BCTS
BC Timber Sales
Chinook

BCTS Chinook Business Area

Forest Stewardship Plan

Haida Gwaii
Natural Resource District

July 2017

Table of Contents

1.0 Clarifications 4

2.0 Abbreviations 6

3.0 Application 7

Plan Signatories & Tenures 7
Designations in Effect prior to Submission 7
Areas within FDUs Subject to Timber Sale Licenses 7

4.0 Term 9

5.0 Map 10

6.0 Results & Strategies 11

Haida Gwaii Land Use Objective Order 11

Cultural Objectives 11

Cedar Stewardship Areas 11
Cultural Feature Identification 12
Haida Traditional Heritage Features 12
Haida Traditional Forest Features 13
Western Yew Retention 15
Cultural Cedar Stands 15
CMTs 15
Monumental Cedar 16

Social Objectives 17

Information Sharing 17
Development Area Referrals 17
Public Engagement 17
Annual Reporting and Data Submission 17
Recreation Resources 18
Visual Quality 19

Aquatic Habitats 19

Type I Fish Habitat 19
Type II Fish Habitat 20
Active Fluvial Units 20
Upland Stream Areas 20
Sensitive Watersheds 21

Biodiversity 23

Forested Swamps 24
Ecological Representation 24
Red and Blue-Listed Ecological Communities 25

Wildlife 25

Black Bear Dens 25
Marbled Murrelet Nesting Habitat 26
Northern Goshawk Habitat 26
Great Blue Heron Nesting Habitat 27
Northern Saw-whet Owl Nesting Habitat 27

Forest Reserves 28

Areas Reserved to Meet Landscape Level Objectives 28
Recruitment in No-harvest Zones, Management Zones & Stand Level Retention 28

7.0 Measures for Invasive Plants 30
8.0 Climate Change 33
9.0 Stocking Standards 34
Stocking Standards - General 34
Special Forest Products Stocking Standards 34
Single Entry Dispersed Retention System Stocking Standards 34
Stocking Standard Application 35
Standards Applying to Pre-FSP Plans and Prescriptions 35
10.0 Signatures of Persons Required 36
The Timber Sales Manager & Authorized Plan Holder Signatures 36
Signing Forester 36
Preparing Forester 36

List of Tables

Table 1: Designations in Effect in the Plan Area at Time of Plan Submission 7
Table 2: Active Timber Sale Licenses & RPs 8
Table 3: Active Declared Areas 8
Table 4: Maximum CS Area Harvest by Landscape Unit 11
Table 5: Minimum Post-Harvest Cedar Composition, Based on Pre-Harvest Cedar Composition 14
Table 6: Summary for HGLUOO Objectives Requiring Annual Reporting and Data Submission 18
Table 7: Recruitment Summary Table, by HGLUOO Objective 29
Table 8: Invasive Plants known to occur in the Plan Area, including Invasiveness Class 30
Table 9: Stocking Standards Application 35
Table 10: Free growing damage Criteria for even-aged (age class 1) coniferous trees B2
Table 11: Deviation from Potential D5

Appendices

Appendix A: FSP Map A1
Appendix B: Cedar Regeneration (and Free Growing) Acceptability Criteria B1
Appendix C: Even Aged Stocking Standards C1
Appendix D: Single Entry Dispersed Retention System (SEDRS) Stocking Obligations D1
Appendix E: Land Use Order Schedules E1
Appendix F: Health and Vigour Criteria for Overstorey Crop Tree F1

1.0 Clarifications

In this Forest Stewardship Plan (FSP, "the Plan", "this Plan"), where terms are used that are defined in the Haida Gwaii Land Use Objectives Order (HGLUOO), Forest and Range Practices Act or the Forest Planning and Practices Regulation, the definition of the term is as per the Order, Act or Regulation (e.g., "tree-length" and "intergovernmental process" are as defined in the HGLUOO). Where there is confusion or conflict between the HGLUOO, FPRA or the FPPR, the order of precedence is as follows: HGLUOO, then FRPA, then the FPPR.

"Plan Area" means the tenure areas covered by FDU A (refer to FSP map in Appendix A).

"Plan Holder" means the Timber Sales Manager.

"Adaptive Management Plan" – A written strategy required under this FSP when values around a specific feature cannot be fully protected. The Adaptive Management Plan addresses site specific values around a specific feature designated for protection under this FSP and the HGLUOO. The Adaptive Management Plan includes site specific strategies developed to compensate for a loss of a value, and/or to return that value in the shortest timeframe, and/ or to otherwise protect the feature without the surrounding values. The Adaptive Management Plan will be submitted to the Joint Solutions Table, and if approved, will be incorporated within a Site Plan and/ or incorporated into an Operational Plan such as a Road Plan or Harvest Plan.

"Cedar" means, unless specified otherwise, western redcedar (*Thuja plicata*) or yellow cedar (*Cupressus nootkatensis*).

"CMT" means culturally modified tree, as defined in the HGLUOO. Furthermore, as noted within the HGLUOO, s. 1(2), the HGLUOO is in conflict with FPPR s. 10. However, consistent with FPPR s. 12(4) the objective established under the HGLUOO prevails in regards to the date provided for a CMT (i.e., is 1920, rather than 1846, as defined under the Heritage Conservation Act and referenced in the FPPR).

"Development Area" – means a specific location associated with an individual cutblock or road and defined by boundaries shown on a site plan where timber harvesting is planned or carried out, and includes any stand level retention, management zones, reserve zones, mapped reserves or other areas where timber harvesting is restricted or managed pursuant to the HGLUOO or the Forest and Range Practices Act and the regulations made there under.

"Diameter at Breast Height" or "dbh" means the outer bark diameter of a tree, measured at 1.3m from the forest floor, on the high side, or from point of germination if the tree roots are elevated above ground or tree is lying on ground (consistent with the Ministry of Forests Coastal Cruising Manual).

"Direct Tributary" means a portion of a tributary stream that is a minimum of 100m in length, and has the same stream order as the most downstream reach of the tributary.

"Practicable" means capable of being done, effected or put into practice with available means and feasibility successfully. Factors to consider: value of resource to protect; environmental risk of alternative options; development area; and value of missed opportunity.

"Significant Public Viewpoint" – A place or location on water or land that is accessible to the public, provides a viewing opportunity and has relevance to the landscape being assessed. Eg. Stretch of highway or waterway leading toward a harvest unit where the harvest unit is within the drivers' field of view while watching road (not adjacent), a highway rest stop, recreation site park, marine anchorage, group of homes, settlement or community or a tourist related commercial enterprise.

"Stand Level Retention" – The retention of a group of trees resembling as close as possible the original stand used to protect a feature. Stand level retention may be small in scale <0.01ha, or large in scale, several hectares.

"Tree-length" is used throughout the Plan in regards to the widths of no-harvest and management zones. Tree-length is as defined in the HGLUOO, and the associated HGLUOO Schedule 5. The site specific tree-length that will be used for the development area (i.e., height assigned) will be documented in the Site Plan. Only one method will be used for each individual development area. The HGLUOO definition provides two methods for determining the tree-length, depending on if the stand is old-growth or young/immature, as follows:

1) Using the predominant site-series for the cutblock and then referencing HGLUOO Schedule 5. As site-series information is required to reference Schedule 5, Plan Holders will need to determine the predominant site-series by either using TEM information or by field verifying the site-series. Whichever method is used, it will be documented within the Site Plan.
2) By measuring the tallest trees in the area adjacent to the feature. It should be noted that this method would be inappropriate for areas that have been previously harvested (i.e., there are no mature trees to measure).

Method 2 will be used except for areas that have been previously harvested, and the stand has yet to become mature; in only these cases method 1 will be used. The measured tallest trees will be marked in the field and the trees dimensions will be documented in the site plan.

"High priority invasive plants" are those which are currently limited in distribution across Haida Gwaii and will have significant negative impacts to the regeneration of a harvest block if permitted to proliferate. Invasive plants and high-priority invasive plants known to occur in the Plan area at the time of Plan submission are listed in Table 8.

"Western Yew Patch" means five or more western yew trees where each yew tree is within 5 meters of another Yew Tree.

"Western Yew Tree" a Western Yew Tree that is or is not included in a Western Yew Patch.

The abbreviation "s." is used to indicate a numbered section or sections of the indicated Act or Regulation.

The capitalized word "Section" or "Sub-section" is used in the singular or plural to refer or cross reference to a numbered clause or section within this FSP.

Where the HGLUOO or Schedules contained therein are referenced in this Plan, they were on the date of approval of this FSP.

2.0 Abbreviations

"AFU" means active fluvial unit
"AIA" means an Archaeological Impact Assessment completed by a Professional Archeologist
"BEC" means Biogeoclimatic Ecosystem Classification
"CSA" or "CS Area" means Cedar Stewardship Area
"DDM" means Designated Decision Maker
"ECA" means Equivalent Clearcut Area
"FDU" means Forest Development Unit
"FPPR" means the Forest Planning and Practices Regulation
"FRPA" means the Forest and Range Practices Act
"FSP" means the Forest Stewardship Plan
"GAR" means the Government Actions Regulation
"GWM" means General Wildlife Measure
"HGLUOO" means the Haida Gwaii Land Use Objectives Order
"HTFF" means Haida Traditional Forest Feature
"HTHF" means Haida Traditional Heritage Feature
"IAPP" means the provincial Invasive Alien Plant Program
"LU" means "Landscape Unit", which are as established in the HGLUOO, Schedule 1
"MOF" means Ministry of Forests
"NAR" means Net Area to be Reforested
"NWIPC" means the Northwest Invasive Plants Council
"PAS" mean Permanent Access Structure
"RBA" means Residual Basal Area
"RMA" means Riparian Management Area
"RMZ" means Riparian Management Zone
"RP" means Road Permit
"RRZ" means Riparian Reserve Zone
"TEM" mean Terrestrial Ecosystem Mapping
"TFL" means Tree Farm License
"TL" means Timber License
"TSL" means Timber Sale License
"WHA" means Wildlife Habitat Area

3.0 Application

FRPA s. 3(4)

Plan Signatories & Tenures

This FSP applies to the Timber Sales Manager and existing and future timber sales in FDU A for the life of the Plan. In accordance to FRPA s. 3(2), the Timber Sales Manager must prepare and obtain the minister's approval of a forest stewardship plan that includes a forest development unit entirely containing the area.

Designations in Effect prior to Submission

FPPR s. 14(2)

The FSP map shows the designations and other areas listed in FPPR s. 14(3) that were in effect on the date the FSP was submitted for approval.

Designations in effect at the time of submission are summarized in Table 1., below.

Table 1: Designations in Effect in the Plan Area at Time of Plan Submission

Designation Category	Designation Details	FDU	Date Designated
Ungulate Winter Ranges	N/A	N/A	N/A
Wildlife Habitat Areas	Northern Goshawk: WHA #6-001 WHA #6-002	A	September 13, 2001 May 14, 2003
	Marbled Murrelet: WHA #6-041 WHA #6-046	A	April 7, 2003
Fisheries Sensitive Watersheds	N/A	N/A	N/A
Scenic Areas	VQO's established for the TSA VQOs for TSA and TFLs consolidated and mapped	A	December 22, 2005
Community Watersheds	Honna River, Slarkedus Creek, Tarundl Creek Queen Charlotte Community Watershed	A	June 15, 1995 Sept. 11, 1997
Old Growth Management Areas	N/A	N/A	N/A
Areas in which commercial timber harvesting is prohibited	As shown on the FSP Map (Protected Areas, Reserves, Private Land/ areas outside of FDU A)	A	N/A
Recreation Sites	Rennell Sound, Kagan Bay, Clapp Basin, Small Lake, Moresby	A	Objectives Effective December 31, 1997
Recreation Trails	Riley Beach, Five "5" Mile Beach, Slatechuck Mountain, Sleeping Beauty	A	Objectives Effective December 31, 1997

Areas within FDUs Subject to Timber Sale Licenses

FPPR s. 14 (2)(b) and 14(3)(j)&(k)

Tables 2 below, shows the areas within the Plan Area that are subject to a TSL held by (or entered into) the Timber Sales Manager and in effect on the Date of Submission.

Table 2: Active Timber Sale Licenses & RPs

Plan Signatory	RP	Approved TSLs
BCTS	R20981, R21182, R20662, R20688, R21139, R20839, R18429, R19261, R20491, R20306, R20219, R18436, R20018, R20840	A93737, A93566, A92174, A93121, A93120, A86082, A88784, A90716, A92922, A68395, A91146, A88156, A91148, A93735

Table 3, below, shows the areas within the Plan Area that are Declared Areas held by the Timber Sales Manager.

Table 3: Active Declared Areas

Plan Signatory	Tenure	Declared Areas	
		Cutblocks	Roads
BCTS		LAW003, BON525, BON527, WAT003, NAD004, NAD003, SKIA450, SKI522	JUN1600, BM2800, BM2890, BOU3800, BOU3803, BOU3804, BOU3805, BOU3200, BOU3210, BOU3610, HAA18150, Spur 26-1

4.0 Term

FRPA s. 6(1)(a)(b); 6(2)

The term of this FSP commences on the date of FSP approval by the DDM and expires 5 years after the date of approval, or another date specified in writing by the minister or DDM.

5.0 Map

FRPA s. 5(1)(a) and FPPR s. 14

The FSP map appended to this document (Appendix A) shows the forest development unit (FDU), tenures and other features of the Plan Area. The map also provides an overview of the Plan Area, including major topographic features and related information that will take effect with the approval of this FSP.

6.0 Results & Strategies

Haida Gwaii Land Use Objectives Order

On December 16, 2010 the Minister of Natural Resource Operations signed the Haida Gwaii Land Use Objectives Order (HGLUOO), which established objectives for the purposes of the Forest and Range Practices Act. Results and Strategies have been created to meet all of these objectives, the Forest Range and Practices Act (FRPA) and Objectives Established Under Regulation (GAR), as provided below. The Results and Strategies found in Sections 6, 7, 8, and 9 apply to FDU A.

Cultural Objectives

Cedar Stewardship Areas
HGLUOO s. 3

6.1 The Timber Sales Manager will not harvest within CS Areas (as identified in the HGLUOO, Schedule 3).

6.2 Despite Section 6.1 above, circumstances may arise where harvesting within Cedar Stewardship Area(s) (CS Area) for commercial purposes is desired. Where harvesting is proposed within a CS Area, the Timber Sales Manager will ensure all of the following:

a) any proposed harvest activities with CS Areas are consistent with the outcome of an intergovernmental process, completed by the Timber Sales Manager; and

b) ensure the total CS Area harvested is ≤ 10% of the total of all CS Areas (2,536.3ha, as indicated in Table 4, below), and that no more than 250ha is harvested in a 10-year period; and

c) the CS Area harvest within a given Landscape Unit, for each 10-year period, will be proportional to the occurrence of CS Areas within the LU (see Table 4, below); and

d) the Timber Sales Manager will maintain a group ledger, updated annually at a minimum, which tracks any CS Area harvest activities; and

e) where CS Areas overlap tenures outside of the Plan Area, the Timber Sales Manager will make reasonable efforts to consult with the relevant tenure holder(s) to ensure that CS Area harvest level do not exceed the limits described in b) and c), above.

Table 4: Maximum CS Area Harvest by Landscape Unit

Landscape Unit	CS Area (ha)	Maximum 10 Year CS Area Harvest Potential (ha)	Maximum Total CS Area Harvest Potential (ha) (10 % threshold)
Eden Lake	3,150.8	31.5	315.1
Honna	1,362.7	13.6	136.3
Ian	5,857.2	57.5	585.7
Jalun	210.8	2.1	21.1
Louise Island	228.1	2.3	22.8
Lower Yakoun	6,933.9	67.3	693.4
Masset Inlet	3,310.7	33.1	331.1
Naikoon	284.7	2.8	28.5
Otun	473.0	4.7	47.3
Rennell	304.7	3.0	30.5
Sewell	69.1	0.6	6.9
Skidegate Lake	1,335.9	13.3	133.6
Tlell	933.2	9.3	93.3

Yakoun Lake	897.7	8.9	89.8
Total	**25,352.6**	**250.0**	**2,536.3**

Cultural Feature Identification
HGLUOO s. 4

6.3 Prior to commencing harvesting or road construction activities in a development area, the FSP Holder will ensure that a Cultural Features Identification Survey has been completed for the proposed area by a surveyor certified by the Council of the Haida Nation.

Haida Traditional Heritage Features
HGLUOO s. 5

6.4 "Haida Traditional Heritage Features" are defined the HGLUOO as being those features listed in Schedule 2 of the HGLUOO. However, in order to be measurable in the context of the FSP approval process, the features listed as HTHFs (Class 1 and Class 2) in the HGLUOO are considered to be those that are of continued cultural significance to the Haida Nation, determined by using the following strategies:

a) Potential HTHFs will be identified and assessed through the Cultural Features Identification Survey, completed by qualified surveyors.

b) Where potential HTHFs are identified, AIAs will be completed, and the significance of the identified feature will be determined.

c) Where identified features are deemed to be of continued cultural significance in the AIA, they will be classed as HTHFs and managed accordingly.

6.5 Where Class 1 HTHFs are identified, they will be retained and a 500m (minimum width) no-harvest zone, measured from the edge of the HTHF, will be maintained to protect the HTHF, subject to a) and b), below.

a) Where a reduction in the no-harvest zone is required for road access, other infrastructure, or to address a safety concern and no practicable alternative exists, the Timber Sales Manager may reduce the size of the no-harvest zone consistent with the outcome of a completed intergovernmental process.

b) Where necessary to address site specific values, the no-harvest zone may be decreased by up to 0.5 tree-lengths from the outer edge of the zone, provided that there is no net loss of no-harvest zone area within the development area. Site specific values will be determined by the signing Forester and documented within the Site Plan.

6.6 Where Class 2 HTHFs are identified, they will be retained and a 100m (average width) no-harvest zone, measured from the edge of the HTHF, will be maintained to protect the HTHF, subject to a) and b), below.

a) Where alteration, removal or reduction of the Class 2 HTHF or no-harvest zone is required for road access, other infrastructure, or to address a safety concern and no practicable alternative exists, the Timber Sales Manager may alter, remove or reduce the HTHF and/ or the size of the no-harvest zone consistent with the outcome of a completed intergovernmental process.

b) Where necessary to address site specific values, the no-harvest zone may be decreased by up to 0.5 tree-lengths from the outer edge of the zone, provided that there is no net loss of no-harvest zone area within the development area. Site specific values will be determined by the signing Forester and documented within the Site Plan.

6.7 Where the Class 2 HTHF is a "Karst Feature", they will be managed in accordance to Section 6.6 above which is in accordance to Government Actions Regulation of the Forest and Range Practices Act (FRPA).

Haida Traditional Forest Features
HGLUOO s. 6

6.8 Where Class 1 HTFFs are identified, they will be retained and a 1.0 tree-length (average width) no-harvest zone, measured from the edge of the HTFF, will be maintained to protect the HTFF. Adjacent the no-harvest zone a 1.0 tree-length (average width) management zone, measured from the edge of the no-harvest zone, will be established to protect the no-harvest zone, subject to a) and b), below.

a) Where necessary to address site specific values, the Class 1 HTFF management zone identified under Section 6.8 above, may be decreased by up to 0.5 tree-lengths from the outer edge of the management zone, provided that there is no net loss of management zone area within the development area.

b) The area of the management zone may be reduced, if necessary for road access, other infrastructure or to address safety concerns, provided that:

   i) the integrity of the HTFF is maintained; and

   ii) the size of the management zone is consistent with the outcome of a completed intergovernmental process.

6.9 Where Class 2 HTFFs are identified within a development area, ≥ 50% of the identified occurrences will be retained and their integrity protected. Stand level retention will be retained where required, to maintain the integrity of the HTFF. Additional strategies for preserving the integrity of HTFFs include the following:

a) adjusting operational boundaries to exclude HTFF areas; and

b) modifying harvesting practices in the vicinity of HTFFs.

6.10 Where Class 3 HTFFs are identified within a development area, they will be retained and protected within established stand level retention to the extent practicable. The percentage of HTFF occurrences that are protected within a given development area will range from 0-100%, depending on the location of the HTFFs and the location of stand level retention that is established to meet other objectives.

Cedar Retention
HGLUOO s. 7

6.11 Where development areas are either:

   i) > 10ha and the pre-harvest cedar (western redcedar and yellow cedar) content >30%; or

   ii) ≤ 10ha and the pre-harvest cedar (western redcedar and yellow cedar) content >60%;

then the Timber Sales Manager will retain a minimum of 15% of the combined pre-harvest cedar composition of the development area, measured in hectares.

The areas that contribute to the cedar retention requirements will be calculated by summing the weighted cedar content for the contributing areas, in hectares, based on the inventory mapping for the applicable polygons.

The Timber Sales Manager will meet the 15% cedar retention requirement using all of the following strategies:

a) Areas designated to contribute to the cedar retention requirements will first be located within no-harvest zones, management zones and stand level retention areas already designated for other objectives.

b) Where existing cedar reserves are insufficient to meet the cedar retention requirements, then additional cedar retention areas will be retained.

c) Cedar retention areas will be located such that the retention areas are large and contiguous to the extent practicable. Cedar retention areas that contribute to meeting the 15% retention requirement will be > 1.0ha in size.

d) Within the areas that contribute to the cedar retention requirement, a range of diameters of redcedar and yellow cedar will be retained which are representative of the pre-harvest area, as documented by the signing Forester in the Site Plan documents.

6.12 Where development areas have pre-harvest cedar (western redcedar and yellow cedar) composition greater than 20% in the harvested area, as indicated in the cruise compilation (measured in percent of cedar sph, not including dead potential or dead useless), then the Timber Sales Manager will regenerate the area according to the minimum post-harvest cedar composition and strategies listed below, subject to Section 6.13.

The cedar commitment will be determined on a cutblock by cutblock basis. The cedar regeneration requirement for a cutblock will be calculated by multiplying the NAR times the appropriate Minimum Post-Harvest Cedar Composition, as indicated in Table 5., below. Location of planted cedar within the cutblock will be at the discretion of the prescribing Forester, and consistent with approved stocking standards.

Table 5: Minimum Post-Harvest Cedar Composition, Based on Pre-Harvest Cedar Composition

Pre-harvest Cedar Composition %	Minimum Post-Harvest Cedar Composition (sph)
20-29	100
30-39	150
40-49	175
50-59	200
60-69	250
70-79	300
80-89	350
90-100	400

The Timber Sales Manager will use the following strategies to meet the objective:

a) The Timber Sales Manager will strive to meet the cedar commitment through planting and/ or natural regeneration.

b) Where deer browse hazard is moderate to high, planted cedar trees will be protected. Protection measures may include coning, scented deterrents, or caging.

c) For areas that have been planted with cedar, where the cedar content falls below 80% of the Minimum Post-Harvest Cedar Composition requirement, the area will be fill-planted once. The cedar content will be assessed using Plan Holder survey information.

d) Cedar acceptability criteria will be as follows:

   i) Regenerated cedar will only be accepted if they are of good form and vigour (refer to Appendix B).

   ii) Regenerated cedar will only be accepted if they are ≥ 1.2m tall.

e) The cedar regeneration obligation due-date will be no sooner than 6 years, and no later than 20 years, post-harvest commencement. The Timber Sales Manager will complete cedar obligation surveys and data will be declared within the Ministry of Forests RESULTS system.

Should the full cedar regen obligation not be fully met at the time of assessment, the amount of cedar regenerated will be accepted, provided that a) through c) from above have been completed, and the obligation will be deemed to have been met, with no further actions required.

6.13 The cedar regeneration requirement for a given cutblock may be lower than those set in Section 6.12 above, provided that the new requirement is consistent with the outcome of a completed intergovernmental process.

Western Yew Retention
HGLUOO s. 8

6.14 Where western yew patches are identified within a development area, they will be protected by establishing stand level retention areas.

6.15 Despite 6.14 above, western yew patches may be altered or removed to accommodate operational requirements for road and bridge construction, where no alternative exists.

6.16 Where western yew trees are identified within a development area, a target of 75% of individual Western Yew trees will be retained within the development area.

6.17 Despite 6.16, if 75% of individual Western Yew trees cannot be retained in a development area because of safety or operational constraints, the Timber Sales Manager will meet with the Joint Solutions Table to determine an acceptable alternative target.

Cultural Cedar Stands
HGLUOO s. 9

6.18 Where cultural cedar stands are identified, they will be retained and a 0.5 tree-length (minimum width) no-harvest zone will be maintained to protect the identified feature. The no-harvest zone will be protected by establishing a 1.0 tree-length (average width) management zone, measured from the outer boundary of the no-harvest zone, subject to 6.19, 6.20, and 6.21 below.

6.19 Where alteration or removal of a cultural cedar stand is required for road access, other infrastructure, to address a safety concern, or for operational feasibility the Timber Sales Manager may alter or remove the cultural cedar stand, consistent with the outcome of a completed intergovernmental process and in accordance to an alteration permit issued by the Archaeological branch, when required. The harvested CMT will be managed in accordance with the direction of the Haida Nation.

6.20 Where a reduction in the size of the no-harvest zone is required for road access, other infrastructure, for operational feasibility or to address a safety concern the Timber Sales Manager may reduce the area of the no-harvest zone(s) consistent with the outcome of a completed intergovernmental process, and provided the integrity of the cultural cedar stand is maintained.

6.21 Where a reduction in the size of the management zone is necessary to address operational constraints or a safety concern, the Timber Sales Manager may reduce the area of the management zone(s) consistent with the outcome of a completed intergovernmental process, and provided the integrity of the management zone is maintained.

CMTs
HGLUOO s. 9

6.22 Where CMTs are identified, they will be retained and a 0.5 tree-length (minimum width) no-harvest zone will be maintained to protect the identified feature. The no-harvest zone will be protected by establishing a 1.0 tree-length (average width) management zone, measured from the outer boundary of the no-harvest zone, subject to 6.23, 6.24, and 6.25 below.

6.23 Where alteration or removal of a CMT is required for road access, other infrastructure, to address a safety concern, or for operational feasibility the Timber Sales Manager may alter or remove the CMT, consistent with the outcome of a completed intergovernmental process and in accordance to an alteration permit issued by the Archaeological branch, when required. The harvested CMT will be managed in accordance with the direction of the Haida Nation.

6.24 Where a reduction in the size of the no-harvest zone is required for road access, other infrastructure, for operational feasibility or to address a safety concern the Timber Sales Manager may reduce the area of the no-harvest zone(s) consistent with the outcome of a completed intergovernmental process, and provided the integrity of the CMT is maintained.

6.25 Where a reduction in the size of the management zone is necessary to address operational constraints or a safety concern, the Timber Sales Manager may reduce the area of the management zone(s) consistent with the outcome of a completed intergovernmental process, and provided the integrity of the management zone is maintained.

Monumental Cedar
HGLUOO s. 9

6.26 Where monumental cedar > 120cm dbh are identified, they will be retained and a 0.5 tree-length (minimum width) no-harvest zone will be maintained to protect the identified feature. The no-harvest zone will be protected by establishing a 1.0 tree-length (average width) management zone, measured from the outer boundary of the no-harvest zone, subject to 6.27, 6.28, and 6.29 below.

6.27 Where alteration or removal of a monumental cedar>120cm dbh is required for road access, other infrastructure, to address a safety concern, for operational feasibility or because of a request from the Cultural Wood Program to harvest >120cm monumental, the Timber Sales Manager may alter or remove the >120cm dbh monumental cedar consistent with the outcome of a completed intergovernmental process. The harvested Monumental Cedar will be provided to the Cultural Wood Program.

6.28 Where a reduction in the size of the no-harvest zone is required for road access, other infrastructure, for operational feasibility or to address a safety concern the Timber Sales Manager may reduce the area of the no-harvest zone(s) consistent with the outcome of a completed intergovernmental process, and provided the integrity of the monumental cedar is maintained.

6.29 Where a reduction in the size of the management zone is necessary to address operational constraints or a safety concern, the Timber Sales Manager may reduce the area of the management zone(s) consistent with the outcome of a completed intergovernmental process, and provided the integrity of the management zone is maintained.

6.30 When monumental cedars<120cm dbh are identified they will be retained and a 0.5 tree-length (minimum width) no-harvest zone will be maintained to protect the identified feature. The no-harvest zone will be protected by establishing a 1.0 tree-length (average width) management zone, measured from the outer boundary of the no-harvest zone, subject to 6.32 and 6.33 below.

6.31 Despite section 6.30 a <120cm dbh monumental cedar identified in a development area, and are not located within a cultural cedar stand may be harvested, subject to:

a) The greater of 10% or one monumental cedar are protected within the development area and/or

b) The harvesting of the monumental cedar tree is requested in writing by the Cultural Wood Program.

6.32 Where a reduction in the size of the monumental cedar no-harvest zone is required for road access, other infrastructure, for operational feasibility or to address a safety concern the Timber Sales Manager may reduce the area of the no-harvest zone(s) consistent with the outcome of a completed intergovernmental process, and provided the integrity of the monumental cedar is maintained.

6.33 Where a reduction in the size of the monumental cedar management zone is necessary to address operational constraints or a safety concern, the Timber Sales Manager may reduce the area of the management zone(s) consistent with the outcome of a completed intergovernmental process, and provided the integrity of the management zone is maintained.

6.34 When monumental cedars are harvested 100% of the monumental cedars will be marked and provided to the Cultural Wood Program.

Social Objectives

Information Sharing

6.35 The Timber Sales Manager will share information regarding cultural heritage resources that are the focus of traditional use and continued importance to the Haida Nation through the Joint Solutions Table as determined by the Haida Gwaii Management Council through the Kunst'aa guu – Kunst'aayah Reconciliation Protocol. The Timber Sales Manager will:

a) identify areas where harvesting and/ or road construction activities are planned and request information respecting cultural heritage resources that are the focus of traditional use and continued importance within the identified areas as identified through the Haida Gwaii Land Use Objectives Order and this document;
b) keep a record of any information provided by the Haida Nation on cultural heritage resources that are the focus of traditional use and continued importance within the Plan Area; and
c) document how management activities will attempt to accommodate cultural heritage resources that are the focus of traditional use and continued importance, or why efforts to accommodate the traditional use were not made.

Development Area Referrals

6.36 The Timber Sales Manager will adhere to requirements of the Haida Gwaii Management Council and the Joint Solutions Table for development area referral process and spatial database uploads.

Public Engagement

6.37 The Timber Sales Manager will, at a minimum of once annually, host a public engagement meeting on Haida Gwaii.

6.38 The Timber Sales Manager will, at a minimum of once annually, meet with the Village Councils on Haida Gwaii.

6.39 The Timber Sales Manager will advertise the current FSP, appendices, supporting documentation and development plans on the BC Timber Sales – Chinook Business Areas' website.

6.40 Prior to submission to the Joint Solution Table, the Timber Sales Manager will advertise each proposed development in the form of an information sharing package (inclusive of overview maps and shape files) on the BC Timber Sales – Chinook Business Area's website for a period of 30 days during which the public have the opportunity to review and comment.

6.41 The Timber Sales Manager will participate in Haida Gwaii "All Licensees'" public forums and discussions as scheduled.

Annual Reporting and Data Submission
HGLUOO s. 5, 6, 7, 8, 9, 10, 11, 12, 15, 16, 17 and 23

6.42 Where applicable features prescribed under the HGLUOO are identified (refer to Table 6, below), and associated no-harvest zone (including cedar reserves), management zones and stand level retention are established or managed by the Timber Sales Manager, the feature(s) and associated no-harvest zones, management zones and stand level retention will be documented and the digital spatial data will be submitted by the Timber Sales Manager by December 31st of each year to the Council of the Haida Nation and to the Province of BC.

Table 6: Summary for HGLUOO Objectives Requiring Annual Reporting and Data Submission

Objective Requiring Annual Reporting & Data Submission	Reporting Element	FSP Section Reference
Class 1 HTHFs	HTHF & No-harvest Zone	6.5
Class 2 HTHFs	HTHF & No-harvest Zone	6.6
Class 1 HTFFs	HTFF & No-harvest Zone	6.8
Class 2 HTFFs	HTFF & applicable Stand Level Retention	6.9
Class 3 HTFFs	HTFF & applicable Stand Level Retention	6.10
Cedar Retention	Cedar Retention Areas	6.11
Western Yew Retention	Western Yew Patches, individual yew tree retention, & applicable stand level retention	6.14, 6.15, 6.16, 6.17
Cultural Cedar Stands, CMTs & Monumental Cedar	Cultural Cedar Stands, CMTs, Monumental Cedar, Reserves, No-harvest Zones & Management Zones	6.26, 6.30
Type I Fish Habitat	Type I Fish Habitat, No-harvest Zone & applicable Management Zone	6.49
Type II Fish Habitat	Type II Fish Habitat, No-harvest Zone & Management Zone	6.52, 6.53
Active Fluvial Units	Active Fluvial Unit & Management Zone	6.54, 6.55, 6.56
Forested Swamps	Forested Swamp & Management Zone	6.77
Ecological Representation	Old Forest Reserves	6.82
Red & Blue-listed Plant Communities	Red & Blue-listed Plant Communities	6.86, 6.87, 6.88
Black Bear Dens	Black Bear Dens (existing & newly discovered)	6.89
Forest Reserves	Forest Reserves	6.107, 6.108

Recreation Resources
FRPA s. 180, 181

6.43 The Timber Sales Manager will undertake (FRPA s. 56) to comply with the legislative requirements. As of the date of Plan submission, there are five recreation sites and four recreation trails established (no interpretive sites established), with designated objectives, within the Plan Area, (refer to Table 1, above).

6.44 Prior to proposing timber harvest or road construction in an area adjacent to a designated recreation site or trail with established objectives, the Timber Sales Manager will consult with the government agency responsible for the recreation site or trail, to ensure that the proposed activity will be conducted in accordance with the established objectives applicable to the area.

6.45 Where “non-motorized access” is the applicable established objective for the designated recreation site or trail, and proposed new road construction will provide motorized access to the recreation resource, the Timber Sales Manager will:

a) deactivate the road, within one year following completion of primary forest activities, to a condition which re-establishes the degree of motorized access similar to that which existed prior to harvest operations; or
b) obtain written approval from the government agency responsible for the recreation site or trail, to maintain access for further operations or activities, and the access will be established as per the approval.

Visual Quality
FPPR 9.2, GAR s. 7(2), FRPA s. 180, 181

6.46 The Timber Sales Manager will be consistent with the visual quality policy as established by the District Manager and outlined in the letter (sent to all licensees on April 10, 2013), and any subsequent amendments made by the District Manager.

6.47 Prior to authorizing primary forest activities, where VQOs apply, the Timber Sales Manager will:

a) Ensure a detailed Visual Impact Assessment is completed by a qualified professional to ensure the activities are consistent with the VQO, taking into account the current state of the VQO and the effects of surrounding development.

6.48 The Timber Sales Manager may authorize road construction or timber harvesting that produces a landscape alteration in excess of that specified in the VQO when road or bridge construction is required to access resource values and no other practicable option exists. This rationale must be specified and written in a plan

Aquatic Habitats

For the purposes of this FSP, the locations of Type I and II fish habitat are as indicated in Schedule 4 of the HGLUOO, unless field assessment indicates otherwise. Where there is a conflict between the HGLUOO and the field assessment as to where the Type I or II fish habitat is located, the field assessment shall prevail.

For the purposes of defining stream riparian classes, the following is provided:

a) The riparian no-harvest zone begins at the outer edge of the Type I or II Fish Habitat, including the active floodplain.
b) The riparian management zone begins at the outer edge of the riparian no-harvest zone, or if there is no riparian no-harvest zone, the edge of the stream channel bank. As the HGLUOO does not specify an RMA width for Upland Streams the FSP will adopt FPPR requirements regarding Riparian Management Areas.

Type I Fish Habitat
HGLUOO s. 10

6.49 With reference to individual development areas, where Type I fish habitat occurs, it will be retained and a 2.0 tree-length (minimum width) riparian no-harvest zone, measured from the outer edge of the Type I habitat, will be maintained to protect the Type I fish habitat, subject Section 6.50 and 6.51 below:

6.50 Where necessary to address site specific values, the Type I no-harvest zone identified under Section 6.49 above, may be increased or decreased by up to 0.5 tree-lengths, measured from the outer edge of the no-harvest zone, provided that there is no net loss of Type I no-harvest zone area within the development area.

6.51 Within an individual development area, up to 5% of the total area of the Type I habitat no-harvest zone may be altered or removed, provided that:

a) the integrity of the Type I fish habitat is maintained; and

b) the alteration or removal is required for road or bridge construction, or to address a safety concern and no practicable alternative exists; or

c) the alteration or removal may be for a purpose other than those listed in Sub-section b) above, provided the reasons are consistent with the outcome of a completed intergovernmental process.

Type II Fish Habitat
HGLUOO s. 11

6.52 With reference to individual development areas, where Type II fish habitat occurs, it will be retained and a 1.0 tree-length (minimum width) riparian no-harvest zone, measured from the outer edge of the Type II habitat, will be maintained to protect the Type II fish habitat. Adjacent the no-harvest zone a 0.5 tree-length (average width) management zone will be established to protect the no-harvest zone, subject to all of the following:

a) Within an individual development area, up to 5% of the total area of the Type II habitat no-harvest zone may be altered or removed, provided that the integrity of the Type II fish habitat is maintained.

b) Within an individual development area, the total area of the Type II habitat management zone may be reduced by up to 20%, measured in hectares or basal area.

c) The retention of trees within the management zone will be based on consideration of the likelihood of damages to the no-harvest zone caused by windthrow.

6.53 Despite Section 6.52 above, the combined area of the Type II habitat no-harvest and management zones may be further reduced, provided:

a) the reduced area is consistent with the outcome of a completed intergovernmental process; and

b) the total amount of mature and old forest in the Type II habitat no-harvest and management zones within the development area is reduced by ≤ 20%, measured in hectares; and

c) the integrity of the Type II habitat is maintained; and

d) an adaptive management plan is developed, documented and implemented prior to reducing the size of the Type II reserve and management zones under Section 6.53.

Active Fluvial Units
HGLUOO s. 12

6.54 With reference to individual development areas, where naturally occurring AFUs occur, any forest located within in the AFU will be retained and a 1.5 tree-length (minimum width) management zone, measured from the outer edge of the AFU, will be established to protect the AFU.

6.55 Despite Section 6.54 above, within an individual development area, the amount of mature and old forest within the AFU management zone(s) may be reduced by up to 10%, measured in hectares.

6.56 In addition to Section 6.55 above, within an individual development area, the amount of mature and old forest within the AFU management zone(s) may be reduced by an additional 10%, measured in hectares, provided that:

a) sufficient functional riparian forest is retained to protect the integrity of the AFU; and

b) an adaptive management plan is developed, documented and implemented prior to reducing the size of the AFU management zone(s) under Section 6.56 above.

Upland Stream Areas
HGLUOO s. 13

6.57 Within each watershed sub-unit indicated on HGLUOO Schedule 6, and where development areas are proposed by the Timber Sales Manager, the Timber Sales Manager will do the following:

a) a watershed analysis will be completed by a qualified person that indicates the watershed condition and the upland stream area; and

b) will ensure that rates of harvesting within a watershed sub-unit are consistent with the watershed analysis results and that >70% of the forest, measured in hectares, in the upland stream area is hydrologically recovered; and

c) will maintain a ledger, updated, that tracks the development activities within watershed sub-units.

6.58 Despite Section 6.57, <70% of the forest, measured in hectares, in the upland stream area may be retained, provided that the Timber Sales Manager ensure the following, subject to a-d, below:

a) the revised upland stream area retention percentage is consistent with the outcome of a completed intergovernmental process; and

b) a watershed assessment is completed by a qualified professional that indicates the watershed sub-unit sensitivity to forest development and disturbance; and the amount, type and distribution of forest cover that is required to sustain natural hydrological and fluvial process; and

c) the rates of harvesting within a watershed sub-unit are consistent with the watershed assessment results provided in Sub-section b) above; and

d) an adaptive management plan is developed, documented and implemented prior to reducing the upland stream area retention percentage below 70%, measured in hectares.

6.59 Where upland streams are direct tributaries to Type I or II fish habitat, sufficient vegetation, which may include trees, will be retained to maintain stream bank and channel stability, as determined by a qualified professional.

6.60 In upland stream areas, where stream channels are incised, have steep gradients and support riparian plant communities that are dependent on high-humidity microclimates, sufficient trees and vegetation will be retained to maintain said riparian plant community.

Sensitive Watersheds
HGLUOO s. 14

6.61 Within each sensitive watershed indicated on HGLUOO Schedule 7, and where development areas are proposed by the Timber Sales Manager, the Timber Sales Manager will do the following:

a) A watershed analysis will be completed by a qualified person that indicates the watershed ECA condition.

b) The Timber Sales Manager will maintain, on an ongoing basis, a group ledger which tracks the development activities within the sensitive watersheds.

6.62 Within each sensitive watershed indicated on HGLUOO Schedule 7, and where development areas are proposed by the Timber Sales Manager, harvest rates will be consistent with the following:

a) For watersheds ≥ 500ha, up 5% of the watershed area may be harvested in a 5-year period.

b) For watersheds < 500ha, up 10% of the watershed area may be harvested in a 10-year period.

c) Despite Sub-sections a) and b) above, no harvesting will occur in sensitive watersheds with an ECA ≥ 20%.

d) Harvest rates and ECAs will be based on the watershed analysis required under Section 6.61, above.

6.63 Despite Section 6.62 above, for a given sensitive watershed, the Timber Sales Manager may maintain a rate of harvest and/ or an ECA that exceeds the thresholds indicated, provided the Timber Sales Manager ensure the following:

a) the revised rate of harvest and/ or ECA threshold is consistent with the outcome of a completed intergovernmental process; and

b) a watershed sensitivity assessment is completed by a qualified professional that indicates the watershed sensitivity to past, current and proposed forest development and disturbance; and the amount, type and distribution of forest cover that is required to sustain natural hydrological and fluvial process; and

c) the rates of harvesting within a watershed sub-unit are consistent with the watershed assessment results provided in Sub-section b) above; and

d) an adaptive management plan is developed, documented and implemented prior to increasing the rate of harvest and/ or ECA for the watershed.

Community Watersheds
FPPR s. 8.2

6.64 Prior to proposing primary forest activities within a community watershed to which section 8.2 of the FPPR applies, the Timber Sales Manager will do all of the following:

a) ensure a watershed assessment is completed by a qualified professional that assesses the current watershed condition; the potential impacts on water quality, water quantity, including risks to public health, and timing of water flows from primary forest activities; and provides a potential schedule for harvesting within the community watershed that maintains the community watershed's values; and

b) ensure that primary forest activities are consistent with any recommendations made in the watershed assessment, and

c) ensure the watershed assessment indicated in Sub-section a) above, is updated by a qualified professional at least every five years, unless no additional primary forest activities are proposed; and

d) maintain a group ledger, updated annually at a minimum, which tracks the development activities within the community watershed.

6.65 Prior to development activities within a community watershed, the Timber Sales Manager will form an agreement that documents:

a) who is responsible for completing the watershed assessment and any updates that may be required; and

b) how the rates of harvesting will be allocated, consistent with the watershed analysis; and

c) who is responsible for tracking the rates of harvest within the community watershed.

Wetland Riparian Classes
FPPR s. 48

6.66 Where a wetland meets the definition of Type I or II Fish Habitat, as defined in the HGLUOO, then the wetland is classed as Type I or II Fish habitat and managed accordingly, otherwise, the Timber Sales Manager adopt the FPPR requirements in relation to wetland riparian classes and minimum zone widths.

Lake Riparian Classes
FPPR s. 49

6.67 Where a lake meets the definition of Type I or II fish habitat, as defined in the HGLUOO, then the lake is classed as Type I or II Fish habitat and managed accordingly, otherwise the Timber Sales Manager adopt the FPPR requirements in relation to lake riparian classes and minimum zone widths.

Restrictions in a Stream, Wetland or Lake Riparian Management Area
FPPR s. 50

6.68 For Type I fish habitat, Type II fish habitat, upland streams; and wetlands and lakes that do not meet the definition of Type I or II fish habitat, as defined in the HGLUOO; the Timber Sales Manager adopt the FPPR requirements in relation to restrictions within a riparian management area.

Restrictions in a Wetland or Lake Riparian Reserve Zone
FPPR s. 51

6.69 For wetlands and lakes that do not meet the definition of Type I or II fish habitat, as defined in the HGLUOO, the Timber Sales Manager adopt the FPPR requirements in relation to restrictions within a riparian reserve zone.

Retention of Trees within the Riparian Management Zones
FPPR s. 12(3)

6.70 Retention of trees within riparian management zones will be as follows:

a) For Upland Streams, the retention of trees within riparian management zones, measured in basal area, will range from 0-100%, as deemed appropriate by the signing Forester and documented within the Site Plan. Additional factors for riparian retention for Upland Streams are detailed in Section 6.57-6.60, above.

b) For wetlands and lakes that do not meet the definition of Type I or II fish habitat, as defined in the HGLUOO, with respect to FPPR s. 12(3), unless specific wildlife and/ or biodiversity values are identified in the riparian management area of a wetland or lake, retention of trees within the RMZ will be based on consideration of the likelihood of damages to the riparian feature or RRZ caused by windthrow. Basal area retention will range from 0-100%, as deemed appropriate by the signing Forester and documented within the Site Plan.

Biodiversity

Soils
FPPR s. 5 (not subject to approval)

6.71 The Timber Sales Manager undertake (FPPR s. 12.1(1)) to comply with the legislated requirements setting limits for soil disturbance and for permanent access structures as outlined in FPPR s. 35 and 36.

Maximum Cutblock Size
FPPR s. 64

6.72 The Timber Sales Manager undertake (FPPR s. 12.1(3)) to comply with the legislated requirements in relation to maximum cutblock size (FPPR s. 64).

Adjacency
FPPR s. 65

6.73 The Timber Sales Manager undertakes to comply with the legislated requirements in relation to harvesting adjacent to another cutblock (FPPR s. 65).

6.74 As per FPPR sec. 12.4(2), the Timber Sales Manager will adhere to FPPR s. 65 for all areas within FDU A, with the following exceptions, which will only apply to the Plan Area within the Eden Lake Landscape Unit, as shown on HGLUOO Schedule 1:

6.75 Section 65 (3)(a) is replaced with: at least 75% of the net area to be reforested of the existing cutblock is stocked such that the average height of the well-spaced trees is a minimum of the free growing height as specified in the approved Stocking Standards, located in Appendix C; and

6.76 Section 65 (3)(b)(ii) is stocked such that the average height of the well-spaced trees is a minimum of the free growing height as specified in the approved Stocking Standards, located in Appendix C.

Forested Swamps
HGLUOO s. 15

For clarity, Forested Swamps refer to the following BEC types: CWH wh1 – 12; CWH wh2 – 06; CWH vh2 – 13 (referred to as western redcedar-Sitka spruce/ skunk cabbage ecological communities under the HGLUOO).

6.77 With reference to individual development areas, where forested swamp areas ≥0.25ha occur, they will be retained and a 1.5 tree-length (average width) management zone will be established to protect the forested swamp.

6.78 Within management zone established under Section 6.77 above, >70% of the forest, measured in hectares, will be retained as mature or old forest.

6.79 Despite Section 6.78 above, the amount of mature or old forest retained in the management zone may be reduced to 60%, measured in hectares, provided that:

a) the amount of mature and old forest retained is sufficient to maintain the integrity of the forested swamp; and

b) an adaptive management plan is developed, documented and implemented prior to reducing the percentage of mature and old forest below 70%, measured in hectares.

Ecological Representation
HGLUOO s. 16

6.80 Within each Landscape Unit indicated in HGLUOO Schedule 10, and where development areas are proposed by the Timber Sales Manager, prior to development activities the Timber Sales Manager will do the following:

a) An ecological representation analysis will be completed by a qualified professional that indicates the current inventory of old forest by site series and LU.

b) For each LU, the Timber Sales Manager will form an agreement that documents:

i.) who is responsible for completing the ecological representation analysis; and

ii.) how the required old forest retention will be allocated; and

iii.) how any required old forest recruitment, consistent with Section 6.84 below, will be allocated; and

iv.) who is responsible for tracking the old forest retention.

6.81 The Timber Sales Manager will maintain a group ledger, updated annually at a minimum, which tracks the depletions and additions to the old forest inventory by site series and LU.

6.82 Where development activities are proposed within a forest area that is classified as a rare or common site-series, consistent with HGLUOO Schedule 10, the Timber Sales Manager will retain an amount (measured in hectares) of old forest greater than or equal to the applicable target listed for said site-series in Schedule 10, consistent with Section 6.80 above.

6.83 Where practicable, old forest areas that are retained consistent with Section 6.80 above, will include habitat for local species at risk and regionally important wildlife, including, but not limited to:

a) Northern Goshawk nesting and foraging habitat; and

b) Marbled Murrelet nesting habitat, Great Blue heron nesting habitat, and Northern Saw-whet Owl core nesting areas; and

c) Black Bear dens and denning habitat.

6.84 Where there is insufficient old forest available to meet the requirements under Section 6.82 above, the Timber Sales Manager will identify, retain and recruit old forest stands where necessary, through natural processes (passive) and may implement voluntary interventions (active), to meet the representation requirements in the shortest possible timeframe. In order to meet the objective in the shortest possible timeframe, older stands will be chosen before younger stands when identifying recruitment areas.

Strategies that will be used to identify, retain and recruit old forest stands include:

a) Identifying mature stands (of the appropriate site-series) in the LU that are already constrained for other reasons, and designating them as reserves set aside to meet the ecological representation requirements.

b) Where there are not enough mature stands (of the appropriate site-series) in the LU that are already constrained for other reasons, unconstrained stands will be identified and designated as reserves set aside to meet the ecological representation requirements.

Where mature stands have been designated as reserves set aside to meet the ecological representation requirements, voluntary management intervention strategies to be used to help recruit old forest stands in the earliest possible timeframe include:

i.) Fertilization treatments, to help accelerate rates of growth and promote old-growth characteristics.

ii.) Stand thinning or stand modification treatments to help accelerate rates of growth and promote old-growth characteristics.

Red and Blue-Listed Ecological Communities
HGLUOO s. 17

6.85 With reference to individual development areas, where red or blue-listed ecological communities ≥0.25ha occur, they will be retained.

6.86 Despite Section 6.85 above, up to 5% of the area of each type of red-listed ecological community occurring in a development area may be altered or harvested if required for road access or to address a safety concern.

6.87 Despite Section 6.85 above, up to 30% of the area of each blue-listed ecological community occurring in a development area may be altered or harvested if:

a) the harvesting is required for road access or to address a safety concern; or

b) the harvesting is required for another reason than specified in Sub-section a) above, provided that the harvesting is consistent with the outcome of a completed intergovernmental process.

Wildlife

Black Bear Dens
HGLUOO s. 18

6.88 With reference to individual development areas, where an active Black Bear dens that is used for over wintering has been identified by a qualified professional, a 20m radius (minimum width) no-harvest zone will be maintained to protect the den. The no-harvest zone will be protected by establishing a 1.0 tree-length (average width) management zone, measured from the outer edge of the reserve zone.

6.89 If an active Black Bear den that is used for over wintering is identified by a qualified person, then a two tree length no work zone will be applied during the winter hibernation season between November 15th to April 15th or May 15th if a cub is present.

6.90 Despite Section 6.88 above, alteration or removal of a Black Bear den or its no-harvest zone, or both may occur, provided that:

a) the alteration and, or removal is consistent with the outcome of a completed intergovernmental process; and

b) the alteration and/ or removal is required for road access or to address a safety concern; and

c) the alteration or removal does not occur during the winter hibernation season.

6.91 For the purposes of recruiting future Black Bear den sites, where practicable:

a) suitable western red cedar or yellow-cedar will be retained within the management zone identified in Section 6.88 above; and

b) trees, snags, stumps and logs >80cm in diameter will be retained within stand level retention associated with the development area.

6.92 Despite Section 6.88 above, alteration or removal of trees within the management zone may occur, outside of the winter hibernation season, consistent with any of the following:

a) the alteration and/ or removal is required to accommodate operational requirements for road or bridge construction and no practicable alternative exists; or

b) for any existing road under active tenure, the alteration and/ or removal is required to accommodate: road maintenance, deactivation, the removal of danger trees, brushing and clearing within a right-of-way, for safety purposes; or

c) the alteration and/ or removal is required to mitigate the impact of windthrow.

Marbled Murrelet Nesting Habitat
HGLUOO s. 19

6.93 Within each Landscape Unit, and where development areas are proposed by the Timber Sales Manager, prior to development activities, the Timber Sales Manager will:

a) retain an amount of Marbled Murrelet nesting habitat within each LU greater than or equal to the LU target area listed in HGLUOO Schedule 9; and

b) ensure the nesting habitat referred to in Sub-section a) above, is within the areas shown in HGLUOO Schedule 11; or may be a different area than identified in HGLUOO Schedule 11, provided the nesting habitat is Class 1 or 2, as identified by a qualified professional; and

c) maintain a group ledger, updated annually at a minimum, which tracks the depletions and additions to the Marbled Murrelet nesting habitat retention inventory, by LU.

6.94 For each LU, and where development areas are proposed by the Timber Sales Manager, the Timber Sales Manager will do the following, prior to development activities within the applicable LU:

a) a Marbled Murrelet nesting habitat retention inventory will be completed; and

6.95 In respect of the WHAs, the Timber Sales Manager will comply with the applicable GWMs, as per FPPR s. 69.

Northern Goshawk Habitat
HGLUOO s. 20

6.96 The Timber Sales Manager will retain all Northern Goshawk reserves as shown on HGLUOO Schedule 12.

6.97 If the Timber Sales Manager during primary forest activities discovers a potential Northern Goshawk nest that outside of the HGLUOO Schedule 12 reserves, the Timber Sales Manager will do all of the following:

a) cease harvesting and road-building activities within 800m of the potential nest immediately and report the location of the potential nest to the Council of the Haida Nation and the Province of BC as soon as practicable; and

b) have the nest and surrounding area assessed by a qualified registered professional; and

c) where the qualified registered professional determines the nest to be a Northern Goshawk nest, a no-harvest zone will be established around the nest site, that is a minimum of 200ha and that maximizes the best available nesting and foraging habitat available, to protect the integrity of the nest site, consistent with the assessment and recommendations of a qualified professional; and

d) the location of the confirmed nest will be reported to the Council of the Haida Nation and the Province of BC as soon as practicable; and

e) unless the nest is confirmed by a qualified registered professional to be inactive during the Northern Goshawk breeding season (reconfirmed annually), a restricted activity zone will be maintained during the breeding season, with a minimum radius of 800m around the nest site.

6.98 Despite Sections 6.96 and 6.97 above, Northern Goshawk reserves (HGLUOO Sch. 12) and no-harvest zones may be reduced, provided that:

a) the reduction is consistent with the outcome of a completed intergovernmental process; and

b) the reduction is required for road access, where no practicable alternative exists, or to address a safety concern; and

c) the reduction does not occur during Northern Goshawk breeding season; and

d) there is no net loss to the Northern Goshawk reserve area.

6.99 In respect of the WHAs, the Timber Sales Manager will comply with the applicable GWMs, as per FPPR s. 69.

Great Blue Heron Nesting Habitat
HGLUOO s. 21

6.100 With reference to individual development areas, where Great Blue Heron nest sites occur they will be retained and a 350m (minimum width) no-harvest zone, measured from the edge of the nest site, will be maintained to protect the nest site. Additionally, the no-harvest zone will be ≥ 45ha in size.

6.101 Where the Timber Sales Manager discovers a new potential Great Blue Heron nest site, the Timber Sales Manager will:

a) cease harvesting and road-building activities within a 350m radius of the potential nest immediately and report the location of the potential nest to the Council of the Haida Nation and the Province of BC as soon as practicable; and

b) have the nest and surrounding area assessed by a qualified registered professional; and

c) where the qualified registered professional determines the nest to be a Great Blue Heron nest, a no-harvest zone will be established consistent with 6.100 above; and

d) the location of the confirmed nest will be reported to the Council of the Haida Nation and the Province of BC as soon as practicable; and

e) unless confirmed by a qualified registered professional to be inactive three consecutive years during the Great Blue Heron Breeding season (reconfirmed annually), a restricted activity zone will be maintained during the breeding season, with a minimum radius of 150m measured from the edge of the no-harvest zone.

Northern Saw-whet Owl Nesting Habitat
HGLUOO s. 22

6.102 The Timber Sales Manager will retain all Northern Saw-whet Owl reserves, as shown on HGLUOO Schedule 12.

6.103 Where the Timber Sales Manager discovers a new potential Northern Saw-whet Owl nest that outside of the HGLUOO Schedule 12 reserves, the Timber Sales Manager will:

a) cease harvesting and road-building activities within a 180m radius of the potential nest immediately and report the location of the potential nest to the Council of the Haida Nation and the Province of BC as soon as practicable; and

b) have the nest and surrounding area assessed by a qualified registered professional; and

c) where the qualified registered professional determines the nest to be a Northern Saw-whet Owl nest, a no-harvest zone will be established around the nest site that is a minimum of 10ha and centred on the nest; and

d) the location of the confirmed nest will be reported to the Council of the Haida Nation and the Province of BC as soon as practicable.

6.104 Where practicable, Northern Saw-whet Owl core nesting areas will be identified and retained within stand level retention and other no-harvest or management zone areas and distributed across the landscape, with a target maximum inter-patch spacing of 1,400m.

Forest Reserves

Areas Reserved to Meet Landscape Level Objectives
HGLUOO s. 23

6.105 The Timber Sales Manager will retain all the Forest Reserves, as shown on HGLUOO Schedule 8 and therefore will not be subject to FPPR s. 66 and 67.

6.106 Despite Section 6.106 above, the area of an individual Forest Reserve may be reduced by up to 5%, provided that:

a) applicable results and strategies within this FSP address the target requirements indicated in HGLUOO Schedules 9 and 10; and

b) the remaining Forest Reserve is ≥ 5.0ha; and

c) the reduction is necessary to:

i.) accommodate operational requirements for road or bridge construction, where no practicable alternative exists; or

ii.) accommodate road maintenance, deactivation, removal of danger trees, brushing and clearing within a right-of way, or for safety purposes, on any existing road under active tenure; or

iii.) to mitigate the impact of windthrow.

6.107 Despite Section 6.105 above, a portion of a Forest Reserve may be moved to another location within the same Landscape Unit, provided that:

a) the alteration of the Forest Reserve is consistent with the outcome of a completed intergovernmental process; and

b) applicable results and strategies within this FSP (i.e., Marbled Murrelet and Ecological Representation) address all of the target requirements indicated in HGLUOO Schedules 9 and 10 for the applicable LU; and

c) the portion removed is ≤ 20ha; and

d) the areas retained are > 200m in width; and

e) the relocation does not result in any Forest Reserve that is < 5.0ha; and

f) the relocation follows the recommendations of an assessment completed by a qualified professional which focuses on identifying candidate reserve areas consistent with meeting the HGLUOO objectives established for Marbled Murrelet nesting habitat and ecological representation.

Recruitment in No-harvest Zones, Management Zones & Stand Level Retention
HGLUOO s. 5, 6, 10, 11, 15 and 20

6.108 Where some or all of the no-harvest zones, management zones or stand level retention areas established under the applicable HGLUOO objectives (refer to 7, below) have been previously altered or harvested, the Timber Sales Manager will provide for recruitment of mature and old forest in the no-harvest zone, management zone or stand level retention area, as applicable, through natural processes (passive recruitment) and may promote recruitment through voluntary interventions (active recruitment).

For the management zones associated with Cultural Cedar Stands, CMTs and Monumental Cedar, the Timber Sales Manager will maintain or recruit, in the shortest possible timeframe, at least 90% of the forest as mature and old forest, through natural processes (passive) and may promote recruitment through voluntary interventions (active). Where the recruitment strategy is to use natural processes (passive), the Timber Sales Manager will not harvest any of the existing mature or old forest in the management zone until the 90% threshold has been attained.

Table 7: Recruitment Summary Table, by HGLUOO Objective

Objective Requiring Recruitment	Recruitment Location	FSP Section Reference
Class 1 HTHFs	No-harvest Zone	6.5
Class 2 HTHFs	No-harvest Zone	6.6
Class 1 HTFFs	No-harvest Zone	6.8
Class 2 HTFFs	Applicable Stand Level Retention	6.9
Class 3 HTFFs	Applicable Stand Level Retention	6.10
Cultural Cedar Stands, CMTs & Monumental Cedar	Management Zones	6.26
Type I Fish Habitat	Type I Fish Habitat & No-harvest Zone	6.49
Type II Fish Habitat	Type II Fish Habitat & No-harvest Zone	6.52
Active Fluvial Units	Active Fluvial Unit & Management Zone	6.54
Forested Swamps	Management Zone	6.77
Existing Northern Goshawk Reserves	Reserve	6.97
New Northern Goshawk nesting No-Harvest Zones	No-harvest Zone	6.98

7.0 Measures for Invasive Plants

Table 8: Invasive Plants known to occur in the Plan Area, including Invasiveness Class

Common Name	Scientific Name	Invasiveness Class
Baby's-breath	*Gypsophila paniculata*	Invasive
Bishop's Goutweed	*Aegopodium podagraria*	Invasive
Black knapweed	*Centaurea nigra*	Extremely Invasive
Bladder campion	*Silene cucubalus*	Aggressive
Blueweed	*Echium vulgare*	Very Invasive
Brown knapweed	*Centaurea jacea*	Extremely Invasive
Bull thistle	*Cirsium vulgare*	Bio-control Available
Canada thistle	*Cirsium arvense*	Bio-control Available
Chicory	*Cichorium intybus*	Very Invasive
Common comfrey	*Symphytum officinale L.*	Invasive
Common bugloss	*Anchusa officinalis*	Invasive
Common burdock	*Arctium minus*	Very Invasive
Common tansy	*Tanacetum vulgare*	Extremely Invasive
Cypress spurge	*Euphorbia cyparissias*	Extremely Invasive
Dalmatian toadflax	*Linaria dalmatica*	Bio-control Available
Diffuse knapweed	*Centaurea diffusa*	Bio-control Available
English Holly	*Ilex aquifolium*	Very Invasive
English ivy	*Hedera helix*	Extremely Invasive
Field scabious	*Knautia arvensis*	Extremely Invasive
Giant Hogweed	*Heracleum mantegazzianum*	Extremely Invasive
Gorse	*Ulex europaeus*	Extremely Invasive
Greater knapweed	*Centaurea scabiosa*	Extremely Invasive
Hawkweeds	*Hieracium spp.*	Extremely Invasive
Himalayan balsam	*Impatiens glandulifera*	Extremely Invasive
Himalayan blackberry	*Rubus discolor*	Extremely Invasive
Hoary alyssum	*Berteroa incana*	Extremely Invasive
Knotweed - Bohemian	*Fallopia X bohemicum*	Extremely Invasive
Knotweed - Giant	*Fallopia sachalinensis*	Extremely Invasive
Knotweed - Himalayan	*Persicaria wallichii*	Extremely Invasive
Knotweed - Japanese	*Fallopia japonica*	Extremely Invasive
Leafy spurge	*Euphorbia esula*	Bio-control Available
Marsh plume thistle	*Cirsium palustre*	Extremely Invasive
Meadow goat's-beard	*Tragopogon pratensis*	Invasive
Meadow knapweed	*Centaurea debeauxii*	Bio-control Available
Mossy stone crop	*Sedum acre*	Very Invasive
Mountain bluet	*Centaurea montana*	Very Invasive
Nodding thistle	*Carduus nutans*	Bio-control Available
Oxeye daisy	*Chrysanthemum leucanthemum*	Very Invasive
Plumeless thistle	*Carduus acanthoides*	Very Invasive
Purple loosestrife	*Lythrum salicaria*	Bio-control Available
Russian knapweed	*Acroptilion repens*	Invasive
Russian thistle	*Salsola kali*	Invasive
Scentless chamomile	*Matricaria maritima*	Very Invasive
Scotch Broom	*Cytisus scoparius*	Extremely Invasive
Scotch thistle	*Onopordum acanthium*	Very Invasive
Spotted knapweed	*Centaurea stoebe*	Bio-control Available

St John's-wort	*Hypericum perforatum*	Bio-control Available
Sulphur cinquefoil	*Potentilla recta*	Extremely Invasive
Tansy ragwort	*Senecio jacobaea*	Bio-control Available
Wild carrot	*Daucus carota*	Very Invasive
Wild chervil	*Anthriscus sylvestris*	*pending/considered noxious*
Wormwood/absinthium	*Artemisia absinthium*	Invasive
Yellow archangel	*Lamium galeobdolon*	Very Invasive
Yellow flag iris	*Iris pseudacorus*	Extremely Invasive
Yellow floating heart	*Nymphoides peltata*	Extremely Invasive
Yellow loosestrife	*Lysimachia vulgaris*	Very Invasive
Yellow toadflax	*Linaria vulgaris*	Bio-control Available

For the purposes of Section 47 of the FRPA, the Timber Sales Manager will do the following:

7.1 Prior to undertaking any field activity that will result in soil disturbance, review the provincial Invasive Alien Plant Program (IAPP) database, to determine the presence of invasive plants in the vicinity of the proposed forest development activities. A field review will be completed to determine if new invasive plants exist or if existing invasive plants have spread beyond the location identified in the IAPP database.

When new invasive plants are identified or have spread beyond the reported location, this information will be reported to the IAPP database.

7.2 Measures to prevent the introduction and/or the spread of invasive plants will be specified in a plan. This plan may include:

a) the timing of grass seed application,
b) washing of equipment capable of disturbing soils in the harvesting or road building phase to ensure that invasive plant reproductive material is removed
c) no storage of equipment in areas of infestation,
d) no use of material from infested soils, and
e) Maintain records of the location and timing of grass seeding.

7.3 Preferred grass seed will be used and must have the following attributes:

a) high sod-forming content except in areas that are planted with tree seedlings,
b) certified by the Canadian Seed Growers Association
c) that the seed meets Common #1 Forage Grade or better standards for varietal purity established by the Association for seed of that kind of species (seeds Act, Seeds Regulation S.2(1)), and
d) is of native origin.

7.4 Timing of grass seeding is based on the following:

a) apply grass seed when germination has the best probability of success,
b) where germination levels cover less than 80% of the treatment area, one additional application of grass seeding will be done.

7.5 Newly disturbed soils in the following areas will not be grass seeded:

a) soils that will be occupied by seedlings as part of the Net Area to be Reforested,
b) soils where there are no known invasive plants within 500m of disturbed soils.

7.6 Grass seed must be applied where:

a) disturbed soils are created as a result of forest harvesting or road construction activities,
b) disturbed soil has been created within 20m of the high water mark of any stream, wetland or lake regardless of 6) above

c) forest harvesting or road construction activities is within a RMA of adjacent water bodies that are capable of transporting reproductive plant material.

8.0 Climate Change

8.1 The Timber Sales Manager will adhere to BCTS's Climate Change Strategy.

9.0 Stocking Standards

Stocking Standards - General

FPPR s. 44

9.1 FPPR s. 44(1) applies in all situations or circumstances under the Plan where a free growing stand is required to be established under FRPA s. 29.

9.2 For the purposes of FPPR. s 44(1a) and (b), Appendices C and D specify the regeneration date, free growing height and stocking standards for the situations or circumstances where FPPR s. 44(1) applies.

Stocking Standards for development areas with Free Growing obligations have been provided in Appendices C and D. Stocking standards are to be assigned and documented within Site Plans, by the prescribing Forester.

Special Forest Products Stocking Standards

FPPR s. 16(4)

The Timber Sales Manager may implement programs for special forest products, including shake, shingle, cant, and whole logs. The special forest products programs will involve the harvest of dead and down wood only. The Timber Sales Manager will implement the special forest products programs under designated salvage permits or licenses.

9.3 Where harvesting of special forest products (FPPR s. 44(3)(i)) occurs, stocking standards will be applied as follows:

a) Where areas are subject to a Site Plan and associated stocking standards, the designated standards will be implemented or maintained.

b) Where there is no Site Plan, the following standards will apply to the area:

i) the harvest activities will not cause the total yield for the standards unit to be less than the yield had the harvesting not occurred; and

ii) at the conclusion of the harvesting, a species composition will retained in the standards unit that is substantially the same as the species composition of the standards unit immediately prior to the harvesting; and

iii) at the conclusion of the harvesting, leave tree health and vigour in the standards unit will be substantially the same as it was immediately prior to the harvesting.

There are no reforestation requirements for special forest products cutting. Justification for the special forest products cutting will be documented within the Site Plan (where a Site Plan is required).

Single Entry Dispersed Retention System Stocking Standards

9.4 In circumstances where non-timber values and objectives are the primary management focus, the Single Entry Dispersed Retention System standard may be applied including:

- Where Visual Quality Objectives are Preservation, Retention or Partial Retention
- Where Terrain Stability is an over-riding concern
- Where wind-firmness is an over-riding concern
- Where riparian management is the primary objective
- Where the clear-cut with reserves silviculture system is precluded due to constraints related to the HGLUOO
- Where habitat enhancement is the primary objective
- Where protection of resource features is the primary objective
- Where forest ecosystem restoration or enhancement is the primary objective

Where the Timber Sales Manager implement the SEDRS stocking standard, on an annual basis, the area harvested under the SEDRS standard will not exceed 10% of the AAC for FDU A, apportioned amongst the Timber Sales Manager proportional to their respective AACs.

In order to address the silvicultural obligations associated with these situations, the Single Entry Dispersed Retention System stocking standard has been included (Appendix D).

Management objectives for areas where the Single Entry Dispersed Retention System is applied should be duly noted in the Site Plan and supporting documents prior to harvesting activities. The Single Entry Dispersed Retention System is only applicable to conifer management, not hardwoods.

Sampling procedures for the single entry dispersed retention system have been included to ensure that these standards are not applied in inappropriate circumstances. Specifically, these standards are to be applied where the residual basal area within a selected harvest area is >5 to <40 m^2/ha and the contiguous opening size is ≥ 1.0ha in size.

Stocking Standard Application

For clarity, Table 9 below has been provided to help illustrate the instances where the Even Aged and Single Entry Dispersed Retention standards are to be applied.

Table 9: Stocking Standards Application

Contiguous Opening Size for Standard Unit (ha)	Standard Unit Basal Area Retention (m^2/ha)	Applicable Stocking Standard
0.1 - 0.9	> 5 to < 40	SEDRS
0.1 - 0.9	≤ 5	Even-Aged[1]
≥ 1.0	≥ 40	-
≥ 1.0	> 5 to < 40	SEDRS
≥ 1.0	≤ 5	Even-Aged

Standards Applying to Pre-FSP Plans and Prescriptions

FRPA s. 197

9.5 For cutblocks where stocking standards set out in the Code or in a pre-Code prescription would otherwise apply (including a Site Plan, Silviculture Prescription or Pre-harvest Silviculture Prescription), the FSP Holder may elect to, for the purposes of otherwise specifying stocking standards under FRPA s. 197(4, 5 or 7) within an FDU as specified by FPPR s. 14(1)(d or e) and where ecologically appropriate, have stocking standards approved under this Plan apply to standards units within such cutblocks. For each standards unit, this election is to be made2 prior to the previously specified Late Free Growing date by electronically updating the Ministry's RESULTS system to indicate the replacement FSP standard and providing notice to the Ministry of Forests, Haida Gwaii Forest District (by way of e-mail or some similar method).

1 Where a small opening (0.1-0.9ha) is associated with a larger partial cut standard unit, the SEDRS standard may apply.

[2] The official date of change (i.e., the date the new standards will apply) will be the date of notice submission to the MOF.

10.0 Signatures of Persons Required

The Timber Sales Manager & Authorized Plan Holder Signatures

Plan Holder	Authorized Signatory & Title	Signature	Date
BC Timber Sales – Chinook Business Area 46360 Airport Road Chilliwack, BC V2P 1A5 Ph: (604) 702 – 5723 Fx: (604) 702 - 5711	Kerry Grozier, Timber Sales Manager		

Signing Forester

Date:

Alexandra Ryland, RPF – Practices Forester
BC Timber Sales, Haida Gwaii Field Team

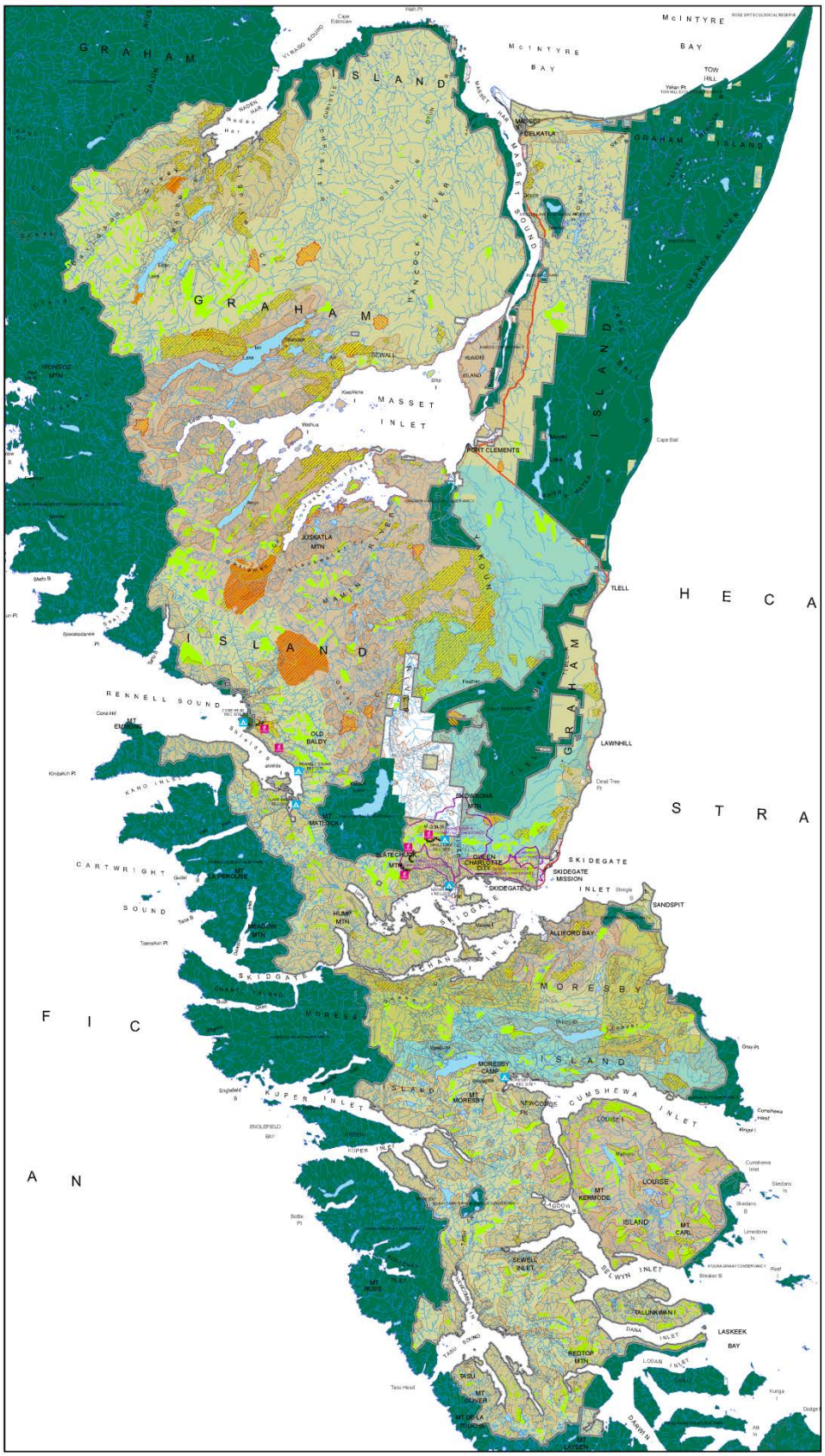
I certify that the work described herein fulfills the standards expected of a member of the Association of British Columbia Forest Professionals and that I did personally supervise the Work.

Preparing Forester

Date:

Nicholas Miller, RPF
Coastal Natural Resource Management–

Appendix A: FSP Map



Forest Stewardship Plan

- Forest Development Unit A
- TFL 58
- TFL 60
- FLTC A87661
- Haida Gwaii TSA
- Scenic Area
- Wildlife Habitat Areas
- Community Watersheds
- LUO Schedule 3 - Cedar Stewardship Areas
- LUO Schedule 8 - Forest Reserves
- LUO Schedule 12 - NOGO Reserves
- LUO Schedule 12 - NSWO Reserves
- Recreation Sites and Reserves
- Recreation Trails
- Protected Areas
- Highway
- Paved Road
- Gravel Road

N

Map Date April 27, 2017

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Albers Equal Area Conic Projection, NAD 83

Disclaimer

Although we take great care in the preparation of this information and are confident that it is accurate, we do not give any warranty as to its accuracy or suitability for any purpose that it might be used for. Users assume the risk associated with the accuracy and results of the contents of this document.

Map Notes

Map contents are for illustration purposes only and are representative of data captured from varying sources using differing scale and accuracy. Exact locations of specific map features or in relation to adjacent or corresponding features should be determined on the ground.

In many instances, only information pertinent to the FSP and more specifically to the Forest Development Unit has been displayed on the map. Information that does not intersect the Forest Development Unit may not be shown.

Taan FOREST

Appendix B: Cedar Regeneration (and Free Growing) Acceptability Criteria

Table 10: Free growing damage Criteria for even-aged (age class 1) coniferous trees

Location of damage	Type of damage	Tree being assessed is UNACCEPTABLE if:	Host species	Likely damage agents & damage agent codes	Comments
Stem	**Wound** (including sunscald and girdling)	• the tree has any wound which is greater than 33% of the stem circumference, or • the tree has a wound which is greater than 20% of the total length of the stem, or • the tree has a wound centred on an infection caused by a stem rust, canker, or dwarf mistletoe (See Note under Stem: Infection).	All	squirrel AS, beaver AZ, vole AV, porcupine AP, hare AH, Warrens root collar weevil IWW, sequoia pitch moth ISQ, fire NB, windthrow NW, sunscald NZ, logging TL, mechanical TM.	A **wound** is defined as an injury in which the cambium is dead (e.g., sunscald) or completely removed from the tree exposing the sapwood. Measure the wound across the widest point of the exposed sapwood (or dead cambium when the tree is damaged by sunscald). Healed over wounds (=scars) are acceptable. See Figure A5-1.
Stem	**Insect mining at root collar**	• the tree is currently attacked by a bark-mining insect such as a weevil or a beetle and exhibits symptoms such as foliage discoloration, thinning, and/or reduced height growth increments	Pl, Sx	root collar weevil IWW.	Only trees that are symptomatic should be checked for insect infestation or mining damage. Non-symptomatic trees are presumed to be unaffected by insect mining.
Stem	**Deformation** (including crook, sweep, fork, browse, and dead or broken top)	• the pith is horizontally displaced more than 30 cm from the point of defect and originates above 30 cm from the point of germination.	For sweep, all except Cw and Hw	Defoliators ID, white pine (spruce) weevil IWS, lodgepole pine terminal weevil IWP, northern pitch twig moth ISP, sequoia pitch moth ISQ, cattle AC, deer AD, elk AE, moose AM, frost NG, hail NH, snow NY, drought ND, logging TL, mechanical TM.	For **horizontal displacement** see Figure A5-2.
		• the tree leader has been killed three or more times in the last five years (weevil only).	Sx, Ss, Pl	White pine (spruce) weevil IWS, lodgepole pine terminal weevil IWP.	This criterion applies only for terminal weevil damage.
		• the tree has two or more leaders with no dominance expressed after five years growth and the fork originates above 30 cm from the point of germination.	All	terminal weevils (IWS, IWP), frost NG, animal damage A.	**Leader dominance** occurs when the tallest leader is at least 5 cm taller than the second tallest leader. See Figure A5-3.
		• the tree has a dead or broken top at a point that is >2 cm (>3 cm for the coast) in diameter.	All		
Stem	**Infection** (including cankers and galls)	• any infection occurs on the stem.	All	comandra blister rust DSC, stalactiform blister rust DSS, white pine blister rust DSB, western gall rust DSG, atropellis canker DSA.	**Note**: Wounds caused by rodent feeding around rust cankers should have stem rust recorded as the causal agent.
Branch	**Infection** (cankers)	• an infection occurs on a live branch less than 60 cm from the stem.	Pw, Pl, Py	white pine blister rust DSB, comandra blister rust DSC, stalactiform blister rust DSS.	See Figure A5-4.
Branch	**Galls**	• a gall rust infection occurs on a live branch less than 5 cm from the stem.	Pl, Py	western gall rust DSG.	See Figure A5-4.

Location of damage	Type of damage	Tree being assessed is UNACCEPTABLE if:	Host species	Likely damage agents & damage agent codes	Comments
Branch	**Gouting**	• any adelgid **gouting** occurs on a branch.	Ba, Bg, Bl	balsam woolly adelgid IAB.	**Gouting** is defined as excessive swelling of a branch or shoot caused by balsam woolly adelgid, and is often accompanied by misshapen needles and buds. It is most common on branch tips and at nodes near the ends of branches. Consult a recent distribution map to identify the geographic extent of this pest.
Foliage	**Defoliation**	• >80% of tree foliage has been removed due to defoliating insects or foliage disease.	All	defoliators ID, foliage diseases DF.	
Stem or Branch	**Dwarf mistletoe infection**	• any infection occurs on the stem or a live branch, or • a susceptible tree is located within 10 m of an overtopping tree, which is infected with dwarf mistletoe.	Hw, Pl, Lw, Fd	hemlock dwarf mistletoe DMH, lodgepole pine dwarf mistletoe DMP, larch dwarf mistletoe DML, Douglas-fir dwarf mistletoe DMF.	**Note:** To confirm infection, the surveyor must observe mistletoe aerial shoots or basal cups on regeneration or on live or dead fallen brooms. **Overtopping tree** is a tree that is three or more times taller than the median height of the trees being assessed.
Roots	**Root disease**	• sign(s) or a definitive combination of symptoms of root disease are observed.	All	armillaria root disease DRA, laminated root rot DRL, tomentosus root rot DRT, annosus root disease DRN, blackstain root disease DRB.	**Signs** are direct evidence of the pathogenic fungus including fruiting bodies, distinctive mycelium or rhizomorphs. **Symptoms** include foliar chlorosis or thinning, pronounced resin flow near the root collar, reduced recent leader growth, a distress cone crop, and wood decay or stain. An individual symptom is not sufficient to identify a root disease.
		• infected tree found in plot. See comments for well-spaced tree net down calculation. The multiplier for DRA is **two**, except in BEC zones PPdh1 and 2, IDFxh1, IDFdm1 and 2, MSdk1, and MSdm1 where the multiplier is **one**.	All	armillaria root disease DRA.	**Note:** All conifer species are considered susceptible. Broadleaf species are considered **not susceptible** for survey purposes only. **Example:** How to apply net down for root disease. If root disease-infected trees are found in the plot: 1. In the first sweep, determine the total number of healthy, well-spaced trees using the prescribed minimum inter-tree distance (MITD) (e.g., 12 trees) ignoring the M-value; 2. In a second independent sweep, determine the number of well-spaced **infected** trees (including dead infected trees and for DRT only, infected stumps) using MITD (e.g., one infected tree); 3. Multiply the number from step 2 by the multiplier for the specific root disease and subtract this number from the number of **susceptible** healthy well-spaced trees found in step 1 (e.g., for DRA: 12-1(2) = 10). The result is the maximum number of free growing trees tallied for the plot.
		• infected conifer found in plot. See comments for well-spaced tree net down calculation. The multiplier for DRL is **four**.	Fd, Sx, Se Lw, Ba, Bg	laminated root rot DRL.	**Note:** Bl, Cw, Pl, Pw, Py, and broadleaf species are considered **not susceptible** for survey purposes only.
		• infected conifer or stump found in plot. See comments for well-spaced tree net down calculation. The multiplier for DRT is **two**.	Se, Sx	tomentosus root rot DRT.	**Note:** Ba, Bl, Cw, Fd, Pl, Pw, Py and broadleaf species are considered **not susceptible** for survey purposes only.
		• infected conifer found in plot. See comments for well-spaced tree net down calculation. The multiplier for DRN is **two**.	Ba, Hw, Ss	annosus root rot DRN.	**Note:** Bg, Bl, Cw, Cy, Fd, Hm, Pl, Pw, Py, Sx and broadleaf species are considered **not susceptible** for survey purposes only.

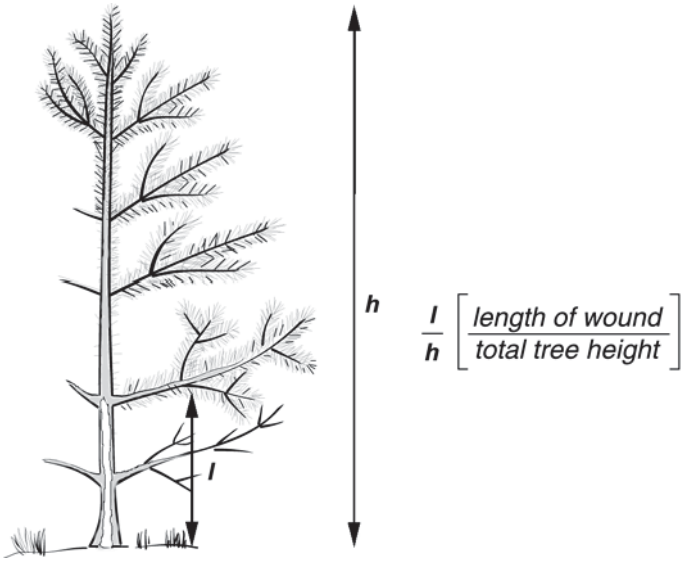

Figure 1: Calculation of wound along stem length

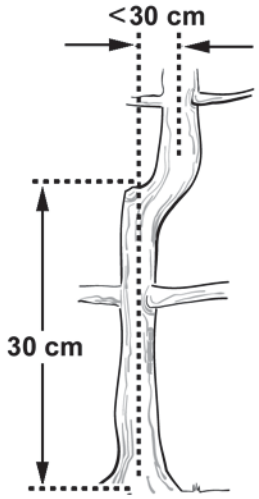

Figure 2: Determining horizontal displacement and height above point of germination when assessing stem deformation

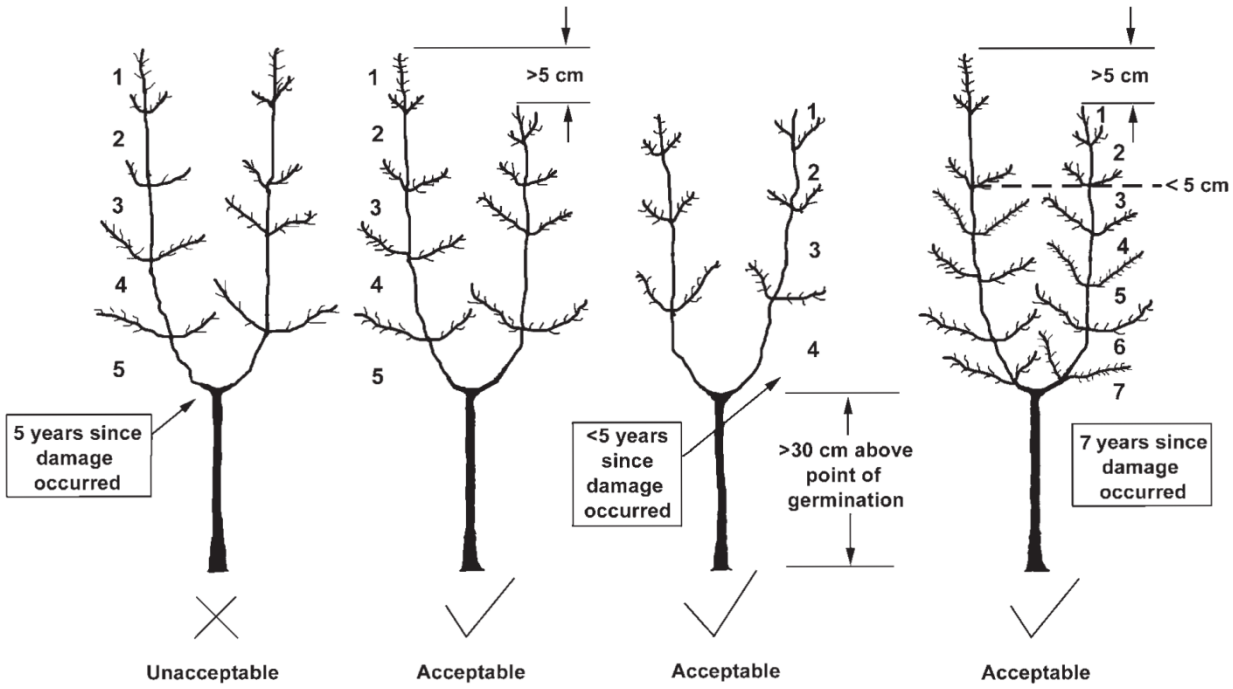

Figure 2: Acceptable and unacceptable forks.

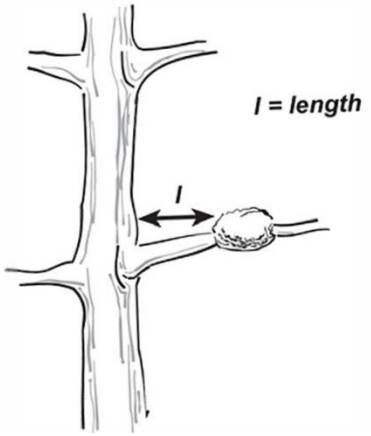

Figure 3: Distance measurement from point of infection by canker or gall to main stem.

Appendix C: Even Aged Stocking Standards

CWHwh1 – even aged

Site Series	Species and Min. FG height (m)	Target Stocking Standard (sph)	Min Stocking Standard (sph)	Min Inter-tree Distance (m)	Regen Date (years)	FTG (years)
01	Hw/2.0 Ss/3.0 Cw/1.2 Dr/4.0	900	500	2.00 (Dr/1.5)	6	20
01s	Hw/2.0 Cw/1.2 Ss/3.0 Plc/2.0	900	500	2.00	6	20
02	Cw/1.2 Hw/1.3 Plc/1.3 Ss/2.0	900	500	2.00	6	20
03	Ss/3.0 Cw/2.0 Hw/2.8 Yc/1.2 Dr/4.0	900	500	2.00 (Dr/1.5)	6	20
04	Cw/1.2 Hw/1.3 Yc/1.2 Plc/1.3 Ss/2.0 Dr/4.0	900	500	2.00 (Dr/1.5)	6	20
05	Hw/2.8 Cw/1.2 Ss/3.0 Dr/4.0	900	500	2.00 (Dr/1.5)	6	20
06	Hw/2.8 Cw1.2 Yc/1.2 Ss/3.0 Hm/2.8 Dr/4.0	800	400	1.50	6	20
07	Ss/3.0 Cw/2.0 Hw/2.8 Dr4.0	900	500	2.00 (Dr/1.5)	6	20
08	Ss/3.0 Cw/2.0 Dr/4.0	900	500	2.00 (Dr/1.5)	6	20

Site Series	Species and Min. FG height (m)	Target Stocking Standard (sph)	Min Stocking Standard (sph)	Min Inter-tree Distance (m)	Regen Date (years)	FTG (years)
10	Cw/1.2	800	400	1.50	6	20
	Yc/1.2					
	Hw/1.3					
	Plc/1.3					
	Ss/2.0					
	Hm/0.8					
11	Plc/1.3	400	200	1.50	6	20
	Cw/1.2					
	Yc/1.2					
12	Cw/1.2	800	400	1.50	6	20
	Hw/1.3					
	Yc/1.2					
	Plc/1.3					
	Ss/1.3					
13	Cw/1.2	400	200	1.50	6	20
	Hw/1.3					
	Plc/1.3					
	Ss/2.0					
14	Ss/3.0	900	500	2.00	6	20
	Hw/2.0					
	Cw/1.5					
15	Ss/3.0	400	200	1.50	6	20
	Cw/1.5					
	Plc/2.0					
	Hw/2.0					
16	Ss/3.0	900	500	2.00	6	20
	Hw/2.0					
	Cw/1.5					
17	Ss2.0	400	200	1.50	6	20
	Cw/1.2					
	Hw/1.3					
18	Ss/2.0	400	200	1.50	6	20
*Mixedwood strategy on the CWHwh1 site series' 03, 05, 06, 07, and 08: where red alder is being managed as a leading species it will comprise ≥ 80% of the Free Growing stand; the target density will be 800-1200 sph; estimated rotation age of 50-70 years, with a target of 30cm dbh at rotation age.						

CWHwh2 – even aged

Site Series	Species and Min. FG height (m)	Target Stocking Standard (sph)	Min Stocking Standard (sph)	Min Inter-tree Distance (m)	Regen Date (years)	FTG (years)
01	Hw/2.0 Cw/1.2 Ss/1.5 Yc/1.5 Hm/1.0	900	500	2.00	6	20
02	Hw/2.0 Cw/1.2 Yc/1.5 Ss/1.5 Hm/1.0	900	500	2.00	6	20
03	Hw/2.0 Cw/1.2 Yc/1.5 Ss/1.5	900	500	2.00	6	20
04	Hw/2.0 Cw/1.2 Yc/1.5 Ss/1.5	800	200	1.50	6	20
05	Yc/1.2 Cw/1.2 Hw/1.3 Hm/0.8 Ss/1.0	400	200	1.50	6	20
06	Yc/1.2 Cw/1.2 Hw/1.3 Hm/0.8 Ss/1.0	800	400	1.50	6	20

CWHvh2 – even aged

Site Series	Species and Min. FG height (m)	Target Stocking Standard (sph)	Min Stocking Standard (sph)	Min Inter-tree Distance (m)	Regen Date (years)	FTG (years)
01	Cw/1.2 Hw/2.0 Yc/1.5 Dr/4.0 Ss/3.0 Plc/1.3	900	500	2.00 (Dr/1.5)	6	20
02	Plc/1.3 Cw/1.2 Yc/1.2 Hw/1.3	400	200	1.50	6	20
03	Cw/1.2 Hw/1.3 Plc/1.3 Yc/1.2 Ss/2.0 Dr/4.0	800	400	1.50 (Dr/1.5)	6	20
04	Hw/1.8 Ss/3.0 Cw//1.2 Dr/4.0 Yc2.0	900	500	2.00 (Dr/1.5)	6	20
05/06	Cw/1.5 Ss/3.0 Hw/1.8 Yc/1.5 Dr/4.0	900	500	2.00 (Dr/1.5)	6	20
07	Cw/1.5 Ss/3.0 Hw/1.8 Yc/1.5 Dr/4.0	900	500	2.00 (Dr/1.5)	6	20
08	Ss/3.0 Cw/1.5 Hw/1.8 Dr/4.0	900	500	2.00 (Dr/1.5)	6	20
09	Ss/4.0 Hw/1.8 Cw/1.5	900	500	2.00	6	20

Site Series	Species and Min. FG height (m)	Target Stocking Standard (sph)	Min Stocking Standard (sph)	Min Inter-tree Distance (m)	Regen Date (years)	FTG (years)
11	Cw/1.2 Yc/1.2 Hw/1.3 Plc/1.3	800	400	1.50	6	20
12	Cw/1.2 Yc/1.2 Plc/1.3	400	200	1.50	6	20
13	Cw/1.2 Yc/1.2 Ss/2.0 Hw/1.3 Plc/1.3	800	400	1.50	6	20
14	Ss/2.0 Cw/1.2 Hw/1.3 Plc/1.3	400	200	2.00	6	20
15	Ss/3.0 Cw/1.5 Hw/2.0	900	500	2.00	6	20
16	Ss/3.0 Cw/1.5 Hw/2.0 Plc/1.5	400	200	2.00	6	20
17	Ss/2.0 Cw/1.2 Hw/1.3	900	500	2.00	6	20
18	Ss/2.0 Cw/1.2	400	200	2.00	6	20
*Mixedwood strategy on the CWHvh2 site series' 03, 04, 05/06, 07 and 08: where red alder is being managed as a leading species it will comprise ≥ 80% of the Free Growing stand; the target density will be 800-1200 sph; estimated rotation age of 50-70 years, with a target of 30cm dbh at rotation age.						

MHwh – even aged

Site Series	Species and Min. FG height (m)	Target Stocking Standard (sph)	Min Stocking Standard (sph)	Min Inter-tree Distance (m)	Regen Date (years)	FTG (years)
01	Hw/1.0 Yc/1.2 Hm/1.0 Cw/1.2 Ss/1.5	900	500	2	6	20
02	Hm/1.0 Yc/1.2 Cw/1.2 Hw/1.0 Ss/1.0	400	200	1.5	6	20
03	Hw/1.0 Ss/1.5 Cw/1.2 Yc/1.2 Hm/1.0	900	500	2	6	20
04	Cw/1.2 Yc/1.2 Hw/2.0 Hm/1.0 Ss/2.0	900	500	2	6	20
05	Cw/1.2 Yc/1.2 Hw/2.0 Hm/1.0 Ss/1.5 Plc/2.0	900	500	2	6	20
06	Cw/1.2 Yc/1.2 Hw/0.8 Hm/0.8 Ss/1.5	800	400	1.5	6	20
07	Cw/1.2 Yc/1.2 Hw/0.8 Hm/0.8 Ss/1.0	900	500	1.5	6	20
08	Cw/1.2 Yc/1.2 Hw/0.8 Hm/0.8	400	200	1.5	6	20

Site Series	Species and Min. FG height (m)	Target Stocking Standard (sph)	Min Stocking Standard (sph)	Min Inter-tree Distance (m)	Regen Date (years)	FTG (years)
09	Cw/1.2	800	400	1.5	6	20
	Yc/1.2					
	Hw/0.8					
	Hm/0.8					
	Ss/1.0					

Species Acceptability

Ecologically suitable species are provided in the stocking standards in the tables above. The suitability/ acceptability of regeneration will be determined in the field by a Qualified Professional based on site-specific soil moisture, nutrient, aspect and elevation characteristics and tree performance in response to the site. Tree species that are ecologically suitable and commercially valuable are listed in the standards provided in Appendix C.

Sitka Spruce (Ss)

On marginal sites: CHWwh1 (01s, 04, 10, 12); CWHwh2 (02, 05, 06); CWHvh2 (01, 13); MHwh (02, 03, 04, 06, 07, 09) where Ss is accepted, it will only be accepted to a maximum of 50% of the minimum stocking density. Furthermore, on these sites, Ss will be limited in terms of its acceptance at regen and Free-Growing to microsites that are medium or better, in terms of productivity (Soil Nutrient Regimes C-E). Sitka spruce will be targeted on elevated and productive microsites. In terms of elevation, Ss will be focused on lower elevation sites (especially in the MH subzone) and planted within the applicable elevation range for the stock.

Lodgepole Pine (Plc)

On marginal sites: CHWwh1 (01s, 02, 04, 10, 13, 14); CWHwh2 (02, 05, 06); CWHvh2 (11, 13, 14, 16); and MHwh (05) where Plc is accepted, it will only be accepted to a maximum of 50% of the minimum stocking density. Furthermore, on these sites, Plc will be limited in terms of its acceptance at regen and Free-Growing to microsites that are medium or poorer, in terms of productivity (Soil Nutrient Regimes A-C). Lodgepole pine will be targeted on depressional, folisolic and other poor productivity microsites.

Red Alder (Dr)

Natural red alder ingress will be defaulted to a preferred species on all sites within 3 metres of any stream banks where harvesting is permissible.

Free Growing Criteria

Conifers

An acceptable conifer crop tree must:

a) Be free from brush competition (consistent with the crop tree to brush height ratio for the BEC applicable BEC unit).
b) Be of good health, form and vigour and meet the Free Growing damage criteria for conifers, as provided in Appendix B, above.

Red Alder

An acceptable red alder crop tree must:

a) Be free from brush competition (consistent with the crop tree to brush height ratio for the BEC applicable BEC unit).
b) Not have a tree pith that is laterally displaced more than 30 cm from the location of the root-crown pith.
c) Not originate from a cut stump.
d) Have one dominant live leader.
e) Not have a wound that is greater than 10% of the stem circumference nor is greater than 10% of the total length of the stem.
f) Not have any fungal infections or insect infestations affecting tissues below the bark surface, visible without destructive sampling.
g) Not be browsed so as to limit its ability to become a crop tree.

Minimum Inter-tree Distance

The Minimum Inter-tree Distances have been specified in the stocking standards tables above, however, for all sites, the minimum inter-tree distance may be reduced to 1.5m, in the following circumstances:

a) within 20.0m of the road centre-line; or
b) immediately adjacent to stream or riparian areas, naturally Non-Productive Areas, or areas ($50m^2$) covered with unplantable slash; or
c) on helicopter logged areas, where slash treatment is not practicable; or
d) on any talus site; or
e) immediately adjacent to retained single trees.

Brush Competition at Free-Growing

The crop tree to brush height ratio at Free Growing is as follows:

a) For CWHwh1, CWHwh2 and CWHvh2 BEC units, the ratio is 150%.
b) For MHwh BEC Units, the ratio is 125%.

Free Growing Window

The Free Growing window is to be 5-years after the regen obligation has been met, and no later than 20-years after the commencement of harvesting for the development area.

Mixed Conifer – Hardwood Management

Red alder may be the leading species in mixed-hardwood/ conifer (i.e., micro-patch mixed wood)) management situations. Where red alder is the leading species (≥ 80%) the hardwood stocking standard may be applied. Where red alder is not the leading species, it will not be accepted as a crop tree.

On an annual basis, the total Plan area managed to hardwood stocking standards will be a maximum of 200ha, for all the Timber Sales Manager combined. The 200ha is to be allocated between the Timber Sales Manager, proportional to their AAC for the Plan Area.

Where red alder is included as a suitable species, the strategy will to pre-stratify the development area, and assign conifer or red alder stocking standards, as appropriate, consistent with the Site Plan. The minimum patch size for identifying and assigning the alder stocking standard will be 0.25ha.

Appendix D: Single Entry Dispersed Retention System (SEDRS) Stocking Obligations

Haida Gwaii Single Entry Dispersed Retention System (SEDRS) Stocking Standards

The procedures below outline the stocking standard and survey process to determine if stocking obligation has been met on partially harvested blocks on Haida Gwaii. These procedures are as of yet untested on Haida Gwaii and may be amended as necessary.

As this method/ policy has yet to be implemented operationally on Haida Gwaii it is be considered as part of an adaptive management process, and may be reviewed and improved on an ongoing basis. It is acknowledged that the SEDRS stocking standard will need to be reviewed in the next 5 years (i.e., at the end of the term, of the FSP), including a review of any Timber Supply impacts. To ensure that there are no significant adverse impact to the Timber Supply, application of the SEDRS stocking standard will be limited to less that 0.1% of the Timber Harvesting Landbase, on an annual basis.

Regen and Free-Growing Obligation Timing

Where required, the regen obligation date for stands managed under the SEDRS stocking standard is between 2 and 6 years, from harvest commencement.

Where required, the Free Growing obligation for stands managed under the SEDRS stocking standard is between 2 and 20 years, from harvest commencement, consistent with even-aged stocking standards.

If the stocking obligations are met after 2-years, a Free-Growing declaration may be made, consistent with FPPR s. 97 or 97.1.

Species Selection

Overstorey and understorey tree species acceptability is the same as described for the even-aged stocking standards in Appendix C, for the applicable site-series. Given that overstorey densities will be variable, depending on the level of harvesting, light interception by the overstorey will be factored into the species acceptability for a particular harvest area and balanced against individual tree species shade tolerance. Shade tolerant species will be considered acceptable where residual basal area is high, whereas, shade intolerant species will not.

Post-Harvest Sampling Procedures

<u>Stratification</u>

The sampling procedures described are to be applied to areas with a residual basal area (RBA) of >5 to < $40m^2$/ha. As such, development areas will be stratified according to the following criteria:

- Areas > 0.1ha with ≤ $5m^2$/ha will be assessed according to even-aged stocking standards and survey procedures.
- Areas ≥ 0.25ha uncut will be classified as group retention and be removed from the NAR and survey area.

Overstorey

- Measure overstorey RBA using a prism that is suited to the tree sizes on site to capture, on average, a minimum of 4 trees per plot in an uncut portion of the stand (or cut and leave trees). The cruise compilation should guide the choice of prism size.
- Tally all overstorey trees, by species, as either crop trees or non-crop trees (as defined in Appendices 1 and 2 of SEDRS Discussion Paper, dated November 5, 2009). Only overstorey crop trees contribute to RBA and the determination of differential from potential (DFP), as presented in Table 1.
- Acceptable overstorey crop trees must meet the criteria specified in the Appendix F, based on the SEDRS Discussion Paper, dated November 5, 2009.

Understorey

An unimpeded well-spaced stem must be:

- Outside of the drip-line of overstorey trees.
- Healthy trees that meet the advanced regeneration criteria, as defined in Appendix G, based on the SEDRS Discussion Paper, dated November 5, 2009.
- Greater than the minimum described height for all species identified as suitable for the site (heights are determined as 75% of the heights provided in the Reference Guide for FDP Stocking Standards – for the Vancouver Forest Region [3] (MOF, November 2010).
- Unimpeded by vegetation (herbaceous or shrubs overtopping the stem).

Key elements of survey methodology

- Pre-stratify: Identify SEDRS areas using stratification criteria described above
- Plots: establish 1 plot per ha within a stratum (SU) with a minimum of 5 plots per stratum (SU), and a maximum of 15 plots per stratum (SU)
- Plot Size: 0.005ha (3.99m radius)
- Measurements**:** Determine RBA and the UWS stems per plot

Stocking Decision

Use Table 11, to determine Deviation-from-Potential and stocking category (open [O], partially stocked [P] or stocked [S]) for each plot. A block is deemed stocked if:

- average DFP value for all plots is ≤ 0.2, and
- proportion of plots in the S (stocked) category is ≥ 60%, and
- proportion of plots in the O (open) category is ≤ 20%

[3] http://www.for.gov.bc.ca/hfp/silviculture/stocking_stds.htm

Table 11: Deviation from Potential

Overstorey BA (m^2/ha)	Well Spaced Trees in Plot*								
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
5	0.86	0.65	0.45	0.30	0.19	0.11	0.06	0.02	0.00
6	0.82	0.62	0.43	0.28	0.18	0.11	0.06	0.02	0.00
7	0.77	0.58	0.40	0.27	0.17	0.10	0.05	0.02	0.00
8	0.72	0.55	0.38	0.25	0.16	0.09	0.05	0.02	0.00
9	0.67	0.51	0.35	0.23	0.15	0.09	0.05	0.02	0.00
10	0.62	0.47	0.32	0.21	0.14	0.08	0.04	0.02	0.00
11	0.57	0.43	0.30	0.20	0.12	0.07	0.04	0.02	0.00
12	0.52	0.39	0.27	0.18	0.11	0.07	0.04	0.01	0.00
13	0.47	0.35	0.24	0.16	0.10	0.06	0.03	0.01	0.00
14	0.42	0.32	0.22	0.15	0.09	0.05	0.03	0.01	0.00
15	0.38	0.28	0.20	0.13	0.08	0.05	0.03	0.01	0.00
16	0.33	0.25	0.17	0.11	0.07	0.04	0.02	0.01	0.00
17	0.29	0.22	0.15	0.10	0.06	0.04	0.02	0.01	0.00
18	0.26	0.19	0.13	0.09	0.06	0.03	0.02	0.01	0.00
19	0.22	0.17	0.12	0.08	0.05	0.03	0.02	0.01	0.00
20	0.19	0.14	0.10	0.07	0.04	0.02	0.01	0.01	0.00
21	0.16	0.12	0.08	0.06	0.04	0.02	0.01	0.00	0.00
22	0.13	0.10	0.07	0.05	0.03	0.02	0.01	0.00	0.00
23	0.11	0.08	0.06	0.04	0.02	0.01	0.01	0.00	0.00
24	0.09	0.07	0.05	0.03	0.02	0.01	0.01	0.00	0.00
25	0.07	0.05	0.04	0.02	0.02	0.01	0.00	0.00	0.00
26	0.05	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00
27	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00
28	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00
29	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
30 – 40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* Total number of well-spaced trees in a 0.005ha plot at a minimum inter-tree distance of 1.5m

"Open"
"Partially Stocked"
"Stocked"

Appendix E: Land Use Order Schedules

Haida Gwaii Land Use Orders Schedules can be found in the following link:

http://www.haidagwaiimanagementcouncil.ca/land_use_orders.html

Appendix F: Health and Vigour Criteria for Overstorey Crop Tree

Location of damage	Type of damage	Tree being assessed is UNACCEPTABLE if:	Host species	Possible damage agents & damage agent codes	Comments
Foliage	DEFOLIATION	For defoliating insects: • > 80% of foliage has been removed, lost or damaged due to foliage disease. For foliar diseases: • > 50% of foliage has been removed, lost or damaged	All	defoliators ID, foliage diseases DF.	
Stem or Branch	ADELGID GOUTING	• Any adelgid gouting occurs on a stem or branch.	Ba, Bg, Bl	balsam woolly adelgid IAB.	Gouting is defined as excessive swelling on a branch or shoot caused by balsam woolly adelgid and is often accompanied by misshapen needles and buds. It is most common on branch tips and at nodes near the ends of branches. Consult a recent distribution map to identify the geographic extent of this pest.
Stem or Branch	DWARF MISTLETOE INFECTION	These criteria apply to layer 2, 3 & 4 trees: • Any infection occurs on the stem or a live branch, or • A susceptible tree is located within 10 m of a higher layer tree that is infected with dwarf mistletoe. These criteria apply to layer 1 trees: • Hawksworth rating >3, or severe stem infections (major swelling or deformity) present.	Hw, Pl, Lw, Fd	hemlock dwarf mistletoe DMH, lodgepole pine dwarf mistletoe DMP, larch dwarf mistletoe DML, Douglas-fir dwarf mistletoe DMF.	Note: To confirm infection, the surveyor must observe mistletoe aerial shoots or basal cups on regeneration or on live or dead fallen brooms. The Hawksworth rating system is described in the FPC Dwarf Mistletoe Management Guidebook.

TABLE X. Tree wounding criteria for layers 1-4. Trees are unacceptable if any ONE criterion is met.

STAND MANAGEMENT OBJECTIVE[1] TREE SPECIES	SHORT TERM RETENTION[2] (Layers 1 & 2)	LONG-TERM RETENTION[3] (Layers 1 & 2)	UNEVEN-AGED [4] (Layers 1 & 2)	LAYERS 3 & 4
B, H, Lw, Ss and Cw <60 years	W.>33%C., or MRW 1m, or G.	W.>33%C., or MRW 1m, or G. 1 W.>400cm²	W.>33%C., or MRW 1m, or G. 1 W.>400cm²	See table 21
Cy, Sx and Cw >60 years	W.>33%C., or MRW 1m, or G	W.>33%C., or MRW 1m, or G. 1 W.>400cm²	W.>33%C., or MRW 1m, or G. 1 W.>400cm²	
Fd, Pw	W.>50% C.	W.>33%C., or MRW 1m, or G.	W.>33%C., or MRW 1m, or G. 1 W.>400cm²	
Pl, Py	W.>50% C.	W.>50% C.	W.>33%C., or MRW 1m, or G.	

[1] The stand management objective should be specified in the site plan. Where it is not, the criteria for uneven-aged management should be applied.
[2] Where tree will be removed within 20 years.
[3] Where tree will be removed in more than 20 years.
[4] Where stand is managed in a true uneven state.
[5] A gouge involves a wound where penetration is into the sapwood or deeper.

W. = Wound C.= Circumference G. = Gouge[5]
MRW = Major Root Wound within1 m of the stem.

Location of damage	Type of damage	Tree being assessed is UNACCEPTABLE if:	Host species	Possible damage agents & damage agent codes	Comments
Roots	ROOT DISEASE	• Sign(s) or definitive combinations of symptoms of root disease are observed.	All	armillaria root disease DRA, laminated root rot DRL, tomentosus root rot DRT, annosus root disease DRN, blackstain root disease DRB.	Signs are direct evidence of the pathogenic fungus including fruiting bodies, distinctive mycelium or rhizomorphs. Symptoms include foliar thinning or chlorosis, pronounced resin flow near the root collar, reduced recent leader growth, a distress cone crop, and wood decay or stain. Symptoms alone are not usually sufficient to identify root disease. Both signs and symptoms may be detected from old stumps, root balls, or other post-harvest remains.
		• Infected conifer found in plot. See Table Y for well-spaced tree net down calculation by layer.	All	armillaria root disease DRA.	Note: All conifer species are considered susceptible. Broadleaf species are considered not susceptible for survey purposes only.Example: How to apply net down for root disease.If root disease-infected trees are found in the plot: 1.Determine the number of healthy, well-spaced trees in each layer using the prescribed minimum inter-tree distance (MITD) (e. g., 3 layer 1, 3 layer 3 and 4 layer 4 = 10 healthy, well-spaced) ignoring the M-value; 2.Count the number of infected trees (e. g., 1 layer 1 tree and 1 layer 3 tree); 3.Working from the uppermost layer down, apply the multiplier in Table Y to each lower layer. Subtract the resultant from each layer in turn, for susceptible species only (e. g., if all trees are susceptible, 1 infected layer 1 tree removes 1 healthy, well-spaced layer 1 tree plus 3 layer 3 trees plus 4 layer 4 trees). Note the effects are cumulative, not exclusive and lower layers do not effect higher layers; 4.Calculate the remaining healthy, well-spaced trees once all removals due to infected trees are completed (e. g. 10 – 8 = 2). The result is the maximum number of free growing trees tallied for the plot.
		• Infected conifer found in plot. See Table Y for well-spaced tree net down calculation.	Fd, Sx, Se Lw, Ba, Bg	laminated root rot DRL.	Note: Bl, Cw, Pl, Pw, Py and broadleaf species are considered not susceptible for survey purposes only.
		• Infected conifer or stump found in plot. See Table Y for well-spaced tree net down calculation.	Se, Sx, Pl	tomentosus root rot DRT.	Note: Ba, Bl, Cw, Fd, Pw, Py and broadleaf species are considered not susceptible for survey purposes only.
		• Infected conifer found in plot. See Table Y for well-spaced tree net down calculation.	Ba, Hw, Ss	annosus root rot DRN.	Note: Bg, Bl, Cw, Cy, Fd, Hm, Pl, Pw, Py, Sx and broadleaf species are considered not susceptible for survey purposes only.

Table Y Deductions from number of acceptable well spaced uninfected stems for trees infected by root disease in unevenaged stand layers.

Infected trees or stumps	Multiplier to determine number of trees to be deducted from:			
	Layer 1	Layer 2	Layer 3	Layer 4
Layer 1	1	2	3	4
Layer 2	-	2	2	3
Layer 3	-	-	2	2
Layer 4	-	-	-	2

Location of damage	Type of damage	Tree being assessed is UNACCEPTABLE if:	Host species	Possible damage agents & damage agent codes	Comments
Stem	WOUND (including sunscald and girdling)	• Refer to table X for layers 1-4.	All	squirrel AS, beaver AZ, vole AV, porcupine AP, hare AH, Warrens root collar weevil IWW, fire NB, windthrow NW, sunscald NZ, logging TL, mechanical TT.	A **wound** is defined as an injury in which the cambium is dead (e.g., sunscald) or completely removed from the tree exposing the sapwood. Measure the wound across the widest point of the exposed sapwood (or dead cambium when the tree is damaged by sunscald).Healed over wounds (=scars) are acceptable.
Stem	DECAY	• Any pathological indicator(s) are present. This may include **conk, blind conk, frost crack, or rotten branches.**	All	various decay fungi DD.	
Stem	DEFORMATION (including crook, fork, and dead or broken top)	• These criteria apply to layer 1& 2 trees only. For layers 3 & 4 use the even-aged damage criteria. •A crook displaces the portion of the stem above the defect by >50% from the line of growth formed by the stem below the point of defect in the bottom 2/3rds of the stem only. •A fork occurs above stump height in the bottom 2/3rds of the stem only. •A dead or broken top extends more than 20% of the stem length or the live crown is removed.	All	defoliators ID, white pine (spruce) weevil IWS, lodgepole pine terminal weevil IWP, cattle AC, deer AD, elk AE, moose AM, frost NG, hail NH, snow NY, drought ND, logging TL, mechanical TT, Dwarf mistletoes (see below).	
Stem	INFECTION (including cankers, and galls	• Any infection occurs on the stem.	All	comandra blister rust DSC, stalactiform blister rust DSS, white pine blister rust DSB, western gall rust DSG, atropellis canker DSA, exploding canker DTNT, Dwarf mistletoes (see below).	Note: Wounds caused by rodent feeding around rust cankers should have stem rust recorded as the causal agent.
Branch	INFECTION (cankers)	• These criteria apply to layer 2, 3 & 4 trees only. An infection occurs on a live branch less than 60 cm from the stem.	Pw, Pl, Py	white pine blister rust DSB, comandra blister rust DSC, stalactiform blister rust DSS.	Branch infections on layer 1 trees can be ignored.
Branch	GALLS	• These criteria apply to layer 2, 3 & 4 trees only. A gall rust infection occurs on a live branch less than 5 cm from the stem.	Pl, Py	western gall rust DSG.	Branch infections on layer 1 trees can be ignored.

Taken from Sections 21 and26 FS 660

http://www.for.gov.bc.ca/hfp/silviculture/Silviculture_Surveys.html,

http://www.for.gov.bc.ca/isb/forms/lib/FS660.PDF