SITE PLAN CP 414 BLOCK 8
COOPER CREEK CEDAR LTD.

A. TENURE IDENTIFICATION

LICENCE NO.:	CP:	BLOCK:	TIMBER MARK:	UTM:	LICENSEE NAME:
FL A30171	**414**	**8**	**FE5414**	**501700 E, 5499700 N**	**Cooper Creek Cedar Ltd.**
AREA UNDER TENURE (ha):	MAPSHEET/OPENING #:		ELEVATION:	LOCATION:	
34.8	**82F066**		**1105-1430m**	**Balfour Face**	

B. AREA SUMMARY

AREA OF NO PLANNED REFORESTATION (ha) (NPR)									
PERMANENT ACCESS	ROCK	WATER	SWAMP	OTHER NP	NC>4ha	WILDLIFE TREE RETENTION AREA (HA):	IMMATURE	OTHER (RESERVE)	TOTAL NPR AREA
1.8	**-**	**-**	**-**	**4.2**	**-**	**2.5**	**-**	**1.2**	**9.7**

NET AREA TO BE REFORESTED (ha)		
SU	SU AREA DESCRIPTION The block is located on Balfour Face upslope of the community of Balfour.	NET AREA TO BE REFORESTED:
A	**ICHmw2 $104_{7}101_{3}$** Aspect is mainly southeast facing, slopes range from 30 to 65% with an average of 45%. Surface soil texture is Loam (L), and subsoil texture is Loam to Sandy Loam (L-SL). Soils are well drained. Coarse fragment content is Low (25%) in surface soils and moderate (50-55%) in subsoils. Moisture regime is mesic to submesic and nutrient regime is poor to medium. Humus form is a thin mor (5-5.5cm thickness) and rooting depth is 26-40cm. Soils are **non-sensitive**. Average stand density (all species) is 499 stems/ha. Most stems fall within the 20-55cm DBH classes, with 4% of stems in the 60-115cm DBH class. Approximate species densities are Cw 183 stems/ha, Lw 110 stems/ha, Fd 76 stems/ha, Hw 75 stems/ha, Bg 42 stems/ha, and Sx 12 stems/ha. Stand age ranges from 80-202 with an average of 141 years old. The understory contains low densities of Hw Cw regen, saplings and poles that are mainly in poor (suppressed) to moderate condition but growing well in openings. **SU A TU 1 (2.2 ha) Conventional Ground Based** harvest methods and a Retention silviculture system with Reserves. **Retain 30-35 stems per hectare of Fd, Lw, and Py** as per Section G (Silvicultural Systems) **SU A TU 2 (5.9 ha)** C**able harvest** methods and a clearcut silviculture system.	**8.1**
B	**ICHdw1 $104_{8}101_{2}$** Aspect is mainly south-southeast facing, slopes range from 20 to 60% with an average of 40%. Surface soil texture is Loam (L), and subsoil texture is Sandy Loam (SL). Soils are well drained. Coarse fragment content is Low (30%) in surface soils and moderate (45%) in subsoils. Moisture regime is submesic and nutrient regime is medium. Humus form is a thin mor (4.5cm thickness) and rooting depth is 33cm. Soils are **non-sensitive**. Average stand density (all species) is similar to SU A, with individual types ranging from 309 – 1145 stems/ha. **TU 1 (4.9 ha) Conventional Ground Based** harvest methods and a Retention silviculture system with Reserves. **Retain 30-35 stems per hectare of Fd, Lw, and Py** as per Section G (Silvicultural Systems) **TU 2 (2.7 ha)** C**able** harvest methods and a clearcut silviculture system.	**7.6**
C	**ICHdw1 101_{9} 104_{1}** Aspect is mainly southeast facing, slopes range from 12 to 50% with an average of 30%. Surface soil texture is Silty-Loam (SiL), and subsoil texture is Loam (L). Soils are well drained. Coarse fragment content is Low (30%) in surface soils and moderate (60%) in subsoils. Moisture regime is mesic and nutrient regime is medium. Humus form is a thin mor (4.5cm thickness) and rooting depth is 45cm. Soils are **sensitive**. Average stand density (all species) is similar to SU A. **Conventional Ground Based** harvest methods methods and a Retention silviculture system with Reserves. **Retain 30-35 stems per hectare of Fd, Lw, and Py** as per Section G (Silvicultural Systems)	**9.4**
	TOTAL NET AREA TO BE REFORESTED:	**25.1**
	TOTAL AREA UNDER THE PLAN:	**34.8**

SOIL DISTURBANCE

SU	Max. Allowable Soil Disturbance (%)	Max. Amount TAS May Exceed MASD Prior to Rehab (%)	Max. Allowable Soil Disturbance For Roadside Work Areas (%)	Maximum Permanent Access Structures (%)
A	10.0	5.0	25%	5.2
B	10.0	5.0		
C	5.0	5.0		

SU	CRITICAL SITE CONDITIONS THAT AFFECT THE TIMING OF OPERATIONS AND HOW THEY AFFECT THEM
A,B,C	• Avoid machine travel during periods of soil saturation to reduce risk of soil compaction. Utilize designated harvesting trails, or a supporting snow pack in the winter. • Spot piling along roadsides, landings and within the NAR may be necessary to remedy high levels of coarse woody debris.

RESULTS AND STRATEGIES

Biodiversity Objectives	
Result or Strategy Description	**3.5.3 - Old and Mature Forest**
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	'KBHLP Objective 2 – Old & Mature Forests' Landscape Unit K10 and K12 For the purposes of biodiversity analysis older BEC mapping is used and this block falls within ICHmw2 in which there is no Mature forest requirement in these landscape units. The Old forest target is met with OGMA area.
Result or Strategy Description	**3.5.3 - Green-up**
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	'KBHLP Objective 4 – Green-up' – The proposed cutblock is consistent with FPPR Section 65(2).
Result or Strategy Description	**3.5.1 - Objectives set by Government for Wildlife and Biodiversity – Landscape Level**
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	'KBHLP Objective 4 – Green-up'. The proposed cutblock complies with Sections 64 and 65 of the FPPR.
Cultural Heritage Resources	
Result or Strategy Description	**3.7 - Objectives set by Government for Cultural Heritage Resources**
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	A referral letter dated January 22, 2019, was sent to the appropriate individual(s) and/or group(s). A response was received from the Penticton Indian Band and Cooper Creek Cedar agreed to a Cultural Heritage Review. Additional reserves were established based on the recommendations of a Preliminary Field Reconnaissance (report received August 20, 2019) which include: • Full timber reserve of a dry swale west of the uppermost switchback with an additional 7m windthrow management buffer on the reserve. • 10m of fully reserved timber on either side of Mountainside creek (including NCD portions), with an additional 7m windthrow management buffer on either side. Windthrow management buffers will target retention of of windthrow resilient species similar to SU A TU 1, SU B TU 1 and SU C as per section G (Silvicultural Systems)
Recreation Resources	
Result or Strategy Description	**4.3 - Recreation Sites**
Applies:	NO
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	The proposed cutblock is not located within a designated Recreational Area or Trail with legal objectives; therefore, managing for Recreation Resources is not applicable.
Riparian Management	
Result or Strategy Description	**3.4.1 Objectives set by Government for Fish, Water, Wildlife & Biodiversity in Riparian Areas**
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	1) **S6 8-1 (Mountainside Creek)** runs through the middle of the block. 2) **S6 (Rhymeley Creek)** runs outside the harvest boundary to the west of the block. 3) **S6 (Queens Creek)** runs outside the harvest boundary to the east of the block. 4) See Section E.1 for Riparian Management Strategies. 5) See Section F for management strategies related to Temporary Access Structures and Soil Disturbance that should be used during and post-harvest in order to prevent/reduce soil disturbance and sediment delivery.
Soil Objectives	
Result or Strategy Description	**3.1 - Objectives set by Government for Soils [FPPR Section 5 and 12.1(1)]**
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	1) **SU A and B** do not contain sensitive soils and soil disturbance will not exceed **10%**. **SU C** does contain sensitive soils and soil disturbance will not exceed **5%**. Specific measures for mitigating soil disturbance levels are addressed in Section F of this Site Plan. 2) Areas of the block where temporary access structures are required will be rehabilitated. Specific rehabilitation measures are addressed under Section F of this Site Plan. 3) PAS will not exceed the recommended limit of **7.0%** and is estimated at **5.2%.** 4) Areas within the block assigned to roadside work areas will not exceed **25%**.
Visual Objectives	
Result or Strategy Description	**3.6 – Visual Quality**
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	**CP 414- Balfour Face** falls partially within a polygon with a PR objective. A Visual Impact Assessment was completed by Timberland Consultants in April 2019, and the proposed blocks meet the definition and requirements of PR. Irregular shaped boundaries that follow natural terrain features, and large reserve areas serve to improve visual quality from viewpoints. 30-35 stems/ha of mature retention throughout Block 8 will enhance visual quality. The proposed development of **CP414 – Balfour Face** meets the established VQO of PR from the selected viewpoints.

Water Management Objectives	
Result or Strategy Description	**3.4.4 - Consumptive Use Streams**
Applies:	Yes
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	'KBHLP Objective 6' – **CP414 Block 8** is located within the Laird Face Domestic Watershed. Referral letters dated February 8, 2019 were sent to POD licensees with a 30 day response period. Comments were received from water users. **Rhymeley Creek (S6 Class)** has 1 active POD approximately 1600m downstream of the block. The POD was inspected on the iMAP database and found to be for irrigation purposes (Balfour Golf Course). A mature timber reserve of 50m+ will help avoid disturbance to water quality. **Wyandotte Creek (S6 Class)** has 2 active PODs. PODs were inspected on the iMAP database and were found to be active. The stream entirely outside the harvest area. There is also a waterline which is diverted from Rhymeley Creek downslope of Block 8 and into Wyandotte Creek. A mature timber reserve of 50m+ on Rhymeley Creek will help avoid disturbance to water quality. **Queens Creek (S6 Class)** has 2 active PODs for domestic use. The closest of which is >1.3km downstream. The harvest boundary was established >100m from the creek at the slope break. **Mountainside Creek (S6 / NCD Class)** has 1 active POD located >1km from the block. See Section E.1 for Riparian Management Strategies. See Section F.2 for Comments from TSA.
Wildlife Objectives	
Result or Strategy Description	**3.3.1 - Objectives set by Government for Wildlife - Species at Risk – Section 7 of the FPPR**
Applies:	NO
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	The block is not within a Wildlife Habitat Area. There were no sightings of Species at Risk during field development of this cutblock.
Result or Strategy Description	**3.5.2 - Objectives set by Government for Wildlife and Biodiversity – Stand Level**
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	Three internal Wildlife Tree Retention Areas are planned for this block, totalling **2.5 ha**. Overall wildlife tree retention percentage for block 8 is approximately **7.2%.** Total WTRA for CP414 is **12.8 ha** which constitutes approximately 7.2**%** of the gross area of the permit. The WTRA area meets the minimum percent requirements stated in the FSP for each block (3.5%) and for the whole cutting permit (7%).
Result or Strategy Description	**3.3.2 - Ungulates**
Applies:	NO
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	**Block 8** is outside designated Ungulate Winter Range.

ADDITIONAL COMMENTS

Consistency Statement
This block is consistent with the approved **2018 to 2023 Forest Stewardship Plan for Cooper Creek Cedar Ltd – Forest Licence A30171**. This Site Plan is prepared for **FL A30171 CP 414 Block 8**, in accordance with FRPA Section 10(1), (2) & (3).
Changes were made to the block boundaries following recommendations in the TSA and comments from water users. As a result two SP data plots are located outside harvest boundaries but are still representative of the respective standards units. Earlier in development this block was previously labeled as CP 409 block 8.
Community Watersheds
FSP Section **3.4.3** Not applicable - The proposed block is not located within a Community Watershed.
Enhanced Resource Development Zones
FSP Section **3.2.1** 'KBHLP Objective 7 – Enhanced Resource Development Zones – Timber' **Block 8** is not within an Enhanced Resource Development Zone.
Fire Maintained Ecosystems
FSP Section **3.5.3** 'KBHLP Objective 8 – Fire maintained Ecosystems'. There are no NDT 4 ecosystems in the FDUs under this FSP, therefore the requirement to create a Result/Strategy for this objective does not apply.
Fisheries Sensitive Watersheds
FSP Section **3.4.2** At the time the FSP was developed there were no designated "Fisheries Sensitive Watersheds" in FDUs under this FSP, therefore the requirement to create a Result/Strategy for this objective does not apply.

Invasive Plants

FSP Section **4.1** – Invasive Plants

The IAPP website was checked on January 3, 2019. The following invasive species were reported in nearby areas to **CP 414 (Balfour Face),** mainly at low elevations within the first km of Balfour Face FSR in the general area of the Balfour Transfer Station: Canada thistle, Chicory, Common tansy, Oxeye daisy, Himalayan blackberry, Hoary alyssum, Japanese knotweed, Scotch broom, Spotted knapweed.

Measures to prevent the introduction or spread of invasive plants noted in the FSP include:

- Cleaning equipment before moving from a worksite with existing infestations to a new work site.
- Minimizing soil disturbance during primary forest activities (PFA).
- Reseed exposed mineral soil, resulting from a PFA in the first available fall or spring within 12 months following the soil disturbance. Plan planting of cutblocks as soon after harvesting as possible.
- During PFAs minimize soil disturbance by:
  - Harvest on a snowpack, when feasible
  - Random skid to designated skid trails to minimize skidder traffic on the ground
  - Utilize benches for skid trails to minimize side cuts
  - Utilize brush to construct skid trails to reduce contact with the ground
  - Use overhead cable harvesting systems on steep ground
- Where grass seeding is undertaken, CCC will use certified grass seed (Canada common #1 or better grade) from reputable suppliers to ensure premium quality free of invasive plant seed, or a seed mix recommended by a MFLNRO range specialist.
- See FSP for additional strategies and practices regarding invasive plants.

Natural Range Barriers

FSP Section – **4.2**

Not applicable. There are no range tenures located in the FDUs covered by this FSP.

Timber

FSP Section **3.2** - Timber

As per Sec 12(8) of the FPPR, results or strategies are not required for an objective set by government for timber.

Wildlife - Caribou

FSP Section – **3.3** and **3.5.3**

'KBHLP Objective 3 – Caribou' was cancelled and replaced by *GAR Order #U-14-012 – Mountain Caribou – Southwest Kootenay Planning Unit.* This block does not fall within a Caribou Management Zone.

Wildlife – Grizzly Bear Habitat - Connectivity

FSP Section **3.3** and **3.5.3**

'KBHLP Objective 5 – Grizzly Bear Habitat & Connectivity Corridors'. Not applicable to the FDU which includes this block.

Block 8 falls within Connectivity Corridor area but there is no mature target for the ICHmw2 within this Landscape Unit and therefore no requirement to consider connectivity.

STOCKING REQUIREMENTS

SU	NAR (ha)	Standards ID #	Other Performance Standards
A	8.1	1057474	See Section H - Stocking Requirements
B	7.6	1057452	See Section H - Stocking Requirements
C	9.4	1057445	See Section H - Stocking Requirements

C. MANAGEMENT OBJECTIVES & STRATEGIES

C.1 MANAGEMENT OBJECTIVES

- Objectives for **CP 414 Block 8** include meeting visual quality objectives, protecting nearby streams, managing for fire mitigation and a changing climate, and maintaining rich biodiversity and wildlife values: All of these objectives are carefully considered, and a balance between all management objectives is the goal.
- Harvest this mature stand of **CwLwFdHwBg(Sx)** for sawlogs, chips and value-added products and manage for a healthy, free growing stand of planted and natural **CwFdLwPw(BgPlHw)** for similar end products.
- **Wildlife Tree Retention Area (WTRA):** Three WTRAs are planned for retention, totalling **2.5 ha** in size (7.2% of the block). The reserves shelter mature stand values, wildlife values, riparian areas and portions of stand structure that is similar to the harvest area.
- **Kootenay Boundary Land Use Plan – Implementation Strategy (June 1997):** This block is located within the designated **Landscape Unit K10** (West Arm) and **K12** (Kaslo River) – Intermediate BEO Assignments.

C.2 CONDITIONS THAT MUST EXIST AFTER HARVEST OR TREATMENT TO ACCOMMODATE KNOWN FOREST RESOURCES

C.2a WILDLIFE

Stand Level attributes/ concerns identified:

Ungulate Winter Range: Block 8 is outside designated ungulate winter range.

Migratory Bird Habitat Assessment: Block 8 is within Migratory Bird Risk Rating 5 polygon (Age Class derived from cruise data 7,8 & Height class 4 – ICH: MixCon - Cw Lw Fdi Hw(Bg Sx))The management matrix therefore requires:

1) The entire Site must be scheduled for harvest outside Restricted Period 1 (April 23 – August 1) , OR
2) Two or more BMP's with DoP rank 2 (moderate) or DoP rank 3 (high) must be selected from the list of BMPs and applied to the Site.

BMP PL1, PL2 and LO2 have been implemented on site to reduce the likelihood of incidental take and to conform with CCC's adopted management strategy. PL1 refers to a high retention silviculture system that will be prescribed, where 30-35 stems per hectare will be retained. PL2 refers to the implementation of a patch/edge retention system around biodiversity anchors encompassed in the WTRAs. LO2 refers to higher levels of retention prescribed surrounding riparian features: This has been implemented with mature timber reserves adjacent to Rhymeley Creek and S6-8-1.
BMP PL3 and SO4 have been implemented as well. PL3 refers to the appropriate training of forest planners, layout personnel, and forest workers. SO4 refers to operation specific recommended practices when chance encounters of active nests occur.

Stand/Site Attributes

Slope values are low to high in the block, with steeper slopes in the northwestern parts of the block. Middle to upper elevation ICH dw1 site conditions and lower ICHmw2 conditions and transitional characteristics where the zones meet. Aspect is mainly southeast facing, with long uniform slopes. Middle slope location. Vegetation cover is low over most of the block. An S6 class stream (Mountainside Creek) runs through the middle of the block. An S6 stream exists outside the block on the southwest side. Existing coarse woody debris levels are low (15-40cm diameter) in most areas.

SU A: stand type by density is: Cw4 Fd3 Lw2 Hw1(SxEp). Some Fd Lw Cw snags with loose bark are scattered throughout the stand.

SU B: stand type by density is: Cw4 Lw3 Fd3 . Few Bg Lw snags are present.

SU C: stand type by density is: Cw4 Fd2 Lw2 Hw1 Bg1. Few Lw Bg snags are present.

Average stand density (all species) is 499 stems/ha. Most stems fall within the 20-55cm DBH classes, with 4% of stems in the 60-115cm DBH class. Approximate species densities are Cw 183 stems/ha, Lw 110 stems/ha, Fd 76 stems/ha, Hw 75 stems/ha, Bg 42 stems/ha, and Sx 12 stems/ha. Stand age ranges from 80-202 with an average of 141 years old. The understory contains low densities of Hw Cw regen, saplings and poles that are mainly in poor (suppressed) to moderate condition but growing well in openings.

Forest cover adjacent to the block includes similar mature stands outside all boundaries.

Actions prescribed:

Total Area specified for the retention of wildlife trees: **2.5 ha** (7.2% of gross area)

Wildlife Tree Retention Patch (WTRA):

WTRA-2 (1.0 ha) Cw4Bg2Fdi2Hw1Lw1: This WTRA is located in the eastern end of the block surrounding steeper slopes and contains a mixed stand with significant blowdown. Density is 600 - 800 stems/ha; Height range is 16 - 30m; DBH range is 20 – 50cm; Age class is 5 - 6. Slope values range from moderate to high, and crown closure is 20-30%. Values within the area include browse, and snags. Woodpecker activity was noted in Cw and Bg snags.

WTRA-3 (0.5 ha) Fd4Lw3Cw2Sx1(BgHwEp): This WTRA is located surrounding S6-8-1/NCD 8-1 and contains a stand similar to the adjacent harvest area. Density is 200 - 400 stems/ha; Height range is 15 - 30m; DBH range is 25 – 60cm; Age class is 5 - 6. Slope values range from moderate to steep, and crown closure is 20%. Values within the area include browse and snags. Vegetation cover includes maple, ferns, thimbleberry and alder.

WTRA-4 (1.1 ha) Fd5Lw3Cw1Sx1: This WTRA is located surrounding S6-8-1 contains a Fd leading stand. Density is 200 - 600 stems/ha; Height range is 18 - 35m; DBH range is 20 – 60cm; Age class is 5 - 6. Slope values range from moderate to high, and crown closure is 20%. Values within the area include browse and snags. Wildlife trails were seen within the WTRA. Vegetation cover includes maple, ferns, alder and thimbleberry. Woodpecker activity was noted in Fdi snags.

WTRA's will provide stand structure values for wildlife, perching and cover values, riparian values and visual values. WTRA's have been established in part, as a best management practice for the reduction of migratory bird incidental take **(BMP PL2)**, to ensure compliance with Visual Quality Objectives, and to mitigate risk to downslope terrain hazards.

C.2c FISHERIES

There are no fish streams within or directly adjacent to the block.

See Section E.1 for Riparian Management Strategies.

Drainage from the majority of the cutblock area flows downslope to the South, towards the community of Balfour.

C.2d WATERSHEDS

See section 3.4.4 (Consumptive Use Streams)

C.2e RECREATION

Not applicable. The proposed cutblock is not located within a designated Recreational Area or Trail with legal objectives.

C.2f BIOLOGICAL DIVERSITY

Landscape Unit - K10 (West Arm) and K12 (Kaslo River): Intermediate BEO Assignment.

C.2g VISUAL RESOURCE MANAGEMENT

See RESULTS AND STRATEGIES section 3.6 (Visual Quality)

C.2h CULTURAL HERITAGE

See RESULTS AND STRATEGIES section 3.7 (Objectives set by Government for Cultural Heritage Resources).

See section E.5 for Archaeological information.

C.2i RANGE

Not applicable. There are no range tenures located in the FDUs covered by this FSP.

C.2j OTHER RESOURCES

Trapping / Guiding:

Trappers or guiding license holders in the area will be identified and notified through the Forest Stewardship Planning process.

Windthrow:

Windthrow hazard is **Moderate** for adjacent mature stands. The block contains dispersed internal retention, internal retention patches and is relatively irregular in shape. Mature stands surrounding the harvest area are similar to the block with moderately well to well drained soils. Fd and Lw form a component of leave trees and adjacent stands and have favorable rooting qualities.

Soils are medium to coarse and well drained with 26-45 cm rooting depth.

CONDITIONS NOT APPLICABLE TO THIS SITE PLAN

THE FOLLOWING CONDITIONS WERE CONSIDERED, AND FOUND NOT TO BE APPLICABLE TO THIS SITE PLAN:

None identified.

D. ECOLOGICAL INFORMATION AND SITE CHARACTERISTICS

D.1 STANDARDS UNITS AND CRITICAL SITE CONDITIONS

	BIOGEOCLIMATIC					
SU	**TREATMENT UNIT**	**ZONE**	**SUBZONE**	**VARIANT & PHASE**	**SITE SERIES**	**SITE TYPE**
A	1,2	ICH	mw	2	104_7101_3	-
B	1,2	ICH	dw	1	104_8101_2	-
C	1	ICH	dw	1	101_9104_1	-

TU 1: Ground based harvest methods.
TU 2: Cable harvest methods.

E. MANAGEMENT STRATEGIES

E.1 RIPARIAN MANAGEMENT STRATEGIES

RIPARIAN RESERVE ZONE (RRZ)

RIPARIAN/ LAKE ID	RIPARIAN/ LAKE CLASS	HARVESTING Y/N	SU XREF	DESCRIPTION OF THE PURPOSE AND EXTENT OF REMOVAL OR MODIFICATION OF TREES AND ANY RELATED FOREST PRACTICES IN RIPARIAN RESERVE ZONE(S)
N/A	-	-	-	-

RIPARIAN MANAGEMENT ZONE (RMZ)

RIPARIAN/ LAKE ID	HARVESTING Y/N	SU XREF	MANAGEMENT STRATEGIES FOR RIPARIAN OR LAKESHORE MANAGEMENT AREAS INCLUDING PROTECTING STREAM BANKS (if there is no RRZ), MAINTAINING SHADE, AND DEBRIS MANAGEMENT. IF FELLING AND/OR YARDING ACROSS STREAMS. INCLUDE EITHER THE RESIDUAL BASAL AREA OR DENSITY FOR RMZ (S) AND LMZ (S).
S6 8-1 (Mountainside Creek)	Y	SU A + WTRA -1,3&4	**30m RMZ**: ≥0% of the basal area will be retained in WTRA-1, 3 and 4. This RMZ is also protected by a Machine Free Zone. The 30m RMZ was applied as per KBHLP Objective 6: Consumptive Use Streams. Portions of Spur 7 fall within the RMZ because the road is required as part of a stream crossing. Road maintenance activities must not be carried out beyond the clearing width of the road, except as necessary to maintain the stream crossing. Gravel or other fill must not be removed from the RMZ in the process of constructing, maintaining or deactivating the road, unless the gravel or fill is within the road prism, at the stream crossing, or there is no other practicable option. (FPPR 50) (See additional management strategies below)
S6 (Rhymeley Creek)	N	WTRA	The 3**0m RMZ** will be fully reserved outside the western harvest boundary. The 30m RMZ was applied as per KBHLP Objective 6: Consumptive Use Streams. Portions of Spur 7 fall within the RMZ because the road is required as part of a stream crossing. Road maintenance activities must not be carried out beyond the clearing width of the road, except as necessary to maintain the stream crossing. Gravel or other fill must not be removed from the RMZ in the process of constructing, maintaining or deactivating the road, unless the gravel or fill is within the road prism, at the stream crossing, or there is no other practicable option. (FPPR 50) (See additional management strategies below)
S6 (Queens Creek)	N	-	Harvest boundary located at slope break >100m off Queens Creek. No harvesting within RMZ.

NON-CLASSIFIED (NC) RIPARIAN AREAS

RIPARIAN/ LAKE ID	SU XREF	MANAGEMENT STRATEGIES
NCD 8 -1	A	This NCD changes to S6-8-1 (Mountainside Creek) further upstream and again before exiting the southern boundary of the block. (See additional management strategies below)

Section E.1 continued

Riparian Assessment was completed by Timberland in **November 2017**.

1) **Mountainside Creek (S6)** – stream had low, intermittent flow, average channel width of 0.48m, and average gradient of 29%. The stream becomes NCD-8-1 for approximately 250m in the centre of the block then becomes an S6 again before exiting the block.
2) **Fall and skid timber away from riparian features** (streams, NCD's, wetland) where practicable. Any debris entering a riparian feature as a result of harvesting will be removed upon completion of harvesting activities unless it does not obstruct water flow or its removal would cause further damage to the riparian feature. **Minimize crossings** on **watercourse channels** to the extent possible.
3) Where **watercourses** are crossed more than once, it is recommended to place a temporary skid bridge (e.g.: logs placed in draw) in order to prevent a potential diversion of flow.
4) All **machine trails** and **crossings** (NCD) should be fully rehabilitated upon the completion of harvesting or prior to the next freshet. Excess material that could cause redirection of natural drainage patterns should not be left at crossing locations.
5) **All surface drainage patterns** should be maintained and any that are disrupted as a result of harvesting operations should be restored immediately.
6) **A post-harvest inspection** should be completed to assess the amount of logging debris/excess soil within the wetted perimeter of all subtle drainage features. All natural drainage patterns should be maintained and left free of excess debris (slash or soil) that could result in a redirection of seasonal surface runoff/drainage diversion.
7) **Basal area retention** levels for the in-block RMZ (within the NAR) are based on windthrow, windfirmness, wildlife habitat, water quality, and operational constraints.

E.2 FOREST HEALTH MANAGEMENT STRATEGIES

SU	Code	Nelson Region DRA Risk Factors	Points	Relative Risk	Comments
A,B, C	DRA	Site factors Host factors Inoculum potential Disease factors	**8** **4-10** **0** **5-9**	H M-H L L-M	• Armillaria is present at low levels within the stand. • The Nomographic Zones in Section 3.0 of the "Armillaria Root Disease Management Guidelines for the Nelson Forest Region" (June 1998) indicate that Alternative or Intensive deferred treatments for root disease management are appropriate for this site, should Armillaria become a problem. • Alternative treatments will include planting a species mixture that includes species tolerant and /or moderately susceptible to Armillaria (e.g.: Cw, Lw, Py, Pw). Fd (highly susceptible) may be included but should be limited to a maximum of 50% of the mix. Microsite selection should reflect buffer zones around infected stumps, if they can be identified. • Hand-pulling (preferred) or pop-up spacing (alternative) should be considered in the future should Armillaria become a limiting factor in meeting regeneration or free growing requirements (see section H). • Stumping or pushover harvesting treatments are not suitable due to low sign of Armillaria, cable harvest areas, high to very high soil hazards, and consumptive use streams in the area.
			17-27	**L-M**	

Other Forest Health Factors

SU	Code	%	Comments	Current risk to inventory
A,B,C	IBD	5	Approximately 5% of stems show signs of IBD, of which nearly all are grey attack, with very little red or green attack noted. Several down Fd stems showed signs of IBD which corroborates with MoF AOS completed in 2017. Due to the presence of frass, beetles and pupae/larva the infestation is presumed to be ongoing at endemic levels. Due to the risk rating of the stand and the high consequence should an epidemic occur a treatment plan has been designed to manage the infestation. • Funnel traps and subsequent trap trees in the area may be utilized if required based on the results of post-harvest spillover probes conducted by a Qualified Professional. • Leave tree prescriptions require Douglas Fir that exhibits signs of stress, scarring, decay or general poor health are not to be selected for retention. Depending upon the severity of the infestation post-harvest, MCH packets may be applied to dispersed retention in areas of high IBD presence determined by the assessment of a Qualified Professional. • Trap trees may be considered for beetle management if timing of road building and block harvesting permits. This is to be determined by a qualified professional.	Mod
A,B,C	DSB	0	Pw is absent or present in minor amounts in the current stand. A small amount of Pw may be planted in SU A. Plant only rust resistant stock. Expect high incidence of white pine blister rust on any naturally regenerated Pw.	nil
A,B,C	DML	<10	Lw forms approximately 22% of the current stand density and 21% of the current stand volume over the entire block. Lw crowns observed in the stand were generally healthy with only low incidence of mistletoe noted. Lw should be planted >10m from DML infected leave trees.	Low

Expected future risks and actions

A forest health/pest incidence assessment is not required. Forest health information was collected during SP field data collection in **November 2018**.

Stand health risks in the future include a warm aspect and possible moisture deficits during the growing season.

SU A: stand type by density is: Cw4 Fd3 Lw2 Hw1 (SxEp).

SU B: stand type by density is: Cw4 Lw3 Fd3 .

SU C: stand type by density is: Cw4 Fd2 Lw2 Hw1 Bg1.

E.3 VEGETATION MANAGEMENT STRATEGIES

LIVESTOCK TO BE USED FOR VEGETATION MANAGEMENT: YES: ☐ NO: ☒

Current Brush Hazard: SU A,B,C: Low levels of brush inside harvest area.

Future Brush Hazard: Moderate due to submesic moisture regime, warm south aspect. Open areas with dry brush complex exist outside the block and at block boundaries, and include maple, alder, saskatoon, rose, and thimbleberry.

Brushing Methods: Should brushing become necessary, manual treatments are the preferred methods.

Risks and Considerations: Woody brushing or stand tending treatments must be carefully assessed due to pathogen ability to colonize wounds on stocking.

Anticipated Timing: Treatment needs will be assessed through periodic walkthroughs and silviculture surveys. Treatment timing will be prescribed at the time of brush assessment.

E.4 COARSE WOODY DEBRIS (CWD) MANAGEMENT STRATEGIES

CWD levels are low to moderate (5 to 10% ground cover). CWD is predominantly composed of 10-40cm diameter stems. Lw Fd Ep Pw Hw Bg Cw are the dominant CWD species. The stand has a dead standing and down component. Fire scars were noted on older snags and CWD.

Manage for **minimum** CWD levels post-harvest in accordance with wildfire mitigation strategies. Post-harvest CWD will consist of non-merchantable existing levels and snags, along with residue and breakage. A reduction of CWD levels is anticipated through fire mitigation.

(FPPR Section 68): **Manage for the minimum of 4 logs per hectare,** each being at least **2 metres** in length and at least **7.5cm** in diameter at one end.

See the SITE PREP section (K.1) for additional CWD management strategies.

E.5 ARCHAEOLOGICAL IMPACT ASSESSMENT

Archaeological Overview Mapping of the **CP 414** area shows that **block 8** does not fall within a polygon that has a potential rating. An Archaeological Impact Assessment is not required.

F. SOIL CONSERVATION

F.1 SITE DISTURBANCE

	HAZARD RATINGS			SOIL CHARACTERISTICS		
SU	SOIL COMPACTION	SOIL DISPLACEMENT	SURFACE SOIL EROSION	DEPTH TO UNFAVOURABLE SUBSOIL (cm)		TYPE OF UNFAVOURABLE SUBSOIL
				MIN(cm)	MAX(cm)	
A	High	High	High	65	65	No restricting layer to 65cm
B	Moderate-High	High	High	65	65	No restricting layer to 65cm
C	High	High	Very High	60	60	No restricting layer to 60cm

F.2 SOIL DISTURBANCE LIMITS

SU A: ARE THERE SENSITIVE SOILS? ☐ YES ☒NO

SU B: ARE THERE SENSITIVE SOILS? ☐ YES ☒NO

SU C: ARE THERE SENSITIVE SOILS? ☒ YES ☐NO

MAX. PROPORTION OF TOTAL AREA UNDER THE PRESCRIPTION ALLOWED FOR PERMANENT ACCESS STRUCTURES (PAS): **5.2%**

Roadside harvesting or temporary landings will be used.

DEACTIVATION OF PERMANENT ACCESS STRUCTURES: Any landings will be deactivated – debris will be piled & burned, water control will be installed around all landings.

Terrain Stability Assessment, Balfour Face, CP 409, Blocks 7, 8* (CP 414 Blk 8), and 9, (report dated February 12, 2019)

* (CP 414 Block 8 was previously labeled CP 409 Block 8)

Perdue Geotechnical Services Ltd. (PGS) conducted a geotechnical assessment for the proposed timber harvesting within the Balfour Face operating area, Cutting Permit (CP) 409, Blocks 7, 8 and 9. The assessment was completed by Mr. Chris Perdue, P.Geo., Eng.L., of PGS on September 17 and 19, 2018. In addition, a series of cursory field reviews across the Balfour Face development area were conducted in April and May 2018.

Provided the general recommendations in the subsequent section (below) are followed, the likelihood of landslide initiation as a result of the proposed timber harvesting throughout the remaining area of Block 8 is rated as **Low**.

Recommendations from TSA: The following factors were considered in determining the hazard rating:

- Hillslope hydrology appears to be predominantly governed by the underlying, highly-fractured igneous bedrock and subject to surface influences beyond the topographically-defined upslope catchment area above each block;
- The predominantly gentle to moderate-sloping terrain and steeper, bedrock-controlled slopes throughout the proposed forest development area are generally not considered conducive to mass wasting following timber harvesting;
- Road construction practices and drainage control measures along access routes within and downslope of the proposed harvest areas (including seasonal surface drainage control measures during periods of nonoperational use) will have the greatest influence on surface / sub-surface watercourses and slope stability.

Provided all natural watercourses are appropriately managed and maintained, the proposed timber harvesting is not expected to have a significant adverse effect on hillslope hydrology or slope stability.

General Timber Harvesting Recommendations are included in the TSA report and are noted on the Harvest Plan map.

Area Removed from Harvest – Northern Corner of Block 8:

A potentially hazardous are of the original block 8 shape, measuring approximately 4.4 ha in size and defined as the area north of a linear line connecting falling corners 11 and 17, **was removed from harvest** due to a **moderate** rating, and the prec\sence of moist site conditions and historic, seepage inducing mass-wasting immediately below the proposed harvest area. Timber harvesting would have increasd seasonal groundwater levels and increasd the likelyhood of further slope instability, with potential impacts to Queens Creek, multiple water intakes, Highway 31, and a private, residential building on the Queens Creek alluvial fan, immediately below the highway.

See the TSA report above for further details.

SU	MAXIMUM ALLOWABLE SOIL DISTURBANCE WITHIN THE NET AREA TO REFOREST (%)	MAXIMUM EXTENT SOIL DISTURBANCE LIMITS MAY BE TEMPORARILY EXCEEDED TO CONSTRUCT TEMPORARY ACCESS STRUCTURES OR EXCAVATED OR BLADED TRAILS (%)
A	**10%**	**5%**
B	**10%**	**5%**
C	**5%**	**5%**

MASD for Roadside Work Areas: 25%

Maximum soil disturbance levels may be exceeded for short periods of time; however any temporary access structures or excavated or bladed trails will be rehabilitated to the extent necessary to bring the SU net area back into compliance with the specified soil disturbance limits.

See **Section F.4** below for description of temporary access structures or excavated or bladed trails, if any.

Avoid harvesting during spring freshet/breakup conditions when soils are moist to reduce soil displacement and compaction.

Steep slopes >35% are present in parts of SU A, B and C and are noted on the **Harvest Plan Map.** In SU A and B ground based and cable harvest methods will be utilized. In SU C ground based harvest methods will be used.

F.3 REHABILITATION TIME FOR TEMPORARY ACCESS STRUCTURES

MAXIMUM ALLOWABLE TIME TO COMPLETE REHAB (MEASURED FROM COMPLETION OF HARVEST): **1 YEAR**

F.4 MANAGEMENT STRATEGIES FOR TEMPORARY ACCESS STRUCTURES

SU	GENERAL LOCATION:	MAX ALLOWABLE HEIGHT OF CUTBANKS (m)	AVERAGE HEIGHT OF CUTBANKS (m)	EQUIPMENT TO BE USED (IF OTHER THAN EXCAVATOR)
A,B,C	Blading or excavating is expected to occur in parts of the unit with moderate to steep slopes.	0.8	0.3	Skidder, cat.

Proposed Landings (temporary):

SU A: 1 landing @ 0.2 ha = **0.2 ha**

SU B: 2 landings @ 0.2 ha = **0.4 ha**

SU C: 3 landings @ 0.2 ha = **0.6 ha**

Temporary Trails:

SU B: Forwarding trail @ 226.7m x 4m = **0.09ha**

SU C: 2 Skid trails totalling 545.3m x 4m = **0.22ha**

- **SU A: Favorable skidding and downhill yarding to roadside and landings.**
- **SU B: Favorable skidding with a minor amount of adverse skidding below spur 8 and uphill yarding.**
- **SU C: Roadside harvest with landings. Favorable skidding with minor adverse skidding in the north end below spur 7.**
- **See Section E.1 for stream management strategies.**

The following will apply for any excavated/bladed trails that are required:

- Maximum trail width is 4m.
- Actual dimensions of bladed trails may vary depending on topography.
- The amount of bladed trail constructed will be kept to a minimum.

Short sections that become bladed trails where a non-bladed trail crosses a hump or ridge will be exempt from rehabilitation requirements provided that the soil disturbance limits in this SP are not exceeded.

Rehabilitation for bladed or excavated trails:

Any bladed or excavated trails will be rehabilitated as follows:

- De-compact the trail, including removing woody debris that is conducting subsurface moisture
- Place fill material that was sidecast on the excavated portion of the trail
- Re-contour the slope
- Re-establish natural surface drainage
- Place some woody debris over exposed mineral soil

G. SILVICULTURAL SYSTEMS

SILVICULTURAL SYSTEMS

SU	SYSTEM / VARIANT / PHASE
A	TU1: Retention silviculture system. TU2: Clear-cut silviculture system.
B	TU1: Retention silviculture system. TU2: Clear-cut silviculture system.
C	Retention silviculture system.
SU	STAND STRUCTURE AND SITE CONDITION - COMMENTS
A,B,C	Post-harvest stand structure will be even-aged with one age class. Planted trees and natural regeneration will include **Fd Lw Cw Pw (Pl Bg Sx Hw)**. **3 Wildlife Tree Group Reserve Areas (WTRA):** totalling 2.5 ha **Leave Trees** **SU A-TU1, SU B-TU1, and SU C (Ground Based Harvest Methods): Retain 30-35 stems per hectare of Fd, Lw, and Py in the >=40cm DBH class** to provide stand structure, biodiversity, visual and wildlife values. Give preference to larger diameter, wind-firm dominants and/or vets. Individual stems may be removed if required for safety or operational reasons. Douglas-fir stems that exhibits signs of stress, scarring, decay or general poor health are not to be selected for retention. In SU A - TU2 and SU B - TU2 (Cable Harvesting): No mature leave trees are planned due to safety and operational concerns associated with yarding. The purpose of this mature retention is to provide stand structure, biodiversity, visual and wildlife values. Give preference to larger diameter, wind-firm dominants and/or vets. Individual stems may be removed if required for safety or operational reasons. Douglas-fir stems that exhibits signs of stress, scarring, decay or general poor health are not to be selected for retention. **Wildfire Mitigation** Py, Fd, and Lw are fire-adapted species that are predicted to survive a fire than other species on this site. Thinning the stand from above while retaining fire resilient stems and minimizing the surface fuels to meet the minimum CWD requirements is a recognized fire mitigation management plan. The objective is to retain larger, healthy stems with live crowns while maintaining a 3-5-m (or even) spacing between the crowns. The larger leave trees have higher crowns, which means a longer distance between surface fuels and tree crowns; reducing the effective ladder fuels, and reducing the likelihood of the fire moving into the canopy. Regularly spaced leave trees will shade the understory, which will help reduce ground temperatures and prevent brush species from becoming established, further reducing the ladder fuels. Leave tree distribution is expected to be regular where large stems exist and is operationally feasible to do so. Adequate inter-crown spacing prevents the spread of a potential wildfire between leave trees, while still providing ground shading. Post harvest the stand will be easier to protect should a fire occur – fire will move more slowly through the stand due to less ground fuel, an open stand with clean ground & a more open canopy that will let more water and fire retardant through to the ground from air drops than a full canopy stand. The roads and trails constructed to access the block will provide better access for the fire fighters. Including Fd, Lw & Py in the planting mixture will make the stand more resilient to adapt to changing climate conditions & to adapt to species specific pests. **Snags** No snags or stubbed trees are prescribed to be left behind in the block, as they are a hazard from a fire management perspective, and a safety/operational hazard in the cable harvest areas.

H. STOCKING REQUIREMENTS (As per DSE South Columbia Default Stocking Standards Version 1.0, April 1, 2018)

LICENCE #	CP	BLOCK	OPENING NUMBER	LOCATION
A30171	414	8	82F066	Balfour Face

H1 ECOLOGICAL INFORMATION

SU	Net Area (ha)	Zone	Subzone	Variant/ Phase	Site Series (complex - %)	Elevation			Slope position	Soil Texture (0-30cm)
						Min	Max	Avg		
A	8.1	ICH	mw	2	104_7101_3	1300	1430	1360	Middle	L
B	7.6	ICH	dw	1	104_8101_2	1150	1340	1245	Middle	L-SL
C	9.4	ICH	dw	1	101_9104_1	1105	1310	1210	Middle	SiL

RATIONALE FOR STOCKING STANDARD FSP ID SELECTION

STANDARDS UNIT FSP ID #	CHANGE FROM STANDARD PRACTICE	COMMENT: (For example: Forest health (DRA) or Rocky site)
A: 1057474	N/A	104 leading – site series complex
B: 1057452	N/A	104 leading – site series complex
C: 1057445	N/A	101 leading – site series complex

H2 STOCKING REQUIREMENTS FOR SILVICULTURAL SYSTEMS OTHER THAN SINGLE TREE SELECTION

Standard unit	Standards ID	Regen Delay (yrs)		Free Growing Early (yrs)			Free Growing Late (yrs)	
A	1057474	7		12**			20	
Preferred Species		**Acceptable Species**		**Post Spacing Density (sph)**				**Max Coniferous (sph)**
Species	min ht(m)	Species	min ht (m)	**Min**	700	**Max**	1800	10,000
$Cw^{10,201}$ Fd^{58} Lw Pw^{31}	Fd- 1.4, Lw Pw- 2.0, Cw - 1.0	Pl Hw $Py^{9,14,203}$ $Sx^{10,13}$	Pl – 2.0, Hw, Py, Sx- 1.0	**Well Spaced Trees (sph)**				
				Target	**Minimum pref&acc**		**Minimum** preferred	**Min Horizontal Inter-tree distance (m)**
				1200	700		600	2.0*
							Height Relative to Competition (%)	
							150	
B	1057452	7		12**			20	
Preferred Species		**Acceptable Species**		**Post Spacing Density (sph)**				**Max Coniferous (sph)**
Species	min ht (m)	Species	min ht (m)	**Min**	700	**Max**	1800	10,000
Fd^{58} Lw $Py^{9,203}$ Pw^{31}	Fd-1.4, Lw Pw- 2.0 Py- 1.0	Bg Pl $Cw^{10,204}$	Pl - 2.0, Bg Cw- 1.0	**Well Spaced Trees (sph)**				
				Target	**Minimum** pref&acc		**Minimum** preferred	**Min Horizontal Inter-tree distance (m)**
				1200	700		600	2.0*
							Height Relative to Competition (%)	
							150	
C	1057445	7		12**			20	
Preferred Species		**Acceptable Species**		**Post Spacing Density (sph)**				**Max Coniferous (sph)**
Species	min ht (m)	Species	min ht (m)	**Min**	700	**Max**	1800	10,000
Fd^{58} Lw Pw^{31} Cw^{10}	Fd-1.4, Lw Pw- 2.0 Cw- 1.0	Bg Pl^{13} Hw $Py^{9,14}$	Pl - 2.0, Bg Hw Py- 1.0	**Well Spaced Trees (sph)**				
				Target	**Minimum** pref&acc		**Minimum** preferred	**Min Horizontal Inter-tree distance (m)**
				1200	700		600	2.0*
							Height Relative to Competition (%)	
							150	

See footnotes on next page

Footnotes

** Early Free Growing has been left in for information purposes only. In RESULTS it is in the comments section only and does not preclude making FG declarations early.

Other Required Stocking Information/Footnotes :

9 – suitable on warm aspects

10 – suitable on cool aspects

13 – suitable at upper elevations

14 – suitable at lower elevations

31 – must use of blister rust resistant stock. See BC Journal of Ecosystems and Management 10(1): 97-100 for supplementary information.

58 – South Area – Fd limited to a max 50% of preferred and acceptable well-spaced stems in the IDFmw and all subzones of the ICH due to root rot. See Root Rot Handbook (2017, in press).

201 – Maximum 50% of preferred and acceptable well-spaced trees

203 – Recommended on sites for climate change adaptation.

204 – Not recommended due to climate change concerns.

500 – Advance Bl regen: <1.5 m tall at time of harvest, >75% live crown, >10cm leader, no scars, forks, crooks, or sweeps, and Apical dominance >1 as measured by comparing ratio of leader height to length of most recent branch.

* - a reduced MITD of 1.7m may be used to facilitate planting superior microsites, when sites have: mechanical site preparation (mounding and disk trenching), been previously fill planted, or conditions where obstacle planting for snow creep is necessary. Reduced MITD applies to PLANTED TREES ONLY

H3 SITE PREPARATION

Area (ha)	TECHNIQUE (S) / LIMITING FACTORS
A B C	Options include: • Mechanical bunching (pile and burn) where feasible to minimize CWD as a method of wildfire mitigation. • Up to 10% of piles may be left unburned in order to contribute to wildlife habitat and coarse woody debris values. • Manage CWD and slash with a goal of future wildfire mitigation; minimize surface fuels post-harvest. Clearcutting and site prep that removes almost all of the aboveground biomass creates a good firebreak given the limited fuel remaining. This will reduce the intensity of a potential fire, and make it easier for firefighters to suppress. This does not mean removing all organic material down to mineral soil; just to reduce significant accumulations of surface fuel. • Care should be taken while working around leave trees to avoid damage to the stems.

H4 PLANTING

SU	Area (ha)	Regen. Method	Species	Age	Stock Type	Season	Stems/Ha	Total Stems
A	8.1	Plant	FdLwCwPw (PlPySx)	1+0	PSB 412A	Spring	1400-1600	11,340-12,960
B	7.6	Plant	FdLwPwPy (PlCw)	1+0	PSB 412A	Spring	1400-1600	10,640-12,160
C	9.4	Plant	FdLwCwPw (PlPy)	1+0	PSB 412A	Spring	1400-1600	13,160-15,040

LIMITING FACTORS / COMMENTS:

- Fd limited to a maximum of 50% of preferred and acceptable well-spaced stems.
- Plant on the high or low side of obstacles to minimize snow creep and snow press especially in cable and steep sections.
- Bg is an acceptable species, and significant amounts of natural Bg regen exist within certain areas the block. Expect quantities of natural regeneration.
- Manage for a high diversity of planted trees as a climate change adaptation strategy. Increasing species diversity may help buffer the negative impacts of climate change, and make forests more resilient when faced with extreme weather events. This strategy is meant to reduce the forest health risks to future timber supply by providing a diversity of species should one or more become susceptible to pests or other damaging agents.

  This block is currently heavy to Fd. Replanting these stands with a higher diversity of species, including species that are more adapted to hotter and drier growing conditions like Lw and Py, will promote a stand that is more likely to tolerate a warming climate.
- Microsite selection for Lw, Pl, and Py should be concentrated to dry sites, with Cw (Sx) populating draws and cold air exposures.
- Limiting factors include a warm aspect and shallow soils. Moisture deficits are expected to persist through the summer.
- Plant as soon as possible following harvesting or site prep operations. **Note:** a post-harvest assessment should be completed to assess the necessity of site preparation prior to planting. If site prep is needed, the person completing the assessment will generate a prescription surrounding the areas that are required and the methods to be employed.
- Anticipated Timing/Constraints: Treatment needs will be assessed through periodic walkthroughs and silviculture surveys.
- Monitor for signs of ungulate browse during silviculture surveys.

H5 BRUSHING / STAND TENDING

Area (ha)	TECHNIQUE (S) / LIMITING FACTORS
25.1	Brush hazard: Current is low with very little shrub cover throughout the block. Future hazard is moderate due to submesic moisture regime, warm southerly aspect. Open areas with dry brush complex exist outside the block and at block boundaries. Competitor species include maple, alder, saskatoon, rose, bracken fern, and thimbleberry. Brushing Methods: Manual treatments are preferred. However, existing pathogens spread by colonizing wounds on stocking and care must be taken to limit damage to crop trees. Woody brushing may be necessary prior to Free Growing and likely is an option in pathogen management, as long as crop trees are not injured. Anticipated Timing/Constraints: Treatment needs will be assessed through periodic walkthroughs and silviculture surveys. Treatment timing will be prescribed at the time of brush assessment.

I. ADMINISTRATION

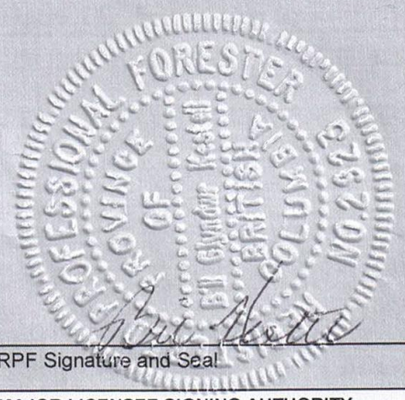
RPF SIGNATURE AND SEAL:

Bill Kestell

RPF Name (Printed)

I certify that I have reviewed this document and, while I did not personally supervise the work described, I have determined that this work has been done to the standards expected of a member of the Association of British Columbia Forest Professionals.

Date: 2020-02-15 RPF #: 2923



RPF Signature and Seal

SITE PLAN PREPARED BY:

Tom Haukaas, RFT

MAJOR LICENSEE SIGNING AUTHORITY:

SITE PLAN ATTACHMENTS:

- ☑ SP MAP(S)
- ☑ ARCHAEOLOGICAL IMPACT ASSESSMENT
- ☑ TERRAIN STABILITY FIELD ASSESSMENT
- ☑ VISUAL IMPACT ASSESSMENT
- ☐ RIPARIAN ASSESSMENT
- ☐ FOREST HEALTH / PEST INCIDENCE ASSESSMENT
- ☐ SOIL CONSERVATION TABLE
- ☑ OTHER: REFORESTATION PRESCRIPTION
- ☑ OTHER: ARMILLARIA RISK ASSESSMENT MATRIX

Licence Holder Signing Authority Signature

Licence Holder Signing Authority Name (Printed)

Date: _____

	Standards Units					
	A	**B**	**C**		**TOTAL HA**	**%**
HAZARD RATINGS:						
Compaction	High	Moderate-High	High			
Soil Displacement	High(20)	High (16-20)	High (20)			
Surface Erosion	High (27-28)	High (26)	Very High (32)			
Forest Floor Displacement	High (17)	High (17)	High (19)			
Mass Wasting	Moderate-High (32-41)	Moderate (32)	High (42)			
Harvest System	TU 1 – ground based TU 2 - cable	TU 1 – ground based TU 2 - cable	Ground based			
TOTAL AREA	10.0	13.4	11.4		34.8	
Wildlife Tree Patches / NP Nat						% WTP/RES
WTRA	1.5	-	1.0		2.5	7.2
NP FOR	-	4.2	-		4.2	12.1
OTHER Reserve	-	0.8	0.4		1.2	3.4
Permanent Access Structures						% Disturbance
Proposed roads	0.4	0.8	0.5		1.7	4.9
Existing roads	-		0.1		0.1	0.3
Landings	-					
Total disturbance permanent access structures	**0.4**	**0.8**	**0.7**		**1.8**	**5.2**
NET AREA TO BE REFORESTED	**8.1**	**7.6**	**9.4**		**25.1**	
Sensitive Soils (Y/N)	No	No	Yes			
Temporary Access Structures: Road, landing, excavated or bladed trails that will be rehabilitated (% of NAR).	5% (excavated/bladed trails)	5% (excavated/bladed trails)	5% (excavated/bladed trails)			
Max. Allowable dispersed Soil Disturbance (% of NAR by Standards Unit) as a result of harvesting, mechanical site preparation, or hazard abatement activities.	10%	10%	5%			

Rehabilitation/Deactivation measures:

All landings and trails within the NAR are temporary and will be rehabilitated by decompacting, re-contouring, surface restoration, followed by planting.

Proposed Roads (permanent):

SU A: Spur 7 = 289m x 10m = **0.29ha**
SU B: Spur 7 = 681m x 10m = **0.68ha**
Spur 8 = 111m x 10m = **0.11ha**
SU C: Spur 7 = 629m x 10m = **0.63ha**

Existing Roads (permanent):

SU C: Balfour Face FSR = 102m x 10m = **0.10ha**
Total PAS = **1.8 ha**

Temp Trails:

SU B: Forwarding trail @ 226.7m x 4m = **0.09ha**
SU C: 2 Skid trails totalling 545.3m x 4m = **0.22ha**

Temp Landings: 5 landings utilizing new access structures, one landing utilizing existing access structure. One 0.2 ha landing within SU A NAR, two 0.2 ha landings within SU B NAR, and three 0.2ha landings within SU C NAR.

See **Section F.4** for discussion of rehabilitation of excavated/bladed trails.