

SITE PLAN CP 405 BLOCK 4 COOPER CREEK CEDAR LTD.

A. TENURE IDENTIFICATION

LICENCE NO.: FL A30171	CP: 405	BLOCK: 4	TIMBER MARK: FE5405	UTM: 507826 E, 5550966 N	LICENSEE NAME: Cooper Creek Cedar Ltd.
AREA UNDER TENURE (ha): 22.4	MAPSHEET/OPENING #: 82K016	ELEVATION: 800-1050m	LOCATION: Salisbury Creek		

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
1.5	-	-	-	-	-	2.3	-	3.0	6.8
NET AREA TO BE REFORESTED (ha)									
SU	SU AREA DESCRIPTION								NET AREA TO BE REFORESTED:
	The block is located on Salisbury Face.								
A	<p><u>ICH dw1 104₉, 103₁</u></p> <p>Aspect is southwest facing, slopes range from 10 to 55% with an average of 30%. Surface and subsoil texture is Sandy Loam (SL). Soils are well drained. Coarse fragment content is moderate to moderately high (40-60%). 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.</p> <p>Average stand density (all species) is 325 stems/ha. Most stems fall within the 20-55cm DBH classes, with <4% of stems in the 60-80cm DBH class. Approximate species densities are Fdi 226 stems/ha, Cw 58 stems/ha and Lw 41 stems/ha. Stand age ranges from 87-125 with an average of 106 years old. The understory contains low densities of Fdi (Ep) regen, saplings and poles that are mainly in poor (suppressed) to moderate condition.</p> <p>Conventional Ground Based harvest methods and a Retention silviculture system. Retain 12-14m² basal area per hectare of Py, Lw and Fd as per Section G: Silvicultural Systems.</p>								2.2
B	<p><u>ICH dw1 103₇, 104₃</u></p> <p>Aspect is mainly southwest facing, slopes range from 25 to 84% with an average of 55%. Surface soil texture is Silty Loam (SiL), and subsoil texture is Loam (L). Soils are well drained. Coarse fragment content is Moderate in surface soils (50%) and in subsoils (45-60%). Moisture regime is subxeric and nutrient regime is medium. Humus form is a thin mor (3cm thickness) and rooting depth is 36cm. Soils are sensitive.</p> <p>Average stand density (all species) is similar to SU A.</p> <p>Cable Harvesting methods and a Clearcut with reserves silviculture system. Retain 10-15 stems per hectare as per Section G: Silvicultural Systems.</p>								7.1
C	<p><u>ICH dw1 104₈, 103₂</u></p> <p>Aspect is mainly southwest facing, slopes range from 25 to 65% with an average of 45%. Surface soil texture is Sandy-Loam (SL), and subsoil texture is Loam (L). Soils are well drained. Coarse fragment content is Moderate (60-65%). Moisture regime is submesic and nutrient regime is medium. Humus form is a thin mor (4.0cm thickness) and rooting depth is 37cm. Soils are non-sensitive.</p> <p>Average stand density (all species) is similar to SU A.</p> <p>Conventional Ground Based harvest methods and a clearcut with reserves silviculture system.</p>								6.3
TOTAL NET AREA TO BE REFORESTED:									15.6
TOTAL AREA UNDER THE PLAN:									22.4

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%	6.7%
B	5.0	5.0		
C	10.0	5.0		

SU	CRITICAL SITE CONDITIONS THAT AFFECT THE TIMING OF OPERATIONS AND HOW THEY AFFECT THEM
A,B,C	<ul style="list-style-type: none"> Avoid machine travel during periods of soil saturation to reduce risk of soil compaction.. 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' There are no Mature + Old forest requirements in this landscape unit, the Old forest target is met with OGMA area. Landscape Unit K16 There is no planned harvest of Old in this block.
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. Adjacent existing cutblocks are consistent with FPPR Section 65.
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 First Nations (FN) referral letter was sent to the FN Bands identified as having Area of Responsibility on January 9, 2020. CCC has completed the FN Referral/Engagement process. No changes were implemented in Block 4.
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)	Management of streams in Block 4 meets the requirements set out in section 3.4.1 of the FSP.
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 C do not contain sensitive soils and soil disturbance will not exceed 10% . SU B contains 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 6.7% . 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)	CP 405-Salisbury Face falls within a polygon with a PR objective. A Visual Impact Assessment was completed by Timberland Consultants June 3, 2020 and the proposed blocks meet the definition and requirements of PR. Irregularly shaped boundaries that follow natural terrain features, and visual reserve areas serve to improve visual quality from viewpoints. The proposed development of CP405-Salisbury 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' – Most of Block 4 is located within Salisbury Creek domestic watershed. There is one POD for domestic use (PD23279). A referral letter was sent out April 16, 2020. CCC has completed the referral process with the licence holder. The block is located $\geq 200\text{m}$ from Salisbury Creek.

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)	One internal Wildlife Tree Retention Area is planned for this block, totalling 2.3 ha . Overall wildlife tree retention percentage for Block 4 is approximately 10.3% . Total WTRA for CP405 is 13.2 ha which constitutes approximately 6.9% of the gross area of the permit. The WTRA area meets the minimum percent requirements stated in the FPPR for each block (3.5%). The total WTRA percentage for areas harvested by CCC after one year beginning April 1 will be consistent with FPPR Section 66(1). An <i>“Assessment of Habitat and Risks for Mountain Caribou and Other Wildlife”</i> was completed by Brenda Herbison, MSc. R.P. Bio. Risks, associated with this block, to Mule deer and Great Blue Heron, were mitigated by boundary changes earlier in development as well as retaining adequate cover in strategic locations in the form of mature retention. (See report).
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)	This block is located within an Ungulate Winter Range Management Unit, 99-MD-127, with specific requirements in the ICH dw. Analysis completed by Timberland shows post-harvest, Ungulate Winter Range Management Unit 99 meets the minimum retention and maximum disturbance levels for snow interception and forage areas.

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 405 Block 4 , 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 4 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 February 4, 2019. The following invasive species were reported in nearby areas to CP 405 (Salisbury Creek) : Canada thistle, Chicory, Common tansy, Oxeye daisy, Spotted knapweed, Orange hawkweed, Yellow hawkweed, Yellow devil hawkweed, King devil hawkweed, Hawkweed species and Burdock. 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.
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 4 falls within Connectivity Corridor area. Applicable targets for Old and Mature forest will be met following harvest.

STOCKING REQUIREMENTS

SU	NAR (ha)	Standards ID #	Other Performance Standards
A	2.2	1062309	See Section H - Stocking Requirements
B	7.1	1062312	See Section H - Stocking Requirements
C	6.3	1062313	See Section H - Stocking Requirements

C. MANAGEMENT OBJECTIVES & STRATEGIES

C.1 MANAGEMENT OBJECTIVES
<ul style="list-style-type: none"> Objectives for CP 405 Block 4 include managing for wildfire mitigation and visual quality, and maintaining biodiversity and wildlife values. A balance between all management objectives is the goal. Harvest this mature stand of Fd Cw Lw for sawlogs, chips and value-added products and manage for a healthy, free growing stand of planted and natural Fd Cw Lw Py Pw (Hw Pl) for similar end products. Wildlife Tree Retention Area (WTRA): One WTRA is planned for retention, totalling 2.3 ha in size (10.3% of the block). The reserve shelters mature stand values, wildlife values 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 K16 (Hamill Creek) - Low BEO Assignment.

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: See RESULTS and STRATEGIES section 3.3.2 – Ungulates.
Migratory Bird Habitat Assessment: This block is within Migratory Bird Risk Rating 4 polygon (Age and height class derived from VRI data), Fdi (Lw Cw). The management matrix therefore requires: <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 BMPs and applied to the Site. <p>BMP PL2 and PL1 have been implemented on site to reduce the likelihood of incidental take and to conform to CCC's adopted management strategy. PL2 refers to the implementation of a patch/edge retention system around biodiversity anchors encompassed in the WTRAs and visual reserves. PL1 refers to a high retention silviculture system prescribed in SU A.</p> <p>BMPs 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>
Stand/ Site Attributes
Slope values are moderate to steep with short, north-south oriented benches. Middle elevation ICHdw1 site conditions. Aspect is mainly southwest, with long uniform slopes. Middle to lower slope location. Vegetation cover is moderate over most of the block with variable shrub cover. Existing coarse woody debris levels are low 10-12% cover (15-30cm diameter) with patches of higher cover in forest health affected centres.
Stand composition by density is: Fd ₇₀ Cw ₁₈ Lw ₁₂
Stand composition by volume is: Fd ₇₈ Lw ₁₅ Cw ₇
Forest cover adjacent to the block includes similar mature stands outside south and east boundaries, previous selection logging outside west boundaries, and small juvenile stand openings outside northwest and southeast boundaries.
Actions prescribed:
Total Area specified for the retention of wildlife trees: 2.3 ha (10.3% of gross area)
Wildlife Tree Retention Patch (WTRA):
WTRA-1 (2.3 ha) Fd7 Cw1 Ep1 Lw1 – 85 years – 32.0m – 40%cc: The WTRA was designed to create a wildlife corridor back from the slope break leading into Salisbury Creek. Scat, game trails and browse were noted.
WTRA will provide stand structure values for wildlife, perching and cover values. Coarse woody debris values will also be created over time from dead and fallen stems. The 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.
Snags
Snags are not to be retained due to wildfire mitigation strategies.
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 towards Salisbury Creek and Kootenay Lake.
C.2d WATERSHEDS
See RESULTS and STRATEGIES 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 - K16 (Hamill Creek): Low BEO Assignment.
C.2g VISUAL RESOURCE MANAGEMENT
See Section 3.6 – Visual Quality
C.2h CULTURAL HERITAGE
See RESULTS AND STRATEGIES – (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 FDU's 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 and Low for adjacent immature stands. The block contains internal reserves and single stem and group retention. Mature stands surrounding the harvest area are similar to the block with well drained soils. Adjacent stands have been partially exposed to windthrow hazard by previous logging. Soils are medium to fine textured and moderately well drained with 36-37 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	ICH	dw	1	104 ₉ 103 ₁	-
B	1	ICH	dw	1	103 ₇ 104 ₃	-
C	1	ICH	dw	1	104 ₈ 103 ₂	-

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).	
-	-	-	-	
NON-CLASSIFIED (NC) RIPARIAN AREAS				
RIPARIAN/ LAKE ID	SU XREF	MANAGEMENT STRATEGIES		
-	-	-		
Salisbury Creek is located >200m from the nearest harvest boundary in this block. There are no streams nor NCDs located within or near this block.				

E.2 FOREST HEALTH MANAGEMENT STRATEGIES					
SU	Code	Nelson Region DRA Risk Factors	Points	Relative Risk	Comments
All	DRA	Site factors	8	H	<ul style="list-style-type: none"> • Armillaria is present at low-moderate levels within the stand. Interaction with IBD was noted. • 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. Lw, Py, Pw and Cw). 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). • When selecting mature retention, care should be taken to leave only healthy stems with no signs or symptoms of DRA infection. • Stumping or pushover harvesting treatments may be suitable in SU C where DRA centres are more concentrated, slopes are gentle and no mature retention is prescribed. However the benefits of stumping or pushover harvesting need to be weighed against the risks associated with High soil displacement, surface soil erosion and mass wasting hazards and very high forest floor displacement hazards.
		Host factors	6	M	
		Inoculum potential	0-5	L-H	
		Disease factors	19	M	
		Total	33-38	H	
Other Forest Health Factors					
SU	Code	%	Comments		Current risk to inventory
All	IBD	5	<p>A walkthrough grid survey was completed by Nazca Consulting Ltd. of CP 405 Salisbury on September 6, 7, 10, 11, 17 and 18 2019. Only endemic levels of Fir beetle was found with little to no active population. Due to the high 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. 		Moderate
All	DML	5	Lw currently makes up 15% of the volume and 12% of the stand density. If Lw is planted it should be planted >10m from infected mature stems.		Low
All	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
Expected future risks and actions					
Stand composition by volume is: Fd ₇₈ Lw ₁₅ Cw ₇					
Moderate potential for ungulate browse in plantation. Moderate to high browse was noted on Cw regen within harvest boundaries and in adjacent blocks. If Cw is planted strategies such as mixing well in the species composition, planting in brush clumps or using browse deterrent fertilizer will aid in limiting ungulate damage.					
Moderate drought hazard on dry slopes in SU B. Early spring planting, obstacle planting for shade and appropriate species choices, such as Py will make the stand more tolerant to drought.					

E.3 VEGETATION MANAGEMENT STRATEGIES

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

Current Brush Hazard: Low to Moderate hazard. A variable cover dry shrub complex including maple, red-stemmed ceanothus, ocean spray, snowberry, soopalalie, and rose. Minor isolated thimbleberry and bracken fern. Scattered deciduous (Ep, At) throughout.

Future Brush Hazard: Moderate to high due to competitive brush species established in understorey. Potential for release and expansion of dry shrubs and deciduous.

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

Existing coarse woody debris levels are low 10-15% cover (25-50cm diameter) Fdi (Ep, Lw, Cw) Variable cover; areas of high cover in isolated blowdown centres; areas of moderate cover created by previous logging/ mechanical treatment.

(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

A Preliminary Field Reconnaissance (PFR) of **CP 405** was conducted by Ursus Heritage Consulting Ltd. in October 2019 that centered on archaeological potential polygons identified in a 2007 desk-top AOA conducted by Choquette (2007).

No archaeological sites were identified during the PFR and the refined in-field assessment of the potential for archaeological sites within **CP 405** is assessed as **Low**.

This low archaeological potential assessment is based on the presence of steeply sloping and undulating terrain and an absence of archaeologically significant landforms, such as level benches and/or promontories.

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	High	High	65	65	No restricting layer to 65cm
B	High	Very High	High	65	65	No restricting layer to 65cm
C	Moderate	High	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): 6.7%

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.

Detailed Terrain Stability Field Review (Report dated February 13, 2020)

W. Halleran P. Geo, L. Eng. Of Apex Geoscience Consultants Ltd. completed a detailed terrain stability review during the 2019 field season. The following were assessed.

- o A terrain stability site review of potential harvesting and road construction on Salisbury Face.
- o A review of drainage control on the existing road network.
- o An assessment of stability of the existing roads on sections where possible fillslope failures could progress to debris slides.
- o Assess the sensitivity to increased or altered slope drainage on downslope areas.
- o A Terrain Stability Field Review of the lower blocks (where they impinge on Terrain Stability Mapped polygons of IV and V)
- o A Partial Risk Assessment for the lower blocks for water quality/intake and private property.

Conclusions:

It was found that timber harvesting as prescribed will **not significantly increase the likelihood of landslide initiation**. This area has a **low landslide hazard**.

It is recommended to build **Spur 4-1 to a 5 year temporary standard** (permanent for the purposes of this SP).

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

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	5%	5%
C	10%	5%

Maximum Allowable Soil Disturbance for Roadside Work Areas: 25%

Maximum soil disturbance limits 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 all SUs and are noted on the **Harvest Plan Map**. Ground based harvest methods will be utilized in SU A and C, Cable harvest methods will be used in SU B.

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.
<p>Proposed Landings (temporary):</p> <p>SU A: 1 landing @ 0.2 ha = 0.2 ha</p> <p>SU B: 1 landing @ 0.2 ha = 0.2 ha</p> <p>SU C: 1 landing @ 0.2 ha = 0.2 ha</p> <p>Temporary Trails:</p> <p>SU A: Backspar trail 54m x 4m = 0.02 ha</p> <p>SU B: Backspar trail 316m x 4m = 0.1 ha</p> <p>SU C: Skid trail 2734m x 4m = 0.1 ha</p> <ul style="list-style-type: none"> ○ SU A and C: Favourable skidding to roadside and landings. ○ SU B: Uphill or downhill cable yarding. ○ See Section E.1 for stream management strategies. <p>The following will apply for any excavated/bladed trails that are required:</p> <ul style="list-style-type: none"> ○ 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. <p>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.</p> <p>Rehabilitation for bladed or excavated trails:</p> <p>Any bladed or excavated trails will be rehabilitated as follows:</p> <ul style="list-style-type: none"> • 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	Retention silviculture system
B	Clear-cut with reserves silviculture system.
C	Clear-cut with reserves silviculture system.
SU	STAND STRUCTURE AND SITE CONDITION - COMMENTS
A,B,C	<p>Post-harvest stand structure will be even-aged with one age class.</p> <p>Planted trees and natural regeneration will include Fd Lw Py Pw (Cw Bg Pl)</p> <p>Leave Trees</p> <ul style="list-style-type: none"> ○ SU A: Retain 12-14m² basal area per hectare, targeting Fd, Lw ≥30cm and all Py ≥20cm DBH classes evenly distributed throughout the SU in a combination of single tree and small groups to reduce the potential spread of a wildfire and to provide stand structure, biodiversity, visual and wildlife values. Give preference to larger diameter, wind-firm dominants and/or vets. ○ SU B: Retain 10-15 stems per hectare in clumps or single tree distribution. ○ SU C: No mature leave trees are prescribed due to forest health concerns. <p>Wildfire Mitigation / Shaded Fuel Break (SU A)</p> <p>Py, Fd, and Lw are fire-adapted species that are predicted to survive a fire. 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 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>Even-Aged Fire Management Stocking Standards (SU B and C)</p> <p>To address fire management objectives these even-aged stocking standards promote lower conifer stocking, include deciduous species, indicate a preference for fire resistant species and consider climate change.</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. Live vets and larger stems selected as leave trees will provide wildlife values post-harvest.</p> <p>1 Wildlife Tree Retention Area (WTRA): 2.3 ha</p> <p>2 Visual Reserves (RES): totalling 3.0 ha</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	405	4	82K016	Salisbury Creek

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	2.2	ICH	dw	1	104 ₉ 103 ₁	800	880	838	Lower	SL
B	7.1	ICH	dw	1	103 ₇ 104 ₃	800	920	860	Lower	SiL
C	6.3	ICH	dw	1	104 ₈ 103 ₂	860	990	925	Lower	SL
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: 1062309	N/A				Fire Management Partial Cut Stocking Standard					
B: 1062312	N/A				Even-aged wildland-urban interface stocking standards.					
C: 1062313	N/A				Even-aged wildland-urban interface stocking standards.					

H2 STOCKING REQUIREMENTS FOR SILVICULTURAL SYSTEMS OTHER THAN SINGLE TREE SELECTION								
Standard Unit	Fire Management Partial Cut (Shaded Fuel Break) Stocking Standard							
A	The resulting stand may be considered sufficiently stocked in the overstorey, and regeneration obligations will not be incurred if a minimum 12m²/ha basal area of preferred and acceptable leave trees is retained 1-3 years post harvest . Acceptable leave trees must be dominant or co-dominant layer trees >17.5 cm dbh, and:							
Standards ID	<ul style="list-style-type: none"> > 25% live crown with no indicators of decline; Free of gouges and wounds > 1/3 of stem circumference; and Free of wounds on a supporting root within 1 m of the stem. 							
1062309	Min. Basal Area / ha:	12m ²	Assessment Period:	1-3 years post harvest				
	Preferred Species:	Fd Lw Py Pw	Acceptable Species:	Bg Pl Ac At Ep Cw Hw				
Standard unit	Standards ID	Regen Delay (yrs)		Free Growing Early (yrs)			Free Growing Late (yrs)	
B	1062312	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	Fd-1.0, Lw-1.4, Py-0.8	Pl Pw ³¹	Pl, 1.4 Pw- 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)	
C	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 Pw ³¹ Py	Fd-1.4, Lw,Pw-2.0, Py-1.0	Pl Bg At Ep	Pl, At, Ep- 2.0 Pw- 1.4 Others-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						
* All conifers >50cm are countable for the purpose of assessment of maximum conifer stocking. ** 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 : 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).								

H3 SITE PREPARATION								
TECHNIQUE (S) / LIMITING FACTORS								
Options for SU A and C include:								
<ul style="list-style-type: none"> ○ Mechanical bunching (pile and burn) where feasible to minimize CWD as a method of wildfire mitigation. ○ Piles may be left unburned to contribute to wildlife habitat and coarse woody debris values; however all roadside and landing piles should be burned to abate wildfire risk. ○ Manage CWD and slash with a goal of future wildfire mitigation; minimize surface fuels post-harvest. Harvesting to create a shaded fuel break (SU A) and reducing the forest floor fuels removes most of the aboveground biomass and 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. 								
Options for mechanical site preparation are limited in much of SU B due to steep slopes. A low intensity broadcast burn may be an option to remove fine fuels and manage wildfire risk.								
H4 PLANTING								
SU	Area (ha)	Regen. Method	Species	Age	Stock Type	Season	Stems/Ha	Total Stems
B	7.1	Plant	Fd Lw Py (Pl Pw)	1+0	PSB 412A, 410A	Spring	400-600	2,840-4,260
C	6.3	Plant	Fd Lw Py Pw (Pl)	1+0	PSB 412A, 410A	Spring	400-600	2,520-3,780
LIMITING FACTORS / COMMENTS:								
<p>-No planting prescribed for SU A.</p> <ul style="list-style-type: none"> ○ Fd limited to a maximum of 50% of preferred and acceptable well-spaced stems in SU B and C. ○ 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 Fd and Pw 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>Brushing:</p> <p>SU B and C (<i>Broadleaf species are considered beneficial from a fire mitigation perspective as they are generally less flammable than other coniferous species and as a result may reduce fire behavior; however, adequate free growing density of preferred and acceptable crop trees, free from deleterious competition, must be established</i>)</p> <ul style="list-style-type: none"> ○ Current Brush Hazard: Low to Moderate hazard. A variable cover dry shrub complex including maple, red-stemmed ceanothus, ocean spray, snowberry, soopalalie, and rose. Minor isolated thimbleberry and bracken fern. Scattered deciduous (Ep, At) throughout. ○ Future Brush Hazard: Moderate to high due to competitive brush species established in understorey. Potential for release and expansion of dry shrubs and deciduous. ○ 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. <p>SU A: As establishment of a regenerated stand is not an objective of this prescription, brushing will not be necessary.</p>								
<p>Juvenile Spacing:</p> <p>SU B and C</p> <ul style="list-style-type: none"> ○ Maximum <i>conifer</i> density is 800 stems/ha. ○ An assessment should be completed at, or prior to, early free growing to determine if a juvenile spacing treatment is necessary. ○ Countable height is 50cm for all conifers. <p>See <i>Fire management/Wildland Urban Interface (WUI) stocking standards for Selkirk Resource District South Columbia November 20, 2018</i></p>								

I. ADMINISTRATION

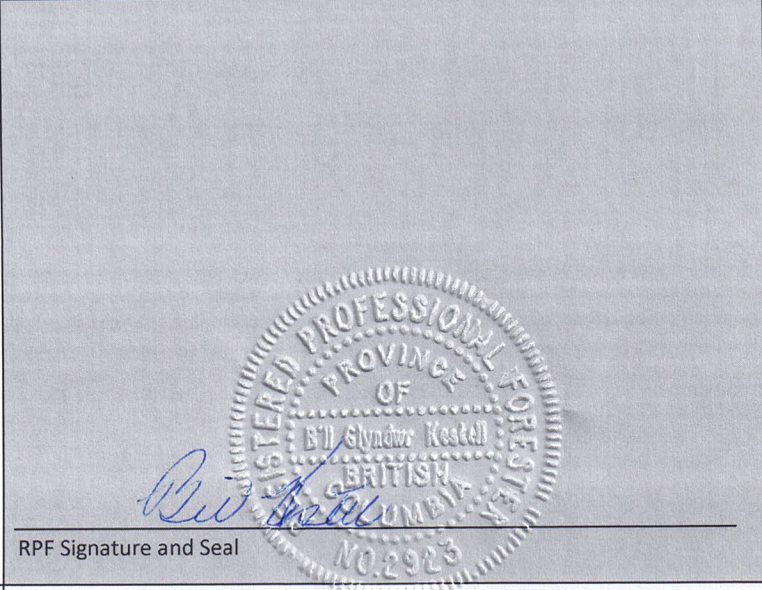
RPF SIGNATURE AND SEAL:

Bill Kestell, RPF

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:

Licence Holder Signing Authority Signature

Licence Holder Signing Authority Name (Printed)

Date: _____

	Standards Units					TOTAL HA	%	
	A	B	C					
HAZARD RATINGS:								
Compaction	Moderate	High	Moderate					
Soil Displacement	High (16)	Very High (36)	High (24)					
Surface Erosion	High (23)	High (31)	High (27)					
Forest Floor Displacement	High (23)	High (20)	Very High (28)					
Mass Wasting	High (24)	Very High (56)	High (44)					
Harvest System	Conventional Ground Based	Cable	Conventional Ground Based					
TOTAL AREA	5.2	9.8	7.4			22.4		
Wildlife Tree Patches / Other Reserves								% WTP/RES
WTRA	-	2.3	-			2.3	10.3	
Other Reserve	3.0	-	-			3.0	13.4	
Permanent Access Structures								% Disturbance
Proposed roads	0	0.4	-			0.4	1.8	
Existing roads	-		1.1			1.1	4.9	
Landings	-							
Total disturbance permanent access structures	0.0*	0.4	1.1			1.5	6.7	
NET AREA TO BE REFORESTED	2.2	7.1	6.3			15.6		
Sensitive Soils (Y/N)	No	Yes	No					
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%	5%	10%					
<p>*Total PAS area in SU A appears as 0.0ha due to rounding.</p> <p>Rehabilitation/Deactivation measures:</p> <p>All landings and trails within the NAR are temporary and will be rehabilitated by decompacting, re-contouring, surface restoration, followed by planting in SU B & C..</p> <p>Landings will be deactivated as per the following: Minimize runoff flowing onto the landing and minimize erosion of the landing fill material by incorporating appropriate drainage systems. If required, carry out measures to ensure that the landing is stable, such as decompaction, re-contouring, and grass seeding.</p> <p>Proposed Roads (permanent): Spur 4-1 (SU B): 173m x 20m = 0.35 ha Spur 4-2 (SU A): 17m x 20m = 0.03 ha</p> <p>Existing Roads (permanent): Salisbury Mainline (SU C): 546m x 20m = 1.1 ha</p> <p>See Section F.4 for discussion of rehabilitation of excavated/bladed trails.</p>								