

SITE PLAN CP 404 BLOCK 15 COOPER CREEK CEDAR LTD.

A. TENURE IDENTIFICATION

LICENCE NO.: FL A30171	CP: 404	BLOCK: 15	TIMBER MARK: FE5404	UTM: 0500311 E, 5497604 N	LICENSEE NAME: Cooper Creek Cedar Ltd.
AREA UNDER TENURE (ha): 24.1	MAPSHEET/OPENING #: 82F066	ELEVATION: 697-915 m	LOCATION: 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
0.9	-	-	-	-	-	1.7	-	3.5	6.1
NET AREA TO BE REFORESTED (ha)									
SU	SU AREA DESCRIPTION								NET AREA TO BE REFORESTED:
	This block is located on lower Laird Face above the community of Balfour.								
A	<p><u>ICHdw1 104⁷ 103² 101¹</u></p> <p>Terrain is a gentle to moderate slope with moderately incised gullies running the length of the block. Aspect is mainly south facing, slopes range from 10 to 55% with short pitches above 60%. Surface soil texture is Loam to Sandy-Loam and subsoil texture is Sandy Loam. Soils are moderately-well drained. Coarse fragment content is moderate (35-65%). Moisture regime is mesic to submesic and nutrient regime is medium. Humus form is a mor (4.5-6.5cm thickness) and rooting depth is 32-40cm. Soils are non-sensitive.</p> <p>Pre-harvest stand density is 525 stems/ha with a composition of Fdi (52%) Cw (30%) Bg (10%) Hw (4%) Lw (3%). There is a dead standing and down density of 63 stems/ha of Fdi, Hw, Bg, Pl, Ep and At.</p> <p>Retain 30-35 stems/ha of Fd in the ≥50cm DBH classes as per Section G – Silvicultural Systems.</p> <p>SU A TU 1 (4.6 ha) Conventional Ground Based harvest methods and a Retention silviculture system. SU A TU 2 (4.6 ha) Cable harvest methods and a Retention silviculture system.</p>								9.2
B	<p><u>ICHdw1 101⁷ 104³</u></p> <p>Terrain is a gradual concave slope leveling out to a gentle receiving area at the southern part of the block. The lower elevation of the block is transitional to the ICHxw. Aspect is mainly south facing, slopes range from 10 to 55% with short pitches above 60%. Surface soil texture is Loam to Sandy-Loam and subsoil texture is Sandy Loam. Soils are moderately-well drained. Coarse fragment content is moderate (35-65%). Moisture regime is mesic to submesic and nutrient regime is medium. Humus form is a mor (6.5cm thickness) and rooting depth is 36cm. Soils are non-sensitive.</p> <p>Pre-harvest stand density is Similar to SU A.</p> <p>Retain 30-35 stems/ha of Fd in the ≥50cm DBH classes as per Section G – Silvicultural Systems.</p> <p>Cable harvest methods and a Retention silviculture system.</p>								8.8
TOTAL NET AREA TO BE REFORESTED:									18.0
TOTAL AREA UNDER THE PLAN:									24.1

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%	3.7
	10.0	5.0		

SU	CRITICAL SITE CONDITIONS THAT AFFECT THE TIMING OF OPERATIONS AND HOW THEY AFFECT THEM
A,B	<ul style="list-style-type: none"> 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)	<p>'KBHLP Objective 2 – Old & Mature Forests'</p> <p>Landscape Unit K10</p> <p>This block falls within ICHdw (Intermediate Biodiversity emphasis) in which there are targets for Mature + Old in this landscape unit.</p> <p>Analysis completed by Timberland Consultants Ltd. (August 2020) show a surplus of Mature + Old in the Landscape Unit / BEC pairing as well as Connectivity Corridor.</p> <p>Requirement for Old Forest is considered to be met through spatially, non-legal Old Growth Management Areas (OGMAs). LU K10 / ICHdw was identified by the District (May 2019) as having an aspatial deficit of Old. CP 404 does not include any harvest of Age Class 8 or 9.</p>
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)	<p>A referral letter dated February 16, 2021, was sent to the appropriate individual(s) and/or group(s).</p> <p>The Penticton Indian Band completed a Cultural Heritage Review (report dated August 26, 2021) containing recommendations manage for Cultural Heritage Resources of importance to the band. Block design modifications were completed during development including increased reserves around watercourses and drainages.</p> <p>As part of a commitment to conserve drainage feature integrity, single tree retention prescribed for the block will, in part, be retained in non-classified drainages as per Section G – Silvicultural Systems.</p>
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)	<ol style="list-style-type: none"> 1) Haiseldean Creek (S6) runs outside the eastern harvest boundary. Two other S6 class streams and two non-classified drainages run through the block protected with riparian reserves. In addition to these reserves a 7-8m feathered edge was established on each reserve where 50% of mature trees and 100% of non-merchantable trees will be retained. 2) See Section E.1 for Riparian Management Strategies. 3) 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)	<ol style="list-style-type: none"> 1) SU A and B do not contain sensitive soils and soil disturbance will not exceed 10%. 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 does not exceed the recommended limit of 7.0% and is estimated at 3.7% 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)	<p>Parts of CP 404 fall within a Partial Retention (PR) visual landscape unit and the rest fall in areas that are not visually sensitive.</p> <p>A Visual Impact Assessment was completed by Timberland Consultants in 2021 and the proposed blocks and associated roads are consistent with the visual quality objectives.</p> <p>The proposed development of CP404 – Laird meets the established VQO of PR from the selected viewpoints.</p>
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)	<p>'KBHLP Objective 6' – CP404 Block 15 is located within the Laird Face Domestic Watershed.</p> <p>Referral letters dated March 17, 2021 were sent to POD licensees with a 30 day response period.</p> <p>Haiseldean Creek (S6) is located outside the southeast corner of the block. There are two PODs on Haiseldean Creek for the purpose of domestic consumption. The harvest boundary was set back from the break of the slope leading into the stream creating a 17-30m timbered buffer. See Section E.1 for additional riparian management strategies.</p> <p>Two springs are mapped within Block 15, neither was found to be where mapped. One spring (PD67119) has been excavated with a trench dug from the source to an artificial settling intake pond. All of this infrastructure has been reserved from harvest. Increased single tree retention has been prescribed surrounding seepage areas upslope from this spring.</p> <p>Reserves were placed on all streams and draws to the slope break as well as an additional 7-8m "feathered edge" will be established where 50% of mature stems and 100% of non-merchantable stems will be retained. As well, in-block retention of mature trees within all drainage features and seepages will help mitigate impacts to domestic water sources.</p> <p>See Section E.1 for Riparian Management Strategies. See Section F.2 for Comments from TSA.</p>
Wildlife Objectives	
Result or Strategy Description	3.3.1 - Objectives set by Government for Wildlife - Species at Risk – Section 7 of the FPPR
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	<p>The block is not within a Wildlife Habitat Area.</p> <p>There were no sightings of Species at Risk during field development of this cutblock.</p> <p>No Wildlife Habitat Features were observed during development of this CP.</p>
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)	<p>One internal Wildlife Tree Retention Area is planned for this block, totalling 1.7 ha. Overall wildlife tree retention percentage for block 15 is approximately 7.1%. Total WTRA for CP 404 is 5.9 ha which constitutes approximately 7.2% of the gross area of the permit.</p> <p>Wildlife tree retention in CP 404 is consistent with FPPR section 66.</p>
Result or Strategy Description	3.3.2 - Ungulates
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	<p>This block overlaps Ungulate Winter Range Management Unit 178. Analysis completed by Timberland Consultants Ltd. (December 2020) shows post harvest Ungulate Winter Range Management Unit 178 meets minimum retention and maximum disturbance requirements for snow interception cover and forage areas.</p>

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 404 Block 15 , in accordance with FRPA Section 10(1), (2) & (3).
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 15 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 June 25, 2020. The following invasive species were reported in nearby areas to CP 404 (Laird Creek) , mainly at low elevations within the first km of Balfour Face FSR in the general area of the Balfour Transfer Station: Burdock, Canada thistle, Chicory, Common tansy, Oxeye daisy, Himalayan blackberry, Hoary alyssum, Japanese knotweed, Scotch broom, Spotted knapweed, St Johns wort, Orange hawkweed, and yellow hawkweed. Measures to prevent the introduction or spread of invasive plants noted in the FSP include: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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 <i>GAR Order #U-14-012 – Mountain Caribou – Southwest Kootenay Planning Unit</i> . This block does not fall within a Caribou Management Zone or federally listed critical habitat matrix.
Wildlife – Grizzly Bear Habitat - Connectivity
FSP Section 3.3 and 3.5.3 'KBHLP Objective 5 – Grizzly Bear Habitat & Connectivity Corridors'. Block 15 falls within Connectivity Corridor. Analysis completed by Timberland Consultants Ltd. (August 2020) show a surplus of Mature + Old within LU K10/ICHdw as a whole and within connectivity corridor area.

STOCKING REQUIREMENTS

SU	NAR (ha)	Standards ID #	Other Performance Standards
A	9.2	1062313	See Section H - Stocking Requirements
B	8.8	1062310	

C. MANAGEMENT OBJECTIVES & STRATEGIES

<p>C.1 MANAGEMENT OBJECTIVES</p> <ul style="list-style-type: none"> Objectives for CP 404 Block 15 include protecting nearby streams and domestic water sources, meeting visual quality objectives, managing for fire mitigation and a changing climate, and maintaining biodiversity and wildlife values: All of these objectives are carefully considered, and a balance between all management objectives is the goal. <ul style="list-style-type: none"> Streams and drainages within and adjacent to the block are sources of domestic water. A primary management objective is to preserve the integrity of these water sources. Harvest this mature stand of Fdi Cw (Bg Hw Lw Py) for sawlogs, chips and value-added products and manage for a healthy, free growing stand of planted and natural CwFdLwPw(BgPIHwPy) for similar end products. Wildlife Tree Retention Area (WTRA): One WTRA is planned for retention, totalling 1.7 ha in size (7.1% of the block). The reserve shelters mature stand values, wildlife values, riparian areas and portions of stand structure that are 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) – Intermediate BEO Assignment.
<p>C.2 CONDITIONS THAT MUST EXIST AFTER HARVEST OR TREATMENT TO ACCOMMODATE KNOWN FOREST RESOURCES</p> <p>C.2a WILDLIFE</p> <p>Stand Level attributes/ concerns identified:</p> <p>Ungulate Winter Range: See RESULTS AND STRATEGIES section 3.3.2 - Ungulates</p> <p>Migratory Bird Habitat Assessment: Block 15 is within Migratory Bird Risk Rating 4 polygon (Age class 6, height class 3-4, Fd leading stand) The management matrix therefore requires:</p> <ol style="list-style-type: none"> The entire Site must be scheduled for harvest outside Restricted Period 2 (May 15 – July 20), OR One or more BMP's with DoP rank 2 (moderate) must be selected from the list of Best Management Practices (BMPs) and applied to the Site. <p>BMP PL1 and LO2 have been implemented on site to reduce the likelihood of incidental take and to conform to 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. LO2 refers to Increasing riparian retention where possible i.e. to match eco-site where riparian-centric species may nest or feed; Streams and non-classified drainages have been preserved in WTRA and Riparian Reserves.</p> <p>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.</p> <p>Stand/Site Attributes</p> <p>Slope values are low to moderate in most of the block, with short steeper slopes in the centre of the block. Lower elevation ICHdw1 site conditions transitioning to ICHxw at the southern boundary. Aspect is mainly south facing, with short uniform slopes. Lower slope location. Vegetation cover is low to moderate.</p> <p>Cruise composition summary:</p> <ul style="list-style-type: none"> Density: Fdi⁵² Cw³⁰ Bg¹⁰ Hw⁴ Lw³ (Py) Volume: Fdi⁶⁶ Cw¹⁸ Bg⁹ Lw⁴ Hw¹ Py¹ <p>Forest cover adjacent to the block includes similar mature stands outside boundaries and some selective logging to the south and southeast on private land.</p> <p>Actions prescribed:</p> <p>Total Area specified for the retention of wildlife trees: 1.9 ha (10.4% of gross area)</p> <p>Wildlife Tree Retention Patch (WTRA):</p> <p>WTRA-1 (1.7 ha) Fd 8 Cw 1 Bg1 – 95 years – 35.0m – 50%cc: This WTRA encompasses an S6 stream and gully. It contains nesting, perching and browsing values. Trails, scat and browse were noted.</p> <p>The WTRA will provide stand structure values for wildlife, perching and cover values, riparian values and visual values. WTRA has been established in part, as a best management practice for the reduction of migratory bird incidental take (BMP PL2), and to mitigate risk to downslope terrain hazards.</p>
<p>C.2c FISHERIES</p> <p>There are no fish streams within the block.</p> <p>See Section E.1 for Riparian Management Strategies.</p> <p>Drainage from the the cutblock area flows down slope toward Laird Creek.</p>
<p>C.2d WATERSHEDS</p> <p>See section 3.4.4 (Consumptive Use Streams)</p>
<p>C.2e RECREATION</p> <p>Not applicable. The proposed cutblock is not located within a designated Recreational Area or Trail with legal objectives.</p>
<p>C.2f BIOLOGICAL DIVERSITY</p> <p>Landscape Unit - K10 (West Arm): Intermediate BEO Assignment.</p>

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. Mature stands surrounding the harvest area are similar to the block with moderately well to well drained soils. Windthrow resistant species (Fdi and Py) are dominant in neighboring stands. Soils are coarse and moderately well drained with 32-40 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						
SU	TREATMENT UNIT	ZONE	SUBZONE	BIOGEOCLIMATIC		
				VARIANT & PHASE	SITE SERIES	SITE TYPE
A	1,2	ICH	dw	1	104 ⁷ 103 ² 101 ¹	-
B	1	ICH	dw	1	101 ⁷ 104 ³	-

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)
-	-	-	-	-
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 <u>OR</u> DENSITY FOR RMZ (S) AND LMZ (S).	
S6 14-1	Y	A,B	<p>20m RMZ: ≥ 90% of basal area will be retained outside the block boundary and within a Riparian Reserve. Full-timber reserves have been established to the slope break with an additional 7-8m RMZ “feathered edge”. In the additional feathered edge 50% of mature stems and 100% of non merchantable stems will be retained.</p> <p>Portions of Laird Spur 1 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)</p> <p>(See additional management strategies below)</p>	
S6 15-1	Y	A,B	<p>20m RMZ: ≥ 80% of basal area will be retained outside the block boundary and within a Riparian Reserve. Full-timber reserves have been established to the slope break with an additional 7-8m RMZ “feathered edge”. In the additional feathered edge 50% of mature stems and 100% of non merchantable stems will be retained.</p> <p>Portions of the Laird Mainline 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)</p> <p>(See additional management strategies below)</p>	
Haiseldean Creek (S6)	Y	B	<p>20m RMZ: ≥ 75% of basal area will be retained outside the block boundary. Haiseldean Creek flows outside the southeast corner of the block. The harvest boundary was set back from the slope break leading into the stream creating a 17-30m full timbered buffer.</p>	
NON-CLASSIFIED (NC) RIPARIAN AREAS				
RIPARIAN/LAKE ID	SU XREF	MANAGEMENT STRATEGIES		
NCD 2-1, 14-2, 15-1,	A,B	<p>See Section G – Silvicultural Systems for single tree retention prescription for drainage features. Full-timber reserves have been placed on NCD-15-1 and NCD 15-2 to the slope breaks with an additional 7-8m RMZ “feathered edge”. In the additional feathered edge 50% of mature stems and 100% of non merchantable stems will be retained.</p> <p>(See additional management strategies below)</p>		
Section E.1 continued				
Riparian Assessment was completed by Timberland Consultants Ltd. in May and June 2017 .				
<ol style="list-style-type: none"> 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. 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. 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. All surface drainage patterns should be maintained and any that are disrupted as a result of harvesting operations should be restored immediately. 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. 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	DRA	Site factors Host factors Inoculum potential Disease factors	8 6 0 16	H M L M	<ul style="list-style-type: none"> • 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, 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 preferable due to low sign of Armillaria, cable harvest areas, high soil hazards, and consumptive use streams in the area.
		Total	30	M	

Other Forest Health Factors

SU	Code	%	Comments	Current risk to inventory
A,B	IBD	5	<p>Approximately 5-10% of stems show signs of IBD, of which nearly all are grey attack, with very little red or green attack noted. 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.</p> <ul style="list-style-type: none"> • 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. <p>Retention strategies should carefully consider pest resiliency.</p>	Mod
A,B	DSB	0	Pw is absent or present in minor amounts in the current stand. Plant only rust resistant stock. Expect high incidence of white pine blister rust on any naturally regenerated Pw.	nil
A,B	DML	<1	Lw forms a small component of the inventory of the stand.	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 **June 2020**.

E.3 VEGETATION MANAGEMENT STRATEGIES

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

See Section H5: BRUSHING / STAND TENDING

E.4 COARSE WOODY DEBRIS (CWD) MANAGEMENT STRATEGIES

CWD levels are low (7 to 10% ground cover). CWD is predominantly composed of 15-40cm diameter stems. Fd Bg (Cw Ep) are the dominant CWD species.

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.

(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 404** area shows that the southwest corner of **block 15** overlaps a polygon with an archaeological potential rating.

On July 16-17th, 2018, TMECS (Tipi Mountain Eco-Cultural Services Ltd.) completed an archaeological field inspection under BC Heritage Inspection Permit 2018-0192.

No archaeological materials or sites were observed, recorded or are otherwise suspected within the proposed boundaries of block 15.

F. SOIL CONSERVATION

F.1 SITE DISTURBANCE						
SU	HAZARD RATINGS			SOIL CHARACTERISTICS		
	SOIL COMPACTION	SOIL DISPLACEMENT	SURFACE SOIL EROSION	DEPTH TO UNFAVOURABLE SUBSOIL (cm)		TYPE OF UNFAVOURABLE SUBSOIL
				MIN(cm)	MAX(cm)	
A	Moderate	Moderate-High	Moderate-High	60	65	No restricting layer to 60cm
B	High	Moderate	Moderate	70	70	No restricting layer to 70cm
F.2 SOIL DISTURBANCE LIMITS						
<p>SU A: ARE THERE SENSITIVE SOILS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p> <p>SU B: ARE THERE SENSITIVE SOILS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p> <p>MAX. PROPORTION OF TOTAL AREA UNDER THE PRESCRIPTION ALLOWED FOR PERMANENT ACCESS STRUCTURES (PAS): 3.7%</p> <p>Roadside harvesting or temporary landings will be used.</p> <p>DEACTIVATION OF PERMANENT ACCESS STRUCTURES: Any landings will be deactivated – debris will be piled & burned, water control will be installed around all landings.</p>						
Terrain Stability						
<p>A site review was conducted by Apex Geoscience Consultants Ltd. On October 27, 2020 as a precautionary measure to identify any terrain or hydrological concerns.</p> <p>The site review found no evidence of terrain instability and no indicators that timber harvesting will have an impact on water quality, quantity, or timing of flows. A DTSA (Detailed Terrain Stability Field Assessment) is not required for the proposed block.</p>						
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%			
<p>MASD for Roadside Work Areas: 25%</p> <p>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.</p> <p>See Section F.4 below for description of temporary access structures or excavated or bladed trails, if any.</p> <p>Avoid harvesting during spring freshet/breakup conditions when soils are moist to reduce soil displacement and compaction.</p> <p>Steep slopes >35% are present within SU A and B, see Harvest Plan Map. In SU A ground based and cable harvest methods will be utilized. In SU B cable harvest methods will be used.</p>						
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	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

- **SU A: Logging Method:**
 - **TU 1: Ground based (Adverse and favourable skidding to roadside and landings)**
 - **TU 2: Cable (Uphill yarding)**
- **SU B: Logging Method: Cable (Uphill yarding)**

- **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,B	Retention silviculture system.
SU	STAND STRUCTURE AND SITE CONDITION - COMMENTS
A,B	<p>Post-harvest stand structure will be even-aged with one age class.</p> <p>Planted trees and natural regeneration will include Fd Lw Cw Pw (Pl Bg Py Hw).</p> <p>1 Wildlife Tree Group Reserve Area (WTRA): totalling 1.7 ha</p> <p>Leave Trees</p> <p>Retain 30-35 stems per hectare of Fdi in the ≥ 50cm DBH classes to provide stand structure, biodiversity, visual and wildlife values. Retention will aid in preserving the integrity of the streams, drainages and domestic water sources.</p> <p>Riparian buffers: in addition to the mapped reserves on streams and drainages an additional 7-8m “feathered edge” will be established where 50% of mature stems and 100% of non-merchantable stems will be retained.</p> <p>Non-classified drainages: Above single tree retention will also be utilized for riparian management of NCDs. 100% of merch and non-merch trees will be retained within NCDs to top-of-draw; an additional 8m beyond top-of-draw will be a feathered edge in which 50% of merch stems and 100% of non-merch stems will be retained.</p> <p>Wildfire Mitigation</p> <p>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.</p> <p>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.</p> <p>Snags</p> <p>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.</p>

H. STOCKING REQUIREMENTS (As per Fire Management/ Wildland Urban Interface (WUI) stocking standards for Selkirk Resource District South Columbia November 20, 2018)

LICENCE #	CP	BLOCK	OPENING NUMBER	LOCATION
A30171	404	15	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	9.2	ICH	dw	1	104 ⁷ 103 ² 101 ¹	765	915	840	Lower	SL
B	8.8	ICH	dw	1	101 ⁷ 104 ³	695	765	730	Lower	L

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: 1062313	N/A	104 leading - site series complex. Even-Aged Fire Management Stocking Standards
B: 1062310	N/A	101 leading - site series complex. Even-Aged Fire Management Stocking Standards

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	1062313	7		12 [†]			20		
Preferred Species		Acceptable Species		Post Spacing Density (sph)				Max Coniferous (sph)	
Species	Min FG ht (m)	Species	Min FG ht (m)	Min	250	Max	600	800 [‡]	
Fd ⁵⁸ Lw Py Pw ³¹	Fd,Pw-1.4, Lw-2.0, Py-1.0	Pl Bg At Ep	Pl, At Ep-2.0 Bg -1.0	Well Spaced Trees (sph)					
				Target	Minimum pref&acc	Minimum preferred	Min Horizontal Inter-tree distance (m)		
				400	250	200	2.0*		
				'M' Value		Height Relative to Competition (%)			
				4		150			

Standard unit	Standards ID	Regen Delay (yrs)		Free Growing Early (yrs)			Free Growing Late (yrs)		
B	1062310	7		12 [†]			20		
Preferred Species		Acceptable Species		Post Spacing Density (sph)				Max Coniferous (sph)	
Species	Min FG ht (m)	Species	Min FG ht (m)	Min	250	Max	600	800 [‡]	
Fd ⁵⁸ Lw Py Pw ³¹	Fd,Pw-1.4, Lw-2.0, Py-1.0	Pl Cw Bg At Ep	Pl, At Ep-2.0 Cw, Bg -1.0	Well Spaced Trees (sph)					
				Target	Minimum pref&acc	Minimum preferred	Min Horizontal Inter-tree distance (m)		
				400	250	200	2.0*		
				'M' Value		Height Relative to Competition (%)			
				4		150			

* - 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

† - 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.

‡ - All conifers >50cm are countable for the purpose of assessment of maximum conifer stocking.

Other Required Stocking Information/Footnotes :

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 IDf_{mw} and all subzones of the ICH due to root rot. See Root Rot Handbook (2017, in press).

H3 SITE PREPARATION	
SU	TECHNIQUE (S) / LIMITING FACTORS
A,B	<p>Options include:</p> <ul style="list-style-type: none"> Mechanical bunching (pile and burn) where feasible. Piles in the NAR 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. Broadcast burn may be only site prep option on steeper slopes.

H4 PLANTING								
SU	Area (ha)	Regen. Method	Species	Age	Stock Type	Season	Stems/Ha	Total Stems
A	9.2	Plant	Fd Lw Py Pw (Pl)	1+0	PSB 412A	Spring	400-600	3680-5520
B	8.8	Plant	Fd Lw Py Pw (Pl Cw)	1+0	PSB 412A	Spring	400-600	3520-5280
<p>LIMITING FACTORS / COMMENTS:</p> <ul style="list-style-type: none"> Fd limited to a maximum of 50% of preferred and acceptable well-spaced stems. Bg is an acceptable species, and moderate 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. 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 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								
TECHNIQUE (S) / LIMITING FACTORS								
<p>Current Brush Hazard: Low to moderate levels of brush inside harvest area. In canopy openings created by forest health issues competitive species of brush have established such as Douglas maple, Saskatoon berry and thimbleberry.</p> <p>Future Brush Hazard: Moderate overall with potential for higher hazards. Timely crop establishment will be crucial in managing for brush hazard.</p> <p>Brushing Methods: Should brushing become necessary, manual treatments are the preferred methods.</p> <p>Risks and Considerations: Woody brushing or stand tending treatments must be carefully assessed due to pathogen ability to colonize wounds on stocking.</p> <p>Anticipated Timing: Treatment needs will be assessed through periodic walkthroughs and silviculture surveys. Treatment timing will be prescribed at the time of brush assessment.</p>								

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: December 15, 2021 RPF #: 2923



RPF Signature and Seal

SITE PLAN PREPARED BY:

Tom Haukaas, RFT

MAJOR LICENSEE SIGNING AUTHORITY:

SITE PLAN ATTACHMENTS:

SP MAP(S)

Licence Holder Signing Authority Signature

Licence Holder Signing Authority Name (Printed)

Date: _____

	Standards Units					TOTAL HA	%	
	A							
HAZARD RATINGS:								
Compaction	Moderate	High						
Soil Displacement	Moderate-High (14-20)	Moderate (10)						
Surface Erosion	Moderate-High (20-24)	Moderate (22)						
Forest Floor Displacement	High (20-23)	High (17)						
Mass Wasting	Moderate (20-23)	Moderate (23)						
Harvest System	Ground based, cable	Cable						
TOTAL AREA	12.3	11.8				24.1		
Wildlife Tree Patches / NP Nat							% WTP/RES	
WTRA	0.6	1.1				1.7	7.1	
NP FOR								
OTHER Reserve	1.6	1.9				3.5	14.5	
Permanent Access Structures							% Disturbance	
Proposed roads	0.9	0.0				0.9	3.7	
Existing roads								
Landings								
Total disturbance permanent access structures	0.9	0.0				0.9	3.7	
NET AREA TO BE REFORESTED	9.2	8.8				18.0		
Sensitive Soils (Y/N)	No	No						
Temporary Access Structures: Road, landing, excavated or bladed trails that will be rehabilitated (% of NAR).	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%						

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):

Spur 1: 463.3m x 20m = 0.9 ha

Existing Roads (permanent):

N/A

Temp Trails: N/A

Temp Landings:

1 landings = 0.2 ha

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