



TENURE IDENTIFICATION

AMENDMENT # 2

LICENCE #	CP	BLOCK	UBI	OPENING NUMBER	FDU	LOCATION	LATITUDE / LONGITUDE
A92377	-	327	BG3S2	093O034-	FDU 4	Tsedeka Cr	55 19 16 / 123 18 07

AREA UNDER THE PLAN

GROSS AREA (TAUP)	PAS	NP	WTRA / WTP	RESERVES	OTHER	NAR
56.8	1.6	0.5	11.5	1.0	0.0	42.2

ADDITIONAL COMMENTS

DEFINITIONS (ADD DEFINITIONS AS REQUIRED)
This Site Plan is consistent with the Amendment #11 of the BCTS Prince George Business Area's approved 2010 - 2015 Forest Stewardship Plan - FDU 4: Mackenzie TSA.

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	10.0	5.0	25.0	5.3
2	10.0	5.0		
SU	CRITICAL SITE CONDITIONS THAT AFFECT THE TIMING OF OPERATIONS, AND HOW THEY AFFECT THE TIMING			
1	No specific seasonal constraints. Thin duff layers on upper crest slopes in the south may be prone to scalping and erosion due to soil displacement from concentrated skidding from forwarding equipment. Terrain stability concerns in the southeast require prompt rehabilitation and maintenance of natural drainage. Monitor closely and rehabilitate any excess soil disturbance as required. Additional details are provided in the "Harvesting Constraints" in the Harvest Plan as well as the "Terrain Stability Comments" in the Support document.			
2	Poor to moderately drained silts and silt loams with a high compaction hazard are prone to excess disturbance if harvested outside dry or frozen conditions. Rehabilitate any excess soil disturbance. Additional details are provided in the "Harvesting Constraints" in the Harvest Plan.			

RESULTS AND STRATEGIES

Biodiversity Objectives	
Result or Strategy Description	5.1.1.1.4 - FDU 4 - Old Growth Order - Land Act Section 93.4 Order Establishing Non-Spatial Landscape Biodiversity Objectives in the Mackenzie Forest District dated May 1, 2008, and as amended on September 23, 2010.
Applies:	YES
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Block 327 falls within BEC Group 5 in the Blackwater LU where the 2008 Order omitted to specify any targets. For comparative purposes, the resultant available Old and Old Interior Forest was evaluated against the targets for BEC Group 5 of the adjacent Philips LU. Both these targets are met and exceeded as per the 2012 analysis. The proposed block 327 does not overlap any forest modeled as "old" in the analysis.
Result or Strategy Description	5.1.2.4.4 - FDU 4 - Landscape Biodiversity - FPPR Section 9 and Section 12.4. FPPR. Order Establishing Non-Spatial Landscape Biodiversity Objectives in the Mackenzie Forest District. May 1, 2008
Applies:	YES
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Block 327 will contribute approximately 45ha to an existing 250-1000ha extra large patch within the Blackwater LU. This patch will exceed 1300ha when all the planned blocks are included. The area occurring in large and extra large patches throughout this landscape unit continues to increase, trending away from the intended distribution targets. This is the result of proposed and recent harvesting to salvage timber that has been damaged by mountain pine. Block 327 is consistent with the Result and Strategy as it is also a salvage proposal. See the Supporting Information - Biodiversity Emphasis\ LU Comments for more details.
Result or Strategy Description	5.1.2.5.1 - all FDUs - Stand Level Biodiversity - FPPR Section 9.1 and Section 12.5(1).
Applies:	YES
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	The block is consistent with the FSP objectives. 11.5 ha have been identified as Wildlife Tree Retention Area accounting for approximately 20% of the gross block area.
Result or Strategy Description	5.1.1.1.1 - FDU1 - Order Establishing Landscape Biodiversity Objectives for the Prince George Timber Supply Area (dated October 20, 2004) continued under section 93.8 of the Land Act.
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.
Result or Strategy Description	5.1.1.1.2 - FDU 2 - Old Growth Order - Order Establishing Provincial Non-Spatial Old Growth Objectives. June 30, 2004. Continued under section 93.8 of the Land Act.
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.

Result or Strategy Description	5.1.1.1.3 - FDU 3 - Old Growth Order - Order Establishing Provincial Non-Spatial Old Growth Objectives. June 30, 2004. Continued under section 93.8 of the Land Act.
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.
Result or Strategy Description	5.1.1.1.5 - FDU 5 - Old Growth Order - Order Establishing Provincial Non-Spatial Old Growth Objectives. June 30, 2004 established under section 4(1) and (2) of the FPC. Draft Old Growth Management Areas (OGMA) identified for the South Trench Landscape Unit (LU), May 31, 2005 under section 8 of this order.
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.
Result or Strategy Description	5.1.1.2.1 - FDU 1 - OGMA - Dome and Slim Landscape Units - October 31, 2002; Humbug Landscape Unit - August 1, 2003. Continued under section 93.8 of the Land Act.
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.
Result or Strategy Description	5.1.1.2.2 - FDU 4 - OGMA - Section 93.4 of the Land Act. Spatial Land Use Objectives for part of the Mackenzie Forest District Area, dated September 23, 2010.
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	No actions required - The 2010 Amendment to the Non-Spatial Old Growth Order did not apply to the Blackwater Landscape Unit.
Result or Strategy Description	5.1.1.2.3 - FDU 5 - OGMA - Established under FPC 4(1) and (2) Order to Establish the Crescent Spur, Lower Morkill Cushing, Forgetmenot, Upper Morkill, North Trench and Goat Landscape Unit Objectives, January 30, 2006. Order to Establish the East Kinbasket, West Kinbasket, Hugh Allan, Foster and Dawson Landscape Unit Objectives, May 26, 2005. Order to Establish the Kiwa-Tete and Canoe Landscape Unit Objectives, January 30, 2006
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.
Result or Strategy Description	5.1.1.3.1 - all FDUs - ADA/SRA - Order Establishing Land Use Objectives Under Section 93.4 of the Land Act for the Purposes of FRPA - November 21, 2006 (Prince George Timber Supply Area and Mackenzie Timber Supply Area). Order Establishing Land Use Objectives Under Section 93.4 of the Land Act for the Purposes of FRPA - November 21, 2006 (Robson Valley Timber Supply Area).
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	No actions required - Block 327 is not within or adjacent to areas designated as Agricultural or settlement reserve areas.
Result or Strategy Description	5.1.2.4.1 - FDU 1 - Landscape Biodiversity - FPPR Section 9 and Section 12.4.
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.
Result or Strategy Description	5.1.2.4.2 - FDU 2 - Landscape Biodiversity - FPPR Section 9 and Section 12.4.
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.
Result or Strategy Description	5.1.2.4.3 - FDU 3 - Landscape Biodiversity - FPPR Section 9 and Section 12.4. FPPR Section 64 and 65 as of January 14, 2008
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.
Result or Strategy Description	5.1.2.4.5 - FDU 5 - Landscape Biodiversity - FPPR Section 9 and Section 12.4. Order Establishing Provincial Non-Spatial Old Growth Objectives. June 30, 2004
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.
Cultural Heritage Resources	
Result or Strategy Description	5.1.2.7.1 - all FDUs - Cultural Heritage Resources - FPPR Section 10(a) and (b).
Applies:	YES
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	First Nation consultation was initially completed for the northern portion of block 327 under Operating Plan #5 and no comments were received. Based on an overview model completed by BC Timber Sales, an Archaeological Impact Assessment was completed in 2014 which did not identify any features or evidence of First Nations use. As well, no Cultural Heritage Resources were found during the field work. If a previously unidentified CHR is identified while conducting a harvesting or silvicultural activity under this Site Plan, operations should cease, or be modified to the extent required, until an appropriate cultural heritage assessment is completed.

Recreation Resources	
Result or Strategy Description	5.1.3.4.2 - FDU 4 - Recreation - Recreation Resources
Applies:	YES
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	No actions required - Block 327 is not within or adjacent to any established recreation areas within the Mackenzie TSA.
Result or Strategy Description	5.1.3.4.1 - FDU 1, 2, 3, 5 - Recreation - FRPA Section 181.
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.
Riparian Management	
Result or Strategy Description	5.1.2.3.1 - all FDUs - Riparian - FPPR Sections 8 and 12.3. Riparian Areas Management
Applies:	YES
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Block 327 proposes harvesting adjacent to two S6 streams and a W1 wetland. Reserves are retained on all riparian features that exceed the minimum required for a moderate to high hazard. Specific details regarding the assessments and proposed operations within the riparian management areas for all the streams are contained in the "Riparian Assessments" section of the Supporting Document and Harvest Plan.
Result or Strategy Description	5.1.2.3.2 - FDU 5 - Movement Corridors - Established under FPC 4(1), Order to Establish the East Kinbasket, West Kinbasket, Hugh Allan, Foster and Dawson Landscape Unit Objectives, May 26, 2005.
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.
Result or Strategy Description	5.1.3.3.1 - FDU 1, 2, 3 - Lakeshore Management - No formal Lakeshore Management Zone objectives were established for any of these classified lakes, therefore no result or strategy is required in this FSP.
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.
Soil Objectives	
Result or Strategy Description	5.1.2.1.1 - all FDUs - Soils - FPPR Sections 5 and 12.2
Applies:	YES
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Consistent with Sections 35 and 36 of the FPPR. The area proposed as Permanent Access is 1.6ha with the maximum allowable set at 5.3%, inclusive of all roads (temporary and permanent). The maximum allowable soil disturbance on the Net Area to be Reforested is 10% for both SU-1 and SU-2. Temporary roads have been prescribed however, should site conditions make rehabilitation impractical, conversion of some or all of the temporary roads to permanent will not exceed the prescribed maximum provided the average disturbance width remains consistent with the parameters described in the Soils Disturbance section of the Support Document. Additional details can also be found in the Critical Site Conditions and Harvest Constraints of the Harvest Plan.
Visual Objectives	
Result or Strategy Description	5.1.2.6.1 - FDU 4 - Visual Quality - FPPR section 9.2.
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Block 327 does not fall within an area where visual quality objectives have been identified. A Visual Impact Assessment is not required.
Result or Strategy Description	5.1.3.2.1 - FDU 1, 2, 3, 5 - Visual Quality - FDU 1 - Order for the Establishment of VQOs for the Prince George Forest District. December 7, 2005. Established under Section 7(2) of GAR. FDU 2 - FRPA Section 181. FDU 3 - FRPA Section 181, GAR Section 17. FDU 5 - FRPA Section 181, GAR Section 17.
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.
Wildlife Objectives	
Result or Strategy Description	5.1.2.2.1 - FDU 1 and 2 - SAR Notice and WHA - FPPR Section 7: Notice - Indicators of the Amount, Distribution and Attributes of Wildlife Habitat Required for the Survival of Species at Risk in the Prince George Forest District - December 30, 2004. Order - Wildlife Habitat Area #7-003 - December 15, 2005
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.
Result or Strategy Description	5.1.2.2.2 - FDU 1, 2, 5 - Mountain Caribou UWR - Order Mountain Caribou Ungulate Winter Range #U7-003. UWR order approved on December 9, 2009 under GAR sections 9(2) and 12(1).
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.

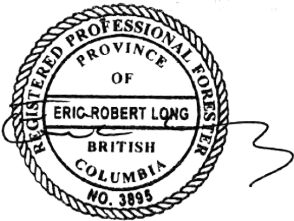
Result or Strategy Description	5.1.2.2.3 - FDU 4 - SAR Section 7 Notices and UWR - FPPR Section 7: Notice A - Indicators of the Amount, Distribution and Attributes of Wildlife Habitat Required for the Survival of Species at Risk in the Mackenzie Forest District. December 2004. Notice B - Indicators of the Amount, Distribution and Attributes of Wildlife Habitat Required for the Winter Survival of Ungulate Species in the Mackenzie Timber Supply Area. December 2004. Order - Ungulate Winter Range #U7-009. November 24, 2005
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	No actions required - Block 327 is not within or adjacent to UWR-9 or an area covered by the 2008 Recovery Action Plan for Northern Caribou Herds in North-central BC.
Result or Strategy Description	5.1.2.2.4 - FDU 4 - UWR - Order - Northern Caribou Ungulate Winter Range #U7-001. Original UWR order approved April 7, 2003 and subsequently amended on July 15, 2010 under GAR sections 9(2) and 12(1). Order - Northern Caribou Ungulate Winter Range #U7-007. UWR order approved June 14, 2007 under GAR sections 9(2) and 12(1). Order - Moose, Elk, and Mountain Goat Ungulate Winter Range #U7-017. UWR order approved December 12, 2008 under GAR sections 9(2) and 12(1).
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	No actions required - Block 327 is not within or adjacent to Ungulate Winter Ranges UWR-001, UWR-007, or UWR-017.
Result or Strategy Description	5.1.2.2.5 - FDU 5 - Section 7 SAR Notice - FPPR Section 7: Notice - Indicators of the Amount, Distribution and Attributes of Wildlife Habitat Required for the Survival of Species at Risk in the Headwaters Forest District, December 30, 2004
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.
Result or Strategy Description	5.1.3.1.1 - FDU 1 - Mule Deer UWR - FPPR Section 181. Order - Ungulate Winter Range #U7-013 - November 26, 2003
Applies:	NO
How Result or Strategy Applies to the Site (or Rationale if it does not apply)	Not applicable as the block is located in FDU 4.

STOCKING REQUIREMENTS

SU	NAR	STANDARDS ID #	OTHER PERFORMANCE STANDARDS
1	33.3	1039343	
2	8.9	1039345	
COMMENTS	Management objectives should target pine consistent with the stocking standards for the SBS wk2 01site series in SU 1 and the SBS wk2 04 in SU-2. Bastard toad flax was noted in the southern portion of the block so consideration should be given to increasing the initial stocking density or including a mix of spruce with the pine where appropriate to reduce the risk of stocking levels not being achieved due to the high potential for pine stem rust mortality.		

ADMINISTRATION

Amendment number	Date Typed (Yr Mo Dy)	Map Required?
ORIGINAL	2015 02 15	YES
1	2016 02 09	YES
Std Amendment Rationale:	Minor amendment to clarify language around timing restrictions for active goshawk nests. Minor area updates.	
2	2016 02 15	NO
Std Amendment Rationale:	Amendment to provide clarity with regard to AIA findings.	

RPF PRINTED NAME	RPF'S SIGNATURE and SEAL
ERIC LONG	
DATE SIGNED	
2016/02/15	
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 standards acceptable of a Registered Professional Forester.	

Map attached forms an integral part of the site plan.

SUPPORT DOCUMENT

AMENDMENT # 2

LICENCE #	CP	BLOCK	UBI	OPENING NUMBER	FDU	LOCATION	LATITUDE / LONGITUDE
A92377	-	327	BG3S2	093O034-	FDU 4	Tsedeka Cr	55 19 16 / 123 18 07

ASSESSMENTS

VISUAL IMPACT ASSESSMENT INFORMATION
Block 327 does not fall within an area where visual quality objectives have been identified. A Visual Impact Assessment is not required.
PEST INCIDENCE SURVEY INFORMATION
Pest Specific Comments
The majority of lodgepole pine in block 327 is grey attack with no evidence of an active mountain pine beetle population noted. No other forest health issues were noted. As per the 2007 "Rust Hazard Management Strategy for the Mackenzie Timber Supply Area", block 327 is in an area rated as Moderate rust hazard (800m - 1000m). Bastard toad flax was noted throughout the block so consideration should be given to increasing the initial stocking density in SU-2 and planting a mix of spruce and pine where appropriate in SU-1 to reduce the risk of understocking in the juvenile stand due to pine stem rust mortality.
Forest Health Comments
The block is made up of 100-120 year old beetle killed pine with a minor spruce component. No current pine beetle attack was noted. No other health issues appear to be impacting the mature forests. A mix of pine and spruce is recommended.
ARCHAEOLOGICAL IMPACT ASSESSMENT INFORMATION
Several small areas modeled by BCTS as having a high potential for Cultural Heritage Resources (CHRs) fall within the boundaries of block 327 and an Archaeological Impact Assessment was completed by Ecofor Natural and Cultural Resource Consultants in the fall of 2014 (See "Interim Report: A92377-327 and A92377-330", January 30, 2015). No cultural or archaeological findings were discovered and no further action is proposed. In addition, no other CHRs were noted during the field work associated with the development of this Site Plan. No specific actions are required however, if a previously unidentified CHR is discovered while conducting any activities under this Site Plan, all operations must cease or be modified to the extent necessary to protect the resource feature until a "cultural heritage resource evaluation", as specified in the applicable Forest Stewardship Plan, is carried out.
TERRAIN STABILITY FIELD AND GULLY ASSESSMENTS INFORMATION
Terrain Stability Comments
A small slump was identified below the southwestern boundary during field layout on slopes exceeding 70%. A Terrain Stability Field Assessment (TSFA) was completed by Onsite Engineering Ltd. in September of 2014 (See. "Terrain Stability Assessment: Timber License A92377 Block 327 - Tsedeka Creek"). The TSFA determined that the likelihood of a harvesting related landslide within the proposed development to be VERY LOW but the likelihood of a harvesting related landslide occurring on the fluvial escarpment downslope of the harvest area is estimated as LOW to MODERATE. The following recommendations were provided that, when implemented, would result in a Low Likelihood of a post-harvest landslide: - Any bladed trails constructed within 50m of the lower (west) boundary of the development should be temporarily deactivated (frequent cross-ditches <50m spacing) concurrent with the completion of harvesting activates and fully rehabilitated within 1 year of the completion of harvesting activities (ie. recontouring of the slope \ natural drainage paths \ woody debris over the recontoured surface). - Drainage structures on any roads must be maintained for the life span of the road or deactivated at harvest completion. Also recommended was a boundary adjustment above the slide which was completed in conjunction with the TSFA. The site plan reflects this change and temporary roads only are proposed in the vicinity of the slide.
Gully Comments
Not applicable to British Columbia interior sites.
VEGETATION
The brush hazard for SU -1 is Moderate as there are areas with higher brush cover (alder/willow) and scattered aspen. SU-2 has a Low brush hazard. A brushing treatment may required in portions of SU-1 in order to meet the current free-to-grow standards.
RIPARIAN ASSESSMENTS
Management Strategies
There are two S6 streams, an ncd and W1 wetland adjacent to the harvest boundaries of the block. Windthrow hazard assessments were not completed as the located boundaries will meet the retention requirement of the more restrictive windthrow hazard (WTH). The riparian management objective is to protect the existing riparian attributes of vegetation and forest cover diversity adjacent to the wetlands and to maintain natural drainage patterns in order to not adversely impact downstream water quality or hydrologic processes on the local landscape.

Riparian I.D. and Class	RMA	SU	WIDTH (m)	BA or SPH Retained	Comments (Indicate if in a Community Watershed)
Tsedeka Cr S2	RMZ	WTRA	50.0		The entire riparian management area is well outside the harvest boundaries. Maintain natural drainage patterns above to minimize potential downslope sedimentation.
R1 S6	RMZ	2	20.0		The 20m riparian management zone is outside the harvest boundaries. No special actions are required - harvest to boundary as per the adjacent SU.
R2 S6	RMZ	WTRA	20.0		The majority of the riparian management zone is outside the harvest boundaries. Where the stream flows through the WTRA, the boundary encroaches within 10m of the stream on the north side only. No special actions are required. Harvest to boundary as per the adjacent SU.
R3 W1	RMZ	1, 2	40.0		The additional 5-20m of reserved timber will retain 25-50% of the RMZ, consistent with the requirements of moderate to high windthrow hazard. No additional retention is required and harvest to boundary as per the adjacent SU.
	RRZ	1, 2	10.0		A variable reserve width of 15-30m is maintained between the harvest boundary and wetland edge.
ncd-a NCD	MFZ	1	0.0		Ncd-a is contained within an internal reserve of spruce and balsam. No harvesting is proposed immediately adjacent. Fall and skid away as per the adjacent SU.

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	H	M	20.0	54.0	SG	
2	H	H	M	30.0	54.0	FM	

COMMENTS							
<p>Soils are a mix of medium to moderately coarse textured silt and sandy loams on a mid to upper slope positions within the SBS wk2. Soil moistures are well drained mesic and sub-mesic soils in the mid and upper slope position with poor to medium nutrient regimes. There is a High compaction hazard due to the silt component and a High erosion hazard so it is important to minimize displacement of the forest floor duff layer on the steeper \ upper crest slopes and to avoid excess skidding disturbance during wet conditions.</p> <p>The TSED 19,000rd is intended to be a 4-5m branch road while the remaining spur roads are planned as 4m roadside logging truck trails. The area proposed to be occupied by permanent access structures is based on an average disturbed width of 8m (top-of-cut to toe-of-fill). The TSED 19,000rd is planned as a permanent road as it access's block 330 to the north. The TSED19,100rd is permanent for the first 240m for silviculture access to the lower NW corner of the block.</p>							

RESERVE / RETENTION INFORMATION

WTRA / WTP (INSIDE OR ATTRIBUTED TO THE BLOCK)		
I.D.#	Area	Description
WTRA	11.5	<p>Representative wildlife tree retention areas (WTRA) are located on the steep slopes below the western block boundary and adjacent to the W1 wetland to the east.</p> <p>- The western WTRA's are comprised of beetle killed pine leading (90% PI) stands with a healthy spruce understory on steep dry slopes. The estimated forest cover inventory is PI(90)Sw((10) - 9/10 - 22/20 -21/E - 20 - 1200 (14).</p> <p>- The WTRA along the W1 wetland is a dense, small piece size, mixed pine and spruce stand with an estimated inventory PI(70) Sw(30) - 9/10 - 18/22 - 18/E - 35 - 1400 (14).</p> <p>Note that the above inventory labels are an average approximation based on ocular estimates alone and should not be construed as a silviculture inventory label derived from a statistically sound survey of the wildlife tree retention areas.</p>
OTHER RESERVE AREAS (INSIDE OR ATTRIBUTED TO THE BLOCK)		
I.D.#	Area	Description
NC	1.0	Brush, devils club and sparse, large mature spruce and subalpine fir along ncd-a. SBS wk2 05..

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	%
327	56.8	11.5	20.2	SBS/wk/2	1.6	2.8
330	36.2	8.0	22.0	SBS/wk/2	1.0	2.6
JG104	47.2	7.0	14.8	SBS/wk/2	3.0	6.4
JG105	22.5	3.0	13.1	SBS/wk/2	1.1	4.7
JG108a	21.3	3.0	14.0	SBS/wk/2	0.5	2.3
JG108b	3.4	0.0	0.0	SBS/wk/2	0.1	4.1
Total # of Blocks: 6	187.3	32.3	17.3		7.3	3.9

SUPPORTING INFORMATION

HLP/FSP CONSIDERATIONS
Wildlife/Endangered Species Comments
<p>Grizzly bear Habitat: Not located within areas identified as HIGH value or Spring Grizzly Bear habitat.</p> <p>Northern Caribou: Not located in an area cover by a Caribou management strategy identified in the Mackenzie LRMP or an area identified in the Recovery Action Plan for Northern Caribou.</p> <p>An active Northern goshawk nest was located in a large spruce tree to the north between block 327 and block 330 (Refer also "Northern Goshawk Habitat Assessment", Dec 2014). No other nests were found in the leave area or within the proposed block boundaries. Consistent with best management recommendations, a buffer of approximately 100m was maintained around this known nest tree and a timing restriction is prescribed within a 200m zone where mechanized activities (ie. harvesting or road construction) are not permitted from February 15 - August 15 while a nest is occupied. If a previously unidentified nest is discovered during the course of operations, cease or modify operations to the extent necessary to protect the resource until such time as an assessment can be completed by a qualified professional.</p> <p>No other specific wildlife habitat features or species at risk were identified during the field work associated with the development of Block 327.</p>
Range Comments
<p>No range tenures exist within or adjacent to Block 327.</p>
Fisheries Comments
<p>No fish streams or direct tributaries are within or adjacent to block 327. Tsedeka creek to the west is a known fish stream (S2) but the tributary drainages are relatively steep with gradient and continuity barriers to fish access. Stream assessments were completed on the tributary streams to confirm non-fish status. An assessment was not done on Tsedeka Creek as it is a known fish stream and the boundaries of block 327 are 75m to 100m away on the bench above.</p>
Watersheds/Hydro Assessments Comments
<p>Block 327 is not within a Community watershed or within 100m upstream of any known licensed waterworks.</p> <p>The block is within PARAWSD000057 (Tsedeka Cr.) with a Watershed Sensitivity rating =2. A Peak Flow Index of 19.5% (Low) was calculated in 2012 indicating that an assessment by a qualified hydrologist should not be required prior to the harvest of this block.</p>
Sensitive Areas Comments
<p>Block 327 is not within or adjacent to the Mugaha Marsh Sensitive Area.</p>
Recreation Comments
<p>Recreation Opportunities Spectrum = SPM (Semi-primitive \ Motorized).</p> <p>RFP Significance = Low \ RFP Sensitivity = Low \ Moderate. No special recreation features or activities are designated for this area. Proposed operations are consistent with motorized access for hunting and/or back country hiking or fishing.</p> <p>Block 327 is not within 100m of any of the recreation sites identified in Sec 5.1.3.4.2 : FDU-4, of the current approved BCTS Forest Stewardship Plan.</p>
Cultural Heritage Comments
<p>The northern part of Block 327 was initially consulted with the applicable First Nations under Operating Plan #5 from January 4, 2010 to March 4, 2010. No comments applicable to this block were received and an additional Cultural Heritage Resource Assessment was not required.</p> <p>However, based on an overview model completed by BC Timber Sales, an Archaeological Impact Assessment was completed in 2014 which did not identify any features or evidence of First Nations use. As well, no Cultural Heritage Resources were found during the field work.</p>
Biodiversity Emphasis/L.U. Comments
<p>LU Group: Blackwater - Resource management direction: Enhanced</p> <p>Biodiversity Emphasis Option: Low</p> <p>BEC Group: 5 (SBS wk2) \ NDT-2</p> <p>Patch Analysis date: March 2013 \ Old Growth Analysis date: May 2012.</p> <p>Landscape Level:</p> <p>The harvest of block 327 (45ha), combined with the adjacent blocks 330 (28ha) will contribute an additional 75ha to an existing early seral opening of approximately 850ha which is larger than the 80-250 "large" patch category for the NDT-2. The 2013 analysis had this patch in a size category exceeding 1000ha but the connectivity in the analysis mistakenly includes a 180ha patch greater than 40years old. The future analysis also omits 40-50 hectares of early seral forest in the vicinity of proposed blocks 326 and JG104. The southern part of block 327, in addition to JG104 and JG103 were not included in the 2013 analysis. In either case the resulting patch will be approximately 1300ha, comprised of the existing harvested blocks that are less than 20years old (projected forward 5 years from date of analysis), proposed blocks 326, 332, 321 and JG103, JG 104 and blocks 327 - 330 as mentioned above.</p> <p>As per the 2013 analysis, the area planned to occur in early seral forest patches, that exceed the large patch category of 80-250ha, continues to increase which is outside the planned patch distribution targets specified in the Mackenzie LRMP and BCTS FSP. The analysis indicates that the combined distribution of early seral patches occurring in patches greater than 250 ha will increase by a factor of 2.5 from 46% (approx. 3,700ha currently) to 55% in the future (9,150ha).</p> <p>However, this increase is primarily due to the large amount of recent and proposed salvage harvesting of timber that has been killed by mountain pine beetle. Block 327 is a beetle salvage harvest proposal which represents an acceptable variance from the intended patch distribution targets.</p> <p>Old Growth:</p> <p>Old Growth Management Areas (OGMA's) have not been designated for the Blackwater LU therefore it is subject to the 2008 "Non-spatial Landscape Biodiversity Objectives in the Mackenzie Forest District". BEC Group 5 in the Blackwater was omitted in this Order so no specific targets have been established. As a comparative LU, the targets for BEC group 5 in the adjacent Philips LU are to retain 9% as Old growth with 10% of that having attributes of Old Interior. As per the 2012 analysis, 10,538ha (18%) of the CFLB is modeled as Old Growth of which 1,521ha (14%) exhibits the attributes of old interior forest - both of which are above Old Growth targets of 9% old and 10% old Interior.</p> <p>Block 327 is proposed to harvest beetle damaged timber that is not modeled as old growth forest (ie. >140yrs) so should not negatively impact the ability to maintain a minimum desired target level in the short term.</p> <p>Stand level:</p> <p>Amendment #11 of the BC Timber Sales 2010-2015 FSP requires all blocks greater than 15ha to have a minimum of 3.5% Wildlife Tree retention and an aggregate of all harvested Blocks over a fiscal year to have an average of 7% retained in Wildlife Tree Retention Areas. In order to ensure both parts of the FSP Result and Strategy are met at the time of harvest, approximately 11.5ha of Wildlife Tree Retention Area (20%) has been identified for block 327.</p>
Other Resources Comments
<p>Trapper: TR729T002</p> <p>Guide\outfitter: None</p> <p>Referral letters were sent to the above stakeholders in January 2010 as part of the Operating Plan #5. No comments were received.</p>
ADDITIONAL COMMENTS:
Invasive Plants
<p>Block 327 is not within or adjacent to a known site containing invasive plants or an area considered as high risk to the introduction of invasive plants. No specific actions are required.</p>

ADMINISTRATION

Amendment number	Date Typed (Yr Mo Dy)	Map Required?
ORIGINAL	2015 02 15	YES
1	2016 02 09	YES
Std Amendment Rationale:	Minor amendment to clarify language around timing restrictions for active goshawk nests. Minor area updates.	
2	2016 02 15	NO
Std Amendment Rationale:	Amendment to provide clarity with regard to AIA findings.	

HARVEST PLAN

AMENDMENT # 2

LICENCE #	CP	BLOCK	UBI	OPENING NUMBER	FDU	LOCATION	LATITUDE / LONGITUDE
A92377	-	327	BG3S2	093O034-	FDU 4	Tsedeka Cr	55 19 16 / 123 18 07

SILVICULTURE SYSTEMS

SU	SYSTEM	VARIANT	PHASE	RESERVE	Min BA (m2/ha)	Min Residual Density (sph)
1,2	CCRES		REMOV	G		
Current Stand Structure/Site Conditions						
Silviculture Systems SU Comments			SU-1: and 2: Retain all large diameter aspen and cottonwood (ie > 30m dbh) outside the roadside work areas.			
Min. Characteristics of Leave Trees (Form, Health, Vigour)			Retain mature, sound aspen and cottonwood greater than 30cm where trees do not pose a hazard to safe operations and road side decking and processing. Retention is prescribed for future stand level diversity, help maintain water table levels in sughygric soils, and to provide wildlife trees for cavity nesting birds and habitat for small fur-bearing mammals along the S6 and ncd watercourses.			

Additional Comments

Harvesting Constraints	<p>-- Soils: Well drained silt loams - Max soil disturbance 10%: Short steep pitches and areas with shallow soils in the southwest may be prone to excess soil disturbance due to concentrated skidding over hummocky terrain. In addition, adverse skidding below the 19,100rd and in the lower slope areas of SU-2 may be prone to compaction disturbance in wet soil conditions.</p> <p>-- Terrain Stability in the southwest corner (Refer also to "Terrain Stability Comments" - Support Document). Within 50m upslope of the recent slump, any bladed trails constructed must be temporarily deactivated with frequent cross-ditches (ie. <50m spacing) concurrent with the completion of harvesting activities and fully rehabilitated within 1 year. Rehabilitation is to include recontouring of the slope, re-establishment of natural drainage paths and the placement of woody debris over the recontoured surface.</p> <p>In addition all roads parallel to the slope break (including the 19,100rd) that could impact natural drainage, are to be fully maintained with functioning drainage systems until they are deactivated or rehabilitated.</p> <p>Monitor harvesting operations closely, particularly during wet soil conditions.</p> <p>HU-2: Timing restrictions from February 15 to August 15 - Northern Goshawk. No road construction or harvesting within 200m of an active goshawk nest.</p>
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SOIL ASSESSMENT

SU	HAZARD RATINGS			SOIL DISTURBANCE				SOIL CHARACTERISTICS			
	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		Type of Unfavorable Subsoil	Sediment Delivery Risk (Comm. Watershed)
								Min (cm)	Max (cm)		
1	H	H	M	10.0	5.0	5.3	25.0	20.0	54.0	Sand and Gravel	
2	H	H	M	10.0	5.0			30.0	54.0	Fragmental Materials	
SU	Critical site conditions that affect the timing of operations and how they affect the timing										
1	No specific seasonal constraints. Thin duff layers on upper crest slopes in the south may be prone to scalping and erosion due to soil displacement from concentrated skidding from forwarding equipment. Terrain stability concerns in the southeast require prompt rehabilitation and maintenance of natural drainage. Monitor closely and rehabilitate any excess soil disturbance as required. Additional details are provided in the "Harvesting Constraints" in the Harvest Plan as well as the "Terrain Stability Comments" in the Support document.										
2	Poor to moderately drained silts and silt loams with a high compaction hazard are prone to excess disturbance if harvested outside dry or frozen conditions. Rehabilitate any excess soil disturbance. Additional details are provided in the "Harvesting Constraints" in the Harvest Plan.										

SU MANAGEMENT COMMENTS

SU	SU Description
1	SU -1 is made up of pine leading stands on mid to upper slopes dominated by the SBS wk2 01and 03 site series. Soils are well drained silt and sandy loams with relatively gentle slopes throughout the northern and central parts of the SU. Short steep pitches with shallow soils and a thin duff layer along the eastern boundary and west of ncd-a. SU-1 should be managed as an even age pine and spruce stand consistent with the stocking standards for the SBS wk2 01site series, but with an increased juvenile stocking target because of the presence of bastard toad flax.
2	SU - 2 is made up of pine leading stands predominantly on mid to lower slopes in the SBS wk2 04 with a small component of the 03 site series in the northeast corner. Soils are poor to moderately drained and nutrient poor with a high compaction hazard that may be prone to excess soil disturbance during wet conditions. This SU should be managed as an even age pine stand consistent with the stocking standards for the SBS wk2 04. The presence of bastard toad flax in the adjacent SU-1 may have an impact on the juvenile stocking target. A post harvest site assessment would be recommended to determine whether an increased initial stocking density should be prescribed prior to planting.

SOIL MANAGEMENT COMMENTS

Soil Conservation

Soils are a mix of medium to moderately coarse textured silt and sandy loams on a mid to upper slope positions within the SBS wk2. Soil moistures are well drained mesic and sub-mesic soils in the mid and upper slope position with poor to medium nutrient regimes. There is a High compaction hazard due to the silt component and a High erosion hazard so it is important to minimize displacement of the forest floor duff layer on the steeper \ upper crest slopes and to avoid excess skidding disturbance during wet conditions.

The TSED 19,000rd is intended to be a 4-5m branch road while the remaining spur roads are planned as 4m roadside logging truck trails. The area proposed to be occupied by permanent access structures is based on an average disturbed width of 8m (top-of-cut to toe-of-fill). The TSED 19,000rd is planned as a permanent road as it access's block 330 to the north. The TSED 19,100rd is permanent for the first 240m for silviculture access to the lower NW corner of the block.

Temporary Access

The following roads are proposed as Temporary Access Structures (TAS) and intended to be rehabilitated upon completion of harvesting activities.

TSED 19,100rd: 0+245 to the end.
TSED 19,020rd: All
TSED 19,110rd: All
TSED 19,120rd: All

In addition, any skid trail within 50m upslope of the recent slide identified on the harvest plan map must be contoured with side cast debris returned and natural drainage restored upon completion of felling and skidding operations. Refer to "Terrain Stability Comments" and the "Harvest Constraints" above for additional details..

Additional TAS not identified on the Site Plan Map may be constructed to facilitate harvest operations provided environmental risks are managed appropriately, specified soil disturbance limits are not exceeded, and they are promptly rehabilitated upon completion of harvest operations.

Slope Instability

A small slump was identified below the southwestern boundary during field layout on slopes exceeding 70%. A Terrain Stability Field Assessment (TSFA) was completed by Onsite Engineering Ltd. in September of 2014 (See. "Terrain Stability Assessment: Timber License A92377 Block 327 - Tsedeka Creek").

The TSFA determined that the likelihood of a harvesting related landslide within the proposed development to be VERY LOW but the likelihood of a harvesting related landslide occurring on the fluvial escarpment downslope of the harvest area is estimated as LOW to MODERATE. The following recommendations were provided that, when implemented, would result in a Low Likelihood of a post-harvest landslide:

- Any bladed trails constructed within 50m of the lower (west) boundary of the development should be temporarily deactivated (frequent cross-ditches <50m spacing) concurrent with the completion of harvesting activates and fully rehabilitated within 1 year of the completion of harvesting activities (ie. recontouring of the slope \ natural drainage paths \ woody debris over the recontoured surface).
- Drainage structures on any roads must be maintained for the life span of the road or deactivated at harvest completion.

Also recommended was a boundary adjustment above the slide which was completed in conjunction with the TSFA.

The site plan reflects this change and temporary roads only are proposed in the vicinity of the slide.

RIPARIAN ASSESSMENTS					
Management Strategies					
There are two S6 streams, an ncd and W1 wetland adjacent to the harvest boundaries of the block. Windthrow hazard assessments were not completed as the located boundaries will meet the retention requirement of the more restrictive windthrow hazard(WTH). The riparian management objective is to protect the existing riparian attributes of vegetation and forest cover diversity adjacent to the wetlands and to maintain natural drainage patterns in order to not adversely impact downstream water quality or hydrologic processes on the local landscape.					

Riparian I.D. and Class	RMA	SU	WIDTH (m)	BA or SPH Retained	Comments (Indicate if in a Community Watershed)
Tsedeka Cr S2	RMZ	WTRA	50.0		The entire riparian management area is well outside the harvest boundaries. Maintain natural drainage patterns above to minimize potential downslope sedimentation.
R1 S6	RMZ	2	20.0		The 20m riparian management zone is outside the harvest boundaries. No special actions are required - harvest to boundary as per the adjacent SU.
R2 S6	RMZ	WTRA	20.0		The majority of the riparian management zone is outside the harvest boundaries. Where the stream flows through the WTRA, the boundary encroaches within 10m of the stream on the north side only. No special actions are required. Harvest to boundary as per the adjacent SU.
R3 W1	RMZ	1, 2	40.0		The additional 5-20m of reserved timber will retain 25-50% of the RMZ, consistent with the requirements of moderate to high windthrow hazard. No additional retention is required and harvest to boundary as per the adjacent SU.
	RRZ	1, 2	10.0		A variable reserve width of 15-30m is maintained between the harvest boundary and wetland edge.
ncd-a NCD	MFZ	1	0.0		Ncd-a is contained within an internal reserve of spruce and balsam. No harvesting is proposed immediately adjacent. Fall and skid away as per the adjacent SU.

COARSE WOODY DEBRIS MANAGEMENT STRATEGY INFORMATION		
A minimum of 4 logs\ha must be retained across the block. As per Sec. 68(1b) of the FPPR, a "log" is defined as being a minimum of 2.0m long and 7.5cm diameter at one end. Normal harvest operations that retain a variety of piece sizes made up of naturally occurring CWD, stubbed snags and scattered non-merchantable logs will meet this objective without significantly impacting waste and revenue utilization standards.		
Performance Std. (%) :	Block Target (%):	Coarse Woody Debris (m3/ha):

DEFINITIONS

ADMINISTRATION

Amendment number	Date Typed (Yr Mo Dy)	Map Required?
ORIGINAL	2015 02 15	YES
1	2016 02 09	YES
Std Amendment Rationale:	Minor amendment to clarify language around timing restrictions for active goshawk nests. Minor area updates.	
2	2016 02 15	NO
Std Amendment Rationale:	Amendment to provide clarity with regard to AIA findings.	

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
ERIC LONG	
DATE SIGNED	
2016/02/15	
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 standards acceptable of a Registered Professional Forester.	

SILVICULTURE PLAN

AMENDMENT # 2

LICENCE #	CP	BLOCK	UBI	OPENING NUMBER	FDU	LOCATION	LATITUDE / LONGITUDE
A92377	-	327	BG3S2	093O034-	FDU 4	Tsedeka Cr	55 19 16 / 123 18 07

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	17.4	SBS	wk	2	01-100	820	13	SW	Middle Slope	42	Si
1	b	14.5	SBS	wk	2	03-100	840	25	SW	Upper Slope	30	SiL
1	c	0.9	SBS	wk	2	04-100	840	15	S	Lower Slope	25	Si
1	d	0.5	SBS	wk	2	05-100	815	13	S	Lower Slope		
2	c	6.5	SBS	wk	2	04-100	840	15	S	Lower Slope	25	Si
2	b	2.4	SBS	wk	2	03-100	840	25	SW	Upper Slope	30	SiL

STOCKING REQUIREMENTS				
ASSESSMENT DATES				
Standard Unit	Standards ID	Regen Delay (yrs)	Freegrow Early (yrs)	Freegrow Late (yrs)
1	1039343	4		20
2	1039345	4		20
Min/Max Elevation Regime: 800 / 865				

SU : 1REGENERATION LAYER													
PREFERRED SPECIES			ACCEPTABLE SPECIES			POST SPACING DENSITY(sph)				MAX CONIFEROUS (sph)			
Species		Min Ht. (m)	Footnotes	Species		Min Ht. (m)	Footnotes	Min		Max		10000	
Sx Hybrid Spruce (SE x SW) Pli Lodgepole Pine - Interior		1.0		Bl	Subalpine Fir	1.0		WELL SPACED TREES (sph)					
								Target Pref/Acc		Minimum Pref/Acc		Minimum Pref	Min Horizontal Dist. Pref/Acc (m)
								1200		700		600	1.6
												Height Relative to Competition (%)	
												150	

SU : 2 REGENERATION LAYER																
PREFERRED SPECIES			ACCEPTABLE SPECIES			POST SPACING DENSITY(sph)				MAX CONIFEROUS (sph)						
Species		Min Ht. (m)	Footnotes	Species		Min Ht. (m)	Footnotes	Min		Max		10000				
Pli	Lodgepole Pine - Interior	2.0		Sx	Hybrid Spruce (SE x SW)	1.0		WELL SPACED TREES (sph)					Min Horizontal Dist. Pref/Acc (m)			
								Sb	Black Spruce	1.0		Target Pref/Acc		Minimum Pref/Acc	Minimum Pref	
								1200		700		600		1.6		
												Height Relative to Competition (%)				
				150												

OTHER REQUIRED STOCKING INFORMATION
Management objectives should target pine consistent with the stocking standards for the SBS wk2 01site series in SU 1 and the SBS wk2 04 in SU-2. Bastard toad flax was noted in the southern portion of the block so consideration should be given to increasing the initial stocking density or including a mix of spruce with the pine where appropriate to reduce the risk of stocking levels not being achieved due to the high potential for pine stem rust mortality.

ACTIVITIES

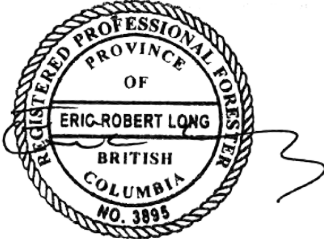
SILVICULTURE ACTIVITY COMMENTS	
ACTIVITY	COMMENT
Planting	Bastard toad flax was noted throughout so a higher initial stocking density (ie 2000 - 2400 sph) is recommended in SU-2 and the drier, nutrient poor portions of SU-1. Planting of alternate non-susceptible species is an option in the mesic and subhygric areas of the 01 site series.

MANAGEMENT STRATEGY

COARSE WOODY DEBRIS MANAGEMENT STRATEGY INFORMATION
A minimum of 4 logs\ha must be retained across the block. As per Sec. 68(1b) of the FPPR, a "log" is defined as being a minimum of 2.0m long and 7.5cm diameter at one end. Normal harvest operations that retain a variety of piece sizes made up of naturally occurring CWD, stubbed snags and scattered non-merchantable logs will meet this objective without significantly impacting waste and revenue utilization standards.
Performance Std. (%): Block Target (%): Coarse Woody Debris (m3/ha):

ADMINISTRATION

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RPF PRINTED NAME	RPF'S SIGNATURE and SEAL
ERIC LONG	
DATE SIGNED	
2016/02/15	
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 standards acceptable of a Registered Professional Forester.	