



Morice & Lakes



Forestry Plan



Outline

- Legislative Framework
- AAC Request.
- Forestry plan elements.
- Questions.

Legislative Framework

- Innovative Forest Practices Agreements (IFPA's) were intended to provide opportunities to get recognized for gains in AAC resulting from the innovative practices and activities.
- Section 59.1(7) of the Forest Act allows Regional Executive Director (RED) to increase AAC for a license if an analysis indicates the the proposed practices will improve timber supply.
- Licensees commit to these activities in the Forestry Plan approved by the RED.

IFPA Regulation

- The RED will determine if the activities proposed in the Forestry Plan meet the following tests in the regulation.
- IFPA Regulation paragraph 2(a) Harvesting and silviculture practices.
 - *the implementation of harvesting methods or silviculture systems that may*
 - *(i) increase the total amount of timber available to harvest in the timber supply area over the amount available under standard practices.*
- IFPA Regulation paragraph 2(e); Data and analysis.
 - the collection and analysis of new data, in accordance with the specifications of the chief forester, to provide a more accurate representation of the forest composition and its expected rate of growth compared to the rate existing when the forest plan is submitted or at any other time determined by the regional manager;
- IFPA Regulation paragraph 2(f); Other resource values.
 - *activities that will enhance and protect other resource values, including, but not limited to, water, fisheries, wildlife, biological diversity, soil productivity and stability, forage production, grazing and recreation values .*

Purpose of the Forestry Plan

- Provide a rationale for uplift request
- Two components:
 - Long term commitment to sustainable forest management
 - Effective implementation of a harvest strategy to optimize the salvage of beetle-killed timber
- The IFPA used the beetle mitigation scenario to test assumptions and sensitivities for the forestry plan compared to current status with Morice LRMP constraints.



Increasing the Allowable Annual Cut

- Requested primarily to deal with the loss of timber values due to the pine beetle epidemic.
 - Includes SFM commitments and Morice LRMP constraints as part of the analysis.
- The M&L IFPA licensees are recommending an AAC uplift of 1.0 million cubic metres.
 - IFPA 290, 000 m³ temporary uplift for 10 years plus 210,000 m³ permanent uplift. Total 500, 000 m³.
 - Recommending an additional 500,000 m³ for 10 years to salvage MPB to meet the following government objectives
 - Maintaining BCTS program at 20% of provincial harvest.
 - Commitments to FN's under new relationship initiatives.
 - Expectations of community forests and woodlots in participating in MPB salvage.
- IFPA cut apportioned among proponents according to IFPA agreement.

Element #1 Reduced Operational Adjustment Factors (OAF1)

- Timber Supply Review (TSR2) in the Morice used 15% for an OAF1 value.
- IFPA did OAF1 study which Indicated lower values than TSR2.

BEC Zone	Morice IFPA OAF1 Value (%)	Gross Area (ha)	Productive Forested Area (ha)	Total Harvestable Land Base Area, THLB (ha)	Percentage of THLB Area (%)
SBSdk 01/05/06	5	82,535.2	80,357.6	53,877.8	8
SBSmc2 01/01c/05/06/09/10	5	577,006.8	558,806.5	484,964.6	69
ESSFmc 01/04/05/06	5	153,411.5	150,693.1	90,875.9	13
ESSFwv 01	5	N/A	N/A	N/A	N/A
SBSdk 07	10	7,863.3	7,557.9	4,324.0	1
ESSFmc 09/10	10	8,144.5	6,809.7	2,888.5	0
All others	15	672,748.5	301,885.9	69,764.5	10

Reduced OAF 1 (con't)

- IFPA decided to use Babine EFMPP OAF1 factors of 12% for pine and 7% for other species because:
 - Morice Study was incomplete at time of analysis.
 - Babine EFMPP OAF adjustments are more conservative.
- Sensitivity analysis indicates 7,600 m³/yr increase from 2017 to 2101 and 5,300 m³/yr in the long term.

Reduced OAF 1 Rationale

- IFPA Regulation paragraph 2(e); Data and Analysis
- Activity is the collection and use of more specific stocking information for volume projection adjustments.
- IFPA commits to monitoring and reporting the actual OAF1 values as part of free growing surveys.

Element #2 Better Site Productivity Information

- Analysis done by IFPA compared SIBEC site productivity with Forest Inventory (FIP) used in TSR 2 using PEM indicated site productivity was underestimated.
 - The Morice PEM marginally failed to meet 65% accuracy score for TSR.
- OGSI yield curves were generated for comparison to PEM/SIBEC yield curves.
 - There was no difference in timber supply for the first 100 years and 0.32% in the long term.

Better Site Productivity Information (con't)

- Morice analyses proceeded with PEM/SIBEC yield curves based OGSI sensitivity because:
 - OGSI site indices supported the site indices generated from PEM and;
 - IFPA has committed to improving accuracy of PEM.
- 77,160 m³/yr increase from 2017 to 2101 and 148,500 m³/yr in the long term.

Better Site Productivity Information Rationale

- IFPA Regulation paragraph 2(e); Data and Analysis.
- Better site productivity estimates have forecasted greater growing stock than predicted in TSR2 in the analysis.
- IFPA commits to improving PEM accuracy and conducting sensitivity analysis to test changes in site productivity estimates.

Element #3 Increased Utilization

- Felling is done almost entirely by machines thus stump heights were felt to be lower than current utilization standards (30 cm.).
- The IFPA conducted utilization studies focusing on stump heights.
- This confirmed achieved stump heights were less than half of current standards.

Increased Utilization (con't).

- Decreasing stump height from 30 cm. to 15 cm. increases merchantable volume of tree by 2% on average.
- Expected to increase timber supply by 60,000 m³ per year during beetle uplift and about 33,000 m³ for the rest of the planning horizon.

Increased Utilization Rationale

- IFPA Regulation paragraph 2(a)
Harvesting and silviculture practices
- IFPA Regulation paragraph 2(e); Data and Analysis.
- IFPA commits to continue practice of harvesting to 15 cm. stump height.
- This will be monitored during waste and residue surveys.

Element #4 Species Composition in Managed Stands

- Historically, Pine has been the preferred species for planting in the Morice TSA.
- In the Morice, there is a cost to long term timber supply by following this practice.
- Spruce has higher mean annual increment than Pine late in the rotation (i.e. later culmination ages).
- Increased harvest due to beetles means there will be a “bulge” in the age class distribution.

Species Composition in Managed Stands (con't)

- Planting a higher percentage of spruce on blocks harvested during the accelerated salvage cutting (the latter part of the regeneration bulge) results in more yield for stands that will be harvested later in the rotation.
- Changing the future plantation's species compositions from a 60:40 pine/spruce mix to a 60:40 spruce/pine mix on suitable sites increases the long-term timber supply 5.25%.
- Expected to increase long term harvest level by 88,500 m³/yr.
- No impact the short and midterm timber supply.
- IFPA is not requesting a cut uplift for this practice.

Species Composition in Managed Stands Rationale

- IFPA Regulation paragraph 2(a) Harvesting and silviculture practices.
- IFPA Regulation paragraph 2(e); Data and Analysis.
- Incorporated the modified species selection in the analysis.
- IFPA is committed to increasing spruce composition in plantations for the duration of post MPB salvage reforestation program.

Element #5 Genetically Improved (GI) Stock.

- The Forest Genetics Council (FGC) has plans for when GI stock will be available.
- Members of the ML-IFPA operate the largest seed orchard facility in the province (Vernon seed orchard).
- Current TSR2 analyses do not fully incorporate proven genetic worth into future managed stand yield assumptions.
- GI stock assumptions have been included in timber supply forecasts based FGC species plans.

Genetically Improved Stock (con't).

- IFPA committed to using GI stock as it becomes available and included sensitivity analyses to demonstrate the contribution of the genetics program to the LTHL in the Morice TSA.
- Spruce GI stock available immediately.
- Pine 30% available now 100% in 2013.
- Expected increase in timber supply to be 100,000 m³/yr. 2017 to 2101 and 161,000 m³ in the long term.

Genetically Improved Stock Rationale.

- IFPA Regulation paragraph 2(a)
Harvesting and silviculture practices.
- Current legislation requires use of GI stock as soon as it is available, however;
 - The IFPA has modeled the gains in volume using GI stock as per FGC plans.
 - IFPA has committed to strategic deployment of seed (e.g. increasing spruce composition in plantations).

Element #6 Prioritize Harvesting of Pine Stands

- short-term (2007 – 2016) harvest rule to target pine stands in the analysis.
- Intended to minimize the non-recoverable losses due to the mountain pine beetle.
- Pine (ITG 28) and Pine Leading (ITG 30) with highest volume of pine were given highest priority in the model subject to constraints.

Pine Volume Ranking	Amount of Pine Volume/Hectare
1	$\geq 400\text{m}^3/\text{ha}$
2	$\geq 300\text{m}^3/\text{ha}$ and $< 400\text{m}^3/\text{ha}$
3	$\geq 200\text{m}^3/\text{ha}$ and $< 300\text{m}^3/\text{ha}$
4	$\geq 100\text{m}^3/\text{ha}$ and $< 200\text{m}^3/\text{ha}$
5	$\geq 50\text{m}^3/\text{ha}$ and $< 100\text{m}^3/\text{ha}$
6	$> 0\text{m}^3/\text{ha}$ and $< 50\text{m}^3/\text{ha}$
7	All other stands

Long term Harvest rule

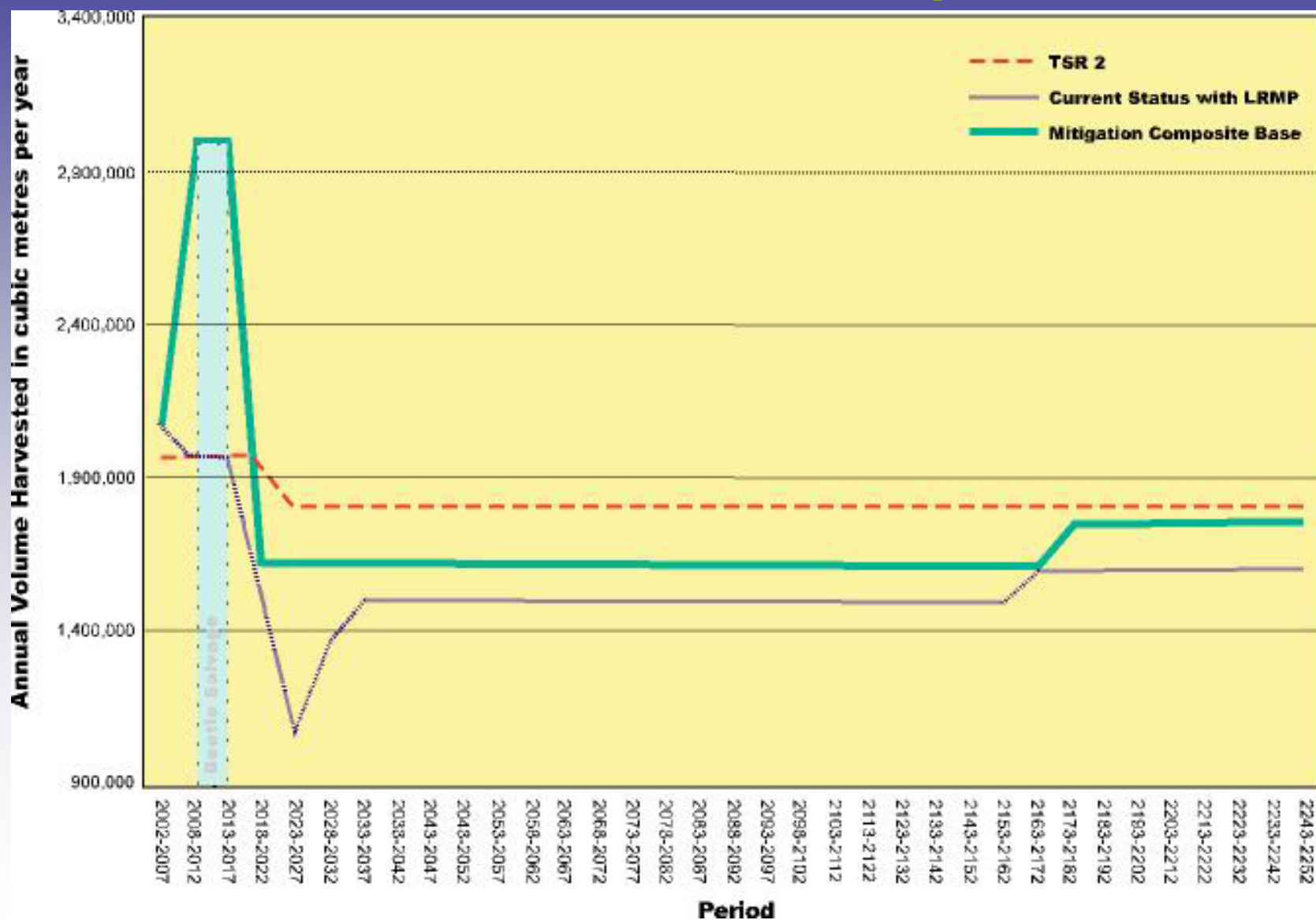
- After 2016 the harvest rule was switched to the long-term harvest rule to prioritize harvest based on the susceptibility in the analysis.

Mountain Pine Beetle						
Hazard Rating	Leading Species	Secondary Species	Age	Site Index	Harvest Priority	
Extreme	PL	Any	>120 yrs	>=16	1	
High	PL	Any	>120 yrs	<16	2	
Moderate	Any	PL 20 - 50%	>120 yrs	Any	4	
Low	PL	Any	> 80 and <=120	Any	None	
Spruce Bark Beetle						
Extreme	S	Any	>120 yrs	>=15	1	
High	S	Any	>120 yrs	<15	2	
Moderate	Any	S 20 - 50%	>120 yrs	Any	4	
Low	S	Any	> 80 and <=120	Any	None	
Balsam Bark Beetle						
Extreme	BL	Any	>120 yrs	>=15	3	
High	BL	Any	>120 yrs	<15	5	
Moderate	Any	BL 20 - 50%	>120 yrs	Any	6	
Low	BL	Any	> 80 and <=120	Any	None	

Prioritize Harvesting of Pine Stands (con't).

- IFPA Regulation paragraph 2(a) Harvesting and silviculture practices.
- Temporary increase in the harvest level for 10 years of 1 million m³.
- Harvest rule priorities result in a direct increase in the timber available to harvest during the mid and long-terms of the planning horizon.
- Allows salvage areas to be reforested promptly with a greater proportion of spruce and GI stock improving mid and long term harvest level.

Harvest Flow Graph

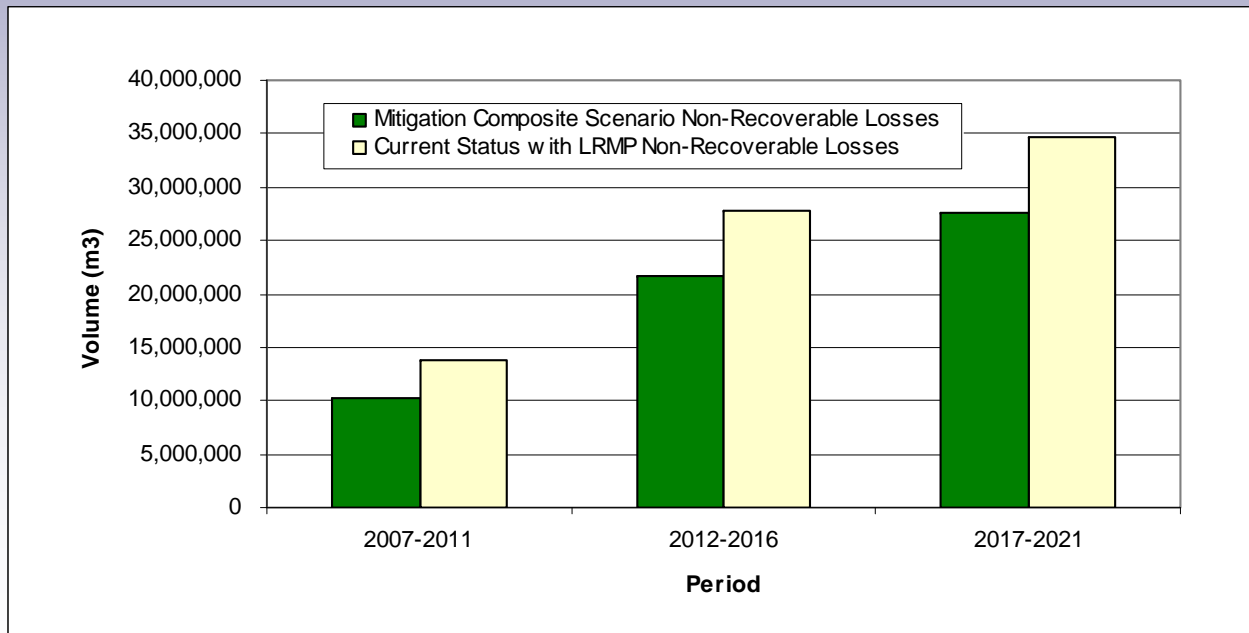


Prioritize Harvesting of Pine Stands (con't).

- IFPA Regulation paragraph 2(e); Data and Analysis.
- Used the provincial MPB projections data to update the yield curves, incorporating pine volume losses due to MPB.
- Non recoverable losses reduced from 76 million to 59 million m³.

Period	Current Status with Morice LRMP (m ³)			Mitigation Composite Scenario (m ³)			Difference
	Volume Lost due to stands being under the economic rotation age and impacted by MPB	Volume Lost due to Pine becoming Unmerchantable (i.e. moving beyond the 5-year shelf life)	Total NRLs	Volume Lost due to stands being under the economic rotation age and impacted by MPB	Volume Lost due to Pine becoming Unmerchantable (i.e. moving beyond the 5-year shelf life)	Total NRLs	
2007-2011	8,365,604	5,329,106	13,694,710	5,426,325	4,857,210	10,283,535	3,411,175
2012-2016	12,920,323	14,870,493	27,790,816	8,998,499	12,755,297	21,753,796	6,037,020
2017-2021	15,685,392	18,994,094	34,679,486	9,673,576	17,819,577	27,493,153	7,186,333
Totals	36,971,319	39,193,693	76,165,011	24,098,400	35,432,084	59,530,484	16,634,528

Note: Depending on the site productivity and the amount of pine lost (i.e. dead for longer than 5 years) due to MPB, it may take from 5-300 years for the stand to recover to Minimum Economic Criteria.



Prioritize Harvesting of Pine Stands (con't).

- IFPA proponents commit to implement the harvest priority strategy in the Forestry Plan by following harvest schedule from beetle mitigation scenario.
- SFM plan indicators are used to monitor performance.
 - Indicator 14 - Percent area of the THLB and non-contributing forest by beetle hazard type (extreme and high) by licensee;
 - Indicator 35 – Percent species composition of harvest volume by licensee.
 - Indicator 58- Percent of harvest area in Mountain Pine Bark Beetle attacked stands by licensee.

Element # 7 Risk Management of Environmental Values

- IFPA did not want to request an AAC uplift until an SFM plan was in place.
- IFPA proponents and BCTS are now under a CSA certified plan.
- The increase in AAC to salvage MPB stands was analyzed within the framework of of the SFM plan which maintains non-timber values.

Summary of Analysis Elements

Element	Planning Horizon		
	Harvest for Periods 2 and 3 (2007-2017)	Harvest for Periods 4 to 20 (2018-2102)	Harvest for Periods 21 to 35 (2103-2262)
1. Reduced Operational Adjustment Factor (OAF) 1	0%	0.48% 648,090 m3 (7,625 m3/yr)	0.31% 793,644 m3 5,291 m3/yr
2. Volumes based on Site Index generated from PEM/SIBEC data rather than the Forest Inventory Site Index.	0%	4.82% 6,558,763 m3 (77,162 m3/yr)	8.81% 22,268,723 m3 148,458 m3/yr
3. Increased Utilization	2% 600,000 m3 (60,000 m3/yr)	2% 2,720,000 m3 32,000 m3/yr	2% 5,054,000 m3 33,693 m3/yr
4. Increase the percentage of spruce planted in future plantations	0%	0%	5.25% 13,262,804 m3 88,418 m3/yr
5. Use genetically improved stock as per BC Forest Genetics Council species plans	0%	6.25% 8,500,000 m3 100,000 m3/yr	9.55% 24,128,571 m3 160,857 m3/yr
Subtotal independent of harvest rule	60,000	216,787	436,717
6. Implement MPB Mitigation Harvest Rule	34.6% 10,338,830 m3 (1,038,883 m3/yr)	0%	0%
7. Manage risk to environmental values from accelerated harvest using SFM Framework	Supports 1,098,883 m3/yr	Supports 216,787 m3/yr	Supports 436,717 m3/yr
Uplift Totals with harvest rule & SFM	1,098,883 m3	216,787 m3	436,717
IFPA requested apportionment of uplift	500,000 m3 *	210,000 m3	210,000 m3

Questions?

- Web page <http://www.moricelakes-ifpa.com/>
 - Forestry Plan, Analysis Report and Information package available on line.