

☐ Original
☒ Amendment #1

LICENCE #	CUTTING PERMIT	BLOCK	MAPSHEET	FOREST DISTRICT	LOCATION
A86661	003	PHI012a-e	093O.012	Mackenzie	12.5 km Long Lake FSR

Gross Area (ha)	PAS (ha)	NP Natural (ha)	WTP (ha)	NCBr (ha)	NAR (ha)
165.4	5.3	0.0	13.5	0.0	146.6

SU	Sensitive Soils	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+B	No	10	5	25%	7%
C	Yes	5	5		
SU	CRITICAL SITE CONDITIONS THAT AFFECT THE TIMING OF OPERATIONS, AND HOW THEY AFFECT THE TIMING				
A	No critical site conditions that affect the timing of operations. Minimize forest floor disturbance during harvesting operations.				
B	Minimize machine traffic in small localized areas with high spring water tables and/or fine-textured soils.				
C	Very high compaction hazard in portions of the SU with clayey textures or organic veneers. Winter harvest over frozen soils and/or sufficient snowpack. Reach in and fall away as appropriate. If this SU is harvested in the summer, limit machine traffic and decking to the extent practicable for machine operations.				

SU	Stocking ID	NAR (ha)	SPECIES		WELL SPACED TREES / HECTARE				Regen Delay (yr)	Free Growing (yr) Late	Min. Height @ F.G. (m)	CROP TREE SIZE VS. COMPET. (%)
			Pref	Acc	TSS	MSS Pr. + Acc	MSS Pref	Min Hor (m)				
A	1044282 1044284	14.7	PI	Sx	1200	700	600	2.0	7	20	PI 2.0, Others 1.0	150
B	1044280 1044286	117.1	PI Sx Fd	BI	1200	700	600	2.0	7	20	PI 2.0, Fd 1.4, Others 1.0	150
C	1044286 1044288	14.8	Sx PI	BI	1000	500	400	2.0 ¹	4	20	PI 1.4, Others 0.8	150

¹Minimum inter-tree distance may be reduced to 1.0m on hygric and wetter sites in SU B and C to avail of naturally raised microsites/plantable spots.

RPF'S SIGNATURE and SEAL	RPF PRINTED NAME
	Francis Patrick Caffrey
	DATE SIGNED
	November 25, 2014
	I certify that this work has been done to standards acceptable of a Registered Professional Forester.

Site Plan Rationale and Background Document

The following sections are not required elements of the Site Plan, but are included for informational purposes.

ASSESSMENTS

VISUAL IMPACT ASSESSMENT

This block is not within a visually sensitive area.

PEST INCIDENCE SURVEY

A preliminary walkthrough was undertaken prior to the development of the block. 87% of lodgepole pine trees, by volume, in the block are dead or attacked by mountain pine beetle. (IBM).

ARCHAEOLOGICAL IMPACT ASSESSMENT

No cultural or archaeological resources were encountered during reconnaissance, layout, cruising or SP fieldwork. No response was received regarding presence of potential CHRs from area First Nations or from the MFLNRO Advisor First Nations Relations regarding any existing Archaeological Overview Assessment(s) that identified CHRs in this area.

RIPARIAN ASSESSMENTS

Within 10m of S4 streams and within 5m of S5 or S6 streams retain brush species, advance regeneration, non-merchantable conifers, and non-commercial stems, unless one or more of conditions a) to d) below exist.

- a) the tree(s) are within the right of way of a stream crossing or within 5m of either side of a skid crossing,
- b) hand-felling is being carried out,
- c) removing, pruning, topping, or stubbing of tree(s) is required to mitigate a safety concern,
- d) a tree or trees must be removed to address a forest health agent that would spread if the tree or trees were not removed.

Riparian ID	Riparian Classif.	RRZ Width	RMZ Width	Designated Reserve	Field Identification	Post Harvest RMZ Stand Structure
RW-1	S3	20m	20m	≥25m	Orange "Three Feathers Block Boundary" Ribbon	Boundary set back ≥25m from stream edge. Basal area retention requirements are achieved external to block boundary ribbon. Treat the remainder of the RMA the same as the adjacent SU.
RW-2	S4	0m	30m	≥20m	Orange "Three Feathers Block Boundary" Ribbon	Boundary set back ≥20m from stream edge. Basal area retention requirements are achieved external to block boundary ribbon. Treat the remainder of the RMA the same as the adjacent SU.
RW-3	S2	30m	20m	≥50m	Orange "Three Feathers Block Boundary" Ribbon	The RMA of the stream is entirely external to the block and therefore the block is beyond influence distance of the stream.
CB-1	S4	0m	30m	5m	Machine Free Zone (MFZ) Ribbon	MFZ is set back ≥5m from stream edge. Basal area retention requirements are to be achieved within the MFZ. Retain advanced regeneration and deciduous. Retention may occur as single stems or clumps of stems. Harvest all dead pine; harvest all live merchantable conifers when safe to do so.
RW-4 RW-5	S6	0m	20m	0m	Machine Free Zone (MFZ) Ribbon	MFZ is set back ≥5m from stream edge. Basal area retention requirements are to be achieved within the MFZ. Retain advanced regeneration and deciduous. Retention may occur as single stems or clumps of stems. Harvest all dead pine; harvest all live merchantable conifers when safe to do so.
RW-6	S3	20m	20m	>25m	Orange "Three Feathers Block Boundary" Ribbon	There is an 8-10m high waterfall (with no plunge pool downstream of this feature) that is a barrier to fish passage upstream and forms a reach break with RW-5. The boundary has been set back ≥25m from stream edge. Basal area retention requirements are achieved external to block boundary ribbon. Treat the remainder of the RMA the same as the adjacent SU.
RW-7	S4	0m	30m	≥5m	Orange "Three Feathers Block Boundary" Ribbon	Boundary set back ≥5m from stream edge. Basal area retention requirements are achieved external to block boundary ribbon. Treat the remainder of the RMA the same as the adjacent SU.
RW-8	NCL	0m	0m	>15m	Orange "Three Feathers Block Boundary" Ribbon	Boundary set back ≥15m from NCL/wetland edge. Basal area retention requirements are achieved external to block boundary ribbon. Treat the remainder of the RMA the same as the adjacent SU.

RW-9	L3	0m	30m	>15m	Orange "Three Feathers Block Boundary" Ribbon	Boundary set back ≥ 15 m from lake edge. Basal area retention requirements are achieved external to block boundary ribbon. Treat the remainder of the RMA the same as the adjacent SU.

TERRAIN STABILITY FIELD ASSESSMENTS

There are no slopes $>60\%$ located within the block. A number of areas with $>60\%$ slopes are located adjacent to the block, with the block boundary located at or before the slope break. A number of areas external to the PHI012d unit exhibited indicators of slope instability, including small slumps, tension cracks and jack-strawed trees. In this case the block boundary was set back 100m from the slump on level ground.

SOIL ASSESSMENT

HAZARD RATINGS					SOIL CHARACTERISTICS			
SU	Soil Comp	Soil Disp	Soil Erosion	FF Disp	Depth To Unfavourable= Subsoil Min(cm) Max(cm)		Type Of Unfavourable Subsoil	Sediment Delivery Risk
A	L	M	M	H	>60	>90	Coarse soils (S, LS textures with high CF%)	Low
B	H	M	H	H	15	>90	Limited locations have high water tables in the spring.	Low
C	VH	H	H	VH	10	>45	High water table through growing season, organic veneers, gleying.	Low

CONSISTENCY WITH FSP RESULTS AND STRATEGIES

RESULT OR STRATEGY	How the Result or Strategy applies to the Site (or Rationale if not applied)
FSP - Soils	Operations are constrained to the extent that soil disturbance limits must not exceed 10% of the NAR in SU A and B and 5% in SU C. The Licensee will comply with FPPR Sections 35 and 36.
FSP – Water, Fish, Wildlife and Biodiversity within Riparian Areas	Basal area retention is consistent with the results and strategies in the FSP. The Licensee will comply with sections 47-51, 52(2) and 53 of the FPPR.
FSP – Stand Level Wildlife and Biodiversity	Two external WTPs consist of stand types, structure and composition similar to that found within the block. The total area of the external WTPs is 13.5ha (8.1%) which exceeds the 7% wildlife tree retention area target.
FSP – Cultural Heritage Resources	An AIA was not completed on this block. No CHR were encountered in the block during block development. If previously unidentified CHRs are encountered during the course of forest operations, operations will cease to the extent necessary to ensure its protection until a CHR assessment can be carried out. Subsequent operations activities will be consistent with the recommendations following from the CHR assessment.
FSP – Landscape Level Biodiversity Objectives	Old forest and old interior forest retention and NDT patch size distribution targets are to be calculated annually at the landscape unit level, and will steer future cutblock development.
FSP - Recreation	There are no known recreation sites, interpretative forest sites or trails in or adjacent to the block. A ≥ 15 m reserve, comprising portions of a WTP, has been created adjacent to the small L3 lake in the northern portions of the block. What appears to be an actively maintained hunting trail is evident running through the northern portion of the PHI012d unit.
FSP – Invasive Plants	Disturbed areas that will not be reforested will be seeded within 2 years of commencement of operations; unless forest activities are on-going, in which case seeding will be conducted as soon as is practicable; using grass seed mix that meets or exceeds Mackenzie Forest District recommended forage mix specifications.
The lodgepole pine component of this block is 88% by basal area, based on the cruise compilation, which meets the requirements of Forest Licence A86661 to harvest stands with a minimum of 70% lodgepole pine by basal area.	

RESOURCE FEATURES

Ungulate Winter Range and Wildlife Habitat Areas

There is no known ungulate winter range within or adjacent to this block.

Range

There are no range tenures or improvements within or adjacent to the block.

LEAVE TREE SPECIFICATIONS

LEAVE TREE SPECIES AND FUNCTIONS			
SU	Species Pref.	Layer	Minimum Leave Tree Characteristics, Incl. Form, Health and Vigour
All	At, Act	1	Retain groups or single mature deciduous, where practicable, outside of roadside work areas.

WILDLIFE TREE PATCH RETENTION			
I.D.#	Area (Ha)	Timber type label (age, height, merch class, crown closure and site index)	Layer 1 stems/ha
WTP1	1.9	Open PI (Sx) 735 with a BI(Sx) advance regeneration understorey ranging 100-500 sph, with frequent small wet herbaceous openings and a small NCD.	300
WTP2	11.6	Features a number of stand types including PI ⁹ Sx ¹ 536, PI ¹⁰ 535, and Sx ⁸ Plx ² 735 stands with a variable BI(Sx) advance regeneration understorey ranging 200-800 sph. Also contained are small wet lake-side herbaceous openings.	500-700

SOIL DISTURBANCE

PERMANENT AND TEMPORARY ACCESS CALCULATION SUMMARY						
Description of Access Structure	S.U.	Details	Temporary		Permanent	
			Area (ha)	% of NAR	Area (ha)	% of Total
Roads	Z	Calculated with an average disturbed width of 7 metres for all in-block roads (~7571 linear metres).	0	0.0	5.3	
Landings	Z	None planned. Road calculation assumes turnarounds and pull outs will net an average disturbed width of 7m or less.	0	0.0	0.0	
Bladed Trails		None Planned	0	0.0	0.0	
Existing Trails	A,B	None	0	0.0	0.0	
Gravel Pit(s)		None	0	0.0	0.0	
Total Temporary			0.0	0.0		
Total Permanent					5.3ha	3.5%

SILVICULTURE PLAN

ECOLOGY						
SU	Elevation Range	BEC Zone	BEC Subzone	BEC Variant	Site Series	Slope Range / Average
A	840-890	SBS	mk	1	03 ⁷ 05 ³	0-30% (10%)
B	840-920	SBS	mk	1	01 ⁸ 07 ² (05)	5 - 40% (16%)
C	840-920	SBS	mk	1	09a ⁵ 07 ⁵	0- 15% (3%)
Comments	<p>See Eco map and SU map for greater detail. A number of ecosystem units are intermixed within larger 01 unit or 03 units, and not readily mappable, and therefore have been complexed.</p> <p>The subseric 03 site series is limited in extent to a gently sloping to level old fluvial bench located in the northcentral portion of the block on coarser-textured soils (sands and loamy sands with high coarse fragment contents).</p> <p>The submesic 05 site series is located on gentle knolls, and warm aspect sites over coarser-textured soils (loamy sands or sandy loams with high coarse fragment contents).</p> <p>The 01 site series is predominant in the block, being found over a range of sites and soils, but particularly prevalent on gently rolling terrain over silt loam soil textures with mesic to permesic SMRs. The 01 is frequently intermixed with areas of the 07 unit across the rolling topography of the block.</p> <p>The 07 site series with its subhygric SMR is present as pure units adjacent to wet, brushy areas that have been excluded from the block but occur frequently throughout or adjacent to the harvest area. This unit is comprised of receiving areas and areas with somewhat restricted soil drainage.</p> <p>The 09a site series is located in depressional features and lower slope/toe positions and features persistent high water table throughout the growing season and a naturally mounded microtopography. Stands are typically spruce-leading and soils feature an organic veneer over gleyed mineral soils, with seepage water present. The 09a is frequently present in association with the 07 unit.</p>					

TERRESTRIAL INFORMATION						
Site Series	Area	Slope Position / Aspect	Humus Form / Thickness	Soil Textures	CF % Range / Average	Soil Moisture/ Nutrient Regime
03, 05	15.3	Level, Upper-Mid	Mor, Mormoder 3-8cm	LS, S	40-70% (50%)	2-3 / B-C
01, 07, 05	121.0	Level, Mid - Lower	Mor, Mormoder 3-6cm	SL, L (LS)	0 - 30% (10%)	3-5 / C-D
09a, 07	15.6	Lower, Toe	Hydromor, Moder 5cm	Org. veneers/ SiL	0- 50% (10%)	6(5) / C-D
Comments	See Eco map and SU map for greater detail. 05 and 07 ecosystem units are intermixed within the larger 01 unit and not readily mappable, and therefore have been complexed.					

SITE PREPARATION	
SU	LIMITING FACTORS and REMEDIAL CONSIDERATIONS
A+B	No site preparation expected. No site limiting factors. Minimize forest floor disturbance during harvesting operations in SU A. Consider lop and scatter of pine tops and limbs to help retain nutrients on site and distribute cones across the site for natural regeneration purposes in SU A.
C	Consider mechanical mounding if there are insufficient natural raised microsites post-harvest. Wet ground may limit trafficability of site preparation equipment. Mounds may be prepared by reaching in, if necessary, to minimize traffic in the unit. Forest floor conservation and retention is important for retaining overall site productivity.
Comments	

PLANTING									
SU	Seed Zone	Class A	Regen Method	Species	Age	Stock Type	Season	Stems/ha	Total Stems
A+B	FIN		Artificial	PLI ₈₀ SX ₂₀	1+0	PSB 310A	Spring/ Summer	1600	PI = 168,704 Sx = 42,176
C	FIN		Artificial	SX ₇₀ PLI ₃₀	1+0	PSB 412A	Summer	1200	PI = 5,328 Sx = 12,432
Comments :	SU A and B - Spruce stock is designated primarily for richer submesic to mesic sites. In SU C, plant on raised microsites, and avoid planting spruce in frost prone / cold air drainage areas.								

BRUSHING	
SU	LIMITING FACTORS
All	Manual or chemical brushing, as required.
Comments	

COARSE WOODY DEBRIS MANAGEMENT STRATEGIES
Retention of CWD will be consistent with the FPPR (S 68) - which requires leaving on the block at least 4 logs/ha that are a minimum of 2m long and at least 7.5cm diameter at one end.
Where safe and feasible, CWD accumulations can be constructed to accommodate small fur bearing predators as small narrow windrows or piles that connect riparian areas with wildlife tree patches. Piles and windrows are not to exceed 2 meters in height by 3 meters in width and remain a minimum of 50m off of the tree line throughout the block. Piles are to be created using lodgepole pine and balsam species and avoid spruce due to presence of spruce bark beetle (IBS) in the block.
CWD and dead useless material can also be scattered throughout the block. Leave trees and WTRAs will contribute to future CWD recruitment. Pile and burn roadside accumulations.

PROFESSIONAL CERTIFICATION

RPF'S SIGNATURE and SEAL	RPF PRINTED NAME
Original	Francis Patrick Caffrey
	DATE SIGNED
	November 25, 2014
	I certify that this work has been done to standards acceptable of a Registered Professional Forester.

Amendment #1

RPF'S SIGNATURE and SEAL	RPF PRINTED NAME
	Patience Rakochy
	DATE SIGNED
	April 18, 2017
	I certify that this work has been done to standards acceptable of a Registered Professional Forester.

Amendment required to address CWD needs and requirements as well as clarify basal area retention instructions for CB1, RW4 and RW5. This block is a marginal pine, salvage block that will be harvested in order to maximize the timber and fibre resource while meeting FSP and other legal requirements. The intent of the basal area retention is to provide protection of riparian values, including wildlife, biodiversity, channel and aquatic habitat integrity, and water quality. Basal area retention is guided by windthrow hazard assessment which is moderate to high. Retention is therefore $\geq 0\%$ of all trees in the RMZ. To recognize and account for natural variability in stand structure, post-harvest retention level targets are based on the entire riparian management zone area.

