITAGE RESOURCES

The following strategy is proposed to conserve and protect cultural heritage resources (CHR) that are the focus of a traditional use by an aboriginal people and of continuing importance to them. This strategy applies to CHR that are not protected under the **Heritage Conservation Act**. The WL holder, is committed to carrying out forest practices at a time and in a manner that is unlikely to damage or harmfully alter CHR.

Consultation with First Nations (FN) to review plans and to participate in the information sharing process is included in section II of this plan. The Crown land of W1678 is within the traditional territory of the Nanwakolas First Nations group, specifically the We Wai Kai (Cape Mudge) and Wei Wai Kum (Campbell River) and K'omoks First Nation. The private land is within Nanwakolas traditional territory, and also just inside the Homalco/K'omoks consultation boundary.

An Archaeological Overview Assessment was completed in 2007 by Millennia Research Limited. An Archaeological Site Potential Assessment was completed for W1678 Crown land in 2009 and 2014 by Aaron Bible, B.A., RPCA of Baseline Archaeological Services Ltd. The reports concluded that there is low archaeological potential in W1678, due to the inland location, sloping topography on the lakeshore, and lack of veteran Cw trees. Although no further archaeological work was recommended, the licensee is aware of the requirement to stop development in the vicinity should any archaeological remains or CHR's be discovered. Notification of the FN and the Ministry of Forests will occur in such an event.

A strategy to conserve and protect the CHR's on W1678 has and will continue to incorporate any existing or new CHR information (when it becomes available). The aim of the strategy is to accommodate access to and use of 1) traditional plants, 2) western red cedar, and 3) to ensure that there is a process for considering existing and new information on CHR. To achieve these three results the specific strategies are as follows:

### Traditional Plants

Facilitating opportunities for FN to harvest and use plants for traditional use will require the following steps:

- Communication from local FN identifying specific traditional use plants of continuing interest.
- Where specific plants other than western red cedar trees (separate specific section) are identified by the applicable FN, notification will be provided by the WL holder prior to timber harvesting activities on stands or sites likely to contain the traditional plants.
- The time frame for notification will be determined in consultation between FN and the licensee, when specific plants have been identified by FN.

### **Traditional Use of Western Red Cedar**

FN traditional use of western red cedar is common throughout the coastal region. In the limited areas where cedar currently exists on W1678, access for traditional use of western red cedar will be accommodated through the following steps:

- When requested by the applicable FN, a reasonable opportunity for traditional use of western red cedar trees for bark stripping and monumental logs, (recognising there is a limited availability of monumental logs within W1678) will be made available.
- Western red cedar will be planted, where it is silviculturally and ecologically suited, as a mixture with other preferred or acceptable trees species in order to build a future supply of cedar trees.
- As part of the retention strategy for specified areas within W1678 western red cedar will be retained as a component of the stand structure. When available, reliable and feasible, sapling sized western red cedar will also be retained within clearcut openings.

### **New Information on CHR**

All plans and activities will consider CHR and when field surveys indicate a potential traditional use, the location will be made available to local FN and Government. Any potential traditional use sites will be protected from alteration or disturbance, whenever practicable and feasible.

If new information on CHR's become available, the licensee will contact the FN and endeavour to understand the concerns and ensure the CHR in question is protected and/or conserved wherever practicable and feasible. During operational planning on W1678 the licensee will avoid damage to CMT or Archaeological sites.

## WILDLIFE TREE RETENTION STRATEGY

The proportion of W1678 that is occupied by Wildlife Tree Retention Areas (WTRA) is specified in the "PERFORMANCE REQUIREMENTS" section of this plan. As per WLPPR Section 52(1), the proportion of W1678 occupied by Wildlife Tree Retention (WTR) areas will not be less than 8 percent of the total woodlot area of 1667.1 ha. The minimum area of WTR will be achieved either as ecologically anchored stands of medium to high value wildlife tree's (WT's), dispersed stands or individual WT's. Only those trees or areas specifically identified and documented to meet the performance requirement of 8% are required to meet the WTR strategy. Other areas of the woodlot, although they also provide wildlife value, are not required or restricted to meet the WTR requirement as per WLPPR s.52 (1) or this strategy. On W1678 the minimum age for trees or forest types to contribute to the 8% wildlife tree retention performance is 30 years, with spacing between areas<sup>3</sup>. to generally not exceeding 500m It is expected that there will be a range of stand and tree ages from 30 years to old growth identified as WTRA and WT on W1678.

There are no known identified wildlife<sup>4</sup> on the woodlot. Expected use by wildlife on W1678 would likely include the Great blue heron, American dipper, Piliated woodpeckers, birds, kinglets, frogs, black-tailed deer, wolf, owl, bear, cougar and Roosevelt elk. Elk and deer cause regeneration difficulties, and strategies to reduce browse and other damage will follow guidelines to reduce damage, while maintaining a healthy ungulate population.

WT's and coarse woody debris retention will be the main techniques employed on W1678 to meet the WTR requirement. These tools are practical, measurable and are included as part of the overall WTR strategy.

A specific map of WTRA has not been included as part of this WLP. A map and tabular summary will be retained on file to demonstrate how the WTR requirements are achieved (WLPPR Section 52). This map and table will be updated periodically as part of management and harvest planning steps to achieve the stated WTR performance requirements.

The two types of WTRA's (Anchored or Dispersed), contribution will be measured as described within the performance requirement section of this plan. The attributes of anchored and dispersed WTRA's are described as follows:

### **Anchored WTRA**

Ecologically anchored WTRA are expected to be integral to a permanent or fixed feature such as a wetland, protected stream, rocky knolls, or group of trees with unique wildlife plant and habitat characteristics. Anchored WTRA's will usually be located adjacent to any den or nest, be part of the RMA for streams and wetlands, or where existing veteran trees or snags have medium to high wildlife value. Anchored WTRA will normally be preferred for meeting the performance requirements. As operational planning is completed anchored WTRA will be selected. Examples of forest areas that have ecological features with potential forest attributes of an Anchored WTRA are described in Table 4.

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<sup>3</sup> Wildlife tree retention: Management guidance, 2006 Ministry document.

<sup>4</sup> Identified Wildlife are described as either species at risk or regionally important wildlife.

## Dispersed WTRA

When ecological anchors are widely spaced (>500m apart), then dispersed WTRA will be used to contribute to the required amount. Dispersed WTR can include single retained trees or clumps of trees that are too small to be mapped (ie <.25 ha.) The retained trees will include suitable medium or high value WT's. Basal area equivalence will be used to verify results (i.e. 50 percent basal area retention on one hectare is equivalent to .5ha of WTR). It is expected that dispersed WTRA's will move over time.

Examples of dispersed WTRA's include the following:

- Specified area's (treated or untreated) where there are greater than 250 stems/ha (SPH) of a preferred or acceptable tree species. Treated areas are required to have similar or future potential of medium or high wildlife characteristics in a similar proportion to untreated stands.
- Individual trees retained within clearcuts that have medium or high wildlife value.
- Minor tree species retained to achieve biodiversity objectives, including Aspen, Cascara, Dogwood, Yew, Cherry, Willow or Hawthorne.
- Contained forest health incidences, such as root disease or mistletoe, where the risk of spread is limited.
- Some younger seral stage stands with smaller size wildlife trees within the stand.

## Individual Wildlife Trees

### Species and Characteristics:

The species and characteristics of WT's will be representative of the current stands composition, with a priority for selection based on high or medium wildlife value classification. Trees with wildlife values will be selected based on species preference as follows: Fd, Cw, Mb, Ss, Bg, Hw, Pw, Dr and Act.

### Wildlife tree characteristics<sup>5</sup> for medium and high value include:

- Pathological indicators – scars, internal decay, cracks, loose bark, cavities, contained<sup>6</sup> areas of root disease or mistletoe;
- Evidence of current or future wildlife use;
- Existing nest or den in or near tree;
- Veteran trees greater than 250 years old;
- Large open grown trees with large branches (more than 5cm in diameter) and having multi-tops and stem distortions (sweeps or crooks);
- Value for wildlife tree (berries, insects, perch to view prey);
- Locally important WT.

WT trees will be assessed for windthrow risk and safety prior to selection. Once selected, WT's will be retained for as many years as practical and left where they fall if windthrow occurs. Generally, WT will be selected outside of the hazard zone of roads or trails<sup>7</sup>.

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<sup>5</sup> Any individual characteristic indicates a medium/high value, when it is >12.5cm and ecologically suited to the site.

<sup>6</sup> Contained: The limited opportunity to spread to healthy stands.

<sup>7</sup> Road hazard zone of 40 m, on both sides of roads.

**a) Conditions Under Which Individual Wildlife Trees May Be Removed:**

-Individual specifically identified WT's may be removed if they become a safety hazard or they become infested with insects which threaten the health of adjacent trees.

Individual WT's could be removed under the following circumstances:

- Compromises the safety of workers or the public;
- Risk of significant forest damage (i.e. localised insect and disease outbreaks);
- When there is available WTRA or WT replacements;
- To improve wildlife function of other WT's.

**b) Replacement of Individual Wildlife Trees:**

If individual WT's are removed they will be replaced with trees of comparable WT value.

It is expected that there will always be stands of large trees and older forests within close proximity to each other, including anchored WTRA's on W1678.

## **Wildlife Tree Retention Areas**

**a) Forest Cover Attributes**

The W1678 WTR strategy for the identification of WTRA's will utilize a selection process. Those forest types which have large numbers of medium and high WT characteristics will have the attributes of a WTRA. Preference for selecting WTRA will be stands anchored ecologically to streams, wetlands, or existing veteran trees. WTRA's will usually contain a mixture of coniferous and deciduous trees. WTRA's will be dispersed throughout the woodlot area, selecting areas where wildlife and biodiversity values are present. A WTRA will be comprised of trees with a minimum age of 30 years, tree diameters greater than 12.5cm and heights greater than 15meters.

The dominant private land forest is about 25-30 years old, with some scattered individual older trees (60-100 year old) left from the previous logging. Much of the private land forest types will exceed the diameter and height criteria for WTRA, with much of the younger types available for future replacement options.

Forest health incidence and risk of spread will be evaluated for an area considered for WTR. When veteran or older trees are selected for WTR they often have forest health factors such as root disease and dwarf mistletoe. The overarching goal is to develop strategies to prevent their spread that are supported by a rationale and monitored for effectiveness.

There are potential Anchored WTRA which have been identified, with the forest cover attributes and resource values listed in Table 4. Both Anchored and Dispersed areas will contribute to meet the Wildlife tree performance requirements.

**Table 4: Forest cover attributes of WTRA**

Location Description	Forest Cover - Site index	Function and Value
WTR 1	Fd 433-19	Upland forest and understorey vegetation with exposed rock - resulting from fire history
WTR 2	Fd(Hw) 448-30 Fd 435-23	Fd forest around small wet depressions.
WTR 3	FdCwHw 856-25	Older forest along shore at outlet of Quinsam Lake
Riparian reserves (RRZs)	Mix of species	Riparian/Diverse forest, recruitment for older trees
Riparian management zone retained trees	Mix of species	Trees with high wildlife value, recruitment for older trees

The WTRA map will be supported with documentation of the contribution as per WLPPR s.52(1) following operational planning, including consultation with Qualified Professionals, when required.

**b) Conditions Under Which Trees May Be Removed from Wildlife Tree Retention Areas:**

Trees may be removed from a WTRA under the following circumstances:

- If they become a safety hazard, or worker or public safety is compromised;
- If they become infested with insects or diseases which threaten the health of adjacent trees or spread is likely to occur (species specific), based on an assessment by a qualified professional;
- To provide access to adjacent stands. To construct access roads and trails, where no other practicable option exists. Access construction will avoid removal of high and medium value WT's. The number of quality WT trees removed will be no more than reasonably needed to provide the access;
- Any tree which is not a high or medium value WT and does not damage the WTRA function;
- Where more than 50% of the trees within a WTRA are damaged by natural causes;
- Where identified within a prescription for a Riparian Management area.

**c) Replacement of Trees Removed from Wildlife Tree Retention Areas:**

If WT's with high or medium wildlife value are removed from a WTRA, they will be replaced with comparable trees from a nearby location. If there is significant damage (>50% tree damage) to a WTRA it will be replaced with a similar area, unless the damage is determined to contribute to achieving the performance requirements of the Wildlife Tree Retention Strategy (ie: CWD, elevated root structures).

**d) Wildlife Notices outside of W1678**

This Wildlife Retention Strategy contributes to the intent of the Wildlife Notice, which does not specifically apply to W1678, but it is important to be aware of when considering the selection of WTRA's. A WILDLIFE NOTICE UNDER SECTION 9(3) OF THE WLPPR INCLUDES INDICATORS OF THE AMOUNT, DISTRIBUTION AND ATTRIBUTES OF WILDLIFE HABITAT REQUIRED FOR THE SURVIVAL OF THE SPECIES AT RISK covering the Campbell River Forest District (CRFD). The CRFD is setting aside areas required to meet the notice within the larger forest land base, and will not likely require any portion of the woodlot for future WHA's. The amount of area required for each wildlife species is relatively small in proportion to the entire TSA. Adequate areas to meet any wildlife notice should be available outside of W1678.



## MEASURES TO PREVENT INTRODUCTION OR SPREAD OF INVASIVE PLANTS

It is likely that the forest practices of a WL holder may cause the introduction or spread of species of plants described in the ISC Invasive Plants-List Updated to 2016 (Appendix V). Some of the invasive plants (Scotch broom, Blackberry and Thistle) presently occur within the woodlot area. The best future approach is to prevent the introduction or spread of invasive plants (stop it from happening). In addition closed canopy forest cover reduces the grow of most invasive plants.

The licensee commits to carry out the following measures to prevent the introduction and spread of invasive plants that are likely the result of the WL holder's forest practices:

- Areas of new disturbance (i.e. new construction where there is significant mineral soil exposure resulting from timber harvesting), will be seeded as soon as practicable. Reseeding will be done at an acceptable rate, with an appropriate mix of fast growing grasses and legumes (using seed of the grade Canada Common #1 or better), if natural plant revegetation and growth is unlikely;

Other activities that are good practice, but are not required, include:

- Invasive plant identification training of employees.
- Annual inspections to identify any areas where invasive plants are present.
- Control measures to prevent the spread of invasive plants as part of operational planning.
- Gravel quarried for road construction kept clean of invasive plants and seeds by clearing topsoil where invasive plants are present. When invasive plants are present the distribution and spread will be avoided.
- Revegetation with native tree and brush species usually occurs within a growing season. If there is a risk of invasive plant introduction, revegetation will be prescribed to minimise the spread. Both reforestation and reseedling will occur at the first practicable time frame.
- Educate the unregulated users who have not been trained in identification of invasive plants.
- Maintaining a closed canopy as soon as practical. Early planting, annual silviculture maintenance and closed canopy will reduce Invasive plants vigour. Narrow road corridors will also maintain low light levels discouraging invasive plants.

An assessment of any invasive plant treatment will incorporate mapping to document the change over time. An adaptive management approach using ecological characteristics will be used to manage invasive species. Treatments, either by hand or with power tools, will be employed as part of a standard brushing regime, with an emphasis on effective implementation and monitoring when invasive plant species are present.

The most effective means available to a license to reduce the impact of invasive plants is to complete an aggressive site preparation, replanting and bushing program, which is a licensee standard operating procedure on W1678. Where existing invasive plants are located free growing plantation establishment will be a priority to shade out competing vegetation (including invasive plants).

## MEASURES TO MITIGATE EFFECT OF REMOVING NATURAL RANGE BARRIERS

No measures are required because there are no range features or tenures on or adjacent to the woodlot area.

## STOCKING INFORMATION FOR SPECIFIED AREAS

☒ The stocking standards for the purpose of section 12 and 34(3) of the WLPPR are found in Appendix II.

Specified areas include:

- Commercial thinning areas,
- Removal of individual trees,
- Areas subject to single or group tree selection or,
- Other types of intermediate cutting and/or,
- Areas subject to the harvest of special forest products.

On specified areas the establishment of a free growing stand is not required because harvesting is limited to commercial thinning, single tree selection, intermediate cuttings, removal of individual trees, single or group selection, or harvesting special forest products . The stocking standards for specified areas in Appendix II will apply.

Specified areas could be located anywhere within W1678 and will be delineated in conjunction with the pre-harvest mapping as per section 33 of the WLPPR. The application of intermediate harvesting systems as stands reach age 35-50 years will provide an opportunity to effectively lengthen rotations and maintain older forest attributes on the woodlot.

Prior to harvesting a stand assessment will determine the target basal area and stems per hectare retention, and removal. The type of commercially valuable and ecologically suited crop trees and their character, quantity and distribution is described in Appendix II.

Multiple stand entries (planning period over many decades) could be made until the stocking is reduced to below the minimum stems per hectare and basal area for meeting the Specified Area stocking standard. Once stocking is reduced to below minimums units will be excluded from the specified area designation. Opening size and configuration, for areas removed (harvested openings) from the specified area designation, will be reviewed and documented to ensure reliability of achieving the free growing stocking standard (Appendix III), within an appropriately sized<sup>8</sup> unit for reforestation success.

Commercial thinning will target a harvest by estimated basal area and/or stems per hectare (SPH) based on an evaluation of stand stocking characteristics. A stand assessment, tree marking and evaluation methodology is developed for the practice of

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<sup>8</sup> The appropriate size for reforestation success on a unit is dependent on a number of site factors including slope, aspect, age and height of trees along the southern boundaries, opening orientation and site ecology.

commercial thinning. The commercial thinning regime plans for re-entry every 10 years until such time as the Current Annual Increment begins to decline due to gaps developing in the stand.

The Stocking Standards (SS) as noted in Appendix IIA will replace (take over) the Specified Areas Stocking Standards in the following circumstances:

- Where more than 50% of the stand volume is harvested during a single entry there will be a regeneration strategy planned to meet the Stocking Standards (SS) as noted in Appendix IIA.
- When stocking is reduced to below 250 SPH or lower than 35m<sup>2</sup>/ha basal area the units will be excluded from the specific area designation.

## PERFORMANCE REQUIREMENTS

### SOIL DISTURBANCE LIMITS

#### ☒ **Alternative WLPPR s.24(1)(a):**

Soil disturbance limits will be less than eight percent of net area to be reforested, except for situations where site preparation activities (scalps and gouges) are described within this Alternative Performance Requirement (APR).

The soil disturbance limits for Wide Scalps and Deep Gouges will be as follows:

Wide scalps - Maximum 30% of site prepared area.

Deep gouges - Maximum 30% of site prepared area.

Rationale:

Wide scalp limits could apply where mechanical disturbance to remove roots and stems from excessive brush competition will help the establishment of a new stand, and reduce brushing and weeding requirements.

Deep gouge limits could apply where ditching and mounding treatments are used to improve site productivity by microsite drainage where poor drainage and high seasonal water levels, cause seedling mortality or low productivity.

In Douglas fir (Fd) stands, where the incidence of root rot is high and where Fd is the preferred and most ecologically suited species for regeneration, the preferred method of treatment is destumping. In the licensee's experience, soil disturbance levels up to 80% have occurred in cutblocks where well stocked stands with a high incidence of root rot were harvested. Destumping for root rot treatment is excluded from the soil disturbance limits.

With the exception of destumping site preparation causing more than 8% soil disturbance is rare. This alternative performance will be limited to sites where the site prep will not impact meeting other woodlot plan or wildlife tree retention objectives.

A full rationale in support of this APR for Soil Disturbance limits and how to meet WLPPR s9 objectives is included within Section II.

### PERMANENT ACCESS STRUCTURES

#### ☒ **Default: WLPPR s.25:**

The maximum area occupied by permanent access structures is as follows:

For Cutblocks  $\geq 5$  ha – 7% of the total cutblock area

For Cutblocks  $< 5$  ha – 10% of the total cutblock area

For the Total WL Area – 7% of the total Woodlot Licence area

## **STOCKING STANDARDS**

### **☒ Alternative WLPPR s. 35(1)(a):**

The stocking standards for regeneration of free growing stands are found in Appendix III. They specify the target and minimum numbers of trees of preferred and acceptable species for each site series in the CWHxm1/2 and CWHmm2 biogeoclimatic subzones, with regeneration and free growing dates, minimum intertree spacing, and crop tree/brush height ratio. Both conifer and broadleaf species are included.

In addition, there are some alternative modifications to the stocking standards for special circumstances or situations. The variations cover:

Reduced Minimum Intertree Distances for specific sites and situations;

Heavy Elk/Deer Browse and vandalism impacting Free Growing;

Retroactive free growing date of 20 years for all previously harvested blocks.

Rationale: Although the majority of sites on the woodlot will be successfully regenerated to the normal standards, there are certain sites and situations that might not. The adoption of a 20-year free growing period (as per FPPR s.44(1)(b) amended on June 1, 2007) for past and future cut blocks improves flexibility to meet the standards when there are unforeseen circumstances (natural events such as drought, flooding or windstorms, or licensee personal crisis). In addition, reduced criteria (minimum free growing trees and/or minimum intertree distance) may be required if certain sites are to be declared free growing. The reduced standard includes definitions of the types of site and circumstances where it is applicable.

More detailed descriptions and rationale to describe circumstances where the stocking standards and modifications will apply and how they meet WLPPR s9 objectives is included within Appendix III and section II.

## **WIDTH OF STREAM RIPARIAN AREAS**

### **☒ Default WLPPR s.36(4)(b):**

The minimum width of the riparian reserve zone, riparian management zone and riparian management area are as described in WLPPR s.36 (4)(b).

## **WIDTH OF WETLAND RIPARIAN AREAS**

### **☒ Default: WLPPR s.37(3)(b)**

The minimum width of the riparian reserve zone, riparian management zone and riparian management area are as described in WLPPR s.37 (3)(b).

## **WIDTH OF LAKE RIPARIAN AREAS**

### **☒ Default: WLPPR s.38 (2)(b)**

The minimum width of the riparian reserve zone, riparian management zone and riparian management area are as described in WLPPR s.38 (2)(b).

## **RESTRICTIONS IN A RIPARIAN RESERVE ZONE**

### **☒ Alternative WLPPR s.39 (2.1):**

Stream crossings could be constructed which cut, modify or remove trees in an RRZ.

If roads are located in RRZs, alongside a stream, best practices described in the legislation and standard operating procedures will be used to minimize any impact. Restrictions and conditions on road construction, maintenance, and deactivation activities, and on cutting, modifying or removing trees in a riparian management zone are described in WLPPR section 40, and regulations applying to road construction are in WLPPR Part 4 - Roads.

Rationale: This Alternative Performance requirement has been included for when there is a potential stream crossing which provides the only practical access to forest values within these areas.

### **☒ Alternative WLPPR Section 39(1)**

Trees may be cut, modified or removed in a riparian reserve zone specified as a) to h) and for the following purposes:

I) Commercial thinning, single tree selection, intermediate cutting, removal of individual trees, single or group selection, or harvesting special forest products where the majority of the canopy trees are maintained (ie crown class 1 and 2 trees) and riparian reserve function is reasonably expected to be unaffected or improved.

J) Openings occupying less than a 30 meter length of the stream, wetland or lake.

Rationale for this alternative performance is included in Appendix II; Section 4. It provides details for specific management practices.

## **RESTRICTIONS IN A RIPARIAN MANAGEMENT ZONE**

### **☒ Default: WLPPR s.40(1)(b)(c) or (d):**

Construction of a road in a riparian management zone is limited to the conditions described in Section 40(1) of the WLPPR without additional conditions to allow road construction being provided in the WLP.

## **WILDLIFE TREE RETENTION**

The proportion of the Woodlot Licence area that will be occupied by wildlife tree retention is:

### **☒ Default WLPPR s.52(1)(c): 8 % of the woodlot licence area**

There are three methods for measurement of the WTRA for meeting WLPPR s52 (1)(c) as follows:

#### **Option A-Anchored WTRA**

Anchored WTR contribution is based on the area designated on maps and documented.

#### **Option B-Individual Tree contribution**

For the purpose of measuring the contribution of individual WT's, 30m<sup>2</sup> of individual WT's is deemed to represent 1ha of WTR. Each individual WT contributes a unique

basal area (m<sup>2</sup>). As an example, 54 medium and high WT's, with an average diameter of 60cm (30m<sup>2</sup>/ha), will be the equivalent of 1ha of WTR.

### **Option C-Retention Equivalence (Untreated or Specified areas)**

For the purpose of measuring the WTRA contribution within an untreated forest type, or a specified area, the equivalent percentage basal area retention will represent the area of WTR. There will be substantially similar proportional representation of tree species, size and wildlife tree value following any commercial thinning or partial cutting treatment. As an example, of measuring the WTRA contribution, if 80% of the basal area of a stand is retained during a commercial thinning, this will be the equivalent of .8 ha of WTR contribution. An untreated area contributes 100% of the occupied area, if it is documented as a WTRA.

## **COARSE WOODY DEBRIS**

Unless exempted by the district manager or the WLPPR, the minimum amount of coarse woody debris to be left on areas where there is a requirement to establish a free growing stand is:

### ☒ **Default: WLPPR s.54(1)(b)**

Minimum retention of 4 logs per ha ≥ 5 m in length and ≥30 cm in diameter at one end.

## **RESOURCE FEATURES**

### ☒ **Default WLPPR s.56(1)(b):**

Ensure that forest practices do not damage or render ineffective a resource feature.

## **CHIEF FORESTER'S STANDARDS FOR SEED USE**

### ☒ **Default WLPPR s.32:**

Adopting the Chief Forester's standards for seed use effective on the date of the approval of this plan.

An alternative (section 32.5) for use of seed, from Washington and Oregon, that is consistent with achieving the intent of the standard is proposed.

Rationale: There is a limited available supply of high genetic gain (>15%) tree seed for some tree species and during different years (shortage of supply during high demand periods for sowing). The alternative of purchasing registered high genetic gain seed from Oregon and Washington improves the opportunity to increase yields and wood quality attributes, along with flexibility in availability of supply. There will also be an increase in genetic diversity with seed from warmer climates for potential climate change issues. The preferred option will be to continue to use BC seed when high genetic gain seedlots are available.

## **APPENDICES**

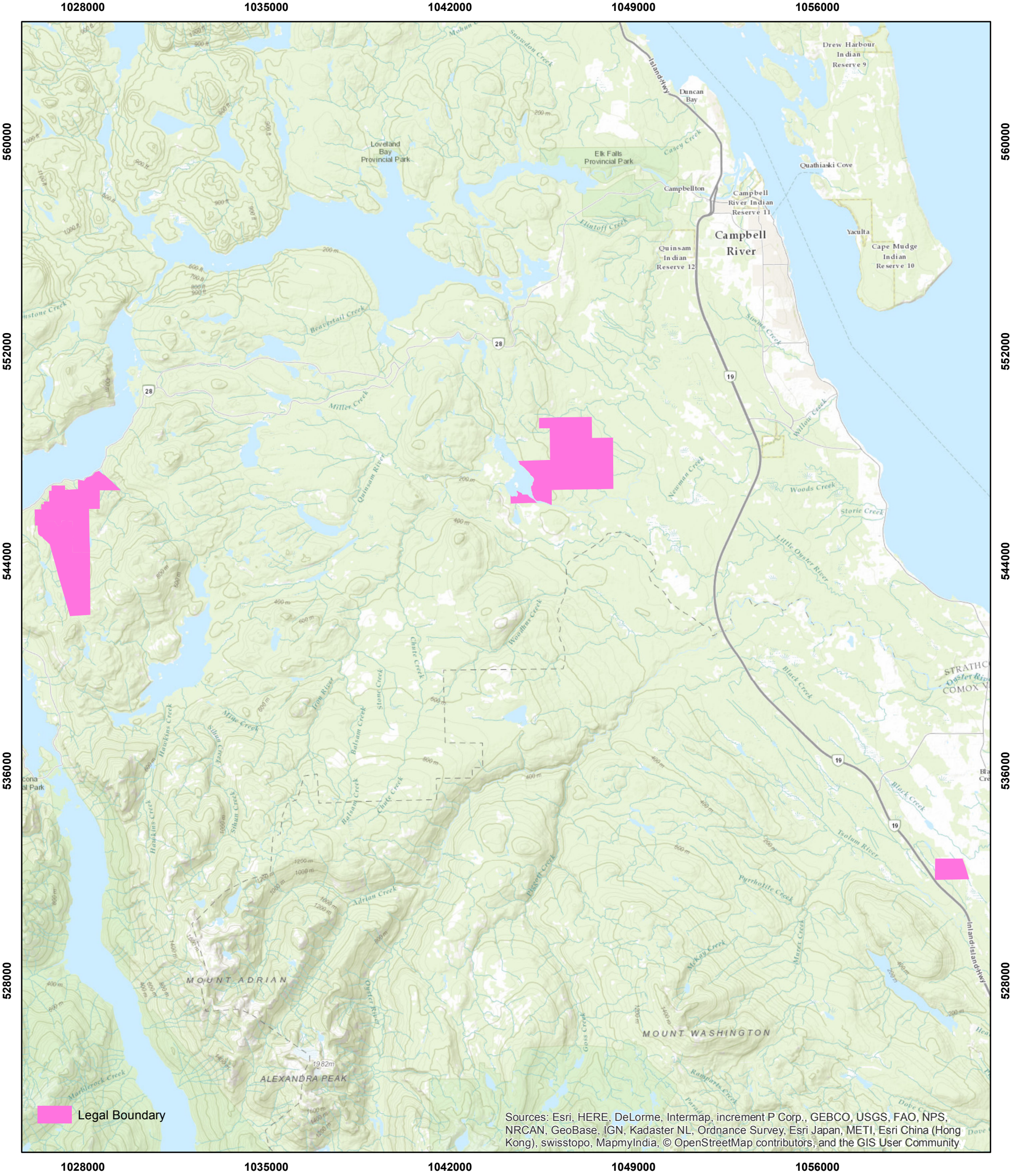


## **Appendix I: Woodlot Licence Plan Maps**



# Woodlot W1678

## General Location Map



### Woodlot Licence

**W1678**

Licensee: 1000175 B.C. Ltd (Pond/Hall)  
Region: RCO  
District: DCR  
Biogeoclimatic Zone, Subzone, Variant (BEC): CWHxm1, CWHxm2, CWHmm2  
Coordinate System/Datum: NAD 1983 BC Environmental Albers  
Landscape Unit: Quinsam  
Resource Management Zone: Integrated  
Mapsheet: 92F085, 92F092, 92F093, 92F094  
Drawn By: HRC (Deb Webster)



1:150,000

1,500 0 1,500 3,000 m



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Date: 10/26/2017



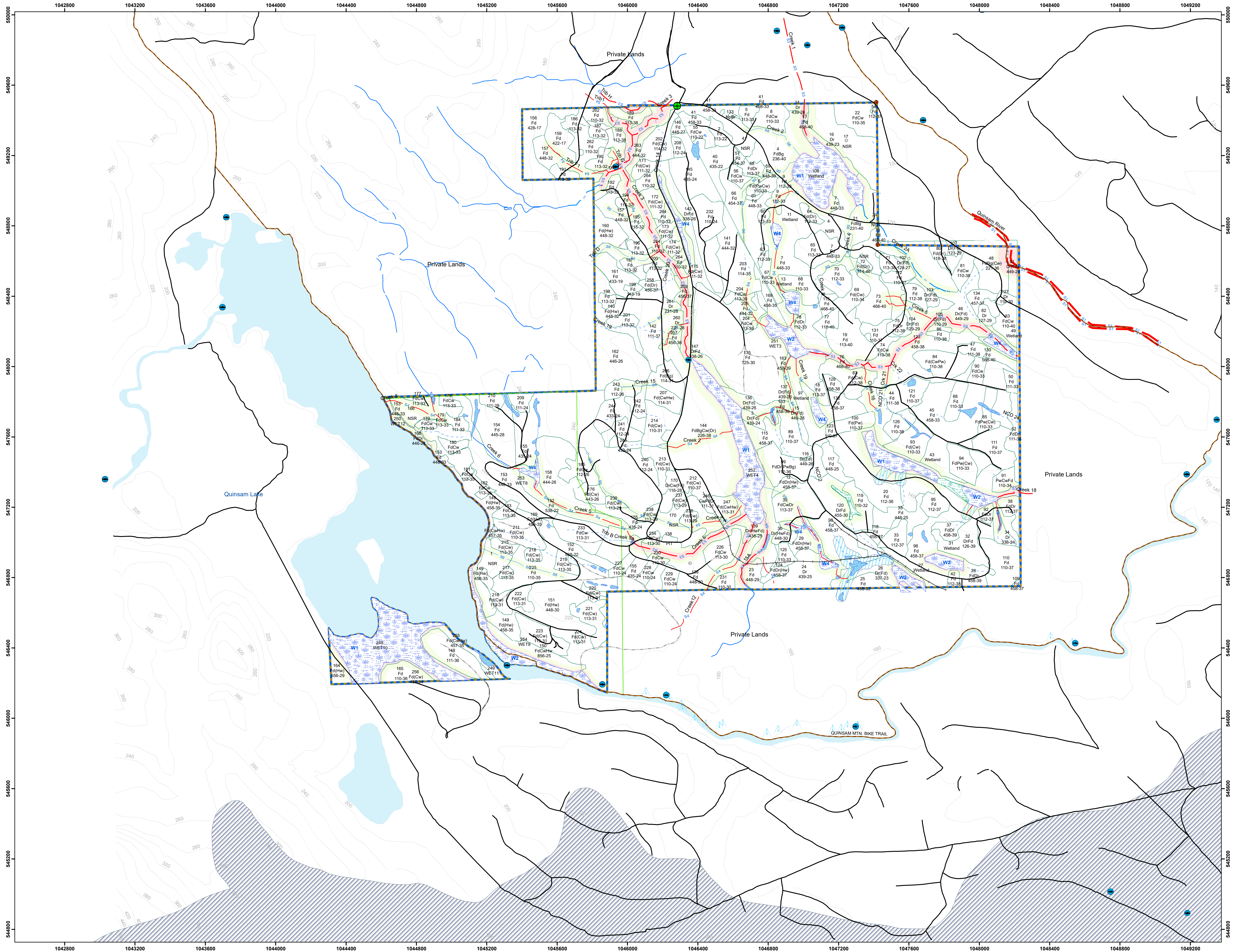
W1678 Quinsam Lake  
Woodlot Licence Plan



Woodlot Licence	W1678
Licensee	1000175 B.C. Ltd (Pond/Hall)
Location:	Quinsam Lake
Region:	RCO
District:	DCR
Biogeoclimatic Zone, Subzone,	
Variant (BEC)	CWHxm1
Coordinate System/Datum	NAD 1983 BC Environmental Albers
Easting/ Northing	1046446/549453
Area:	770 ha.
Landscape Unit	Quinsam
Resource Management Zone	Integrated
Mapsheet	92F094
Drawn By:	HRC (Deb Webster)

1:10,000

200 0 200 400 m





W1678 Woodlot Licence Plan Map  
Sturgess Road

- legalPoints
- 💧 Water licence and POD
- ⊕ Gate
- ▬▬▬ Transmission Line
- ▬ Low voltage Utility Line
- Contours

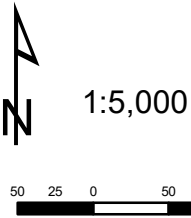
Streams

- Unclassified

CLASS

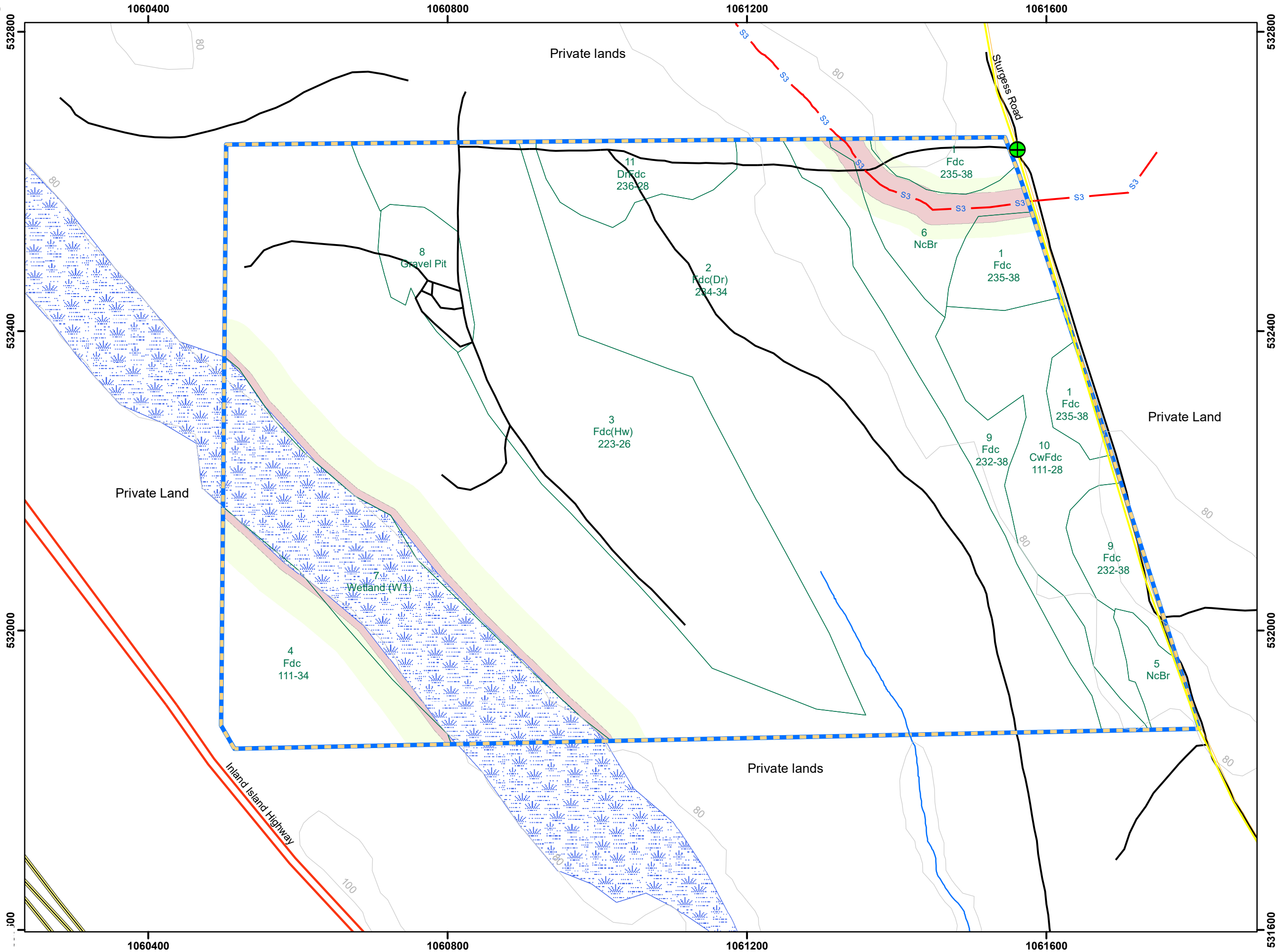
- - - NCD
- ▬ S1
- ▬ S2
- ▬ S3
- ▬ S4
- ▬ S5
- ▬ S6
- ▬ Woodlot Boundary
- ▬ Community Watershed
- ▬ Forest Cover
- ▬ Wetland
- ▬ RRZ
- ▬ RMZ

Woodlot Licence	W1678
Licensee	1000175 B.C. Ltd (Pond/Hall)
Location:	Sturgess Road, Black Creek
Region:	RCO
District:	DCR
Biogeoclimatic Zone, Subzone, Variant (BEC)	CWHxml
Area	94 hectares
Coordinate System/Datum	NAD 1983 BC Environmental Albers
Easting/Northing	1061018/532039
Landscape Unit	Tsolum
Resource Management Zone	Integrated
Mapsheet	92F085
Drawn By:	HRC (Deb Webster)

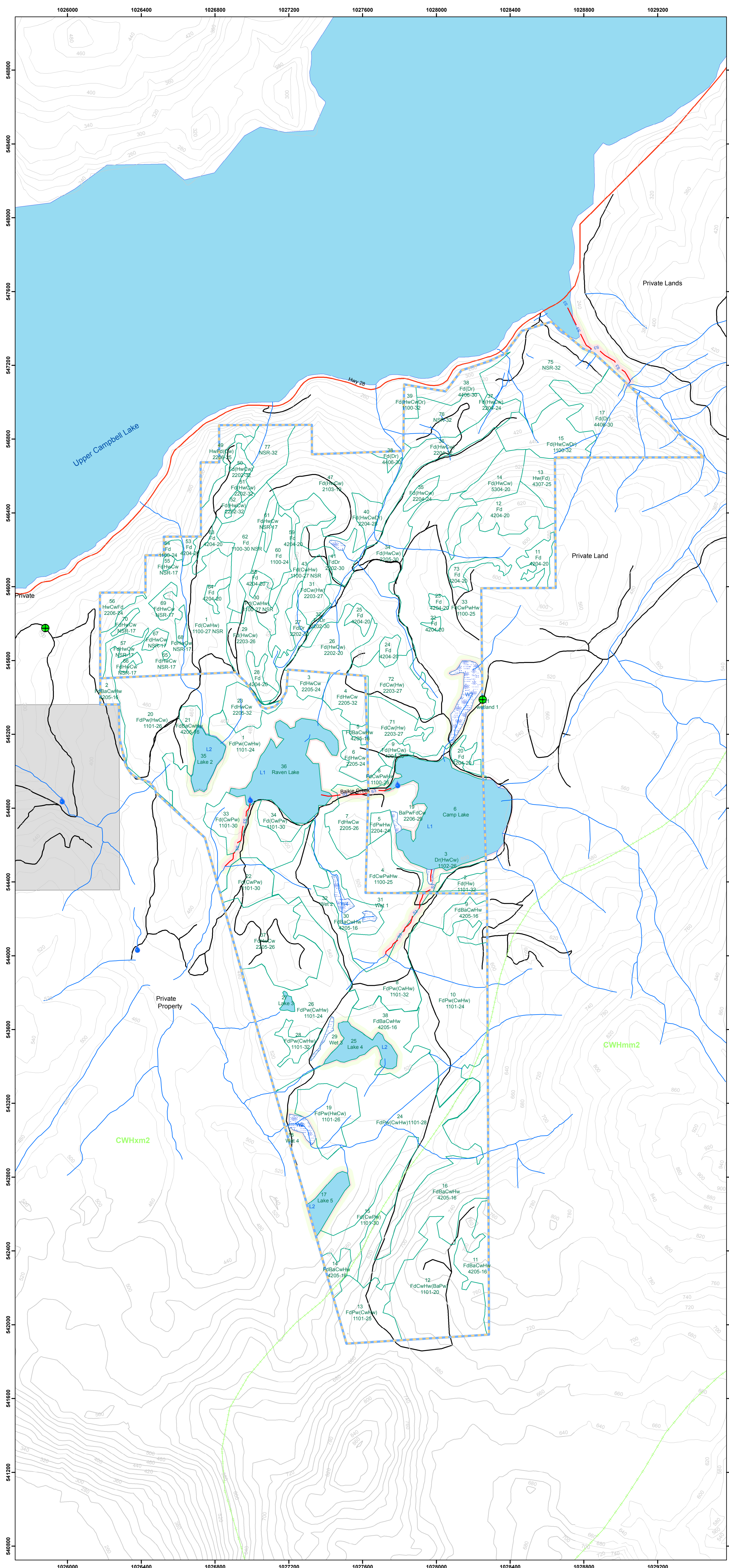


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## **Appendix II: Stocking Standards for Specified Areas**

The stocking standards for Specified areas apply for the purposes of sections 12 and 34(3) of the Woodlot Licence Planning and Practices Regulation to areas where there is no regeneration objective (ie establishment of a new free growing stand is not required). Harvesting within a specified area is limited to commercial thinning, removal of individual trees, or a similar type of intermediate cutting, or the harvesting of special forest products (eg poles).

On W1678 the Specified Areas will be managed as even-aged stands. The effect of this is to lengthen rotations and maintain older forest attributes on the woodlot.

A minimum of 250 stems per hectare of layer 1 trees (greater than 12.5 cm dbh) and basal area of 35m<sup>2</sup>/ha will remain to ensure site occupancy and an economically harvestable stand for the next entry. The uneven aged stocking standards have not been used to avoid using layer 2-4 stems (smaller than 12.5 cm dbh) due to unachievable results (can not achieve level 2-4 stocking by layer when layer 1 stems dominate the over-storey).

The retained layer 1 trees will have diameters >12.5cm and be dominant by size and vigour (crown development, colour and spread) contributing to maintaining and enhancing the economically valuable supply of commercial timber from ecologically suitable tree species. The leave tree damage criteria and forest health tests will be as in Table A – Layer 1 for managed stands in coastal BC from the Final SEDRESS Implementation Guide September 14, 2011.

The stand retained following the completion of a harvest entry is expected to have the following characteristics:

- Species composition with preferred and acceptable tree species by site series (as in Appendix III table),
- Improved spacing and form (straight stems, fewer multiple tops, forks or crooks), except when classified as a medium or high value WT,
- Improved individual residual tree vigour (crown height, height/diameter ratio and colour) and growth potential,
- Other layers could exist as an under-story composition of ecologically suited trees of varying form and vigour,
- Wildlife trees and minor species<sup>9</sup> will be retained to avoid species sanitation

The Licensee must ensure that for a period of 12 months after completion of harvest that the stand meets this specified area stocking standard.

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<sup>9</sup> Minor tree species list: Yew, cascara, dogwood, hardhack, crab apple, willow, and cherry.

## **Appendix III: Stocking Standards for Free Growing**

The stocking standards for CWHxm1&2 (Table 5) and CWHmm2 (Table 6) apply where the establishment of a free growing stand is required under section 29(3) of the *Forest and Range Practices Act*. They were developed from the MoF publication "Reference Guide for Forest Development Plan Stocking Standards" (2017/05/25 date of downloading guide) with some modifications as an alternative performance requirement under WLPPR s.35 (1)(a) for W1678. The tables show the standards by site series. The stocking standards include the following additional requirements and potential modifications for special circumstances.

### **Minimum inter-tree distance:**

Trees must be greater than the approved minimum inter-tree distance apart in order to be well spaced as follows:

Min inter-tree

distance (m)    Location/condition

1.0                Hygric, sub-hydric or site prepared areas;

1.5                Heavy Deer/Elk Browse and Vandalised areas;

2.0                All other areas.

**Height of trees above brush:** In addition to being at least the required minimum height, trees must be greater than a minimum 150% height above brush in order to be free growing.

### **Where appropriate and practicable:**

A) Areas will be reforested with a mixture of desirable species, and

B) On sites with more than one preferred species, more than one preferred species will be planted where practicable.

**Retroactive Free Growing date of 20 years:** The free growing date can be extended to 20 years on all older plantations that have not yet been declared Free Growing. This may be required in case of personal crisis of the Licensee, or where unexpected losses occur. If the FG time period is extended to beyond the standard number of years (as per the Reference Guide) the Allowable Annual Cut may need adjusting. A timber supply analysis (part of Management plan) will be done to determine if adjustments are needed if the extensions become common or significant (common/significant would be on more than 10% of the timber harvesting landbase.)

### **Addition of Pw in site series 01, 05, 07, 08, 13, 14 and Ss in 07, 13, 14, 15**

With the development of seedlings that are resistant to White Pine Blister Rust and Spruce Weevil, both Pw and Ss are becoming more reliable and feasible species to plant. Both are valuable for their wood quality. They have been added as preferred or acceptable species to the site series where they are productive according to the silvics of each species. The edaphic soil moisture and nutrient regimes from the ministry website (<http://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/silviculture/tree-species-selection/tool-introduction/tree-species-silvics-and-comparisons>) were used to determine the appropriate site series.

Initially Pw and Ss species will be limited to less than 30% of a stand. Pw will be used as a preferred species where a destumping treatment for root rot has not been prescribed, in which there could be pure units of 100% Pw. Wetter site series occur in a minor

proportion of the woodlot area. Over the whole woodlot, the potential component of Ss will be less than Cw when planted on wet sites. Regeneration practices will be modified to adopt new recommendations as more experience and research information is developed.

**Site Specific or Conditional Stocking Standard Modifying Rules:**

A) Area with limited plantable sites

- These areas will be identified where productive and plantable sites are limited by pre-harvest site characteristics including but not limited to colluvial, hygric and subhygric sites, areas immediately adjacent to a stream (within a RMA), unmapped NPNAT, or post harvest, on mechanically mounded sites and immediately surrounding unplantable slash piles.
- Reduced Minimum Inter-tree distance: 1.0 m
- Justification for a reduced MITD will be supported by a rationale and documented.

B) Area of chronic heavy Elk/Deer browse or vandalism

- These areas will be identified where more than 50 damaged trees per hectare are found and browse or damage is chronic and ongoing.
- Reduced Minimum Inter-tree distance: 1.5m.
- Reduced Minimum Preferred and Acceptable Well Spaced down to a 50% reduction to stocking standards.
- The heavy browse or vandalism designation will be supported by a rationale and documented.



**Table 5: Regeneration Guide/Stocking Standard Detail W1678 - Biogeoclimatic Zone/SubZone is CWHxm1 & 2.**

		Regeneration Guide CWHxm <sup>47</sup>							Free Growing Guide					
		Species			Stocking				Assessment		Min. Height		Min. Height	
Site Series		Conifer		Broadleaf	Target	Min pa	Min p	Regen Delay	Free Growing (yrs)		Species Ht (m)	Species Ht (m)		
	Standards ID	Preferred (p)	Acceptable (a)	SSID 1049247	(well spaced/ha)			(yrs)		Late				
01	1049035	Fd Pw <sup>31,42</sup>	Hw <sup>24</sup> Cw	Dr <sup>7,42,a</sup> Mb <sup>b</sup> Ra <sup>b</sup>	900	500	400	3		20	Fd 3.00 Pw 2.50	Hw 2.00 Cw, Lw 1.50		
02*	1049048	PI Fd		Qg <sup>b</sup> Ra <sup>a</sup>	400	200	200	3		20	Pw 2.50 Fd 2.00	PI 1.25 Lw 1.50		
03	1049036	Fd PI <sup>6</sup>	Cw	Act <sup>b</sup> Dr <sup>b</sup> Mb <sup>b</sup> Ra <sup>b</sup>	800	400	400	3		20	Pw 2.50 Fd 2.00 Lw, Ss 1.50	Hw, PI 1.25 Cw 1.00		
04	1049037	Fd	Cw Pw <sup>31</sup>	Act <sup>b</sup> Dr <sup>b</sup> Mb <sup>a</sup>	900	500	400	3		20	Fd 3.00 Pw 2.50	Hw 2.00 Cw, Lw 1.50		
05	1049038	Cw Fd Pw <sup>31</sup>		Act <sup>4,a</sup> Dr <sup>3,a</sup> Mb <sup>a</sup>	900	500	400	3		20	Fd 4.00 Bg 3.50 Pw 2.50	Cw 2.00 Hw 1.75		
06	1049039	Cw Hw Fd <sup>18</sup>		Act <sup>b</sup> Dr <sup>7,41,a</sup> Mb <sup>b</sup>	900	500	400	6		20	Bg, Fd 3.00 Pw 2.50	Hw 2.00 Cw, Lw 1.50		
07	1049040	Cw Fd Pw <sup>31</sup>	Bg <sup>47</sup> Ss <sup>35</sup>	Act <sup>41,a</sup> Dr <sup>41,a</sup> Mb <sup>41,a</sup>	900	500	400	3		20	Fd 4.00 Bg 3.50 Pw 2.50	Cw 2.00 Hw 1.75		
08	1049041	Cw Ss <sup>35</sup> Pw <sup>31</sup>	Bg <sup>47</sup>	Act <sup>41,a</sup> Dr <sup>41,a</sup> Mb <sup>41,a</sup>	900	500	400	3		20	Fd, Ss 4.00 Bg 3.50	Pw 2.50 Cw 2.00		
09	1049042	Cw <sup>1</sup>	Bg <sup>1,47</sup>	Act <sup>41,a</sup> Dr <sup>41,a</sup> Mb <sup>41,a</sup>	900	500	400	3		20	Fd 4.00 Bg 3.50	Pw 2.50 Cw 2.00		
10		no conifers		Act <sup>b</sup> Dr <sup>b</sup> Mb <sup>b</sup>	-	-	-	-	-	-				
11*	1049043	PI <sup>1</sup>	Cw <sup>1</sup>	N/A	400	200	200	3		20	PI 1.25 Cw 1.00			
12	1049044	Cw <sup>1</sup>	Hw <sup>1</sup> Pw <sup>31</sup> Ss <sup>35</sup>	Act <sup>b</sup> Dr <sup>b</sup> Mb <sup>b</sup>	800	400	400	3		20	Pw 2.50 Ss 1.50	Hw 1.25 Cw 1.00		
13	1049045	Cw Bg <sup>47</sup> Fd	Pw <sup>31</sup> Ss <sup>35</sup>	Act <sup>41,a</sup> Dr <sup>41,a</sup> Ep <sup>18,a</sup> , Mb <sup>41,a</sup>	900	500	400	3		20	Fd, Ss 4.00 Bg 3.50	Pw 2.50 Cw 2.00		
14	1049046	Bg <sup>1,47</sup> Cw <sup>1</sup>	Ss <sup>1,35</sup>	Act <sup>41,a</sup> Dr <sup>41,a</sup> Ep <sup>18,a</sup> , Mb <sup>41,a</sup>	900	500	400	3		20	Fd, Ss 4.00 Bg 3.50	Pw 2.50 Cw 2.00		
15	1049047	Cw <sup>1</sup>	Ss <sup>1,35</sup>	Act <sup>b</sup> Dr <sup>b</sup> Mb <sup>b</sup>	800	400	400	3		20	Fd, Ss 4.00 Bg 3.50	Pw 2.50 Cw 2.00		

**Table 6: Regeneration Guide/Stocking Standard Detail W1678 - Biogeoclimatic Zone/SubZone is CWHmm2.**

		Regeneration Guide CWHmm2 <sup>47</sup>							Free Growing Guide					
		Species			Stocking				Assessment		Min. Height		Min. Height	
Site Series		Conifer		Broadleaf	Target	Min pa	Min p	Regen Delay	Free Growing (yrs)		Species Ht (m)	Species Ht (m)		
	Standards ID	Preferred (p)	Acceptable (a)	Not an option	(well spaced/ha)			(yrs)		Late				
01		Hw Cw Fd <sup>9</sup> Yc	Ba Se <sup>23</sup> Pw <sup>31</sup>		900	500	400	6		20	Fd 2.25 Pw 2.50 Hw 1.25	Cw, Yc, Bp 1.00 Ba, Se 0.75		
02*		PI Fd	Cw		800	400	400	6		20	Pw 2.50 Fd 1.50	PI 1.25 Cw 0.75		
03		Fd Hw	Cw Yc PI Se <sup>23</sup>		800	400	400	3		20	Pw 2.50 Fd 1.50 Se 0.50	PI 1.25 Cw, Yc 0.75		
04		Fd	Se <sup>23</sup> Cw Pw <sup>31</sup> Yc		900	500	400	3		20	Fd 1.50 Pw 2.50	Hw 1.00 Cw, Yc, Se, 0.75		
05		Ba <sup>47</sup> Cw Fd <sup>9</sup> Yc	Bp <sup>23,47</sup> Pw <sup>31</sup>		900	500	400	3		20	Fd 2.25 Pw 2.50	Cw Yc Ba Se 1.00 Hw Bp 1.25		
06		Cw Hw Yc	Ba <sup>47</sup> Hm <sup>13</sup> Fd <sup>1</sup>		900	500	400	6		20	Fd 2.25 Pw 2.50	Hw 1.25 Cw, Yc 1.00		
07		Ba <sup>47</sup> Cw <sup>1</sup> Hw	Yc <sup>1</sup>		800	400	400	3		20	Ba, Cw, Yc 0.75		Hw 1.00	
08		Ba <sup>47</sup> Cw Yc	Hw <sup>2</sup> Fd <sup>9</sup>		900	500	400	3		20	Fd 3.00 Ba 1.00	Pw 2.50 Cw, Yc 1.25 Hw 1.75		
09*		PI <sup>1</sup>	Yc <sup>1</sup>		400	200	200	3		20	PI 1.25		Yc 0.75	
10		Cw <sup>1</sup>	Pw <sup>1,31</sup> Yc <sup>1</sup>		800	400	400	3		20	Cw, Yc 0.75		Pw 2.50	

## Footnotes

The footnote numbers are retained from the Stocking Standard Reference Guide document to avoid inconsistency.

Footnote #	
1	elevated microsites are preferred
2	suitable on thick forest floors
6	restricted to nutrient-very-poor sites
7	restricted to nutrient-medium sites
9	restricted to southerly aspects
18	restricted to eastern portion of biogeoclimatic unit in region
23	Restricted to trial use
24	suitable (as a major species) in wetter portion of biogeoclimatic unit
31	use of resistant stock mitigates risk of white pine blister rust. Do not use non-resistant stock for reforestation. See <i>BC Journal of Ecosystems and Management</i> 10(1): 97-100.
35	use of resistant stock mitigates risk of spruce weevil damage. Use stock with the highest resistance rating for your area. See Ss Weevil Decision Tool at: ( <a href="http://www.for.gov.bc.ca/hre/forgen/projects/spruceweevil">http://www.for.gov.bc.ca/hre/forgen/projects/spruceweevil</a> ) and <i>BC Journal of Ecosystems and Management</i> 7(3): 45-49.
41	Limited to poorly drained soils
42	restricted to fresh soil moisture regimes
47	risk of balsam woolly adelgid – applies to all <i>Abies</i> species in subzones within the regulated quarantine area ( <a href="http://www.al.gov.bc.ca/cropprot/balsamwa.htm">http://www.al.gov.bc.ca/cropprot/balsamwa.htm</a> )
#	<u>Broadleaf Management Constraints</u>
a	productive, reliable, and feasible regeneration option
b	limited in productivity, reliability and/or feasibility

### Conifer Tree Species

"Bg" means grand fir;  
 "Cw" means western red cedar;  
 "Fd" means Douglas-fir;  
 "Hw" means western hemlock;  
 "Pl" means lodgepole pine;  
 "Pw" means white pine;  
 "Ss" means Sitka spruce;  
 "Bp" means noble fir;  
 "Ba" means amabilis fir;  
 "Se" means Engelman spruce;

### Broadleaf Tree Species

"Acb" means balsam poplar;  
 "Act" means black cottonwood;  
 "At" means trembling aspen;  
 "Dr" means red alder;  
 "Mb" means bigleaf maple;  
 "Qg" means garry oak;  
 "Ra" means arbutus;

"Biogeoclimatic unit" or "BGC or BEC classification" means the zone, subzone, variant and site series described in the most recent field guide published by the Ministry of Forests for the identification and interpretation of ecosystems, as applicable to a harvested area.

"MIN or "Min" means minimum.

## **Appendix IV – Coastal ISC Priority Invasive Plant List (April 2016)**

### **CONTAIN**

**These species have established infestation in portions of the region.  
Contain existing infestation and prevent spread to un-infested areas.**

#### **Plant Species**

Carpet Burweed *Soliva sessilis*  
Hawkweed, Orange *Hieracium aurantiacum*  
Knapweed, Black *Centaurea nigra*  
Knapweed, Diffuse *Centaurea diffusa* (N)  
Knapweed, Meadow *Centaurea pratensis*  
Knapweed, Spotted *Centaurea maculosa* (B) (N)  
Knotweed, Bohemian *Fallopia x bohemica* (N)  
Knotweed, Giant *Fallopia sachalinensis* (N)  
Knotweed, Himalayan *Polygonum polystachum* (N)  
Knotweed, Japanese *Fallopia japonica* (N)  
Poison Hemlock *Conium maculatum* (T)  
Policemans Helmet/Himalayan Balsam *Impatiens glandulifera*  
Scotch Thistle *Onopordum acanthium*  
Yellow Flag Iris *Iris pseudacorus* (N)

### **CONTROL**

**Established infestations common and widespread throughout the Coastal ISC region.  
Focus control in high value conservation areas.**

**Use biological control, if available, on a landscape scale.**

#### **Plant Species**

Bur Chervil *Anthriscus caucalis* (N)  
Burdock Species *Arctium spp.*  
Canada Thistle *Cirsium arvense* (B) (N)  
Tansy, Common *Tanacetum vulgare*  
Teasel, Fuller's *Dipsacus fullonum*  
Dalmatian Toadflax *Linaria dalmaticab* (B) (N)  
English Holly *Ilex aquifolium*  
English Ivy *Hedera helix*  
Giant Mannagrass *Glyceria maxima*  
Hairy Cat's Ear *Hypochaeris radicata*  
Himalayan Blackberry *Rubus armeniacus* (discolor)  
Jimsonweed/Devil's Apple *Datura stramonium* (T)  
Periwinkle Species *Vinca spp.*  
Loosestrife, Purple *Lythrum salicaria* (B) (N)  
Scotch Broom *Cytisus scoparius*  
St. John's Wort *Hypericum perforatum* (B)  
Tansy Ragwort *Senecio jacobaea* (B) (N)

- class.