BLUE RIDGE LUMBER INC.
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February 6, 2009

Mr. Robert W. Stokes, Acting Executive Director
Alberta Sustainable Resource Development
Forestry Division, Forest Management Branch
7th Floor, 9920 – 108 Street NW
Edmonton, Alberta
T5K 2M4

Dear Mr. Stokes:

Submission of the BRL MPB Pine Strategy DFMP Amendment

This letter accompanies five copies of the BRL MPB Pine Strategy DFMP Amendment for your review and approval. Five digital copies are also included.

This MPB Pine Strategy DFMP is an amendment to our approved September 1, 2005 DFMP. This plan generates a new spatial sequence that focuses the harvest on stands that are most susceptible to MPB attack while maintaining long term fibre sustainability and other landscape values. This plan proposes a modest increase of the conifer harvest level to 832,500 m3 compared to the previous DFMP of 824,116 m3. Following this plan will result in 58.2% of the rank 1 and 2 stands being harvested over the first 20 year period. The AAC will drop to 775,250 m3 (6.9%) after 20 years.

If MPB populations increase in the future then BRL will also respond by amending this plan to get more aggressive in the control of the beetle. Many of the rank 1 and 2 stands that are not targeted in this plan are stands that would not be selected by the model until mid rotation. Forcing them to be cut sooner so as to achieve a harvest of 75% of the rank 1 and 2 stands in the first 20 year period would result in a drop in AAC of approximately 23% at the end of 20 years. This significant drop in AAC seriously affects the long term sustainability of the harvest and does not comply with the goals of the Interpretive Bulletin and the current Alberta Forest Management Planning Standard.

The submission of this DFMP amendment addresses the conditions as outlined in the Mountain Pine Beetle Action Plan, Interpretive Bulletin and the Terms of Reference.

This amendment has been developed in consultation with ARSD. The concerns expressed by ARSD in the draft review meeting of the plan on April 23, 2008 have been addressed. The level of Grizzly Bear analysis has also been accepted by ARSD.

During the past six months BRL has being working closely with the embedded operators to ensure their concerns have been addressed and documented in this plan. As a result of this consultation BRL and the embedded operators have developed an Edited PFMS (Preferred Forest Management Scenario) that better addresses the operational concerns

expressed by the Quota Holders. This revised SHS was accomplished by predominately switching stands from the 11 to 20 year period to the 1 to 10 year period and vice versa. The text has also been modified to document and deal with other embedded operator concerns such as Aspen flow, entitled carry over volumes, the level of aggressiveness of the harvest strategy etc.

BRL has also presented our plan to the Whitecourt Regional Forest Advisory Committee and the Swan Hills Forest Communications Group. We have conducted our annual woodlands open house meetings in Whitecourt, Fort Assiniboine, Swan Hills and Fox Creek to share our various plans and solicit input from the public.

BRL sent an information package to the various First Nations communities that SRD directed us to communicate with. The result of this communication is documented in the plan as requested by SRD.

We look forward to an early approval of this DFMP Amendment.

Yours truly,

Tim Burns, RPF
Planning Superintendent
Blue Ridge Lumber Inc.

CC Darrell Kentner

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MPB Pine Strategy DFMP Amendment

VERSION 1.0

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MPB Pine Strategy DFMP Amendment

Section 1
Introduction

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1 INTRODUCTION

1.1 Mountain Pine Beetle Epidemic

In recent years, the Mountain Pine Beetle (MPB) population in western Canada has grown to both epidemic and unprecedented levels. The dramatic increase in MPB population has been attributed to a combination of several different factors. First are the multiple successive, warm winters that have aided beetle survival allowing reproduction to be exponential numbers in comparison to past years. Secondly the abundance of old, pine dominated forests on the landscape that have partially resulted from historical forest management practices (fire suppression in particular) has provided an excellent food source for the growing beetle population. With pine mortality in BC projected to hit 80% within 10 years (BC Ministry of Forests, 2004), Alberta can only expect increased MPB pressure in the near future.

Previous uncertainties surrounding the ability of MPB to cross the continental divide, establish itself within Alberta's forests, and survive the harsher winters have now been laid to rest. Surveys performed by Alberta Sustainable Resource Development (ASRD) confirm that MPB has taken a strong hold on the eastern slopes of the Alberta Rockies. Proactive forest management is essential to addressing the current MPB threat. Forest companies in Alberta must prepare for a MPB epidemic similar to what is occurring in BC.

While Blue Ridge Lumber Inc. (BRL) is not currently experiencing high MPB populations within its FMA area, it is committed to effectively managing for the MPB and the values impacted by it within the BRL Forest Management Agreement (FMA) area in a measured but proactive manner. BRL recognizes the need to create an amendment to its current Detailed Forest Management Plan (DFMP) that will generate a new spatial harvest sequence, focused on targeting the stands that are most susceptible to MPB attack while maintaining long term fibre sustainability and other landscape values.

1.2 MPB Management in Alberta

In September, 2006, the Alberta provincial government released the 'Mountain Pine Beetle Action Plan for Alberta' and the 'Interpretive Bulletin: Planning Mountain Pine Beetle Response Operations'. The objectives of the Action Plan are to:

1) Effectively detect, accurately survey and aggressively control infested trees;
2) Reduce the number of highly susceptible stands;
3) Minimize the impact of a major outbreak;
4) Establish SRD policies and procedures to facilitate efficient and timely MPB management;
5) Conserve all of the long-term forest values and maintain and protect public health, safety and infrastructure;
6) Maintain a project management structure that ensures effective planning and implementation of mitigation measures among all land managers and adjacent jurisdictions;
7) Communicate to all clients and stakeholders.

Three strategies for MPB control on Provincial lands are presented in the Action Plan:

1) Control Strategy (Beetle): Focuses on the treatment of infested trees;

2) Prevention Strategy (Pine): Addresses the need to reduce the overall susceptibility of the pine forest;
3) Salvage Strategy: Mitigates impacts if a large scale outbreak occurs.

The current pine strategy recommendation outlined in SRD's *Interpretive Bulletin Version 2.6 September 2006,* is as follows:

- *"The goal is to reduce the area of susceptible pine stands in the Rank 1 and Rank 2 categories in the Sustained Yield Unit (SYU) to 25% of that projected in the currently approved FMP at a point twenty years into the future."*

BRL will strive to achieve the above guideline while maintaining long term fibre sustainability and operational realities.

1.3 MPB Management on the FMA

BRL recognizes the threat MPB poses to their FMA area, and as a result are taking a measured, proactive approach to MPB management while balancing other FMA values such as long term sustainability. The conditions surrounding the BRL long term timber supply are unique in that the Virginia Hills Fire of 1998 removed a significant tract of mature timber, largely comprised of pine, from the productive landbase. This event in itself has somewhat mitigated the effects of a MPB outbreak at the present time and new management planning will take this into consideration.

BRL recognizes that the MPB threat is dynamic and as such, is prepared to adjust this strategy as a reactive response. The purpose of this document is to present BRL's pine management strategy which:

1) Results in a revised Preferred Forest Management Strategy (PFMS) for the FMA
2) Demonstrates the sustainability of a revised PFMS;
3) Provides a new spatial harvest sequence.

1.4 Public Consultation

The Province has the mandate to inform the public about forest health issues.

In 2007, Blue Ridge Lumber Inc. (BRL), Alberta Newsprint Company (ANC), Millar Western Forest Products (MWFP) and the regional staff of Alberta Sustainable Resource Development (ASRD) developed a plan to provide information to the local and regional public stakeholders. In 2007 and 2008 the Companies and ASRD jointly provided information in meetings to foster stakeholder understanding and to gain support for the implementation of forest management strategies to control the MPB.

Local and regional stakeholders were generally positive about the proposed management strategies, however requests for additional information and the level of response was low.

Numerous articles have also appeared in the local newspapers providing information on the status of the Mountain Pine Beetle and Forest Industry activities.

1.4.1 Forest Advisory Committees

Blue Ridge Lumber has two Forest Advisory Committees who have an interest in forest management on our FMA. Blue Ridge Lumber has staff representation on the following two committees:

- The Whitecourt Regional Forest Advisory Committee; and
- The Swan Hills Forest Communications Group.

The Mountain Pine Beetle has been on their agendas several times for updates and progress of Company activities. Both groups have been well informed of the company's MPB Strategy and DFMP amendments.

1.4.2 General Public

Blue Ridge Lumber Inc. holds annual woodlands open house meetings in Whitecourt, Fort Assiniboine, Niton Junction, Swan Hills and Fox Creek to provide information to the general public and to answer questions. Information is provided on the annual operating plan, 5-year general development plan, road development plans, reforestation, silviculture, herbicide, mountain pine beetle, etc.

Blue Ridge Lumber also contacts regional trappers, guides and outfitters to bring them up to date on our harvesting, road and silviculture activities.

1.4.3 First Nations Consultation Activities

Blue Ridge Lumber has established ongoing communication and information sharing with First Nations in regard to annual operating plans, general development plans and the MPB strategy DFMP Amendment. The First Nations communities include:

- Alexander First Nation
- Alexis Nakota Sioux Nation
- Sturgeon Lake Cree Nation
- Sucker Creek First Nation
- Swan River First Nation
- IYINIWOK Consultation Referral and Coordination Centre

IYINIWOK is the Coordination Centre for Sawridge First Nation, Driftpile First Nation and Kapawe'no First Nation. Kapawe'no First Nation does not have an interest in the BRL FMA.

Blue Ridge Lumber contacted all of the First Nations and offered to meet with them to answer any questions or concerns or to provide additional information.

Summary

The following is a table summarizing BRL's efforts to share plans and solicit input from the public and First Nations, along with any issues expressed by this groups and the BRL response to the issues expressed.

Table 1-1: Documentation of Public and First Nation's Consultation

Stake Holder	Type of Contact	Date of Contact	Issues Expressed	BRL Response
General Public	Public Forum	April 23, 24, 29 and 30, 2008 at Fox Creek, Swan Hills, Fort Assiniboine, and Whitecourt	No concerns expressed	Discussions were general in nature and centered around sharing the companies MPB strategy.
General Public	Open Houses	April 14, May 7, May 8 and June 25, 2008 at Swan Hills, Fox Creek, Whitecourt, and Fort Assiniboine	No concerns expressed	N/A
Regional Forestry Advisory Committee	Meetings	Nov. 27, 2007, Jan. 22, Mar. 18 and May 27, 2008	No concerns expressed	Mar. 18 BRL presented a power point presentation highlighting the key points of our MPB DFMP TSA. On May 27 BRL provided a handout summarizing the main strategies of our MPB SHS.
Alexis Nakota Sioux	Letter	May 30, 2008	No Response	N/A
Alexander First Nation	Meeting and Hand Delivered Letter (Re: the BRL MPB Plan)	May 27, 2008 May 29, 2009	Requested a copy of our MPB Amendment once it is approved.	Will provide a digital copy of our plan once it is approved.
Sturgeon Lake Cree Nation	Letter	May 30, 2008	No Response	N/A
Sucker Creek First Nation	Letter	May 30, 2008	No Response	N/A
Swan River First Nation	Letter and Email	May 30, 2008, June 9, 2008	Expressed concern about the effect of the MPB Plans effect on archeological sites.	BRL has a heritage management process as required by Alberta Community Development and annually shares the location of our cutblocks in order to solicit any additional sites that the FNs may be aware of.
IYINIWOK Consultation Referral and Coordination Centre	Letter	May 30, 2008	No Response	N/A

1.4.4 Embedded Timber Operators

Within the Blue Ridge Lumber FMA, Millar Western Forest Products holds coniferous timber rights in Volume Supply Area 1 (VSA) and deciduous timber rights in VSA 2. Alberta Newsprint Company holds aspen timber rights in VSA 1.

BRL has been working very closely with the embedded operators to try and understand their concerns and address them as best we can within reasonable cost and time parameters. After several meetings, phone calls and emails BRL and the embedded operators have developed an edited PFMS. This slight deviation from the modeled PFMS better represents operationally what is desired by the embedded operators. The revised SHS map can be found in Appendix D.

The embedded operators have also identified the following additional concerns:

1. ANC has expressed that they would like to have a better idea of how much incidental aspen volume is going to flow out of the conifer operations in VSA 1 per year and where it will be located so they can calculate an approximate delivered cost. BRL is of the opinion that this is an operational sequence issue and that the best way to solve this issue is by outlining in this plan a framework for the integration of operations to occur within. The following bullets would constitute the framework for integration discussions for overlapping tenures in both VSA 1 and 2:

    - Within the Blue Ridge Lumber DFMP MPB SHS specific stands are identified for individual companies for years 1-10 of this plan. These are the stands that a company will focus on when developing their harvesting plans. The total estimated volume within those stands is intended to equal the total volume allocated to the Company for a ten year period.
    - All companies operating within the FMA would be expected to share their Draft Harvest Plans with affected operators prior to layout. At this time the company developing the plan would secure agreement from the affected operator to include any of the other company's polygons within its harvest plan that may be logical to do so.
    - As per the BRL Operating Ground Rules once the Final Harvest Plan is completed the affected operator is required to agree to the FHP before ASRD will approve it.
    - BRL, ANC and MWFP would meet annually prior to the submission of each company's GDP to share projected numbers of incidental volume for a five year period and the approximate locations of this volume.
    - It would be accepted that the numbers and locations for years three, four and five would not be as accurate as for years one and two.
    - The numbers and location for year two would be expected to be fairly accurate. Though the specific blocks may not be laid out in the field at this time, the general location within a compartment of where the volume would come from would be identified.
    - The numbers and location for year one should be what a company is prepared to agree to in a contract. The numbers should be tied to specific blocks. The difference between years one and two should be very minimal.
    - It is anticipated that BRL and MWFP will combine to harvest approximately 25% of ANC's VSA 1 deciduous allocation provided the appropriate business deals can be agreed to. This 25% would be aspen which is incidental volume contained within polygons assigned to BRL and MWFP.
    - Provided an appropriate business deal can be reached, MWFP will have the option to purchase enough incidental conifer from ANC's VSA 1 operations to meet their VSA 1 ten year allowable conifer volume.

- If ANC generates incidental conifer volume in excess of MWFP's needs, BRL would be willing to purchase up to 10,000m^3 of incidental conifer annually from ANC, provided an appropriate business deal can be agreed to.
- The incidental conifer volume in VSA 1 would be charged against dispositions belonging to the conifer operators in proportions equal to the amount that each conifer operator purchases from ANC.
- The amount of incidental volumes to be generated by MWFP and BRL in VSA 2 will be discussed and resolved prior to submitting their respective Five Year General Development Plans.
- In the event that companies cannot agree to a FHP or GDP the dispute resolution process outlined in Ground Rule 5.1.1 of the July 2005 Blue Ridge Lumber Inc. Operating Ground Rules will be followed.

2. MWFP has requested a utilization change be made to the timber supply calculation to accommodate a 15 or 20 cm stump height. BRL is open to doing the necessary analysis to revise the AAC based upon a lower stump height. We anticipate that this work will be completed in 2009.

3. MWFP has expressed that they are concerned that the BRL Pine strategy is not aggressive enough. MWFP is concerned that by being limited to cutting virtually the same AAC as the 2005 approved DFMP that they will not be able to harvest all of the MPB infected blocks within their assigned compartments. BRL acknowledges that within the BRL FMA MWFP's has encountered a higher number of MPB hits relative to the number of annual blocks they harvest compared to BRL. Over the last three operating years MWFP has had approximately 100% of their blocks with MPB present where BRL has had less than 10%. BRL is willing to discuss an operational solution to this on an annual basis if MWFP does not have enough AAC capacity to address all of the MPB they are encountering. However BRL is reluctant at this time to implement a surge cut to harvest more pine because our scenario runs have illustrated that a more aggressive approach would result in more mid rotation pine being harvested and a longer term drop in AAC that would be undesirable by both companies. BRL will continue to monitor the MPB situation within the FMA closely and will remain flexible to adjust our sequence if necessary to maintain a healthy forest.

4. MWFP has pointed out that on Table D-4 in Appendix D that the total deciduous volume allocated to MWFP in VSA 2 (i.e. 1,658,491m^3) is approximately 103,217m^3 short of what they are entitled to for this ten year period. Millar Western is entitled to 1,761,708m^3 based on the following calculation: (144,600m^3AAC for DTAW140003 X 10yrs.) + (31,077m^3 unused volume from the third quadrant of DTA W910001 X 7yrs.) + 98,169m^3 carry forward volume resulting in the Cancellation of DTA's W910001 and W90002.

   As pointed out in Section 6.3 of the approved 2005 BRL DFMP and also in section 4.1.5 of this plan, the full reconciliation volume of 310,773 m^3 from the third quadrant of DTA W910001 was modeled over a ten year period commencing in 2010-2011. However the carry forward volume of 98,169m^3 was not modeled into the sequence as the TSA work for the Pine strategy had been completed when BRL was informed of this volume, thus explaining the shortfall of volume pointed out by MWFP. BRL and MWFP have discussed this issue and MWFP has indicated that since this will not be an issue for approximately 9 plus years, they can accept the current sequenced volume shortfall provided the amount of their entitled volume is clearly documented.

1.4.5 Embedded Operators Summary

In summary, the challenge of coming up with a Spatial Harvest Sequence that all operators are content with is a unique challenge within the W14 FMU. All operators regardless of whether they are conifer or deciduous operators desire to have their operations in consolidated areas and are not very open to chasing small scattered pockets of timber. This is especially challenging for the Deciduous Timber Allocations. MWFP's only has the rights to the deciduous that is designated as pure "D" within the Alberta Vegetation Inventory in VSA 2 and ANC just has rights to Aspen within VSA 1. However on the landscape, the deciduous these operators have the rights to often does occur in scattered stands, mixed wood stands and in small pockets. Therefore when running different SHS scenario's to ensure different stands are either in or out of the 1-10 year period there is a domino effect causing other AVI polygons to be chosen or omitted which may not be the desired outcome. It can be very costly to run the many scenarios required to get a SHS that satisfies all operators. In addition, as time goes by this effort and expense can also end up being all for nothing if there is a major event on the landscape such as fire, insect outbreak, etc. that makes it necessary to re-do the SHS. BRL is of the opinion that it is more efficient and cost effective to get a reasonable SHS with an acceptable price tag and work out some of the sequencing issues through operational cooperation with the other operators. This approach also requires flexibility on the part of the Government. Specific Final Harvest Plans may vary from the SHS more than what is currently prescribed in the operating ground rules but may make more sense operationally, while still not significantly affecting the long term sustainability of the cut or other resources.

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MPB Pine Strategy DFMP Amendment

Section 2
FMA Description

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2 FMA DESCRIPTION

The FMA area falls within Forest Management Unit (FMU) W14 with a gross area of 662,392 ha and covers four natural subregions within its boundary: Central Mixedwood (177,117 ha), Dry Mixedwood (37 ha), Upper Foothills (191,534 ha) and Lower Foothills (293,704 ha) as per the 2001 approved net landbase.

2.1 Pine Distribution

The FMA area contains a considerable amount of pine as shown in Table 2-1, which presents the FMA composition by cover type. Map 2-1 presents the cover type distribution across the FMA.

Table 2-1: FMA Cover Type Distribution

COVER TYPE DISTRIBUTION			
Cover Type[1]	**Net Landbase (ha)**	**Passive Landbase (ha)**	**Total Landbase Area (ha)**
Conifer - Pine Leading	**122,001**	**4,302**	**126,303**
Conifer	116,650	125,117	241,767
Conifer Dominated Mixedwood - Pine Leading	**13,767**	**553**	**14,320**
Conifer Dominated Mixedwood	35,295	1,306	36,600
Deciduous Dominated Mixedwood	45,416	1,093	46,508
Deciduous	130,355	3,716	134,072
Non Forested	0	62,822	62,822
Total	***463,484***	***198,908***	***662,392***

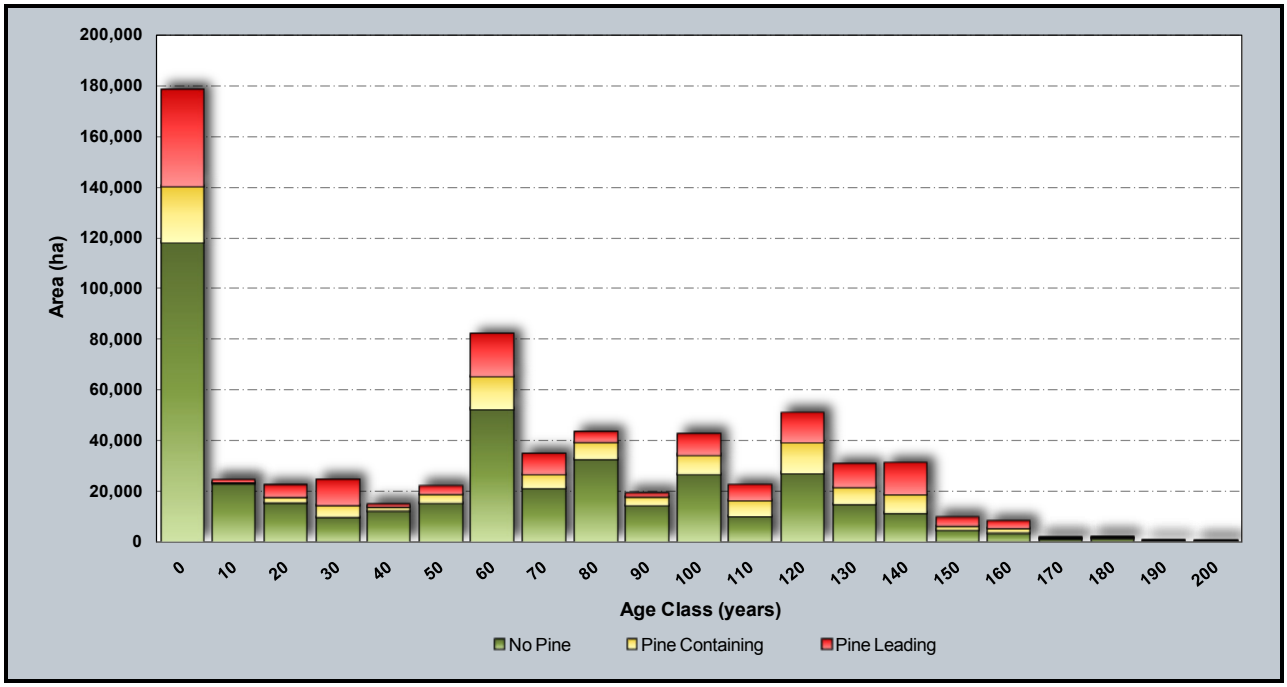
[1] *Cover type distribution derived from DFMP landbase (2001 effective date).*

Map 2-1: Cover Type Distribution

2.2 Age Class Distribution

At endemic levels, MPB typically does not attack small diameter, young pine. Generally, pine stands >80 years in age are deemed more susceptible to attack. As a result, an age class distribution can provide a general indication of the level of MPB susceptibility. Figure 2-1 presents the current age class distribution of pine stands across the FMA. There are currently 59,589 ha of pine leading stands greater than 80 years old and an additional 54,637 ha of pine containing stands greater than 80 years old. Approximately 17.2% of the BRL FMA area is represented by these types of stands.

Figure 2-1: Pine Age Class Distribution[1]



2.3 MPB Pine Stand Ranking

2.3.1 FMA MPB Pine Stand Ranking Process

The BRL FMA area has undergone 3 separate classifications, from which a Pine Stand Ranking was determined at the stand level. The steps taken throughout this process are outlined within the SRD *Interpretive Bulletin* 'Planning MPB Response Operations, Version 2.6 September 2006'. The 3 classifications are defined as follows:

- Stand Susceptibility Index (SSI): A measure of a stand's ability to produce beetles.
- Climate Factor: A measure of the potential for successful MPB development and provided via the SRD MPB Stand Susceptibility Index model;

[1] *2001 Approved Net Landbase Age Class (2001 effective date).*

- Compartment Risk: An assessment provided by Brooks Horne, the regional Forest Health Officer of the probability that a compartment will be attacked based on existing MPB populations.[1]

The Pine Stand Ranking is used as a primary input in the determination of the selected PFMS. The area and volume by Pine Stand Ranking effective 2001 is summarized in Table 2-2. Map 2-2 presents the Pine Stand Ranking distribution across the FMA based on the effective date of 2001.

Table 2-2: Area and Volume Summary of Gross Landbase and Net Landbase by MPB Pine Stand Ranking: 2001 Effective Date

AREA AND VOLUME BY PINE STAND RANKING (2001)							
MPB Risk	Pine Stand Ranking	Gross Landbase			Net Landbase		
		Area (ha)	Conifer Volume (m^3)	Deciduous Volume (m^3)	Area (ha)	Conifer Volume (m^3)	Deciduous Volume (m^3)
Greatest	Rank 1	21,105	4,134,980	444,332	20,548	4,032,484	434,240
↓	Rank 2	132,406	21,152,547	6,883,349	122,168	19,328,128	6,604,555
↓	Rank 3	13	2,324	66	13	2,324	66
Least	Rank 0	508,867	33,415,657	22,970,955	320,754	15,593,899	20,987,051
Total		**662,392**	**58,705,509**	**30,298,702**	**463,484**	**38,956,836**	**28,025,912**

[1] *Assessment provided December 18, 2006 and re-confirmed by Seena Bentley on April 24, 2008. 'Low' risk compartments are 100, 120, 130, 140, 160, 170, 190, 350, 360 and 370. 'Moderate' risk compartments are 110, 150, 180, 210, 220, 230, 240, 250, 260, 270, 280, 290, 310, 320, 330, 340, 620, 630, 640, 650, 660, 670, 680 and 690. There are no 'High' risk compartments.*

Map 2-2: FMA MPB Pine Stand Rank: 2001 Effective Date

2.4 Current MPB Infestation

Over the past two years, the FMA area and surrounding regions have experienced increased MPB activity, primarily occurring within the Grande Prairie area. Following the initial discoveries, a number of surveys within the BRL FMA and neighbouring areas have been completed by various agencies. Map 2-3 displays the results of these surveys as of June 2007. The findings indicate that beetle populations are continuing to increase. SRD's province-wide estimates of MPB infested trees increased from 1.6 million in December 2006 to 2.8 million by July 2007 (based on June 2007 data).

Map 2-3: FMA's Proximity to Known MPB Locations

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MPB Pine Strategy DFMP Amendment

Section 3
Pine Strategy Development

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3 PINE STRATEGY DEVELOPMENT

3.1 2005 DFMP Summary

BRL is currently operating under the approved 2005 DFMP which was submitted to SRD in December of 2005 and following review, approved on March 9, 2006. The conifer AAC for the first 20 years is 824,116 m^3/yr with carry-forward volume included and 795,750 m^3/yr without. It then decreases to 775,250 m^3 for the remainder of the planning horizon. The BRL FMA is also sub-divided into two Volume Supply Areas (VSA) identified as VSA 1 and VSA 2. VSA 1 comprises the western portion of the FMA and VSA 2 comprises the eastern portion. A summary of net landbase categories and a graphical representation of the net landbase area by age class and species group are presented in Figure 3-1. The yield curves are presented in Figure 3-2. The net landbase and yield curves are unchanged from the 2005 DFMP.

Figure 3-1: 2001 DFMP Net Landbase Summary

LANDBASE CATEGORY	AREA (HA)	PERCENT OF GROSS AREA
Gross Area	**662,392**	**100.0**
Non-Forested		
• Natural	39,859	6.0
• Anthropogenic	22,962	3.5
Sub-Total	*62,821*	*9.5*
Temporary Subjective Deletions		
• Excluded Dispositions	349	0.1
• Steep Slopes	506	0.1
• Inoperable Areas	1,107	0.2
Sub-Total	*1,962*	*0.3*
Watercourse Buffers		
• Lake Buffers (100m)	2,163	0.3
• River Buffers (60m)	7,709	1.2
• Stream Buffers (30m)	7,211	1.1
Sub-Total	*17,083*	*2.6*
Net Forested Area	***580,526***	***87.6***
• Merchantability Deletions	96,871	14.6
Net Productive Area	***483,655***	***73.0***
• Marginally Merchantable Area	20,171	3.0
Net Operable Area	***463,484***	***70.0***

AGE CLASS DISTRIBUTION: NET LANDBASE AREA

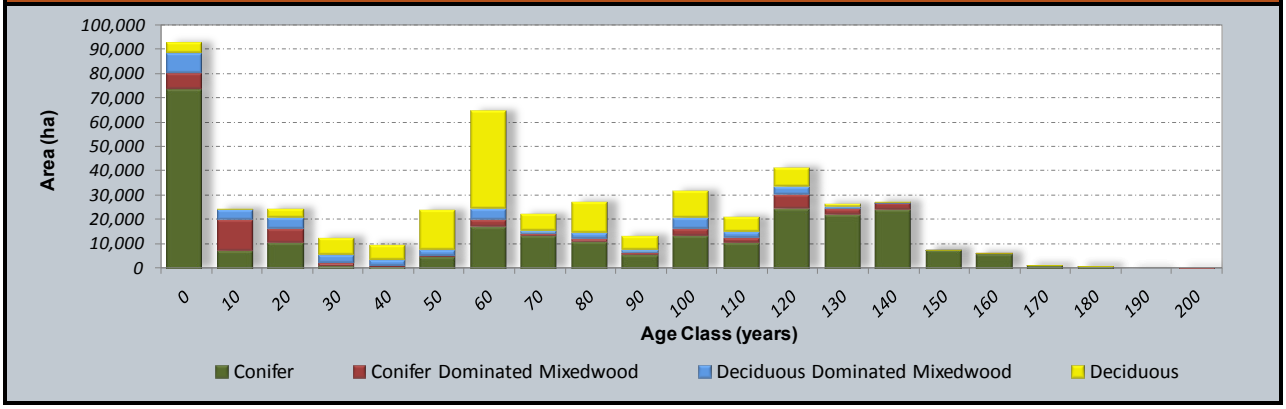
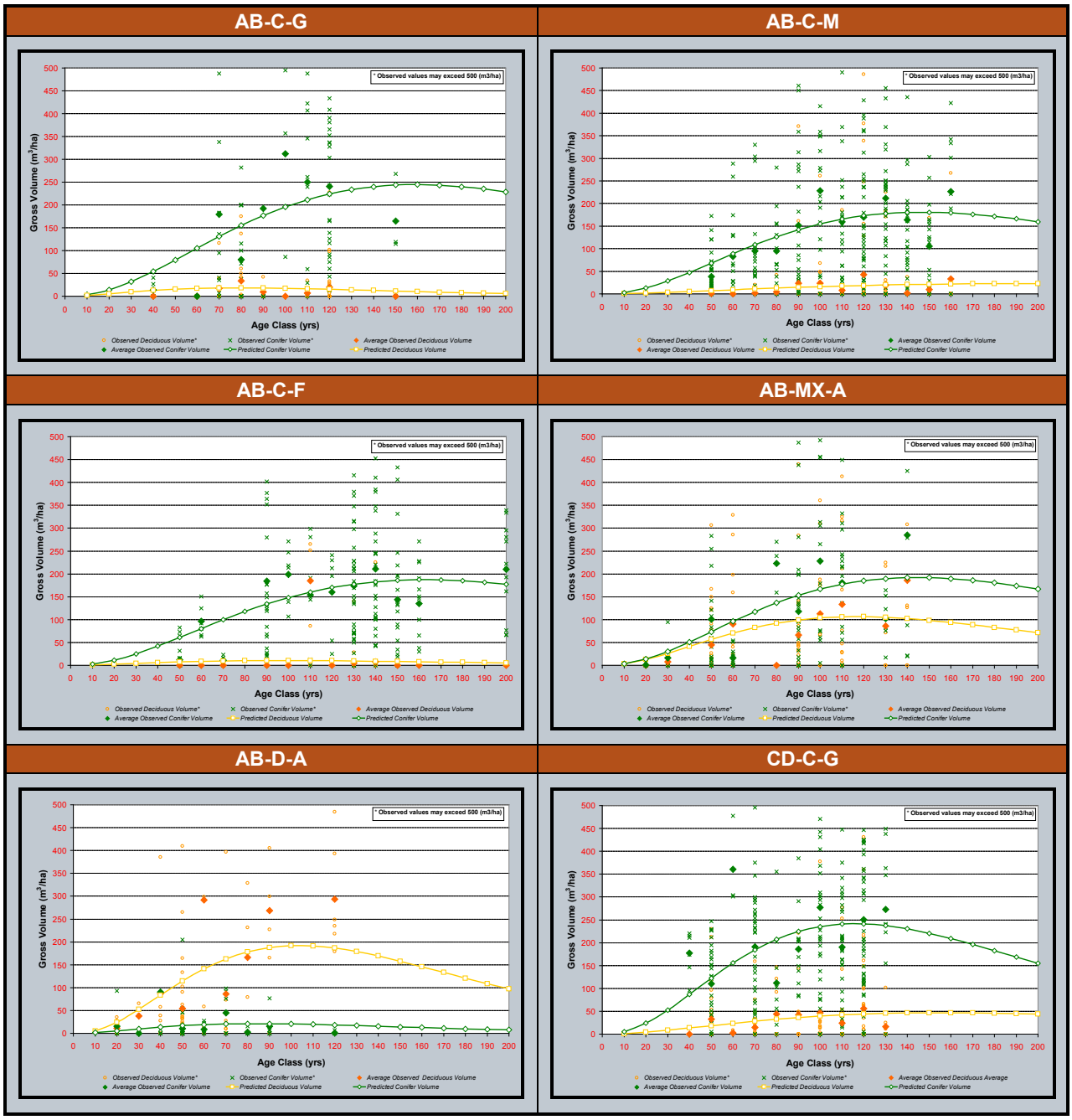


Figure 3-2: Yield Curves



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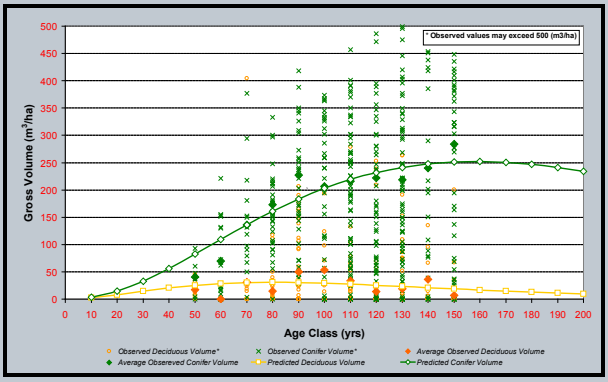

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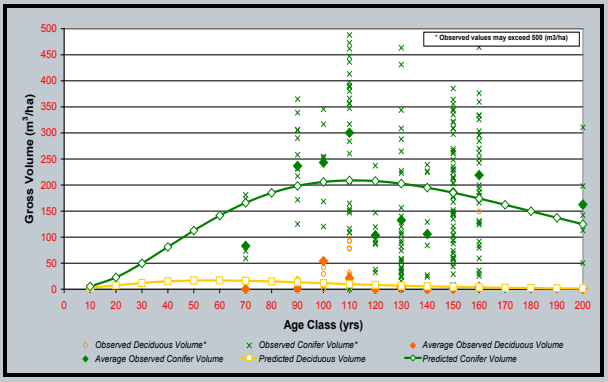

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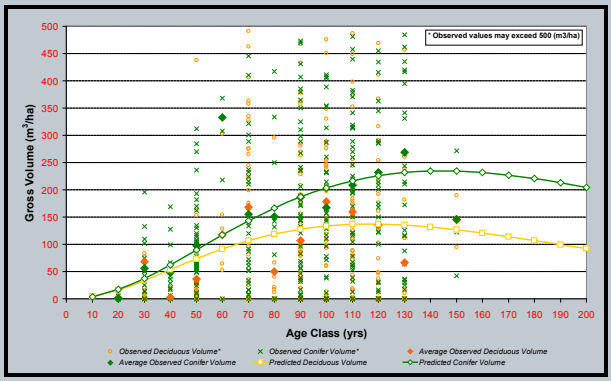

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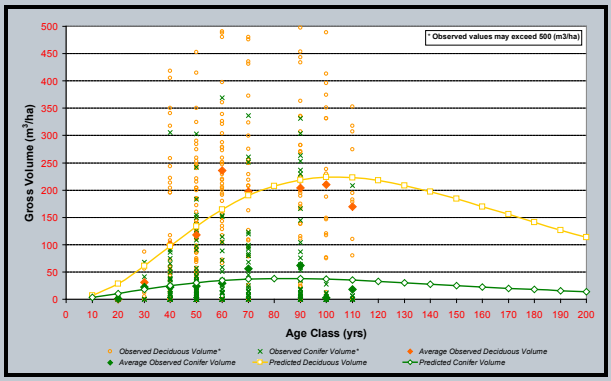
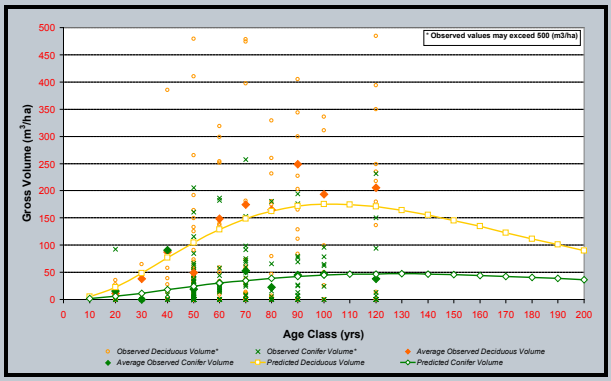
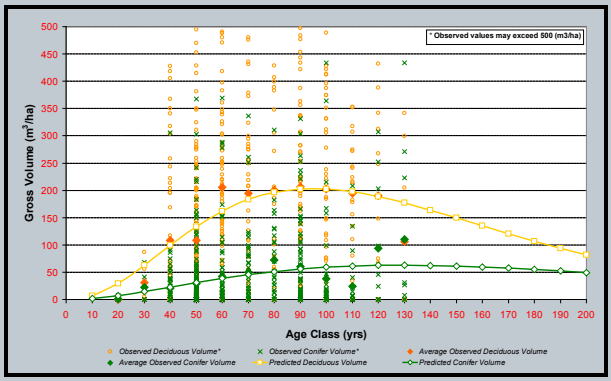
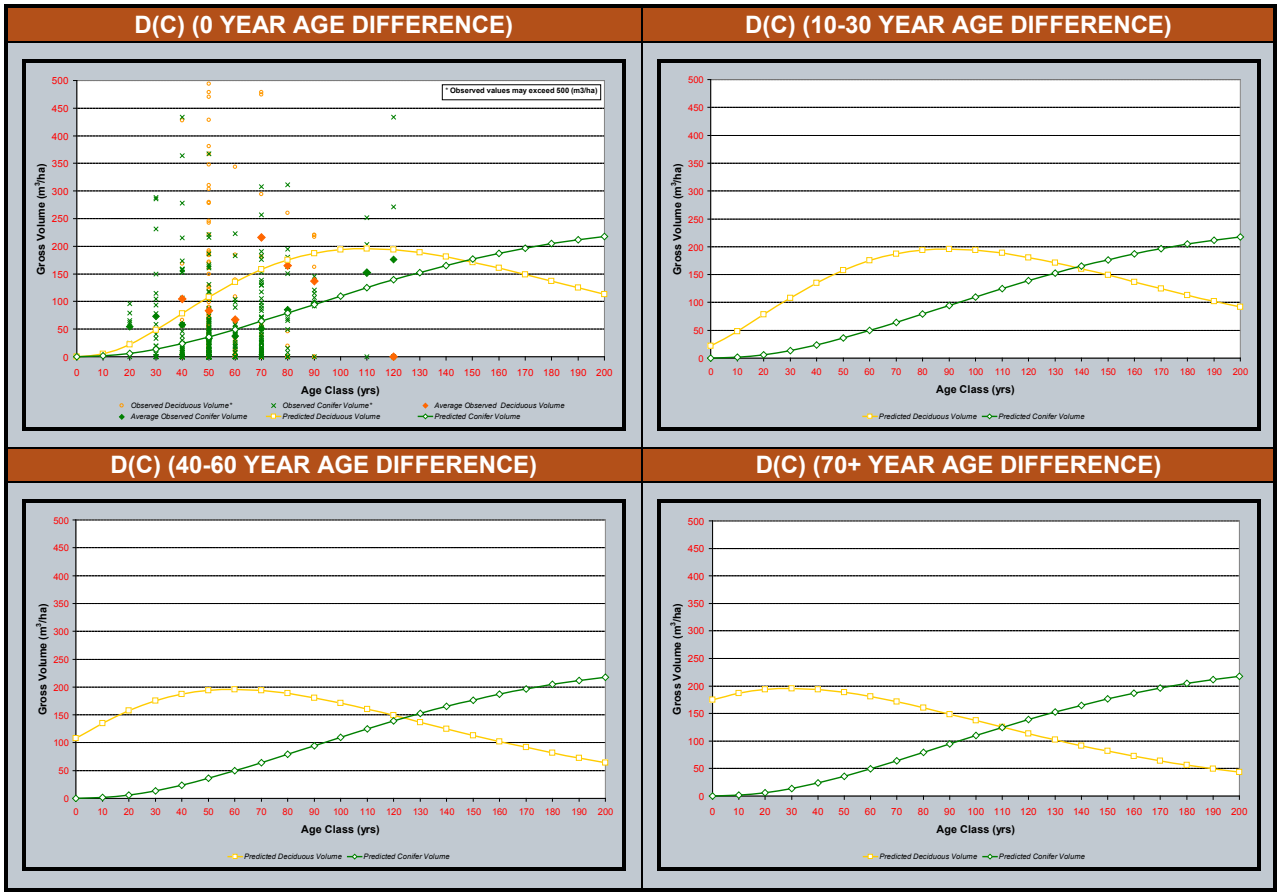


AB-D-D(C)-A



CD-D-D(C)-A





3.2 Pine Strategy Scenario Development and Analysis

3.2.1 Scenarios

MPB infestation and the subsequent management of MPB can result in a variety of outcomes. Several scenarios (runs) have been evaluated in order to determine the potential impacts that a MPB infestation may have on the BRL FMA. Four scenarios are presented in this section to compare the potential impacts of a MPB epidemic and the management options that BRL considered. These scenarios, which are listed and briefly described in Table 3-1, were selected because they were perceived to reflect the most probable future conditions and are built off the 2005 DFMP landbase to better compare them to the DFMP PFMS. Analysis of these possible scenarios has led to the creation of a new scenario, the MPB PFMS, which addresses fibre sustainability, operability and other landscape values in addition to MPB Rank reduction. This new MPB PFMS, presented in Section 4, has also been updated to current conditions.

In addition to the scenarios introduced above, an additional scenario has been completed under SRD direction. This scenario is described as the new MPB PFMS impacted by an MPB outbreak and is presented in Appendix B.

Furthermore, an operational version of the MPB PFMS with a slightly modified spatial harvest sequence is included in Appendix D.

Table 3-1 Scenario Description

#	SCENARIO	DESCRIPTION
1	STATUS QUO	Continue with the 2005 DFMP and assume no MPB outbreak occurs.
2	STATUS QUO WITH MPB OUTBREAK	Continue with the 2005 DFMP and assume a MPB outbreak occurs (MPB kills all pine dominated stands[1] within 20 years and stands with a lesser component of pine are adjusted to account for pine mortality).
3	MPB SUSCEPTIBILITY TARGET REDUCTION	Increase harvesting for 20 years at a level that meets the SRD goal of harvesting 75% of the rank 1 & 2 areas that are not sequenced for the first 20 years of the DFMP PFMS. Harvest the most susceptible pine stands first. Assume no MPB outbreak occurs as a result of management activities controlling the MPB threat.
4	MPB SUSCEPTIBILITY 10% REDUCTION	Increase harvesting for 20 years at a level that will not impact the long-term sustainable harvest by more than 10%. Harvest the most susceptible pine stands first. Assume no MPB outbreak occurs as a result of management activities controlling the MPB threat.

3.2.1.1 Scenario 1: Status Quo

The status quo (business as usual) forest management strategy (FMS) was completed to represent the results of continuing with the current strategy from the 2005 DFMP. This run is based on the same inputs and assumptions as the 2005 PFMS. The harvest simulation parameter settings are listed in Table 3-2 and the run results are illustrated in Figure 3-3.The 20 year spatial harvest sequence from the 2005 DFMP is displayed in Map 3-1.

[1] *Stands that are 20 years or older at the beginning of the planning horizon (2001).*

Table 3-2: Harvest Simulation Control Parameters – Status Quo

HARVEST SIMULATION CONTROL PARAMETERS SCENARIO: Status Quo[1]	
Control Parameter	**Parameter Setting**
Harvest unit:	FMA – W14 (VSA 1 + VSA 2)
Planning horizon:	160 Years
Targeted average harvest age at the end of the planning horizon:	80 ± 5
Minimum harvest age:	70 Yrs (Conifer) 50 Yrs (Deciduous)
Landbase:	Single
Sorting rules:	1) Oldest first 2) Modulate deciduous flow 3) Maximize conifer harvest
Harvest flow constraint:	1) Incorporating reconciliation volume 2) Even flow conifer 3) Maintain deciduous commitments by VSA for the 1st 20 years
Yield curves:	TSA net yield curves
Cull deductions:	Conifer 4.2% and Deciduous 5.9%
Regeneration transition:	Fully stocked – transition strategy 2
Regeneration lag:	Not Applied
Introduce harvest plans:	Applied
Spatial stand adjacency:	Not applied
Adjacency – Green Up:	Not applied
Adjacency – Accumulate adjacent stands:	Not applied
MPB Infestation:	Not Applied

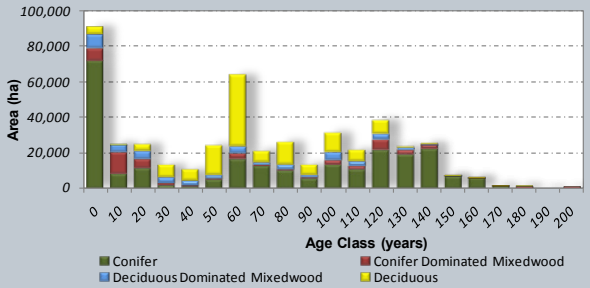
[1] *Refer to 2005 BRL DFMP TSA document, Section 3.2.2.*

Figure 3-3: Harvest Simulation Results – Status Quo

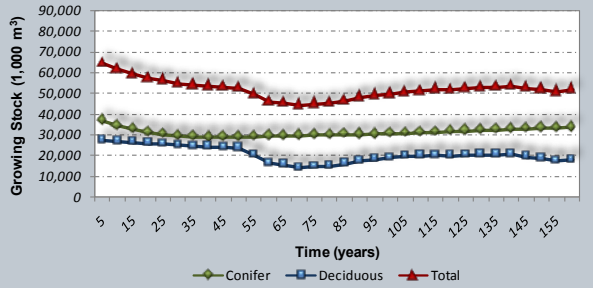
AAC SUMMARY TABLE

Net Productive Area		463,484 ha
Conifer Harvest Level	Years 1-20:	824,116 m^3/yr (includes carry-forward volume)
	Years 21-160:	775,250 m^3/yr
Deciduous Harvest Level	20 yr AVG:	394,432 m^3/yr

INITIAL AGE CLASS DISTRIBUTION

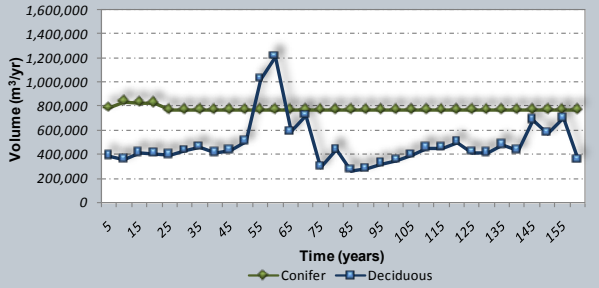


TOTAL GROWING STOCK



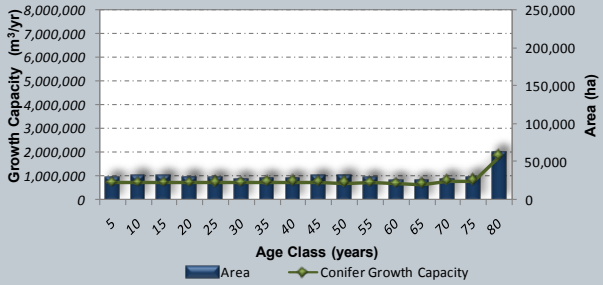
Description: *This graph summarizes the conifer, deciduous, and total growing stock (live volume) over the length of the planning horizon*

HARVEST FLOW SUMMARY



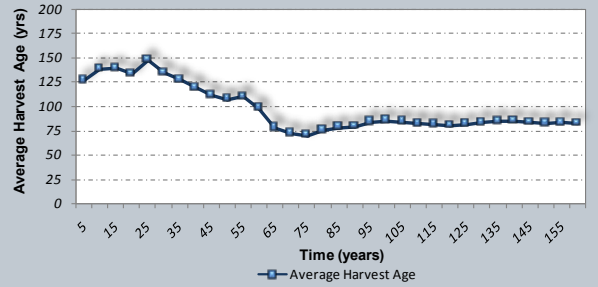
Description: *This graph summarizes the projected conifer and deciduous harvest levels over the planning horizon*

POST HARVEST FOREST CONDITIONS



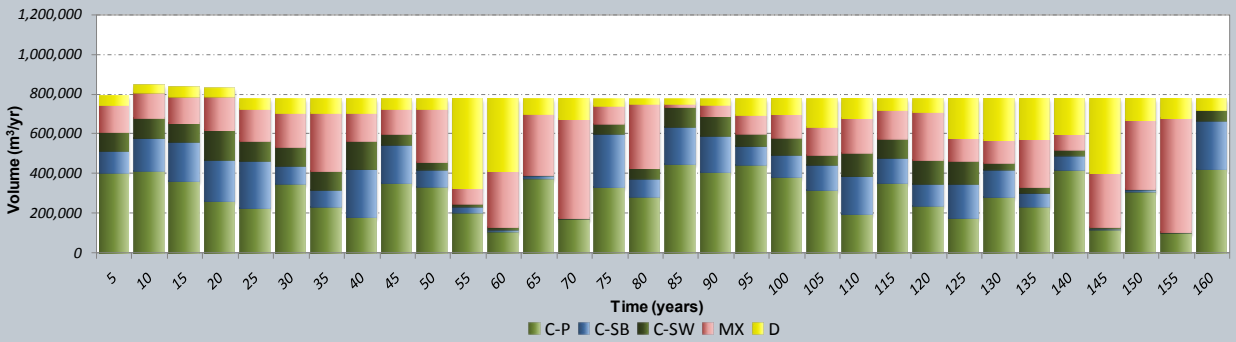
Description: *This graph summarizes the projected growth capacity and area by age class once the planning horizon is over (years 185-270)*

AVERAGE HARVEST AGE BY 5 YR ITERATION



Description: *This graph summarizes the average age of stands harvested over the planning horizon*

CONIFER AAC VOLUME CONTRIBUTION BY STAND TYPE



Description: *This graph depicts the conifer volume contributed by stand types (based on yield strata) over the entire 180 year planning horizon.*

Map 3-1: 20 Year Harvest Sequence 2005 PFMS

Map 3-2: 2005 PFMS MPB Susceptability Reduction Time Series

3.2.1.2 Scenario 2: Status Quo with MPB Outbreak

Scenario 2 is built upon the status quo run except that it includes a large scale beetle infestation. To model such a complex landscape level event, a number of simple and quantifiable rules have been employed[1]:

- Set the AAC to the 20 year DFMP approved harvest levels where conifer AAC is 824,116 m^3 (years 1-20, includes carry-over volume) and the deciduous AAC is 394,432 m^3 (years 1-20 average);
- Assume massive pine mortality in 10 years;
- Assume harvest of salvage to continue at 'Harvest Rate A' for the next 10 years (years 11 to 20);
- Stands that are salvaged return to normal regeneration transition and normal regeneration lags;
- For stands that aren't salvaged, the following rules apply:
    a. For stands with greater than 60% pine content, assume entire stand mortality (mortality applies to stands that are 20 years or older). Stand goes onto the lowest density yield curve (e.g. AB density) that strata with a 15-year regeneration lag. Stand age is reset to 0.
    b. For stands with less than or equal to 60% pine content, the approved yield curves from the last DFMP are reduced to remove the pine content, on a proportionate basis, and the stand continues to grow at its current age (stand age is not reset to 0). No assumption is made for stand release due to opening of the canopy by the pine mortality.

The harvest simulation parameter settings are listed in Table 3-3 and the run results are illustrated in Figure 3-4.

[1] *As per the SRD MPB Disaster Scenario Evaluation (June, 2007) with the exception of the definition of the harvest levels.*

Table 3-3: Harvest Simulation Control Parameters – Status Quo with MPB Outbreak

HARVEST SIMULATION CONTROL PARAMETERS SCENARIO: Status Quo with MPB Outbreak[1]	
Control Parameter	**Parameter Setting**
Harvest unit:	FMA – W14 (VSA 1 + VSA 2)
Planning horizon:	160 Years
Targeted average harvest age at the end of the planning horizon:	80 ± 5
Minimum harvest age:	70 Yrs (Conifer) 50 Yrs (Deciduous)
Landbase:	Single
Sorting rules:	1) Oldest first 2) Modulate deciduous flow 3) Maximize conifer harvest
Harvest flow constraint:	1) Incorporating reconciliation volume 2) Even flow conifer 3) Maintain deciduous commitments by VSA for the 1st 20 years
Yield curves:	TSA net yield curves
Cull deductions:	Conifer 4.2% and Deciduous 5.9%
Regeneration transition:	Fully stocked – transition strategy 2
Regeneration lag:	Applied (15 years for stands killed by MPB)
Introduce harvest plans:	Applied
Spatial stand adjacency:	Not applied
Adjacency – Green Up:	Not applied
Adjacency – Accumulate adjacent stands:	Not applied
MPB Infestation[2]:	Applied

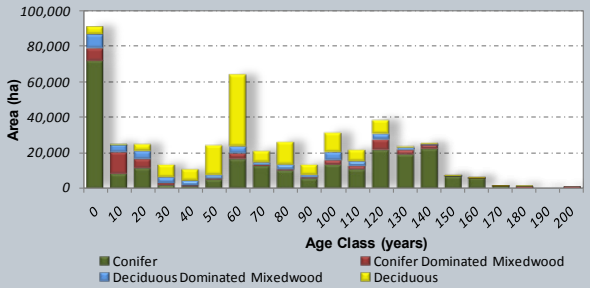
[1] Refer to 2005 BRL DFMP TSA document, Section 3.2.2.
2 All stands with 70% or greater pine content are 'killed' at year 20 and considered to be age 0 with a 15 year regeneration lag. All stands with less than 70% pine are not killed but their estimated volumes are adjusted to exclude any pine volume.

Figure 3-4: Harvest Simulation Results – Status Quo with MPB Outbreak

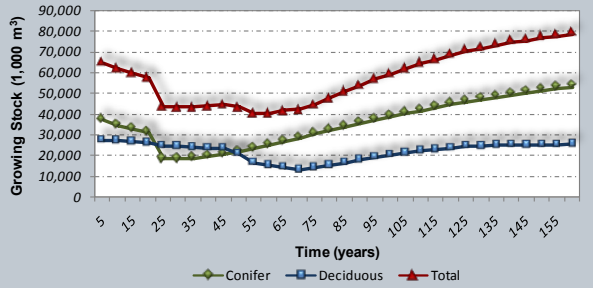
AAC SUMMARY TABLE

Net Productive Area		463,484 ha
Conifer Harvest Level	Years 1-20:	824,116 m^3/yr (includes carry -forward volume)
	Years 21-160:	477,000 m^3/yr
Deciduous Harvest Level	20 yr AVG:	394,432 m^3/yr

INITIAL AGE CLASS DISTRIBUTION

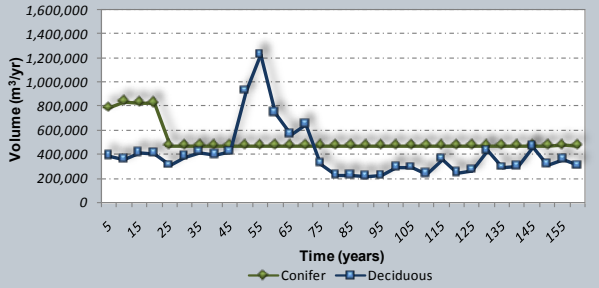


TOTAL GROWING STOCK



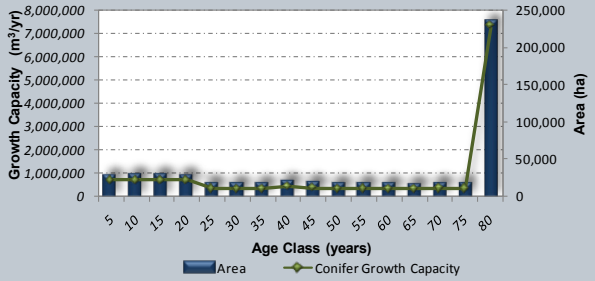
Description: *This graph summarizes the conifer, deciduous, and total growing stock (live volume) over the length of the planning horizon*

HARVEST FLOW SUMMARY



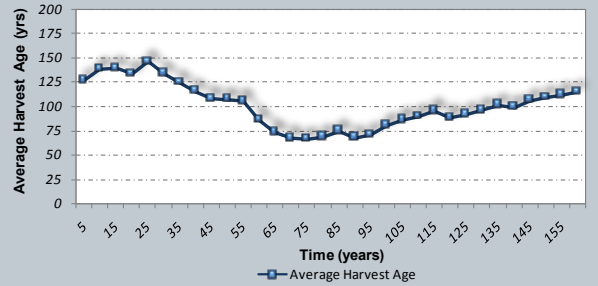
Description: *This graph summarizes the projected conifer and deciduous harvest levels over the planning horizon*

POST HARVEST FOREST CONDITIONS



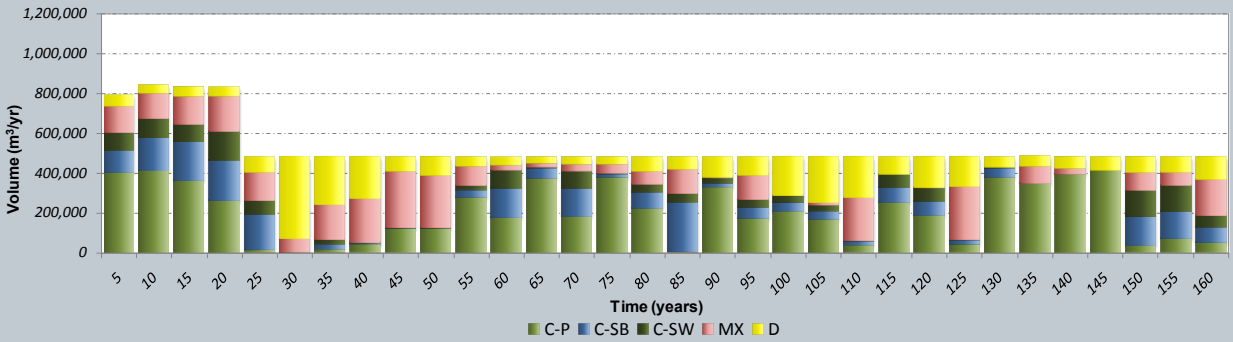
Description: *This graph summarizes the projected growth capacity and area by age class once the planning horizon is over (years 185-270)*

AVERAGE HARVEST AGE BY 5 YR ITERATION



Description: *This graph summarizes the average age of stands harvested over the planning horizon*

CONIFER AAC VOLUME CONTRIBUTION BY STAND TYPE



Description: *This graph depicts the conifer volume contributed by stand types (based on yield strata) over the entire 180 year planning horizon.*

3.2.1.3 Scenario 3: MPB Susceptibility Target Reduction

This scenario focuses on decreasing the highly susceptible pine stands by 75% as per the 'MPB Interpretive Bulletin' reduction target over the next 20 years. In order to evaluate long-term impacts to the AAC as a result of accelerating the harvest of pine stands in the absence of MPB, it is assumed that no beetle outbreak will occur. The harvest simulation parameter settings are listed in Table 3-4 and the run results are illustrated in Figure 3-5.

Table 3-4: Harvest Simulation Control Parameters – MPB Susceptibility Target Reduction

HARVEST SIMULATION CONTROL PARAMETERS SCENARIO: MPB Susceptibility Target Reduction[1]	
Control Parameter	**Parameter Setting**
Harvest unit:	FMA – W14 (VSA 1 + VSA 2)
Planning horizon:	160 Years
Targeted average harvest age at the end of the planning horizon:	80 ± 5
Minimum harvest age:	70 Yrs (Conifer) 50 Yrs (Deciduous)
Landbase:	Single
Sorting rules:	1) MPB Susceptibility (1st 20 years) 2) Oldest first 3) Modulate deciduous flow 4) Maximize conifer harvest
Harvest flow constraint:	1) Incorporating reconciliation volume 2) Even flow conifer 3) Maintain deciduous commitments by VSA for the 1st 20 years
Yield curves:	TSA net yield curves
Cull deductions:	Conifer 4.2% and Deciduous 5.9%
Regeneration transition:	Fully stocked – transition strategy 2
Regeneration lag:	Not applied
Introduce harvest plans:	Applied
Spatial stand adjacency:	Not applied
Adjacency – Green Up:	Not applied
Adjacency – Accumulate adjacent stands:	Not applied
MPB Infestation:	Not Applied

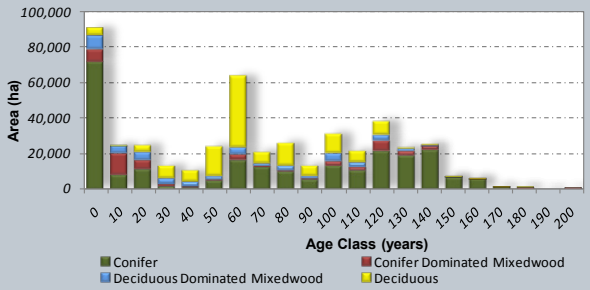
[1] *Refer to 2005 BRL DFMP TSA document, Section 3.2.2.*

Figure 3-5: Harvest Simulation Results – MPB Susceptibility Target Reduction

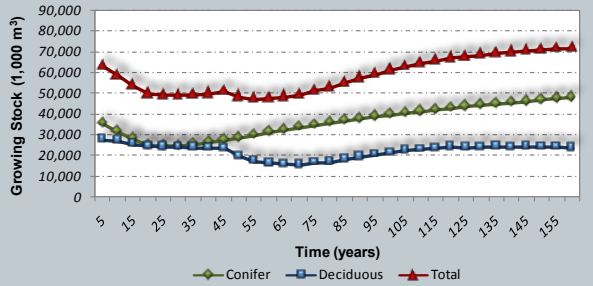
AAC SUMMARY TABLE

Net Productive Area		463,484 ha
Conifer Harvest Level	Years 1-20:	1,132,000 m^3/yr
	Years 21-180:	613,000 m^3/yr
Deciduous Harvest Level	20 yr AVG:	457,817 m^3/yr

INITIAL AGE CLASS DISTRIBUTION

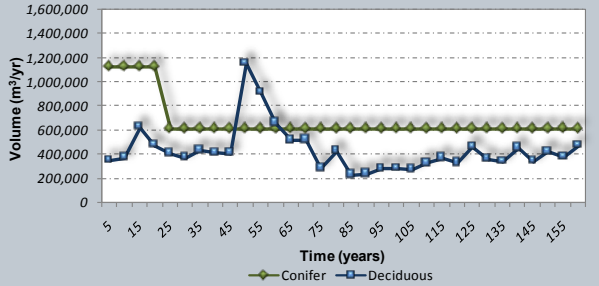


TOTAL GROWING STOCK



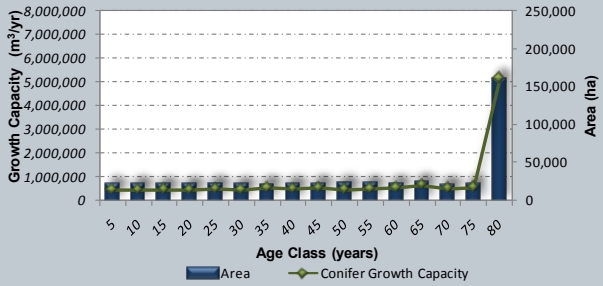
Description: *This graph summarizes the conifer, deciduous, and total growing stock (live volume) over the length of the planning horizon*

HARVEST FLOW SUMMARY



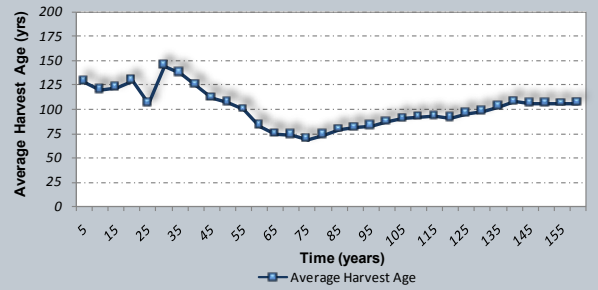
Description: *This graph summarizes the projected conifer and deciduous harvest levels over the planning horizon*

POST HARVEST FOREST CONDITIONS



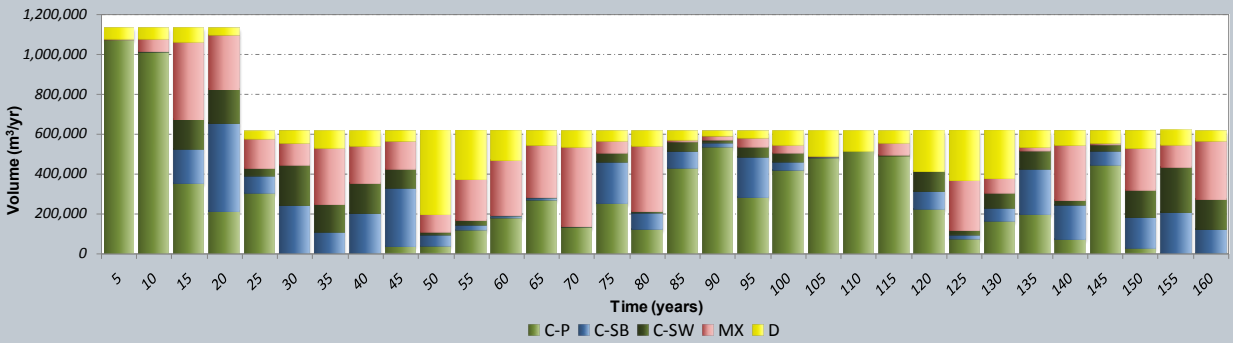
Description: *This graph summarizes the projected growth capacity and area by age class once the planning horizon is over (years 185-270)*

AVERAGE HARVEST AGE BY 5 YR ITERATION



Description: *This graph summarizes the average age of stands harvested over the planning horizon*

CONIFER AAC VOLUME CONTRIBUTION BY STAND TYPE



Description: *This graph depicts the conifer volume contributed by stand types (based on yield strata) over the entire 180 year planning horizon.*

3.2.1.4 Scenario 4: MPB Susceptibility 10% Reduction

This scenario focuses on decreasing the highly susceptible pine stands over the next 20 years while not exceeding a 10% impact to the long term AAC as indicated in the Alberta Forest Management Planning Standard (Annex 1, Section 5.6). Similar to Scenario 3, it assumed that no MPB outbreak will occur. The harvest simulation parameter settings are listed in Table 3-5 and the run results are illustrated in Figure 3-6.

Table 3-5: Harvest Simulation Control Parameters – MPB Susceptibility 10% Reduction

HARVEST SIMULATION CONTROL PARAMETERS *SCENARIO: MPB Susceptibility 10% Reduction*[1]	
Control Parameter	**Parameter Setting**
Harvest unit:	FMA – W14 (VSA 1 + VSA 2)
Planning horizon:	160 Years
Targeted average harvest age at the end of the planning horizon:	80 ± 5
Minimum harvest age:	70 Yrs (Conifer) 50 Yrs (Deciduous)
Landbase:	Single
Sorting rules:	1) MPB Susceptibility (1st 20 years) 2) Oldest first 3) Modulate deciduous flow 4) Maximize conifer harvest
Harvest flow constraint:	1) Incorporating reconciliation volume 2) Even flow conifer 3) Maintain deciduous commitments by VSA for the 1st 20 years
Yield curves:	TSA net yield curves
Cull deductions:	Conifer 4.2% and Deciduous 5.9%
Regeneration transition:	Fully stocked – transition strategy 2
Regeneration lag:	Not applied
Introduce harvest plans:	Applied
Spatial stand adjacency:	Not applied
Adjacency – Green Up:	Not applied
Adjacency – Accumulate adjacent stands:	Not applied
MPB Infestation:	Not Applied

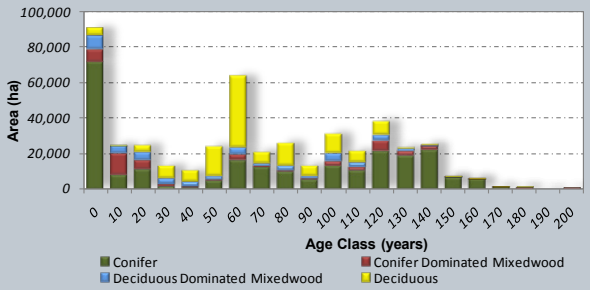
[1] *Refer to 2005 BRL DFMP TSA document, Section 3.2.2.*

Figure 3-6: Harvest Simulation Results – MPB Susceptibility 10% Reduction

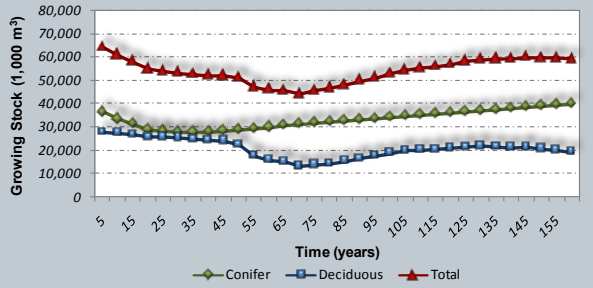
AAC SUMMARY TABLE

Net Productive Area		463,484 ha
Conifer Harvest Level	Years 1-20:	937,000 m^3/yr
	Years 21-180:	716,175 m^3/yr
Deciduous Harvest Level	20 yr AVG:	409,253 m^3/yr

INITIAL AGE CLASS DISTRIBUTION

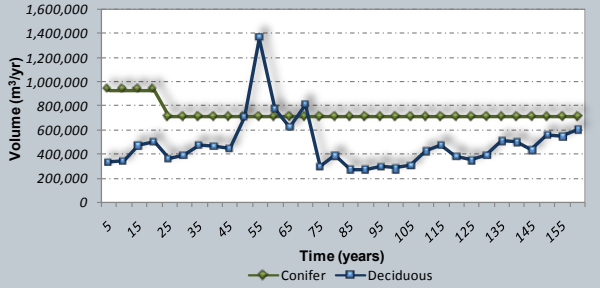


TOTAL GROWING STOCK



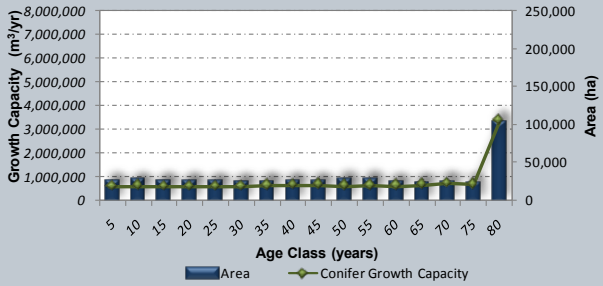
Description: *This graph summarizes the conifer, deciduous, and total growing stock (live volume) over the length of the planning horizon*

HARVEST FLOW SUMMARY



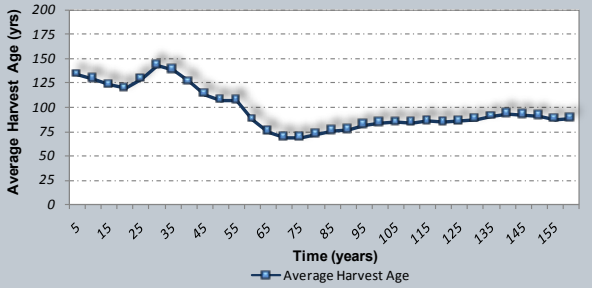
Description: *This graph summarizes the projected conifer and deciduous harvest levels over the planning horizon*

POST HARVEST FOREST CONDITIONS



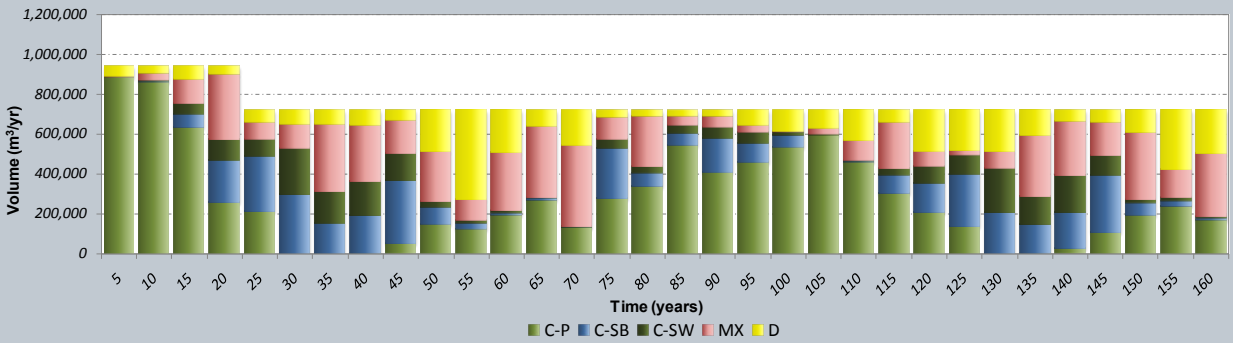
Description: *This graph summarizes the projected growth capacity and area by age class once the planning horizon is over (years 185-270)*

AVERAGE HARVEST AGE BY 5 YR ITERATION



Description: *This graph summarizes the average age of stands harvested over the planning horizon*

CONIFER AAC VOLUME CONTRIBUTION BY STAND TYPE



Description: *This graph depicts the conifer volume contributed by stand types (based on yield strata) over the entire 180 year planning horizon.*

3.2.2 Scenario Comparative Analysis

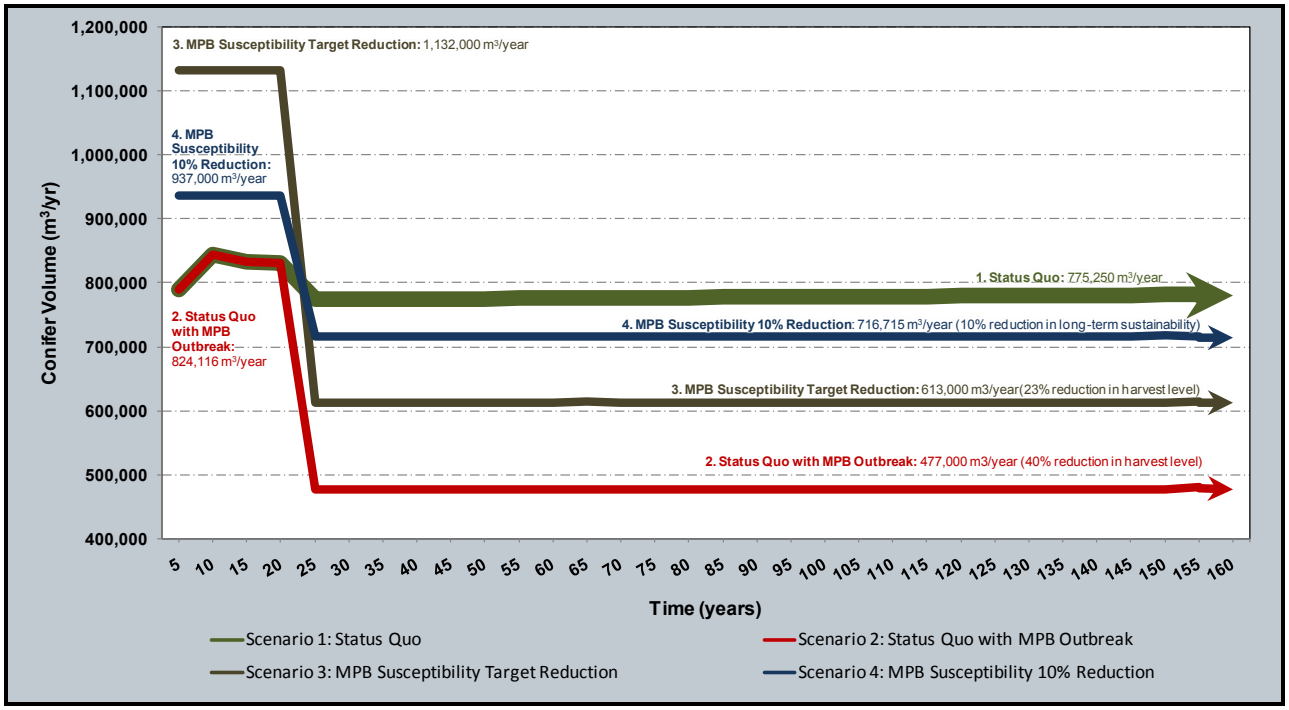
In this section, comparative analysis is presented for Scenarios 1 to 4 relative to their impacts on the following:

- Long term fibre sustainability;
- MPB pine stand ranking reduction;
- Watersheds;
- Grizzly Bear occurrence, mortality and habitat.

3.2.2.1 Long Term Fibre Sustainability

The BRL FMA is managed through harvesting, planting and conserving at a level that ensures sustainability of the timber supply over a long term planning horizon (160 years). MPB and the effects of managing for MPB have the potential to impact this long term sustainability. Figure 3-7 illustrates the long term sustainability of the fibre resource for each scenario. Displayed on the graph are the respective harvest level reductions for Scenarios 2 through 4. The percent reduction harvest level figures are relative to the long-term AAC of 795,750 m^3/yr (does not include carry forward volume) from the 2005 DFMP.

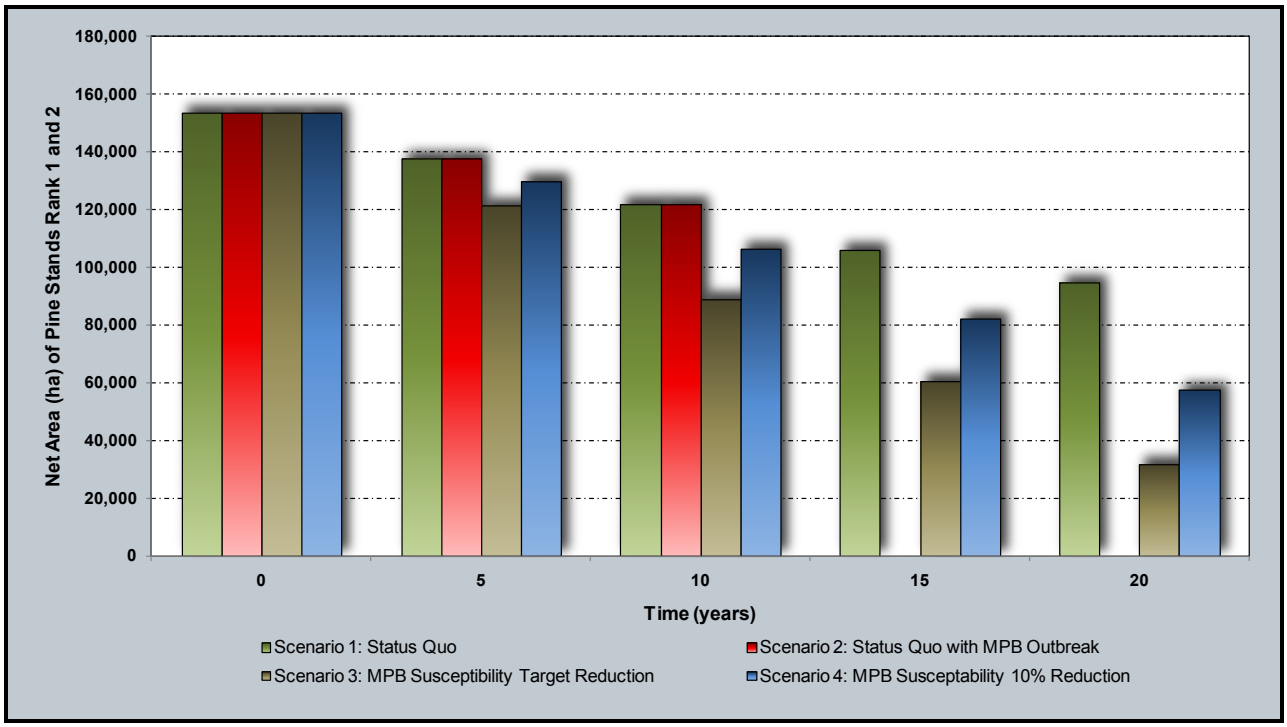
Figure 3-7: Run Results Summary



3.2.2.2 Reduction in MPB Pine Stand Ranking

The reduction in MPB susceptibility achieved on the FMA gross landbase with the 2005 PFMS (Scenario 1) is compared against the other 3 scenarios in Figure 3-8. The remainder of the 2005 PFMS 20 year spatial harvest sequence would result in a 58,892 ha (38.4 %) reduction in Rank 1 and Rank 2 stands of the 153,511 ha that is on the 2001 gross landbase. The susceptibility reduction for the first 10 years is identical for Scenario 1 and 2 because they are based on the same inputs, assumptions and management strategy. The Scenario 2 output for year 15 is zero because of the pine mortality from the assumed MPB outbreak. Scenario 3 has the greatest rate of reduction for Rank 1 and 2 area due to the increased harvesting of high susceptibility pine stands to meet SRD's target of reducing "Rank 1 and Rank 2 categories in the Sustained Yield Unit (SYU) to 25% of that projected in the currently approved FMP at a point twenty years into the future". Scenario 3 produces a 121,790 ha (79.3%) reduction in susceptible pine area on the FMA but results in a 23% decrease in long term AAC as shown in Figure 3-7. Due to the large amount of susceptible pine on the FMA, BRL cannot meet SRD's target reduction level while maintaining a minimum 10% decrease to its long term AAC (section 5.6.4c of the Alberta Forest Management Planning Standard) as shown by Scenario 3. Scenario 4 was developed to reduce the maximum amount of susceptible stands while maintaining the aforementioned minimum 10% decrease. While not reducing the Rank 1 and 2 area as dramatically as Scenario 3, Scenario 4 does have an increased level of susceptible pine reduction in comparison to the status quo with a 95,947 ha (62.5%) reduction.

Figure 3-8: Reduction in Pine Stand Ranking[1]



[1] *No Rank 1 or Rank 2 stands after year 10 under Scenario 2 due to MPB outbreak.*

3.2.2.3 Watersheds

This analysis used the Cumulative Watershed Disturbance and Hydrologic Recovery Simulator (ECA-Alberta) and while it was not developed to accurately predict the changes in stream flow resulting from natural disturbances such as MPB attack, there is presently no hydrologic model that has limited data requirements which is available for industry use in this manner. Despite some uncertainty, this assessment of various scenarios of forest disturbances gives BRL the confidence that they have used the best available tool and/or approach that is currently available to assess the potential watershed impacts.

The harvest sequences from the 4 different scenarios are used as inputs into the model to perform this analysis for the 35 watersheds on the FMA. ECA stands for "equivalent clearcut area" which describes the "effective" area that a recovering historic disturbance currently represents in terms of its ecological effects. The main application of the model is to evaluate the effect of past disturbance on stream flow in a watershed and to project the cumulative effect of both past and proposed future forest harvesting and/or natural disturbances on stream flow.

To accomplish these, the model requires an aggregated data set of past and future areas disturbed by species and timber productivity rating. Using this information, along with regional long term average precipitation, stream flow data and provincial average growth/yield data (to predict rate of hydrologic recovery), the model will calculate the equivalent clearcut area and resulting predicted change in annual stream flow.

A MPB outbreak has the potential to significantly impact watersheds across the FMA. Thus, a watershed analysis was performed to assess the hydrologic response to a potential MPB outbreak, and compared to the present harvest sequence determined in the 2005 DFMP PFMS response if the pre-emptive management strategies laid out in scenario 3 and 4 were implemented. Stands killed by MPB under Scenario 2 are treated in the same manner as harvested stands. Map 3-3 displays watershed boundaries and Figure 3-9 summarizes and compares the potential impacts of scenarios 1 through 4 on the average stream flow yields within the FMA.

NOTES:

- *Stream flow and precip data were gathered from stations that were representative of the regional hydrologic variability. An average of 149.69mm/yr for stream flow and 522.16mm/yr for precipitation was determined for the FMA and used as input in the model;*
- *Most stream flow gauging stations are shut down during certain times of the year and therefore, the gaps in data must be estimated to determine a year round average;*
- *Model accuracy depends primarily on accurate hydrologic recovery information of forest stands after disturbance, as well as representative regional stream flow and precipitation data;*
- *Hydrologic recovery of mixedwood stands is not simulated by this model;*
- *Model calculations reflect provincial averages for unmanaged (primarily fire origin) stands;*
- *Deviation of regional forest growth from provincial averages may produce unreliable results for some regions;*
- *This analysis only represents the incremental cumulative effect of harvesting;*
- *The objective of this model is not to produce a detailed, highly accurate simulation of stream flow, but rather a projection of stream flow changes over time assuming average climatic conditions in the region;*
- *ECA-Alberta describes how disturbance will affect stream flow based on long-term climatic conditions and may not represent actual changes in any given year;*
- *This analysis has been conducted in partnership with Dr. Kevin Bladon, Ecohydrologist, University of Alberta.*

Map 3-3: FMA Area Watersheds

3.2.2.4 Grizzly Bear and FMA Access

Grizzly bear populations and habitat important to grizzly bears have been identified within the FMA area. These landscape values are sensitive to all forms of human activity, including forest operations. As a result, through partnership with the Foothills Research Institute (FRI) Grizzly Bear Program, Blue Ridge Lumber Inc. has aided with the development of a series of planning tools with the objective of ensuring the long-term sustainability of grizzly bears within both the FMA area and throughout Alberta.

The first of these tools is the Resource Selection Function (RSF) model which classifies the FMA area according the probability of grizzly bear occurrence. This is done through tracking grizzly bear activity using GPS collars, determining their habitat preferences and applying these preferences to habitats of the same type. By this means, a comparison between Scenarios 1 through 4 of the probability of Grizzly Bear occurrence over time is illustrated in Figure 3-10.

In addition to this, one of the driving factors that influence grizzly bear populations and habitat quality is the existence of access corridors as this increases the probability of grizzly bear encounters with humans. The FRI Grizzly Bear Program suggests that 0.3 km/km^2 of permanent all-weather road is a critical threshold for Grizzly Bear Habitat. Analysis of the roads shown on Map 3-4 and Map 3-5 show that the total road density from all roads is presently 0.5 km/km^2. Due to the vast extent of all-weather roading already in place, no additional all-weather roading was identified in the 2005 DFMP (see Map 3-5: Road Corridor Development Plan).

Using the Grizzly Bear Mortality Risk Model, the probability of grizzly bear mortality has been assessed at the beginning of Scenarios 1 through 4 and at year 20 for each of these scenarios. The results are illustrated in Figure 3-11.

Further to the FRI data, BRL has also completed the same Grizzly Bear habitat analysis that was presented in the 2005 DFMP. Figure 3-12 shows a comparison of the results of this analysis for all four scenarios.

Figure 3-10: Probability of Grizzly Bear Occurrence

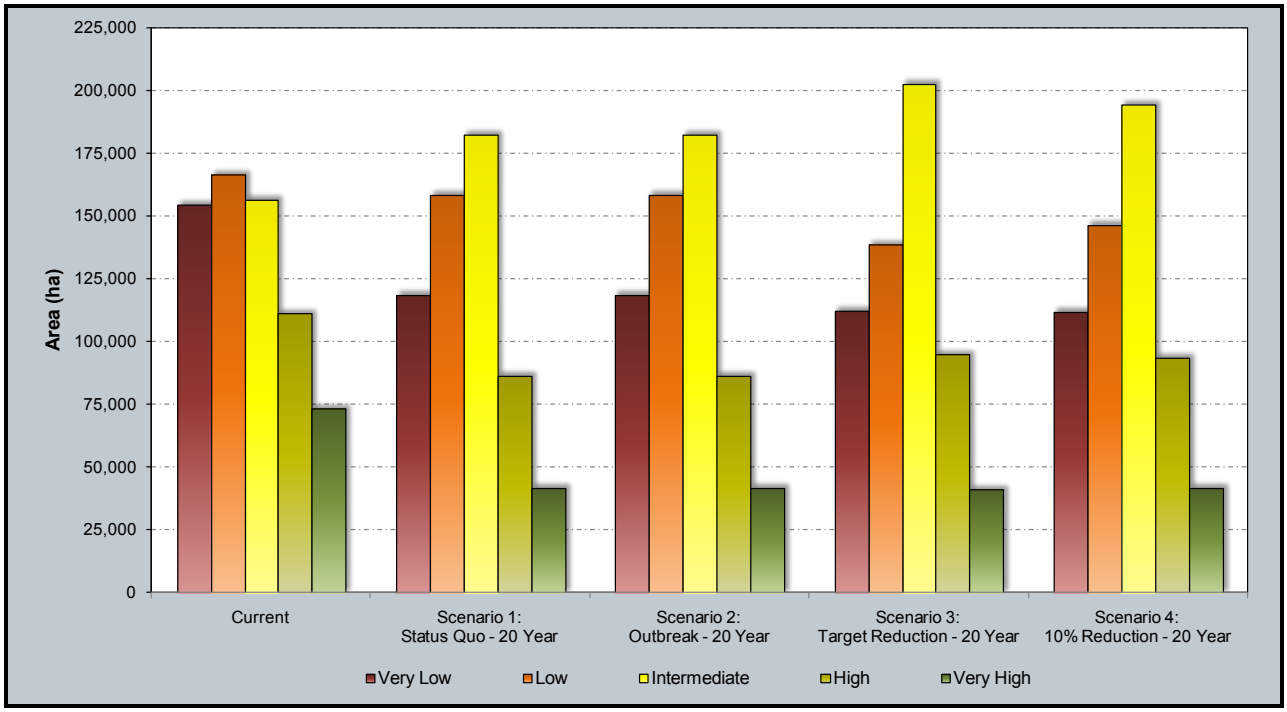


Figure 3-11: Probability of Grizzly Bear Mortality

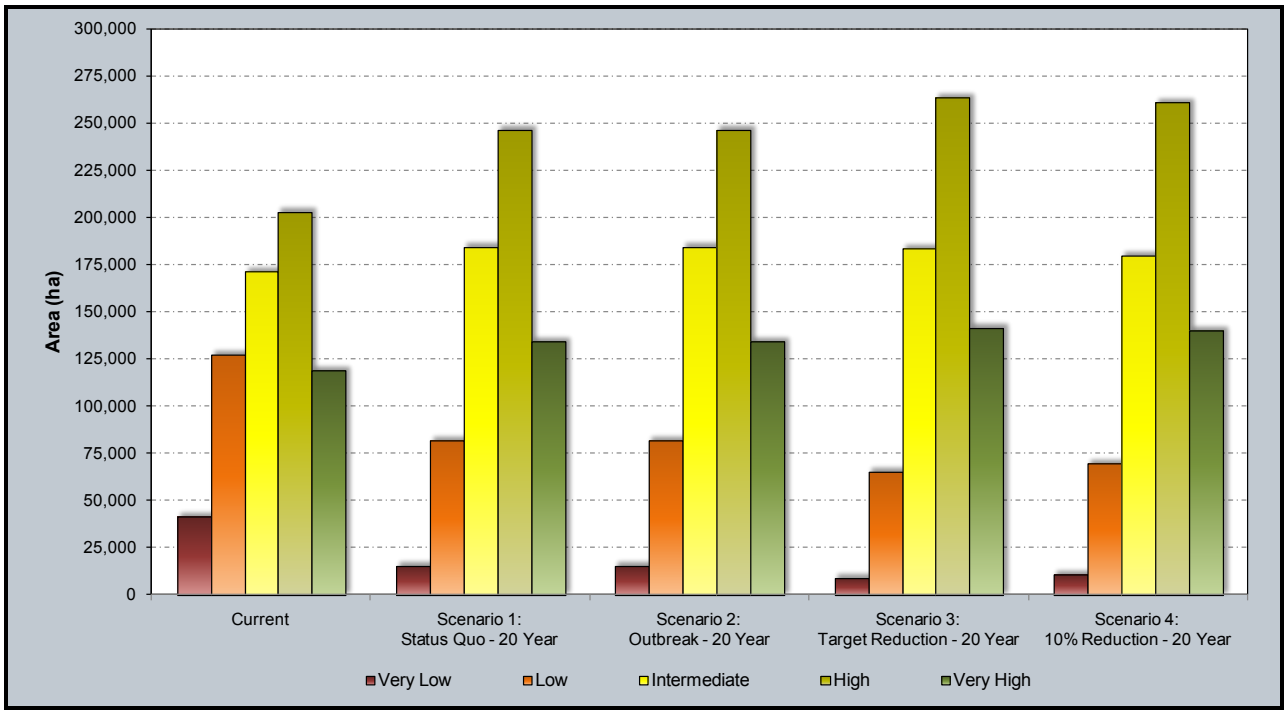
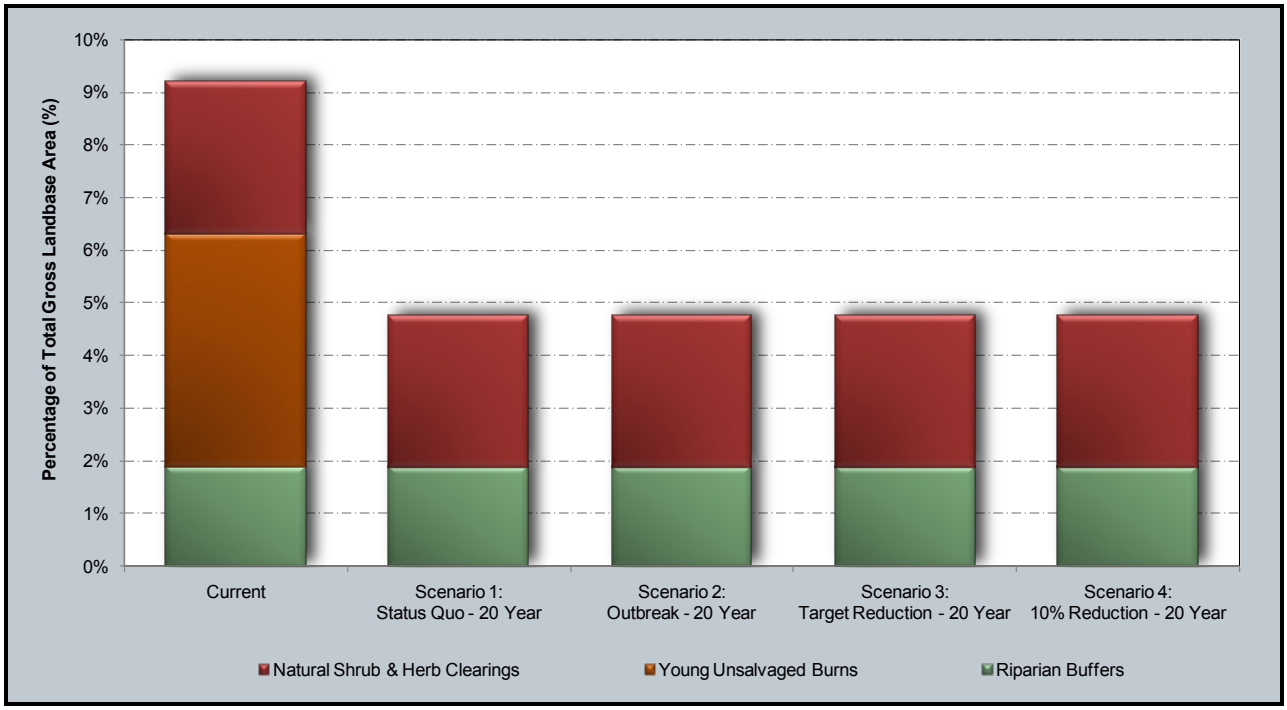


Figure 3-12: Grizzly Bear Habitat[1]



[1] *Young, unsalvaged burns do not exist at year 20 due to the fact that these stands have aged beyond this categorization.*

Map 3-4: All Weather Roads

Map 3-5: Road Corridor Development Plan

3.3 Scenario Selection

As a result of the comparison analysis, a MPB PFMS will be created based in principle on Scenario 4, with significant adjustments being made for various planning considerations. These include but are not limited to fibre sustainability, piece size, species mix, incidental volume commitments, understorey presence and operability factors. The preferred forest management strategy as well as the associated analysis is presented in the following section.

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MPB Pine Strategy DFMP Amendment

Section 4
Pine Management Strategy

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4 PINE MANAGEMENT STRATEGY

4.1 MPB Preferred Forest Management Strategy

The following scenario represents the selected MPB Preferred Forest Management Strategy which is based on Scenario 4 defined in 3.2.1.4. Additional updates to the landbase relative to Scenario 4[1] have been incorporated[2] into this strategy and are as follows:

1) CUTBLOCK UPDATES:
- Cutblock updates to the landbase since the 2001 landbase "CC_UPDATE=1";

2) PLANNED HARVEST AREAS:
- Harvest areas approved for the 2007/2008 season "CC_UPDATE=2".

4.1.1 High Density Advanced Growth Understorey

To maintain operability and achieve DFMP objectives, Blue Ridge Lumber incorporated additional targets that compliment MPB rank reduction. Specifically, Stands with 30 percent pine or less were deferred from harvest for the next 20 years (except for those stands 140 years old or greater). This is due to the fact that these stands consist of significant non-pine volume that will contribute to mid-term timber supply, even if the widely-scattered overstorey pine is killed by the MPB. Further to this, approximately 8,000 hectares of area with low density pine overstorey and high density white spruce/fir advanced growth that is at least 8 m tall are deferred from harvest for the next 20 years (see Figure 4-1). This advanced growth is more beneficial stored on the stump rather than harvested, so it can contribute to mid-term timber supply. Issues surrounding isolated stands, sliver stands have also been addressed in the operationalization process. The harvest simulation parameter settings for the MPB PFMS are listed in Table 4-1 and the run results are illustrated in Figure 4-2. The 20 year spatial harvest sequence is displayed in Map 4-1.

Figure 4-1: Low Density Pine Overstorey and High Density Advanced Growth Understorey

[1] With the exception of the Foothills Research Institute Grizzly Bear analysis as it requires a separate, proprietary landbase as the input landbase.
[2] The cutblock updates (CC_UPDATE ≠ 0) were hardwired into the TSA as the first five year period (this harvest period is not reported on in the following section, since the harvesting has already occurred).

4.1.2 Virginia Hills Fire Green Islands Deferral

Currently within the boundary of the 1998 Virginia Hills Fire there are many over mature pine stands that were not included in the approved 2005 timber supply analysis. These AVI polygons have been added back into the net land base for the MPB PFMS because most of them have a high mountain pine beetle susceptibility rating. As a result of the age and pine content of these timber types many of them were selected by the timber supply model to be harvested in the first ten year period of this plan.

However these stands are currently providing crucial habitat to various wildlife species and it was expressed by SRD in Whitecourt that in order to mitigate the effects on the wildlife, it would be preferred if the harvesting of some of these stands could be delayed until the second ten year period. This would allow time for the neighboring young regenerating trees to reach a height where they can provide similar wildlife benefits as the existing mature timber does. To address this concern, BRL proposes to defer the harvesting of the stands in units 210, 220 and 230 that are within the boundary of the Virginia Hills fire until the second ten year period. The area of these polygons is approximately 356 hectares. To replace this area BRL is also proposing to move approximately 381 hectares of area from units 210, 250 and 280 which are outside the Virginia Hills Fire boundary and currently scheduled in the 11 to 20 year period to the 1 to 10 year period. This proposal which has been discussed with local SRD staff mitigates the expressed wildlife concern while still allowing BRL the ability to harvest a similar area and volume in the same season. To facilitate this request by SRD, BRL has incorporated these changes into the edited PFMS spatial harvest sequence found in Appendix D.

4.1.3 Operational MPB PFMS Variance

In the MPB PFMS that BRL is proposing in this DFMP amendment, we have elected not to meet the target of reducing the rank 1 and 2 stands by 75% within twenty years because the result is a drop of long term AAC by 23%. As an alternative approach BRL has adopted a strategy to ensure the long term AAC does not drop more than 10% but at the same time to still aggressively pursue stands with a significant pine content that could be potential MPB habitat. The MPB PFMS results in our long term AAC dropping by 6.9% and rank 1 and 2 stands being reduced by 58.2% over the 20 year planning horizon of this plan.

To make the plan more operational than what was modeled, BRL with input from SRD and the embedded operators have slightly edited the PFMS sequence. This editing was predominately done by switching modeled 11-20 year period stands with the 1-10 year period and vice versa.

To complement the edited PFMS sequence, BRL requests that we and our embedded operators be granted the flexibility to include non-scheduled stands for harvest that have either been attacked by MPB or are at risk to MBP attack. Further to what was done in the edited PFMS sequence, it may be prudent to add additional stands that are potential MPB habitat that maybe isolated if not taken with current operations or have a low amount of volume. It is our opinion that all of these types of stands would be best harvested in conjunction with the scheduled operations to reduce the MBP threat and to avoid future disturbance and the cost of re-accessing these stands. It should be recognized that in some cases the result of further operationalizing specific compartments to make them more MPB proof may result in a variance from the edited MPB PFMS SHS of more than 20% or exceeding 100% of the hectares scheduled within a compartment. The reasons for these deviations from the approved SHS will be justified in the FHP but are hard to capture in a higher level plan like a DFMP because we cannot anticipate or plan for how MPB is going to spread out across the landscape. Therefore it is important that both the companies and the approving agency (i.e. the Government) be flexible to react to different scenarios while still maintaining the overall integrity of this plan and the efficiency of the industry.

Table 4-1: Harvest Simulation Control Parameters – MPB PFMS Scenario

HARVEST SIMULATION CONTROL PARAMETERS SCENARIO: MPB PFMS	
Control Parameter	**Parameter Setting**
Harvest unit:	FMA – W14 (VSA 1 + VSA 2)
Planning horizon:	160 Years
Targeted average harvest age at the end of the planning horizon:	80 ± 5
Minimum harvest age:	70 Yrs (Conifer) 50 Yrs (Deciduous)
Landbase:	Single
Sorting rules[1]:	1) MPB Susceptibility (1st 20 years) 2) Oldest first 3) Modulate deciduous flow 4) Maximize conifer harvest
Harvest flow constraint:	1) Incorporating reconciliation volume 2) Even flow conifer 3) Maintain deciduous commitments by VSA for the 1st 20 years
Yield curves:	TSA net yield curves
Cull deductions:	Conifer 4.2% and Deciduous 5.9%
Regeneration transition:	Fully stocked – transition strategy 2[2]
Regeneration lag:	Not applied
Introduce harvest plans:	Applied
Spatial stand adjacency:	Not applied
Adjacency – Green Up:	Not applied
Adjacency – Accumulate adjacent stands:	Not applied
MPB Infestation:	Not Applied

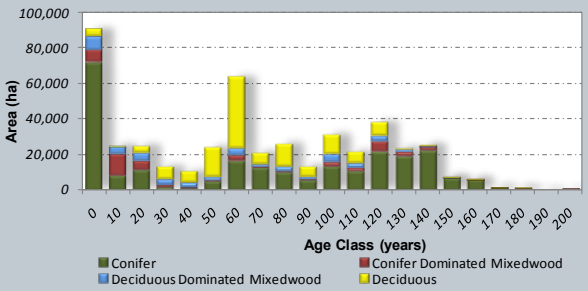
[1] Refer to Section 4.1 above for greater background behind sorting rules;
[2] Refer to 2005 BRL DFMP TSA document, Section 3.2.2.

Figure 4-2: Harvest Simulation Results – MPB PFMS Scenario

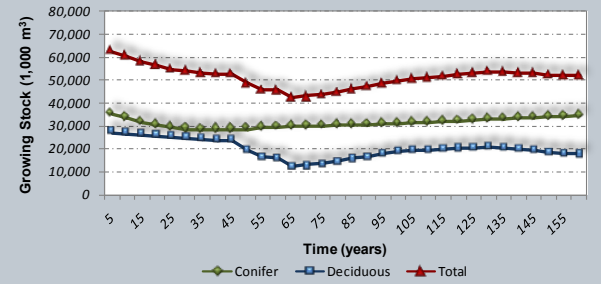
AAC SUMMARY TABLE

Net Productive Area		463,484 ha
Conifer Harvest Level	Years 1-20:	832,500 m^3/yr (includes carry-forward volume)
	Years 21-160:	775,250 m^3/yr
Deciduous Harvest Level	20 yr AVG:	Refer to table 4.4

INITIAL AGE CLASS DISTRIBUTION

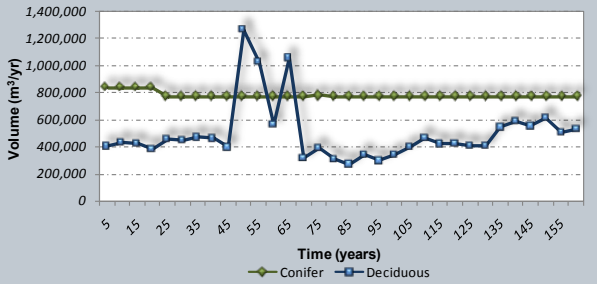


TOTAL GROWING STOCK



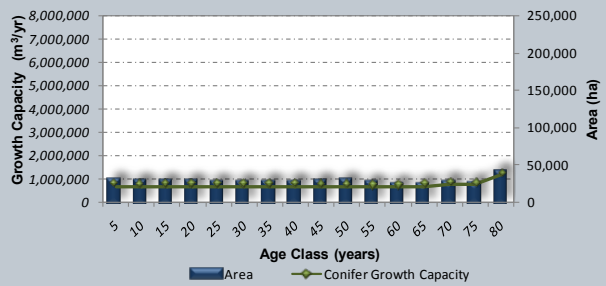
Description: *This graph summarizes the conifer, deciduous, and total growing stock (live volume) over the length of the planning horizon*

HARVEST FLOW SUMMARY



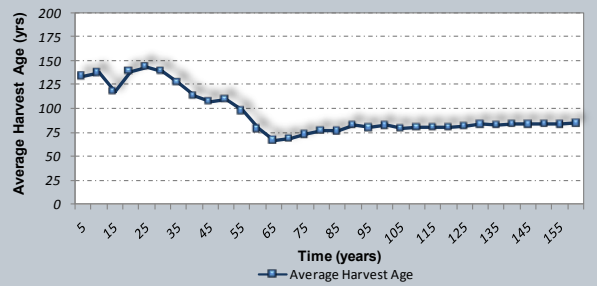
Description: *This graph summarizes the projected conifer and deciduous harvest levels over the planning horizon*

POST HARVEST FOREST CONDITIONS



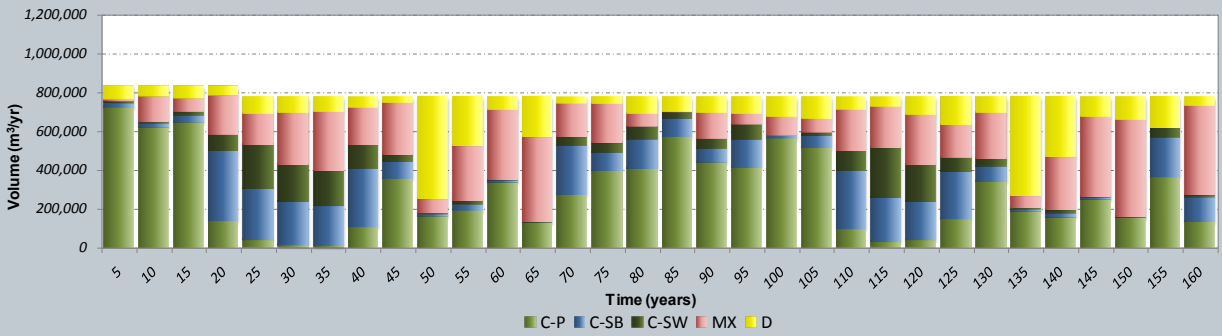
Description: *This graph summarizes the projected growth capacity and area by age class once the planning horizon is over (years 185-270)*

AVERAGE HARVEST AGE BY 5 YR ITERATION



Description: *This graph summarizes the average age of stands harvested over the planning horizon*

CONIFER AAC VOLUME CONTRIBUTION BY STAND TYPE



Description: *This graph depicts the conifer volume contributed by stand types (based on yield strata) over the entire 180 year planning horizon.*

Map 4-1: MPB PFMS 20 Year Harvest Sequence

Map 4-2: MPB PFMS MPB Susceptibility Reduction Time Series

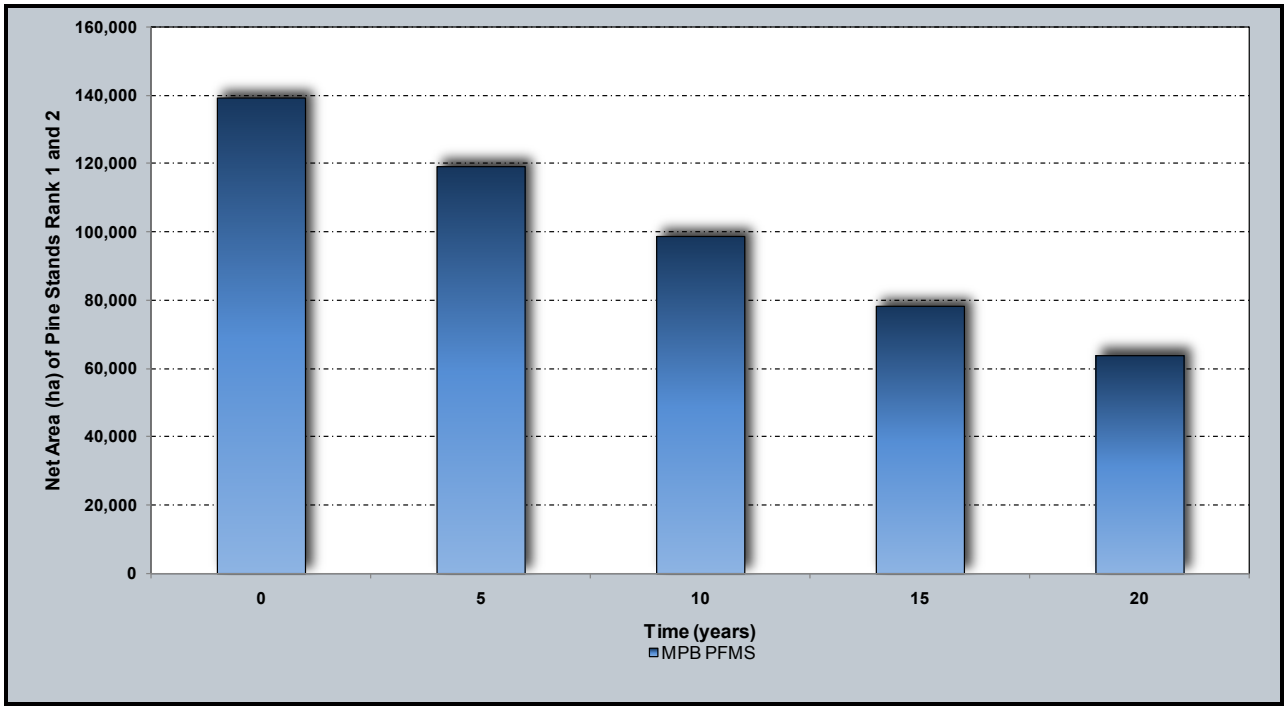
4.1.4 MPB PFMS Analysis

This section contains the results of various analyses that were completed to aid in the selection of the MPB PFMS. As with the first four scenarios, pine stand ranking, water yields, and Grizzly Bear occurrence/mortality/habitat were all evaluated.

4.1.4.1 Reduction in MPB Pine Stand Ranking

The reduction in MPB susceptibility achieved under the MPB PFMS Harvest is illustrated in Figure 4-3. The strategy is successful in reducing the Rank 1 and 2 areas by 58.2% from its 2001 landbase amount of 153,511 ha to 64,035 ha. Map 4-2 displays the reduction in Rank 1 and 2 areas over time.

Figure 4-3: MPB PFMS: Reduction in Pine Stand Ranking



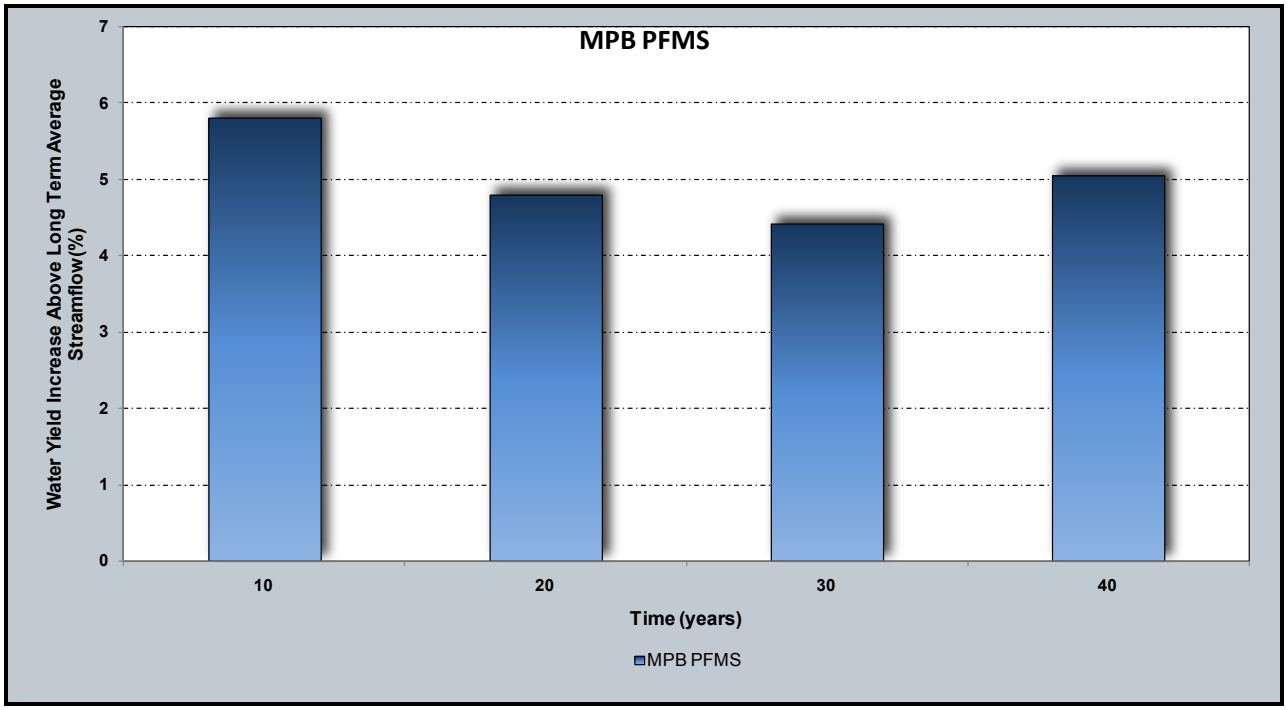
4.1.4.2 Watersheds

In comparison to the watershed analysis in Section 3(Figure 3-9), the increase to long term average water yield is reported at both the watershed level and the FMA level.

Table 4-2: Long Term Average Yield Increases by Watershed

Watershed	Area (ha)	Long Term Average Yield Increase (%)			
		YEAR 10	YEAR 20	YEAR 30	YEAR 40
1	12,117	0	2	3	3
2	49,223	2	5	2	2
3	30,239	1	3	4	7
4	15,074	5	6	5	4
5	7,540	3	6	7	7
6	25,199	12	10	6	5
7	10,021	15	10	6	4
8	19,346	7	8	6	6
9	22,353	2	3	7	10
10	18,579	5	7	3	8
11	23,495	10	4	3	5
12	19,287	4	4	6	6
13	17,418	3	6	6	4
14	5,946	2	7	5	9
15	7,497	6	8	6	8
16	12,762	4	8	5	4
17	31,548	9	6	2	2
18	19,387	9	4	2	1
19	27,345	9	4	3	3
20	30,109	9	4	3	2
21	25,934	7	4	3	3
22	21,051	3	4	3	8
23	18,017	8	5	4	6
24	20,020	4	3	5	7
25	20,144	5	6	4	6
26	27,334	6	4	7	7
27	22,198	7	3	6	5
28	15,718	5	3	3	7
29	8,574	5	2	6	9
30	16,538	4	4	9	11
31	15,086	7	5	5	7
32	19,128	4	3	5	4
33	17,177	6	3	5	3
34	6,350	9	5	4	3
35	4,637	6	6	2	5
Total Area / Avg.Yeld Increase	***662,392***	***6***	***5***	***4***	***5***

Figure 4-4: Long Term Average Yield Increases: FMA Average



4.1.4.3 Grizzly Bear and FMA Access

The impact of the MPB PFMS to grizzly bear occurrence and mortality is illustrated in Figure 4-5 and Figure 4-6 respectively. Figure 4-7 represents a summary of grizzly bear habitat over time with Map 4-3 displaying the current distribution and Map 4-4 displaying the distribution of grizzly bear habitat after 20 years of the MPB PFMS. Note that for this analysis, Foothills Research Institute (FRI) provided BRL with a specialized landbase (2005 effective date) that was used as the input landbase for the model. No additional permanent all weather access will be required (see Section 4.1.4.4).

4.1.4.4 FMA Access

The current FMA access has been assessed and is considered more than sufficient for BRL to carry out a new MPB PFMS. There may be certain roads required to be open at different times but the amount of permanent all-weather roads is predicted to remain the same. As a result, no current access-related disturbances are considered for the grizzly bear analysis. Future access is also not considered as there is a great uncertainty associated with the predicted location of and construction dates of future permanent all-weather roads. Temporary access that will be constructed by BRL to access specific blocks will be in use for a limited time and after which, will be immediately reclaimed in order to return such area to the productive landbase.

Figure 4-5: Probability of Grizzly Bear Occurrence

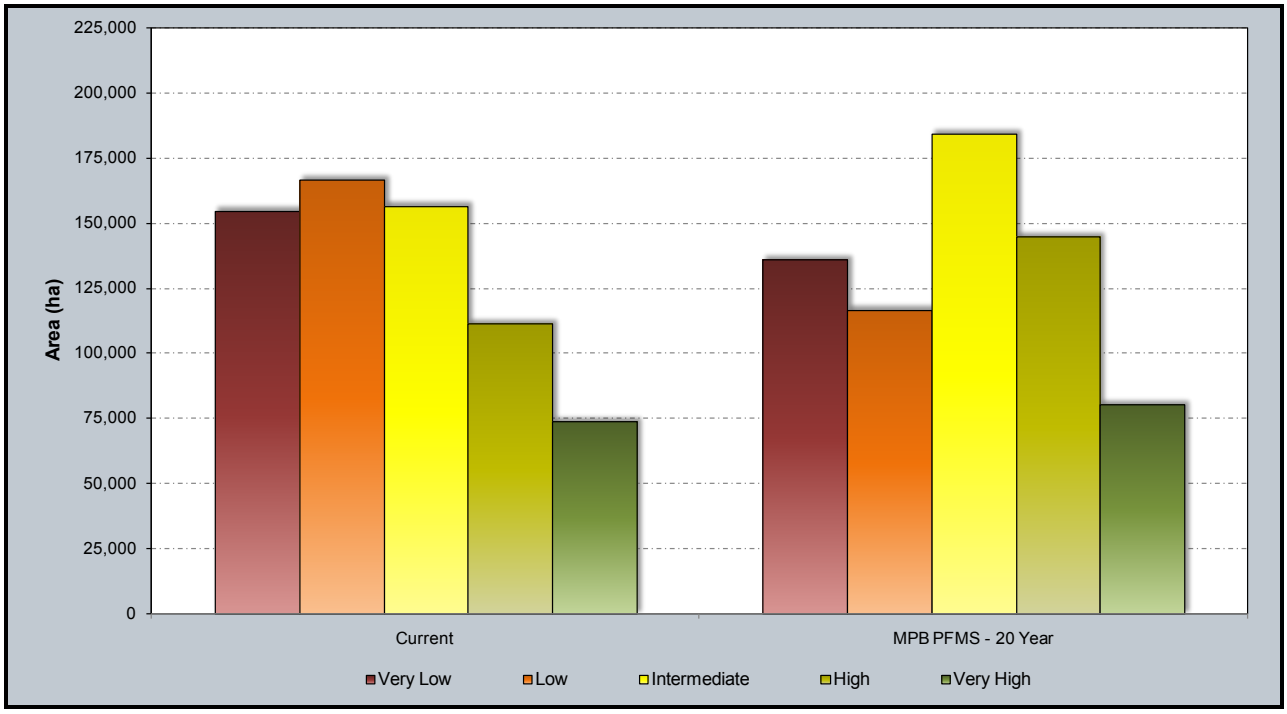


Figure 4-6: Probability of Grizzly Bear Mortality

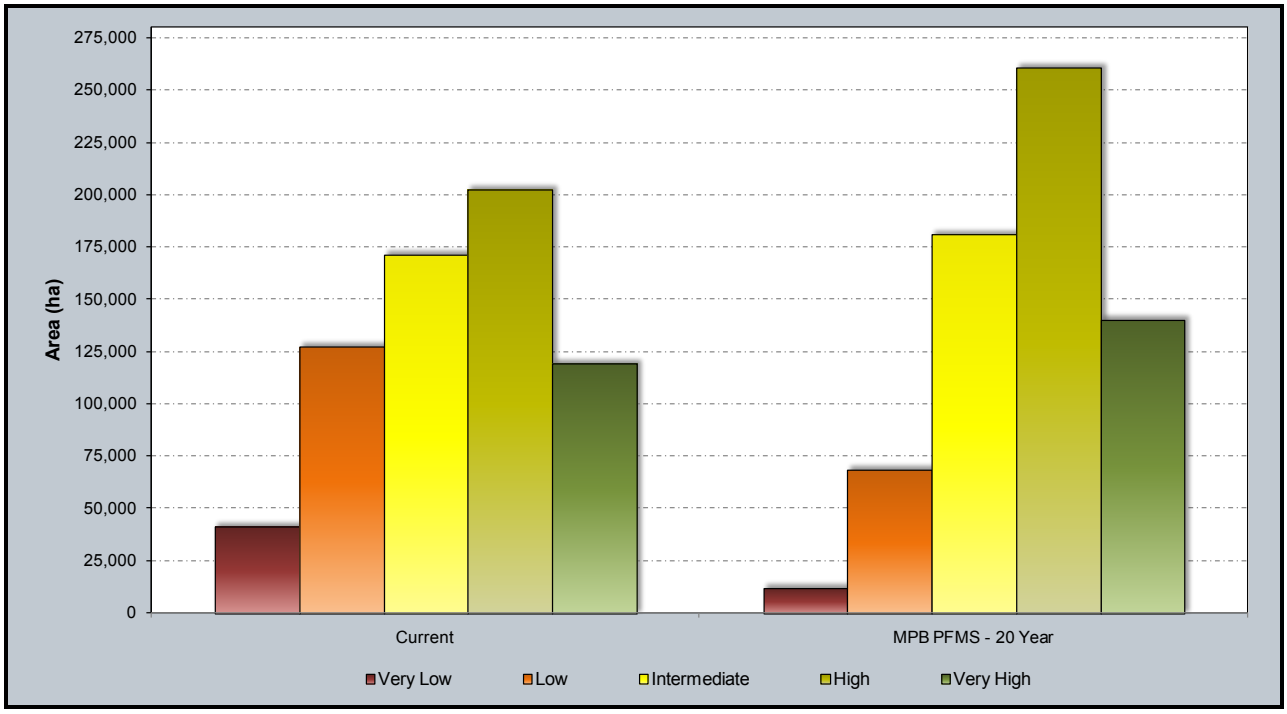
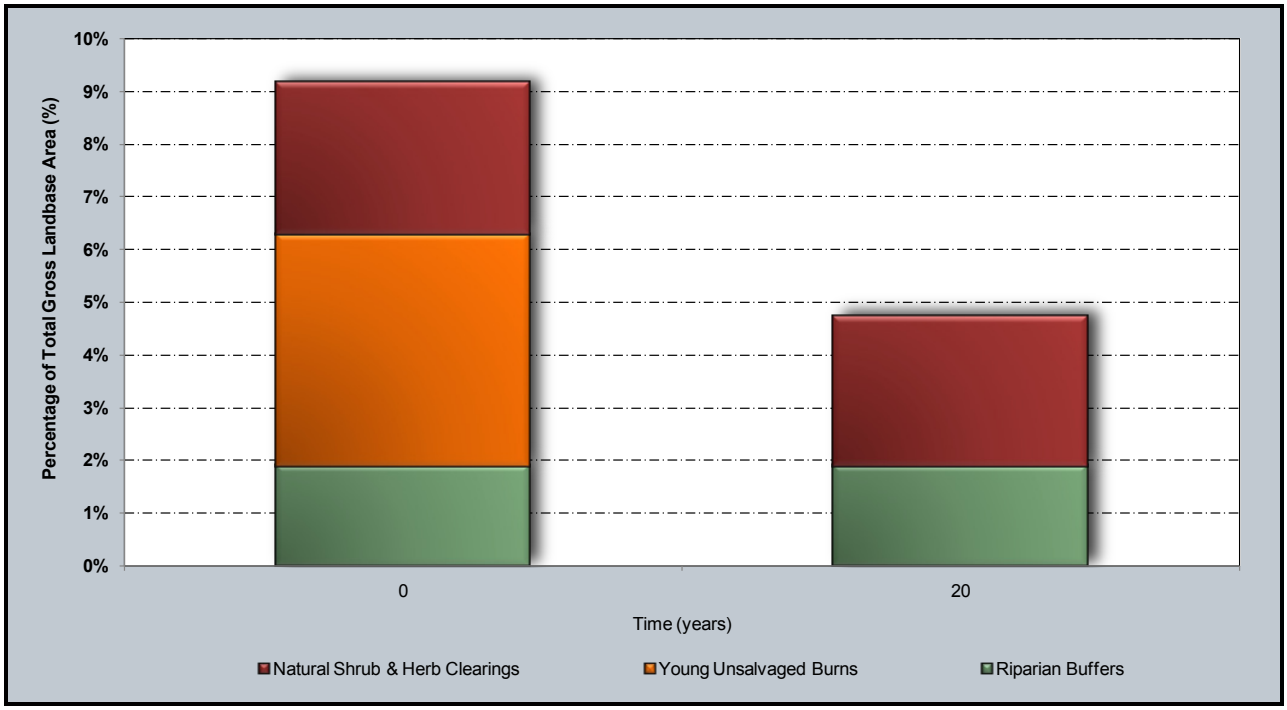


Figure 4-7: Grizzly Bear Habitat[1]



[1] *Young, unsalvaged burns do not exist at year 20 due to the fact that these stands have aged beyond this categorization.*

Map 4-3: MPB PFMS Grizzly Bear Habitat Distribution Analysis – Current

Map 4-4: MPB PFMS Grizzly Bear Habitat Distribution Analysis – Year 20

4.1.5 Recommended Harvest Levels by Operator for Approval

Due to the number of stakeholders operating within the BRL FMA, the MPB PFMS has been further summarized by the recommended harvest levels by operator. Table 4-3 lists historical allocations and AACs and Table 4-4 identifies the current allocations and AACs under the MPB PFMS at 15/10 utilization. Figure 4-8 also identifies the current allocations across the entire planning horizon.

Table 4-5 summarizes quota holders' AAC levels adjusted for operational utilization and Table 4-6 outlines the AACs by company and quadrant.

BRL has also requested for an amendment to its coniferous utilization standard for the FMA. This request was reviewed and approved by SRD on May 8th, 2008. As such, BRL will shift its coniferous utilization standard from the initial standard of 15/10 to the amendment standard of 15/11 and this amendment approval is effective beginning May 1st, 2008 through to April 30th, 2009 (1 year). Table 4-7 illustrates BRL AAC levels adjusted under the temporary operational utilization. Changing the utilization standard from 15/10 to 15/11 equates to a 3.90% reduction for BRL. This will result in the BRL volume allocation changing from 732,854 m^3/yr to 704,291 m^3/yr.

Table 4-8 illustrates the detailed calculations of factors for allocating total deciduous volume harvested by individual species.

Table 4-3: Blue Ridge Lumber Forest Management Agreement Area Historical Allocations and Annual Allowable Cuts

Blue Ridge Lumber Forest Management Agreement Area Historical Allocations and Annual Allowable Cuts FMU W14 AAC - Coniferous and Deciduous								
Company Name	**Disposition Number**	**FMU**	**Landbase Management Type**	**Deciduous AAC (%)**	**Deciduous AAC (m^3/yr)**	**Coniferous AAC (%)**	**Coniferous AAC (m^3/yr)**	**Utilization**
Blue Ridge Lumber	FMA7500020[1]	W14	Single	n/a	118,231	n/a	727,320	15/10
ANC Timber	DTAW140001	W14 (VSA 1)	Single	n/a	48,650	n/a	n/a	15/10
ANC Timber	DTAW140002	W14 (VSA 1)	Single	n/a	32,975	n/a	n/a	15/10
Millar Western Forest Products	DTAW140003	W14 (VSA 2)	Single	n/a	144,600	n/a	n/a	15/10
Millar Western Forest Products	CTQW140001	W14 (VSA 1)	Single	n/a	n/a	8.6	68,430	15/10
Millar Western Forest Products	Deciduous Timber Allocation - Conditional Reservation (Balsam Poplar)	W14 (VSA 1)	Single	100% of allowable cut in VSA 1 Balsam Poplar	23,594	n/a	n/a	15/10
Unallocated	n/a	W14 (VSA 1)	Single	n/a	5,426	n/a	n/a	15/10
Unallocated	n/a	W14 (VSA 1)	Single	n/a	15,528	n/a	n/a	15/10
Unallocated	n/a	W14 (VSA 2)	Single	n/a	678	n/a	n/a	15/10
Totals (Approved AACs)					389,682		795,750	

[1] *Pursuant to clause 8 (2) (a) of Blue Ridge Lumber Inc. Forest Management Agreement (O.C. 563/2007) up to 0.5% of Blue Ridge Lumber AAC will be made available to the Minister to issue timber dispositions for local use. The annual volume used by the Minister for local timber use permits will not exceed: Conifer - 3,637 m3 at 15/10 cm utilization; Deciduous - 591 m3 at 15/10 cm.*

Table 4-4: Approved Allocations 15/10 Utilization

Approved Allocations 15/10 Utilization									
Company Name	**Disposition Number**	**FMU**	**Stand Type/ Source**	**Landbase Management Type**	**Effective Date of the AAC**	**Deciduous AAC (%)**	**Deciduous AAC (m^3/yr)[1]**	**Coniferous AAC (%)**	**Coniferous AAC (m^3/yr)**
Blue Ridge Lumber	FMA 7500020[2]	W14	Coniferous (C; MXD; D(C); incidental C) Deciduous (VSA 2 (MXD, D(C); C)	Single	May 1, 2008	n/a	118,231	91.40%	738,726
ANC Timber	DTAW140001	W14 (VSA 1)	All Stands; Aspen volume only (VSA 1)	Single	May 1, 2008	n/a	48,650	n/a	n/a
ANC Timber	DTAW140002	W14 (VSA 1)	All Stands; Aspen volume only (VSA 1)	Single	May 1, 2008	n/a	32,975	n/a	n/a
Millar Western Forest Products	DTAW140003	W14 (VSA 2)	Pure Deciduous Stands (VSA 2)	Single	May 1, 2008	n/a	144,600	n/a	n/a
Millar Western Forest Products	CTQW140001	W14 (VSA 1)	C;MXD;D(C); incidental C	Single	May 1, 2008	n/a	n/a	8.60%	69,508
Unallocated	n/a	W14 (VSA 1)	All Stands; Balsam Poplar (VSA 1)	Single	May 1, 2008	n/a	23,594	n/a	n/a
Unallocated	n/a	W14 (VSA 1)	All Stands; Birch (VSA 1)	Single	May 1, 2008	n/a	5,426	n/a	n/a
Unallocated	n/a	W14 (VSA 1)	All Stands; Aspen (VSA 1)	Single	May 1, 2008	n/a	15,528	n/a	n/a
Unallocated	n/a	W14 (VSA 2)	Pure D (VSA 2)	Single	May 1, 2008	n/a	678	n/a	n/a
Totals (Approved AACs)							***389,682***	***100%***	***808,234***

[1] Coniferous AAC (m3/yr) is a weighted average of volume per 3-month period and does not include carry forward volume.
[2] Pursuant to clause 8 (2) (a) of Blue Ridge Lumber Inc. Forest Management Agreement (O.C. 563/2007) up to 0.5% of Blue Ridge Lumber AAC will be made available to the Minister to issue timber dispositions for local use. The annual volume used by the Minister for local timber use permits will not exceed: Conifer - 3,694 m^3 at 15/10 cm utilization; Deciduous - 591 m^3 at 15/10 cm utilization.

Figure 4-8: MPB PFMS Harvest Volume Allocation

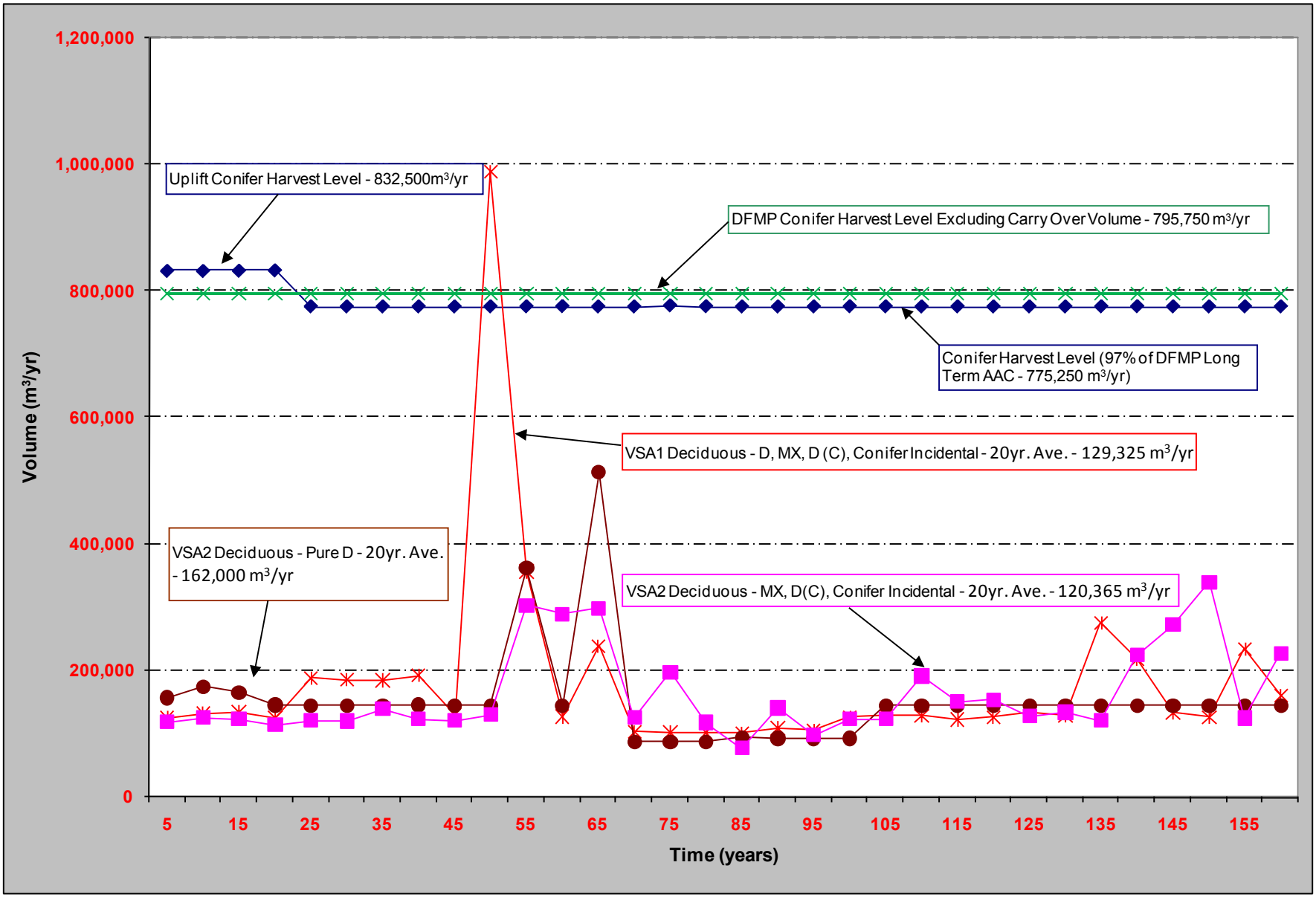


Table 4-5: Utilization

Utilization									
Company	Disposition Number	Utilization used in FMU AAC Calculations			Operational Utilization[1]				
		Top Diameter (cm)	Butt Diameter (cm)	Stump Height (cm)	Top Diameter (cm)	Butt Diameter (cm)	Stump Height (cm)	Deciduous AAC (m^3) based on Operational Utilization	Coniferous AAC (m^3) based on Operational Utilization
Millar Western Forest Products	CTQW140001	10	15	30	11	15	30	-	66,757

[1] *Operational Utilization Factor Used for Coniferous AAC: -3.6650592% (this number derived from DFMP tables and is the % drop in conifer AAC to 15/11 from 15/10)*

Table 4-6: Quadrant and Periodic Allowable Cuts

Quadrant and Periodic Allowable Cuts								
Company Name	**Disposition Number**	**FMU**	**Quadrant Date**	**Approved Quadrant Coniferous Reconciliation Volume (m^3)**	**Approved Quadrant Deciduous Reconciliation Volume (m^3)**	**Coniferous Quadrant Allowable Cut (m^3)**	**Deciduous Quadrant Allowable Cut (m^3)**	**Comments**
Blue Ridge Lumber[1][2]	FMA 7500020	W14	Sep. 01/2005 - Apr. 30/2008	262,122	n/a	2,199,916	315,002	**Assuming** (2.6643 yr. x 727,320 m^3/yr. coniferous at 15/10 cm) + (2.6643 yrs. x 36,575.15 m^3/yr. coniferous reconciliation volume at 15/10 cm) + 164,675 m^3 coniferous AAC reconciliation volume at 15/10 cm for period covering 2003-2008. **Assuming** 2.6643 yrs. x 118,231 m^3/yr. deciduous at 15/10 cm from VSA 2.
Blue Ridge Lumber[3]	FMA 7500020	W14	May 01/2008 - Apr. 30/2013	182,876	n/a	3,788,984	591,155	**Assuming** (2.9984 yr. x 717,047 m3/yr. coniferous at 15/10 cm) + (2.0016 yrs. x 727,475 m^3/yr. coniferous at 15/10 cm) + (5 yrs. x 36,575.15 m^3/yr. coniferous reconciliation volume at 15/10 cm). **Assuming** 5 yrs. x 118,231 m^3/yr. deciduous at 15/10 cm VSA 2.
ANC Timber	DTAW140001	W14	May 01/2004 - Apr. 30/2009	n/a	Not Determined	n/a	243,250	**Assuming** 5 yrs. x 48,650 m^3/yr. deciduous at 15/10 cm from VSA 1.
ANC Timber	DTAW140002	W14	May 01/2004 - Apr. 30/2009	n/a	Not Determined	n/a	164,875	**Assuming** 5 yrs. x 32,975 m^3/yr. deciduous at 15/10 cm from VSA 1.

Table continued on next page

[1] Audited unused green timber of 731,503 m^3 or 36,575 m^3/yr. from 1998 Virginia Hills fire was approved as carry forward to be harvested over 20 years commencing Sept. 1, 2000.
[2] Pursuant to clause 8 (2) (a) of Blue Ridge Lumber Inc. Forest Management Agreement (O.C. 563/2007) up to 0.5% of Blue Ridge Lumber AAC will be made available to the Minister to issue timber dispositions for local use. The total volume for local timber use permits for the period covering Sept. 01/05 to Apr. 30/08 will not exceed: Conifer - 9,690 m^3 at 15/10 cm utilization; Deciduous - 1,575 m^3 at 15/10 cm.
[3] Pursuant to clause 8 (2) (a) of Blue Ridge Lumber Inc. Forest Management Agreement (O.C. 563/2007) up to 0.5% of Blue Ridge Lumber AAC will be made available to the Minister to issue timber dispositions for local use. The total volume for local timber use permits for the period covering May 01/08 to Apr. 30/13 will not exceed: Conifer - 18,029 m^3 at 15/10 cm utilization; Deciduous - 2,955 m^3 at 15/10 cm.

Quadrant and Periodic Allowable Cuts

Company Name	Disposition Number	FMU	Quadrant Date	Approved Quadrant Coniferous Reconciliation Volume (m^3)	Approved Quadrant Deciduous Reconciliation Volume (m^3)	Coniferous Quadrant Allowable Cut (m^3)	Deciduous Quadrant Allowable Cut (m^3)	Comments
Millar Western Forest Products [1,2]	DTAW140003	W14	May 01/2007 - Apr. 30/2012	n/a	160,323	n/a	883,323	**Assuming** (5 yrs. x 144,600 m^3/yr. deciduous at 15/10 cm from VSA 2) + 98,169 m^3 AAC at 15/10 cm from the amalgamation of DTAW910001 and DTAW910002 in VSA 2 for the period covering 2003-2007 + 62,154 m^3 AAC reconciliation volume at 15/10 cm from the period covering 1997-2002.
Millar Western Forest Products	CTQW140001	W14	May 01/2006 -Apr. 30/2011	62,349	0	401,613	n/a	**Assuming** (2 yrs. x 68,430 m^3/yr. coniferous at 15/10 cm) + (3yr. x 67,468 m^3/yr. coniferous at 15/10 cm) + 57,045 m^3 AAC reconciliation volume from CTQW020022 for period covering 1996-2001) + (5,304 m^3 AAC reconciliation volume from CTQW140001 for period covering 2003-2006).

[1] MWFP requested approval to carry their unused deciduous volume of 310,773m^3 for their former DTA W910001 from the 3rd quadrant, May 1997 to April 2002. The eligible volume must be taken over a period of between 5 and 40 years. MWFP has requested that this volume be taken evenly for a 10 year period starting in 2010 (thus two years of carry forward at 31,077m^3/yr are included in the May 2007 to April 2012 quadrant).

[2] The volume of 98,169m^3 from the amalgamation of DTAW910001 and DTAW910002 in VSA 2 for the period covering 2003-2007, was the product of -10,423m^3 over production for DTAW910001 and 108,592m^3 under production for DTAW910002 at the time of amalgamation.

Table 4-7: Temporary BRL Coniferous Utilization: 2008-2009

BRL Coniferous Utilization									
Company	Disposition Number	Utilization used in FMA AAC Calculations			Operational Utilization				
		Top Diameter (cm)	Butt Diameter (cm)	Stump Height (cm)	Top Diameter (cm)	Butt Diameter (cm)	Stump Height (cm)	Percent AAC reduction	Coniferous AAC (m^3) based on Operational Utilization
Blue Ridge Lumber	FMA 7500020	10	15	30	11	15	30	3.90 %	704,291

Table 4-8: Total MPB PFMS Harvested Deciduous Volume by Individual Species

MPB PFMS DECIDUOUS HARVESTED VOLUME								
YIELD STRATUM	MPB PFMS HARVESTED AREA (ha) (1st 20YRS)	ASPEN VOLUME		POPLAR VOLUME		BIRCH VOLUME		TOTAL DECIDUOUS VOLUME (m^3/ha)
		M^3/HA	%	M^3/HA	%	M^3/HA	%	
AB-C -G	1,362	5.54	35.28	1.91	12.13	8.27	52.59	15.72
AB-C -M	9,508	11.88	80.06	1.45	9.77	1.51	10.17	14.83
AB-C -F	6,373	7.26	90.49	0.74	9.23	0.02	0.28	8.02
AB-MX-A	3,162	60.21	77.51	12.81	16.49	4.66	6.00	77.67
AB-D -A	3,995	73.47	64.51	36.76	32.28	3.65	3.21	113.89
CD-C -G	8,594	23.52	67.26	6.08	17.38	5.37	15.36	34.97
CD-C -M	28,101	20.93	83.40	2.96	11.81	1.20	4.79	25.09
CD-C -F	6,923	4.80	77.98	1.26	20.42	0.10	1.60	6.16
CD-MX-A	10,490	93.49	84.09	15.43	13.88	2.26	2.04	111.19
CD-D -A	18,247	114.46	74.25	34.18	22.17	5.51	3.58	154.16
D(C)	4,229	115.04	80.17	24.76	17.25	3.69	2.57	143.50
Total	100,985							
AREA WEIGHTED AVERAGE		47.35	76.32	12.03	19.39	2.66	4.29	62.04
RECOMMENDED PERCENTAGE CONVERSION FACTORS (%)			76.3		19.0		4.3	

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Section 5
Conclusion

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5 CONCLUSION

There is a significant component of mature pine on the BRL FMA area; although much of this pine is distributed among multi-species stand types. There is still the potential for various negative impacts if proactive measures are not taken such as reduced timber supply, increased fire risk and amplified water yields. In an effort to mitigate these threats, Blue Ridge Lumber Inc. has prepared this plan with the aim of amending the management strategy presented in the 2005 DFMP and is intended as a measured proactive response to the current threat that the MPB poses to the FMA area.

In the interest of addressing other landscape values, this MPB PFMS effectively reduces the level of MPB susceptible stands by 58.2% over the first 20 years while also managing for other values such as long term fibre sustainability in an operationally feasible manner. While this response is below the recommended level of 75% proposed by SRD, it addresses the most susceptible stands on the landbase (pure pine stands) and will continue to harvest the remaining susceptible stands beyond the first 20 years.

Further to this, the change in the 20 year conifer AAC of 824,116 m^3 (2005 DFMP, with carry-forward volume) to 832,500 m^3 (MPB PFMS, with carry forward volume) results in a 8,384 increase and in no change to the approved 2005 DFMP conifer AAC for the remainder of the MPB PFMS planning horizon.

In closing, BRL is committed to mitigating the impacts of a possible MPB outbreak within the FMA area and this Pine Strategy DFMP Amendment represents a measured management approach towards this objective. It does this by significantly reducing the most susceptible stands to MPB in the most efficient manner while maintaining long term fibre sustainability. Having protected these landscape values regardless of the MPB outcome, BRL is preparing for the worst but is hoping for the best. Should a MPB outbreak not occur on the FMA area, BRL is well positioned to adapt its forest management strategy and will update it as required. However, if MPB populations increase at a higher level than anticipated, BRL will also be prepared to explore a more aggressive response.

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Appendix A
MPB PFMS with MPB Outbreak Scenario

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Appendix A: MPB PFMS WITH MPB OUTBREAK SCENARIO

The following scenario represents the MPB PFMS on the same updated landbase as described in Section 4.1 where an MPB Outbreak occurs as defined in Section 3.2.1.2. The harvest simulation parameter settings are listed in Table A-1and the run results are illustrated in Figure A-1.

Table A-1: Harvest Simulation Control Parameters – MPB PFMS Scenario

HARVEST SIMULATION CONTROL PARAMETERS SCENARIO: MPB PFMS	
Control Parameter	**Parameter Setting**
Harvest unit:	FMA – W14 (VSA 1 + VSA 2)
Planning horizon:	160 Years
Targeted average harvest age at the end of the planning horizon:	80 ± 5
Minimum harvest age:	70 Yrs (Conifer) 50 Yrs (Deciduous)
Landbase:	Single
Sorting rules[1]:	1) MPB Susceptibility (1st 20 years) 2) Oldest first 3) Modulate deciduous flow 4) Maximize conifer harvest
Harvest flow constraint:	1) Incorporating reconciliation volume 2) Even flow conifer 3) Maintain deciduous commitments by VSA for the 1st 20 years
Yield curves:	TSA net yield curves
Cull deductions:	Conifer 4.2% and Deciduous 5.9%
Regeneration transition:	Fully stocked – transition strategy 2
Regeneration lag:	Applied (15 years for stands killed by MPB)
Introduce harvest plans:	Applied
Spatial stand adjacency:	Not applied
Adjacency – Green Up:	Not applied
Adjacency – Accumulate adjacent stands:	Not applied
MPB Infestation:	Applied

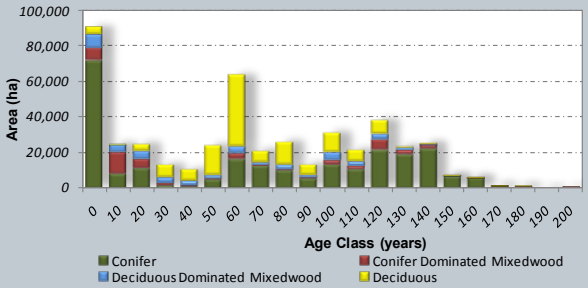
[1] *Refer to Section 4.1 above for greater background behind sorting rules;*

Figure A-1: Harvest Simulation Results – MPB PFMS Scenario

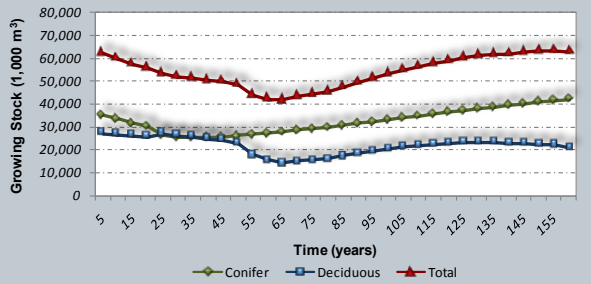
AAC SUMMARY TABLE

Net Productive Area		463,484 ha
Conifer Harvest Level	Years 1-20:	832,500 m^3/yr (includes carry-forward volume)
	Years 21-180:	660,500 m^3/yr
Deciduous Harvest Level	20 yr AVG:	410,890 m^3/yr

INITIAL AGE CLASS DISTRIBUTION

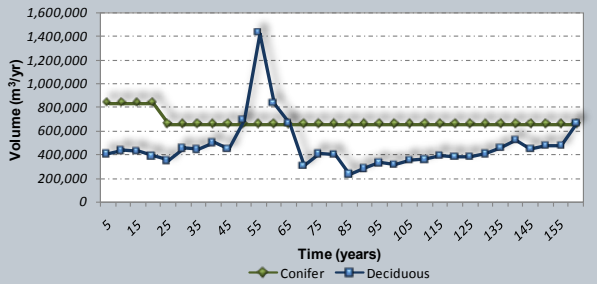


TOTAL GROWING STOCK



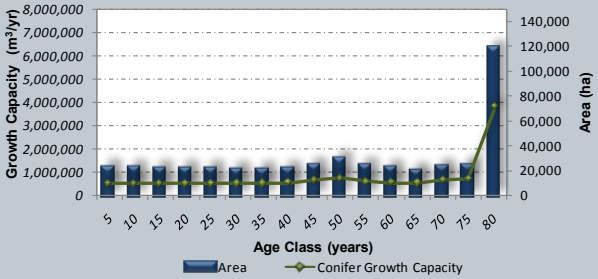
Description: *This graph summarizes the conifer, deciduous, and total growing stock (live volume) over the length of the planning horizon*

HARVEST FLOW SUMMARY



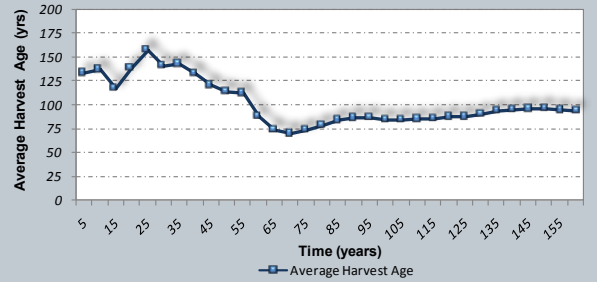
Description: *This graph summarizes the projected conifer and deciduous harvest levels over the planning horizon*

POST HARVEST FOREST CONDITIONS



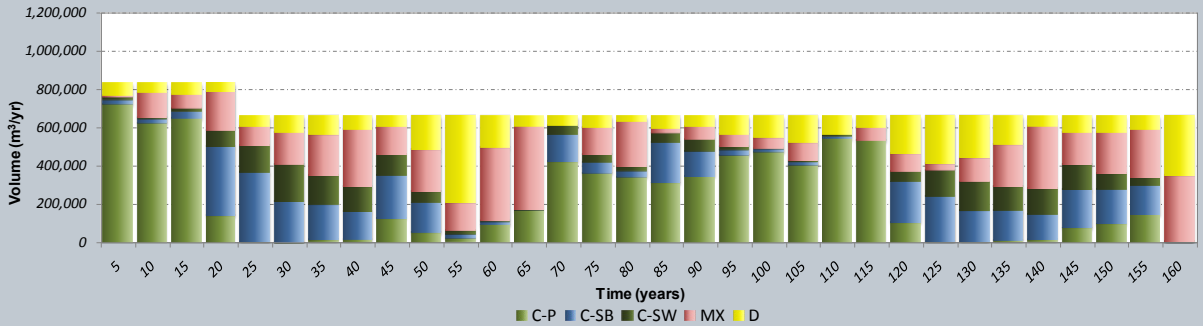
Description: *This graph summarizes the projected growth capacity and area by age class once the planning horizon is over (years 185-270)*

AVERAGE HARVEST AGE BY 5 YR ITERATION



Description: *This graph summarizes the average age of stands harvested over the planning horizon*

CONIFER AAC VOLUME CONTRIBUTION BY STAND TYPE



Description: *This graph depicts the conifer volume contributed by stand types (based on yield strata) over the entire 180 year planning horizon.*

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Appendix B
Net Landbase Database Structure and Description

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Appendix B: Net Landbase Database Structure and Description

please refer to 'Net_Landbase_Database_Structure_&_Description.pdf' within the BRL MPB Pine Strategy DFMP Amendment – Databases and Datasets DVD'

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Appendix C
MPB PFMS Harvest Sequence Database Structure and Description

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Appendix C: MPB PFMS Harvest Sequence Database Structure and Description

please refer to 'harvest_sequence_database_structure_and_description.pdf' within the BRL MPB Pine Strategy DFMP Amendment – Databases and Datasets DVD'

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Appendix D
MPB PFMS Edited Harvest Sequence and Operator Assignment

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Appendix D: MPB PFMS Edited Harvest Sequence and Operator Assignment

Upon reviewing the MPB PFMS sequence to assign stands to each operator, some minor changes to the MPB PFMS sequence were required. The changes were relatively small, and involved mostly only swapping 1-10 and 11-20 stands. As a result, the planning team determined that re-running the TSA model would not be required.

The following tables summarize the changes to the modeled MPB PFMS sequence.

Table D-1: Summary of Area Changes to the BRL MPB DFMP Amendment Modeled Sequence

SUMMARY OF AREA CHANGES TO THE BRL MPB DFMP AMENDMENT MODELED SEQUENCE (HA)								
		Modeled Sequence						
		10	20	30	40	50	60	Total
Edited Sequence	10	51,543	2,985	62	28	0	0	54,619
	20	3,051	51,137	0	0	0	0	54,188
	30	0	0	47,595	0	0	0	47,595
	40	0	0	0	48,687	0	0	48,687
	50	0	0	0	0	62,819	0	62,819
	60	0	0	0	0	0	67,472	67,472
	Total	54,594	54,122	47,656	48,716	62,819	67,472	335,379

Table D-2: Summary of Percent Area Changes to the BRL MPB DFMP Amendment Modeled Sequence

SUMMARY OF PERCENT AREA CHANGES TO THE BRL MPB DFMP AMENDMENT MODELED SEQUENCE			
Harvest Period	Modeled Sequence (ha)	Edited Sequence (ha)	Percent Change (%)
10	54,594	54,619	100.04%
20	54,122	54,188	100.12%
30	47,656	47,595	99.87%
40	48,716	48,687	99.94%
50	62,819	62,819	100.00%
60	67,472	67,472	100.00%
Total	335,379	335,379	100.00%

The operator assignment of the edited 1-10 sequence is summarized in the following tables and map.

Table D-3: BRL MPB DFMP Amendment Edited 1-10 Sequence Area by Operator

BRL MPB DFMP AMENDMENT EDITED 1-10 SEQUENCE AREA BY OPERATOR						
VSA	Operator	Conifer (ha)	Conifer Dominated Mixedwood (ha)	Deciduous Dominated Mixedwood (ha)	Deciduous (ha)	Total (ha)
VSA1	ANC	32	17	0	4,252	**4,301**
VSA1	BRL	5,706	257	36	0	**5,999**
VSA1	MWFP	2,536	271	0	0	**2,806**
VSA1	UNA	0	0	0	636	**636**
VSA2	BRL	26,309	2,856	206	3,020	**32,391**
VSA2	MWFP	0	0	0	8,486	**8,486**
	Total	**34,582**	**3,401**	**242**	**16,393**	**54,619**

Table D-4: BRL MPB DFMP Amendment Edited 1-10 Sequence Deciduous Volume by Operator

BRL MPB DFMP AMENDMENT EDITED 1-10 SEQUENCE DECIDUOUS VOLUME[1] BY OPERATOR						
VSA	Operator	Conifer (m^3)	Conifer Dominated Mixedwood (m^3)	Deciduous Dominated Mixedwood (m^3)	Deciduous (m^3)	Total (m^3)
VSA1	ANC	604	2,159	0	836,415	**839,178**
VSA1	BRL	187,329	32,361	3,697	0	**223,387**
VSA1	MWFP	73,602	33,567	0	0	**107,169**
VSA1	UNA	0	0	0	127,640	**127,640**
VSA2	BRL	405,581	324,776	23,074	497,519	**1,250,950**
VSA2	MWFP	0	0	0	1,658,491	**1,658,491**
	Total	**667,117**	**392,863**	**26,771**	**3,120,065**	**4,206,816**

Table D-5: BRL MPB DFMP Amendment Edited 1-10 Sequence Conifer Volume by Operator

BRL MPB DFMP AMENDMENT EDITED 1-10 SEQUENCE CONIFER VOLUME[1] BY OPERATOR						
VSA	Operator	Conifer (m^3)	Conifer Dominated Mixedwood (m^3)	Deciduous Dominated Mixedwood (m^3)	Deciduous (m^3)	Total (m^3)
VSA1	ANC	6,901	3,687	0	151,329	**161,917**
VSA1	BRL	1,270,412	56,396	6,166	0	**1,332,975**
VSA1	MWFP	555,497	57,232	0	0	**612,730**
VSA1	UNA	0	0	0	20,984	**20,984**
VSA2	BRL	5,116,197	580,569	35,746	153,153	**5,885,666**
VSA2	MWFP	0	0	0	250,376	**250,376**
	Total	**6,949,008**	**697,885**	**41,912**	**575,842**	**8,264,646**

[1] *The volumes summarized are the current volumes, and are provided for information purposes only (the volumes for approval remain the modeled MPB PFMS sequence.*

Map D-1: Edited MPB PFMS 1-10 Sequence by Operator