Burns Lake
Community Forest Ltd.
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VIA EMAIL

January 3, 2017

Ministry of Forests, Lands and Natural Resource Operations (FLNRO)
Box 999
Burns Lake, BC, V0J 1E0

Attention: Eamon Donahue Regional Executive Director and Albert Nussbaum Director Forest Analysis and Inventory Branch

Regarding: VRI Data Set and to Address Action Item #1 December 15th Meeting Note Summary

In follow up to our meeting on December 15, 2016, this letter provides an update to address the first course of action identified during our meeting.

The first course of action states "*beginning prior to the impending holiday season, representatives of the BLCF, Forsite and the ministry analyst that supported the AAC decision maker will start work to understand the causes for the large differences in the timber harvest/salvage opportunity estimated in the BLCF information submitted with Management Plan 3, the information and analysis prepared by the ministry to support the AAC decision and its focus on stands greater than 70% dead, and the Forsite MPB Salvage Chance Planning report*".

In the BLCF Management Plan 3 (Appendix 6) and the November 30, 2015 AAC request, the Timber Harvesting Landbase (THLB) was approximated and the Ministry's 2014 VRI was used to determine total dead and live volumes and estimate available volumes. That inventory indicated a total of 11.6 m^3 of timber[1] and nearly 4 million cubic metres of dead Pl.

Once the magnitude of the volume of dead wood still on the Community Forest was identified, BLCF proposed a management regime for continuation of the clear cut salvage program in stands >70% dead Pl and the development of a new initiative to use partial cutting in a new, accelerated salvage program in stands 30 to 70% dead Pl; both of these regimes were designed to salvage the remaining dead Pl over the entirety of the THLB, ensure maximum reforestation of the attacked stands and to expand options to protect the mid-term timber supply. However, the Statutory Decision Maker did not support the BLCF

[1] The information available for use in MP 3 was based upon an estimated THLB and compiled to standard close utilization standards.

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approach, and directed Ministry staff to prepare additional timber supply analysis to support the AAC determination.

With regard to the timber supply analysis prepared by Ministry staff, the AAC Determination (May 2016) states that *"For this work, the most current vegetation resource inventory, which includes up-to-date mountain pine beetle mortality estimates, was updated with disturbance information to quantify stands within the CFA. This disturbance information included all harvesting activities up to March 31, 2015. This inventory information was overlaid with the THLB data layer provided by the CFA."*

The Ministry's conclusion indicated, "*there is currently about 8.9 million cubic metres of mature volume on the THLB within the CFA. Dead pine accounts for 45 percent – or four million cubic metres – of this total mature volume. Of the dead volume, about 1.8 million cubic metres is found in stands where more than 70 percent of the total volume is dead. Within stands where more than 70 percent of the total volume is dead, there is also about 400,000 cubic metres of live volume*[2]*."* As discussed on December 15th, the BLCF has been struggling to find suitable volumes for operations that meet the criteria set out in the AAC Determination.

The 2016 VRI was made available to BLCF on September 7th, 2016, by Resource Inventory Branch and was updated by Forsite for depletion and volumes assigned using the latest version of VDYP.

Recent work by Forsite on timber availability[3] and the BLCF use of the new VRI in our own timber supply analysis, have indicated some very significant differences in mature green and dead volumes between the 2014 VRI and the 2016 VRI.

Summaries of the 2016 inventory indicate about 36% less merchantable volume than the 2014 inventory (Table 1).

Table 1. Merch volumes in the 2014 and 2016 VRIs[4]*.*

	2014 VRI	2016 VRI	Difference	
THLB (ha)	65,958	66,905	947	1%
Live + Dead Volume				
Total (million m^3)	12.2	7.8	- 4.4	-36%
Volume/ha	185	116	- 69	-37%
Live Volume				
Total (million m^3)	8.5	57	- 2.8	-33%

[2] Rationale for the AAC Determination for the Community Forest Agreement K1A effective May 1, 2016.
[3] Forsite Consulting Ltd. November 8, 2016. Burns Lake Community Forest Mountain Pine Beetle Salvage Chance Planning – Harvest Sequence Planning.
[4] In this table, each VRI is for a slightly different THLB and both inventories are approximate and are compiled to 12.5 cm+ merch limit.

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Volume/ha	129	85	(44)	-34%
Dead Volume				
Total (million m^3)	3.7	2.0	- 1.6	-43%
Volume/ha	56	31	(25)	-44%
Proportion of Total	30%	27%	-3%	-11%

There are several possible reasons for these differences in volume between the two inventories. However, it is unknown if any of these are the reasons (discussed below), how much of the difference they may account for, or if the Ministry has investigated these differences. Potential sources of the volume differences could include:

1. **Depletion**. The 2014 version of the VRI that BLCF used was likely not updated for depletion. This could easily account for 2,000 – 2,500 ha of merchantable stand area that had been harvested and 750,000 m^3 of the volume difference.

2. **Classification**. The new VRI is based on new classification from new digital imagery. This includes classifying the dead and live layers separately resulting in new linework and attributes. This will account for some difference, but would not fully account for these large apparent differences.

3. **Shelf life**. The new inventory may use a different way of accounting for shelf life and loss of merchantable timber from the dead wood component. Previously dead wood was assumed to be 100% merchantable until shelf life expired, then 0% merchantable. The new approach may reduce the amount of merchantable dead wood according to a shelf life curve. If this was done, it would reduce the amount of dead wood in the 2016 inventory relative to the 2014 version where all dead wood was considered merchantable.

4. **Spruce mortality**. It is possible that spruce mortality is more accurate in the new inventory and if this mortality has increased, it could account for some of the loss of live volume and increase in dead volume.

5. **Dead proportion.** We believe the 2014 inventory used the MPB model to predict the amount of Pl that was killed by the mountain pine beetle. The new inventory estimates the amount of dead directly from the digital imagery in the classification process. This could account for some difference in loss of live wood and increase in dead wood.

6. **VDYP.** The impact of applying the VDYP model to the new inventory could be the largest potential source of volume differences. However, we do not know the magnitude of this

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potential difference or what checks and comparisons the Ministry has completed in this regard. VDYP was developed largely using permanent sample plots from (mostly) fully stocked stands. For MPB impacted stands, the model is now being applied to stand conditions for which it was not developed, and thus may not be performing in a realistic manner. This could affect the assignment of yield to the inventory, and the projection of that yield into the future.

At this point, based upon these very significant volume differences, BLCF's significant financial and resources commitments to the new TSR for the K1A, and BLCF's commitment to work within the bounds of the current determination at a significant increased operational and administrative cost, BLCF would request that:

1. The Ministry provides more details on the processing of the new VRI including live and dead volume projection. This may be achieved through engagement between the BLCF and the Ministry analyst that supported the Ministry work.

2. The Ministry fund further in-depth analysis of the differences between the two inventories. This information would also be useful in the upcoming Lakes TSA timber supply review.

3. The ministry completes these to support the current time line commitments of BCLF project completion for the mountain pine beetle mitigation plan, Forest Certification, communication strategy and First nation relationship building.

As part of our efforts to mitigate the impacts of the MPB on our timber supply we have a meeting with Regional Executive Director (RED) January 5th, and we will review our action plan from Dec 15th meeting in light of the VRI concerns in the context of THLB Stabilization for the BLCF.

The potential loss of millions of metres of timber will have a very significant impact on the BLCF and our community and local employment. I cannot emphasize how important it is that this issue is addressed in an expedient manner which will provide confidence in the inventory for all.

Sincerely,

Frank Varga RPF
General Manager
COMFOR Management Services
Burns Lake Community Forest Ltd