BCTS
BC Timber Sales
Kootenay

SITE PLAN
KOOTENAY
BC TIMBER SALES

Report Date 2014/02/20

ORIGINAL

TENURE IDENTIFICATION

LICENCE #	CP	BLOCK	UBI	OPENING NUMBER	FDU	LOCATION	LATITUDE / LONGITUDE
A90479	-	1	BF5DR		Toby	Mineral Creek	50 22 43 / 116 19 00

AREA UNDER THE PLAN

GROSS AREA (TAUP)	PAS	NP	WTRA / WTP	RESERVES	OTHER	NAR
37.9	2.1	0.0	8.5	1.2	0.0	26.1

ADDITIONAL COMMENTS

CONSISTENCY STATEMENT
The Site Plan is consistent with the objectives, results, and strategies as outlined in the the Rocky Mountain Forest Stewardship Plan. The block is contained within Operating Plan # 13.

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 (%)
1	5.0	10.0	25.0	5.5

SU	CRITICAL SITE CONDITIONS THAT AFFECT THE TIMING OF OPERATIONS, AND HOW THEY AFFECT THE TIMING
1	Harvesting, processing, deactivation, and log hauling activities should not occur during winter conditions due to the steepness of the Coppercrown FSR. Yarding/skidding and mechanical felling are to be confined to soil conditions that will not result in an inordinate amount of soil disturbance. If roadside work areas are used, their location must be pre-approved by the Timber Sales Manager or his/her Designate. No roadside work areas permitted within a riparian management area. Ensure natural drainage patterns are maintained during harvesting operatations.

RESULTS AND STRATEGIES

RESULT OR STRATEGY		HOW THE STRATEGY OR RESULT APPLIES TO THE SITE or RATIONALE (IF NOT APPLIED)
Cultural Heritage Resources		2.10.2 Results and Strategies that relates to Cultural Heritage Resources The Rocky Mountain Forest Stewardship Plan, Operating Plan #14 was referred to First Nations, and no traditional use or cultural heritage values where identified for the block. Protection of any identified cultural heritage site from disturbance or destruction is required under the Conservation Act. Forest management practices will cease and the Timber Sales Manager or his/her designate will be immediately notified if cultural or archeological significant resource features are discovered during operations.
Green-Up		2.7.3 Results and Strategies that relate to Biodiversity -Green up and Max cutblock size Block 1 is a mountain pine beetle sanitation cut that is adjacent to an already harvested area that is not greened-up. The patch size will exceed 40 ha, but due to forest health reasons, it is consistent with section 64(1) of the FPPR and section 2.7.3 of the FSP.
Riparian		2.3.4 Results and Strategies that relate to Riparian Areas Riparian assessments have been completed and the plan is consistent with Section 47 to 51, 52(2), and 53 of the FPPR. The block is consistent with riparian retention strategies outlined in Section 2.3.4 of the Rocky Mountain Forest District BCTS Forest Stewardship Plan. Riparian management strategies are addressed in Section: "Riparian Assessments" of the attached Support Document.
Soils		2.1.3 Results and Strategies that relate to soils Temporary: Where the Licensee determines that temporary bladed structures (i.e. excavated trails/roads) are required, the Licensee must have those locations authorized in written by the Timber Sales Manager or his/her designated. Where the Licensees determines temporary bladed structures (i.e. excavated trails/roads) must be built, the Licensee must build those structures using an excavator or other equipment authorized by the Timber Sales Manager or his/her designate, and must rehabilitate those trails and grass-seed with suitable mix following completion of operations conducted under this licence. All rehabilitation must comply with the requirements set out in Sections 35(6) and 35(7) of the Forest Planning and Practices Regulation (FPPR). The amount of temporary access structures combined with other soil disturbance caused by random skidding and mechanical falling must not exceed 5% of the Net Area to Reforest (NAR) for SU 1; the maximum disturbance may temporarily be exceeded by 10% to allow for additional temporary access structures, but they must be rehabilitated by the completion of harvesting. Further measures to mitigate soil disturbance are addressed in the Harvest Plan. The site plan is consistent with Section 35 of the FPPR. Permanent: Permanent Access Structures (PAS) is 5.5% for the block, and therefore does not exceed the applicable performance standard of 7% as stated in Section 36 of the FPPR. The plan is consistent with Section 36 of the FPPR.
Wildlife - Ungulate Winter Range		2.8.3 OEBR-Ungulate Winter Range # U-4-008 Invermere TSA. The block is not located within the Ungulate Winter Range habitat type as indicated in the Ungulate Winter Range order # U-4-008. No wildlife issues have been identified for the block.

Wildlife - Wildlife Tree Retention		2.7.3 Results and Strategies that relates to Biodiversity Stand level in relation to the objective'set by government for wildlife and biodiversity at stand level. Wildlife tree retention targets of 1.4% for the Toby FDU within the MS BEC Variant of Landscape Unit 115 as set out in the Rocky Mountain Forest Stewardship Plan, will be achieved through 3 designated WTRA patches for the block.The WTRA retention level for the block is 22.5% and retention level for the TSL is 23.1%.

STOCKING REQUIREMENTS

SU	NAR	STANDARDS ID #	OTHER PERFORMANCE STANDARDS
1	26.1	1001830	Additional information or requirements are contained in the text of the Rocky Mountain Forest District FSP Stocking Standards approved in the individual Licensee FSP and the FSP itself. The approved document in the Licensee Fsp is the correct standard.

ADMINISTRATION

Amendment number	Date Typed (Yr Mo Dy)	Map Required?
ORIGINAL	2014 02 20	YES

RPF PRINTED NAME	RPF'S SIGNATURE and SEAL
CLAUDE SCHWEIZER	REGISTERED PROFESSIONAL FORESTER PROVINCE OF BRITISH COLUMBIA CLAUDE SCHWEIZER NO. 4236
DATE SIGNED	
2014/02/20	
I certify I personally completed the work described herein.	

Map attached forms an integral part of the site plan.

THE FOLLOWING INFORMATION IS ATTACHED FOR INFORMATION ONLY AND DOES NOT FORM PART OF THE SITE PLAN

SUPPORT DOCUMENT

ORIGINAL

LICENCE #	CP	BLOCK	UBI	OPENING NUMBER	FDU	LOCATION	LATITUDE / LONGITUDE
A90479	-	1	BF5DR		Toby	Mineral Creek	50 22 43 / 116 19 00

ASSESSMENTS

VISUAL IMPACT ASSESSMENT INFORMATION

The block is not located in a VQO polygon. Low visual landscape concerns.

PEST INCIDENCE SURVEY INFORMATION

Pest Specific Comments

IBM-Moutain Pine Beetle- Current infestation level was estimated at <1% incidence during field development activities. All the mature Pl will be harvested to minimize the spread of mountain pine beetle.

DRA - Armillaria Root Rot. Using the Armillaria Risk Assessment Matrix (MOF Technical Report TR-014, June 1998), DRA risk is Low (16). Mixed species planting will be employed.

NW - Windthrow. Windthrow hazard is Moderate. Establishing block boundaries along existing openings, forest cover type lines, and slope breaks will reduce the post harvest windthrow hazard.

IBD - Douglas-fir beetle- No Douglas-fir beetle was identified during the walkthrough. Douglas-fir is a very small stand componenet. Slash disposal will occur as soon as possible to minimize risk to residual stems and adjacent stands.

IBS -Spruce bark beetle. No recent spruce bark beetle was noticed in the field. Spruce is a small stand component. Slash disposal will occur as soon as possible to minimize risk to residual stems and adjacent stands.

Forest Health Comments

ARCHAEOLOGICAL IMPACT ASSESSMENT INFORMATION

TERRAIN STABILITY FIELD AND GULLY ASSESSMENTS INFORMATION

Terrain Stability Comments

A terrain stability/avalanche risk site review of the block and the roads was completed by Wayne Miller (P.Geo, Eng. L.) and Mark Deschenes (Geotechnical and Avalanche Specialist) from Sitkum Consulting Ltd.

The TSA report (Terrain Stability Assessment TSL A90479 Block 1: Units A and B Associated roads Mineral Creek - Toby Creek, Rocky Mountain Forest District, Project No. 13-989, September 2013) states that no changes to the block boundaries or road locations are required for terrain hazard considerations.

The assessment and report are only valid for a cable harvesting system. If an alternative system is considered a new Terrain Stability Report signed by a qualified registered professional will be required.

The likelihood of a small to medium sized debris flow attributable to the proposed development of Block 1, including cable harvesting and road construction ranges from Low to Moderate if generally accepted good development and road construction practices are implemented.

Below is a summary of the report recommendations. The Licence Holder must review the full report and operate in accordance to the terms and procedures outlined in the report. Specific road building instructions are also detailled in the report.

Block and Roads Specific Report Recommendations:
1. Harvesting and road building activities should be modified or suspended when there is abundant hill slope runoff occurring at the site, which is likely to occur during times such as spring break-up or prolonged heavy precipitation.

2. Road drainage systems along both licensee construct and existing roads within the development area should be maintained and kept clear of debris during and subsequent to harvesting operations, including at and down slope of cross drain locations.

3. All natural drainage patterns (including all NCDs as well as dry gullies or dry swales) should be left free of excess debris (slash or soil) that could result in a redirection of seasonal surface runoff.

4. All trails should be fully rehabilitated upon completion of use, ideally prior to the next freshet. If any trails are to overwinter then additional precautions should be taken including pulling back all watercourses crossings and any potentially unstabe fill slopes, and installing frequent cross-ditches in order to limit the potential for redirect runoff.

Avalanche Hazard Mitigation Recommendations:
a) Avalanche Reserve 1: Create a 40m wide forest reserve centered on the shallow gully which extends down slope of FC 4 to reduce the likelihood of size 3 avalanches spreading latterallly within the block and damaging seedlings and younger conifers

b) Avalanche Reserve 2: Create a 40m wide forest reserve centered on the gully between the two forwarding trails and located approximately 50m to 75m from the southern block boundary to reduce the likelihood of forming an avalanche path capable of producing size 3 avalanches which could impact Mineral Creek.

Maintenance and Deactivation Considerations
1. Regular road inspections for additional required maintenance/work (possible ditch cleaning, culvert cleaning, or cross-ditch placements or improvement, armouring or cut slope stabilization).

2. Seasonal deactivation measures (back up cross-ditches for all culvert locations and intermediate waterbars as appropriate) during periods of non-industrial use, including over winter.

3. Full pull back and rehabilitation of the temporary roads within 2 years of construction. Road inspections should take place semi-annually, once in the fall and once during the spring freshet, for the first two years following road construction. Subsequent inspections should be carried out at least annually.

Gully Comments

VEGETATION

RIPARIAN ASSESSMENTS

Management Strategies

Riparian assessments have been completed. Two S6 streams (stream #1 and stream #2) are located in WTP # 1 and Mineral Creek (S2) is flowing adjacent to the block along the western boundary. The block boundary is outside the Riparian Management Areas of all the streams.

Riparian I.D. and Class	RMA	SU	WIDTH (m)	BA or SPH Retained	Comments (Indicate if in a Community Watershed)
Mineral Creek S2	RRZ		30.0		The block boundary is outside the RRZ.
	RMZ		20.0		The block boundary is outside the RMZ.
Stream 1 S6	RMZ		20.0		The block boundary is outside the RMZ.
Stream 2 S6	RMZ		20.0		The block boundary is outside the RMZ.

SOIL ASSESSMENT

HAZARD RATINGS				SOIL CHARACTERISTICS			
SU	Soil Comp	Soil Erosion	Soil Disp	Depth To Unfavourable Subsoil		Type of Unfavourable Subsoil	Sediment Delivery Risk (Community Watersheds)
				Min(cm)	Max(cm)		
1	H	VH	VH	40.0	45.0	PMT	

COMMENTS

Silt Loam is the main soil type throughout the block resulting in a high compaction hazard. Extra care should be taken in receiving sites and to minimize machine traffic.

RESERVE / RETENTION INFORMATION

WTRA / WTP (INSIDE OR ATTRIBUTED TO THE BLOCK)

I.D.#	Area	Description
WTRA	8.5	There are three Wildlife Tree Reserve Areas (WTRA) associated with the block. The overall Forest Cover for the WTRAs is: Pl 80%, Sx 20% (Bl); 100+ years; 24m height; 18 site index WTRA # 1: Structural stages consist of: 75% mature forest (Pl8Sx1Bl1), 5% young forest (Bl7Sx3), 5% poles and saplings (Bl9Sx1), 5% shrubs, 5% herbs, and 5% rock. WTRA # 1 includes two major gullies with S6 streams (#1 & 2) and a rocky ridge. The east and west sides of WTRA # 1 are not ribboned in the field. The north and south sides of the WTRA are field marked in pink BCTS cutblock boundary ribbon. WTRA # 2: Structural stages consist of: 85% mature forest (Pl7Sx3), 5% young forest (Sx6Bl3Pl1), 5% poles, and saplings (Sx6Bl4), and 5% shrubs. WTRA # 2 is on variable terrain (benches too steep and rocky) that is out of deflection. The external perimeter of WTRA # 2 is not ribboned in the field with the exception of the west side that is field marked in pink BCTS cutblock boundary ribbon, WTRA # 3: Structural stages consist of: 55% mature forest (Pl5Sx3Bl1Fd1), 10% young forest (Sx4Bl4Pl2), 10% poles and saplings (Bl5Sx5), 15% shrubs, and 10% herbs. WTRA # 3 includes a dry gully with steep side walls. As recommended by the GeoTech, WTP # 3 acts as an avalanche buffer and it is field marked in orange-glo/black letter (Reserve). The WTRAs will contribute to CWD, wildlife habitat, and stand density. See Wildlife Tree Patch Assessment Card for further details on the WTRAs.

OTHER RESERVE AREAS (INSIDE OR ATTRIBUTED TO THE BLOCK)

I.D.#	Area	Description
RES	1.2	The two Internal Reserves are avalanche buffers as recommended by the GeoTech. Overall Forest Cover for the Internal Reserves: Pl 80%, Sx 10%, Bl 10%; 100+ years; 22m height; 18 site index The Internal Reserve structural stages consist of: 55% mature forest (Pl8Sx1Bl1), 5% young forest (Sx4Bl4Pl2), 10% poles and saplings (Bl7Sx3), 25% shrubs, 5% herbs. The internal Reserves are marked in orange-glo/black letter (Reserve). The two Internal Reserves each include a narrow slide path.

GROUP WTRA / WTP AND SITE DEG. CALCULATION (to be retained on the first block of the Permit only)

Block	Gross Cutblock Area	WTRA / WTP	%	BEC	Perm Access	%
1	37.9	8.5	22.5	MS/dk/	2.1	5.5
2	23.6	4.8	20.4	MS/dk/	1.2	5.3
3	10.6	3.3	31.2	MS/dk/	0.0	0.0
Total # of Blocks: 3	**72.0**	**16.6**	**23.1**		**3.3**	**4.6**

SUPPORTING INFORMATION

HLP/FSP CONSIDERATIONS

Wildlife/Endangered Species Comments

A species at risk search was conducted with the database available from the BC Conservation Data Center, and search results show no wildlife conflicts for the block. No wildlife species at risk were discovered during field development activities, and there are no wildlife habitat areas (WHAs) within or adjacent to the block.

Range Comments

No range issues. Grass seeding will be done for erosion control purposes.

Fisheries Comments

Riparian assessments have been completed. Two S6 streams (stream # 1 & # 2) are located in WTP # 1 and fish bearing Mineral Creek (S2) is adjacent to the lower boundary. The block boundary is outside the 50m RMA of Mineral Creek. The harvesting of the block will have no to minimal impact on downstream fishery values. Impact on water quality can be further minimized by grass speeding in block roads, cut and fill slopes of landings and skid trails after operation. Ensure that existing culverts function properly and maintain water drainage.

Watersheds/Hydro Assessments Comments

This block is not located within a community watershed. No domestic water intake within 10km from the block.

Sensitive Areas Comments

Recreation Comments

Although an old hiking trail that is cut off in the adjacent cutblocks was noticed in SU 1, the block is not within proximity of an official recreation site or trail. The major recreation use is hunting. Harvesting will have minimal impact on this activity.

Cultural Heritage Comments

Protection of any identified cultural heritage site from disturbance or destruction is required under the Conservation Act, Forest management practices will cease and the Timber Sales Manager or his/her designate will be immediately notified if cultural or archeological significant resource features are discovered during operations.

Biodiversity Emphasis/L.U. Comments

The block has a low biodiversity emphasis.

WTRA retention level for the block is 22.5% and average retention level for the TSL is 23.1% . The target retention level of 1.4% for LU 115, MSdk is exceeded through WTRA patches by block and TSL.

Other Resources Comments

The block is used by a trapper/guide outfitter (license # 400829). The trapper and guide outfitter were referred to and no response was received. Patch size distribution and WTRA requirements for the Landscape Unit (#115) will minimize the block harvesting impacts on this license.

ADDITIONAL COMMENTS:

Calculations - Permanent Access Structures

PERMANENT ACCESS STRUCTURES
Coppercrown FSR: 195m x 20m = 0.39ha

Backspar trail CR PLA90479 Section 5 Seg 1: 383m x 10m = 0.38ha
Backspar trail CR PLA90479 Section 5 Seg 2: 83m x 10m = 0.08ha

5 landings: 5 x 0.25ha= 1.25ha

Total PAS: 2.1ha
*GIS Rounding
% of Gross: 5.5%

TEMPORARY ACCESS STRUCTURES
SU 1:
Temporary Roads:
CR PLA90479 Section 1 Seg 1 (in block 1): 622m x 15m = 0.93ha
CR PLA90479 Section 2 Seg 1: 285m x 15m = 0.43ha

Forwarding trail CR PLA90479 Section 3 Seg 1: 299m x 10m = 0.29ha
Forwarding trail CR PLA90479 Section 4 Seg 1: 146m x 10m = 0.15ha

Total TAS SU 1: 1.8ha*
*GIS Rounding
% of NAR: 6.9%

Invasive Plants

A review of the invasive plants provincial inventory database and mapping system was conducted and no invasive plants were reported or observed during field development activities within the immediate area of the block.

Measure to be carried out to prevent the introduction or spread of invasive plants are:
1)The Timber Sales Manager or his/her designate will ensure that equipment used for primary forest activities is inspected and if necessary cleaned, prior to moving from one invasive plant location to another area.
2)The Timber Sales Manager or his/her designate will ensure exposed soils on roadsides and rehabilitated areas are seeded within one year following the completion of harvesting activities, and landings are reseeded within one year of the completion of hazard abatement.
3)Report new invasive plant infestations to the Timber Sales Manager or his/her designated.

ADMINISTRATION

Amendment number	Date Typed (Yr Mo Dy)	Map Required?
ORIGINAL	2014 02 20	YES

THE FOLLOWING INFORMATION IS ATTACHED FOR INFORMATION ONLY AND DOES NOT FORM PART OF THE SITE PLAN

HARVEST PLAN

ORIGINAL

LICENCE #	CP	BLOCK	UBI	OPENING NUMBER	FDU	LOCATION	LATITUDE / LONGITUDE
A90479	-	1	BF5DR		Toby	Mineral Creek	50 22 43 / 116 19 00

SILVICULTURE SYSTEMS

SU	SYSTEM	VARIANT	PHASE	RESERVE	Min BA (m2/ha)	Min Residual Density (sph)
1	CLEAR		REMOV			

Current Stand Structure/Site Conditions	The even-aged stand consists of mature Lodgepole pine (90%) with a minor component of Spruce and Subalpine fir. The harvest area of the block has a cruise based residual net volume of 426 m3/ha and a stand density of 1400 stems/ha. Dead standing beetle killed Lodgepole pines and small blowdown/fallout pockets are found throughout the stand.
Silviculture Systems SU Comments	SU-1: The purpose of this entry is to harvest all the mature timber. A healthy even aged stand of preferred species will be established on the site through artificial regeneration.
Min. Characteristics of Leave Trees (Form, Health, Vigour)	None -Cable harvest

Additional Comments

Constraints - Harvesting	SU 1 has slopes throughout that are consistently greater than 35%. The licensee should be aware of Worksafe BC regulations surrounding harvesting on steep slopes, and in addition to the mapped areas, there may be other areas with slopes exceeding 35%.
Constraints - Harvesting	This area is designated for cable and approximately 30% is on bunchable terrain. Square lead yarding to roadside decking is feasible in some locations. There are two forwarding trails and a skid trail that splits into two planned for SU 1. The skid trail in the cutblock can be used as a backspar trail for the area above the road. Yarding distances in this portion of the block are short and the slopes are too long and steep to hoe chuck. The two forwarding trails are going through some steep ground. The upper forwarding trail is adverse (-5 to -10%). The lower forwarding trail has a short pitch of 26% near the start and favorable grades ranging from 5-12% beyond. The lower forwarding trail can be used as a backspar trail for the uphill yarding area between the two forwarding trails.The timber on the top side of the Coppercrown FSR at the north end of the block will have to be forwarded 200-300m down the FSR to the existing landing.

SOIL ASSESSMENT

	HAZARD RATINGS			SOIL DISTURBANCE				SOIL CHARACTERISTICS			
SU	Soil Comp.	Soil Erosion	Soil Disp.	Max Allow Soil Dist %	Max Allow Max Amount TAS may exceed MASD prior	Max Allow Perm Access Structures %	MASD for Roadside work areas %	Depth to Unfavorable Subsoil Min (cm)	Depth to Unfavorable Subsoil Max (cm)	Type of Unfavorable Subsoil	Sediment Delivery Risk (Comm. Watershed)
1	H	VH	VH	5.0	10.0	5.5	25.0	40.0	45.0	Parent Material	

SU	Critical site conditions that affect the timing of operations and how they affect the timing
1	Harvesting, processing, deactivation, and log hauling activities should not occur during winter conditions due to the steepness of the Coppercrown FSR. Yarding/skidding and mechanical felling are to be confined to soil conditions that will not result in an inordinate amount of soil disturbance. If roadside work areas are used, their location must be pre-approved by the Timber Sales Manager or his/her Designate. No roadside work areas permitted within a riparian management area. Ensure natural drainage patterns are maintained during harvesting operatations.

SU MANAGEMENT COMMENTS

SU	SU Description
1	The stand consists of mature Lodgepole pine with a minor component of Spruce and Subalpine fir. The harvest area of the block has a cruise based residual net volume of 426 m3/ha and a stand density of 1400 stems/ha. Dead standing beetle killed Lodgepole pines and small blowdown/fallout pockets are found throughout the stand. The terrain in SU 1 consists mainly of long uniform cable slopes with a few gullies.

SOIL MANAGEMENT COMMENTS

Soil Conservation

Silt Loam is the main soil type throughout the block resulting in a high compaction hazard. Extra care should be taken in receiving sites and to minimize machine traffic.

Temporary Access

There are two roads (CR PLA90479 Section 1 & 2), two forwarding trails, and a backspar trails proposed for block1. The lower spur road (CR PLA Section 1) is adverse and goes through several gullies. Approximately half the length of the lower sprur is located in cutblocks. The upper road (CR PLA90479 Section 2) is an extension of the Coppercrown FSR and is adverse (~3% average).

5 landings are proposed for the block. The landings are included in the permanent access structure calculations. All the landings must be rehabilitated post harvesting.

The proposed roads, forwarding trails, and the backspar trail (old reclaimed trail) are temporary access structures that must be fully rehabilitated following harvest. The backspar trail has been included in the permanent access structures because post harvest soil productivity is questionable.

If the licensee determines that roadside work areas are required, their locations must be pre-approved by the Timber Sales Manager or his/her designate. No roadside work areas are permitted within a riparian management area.

Slope Instability

A terrain stability/avalanche risk site review of the block and the roads was completed by Wayne Miller(P.Geo, Eng. L.) and Mark Deschenes (Geotechnical and Avalanche Specialist) from Sitkum Consulting Ltd.

The TSA report (Terrain Stability Assessment TSL A90479 Block 1: Units A and B Associated roads Mineral Creek - Toby Creek, Rocky Mountain Forest District, Project No. 13-989, September 2013) states that no changes to the block boundaries or road locations are required for terrain hazard considerations.

The assessment and report are only valid for a cable harvesting system. If an alternative system is considered a new Terrain Stability Report signed by a qualified registered professional will be required.

The likelihood of a small to medium sized debris flow attributable to the proposed development of Block1, including cable harvesting and road construction ranges from Low to Moderate if generally accepted good development and road construction practices are implemented.

Below is a summary of the report recommendations. The Licence Holder must review the full report and operate in accordance to the terms and procedures outlined in the report. Specific road building instructions are also detailled in the report.

Block and Roads Specific Report Recommendations:
1. Harvesting and road building activities should be modified or suspended when there is abundant hill slope runoff occurring at the site, which is likely to occur during times such as spring break-up or prolonged heavy precipitation.

2. Road drainage systems along both licensee construct and existing roads within the development area should be maintained and kept clear of debris during and subsequent to harvesting operations, including at and down slope of cross drain locations.

3. All natural drainage patterns (including all NCDs as well as dry gullies or dry swales) should be left free of excess debris (slash or soil) that could result in a redirection of seasonal surface runoff.

4. All trails should be fully rehabilitated upon completion of use, ideally prior to the next freshet. If any trails are to overwinter then additional precautions should be taken including pulling back all watercourses crossings and any potentially unstabe fill slopes, and installing frequent cross-ditches in order to limit the potential for redirect runoff.

Avalanche Hazard Mitigation Recommendations:
a) Avalanche Reserve 1: Create a 40m wide forest reserve centered on the shallow gully which extends down slope of FC 4 to reduce the likelihood of size 3 avalanches spreading latterallly within the block and damaging seedlings and younger conifers

b) Avalanche Reserve 2: Create a 40m wide forest reserve centered on the gully between the two forwarding trails and located approximately 50m to 75m from the southern block boundary to reduce the likelihood of forming an avalanche path capable of producing size 3 avalanches which could impact Mineral Creek.

Maintenance and Deactivation Considerations
1. Regular road inspections for additional required maintenance/work (possible ditch cleaning, culvert cleaning, or cross-ditch placements or improvement, armouring or cut slope stabilization).

2. Seasonal deactivation measures (back up cross-ditches for all culvert locations and intermediate waterbars as appropriate) during periods of non-industrial use, including over winter.

3. Full pull back and rehabilitation of the temporary roads within 2 years of construction. Road inspections should take place semi-annually, once in the fall and once during the spring freshet, for the first two years following road construction. Subsequent inspections should be carried out at least annually.

RIPARIAN ASSESSMENTS

Management Strategies

Riparian assessments have been completed. Two S6 streams (stream #1 and stream #2) are located in WTP #1 and Minearl Creek (S2) is flowing adjacent to the block along the western boundary. The block boundary is outside the Riparian Management Areas of all the streams.

Riparian I.D. and Class	RMA	SU	WIDTH (m)	BA or SPH Retained	Comments (Indicate if in a Community Watershed)
Mineral Creek S2	RRZ		30.0		The block boundary is outside the RRZ.
	RMZ		20.0		The block boundary is outside the RMZ.
Stream 1 S6	RMZ		20.0		The block boundary is outside the RMZ.
Stream 2 S6	RMZ		20.0		The block boundary is outside the RMZ,

COARSE WOODY DEBRIS MANAGEMENT STRATEGY INFORMATION

Coarse woody debris objectives will be met with existing on-site levels of downed material (~30m3/ha). Anticipate a range of piece sizes greater than 10 cm in diameter, including stumps greater than 10 cm tall. Some localized areas may have greater or lesser amounts of CWD, depending on its amount pre-harvest and operational considerations such as the amount of stem breakage, skid trail location, etc.

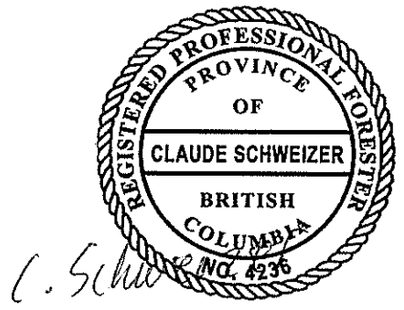
Performance Std. (%) :	Block Target (%):	Coarse Woody Debris (m3/ha):

DEFINITIONS

ADMINISTRATION

Amendment number	Date Typed (Yr Mo Dy)	Map Required?
ORIGINAL	2014 02 20	YES

Print off the PAS/TAS table located as an attachment on the Block Details Screen and attach to this prescription.

RPF PRINTED NAME	RPF'S SIGNATURE and SEAL
CLAUDE SCHWEIZER	
DATE SIGNED	
2014/02/20	
I certify I personally completed the work described herein.	

THE FOLLOWING INFORMATION IS ATTACHED FOR INFORMATION ONLY AND DOES NOT FORM PART OF THE SITE PLAN

SILVICULTURE PLAN

ORIGINAL

LICENCE #	CP	BLOCK	UBI	OPENING NUMBER	FDU	LOCATION	LATITUDE / LONGITUDE
A90479	-	1	BF5DR		Toby	Mineral Creek	50 22 43 / 116 19 00

ECOLOGICAL INFORMATION

SU	Ecology Unit	Area	Zone	Subzone	Variant / Phase	Site Series (series - %)	Elevation Avg (m)	Slope Avg (%)	Aspect	Slope Position	Rooting Depth (cm)	Soil Texture
1	A	26.1	MS	dk		01-90 04-10	1,540	55	NE	Middle Slope	45	SIL

STOCKING REQUIREMENTS

ASSESSMENT DATES

Standard Unit	Standards ID	Regen Delay (yrs)	Freegrow Early (yrs)	Freegrow Late (yrs)
1	1001830	7		20

Min/Max Elevation Regime: 1400 / 1760

SU : 1 REGENERATION LAYER

PREFRERRED SPECIES				ACCEPTABLE SPECIES				POST SPACING DENSITY(sph)				MAX CONIFEROUS (sph)	
	Species	Min Ht. (m)	Footnotes		Species	Min Ht. (m)	Footnotes	Min	1200	Max	2200	25000	
								WELL SPACED TREES (sph)					
Fdi	Douglas Fir - Interior	0.8		Bl	Subalpine Fir	0.8		Target Pref/Acc		Minimum Pref/Acc		Minimum Pref	Min Horizontal Dist. Pref/Acc (m)
Sx	Hybrid Spruce (SE x SW)	0.8						1200		700		600	2.0
Pli	Lodgepole Pine - Interior	1.4										Height Relative to Competition (%)	
Lw	Western Larch	1.4	32									125	

32: Limited by growing-season frosts

OTHER REQUIRED STOCKING INFORMATION

ACTIVITIES

SILVICULTURE ACTIVITY COMMENTS

ACTIVITY	COMMENT

MANAGEMENT STRATEGY

COARSE WOODY DEBRIS MANAGEMENT STRATEGY INFORMATION

Coarse woody debris objectives will be met with existing on-site levels of downed material (~30m3/ha). Anticipate a range of piece sizes greater than 10 cm in diameter, including stumps greater than 10 cm tall. Some localized areas may have greater or lesser amounts of CWD, depending on its amount pre-harvest and operational considerations such as the amount of stem breakage, skid trail location, etc.

Performance Std. (%):	Block Target (%):	Coarse Woody Debris (m3/ha):

ADMINISTRATION

Amendment number	Date Typed (Yr Mo Dy)	Map Required?
ORIGINAL	2014 02 20	YES

RPF PRINTED NAME	RPF'S SIGNATURE and SEAL
CLAUDE SCHWEIZER	
DATE SIGNED	
2014/02/20	
I certify I personally completed the work described herein.	

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