



Lillooet TSA 2006 Forest Stewardship Plan

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1 INTERPRETATION

(1) In this FSP:

“**FDU**” means the forest development units under this FSP;

“**FPPR**” means the Forest and Range Practices Regulation (B.C. Reg. 14/2004);

“**FRPA**” means the *Forest and Range Practices Act*;

“**FSP**” means this Forest Stewardship Plan;

“**mature timber harvesting landbase**” means the mature timber harvesting landbase in the FDU as defined by applying 80 yr age factor to the Lillooet Timber Supply Review Timber Harvest Land Base within the Lillooet TSA;

“**non-contributing land base**” means all land within the Lillooet Timber Supply Area not contributing to timber supply area harvests as described in the Timber Supply Review 3 for the Lillooet Timber Supply Area (March 2004);

“**Susceptible Pine Stands**” means, for the purpose of this document, stands within the FDU that are susceptible to Mountain Pine Beetle characterized by: Polygons of Forest Cover Lodgepole Pine content of greater than 59% and greater than 40 yrs age and where incidence of beetle is in or adjacent to the stand, and within the Bark Beetle Management zones as identified on the map.

“**TSA**” means timber supply area;

“**TSM**” means the Timber Sales Manager for the BC Timber Sales Kamloops Business Area.

(2) The Term of this FSP is 5 years.

(3) This FSP applies to B C Timber Sales and Forest License A 18703 within the Lillooet TSA. It does not apply to activities identified in Section 2 (1) unless the funding for those activities is provided as set out in Section 96 of the regulation, or to 2 (3) of the FPPR

2 FOREST DEVELOPMENT UNITS

The are 17 FDU's that are indicated on the Cascades Forest District Lillooet TSA 2006 Forest Stewardship Plan Key Map. They are similar to the Landscape units except in 2 ways. First the Bridge River FDU excludes some of the non-forested West end of the landscape unit. Second, as The Stein is a park, the bulk the Stein is not included, rather there is a 0.5 km buffer added to the adjacent FDU's from the Stein, and the Visual polygons at the mouth of the Stein are included. There is no intention to propose development in these areas, rather to track resource values.

3 AREAS WITHIN FDU'S THAT ARE SUBJECT TO (FRPA s. 197 (7))

All Timber Sales Licenses, cutting permits and road permits in effect on the beginning of the term of this FSP will continue to operate under the *Forest Practice Code Act* and the associated regulations and are not subject to this FSP.

4 FDP BLOCKS AND ROADS WITH ASSESSMENTS WITHOUT ASSESSMENTS AND ROADS AND BLOCKS UNDER PERMIT

The FRPA 196 (1), 196 (2), cutblocks and roads under permit pursuant to FPPR 14 (1)(c) and 14 (3)(j),(k) respectively are identified on the maps.

5 RESULTS OR STRATEGIES

5.1 ORDER ESTABLISHING PROVINCIAL NON-SPATIAL OLD GROWTH OBJECTIVES

(1) To meet the intent of the Non-Spatial Old Growth Order that came into effect June 30th, 2004 the TSM will carry out or authorize primary forest activities within a cutblock only

(a) if the design of the cutblock is consistent with March 31 2006 spatial OGMA polygons of Old Growth Management Areas, as amended through mutual agreement with ILMB to remove areas overlapping identified blocks and roads.

Or

(b) under any of the following circumstances relative to the OGMA identified in (a):

- (i) incursion is necessary for range development, road system development, road maintenance, or safety;
- (ii) for the purpose of administrative OGMA boundary changes of up to 50 m that will not compromise the long term management of the OGMA;
- (iii) the harvesting is necessary to preserve the timber harvesting opportunities in areas adjacent to the OGMA and the amount of harvesting within the OGMA is restricted to the least amount necessary to facilitate harvesting within the adjacent areas;
- (iv) trees within the OGMA pose a significant forest health risk to forests outside of the OGMA.

(2) If harvesting within an OGMA under paragraph (1)(b) results in

(a) harvesting of greater than 10 ha or 10% of the OGMA (which ever less), and

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(b) the OGMA no longer demonstrating consistency with old growth seral conditions, the TSM will:

- (a) identify a replacement, of an age per Section A 2 or Section A 6 of the Provincial Non Spatial Old Growth Order, and of the Same Biogeoclimatic Ecological Classification and Landscape Unit from which the OGMA occurs, prior to the commencement of harvest within that OGMA, and
- (b) forward the replacement area to the responsible Government Agency.

5.2 SCENIC AREAS WITH ESTABLISHED VISUAL QUALITY OBJECTIVES

“Visually Effective Green-up term” for the purpose of this clause means the time lapsed between harvest and the temporal stage where vegetative regeneration is perceived as being a newly established forest as represented by;

- (a) openings where greater than 75% of the net area stocked to the applicable stocking standard with commercially viable trees greater than 1.3 meters and where tree height of the top 100 trees is greater than 3 meters, or
- (b) openings where 40% or more of the basal area of the pre-disturbance stand remaining, or
- (c) openings where tree height and density are not measured and a qualified professional determines that Visual Effective Green-up has occurred using the Visual Quality Effectiveness Evaluation form FS 1239 HFP 04/11 Draft.

The TSM will carry out or authorize timber harvesting or road construction only if the harvesting or construction is consistent with any applicable visual quality objective

- (a) unless the timber harvesting or road construction is required to
 - (i) ensure safety in adjacent areas or the safety of users of adjacent roads,
 - (ii) salvage timber of up to 2,000 m³,
 - (iii) remove wind-thrown or fire damaged timber and/or timber under attack from forest pests,
 - (iv) remove lodgepole pine in **Susceptible Pine Stands**, or
 - (v) provide the only practicable access to adjacent areas to preserve the timber harvesting opportunities,
- (b) Where timber harvesting or road construction is carried out under 5.2 (a) (ii) (iii), (iv) or (v) It will be carried out in accordance visual landscape design principles of Line Force, Natural Character, Edge Treatments, and Leave Patterns identified in the Jan 2001 Visual Assessment guidebook to the extent practicable; with the intent to achieve the applicable visual quality objective following the **Visually Effective Greened up term**..

5.3 SOILS (FPPR S. 5)

If the TSM carries out or authorizes primary forest activities, the intended result or strategy for the objective set by government for soils that is set out in section 5 of the FPPR are sections 35 and 36 of the FPPR. With the following Exception

Section 35 (6) (c), as it applies to Section 35 (4) only, is modified as a strategy to read “return displaced surface soils, retrievable side-cast and berm materials to the extent practicable and necessary to establish and grow trees consistent with the stocking standards”..

5.4 WILDLIFE (FPPR S. 7)

5.4.1 Ungulate Winter Range

(1) In paragraph (2):

“Moose Management Units” means wetlands located within Moose Winter Range, as described in the Notice, that

- (a) are 200 m in length or greater than 1 ha in size, and
- (b) contain habitat features required by Moose;

“Notice” means the notice given under section 7 (2) of the FPPR, dated December 30, 2004, and entitled “Notice – Indicators of the Amount, Distribution and Attributes of Wildlife Habitat Required for the Winter Survival of Ungulate Species in the Lillooet Timber Supply Area”;

“Snow Interception Cover” for the purpose of this FSP means:

- (a) for Mule Deer, Elk and Bighorn sheep, mature coniferous stands typically;
 - (i) comprised of >70% Douglas fir with a minimum age of 120,
 - (ii) for deep (comprised of ESSF and ICH) a crown closure equal to or greater than 46% (as identified in the forest cover attributes at the time of the design of the cutblock), and
 - (iii) for moderate (comprised of IDFdk1, IDFdk2, IDFdk3, IDFunk, MS) a crown closure equal to or greater than 36% (as identified in the forest cover attributes at the time of the design of the cutblock),
 - (iv) for shallow (comprised of PP, IDFxh2) a crown closure equal to or greater than 0% (as identified in the forest cover attributes at the time of the design of the cutblock),
- (b) for Mountain Goat, mature coniferous forest with preference given to Douglas-fir leading stands equal to or greater than 12 m in height with a crown closure class equal to or greater than 7.

(2) If the TSM carries out or authorizes primary forest activities within an area in the FDU that is subject to the Notice, the TSM will

- (a) for Mule Deer, Elk and Bighorn sheep up to the applicable amount specified in the Notice

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- (i) Develop Ungulate Winter Range planning cells, with the cells being located in the contributing land base if there is insufficient habitat on the Non-contributing Land Base or it is impracticable to identify the non-contributing landbase, and
- (ii) Subject to (iii) within each planning cell, not carry out forest activities that cause the amount of snow interception cover to drop below
 - (A) 33% **Snow Interception Cover** in the Moderate Snowpack Zone which is comprised of the IDFdk1, IDFdk2, IDFdk3, IDFunk, and MS Biogeoclimatic zones, and
 - (B) 15% of the **Snow Interception Cover** in the Shallow Snowpack Zone which is comprised of the BG, PP, IDFxh2 Biogeoclimatic zones, and
 - (C) 40% of the Snow Interception Cover in the Deep Zone which is comprised of ESSF and ICH Biogeoclimatic Zones
- (iii) Where the TSM identifies that:
 - (A) The area identified in (ii) is not available or
 - (B) timber harvesting or road construction is required to
 - (I) ensure safety in adjacent areas or the safety of users of adjacent roads,
 - (II) salvage timber of up to 2 000 m3,
 - (III) remove wind-thrown timber and/or timber under attack from forest pests,
 - (IV) remove lodgepole pine from **susceptible pine stands**, or
 - (V) provide the only practicable access to adjacent areas to preserve the timber harvesting opportunities,

The TSM will substitute available area that meet the following criteria as surrogate or recruitment Snow interception cover in accordance with the Step Down Table below

Step Down when Snow Interception Cover attributes are not available

Rank Order	Species	Age (years) (FIP age)	Canopy Closure (%) (FIP crown closure)
1	Douglas-fir > 70%	> 81	> 35
2	Douglas-fir > 50%	> 81	> 35
3	Douglas-fir > 50%	> 81	> 15
4	Douglas-fir > 30%	> 81	> 15

- (b) for moose, up to the applicable amount specified in the Notice,

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- (i) manage moose thermal cover and moose forage by retaining in each **Moose Management Unit** a minimum of 67% of the forested area that is a minimum of 5 m in height if there is insufficient habitat on the Non-contributing Land Base or it is impracticable to identify the non-contributing landbase,
 - (ii) Subject to (b) (iii) (v), retain existing visual screening consisting of
 - (A) vegetation that is a minimum of 4 m in height, or
 - (B) topography providing visual obstructionthat is located within a **Moose Management Unit** and adjacent to any road that is a permanent access structure within the 100 m moose management unit,
 - (iii) retain or promote Moose Forage during silviculture activities unless it will impede the ability of a stand to reach free growing status, and
 - (iv) consider **Moose Management Units** when establishing Wildlife Tree Retention,
 - (v) (i) or (ii) does not apply where timber harvesting or road construction is required to
 - (A) ensure safety in adjacent areas or the safety of users of adjacent roads,
 - (B) salvage timber of up to 2 000 m³,
 - (C) remove wind-thrown timber and/or timber under attack, or has been impacted by forest pests or damaged by fire,
 - (D) remove lodgepole pine from **Susceptible Pine Stands**, or
 - (E) provide the only practicable access to adjacent areas to preserve the timber harvesting opportunities,
 - (vi) where (i) or (ii) do not apply, except for (v) (A), a qualified professional will be engaged to identify mitigative impacts to cover and forage attributes listed in the strategy
- (c) for Mountain Goat,
- (i) within 200 m of escape terrain (including rock outcrops or cliffs with slopes >55% and <175%), utilize existing Old Growth Management Areas, Wildlife Tree Retention or other reserves established to protect additional resource values and inoperable areas to retain, if there is insufficient habitat on the Non-contributing Land Base or it is impracticable to identify the non-contributing landbase:
 - (A) a minimum of 67% of the forested area in Moderate or Late Seral (i.e. greater than 40 years of age or greater than 11 m in height), and
 - (B) a minimum of 50% basal area of available Snow Interception Cover, and
 - (ii) in occupied Mountain Goat Winter Range, locate and design cutblocks and roads to conserve mountain goat habitat.
 - (iii) (i) or (ii) do not apply where timber harvesting or road construction is required to

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- (A) ensure safety in adjacent areas or the safety of users of adjacent roads,
 - (B) salvage timber of up to 2,000 m³,
 - (C) remove wind-thrown timber and/or timber under attack, or has been impacted by forest pests or damaged by fire,
 - (D) remove lodgepole pine that is at risk from the mountain pine beetle, or
 - (E) provide the only practicable access to adjacent areas to preserve the timber harvesting opportunities,
- (iv) where (i) or (ii) do not apply, except in (iii) (A), a qualified professional will mitigate impacts to cover and forage attributes listed in the strategy

5.4.2 Species at Risk

- (1) In paragraph (2):

“Notice” means the notice given under section 7 (2) of the FPPR, dated December 30, 2004, and entitled “Notice – Indicators of the Amount, Distribution and Attributes of Wildlife Habitat Required for the Survival of Species at Risk in the Cascades Forest District”;

“specified applicable habitat” means

- (a) for Coastal Tailed Frog, 1313 ha (47% of the total amount specified in the Notice), with up to 558 ha in the mature timber harvesting landbase (47% of the total amount specified in the Notice if there is insufficient habitat on the Non-contributing Land Base or it is impracticable to identify the non-contributing landbase,
- (b) for “Great Basin” Gopher Snake, 1640 ha (41% of the total amount specified in the Notice), with 0 ha in the mature timber harvesting landbase,
- (c) for Flammulated Owl, 446 ha (11% of the total amount specified in the Notice), with up to 347 ha in the mature timber harvesting landbase (11% of the total amount specified in the Notice), if there is insufficient habitat on the Non-contributing Land Base, if there is insufficient habitat on the Non-contributing Land Base or it is impracticable to identify the non-contributing landbase
- (d) for “Interior” Western Screech-Owl, 31 ha (71% of the total amount specified in the Notice), with up to 16 ha in the mature timber harvesting landbase (71% of the total amount specified in the Notice), if there is insufficient habitat on the Non-contributing Land Base or it is impracticable to identify the non-contributing landbase
- (e) for Spotted Owl, 5,000 ha, with up to 5 000 ha in the mature timber harvesting if there is insufficient habitat on the Non-contributing Land Base or it is impracticable to identify the non-contributing landbase
- (f) for Spotted Bat, 9 ha (57% of the total amount specified in the Notice), with up to 2 ha in the mature timber harvesting landbase (57% of the total amount specified in

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the Notice), if there is insufficient habitat on the Non-contributing Land Base or it is impracticable to identify the non-contributing landbase, and

- (g) for Grizzly Bear, an amount of area equal to a mature timber harvesting landbase impact of 8,000 ha. if there is insufficient habitat on the Non-contributing Land Base or it is impracticable to identify the non-contributing landbase
- (2) If the TSM carries out or authorizes primary forest activities within an area in the FDU that is subject to the Notice, the TSM will
- (a) for Coastal Tailed Frog, until the specified applicable habitat is met
 - (i) assess potential habitat for the presence of this species;
 - (ii) consult the General Wildlife Measures for direction on activities in approved Coastal Tailed Frog Wildlife Habitat Areas;
 - (iii) locate and design cutblocks and roads so as to conserve occupied habitat in accordance with the Coastal Tailed Frog Accounts and Measures for Managing Identified Wildlife (Identified Wildlife Management Strategy Version 2004) and/or other pertinent information; and
 - (iv) consider Coastal Tailed Frog Known Locations when establishing Wildlife Tree Retention
 - (b) for “Great Basin” Gopher Snake, until the specified applicable habitat is met, if there is insufficient habitat on the Non-contributing Land Base or it is impracticable to identify the non-contributing landbase
 - (i) assess potential habitat for the presence of this species;
 - (ii) consult the General Wildlife Measures for direction on activities in approved “Great Basin” Gopher Snake Wildlife Habitat Areas;
 - (iii) locate and design cutblocks and roads so as to conserve occupied habitat in accordance with the “Great Basin” Gopher Snake *Accounts and Measures for Managing Identified Wildlife* (Identified Wildlife Management Strategy Version 2004), and
 - (iv) consider “Great Basin” Gopher Snake Known Locations when establishing Wildlife Tree Retention,
 - (c) for Flammulated Owl, until the specified applicable habitat is met
 - (i) assess potential habitat for the presence of this species;
 - (ii) locate and design cutblocks roads so as to conserve occupied Flammulated Owl in accordance with the Flammulated Owl Accounts and Measures for Managing Identified Wildlife (Identified Wildlife Management Strategy Version 2004) and/or other pertinent information; and
 - (iii) consider Flammulated Owl Known Locations when establishing Wildlife Tree Retention,

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- (d) for “Interior” Western Screech-Owl, until the specified applicable habitat is met, if there is insufficient habitat on the Non-contributing Land Base or it is impracticable to identify the non-contributing landbase
 - (i) assess potential habitat for the presence of this species;
 - (i) locate and design cutblocks and roads so as to conserve the occupied “Interior” Western Screech-Owl habitat in accordance with the “Interior” Western Screech-Owl Accounts and Measures for Managing Identified Wildlife (Identified Wildlife Management Strategy Version 2004) and/or other pertinent information; and
 - (ii) consider “Interior” Western Screech-Owl Known Locations when establishing Wildlife Tree Retention,
- (e) for Spotted Owl, until the specified applicable habitat is met, if there is insufficient habitat on the Non-contributing Land Base or it is impracticable to identify the non-contributing landbase
 - (i) locate and design cutblocks and roads that are in areas of draft Spotted Owl Long Term Activity Centres (“**Draft Spotted Owl Long Term Activity Centres**” means 7 areas in the Lillooet TSA (Carpenter Road South, Lost Valley Creek, Enterprise, Copper, Boulder, Nesikep and Kwoiek) that have been identified as potential home ranges for Spotted Owl breeding pairs) so as to conserve the habitat in accordance with the 1997 Spotted Owl Management Plan, and
 - (ii) not locate blocks or roads in the Enterprise, Copper or Boulder LTAC for the period ending 2011
 - (iii) consider Spotted Owl Known Locations when establishing Wildlife Tree Retention,
- (f) for Spotted Bat, until the specified applicable habitat is met, if there is insufficient habitat on the Non-contributing Land Base or it is impracticable to identify the non-contributing landbase
 - (i) locate and design cutblocks and roads so as to conserve the occupied Spotted Bat habitat in accordance with the Spotted Bat *Accounts and Measures for Managing Identified Wildlife* (Identified Wildlife Management Strategy Version 2004), and
 - (ii) consider Spotted Bat Known Locations when establishing Wildlife Tree Retention, and
- (g) for Grizzly Bear, until the specified applicable habitat is met, if there is insufficient habitat on the Non-contributing Land Base or it is impracticable to identify the non-contributing landbase
 - (i) locate and design cutblocks and roads that are in the 19 Grizzly Bear Watersheds identified by the Ministry of Environment in the Lillooet TSA so as to

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- (A) identify areas of important habitat by attributes identified in Schedule 1 of the Notice, and known important habitat features (denning sites), and
 - (B) conserve the habitat in accordance with the Grizzly Bear *Accounts and Measures for Managing Identified Wildlife* (Identified Wildlife Management Strategy Version 2004) and having regard to the Draft Lillooet Land and Resource Management Plan (July 22, 2004), Section 4.3.3, Objectives 4, 5 and 6, and
 - (C) manage access in accordance with the Identified Wildlife Provisions of the General Wildlife Measures *Accounts and Measures for Managing Identified Wildlife* (Identified Wildlife Management Strategy Version 2004), and
- (ii) consider Grizzly Bear Habitat when establishing Wildlife Tree Retention.

5.5 WATER, FISH, WILDLIFE & BIODIVERSITY WITHIN RIPARIAN AREAS (FPPR S. 8)

In relation to the objective set by government for water, fish, wildlife and biodiversity set out in section 8 of the FPPR, the intended results or strategies that apply to primary forest activities carried out or authorized by the TSM are:

- (a) the requirements of section 47(4) to (6), 48(3) to (5), 49 (2), 49(3), 50(1), 51(3), 52(2), 53 of the FPPR, and
- (b) to retain at minimum an average basal area, distributed or grouped within the riparian management zone of a cutblock, or;
to retain at minimum an average basal area distributed or grouped within the riparian management zone associated with the length of the stream that includes the cutblock, up to 500m up-stream and 500m down-stream of the cutblock, aligned with the stream length, with intent to provide reasonable alternate;

That are equivalent to the percent of the pre-harvest basal area within that management zone in accordance with the following:

- (i) for S1-A, S1-B, S2, S3; 20%
- (ii) for S-4, S-5 10%
- (iii) for S-6 0%

- (c) to retain at minimum an average basal area, distributed or grouped within the riparian management zone of a cutblock, or;
to retain at minimum an average basal area distributed or grouped within the riparian management area of the entire wetland or lake;

That are equivalent to the percent of the pre-harvest basal area within the management zone in accordance with the following:

- (i) for W1, W2, W3, W4 and W5 wetlands, 10%
- (ii) for L2, L3 and L4 lakes, 10%

- (d) as per 12.3 (5) The TSM is exempt from FPPR 51(1); The following strategy replaces the FPPR 51 (1):

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The TSM will not cut modify or remove trees from the riparian reserve zone, except for the following purposes

- (i) to ensure safety in adjacent areas or the safety of users of adjacent roads,
- (ii) within 5 m of either side of a skid crossing,
- (iii) to remove wind-thrown or fire damaged timber and/or timber under attack from forest pests,
- (iv) to remove lodgepole pine in **Susceptible Pine Stands**,
- (v) to provide the only practicable access to adjacent areas to preserve the timber harvesting opportunities,
- (vi) to fell or modify trees for the purpose of establishing or maintaining an interpretative site, facility or trail,
- (vii) to facilitate cable or aerial yarding systems for areas being harvested,
- (viii) to top, cut or prune a tree that is not wind firm
- (ix) to construct a stream crossing

Where (d) (ii), (d) (iii), (d) (iv) (d) (v), (d) (vii) apply, the riparian management and reserve area will be increased proportionately in adjacent areas and/or the basal area in the adjacent areas will be increased, where practicable, to account for loss of basal or riparian areas.

5.6 WATER IN COMMUNITY WATERSHEDS (FPPR S. 8.2)

“Equivalent Clearcut Area” (ECA) means the area that has been clearcut, with a reduction factor to account for the hydrological recovery due to forest regeneration

“Qualified Professional” is a professional as described in FPPR Section 22.1 (1) (a) (b) (c), (d) that has sufficient experience and training to allow them to practice in relation to the matter subject of this FSP Section 5.6

The TSM will carry out or authorize primary forest activities within a community watershed to which the objective set by government in section 8.2 of the FPPR applies, only if

- (a) the cutblocks and roads are located, designed and managed so as to prevent the cumulative hydrological effects of the forest activities from resulting in any material adverse effect described in section 8.2 of the FPPR, by:
 - (i) conducting assessments by qualified professionals where ECA exceeds 30% for the watershed or sub-basin affected by the proposed development,
 - (ii) following the recommendations of the assessment in primary forest activities and timing that will not result in significant risks of adverse affect, and
- (b) the primary forest activities conform with the requirements of sections 59 to 61 of the FPPR.

5.7 WILDLIFE & BIODIVERSITY – LANDSCAPE LEVEL (FPPR S. 9)

If the TSM carries out or authorizes primary forest activities, the primary forest activities will, subject to (1) conform with Sections 64 and 65 of the FPPR.

Further to FPPR Section 64 (2) (a) (i) and 65 (2) (b), Sub section 64 (1) does not apply where the timber harvesting is being carried out on the block to address **Susceptible Pine Stands** where the TSM ensures, to the extent practicable that the structural characteristics of the cutblock after timber harvesting has been substantially completed resemble an opening that would result from a natural disturbance.

5.8 WILDLIFE & BIODIVERSITY – STAND LEVEL (FPPR S. 9.1)

- (a) If the TSM carries out or authorizes timber harvesting in one or more cutblocks in a landscape unit during any 12 month period beginning on April 1 of any calendar year, the TSM will ensure that:
 - (i) at the end of the 12 month period, for the blocks authorized, the minimum percentage of Wildlife Tree Retention area related to the total area of those blocks is a minimum of 7% for the total area of the cutblocks,
 - (ii) and 3.5% for any individual cutblock authorized in the 12 month period
- (b) During timber development the TSM will develop Wildlife Tree Retention Areas as determined through an evaluation performed by a qualified person,
- (c) Wildlife Tree Retention Areas for the purpose of (a) a wildlife retention area can relate to more than one cutblock, and may include contribution from suitable dispersed trees or groups of trees according to the relative basal area represented by the retention trees compared to the pre-disturbance or typical mature forest cover basal area. Where available and practicable BCTS will retain area within cutblocks such that there is no more than 500 m from other areas of cover of at least 0.25 hectares in size whether inside or outside the cutblock
- (d) If the TSM carries out or authorizes primary forest activities that impact WTP areas associated with another cutblock, then prior to carrying out those activities the TSM will identify replacement wildlife tree retention areas that are at least equivalent to the portion of the wildlife tree area retention area from which the timber is being harvested, and associate this new area with that cutblock.
- (e) Subject to (d) the primary forest activities will conform to section 67 of the FPPR.

5.9 VISUAL QUALITY, SCENIC AREAS WITHOUT ESTABLISHED OBJECTIVES (FPPR S. 9.2)

“Visually Effective Green-up term ” for the purpose of this clause means the time lapsed between harvest and the temporal stage where vegetative regeneration is perceived as being a newly established forest as represented by;

- (a) openings where greater than 75% of the net area stocked to the applicable stocking standard with commercially viable trees greater than 1.3 meters and where tree height of the top 100 trees is greater than 3 meters, or

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- (b) openings where 40% or more of the basal area of the pre-disturbance stand remaining, or
- (c) openings where tree height and density are not measured and a qualified professional determines that Visual Effective Green-up has occurred using the Visual Quality Effectiveness Evaluation form FS 1239 HFP 04/11 Draft.

The TSM will carry out or authorize timber harvesting or road construction only if the harvesting or construction is consistent with any applicable visual sensitivity class.

- (a) unless the timber harvesting or road construction is required to
 - (i) ensure safety in adjacent areas or the safety of users of adjacent roads,
 - (ii) salvage timber of up to 2 000 m3,
 - (iii) remove wind-thrown or fire damaged timber and/or timber under attack from forest pests,
 - (iv) remove lodgepole pine in **Susceptible Pine Stands**, or
 - (v) provide the only practicable access to adjacent areas to preserve the timber harvesting opportunities,
- (b) Where timber harvesting or road construction is carried out under 5.2 (a) (ii) (iii), (iv) or (v) It will be carried out in accordance visual landscape design principles of Line Force, Natural Character, Edge Treatments, and Leave Patterns identified in the Jan 2001 Visual Assessment guidebook to the extent practicable; with the intent to achieve the applicable visual sensitivity class following the **Visually Effective Greened up term**.

5.10 CULTURAL HERITAGE RESOURCES (FPPR S. 10)

“**Evaluation** ” means an assessment of the potential for impact of proposed development projects which will disturb or alter the landscape, including making reasonable efforts to share information with First Nations, whether the assessment consists of a site visit or not, and based on information available to BCTS

In relation to the objective set by government for cultural heritage resources set out in section 10 of the FPPR, the results or strategies that apply to each FDU are

The TSM will:

- (a) follow any development specific or general protocols developed by British Columbia Timber Sales, in conjunction with the aboriginal group or individual in accordance with their traditional use areas or
- (b) in the absence of a general or specific protocol,
 - (i) provide the general location of cut blocks and roads outside cutblocks in the form of a reference map to the Ministry of Forests and Range and the aboriginal group at least a 60 day period before authorizing cutting or road building for the area proposed for development

- (ii) before The TSM carries out or authorizes timber harvesting or road construction, the TSM will ensure that an evaluation in respect of cultural heritage resources to which the objective applies is conducted within areas
 - (A) that contain significant cultural heritage resources previously identified to BCTS,
 - (B) that are identified as having “high potential” within an established archaeological predictive map or model for the area, or
 - (C) for which development-specific information regarding applicable cultural heritage resources is brought forward or made available to the TSM by an aboriginal people or government employee,
- (iii) if the TSM receives site specific information concerning a cultural heritage resource to which the objective applies that is in or adjacent to a proposed cutblock or road, prior to the end of the 60 day period referred to in (i), the TSM will
 - (A) record the location of the cultural heritage resource,
 - (B) evaluate the direct impact of the road or cutblock on the cultural heritage resource,
 - (C) modify the design of the cutblock or road to mitigate impact as practicable such that the cultural heritage resource is conserved, or if necessary protected, considering
 - (I) the relative value or importance of the cultural heritage resource to a traditional use by an aboriginal people,
 - (II) the relative abundance or scarcity of the cultural heritage resource, and
 - (III) the historical extent of the traditional use of the cultural heritage resource, and
 - (D) communicate the mitigative action to the person that provided the site-specific information,
- (iv) subject to paragraph (v), primary forest activities will be consistent with the recommendations given in the evaluation referred to in paragraph (iii) and any outcomes described in paragraph (iii), and
- (v) if a previously unidentified cultural heritage resource to which the objective applies is encountered during harvesting, road construction or mechanical site preparation, operations will
 - (A) cease to the extent necessary to protect the feature, until an evaluation can be carried out, and
 - (B) continue in a manner that is consistent with the recommendations given in the evaluation.

6 MEASURES

6.1 PREVENTING THE INTRODUCTION OR SPREAD OF INVASIVE PLANTS (FRPA 47)

High Risk Invasive Plants for the purpose of this FSP are: Marsh Plume Thistle (*Cirsium palustre*), Rush Skeleton Weed (*Chondrilla juncea*), Common Bugloss (*Anchusa officinalis*), Plumeless Thistle (*Carduus acanthoides*), Hoary Alysum (*Berteroa incana*), Field Scabious (*Knautia arvensis*) and Leafy Spurge (*Euphorbia esula*).

If the TSM carries out or authorizes primary forest activities, the measures for the purposes of section 47 of the Act are;

- (a) Outside the Net Area to be reforested (NAR), for Permanent Access Structure, Temporary Access Structure, and Excavated or Bladed Trails; within 2 spring seasons of completing timber harvesting or road construction on an area, the TSM will cause to have seeded with a blend of certified seed, mineral soil exposed as a result of the those harvest and construction activities authorized under this FSP except for active running surfaces of roads.
- (b) Outside the NAR, for Permanent Access Structure, Temporary Access Structure, and Excavated or Bladed Trails ; within 1 year of deactivation of a road or landing, or deactivation of a bladed trail in a community watershed, TSM will cause to have seeded with a blend of certified seed, mineral soil exposed as a result of the those harvest and construction activities authorized under this FSP.
- (c) within 1 year of cessation of use of an exposed borrow or gravel pit, the TSM will cause to have seeded exposed areas.
- (d) in areas identified by Ministry of Forests Operations Division, or through information gathered by BCTS, as high risk as indicated by invasive plant presence and access use frequency, BCTS will employ deactivation measures, designed to restrict vehicular traffic, upon cessation of road use.
- (e) for areas within the NAR, and within 500 m of known occurrence of the **high risk invasive Plants**
 - (i) The TSM will cause to have seeded with a blend of certified seed, contiguous areas of exposed mineral soil greater than 0.1ha resulting from harvest, construction and deactivation activities authorized under this FSP,.
 - (ii) The TSM will cause to have seeded with a blend of certified seed, contiguous areas of exposed mineral soil greater than 0.1ha disturbed by silviculture activities authorized under this FSP, giving consideration for reforestation objectives.
 - (iii) The TSM will cause to have visually inspected, and any visual evidence of those plants removed from; harvest, construction and site preparation equipment, prior to moving the equipment from the site.
- (f) areas referred to in subsection (a), (b), (c) and (e) (i) will be monitored through sampling, the growing season following seeding and, where evidence of vegetation establishment is not observed, action will be taken to establish vegetation with intent to meet the objective.
- (g) record and report observed new occurrence of invasive plant infestations on BCTS responsibility roads to the MoFR within one year of discovery

6.2 MITIGATING THE LOSS OF NATURAL RANGE BARRIERS (FRPA 48)

The measures in respect of section 48 of the Act are that the TSM will:

- (a) inform each the affected holders of agreements under the *Range Act* of the general area of planned harvest and road construction within or adjacent to their agreement;

- (b) where the affected holder of an agreement under the *Range Act* identifies a range barrier, and if requested by BCTS, demonstrates that the planned harvest and road construction will remove or render ineffective a significant vegetative or physical natural range barrier between licensed range users, or pastures that he will rely on to control stock movement, the TSM will:
 - (i) design cutblocks and roads to mitigate the effect of the removal or ineffectiveness, and
 - (ii) carry out or authorize forest practices only if the forest practices are consistent with the mitigative design for the cutblock or road referred to in subparagraph (i),
 - (iii) or mitigate the effect of natural range barrier removal by some other means

7 OBJECTIVES FOR RECREATION TRAILS, SITES AND INTERPRETIVE FOREST SITES

Although there are trails and sites in the Lillooet TSA that have been established, there are no Objectives established. No Result or strategy is required.

8 STOCKING REQUIREMENTS

- (1) Section 44 (1) of the FPPR applies in all situations or circumstances under this FSP where a free growing stand is required to be established under section 29 of the FRPA.
- (2) Appendix B specifies the regeneration date, free growing height and stocking standards for the situations or circumstances where section 44 (1) of the FPPR applies.
- (3) If the TSM carries out or authorizes harvesting of special forest products, intermediate cuts or commercial thinning from an area, the stocking standards in Appendix B 2 will be maintained on the area for twelve months following the completion of the harvesting.

9 APPENDICES

APPENDIX A - STOCKING STANDARDS

GENERAL STANDARDS

1 Coniferous stocking standards

For the purposes of Stocking and Free-Growing surveys, tree acceptability and damage criteria, for both a) single layer and b) multi-layer, will be based on the Establishment to Free Growing Guidebook: Kamloops Forest Region, May 2000 – Version 2.2 (ETFG), or equivalent future guidelines.

a) Single layer

Except as noted below in, “VARIATIONS TO GENERAL STANDARDS”, the coniferous stocking standards in Appendix B-1, apply to all blocks being managed as single layer coniferous stands.

b) Multi-layer

Except as noted below in, “VARIATIONS TO GENERAL STANDARDS”, the multi-layer stocking standards in Appendix B-2 apply to all blocks that are being managed as multi-layer coniferous stands. The preferred and acceptable species to be retained are noted in the coniferous stocking standards in Appendix B-1.

2 Minimum Inter-tree Distance

The Site plan may specify, on a standard unit basis, a reduction in the minimum inter-tree distance to 1.6 meters from the 2 meters stated in the Stocking Standards (Appendix B-1) if the standard unit exhibits the following characteristics, as per the Establishment to Free Growing Guidebook: Kamloops Forest Region – Version 2.2 May 2000:

- Hygric or wetter sites
- Very rocky or shallow soils
- Areas with high potential for cattle congregation
- Sites where the number of wildlife trees being managed interferes with planting distribution that affects target densities
- Riparian areas with a high residual component
- Sites that are to be managed for root rot
- Partial cut areas with an abundance of residual regeneration
- Very harsh sites where protected microsites are critical (e.g. shaded areas, snow creep)

Minimum Inter-tree distance for Grizzly Bear Habitat

Where the Site Plan specifies cluster planting for the management of Grizzly Bear Habitat, the minimum inter-tree distance within the clump may be reduced to 1.0m. The site plan

will also specify a number of trees per cluster using a minimum of 10 trees and a maximum of 30 trees. Note the Stocking Standards in Appendix B-1.

3 Maximum Density

The maximum density for stands having a leading component of lodgepole pine (Pli), a minimum of 80% of the inventory label, will be 25,000 countable stems per hectare.

The maximum density of all other species will be 10,000 countable stems per hectare.

4 Additional criteria for stands containing white pine

Where white pine (Pw) is an acceptable species in the attached stocking standards, planted rust resistant stock will be considered preferred, to a maximum of 50% of the total preferred and acceptable well-spaced stems.

Where natural regeneration or non-rust resistant planted Pw comprise 5% or more of the stems required to achieve free growing numbers, the natural or non-resistant planted stems are to be pruned to a height of 1.3 m. Stems are to be pruned only after they have reached a height that will ensure no less than 30% live crown remains following pruning.

Where natural regeneration or non-rust resistant planted Pw comprise <5% of the stems required to achieve free growing numbers, then un-pruned Pw may be accepted as free growing stems.

VARIATIONS TO GENERAL STANDARDS

Despite sections 1 to 4 of this appendix, the TSM may apply the following stocking standards in the following circumstances;

Uneven aged minimum basal area to be retained

On areas being managed as uneven aged, the minimum basal area to be retained will be 40% of the total pre-harvest basal area

Regeneration date and free-growing date for coniferous stocking standards

A regeneration date of 4 years, as specified in Appendix B-1, may be extended to 7 years when natural ingress is deemed to be an appropriate regeneration method.

The earliest free growing date will be the date regeneration delay has been achieved plus five years for the Interior Douglas-fir (IDF), Montane Spruce (MS), Ponderosa Pine (PP), and Coastal Western Hemlock (CWH) zones, and the date regeneration delay has been met plus eight years for the Engelmann Spruce Sub-alpine Fir (ESSF) zone.

Riparian management considerations

Aspen, cottonwood, and birch as well as willow and alder within 5 meters of a temperature sensitive stream, or fish-bearing stream, are not considered brush competition when conducting a free growing survey.

Alternate Species and Root Rot

Where the Site Plan specifies that alternate species are required for the management of root rot, species shown as “tertiary” or “broadleaf” in Appendix B-1 may be considered as acceptable.

Tertiary Species

Where specified by the Site Plan, a species shown as tertiary in Appendix B-1 may be considered as acceptable if it is present in the pre-harvest stand, is expected to form a component of the free growing stand while meeting the healthy tree definition or is otherwise deemed appropriate by a RPF. When assessing the suitability of a tertiary species, the footnotes shown in Appendix B-3 are to be used as guidelines only.

The TSM will use the Biogeoclimatic zone spatial data, published April 2006 as provided by the Ministry of Forests and Range, and this information will be used for the term of the FSP. Where there is no guideline Stocking Standard listed in Appendix B-1 for new Biogeoclimatic Zones, the TSM will revert to the Previous Biogeoclimatic Zone Subzone and apply the stocking guideline associated with that classification.

APPENDIX B -1- CONIFEROUS STOCKING STANDARDS

BGC		Regeneration		Guide										Free	Growing	Guide	
Classification		Species				Stocking(i)			Post Spacing		Minimum Inter-tree Distance	Tree Height/brush ratio (%)	Regen	Latest Assessment Date (yrs)	Min. Height(ii)		
		Conifer			Broadleaf	Target	MIN pa	MIN p	Density (sph)				Delay		Species	Ht	
Zone/SZ	Series	Preferred (p)	Acceptable (a)	Tertiary		(well-spaced/ha)			Min	Max			(Max yrs)			(m)	
ESSFdc2	01	PI Se	BI			1200	700	600	700	4000	2	125	4	20	PI	1.6	
															Others	0.8	
		02	PI	BI Se			-	-	-								
		03	PI	BI ¹³ Pa ^{9,17} Se			1000	500	400	500	4000	2	125	7	20	PI	1.2
															Others	0.6	
		04	PI	BI ¹³ Se			1000	500	400	500	4000	2	125	7	20	PI	1.2
															Others	0.6	
		05	PI Se	BI ^{10,13}			1000	500	400	500	4000	2	125	7	20	PI	1.2
															Others	0.6	
		06	PI Se	BI			1200	700	600	700	4000	2	125	4	20	PI	1.6
															Others	0.8	
		07	PI Se ³²	BI			1200	700	600	700	4000	2	125	4	20	PI	1.6
															Others	0.8	
		08	PI ¹ Se ^{1,32}	BI ^{1,32}			1000	500	400	500	4000	2	125	4	20	PI	1.2
		08 Griz	PI ¹ Se ^{1,32}	BI ^{1,32}			500	300	300	500	4000	1	125	4	20	PI	1.2
															Others	0.6	
ESSFdv	01	PI Se	BI ¹³	Pa ^{9,13}		1200	700	600	700	4000	2	125	4	20	PI	1.6	
ESSFdv d															Others	0.8	
	02*	PI	BI Se	Pa ^{9,13}	At ^b	400	200	200	200	4000	2	125	4	20	PI	1.2	
															Others	0.6	
	03	PI	BI Se	Pa ^{9,13}		1000	500	400	500	4000	2	125	7	20	PI	1.2	
															Others	0.6	
	04	PI Se	BI ^{10,13}	Pa ^{9,13}		1000	500	400	500	4000	2	125	7	20	PI	1.2	
															Others	0.6	
	05	PI Se ³²	BI ³²	Pa ^{9,13}		1200	700	600	700	4000	2	125	4	20	PI	1.6	
															Others	0.8	
	06	PI ¹ Se ^{1,32}	BI ^{1,32}	Pa ^{9,13}		1000	500	400	500	4000	2	125	4	20	PI	1.2	

BGC		Regeneration	Guide										Free	Growing	Guide
Classification		Species			Stocking(i)				Post Spacing			Regen		Min. Height(ii)	
		Conifer			Target	MIN pa	MIN p	Density (sph)				Delay		Species	Ht
ESSFmw1	01	Se	Ba ¹⁷ Bl ¹³	Pl ³⁴	1200	700	600	700	4000	2	125	4	20	Pl	2.0
ESSFmw2														Others	1.0
	02	Pl Fd ^{9,14} Se ^{10,13}		Bl ^{10,13} Pa ^{9,13,18}	1000	500	400	500	4000	2	125	7	20	Pl	1.4
														Others	0.8
	03	Pl Fd ^{9,14} Se		Bl ¹³ Pa ^{9,13,18}	1000	500	400	500	4000	2	125	7	20	Pl	1.4
														Others	0.8
	04	Pl ³⁴ Se Fd ^{9,14,34}	Ba ¹⁷ Bl ^{10,13}		1200	700	600	700	4000	2	125	7	20	Pl	2.0
														Others	1.0
	05	Bl ¹³ Se	Ba ¹⁷	Pl ³⁴	1200	700	600	700	4000	2	125	4	20	Pl	2.0
														Others	1.0
	06	Bl Se	Ba ¹⁷	Pl ³⁴	1200	700	600	700	4000	2	125	4	20	Pl	2.0
														Others	1.0
	07	Ba ¹⁷ Se	Bl Pl ³⁴ Cw ^{14,32}	Hw ^{14,32}	1000	500	400	500	4000	2	125	4	20	Pl	1.4
														Others	0.8
	08	Bl ¹ Se ¹	Pl ^{1,34}	Ba ¹⁷	1000	500	400	500	4000	2	125	4	20	Pl	1.4
	08 Griz	Bl ¹ Se ¹	Pl ^{1,34}	Ba ¹⁷	500	300	300	500	4000	1	125	4	20	Pl	1.2
														Others	0.8
ESSFxc2	01	Pl Se ³²	Bl ^{10,13}		1200	700	600	700	4000	2	125	4	20	Pl	1.6
ESSFxc3														Others	0.8
	02	Pl	Bl ¹³ Se		600	400	400	400	4000	2	125	7	20	Pl	1.2
														Others	0.6
	05	Pl	Bl ¹³ Se		1000	500	400	500	4000	2	125	7	20	Pl	1.2
														Others	0.6
	06	Pl Se	Bl ¹³		1200	700	600	700	4000	2	125	7	20	Pl	1.6
														Others	0.8
	07	Pl Se ³²	Bl ³²		1200	700	600	700	4000	2	125	4	20	Pl	1.6
														Others	0.8
	08	Pl ¹ Se ^{1,32}	Bl ^{1,32}		1000	500	400	500	4000	2	125	4	20	Pl	1.2
														Others	0.6

BGC		Regeneration	Guide										Free	Growing	Guide	
Classification		Species				Stocking(i)			Post Spacing			Regen		Min. Height(ii)		
		Conifer			Broadleaf	Target	MIN pa	MIN p	Density (sph)			Delay		Species	Ht	
ESSFxv2	01	PI Se32	BI32,Pa	Pa		1200	700	600	700	4000	2	125	4	20	PI Others	1.0 0.8
	02*	PI, Pa	BI 28, 53			800	500	400	500	4000	2	125	7	20	PI Others	0.8 0.6
	03*	PI	Pa			600	400	300	400	4000	2	125	7	20	PI Pa	0.8 0.6
	04	PI	BI28, Pa			1200	700	600	700	4000	2	125	7	20	PI Others	1.0 0.8
	05	PI	BI ¹³ Se			1000	500	400	500	4000	2	125	7	20	PI Others	1.0 0.8
	06	PI Se	BI ¹³			1200	700	600	700	4000	2	125	7	20	PI Others	1.0 0.8
	07	PI Se ³²	BI ³²			1200	700	600	700	4000	2	125	4	20	PI Others	1.0 0.8
	08	Se1, 32 BI1,32	PI1			600	400	300	400	4000	2	125	7	20	PI Others	1.0 0.8
	09	Se1, 32 BI1,32	PI 1, 32			600	400	300	400	4000	2	125	7	20	PI Others	1.0 0.8
	10	Se1, 32 BI1,32	PI 1, 32			600	400	300	400	4000	2	125	4	20	PI Others	1.0 0.8

BGC		Regeneration	Guide										Free	Growing	Guide
Classification		Species				Stocking(i)			Post Spacing			Regen		Min. Height(ii)	
		Conifer			Broadleaf	Target	MIN pa	MIN p	Density (sph)		2	125	Delay	20	Species Ht
IDFdk1	01	Fd32 PI	Py ^{9,14} Sx ^{10,13}	Lw ^{9,14,23,32}	At ^a	1000	500	400	500	4000	2	125	7	20	PI 1.0 Lw 1.0 Fd 0.8 Sx 0.6 Py 0.6
	02	Fd ²⁷ Py ^{9,14}			At ^b	600	400	400	400	4000	2	125	7	20	PI 1.0 Fd 0.8 Py 0.6
	03	Fd PI	Py ^{9,14,23}		At ^b	600	400	400	400	4000	2	125	7	20	PI 1.0 Fd 0.8 Py 0.6
	04	Fd PI	Py ^{9,14} Sx ^{10,13}		At ^b	1000	500	400	500	4000	2	125	7	20	PI 1.0 Fd 0.8 Others 0.6
	05	Fd ^{9,14,32} Sx	Bl ^{10,13} PI	Lw ^{9,14,23,32}	Act ^a At ^a Ep ^b	1000	500	400	500	4000	2	125	7	20	PI, Lw 1.0 Fd 0.8 Others 0.6
	06	PI ¹ Sx ¹ Fd ^{1,32}	Bl ¹		Act ^a At ^b Ep ^b	1000	500	400	500	4000	2	125	4	20	PI 1.0 Fd 0.8
	06 Griz	PI ¹ Sx ¹ Fd ^{1,32}	Bl ¹		Act ^a At ^b Ep ^b	500	300	300	500	4000	1	125	4	20	Fd PI 0.8 Others 0.6
	07	non-forested				-	-	-					-	-	- -

Lillooet TSA Forest Stewardship Plan

BGC		Regeneration	Guide										Fre	Growing	Guide	
Classification		Species				Stocking(i)			Post Spacing				Regen	Min. Height(ii)		
		Conifer			Broadleaf	Target	MIN pa	MIN p	Density (sph)				Delay	Species	Ht	
IDFdk2	01	Fd ³² PI	Py ^{9,14} Sx ^{10,13}	Lw ^{23,32}	At ^b	1000	500	400	500	4000	2	125	7	20	PI, Lw	1.0
															Fd	0.8
															Sx	0.6
															Py	0.6
	02	Fd ²⁷ Py ¹⁴			At ^b	600	400	400	400	4000	2	125	7	20	Fd	0.8
															Py	0.6
	03	Fd ²⁷ PI	Py ¹⁴		At ^b	1000	500	400	500	4000	2	125	7	20	PI	1.0
															Fd	0.8
															Py	0.6
	04	Fd ³² PI Sx ^{10,13}	Py ^{9,14}	Lw ^{23,32}	At ^a	1200	700	600	700	4000	2	125	7	20	PI, Lw	1.4
															Fd	1.0
															Py	0.8
	05	Fd ³² Sx PI	Cw ³²	Bl ^{10,13} Lw ^{23,32}	Act ^a At ^a Ep ^a	1200	700	600	700	4000	2	125	4	20	PI, Lw	1.4
															Fd	1.0
															Others	0.8
	06	PI ¹ Sx ¹ Fd ^{1,32}		Bl ¹	Act ^a At ^b Ep ^b	1000	500	400	500	4000	2	125	4	20	PI	1.0
															Fd	0.8
															Others	0.6
	07	PI ¹ Sx ¹	Cw ³²	Bl	Act ^a At ^a Ep ^a	1000	500	400	500	4000	2	125	4	20	PI	1.0
															Others	0.6
IDFdk3	01	Fd ^{27,32} PI	Sx ^{13,28}		At ^a	1200	700	600	700	4000	2	125	7	20	P	1.4
															Fd	1.0
															Sx	0.8
	02*	Fd ²⁷ PI				1000	500	400	500	4000	2	125	7	20	PI	1.0
															Fd	0.8
	03*	Fd ²⁷ PI				600	400	400	400	4000	2	125	7	20	PI	1.0
															Fd	0.8
	04	Fd ²⁷ PI			At ^b	1200	700	600	700	4000	2	125	7	20	PI	1.4
															Fd	1.0
	05	Fd ²⁷ PI			At ^b	1200	700	600	700	4000			7	20	PI	1.4
															Fd	1.0
	06	Fd ²⁷ PI			At ^b	1200	700	600	700	4000			7	20	PI	1.4

Lillooet TSA Forest Stewardship Plan

BGC		Regeneration	Guide										Fre	Growing	Guide	
Classification		Species			Stocking(i)	Target	MIN pa	MIN p	Post Spacing		Regen	Delay	e	Min. Height(ii)	Ht	
									Density (sph)							
		Conifer			Broadleaf									Species	Ht	
	06													Fd	1.0	
	07	Fd ³² PI Sx			At ^a Ep ^b	1000	500	400	500	4000	2	125	4	20	PI	1.0
														Fd	0.8	
														Sx	0.6	
	08	Fd ³² PI Sx			Act ^a At ^a Ep ^b	1000	500	400	500	4000	2	125	4	20	PI	1.0
														Fd	0.8	
														Sx	0.6	
	09	Sx ^{1,32} PI ¹			Act ^a	1000	500	400	500	4000	2	125	4	20	PI	1.0
														Sx	0.6	
IDFwx	01	Fd ²⁷ Py			At ^b	1200	700	600	700	4000	2	125	7	20	Fd, Py	0.8
	02*	Fd ^{27,28} Py ²⁸				600	400	400	400	4000	2	125	7	20	Fd, Py	0.6
	03*	Fd ^{27,28} Py ²⁸				600	400	400	400	4000	2	125	7	20	Fd, Py	0.6
	04	Fd ^{27,28} Py ²⁸			At ^b	800	500	400	500	4000	2	125	7	20	Fd, Py	0.6
	05	Fd ²⁷			At ^b	1200	700	600	700	4000	2	125	7	20	Fd	0.8
	06	Fd Sx			Act ^a At ^a Ep ^a	1200	700	600	700	4000	2	125	4	20	Fd, Sx	0.6
	07	Fd Sx			Act ^a At ^a Ep ^a	1000	500	400	500	4000	2	125	4	20	Fd, Sx	0.6
IDFww1	01	Fd PI	Py ^{7,16} Cw	Lw ^{16,23}		600	400	400	400	4000	2	150	4	20	Sx	3.0
														PI	2.0	
														Fd, Lw	1.5	
														Cw, Py	1.5	
	02	PI	Cw ^{10,13} Sx ^{10,13}	Bl ^{10,13} Fd Lw ²³		1200	700	600	700	4000	2	150	7	20	PI, Lw	1.6
														Fd	1.0	
														Others	0.8	
	03	Fd PI	Py ^{7,16} Sx ^{10,13}	Lw ²³		1200	700	600	700	4000	2	150	7	20	PI, Lw	1.6
														Fd	1.0	
														Sx, Py	0.8	
	04	Fd Py ¹⁶	Cw PI	Lw ^{16,23}		600	400	400	400	4000	2	150	7	20	PI	1.2
														Fd	0.8	
														Cw, Py	0.6	
	05	Cw Fd	Sx ^{15,35}			1000	500	400	500	4000	2	150	7	20	PI, Lw	1.6
														Fd	1.0	

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BGC		Regeneration	Guide									Fre	Growing	Guide
Classification		Species			Stocking(i)	MIN pa	MIN p	Post Spacing			Regen	e	Min. Height(ii)	Ht
								Density (sph)						
		Conifer			Broadleaf	Target								
	06	Cw Fd Sx ^{13,15,35}	Bg ¹⁶			1200	700	600	700	4000	2	150	4	20
														Others
														PI, Lw
														Fd
														Others
	07	Cw ¹⁶ Sx ^{1,13,15,35}				400	200	200	200	4000	2	150	4	20
														PI
														Others
IDFxh2	01	Fd ²⁷ Py			At ^b	1000	500	400	500	4000	2	125	7	20
	02	Py ²⁷ Fd ²⁷				400	200	200	200	4000	2	125	7	20
	03	Py ²⁷ Fd ²⁷				400	200	200	200	4000	2	125	7	20
	04	Py Fd ²⁷				600	400	400	400	4000	2	125	7	20
	05	Fd ²⁷ Py				1000	500	400	500	4000	2	125	7	20
	06	Fd Py			At ^b	1200	700	600	700	4000	2	125	7	20
	07	Fd ³² Sx	Py ³² Cw ³²		Act ^a At ^a Ep ^a	1200	700	600	700	4000	2	125	4	20
	08	Sx ¹ Fd ^{1,32}	PI ^{1,23}		Act ^a At ^a Ep ^a	1000	500	400	500	4000	2	125	4	20
														PI
														Others
	95	Fd ³² Py ³²			At ^a	1200	700	600	700	4000	2	125	4	20
IDFwx	01	Fd ²⁷ Py			At ^b	1200	700	600	600	4000	2	125	7	20
	02*	Fd ^{27,28} Py ²⁸				600	400	400	400	4000	2	125	7	20
	03*	Fd ^{27,28} Py ²⁸				600	400	400	400	4000	2	125	7	20
	04	Fd ^{27,28} Py ²⁸			At ^b	800	500	400	400	4000	2	125	7	20
	05	Fd ²⁷			At ^b	1200	700	600	600	4000	2	125	7	20
	06	Fd Sx			Act ^a At ^a Ep ^a	1200	700	600	600	4000	2	125	4	20
	07	Fd Sx			Act ^a At ^a Ep ^a	1000	500	400	400	4000	2	125	4	20
														Fd, Py
														Fd, Py
														Fd, Py
														Fd
														Fd, Sx
														Fd, Sx

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BGC		Regeneration	Guide										Fre	Growing	Guide	
Classification		Species				Stocking(i)			Post Spacing				Regen	Min. Height(ii)		
		Conifer			Broadleaf	Target	MIN pa	MIN p	Density (sph)				Delay	Species	Ht	
MSdc1	01	PI Sx Fd ^{9,14,32}	BI ^{10,13}		At ^a	1200	700	600	700	4000	2	125	7	20	PI	1.4
														Others	0.8	
	02	PI Fd ⁹	Sx ^{10,13}	BI ^{10,13} Pa ^{9,13,17}		1000	500	400	500	4000	2	125	7	20	PI	1.0
														Others	0.6	
	03	PI Fd ^{9,14,32}	Sx ^{10,13}	BI ^{10,13} Pa ^{9,13,17}	At ^b	1000	500	400	500	4000	2	125	7	20	PI	1.0
														Others	0.6	
	04	PI Sx Fd ^{9,14,32}	BI ¹³		Act ^a At ^a	1200	700	600	700	4000	2	125	4	20	PI	1.4
														Others	0.8	
MSdm2	01	PI Sx Fd ^{9,14,32}	BI ^{10,13}	Lw ^{14,23,32}	At ^a	1200	700	600	700	4000	2	125	7	20	PI, Lw	1.4
														Others	0.8	
	03	Fd ^{9,14} PI	BI ^{10,13} Sx ^{10,13}		At ^b	1000	500	400	500	4000	2	125	7	20	PI	1.0
														Others	0.6	
	04	PI Fd ^{9,14,32} Sx ^{10,13}	BI ^{10,13}	Lw ^{14,23,32}	At ^a	1200	700	600	700	4000	2	125	7	20	PI, Lw	1.4
														Others	0.8	
	05	PI Sx Fd ^{9,14,32}	BI Cw ³²	Lw ^{14,23,32}	Act ^a At ^a	1200	700	600	700	4000	2	125	4	20	PI, Lw	1.4
														Others	0.8	
06	PI Sx Fd ^{9,14,32}	BI	Lw ^{14,23,32}	Act ^a At ^a	1200	700	600	700	4000	2	125	4	20	PI, Lw	1.4	
													Others	0.8		
07	PI Sx	BI		Act ^a At ^b	1000	500	400	500	4000	2	125	4	20	PI	1.0	
MSxk3	01	PI Fd ^{9,14,32} Sx ^{10,13}	BI ^{10,13}		At ^a	1200	700	600	700	4000	2	125	7	20	PI	1.4
														Others	0.8	
	02	PI Fd ^{9,14}	BI ^{10,13}			1000	500	400	500	4000	2	125	7	20	PI	1.0
														Others	0.6	
	05	PI Fd ^{9,14}	BI ^{10,13} Sx ^{10,13}			1000	500	400	500	4000	2	125	7	20	PI	1.0
														Others	0.6	
	06	PI Fd ^{9,14,32} Sx ^{10,13}	BI ^{10,13}	Lw ^{9,14,23}	At ^a	1200	700	600	700	4000	2	125	7	20	PI, Lw	1.4
														Others	0.8	
07	PI Fd ^{1,9,14,32} Sx	BI ^{10,13}			1200	700	600	700	4000	2	125	4	20	PI	1.4	
													Others	0.8		

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BGC		Regeneration	Guide										Fre	Growing	Guide	
Classification		Species			Stocking(i)			Post Spacing				Regen		Min. Height(ii)		
		Conifer			Broadleaf	Target	MIN pa	MIN p	Density (sph)			Delay		Species	Ht	
	08	PI Sx Fd ^{9,14,32}	BI		Act ^a At ^a	1200	700	600	700	4000	2	125	4	20	PI	1.4
														Others	0.8	
	09	PI ¹ Sx ¹	BI ¹		Act ^a At ^b	1000	500	400	500	4000	2	125	4	20	PI	1.0
														Others	0.6	
MSxv	01	PI Sx ^{28,32}	BI ^{16,28,32}			1200	700	600	700	4000	2	125	7	20	PI	1.0
														Others	0.8	
	02	PI ³²				1000	500	400	500	4000	2	125	7	20	PI	0.8
	03	PI				1000	500	400	500	4000	2	125	7	20	PI	0.8
	04	PI Sx ³²	BI ^{16,28,32}			1200	700	600	700	4000	2	125	7	20	PI	1.0
														Others	0.8	
	05	PI Sx ³²	BI ³²			1200	700	600	700	4000	2	125	7	20	PI	1.0
														Others	0.8	
	06	PI Sx ³²	BI ^{16,32}			1200	700	600	700	4000	2	125	7	20	PI	1.0
														Others	0.8	
	07	PI Sx ³²	BI ^{16,32}			1000	500	400	500	4000	2	125	4	20	PI	0.8
														Others	0.6	
	08	Sx ^{1,32}	PI BI ^{1,16,32}			1000	500	400	500	4000	2	125	4	20	PI	0.8
														Others	0.6	
	09	Sx ^{1,32}	BI ^{1,32} PI ¹			400	200	200	200	4000	2	125	4	20	PI	0.8
PPxh2	01	Py ²⁷ Fd ²⁷				400	200	200	200	4000	2	125	7	20	All	0.6
	02*	Py ²⁷ Fd ²⁷				400	200	200	200	4000	2	125	7	20	All	0.6
	03	Py ²⁷ Fd ²⁷				400	200	200	200	4000	2	125	7	20	All	0.6
	04	Py ²⁷ Fd ²⁷				400	200	200	200	4000	2	125	7	20	All	0.6
	06	Fd ²⁷ Py				600	400	400	400	4000	2	125	7	20	All	0.6
	07	PI ^{1,23} Sx ¹ Fd ¹	Py ¹		Act ^a At ^a Ep ^b	1000	500	400	500	4000	2	125	4	20	All	0.6

BGC		Regeneration	Guide										Fre	Growing	Guide	
Classification		Species				Stocking(i)			Post Spacing				Regen	Min. Height(ii)		
		Conifer			Broadleaf	Target	MIN pa	MIN p	Density (sph)				Delay	Species	Ht	
CWHms1	01	Cw Fd Se ^{13,18}	Yc ⁶⁰	Bp ^{7,23}	Act ^b Dr ^b Ep ^b Mb ^b	900	500	400	500	4000	2	150	7	20	Fd	2.25
		Hw ^{10,13,60}												Cw, Hw, Lw, Yc	1.50	
		Ba ^{10,13,60,62}											4	Bp, Sw/Se/Sx	1.00	
														Ba	0.75	
	02*	PI Fd			Ep ^b	400	200	200	200	4000	2	150	3	20	Pw	2.50
														Fd	1.50	
														PI	1.25	
														Cw, Yc	1.00	
														Sw/Se/Sx	0.75	
	03	Cw Fd Se ^{13,18}	Ba ^{10,60}	Hw	Act ^b Dr ^b Ep ^b Mb ^b	800	400	400	400	4000	2	150	3	20	Fd	2.25
														Cw, Hw, Lw, Yc	1.50	
														Bp, Sw/Se/Sx	1.00	
														Ba	0.75	
	04	Cw Fd Se ^{13,18}	Hw ^{10,13} Pw ³¹	Bp ²³ Pw ³¹	Act ^{42,a} Dr ^b Ep ^b Mb ^b	900	500	400	500	4000	2	150	3	20	Fd	3.00
		Ba ^{10,13,60,62}												Bg, Pw	2.50	
														Cw, Hw, Lw, Yc	2.00	
														Bp, Sw/Se/Sx	1.25	
														Ba	1.00	
	05	Cw Hw Yc ^{13,17}			Act ^b Dr ^b Ep ^b Mb ^b	900	500	400	500	4000	2	150	6	20	Fd	2.25
		Ba ^{10,13,62}												Cw, Hw, Lw, Yc	1.50	
														Bp, Sw/Se/Sx	1.00	
														Ba	0.75	
	06	Cw Fd Yc ^{13,17} Se ¹³	Ba ^{13,61} Bg ^{14,17}	Bp ²³ Hw	Act ^{41,a} Dr ^b Ep ^b Mb ^b	900	500	400	500	4000	2	150	3	20	Fd	3.00
														Bg, Pw	2.50	
														Cw, Hw, Lw, Yc	2.00	
														Bp, Sw/Se/Sx	1.25	
														Ba	1.00	
	07	Ba ^{13,62} Cw Ss ³⁵	Fd ¹ Se ¹⁸		Act ^{41,a} Dr ^b Ep ^b Mb ^b	900	500	400	500	4000	2	150	3	20	Ss	4.00
														Fd	3.00	

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BGC		Regeneration	Guide										Fre	Growing	Guide	
Classification		Species				Stocking(i)			Post Spacing				Regen		Min. Height(ii)	
		Conifer			Broadleaf	Target	MIN pa	MIN p	Density (sph)				Delay		Species	Ht
	07 (cont)														Bg, Pw	2.50
															Cw, Hw, Lw, Yc	2.00
															Bp, Sw/Se/Sx	1.25

BGC		Regeneration	Guide										Fre	Growing	Guide	
Classification		Species			Stocking(i)			Post Spacing				Regen		Min. Height(ii)		
		Conifer			Broadleaf	Target	MIN pa	MIN p	Density (sph)			Delay		Species	Ht	
														Ba	1.00	
	08	Cw ¹	Ba ¹		Act ^{41,a} Dr ^b Ep ^b Mb ^b	900	500	400	500	4000	2	150	3	20	Fd	3.00
														Bg, Pw	2.50	
														Cw, Hw, Lw, Yc	2.00	
														Bp, Sw/Se/Sx	1.25	
														Ba	1.00	
	09	no conifers			Act ^b Dr ^b Ep ^b Mb ^b	-	-	-								
	10*	Pl ¹	Cw ¹			400	200	200	200	4000	2	150	3	20	Pw	2.50
														Fd	1.50	
														Pl	1.25	
														Cw, Yc	1.00	
														Sw/Se/Sx	0.75	
	11	Cw ¹ Yc ^{13,17}	Pw ³¹ Se ¹	Ss ¹	Act ^b Dr ^b Ep ^b Mb ^b	800	400	400	400	4000	2	150	3	20	Pw	2.50
														Ss	2.00	
														Fd	1.50	
														Pl	1.25	
														Cw, Yc	1.00	
														Sw/Se/Sx	0.75	

APPENDIX B 2 MULTI-LAYER STOCKING STANDARDS

M * -- Single-tree selection only

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5
Target from Appendix B-1 standards	Layer**	Stocking***			Target from Appendix B-1 standards	Layer**	Stocking***		
		Target pa	MIN pa	MIN p			Target pa	MIN pa	MIN p
(stems/ha)		(well-spaced/ha)			(stems/ha)		(well-spaced/ha)		
1200 ID (all layers)	1	600	300	250	800 ID(all layers)	1	300	150	150
	2	800	400	300		2	400	200	200
	3	1000	500	400		3	600	300	300
	4	1200	700	600		4	800	400	400
1000 ID (all layers)	1	400	200	200	600 ID (all layers)	1	300	150	150
	2	600	300	250		2	400	200	200
	3	800	400	300		3	500	300	300
	4	1000	500	400		4	600	400	400
900 ID (all layers)	1	400	200	200	400 ID (all layers)	1	200	100	100
	2	500	300	250		2	300	125	125
	3	700	400	300		3	300	150	150
	4	900	500	400		4	400	200	200

* Maximum regeneration delay is seven years. For a seven-year regeneration delay, the early free growing is 12 years and the late free growing is 15 years. Regeneration delay can be met immediately following harvest if the residual stand has no significant damage or pest problems and meets minimum stocking standards. If regeneration is achieved immediately following harvest, earliest free growing date is 12 months after completion of harvest and the latest date is 24 months after completion of harvest.

**** Stand Layer Definition**

Layer 1	Mature	trees \geq 12.5 cm dbh
Layer 2	Pole	trees 7.5 cm to 12.4 cm dbh
Layer 3	Sapling	trees \geq 1.3 m height to 7.4 cm dbh
Layer 4	Regeneration	trees $<$ 1.3 m height

*** pa - preferred and acceptable species p - preferred species

Preferred and acceptable species and "Target from Appendix B-1 standards" are as specified in Appendix B-1 by biogeoclimatic ecosystem classification (BEC) site series.

APPENDIX B-3 FOOTNOTES TO STOCKING STANDARDS

	Footnote #	<u>Footnote</u>
<u>Conifer Tree Species</u>	1	elevated microsites are preferred
"Ba" means amabilis fir;	2	suitable on thick forest floors
"Bg" means grand fir;	3	restricted to coarse-textured soils
"Bl" means subalpine fir;	4	restricted to medium-textured soils
"Bp" means noble fir;	5	footnote retired
"Cw" means western red cedar;	6	restricted to nutrient-very-poor sites
"Fd" means Douglas-fir;	7	restricted to nutrient-medium sites
"Hm" means mountain hemlock;	8	restricted to steep slopes
"Hw" means western hemlock;	9	restricted to southerly aspects
"Lt" means tamarack;	10	restricted to northerly aspects
"Lw" means western larch;	11	restricted to crest slope positions
"Pa" means whitebark pine;	12	suitable on cold air drainage sites
"Pl" means lodgepole pine;	13	restricted to upper elevations of biogeoclimatic unit
"Pw" means white pine;	14	restricted to lower elevations of biogeoclimatic unit restricted to northern portion of biogeoclimatic unit in region
"Py" means ponderosa pine;	15	restricted to southern portion of biogeoclimatic unit in region
"Sb" means black spruce;	16	region
"Se" means Engelmann spruce;	17	restricted to western portion of biogeoclimatic unit in region
"Ss" means Sitka spruce;	18	restricted to eastern portion of biogeoclimatic unit in region
"Sw" means white spruce;	19	restricted, not in Queen Charlotte Islands
"Sx" means hybrid spruce or interior spruce;	20	restricted, not near outer coast
"Sxs" means hybrid Sitka spruce;	21	restricted to mainland
"Sxw" means hybrid white spruce;	22	restricted to southern Gardner Canal-Kitlope area
"Yc" means yellow cedar.	23	restricted to trial use
	24	suitable (as a major species) in wetter portion of

Broadleaf Tree Species

“Acb” means balsam poplar;	25	biogeoclimatic unit
“Act” means black cottonwood;	26	suitable on sites lacking salal
“At” means trembling aspen;	27	suitable minor species on salal-dominated sites
“Dr” means red alder;	28	partial canopy cover required for successful establishment
“Ep” means common paper birch;	29	limited by moisture deficit
“Mb” means bigleaf maple;	30	risk of heavy browsing by moose
“Qg” means garry oak;	31	risk of porcupine damage
“Ra” means arbutus;	32	risk of white pine blister rust
	33	limited by growing-season frosts
		footnote retired and replaced with footnote 'a'
“Biogeoclimatic unit” or “BGC classification”		
means	34	risk of snow damage
the zone, subzone, variant and site series described	35	risk of weevil damage
in the most recent field guide published by the		
Ministry	36	suitable major species on salal-dominated sites
of Forests for the identification and interpretation of	37	risk of heart rots
ecosystems, as applicable to a harvested area.	38	footnote retired
	39	avoid exposed and windy sites
“MIN or “Min” means minimum.	40	risk of redheart
	41	limited by poorly drained soils
	42	restricted to fresh soil moisture regimes
	43	suitable on mainland coast only (QCI only)
	44	suitable in areas with stronger maritime influence
	45	suitable in areas with stronger continental influence

“Griz” stocking Standards are applicable for those areas where Grizzly Bear habitat is specifically being managed. For the purpose of Stocking and Free growing assessments on Griz Bear Managed stocking areas, the assessment will use a “M” value based on the target Stocking Standard for the Non-Griz association. Eg where the target association for non-griz areas is 1000 then the “M” value for the Griz area on the same association will be 5.