Alberta-Pacific Forest Products Inc.

Forest Management Agreement Area

Forest Stewardship Report

Reporting Period May 1, 2015–April 30, 2020

Table of Contents

EXECUTIVE SUMMARY 6

A. OVERVIEW 7

About this Report 7
Quota Holders and Forest Management Units in the FMA Area in 2015 7
About Al-Pac 9
About the FMA Area 10
The FMA Area Stakeholders 13
About the Landscape Advisory Group (LAG) 15

B. SUSTAINABILITY AND CERTIFICATION 16

Environmental Sustainability 16
Economic and Social Context 19
Economic Sustainability 20
Social Sustainability 20
Integrating Values 21
Research and Development 21
Regulatory Compliance 23
Certifications 23
Developments Affecting Forest Management Planning 24

C. MANDATORY REPORTING 27

Non-VOIT Mandatory Components 27
1. 2015 Al-Pac FMA Area Forest Management Plan Approval Decision Conditions: Review and Status 27
2. FMA Area Specific Management Objectives (VOITs) 30
3. FMP Spatial Harvest Sequence (SHS) Variance Assessment 30
4. Landbase Changes 31
5. AAC Review 32
6. Growth and Yield Program Maintenance 33
7. Al-Pac Seed Availability and Usage 41
8. FGRMS Reporting 41

D. VALUES, OBJECTIVES, INDICATORS, AND TARGETS (VOITS) 42

VOIT 1 – Area of old, mature, and young forest in the FMA area by cover class 46
VOIT 2 – Range of patch sizes on the FMA area 48
VOIT 3 – Area of old interior forest of each cover class on the FMA area 50
VOITs 4 and 5 – Open all-weather forestry road – Linear distance in FMA area and Open seasonal / temporary road length in the FMA area (non-DLO roads) 52
VOIT 6 – Area (hectares) and type of rare plant or community protected / ha identified for FMA area; Operate under the Alberta-approved operating ground rules (OGRs) 55
VOIT 7 – Area of unsalvaged burned forest: Based on approved *Northeast Alberta Operating Ground Rules* and the Government of Alberta *Fire Salvage Strategy* (Directive 2007-01) 56
VOIT 8 – Area of unsalvaged blowdown forest 60

VOIT 9 – Compliance with *Northeast Alberta Operating Ground Rules* (OGRs) 61
VOIT 10 – Retain a percentage of area (5 percent) with residual structure (both living and dead) within a harvest area, representative of the status (live/dead), sizes, and species of the overstorey trees within the FMA area 63
VOIT 11 – Retain a percentage of harvested area within the FMA area harvest blocks with downed woody debris mostly equivalent to pre-harvest conditions 67
VOIT 12 – Maintain sensitive sites within the FMA area 69
VOIT 13 – Forestry water crossing in compliance with the code of practice for watercourse crossings within the FMA area 71
VOIT 14 – Successful implementation of caribou habitat zonal deferral strategy within the caribou zone 73
VOIT 15 – Retained habitat for trumpeter swan 76
VOIT 16 – The appropriate number and area (ha) of in-situ tree gene conservation reserves as directed by the FGRMS 77
VOIT 17 – Number of provenances and genetic lines in ex-situ gene banks and trials – as per current approved Al-Pac Balsam Poplar CPP 79
VOIT 18 – Stakeholder and GoA consultation / engagement – Identify a series of ecological benchmarks 81
VOITs 19 and 20 – Reforestation surveys and MAI targets 83
VOIT 20 – Objective 2.1.1.2 Results 85
VOIT 21 – Implementation of merchantable timber FMA area landbase maintenance program 91
VOIT 22 – Amount of area affected by insects, diseases and natural calamities; forest health 93
VOIT 23 – Noxious weed program 96
VOIT 24 – Compliance, support and adherence with current approved *Northeast Alberta Operating Ground Rules* 97
VOIT 25 – Compliance, support, and adherence to current approved *Northeast Alberta Operating Ground Rules* and *Forest Soils Conservation Guidelines* regarding soil erosion and slumping 99
VOIT 26 – Limit impact of timber harvesting on water yield 100
VOIT 27 – Compliance, support, and adherence to current approved *Northeast Alberta Operating Ground Rules* – Riparian buffers maintained 101
VOITs 28 and 29 – Carbon budgets and cycles 102
VOIT 30 – Establish appropriate annual allowable cuts (AAC) with the *Alberta Forest Management Planning Standard* process described in Annex 1 of the planning manual 104
VOIT 31 – Percentage reduction in Fire Behaviour Potential area (ha) within the FireSmart Community Zone 106
VOIT 32 – Wildfire threat assessment for the FMA area 107
VOIT 33 – Integrate other users and timber management activities throughout the FMA area through an Integrated Land Management (ILM) process 108
VOIT 34 – Maintain long-run sustained yield average (LRSYA) 110
VOIT 35 – Meet Alberta's current regulatory expectations for First Nations consultation plan 111
VOIT 36 – Implement a Community Engagement Strategy (CES) 117

Appendix I: Detailed Al-Pac SHS Variance Tables (separate document)

Appendix II: Quota Holder Information (separate document)

Alberta Plywood (West Fraser)
Ed Bobocel Lumber
Northland Forest Products
Vanderwell Contractors

Figures and Tables

Figures

Figure 1. Al-Pac FMA area – 12 FMUs 8
Figure 2. Map of FMA area communities 11
Figure 3. FMA area landbase netdown 12
Figure 4. Ecological benchmark areas and existing protected areas in and around the Al-Pac FMA area 17
Figure 5. FMA area fibre flow 19
Figure 6. Caribou harvest deferrals within the Al-Pac FMA area 25
Figure 7. Growth and Yield Strategy Matrix 33
Figure 8. FMA area road network 54
Figure 9. Al-Pac FMA area fire history, 1942–2019 57
Figure 10. Al-Pac FMA area retained stand structure – average percentage per year, 2015–2020 (stewardship reporting period) 66
Figure 11. Caribou harvest deferrals within the Al-Pac FMA area 2015 TSA 74
Figure 12. Kitaskino Nuwenene Wildland Park 82
Figure 13. Understorey protection treatment QII 2015–QII 2020 – SHS forecast and actual hectares treated 88
Figure 14. Understorey protection establishment surveys (hectares) 89
Figure 15. Understorey protection performance surveys (hectares) 90
Figure 16. Al-Pac industrial salvage volumes (m^3) 109

Tables

Table 1. Approximate annual pulp production and wood requirements 9
Table 2. FMA area resource users and influencers 13
Table 3. 2015–2020 Al-Pac harvest blocks (hectares) 18
Table 4. 2015 *Forest Management Plan* – GoA conditions and Al-Pac response 27
Table 5. Summary of landbase changes to the Al-Pac FMA area (hectares) 31
Table 6. Forecasted vs. actual volume review – Deciduous and conifer cover groups (cubic metres per hectare) 32
Table 7. Abbreviations used in this section 36
Table 8. Current PGYI plot allocation in natural stands in the Al-Pac FMA area 37
Table 9. Al-Pac FMA area PSP establishment and remeasurement 38
Table 10. SCUP PSP installations 39
Table 11. Natural stand TSPs 2016–2020 – Yield stratum 40
Table 12. FRIAA TSP program 40
Table 13. Al-Pac seed inventory and usage 41
Table 14. 2015 Al-Pac FMA area *Forest Management Plan* VOIT summary table 43
Table 15. FMA area length of road by class 53
Table 16. Al-Pac FMA area wildfire metrics, QIII 2015–QII 2020 59
Table 17. Al-Pac fire disturbance salvage volumes (m^3) 59
Table 18. FMUs L1/L8 2017 blowdown event (hectares) 60
Table 19. Al-Pac–GoA enforcement actions, 2016–2020 62
Table 20. Riparian buffers 62
Table 21. Five-year metrics and average FMU retained stand structure metrics 65
Table 22. Permanent bridges and culverts on Al-Pac DLO roads 72

Table 23. Poplar genetic test sites and legal locations 80
Table 24. Al-Pac deciduous silviculture program – Al-Pac FMA area (by year of harvest) 84
Table 25. Al-Pac's performance survey results – Five-year rolling average – Harvest blocks (cubic metres per hectare per year) 85
Table 26. Al-Pac conifer silviculture program 86
Table 27. Summary of Al-Pac consultation for each year in the reporting period 113
Table 28. LAG interests regularly represented by LAG members, 2015–2020 118
Table 29. LAG year September 2014–June 2015 119
Table 30. LAG year September 2015–June 2016 120
Table 31. LAG year October 2016–June 2017 121
Table 32. LAG year November 2017–June 2018 122
Table 33. LAG year November 2018–June 2019 123
Table 34. LAG year 2019–2020 124

Alberta-Pacific Forest Products Inc.
Forest Management Agreement Area

Forest Stewardship Report Overview

(Reporting Period May 1, 2015–April 30, 2020)

Executive Summary

Alberta-Pacific Forest Industries (Al-Pac) has developed this stewardship report to describe its performance toward fulfilling commitments made in the company's 2015 *Forest Management Plan* (FMP), which was approved by the Government of Alberta (GoA) on May 1, 2017, and amended in 2019 and 2020 to account for developments such as the effects of wildfires. The FMP and stewardship report are requirements under Al-Pac's most recent Forest Management Agreement (FMA) with the GoA, signed in 2011.

This report covers five years from May 1, 2015, to April 30, 2020—i.e., the first half of the 10-year period projected in the 2015 FMP. The report contents are designed to comply with the *Stewardship Reporting Requirements* issued by the GoA in 2017 and to provide additional information that may be important for interested stakeholders. For example, the FMP includes 36 VOITs (values, objectives, indicators, and targets), but the GoA only requires reporting on the "dynamic" variables. Al-Pac has decided to include information on all 36 VOITs, beginning on page 47. The GoA also mandates reporting on other stewardship matters in addition to the VOITs.

For each VOIT and the other eight non-VOIT mandatory reporting requirements, Al-Pac provides context and commentary as needed. If a target or requirement has not been fulfilled as intended, the reasons for this are given, along with plans to address the deficiency. All the commitments will also be evaluated during preparation of the next FMP, due in 2025.

Most commitments have been met within acceptable thresholds. Some variances were required because of wildfires or changes in industrial activity. Preparation of this report also revealed one significant variance due to a change in requirements. Previous reporting addressed stand-structure retention on the basis of aggregate amounts for the entire FMA area. However, structure retention now must be reported separately for each of the 12 forest management units (FMUs); doing this showed wide variance outside the 5 percent retention target, although the five-year average for the entire FMA area was 4.7 percent (VOIT 10). The GoA also changed the way retention was calculated, excluding areas on the edge of harvest blocks, and this contributed to the apparent reduction in retained structure. Al-Pac is now addressing the variance issue through several initiatives: increased training and monitoring of contractors; training tours of harvest blocks; retraining of company operations coordinators, and flagging specific retention areas in larger harvest blocks.

Al-Pac performance is reported in detail for its own operations. Seven other companies have volume-based quotas to harvest conifer timber in the FMA area. Information on activities of these quota holders (QHs) is included in Appendix II and elsewhere where available and relevant. Alberta Plywood, Ed Bobocel Lumber, Northland Forest Products, and Vanderwell Contractors have contributed to this stewardship report. The other three QHs did not have harvest operations during the reporting period. In this document, references to "the forest companies" include the QHs.

The FMP and previous stewardship reporting included commentary from the Al-Pac Landscape Advisory Group (LAG). Unfortunately, restrictions during the COVID-19 pandemic in 2020–2021 made it impractical to assemble a LAG subcommittee for review of this report. Information on LAG is contained in the report on VOIT 36 and elsewhere where relevant.

A. Overview

About this Report

This is the fourth stewardship report for Al-Pac's FMA area. The first general stewardship report was published in 2002, describing progress toward goals and objectives up to 2000, as described in Al-Pac's *Detailed Forest Management Plan* (DFMP) approved in 2000 and preceding interim forest management plans from the beginning of operations on Crown land in 1993 under Al-Pac's Forest Management Agreement (FMA). No report was prepared for the 2001–2005 period because stewardship information was included in the 2006 FMP. A second stewardship report was produced in 2011 for the 2006–2010 period. The third report, for 2011–2015, was published in 2018; it was delayed due to a change in reporting requirements. Al-Pac has also published other reports on its forestry and corporate performance. These reports are available from the company[*] or on the website at www.alpac.ca. The complete 2015 FMP is also available on request and is posted on the GoA website.[†] Definitions of special terms, abbreviations, and acronyms used in this report can be found in section 5, Chapter 2, of the 2015 FMP.

This document is intended to comply with the provincial government's *Forest Management Planning Standard Interpretive Bulletin*, *Stewardship Reporting Requirements*,[‡] issued in June 2017. The report aims to satisfy both the GoA regulatory requirements and the need for accountability and transparency with stakeholders and the public. As a result, we have endeavoured to make the contents accessible to anyone who is interested, whether they want to see general trends or to track a technical issue in detail. The document was also prepared to reflect the interests and requirements of Al-Pac's ongoing Forest Stewardship Council (FSC) sustainable forest management certification. Al-Pac continues to obtain FSC certification to assist in kraft pulp market access and in retaining worldwide pulp market share.

The FMP deals with forestry throughout the FMA area (see Figure 1), including the activities of other forest companies in addition to Al-Pac. Other companies are principally the quota holders (QHs) that have conifer timber rights in the FMA area, although there is also limited activity under the GoA Commercial Timber Permit and Miscellaneous Timber Use programs. References to the "the forest companies" in this document include the QHs, and additional information from them is found in Appendix II.

Quota Holders and Forest Management Units in the FMA Area in 2015

Major Quota Holders:

Alberta Plywood Ltd. (West Fraser Mills Ltd.) – Slave Lake (S18)

Ed Bobocel Lumber (1993) Ltd. – Lac La Biche (L1, S23, L2, L8)

Northland Forest Products Ltd. – Fort McMurray (A15, A14, L3)

Vanderwell Contractors (1971) Ltd. – Slave Lake (L2, S18, S22)

Small Quota Holders:

Alberta Forest Industries – Lac La Biche (L1)

Kee-Tas-Kee-Now Tribal Council (S14)

S-11 Logging Company Ltd. – Trout Lake (S11)

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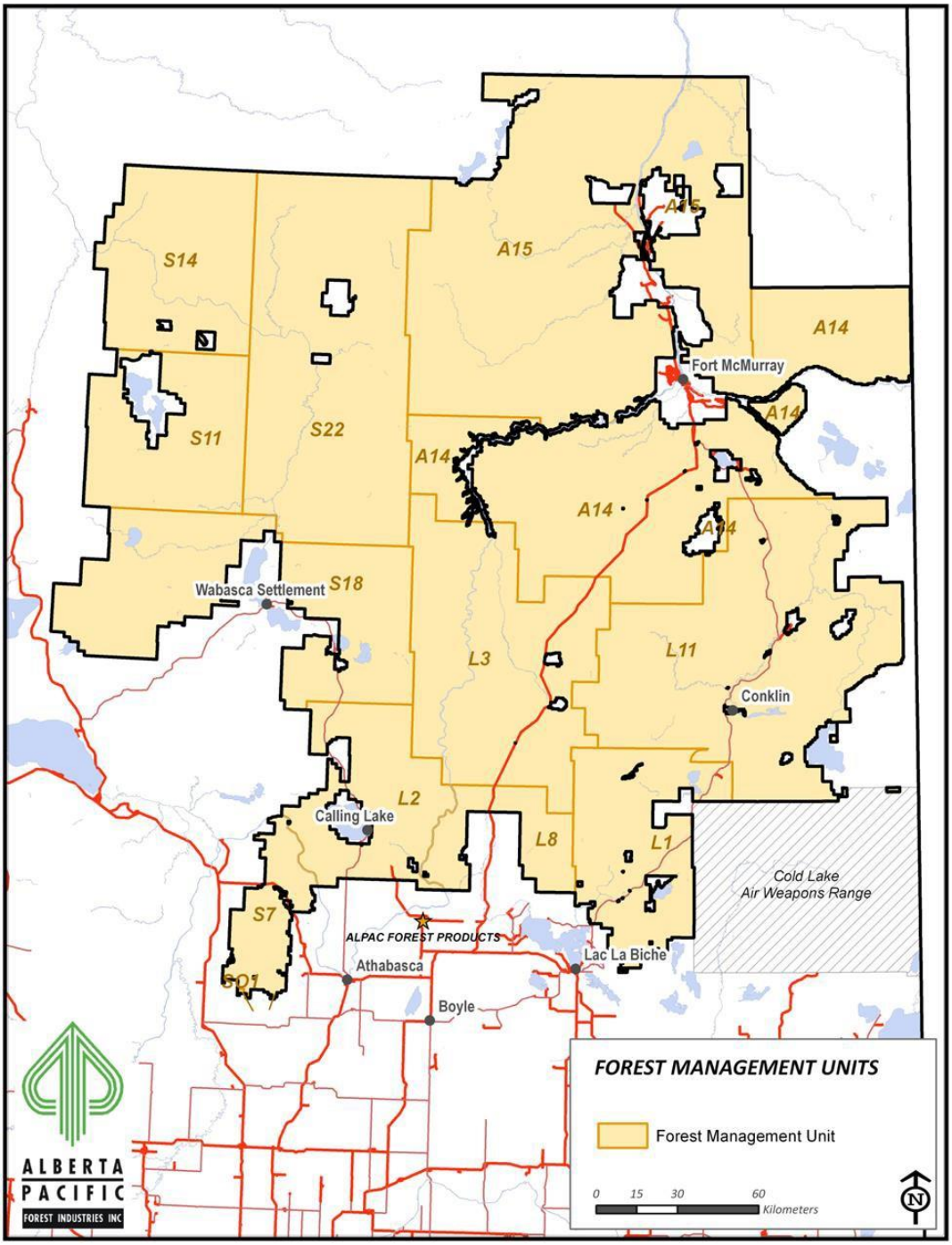
[*] Alberta-Pacific Forest Industries: www.alpac.ca; 1-780-525-8000 or 1-800-661-5210 ext. 8000

[†] Alberta-Pacific FMA area 2015 *Forest Management Plan*: https://open.alberta.ca/publications/alberta-pacific-fma-area-2015-forest-management-plan

[‡] Government of Alberta. 2017. *Forest Management Planning Standard Interpretive Bulletin: Stewardship Reporting Requirements*. Edmonton, AB. https://open.alberta.ca/dataset/e0837e42-34c0-4704-b415-6fea1356a99c/resource/f316f9bb-0ea7-46a2-a908-ea5aea419eb2/download/af-fdp-2017-03-stewardship-reporting-requirements-interpretive-bulletin.pdf

The Forest Management Agreement (FMA) area from 2015-2020 was divided into 12 Forest Management Units (FMUs). The following map (Figure 1) illustrates the 12 FMUs.

Figure 1. Al-Pac FMA area – 12 FMUs



About Al-Pac

Al-Pac operates the largest single-line pulp mill in North America. Approximately 1,000 team members and contractors produce upward of 650,000 tonnes of high-quality, elemental-chlorine-free bleached kraft pulp annually, as well as some speciality products. In addition, the company exports electric power to the provincial grid. The mill is located about 50 kilometres northeast of Athabasca, Alberta, and 200 kilometres northeast of the Edmonton area, where Al-Pac also has a business office.

Al-Pac is owned by Japan-based Hokuetsu Kishu Paper Co. Ltd.* The company's pulp products are used around the world in the manufacturing of writing- and printing-grade papers, commercial printing papers, glossy photography and specialty papers, corrugated paper products, and hygienic tissue papers.

The kraft mill requires approximately 3 million cubic metres (m^3) per year of deciduous and coniferous fibre. This requirement is based on budgeted pulp mill capacity of 1,920 air-dried metric tonnes (ADt) of deciduous pulp per day or 1,520 ADt of coniferous pulp per day. At these rates, the annual mill output is approximately 556,000 ADt of bleached deciduous pulp and 92,000 ADt of bleached coniferous pulp. The average annual wood requirements and supply are summarized in Table 1.

Table 1. Approximate annual pulp production and wood requirements

	Deciduous	Conifer	Total
Annual Pulp Production (ADt/yr)	556,000	92,000	648,000
Approximate Fibre Requirements (m^3/yr)	2,560,000	510,000	3,070,000

Note: Deciduous Yield is approximately 4.8 m^3/ADt – roundwood; Coniferous Yield is approximately 6.0 m^3/ADt – chips. (Chips include purchased chips and chips produced by Al-Pac.)

Al-Pac kraft pulp mill

* Hokuetsu Kishu acquired Al-Pac in February 2015 from Mitsubishi Corporation and Oji Paper Co. Ltd., which had jointly owned the company since 1998.

About the FMA Area

In 2011, Al-Pac renewed its forest management agreement (FMA) with the Government of Alberta. Under the agreement, the company is licensed to sustainably harvest trees in a net area of 6.2 million hectares in northeastern Alberta, within a gross area of 7.2 million hectares. About 1.8 million hectares of the FMA area are harvestable forest, while about 4.4 million hectares comprise wetlands (bogs, fens, and muskeg), non-commercial black spruce stands, and non-harvestable forest areas (river valleys, slopes, protected areas, riparian buffers, and other dispositions such as those for transportation and energy sector uses).

Al-Pac's planning and operations in the FMA area are governed by the terms of the FMA, the *Forest Management Plan* (FMP), the *Northeast Alberta Operating Ground Rules* (OGRs),[*] the *General Development Plan* (GDP), and the *Annual Operating Plan* (AOP). These plans are all prescribed by the *Alberta Forest Management Planning Standard.*[†] The 2015 FMP was the third complete forest management plan prepared by Al-Pac. The OGRs are negotiated periodically between GoA and the forest companies.

The gross FMA area includes the approximately 380,000-hectare surface mineable area (SMA) of oil sands deposits north of Fort McMurray, which is excluded from the Al-Pac managed forest landbase. However, large areas of in-situ oil sands and conventional oil and gas are included within the FMA area. The energy sector and related transportation create substantial linear disturbance throughout the FMA area. These disturbances include roads, pipelines, power lines, borrow pits, gravel pits, seismic lines, airstrips, industrial plants, wellheads, facilities, and worker accommodation sites.

The FMA area is a boreal mixedwood forest, containing deciduous (leafy, hardwood) tree species and coniferous (cone-bearing, softwood) species. Al-Pac primarily utilizes deciduous trees (trembling aspen and balsam poplar), plus small amounts of birch and other species. Quota holders and other forest companies that operate in the FMA area utilize conifer species such as white spruce and jack pine, and they provide conifer chips to Al-Pac. In total, from 1993 to 2020, Al-Pac and other forest companies harvested approximately 280,000 hectares, equivalent to about 15 percent of the commercially productive forest or 4.5 percent of the total FMA area. Forest companies comply with regulations that require harvested areas to be reforested within two years.

In addition to its own harvests, Al-Pac is responsible for all strategic forest management in the FMA area, including inventories and planning. All forest companies must comply with the laws, policies, and regulations of the Government of Alberta and the terms of the FMA. Although Alberta Agriculture and Forestry (AAF) is the principal regulator, forest activities are also affected by policies and regulations of other provincial government departments as well as federal and municipal governments.

Forest management in the FMA area is integrated with many other uses and users of the landscape and resources. These include Indigenous[‡] peoples, energy and transportation sectors, and hunting, fishing, trapping, outfitting, gathering, and recreational uses.

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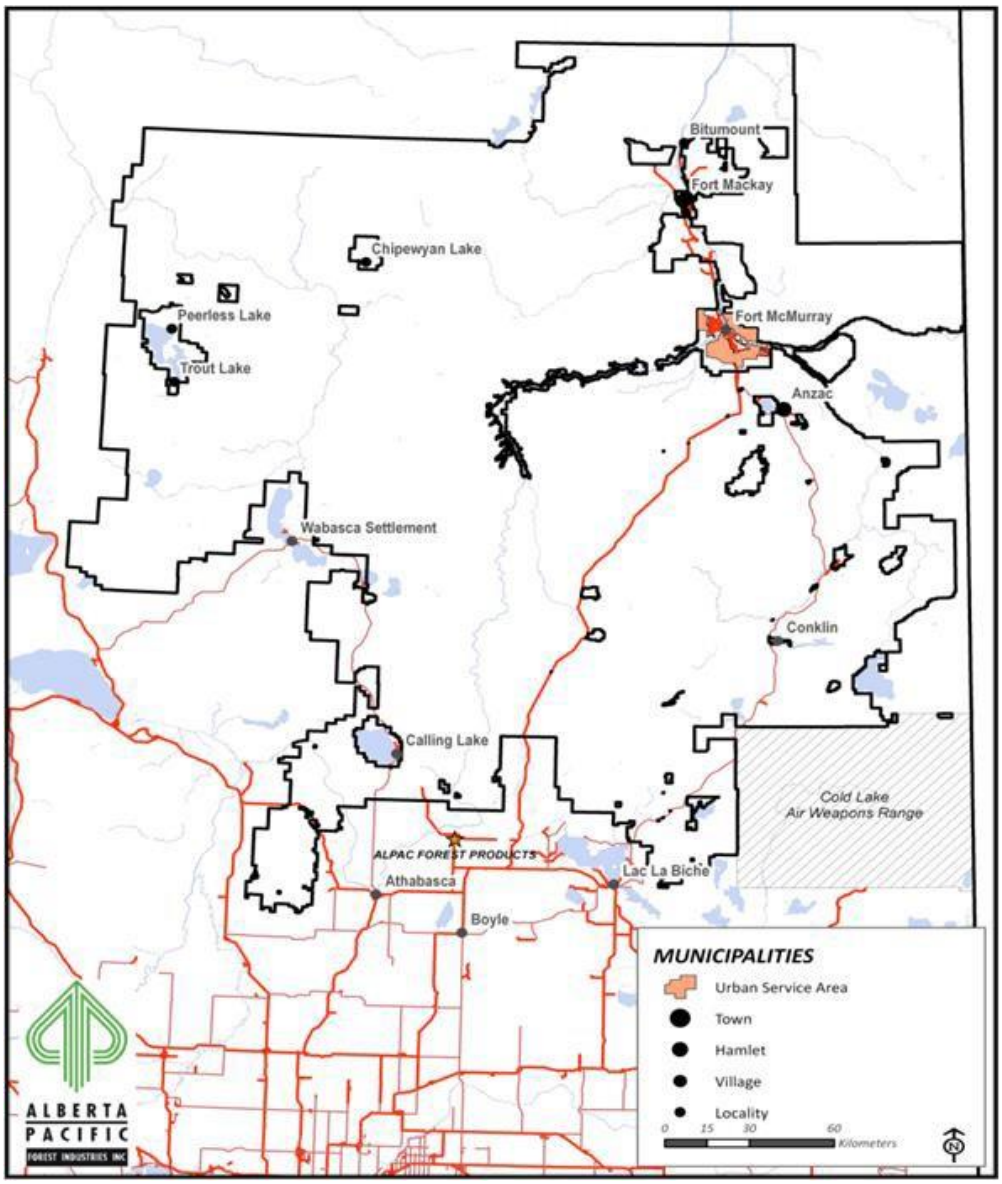
[*] *Northeast Alberta Operating Ground Rules*: https://open.alberta.ca/publications/northeast-alberta-operating-ground-rules

[†] *Alberta Forest Management Planning Standard*: https://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/formain15749/$FILE/ForestManagementPlanningStandard-2006.pdf

[‡] The term "Indigenous" has replaced "Aboriginal" in much Canadian usage since adoption of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). Although the UN issued the declaration in 2007, Canada was one of four countries that initially objected to it—along with the United States, Australia, and New Zealand—and there was little change in usage here. The usage began to change after July 2015, when the Government of Alberta announced plans to potentially incorporate UNDRIP provisions into law and policy. The federal government followed suit and withdrew Canada's objector status in May 2016. Since then, governments across Canada have been implementing UNDRIP in accordance with the Canadian constitution. The term "Aboriginal" is retained here in some instances because it is embedded in legislation, program names, and quoted documents.

The FMA area is bounded on the south by agricultural settlement and the major towns of Athabasca, Boyle, and Lac La Biche. The city of Fort McMurray falls within the FMA area (in FMU A15). Other communities and First Nations reserves in the FMA area include Janvier, Wabasca, Bigstone Cree, Heart Lake, Gregoire Lake, Fort McKay, Peerless Lake, Trout Lake, Calling Lake, and Chipewyan Lake. Just outside the FMA area are the Beaver Lake, Saddle Lake, Cold Lake, and Namur Lake reserves and the communities of Red Earth, Plamondon, Wandering River, Smith, Atmore, Grassland, Buffalo Lake, and Kikino Métis Settlement (see Figure 2).

Figure 2. Map of FMA area communities



For communities in and around the FMA area, forest resources are important in providing employment through the forest industry. Activities such as trapping, guiding, hunting, tourism, and fishing also provide employment opportunities. The FMA area also contains the large energy sector, which is dependent on the region's huge deposits of primarily bitumen and other fossil fuels. The oil and gas sector is the largest non-forestry industrial activity on the landscape (see the anthropogenic area in Figure 3). The energy sector is also a major factor in the transportation sector.

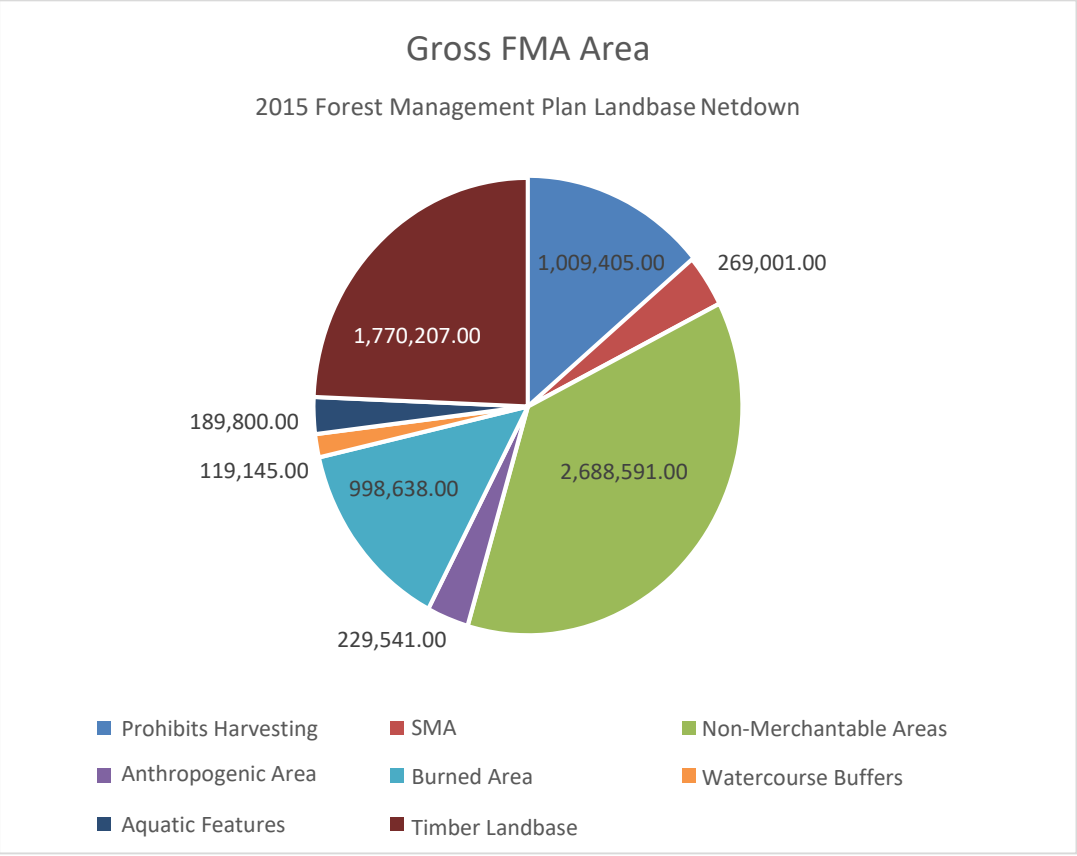
The southern part of the FMA area lies within a three-hour drive from major population centres around Edmonton. Several lakeside summer villages are established along the southern edge of the FMA area.

Lakeland Provincial Park and Recreation Area and the Cold Lake Air Weapons Range are also on the southeastern edge of the FMA. Lakeland Provincial Park and Recreation Area offers tourism and recreation opportunities. The Cold Lake Air Weapons Range includes a military base that provides economic benefits to the area; the large training area may contribute to protected-area ecological values because of its very restricted use.

Although the FMA area landscape encompasses a gross area of 7.2 million hectares, the majority of the area comprises wetlands and non-harvestable areas such as water bodies, slopes, protected areas, parks, riparian buffers, and black spruce bogs. Fire is the predominant natural disturbance on the landscape. More than 840,000 hectares of the FMA area burned in the 2015–2020 period. Insects and disease have also affected forest composition.

Al-Pac procures fibre from a variety of sources, including Crown area timber, private wood purchases, and sawmill chips. Management of forest lands occurs under provisions of the September 2011 Forest Management Agreement (FMA) between Al-Pac and the Government of Alberta and the preceding FMA. The FMA is a 20-year, renewable agreement. The conifer-harvesting quota holders (QHs) support all planning and procurement efforts. The quotas are based on volume harvested, whereas the FMA is based on the area managed.

Figure 3. FMA area landbase netdown



Note: SMA is the surface mineable area, formerly known as the mineable oil sands area, or MOSA.

When the original Al-Pac FMA was signed in 1991, there were only two operating oil sands mines and a small number of in-situ oil sands pilot projects. Since then, oil sands production has grown five-fold, and more projects are under development.

The FMA Area Stakeholders

In addition to Al-Pac, the quota holders and various miscellaneous timber users (MTUs) also have timber rights within the area. The MTU program includes both commercial and non-commercial fibre use and is maintained by the Government of Alberta.

Most of the FMA area is intended to be managed for multiple uses and ecological sustainability. This requires integrating the interests of many varied stakeholders, including government, industry, Indigenous, traditional, and recreational. The interactions among these stakeholders contribute to a complex management mosaic. Table 2 identifies examples of the resource users and influencers in the FMA area.

Table 2. FMA area resource users and influencers

FMA Area Resource Users and Influencers		
Government	Alberta	Indigenous Relations
		Culture
		Energy
		Agriculture and Forestry
		Infrastructure
		Environment and Parks
		Transportation
	Canada	Fisheries and Oceans
		Natural Resources
		Environment and Climate Change
	Municipal	Towns and counties
Forestry		Al-Pac
		Quota holders
		Miscellaneous timber permit users
Energy		Oils sands mining
		In-situ oil sands
		Natural gas
		Conventional oil
		Seismic programs
		Pipelines
		Utilities corridors
		Worker housing and camps
Other		Hunting
		Trapping
		Fishing
		Gathering food and medicine
		Camping

		Outfitters and lodge owners
		Naturalists
		Recreation (quads, snowmobiles, cross-country skiing, etc.)
		Peat extraction
		Sand and gravel operations
Indigenous Peoples		First Nations
		Métis Nation of Alberta
		Métis settlements

Power and pipeline corridor in FMU L1 (Robert Bott photo)

About the Landscape Advisory Group (LAG)

The LAG was established in 2007 to succeed the Forest Management Task Force (FMTF) as a forum that brings together forest companies, Indigenous peoples, government officials, and land users (hunting and fishing, trapping, conservation and naturalist interests, and public members) to discuss the needs, interests, and issues affecting the forest landscape and to provide advice for addressing them. The LAG normally meets four times annually, in Edmonton or a community in or near the FMA area, and takes an annual field trip in the FMA area or to a forestry-related site. Meetings are professionally facilitated. Individual LAG members and subcommittees undertake special assignments on behalf of the group.

The LAG is a key component of Al-Pac's Community Engagement Strategy, developed in 2007 and updated in 2014 and 2017. The strategy can be found in Appendix 1, Chapter 2, of the 2015 FMP. LAG activities and other components of community engagement are described further in the reporting on VOIT 36 in this report.

LAG was not able to meet in 2020 and early 2021 due to restrictions on travel and gatherings during the COVID-19 pandemic. As a result, it was not possible to include LAG commentary on specifics in this report. Extensive LAG commentary can be found in Chapters 1 and 5 of the FMP.

The Al-Pac FMA Area Landscape Advisory Group – Field Day at Gregoire Lake, 2017 (Robert Bott photo)

B. Sustainability and Certification

Forest management in Alberta is based on the Canadian Council of Forest Ministers *Criteria and Indicators for Sustainable Forest Management*. Under these standards, forestry is considered sustainable when all the economic, environmental, and social values of the landscape are maintained or enhanced, today and over the long term. Performance is verified through government monitoring, company reporting, advisory groups such as Al-Pac's LAG, and third-party auditing and certification bodies such as the Forest Stewardship Council.

An important principle in working toward sustainability in forest management is the adoption of active adaptive management (AAM), which involves researching, testing, adjusting, and applying changes to forest practices as new information is gathered.

The following is a summary of progress during the first half of the implementation of the 2015 Al-Pac FMP. This summary is based on the progress toward the goals and objectives set out in the FMP as described in the technical discussion, other documents, and the perceptions of foresters and stakeholders.

Environmental Sustainability

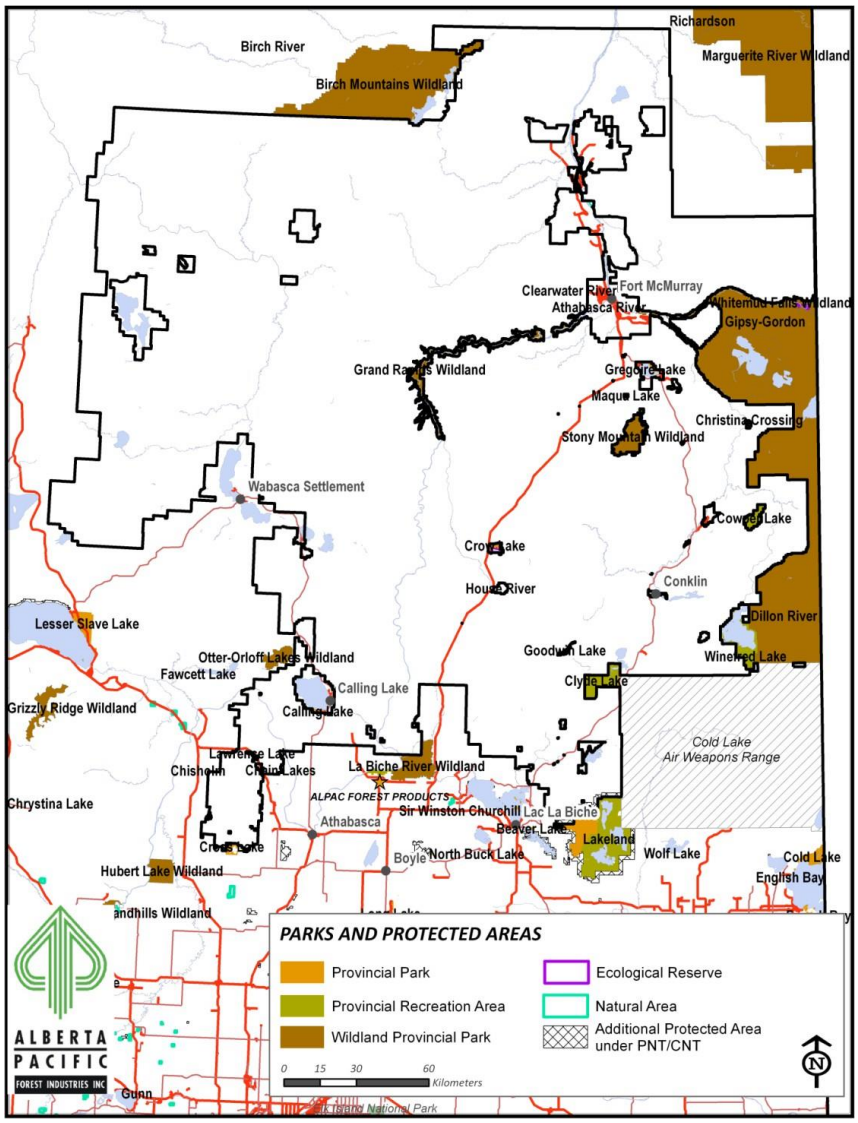
The key objectives identified by Al-Pac in working toward environmental sustainability of the FMA area are:

- Maintaining biological diversity
- Protecting species at risk
- Maintaining the distribution of coniferous, deciduous, and mixedwood stands
- Reforesting harvest areas
- Avoiding impacts on groundwater and surface water resources
- Designing harvest patterns to approximate natural disturbances.

Maintaining biological diversity on the landscape is a central goal of sustainable forest management. Al-Pac has maintained that large, ecologically representative areas should be protected from industrial activity so they can serve as benchmarks for comparison with the ecosystems of other managed parts of the FMA area. However, it has been difficult to gain government and stakeholder agreement for such designations in the Al-Pac FMA area. The GoA attempted to address this goal through the designation of protected areas under the Land-use Framework (LUF) and the Alberta Land Stewardship Act (2009). Current ecological reserves and protected areas are shown in Figure 4.*

* Small areas are designated as protected notations (PNTs) and consultative notations (CNTs). These are too small to be visible in Figure 4.

Figure 4. Ecological benchmark areas and existing protected areas in and around the Al-Pac FMA area



An alternative means of assessing biodiversity has emerged through the sampling methods of the Alberta Biodiversity Monitoring Institute (ABMI). The institute's reports on the FMA area indicate that habitat and species are largely intact despite recent high levels of industrial activity. Integrated land management (ILM) agreements among forest users also reduce the ecological footprint (the cumulative effects of forestry, energy, and transportation sector activities) compared to what might otherwise occur without integrated planning.

Among species at risk, woodland caribou has been identified as being of particular concern in the FMA area. Al-Pac has taken steps to avoid impacts on caribou and their habitat, and the company participates in regional and provincial initiatives to protect the species. Al-Pac continues to work with the Alberta government, the energy industry, and other stakeholders to address the caribou issue. In 2011, the government issued *A Woodland Caribou Policy for Alberta*, which stated:

> *Efforts will be undertaken to stabilize, recover, and sustain woodland caribou populations in Alberta. Actions will be undertaken to address caribou habitat needs, including achievement of these requirements in land-use planning and approvals. Areas within caribou ranges will be identified and established where caribou conservation is the highest land management priority and other activities/uses minimized.*

Traditional forestry practices would return harvested sites to either all-conifer or all-deciduous stands. The Alberta government's adoption of new regeneration standards (Reforestation Standard of Alberta* or RSA) in 2010 has directed forest companies to implement the reforestation of mixedwood sites. Several steps have been taken to maintain the diversity of mixedwood sites containing both deciduous and coniferous species. Al-Pac continues to address this issue through understorey protection (avoiding damage to young conifers while harvesting mature poplars in mixedwood stands).

Successful reforestation of harvested sites is a requirement—legally, environmentally, socially, and economically. This is being achieved on most harvest sites, but soil compaction can inhibit the natural regeneration of aspen (through suckering) on roads, landings, and some areas logged in summer during wet conditions. The sites may be decompacted and planted with conifer seedlings or balsam poplar.

The majority of harvest and hauling activities occur when the ground is frozen, which minimizes effects on both soil and water resources. Al-Pac has supported considerable research on hydrology in the FMA area. Operational changes have included more frequent culvert inspections and the use of portable bridges and other crossing designs that minimize siltation and avoid the disturbance of stream flows. These changes have been incorporated into the operating ground rules (OGRs).

Fire is the principal natural disturbance in the FMA area, and it has also been a focus of research. One major change in forest operations over the past decade has been a move to much larger planning units and single-entry harvest areas to approximate the patterns of natural disturbance. Historically, there have been many small wildfires and a few large ones across the landscape, with the large wildfires accounting for most of the total hectares burned. As a result, harvest block size has been made more variable and under the FMP can include blocks as large as approximately 500 hectares, which would also include significant areas of retained structure. However, the average harvest block size declined from 25 hectares in 2011–2015 to 21 hectares in 2016–2020.

Table 3. 2015–2020 Al-Pac harvest blocks (hectares)

Average harvest block size	21
Largest block	552
Smallest block	<1.0
Number of blocks	1,848
Total hectares	37,068

Note: Includes both deciduous and coniferous harvest

The retention of trees as structure in harvest blocks has also been altered due to natural disturbance research. Initially, many single trees were retained, but research has shown that it is more effective to retain clumps of trees. Structure retention is discussed in the VOIT 10 section of this report.

Reforestation Standard of Alberta: https://open.alberta.ca/dataset/f8b19d0a-4d8a-45ca-b904-11a19a207cf4/resource/f6967592-ff68-4f68-9093-85a2df704e62/download/af-reforestation-standard-alberta-2020-05.pdf

Economic and Social Context

The following is an overview of some of the factors affecting the economic and social sustainability of forest operations in Al-Pac's FMA area.

Since the late 1990s, the economy of the FMA area has been growing rapidly due to expansion of the oil sands industry. This activity slowed somewhat after the deep recession in 2008 and especially following the steep decline in oil prices since 2014. The oil sands industry created economic benefits for many people living in northeastern Alberta; it also created challenges for forest management and forest companies. In addition, conifer operations were affected at times by the exchange rate of the Canadian dollar, fluctuating demand for lumber and panelboard, effects of the U.S.–Canada softwood lumber agreement, and high operating costs in northeastern Alberta. Some of these factors also affected Al-Pac, though less severely than the lumber and panelboard operations.

Forest clearing for oil sands expansion (mines, in-situ developments, plants, roads, wells, pipelines, seismic cutlines, power lines, camps, housing, etc.) created short-term fibre supply for the forest companies but removed significant forested areas from the landscape. Under the Land-Use Framework and the *Alberta Land Stewardship Act*, additional areas of forest have been protected for social or environmental reasons. Over the next 20 to 60 years, conifer operations may face reduced timber supply in any case due to the need to maintain all age classes across the landscape and a short-term regeneration gap. Al-Pac may face increased transportation costs as increased harvesting occurs in parts of the FMA area that are more distant from the mill.

Integrated Land Management (ILM) agreements between Al-Pac and energy companies have helped to reduce the costs and maximize the benefits from industrial activity in and near the FMA area. Benefits include short-term fibre supply for the forest companies, reducing the loss of productive forest, and avoiding duplication of road construction. Sales of roads and landscape data to energy companies have also produced revenues for Al-Pac. The company has supported research and development on reclamation of industrially disturbed sites so that they can be returned to productive forest as rapidly and effectively as possible after activity ceases.

Figure 5. FMA area fibre flow

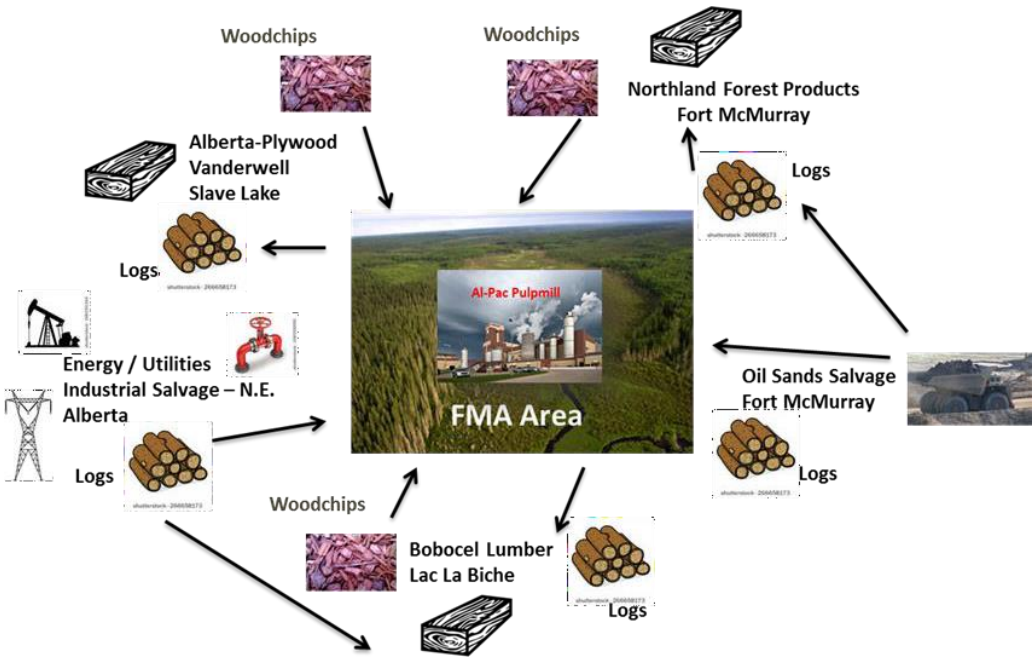


Figure 5 illustrates fibre-trading arrangements among forest companies; the arrangements are designed to obtain maximum value from each cubic metre of harvested wood.

Economic Sustainability

Al-Pac makes substantial contributions to the economic and social well-being of northeastern Alberta. This is where most team members and contractors live, where most goods and services are purchased, and where company contributions and volunteerism are concentrated. The other forest companies have smaller, though significant, socio-economic impacts in their areas.

Al-Pac is thoroughly integrated into the social fabric of northeastern Alberta and in Athabasca County, where the mill is located and the majority of team members reside. Other team members and contractors live in adjacent Lac La Biche County to the east. Al-Pac purchases more than $100 million in Alberta goods and services annually, mainly in the nearby region. The company's direct community investment is also focused in the region. The community investment strategy focuses on four key investment areas, and these areas guide decisions about the projects selected for participation and support:

1. **Educational programs** – Community-based programs and awards that address educational initiatives, given the company's dependency on the skilled workforce required to meet business objectives in the years ahead
2. **Environmental programs** – Programs that encourage sustainability, habitat conservation, environmental education, and community environmental responsibility
3. **Health and wellness programs** – Initiatives that promote healthy lifestyles through education and prevention
4. **Cultural programs** – Non-exclusive activities that promote effective relationship building through cultural awareness activities; this includes Indigenous and non-Indigenous activities

In 2011, Al-Pac introduced its Community Enhancement Program. The program supports projects that include, but are not limited to, small-scale, non-profit facility upgrades, expansion, and developments in northeast Alberta. Recipients included community and school groups, a seniors' association, a library, and two fire departments. A complete list appears on page 12 of the 2018 *Socio-Economic Indicator Report*, available on the Al-Pac website under "Other Reports."*

Elsewhere in the FMA area, forest operations and transportation have some socio-economic effects, but they are difficult to discern because the energy sector is many times larger than forestry in northeastern Alberta, whether measured by employment, investment, or revenues. Al-Pac research indicates that the energy sector is the dominant socio-economic factor in most of the FMA area.

Social Sustainability

"Social licence" is essential for any activity involving public lands and resources. Government approval constitutes one form of social licence, whether for forestry and energy sector operations, hunting and fishing, trapping, or recreational uses. That approval is generally based on public engagement, stakeholder involvement, Indigenous consultation, and a judgment that the activity is in the public interest. (One definition of public interest is that Albertans are better off with the activity than without it.) As part of its approval for forest management, the government also requires certain forms of Indigenous consultation and stakeholder engagement, including forums such as the LAG, community meetings, and dissemination of public information such as the company's forestry plans.

Beyond government requirements, Al-Pac undertakes a variety of initiatives to validate and enhance the social sustainability of forest management. Al-Pac's sustainable forest management certification by the FSC recognizes the company's community engagement and Indigenous commitments and consultation, as well as environmental performance.

* Al-Pac – Corporate Reports: https://alpac.ca/our-roots/corporate-documents/

Other forest companies in the area receive public input by participating in the LAG and consulting with people directly affected by their operations.

Al-Pac complies with *Alberta's First Nations Consultation Guidelines on Land Management and Resource Development* and demonstrates its commitment to Indigenous communities through ongoing consultation, employment, economic development, and education partnerships that provide lasting benefits. In 2007, the company adopted an Indigenous Relations Strategy that focuses on four key areas: economic development and partnerships; employment and training; education and consultation; and traditional use of land, forests, and cultural sites. Since 2006, Al-Pac has been awarded a Gold Level certification in Progressive Aboriginal Relations (PAR), a national initiative that recognizes commitment to increasing Indigenous employment, assisting in business development, building individual capacity, and enhancing community relations.

Integrating Values

Sustainability and the public interest are often difficult to determine because many costs and benefits cannot be measured in dollars and cents. Moreover, there may be conflicts and trade-offs among economic, environmental, and social objectives, so they need to be weighed and judged together as well as individually. If there are negative effects, are they temporary or permanent? Are there alternative approaches or ways to reduce impacts?

Summer harvesting provides an example of how economic, environmental, and social values are integrated. The majority of Al-Pac's logging and trucking activities occur when the ground is frozen. This minimizes disturbances that can affect soils and watersheds. Winter operations reduce soil compaction that prevents the natural regeneration of aspen and balsam poplar. However, about one-third of the harvest takes place during the frost-free months for various social and economic reasons. Year-round operations maintain the flow of timber to the mill, make efficient use of roads and equipment, and provide economic security and social stability for contractors and their communities. As a result, some compaction and disturbance inevitably occurs, and Al-Pac continues to develop ways to reduce and remediate the effects.

Another example of an integration challenge is access management. There are instances where biodiversity and other objectives could be met most effectively by blocking or limiting access to sensitive areas. However, this is not practical in many parts of the FMA area due to relatively flat terrain, nor could closures be enforced effectively in such a large area. Because hunting and fishing are such a large part of Indigenous and non-Indigenous culture and lifestyle in the region, it would also be difficult to devise socially acceptable access control in much of the area.

Research and Development

Since its inception, Al-Pac has supported scientific research in various areas of forest ecology and the effects of logging and other industrial activities on the forest. These efforts to support research have influences that cover a wide range of people and researchers, with one of the effects being potential changes to forest management plans and activities. The indicator for research and development identified in the previous socio-economic reporting tracked research dollars and the organizations supported.

Al-Pac continues to invest company resources in the development and implementation of research projects to enhance understanding of the boreal forest system and its processes. Although research is a primary means to address knowledge gaps, Al-Pac also strives to "learn while doing" in an adaptive management (AM) approach.

Adaptive management is a way of testing assumptions based on forecasting anticipated outcomes relative to objectives and then measuring actual responses. Responses are interpreted in terms of the effectiveness of a given practice to reach the desired outcome. If the desired outcome is not attained, then Al-Pac adjusts planning and/or practices, and repeats the implementation and monitoring stages again—i.e., learning while doing.

Most research initiatives are undertaken in collaboration or partnership with other agencies and other forest companies, although several research initiatives have been funded directly and solely by Al-Pac. The participants include federal and provincial governments, other forest industry companies, Indigenous peoples, universities,

conservation agencies, and other resource sectors. Active collaborations have been undertaken relative to caribou conservation, integrated land management, natural disturbance patterns, operational research, and biodiversity.

Collaboration on research projects and the application of research results to the development of integrated land management (ILM) practices is needed to maintain or restore biodiversity and forest health. The potential for the implementation of new practices is much higher if they are developed collaboratively by academia, government, and industry. In addition, transfer of knowledge across resource sectors promotes ILM implementation by enhancing each sector's understanding of the other industries' planning and operational practices and regulatory frameworks. Collaborations are also useful within and across academic institutions and government agencies.

The Al-Pac research and development initiatives listed below provide an overview of Al-Pac's research topics.

Projects and associated research collaborators supported by Al-Pac during 2015–2020:

- **Science solutions for protecting and restoring ecological integrity of fragmented in-situ oil sands landscapes**

  Canadian Forest Service, Northern Forestry Centre, Cenovus Energy, Imperial, Conoco-Philips, Al-Pac, Canadian Oil Sands Innovation Alliance (COSIA), University of Alberta, Government of Alberta, Alberta Innovates

- **Healthy Landscapes Program**

  Foothills Research Institute, Bandiloop Consulting (Dr. David Andison), Weyerhaeuser Canada, Canadian Forest Products, West Fraser, Alberta Newsprint Company, Daishowa-Marubeni International Inc., LP Building Products, Government of NWT, Government of Alberta, Government of Saskatchewan, Ainsworth, Mistik Management Ltd.

- **Regional Industry Caribou Collaboration (RICC)**

  Devon Canada, Cenovus Energy, Imperial, Meg Energy, Canadian Natural Resources Ltd., Canadian Oil Sands Innovation Alliance (COSIA), Athabasca Oil Sands, Al-Pac

- **Alberta Biodiversity Conservation Chairs Program (2013–2018) (Dr. Stan Boutin, Dr. Scott Nielsen, Dr. Erin Bayne)**

  Partners include GoA Environment and Parks, Alberta Innovates, Canadian Oil Sands Innovation Alliance (COSIA), University of Alberta, National Science Engineering Research Council (NSERC)

- **Boreal Ecosystem Recovery and Assessment Project (BERA)**

  Partners include University of Calgary, Greg McDermid, and others; also Canadian Forest Service, Cenovus Energy, Conoco-Philips Canada, Al-Pac

- **Avian Research**

  Al-Pac, University of Alberta, Dr. Erin Bayne, Canadian Wildlife Service, Dr. Fiona Schmiegelow

- **Forest Management and Wetland Stewardship Initiative**

  Partners include Ducks Unlimited Canada, Weyerhaeuser Canada, Canadian Forest Products Ltd., Daishowa-Marubini International, West Fraser Timber

- **Biodiversity Monitoring**

  Alberta Biodiversity Monitoring Institute (ABMI)

- **Integrated Landscape Management**

  Partners include Cenovus, JACO, Devon, Meg, Husky, Imperial, CNRL, Nexon, Statoil, Suncor, University of Alberta, Wilfrid Laurier University

- **Tree Improvement Industrial Research Chair**

  University of Alberta

Regulatory Compliance

Government agencies regulate virtually every aspect of Al-Pac's operations. Compliance with regulations is a primary requirement for team members and contractors. Government inspections and internal audits provide further verification that high standards are being met. Voluntary certifications provide additional verification of performance.

There was only one forestry infraction that resulted in a compliance penalty during the 2015–2020 period. Multiple skid crossings within an ephemeral watercourse in 2016 resulted in damage to vegetation in the buffer area of the watercourse, and this led to a $650 penalty assessed in 2017.

Al-Pac also received warning letters, but no penalty, regarding two occurrences. One involved roading in a riparian area and the related water crossing (2017). The other warning involved erosion control and deleterious material on a site (2018).

Certifications

Forest Stewardship Council

A team of third-party experts has regularly audited Al-Pac's forest management program since 2004. In the period 2015–2020, Al-Pac underwent annual audits and successful recertification to the Forest Stewardship Council (FSC) standard.

ISO 14001

Al-Pac participated in the ISO 14001 certification process up to 2018. The standard, ISO 14001:2004, is primarily concerned with environmental management and verifies efficient and effective management of processes that affect the environment. Al-Pac dropped this program when the ISO certification was no longer required for another third-party forest management accreditation process. Al-Pac continues to support FSC as its third-party accreditation process.

Progressive Aboriginal Relations (PAR)

Progressive Aboriginal Relations (PAR) is an identifying hallmark indicating that a business is committed to increasing Indigenous employment, assisting business development, building individual capacity, and enhancing community relations. Al-Pac supports and is currently certified to a PAR Gold level. PAR is a program of the Canadian Council for Aboriginal Business (www.ccab.com).

Partners in Injury Reduction (PIR)

Partners in Injury Reduction (PIR) is a program of the Workers' Compensation Board, Alberta Human Services, and the Alberta Safety Council to increase safety awareness and reduce accidents. Al-Pac continues to be certified to the PIR standard.

Partnerships IN INJURY REDUCTION

Developments Affecting Forest Management Planning

Wildfires

Horse River Wildfire

In May 2016, a major wildfire began near the Horse River in the Fort McMurray area and eventually affected approximately 585,000 hectares of FMA area forest extending from the Athabasca River to the Saskatchewan border.

About one-fifth of the burned area had been classified as merchantable forest and would have contributed to the calculation of annual allowable cut (AAC). Removal of merchantable areas from the FMU net landbases results in a reduction in the AAC for all three FMUs (A15, A14, and L11)—see VOITs 7 and 30 discussion in this report. The burned area will nevertheless continue to contribute to non-timber values such as wildlife habitat. As the burn areas regenerate, they will again contribute to the vegetation inventory.

Horse River (Fort McMurray) Wildfire – May 2016

McMillan Complex Wildfire

The McMillan Complex wildfire in May 2019 affected about 274,000 hectares in the Slave Lake area, including about 255,000 hectares in Al-Pac's FMA area as of October 31, 2019.

About one-third of the burned area had been classified as merchantable forest and would have contributed to the AAC. Removal of merchantable areas from the FMU net landbases results in a reduction in the AAC for two FMUs (S11, S18)—see VOITs 7 and 30 in this report. The burned area will nevertheless continue to contribute to non-timber values such as wildlife habitat. As the burn areas regenerate, they will again contribute to the vegetation inventory.

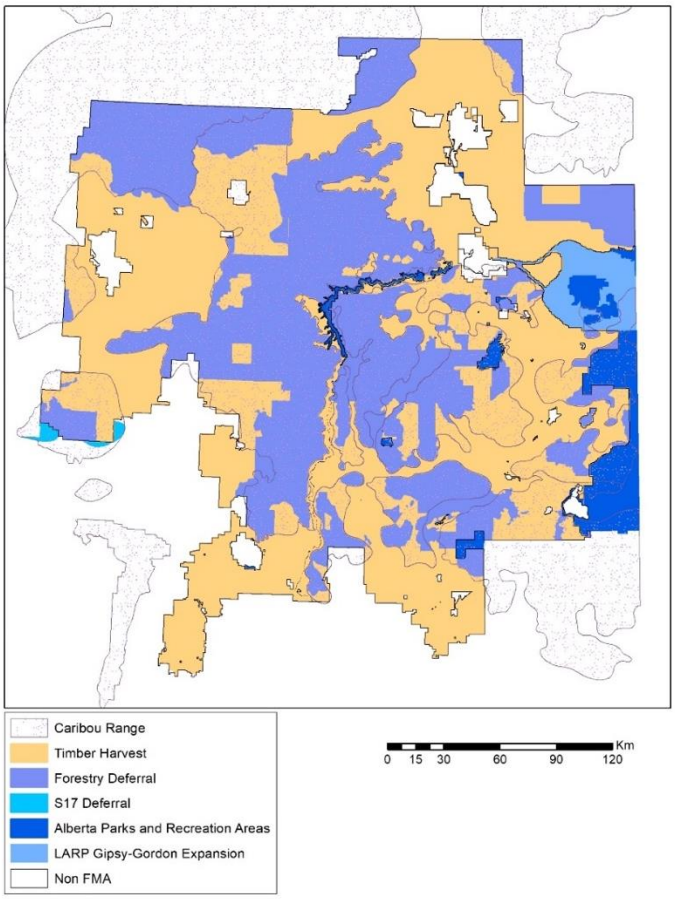
Caribou Initiatives

The Government of Alberta (GoA) has chosen to meet requirements outlined by the federal *Species at Risk Act* (SARA) and the federal recovery strategy by developing subregional plans that will include caribou range and action planning processes. In 2019, Al-Pac was invited to participate on the multi-stakeholder Cold Lake Sub-regional Task Force. Recommendations from the task force were finalized in April 2020 and submitted to the GoA. One of the recommendations was to implement ecosystem-based management for forestry through the implementation of an aggregated harvest strategy. GoA completed a draft plan for the Cold Lake subregion in December 2020. Plan completion is expected in 2021.

In October 2020, GoA and Environment and Climate Change Canada (ECCC) signed an Agreement for the Conservation and Recovery of the Woodland Caribou in Alberta, under Section 11 of the federal *Species at Risk Act.* The Agreement sets out a schedule for conservation activities over the next five years, including a schedule for developing range plans, as well as harvest scheduling within caribou ranges. Al-Pac remains prepared to participate in future GoA-led processes as they are initiated for other caribou ranges within the FMA area in accordance with this Agreement.

Al-Pac's 2015 *Forest Management Plan* includes a zonation approach to forest management within caribou range that delineates significant areas as "caribou deferrals" in which no harvest will occur in the next 20 years. This approach created a spatial-temporal window of opportunity for GoA-led range planning to occur. Because these deferral areas are incorporated into the FMP, they also apply to all embedded quota holders. The caribou strategies in the Al-Pac FMP may be amended following government direction through GoA range plans or other directives. The deferrals are shown in Figure 6.

Figure 6. Caribou harvest deferrals within the Al-Pac FMA area



Through the Cold Lake subregional planning process, a more detailed, long-term (i.e., 100 years) approach to forest management within caribou range is being developed in collaboration with the GoA. From August 2019 through October 2020, Al-Pac ecologists and planners collaborated with GoA staff and ForCorp to develop the forestry harvest strategy for the Cold Lake caribou range and the Christina herd range. The objective of this approach is to aggregate harvest in time and space within caribou range in order to minimize the extent and duration of forestry footprint and access. To accomplish this, the team partitioned caribou range into sequencing units, with units delineated to capture as much same-age timber as possible while respecting patterns of caribou space use and movement. Each sequencing unit is scheduled for harvest in a given decade from now to year 100; once a unit is entered, all harvest is to be completed, and then access removed. The subsequent unit can only be entered once harvest is complete in the first unit. Decades were assigned to achieve timber objectives while staying out of areas of high caribou use for the first approximately five decades. Decade 1 units are generally aligned with Period 1 spatial harvest sequence (SHS). Some units with small amounts of timber and high caribou use were deferred for the duration of the range plan.

As caribou range planning rolls out across the province, adjustments may be done simultaneously because multiple ranges overlap multiple Al-Pac FMA area FMUs, and decisions in one caribou range will reduce the solution space in other ranges that intersect the same FMUs.

Al-Pac participated in restoration activities through a number of collaborative partnerships, including through the Regional Industry Caribou Collaboration (RICC), as well as through our regular operations that require restoration of Class IV roads and seismic lines situated within harvest areas (OGR 9.6).

In terms of monitoring caribou population dynamics, Al-Pac relies upon the Government of Alberta's well-established monitoring program. Al-Pac has a data-sharing agreement with the GoA and receives semi-annual updates of radio telemetry locations of collared caribou.

Al-Pac has a long history of participation and leadership on regional, provincial, and national caribou working groups. Al-Pac participated in the caribou conservation planning activities of the GoA-led Sub-regional Caribou Task Force.

Al-Pac also supports and participates in the government-industry Alberta Regional Caribou Knowledge Partnership (ARCKP), a knowledge-sharing collaboration committed to finding on-the-ground solutions that balance forestry activities with woodland caribou conservation.

C. Mandatory Reporting

Non-VOIT Mandatory Components

Alberta Forest Management Planning Standard
Interpretative Bulletin Stewardship Reporting Requirements

Non-VOIT Mandatory Components – Al-Pac FMA Area

Within the Al-Pac FMA area stewardship report, six mandatory components assess performance indicators and provide information on the ongoing implementation of the VOITs (Values, Objectives, Indicators, and Targets) in Al-Pac's Forest Management Plan (FMP). Al-Pac's FMP did not include two other GoA mandatory components: FMA area-specific VOITs and FGRMS* requirements. The non-VOIT mandatory components are:

1. Review and status of 2015 FMP Approval Decision conditions
2. FMA area Specific Management Objectives
3. FMP spatial harvest sequence (SHS) variance assessment
4. Landbase changes
5. AAC review
6. Growth and Yield program maintenance
7. Seed availability and usage
8. FGRMS reporting

1. 2015 Al-Pac FMA Area Forest Management Plan Approval Decision Conditions: Review and Status

The 2015 FMP was approved by GoA on May 17, 2018. Fourteen conditions were listed in the decision that the forest companies were obliged to meet. These conditions were a combination of reporting on current programs and the preparation of new data or models to meet other conditions. Al-Pac has met all the conditions to-date. Table 4 details the approval condition and status, and also provides comments on the condition.

Table 4. 2015 Forest Management Plan – GoA conditions and Al-Pac response

#	Condition	Particulars	Status / Response
1.1	Public Consultation	Maintain efforts to conduct meaningful public engagement. This is an ongoing program.	Al-Pac is engaged in reasonable and ongoing public engagement related to all of its forest planning documents and exercises. Documentation of these activities is available upon request. Within this *Stewardship Report*, VOIT 36 details activities for public engagement.

* FGRMS – Forest Genetic Resource Management and Conservation Standards (GoA, 2009) – Conifer reforestation program element.

1.2	Indigenous Consultation	Remain in alignment with GoA's current Indigenous Consultation policy. This is an ongoing program.	Al-Pac continues to meet and adhere to the current policy and guidelines related to all of its forest planning documents and exercises. VOIT 35 in this report describes activities for Indigenous Consultation.
2.1 i	FMP Integration with Regional Plans – Lower Athabasca Regional Plan (LARP)	GoA will initiate discussions on the review and potential implementation schedule of LARP/LUF strategies for the Lower Athabasca, Lower Peace, and North Saskatchewan zones.	The FMA area exists within three LUF regional planning zones. Al-Pac is awaiting GoA required amendments to the FMP based on regional land use and integrated resources management plans. To date, GoA has not required nor requested changes to the FMP.
2.1 ii	FMP Integration with Regional Plans – GoA Caribou Range Planning	When applicable, Al-Pac FMA area FMP's preferred forest management scenario (PFMS) and spatial harvest sequence (SHS) to be aligned with range plan(s). The FMA area is overlapped by six caribou ranges. This is an ongoing program.	Ongoing program with GoA – Alberta Environment and Parks (AEP). Al-Pac continues to participate in GoA-led range-planning programs. Al-Pac has "signed off" on the Cold Lake plan (2020). To date, the Cold Lake plan has not resulted in any changes to the Al-Pac FMP. Al-Pac is awaiting future direction from AEP and Alberta Agriculture and Forestry (AAF) on implementation into PFMS and the 2025 FMP (see VOIT 14).
3.0	Forest Health	Respond to GoA requirements to reduce overall susceptibility of the future forests due to insects, disease, and noxious weeds. This is an ongoing program.	Forest companies have not received specific GoA guidelines toward forest health. Program is status quo in the FMA area. To date, the mountain pine beetle has not been a serious threat to pine-growing stock in the FMA area; susceptible jack pine stands were addressed in the approved SHS (see VOIT 23).
4.0 i–ix	Spatial Harvest Sequence (SHS)	Al-Pac and QHs committed to proposed SHS with associated monitoring. This is an ongoing program.	SHS adherence and variance reporting is *Stewardship Report* Mandatory Component 3.
5.0	Stand-Level Structure Retention	Tenure holders to adhere to stand structure retention targets and monitoring. This is an ongoing program.	See VOIT 10 in this stewardship report; Al-Pac program target is 5 percent average stand level structure retention.
6.0	Growth and Yield	Updated Growth and Yield (G&Y) plan and update on progress to date.	Al-Pac FMA Area Growth and Yield Strategy submitted to GoA December 2018; approved by GoA February 2019. Monitoring of the G&Y program is *Stewardship Report* Mandatory Component 5.

7.0	Surface Mineable Area (SMA) in Forest Management Unit A15	SMA operations to be incorporated into the Operating Ground Rules (OGRs)	Approved *Northeast Alberta OGRs* – 12.0 SMA Guidelines. Incorporated into current OGRs – November 2018.
8.0	Old Forest Area Sensitivity Analysis	TSA sensitivity analysis within each FMU on old forest stands (>120 years)	Al-Pac prepared complete TSA sensitivity analysis on 12 FMUs – November 2017. Reviewed and approved by GoA in November 2018. (Report is available upon request.)
9.0	FMU S14 Sensitivity Analysis	Update approved 2015 S14 TSA to account for previous quadrant's (2010–2014) "unused coniferous volume"	Al-Pac prepared new S14 TSA and submitted to GoA– QIII 2017. Reviewed and approved by GoA in November 2018. (Report is available upon request.)
10.0 i	Compartment Delineation for FMP Implementation Tracking and Stewardship Reporting	For FMUs A14, A15, L3, L11, S18, and S22 – split FMUs into compartments between 50,000 and 200,000 hectares. FMUs S23, L2, L1, L8, S14, and S11 are 2–3 compartments per FMU.	FMU compartment map completed by Al-Pac QI 2018. Reviewed and approved by GoA November 2018. Compartments utilized for reporting to Mandatory Component 3.
10.0 ii	Compartment Delineation Inputted into Strata Description Tables (SDT)	Final compartments to be utilized for SHS variance tracking	Compartments utilized for Mandatory Component 3. Al-Pac reported on 34 compartments for this reporting period.
11.0	Seed Collection	All forest companies to submit an updated seed collection plan	Al-Pac and QHs submitted seed collection plans in 2018. Reviewed and approved by GoA – November 2018. Seed collection plan is *Stewardship Report* Mandatory Component 7.
12.0	Delivered Timber Volume Monitoring and Reporting Program	Program required to compare delivered merchantable timber volumes to harvested area yield forecasts.	Program developed and Year I delivered to GoA – November 2019. Approved by GoA January 2020. *Stewardship Report* Mandatory Component 5.
13.0	Timber Harvest Planning and Operating Ground Rules	GoA, Al-Pac, and QHs to complete negotiations to update the current OGRs	GoA completed negotiations and prepared new OGRs for Northeast Alberta – November 2018.
14.0	Performance Monitoring and Reporting	Al-Pac and QHs to prepare and submit to GoA a stewardship report that adheres to the GoA "interpretive bulletin"	*Stewardship Report* for the period May 2015 – April 2020; submitted to GoA May 2021. *Stewardship Report* for the period May 2021–April 2025; to be prepared and submitted in association with the 2025 FMP.
15.0	Future Al-Pac FMA Area Forest Management Plan	The forest companies shall submit a new forest management plan by May 2025.	Plan to be prepared that adheres to the GoA *Forest Management Planning Standard* (FMPS).

2. FMA Area Specific Management Objectives (VOITs)

The 36 VOITs developed for the Al-Pac FMA area Forest Management Plan (FMP) were based on the six criteria outlined by the Canadian Council of Forest Ministers (CCFM) that cover a range of socio-economic and environmental values within the context of sustainable forest management (SFM). Al-Pac did not add any FMA area-specific management objectives to the 36 CCFM indicators. The six criteria are as follows:

1. Biological Diversity – 18 VOITs
2. Ecosystem Productivity – 5 VOITs
3. Soil and Water – 4 VOITs
4. Global Ecological Cycles – 2 VOITs
5. Multiple Benefits to Society – 5 VOITs
6. Accepting Societies Responsibility for Sustainable Development – 2 VOITs

3. FMP Spatial Harvest Sequence (SHS) Variance Assessment

The spatial harvest sequence (SHS) outlines the implementation strategy of the preferred forest management scenario (PFMS) from the timber supply analysis of the approved 2015 Al-Pac FMA area forest management plan (FMP) to achieve the forecasted future forest conditions.

The SHS presents spatially and temporally the forest companies' harvest block footprint for the FMA area. Harvest area deviations from the 20-year SHS (Periods 1 and 2) could prevent the FMP from achieving its forecasted outcomes and may adversely impact the non-timber assumptions identified in the plan.

Adherence to the 20-year SHS is tracked according to the approved 2018 *Northeast Alberta Operating Ground Rules* (OGRs) for Forest Harvest Plan (FHP) submissions. Annual variances to the SHS are reported in the *General Development Plan* (GDP)* for planned and harvested activities.

SHS variance is classified into one of three categories—Additions, Deletions, or Deferrals—based on OGR definitions and tracked for all nine yield strata identified in the timber supply analysis; Al-Pac does not utilize yield strata black spruce (Fair/Medium) – Sb-F/M. Appendix I provides detailed reports of the SHS variance for Al-Pac's 34 FMA area compartments. Other FMA area compartments that were not operated within the period are not included in the appendix.

Al-Pac attempts to consistently follow the SHS during the reporting period. In this period, there are a few FMA area compartments where the SHS variance for additions exceeds 20 percent when calculated against the SHS. Within the FMP, Chapter 4 – Section 1.4 provides 17 rationales for variance formulation. The primary rationale being that the FMA area AVI inventory is aging and does not precisely reflect the actual polygon forest cover composition and associated forecasted volume.

The primary reason for two compartments (see Appendix I – S11-A and A14B) with a reported huge variance is related to harvest blocks being implemented within the reporting period, which had actually been planned subsequent to the SHS approval. Both these compartments were approved by GoA.

* The *General Development Plan* can be found on the Al-Pac website: https://alpac.ca/our-roots/corporate-documents/

4. Landbase Changes

Over time, the Al-Pac FMA area has continually shrunk due to landbase deletions from anthropogenic activities and removal of areas by GoA for other values (e.g., parks and Land Use Framework deletions). The cumulative impact of these factors can negatively affect the timber harvesting landbase and the associated annual allowable cut (AAC).

Every 10 years, a landbase netdown is performed that provides an accounting of the FMA area into 31 categories. For the 2015 FMP, the FMA area had a gross area of 7.2 million hectares (the outside perimeter). The final four categories are the forest's major strata of the TSA, constituting 24 percent of the gross area. The current legal area of the FMA area is 6,223,500 hectares. This number is less than the gross area due to reductions for other legal areas, LARP protected areas, First Nations reserves, provincial parks, municipal land (e.g., Fort McMurray), the Surface Mineable Area (SMA), and other anthropogenic sites (e.g., SAGD sites, pipelines, power lines). A new landbase netdown (NLB) is planned for 2023 in association with the next FMP. A significant addition to this NLB will be the inclusion of new Alberta Vegetation Inventory (AVI) for the majority of the FMA area.

For the five-year reporting period, there were numerous landbase withdrawals due to anthropogenic activities and the creation of a new park, partially within FMU A15. Table 5 illustrates the major disposition depletions for the period QII 2015–QII 2020. This represents 0.24 percent of the legal FMA area landbase.

Additionally, two huge wildfires in the FMA area "changed" the NLB metrics. The 2016 Horse River wildfire (585,000 ha)[*] and the 2019 McMillian Complex wildfire (255,000 ha) transferred approximately 14 percent of the FMA area into "Burned Area" NLB status; these cannot contribute to the FMA area growing stock account until re-inventoried. Both fires resulted in GoA proactive negative changes to the approved AAC in FMUs S18, S11, L11, A14, and A15. Neither fire decreased the gross FMA area.

Table 5. Summary of landbase changes to the Al-Pac FMA area (hectares)

Description	Area (hectares)
Gross FMA area – May 1, 2015	6,237,150
Anthropogenic dispositions	15,058
Area back into FMA area	1,458
Gross FMA area – April 30, 2020	6,223,500

Source: Al-Pac, 2020

[*] The Horse River (Fort McMurray) wildfire was a "last-minute" deletion to the final approved FMP's Patchworks TSA modelling landbase and outputs. The FMP was submitted to GoA in QII 2017 and received final GoA approval in May 2018. This timing allowed Al-Pac to remove the Horse River burn area from the Patchworks modelling net landbase.

5. AAC Review

Al-Pac monitors the forecasted annual allowable cut (AAC) yield vis-à-vis the delivered volume. This is done through an analysis of the TSA's forecast by species (D and C aggregate strata) of the cubic metres per hectare for the actual spatial harvest sequence (SHS) blocks for a given year, compared to the delivered volume from harvested blocks. In 2019 (as per FMP approval condition 12), Al-Pac developed a "Delivered Timber Volume Monitoring and Reporting Program" that prepared the analytics required to formulate annual comparative summaries for timber years 2016 to 2020.

For the forecasted block information, the process uses the assigned landbase stratum for each harvest block and the age of the harvest block based on the AVI and SHS. Projected volume is derived from the associated yield curve from the TSA. The delivered volumes are based on individual harvest block volumes from delivered mill records.

Table 6 illustrates the average yield per hectare for the two main cover groups, deciduous and conifer. Thus, the associated metrics are merely comparing forecasted yields versus actuals. Annual allowable cut (AAC) is the volumetric sum of all SHS polygons by stratum for a given year from the 10-year TSA period. The approved AAC is the average volume per year based on the 70-year patchworks TSA appraisal. AAC assessment (cut control) is provided yearly in the forest companies' General Development Plans (GDPs).

Table 6. Forecasted vs. actual volume review – Deciduous and conifer cover groups (cubic metres per hectare)

Year m^3/ha	Conifer		Incidental Deciduous	
	Projected / Forecasted Volume	Delivered Volume	Projected / Forecasted	Delivered Volume
2016	n/a	n/a	n/a	n/a
2017	n/a	n/a	n/a	n/a
2018	n/a	n/a	n/a	n/a
2019	136.8	142.6	77.4	107.4
2020	139.0	108.0	100.9	133.9

Year m^3/ha	Deciduous		Incidental Conifer	
	Projected / Forecasted Volume	Delivered Volume	Projected / Forecasted Volume	Delivered Volume
2016	199.0	241.2	14.6	25.5
2017	189.1	253.3	18.4	30.6
2018	192.4	218.2	41.8	32.5
2019	194.8	226.6	14.0	27.7
2020	185.0	218.0	24.4	32.9

6. Growth and Yield Program Maintenance

The Al-Pac Growth and Yield Program (GYP) was approved by GoA in February 2019. The general framework and requirements for the GYP follow the GoA's design from their Growth and Yield Guidelines Series in the document titled "Growth and Yield Programs" (GoA 2016).

The Al-Pac GYP addresses three primary strategic elements:

1. Growth modelling
2. Yield curve development for the FMP
3. Performance monitoring

The strategic elements, target populations and associated objectives have determined the scope, sampling design, and intensity of the data collection programs for the FMA area.

The Al-Pac FMA area harvestable landbase forest can be divided into two main populations: natural (fire-origin) stands and managed (post-harvest regenerated) openings. There are six groups of managed openings that can be differentiated by stand type, operator and silviculture era as shown below (Figure 7).

Figure 7. Growth and Yield Strategy Matrix

<table>
<tr><th colspan="5">OPENING TYPES BY DECLARATION, OPERATOR AND SILVICULTURE ERA</th></tr>
<tr><th rowspan="2">Stand Type</th><th rowspan="2">Responsibility</th><th colspan="4">1995 2006 2015 2025</th></tr>
<tr><td colspan="4">REFORESTATION CLOCK START*</td></tr>
<tr><td rowspan="2">C, CD,DC</td><td>Alberta-Pacific</td><td rowspan="2">PRE-1995 OPENINGS</td><td>MANUAL TENDING</td><td>LATE JUVENILE SPRAYING</td><td>EARLY JUVENILE SPRAYING</td></tr>
<tr><td>Quota Holders</td><td colspan="3">EARLY JUVENILE SPRAYING</td></tr>
<tr><td>D</td><td>Alberta-Pacific</td><td colspan="4">DECIDUOUS-DECLARED OPENINGS</td></tr>
<tr><td>UP</td><td>All</td><td colspan="2">N/A</td><td colspan="2">HIGH-EFFORT STRIP CUT UNDERSTORY PROTECTION</td></tr>
<tr><td colspan="6">* Note that some reforestation clock start cutoff dates are approximate as not all openings received the treatment. Openings will be assigned a specific group based on the actual treatments they received.</td></tr>
</table>

A condensed summary of the Al-Pac growth and yield program is provided below:

- Al-Pac is working toward contributing 175 permanent sample plots (PSPs)—75 natural stand PSPs and 100 managed stand PSPs—to the Provincial Growth and Yield Initiative (PGYI) for the development and recalibration of a new provincial growth model.
- The program has retained 75 non-PGYI PSPs in natural stands. These plots are located in mature stands and measured on a 10-year cycle. The last measurement of all natural PSPs collected no later than three years prior to FMP submission may be used in the yield estimation or as an independent data set for validation. The non-PGYI plots provide a source for replacement of PGYI plots that have been destroyed (see below).
- Al-Pac has standardized digital data collection using tablets and data collection software to be compatible with the PGYI standard. This has allowed Al-Pac to streamline the yearly PGYI data submission process.
- Continuing to collect temporary sample plot (TSP) data in natural stands for FMP yield curve development. Al-Pac is working toward the establishment of 1,500 plots across the FMA area using stratified random sampling following the "rolling" Alberta Vegetation Inventory (AVI) to achieve a balanced sample of target stand types. Plots have been established within two years of the AVI photos in each FMU. The new completed AVI will be used to assess plot distributions by strata and "top up" the number of plots in the FMU.
- Al-Pac has created an integrated Reforestation Standard of Alberta (RSA) database for all Al-Pac's performance-surveyed openings since 2010. New survey data will be added yearly. About 6,000 ha of RSA performance survey data have been gathered to date (total does not include harvest blocks and has been reconciled with the Alberta Regeneration Information System (ARIS) records). Upward of 40,000 ha of RSA performance surveys are expected by 2025; these do not include hectares lost due to wildfire and industrial land use.
- For the reporting period, there have been 25 new managed-stand PSPs established in ground-sampled SUs following the RSA performance survey of Al-Pac openings. These post-RSA plots will be remeasured on a five-year cycle until they reach 30 years stand age and on a 10-year cycle afterwards.
- There are currently 80 high-effort strip cut understorey protection (SCUP) PSPs in 20 Al-Pac harvest blocks that are remeasured on a five-year cycle by the Forest Growth Organization of Western Canada (FGROW). There are also five existing understorey PSPs following the outmoded ASRD protocols and six new SCUP PSPs established between 2015–2017 that are maintained by Al-Pac. Another two to four new SCUP plots per year may be established by Al-Pac before 2024.
- To-date, two Al-Pac SCUP plots have been remeasured. The data may be used to calibrate the University of Alberta Mixedwood Growth Model (MGM).
- All 80 FGROW SCUP plots were remeasured in the 2018–2020 field season.
- Al-Pac is also an active member of the Forest Growth Organization of Western Canada (FGROW). Al-Pac continues to work with FGROW to shape the vision for growth and yield in Alberta.
- Al-Pac has been an active member of Western Boreal Growth and Yield (WESBOGY) since 1994 and has two full research installations in FMU L1. WESBOGY is now a working group within FGROW.

Growth and Yield Plan (GYP) – Guiding Principles

A set of guiding principles provides structure for the objectives of the Al-Pac GYP through all program phases, including sampling design, plot establishment and data collection, analysis, and reporting. The GYP is designed so that it will:

Be fiscally responsible:

- Utilize existing G&Y programs and data to reduce overall costs.
- Acknowledge that access considerations will be an integral part of the development of a cost-efficient program due to the size of the FMA area.
- Collect only the necessary data to maintain cost-effectiveness.
- Simplify data collection protocols whenever possible.
- Use RSA performance survey data as an important component of the program.
- Continue to evaluate opportunities to utilize emerging technologies such as LiDAR and other remote sensing methods that have the potential for long-term cost savings.

Be scientifically defensible:

- Develop an objective-driven sampling design.
- Calculate a sample size that is sufficient to meet program objectives.
- Collect unbiased, local, representative data for the target populations.
- Aim for the highest possible data quality.

Be efficient:

- Build upon existing data collection systems and data format standards.
- Participate in the Provincial Growth and Yield Initiative (PGYI) for growth model development.
- Focus data collection on local, representative TSPs for natural stand yield curve development.
- Design sampling programs that represent the target population over time.
- Apply a sampling design that allows for the timely accumulation of data.
- Facilitate continuous improvement of the programs.
- Use spatially explicit data systems for referencing and analysis.

Be consistent:

- Align GYP objectives with assumptions made in the timber supply analysis.
- Stabilize plot configuration and data collection protocols for the FMP cycle.
- Use generally accepted protocols during data compilation and analysis.

Table 7. Abbreviations used in this section

Aw	Aspen
AwU	Aspen with a Conifer Understorey
AwSx	Aspen Leading Mixedwood
SxAw	White Spruce Leading Mixedwood
Sw	White Spruce
SbG	Black Spruce – Good Site
SbF/M	Black Spruce – Fair / Medium Site
PjMx	Jack Pine Mixedwood
Pj	Jack Pine
Hw	Hardwood
HwPl	Hardwood / Pine Mixedwood
HwSx	Hardwood Leading Mixedwood
SwHw	Softwood Leading Mixedwood
Pl	Pine
Sb	Black Spruce
NSR	Not-Satisfactorily Reforested
LBH	Lower Boreal Highlands
CMW	Central Mixedwood
tbd	To be determined

Natural Stands – PSPs

Al-Pac has contributed 75 natural stand PSPs to PGYI (Table 7). All historic measurements were converted to the PGYI format and submitted to the PGYI database in April 2018. Al-Pac used the GoA-approved conversion for historic tree condition codes.

Table 8. Current PGYI plot allocation in natural stands in the Al-Pac FMA area (blank cells are null)

NSR Group	Stratum	Age Class						Target
		0–30	31–60	61–90	91–120	121+	Have	
LBH	1_Hw		1	3	1		**5**	5
	2_HwPl			1			**1**	1
	5_PlHw			2			**2**	2
	7_Sw					2	**2**	2
	8_Pl			1			**1**	1
	9_Sb			1	1	1	**3**	3
LBH Total		***0***	***1***	***8***	***2***	***3***	***14***	***14***
CMW	1_Hw		10	7	8	3	**28**	28
	2_HwPl		1			1	**2**	2
	3_HwSx	1	1	2		1	**5**	5
	4_SwHw		3		2	1	**6**	6
	5_PlHw			1			**1**	1
	7_Sw	1		1	2	4	**8**	8
	8_Pl		2	3	1		**6**	6
	9_Sb			3	1	1	**5**	5
CMW Total		***2***	***17***	***17***	***14***	***11***	***61***	***61***
Grand Total		***2***	***18***	***25***	***16***	***14***	***75***	***75***

Managed Stands – PSPs

Al-Pac has contributed 86 managed stand PSPs to PGYI (Table 8) to-date. All historic measurements were converted to the PGYI format and submitted to the PGYI database in April 2018.

Al-Pac established 25 new PGYI plots during the reporting period and is working toward provision of the required 100 plots by 2025 or earlier. The managed stand PGYI plots present a number of challenges regarding plot allocation by natural subregion, stratification, and linkages to silviculture treatment.

Stratum assignment for PGYI is based on the ground-observed basal area proportions. Although this may be useful for growth modelling in mature natural stands, it may not be as meaningful in managed stands where density or stocking would have likely been a more meaningful measure for stratum assignment. Using the ground-based measurements for stratification presents a challenge for planning purposes as the actual stratum (ground-observed) cannot be guaranteed.

Al-Pac's managed stand PSP program establishes new plots in openings scheduled for an RSA performance survey. The planned stratum is based on the RSA aerial survey stratum call.

Current Status – PSP Program Maintenance – Natural and Managed Stands

Al-Pac currently has 234 active natural stand PSPs in the FMA area. There are approximately 75 plots maintained for PGYI purposes and 161 non-PGYI natural stand plots. Al-Pac has lost 106 out of the 340 natural stand PSPs since the 1994 inception of the program due to natural and humanmade disturbances, as well as landbase deletions in the 2015 FMP. There was a considerable amount of investment made in the collection of these data without much return. Al-Pac continues to maintain this program, which contributes to an extensive PSP database that can be used for future growth and yield developments.

During the reporting period (plus the summer of 2020), the following PSP program was inputted and maintained; see Table 9.

Table 9. Al-Pac FMA area PSP establishment and remeasurement

Year	PSP Establishment		PSP Re-Measurement	
	Natural Stands	Managed Stands	Natural Stands	Managed Stands
Planned				
2015	0	5	6	8
2016	0	5	10	14
2017	0	5	15	17
2018	0	5	16	4
2019	0	5	31	13
2020	0	5	23	7
Actual				
2015	0	4	6	8
2016	0	5	10	14
2017	0	5	14	17
2018	0	5	16	4
2019	0	6	26	13
2020	0	9	23	8

Of the 95 natural stand plots that were remeasured in the six years, five were found to have been destroyed by wildfire. The six plots that were “missed” were due to access challenges primarily caused by seasonal high water and flooding; these plots are planned to be visited in 2021 or 2022.

Current Status / Maintenance – High-Effort Understorey Protection PSPs

Understorey protection (UP) stands involve a specialized method of harvesting (High-Effort Understorey Protection; see VOIT 19), also referred to as a strip-cut harvesting approach—removal of both conifer and deciduous in strips to form extraction trails, removal of deciduous on either side of each extraction trail to release understorey conifers, and retention of a deciduous buffer between reach areas to minimize windthrow of the remaining conifers.

The method of strip-cut harvesting in understorey protection blocks results in relatively complex spatial patterns and generally discrete yield strata within openings. Due to the complexity of stand structures, Al-Pac has installed, throughout the FMA area, six strip-cut understorey protection (SCUP) PSPs and five PSPs using a former GoA protocol.

There are three types of PSP installations in high-effort SCUP openings in the Al-Pac FMA area:

- 80 SCUP PSPs in 14 openings maintained by FGROW
  - Al-Pac is a founding member of FGROW.
  - All 80 plots were remeasured by FGROW in the period 2018–2020
- Five old-protocol PSPs in five openings maintained by Al-Pac – established in 2002
  - Al-Pac remeasured all five plots in 2018.
- Six SCUP PSPs in six openings maintained by Al-Pac
  - The SCUP program for the reporting period (plus summer 2020) is presented in Table 10

Table 10. SCUP PSP installations

Year	Establishment	Remeasurement
	DU Stands	SCUP Plots
2015	2	0
2016	2	0
2017	2	0
2018	0	0
2019	0	0
2020	0	2

All the SCUP plots should support the utilization of the Mixedwood Growth Model (MGM) in the 2025 FMP; MGM is a deterministic, distance-independent, individual tree growth model developed by the University of Alberta. MGM is designed to model complex, multi-species, multi-cohort stands, which is well suited for growth and yield projections of UP openings. Depending on the availability of suitable strip harvest areas, the SCUP program could result in over 100 understorey protection plots throughout the FMA area by 2025.

Current Status / Maintenance – Temporary Sample Plot (TSP) Program

Al-Pac has been focused on establishing TSPs in natural stands for the 2025 FMP. The plots serve several purposes: ground truthing the new inventory, data for landbase monitoring, as well as data for model initialization for FMP yield curve development. Al-Pac installed 768 TSPs in the reporting period, 128 percent of the five-year TSP target. See Table 11 for a summary of TSPs by the nine strata.

Al-Pac also initiated a FRIAA program* in 2019 that installed 1,543 TSPs throughout the southern and eastern portions of the FMA area. These plots also assist in ground truthing the new inventory, data for landbase monitoring as well as excellent data for revitalisation of Al-Pac's local yield strata table for operational planning. The FRIAA TSP program is illustrated in Table 12.

* FRIAA Project; AL-PAC-030 – "Understanding the Ecosystem through Supplemental FMA Area Forest Sampling"

Table 11. Natural stand TSPs 2016–2020 – Yield stratum

Year	2016	2017	2018	2019	2020
Aw	13	4	9	30	69
AwU	40	110	3	67	12
AwSx	15	12	48	2	6
SxAw	16	8	21	0	3
Sw	38	27	37	0	3
SbG	5	3	19	0	12
SbF/M	0	2	6	0	0
PjMx	2	0	25	0	3
Pj	14	35	25	0	12
tbd	4	6	2	0	0
Total	**147**	**207**	**195**	**99**	**120**

Table 12. FRIAA TSP program

Year	2019	2020
Aw	69	128
AwU	103	239
AwSx	46	117
SxAw	29	112
Sw	52	268
SbG	20	14
SbF/M	17	40
PjMx	25	33
Pj	90	119
tbd	5	17
Total	**456**	**1087**

7. Al-Pac Seed Availability and Usage

Al-Pac maintains an inventory of forest tree seed to be used for silviculture purposes in future harvest blocks. All forest seed may be acquired through three different means: 1) collection of "wild" seed from within the FMA area; 2) Purchase of "wild" seed from QHs from sources within the FMA area; and 3) Purchase of "Steam 2" improved conifer seed from GoA. Al-Pac does not have a deciduous or conifer CPP program. Table 13 details the Al-Pac seed program to date (QI 2021) and illustrates Al-Pac's seed inventory and usage report for the reporting period.

Table 13. Al-Pac seed inventory and usage

Alberta-Pacific Seed Requirements / Inventory - April, 2021

Al-Pac				
	ALPAC Estimates updatedApril, 2021			
Seed zone or breeding region	Seed inventory (kg)	# of sdlgs produced with current inventory	Area planted with current inventory* (ha)	Area to be cut in next 10 years (ha)
White Spruce				
CM2.1	24.08	10,978,358	6,861	164
CM2.2	30.87	7,045,746	4,404	4,391
CM2.3	148.18	19,554,091	12,221	0
CM2.4	328.06	46,812,486	29,258	2,600
CM3.1	29.19	6,938,819	4,337	2,194
CM3.2	364.36	83,699,655	52,312	0
DM2.2	77.02	17,119,609	10,700	0
LBH1.3	170.47	37,567,997	23,480	760
LBH1.5	30.87	8,291,956	5,182	647
LF1.5	8.23	2,023,531	1,265	0
Black Spruce				
CM2.2				75
CM2.4	5.88	2,710,863	1,694	244
CM3.1	8.40	2,897,517	1,811	552
CM3.2	0.97	446,279	279	0
LBH1.5	1.16	981,538	613	354
Jack Pine				
CM2.1	4.08	559,988	350	126
CM2.2	13.82	1,781,064	1,113	440
CM2.4	17.17	1,642,226	1,026	63
CM3.1	16.39	2,147,865	1,342	1,806
CM3.2	14.03	2,242,445	1,402	0
LBH1.3			0	7
LBH1.5	69.29	9,810,581	6,132	1,851
* Planting density of 1600 seedlings/ha used. Changed from 1400 stems/ha in original submission				

8. FGRMS Reporting

Al-Pac has a limited conifer regeneration program on the FMA area: approximately 3.26 million trees planted on 2,400 hectares within the reporting period (2015–2020, including the 2020 program) (see VOIT 19). Al-Pac does not have a conifer CPP for its silviculture program (see VOIT 17). The majority of the conifer reforestation program (>95 percent) is with white spruce seedlings utilizing "Stream 2" seeds for Region E and D1. All "Stream 2" seeds are purchased from GoA. A limited number of jack pine are planted within the FMA area; these seedlings utilize wild seed from various seed zones throughout the FMA area. Seed deployment by harvest block and area is provided to GoA through annual Alberta Regeneration Information System (ARIS) reporting.

D. Values, Objectives, Indicators, and Targets (VOITs)

Chapter 5 of the 2015 Al-Pac *Forest Management Plan* (FMP) describes 36 VOITs that comprise the strategies for implementing and monitoring the plan. The following section reports 2015–2020 performance based on the VOITs.

The Government of Alberta (GoA) stewardship reporting requirements guided the layout of this section. The GoA requirements distinguish between "dynamic" VOITs (based on measurable performance indicators) and "modelled" VOITs that apply to predicted or future performance. The latter VOITs utilize landscape models developed for the 10-year FMP and are generally not revisited during the five-year stewardship reporting period. The GoA does not require reporting on the modelled VOITs, but Al-Pac has opted to summarize them and note any relevant changes that may have occurred.

Table 14 on the following pages provides a summary of Al-Pac's VOITs (modelled and dynamic) and a brief status report.[*] Appendix II of this report also provides independent VOIT and mandatory component updates from four active FMA area conifer quota holders (QHs). Al-Pac did not prepare the QH information.

VOITs are arranged according to the six Canadian Council of Forest Ministers (CCFM) Criteria, as in Chapter 5 of the 2015 Al-Pac *Forest Management Plan*. Each VOIT is also referenced to the 13 elements of CAN/CSA Z809, the Canadian Standards Association (CSA) Sustainable Forest Management (SFM) Standard.[†]

- Criterion 1: Biological Diversity – VOITs 1–18 (four elements)
- Criterion 2: Ecosystem Productivity – VOITs 19–23 (one element)
- Criterion 3: Soil and Water Resources – VOITs 24–27 (two elements)
- Criterion 4: Global Ecological Cycles – VOITs 28–29 (two elements)[‡]
- Criterion 5: Multiple Benefits to Society – VOITs 30–34 (two elements)
- Criterion 6: Accepting Society's Responsibility for Sustainable Development – VOITs 35–36 (two elements)

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[*] Abbreviations, acronyms, and special terms used in the summary table and throughout VOIT reporting:
AAC: annual allowable cut
AOP: AOP roads are temporary access to forestry sites, designated in the *Annual Operating Plan*
C and D MAI: C (conifer) and D (deciduous) mean annual increment (MAI)
CPP: Controlled Parentage Program
DLO: "Department License of Occupation" Alberta Environment and Parks (AEP) approved road dispositions
ECA: "Equivalent Clear-Cut Assessment" model used to forecast impact of timber harvesting on water yield
FGRMS: *Alberta Forest Genetic Resource Management and Conservation Standards*, 2016
FMUs: the 12 Forest Management Units within the Al-Pac FMA area
ILM: Integrated Land Management
LRSYA: long-run sustained yield average
OGRs: *Northeast Alberta Timber Harvest Planning and Operating Ground Rules*, revised effective October 31, 2018: https://open.alberta.ca/publications/northeast-alberta-operating-ground-rules
Quadrant: Five years; i.e., one-quarter of the 20-year span of the forest management agreement (FMA)
TDA: timber damage assessment – Merchantable standing timber landbase values assessments for Al-Pac and GoA. Hectare values as per GoA TDA tables. The withdrawal and TDA process is articulated in the Al-Pac FMA – Section 6 (1–10).

[†] The CAN/CSA Z809 SFM Standard was used as the basis for the Alberta Forest Management Planning Standard. More about the CSA standard can be found at https://www.csasfmforests.ca/

[‡] The GoA does not require stewardship reporting for Criterion 4 elements, which are summarized in this report for informational purposes only.

Table 14. 2015 Al-Pac FMA area Forest Management Plan VOIT summary table

VOIT #	Value	FMP Objective	VOIT Description	VOIT Type	Current Status
1	Maintain biodiversity – Area of old, mature, and young forest by FMA area subunit by cover class	1.1.1.1	Area of old, mature, and young forest in the FMA area by cover class	M	Pending inventory and analysis for the 2025 *Forest Management Plan*
2	Maintain biodiversity – Range of patch sizes by subunit and the entire FMA area	1.1.1.2a	Range of patch sizes on the FMA area	M	Pending inventory and analysis for the 2025 *Forest Management Plan*
3	Maintain biodiversity – Area of interior forest of each cover class by subunit and FMA area	1.1.1.2b	Area of old interior forest of each cover class on the FMA area	M	Pending inventory and analysis for the 2025 *Forest Management Plan*
4	Open all-weather forestry road linear disturbance within the FMA area	1.1.1.3a	Open all-weather (DLO) forestry road kilometres in the FMA area	D	Achieved
5	Open seasonal / temporary forestry road length within the FMA area	1.1.1.3b	Open seasonal / temporary (AOP) forestry road length in the FMA area	D	Achieved
6	Maintain occurrence or area of identified uncommon plant communities	1.1.1.4	Maintained area or occurrence of each identified uncommon plant community within the FMA area	D	Achieved
7	Maintain unique habitats created by wildfire and natural disturbance events	1.1.1.5a	Area unsalvaged in burned forest	D	Achieved
8	Maintain unique habitats through unsalvaged blowdown	1.1.1.5b	Area of unsalvaged blowdown forest	D	Achieved
9	Retain ecological values and functions associated with riparian areas	1.1.1.6	Compliance with OGRs for riparian zones	D	Achieved with one infraction
10	Retain stand-level structure	1.1.2.1a	% area or volume of merchantable (living and dead) structure retained coniferous/deciduous by the FMA area subunit (FMU)	D	FMA area average of 4.71 percent was slightly below target, but there was considerable variation among FMUs—seven did not meet the five-year average target; mitigation measures are underway in the 2020–2025 period
11	Retain downed woody debris	1.1.2.1b	% of harvest areas where post-harvest CWD levels are equal to or greater than pre-harvest levels	D	Achieved
12	Maintain integrity of sensitive sites	1.1.2.2	Area (ha) of sensitive sites maintained by type	D	Achieved

13	Maintain aquatic biodiversity by minimizing impacts of watercourse crossing	1.1.2.3	Report non-compliance incidents Report number, type, and status of watercourse crossings	D	Achieved
14	Maintain high-value species habitat – woodland caribou	1.2.1.1	Area (ha) of woodland caribou habitat, actual versus projected	M	Pending new forest inventory (Alberta Vegetation Inventory or AVI) and timber supply analysis for the 2025 Al-Pac FMA area *Forest Management Plan*
15	Maintain high-value species habitat – trumpeter swan	1.2.1.1	Maintenance of OGR buffer on selected water bodies	M	Pending new forest inventory and timber supply analysis for 2025 Al-Pac FMA area *Forest Management Plan*
16	Retain wild forest populations for native species – genetic diversity (in-situ reserves – CPP)	1.3.1.1	Number of genetic conservation sites established by seed zone compared to required sites per seed zone	D	Al-Pac has not implemented a conifer CPP
17	Retain wild forest genetic resources – genetic diversity (ex-situ conservation – CPP)	1.3.1.2	Report on status of CPP	D	Al-Pac has terminated the Balsam Poplar CPP
18	Integrate trans-boundary values and objectives – protected areas consultation	1.4.1.1	Name of protected area, level of protection, stakeholders contacted, issues discussed, resolution	D	Pending next FMP
19	Reforestation – all harvest areas	2.1.1.1a	% of satisfactorily reforested harvest areas by year	D	Achieved
20	Reforestation – meet or exceed MAI standard for harvest areas (openings)	2.1.1.1b	Cumulative % of area of harvest areas meeting reforestation standards	D	Achieved
21	Limit conversion of productive forest landbase by other users	2.1.2.1	Number of ha and % (expressed as a % of net landbase) changing or converted to other uses or returned to productive landbase	D	Ongoing monitoring through the TDA process
22	Recognize lands affected by Insect, disease, and natural calamities	2.1.2.2	Number of ha affected, number of ha treated	D	Ongoing program
23	Control non-invasive, non-native plant species	2.1.3.1	Number of ha affected, number of ha treated	D	Achieved
24	Minimize impact of roading and bared areas in operations; OGRs compliance	3.1.1.1	Number and nature of incidents	D	Achieved
25	Minimize incidence of soil erosion and slumping; OGRs compliance	3.1.1.2	Number and nature of incidents	D	Achieved (with two warnings received)
26	Limit impacts of timber harvesting on water yield	3.2.1.1	Forecast impact of timber harvesting on water yield	M	Pending 2025 *Forest Management Plan* and new ECA outputs

27	Minimize impacts of operations in riparian areas; OGRs compliance	3.2.2.1	Riparian buffers maintained as outlined in OGR	D	One infraction
28	Forest management and the carbon budget and cycle	4.1.1.1	Based on direction from GoA; this VOIT was n/a in the FMP	M	Not required
29	Forest management and global ecological cycles	4.2.1.1	Based on direction from GoA; this VOIT was n/a in the FMP	M	Not required
30	Sustainable timber supply (establish appropriate AACs)	5.1.1.1	Report on between plan recalculation or adjustment to AAC, % change by species	M	Pending next *Forest Management Plan*
31	Reduce wildfire threat potential through community protection and reduction in landscape fuels	5.2.1.1 a	Number of hectares rated Extreme or High fire behaviour Number and type of treatments within identified Community Protection Zones Number and type of treatments within DFA	D	VOIT has been met – no FireSmart Community Zones were identified
32	Reduce wildfire threat potential – through community protection, and reduction in landscape fuels	5.2.1.1 b	GoA Landscape Wildfire Threat Assessment – FMA area	M	Pending next Al-Pac FMA area *Forest Management Plan*
33	Integrate other users and timber management activities	5.2.2.1	Number of consultations, forums, and values discussed, how issues addressed; ILM agreements; Data share agreements; Industrial salvage volumes	D	Ongoing program
34	Maintain the long-run sustained yield average (LRSYA)	5.2.3.1	Current Information versus that of the FMP calculation	M	Pending next *Forest Management Plan* – 2025
35	Implement the Indigenous consultation plan	6.1.1.1	Number of consultations, forums, and values discussed, how issues addressed	D	Achieved – Ongoing program
36	Implement a Community Engagement Plan	6.2.1.1	Number of consultations, forums, and values discussed, how issues addressed; satisfaction rating	D	Achieved – Continuing engagement through the Landscape Advisory Group (LAG) and other activities (e.g., 1-800 phone line, website)

VOIT 1 – MODELLED – Area of old, mature, and young forest in the FMA area by cover class (1.1.1.1)

CCFM Criterion 1 – Biological Diversity

CSA SFM Element – 1.1 Ecosystem Diversity: Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that occur naturally in the FMA area

Value	1.1.1 Landscape-scale biodiversity
Objective	1.1.1.1 Maintain biodiversity by retaining the full range of cover types and seral stages
Type of VOIT	Modelled
Indicator	Area and distribution of species and age classes
Target	Over the 200-year planning horizon: On the gross landbase, the old forest will be forecasted to be within the +/– 25 percent of the mean natural range of variability (NRV) for four strata (mixedwood, hardwood, jack pine, and black spruce) in three FMA area zones [West (FMUs S14,S22, S18, S11), East (A15, A14, L11, L3), and South (S23, L2, L8, L1)].
Acceptable Variance	Between 25th and 75th percentile of NRV for old forest
Status	Pending inventory and analysis for 2025 *Forest Management Plan*

Al-Pac's strategy for meeting this objective is based on maintaining the distribution of species and age classes, including old forest, within the natural range of variability that would have existed historically in the landscape due to cycles of wildfire and other disturbance. Research[*] established NRVs used in the 2015 *Forest Management Plan*.

During the 2015–2020 period, the distribution would have changed mainly due to two large wildfires as well as continuing anthropogenic disturbance. These will be considered in the new analysis and inventory for the 2025 forest management plan.

Within the boreal forest, "old" or overmature forest stands have unique structural attributes and ecological processes. The key structures of old stands develop over time due to the mortality of individual trees, not age per se. The deaths of individual trees lead to gaps in the forest canopy. Direct sunlight in these gaps then contributes to the growth of herbaceous plants and the "release" of immature trees that had been growing slowly in the understorey. Additionally, the older stands in boreal forests gradually accumulate an abundance of snags and downed woody debris that result in a high level of structural diversity.

Old-forest stands are defined as the overmature seral stage of the boreal forest. Different stand types develop old-forest characteristics at different ages. Additionally, the aging process is usually a slow and gradual process, but for this timber supply analysis (TSA) modelling, precise (e.g., 80 years old for deciduous) old-forest commencement ages were utilized for the various stand types.

In general terms, the complex structure of old stands provides a large variety of habitat types for use by species with specialized habitat requirements. Within the FMA area, the distribution and total area of old-forest stands have varied and will continue to vary through time. Old-forest stands are dependent on the occurrence and development of different forest cover types, the selection of stands for harvest, human-caused disturbances, and, primarily, unpredictable natural disturbances such as fire, insects, disease, and wind.

[*] Dr. D. Andison. 2015. Modelling Historical Landscape Patterns on the Alberta-Pacific FMA Area, 2015 FMP Chapter 5, Appendix 2.

The consequence is that boreal forest structure, forest stand ages, and forest stand size are not stationary but vary widely through time and space. Thus, a lack of change or a stationary balance of age classes within the forest would not be consistent with ecological forest management based on the natural disturbance model. The variation inherent in natural patterns forms the basis for future older forest retention strategies.

In the FMA area, old-forest stands are found frequently in small, isolated patches remaining after a natural disturbance and also in large patches that have escaped disturbance. Fire is by far the most common type of natural disturbance. The resulting old-forest stand pattern is highly variable across the FMA area landscape. Individual old-forest stands are not permanent features of the boreal forest.

Although there is always some amount of old forest at the landscape or regional scale, the location and total area will change due to natural and anthropogenic disturbances such as fire and harvesting. Management for retention of old-forest stands within the FMA area must similarly incorporate shifting locations and target amounts that fall within a NRV on large landscape units. Spatially, amounts of old forest can vary from one landscape to the next.

In summary, the major NRV assumptions are as follows:

- Average fire cycle (the most critical factor) is 60 years in the FMA area boreal forest;
- Fire size is random;
- Conifer burn probability is higher than deciduous;
- Mixedwood is half as likely to burn as pine and spruce;
- The landscape is defined in four major strata: deciduous, mixedwood, black spruce, and jack pine;
- The entire forested area of the FMA area was utilized—corresponding to 5.4 million hectares within the gross FMA area (an area that can have an old-forest component);
- Topography is not a modelling factor; and
- All forest stands in the Alberta vegetation inventory database returned to their original label after the stands were disturbed.

Definitions

Forest seral stages differ for each forest type and reflect different stages in the forest stands' function and successional stage. In a timber supply analysis (TSA), seral stages are generally defined by age classes. It is this current age class situation that determines future landscape metrics within the timber supply analysis. In general, seral stages can be described by four basic forestry definitions:

Juvenile – The establishment or regeneration phase of tree growth (generally years 1–10 or 1-20)—seedlings or suckers. No merchantable volume in this stand type.

Immature – Trees or stands that have grown past the regeneration or juvenile stage but are not yet mature. The age period for this class varies by species (generally years 11–60 or 21–60). These trees are still considered non-merchantable. The stand is represented by the rapid growth segment of a yield curve.

Mature – Trees or stands that are sufficiently developed to be harvestable and that are at or near rotation age. The age period for this class varies by species (generally years 61–100 or 71–120). These stands represent the peak growth volume segment of a yield curve.

Overmature (Old Forest) – An aging stand that is past the mature stage. The age period for this class varies by species (generally greater than 100–120 years). Stands have declining growth volume rates and increased individual mortality. These stands demonstrate changes in the upper forest canopy (i.e., gap dynamics) and have an increasing recruitment of snags and downed woody debris.

VOIT 2 – MODELLED – Range of patch sizes on the FMA area (1.1.1.2A)

CCFM Criterion 1 – Biological Diversity

CSA SFM Element – 1.1 Ecosystem Diversity: Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that occur naturally in the FMA area

Value	1.1.1 Landscape-scale biodiversity
Objective	1.1.1.2 Maintain biodiversity by avoiding landscape fragmentation
Type of VOIT	Modelled
Indicator	Range of patch sizes in the FMA area
Target	A distribution of harvest area sizes that will result in a patch size pattern over the 200-year planning horizon, approximating patterns created by natural disturbance NRV analysis.
Acceptable Variance	Target range (+/– 20 percent) is achieved by year 100 in the model (as per the *Alberta Forest Management Planning Standard*)
Status	Pending inventory and analysis for 2025 *Forest Management Plan*

In the 2015–2020 period, the average Al-Pac harvest block area was 21 hectares, and the largest harvest block area was 552 hectares.

One aspect of concern in forest management planning is the spatial pattern, or patch sizes, of the future forest, where patches are contiguous stands of the same age. The distribution of forest patches tends to follow an inverse "J" curve, which aligns with fire dynamics; that is, many small disturbances and a few very large wildfire disturbances. The forest companies can only approximate the small and moderate-sized patches and cannot proceed with very large continuous patches (i.e., harvest blocks greater than about 500 hectares).

In general, a patch is defined as a single forest stand or group of stands in the same seral stage, and can further be defined in the Al-Pac FMA area by:

- Patches of mesic stands [a combination of deciduous (Aw), white spruce (Sw), and mixedwood (Mx)];
- Patches of pine (Pj) stands; and
- Patches of black spruce (Sb) stands.

A forest stand is a community of trees sufficiently uniform in species, age, arrangement, and condition, which is distinguishable as a group in the forest or other growth on the area. A harvest block is a specified area of merchantable timber with defined boundaries designated for harvest.

However, patches can be split by linear features such as roads, energy sector linear corridors, power lines, and rivers. In the first 50 years of the planning horizon in the timber supply analysis (TSA), the forest companies' activities primarily affect the forest patches of mature, overmature, and juvenile seral stages (i.e., harvest areas and reforestation of those areas).

A particular concern in the FMA area boreal forest is the maintenance of patches of mature and old interior[*] forests. Mature and old interior patches are important for some species of wildlife that prefer the interior of stands away from the effects of exterior edges.

[*] Interior forest, which can be simply defined as forest area surrounded by more forest, supports a range of plants and animals that do not thrive in forest edges or small patches (see https://www.srs.fs.usda.gov/compass/2012/10/09/interior-forest-on-the-wane-in-the-united-states/)

For all landscape metrics, discrepancies will occur when there are natural disturbance events and energy sector activities throughout the planning horizon. These events and activities will change age-class distributions and patch metrics, and they are not forecasted in the timber supply modelling environment.

The largest contiguous stands of forest patches in the FMA area are black spruce muskeg / bog ecosystems.

VOIT 3 – MODELLED – Area of old interior forest of each cover class on the FMA area (1.1.1.2B)

CCFM Criterion 1 – Biological Diversity

CSA SFM Element – 1.1 Ecosystem Diversity: Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that occur naturally in the FMA

Value	1.1.1 Landscape-scale biodiversity
Objective	1.1.1.2 Maintain biodiversity by avoiding landscape fragmentation
Type of VOIT	Modelled
Indicator	n/a
Target	A distribution of areas (patches) in the FMA area of old interior forest. Area for each of the strata: deciduous, pine, black spruce, white spruce/mixedwood. Values to be determined after spatial harvest sequence (SHS) is prepared with direction from old forest and patch NRV targets (from VOITs 1 and 2). Metrics are determined from the gross landbase.
Acceptable Variance	Old interior forest metrics maintained for at least 80 percent of the first 50 years of SHS; i.e., 10 five-year periods (as per the *Alberta Planning Standard*).
Status	Pending inventory and analysis for 2025 *Forest Management Plan*

Determination of the metrics for this VOIT has proved challenging. Wildfire and anthropogenic disturbances in the FMA area create so much variance that thus far it has not been possible to determine old interior patch characteristics in a way that would be useful for forest management.

Within the boreal forest, "old" or overmature forest stands[*] have unique structural attributes and ecological processes. The key structures of old stands develop over time due to the mortality of individual trees, not age per se. The deaths of individual trees lead to gaps in the forest canopy. Direct sunlight in these gaps then contributes to the growth of herbaceous plants and the "release" of immature trees that had been growing slowly in the understorey.

Additionally, the older stands in boreal forests gradually accumulate an abundance of snags and downed woody debris. The result is a high level of structural diversity.

Old-forest stands are defined as an overmature seral stage of the boreal forest. Different stand types develop old-forest characteristics at different ages. Additionally, the aging process is usually a slow and gradual process, but for a modelling analysis, exact old-forest commencement ages have to be utilized for the various stand types.

As stated in VOIT 2, a patch is defined as a single or group of forest stands in the same seral stage, with a discrete vegetation community or area of wildlife habitat, and can further be defined in the Al-Pac FMA area by:

- Patches of mesic stands [a combination of deciduous (Aw), white spruce (Sw), and mixedwood (Mx)];
- Patches of pine (Pj) stands;
- Patches of black spruce (Sb) stands;
- Patches can be small (e.g., two forest polygons[†]) or large (e.g., a large wildfire event like the House River burn, 248,000 hectares in 2002); and
- Patches can be amalgamations of harvest blocks, forested buffers, water bodies, non-merchantable forest stands, and muskegs.

[*] Stand: A grouping of trees with similar characteristics (such as species, age, or condition) that can be distinguished from adjacent groups. A stand is usually treated as a single unit in a management plan.

[†] A polygon, the minimum contiguous forest area used in the Alberta Vegetation Inventory (AVI), is typically about 2.0 hectares.

A specific target for old interior forests in the FMA area is not achievable by the forest companies, but continual monitoring can lead to adaptive management approaches to maintain old interior forest stands on the landscape over time. Large contiguous patches of old interior forest are difficult to maintain due to wildfires and the increasingly fragmented and intensively developed landscapes within the Al-Pac FMA area.

Old interior forest stand – Permanent sample plot (PSP) in FMU L11

VOITs 4 and 5 – DYNAMIC – Open all-weather forestry road – Linear distance in FMA area (1.1.1.3a) and Open seasonal / temporary road length in the FMA area (non-DLO roads) (1.1.1.3b)

CCFM Criterion 1 – Biological Diversity

CSA SFM Element – 1.1 Ecosystem Diversity: Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that occur naturally in the FMA area

Value	1.1.1 Landscape-scale biodiversity
Objective	*1.1.1.3a & b Maintain biodiversity by minimizing access*
Type of VOIT	Dynamic
Indicator	a – Open all-weather forestry road – linear distance in FMA area b – Open seasonal / temporary road length in the FMA area (non-DLO roads)
Target	VOIT 4 – Less than 2,500 km of open all-weather forestry road (Class I, II, and III – DLO) within the FMA area (10-year period). VOIT 5 – Less than 3,500 km of seasonal / temporary forestry roads on the FMA area annually.
Acceptable Variance	Not exceeding 20 percent of the target
Status	Both achieved

The Al-Pac FMA area forest is a busy industrial landscape primarily due to the presence of major energy sector and utility sector developments since the 1990s. Of particular significance are the activities occurring in the surface mineable area (SMA) in FMU A15 and in-situ oil developments in FMUs L3, A15, A14, S11, S22, S18, and L11.

The large cumulative footprint of private and public roads on the FMA area is not the responsibility of the forest companies, nor are the companies accountable for myriad GoA dispositions of highways, utility corridors, or energy sector roads. As such, no specific density targets for total roads are established for the FMA area. The linear targets are aligned with forest company activities. The forest companies strive to minimize the amount of road construction required to achieve an efficient and effective primary and secondary road system.

Forest company primary roads do result in a net reduction on the forest landbase and can have negative ecological consequences associated with habitat fragmentation, hydrology concerns, and increased risks of mortality to wildlife, such as collisions with vehicles, increased hunting and fishing pressure, and increased risk of predation.

Table 15 details the 2020 status of permanent roads in the FMA area as defined through Al-Pac's land use and disposition accounting process. Al-Pac attempts to digitally track all DLO dispositions in the FMA area. As can be seen in Table 15, the forest companies are responsible for about 6.6 percent of the permanent road footprint in the FMA area. Al-Pac is still committed to expanding the Trout River road in S11 and is currently completing the Seaforth road in S22—approximately 10 kilometres per year in total new construction.

In the 2015–2020 period, Al-Pac built about 50 kilometres of primary roads. This current linear aggregation is only 75 percent of the target and obviously does not exceed the accepted VOIT variance. However, the linear total is a 3 percent decrease from the 2015 metric, primarily due to other forest companies cancelling road dispositions. Figure 8 illustrates the overall roading footprint on the Al-Pac FMA area.

For VOIT 5 (seasonal and temporary roads), the target formulation is based on an equation of approximately 1 kilometre per 1,000 cubic metres (m^3) of fibre accessed by all forest companies. In the five-year reporting period, the forest companies harvested approximately 10,500,000 m^3 of primary conifer and deciduous fibre. This equates to about 10,500 kilometres of temporary road being constructed within the period.

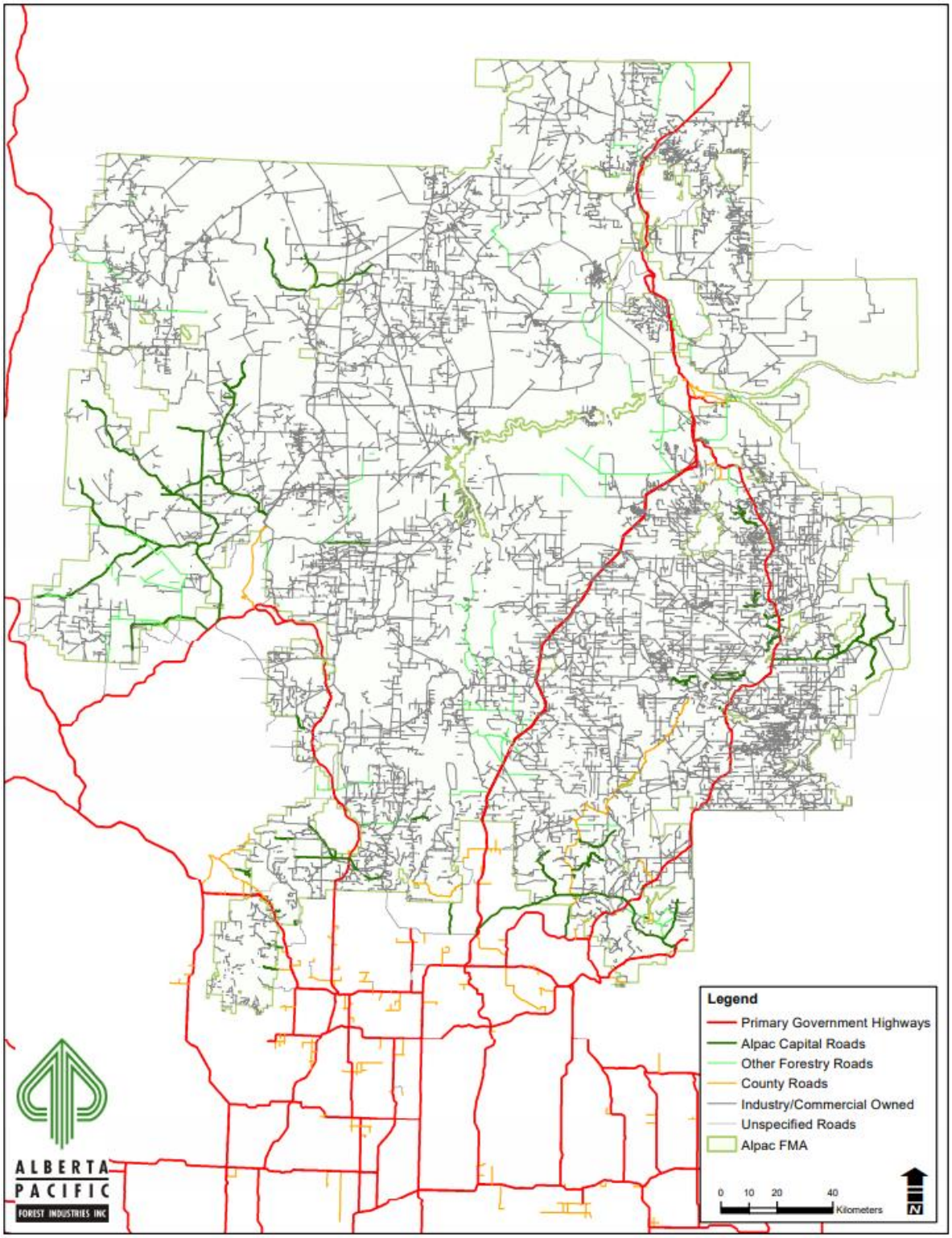
Accordingly, in this five-year period, on an annual basis, Al-Pac and the quota holders constructed approximately 2,100 kilometres of secondary roads per year to access five years of fibre from all the planning units. However, the forest companies also reclaimed the equivalent amount of said roads; this resulted in a zero-sum gain of secondary road kilometres, as required by the OGRs. The yearly average is 60 percent of the VOIT target.

Table 15. FMA area length of road by class (source: Al-Pac)

	Kilometres	**Percent**
Forest companies*	**1,880**	**6.6**
Oil and gas sector	24,186	84.3
Utilities / Other	418	1.5
Gravel operators	247	0.9
Counties / Municipalities	317	1.1
Government of Alberta	1,292	4.5
Undefined (Unnamed road)	111	0.4
Undefined (Named road)	247	0.9
Total km	**28,698**	

The following map (Figure 8) highlights the QII 2020 all-weather linear footprint on the FMA area.

Figure 8. FMA area road network



VOIT 6 – DYNAMIC – Area (hectares) and type of rare plant or community protected / ha identified for FMA area; Operate under the Alberta-approved operating ground rules (OGRs) (1.1.1.4)

CCFM Criterion 1 – Biological Diversity

CSA SFM Element – 1.1 Ecosystem Diversity: Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that occur naturally in the FMA

Value	1.1.1 Landscape-scale biodiversity
Objective	1.1.1.4 Maintain plant communities uncommon in the FMA area
Type of VOIT	Dynamic
Indicator	Area (ha) and type of rare plant or community protected/ ha identified for Al-Pac FMA area; Operate under the Alberta-approved operating ground rules (OGRs)
Target	When encountered, maintain 80 percent of the identified uncommon plant community area, for each community confirmed to exist within the FMA, as defined within the Alberta Conservation Information Management System (ACIMS).
Acceptable Variance	Target achieved during 10-year term
Status	Achieved

In 2018, the FMA area forest companies and the GoA completed and signed new sets of OGRs for the FMA area and all of northeast Alberta. All versions of the OGRs follow the provincial template for all forest operations in Alberta and are reviewed annually to meet ongoing challenges and emerging issues. All operators must meet the approved OGRs for planning, harvest and haul, and silviculture operations.

Al-Pac has been in compliance with the OGRs related to this objective.

The OGRs are available at
http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/formain15749/$FILE/ne-ab-ogr-final-oct-18.pdf

Natural ecological communities are defined as recurring assemblages of plant species, the species occurring together because they respond similarly to a variety of site attributes. The species that make up the assemblage often show an affinity or association with each other. Community types that have been described as “unusual,” “uncommon,” “of limited extent,” or “encountered infrequently” by vegetation experts are considered for inclusion on the Alberta *Ecological Community Tracking List*.

Community types that have been described as “in decline” or “threatened” by vegetation experts are also considered for inclusion. Only natural communities are considered In Alberta.[*]

Al-Pac does not commonly distinguish the rationale for the various types of buffered areas that are removed from a planning unit for non-timber values. These may include uncommon plants, sensitive sites (e.g., stick nests), historical sites, and/or traditional-use sites and areas. The buffered area (hectares) that has been removed varies widely depending on the unique ecological and social attributes of a planning unit. This removal is in addition to OGR riparian buffers. Additionally, Al-Pac, the GoA, and knowledgeable stakeholders do not wish this type of information released in the public domain because the result could be a removal of said value from the forest by unscrupulous people.

[*] Allen, L. 2014. *Introduction – Alberta Conservation Information Management System Ecological Community Tracking List*. Alberta Tourism, Parks and Recreation. Edmonton, AB.

VOIT 7 – DYNAMIC – Area of unsalvaged burned forest: Based on approved *Northeast Alberta Operating Ground Rules* and the Government of Alberta *Fire Salvage Strategy* (Directive 2007-01) (1.1.1.5a)

CCFM Criterion 1 – Biological Diversity

CSA SFM Element – 1.1 Ecosystem Diversity: Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that occur naturally in the FMA

Value	1.1.1 Landscape-scale biodiversity
Objective	1.1.1.5a Maintain unique habitats created by wildfire and natural disturbance events
Type of VOIT	Dynamic
Indicator	Area of unsalvaged burned forest: Based on approved *Northeast Alberta Operating Ground Rules* and the Government of Alberta *Fire Salvage Strategy* (Directive 2007-01)
Target	Live trees – Retain all unburned trees in green islands and retained patches recognizing timber condition, access, non-timber needs; Burned trees – Large blocks: Retain greater than 10 percent of merchantable black trees in patches greater than 100 hectares (ha); Burned trees – Small to medium blocks: Retain greater than 10 percent of merchantable black trees in patches 10 to 100 ha; and Retain greater than 5 percent of merchantable black trees in small patches, single trees according to loggers' choice.
Acceptable Variance	Target achieved during 10-year term
Status	Achieved

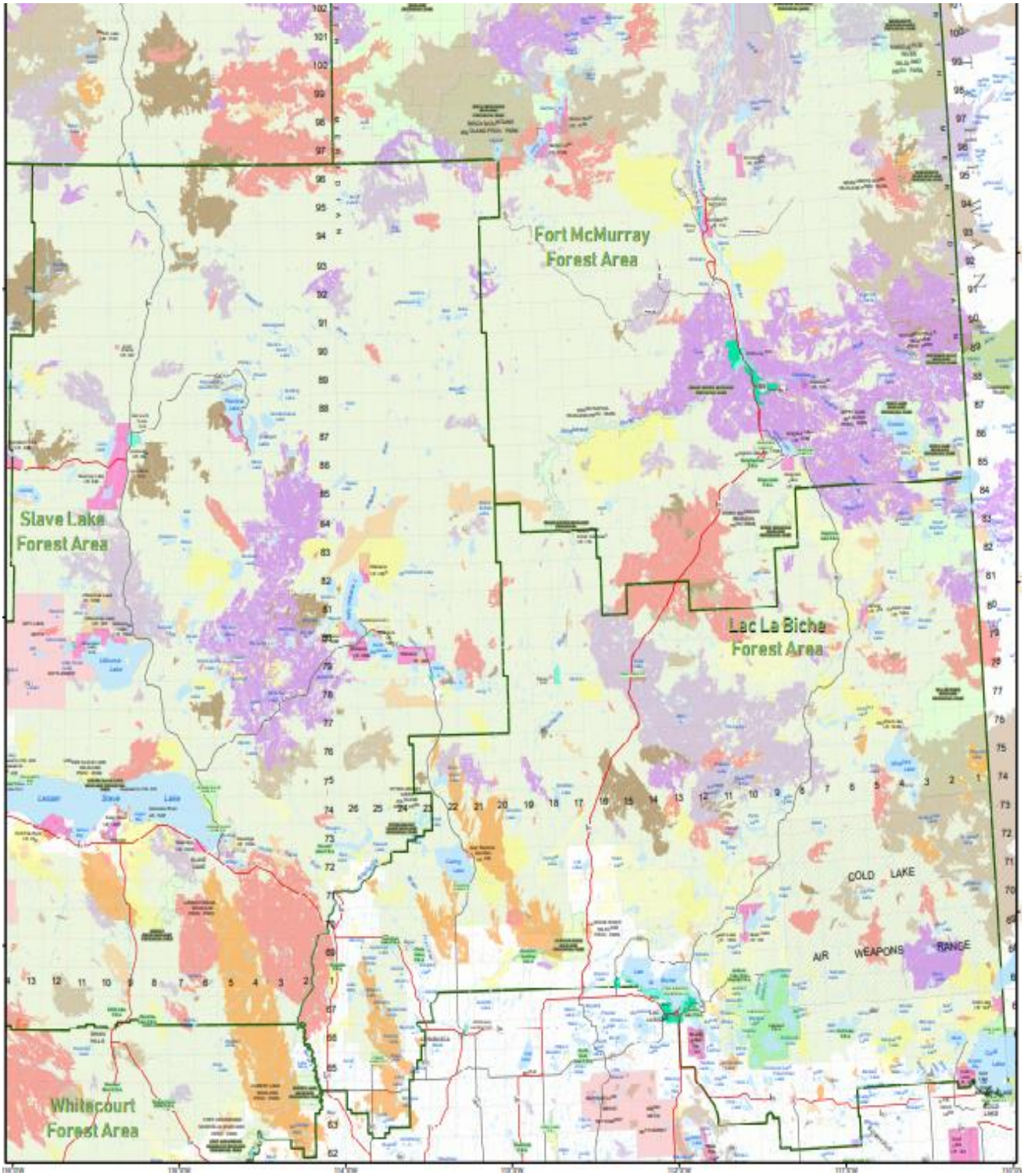
At the scale of the FMA area landscape, forest stands in the boreal mixedwood forest are arranged in a complex mosaic pattern. These patterns reflect a dynamic interplay between natural disturbance and forest succession, both of which are influenced by local site conditions. Wildfire is the dominant natural disturbance in the boreal mixedwood forest. Wildfires occur throughout the FMA and surrounding areas, and they are described according to their variations in size, intensity, temporal variation, and impact on human activities.

Forest wildfires may affect huge swathes of area and merchantable timber at any given time. In the *Forest Management Plan* (FMP), all fires less than 10 years old are treated as areas with no merchantable timber and do not contribute growing stock toward the forest companies' annual allowable cuts (AACs). Within the stewardship reporting period, two large landscape fires occurred on the FMA area, and both underwent post-fire salvage harvesting by Al-Pac and the quota holders:

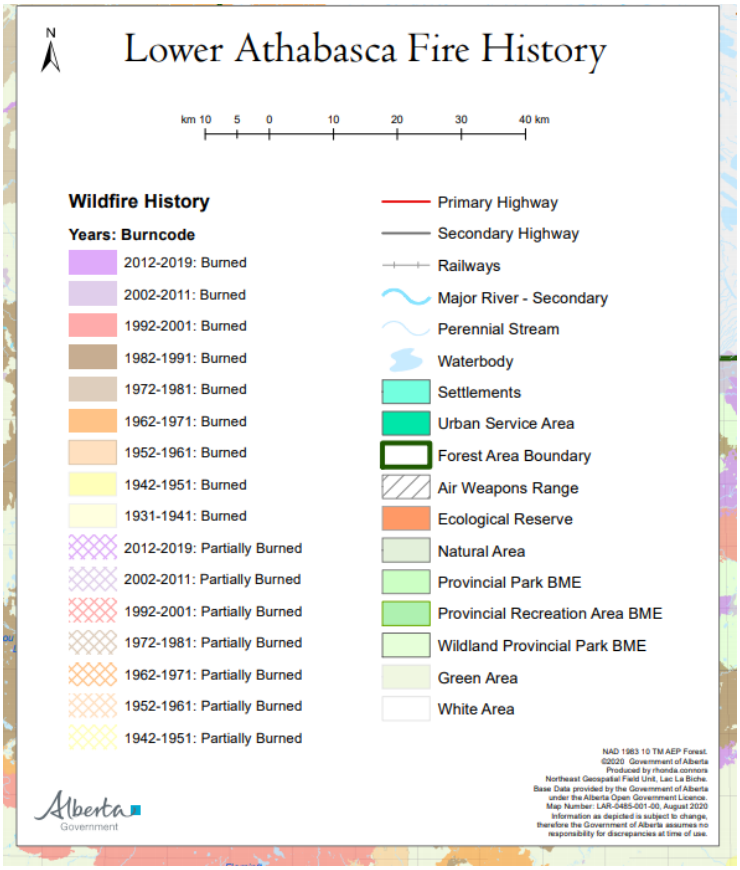
1. 2016 Horse River Wildfire (FMUs A15 / A14 / L11) – ~585,000 (gross) hectare wildfire
2. 2019 McMillan Complex Wildfire (FMUs S18 / S11) – ~255,000 (gross) hectare wildfire

Figure 9 below illustrates the current regional and FMA area fire history.

Figure 9. Al-Pac FMA area fire history, 1942–2019 (source: GoA, 2020) [see legend next page]



Legend for preceding map



For the forest companies, achieving the target involves meeting the FMA area's OGRs, which incorporate fire salvage targets for large patches and stand structure.

The OGRs are available at
http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/formain15749/$FILE/ne-ab-ogr-final-oct-18.pdf

As fire is the predominant natural disturbance in the FMA area, and since some species of plants and animals are strongly associated with post-fire environments, the forest companies recognize the need to leave some portion of the burned landscape unsalvaged. It is unclear from a scientific standpoint as to what levels of burned timber retention are necessary to maintain natural disturbance ecological elements. Timber salvaged from forest fires, blowdown, insect and disease attacks, agricultural land clearing, and industrial clearing is utilized where it is economical to do so. Al-Pac's use of fire-killed timber is limited because charred wood cannot be utilized by the pulp mill. Sawmill fibre requirements are different, resulting in increased salvage fibre utilization by these mills.

Salvage intensity of merchantable burned timber has historically varied in relation to factors such as size of fire, amount of merchantable wood that is available to salvage, distance to road infrastructure, burn intensity, and tree species. On a fire-by-fire basis, there is tremendous variation in the percentage of merchantable area planned for harvest (ranging from 10 percent to 80 percent).

Al-Pac has adopted modified harvesting techniques in burned sites, such as high stumps, to eliminate charred wood destined for the pulp mill. Table 16 illustrates wildfire metrics. Also, the company follows its typical stand structure guidelines even when harvesting in fire-salvage areas so that in-block retention is at a minimum 5 percent. Table 16 illustrates Al-Pac's past five-year natural disturbance metrics. The 2016–2017 and 2019–2020 forest company metrics are overwhelmed by the size of the two wildfires.

Table 16. Al-Pac FMA area wildfire metrics, QIII 2015–QII 2020

Year	Number of Wildfires	Total Hectares Burned	Unsalvaged Burned Areas (ha)	Burned Patches >100 ha	Burned Patches 10–100 ha	Small Burned Patches (ha)	Total Burned Area Salvaged
2016	**1**	**346,130**	**343,178.7**	**342,349**	**625**	**205**	**2,950**
2017	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2018	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2019	**1**	**156,062**	**150,583**	**149,230**	**666**	**687**	**5,479**
2020	n/a	n/a	n/a	n/a	n/a	n/a	n/a

The two large wildfires presented the opportunity for salvage volumes to Al-Pac and three conifer quota holders. These large "campaign"* wildfires burned through the entire mixedwood mosaic and affected all seral stages within the forest, including QH and Al-Pac juvenile harvest blocks. Additionally, both wildfires destroyed about 20 Al-Pac permanent sample plots (PSPs). Table 17 illustrates the Al-Pac harvest volumes that were salvaged from the two campaign wildfires: Horse River (Fort McMurray), 2016–2017, and McMillan Complex, 2019–2020.

Table 17. Al-Pac fire disturbance salvage volumes (m^3)

Year	Fire Salvage Volume – Deciduous	Fire Salvage Volume – Conifer
2016	n/a	n/a
2017	766,500	90,700
2018	n/a	n/a
2019	220,000	47,375
2020	n/a	n/a

* A campaign wildfire is one of such size, complexity, and/or priority that its extinction requires a large organization, high resource commitment, significant expenditure, and prolonged suppression activity. https://novascotia.ca/natr/forestprotection/wildfire/media-guide/glossary.asp

VOIT 8 – DYNAMIC – Area of unsalvaged blowdown forest (1.1.1.5b)

CCFM Criterion 1 – Biological Diversity

CSA SFM Element – 1.1 Ecosystem Diversity: Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that occur naturally in the FMA

Value	1.1.1 Landscape-scale biodiversity
Objective	1.1.1.5b Maintain unique habitats created by wildfire and natural disturbance events
Type of VOIT	Dynamic
Indicator	Area of unsalvaged blowdown forest
Target	In areas of significant blowdown (exceeding 10 hectares in size), an average of 10 percent (by area) of the harvest block area will be left unsalvaged (as per GoA Forest Management Directive 2007-01).
Acceptable Variance	Target achieved during 10-year term
Status	Achieved

Forest companies do not monitor blowdown events in the FMA area. Evidence of blowdown may be identified through the ongoing FMA area inventory update process. If large blowdown events occur, the Government of Alberta usually provides area information and may provide direction on a salvage response for the forest companies. There was one major blowdown event in the FMA area in August 2017 in FMU L1 and L8. The gross extent of this event was estimated by GoA through an aerial survey, and the approximate area was provided to the forest companies in QIV 2017. Al-Pac, Northland Forest Products, and Bobocel Lumber all planned harvests and salvaged timber from this event.

Table 18 illustrates blowdown event metrics. During the reporting period, no other significant blowdown events were observed by GoA and the forest companies. Within the FMUs L1-L8 event, Al-Pac harvested about 845 hectares of deciduous landbase, while about 1,000 hectares of conifer landbase was harvested by Northland Forest Products and Bobocel Lumber; both QHs had tenure within the blowdown area.

Table 18. FMUs L1/L8 2017 blowdown event (hectares)

Year	Area (ha) of Unsalvaged Blowdown	Area of Identified Blowdown ha (Total) *(estimate)*	Percent Blowdown Area Left Unsalvaged	Number of Blowdown Events
2017	3,260	5,100	64 percent	1

VOIT 9 – DYNAMIC – Compliance with *Northeast Alberta Operating Ground Rules* (OGRs) (1.1.1.6)

CCFM Criterion 1 – Biological Diversity

CSA SFM Element – 1.1 Ecosystem Diversity: Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that occur naturally in the FMA

Value	1.1.1 Landscape-scale biodiversity
Objective	1.1.1.6 Retain ecological values and functions associated with riparian zones.
Type of VOIT	Dynamic
Indicator	Compliance with *Northeast Alberta Operating Ground Rules* (OGRs)
Target	Al-Pac to be consistent with current forest practices in northeast Alberta—compliance, support, and adherence to the approved *Northeast Alberta Operating Ground Rules* (OGRs).
Acceptable Variance	No variance
Status	Achieved with one infraction

Riparian zones are terrestrial areas where the vegetation complex and microclimate conditions are products of the combined presence and influence of perennial or intermittent water, associated high-water tables, and soils that exhibit some wetness characteristics. The term is normally used to refer to the zone within which plants grow rooted in the water table of these rivers, streams, lakes, ponds, reservoirs, springs, marshes, seeps, bogs, and wet meadows. The riparian zone is influenced by, and exerts an influence on, the associated aquatic ecosystem.

The majority of the FMA area is composed of wetlands and non-harvestable forest areas such as river valleys, water bodies, slopes, protected areas, parks, riparian buffers, and black spruce bogs; these areas total approximately 3 million hectares. The forest companies do not harvest in these areas, although limited access to blocks does occur through riparian areas. Access built to comply with the OGRs should not have significant effects at the landscape level.

In 2018, the forest companies and the GoA updated and signed OGRs for the FMA area and all of northeast Alberta. The OGRs follow the provincial template for all operations in Alberta and are reviewed annually to meet ongoing challenges and emerging issues. All operators must meet the approved OGRs for planning, harvest and haul, and silviculture operations. GoA enforcement actions on Al-Pac for the reporting period are provided in Table 19. Only one enforceable action occurred within the planning period.

The OGRs are available at
http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/formain15749/$FILE/ne-ab-ogr-final-oct-18.pdf

Table 19. Al-Pac–GoA enforcement actions, 2016–2020

Date Assessed or Recommended	Date of Infraction	Penalty, Warning, Waiver, or Closed	Amount	Planning Unit	Details
2016	Dec. 13	Yes	$650	81-07-4	Ephemeral watercourse buffer damage
2017	n/a	n/a	n/a	n/a	n/a
2018	n/a	n/a	n/a	n/a	n/a
2019	n/a	n/a	n/a	n/a	n/a
2020	n/a	n/a	n/a	n/a	n/a

(n/a – not applicable, no infractions)

For this reporting period, the only applicable indicator is OGR violations regarding riparian areas. Through operational planning at the plannng unit and block level, riparian areas (e.g., unmapped streams) are identified that require buffering and are not accounted for in the FMA area TSA netdown. In the reporting period, this metric was not tabulated by Al-Pac. Accordingly, Table 20 illustrates that the number of hectares per FMU that received non-TSA buffering is not-applicable (n/a).

Table 20. Riparian buffers

Year	Riparian Buffers – TSA (ha)	Hectares Harvested within TSA/OGR Buffer	Operational Riparion Buffers – Added through OGR Planning (FMU – ha)
2016	119,150	0	n/a
2017	119,150	0	n/a
2018	119,150	0	n/a
2019	119,150	0	n/a
2020	119.150	0	n/a

The baseline riparian buffers metric is the total hectares of buffers generated within the timber supply analysis (TSA) from the netdown of the gross FMA area; approximately 1.6 percent of the gross FMA area landbase—an FMP netdown data output. Buffers are applied to all lakes, rivers, and streams within the FMA area; excluding any water bodies within the 2.5 million hectares of landscapes removed from the growing stock landbase for other legal land uses, anthropogenic disturbances, and wildfire. The netdown process used the operating ground rules (OGRs) definitions for riparian buffers. Buffer area is then removed from the “harvestable landbase” that is used to calculate the allowable annual cut (AAC) and spatial harvest sequence (SHS). This metric is thus static for the TSA and the stewardship reporting period.

Operational riparian buffers that were added during the planning and operations of a block were not tracked during this period.

VOIT 10 – DYNAMIC – Retain a percentage of area (5 percent) with residual structure (both living and dead) within a harvest area, representative of the status (live/dead), sizes, and species of the overstorey trees within the FMA area (1.1.2.1a)

CCFM Criterion 1 – Biological Diversity

CSA SFM Element – 1.1 Ecosystem Diversity: Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that occur naturally in the FMA

Value	1.1.2 Local and stand-scale biodiversity
Objective	1.1.2.1a Retain stand-level structure
Type of VOIT	Dynamic
Indicator	Retain a percentage of area (5 percent) with residual structure (both living and dead) within a harvest area, representative of the status (live/dead), sizes, and species of the overstorey trees within the FMA area
Target	A combination of merchantable single stems, clumps, and islands that are representative of the forest stands harvested, comprising a targeted percent of the harvested area within the FMA area. Average of 5 percent structure—monitored at the harvest block and averaged at the FMU level.
Acceptable Variance	No variance
Status	FMA average of 4.71 percent was slightly below target, but there was considerable variation among FMUs—seven did not meet the five-year average target; mitigation measures are underway in the 2020–2025 period.

Stand structure in harvest areas plays a variety of temporal and spatial roles for biodiversity. Residuals (patches of live trees, as well as scattered live and dead trees) may produce structural conditions that are more similar to those created by forest fires than those resulting from traditional clear-cut harvesting, especially as the forest regenerates. Residual structures positively affect microsite conditions to help establish the new vegetation community. Residual patches may also act as “lifeboats” that give various species fuller use of the disturbed area and permit more rapid recolonization of its interior by plant and animal species characteristic of later successional stages.

For Al-Pac, stand structure retention is a critical component of the ecosystem-management approach laid out in its government-approved FMP and the current approved operating ground rules (OGRs). Al-Pac started implementing the concept of residual stand-structure retention when operations commenced on the FMA area in 1993.

The original guideline was simply to leave an average of eight stems per hectare. Protocols evolved over the years, but the target on Al-Pac harvest blocks since 1998 has been to retain an average of 5 percent of merchantable trees as single stems and clumps of various sizes and species of trees.

By definition, retained stand structure consists of live single trees, clumps of merchantable and non-merchantable trees of all ages, and snags that will provide seed sources and contribute over time to an increase in downed woody material in the harvest block. Gap dynamics (the effects of light-admitting gaps opening and closing in the canopy) can also benefit from structure retention. Al-Pac’s stand structure strategy has evolved toward leaving more patches within a larger range of block sizes.

The retention of single trees, patches of large, live trees, and snags in harvest areas makes the harvested areas more similar to burned areas. In addition, residual live trees may create some old forest attributes in young, regenerating harvest areas. Retaining some large snags within harvest areas creates habitat for some biota associated with naturally disturbed habitats.

Additional large snags may be created by retaining large, live trees, as some of these trees will die as the stand ages. Stand-structure patches are generally located such that natural features, riparian areas, sensitive sites (e.g., stick nests), and proximity to standing forests are taken into account to maximize their utility or usefulness by the biotic community.

Structure is generally created by machine operators leaving patches and single trees throughout a harvest area. Al-Pac provides the operators with training in retention protocols and checks on the post-harvest results. The operator-initiated stand structure can be augmented by larger, planned patches, inputted into the process in the Final Harvest Plan (FHP) by Al-Pac operational planners.

For Al-Pac, retained post-harvest stand structure can also be maintained in the following manner:

- Leave as many individual stems of non-merchantable trees, shrubs, and snags as operationally and silviculturally feasible;
- Leaning snags or trees of non-merchantable species that are greater than 6 metres in height that create a safety hazard may be felled to create safe working conditions; and
- Snags within 2.5 tree lengths of roads, camps, landings, fence lines, power lines, and machine maintenance areas may be felled to create safe working conditions.

At the FHP level, unplanned merchantable stands and/or large patches within stands (stands that are part of the spatial harvest sequence (SHS) but remain unplanned for various reasons, such as aesthetic or wildlife concerns, terrain, etc.) can contribute to the planned stand structure as long as they are:

- Merchantable;
- Within the harvest area;
- Between harvest areas where the structure forms part of continuous merchantable timber (e.g., attached to riparian buffers, not to the TSA netdown buffer itself); and/or
- Attached to the boundary as a peninsula, where the length exceeds the widest portion reaching into the harvest area (removed from calculation under the 2018 OGR revision).

For Al-Pac's monitoring purposes, there is a correlation between area retained and volume retained.

If the retained stand structure is representative of the original forest stand, then the assumption is that on average, the structure is comparable to average volumes from pre-harvest forest stands. For these purposes, area rather than volume is the monitored variable. This information is captured yearly through the post-harvest disturbance digital aerial imagery program (DAP), and then the metrics are compiled through an interpretation process and reported in the annual operating plan (AOP).

The Al-Pac average structural retention percentage within harvest area boundaries for the FMA area is 4.71 percent for the five years from within the stewardship period. Table 21 provides actual post-harvest stand-structure retention percentage metrics (clumps plus single trees) for all Al-Pac harvest operations within the FMA area by FMU; the last line of the table is the five-year FMU average. Al-Pac operated within 10 FMUs during this reporting period; no harvesting in S14, and only industrial salvage harvests from within SMA and Horse River Wildfire salvage operations in FMU A15. Table 21 provides the FMA area average per year for Al-Pac harvest blocks in the reporting period.

Table 21. Five-year metrics and average FMU retained stand structure metrics

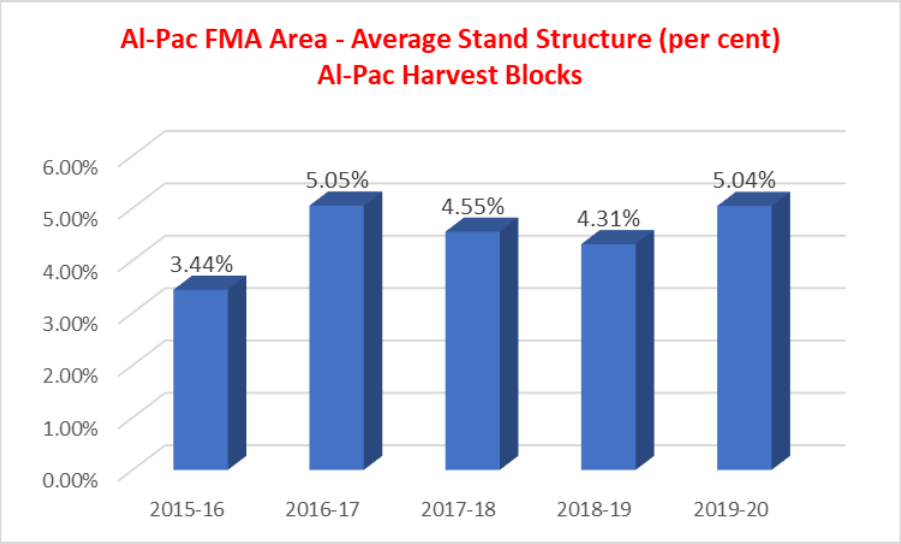
Year	A14	A15	L1	L11	L2	L3	L8	S11	S14	S18	S22	S23
2015–16	3.5%	n/a	3.4%	4.2%	3.9%	n/a	n/a	2.5%	n/a	2.4%	4.0%	3.6%
2016–17	2.8%	n/a	3.0%	5.9%	3.9%	n/a	n/a	n/a	n/a	4.1%	6.1%	9.6%
2017–18	3.7%	n/a	2.4%	4.2%	4.3%	2.8%	n/a	5.3%	n/a	9.3%	5.5%	3.4%
2018–19	2.1%	n/a	5.6%	n/a	2.7%	n/a	7.6%	4.6%	n/a	n/a	5.3%	2.2%
2019–20	2.7%	n/a	2.2%	2.8%	3.6%	n/a	13.0%	4.2%	n/a	6.0%	7.1%	3.8%
Five-year average	**3.0%**	**n/a**	**3.3%**	**4.3%**	**3.7%**	**2.8%**	**10.3%**	**4.2%**	**n/a**	**5.4%**	**5.6%**	**4.5%**

(n/a – not applicable – no harvest blocks)

During this period, Al-Pac harvested fibre from more than 1,600 deciduous, mixedwood, understorey protection, and conifer blocks; blocks are “declared” either D, DC, CD, or C and entered into the government’s Alberta Regeneration Information System (ARIS). This assemblage of blocks represented over ~37,000 hectares harvested in the five-year period. Variability between FMUs is primarily due to having different harvest operators within each unit.

Al-Pac harvest block with retained stand structure – FMU S23

Figure 10. Al-Pac FMA area retained stand structure – average percentage per year, 2015–2020 (stewardship reporting period)



Source: Al-Pac

The five-year metrics in Table 21 on the previous page illustrate that Al-Pac has been underachieving the five-year average structure target in seven of the 10 FMUs where harvesting occurred. This has been primarily due to a reduction of operator-selected structure clumps within blocks and planned structure becoming block boundary. Additionally, the removal of proximal structure such as peninsulas of mature forest from the metric, through the 2018 revision of the OGRs, has also reduced the original metric's actual area that is now tabulated to measure structure. Moving forward, the following remedial actions are being initiated by Al-Pac:

1. Increased training for harvest equipment operators
    a. Provision of actual imagery samples of "good" (i.e., greater than 5 percent) structure within a block
    b. Field reconnaissance and training tours of "good" blocks
    c. On-site presentations to contractors
2. Al-Pac's operational planners to designate more "planned" or laid-out clumps within blocks greater than 50 hectares.
3. Al-Pac operations coordinators to be reoriented in reconnaissance of post-harvest stand-structure metrics (to better estimate 5 percent retention)
4. Al-Pac operational coordinators to provide a visual estimate of structure for each block greater than 10 hectares within a planning unit
5. Increased feedback between coordinators and harvest equipment operators

VOIT 11 – DYNAMIC – Retain a percentage of harvested area within the FMA area harvest blocks with downed woody debris mostly equivalent to pre-harvest conditions (1.1.2.1b)

CCFM Criterion 1 – Biological Diversity

CSA SFM Element – 1.1 Ecosystem Diversity: Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that occur naturally in the FMA area

Value	1.1.2 Local and stand-scale biodiversity
Objective	1.1.2.1b Retain stand-level structure with downed woody debris
Type of VOIT	Dynamic
Indicator	Percentage of harvested area within the FMA area harvest blocks with downed woody debris (DWD) mostly equivalent to pre-harvest conditions
Target	75 percent or more of all harvest areas will avoid treatments that reduce DWD retained on the post-harvest site. Treatments such as brush raking and prescribed burns are examples of DWD reduction efforts.
Acceptable Variance	None
Status	Achieved

Downed woody debris (DWD) is defined as “wood lying at an angle of less than 45 degrees from the ground and having a diameter greater than 1 centimetre.” Harvesting operations in the FMA area generally rearrange the ground-level biomass and typically add volume to the ground-level pre-harvest DWD level. Pre-harvest levels are a wide range of decomposing biomass of various piece sizes and distribution. This pre-harvest metric is not collected by the forest companies. The normal practice of the forest companies in the reporting period was in-block delimbing.

Within this period, however, Al-Pac had a few harvest block trials using an on-site mechanical chipper that created comparable post-harvest logging debris compared to the usual logging practices; 182 hectares in FMU L1 and 139 hectares in FMU L3 were harvested with this methodology. However, this type of fibre processing did not utilize any pre-harvest on-site DWD, thus DWD site characteristics were unchanged.

Typical pre-harvest debris

Debris or slash accumulation resulting from timber harvest operations must, as a priority, be redistributed or disposed to minimize the risk of wildfire ignition and spread. However, it is recognized that some retention of debris is valuable from an ecological perspective, and that a reasonable amount of debris retention should occur to emulate natural forest floor accumulations. Ecological benefits include rodent habitat, furbearer habitat (when piled), and soil nutrient inputs.

When debris is maintained, it must be in such a distribution and amount as to:

1. Minimize wildfire risk as a priority;
2. Minimize the amount of productive land base loss by limiting lost area available for deciduous species suckering, or tree planting; and
3. Provide ecological benefit at the ecosystem level.

Al-Pac does not remove pre-harvest DWD, and harvesting always adds some amount of debris or DWD. As a result, the post-harvest biomass volumes (DWD) are always increasing. For the reporting period, Al-Pac harvested more than 30,000 hectares, all of which would have had no negative change to pre-harvest DWD metrics. The 75 percent target was achieved.

On-site mechanical chipper – Al-Pac FMA area 2020

VOIT 12 – DYNAMIC – Maintain sensitive sites within the FMA area (1.1.2.2)

CCFM Criterion 1 – Biological Diversity

CSA SFM Element – 1.1 Ecosystem Diversity: Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that occur naturally in the FMA area

Value	1.1.2 Local and stand-scale biodiversity
Objective	1.1.2.2 Maintain the integrity of sensitive sites within the FMA area.
Type of VOIT	Dynamic
Indicator	Maintain sensitive sites within the FMA area
Target	Harvesting and silviculture strategies to remain consistent with provincial guidelines and approved *Northeast Alberta Operating Ground Rules* (OGR – 7.7.6).
Acceptable Variance	None
Status	Achieved

In 2018, the GoA (supported by the forest companies) completed and signed new sets of OGRs for the FMA area and all of northeast Alberta. The latest version of the OGRs follows the provincial template for all operations in Alberta and are reviewed annually to meet ongoing challenges and emerging issues. All operators must meet the approved OGRs for planning, harvest and haul, and silviculture operations.

Sensitive sites, which are identified through an existing database or from field reconnaissance, are incorporated into the Final Harvest Plan (FHP) and protected by means of variable size buffers. Field personnel utilize the Alberta Conservation Information Management System (ACIMS) and the Fisheries and Wildlife Management Information System (FWMIS) during block layout and identify additional sites where encountered.

Al-Pac has complied with the OGRs in reference to this objective.

The OGRs are available at
http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/formain15749/$FILE/ne-ab-ogr-fiNAl-oct-18.pdf

The habitats of selected wildlife species require the maintenance of undisturbed habitats such as breeding or denning locations. These species require specific sites in order to complete all or part of their life cycles. Other species selected and associated sensitive sites are protected by the retention of an undisturbed, forested buffer from the edge of the opening associated with these sites or from the centre of selected sites without openings. The following sensitive sites and associated wildlife are listed in the current *Northeast Alberta Operating Ground Rules*:

- Breeding sites and hibernacula of species at risk;
- Salamanders, amphibians, and reptiles;
- Bat hibernacula;
- Colonial bird nesting areas;
- Sandhill crane nesting areas;
- Wolverine dens (none found to date in the FMA area);
- Mineral licks;
- Raptor (stick) nest trees;
- Natural springs and beaver ponds with no outflow channel; and
- Grizzly dens (none found to date in the FMA area).

Al-Pac does not monitor any identified sites from the above list—that is the responsibility of the GoA. Al-Pac believes it is the collective responsibility of all stakeholders to add to this site database. This can be accomplished through the Alberta Conservation Information Management System (ACIMS) or by working with local or regional Fish and Wildlife staff to have information added to the Fish and Wildlife Information System (FWIS). However, there is usually sensitivity about disclosure of this information to the public (e.g., the location of salt licks and corresponding ungulate activity), which could lead to adverse impacts on the sites. A large challenge is how to keep the database up to date. Monitoring is very challenging for existing sites.

Eagle (stick) nest on the La Biche River – Al-Pac FMA area

VOIT 13 – DYNAMIC – Forestry water crossing in compliance with the code of practice for watercourse crossings within the FMA area (1.1.2.3)

CCFM Criterion 1 – Biological Diversity

CSA SFM Element – 1.1 Ecosystem Diversity: Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that occur naturally in the FMA area

Value	1.1.2 Local and stand-scale biodiversity
Objective	1.1.2.3 Maintain aquatic biodiversity by minimizing impacts of water
Type of VOIT	Dynamic
Indicator	Forestry water crossing in compliance with the code of practice for watercourse crossings within the FMA area
Target	Designs meet standards of the *Code of Practice for Watercourse Crossings*. Remain consistent with provincial guidelines and approved *Northeast Alberta Operating Ground Rules*.
Acceptable Variance	None
Status	Achieved

In 2018, the forest companies and the GoA completed and signed new sets of OGRs for the FMA area and all of northeast Alberta. All versions of the OGRs follow the provincial template for all operations in Alberta and are reviewed annually to meet ongoing challenges and emerging issues. All operators must meet the approved OGRs for planning, harvest and haul, and silviculture operations. Al-Pac has complied with the OGRs in reference to this VOIT. The OGRs are available at http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/formain15749/$FILE/ne-ab-ogr-fiNAl-oct-18.pdf

Al-Pac has a risk-based monitoring program that complies with the *Northeast Alberta Operating Ground Rules*. This applies to all temporary watercourse crossings in active, inventory, and outstanding reclamation areas. The following is required for Al-Pac's monitoring program:

- All crossings will be monitored and documented on the Water Course Crossing (WCC) form;
- All crossings identified in the approved Forest Harvest Plan (FHP), as well as additional crossings, must have one inspection completed at or prior to the skid clear phase of operations and one inspection completed post-reclamation;
- A minimum of six photos must be taken at the time of inspection for crossings that are considered higher risk or have greater potential of causing environmental impact;
- Blocks with harvested timber awaiting transportation and active culverts will require an inspection by April 30 and November 1; this inspection must be conducted under snow-free conditions;
- Additional inspections will be done for crossings that are required for continued access over 12 months (this could be monthly monitoring inspections for the life of the road);
- Crossings that have been reclaimed with the potential of erosion will be placed on the Al-Pac disturbance monitoring list. A monitoring inspection will be done for each visit and documented on the WCC form; this must be done until the item is cleared from the disturbance monitoring list;
- Inspections will be tracked in an Al-Pac database;
- All variances arising from the monitoring program must be investigated;
- Any new crossings must be inspected as above; and
- An Al-Pac harvest contractor will complete one watercourse crossing checklist within two weeks of initial construction of the culvert.

The majority of harvest and hauling activities occurs when the ground is frozen, which reduces effects on both soil and water resources. When operations occur during non-frozen conditions, there will be a greater likelihood of impacts (e.g., siltation) on aquatic habitat and associated water crossings. Table 22 illustrates the current number of permanent bridges and culverts managed by Al-Pac throughout the Al-Pac FMA area.

Table 22. Permanent bridges and culverts on Al-Pac DLO roads

(DLO – Department License of Occupation, a permanent road)

Year	Bridges	Culverts	Non-Compliance Incidents
2016	46	1,215	0
2017	49	1,245	0
2018	49	1,275	0
2019	52	1,280	0
2020	52	1,305	0

Al-Pac permanent bridge – burned in the McMillan Complex Wildfire

VOIT 14 – MODELLED – Successful implementation of caribou habitat zonal deferral strategy within the caribou zone (1.2.1.1a)

CCFM Criterion 1 – Biological Diversity

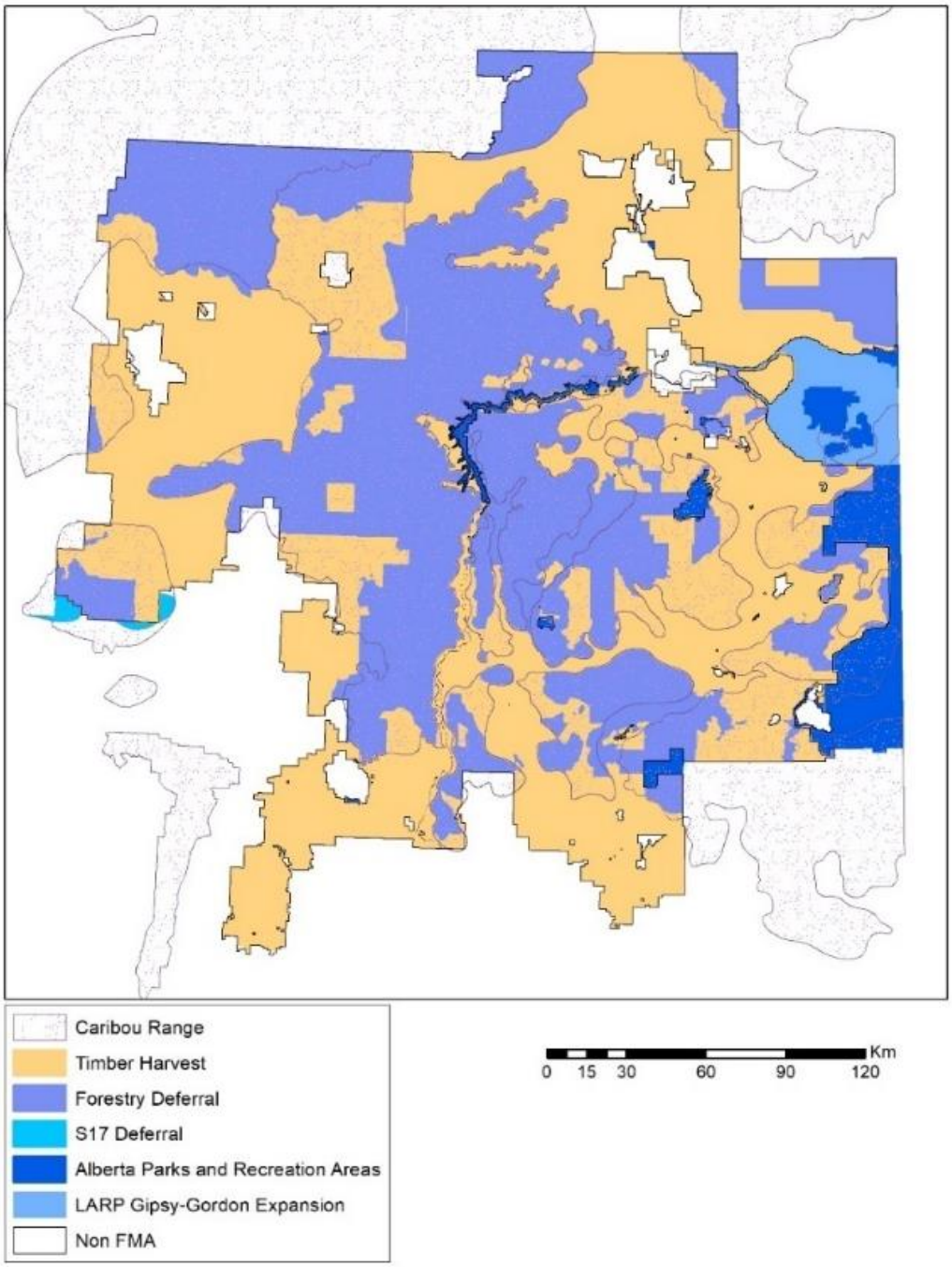
CSA SFM Element – 1.2 Species Diversity: Conserve species diversity by ensuring that habitats for the native species found in the FMA area are maintained throughout time

Value	1.2.1 Viable populations of identified plant and animal species
Objective	Maintain habitat for identified high-value species (i.e., economically valuable, socially valuable, species at risk, species of management concern) – woodland caribou
Type of VOIT	Modelled
Indicator	1.2.1.1a Area (ha) of suitable caribou habitat within the FMA area – through successful implementation of caribou habitat deferral strategy within FMA area woodland caribou zone.
Target	Incorporate a woodland caribou habitat zonal deferral strategy into the timber supply analysis (TSA) and spatial harvest sequence (SHS), and operational activities within the caribou zone.
Acceptable Variance	+/– 20 percent variance of the SHS
Status	Pending new forest inventory (Alberta Vegetation Inventory, or AVI) and timber supply analysis for the 2025 Al-Pac FMA area *Forest Management Plan*

Al-Pac and the quota holders implemented woodland caribou planning as a zonation approach to forest management within caribou ranges. Significant areas are delineated as “caribou deferrals” in which no harvest will occur in the first 20 years of the SHS; these areas are the blue zones in Figure 11. This approach created a spatial-temporal window of opportunity for GoA-led range planning to occur. To date, all forest companies’ harvest planning has followed the FMP’s zonal strategy.

Figure 11 illustrates the 2015 FMP’s zonal map that was incorporated into the FMPs timber supply analysis. Additionally, Al-Pac was in full compliance with the relevant operating ground rule (OGR 7.7.2) in its operational planning and harvest operations.

Figure 11. Caribou harvest deferrals within the Al-Pac FMA area 2015 TSA



In addition to following the TSA zonal strategy, Al-Pac and Northland Forest Products assisted the GoA range-planning program through the Cold Lake subregional planning process. Range planning, for all caribou ranges in Alberta, is a GoA endeavour that is slowly progressing through all the ranges. The Al-Pac FMA area has six ranges to be planned. The Cold Lake range plan is a more detailed, long-term (i.e., 100 years) approach to forest management within caribou range that is being developed in collaboration with the GoA and other industries. Al-Pac ecologists and planners collaborated with GoA staff and their consultant to develop a tactical forestry harvest strategy for the Cold Lake caribou range and the Christina herd range. The Cold Lake range only encompasses a small part of FMUs L1 and L11.

The objective of this range-planning approach is to aggregate harvest in time and space within caribou range to minimize the extent and duration of forestry footprint and access. To accomplish this, Al-Pac and GoA partitioned caribou range into sequencing units, with units delineated to capture as much same-age timber as possible while respecting patterns of caribou space use and movement. Each sequencing unit is scheduled for harvest in a given decade from now to Year 100; once a unit is entered, all harvest is to be completed, then access removed. The subsequent unit can only be entered once harvest is complete in the first unit.

Decades were assigned for achieving timber objectives while staying out of areas of high caribou use for approximately the first five decades. Decade 1 units are generally aligned with Period 1 (first 10 years) of the spatial harvest sequence (SHS). The methodology from the Cold Lake exercise may be used within the other five caribou ranges in the Al-Pac FMA area.

Although these planning aggregations and harvest timings are designed to help achieve the federal target of 65 percent undisturbed caribou habitat while minimizing effects on timber supply, some impacts will most likely occur.

As range planning rolls out across the FMA area, these adjustments should be done simultaneously, because multiple ranges overlap multiple FMUs and decisions in one caribou range will reduce the solution space in other ranges that intersect with the same FMUs.

The next Al-Pac FMA area *Forest Management Plan* will most likely include TSA parameters dealing with block aggregations and harvest timing for caribou range planning.

Woodland caribou – Al-Pac FMA area (ABMI photo)

VOIT 15 – MODELLED – Retained habitat for trumpeter swan (1.2.1.1)

CCFM Criterion 1 – Biological Diversity

CSA SFM Element – 1.2 Species Diversity: Conserve species diversity by ensuring that habitats for the native species found in the FMA area are maintained throughout time

Value	1.2.1 Viable populations of identified plant and animal species
Objective	Maintain habitat for identified high-value species (i.e., economically valuable, socially valuable, species at risk, species of management concern) – trumpeter swan
Type of VOIT	Modelled
Indicator	1.2.1.1b Retained habitat for trumpeter swan.
Target	Maintain a 200-metre buffer (no harvest zone) around all lakes with identified trumpeter swan nesting sites. From April 1 to September 30, there are to be no activities within 800 metres of the high-water mark on identified trumpeter swan lakes.
Acceptable Variance	None
Status	Pending new forest inventory and timber supply analysis for the 2025 Al-Pac FMA area *Forest Management Plan*

VOIT 15 is based on a fine-filter analysis of a wildlife species and its habitats. Protection of trumpeter swan habitat has been inserted into the operating ground rules by the GoA (OGR 7.7.3). The maintenance of a 200-metre buffer on selected lakes was enacted within the FMP's landbase netdown.[*] The current netdown has more than 20 FMA area lakes with the 200-metre buffers represented. Additional lakes are buffered due to other non-timber considerations. FMA area lakes designated as swan habitat have other buffers and/or are surrounded by landscape deemed "non-productive" from a forest harvesting perspective. Thus, these lakes are also protected from harvest activities. This situation has not changed within the reporting period. For the 2025 FMP, Al-Pac will review the listing of selected lakes and amend the dataset to meet current GoA guidelines. No trumpeter swan lake buffers were compromised by the forest companies during the five-year reporting period. There was no non-compliance with respect to OGR 7.7.3. The OGRs not only enact a no-harvest buffer, but also limit anthropogenic activities within 800 metres from the high-water mark. OGR details can be obtained from the GoA website.[†]

[*] The netdown is the stepwise accounting process of determining the commercially productive landbase from the gross FMA area according to approved classification criteria. From the gross area, areas classified as non-Crown, non-productive, non-forest, protected areas, and industrial dispositions are subtracted to determine the commercially productive forest area.

[†] *Northeast Alberta timber harvest planning and operating ground rules:* https://open.alberta.ca/publications/northeast-timber-harvest-planning-and-operating-ground-rules

VOIT 16 – DYNAMIC – The appropriate number and area (ha) of in-situ tree gene conservation reserves as directed by the FGRMS (1.3.1.1)

CCFM Criterion 1 – Biological Diversity

CSA SFM Element – 1.3 Genetic Diversity: Conserve genetic diversity by maintaining the variation of genes within species

Value	1.3.1 Genetic integrity of natural tree populations
Objective	1.3.1.1 Retain wild forest populations for each tree species in each seed zone through the establishment of in-situ reserves, with an approved controlled parentage program (CPP)
Type of VOIT	Dynamic
Indicator	The appropriate number and area (ha) of in-situ tree gene conservation reserves as directed by the FGRMS (Forest Genetics Resource Management and Conservation Standards)
Target	The appropriate number of in-situ tree gene conservation reserves per wild forest tree species as directed by FGRMS and the conservation zones within Al-Pac's sphere of interest in CPP Regions E and D for seed zones UBH 1.3 and LBH 1.6. This target is to be established in consultation with associate FMA holders in the CPP region and directed by the GoA.
Acceptable Variance	None
Status	Al-Pac has not implemented a conifer CPP

"Wild forest populations" refers to genetic materials of native species originating from natural regeneration (e.g., white spruce seed from indigenous white spruce stands in the FMA area).

The *Standards for Tree Improvement in Alberta*, first implemented in 2003, were revised in 2009 by the Government of Alberta.* The standards represent science-based policy developed to encourage the maintenance of the genetic integrity, health, and productivity of Alberta's wild and managed forests. The standards achieve this by guiding the management of forest genetic resources in reforestation and tree improvement activities on public forest lands.

The majority of the revision effort was directed at improving standards dealing with Stream 2 Controlled Parentage Programs (CPPs) and tree improvement activities for seed and vegetative propagules.

There are two forms of tree improvement:

- "In situ" means seed from existing trees (conifers principally); and
- "Ex situ" means bringing in new plant material from outside sources; e.g., from poplar plantations in the White Zone of the province into the FMA area (see VOIT 17).

Al-Pac has not implemented an in-situ program.

* *Forest Genetic Resource Management and Conservation Standards*: https://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/formain15749/$FILE/fgrms-stream1apr2018.pdf

Al-Pac is a supporting member of Tree Improvement Alberta (TIA), a project team of the Forest Growth Organization of Western Canada (FGROW). Al-Pac is a founding and very supportive member of FGROW.

Conifer nursery stock – Bonnyville Forest Nursery, Alberta

VOIT 17 – DYNAMIC – Number of provenances and genetic lines in ex-situ gene banks and trials – as per current approved Al-Pac Balsam Poplar CPP (1.3.1.2)

CCFM Criterion 1 – Biological Diversity

CSA SFM Element – 1.3 Genetic Diversity: Conserve genetic diversity by maintaining the variation of genes within species

Value	1.3.1 Genetic integrity of natural tree populations
Objective	1.3.1.2 Retain wild forest genetic resources through ex-situ conservation for balsam poplar under an approved controlled parentage program (CPP)
Type of VOIT	Dynamic
Indicator	Number of provenances and genetic lines in ex-situ gene banks and trials – as per current approved Al-Pac Balsam Poplar CPP
Target	Establish and maintain active ex-situ conservation program for species under CPP programs in cooperation with GoA and in accordance with FGRMCS* Section 17 and 29 and ex-situ conservation criteria (Alberta Agriculture and Forestry Document: Appendix 4, Footnote 1). Subject also to Section 6.3 of the Gene Conservation Plan for Native Trees of Alberta (2008). The Al-Pac program was a GoA-approved Balsam Poplar CPP.
Acceptable Variance	None
Status	Al-Pac has terminated the Balsam Poplar CPP

In 2011, Al-Pac developed and started to deploy on the FMA area a balsam poplar tree improvement program, intended to provide fast-growing poplar fibre. The program was called the Balsam Poplar Controlled Parentage Plan. The Government of Alberta approved this controlled parentage program (CPP) for the Al-Pac FMA area.

The basic objective of the plan was to reduce silviculture liability and associated costs to meet silviculture standards through the deployment of superior poplar trees. Poplar clones may be deployed on roads, landings, and processing areas where natural regeneration was often less abundant and less vigorous than the surrounding cutover area. The trees could also have been utilized for artificial regeneration of not-satisfactorily-regenerated (NSR) harvest blocks or areas in the FMA area.

Al-Pac's program with superior individuals was based on:

- Application of initial selection,
- Clone testing,
- Clone reselection, and
- Clonal propagation for operational deployment.

The program had an initial selection population of 520 balsam poplar clones from provenances across the entire FMA area, selections from northeast British Columbia, and poplar clones from south-central Alberta. As of 2020, these clones were deployed on six government-approved test sites in and around the FMA area to look at adaptability, growth, and insect and disease resistance. Table 23 provides the test site names and locations.

* Alberta Forest Genetic Resource Management and Conservation Standards: https://open.alberta.ca/publications/9781460131596

Table 23. Poplar genetic test sites and legal locations

Test Site Locations	Legal Locations	Test Site #
Upper Wells Road (Waskahegan)	SW-6-78-15-W4	1
Cowpar Road	SW-2-79-5-W4	2
Aostra Road	SW-8-92-12-W4	3
Chipewyan Lake Road	SW-9-83-24-W4	4
Alberta-Pacific mill site	NE-17-68-19-W4	5
Smoky Lake Tree Improvement Centre	Smoky Lake AB	6

As of the second quarter 2020, all six test sites had undergone mortality and health surveys. All sites exhibited considerable mortality throughout all clones. This mortality occurred due to herbaceous competition, primarily *Calamagrostis* grass (Canada blue-joint grass), insect attacks, drought, and primarily because most sites were not suitable for a balsam poplar afforestation program. As of QIII 2020, the CPP has been terminated, and the program will not be continued.

Juvenile balsam poplar catkins and leaves

VOIT 18 – DYNAMIC – Stakeholder and GoA consultation / engagement – Identify a series of ecological benchmarks (1.4.1.1)

Criterion 1 – Biological Diversity

CSA SFM Element – 1.4 Protected Areas: Respect protected areas identified through government processes

Value	1.4.1 Areas with minimal human disturbances within managed landscapes.
Objective	1.4.1.1 Integrate trans-boundary values and objectives into forest management
Type of VOIT	Dynamic
Indicator	Stakeholder and GoA consultation / engagement – Identify a series of ecological benchmarks
Target	Ongoing consultation with the Alberta Land-use Framework (LUF) secretariat for selected planning regions (i.e., Lower Peace and Lower Athabasca) – primarily regarding current and projected protected areas.
Acceptable Variance	None
Status	Pending next FMP

The Alberta Land-use Framework (LUF) program was essentially halted by GoA during the planning period. Rationale for discontinuing the LUF discourse was to re-establish consultation activities and renew public engagement. Al-Pac and the forest companies were no longer involved with any LUF activities or planning processes.

However, in 2019, Al-Pac initiated a Protected Areas Gap Analysis Project (PAGA) for northeastern Alberta and northwestern Saskatchewan in collaboration with Mistik Management, Ducks Unlimited Canada (DUC), and the Canadian Parks and Wilderness Society (CPAWS – Northern Alberta and Saskatchewan chapters).

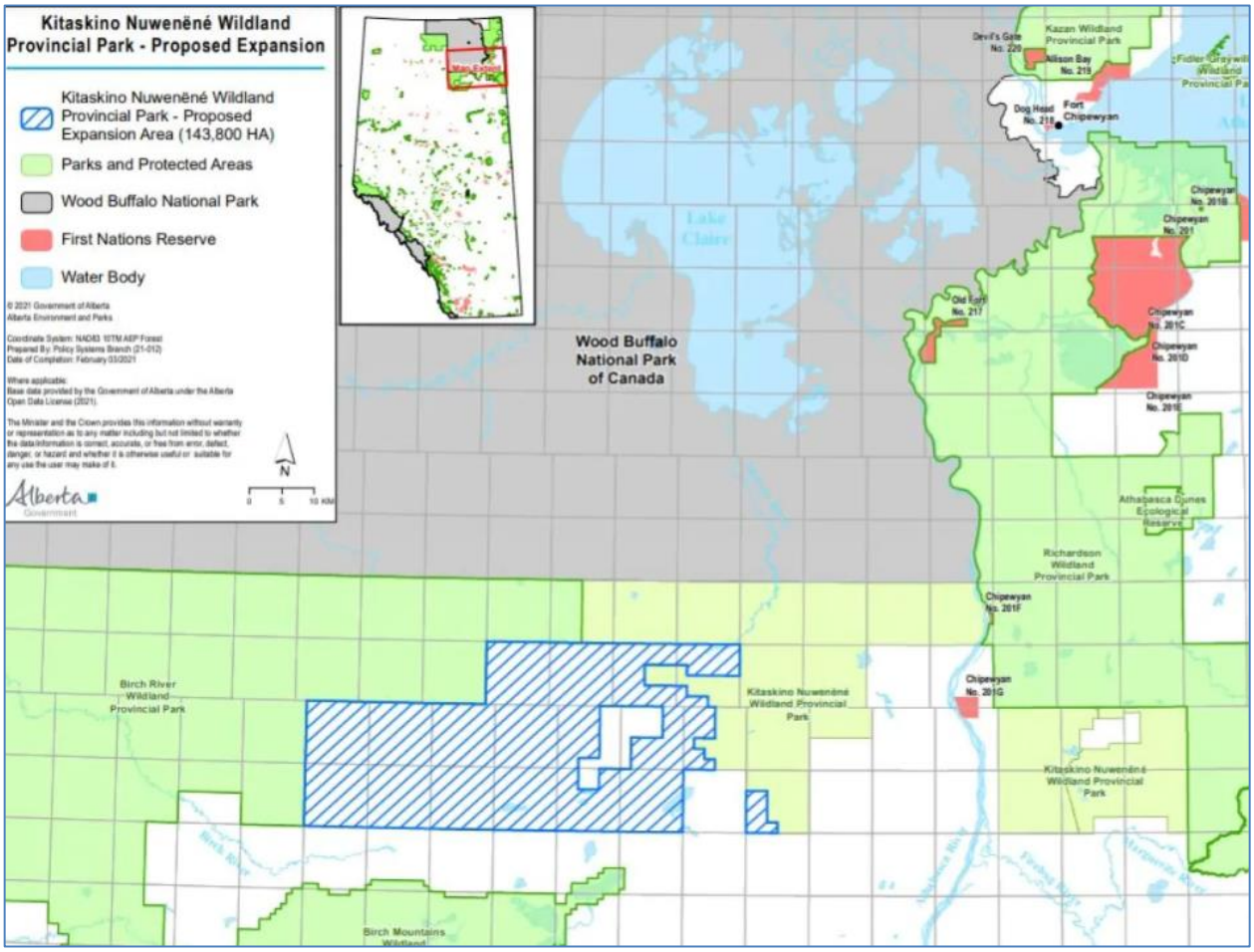
The objective of the project is to evaluate the ecological representativeness of existing protected areas and to provide recommendations on potential candidate protected areas if gaps were found. Caribou are explicitly included as an ecological value in this process. The study area for this project encompasses an Area of Ecological Influence (AEI), defined as all eco-districts that intersect the Al-Pac or Mistik FMA areas. The gap analysis has been completed (Phase 1), and the "Marxan"* model has been calibrated for the AEI (Phase 2).

Over the next few years, engagement with Indigenous peoples and other interested and affected stakeholders will be conducted to refine the proposed network and consider the various conservation tools that may be used to fill the gaps found in Phase 1.

In addition to the PAGA project, in 2020, Al-Pac and Northland Forest Products Ltd. provided Mikisew Cree First Nation with letters of support in their lobbying efforts to create Kitaskino Nuwenëné Wildland Provincial Park (Phase II). This proposed Alberta park is on Crown land that overlaps portions of the Red Earth caribou ranges (see Figure 12). (*Note:* In QI 2021, GoA approved the new park - phase II.)

* Marxan is widely used decision-support software that finds cost-efficient solutions to land-use planning problems and is designed specifically for identifying candidate areas for representative protected areas networks (see http://marxan.org/).

Figure 12. Kitaskino Nuwenëné Wildland Park Expansion (Phase II) (source: GoA)



VOITs 19 and 20 – DYNAMIC – Reforestation surveys (2.1.1.1) and MAI targets (2.1.1.2)

Criterion 2 – Ecosystem Productivity

CSA SFM Element – 2.1 Ecosystem Resilience

Value	2.1.1 Reforested harvest areas
Objective	2.1.1.1 Reforest all harvested areas 2.1.1.2 Meet or exceed the coniferous and deciduous mean annual increment (C and D MAI) standard for the population of openings surveyed in a given quadrant
Type of VOIT	Dynamic
Indicator	2.1.1.1 Annual percentage of openings that: • Meet or exceed the Reforestation Standard of Alberta (RSA) establishment survey (four to eight years post-harvest) minimum stocking and species composition standards for the declared regenerated yield stratum; • Meet or exceed the RSA establishment survey minimum stocking and species composition standards for a regenerated yield stratum; and • Do not achieve the RSA establishment survey minimum stocking and/or species composition standards for any regenerated yield strata and are retreated within one year 2.1.1.2 Summed difference between target and actual C and D MAIs for openings surveyed in a five-year quadrant, as reported to the Alberta Regeneration Information System (ARIS)
Target	Indicators = 100 percent of openings; 100 percent of target
Acceptable Variance	None – report actuals
Status	Achieved

Forest renewal (reforestation of harvest areas), or silviculture, is the theory and practice of controlling the establishment, species mix, growth, and quality of forest stands to achieve forest management objectives. Using a combination of harvesting, site preparation, reforestation, and stand-tending interventions, forest vegetation is manipulated at the stand and landscape levels to balance timber production with other societal values. To determine whether objectives are being met, forest renewal programs monitor crop tree performance and adjust scheduled treatments as required.

The Reforestation Standard of Alberta (RSA) was developed and implemented in 2010 to monitor future forest growth. Compared to the past GoA monitoring process, the RSA also provides a much more comprehensive means of illustrating how the managed forest is responding to silviculture treatments.

The RSA process is designed to monitor forest regeneration based on individual tree growth rates within harvest blocks (stands) and then cumulatively provide a total estimate of future growing stock for each forest management unit.

The measurement criterion for success is the sum of the harvest block parts (i.e., all the trees in a harvest block or stand) rather than the success of individual trees. The current RSA program is 100 percent photo acquisition, followed by 100 per cent stratification into species composition and density classes, random ground sampling of

species composition and density classes to determine CMAI and DMAI[*] for each stratum, then assigning ground results back to an opening proportionately based on the area of each stratum within said openings.

Under the RSA,[†] establishment surveys determine the level of success of early silvicultural activities in harvested areas or openings. Site occupancy is the predominant parameter used to determine the level of regeneration success. Site occupancy is the degree to which trees utilize a site's available growing space. Sufficient numbers of trees are necessary to fully utilize the site's water and nutrient resources to maintain timber productivity. Site occupancy, or the presence of a vegetation community, is also integral to maintaining healthy ecosystems.

Performance surveys are used to determine whether established stands have continued to grow and to ensure that these stands are healthy, vigorous, and capable of generating yields similar to the post-harvest yields assumed in the timber supply analysis (TSA).

The Mean Annual Increment (MAI), or mean annual growth, refers to the average growth per year that a tree or stand of trees has exhibited or experienced to a specified age.

Deciduous Silviculture Program

For Al-Pac, the normal prescription for deciduous sites is leave-for-natural (LFN) regeneration. Natural suckering from the root systems provides good regeneration in most cases and maintains the genetic composition of the pre-harvest stand. Removal of most of the mature timber in accordance with OGRs is necessary as it provides sufficient sunlight to heat the ground surface and stimulate suckering. Where regeneration is deemed not adequate, sites may be planted to an appropriate indigenous tree species from the appropriate Alberta seed zones. Table 24 illustrates the extent of the complete-to-date Al-Pac FMA area deciduous silviculture program, from 1993 to 2020. For the reporting period, Al-Pac harvested 29,580 hectares from the deciduous landbase.

Table 24. Al-Pac Deciduous Silviculture Program – Al-Pac FMA area (by year of harvest)

2016–2020	**Total "D" hectares harvested**	**29,580 ha**
1993–2020	Declared successfully regenerated	96,344 ha
1993–2020	Not successfully regenerated (NSR)	813 ha
As of 2020	Not surveyed or requiring survey	28,772 ha
1993–2020	Total "D" hectares harvested	128,797 ha

[*] Conifer Mean Annual Increment – CMAI; Deciduous Mean Annual Increment – DMAI

[†] Alberta Environment and Sustainable Resource Development. 2013. *Reforestation Standard of Alberta*. Government of Alberta, Department of Environment and Sustainable Resource Development. Edmonton, AB. Glossary, p. 227.

VOIT 20 – Objective 2.1.1.2 Results

Al-Pac conducts performance surveys across the FMA area every year in accordance with the RSA monitoring protocols. Table 25 depicts the five-year rolling average for the mean annual increment (MAI) calculated for deciduous and conifer growth; four major strata groups – deciduous (D), deciduous-leading mixedwood (DC), conifer-leading mixedwood (CD), and conifer (C).

Table 25. Al-Pac's performance survey results – Five-year rolling average – Harvest blocks (cubic metres per hectare per year)

Five-Year Average Forest Management Plan Strata	MAI Target (m^3/ha/year)		MAI Target (m^3/ha/year)	
	Deciduous	Conifer	Deciduous	Conifer
Deciduous (D)	2.35	0.31	3.53	0.53
Deciduous Leading Mixedwood (DC)	1.40	1.18	3.27	0.82
Conifer Leading Mixedwood (CD)	1.05	1.39	2.85	1.23
Conifer (C)	0.26	1.57	2.52	1.45

The FMP defines nine "base" strata: two deciduous, four mixedwood, and three conifer.

One of the "D" strata is deciduous stands with an identified conifer understorey—DU stratum. No MAI targets nor survey results are available for this stand type to be included in Table 25. These complex multi-cohort stands currently do not have a program designed to create MAI metrics.

Table 25 (above) also combines all conifers into one stratum (primarily white spruce) and does not provide distinct metrics for the jack pine nor the two black spruce strata.

Al-Pac did not harvest any black spruce blocks during the reporting period.

Conifer Silviculture Program

Replacement strategies for conifer, and for conifer in mixedwood sites, are dictated by site-specific ecological conditions; treatments are prescribed in the 2015 FMP's Silviculture Matrix (Chapter 7, Appendix II). Virtually all conifer cut-blocks in the FMA area are planted, in whole or in part, with the appropriate stock type. It should be noted that a cumulative total of about 250 hectares within various deciduous harvest blocks were also planted with conifer seedlings in the same period.

From 2016 to 2020, Al-Pac planted approximately 3.2 million conifer seedlings within the FMA area (see Table 26). The conifer silviculture program declined after 2013 as the Incidental Conifer Replacement* program was no longer required in the FMA area because the specific clause was removed by GoA from the 2011 Forest Management Agreement. The increased chemical tending program in 2017–2018 was in response to the liability attributed to the terminated Incidental Conifer Replacement program. These treated sites are from harvest blocks planted prior to 2011.

* Incidental conifer refers to conifers harvested by Al-Pac in blocks that are primarily deciduous.

Table 26. Al-Pac conifer silviculture program

Year	Planted Hectares	Mechanical Site Preparation – Hectares	Chemical Site Preparation – Hectares	Chemical Tending for Vegetation Control – Hectares	Conifer Seedlings Planted
2016	529	107	n/a	564	669,130
2017	220	81	n/a	3,188	287,460
2018	575	254	n/a	1,204	826,111
2019	574	67	n/a	405	745,900
2020	500	140	n/a	545	736,650

High-Effort Understorey Protection

High-effort understorey protection (UP) is used in deciduous forest stands with coniferous understoreys in excess of 600 stems per hectare—DU stratum. Within the Al-Pac FMA area, since the completion of the Alberta Vegetation Inventory (AVI) in 2000, approximately 200,000 hectares have been interpreted throughout 11 FMUs as having a highly variable, discontiguous, immature conifer understorey that meets the >600 criterion.

Since 2014, Al-Pac has been implementing a new forest inventory, AVI-II. The AVI-II process uses four-band digital, high-resolution imagery (DAP) acquired when the forest stands are in a leaf-off condition in late spring. This enhanced imagery allows for superior interpretation of conifer understoreys throughout the FMA area. The result is a more detailed inventory of the DU forest stands.

The current OGRs delineate the process for understorey protection. The process removes deciduous understorey treatment (DU) polygons that are 10 hectares or less from requiring high-effort understorey protection for operational considerations.

In the timber supply model for 11 of the 12 FMUs,[*] the spatial harvest sequence (SHS) for the period QII 2015–QII 2020 forecasted that approximately 5,400 hectares of deciduous (DU) stands could undergo high-effort understorey protection and a portion of these hectares would transition to a mixedwood forest stand (CD or DC).

The timber supply analysis (TSA) five-year average (forecast) is approximately 1,075 hectares per year, and the TSA transition ratio for deciduous stands undergoing high-effort understorey protection, according to the forecasted future forest AVI condition, is as follows:

- 15 percent of DU regenerate as conifer-leading mixedwood stands (CD strata) with an age of 0 years (juvenile forest);
- 15 percent of DU regenerate as deciduous-leading mixedwood stands (DC strata) with an age of 0 years (juvenile forest); and
- 70 percent of original DU polygon area regenerate as pure D strata at year one.

In the 2015 FMP, Al-Pac changed the above transition ratio to 15/15/70 (DC-UP/CD-UP/D) as an adaptive management measure that more closely resembled the actual post-harvest footprint that was being created from the DU stratum.

[*] FMU S14 does not have an AVI dataset with DU coverage. When GoA inserted this FMU into the FMA in 2011, this unit's AVI had never been updated or enhanced while it was a Crown management unit. Al-Pac inputted an anthropogenic footprint inventory update to S14 in 2014. Al-Pac's AVI-II program should provide an enhanced inventory for FMU S14 by around 2025.

The transition ratio from the 2006 FMP was 40 percent DC, 40 percent CD, and 20 percent D. Harvest block monitoring from 2006 to 2014 revealed that this ratio was overestimating the amount of treatment area (area left in strips with an immature conifer component) and gross amount of conifer growing stock. This necessitated the change within the 2015 TSA to reflect actual harvest footprint.

The TSA transition is a strategic target that moves entire forest polygons from one AVI situation to another, such as from DU to CD. The TSA does not account for inventory inconsistencies or errors or the splitting of forest polygons to relate to the actual hectares that were protected throughout the five years of operations. The spatially explicit forest management model, Patchworks, does not create new polygon linework.

Accordingly, the forecasted spatial TSA does not spatially relate to the actual post-harvest layout of declared forest stands that underwent an understorey protection treatment, approximately 2,500 hectares for the reporting period.

In the process of planning candidate understorey protection treatments from the SHS, all DU AVI polygons are confirmed by either a field crew or air photo interpretation (if four-band digital aerial photos are available) to confirm the presence of immature conifer stems (>600 stems/hectare). This process drops stands from candidate DU treatments due to reductions (i.e., <600 stems/hectare) to the original AVI immature conifer stems interpretation.

These SHS polygons are then harvested as D stands with a leave-for-natural (LFN) treatment regime, based on the silviculture matrix in Appendix II, Chapter 7 of the approved 2015 Al-Pac FMA area FMP.

A candidate understorey protection block is then provided with a detailed block plan that delineates the spatial distribution of the immature stems and how the understorey protection treatment will be executed. This plan, in all cases, nets down the original AVI polygon area due to the discontiguous immature conifer understorey and the layout of roads and landings.

The final treated DU polygon delineation provides new AVI linework that will not correlate with the SHS forecast. The actual final DU hectares and subsequent treatment polygons are normally lower than the planned hectares due to operational considerations. Thus, the final treated DU area declaration has undergone a dual netdown from the original AVI (interpreted) SHS polygon.

In addition to the planning of the field-confirmed candidate DU-AVI-SHS stands, field reconnaissance frequently discovers deciduous stands with >600 stems of immature conifer that have not been identified in the original inventory. These stands then undergo high-effort understorey protection planning. The summary of Al-Pac's final post-harvest DU treatment hectares is a combination of actual areas of treated DU-AVI-SHS stands and found treated DU stand areas. The TSA forecast or estimate was for approximately 5,000 hectares in the period.

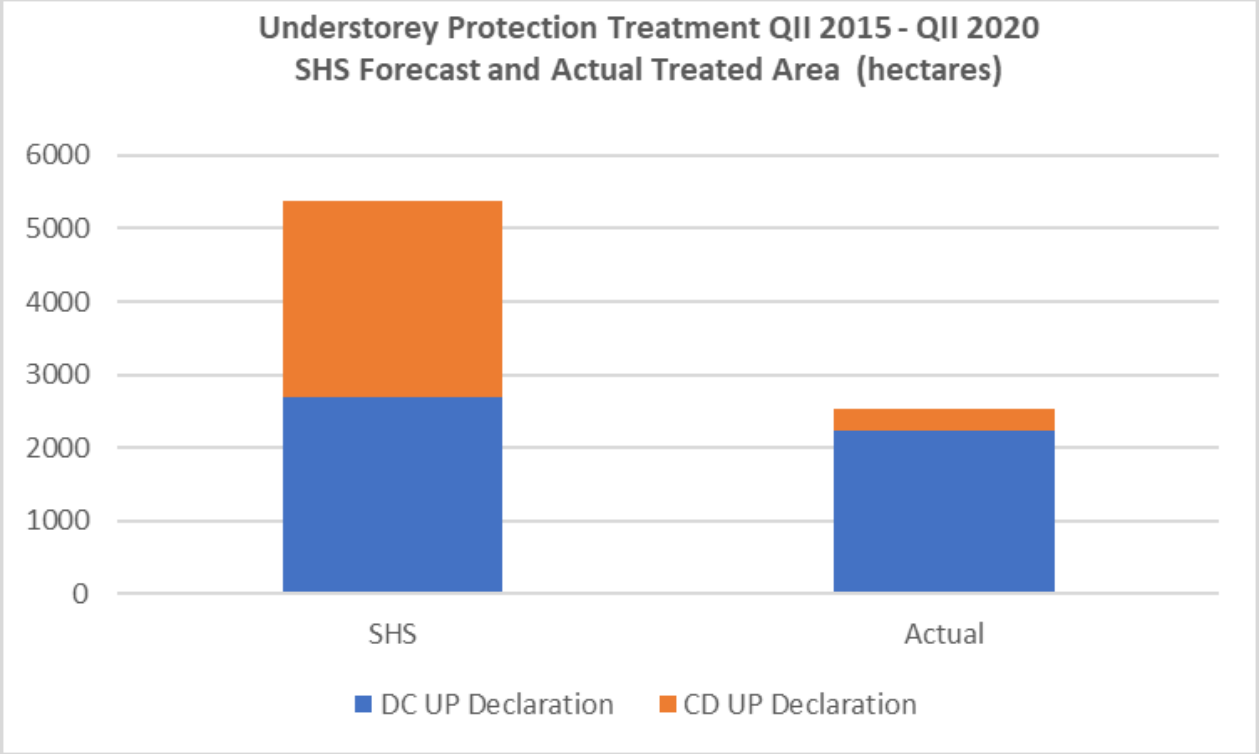
From QII 2015 to QII 2020, approximately 48 percent of the gross SHS DU forecast was actualized into DU treatment areas and was reported as DC-UP and CD-UP treatment stratum.

Al-Pac reports the post-harvest declaration of DC understorey protection and CD understorey protection treated areas. Figure 13 illustrates the forecasted SHS hectare targets and the actual DU treated areas. These treatment areas have been created from the aspen (Aw) polygons where DU was found through field reconnaissance and/or photo interpretation and the actual AVI inventoried DU polygons found to have significant understorey density (>600 stems/ha) through field reconnaissance and imagery. Al-Pac does not delineate within the silviculture declarations (DC-UP or CD-UP) whether the new DU treatment area was found through the original AVI or field survey.

The SHS forecast is approximately 52 percent greater than the actual treatment hectares because the majority of the SHS forecast is in FMUs A15 and S22 (44 percent of SHS) where limited DU stands were actually harvested. Field monitoring and interpretation have illustrated that the DC-UP outcome tends to be the likely occurrence. Moving forward, Al-Pac intends to designate all future DU treatment stands as DC-UP. This will result in only one yield strata in the next TSA for DU stands. Within the TSA, the difference between the Mixedwood Growth Model (MGM) DC-UP and CD-UP yield curves is negligible.

University of Alberta's Mixedwood Growth Model is a deterministic, distance-independent, individual tree-based stand growth simulation model used in the Al-Pac FMA Area TSA.

Figure 13. Understorey protection treatment QII 2015–QII 2020 – SHS forecast and actual hectares treated



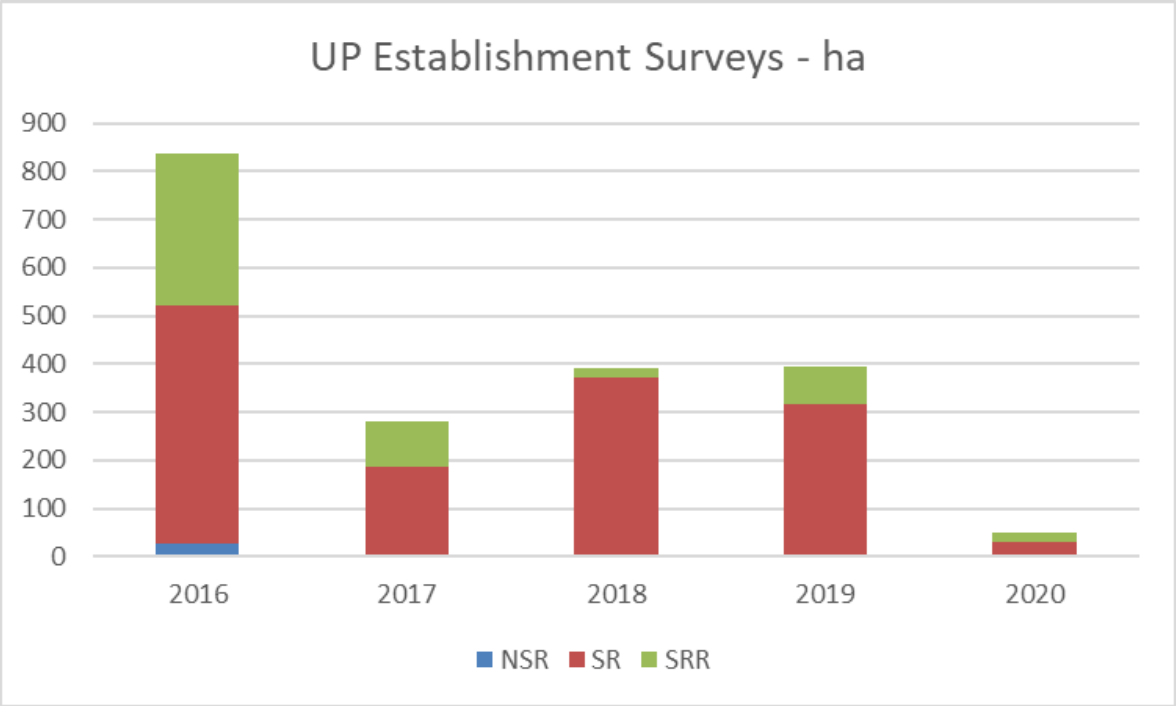
Understorey Protection – Post-Harvest Monitoring – Establishment Surveys

Since 2015, all Al-Pac understorey protection stands have undergone an RSA-approved establishment survey. In that period, more than 2,000 hectares were surveyed. The objectives of UP establishment surveys are to:

- Determine and document the reforestation status of each opening;
- Document the presence and distribution of retained coniferous trees across the entire opening;
- Document the presence and distribution of regenerating seedlings and suckers across the entire opening; and
- Identify areas and conditions in openings where regeneration success has been inhibited or is unlikely to meet the density and/or distribution targets for regeneration at the time of the performance survey.

Figure 14 illustrates the UP establishment surveys by year and status. Essentially, all designated UP stands have achieved a level of satisfactorily restocked (SR).

Figure 14. Understorey protection establishment surveys (hectares)



Abbreviations: NSR – not satisfactorily restocked; SR – satisfactorily restocked;
SRR – satisfactorily restocked to reduced understorey protection standard

Understorey Protection – Post-Harvest Monitoring – Performance Surveys

In 2018, 2019, and 2020, Al-Pac initiated RSA performance surveys on UP stands on approximately 2,800 hectares. The protocols were developed with GoA and designed to monitor the success of high-effort understorey protection treatments at leaving a significant number of immature conifer stems on the site. Actual stand metrics are collected through a combination of field plots, aerial assessment, and imagery interpretation. Over the three years, almost all post-harvest stands were declared "DC," as that was the actual AVI interpretation.

Mean annual increment (MAI) was not a metric collected for this post-harvest stratum. Post-harvest, the diversity and complexity of stand dynamics of the treated stand provides a challenging environment for the collection of homogeneous tree data that can be used in regulated forest stand modelling. The future forest forecast for these treatments requires a post-harvest tree list to suitably delineate stand dynamics.

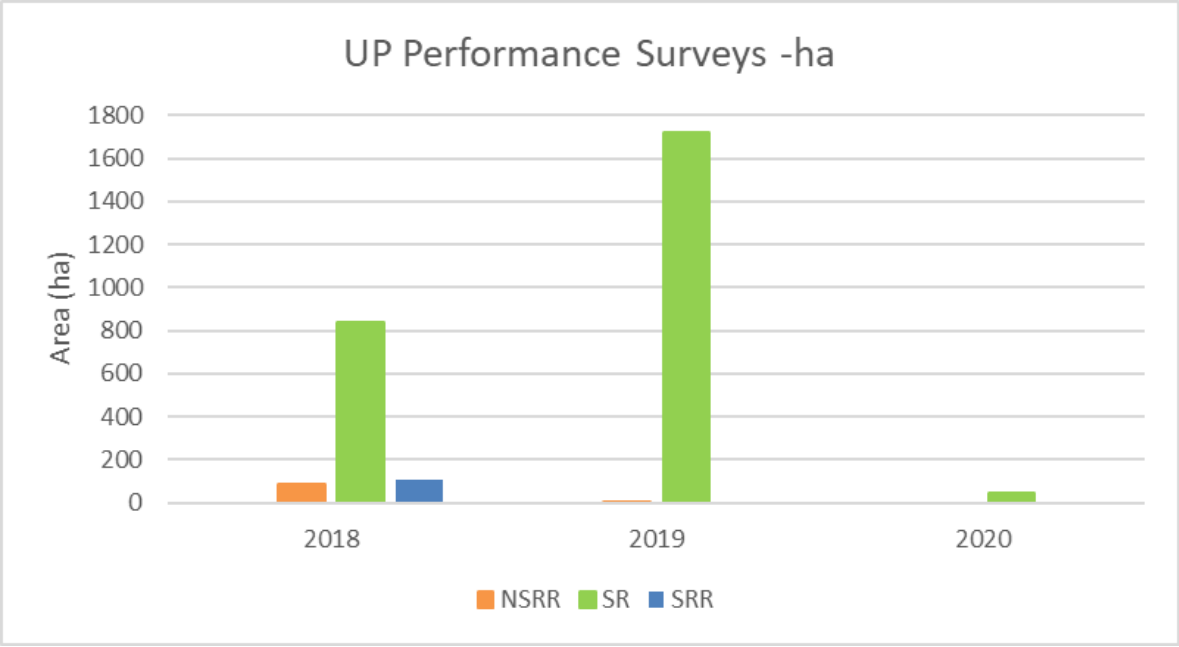
Al-Pac has initiated strip-cut understorey protection (SCUP) permanent sample plots (PSPs) over the past 10 years to capture dynamic stand metrics. Upward of 80 plots have been installed throughout the FMA area. This data will most likely be used in future forest modelling.

Within the TSA, to capture the stand dynamics and associated acute complexity, and thus provide a future forest outlook, these stands are placed in managed stand yield curves using the Mixedwood Growth Model (MGM)—a deterministic, distance-independent, individual tree-growth model. Two MGM yield curves (DC-UP and CD-UP) were utilized within the approved 2015 *Forest Management Plan* to provide data for the AAC and future SHS.

Moving forward, only one stratum (DC-UP) will be designed for the 2025 FMP's TSA to facilitate efficient modelling and thus mimic actual post-harvest stand conditions, as observed through monitoring.

The three-year performance survey situation for DU stands is as follows in Figure 15. The year 2020 had a limited UP performance survey program due to helicopter passenger and field crew COVID restrictions. Imagery was not available for this reporting period.

Figure 15. Understorey protection performance surveys (hectares)



Abbreviations: NSRR – not satisfactorily restocked to reduced understorey protection standard; SR – satisfactorily restocked; SRR – satisfactorily restocked to reduced understorey protection standard

VOIT 21 – DYNAMIC – Implementation of merchantable timber FMA area landbase maintenance program (2.1.2.1)

Criterion 2 – Ecosystem Productivity

CSA SFM Element – 2.1 Ecosystem Resilience

Value	2.1.2 Maintenance of forest landbase
Objective	2.1.2.1 Limit conversion of merchantable timber FMA area landbase to other uses
Type of VOIT	Dynamic
Indicator	Implementation of merchantable timber FMA area landbase maintenance program
Target	No changes in operable landbase due to forest management operations.
Acceptable Variance	No variance
Status	Achieved – Ongoing monitoring through the TDA* process

Maintenance of the forested landbase is important for sustainable forest management. The GoA planning standard presumes that the current forest estate remains in a static gross hectare state for the duration of the planning horizon. Currently, fewer than 1.9 million hectares of the FMA area are defined as merchantable timber or harvestable forest landscape and will remain as forecasted for at least two forest harvest rotations (i.e., 200 years). The ongoing forest inventory process (AVI-II) will allow the forest companies to monitor the gross forest estate. The forest companies always attempt to minimize the conversion of forested land to non-forest cover. Al-Pac only removes forested land through mainly DLO (road) and DML (department miscellaneous lease; e.g., camps and yards) dispositions that support harvest operations.

Since FMA inception in 1992, vast areas of forested and non-forested landbase have been removed (FMA area withdrawal) from the FMA area due to GoA-approved anthropogenic activity, primarily the energy, pipeline, and transmission line sectors. Al-Pac prepared a "Vignette" in 2016 that details the FMA area gross area changes over time; this document can be found under Our Roots/Corporate Documents/Other Reports at www.alpac.ca.

For the stewardship reporting period, the regional slowdown in the energy sector greatly reduced the negative pressure on the FMA area landbase.

Mandatory Component 4, in the previous section, reports landbase changes for the reporting period.

* TDA – Timber Damage Assessment – Merchantable standing timber landbase values assessments for Al-Pac and GoA. Hectare values are as per GoA TDA tables. The withdrawal and TDA process is articulated in the Al-Pac FMA – Section 6 (1–10).

Within the stewardship reporting period, GoA approved more than 15,000 hectares being removed from the gross landbase, primarily based on the six approved disposition types listed below. The entirety of the 15,000 hectares has been removed from the legal FMA area landbase. These hectares were from a variety of sites and netdown landbase criteria.

Upward of 3,500 individual dispositions were managed by Al-Pac during the five-year period to generate the land metrics for Mandatory Component 4. Fewer than 20 actual dispositions (oil sands activities) accounted for over 90 percent of the converted lands.

Primary Dispositions for FMA Area Landbase Removal

MSL – mineral surface lease	(e.g., wells, SAGD sites, mine sites, and expansions)
SML – surface materials lease	(e.g., gravel pits)
PLA – pipeline agreement	
DLO – permanent roads	(DLO – Departmental Licence of Occupation)
EZE – easements	(e.g., transmission lines)
DML – departmental misc. lease	(e.g. camps, radio tower site, log yards)

Al-Pac's Wabasca log yard

VOIT 22 – DYNAMIC – Amount of area affected by insects, diseases, and natural calamities; forest health (2.1.2.2)

Criterion 2 – Ecosystem Productivity

CSA SFM Element – 2.1 Ecosystem Resilience

Value	2.1.2 Maintenance of forest landbase
Objective	2.1.2.2 Recognize lands affected by insects, disease, or natural calamities
Type of VOIT	Dynamic
Indicator	Amount of area affected by insects, diseases, and natural calamities; forest health
Target	Reduction in the area (ha) within the operable landbase affected by significant outbreaks, infestations, and natural calamities. In the first two SHS periods (years 1–10), all mature (merchantable/operable) jack pine (Pj) stands greater than 90 years old will be selected for harvest.
Acceptable Variance	No variance
Status	Achieved – Ongoing program

Forest health is a term used to describe the condition of a forest and how well it can meet management objectives. A healthy forest can sustain itself ecologically while providing for the economic, social, recreational, and spiritual needs and values of society. From a forestry perspective, management objectives focus on the health of the trees. GoA and the forest industry are jointly responsible for protecting Alberta's forests from pests.

Insects and diseases are natural processes within the forest ecosystem and seldom require intervention by the forest companies. It is recognized that both insects and diseases are natural processes inherent in forest ecosystems and forest succession. The forest companies participate in the Northeast Regional Integrated Pest Management Working Group, which is a joint government-industry group that aims to develop policy and action plans for provincial and regional insect and disease management. The forest companies continue to support the management programs agreed to through this process to adhere to the *Alberta Forest Health Strategy*. The largest "natural calamity" on the FMA area continues to be wildfire (see VOIT 7).

Currently (as of 2020), there are no major outbreaks of insects or diseases in the FMA area. Over the previous 20 years there have been spruce budworm and tent caterpillar outbreaks. Mountain pine beetle (MPB) is also not a serious risk to date in the FMA area. There have been no major in-field actions to mitigate tent caterpillar outbreaks on the FMA area. The 2015 FMP's TSA did direct the SHS to prioritize jack pine stands >90 years old in all the western FMUs and FMU S23.

To date, MPB has been observed to be slowly migrating from the foothills north and eastward into Alberta's boreal forest. The forest companies have not been directly involved in any of GoA's MPB management programs in the FMA area, which mainly involve aerial survey and bait programs.

Mountain pine beetle bait program (GoA 2020 photo)

Direct control of other insects in the FMA area's forest is usually not necessary because the impact of most insects has not been critical to fibre supply. Maintenance of a well-stocked stand and protection from mechanical wounding is perhaps the most practical method of coping with insects in the boreal forest. For hardwood trees, it is primarily insect defoliators that cause deleterious effects.

However, seven main insects are identified as potential hazards:

Insect	**Host**
Tent caterpillar (*Malacosoma disstria*)	Aspen and poplar
Aspen leaf roller (*Archips negundana*)	Aspen and poplar
Aspen two-leaf tier (*Enargia decolor*)	Aspen and poplar
Satin moth (*Leucoma salicis*)	Aspen and poplar
Aspen tortrix (*Choristoneura conflictana*)	Aspen and poplar
Mountain pine beetle (*Dendroctonus ponderosae*)	Pine
Spruce budworm (*Choristoneura fumiferana*)	Spruce and balsam fir

Tent caterpillar (Malacosoma disstria) (Canadian Forest Service photo)

Although many diseases attack aspen and conifers, relatively few kill or seriously injure living trees. The common deciduous leaf diseases, in general, are widely distributed throughout the range of aspen, whereas there are subtle differences in distribution among the important decay fungi, and entirely different areas of distribution of major canker-causing organisms. However, there still are large gaps in knowledge of the disease organisms and their influence on natural and regenerated stands. These knowledge gaps are being addressed through government and industry research and monitoring initiatives and programs throughout Alberta. Three main diseases are identified as potential hazards:

Disease	**Host**
Armillaria (*Armillaria ostoyae*)	All commercial tree species
Shepherd's crook (*Venturia* species)	Aspen and balsam poplar
Aspen trunk rot (*Phellinus tremulae*)	Aspen and balsam poplar

Aspen trunk rot (Phellinus tremulae) (Canadian Forest Service photo)

VOIT 23 – DYNAMIC – Noxious weed program (2.1.3.1)

Criterion 2 – Ecosystem Productivity

CSA SFM Element – 2.1 Ecosystem Resilience

Value	2.1.3 Control invasive species
Objective	*2.1.3.1 Control non-native plant species (weeds – as per GoA direction).*
Type of VOIT	Dynamic
Indicator	Noxious weed program
Target	Forest company noxious weed program in place and implemented.
Acceptable Variance	Report actuals
Status	Achieved

Alberta's *Weed Control Act* exists to enforce the control of weeds in order to protect landowners and the environment. Weeds are designated into one of three categories:

1. Restricted
2. Noxious
3. Nuisance

The forest companies can only control weeds within areas they operate on—harvest blocks and access. To date, the companies have efficiently combated the spread of weeds as they have been reported on harvest blocks and access. Controlling the spread of weeds throughout the FMA area is an impossible task for the forest companies except in forest company dispositions (e.g., DLO roads/liability). The southern part of the FMA area is adjacent to the agricultural White Zone and the entire FMA area also experiences heavy use from both industrial and recreational users. Consequently, opportunities for invasive speciecs migration is considerable.

Crown land (harvest blocks and forest company access roads) is accessible to all Albertans, and the control of seed sources and spread through third parties is truly unmanageable without a huge increase in GoA enforcement.

For the five-year reporting period, Al-Pac treated approximately 1,700 km of their DLO road dispositions within the Al-Pac FMA area. Additionally, a number of former harvest operator camps and operational log pits were also teated if weed abatement was deemed necessary. Control actions and locations are now tracked annually by Al-Pac. Treatment is with GoA approved herbicides.

VOIT 24 – DYNAMIC – Compliance, support, and adherence with current approved *Northeast Alberta Operating Ground Rules* (3.1.1.1)

Criterion 3 – Soil and Water Resources

CSA SFM Element – 3.1 Soil Quantity and Quality: Conserve soil resources by maintaining soil quality and quantity

Value	3.1.1 Soil productivity
Objective	3.1.1.1 Minimize impact of road and barred areas in forest operations
Type of VOIT	Dynamic
Indicator	Compliance, support, and adherence to the current approved *Northeast Alberta Operating Ground Rules*
Target	In-block road and/or bared areas not to exceed 5 percent of the gross block area on an annual timber year basis.
Acceptable Variance	No non-compliance actions
Status	Achieved

Soil productivity is critical to the successful regeneration of harvest blocks. Minimizing the damage to soils is of great concern to the forest companies such that their actions do not impair soil productivity and/or cause soil compaction. Additionally, soil productivity is the capacity of a soil to provide for growth. Bared soil is any soil where the organic layers and vegetation have been removed. Soil disturbance includes bared landing areas, temporary roads, displaced soils, or ruts. Soil erosion is defined as the wearing away of topsoil. Topsoil is the top layer of soil and is the most fertile because it contains the most organic, nutrient-rich materials.

The majority of the forest companies' harvesting activities occur when the ground is frozen, so soil damage is usually not an issue. However, about 25 percent of Al-Pac's harvest takes place during frost-free months and, as such, the companies have soil guidelines in the OGRs.

Protection of soil is best achieved through choice of equipment, staff training, and advanced planning of operations. Management of field operations should involve operating on soils when they are as dry as possible. The weather and percentage of sensitive areas in the harvest area should be considered when scheduling areas for harvesting.

The forest companies recognize that the regeneration of in-block roads and landings is the greatest challenge for silviculture practitioners, particularly when harvesting occurs in the frost-free period. These areas are most likely to become the not satisfactorily restocked (NSR) areas within a cut-block and/or planning unit. NSR may be due to a number of related factors, including harvest practices, site, soil, seasons, and biological constraints.

In addition to the OGRs, Al-Pac's silviculture program has investigated practices for reducing NSR caused by roads and landings that impair soil processes. The improved handling of topsoil is the primary objective of new best practices to ensure that the mineral soil component is available for subsequent tree regeneration.

The following are some resulting guiding principles and specific best management practices*:*

- Minimize road length in a harvest-block;
- Store topsoil in compact piles adjacent to the road or at the edge of the harvest block;
- Construct road after the logs have been decked;
- Avoid having skidders push mineral soil;
- Create high decks with the logs;
- Pile slash with rakes;
- Pile slash immediately after decks are hauled;
- Reclaim roads with a silvicultural objective in mind; and
- Utilize site preparation techniques for road reclamation that should stimulate hardwood suckering.

For the reporting period, Al-Pac did not have any violations of the OGRs with respect to soils.

Al-Pac harvest block

VOIT 25 – DYNAMIC – Compliance, support, and adherence to current approved *Northeast Alberta Operating Ground Rules* and *Forest Soils Conservation Guidelines* regarding soil erosion and slumping (3.1.1.2)

Criterion 3 – Soil and Water Resources

CSA SFM Element – 3.1 Soil Quantity and Quality: Conserve soil resources by maintaining soil quality and quantity

Value	3.1.1 Soil productivity
Objective	3.1.1.2 Minimize incidence of soil erosion and slumping
Type of VOIT	Dynamic
Indicator	Compliance, support, and adherence with current approved *Northeast Alberta Operating Ground Rules* and *Forest Soils Conservation Guidelines* regarding soil erosion and slumping
Target	Compliance with OGRs.
Acceptable Variance	No non-compliance actions
Status	Achieved (with two warnings received)

A slump (or slumping) is a mass movement process of slope failure in which a mass of rock or unconsolidated material drops along a concave slip surface. The term "slump" is also used to refer to the material that breaks off in a slumping slide. Slumps are sometimes caused by harvesting on unstable soils, and the sagging and rotational movement of the mass of soil and rock is due in part to water infiltration and the lubrication of clay-rich soils below.

A primary concern is minimizing soil displacement (erosion and slumping), compaction, and rutting or puddling during road construction, harvesting, and silvicultural operations. Soils are most at risk of compaction and rutting or puddling when the soil is moist or wet, with the more poorly drained soils remaining wetter longer. Within the five-year stewardship period, two warnings were provided to Al-Pac relating to this VOIT:

1. 2017 – No erosion control and deleterious material on ice surface in harvest area
2. 2019 – Issues regarding erosion control and existence of deleterious material

For the reporting period, Al-Pac did not have any violations of the OGRs with respect to soils.

VOIT 26 – MODELLED – Limit impact of timber harvesting on water yield (3.2.1.1)

CCFM Criterion 3 – Soil and Water Resources

CSA SFM Element – 1.2 Species Diversity: Conserve species diversity by ensuring that habitats for the native species found in the FMA area are maintained throughout time.

Value	3.2.1 Water quality
Objective	Limit impact of timber harvesting on water yield
Type of VOIT	Modelled
Indicator	3.2.1.1 Forecast impact of timber harvesting on water yield. Use the "Equivalent Clear-Cut Assessment" (ECA) model with the spatial harvest sequence (SHS) spatially explicit output.
Target	*Zero Water Act* penalties associated with timber harvesting.
Acceptable Variance	None.
Status	Pending 2025 *Forest Management Plan* and new ECA outputs

The ECA model is recalibrated every 10 years in association with the next *Forest Management Plan*. The GoA will continue to manage the direction of the ECA model for the forest companies.

Water yield is the runoff from the drainage basin, including groundwater outflow that appears in the stream plus groundwater outflow that bypasses the gauging station and leaves the basin underground. Water yield is the precipitation minus the evapotranspiration.

The original ECA model outputs per FMU are enclosed with the 2015 FMP TSA documentation.

FMA area wetlands

VOIT 27 – DYNAMIC – Compliance, support, and adherence to current approved *Northeast Alberta Operating Ground Rules* – Riparian buffers maintained (3.2.2.1)

CCFM Criterion 3 – Soil and Water Resources

CSA SFM Element – 1.2 Species Diversity: Conserve species diversity by ensuring that habitats for the native species found in the FMA area are maintained throughout time

Value	3.2.1 Water quality
Objective	3.2.2.1 Minimize impact of operations in riparian areas
Type of VOIT	Dynamic
Indicator	Compliance, support, and adherence to current approved *Northeast Alberta Operating Ground Rules* – riparian buffers maintained
Target	Complete compliance.
Acceptable Variance	None
Status	One infraction

The *Northeast Alberta Operating Ground Rules* (OGRs) direct the forest companies with respect to watershed protection, including all river and stream crossings. OGRs address fisheries and the aquatic environments. All relevant provincial and federal legislation is followed to meet the minimum requirements of the legislation. Al-Pac primarily monitors culverts and bridges for all its water crossings in the FMA area.

The *Northeast Alberta Operating Ground Rules* are designed to manage the implications of timber operations on water quality, quantity, and flow regime, by:

- Minimizing the potential for sedimentation in watercourses;
- Preventing soil, logging debris, and deleterious substances from entering watercourses;
- Maintaining aquatic and terrestrial habitat;
- Complying with the relevant legislation.

Al-Pac operated in compliance with the riparian OGRs throughout the reporting period. VOIT 27 is similar to VOIT 9 in that they both deal with riparian areas and in particular water course buffers. As stated in VOIT 9, Al-Pac had a 2016 OGR infraction.

VOITs 28 and 29 – MODELLED – Carbon budgets and cycles

CCFM Criterion 4 – Global Ecological Cycles (GoA-approved Terms of Reference for the 2015 FMP do not address Criterion 4)

CSA SFM Element – 4.1 Carbon Uptake and Storage: Maintain the processes that take carbon from the atmosphere and store it in forest ecosystems

CSA SFM Element – 4.2 Forest Land Conversion: Protect forest lands from deforestation or conversion to non-forests, where ecologically appropriate

Value	Maintain forest conditions and management activities that contribute to the health of global ecological cycles
Objective	VOIT 28 – 4.1.1 Impact of forestry operations on carbon budgets 4.1.1.1 Further the understanding of the impact of forest management on carbon cycles VOIT 29 – 4.2.1 Forest management and global ecological cycles: Protect forest lands from deforestation or conversion to non-forests, where ecologically appropriate
Type of VOIT	Modelled
Indicators	4.1.1 – Net carbon uptake 2.1.1 – Reforestation success 2.2.1 – Additions and deletions to the forest area
Target	n/a
Acceptable Variance	n/a
Status	Not required

The GoA does not currently require fulfillment of Criterion 4 by the forest companies.

According to the Canadian Standards Association Z809-08 standard for Sustainable Forest Management (SFM):

> Machine operations generate emissions of carbon dioxide and other compounds that contribute to climate change. Thus, the lower that forest managers can make the emissions during forest operations, the better for the environment.
>
> Forests have great potential to sequester and store carbon from the atmosphere. Given the importance today and in the future of the carbon-storage potential of forests, managers should recognize the imperative of keeping forest lands in vigorous tree growth at all times. This includes ensuring prompt tree regeneration following disturbances such as timber harvests. It also includes converting the smallest possible amount of forest land to non-forest land during forest operations (e.g., minimizing roads and landings).
>
> Where possible, it can also mean converting non-forest land to forest land by establishing trees—a process known as afforestation. A common example of afforestation is planting trees on abandoned farm fields.
>
> Forest carbon has recently become a key SFM value, especially in light of Canada's international commitment to lower its net carbon outputs to the atmosphere. Models for calculating a forest carbon budget (e.g., the Canadian Forest Service's Carbon Budget Model of the Canadian Forest Sector (CBM-CFS3)) have become widely available and are readily linked to common models used for forecasting forest structures and potential wood supplies. Their use in forest planning can indicate whether a specific forest is expected to be a net carbon source or sink over the period normally used for wood-supply forecasts.

> In some cases, it can be advisable for the organization to look beyond the DFA [defined forest area] and identify the carbon budget using existing data calculated over a broader scale (e.g., from provincial government initiatives devoted to calculating forest carbon budgets).
>
> Forests can be turned into other types of ecosystems through a variety of activities, including those that relate directly to SFM (e.g., building roads and landings) and those outside the influence of forest managers (e.g., urban and industrial developments, utility corridors). Forest managers should reduce, as much as possible, the amount of area they convert to non-forest ecosystems and should discourage unwarranted forest land conversions that are beyond their control.

The Al-Pac LAG commented on these two VOITs in the 2015 FMP:

> Although Criterion 4 was not considered as part of FMP preparation, the LAG would like to be kept informed of the latest research on the role of forestry in carbon sequestration and the possible effects of forest management on global climate change. At the current rate of harvest in the FMA area, it does not appear likely that this value will be affected. The forest companies should continue to monitor and assess the situation.

FMA area landscape

VOIT 30 – MODELLED – Establish appropriate annual allowable cuts (AAC) with the *Alberta Forest Management Planning Standard* process described in Annex 1 of the planning manual (5.1.1.1)

CCFM Criterion 5 – Multiple Benefits to Society

CSA SFM Element – 5.1 Timber and Non-Timber Benefits

Value	5.1.1 Sustainable timber supplies
Objective	5.1.1.1 Establish appropriate AACs (annual allowable cuts)
Type of VOIT	Modelled
Indicator	5.1.1.1 Annex 1 – *Alberta Forest Management Planning Standard*
Target	Compliance to Annex 1.
Acceptable Variance	Issue specific
Status	Pending next *Forest Management Plan*

The timber supply analysis (TSA) quantifies the amount of fibre that may be harvested by the forest companies within the FMA area. The model does not forecast losses of fibre due to natural disturbances and other industrial activity. The TSA delineates fibre at a temporal scale for at least two forest rotations or 200 years and at a spatial scale for 10 to 70 years. This identified amount of fibre available to the forest products industry is referred to as an annual allowable cut (AAC) or volume available within the goals and strategies provided in the FMP.

The main output of the TSA spatial analysis is to provide an explicit 10-year spatial harvest sequence (SHS) and a coarse 11- to 60-year spatial analysis for each of the 12 FMUs. The explicit sequence is committed to and divided up among (based on tenure) all eligible forest companies. The start year for the sequence is 2015, which corresponds with the start of a timber quadrant.

The forest companies manage the TSA on discrete landbases for 12 FMUs but with an integrated approach to planning the spatial harvest sequence (SHS). The TSA is designed to simultaneously maximize and even-flow both the deciduous and coniferous volumes over the 200-year planning horizon. The next TSA (as part of the FMP) is scheduled for completion in 2025. At that point, a renewed AAC and SHS will be prepared.

In 2018, managed-stand conifer yield curves for conifer quota holders Alberta Plywood and Vanderwell were approved by the GoA, which resulted in a small increase in the conifer AAC for FMUs S18 and L2. (*Note:* This S18 AAC increase was subsequently negated by the AAC reduction due to the 2019 McMillan Complex Wildfire.)

In 2019, the (arson-caused) McMillan Complex Wildfire affected about 265,000 gross hectares in the Slave Lake area, including about 255,000 hectares in Al-Pac's FMA area. About one-third of the burned area had been classified as merchantable forest and would have contributed to the AAC. Removal of merchantable areas from the FMU net landbases results in a GoA-approved reduction in the AAC for two affected FMUs (S11 and S18).

The burned areas will nevertheless continue to contribute to non-timber values such as wildlife habitat. As the burn areas begin to regenerate, they will again contribute to vegetation inventory.

The landbase determination, or netdown process (NLB), is used to define the net landbase currently available for timber harvesting, based upon the *Northeast Alberta Operating Ground Rules* (OGRs) and the most up-to-date inventory of land uses in the FMA area. The complete documentation of the NLB is part of the *Forest Management Plan* (Annex III).

The prediction of current and future forest growth and yield is a primary driver in the determination of sustainable allowable harvest levels. Yield estimation in Alberta is typically prepared using growth models within the guidelines set out by the GoA Planning Standard Annex. The complete documentation of the Al-Pac FMA area growth and yield (G&Y) program is part of the *Forest Management Plan* (Chapter 7, Appendix IV).

Al-Pac FMA area harvest blocks

VOIT 31 – DYNAMIC – Percentage reduction in Fire Behaviour Potential area (ha) within the FireSmart Community Zone (5.2.1.1a)

CCFM Criterion 5 – Multiple Benefits to Society

CSA SFM Element – 5.2 Communities and sustainability

Value	5.2.1 Risk to communities and landscape values from wildfire is low
Objective	5.2.1.1a To reduce wildfire threat potential by reducing fire behaviour, fire occurrence, threats to values at risk, and enhancing fire suppression capability
Type of VOIT	Dynamic
Indicator	Percentage reduction in Fire Behaviour Potential area (ha) within the FireSmart Community Zone
Target	Reduce the area (ha) in the extreme and high Fire Behaviour Potential rating categories within the FireSmart Community Zone by the GoA (communities to be identified by GoA-AAF).
Acceptable Variance	Issue (Community Zone) specific
Status	VOIT has been met – no FireSmart community zones were identified

FireSmart seeks to mitigate large, high-intensity, high-severity wildfires and incorporate natural disturbance emulation. Designing FireSmart by integrating fire, forest, and land management planning activities is the cornerstone of protecting a multitude of values, achieving safety, meeting planning objectives, and ultimately attaining sustainable forest management. FireSmart also identifies opportunities to use prescribed burning as a natural disturbance management strategy to meet ecological objectives through ecological restoration. FireSmart is a building block of all elements of wildfire prevention (engineering, education, enforcement).* Most of the major communities within the FMA area completed a FireSmart program prior to 2015. FireSmart programs are managed by the Government of Alberta and components of the program have been enacted by the forest companies. Within the reporting period, the GoA did not identify any new FMA area communities that required FireSmart programs.

Horse River (Fort McMurray) Wildfire, 2016 (GoA photo)

* Government of Alberta. 2006. *Alberta Forest Management Planning Standard: V4.1.* Annex 3: FireSmart Management, p 83. https://open.alberta.ca/dataset/1f6f64f1-d530-4a50-b50e-a981168bf9cf/resource/5006c175-8db5-4e91-b45b-9df28809479d/download/3491799-2006-forest-management-planning-standard.pdf

VOIT 32 – MODELLED – Wildfire threat assessment for the FMA area (5.2.1.1b)

CCFM Criterion 5 – Multiple Benefits to Society

CSA SFM Element – 5.2 Communities and Sustainability

Value	5.2.1 Risk to communities and landscape values from wildfire is low
Objective	5.2.1.1b To reduce wildfire threat potential by reducing fire behaviour, fire occurrence, threats to values at risk, and enhancing fire suppression capability
Type of VOIT	Modelled
Indicator	5.2.1.1b Percentage reduction in Fire Behaviour Potential area (ha) across the FMA area, now and over the planning horizon
Target	Reduce the area (ha) in the extreme and high Fire Behaviour Potential rating categories across the FMA area by the percent determined through analysis using the current Wildfire Threat Management Plan model (target supplied by GoA).
Acceptable Variance	Issue specific
Status	Pending next Al-Pac FMA area *Forest Management Plan*

Wildfire modelling and suppression capability are determined and directed by the Government of Alberta. The GoA has prepared landscape modelling (Landscape Wildfire Threat Assessment) that is designed to assist in the reduction of the area (ha) in the extreme and high Fire Behaviour Potential rating categories across the FMA area.

The GoA wildfire threat assessments include:

- Fire behaviour potential;
- Fire occurrence risk;
- Suppression capability; and
- Values at risk.

Al-Pac continues to assist GoA in its FireSmart and wildfire suppression activities in the FMA area throughout the reporting period. A Landscape Wildfire Threat Assessment for the FMA area was completed by G0A in 2016; a subsequent assessment should be completed by GoA for the next *Forest Management Plan*.

VOIT 33 – DYNAMIC – Integrate other users and timber management activities throughout the FMA area through an Integrated Land Management (ILM) process (5.2.2.1)

CCFM Criterion 5 – Multiple Benefits to Society

CSA SFM Element – 5.2 Communities and Sustainability

Value	5.2.2 Provide opportunities to derive benefits and participate in use and management
Objective	5.2.2.1 Integrate other users and timber management activities throughout the FMA area through an Integrated Land Management (ILM) process
Type of VOIT	Dynamic
Indicator	Availability of Al-Pac roads for use by other commercial forest users and the public. Inventory distribution. Volume of industrial fibre salvage.
Target	All forest company all-weather roads will be made available for use by other commercial forest users and the public (unless access restrictions are required by the Government of Alberta). The forest companies will, where applicable, pursue Road Use Agreements with other potential industrial users. The forest companies will utilize ILM to minimize disturbance and maximize recovery of merchantable fibre from non-forestry users (e.g., energy sector activities). Provide inventory data of the FMA area to other users and stakeholders, upon their request.
Acceptable Variance	Report actuals
Status	Ongoing program

In the late 1990s, as energy development began to accelerate in and near the FMA area, Al-Pac led the development of a new, cooperative strategy called ILM, which was intended to reduce the size and intensity or duration of the human footprint on the landbase. It is based on the recognition that one sector's activities affect other sectors' activities and that the integrity of the FMA area's functioning ecosystems require user coordination on a landscape level to reduce the cumulative effects of human activity and produce economic benefits for all parties.

Al-Pac has, over the past 20 years, been entering into ILM agreements with selected energy firms. The agreements may spell out one or all of the following: road use, maintenance, ownership, priority harvesting areas, data sharing, energy sector site preparation, and regulatory assistance.

Al-Pac has made its complete "up-to-date" Alberta Vegetation Inventory (AVI) data and associated imagery available to the public, academic institutions, government research organizations, the Alberta Biodiversity Monitoring Institute (ABMI), Indigenous communities, and industry (in particular, the energy and utilities sector). The data are available at a fee on a township basis or as in-kind donations to academia and other projects.

Data sales and distribution are based on external market demand. Al-Pac does not create the market nor promote the distribution of the data and/or imagery. In this reporting period, energy sector exploration and expansion were limited. Accordingly, data sales and deliveries to that sector were extremely diminished compared to 10 years earlier. For the reporting period, Al-Pac only sold 80 townships of AVI data to the energy and utility sector. The majority of these townships were for pipeline projects within the FMA area.

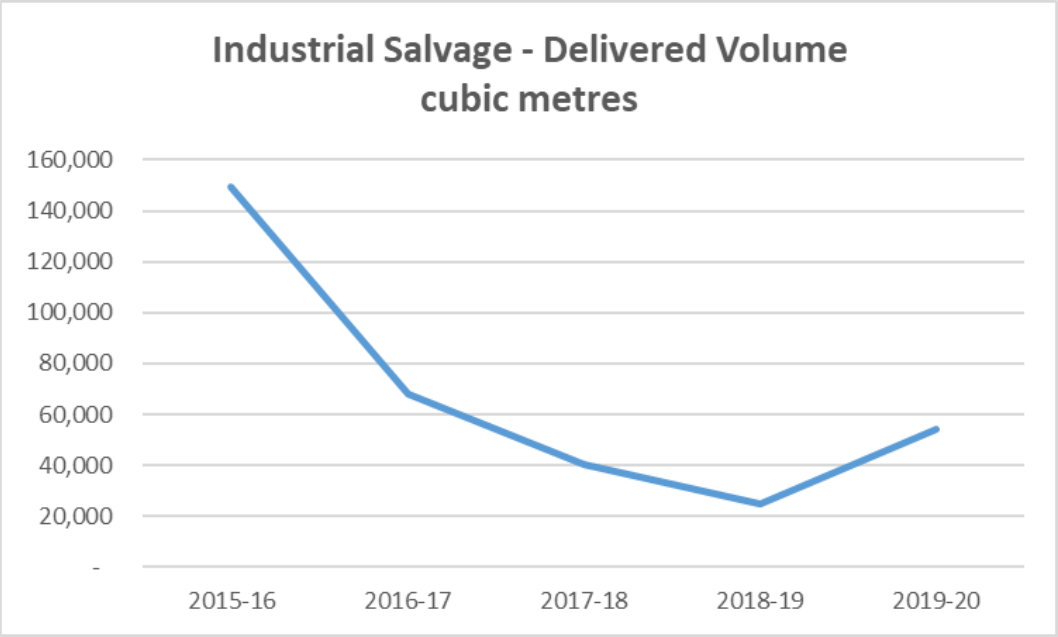
However, during the reporting period, Al-Pac did continue to provide up-to-date data and imagery to Canadian universities, upon their request.

Due to the decrease in energy sector activities on the FMA area landscape, Al-Pac no longer has a dedicated Integrated Land Services (ILS) team that promotes and actualizes an ILM approach. However, Al-Pac is involved the following areas:

1. Efficient fibre delivery from energy and utility companies' industrial salvage
2. Road construction, maintenance, and ownership synergies
3. Data sharing

Throughout the planning period AL-Pac purchased industrial salvage fibre from energy and utility companies. Figure 16 illustrates industrial salvage fibre volumes from the FMA area. The chart illustrates five years of activity—2015 (QIII) to 2020 (QII). The downward trend mirrors the decline in energy and utility sector activity over the last several years.

Figure 16. Al-Pac industrial salvage volumes (m^3)



VOIT 34 – MODELLED – Maintain long-run sustained yield average (LRSYA) (5.2.3.1)

CCFM Criterion 5 – Multiple Benefits to Society

CSA SFM Element – 5.2 Communities and Sustainability

Value	5.2.3 Forest productivity
Objective	5.2.3.1 Maintain the long-run sustained yield average (LRSYA) by comparing regenerated stand yield to natural stand yield
Type of VOIT	Modelled
Indicator	FMP – timber supply analysis (TSA) and growth and yield forecasts
Target	No net decrease from the natural stand productivity, based on the natural stand yield estimates.
Acceptable Variance	Report actual in FMP
Status	Pending the next *Forest Management Plan* – 2025

The long-run sustained yield average (LRSYA) is a forecast that assumes natural-to-natural transitions to generate the baseline for the proposed growth and yield strata transitions to predict that they are practical and reasonable. This VOIT is a requirement of the GoA Planning Standard and will be recalculated for the 2025 FMP.

FMA area landscape

VOIT 35 – DYNAMIC – Meet Alberta's current regulatory expectations for First Nations consultation plan (6.1.1.1)

CCFM Criterion 6 – Accepting Society's Responsibility for Sustainable Development

CSA SFM Element – 6.1 Indigenous and Treaty Rights and Indigenous Forest Values

Value	6.1.1 Compliance with Alberta government First Nations consultation regulations and policies
Objective	6.1.1.1 Implement First Nations Consultation Plan
Type of VOIT	Dynamic
Indicator	Meet Alberta's current regulatory expectations for First Nations consultation plan
Target	Consult at the community level with designated First Nations and their representatives in the affected communities.
Acceptable Variance	Report actuals
Status	Achieved – Ongoing program

The Alberta-Pacific Forest Industries Inc. (Al-Pac) First Nations Consultation program articulates how the company will carry out the prescribed procedural aspects of consultation required by the Government of Alberta (GoA) with specific First Nations. This process is driven by the GoA *First Nations Consultation Policy on Land Management and Resource Development*.[*]

Al-Pac's *Forest Management Plan* (FMP) is one component of the company's forest management planning process. The FMP is a technical document that outlines strategies regarding where, when, and how Al-Pac will manage the forest landbase on which it operates. In addition to the FMP, Al-Pac also continually consults on all documents within the planning hierarchy: *General Development Plan*, *Annual Operating Plan*, and *Forest Harvest Plans*.

Al-Pac carried out the procedural aspects of consultation with specific First Nations regarding the company's FMP. This consultation with specific First Nations was conducted in accordance with the following principles:

1. Consultation will be conducted in a manner consistent with the requirements of the Alberta government, as specified in the *Government of Alberta's Policy on Consultation with First Nations on Land Management and Natural Resource Management, 2013*; the *Government of Alberta's Corporate Guidelines for First Nations Consultation Activities, 2013;* and the procedural aspects for consultation with First Nations outlined on the Government of Alberta website.
2. Consultation will be conducted in a manner that respects the goals, priorities, and timelines of both the specific First Nations and Al-Pac.
3. Consultation will identify, respect, and address the particular interests of each party involved in the consultation process.
4. Consultation will adhere to any previously held consultation agreements or other agreements signed between Al-Pac and specific First Nations.

[*] The Government of Alberta's First Nations consultation policy on land management and resource development: https://open.alberta.ca/publications/3775118-2014

For the 2015 Al-Pac FMA area FMP, Al-Pac was advised to consult the following 12 First Nation communities in the development of the FMP:

- First Nations located outside Al-Pac's FMA area:
  - Athabasca Chipewyan First Nation
  - Beaver Lake Cree Nation
  - Cold Lake First Nation
  - Mikisew Cree First Nation
  - Saddle Lake First Nation
  - Whitefish (Goodfish) Lake First Nation
- First Nations located within Al-Pac's FMA area:
  - Bigstone Cree Nation
  - Chipewyan Prairie First Nation
  - Fort McKay First Nation
  - Fort McMurray First Nation
  - Heart Lake First Nation
  - Peerless Trout First Nation

GoA accepted the adequacy of Al-Pac's Indigenous consultation for the 2015 *Forest Management Plan*.

Regarding consultation continuing throughout the ensuing five-year stewardship period, GoA instructed Al-Pac to consult a greater number of Indigenous communities (22) within and outside the FMA area. The following list is as of 2020:

Athabasca Chipewyan First Nation	Heart Lake First Nation
Beaver Lake Cree Nation	Mikisew Cree Nation
Bigstone Cree Nation	Peerless Trout First Nation
Chipewyan Prairie Dene First Nation	Saddle Lake Cree Nation
Cold Lake First Nation	Sucker Creek First Nation
Fort McKay First Nation	Whitefish Lake First Nation
Fort McMurray First Nation #468	Whitefish (Goodfish) First Nation
Métis Nation of Alberta	Fort McKay Métis Nation
Buffalo Lake Métis Settlement	Gift Lake Métis Settlement
East Prairie Métis Settlement	Kikino Métis Settlement
Elizabeth Métis Settlement	Peavine Métis Settlement

Alberta-Pacific has complied with and performed all procedural aspects of First Nations and Métis Settlements consultation as per the *Government of Alberta's Proponent Guide to First Nations and Métis Settlements Consultation Procedures*, December 2019; the *Government of Alberta's Policy on Consultation with Métis Settlements on Land and Natural Resource Management*, 2015; and the *First Nations and Métis Settlements Pre-consultation Assessment* provided by Alberta Agriculture and Forestry on March 2, 2020. GoA accepted the adequacy of Al-Pac's detailed reporting for each year in the 2015-2020 period.

For every consultation occurrence (i.e., community contact), a "Record of Consultation" (ROC) was prepared by Al-Pac and subsequently submitted to GoA.

Table 27 summarizes the stewardship period, communities contacted (by year), and concerns, issues, or interests that were brought to Al-Pac's attention. The majority of the concerns, issues, and interests do not change on a year-to-year basis.

Table 27. Summary of Al-Pac consultation for each year in the reporting period

2015–2016 Consultation Program

Number of Communities	Communities	Concerns, Issues, and Interests Provided During the Consultations
12 communities ROC complete for each community	Athabasca-Chipewyan FN Beaver Lake CN Bigstone Cree Nation Chipewyan-Prairie FN Cold Lake FN Fort McKay FN Fort McMurray FN Heart Lake FN Peerless Trout FN Saddle Lake FN Sucker Creek FN Whitefish Lake FN	In general, no site-specific considerations Trapper / trapline interests Buffers on roads / animal dens Community economic development Access – closing roads / restrictions Truck / highway safety Timber supply analysis process GIS capabilities at communities General tree silvics Outdoor ecological education for children Ice bridge standards Mountain pine beetle (MPB) situation Wildfire salvage process Timing of block entry

2016–2017 Consultation Program

Number of Communities	Communities	Concerns, Issues, and Interests Provided During the Consultations
16 communities ROC complete for each community	Athabasca-Chipewyan FN Beaver Lake Cree Nation Bigstone Cree Nation Chipewyan-Prairie FN Cold Lake FN Fort McKay FN Fort McMurray FN Heart Lake FN Mikisew Cree FN Peerless Trout FN Saddle Lake FN Kehewin Cree Nation Sucker Creek FN Whitefish Lake FN Whitefish (Goodfish) Lake FN Buffalo Lake Métis Settlement	In general, no site-specific considerations Trapper / trapline interests Buffers on roads / animal dens Caribou habitat Access – closing roads / restrictions Moose Lake Plan Truck / highway safety General tree silvics Data-sharing agreements High Conservation Values (HCVs) Integrated Land Management (ILM) Athabasca River water quality Treaty rights Cumulative effects Herbicide application / chemicals used Tree-planting opportunities Bee habitat Alberta Bio-Monitoring Institute program

2017–2018 Consultation Program

Number of Communities	Communities	Concerns, Issues, and Interests Provided During the Consultations
19 communities ROC complete for each community	Athabasca-Chipewyan FN Beaver Lake Cree Nation Bigstone Cree Nation Chipewyan-Prairie FN Cold Lake FN Fort McKay FN Fort McMurray FN Heart Lake FN Mikisew Cree FN Peerless Trout FN Saddle Lake FN Sucker Creek FN Whitefish Lake FN Whitefish (Goodfish) Lake FN Buffalo Lake Métis Settlement East Prairie Métis Settlement Elizabeth Métis Settlement Gift Lake Métis Settlement Peavine Métis Settlement	In general, no site-specific considerations Trapper / trapline interests Buffers on roads / animal dens Caribou habitat Access – closing roads / restrictions Water crossings Truck / highway safety General tree silvics Tree / fibre utilization Data-sharing agreements High Conservation Values (HCVs) Biodiversity (flora and fauna) “Natural” food supply Integrated Land Management (ILM) Harvest block entry timing Athabasca River water quality Moose Lake Plan Treaty rights / burial sites / artifacts Cumulative effects Herbicide application / chemicals used Tree-planting opportunities Bee habitat Alberta Bio-Monitoring Institute program PAR program

2018–2019 Consultation Program

Number of Communities	Communities	Concerns, Issues, and Interests Provided During the Consultations
19 communities ROC complete for each community	Athabasca-Chipewyan FN Beaver Lake Cree Nation Bigstone Cree Nation Chipewyan-Prairie FN Cold Lake FN Fort McKay FN Fort McMurray FN Heart Lake FN Mikisew Cree FN Peerless Trout FN Saddle Lake FN Sucker Creek FN Whitefish Lake FN Whitefish (Goodfish) Lake FN Buffalo Lake Métis Settlement East Prairie Métis Settlement Elizabeth Métis Settlement Gift Lake Métis Settlement Kikino Métis Settlement	In general, no site-specific considerations Trapper / trapline interests Buffers on roads / animal dens Caribou habitat Water crossings Truck / highway safety Biodiversity (flora and fauna) Integrated Land Management (ILM) Harvest block entry timing Water quality Moose Lake Plan Treaty rights Cumulative effects Herbicide application / chemicals used Environmental monitor opportunities Climate change planning Landscape wildfire risk

2019–2020 Consultation Program

Number of Communities	Communities	Concerns, Issues, and Interests Provided During the Consultations
19 communities ROC complete for each community	Athabasca-Chipewyan FN Beaver Lake Cree Nation Bigstone Cree Nation Chipewyan-Prairie FN Cold Lake FN Fort McKay FN Fort McMurray FN Heart Lake FN Mikisew Cree FN Peerless Trout FN Saddle Lake FN Whitefish Lake FN Whitefish (Goodfish) Lake FN Buffalo Lake Métis Settlement East Prairie Métis Settlement Elizabeth Métis Settlement Gift Lake Métis Settlement Kikino Métis Settlement Peavine Métis Settlement	In general, no site-specific considerations Trapper / trapline interests Buffers on roads / animal dens Caribou habitat Water crossings / buffers Truck / highway safety Biodiversity (flora and fauna) Integrated Land Management (ILM) Quota holder planning obligations Harvest block entry timing Water quality Moose Lake Plan FireSmart Treaty rights Trails Wildlife monitoring program Cumulative effects Herbicide application / chemicals used Environmental monitor opportunities Climate change planning Landscape wildfire risk Economic development opportunities Timber / wood donations Aggregate sales Employment and training Capacity funding Historic anthropogenic footprint

VOIT 36 – DYNAMIC – Implement a Community Engagement Strategy (CES) (6.2.1.1)

CCFM Criterion 6 – Accepting society's responsibility for sustainable development

CSA SFM Element – 6.2 Public participation and information for decision making

Value	6.2.1 Meaningful public involvement is achieved
Objective	6.2.1.1 The CES shall meet the expectations of Section 5 of CSA Z809-02
Type of VOIT	Dynamic
Indicator	Community engagement activities
Target	Implement Community Engagement Strategy (CES) – described in Chapter 2 of the FMP.
Acceptable Variance	n/a (report actual activities)
Status	Achieved – Continuing engagement through the Landscape Advisory Group (LAG) and other activities (e.g., 1-800 phone line, website)

Advisory Group Focus of Community Engagement, 2015–2020

The Forest Landscape Advisory Group (LAG) has been the principal focus of Al-Pac's community engagement for forest management during the 2015–2020 period. The methods of engagement have included information presentations, learning opportunities, and workshop discussions dealing with specific Al-Pac interests and needs. This engagement occurred during regular meetings of the LAG and during the annual field trips that have been arranged to various locations within the FMA area.

The LAG has existed since 1991 with the establishment of the (then) Forest Management Task Force (FMTF). Management planning changed with the advent of the Government of Alberta *Forest Management Planning Standard* in 2006.[*] The introduction of the Planning Standard coincided with the maturing of the forest management planning process. Consequently, the role of the former FMTF was refocused through a revised engagement strategy[†] and the establishment of the Landscape Advisory Group (LAG).

The members of the LAG represent a diversity of geographic interests (i.e., within or adjacent to Al-Pac's FMA area), forest users (e.g., First Nations, Métis, professional outfitters, trappers, recreational hunters and anglers), and commonly shared values (e.g., industry and business associations, environmental organizations). The specific interests that were regularly represented at LAG meetings during the 2015–2020 period are provided in Table 27 below:

[*] See Government of Alberta *Forest management standards and guidelines*: https://www.alberta.ca/forest-management-manuals-and-guidelines.aspx

[†] Al-Pac's Community Engagement Strategy, revised in June 2017, is Appendix 1, Volume 1, in the 2015 *Forest Management Plan*: https://www.alberta.ca/alberta-pacific-forest-industries-alpac.aspx

Table 28. LAG interests regularly represented by LAG members, 2015–2020

• Métis Nation Local 2020 • S-11 Logging • Northland Forest Products • Métis Nation of Alberta • Fort McKay First Nation • Vanderwell Contractors • Métis Nation Region 1 • Peerless Trout Lakes First Nation • Métis Nation Local 1909	• Public member, Slave Lake Area • The Wildlife Society Alberta Chapter • Alberta Agriculture and Forestry • Public member – stewardship interest • Public member – former FMTF member • Métis Nation, Athabasca	• Calling Lake Community • Alberta Trappers Association • Métis Elder, Fort Chipewyan • Alberta Métis Federation Governance Council • Bigstone Cree Nation • Alberta Fish and Game Association • Alberta Professional Outfitters Society

LAG Meetings and Field Trips 2015–2020: Number of Meetings, Field Trips, Feature Information Presentations, Workshops, and Learning Opportunities

Annually from 2015 to 2020, the LAG "meeting year" ran from the autumn (usually September or October) of the previous year to the summer (usually June) on the next year. The number of meetings averaged three to four annually, including a two-day field trip within the FMA area with a meeting on one of the two days.

Each meeting had a prepared agenda that was based on a discussion and agreement with members at the previous meeting. The agenda included an item from the member interests that Al-Pac representatives felt was important to present and discuss for advice and two or three items requested by members that updated or presented new information for discussion. Learning opportunities were regularly identified and provided with the agreement of the members. From time to time, comment and advice was sought through a workshop format that used small group discussion to help provide information for operational decision making. A summary of contents of the LAG meetings, by year, is provided in the tables below.

Annual Summary of LAG meetings and Field Trips – Presentations, Learning Opportunities and Workshops by LAG Year

Table 29. LAG year September 2014–June 2015

Meetings and Field Trips	Presentations	Learning Opportunities	Workshops
4 meetings / 1 field trip	• 2015 AL-Pac FMA area *Forest Management Plan* updates • Forest Stewardship Council / Sustainable Forest Initiative • Update on quota holder roles, responsibilities, and forest certification relationships • Canadian Boreal Forest Agreement (CBFA) updates	• Al-Pac Community Investment Program • Landscape assessment – Forest netdown: FMA area management and harvest planning • Landscape interpretation – Preparation of forest area inventory maps for forest planning • Controlled Parentage Plan for Balsam Poplar (*Populus balsmifera*) (*field trip, Lac La Biche area, June 2015*)	• LAG Governance: Detailed review and update of the LAG Terms of Reference • High Conservation Values in the Al-Pac FMA Area • Current Al-Pac research review and priority setting for presentations

Table 30. LAG year September 2015–June 2016

Meetings and Field Trips	Presentations	Learning Opportunities	Workshops
4 meetings / 1 field trip	• Forest Stewardship Council, Al-Pac FMA area certification updates • Silviculture and Herbicide in Alberta and the Proposed Program within the FMA area • The Status of the Cumulative Environmental Management Association (CEMA) and the Future of the Organization's Reports and Studies • Canadian Boreal Forest Agreement (CBFA) update • Situation – GOA IRMS – Regional Multi-Stakeholder Forums • Al-Pac FMA area FMP – Timber Supply Analysis update	• Forest Inventory process – Landscape interpretation for mapping of the FMA area • Five-year update on biodiversity within the Al-Pac FMA area (*ABMI staff presented*) • Timber Supply Analysis – Patchworks interpretation for future mapping of FMA area • Northern Alberta – A History of the 1919 Wildfire (*Professor Emeritus Peter Murphy of UofA presented*) • Alberta's Harvest Block Stand-Structure Retention Guidelines (*Government of Alberta presenter*) • Site visits to Vegetation Management – Harvest Blocks – response to treatments in various-aged harvest blocks (*field trip Athabasca area, June 2016*)	• Al-Pac FMA area FMP – LAG commentary review and verification of draft content

Table 31. LAG year October 2016–June 2017

Meetings and Field Trips	Presentations	Learning Opportunities	Workshops
4 meetings / 1 field trip	• Proposed Structure Retention Directive – Additional Information (*presentation by Provincial Forest Ecologist*) • Horse River (Fort McMurray) Wildfire – How It Started, Its Behaviour, Area Burned, and Subsequent Fire Salvage Operations (*presentation by Provincial Wildfire Prevention staff*)	• Stick nest buffers and requirements for migratory bird management within the FMA area • Al-Pac FMA area – *Forest Management Plan* (FMP) – Three "new" *Alberta Planning Standard* requirements (Values, Objectives, Indicators, and Targets – VOITs) for Biological Diversity • Visit to House River Wildfire – 15-year-old site forest succession, and to Horse River Wildfire – two sites (Anzac): Al-Pac Fire Salvage Site – Winter 2017; Burned forest sites – May 2016 burn (*field trip Anzac / Conklin area, June 2017*)	• *Forest Management Plan* and LAG acronym list preparation and updates • *Forest Management Plan* review – Three additional VOITs to complete the FMP for regulatory submission and review; discuss and provide advice on the proposed *Objectives and Targets*; verify the LAG commentary for each VOIT • *Lessons from Nature* video – Facilitated discussion with LAG members on applicability and understanding of videos prepared by the Foothills Research Institute (fRI)

Table 32. LAG year November 2017–June 2018

Meetings and Field Trips	Presentations	Learning Opportunities	Workshops
3 meetings / 1 field trip	• FMA Area *Forest Management Plan* (FMP), Status, Government of Alberta, Alberta Agriculture and Forestry – (Draft) Conditions of Approval • Forest Stewardship Council – June 2017 Audit Results • Initiatives for Woodland Caribou Recovery Across Western Canada – Collaborative Research: Science for Caribou Recovery (*presentation by Alberta Biodiversity Monitoring Institute, Caribou Monitoring Unit Lead*) • Al-Pac FMA Area *Forest Management Plan* (FMP) – Final approval and highlights	• Caribou Range Planning in Alberta (*presentation by Alberta Environment and Parks, Land, and Environment Planning (North), Caribou Range Planning lead)* • Caribou Range Planning in Alberta with emphasis on the herds within the Al-Pac FMA area • Forest Hydrology and Management (*presentation by the Provincial Forest Hydrologist*) • Protected Area Gap Analysis for the Al-Pac FMA Area and the Mistik FMA Area (SK) (*presentation by Consultant Lead, Protected Areas Gap Analysis*)	• Future LAG "Hot Topics" – LAG members worked to prepare a listing of what members might wish to learn about, provide advice on, or engage in over the next year of LAG operation • Smoky Lake Tree Nursery Tour – AAF Tree Improvement Centre and Smoky Lake Tree Nursery (*field trip, June 2018*)

Table 33. LAG year November 2018–June 2019

Meetings and Field Trips	Presentations	Learning Opportunities	Workshops
3 meetings / 1 Field Trip	• Woodland Caribou Planning in Alberta – Woodland Caribou Conservation and Multispecies Planning NE Alberta / NW Saskatchewan • FSC Monitoring Vignettes – Stand and Landscape Structure, and Social and Economic Impact Analysis (SEIA) update • Ecosystem-Based Management in the FMA Area – Overview	• Al-Pac FMA Area *Forest Management Plan* Approval Conditions – Stewardship Reporting Requirements (2010–2015 period and 2015–2020 period) • History of Significant Decisions in the Establishment of Indigenous Rights • Meeting with Fort McKay Elders to learn about effects of energy sector (oil sands) on Fort McKay traditional land use and why the traditional use area at Moose Lake is important to the First Nation (*field trip, June 2019*) • Tour of Giants of Mining Park at the Syncrude site (*field trip, June 2019*) • Tour of the Snye and Indigenous Artists Walk, Macdonald Island Park, Fort McMurray, AB (*field trip, June 2019*)	• Protected Areas Gap Analysis – Northeast Alberta / North West Saskatchewan – LAG subcommittee • Stewardship Report preparation for 2010–2015 period – LAG subcommittee • June 2019 field trip evaluation

Table 34. LAG year 2019–2020

(*Note:* The 2019–2020 LAG year was abbreviated due to the pandemic health restrictions put in place in March 2020 by the GoA)

Meetings and Field Trips	Presentations	Learning Opportunities	Workshops
2 meetings	• Al-Pac FMA Area 2010 – 2015 Stewardship Report* – LAG Review (Chapters I and II)	• "What Bugs the Forest" Population Dynamics of Alberta's Forest Pathogens and Insects (*presented by UofA Entomology Professor*)	• High Conservation Values (HCVs): LAG Member Engagement – Identification of HCVs within the Al-Pac FMA area • Protected Area Gap Analysis (PAGA) Review – Review, respond, and add to potential sites within the FMA area and adjacent lands

Due to the pandemic restrictions, the last meeting of the LAG in this reporting period was held in December 2019. The meeting to follow was scheduled for March 2020, but it had to be cancelled due to COVID-19 pandemic public health restrictions on gatherings and movement. In December 2020, Al-Pac representatives sent a newsletter update to all LAG members outlining:

- Al-Pac's pandemic response at the mill site and for administrators, mill operations, woodlands planning, and harvesting activities
- The current situation with the LAG, recognizing that there would be no face-to-face meetings until the pandemic gathering restrictions were lifted (which was yet to occur as this report was prepared)
- Al-Pac LAG coordinators would review the LAG terms of reference and how the LAG operates, and make recommendations for changes during the pandemic lockdown (this process had been planned to start with the LAG beginning at the cancelled March 2020 meeting)

* The 2010–2015 report was delayed to comply with new GoA stewardship reporting requirements released in June 2017. In fact, most of the relevant stewardship information had already been included in the 2015 FMP.

Other Al-Pac Engagement and Communications with Public and Stakeholders

In addition to the LAG, Al-Pac's Community Engagement Program provides opportunities for the exchange of information and perspectives with the public on Al-Pac's forest management planning and harvest operations activities through a range of community engagement methods. The program is designed to help facilitate comprehensive and meaningful public awareness and involvement so that Al-Pac may address concerns. Shared insights are used to create forest management plans that are sensitive to the cultural, social, environmental, and economic concerns of those who reside in or are otherwise concerned about the FMA area. These programs continuously seek new ways to improve opportunities for public participation and information sharing. To that end, Al-Pac looks to stakeholders for suggestions with respect to how the company may better meet the needs of concerned groups and individuals.

Al-Pac's engagement program encompasses the following activities:

- Development and distribution of forest planning summary documents (when requested);
- Forest planning meetings held in Indigenous communities within the FMA area – part of the comprehensive Al-Pac consultation program;
- Advertising in local newspapers the availability of forest management planning information;
- Topical presentations delivered by in-house expertise when requested;
- Woodland tours (when requested);
- Dedicated public affairs and Indigenous relations staff to facilitate an open-door policy should concerned individuals or groups want to talk directly to Al-Pac staff;
- Toll-free phone access to Al-Pac staff;
- Corporate website providing detailed information on company practices and activities; and
- Social media, including Facebook, Twitter, and LinkedIn

The Al-Pac website, www.alpac.ca, also includes information and publications relating to forest management in the FMA area. New information posted in the 2015–2020 period* included:

2020

Al-Pac FMA Area Actual Harvest vs. Quadrant Cut Control, 2016–2020

High Conservation Values in the Alberta-Pacific Forest Industries Inc. Forest Management Agreement Area

Status of Land Cover and Biodiversity in the Alberta-Pacific Forest Industries Inc. Forest Management Agreement Area

2019

Annual Report 2015–2020, Management and Monitoring Strategy for High Conservation Values

Al-Pac Blog Calling Lake V05

Al-Pac Blog Calling Lake V05 Pt. 2

Al-Pac Blog Canada Warbler V11

Al-Pac Blog Understorey Protection V08

Cultural Values Monitoring Report

Fish-Bearing Stream Assessments Monitoring

Permanent Sampling Plots Monitoring Assessments, Vignette

Stream Crossing Assessments Monitoring

2018

Landscape and Stand-Level Structure Monitoring, Vignette

Protected Areas Gap Analysis – Phase 1 Report

Protected Areas Gap Analysis – Phase 1 Peer Review

Socio-Economic Indicator Report, Vignette

2016

Forest Inventory Monitoring, Vignette

Approved Al-Pac FMA Area *Forest Management Plan*

2015

Modelling Historical Landscape Patterns on the Al-Pac FMA Area, D. Andison, 2015

* All reports available at https://alpac.ca/our-roots/corporate-documents/

Value of Engagement for Forest Management

As the LAG has commented, the direct impact of public, Indigenous, and stakeholder engagement on forest management is limited by the requirements of the GoA Planning Standard, operating ground rules, other regulations and policies, and awarding of numerous non-forestry (anthropogenic) dispositions in the FMA area. However, there are significant indirect benefits from engagement for the participants, including the forest companies and the GoA. For example, LAG members were actively involved in preparing the 2015 Al-Pac FMA area *Forest Management Plan* and provided commentary* on the 36 VOITs that an Alberta Agriculture and Forestry (AAF) official said would be considered in the next iteration of the Planning Standard.

Through engagement, interested parties learn about forestry operations, ecological considerations, and effects on landscapes and communities—knowledge which they can convey to their constituencies. Forest companies and government officials learn about concerns they need to address in planning and operations. LAG members have participated in identifying "high conservation value" features and areas on the landscape, and they took part in a multi-jurisdictional Protected Area Gap Analysis study (See VOIT # 18). Engagement not only fulfills a GoA requirement, it is also an important factor in Al-Pac's certification by the Forest Stewardship Council (FSC). LAG members provide feedback to FSC auditors that affects their evaluation and may influence evolution of FSC's standard for sustainable forest management.

LAG field trip, Rock Island Lake, 2016 (Robert Bott photo)

Appendices to this report are available as separate documents:

Appendix I: Alberta-Pacific Spatial Harvest Sequence Variance Tables

Appendix II: Quota Holder Stewardship Reporting

* The LAG commentaries are included with the VOITs in Chapter 5 of the FMP and also summarized at the end of Chapter 1 (pages 37–41): https://www.alberta.ca/alberta-pacific-forest-industries-alpac.aspx

Alberta-Pacific Forest Products Inc.

Forest Management Agreement Area

Forest Stewardship Report

Reporting Period May 1, 2015–April 30, 2020

Appendix I

Spatial Harvest Sequence

Variance Tables

for Alberta-Pacific Harvest Operations

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year) 2021-03-08
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)												Asbuilts								Combined As-Built & Planned						
										Variance							Harvested (ha)					SHS Assessment (Excluding Slivers)			Variance			SHS Assessment (Excluding Slivers)			Unplanned
										Substantial				Slivers											Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	unplanned SHS in Compartment
A14-B	All	All	1,091	257	-	-	-	-	-	-	33	8	41	9	15	23	189	-	216	28	433	0.00%	(41)	176	244	33	8	94.90%	203	(176)	13
	Aw/Aw U	D	257	257	-	-	-	-	-	-	33.1	8.3	41.4	1.8	14.8	16.6	188.7	-	207.8	28.0	424.5	0.00%	(41)	167	236	33	8	91.61%	194	(167)	13
	PjMX	DC-P	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	12	-	-	-	-	-	-	-	-	-	-	1.7	-	1.7	-	-	5.5	-	5.5	100.00%	-	6	6	-	-	100.00%	6	(6)	-
	SxAw	CD-SW	56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	387	-	-	-	-	-	-	-	-	-	-	0.7	-	0.7	-	-	2.9	-	2.9	100.00%	-	3	3	-	-	100.00%	3	(3)	-
	Pj	C-P	94	-	-	-	-	-	-	-	-	-	-	0.3	-	0.3	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	278	-	-	-	-	-	-	-	-	-	-	2.2	-	2.2	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	0.3	-	0.3	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	1.7	-	1.7	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP
Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)												Asbuilts								Combined As-Built & Planned						Unplanned
										Variance							Harvested (ha)					SHS Assessment (Excluding Slivers)			Variance			SHS Assessment (Excluding Slivers)			
										Substantial				Slivers											Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
A14-C	All	All	7,042	2,815	-	-	-	-	-	-	143	147	291	24	87	111	537	-	-	-	537	0.00%	(291)	(2,278)	-	143	147	0.00%	(291)	2,278	1,900
	Aw/Aw U	D	2,614	2,614	-	-	-	-	-	-	141.2	141.0	282.2	6.6	61.1	67.7	370.1	-	-	-	370.1	0.00%	(282)	(2,243)	-	141	141	0.00%	(282)	2,243	1,900
	PjMX	DC-P	6	4	-	-	-	-	-	-	-	-	-	0.3	0.2	0.5	4.3	-	-	-	4.3	0.00%	-	(0)	-	-	-	0.00%	-	0	0
	AwSx	DC-S	589	20	-	-	-	-	-	-	-	-	-	1.7	3.2	4.8	16.8	-	-	-	16.8	0.00%	-	(3)	-	-	-	0.00%	-	3	0
	SxAw	CD-SW	626	16	-	-	-	-	-	-	-	-	-	2.6	1.0	3.6	14.8	-	-	-	14.8	0.00%	-	(1)	-	-	-	0.00%	-	1	0
	PjMx	CD-P	9	0	-	-	-	-	-	-	-	-	-	0.1	0.1	0.1	0.4	-	-	-	0.4	0.00%	-	(0)	-	-	-	0.00%	-	0	0
	SxAw	CD-SB	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	2,852	146	-	-	-	-	-	-	2.1	6.4	8.4	5.5	20.4	25.9	116.6	-	-	-	116.6	0.00%	(8)	(29)	-	2	6	0.00%	(8)	29	0
	Pj	C-P	24	13	-	-	-	-	-	-	-	-	-	0.0	0.7	0.7	12.1	-	-	-	12.1	0.00%	-	(1)	-	-	-	0.00%	-	1	0
	SbG	C-SB	288	3	-	-	-	-	-	-	-	-	-	1.0	0.4	1.3	2.2	-	-	-	2.2	0.00%	-	(0)	-	-	-	0.00%	-	0	0
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	0.4	-	0.4	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	5.5	-	5.5	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned						Unplanned
										Variance														Variance			SHS Assessment (Excluding Slivers)			
										Substantial				Slivers			Harvested (ha)					SHS Assessment (Excluding Slivers)			Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
A14-E	All	All	3,862	1,432	2	-	-	-	2	-	184	142	326	112	224	336	858	-	123	157	1,137	0.00%	(326)	(295)	279	184	142	19.52%	(47)	293	22
	Aw/Aw U	D	1,432	1,432	1.87	-	-	-	1.87	-	184.4	142.0	326.4	56.3	224.3	280.6	857.6	-	122.7	156.8	1,137.1	0.00%	(326)	(295)	279	184	142	19.52%	(47)	293	22
	PjMX	DC-P	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	427	-	-	-	-	-	-	-	-	-	-	7.6	-	7.6	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	414	-	-	-	-	-	-	-	-	-	-	8.3	-	8.3	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	36	-	-	-	-	-	-	-	-	-	-	0.0	-	0.0	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	19	-	-	-	-	-	-	-	-	-	-	1.3	-	1.3	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	880	-	-	-	-	-	-	-	-	-	-	12.4	-	12.4	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	280	-	-	-	-	-	-	-	-	-	-	1.6	-	1.6	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	361	-	-	-	-	-	-	-	-	-	-	19.6	-	19.6	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	2.1	-	2.1	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	2.7	-	2.7	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

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SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned					Unplanned
										Variance														Variance		SHS Assessment (Excluding Slivers)			
										Substantial				Slivers						SHS Assessment (Excluding Slivers)				Substantial					
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
A14-F	All	All	217	215	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	0.00%	-	(215)	-	-	-	0.00%	-	215	214
	Aw/Aw U	D	215	215	-	-	-	-	-	-	-	-	-	-	0.8	0.8	-	-	-	-	-	0.00%	-	(215)	-	-	-	0.00%	-	215	214
	PjMx	DC-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

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SHS Variance Summary 5 Year Stewardship Report

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SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned					Unplanned
										Variance														Variance					
										Substantial				Slivers										Substantial			SHS Assessment (Excluding Slivers)		
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
A15-A	All	All	5,739	4,179	-	-	-	-	-	-	231	82	313	132	244	376	1,549	-	148	15	1,712	0.00%	(313)	(2,467)	163	231	82	3.90%	(150)	2,467	2,073
	Aw/Aw U	D	3,375	3,375	-	-	-	-	-	-	121.4	50.2	171.5	55.2	149.0	204.2	1,004.8	-	114.1	8.2	1,127.1	0.00%	(172)	(2,248)	122	121	50	3.62%	(49)	2,248	2,050
	PjMX	DC-P	215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	222	137	-	-	-	-	-	-	7.8	-	7.8	13.9	11.9	25.8	116.8	-	21.4	-	138.2	0.00%	(8)	2	21	8	-	15.65%	14	(2)	(0)
	SxAw	CD-SW	250	174	-	-	-	-	-	-	10.2	-	10.2	2.9	16.1	19.0	139.4	-	5.6	-	145.0	0.00%	(10)	(29)	6	10	-	3.20%	(5)	29	8
	PjMx	CD-P	95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	4	4	-	-	-	-	-	-	-	-	-	0.8	2.6	3.4	1.4	-	-	-	1.4	0.00%	-	(3)	-	-	-	0.00%	-	3	(0)
	Sw	C-SW	854	489	-	-	-	-	-	-	91.6	31.7	123.3	27.3	64.3	91.6	286.3	-	6.9	-	293.2	0.00%	(123)	(196)	7	92	32	1.40%	(116)	196	15
	Pj	C-P	724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	-	-	-	-	-	-	-	-	-	-	-	23.3	-	23.3	-	-	-	6.8	6.8	100.00%	-	7	7	-	-	100.00%	7	(7)	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	8.4	-	8.4	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

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SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)												Asbuilts								Combined As-Built & Planned						Unplanned
										Variance							Harvested (ha)					SHS Assessment (Excluding Slivers)			Variance			SHS Assessment (Excluding Slivers)			
										Substantial				Slivers											Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
A15-C	All	All	6,058	4,710	-	-	-	-	-	-	25	42	67	-	27	27	-	-	-	-	-	0.00%	(67)	(4,710)	-	25	42	0.00%	(67)	4,710	4,617
	Aw/Aw U	D	4,710	4,710	-	-	-	-	-	-	24.8	42.2	67.0	-	26.6	26.6	-	-	-	-	-	0.00%	(67)	(4,710)	-	25	42	0.00%	(67)	4,710	4,617
	PjMX	DC-P	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	363	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	266	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	366	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	302	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

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2021-03-08

Harvest Profile					Planned for Harvest (ha)												Asbuilts								Combined As-Built & Planned					Unplanned
										Variance															Variance			SHS Assessment (Excluding Slivers)			
										Substantial				Slivers											Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
A15-D	All	All	8,209	5,755	-	-	-	-	-	-	16	31	47	-	6	6	-	-	-	-	-	0.00%	(47)	(5,755)	-	16	31	0.00%	(47)	5,755	5,703
	Aw/Aw U	D	5,755	5,755	-	-	-	-	-	-	15.7	31.1	46.8	-	6.0	6.0	-	-	-	-	-	0.00%	(47)	(5,755)	-	16	31	0.00%	(47)	5,755	5,703
	PjMX	DC-P	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	136	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	580	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	1,664	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts							Combined As-Built & Planned						Unplanned
										Variance														Variance			SHS Assessment (Excluding Slivers)			
										Substantial				Slivers										Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
A15-E	All	All	1,736	1,151	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(1,151)	-	-	-	0.00%	-	1,151	1,151
	Aw/Aw U	D	1,151	1,151	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(1,151)	-	-	-	0.00%	-	1,151	1,151
	PjMX	DC-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	122	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	387	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

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SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned						Unplanned
										Variance														Variance			SHS Assessment (Excluding Slivers)			
										Substantial				Slivers			Harvested (ha)					SHS Assessment (Excluding Slivers)			Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
101-A	All	All	9,268	7,831	-	-	-	-	-	-	419	292	710	158	464	622	1,878	-	286	8	2,172	0.00%	(710)	(5,659)	295	419	292	3.76%	(416)	5,659	4,778
	Aw/Aw U	D	6,327	6,327	-	-	-	-	-	-	341.1	246.6	587.7	60.7	377.3	438.1	1,800.9	-	283.4	3.2	2,087.5	0.00%	(588)	(4,240)	287	341	247	4.53%	(301)	4,240	3,561
	PjMX	DC-P	101	44	-	-	-	-	-	-	-	8.8	8.8	1.3	1.7	3.1	0.3	-	-	2.2	2.5	0.00%	(9)	(42)	2	-	9	4.89%	(7)	42	33
	AwSx	DC-S	119	119	-	-	-	-	-	-	2.6	10.6	13.2	8.7	15.6	24.3	58.1	-	-	-	58.1	0.00%	(13)	(61)	-	3	11	0.00%	(13)	61	32
	SxAw	CD-SW	148	94	-	-	-	-	-	-	-	4.4	4.4	3.6	7.3	10.9	0.2	-	-	-	0.2	0.00%	(4)	(94)	-	-	4	0.00%	(4)	94	82
	PjMx	CD-P	172	98	-	-	-	-	-	-	-	2.4	2.4	2.8	6.4	9.2	0.5	-	-	-	0.5	0.00%	(2)	(98)	-	-	2	0.00%	(2)	98	89
	SxAw	CD-SB	22	22	-	-	-	-	-	-	-	-	-	0.6	3.1	3.7	0.2	-	-	-	0.2	0.00%	-	(21)	-	-	-	0.00%	-	21	18
	Sw	C-SW	386	264	-	-	-	-	-	-	37.1	19.0	56.0	9.3	20.5	29.8	10.0	-	-	-	10.0	0.00%	(56)	(254)	-	37	19	0.00%	(56)	254	177
	Pj	C-P	1,849	856	-	-	-	-	-	-	37.9	-	37.9	17.7	32.6	50.3	7.7	-	2.6	-	10.3	0.00%	(38)	(846)	3	38	-	0.31%	(35)	846	778
	SbG	C-SB	144	7	-	-	-	-	-	-	-	-	-	39.1	-	39.1	-	-	-	3.1	3.1	0.00%	-	(4)	3	-	-	43.16%	3	4	7
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	13.6	-	13.6	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

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SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned					Unplanned
										Variance														Variance		SHS Assessment (Excluding Slivers)			
										Substantial				Slivers						SHS Assessment (Excluding Slivers)				Substantial					
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
101-B	All	All	1,987	1,298	-	-	-	-	-	-	231	26	258	57	163	219	616	-	12	11	640	0.00%	(258)	(658)	23	231	26	1.79%	(235)	658	261
	Aw/Aw U	D	799	799	-	-	-	-	-	-	183.7	22.0	205.7	10.7	113.1	123.9	480.1	-	-	8.6	488.7	0.00%	(206)	(310)	9	184	22	1.08%	(197)	310	(0)
	PjMX	DC-P	11	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(4)	-	-	-	0.00%	-	4	4
	AwSx	DC-S	223	223	-	-	-	-	-	-	47.8	4.3	52.1	4.6	49.6	54.2	119.9	-	12.3	2.4	134.5	0.00%	(52)	(88)	15	48	4	6.59%	(37)	88	1
	SxAw	CD-SW	306	88	-	-	-	-	-	-	-	-	-	4.6	-	4.6	3.8	-	-	-	3.8	0.00%	-	(84)	-	-	-	0.00%	-	84	84
	PjMx	CD-P	68	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(1)	-	-	-	0.00%	-	1	1
	SxAw	CD-SB	-	-	-	-	-	-	-	-	-	-	-	1.4	-	1.4	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	343	174	-	-	-	-	-	-	-	-	-	17.0	-	17.0	12.7	-	-	-	12.7	0.00%	-	(161)	-	-	-	0.00%	-	161	161
	Pj	C-P	229	5	-	-	-	-	-	-	-	-	-	0.4	-	0.4	-	-	-	-	-	0.00%	-	(5)	-	-	-	0.00%	-	5	5
	SbG	C-SB	8	5	-	-	-	-	-	-	-	-	-	15.7	-	15.7	-	-	-	-	-	0.00%	-	(5)	-	-	-	0.00%	-	5	5
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	2.2	-	2.2	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

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PD 1, Year 1-10

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										Variance														Variance			SHS Assessment (Excluding Slivers)			
										Substantial				Slivers										Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	unplanned SHS in Compartment
L02-B	All	All	10,736	6,836	-	-	-	-	-	-	1,262	457	1,719	156	593	749	2,031	-	327	30	2,388	0.00%	(1,719)	(4,448)	357	1,262	457	5.22%	(1,362)	4,448	2,493
	Aw/Aw U	D	6,836	6,836	-	-	-	-	-	-	1,262.2	457.0	1,719.3	49.1	592.8	641.9	2,031.4	-	327.4	29.6	2,388.4	0.00%	(1,719)	(4,448)	357	1,262	457	5.22%	(1,362)	4,448	2,493
	PjMX	DC-P	28	-	-	-	-	-	-	-	-	-	-	1.1	-	1.1	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	712	-	-	-	-	-	-	-	-	-	-	13.8	-	13.8	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	805	-	-	-	-	-	-	-	-	-	-	22.8	-	22.8	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	63	-	-	-	-	-	-	-	-	-	-	0.1	-	0.1	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	7	-	-	-	-	-	-	-	-	-	-	1.7	-	1.7	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	1,354	-	-	-	-	-	-	-	-	-	-	20.2	-	20.2	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	569	-	-	-	-	-	-	-	-	-	-	5.9	-	5.9	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	361	-	-	-	-	-	-	-	-	-	-	22.3	-	22.3	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	18.9	-	18.9	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

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2021-03-08

Harvest Profile					Planned for Harvest (ha)												Asbuilts								Combined As-Built & Planned						Unplanned
										Variance							Harvested (ha)					SHS Assessment (Excluding Slivers)			Variance			SHS Assessment (Excluding Slivers)			
										Substantial				Slivers											Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
L03-A	All	All	9,189	4,320	7	-	-	-	7	-	403	107	511	27	347	374	177	-	155	-	332	0.00%	(511)	(3,988)	155	403	107	3.59%	(355)	3,981	3,279
	Aw/AwU	D	2,723	2,709	1.82	-	-	-	1.82	-	236.3	59.4	295.8	6.8	195.7	202.5	172.1	-	153.0	-	325.1	0.00%	(296)	(2,384)	153	236	59	5.65%	(143)	2,383	2,044
	PjMX	DC-P	169	29	-	-	-	-	-	-	-	-	-	-	0.0	0.0	-	-	-	-	-	0.00%	-	(29)	-	-	-	0.00%	-	29	29
	AwSx	DC-S	670	199	0.89	-	-	-	0.89	-	9.4	-	9.4	1.0	12.6	13.6	1.6	-	2.1	-	3.8	0.00%	(9)	(195)	2	9	-	1.08%	(7)	195	175
	SxAw	CD-SW	886	168	0.01	-	-	-	0.01	-	10.6	2.4	13.0	4.1	24.5	28.6	1.0	-	-	-	1.0	0.00%	(13)	(167)	-	11	2	0.00%	(13)	167	130
	PjMx	CD-P	66	9	-	-	-	-	-	-	-	-	-	-	0.1	0.1	-	-	-	-	-	0.00%	-	(9)	-	-	-	0.00%	-	9	9
	SxAw	CD-SB	53	15	-	-	-	-	-	-	-	-	-	-	3.9	3.9	-	-	-	-	-	0.00%	-	(15)	-	-	-	0.00%	-	15	11
	Sw	C-SW	2,674	580	4.12	-	-	-	4.12	-	69.3	26.7	96.0	7.4	68.6	75.9	2.1	-	-	-	2.1	0.00%	(96)	(578)	-	69	27	0.00%	(96)	574	409
	Pj	C-P	622	310	-	-	-	-	-	-	12.8	18.8	31.6	-	12.9	12.9	0.1	-	-	-	0.1	0.00%	(32)	(310)	-	13	19	0.00%	(32)	310	265
	SbG	C-SB	1,325	300	-	-	-	-	-	-	64.8	-	64.8	2.8	28.8	31.6	-	-	-	-	-	0.00%	(65)	(300)	-	65	-	0.00%	(65)	300	206
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	0.4	-	0.4	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	4.6	-	4.6	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned					Unplanned
										Variance														Variance		SHS Assessment			
										Substantial				Slivers										Substantial		(Excluding Slivers)			
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
103-B	All	All	2,511	523	-	-	-	-	-	-	138	95	233	4	62	67	37	-	-	-	37	0.00%	(233)	(486)	-	138	95	0.00%	(233)	486	190
	Aw/Aw U	D	524	523	-	-	-	-	-	-	138.2	94.9	233.1	0.2	62.4	62.6	37.3	-	-	-	37.3	0.00%	(233)	(486)	-	138	95	0.00%	(233)	486	190
	PjMX	DC-P	49	-	-	-	-	-	-	-	-	-	-	0.5	-	0.5	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	249	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	242	-	-	-	-	-	-	-	-	-	-	0.2	-	0.2	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	277	-	-	-	-	-	-	-	-	-	-	0.2	-	0.2	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	748	-	-	-	-	-	-	-	-	-	-	1.3	-	1.3	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	343	-	-	-	-	-	-	-	-	-	-	0.9	-	0.9	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	0.9	-	0.9	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	0.1	-	0.1	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

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Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned						Unplanned
										Variance														Variance			SHS Assessment (Excluding Slivers)			
										Substantial				Slivers										Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
L03-C	All	All	911	587	-	-	-	-	-	-	-	-	-	11	0	11	0	-	80	-	80	0.00%	-	(507)	80	-	-	13.61%	80	507	587
	Aw/Aw U	D	119	119	-	-	-	-	-	-	-	-	-	3.8	0.3	4.1	0.0	-	77.1	-	77.2	0.00%	-	(42)	77	-	-	64.58%	77	42	119
	PjMX	DC-P	-	-	-	-	-	-	-	-	-	-	-	0.5	-	0.5	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	138	118	-	-	-	-	-	-	-	-	-	1.8	-	1.8	-	-	2.7	-	2.7	0.00%	-	(115)	3	-	-	2.29%	3	115	118
	SxAw	CD-SW	195	159	-	-	-	-	-	-	-	-	-	0.4	-	0.4	-	-	-	-	-	0.00%	-	(159)	-	-	-	0.00%	-	159	159
	PjMx	CD-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	454	190	-	-	-	-	-	-	-	-	-	3.8	-	3.8	-	-	-	-	-	0.00%	-	(190)	-	-	-	0.00%	-	190	190
	Pj	C-P	4	-	-	-	-	-	-	-	-	-	-	0.0	-	0.0	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	1	-	-	-	-	-	-	-	-	-	-	0.3	-	0.3	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	0.1	-	0.1	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	0.3	-	0.3	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note:

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SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned					Unplanned
										Variance						Harvested (ha)					SHS Assessment (Excluding Slivers)			Variance		SHS Assessment (Excluding Slivers)			
										Substantial				Slivers										Substantial					
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
L08-A	All	All	4,509	3,058	-	-	-	-	-	-	49	84	133	67	157	223	897	-	252	7	1,155	0.00%	(133)	(1,903)	258	49	84	8.45%	126	1,903	1,871
	Aw/Aw U	D	2,832	2,832	-	-	-	-	-	-	49.1	83.9	132.9	33.6	156.9	190.5	895.6	-	241.0	6.8	1,143.4	0.00%	(133)	(1,689)	248	49	84	8.75%	115	1,689	1,647
	PjMX	DC-P	5	-	-	-	-	-	-	-	-	-	-	1.0	-	1.0	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	228	-	-	-	-	-	-	-	-	-	-	6.2	-	6.2	-	-	10.7	-	10.7	100.00%	-	11	11	-	-	100.00%	11	(11)	-
	SxAw	CD-SW	275	57	-	-	-	-	-	-	-	-	-	8.1	-	8.1	0.3	-	-	-	0.3	0.00%	-	(56)	-	-	-	0.00%	-	56	56
	PjMx	CD-P	10	7	-	-	-	-	-	-	-	-	-	0.2	-	0.2	0.0	-	-	-	0.0	0.00%	-	(7)	-	-	-	0.00%	-	7	7
	SxAw	CD-SB	2	-	-	-	-	-	-	-	-	-	-	0.0	-	0.0	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	307	101	-	-	-	-	-	-	-	-	-	3.1	-	3.1	0.5	-	-	-	0.5	0.00%	-	(100)	-	-	-	0.00%	-	100	100
	Pj	C-P	649	61	-	-	-	-	-	-	-	-	-	2.0	-	2.0	0.1	-	-	-	0.1	0.00%	-	(61)	-	-	-	0.00%	-	61	61
	SbG	C-SB	201	-	-	-	-	-	-	-	-	-	-	6.7	-	6.7	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	5.6	-	5.6	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

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Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)												Asbuilts									Combined As-Built & Planned					Unplanned
										Variance											SHS Assessment (Excluding Slivers)					Variance			SHS Assessment (Excluding Slivers)			
										Substantial				Slivers			Harvested (ha)									Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
L11-A	All	All	10,233	9,520	-	-	-	-	-	-	1,217	60	1,277	118	595	714	1,498	-	5	13	1,515	0.00%	(1,277)	(8,005)	17	1,217	60	0.18%	(1,260)	8,005	6,150
	Aw/Aw U	D	7,038	7,038	-	-	-	-	-	-	649.2	44.2	693.4	44.4	359.0	403.4	1,397.7	-	4.5	6.5	1,408.8	0.00%	(693)	(5,629)	11	649	44	0.16%	(682)	5,629	4,588
	PjMX	DC-P	228	152	-	-	-	-	-	-	28.5	2.6	31.1	6.1	11.3	17.4	24.8	-	-	-	24.8	0.00%	(31)	(127)	-	28	3	0.00%	(31)	127	85
	AwSx	DC-S	309	309	-	-	-	-	-	-	40.6	-	40.6	1.0	40.2	41.2	36.9	-	-	3.5	40.3	0.00%	(41)	(269)	3	41	-	1.12%	(37)	269	192
	SxAw	CD-SW	163	163	-	-	-	-	-	-	57.3	5.0	62.3	0.2	19.7	19.9	9.8	-	-	3.0	12.8	0.00%	(62)	(150)	3	57	5	1.81%	(59)	150	71
	PjMx	CD-P	212	107	-	-	-	-	-	-	22.1	-	22.1	6.6	6.5	13.1	4.3	-	-	-	4.3	0.00%	(22)	(102)	-	22	-	0.00%	(22)	102	74
	SxAw	CD-SB	62	62	-	-	-	-	-	-	9.5	-	9.5	0.0	9.2	9.2	0.0	-	-	-	0.0	0.00%	(10)	(62)	-	10	-	0.00%	(10)	62	43
	Sw	C-SW	707	707	-	-	-	-	-	-	246.9	8.4	255.3	3.0	86.4	89.5	14.7	-	-	-	14.7	0.00%	(255)	(692)	-	247	8	0.00%	(255)	692	351
	Pj	C-P	1,162	638	-	-	-	-	-	-	101.6	-	101.6	19.6	39.7	59.4	7.4	-	-	-	7.4	0.00%	(102)	(631)	-	102	-	0.00%	(102)	631	490
	SbG	C-SB	352	344	-	-	-	-	-	-	61.4	-	61.4	30.3	23.4	53.7	2.1	-	-	-	2.1	0.00%	(61)	(342)	-	61	-	0.00%	(61)	342	257
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	7.2	-	7.2	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

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SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned					Unplanned
										Variance						Harvested (ha)					SHS Assessment (Excluding Slivers)			Variance		SHS Assessment (Excluding Slivers)			
										Substantial				Slivers										Substantial					
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
L11-B	All	All	5,914	5,914	-	-	-	-	-	-	522	308	830	136	454	590	2,311	-	18	51	2,380	0.00%	(830)	(3,533)	69	522	308	1.17%	(761)	3,533	2,318
	Aw/Aw U	D	3,348	3,348	-	-	-	-	-	-	161.2	36.8	198.0	46.1	314.0	360.1	1,919.1	-	-	51.2	1,970.4	0.00%	(198)	(1,377)	51	161	37	1.53%	(147)	1,377	916
	PjMX	DC-P	60	60	-	-	-	-	-	-	-	12.8	12.8	6.7	6.8	13.6	32.3	-	10.0	-	42.2	0.00%	(13)	(18)	10	-	13	16.65%	(3)	18	8
	AwSx	DC-S	281	281	-	-	-	-	-	-	30.5	26.6	57.1	4.3	22.8	27.1	132.7	-	-	-	132.7	0.00%	(57)	(149)	-	31	27	0.00%	(57)	149	69
	SxAw	CD-SW	151	151	-	-	-	-	-	-	2.2	-	2.2	3.5	16.8	20.3	76.2	-	-	-	76.2	0.00%	(2)	(75)	-	2	-	0.00%	(2)	75	56
	PjMx	CD-P	67	67	-	-	-	-	-	-	-	22.2	22.2	6.7	6.5	13.2	-	-	-	-	-	0.00%	(22)	(67)	-	-	22	0.00%	(22)	67	38
	SxAw	CD-SB	37	37	-	-	-	-	-	-	12.9	6.1	19.0	0.3	4.5	4.8	7.0	-	-	-	7.0	0.00%	(19)	(30)	-	13	6	0.00%	(19)	30	7
	Sw	C-SW	295	295	-	-	-	-	-	-	46.2	19.5	65.7	8.6	37.0	45.6	70.9	-	5.5	-	76.3	0.00%	(66)	(219)	5	46	20	1.86%	(60)	219	121
	Pj	C-P	1,380	1,380	-	-	-	-	-	-	70.1	184.3	254.4	13.3	26.0	39.3	9.7	-	2.3	-	12.0	0.00%	(254)	(1,368)	2	70	184	0.17%	(252)	1,368	1,090
	SbG	C-SB	295	295	-	-	-	-	-	-	198.5	-	198.5	30.6	19.8	50.5	63.6	-	-	-	63.6	0.00%	(199)	(231)	-	199	-	0.00%	(199)	231	13
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	15.6	-	15.6	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

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SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts							Combined As-Built & Planned						Unplanned
										Variance														Variance			SHS Assessment (Excluding Slivers)			
										Substantial				Slivers										Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
L11-C	All	All	258	258	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(258)	-	-	-	0.00%	-	258	258
	Aw/Aw U	D	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(1)	-	-	-	0.00%	-	1	1
	PjMX	DC-P	33	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(33)	-	-	-	0.00%	-	33	33
	AwSx	DC-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(2)	-	-	-	0.00%	-	2	2
	PjMx	CD-P	8	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(8)	-	-	-	0.00%	-	8	8
	SxAw	CD-SB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	214	214	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(214)	-	-	-	0.00%	-	214	214
	SbG	C-SB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)												Asbuilts								Combined As-Built & Planned						Unplanned
										Variance							Harvested (ha)					SHS Assessment (Excluding Slivers)			Variance		SHS Assessment (Excluding Slivers)				
										Substantial				Slivers											Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
L11-D	All	All	3,250	3,205	-	-	-	-	-	-	17	22	39	15	43	58	388	-	-	-	388	0.00%	(39)	(2,817)	-	17	22	0.00%	(39)	2,817	2,736
	Aw/Aw U	D	1,634	1,634	-	-	-	-	-	-	9.6	-	9.6	3.5	30.5	34.0	318.2	-	-	-	318.2	0.00%	(10)	(1,315)	-	10	-	0.00%	(10)	1,315	1,275
	PjMX	DC-P	69	67	-	-	-	-	-	-	2.2	-	2.2	0.3	1.7	2.0	19.7	-	-	-	19.7	0.00%	(2)	(48)	-	2	-	0.00%	(2)	48	44
	AwSx	DC-S	45	45	-	-	-	-	-	-	-	-	-	1.3	0.5	1.8	18.9	-	-	-	18.9	0.00%	-	(26)	-	-	-	0.00%	-	26	26
	SxAw	CD-SW	56	56	-	-	-	-	-	-	-	-	-	-	2.9	2.9	18.1	-	-	-	18.1	0.00%	-	(38)	-	-	-	0.00%	-	38	35
	PjMx	CD-P	29	27	-	-	-	-	-	-	-	-	-	-	0.2	0.2	1.1	-	-	-	1.1	0.00%	-	(25)	-	-	-	0.00%	-	25	25
	SxAw	CD-SB	24	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(24)	-	-	-	0.00%	-	24	24
	Sw	C-SW	168	168	-	-	-	-	-	-	4.8	-	4.8	0.9	2.1	3.0	10.9	-	-	-	10.9	0.00%	(5)	(157)	-	5	-	0.00%	(5)	157	150
	Pj	C-P	959	918	-	-	-	-	-	-	-	22.0	22.0	3.2	3.8	7.0	0.9	-	-	-	0.9	0.00%	(22)	(917)	-	-	22	0.00%	(22)	917	891
	SbG	C-SB	266	266	-	-	-	-	-	-	-	-	-	5.2	0.7	5.9	0.0	-	-	-	0.0	0.00%	-	(266)	-	-	-	0.00%	-	266	265
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	1.1	-	1.1	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note:

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Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned					
										Variance											SHS Assessment (Excluding Slivers)			Variance			SHS Assessment (Excluding Slivers)			
										Substantial				Slivers			Harvested (ha)								Substantial						Unplanned
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
L11-E	All	All	1,814	1,404	-	-	-	-	-	-	146	187	333	58	160	218	715	-	196	100	1,011	0.00%	(333)	(393)	296	146	187	21.08%	(37)	393	196
	Aw/Aw U	D	927	927	-	-	-	-	-	-	20.0	14.0	33.9	20.5	92.8	113.3	622.4	-	171.0	100.1	893.4	0.00%	(34)	(33)	271	20	14	29.26%	237	33	177
	PjMX	DC-P	4	4	-	-	-	-	-	-	-	2.9	2.9	1.3	0.2	1.5	0.7	-	-	-	0.7	0.00%	(3)	(3)	-	-	3	0.00%	(3)	3	0
	AwSx	DC-S	70	70	-	-	-	-	-	-	21.6	-	21.6	10.4	6.9	17.3	38.7	-	24.8	-	63.5	0.00%	(22)	(7)	25	22	-	35.24%	3	7	3
	SxAw	CD-SW	214	70	-	-	-	-	-	-	11.5	32.2	43.7	3.7	11.1	14.9	14.5	-	-	-	14.5	0.00%	(44)	(55)	-	11	32	0.00%	(44)	55	0
	PjMx	CD-P	4	4	-	-	-	-	-	-	-	-	-	0.0	1.7	1.8	2.1	-	-	-	2.1	0.00%	-	(2)	-	-	-	0.00%	-	2	0
	SxAw	CD-SB	12	2	-	-	-	-	-	-	2.4	-	2.4	0.4	-	0.4	-	-	-	-	-	0.00%	(2)	(2)	-	2	-	0.00%	(2)	2	0
	Sw	C-SW	310	221	-	-	-	-	-	-	79.4	69.7	149.1	1.1	33.4	34.5	32.5	-	-	-	32.5	0.00%	(149)	(188)	-	79	70	0.00%	(149)	188	6
	Pj	C-P	105	105	-	-	-	-	-	-	11.2	68.3	79.5	4.8	12.5	17.4	3.7	-	-	-	3.7	0.00%	(79)	(101)	-	11	68	0.00%	(79)	101	9
	SbG	C-SB	169	1	-	-	-	-	-	-	-	-	-	11.9	1.4	13.3	0.1	-	-	-	0.1	0.00%	-	(1)	-	-	-	0.00%	-	1	0
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	3.8	-	3.8	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts							Combined As-Built & Planned						Unplanned
										Variance														Variance			SHS Assessment (Excluding Slivers)			
										Substantial				Slivers			Harvested (ha)					SHS Assessment (Excluding Slivers)			Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S11-A	All	All	3,105	0	-	-	-	-	-	-	-	-	-	10	-	10	-	-	213	-	213	0.00%	-	213	213	-	-	154670.40%	213	(213)	0
	Aw/Aw U	D	0	0	-	-	-	-	-	-	-	-	-	5.4	-	5.4	-	-	213.1	-	213.1	0.00%	-	213	213	-	-	154670.40%	213	(213)	0
	PjMX	DC-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	477	-	-	-	-	-	-	-	-	-	-	0.1	-	0.1	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	497	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	2,102	-	-	-	-	-	-	-	-	-	-	1.7	-	1.7	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	-	-	-	-	-	-	-	-	-	-	-	0.3	-	0.3	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	25	-	-	-	-	-	-	-	-	-	-	2.8	-	2.8	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	0.1	-	0.1	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

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Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts												Unplanned
										Variance													Combined As-Built & Planned					
										Substantial				Slivers						SHS Assessment (Excluding Slivers)			Variance Substantial			SHS Assessment (Excluding Slivers)			
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S11-B	All	All	9,039	6,974	-	-	-	-	-	-	809	792	1,601	95	578	673	2,885	-	451	37	3,373	0.00%	(1,601)	(3,600)	488	809	792	7.00%	(1,112)	3,600	1,910
	Aw/Aw U	D	6,974	6,974	-	-	-	-	-	-	808.8	792.0	1,600.8	38.7	577.9	616.7	2,884.9	-	451.3	37.2	3,373.4	0.00%	(1,601)	(3,600)	488	809	792	7.00%	(1,112)	3,600	1,910
	PjMX	DC-P	7	-	-	-	-	-	-	-	-	-	-	0.3	-	0.3	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	510	-	-	-	-	-	-	-	-	-	-	6.8	-	6.8	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	198	-	-	-	-	-	-	-	-	-	-	5.5	-	5.5	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	15	-	-	-	-	-	-	-	-	-	-	0.3	-	0.3	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	4	-	-	-	-	-	-	-	-	-	-	1.0	-	1.0	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	679	-	-	-	-	-	-	-	-	-	-	8.5	-	8.5	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	646	-	-	-	-	-	-	-	-	-	-	7.0	-	7.0	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	6	-	-	-	-	-	-	-	-	-	-	20.3	-	20.3	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	6.2	-	6.2	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

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SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned					Unplanned
										Variance						Harvested (ha)					SHS Assessment (Excluding Slivers)			Variance		SHS Assessment (Excluding Slivers)			
										Substantial				Slivers										Substantial					
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S14-A	All	All	12,440	8,213	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(8,213)	-	-	-	0.00%	-	8,213	8,213
	Aw/Aw U	D	8,213	8,213	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(8,213)	-	-	-	0.00%	-	8,213	8,213
	PjMX	DC-P	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	713	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	926	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	2,542	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

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SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned					
										Variance																			
										Substantial				Slivers										Variance		SHS Assessment (Excluding Slivers)			Unplanned
																Harvested (ha)					SHS Assessment (Excluding Slivers)			Substantial					
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S14-B	All	All	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(5)	-	-	-	0.00%	-	5	5
	Aw/Aw U	D	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(5)	-	-	-	0.00%	-	5	5
	PjMX	DC-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts											Combined As-Built & Planned					
										Variance											SHS Assessment (Excluding Slivers)			Variance			SHS Assessment (Excluding Slivers)			Unplanne
										Substantial				Slivers											Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S18-A	All	All	12,363	7,591	-	-	-	-	-	-	361	633	994	96	401	498	2,417	-	104	56	2,578	0.00%	(994)	(5,013)	161	361	633	2.12%	(833)	5,013	3,778
	Aw/Aw U	D	7,591	7,591	-	-	-	-	-	-	360.8	633.3	994.1	27.2	401.2	428.5	2,417.1	-	101.9	56.3	2,575.3	0.00%	(994)	(5,016)	158	361	633	2.08%	(836)	5,016	3,778
	PjMX	DC-P	15	-	-	-	-	-	-	-	-	-	-	0.5	-	0.5	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	1,084	-	-	-	-	-	-	-	-	-	-	12.3	-	12.3	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	1,332	-	-	-	-	-	-	-	-	-	-	14.0	-	14.0	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	30	-	-	-	-	-	-	-	-	-	-	0.3	-	0.3	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	32	-	-	-	-	-	-	-	-	-	-	3.3	-	3.3	-	-	2.5	-	2.5	100.00%	-	3	3	-	-	100.00%	3	(3)	-
	Sw	C-SW	1,896	-	-	-	-	-	-	-	-	-	-	5.5	-	5.5	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	100	-	-	-	-	-	-	-	-	-	-	0.6	-	0.6	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	282	-	-	-	-	-	-	-	-	-	-	17.5	-	17.5	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	15.2	-	15.2	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned						Unplanned
										Variance														Variance			SHS Assessment			
										Substantial				Slivers			Harvested (ha)					SHS Assessment (Excluding Slivers)			Substantial			(Excluding Slivers)			
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S18-B	All	All	3,879	2,060	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(2,060)	-	-	-	0.00%	-	2,060	2,060
	Aw/Aw U	D	2,060	2,060	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(2,060)	-	-	-	0.00%	-	2,060	2,060
	PjMX	DC-P	89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	511	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	512	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	606	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note:

* Deletions and Deferrals to be provided in shapefile format for next FMP

Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)										Asbuilts								Combined As-Built & Planned					Unplanned
										Variance													Variance	SHS Assessment (Excluding Slivers)			
										Substantial				Slivers						SHS Assessment (Excluding Slivers)							
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S18-C	All	All	476	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(1)	-	-	-	0.00%	-	1	1
	Aw/Aw U	D	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(1)	-	-	-	0.00%	-	1	1
	PjMX	DC-P	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	135	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned					Unplanned
										Variance														Variance					
										Substantial				Slivers										Substantial			SHS Assessment (Excluding Slivers)		
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S18-D	All	All	2,259	2,259	-	-	-	-	-	-	-	-	-	10	-	10	-	-	449	-	449	0.00%	-	(1,810)	449	-	-	19.86%	449	1,810	2,259
	Aw/Aw U	D	2,259	2,259	-	-	-	-	-	-	-	-	-	4.6	-	4.6	-	-	448.7	-	448.7	0.00%	-	(1,810)	449	-	-	19.86%	449	1,810	2,259
	PjMX	DC-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	-	-	-	-	-	-	-	-	-	-	-	0.6	-	0.6	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	-	-	-	-	-	-	-	-	-	-	-	0.3	-	0.3	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	-	-	-	-	-	-	-	-	-	-	-	0.6	-	0.6	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	-	-	-	-	-	-	-	-	-	-	-	0.4	-	0.4	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	-	-	-	-	-	-	-	-	-	-	-	1.6	-	1.6	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	1.6	-	1.6	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned					Unplanned
										Variance						Harvested (ha)					SHS Assessment (Excluding Slivers)			Variance		SHS Assessment (Excluding Slivers)			
										Substantial				Slivers										Substantial					
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S22-A	All	All	3,292	3,292	-	-	-	-	-	-	227	128	355	82	337	419	1,589	-	41	81	1,711	0.00%	(355)	(1,581)	122	227	128	3.71%	(233)	1,581	1,011
	Aw/Aw U	D	2,030	2,030	-	-	-	-	-	-	138.4	100.6	239.0	29.6	210.6	240.2	989.0	-	30.4	16.8	1,036.2	0.00%	(239)	(994)	47	138	101	2.33%	(192)	994	591
	PjMX	DC-P	-	-	-	-	-	-	-	-	-	-	-	2.6	-	2.6	-	-	-	5.6	5.6	100.00%	-	6	6	-	-	100.00%	6	(6)	-
	AwSx	DC-S	530	530	-	-	-	-	-	-	27.7	18.1	45.8	14.5	47.5	61.9	371.3	-	10.7	3.4	385.4	0.00%	(46)	(144)	14	28	18	2.67%	(32)	144	65
	SxAw	CD-SW	295	295	-	-	-	-	-	-	22.2	9.2	31.5	2.3	27.1	29.4	71.1	-	-	-	71.1	0.00%	(31)	(223)	-	22	9	0.00%	(31)	223	165
	PjMx	CD-P	16	16	-	-	-	-	-	-	2.0	-	2.0	-	0.6	0.6	5.5	-	-	5.3	10.8	0.00%	(2)	(5)	5	2	-	34.37%	3	5	7
	SxAw	CD-SB	2	2	-	-	-	-	-	-	-	-	-	0.2	0.1	0.2	2.0	-	-	-	2.0	0.00%	-	(0)	-	-	-	0.00%	-	0	0
	Sw	C-SW	365	365	-	-	-	-	-	-	24.3	-	24.3	4.0	44.3	48.3	145.1	-	-	-	145.1	0.00%	(24)	(220)	-	24	-	0.00%	(24)	220	151
	Pj	C-P	27	27	-	-	-	-	-	-	-	-	-	0.4	2.1	2.4	4.6	-	-	42.6	47.2	0.00%	-	21	43	-	-	159.95%	43	(21)	20
	SbG	C-SB	29	29	-	-	-	-	-	-	12.3	-	12.3	11.1	5.0	16.1	0.8	-	-	7.2	8.0	0.00%	(12)	(21)	7	12	-	25.18%	(5)	21	10
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	17.5	-	17.5	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts									Combined As-Built & Planned						Unplanned
										Variance															Variance			SHS Assessment (Excluding Slivers)			
										Substantial				Slivers			Harvested (ha)					SHS Assessment (Excluding Slivers)			Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S22-C	All	All	927	890	-	-	-	-	-	-	41	8	48	41	80	121	760	-	209	-	969	0.00%	(48)	79	209	41	8	23.54%	161	(79)	2
	Aw/Aw U	D	857	857	-	-	-	-	-	-	38.4	7.8	46.2	14.2	79.3	93.5	731.5	-	207.4	-	939.0	0.00%	(46)	82	207	38	8	24.20%	161	(82)	(0)
	PjMX	DC-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	31	31	-	-	-	-	-	-	2.1	-	2.1	0.4	0.6	1.1	28.0	-	-	-	28.0	0.00%	(2)	(3)	-	2	-	0.00%	(2)	3	(0)
	SxAw	CD-SW	5	-	-	-	-	-	-	-	-	-	-	0.3	-	0.3	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	17	0	-	-	-	-	-	-	-	-	-	6.2	-	6.2	-	-	-	-	-	0.00%	-	(0)	-	-	-	0.00%	-	0	0
	Pj	C-P	16	2	-	-	-	-	-	-	-	-	-	9.6	-	9.6	-	-	2.0	-	2.0	0.00%	-	0	2	-	-	103.53%	2	(0)	2
	SbG	C-SB	-	-	-	-	-	-	-	-	-	-	-	7.1	-	7.1	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	2.9	-	2.9	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)												Asbuilts									Combined As-Built & Planned					Unplanned
									Variance								Harvested (ha)					SHS Assessment (Excluding Slivers)				Variance			SHS Assessment (Excluding Slivers)			
									Substantial				Slivers													Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	unplanned SHS in Compartment
S22-D	All	All	15,779	12,422	234	-	10	2	246	12	338	578	916	125	509	634	1,876	-	62	6	1,944	0.10%	(903)	(10,478)	80	338	578	0.65%	(835)	10,231	8,886
	Aw/Aw U	D	10,976	10,976	218.12	-	10.07	2.15	230.34	12.2	265.9	481.4	747.2	49.3	397.8	447.1	1,517.8	-	23.0	6.2	1,547.0	0.11%	(735)	(9,429)	41	266	481	0.38%	(706)	9,199	8,095
	PjMX	DC-P	82	1	-	-	-	-	-	-	-	-	-	-	1.0	1.0	-	-	-	-	-	0.00%	-	(1)	-	-	-	0.00%	-	1	0
	AwSx	DC-S	1,045	1,045	13.95	-	-	-	13.95	-	26.9	48.1	75.0	9.0	75.6	84.6	320.2	-	36.5	-	356.7	0.00%	(75)	(688)	37	27	48	3.50%	(38)	674	560
	SxAw	CD-SW	553	46	1.44	-	-	-	1.44	-	5.6	-	5.6	11.1	5.6	16.7	8.9	-	-	-	8.9	0.00%	(6)	(37)	-	6	-	0.00%	(6)	36	25
	PjMx	CD-P	67	0	0.12	-	-	-	0.12	-	-	-	-	0.2	0.0	0.2	-	-	-	-	-	0.00%	-	(0)	-	-	-	0.00%	-	0	0
	SxAw	CD-SB	8	1	-	-	-	-	-	-	-	-	-	0.4	-	0.4	-	-	-	-	-	0.00%	-	(1)	-	-	-	0.00%	-	1	1
	Sw	C-SW	1,195	248	0.25	-	-	-	0.25	-	39.7	26.8	66.6	27.8	23.7	51.5	28.1	-	2.2	-	30.3	0.00%	(67)	(217)	2	40	27	0.90%	(64)	217	129
	Pj	C-P	1,751	30	0.26	-	-	-	0.26	-	-	21.3	21.3	1.8	1.7	3.5	0.2	-	-	-	0.2	0.00%	(21)	(30)	-	-	21	0.00%	(21)	29	6
	SbG	C-SB	102	74	-	-	-	-	-	-	-	-	-	20.4	3.9	24.3	0.9	-	-	-	0.9	0.00%	-	(73)	-	-	-	0.00%	-	73	69
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	4.7	-	4.7	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned					Unplanned
										Variance						Harvested (ha)					SHS Assessment (Excluding Slivers)			Variance		SHS Assessment (Excluding Slivers)			
										Substantial				Slivers										Substantial					
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S22-E	All	All	4,205	2,980	1	-	-	-	1	-	272	872	1,144	59	198	257	887	-	31	15	933	0.00%	(1,144)	(2,047)	46	272	872	1.54%	(1,098)	2,046	750
	Aw/Aw U	D	2,425	2,425	-	-	-	-	-	-	241.4	693.8	935.2	46.1	151.5	197.6	674.3	-	28.8	2.9	706.0	0.00%	(935)	(1,719)	32	241	694	1.31%	(904)	1,719	664
	PjMX	DC-P	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	341	341	-	-	-	-	-	-	17.7	93.6	111.4	2.1	28.0	30.1	136.9	-	2.3	2.4	141.6	0.00%	(111)	(199)	5	18	94	1.40%	(107)	199	64
	SxAw	CD-SW	234	100	-	-	-	-	-	-	5.9	9.3	15.2	2.0	9.0	11.0	59.9	-	-	9.4	69.3	0.00%	(15)	(31)	9	6	9	9.35%	(6)	31	16
	PjMx	CD-P	40	24	-	-	-	-	-	-	-	23.8	23.8	-	0.7	0.7	-	-	-	-	-	0.00%	(24)	(24)	-	-	24	0.00%	(24)	24	(0)
	SxAw	CD-SB	39	-	-	-	-	-	-	-	-	-	-	2.7	-	2.7	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	846	79	0.85	-	-	-	0.85	-	7.3	40.6	47.9	0.5	8.7	9.2	16.0	-	-	-	16.0	0.00%	(48)	(62)	-	7	41	0.00%	(48)	62	5
	Pj	C-P	217	11	-	-	-	-	-	-	-	10.7	10.7	-	-	-	-	-	-	-	-	0.00%	(11)	(11)	-	-	11	0.00%	(11)	11	(0)
	SbG	C-SB	32	-	-	-	-	-	-	-	-	-	-	2.1	-	2.1	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	3.4	-	3.4	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned					Unplanned
										Variance						Harvested (ha)					SHS Assessment (Excluding Slivers)			Variance					
										Substantial				Slivers										Substantial			SHS Assessment (Excluding Slivers)			
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S23-A	All	All	3,719	2,150	-	-	-	-	-	-	143	31	174	49	249	298	1,029	-	35	38	1,102	0.00%	(174)	(1,048)	73	143	31	3.40%	(101)	1,048	698
	Aw/Aw U	D	2,150	2,150	-	-	-	-	-	-	142.6	31.4	174.0	18.9	248.7	267.5	1,029.1	-	35.2	3.3	1,067.7	0.00%	(174)	(1,083)	39	143	31	1.79%	(136)	1,083	698
	PjMX	DC-P	19	-	-	-	-	-	-	-	-	-	-	0.4	-	0.4	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	188	-	-	-	-	-	-	-	-	-	-	3.8	-	3.8	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	373	-	-	-	-	-	-	-	-	-	-	2.9	-	2.9	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	54	-	-	-	-	-	-	-	-	-	-	0.5	-	0.5	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	7	-	-	-	-	-	-	-	-	-	-	0.2	-	0.2	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	232	-	-	-	-	-	-	-	-	-	-	4.2	-	4.2	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	567	-	-	-	-	-	-	-	-	-	-	6.8	-	6.8	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	130	-	-	-	-	-	-	-	-	-	-	10.9	-	10.9	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	0.9	-	0.9	-	-	-	34.5	34.5	100.00%	-	34	34	-	-	100.00%	34	(34)	-

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Values may be affected by rounding

SHS Variance Summary 5 Year Stewardship Report

Operator: Al-Pac

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

2021-03-08

Harvest Profile					Planned for Harvest (ha)												Asbuilts									Combined As-Built & Planned						Unplanned
										Variance							Harvested (ha)					SHS Assessment (Excluding Slivers)				Variance			SHS Assessment (Excluding Slivers)			
										Substantial				Slivers											Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S23-B	All	All	2,210	2,206	-	-	-	-	-	-	326	54	379	36	100	137	788	-	-	-	788	0.00%	(379)	(1,418)	-	326	54	0.00%	(379)	1,418	938
	Aw/AwU	D	2,206	2,206	-	-	-	-	-	-	325.7	53.7	379.5	21.6	100.4	122.1	787.7	-	-	-	787.7	0.00%	(379)	(1,418)	-	326	54	0.00%	(379)	1,418	938
	PjMX	DC-P	-	-	-	-	-	-	-	-	-	-	-	0.1	-	0.1	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	-	-	-	-	-	-	-	-	-	-	-	0.1	-	0.1	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	-	-	-	-	-	-	-	-	-	-	-	1.9	-	1.9	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	-	-	-	-	-	-	-	-	-	-	-	0.2	-	0.2	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	-	-	-	-	-	-	-	-	-	-	-	0.0	-	0.0	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	-	-	-	-	-	-	-	-	-	-	-	0.3	-	0.3	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	-	-	-	-	-	-	-	-	-	-	-	0.4	-	0.4	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	4	-	-	-	-	-	-	-	-	-	-	0.8	-	0.8	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	10.6	-	10.6	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

Values may be affected by rounding

Alberta-Pacific Forest Products Inc.

Forest Management Agreement Area

Forest Stewardship Report

Reporting Period May 1, 2015–April 30, 2020

Appendix II

Quota Holder Information

1. **Alberta-Plywood (West Fraser Woodlands) – FMUs S18 / S11 / S14**
2. **Ed Bobocel Lumber – FMUs S23 / L2 / L1 / L8**
3. **Northland Forest Products – FMUs A14 / A15 / L03 / L01 / L08**
4. **Vanderwell Contractors – FMUs S22 / S18 / L2**

Al-Pac FMA Area – Forest Stewardship Report 2015–2020
Alberta-Plywood (West Fraser Woodlands)
FMUs – S18 / S11 / S14

- **Approved FMP SHS Variance Assessment**
  - Please see attached files in Appendix B with Variance tables for:
    - S11-A
    - S11-B
    - S18-A
    - S18-B
    - S14-A

- **AAC Review**

Table 1. AAC Review

FMU	Conifer	
	Project Volume (m3/ha)	Delivered Volume (m3/ha)
S11	188	219
S14	198	212
S18	187	174

*Delivered volume includes fire killed
*Has to be averaged for 5 years due to unscaled stockpiles
*Do not have data for delivered incidental deciduous
*Does not include KSL volume

- **Growth and Yield Maintenance Program**
  - No PSP plots have been established to date

- **Seed Availability and Usage**

Table 2. Seed Availability (next page)

Notes: "Non-TIC" seed lots AB-Ply used are below.

As of November 30, 2020, this is the current amount Ab-Ply has on stock (kgs / # of trees)

1. Seed lot BL 14-89-7-5-2007 SW – 4.059 kg; 835,180 trees
2. Seed lot ZF 8-87-8-5-2011 SW – 0.0 kgs; 0 trees
3. Seed lot BRC 87-10-5-93 SW – 30.527 kg; 6,621,900 trees

Operator: Alberta-Plywood

Seed Zone	Seed Inventory (kg)	Number of seedlings that could be planted with current seed inventory	Area that could be planted with current seed inventory (ha)	Approximate area to be cut in next 10 years (ha) (from SHS))	Number of seedlings required to plant SHS	Seed required for next 10 years (kg)	Required to collect (kg)
FMU:		**S18, S11, S14**					
White Spruce							
CM 1.2	0.00	0	0	0	0	0.00	0
CM 2.1	0.00	0	0	0	0	0.00	0
CM 2.2	0.00	0	0	649	973,039	64.87	64.869243
CM 2.3	91.93	43,500,000	29,000	3,348	5,022,328	334.82	242.89189
CM 2.4	1838.02	397,012,000	264,675	4,677	7,016,082	467.74	-1370.281
CM 3.1	0.00	0	0	0	0	0.00	0
CM 3.2	386.45	113,040,000	75,360	0	0	0.00	0
CM 3.3	75.27	27,097,000	18,065	622	933,483	62.23	-13.03783
LBH 1.3	38.99	14,035,000	9,357	4,440	6,660,374	444.02	405.03493
LBH 1.5	0.00	0	0	0	0	0.00	0
LF1.1	67.76	27,350,000	18,233	0	0	0.00	0
UBH 1.1	0.00	0	0	0	0	0.00	0
Jack Pine	.						
CM 1.2	0.00	0	0	0	0	0.00	0
CM 2.1	0.00	0	0	0	0	0.00	0
CM 2.2	0.00	0	0	4	6,632	0.44	0.4421319
CM 2.3	0.00	0	0	11	16,901	1.13	1.1267598
CM 2.4	16.11	1,040,500	694	914	1,370,628	91.38	75.2652
CM 3.1	0.00	0	0	0	0	0.00	0
CM 3.2	0.00	0	0	0	0	0.00	0
CM 3.3	0.00	0	0	14	21,179	1.41	1.4119111
LBH 1.3	0.00	0	0	0	0	0.00	0
LBH 1.5	0.00	0	0	0	0	0.00	0
LF1.1	0.00	0	0	0	0	0.00	0
UBH 1.1	0.00	0	0	0	0	0.00	0
Black Spruce							
CM 1.2	0.00	0	0	0	0	0.00	0
CM 2.1	0.00	0	0	0	0	0.00	0
CM 2.2	0.00	0	0	13	18,889	1.26	1.2592623
CM 2.3	0.00	0	0	11	15,972	1.06	1.0647759
CM 2.4	1.50	1,490,400	994	258	386,996	25.80	24.299719
CM 3.1	0.00	0	0	0	0	0.00	0
CM 3.2	11.02	6,865,500	4,577	0	0	0.00	0
CM 3.3	1.40	1,290,000	860	11	17,206	1.15	-0.252924
LBH 1.3	0.00	0	0	20	29,414	1.96	1.9609294
LBH 1.5	0.00	0	0	0	0	0.00	0
LF1.1	1.40	1,165,000	777	0	0	0.00	0
UBH 1.1	0.00	0	0	0	0	0.00	0

- **VOIT 7**
  - Fire salvage from the 2019 McMillan Complex Wildfire.
  - See Al-Pac Report VOIT 7 for comprehensive wildfire metrics.
  - Ab-Ply McMillan Complex Wildfire salvage – Table 3

Table 3. Salvage (ha)

Timber Year	Area of Salvaged Blocks (ha)
2019–2020	3751.7
2020–2021	1409.3
Grand Total	**5067.7**

- **VOIT 8 – Blowdown Salvage**
  - No blowdown events to report

- **VOIT 10 – Stand Structure**

Table 4. Retention Summary

	Harvested Area (ha)	Target Retention	Target Percent Retention	Retention Area (ha)	Percent Retention %	Notes
S110	**2150.05**	**47.12**	**2.19%**	**74.67**	**3.47%**	We are on track with meeting our retention targets in S11.
2015/2016	704.89	7.05	1.00%	29.42	4.17%	
2016/2017	164.33	1.64	1.00%	2.44	1.49%	
2017/2018	462.94	13.89	3.00%	20.39	4.40%	
2018/2019	342.91	10.29	3.00%	9.64	2.81%	
2019/2020	474.98	14.25	3.00%	12.78	2.69%	
S140	**1938.81**	**58.16**	**3.00%**	**32.51**	**1.68%**	We are a bit low on our S14 retention and will be increasing the retention for the last 5 years of the FMP Period to achieve the FMP Retention target.
2017/2018	1254.45	37.63	3.00%	18.27	1.46%	
2018/2019	509.18	15.28	3.00%	7.34	1.44%	
2019/2020	175.18	5.26	3.00%	6.90	3.94%	
S180	**6698.45**	**166.72**	**2.49%**	**206.20**	**3.08%**	We are on track with meeting our retention targets in S18.
2015/2016	376.37	3.76	1.00%	7.66	2.04%	
2016/2017	1335.29	13.35	1.00%	21.05	1.58%	
2017/2018	268.85	8.07	3.00%	10.98	4.08%	
2018/2019	1061.54	31.85	3.00%	33.33	3.14%	
2019/2020	3656.40	109.69	3.00%	133.18	3.64%	
Grand Total	**10787.31**	**272.00**	**2.52%**	**313.39**	**2.91%**	

- **VOITs 9, 12, and 13 – OGR Compliance**
  - There has been zero non-compliance related to these items.

- **VOITs 19 and 20 – Silviculture / RSA**

Table 5. Conifer Reforestation Program

Years	Area Harvested (ha)	Area Planted (ha)	Percent Planted (ha)	Area Site Prepped (ha)	Percent Site Prepped (ha)
S11	**2,180.6**	**1,615.5**	**74.1%**	**75.9**	**3.5%**
2015/2016	704.9	188.7	26.8%	17.5	2.5%
2016/2017	164.3	648.9	394.9%	0.0	0.0%
2017/2018	462.9	287.5	62.1%	0.0	0.0%
2018/2019	342.9	490.4	143.0%	58.4	17.0%
2019/2020	505.5	0.0	0.0%	0.0	0.0%
S14	**1,938.8**	**1,677.5**	**86.5%**	**394.1**	**20.3%**
2017/2018	1,254.5	0.0	0.0%	123.4	9.8%
2018/2019	509.2	1,159.3	227.7%	144.7	28.4%
2019/2020	175.2	518.2	295.8%	26.0	14.8%
S18	**6,698.5**	**5,602.4**	**83.6%**	**1,372.5**	**20.5%**
2015/2016	376.4	763.9	203.0%	24.5	6.5%
2016/2017	1,335.3	783.8	58.7%	86.9	6.5%
2017/2018	268.9	1,229.2	457.2%	140.1	52.1%
2018/2019	1,061.5	509.4	48.0%	418.9	39.5%
2019/2020	3,656.4	2,316.1	63.3%	702.1	19.2%
Grand Total	**10,817.9**	**8,895.4**	**82.2%**	**1,842.5**	**17.0%**

Table 6. Conifer Reforestation – Monitoring Program

Year	Establishment Survey Area (ha)	Satisfactorily Regenerated Area (ha)	Percent Meeting SR Standards (%)
S11	**47.3**	**47.3**	**100.0%**
2015/2016	32.8	32.8	100.0%
2017/2018	14.4	14.4	100.0%
S14	**125.8**	**125.8**	**100.0%**
2015/2016	3.0	3.0	100.0%
2016/2017	122.8	122.8	100.0%
S18	**2,654.5**	**2,654.5**	**100.0%**
2016/2017	1,225.1	1,225.1	100.0%
2017/2018	125.1	125.1	100.0%
2018/2019	233.2	233.2	100.0%
2019/2020	1,071.2	1,071.2	100.0%
Grand Total	**2,827.6**	**2,827.6**	**100.0%**

- **VOIT 23 – Non-Invasive Species**
  - Zero hectares of invasive / non-native plant species have been found.
  - No non-compliance

- **VOITs 24, 25, and 27 – OGR Compliance**
  - There has been zero non-compliance related to these items.

Appendix B. SHS Variance

SR SHS Tracking between 2015 and 2025 (timber year) Alberta-Plwood
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)					Partly Combined and Partly Not Combined									AsBuilts					Combined As-Built & Planned						
										Variance					SHS Assessment (Excluding Slivers)				Harvested (ha)					Variance			SHS Assessment (Excluding Slivers)			Unplanned
										Substantial			All Slivers											Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Planned Additions	Planned + Harvested Deletions	Planned + Harvested Deferrals	Total D & D	Planned + Harvested Additions	Planned + Harvest Deletions & Deferrals	Total Slivers	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Planned Area & 10yr FMP SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S11-A	All	All	3,105	3,104	310	-	5	-	315	5	107	128	235	183	188	370	0.17%	(230)	(2,789)	1,029	-	11	2	1,043	18	107	128	0.59%	(216)	1,747	1,343
	Aw/AwU	D	0	-	-	-	5.20	-	5.20	5.2	-	-	-	123.2	-	123.2	100.00%	5	5	-	-	4.5	-	4.5	10	-	-	100.00%	10	(10)	-
	PjMX	DC-P	-	-	-	-	-	-	-	-	-	-	-	0.2	-	0.2	0.00%	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	477	477	20.20	-	-	-	20.20	-	5.9	9.0	14.9	6.4	7.0	13.4	0.00%	(15)	(457)	130.4	-	-	-	130.4	-	6	9	0.00%	(15)	327	305
	SxAw	CD-SW	497	497	46.70	-	-	-	46.70	-	22.0	15.1	37.1	1.6	21.5	23.1	0.00%	(37)	(450)	215.6	-	6.4	-	222.0	6	22	15	1.29%	(31)	228	176
	PjMx	CD-P	-	-	-	-	-	-	-	-	-	-	-	0.6	-	0.6	0.00%	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	4	4	-	-	-	-	-	-	-	-	-	0.5	0.1	0.6	0.00%	-	(4)	-	-	-	-	-	-	-	-	0.00%	-	4	3
	Sw	C-SW	2,102	2,102	242.60	-	-	-	242.60	-	71.1	104.1	175.2	13.9	155.9	169.8	0.00%	(175)	(1,860)	670.1	-	-	-	670.1	-	71	104	0.00%	(175)	1,190	858
	Pj	C-P	-	-	-	-	-	-	-	-	-	-	-	3.5	-	3.5	0.00%	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	25	25	0.30	-	-	-	0.30	-	7.6	-	7.6	28.2	3.3	31.5	0.00%	(8)	(24)	13.3	-	-	2.3	15.6	2	8	-	9.36%	(5)	9	0
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	4.5	-	4.5	0.00%	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-

Note: Values may be affected by rounding

SR SHS Tracking between 2015 and 2025 (timber year) Alberta-Plywood
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)					Partly Combined and Partly Not Combined									AsBuilts					Combined As-Built & Planned						Unplanned
										Variance							SHS Assessment (Excluding Slivers)			Harvested (ha)					Variance			SHS Assessment (Excluding Slivers)			
										Substantial				All Slivers											Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Planned Additions	Planned + Harvested Deletions	Planned + Harvested Deferrals	Total D & D	Planned + Harvested Additions	Planned + Harvest Deletions & Deferrals	Total Slivers	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Planned Area & 10yr FMP SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S11-B	All	All	9,039	2,066	-	-	-	-	-	-	32	83	115	120	144	264	0.00%	(115)	(2,066)	1,013	-	127	12	1,153	139	32	83	6.74%	24	913	793
	Aw/AwU	D	6,974	-					-	-	0.1	-	0.1	75.6	0.5	76.1	0.00%	(0)	-	0.6	-	55.2	5.4	61.2	61	0	-	100.00%	61	(61)	(1)
	PjMX	DC-P	7	7					-	-	-	-	-	-	-	-	0.00%	-	(7)	-	-	-	-	-	-	-	-	0.00%	-	7	7
	AwSx	DC-S	510	510					-	-	17.0	22.6	39.6	2.1	44.4	46.5	0.00%	(40)	(510)	407.7	-	21.1	-	428.8	21	17	23	4.14%	(19)	81	18
	SxAw	CD-SW	198	198					-	-	1.6	9.8	11.4	1.6	19.9	21.5	0.00%	(11)	(198)	152.8	-	10.5	-	163.3	10	2	10	5.29%	(1)	35	14
	PjMx	CD-P	15	15					-	-	-	-	-	-	-	-	0.00%	-	(15)	-	-	-	-	-	-	-	-	0.00%	-	15	15
	SxAw	CD-SB	4	4					-	-	-	-	-	-	1.7	1.7	0.00%	-	(4)	1.4	-	-	0.1	1.5	0	-	-	2.59%	0	2	1
	Sw	C-SW	679	679					-	-	12.8	49.3	62.1	11.7	75.4	87.1	0.00%	(62)	(679)	449.0	-	36.9	0.1	486.0	37	13	49	5.45%	(25)	193	93
	Pj	C-P	646	646					-	-	-	-	-	0.1	0.1	0.2	0.00%	-	(646)	-	-	-	-	-	-	-	-	0.00%	-	646	646
	SbG	C-SB	6	6					-	-	0.5	1.3	1.8	22.4	2.0	24.4	0.00%	(2)	(6)	1.7	-	3.6	6.0	11.3	10	1	1	152.20%	8	(5)	1
	SBFM	C-SBFM	-	-					-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-					-	-	-	-	-	6.8	0.1	6.9	0.00%	-	-	0.1	-	0.2	0.2	0.5	0	-	-	100.00%	0	(1)	(0)

Note: *793 Ha of Unplanned are unsalvaged SHS within the McMillan fire and will not be harvested for the duration of this FMP.
Values may be affected by rounding

SR SHS Tracking between 2015 and 2025 (timber year) Alberta-Plywood
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)					Partly Combined and Partly Not Combined									AsBuilts					Combined As-Built & Planned						Unplanned
										Variance					SHS Assessment (Excluding Slivers)				Harvested (ha)					Variance			SHS Assessment (Excluding Slivers)			
										Substantial			All Slivers											Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Planned Additions	Planned + Harvested Deletions	Planned + Harvested Deferrals	Total D & D	Planned + Harvested Additions	Planned + Harvest Deletions & Deferrals	Total Slivers	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Planned Area & 10yr FMP SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S14-A	All	All	12,440	4,228	239	-	-	-	239	-	218	426	645	281	329	610	0.00%	(645)	(3,988)	2,053	-	34	19	2,105	52	218	426	1.24%	(593)	1,883	961
	Aw/AwU	D	8,213	-	0.10	-	-	-	0.10	-	0.2	0.3	0.5	175.4	1.2	176.6	100.00%	(1)	0	1.7	-	33.5	5.1	40.3	39	0	0	100.00%	38	(40)	(3)
	PjMX	DC-P	2	2	0.00	-	-	-	0.00	-	-	2.1	2.1	0.0	0.0	0.0	0.00%	(2)	(2)	-	-	-	-	-	-	-	2	0.00%	(2)	2	0
	AwSx	DC-S	713	713	55.24	-	-	-	55.24	-	30.7	94.4	125.1	7.4	50.8	58.2	0.00%	(125)	(657)	306.8	-	0.0	4.1	310.9	4	31	94	0.58%	(121)	346	175
	SxAw	CD-SW	926	926	80.04	-	-	-	80.04	-	21.2	85.4	106.5	5.2	79.6	84.8	0.00%	(107)	(846)	473.2	-	0.0	0.4	473.7	0	21	85	0.04%	(106)	372	187
	PjMx	CD-P	6	6	0.00	-	-	-	0.00	-	-	0.0	0.0	0.1	0.8	0.9	0.00%	(0)	(6)	5.4	-	-	-	5.4	-	-	0	0.00%	(0)	1	0
	SxAw	CD-SB	17	17	-	-	-	-	-	-	0.0	12.1	12.1	0.5	2.0	2.5	0.00%	(12)	(17)	2.5	-	-	-	2.5	-	0	12	0.00%	(12)	15	1
	Sw	C-SW	2,542	2,542	102.92	-	-	-	102.92	-	166.0	226.8	392.8	15.8	190.8	206.5	0.00%	(393)	(2,439)	1,261.1	-	0.1	4.9	1,266.0	5	166	227	0.19%	(388)	1,173	595
	Pj	C-P	7	7	0.20	-	-	-	0.20	-	0.0	0.0	0.0	0.6	2.7	3.3	0.00%	(0)	(7)	0.0	-	-	-	0.0	-	0	0	0.00%	(0)	7	4
	SbG	C-SB	13	13	0.51	-	-	-	0.51	-	0.1	4.8	4.8	55.9	0.5	56.3	0.00%	(5)	(13)	1.4	-	0.1	2.6	4.1	3	0	5	19.59%	(2)	9	6
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	0.14	-	-	-	0.14	-	0.3	0.5	0.8	19.6	1.1	20.7	100.00%	(1)	0	0.7	-	0.0	1.5	2.2	2	0	1	100.00%	1	(2)	(3)

Note: *Values include WF and KSL Blocks
Values may be affected by rounding

SR SHS Tracking between 2015 and 2025 (timber year) Alberta-Plywood
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)					Partly Combined and Partly Not Combined								AsBuilts					Combined As-Built & Planned						Unplanned
										Variance						SHS Assessment (Excluding Slivers)								Variance		SHS Assessment (Excluding Slivers)			
										Substantial			All Slivers										Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Planned Additions	Planned + Harvested Deletions	Planned + Harvested Deferrals	Total D & D	Planned + Harvested Additions	Planned + Harvest Deletions & Deferrals	Total Slivers	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Planned Area & 10yr FMP SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S18-A	All	All	12,363	3,677	-	-	-	-	-	-	81	277	358	362	224	586	0.00%	(358)	(3,677)	2,161	-	2,798	449	5,408	3,247	81	277	88.32%	2,889	(1,732)	933
	Aw/AwU	D	7,591	-					-	-	0.2	0.4	0.6	211.7	1.7	213.4	0.00%	(1)	-	2.4	-	640.9	128.3	771.6	769	0	0	100.00%	769	(772)	(5)
	PjMX	DC-P	15	13					-	-	-	3.4	3.4	0.2	-	0.2	0.00%	(3)	(13)	-	-	5.9	2.1	8.0	8	-	3	63.83%	5	5	9
	AwSx	DC-S	1,084	860					-	-	14.0	71.8	85.8	22.9	49.3	72.2	0.00%	(86)	(860)	596.1	-	388.9	34.0	1,019.0	423	14	72	49.15%	337	(159)	129
	SxAw	CD-SW	1,332	973					-	-	9.7	40.6	50.3	22.4	52.3	74.7	0.00%	(50)	(973)	599.0	-	544.0	9.0	1,152.0	553	10	41	56.84%	503	(179)	271
	PjMx	CD-P	30	8					-	-	-	2.0	2.0	0.1	1.4	1.5	0.00%	(2)	(8)	3.5	-	36.5	36.7	76.7	73	-	2	933.96%	71	(69)	1
	SxAw	CD-SB	32	11					-	-	-	8.7	8.7	0.1	0.6	0.7	0.00%	(9)	(11)	2.1	-	1.4	-	3.5	1	-	9	12.28%	(7)	8	0
	Sw	C-SW	1,896	1,513					-	-	32.6	70.3	102.9	39.6	94.8	134.4	0.00%	(103)	(1,513)	865.0	-	1,007.8	66.6	1,939.4	1,074	33	70	70.99%	972	(426)	451
	Pj	C-P	100	85					-	-	19.0	15.6	34.6	2.7	6.5	9.2	0.00%	(35)	(85)	43.9	-	136.0	44.4	224.3	180	19	16	211.08%	146	(139)	0
	SbG	C-SB	282	213					-	-	5.8	64.0	69.8	46.2	17.2	63.4	0.00%	(70)	(213)	48.7	-	24.1	101.6	174.4	126	6	64	59.12%	56	38	77
	SBFM	C-SBFM	-	-					-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-					-	-	0.1	0.1	0.2	16.0	0.5	16.5	0.00%	(0)	-	0.3	-	12.8	26.3	39.4	39	0	0	100.00%	39	(39)	(1)

Note: *3547 Ha of Total Harvested were fire salvage blocks; 93 ha of those salvaged under a DTP.
Values may be affected by rounding

SR SHS Tracking between 2015 and 2025 (timber year) Alberta-Plywood
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)					Partly Combined and Partly Not Combined								AsBuilts					Combined As-Built & Planned					Unplanned
										Variance					SHS Assessment			Harvested (ha)					Variance			SHS Assessment		
										Substantial			All Slivers		(Excluding Slivers)								Substantial			(Excluding Slivers)		
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Planned Additions	Planned + Harvested Deletions	Planned + Harvested Deferrals	Total D & D	Planned + Harvested Additions	Planned + Harvest Deletions & Deferrals	Total Slivers	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Planned Area & 10yr FMP SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
S18-B	All	All	3,879	1,819	-	-	-	-	-	-	140	482	622	118	134	253	0.00%	(622)	(1,819)	1,062	-	1,191	58	2,310	1,248	140	482	68.61%	626	(491)	1
	Aw/AwU	D	2,060	-					-	-	-	0.5	0.5	49.6	0.3	49.9	0.00%	(1)	-	0.5	-	106.1	8.4	115.0	115	-	1	100.00%	114	(115)	(1)
	PjMX	DC-P	89	89					-	-	-	16.2	16.2	4.0	8.6	12.6	0.00%	(16)	(89)	63.7	-	1.5	-	65.2	2	-	16	1.69%	(15)	24	0
	AwSx	DC-S	511	511					-	-	18.0	93.8	111.8	8.2	39.4	47.6	0.00%	(112)	(511)	358.0	-	171.1	18.6	547.7	190	18	94	37.14%	78	(37)	2
	SxAw	CD-SW	512	512					-	-	64.2	154.6	218.8	1.6	25.9	27.5	0.00%	(219)	(512)	266.0	-	298.9	0.1	565.0	299	64	155	58.43%	80	(53)	1
	PjMx	CD-P	33	33					-	-	-	14.8	14.8	0.7	3.1	3.8	0.00%	(15)	(33)	15.1	-	13.7	2.0	30.8	16	-	15	47.42%	1	2	0
	SxAw	CD-SB	8	8					-	-	-	6.9	6.9	0.7	0.9	1.6	0.00%	(7)	(8)	0.1	-	-	0.6	0.7	1	-	7	7.52%	(6)	7	0
	Sw	C-SW	606	606					-	-	48.1	164.0	212.1	22.2	46.5	68.7	0.00%	(212)	(606)	346.5	-	587.4	0.6	934.5	588	48	164	96.98%	376	(328)	1
	Pj	C-P	32	32					-	-	0.8	18.6	19.4	0.5	7.7	8.2	0.00%	(19)	(32)	4.6	-	9.3	-	13.9	9	1	19	29.29%	(10)	18	0
	SbG	C-SB	29	29					-	-	9.0	12.4	21.4	24.1	1.4	25.5	0.00%	(21)	(29)	6.8	-	2.3	19.4	28.5	22	9	12	75.89%	0	0	(1)
	SBFM	C-SBFM	-	-					-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-					-	-	0.3	0.2	0.5	6.6	0.5	7.1	0.00%	(1)	-	0.2	-	0.3	7.8	8.3	8	0	0	100.00%	8	(8)	(1)

Note: *1574 ha of Total Harvested was fire salavge.
Values may be affected by rounding

Al-Pac FMA Area – Forest Stewardship Report 2016–2020
Ed Bobocel Lumber – Quota Holder Data
FMUs – S23 / L2 / L1 / L8

- **Approved FMP SHS Variance Assessment**
  - Please see Appendix D with variance tables for:
    - L01-A
    - L02-B
    - S23-A
    - L08-A

- **AAC Review**

Table 1. AAC Review

	Year	Conifer Volume Projected (m3/ha)	Conifer Volume Delivered (m3/ha)
L01	**2015-16**	0	0
	2016-17	154	162
	2017-18	0	0
	2018-19	154	157
	2019-20	154	155
	Total	**154**	**158**
L02	**Year**	**Conifer Volume Projected (m3/ha)**	**Conifer Volume Delivered (m3/ha)**
	2015-16	0	0
	2016-17	0	0
	2017-18	154	150
	2018-19	154	155
	2019-20	154	155
	Total	**154**	**153**
L08	**Year**	**Conifer Volume Projected (m3/ha)**	**Conifer Volume Delivered (m3/ha)**
	2015-16	0	0
	2016-17	129	125
	2017-18	129	125
	2018-19	129	125
	2019-20	129	125
	Total	**129**	**125**
S23	**Year**	**Conifer Volume Projected (m3/ha)**	**Conifer Volume Delivered (m3/ha)**
	2015-16	0	0
	2016-17	155	156
	2017-18	155	156
	2018-19	155	155
	2019-20	155	155
	Total	**155**	**156**

- **Growth and Yield Maintenance Program**
  - No PSP plots have been established to date.
  - PSP plot establishment is not required by Ed Bobocel Lumber.

- **Seed Availability and Usage**

Table 2. Seed Availability

Inventory With Seedlot Test Data

Owner: EBL - Ed Bobocel Lumber (1993) Ltd.

Species: PJ - Pinus banksiana - Jack Pine

					Elevation			Unstratified	Stratified	Last Test Date	
INV#	Seedlot Number	Sublet	SD_ZONE	From	To	Purity	Seed/Kg	Germ	Germ		Balance (kg)
615	SJ 75-15-4-1977 PJ		LBH1.5			99.80%	241,255	84%	80%	1993-09-30	0.6
4087	SJ 4-72-16-4-2005 P J		CM2.4	590	600	99.30%	286,862	89%	94%	2005-10-31	12,500
4942	EBL5-71-13-4-2011 PJ		CM3.1	646	648	97.70%	270,197	93%	94%	2011-07-21	5.618
										Total Balance:	7.468

Species: PUPJ - Lodgepole Pine/Jack Pine

								Unstratified	Stratified	Last Test Date	
INV#	Seedlot Number	Sublot	SD_ZONE	From	To	Purity	Seed/Kg	Germ	Germ		Balance (kg)
5467	EBL 11-69-26-4-2013 PUPJ		CM3.2	660	675	99.30%	301,386	92%	90%	2013-05-06	19.126
										Total Balance:	19.126

Species: SB - Picea mariana - Black Spruce

								Unstratified	Stratified	Last Test Date	
INV#	Seedlot Number	Sublot	SD_ZONE	From	To	Purity	Seed/Kg	Germ	Germ		Balance (kg)
5888	EBL 21-71-20-4-2014 SB		CM2.4	595	597	98.40%	1,057,082	97%	93%	2014-05-01	0.575
										Total Balance:	0.575

Species: SW - Picea glauca - White Spruce

								Unstratified	Stratified	Last Test Date	
INV#	Seedlot Number	Sublot	SD_ZONE	From	To	Purity	Seed/Kg	Germ	Germ		Balance (kg)
3556	SJ 17-70-25-4-1999 SW		CM3.2	581		99.90%	450,045	45%	46%	2000-11-07	0.279
3557	SJ 12-72-18-4-2000 SW		CM2.4	520		99.90%	513,611	39%	89%	2000-10-27	0.124

				Elevation				Unstratified	Stratified	Last Test Date	
INV#	Seedlot Number	Sublet	SD_ZONE	From	To	Purity	Seed/Kg	Germ	Germ		Balance (kg)
3808	SJ 71-1S-4-2002 SW		CM3.1	640		100.00%	672,948	43%	80%	2002-11-08	0.32
3887	SJ 12-72-19-4-2003SW		CM2.4	550	650	99.90%	591,716	53%	85%	2003-11-10	1.37
4289	EBL 12-6B-25-4-2007 SW	Strat	CM3.2	710	715						0.278
4259	SJ 19-70-16-4-2007 SW		CM2.4	549	610	99.60%	529,101	87%	91%	2007-10-19	3.634
5643	EBL 2B-69-12-4-2013 SW	Bulk	CM3.1	584	585						17.584
5643	EBL 2B-69-12-4-2013 SW	STR	CM3.1	584	585 •						0.221
5642	ESL 17-71-20-4-2013SW	..•	CM3.2	596	600	99.40%	526,039	56%	89%	2013-11-25	17.957
5642	EBL 17-71-20-4-2013 SW	Strat	CM3.2	596	600						0.255
6595	ESL 19-70-20-4-2015 SW		CM3.2	632	633	97.90%	671,141	26%	23%	2015-11-17	0.53
6892	EBL 1-70-15-4-2016SW		CM2.4	580	581	99.40%	473,934	79%	86%	2016-11-16	6.24
										Total Balance:	487,920

- **VOIT 7 – Wildfire Salvage**
  - n/a – No fire salvage in the reporting period.

- **VOIT 8 – Blowdown Salvage**
  - See VOIT 8 in Al-Pac main report – L1 and L8 blowdown event in 2017.

- **VOIT 10**

Table 3. Retention Summary

	Year	Area Harvested (ha)	Retention Area (ha)	Percent Retention (%)
L1	**2015-16**	318.7	0.0	0.0
	2016-17	0.0	0.0	0.0
	2017-18	0.0	0.0	0.0
	2018-19	242.9	7.3	3.0
	2019-20	254.2	26.4	10.4
	Total	**815.8**	**33.7**	**4.1**

	Year	Area Harvested (ha)	Retention Area (ha)	Percent Retention (%)
L2	**2015-16**	0.0	0.0	0.0
	2016-17	0.0	0.0	0.0
	2017-18	203.4	8.1	4.0
	2018-19	0.0	0.0	0.0
	2019-20	131.6	5.3	4.0
	Total	**335.1**	**13.4**	4.0

	Year	Area Harvested (ha)	Retention Area (ha)	Percent Retention (%)
L8	**2015-16**	0.0	0.0	0.0
	2016-17	0.0	0.0	0.0
	2017-18	201.4	0.0	0.0
	2018-19	234.3	12.9	5.5
	2019-20	22.8	1.3	5.5
	Total	**458.6**	**14.2**	**3.1**

	Year	Area Harvested (ha)	Retention Area (ha)	Percent Retention (%)
S23	**2015-16**	0.0	0.0	0.0
	2016-17	572.3	17.2	3.0
	2017-18	0.0	0.0	0.0
	2018-19	32.7	1.0	3.2
	2019-20	0.0	0.0	0.0
	Total	**605.0**	**18.2**	**3.0**

- **VOITs 9, 12, and 13 – OGR Compliance**
  - There have been zero non-compliance related to these items.

- **VOITs 19 and 20 – Silviculture / RSA**

Table 4. Conifer Reforestation Program

	Year	Area Harvested (ha)	Area Planted (ha)	Percent Planted
L1	**2015-16**	318.7	176	55.23%
	2016-17	0.0	0.0	0.00%
	2017-18	0.0	0.0	0.00%
	2018-19	242.9	242.9	100.00%
	2019-20	254.2	222	87.13%
	Total	**815.8**	**640**	78.50%

	Year	Area Harvested (ha)	Area Planted (ha)	Percent Planted
L2	**2015-16**	0.0	-	0.00%
	2016-17	0.0	-	0.00%
	2017-18	203.4	203	100.00%
	2018-19	0.0	-	0.00%
	2019-20	131.6	121	91.92%
	Total	**335.0**	**324**	96.82%

	Year	Area Harvested (ha)	Area Planted (ha)	Percent Planted
L8	**2015-16**	0.0	0.0	0.00%
	2016-17	0.0	-	0.00%
	2017-18	201.4	0.0	0.00%
	2018-19	234.3	-	0.00%
	2019-20	22.8	-	0.00%
	Total	**458.6**	**0**	0.00%

	Year	Area Harvested (ha)	Area Planted (ha)	Percent Planted
S23	**2015-16**	0.0	0.0	0.00%
	2016-17	572.3	323	56.51%
	2017-18	0.0	0.0	0.00%
	2018-19	32.7	33	99.91%
	2019-20	0.0	-	0.00%
	Total	**605.0**	**356**	58.86%

Table 5. Conifer Reforestation – Monitoring Program

	Year	Establishment Survey Area (ha)	Satisfactorily Regenerated Area (ha)	Percent Meeting SR Standards
L1 / L2 / S23 / L8	**2015-16**	204.9	169.1	82.53%
	2016-17	585.4	585.4	100.00%
	2017-18	0	0	0.00%
	2018-19	695.5	695.5	100.00%
	2019-20	799.4	587.5	73.49%
	Total	**2285.2**	**2037.5**	89.16%

- **VOIT 23 – Non-Invasive Species**
  - Zero hectares of invasive / non-native plant species have been found.

- **VOITs 24, 25, and 27 – OGR Compliance**
  - There has been zero non-compliance related to these items.

Appendix D. SHS Variance

SR SHS Tracking between 2015 and 2025 (timber year) — Ed Bobocel Lumber
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned					Unplanned
									Variance							Harvested (ha)					SHS Assessment (Excluding Slivers)			Variance			SHS Assessment (Excluding Slivers)		
									Substantial				Slivers											Substantial					
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	unplanned SHS in Compartment
L01-A	All	All	9,268	915	233	-	-	-	233	-	8	-	8	43	35	78	67	-	54	-	120	0.00%	(8)	(794)	-	8	-	0.00%	(8)	682	572
	Aw/AwU	D	6,327	-	-	-	-	-	-	-	-	-	-	22.5	-	22.5	5.4	-	-	-	5.4	100.00%	-	5	-	-	-	100.00%	-	(5)	(5)
	PjMX	DC-P	101	51	-	-	-	-	-	-	-	-	-	0.7	-	0.7	-	-	-	-	-	0.00%	-	(51)	-	-	-	0.00%	-	51	51
	AwSx	DC-S	119	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	148	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMx	CD-P	172	59	12.07	-	-	-	12.07	-	4.6	-	4.6	0.1	0.6	0.7	3.7	-	-	-	3.7	0.00%	(5)	(55)	-	5	-	0.00%	(5)	43	38
	SxAw	CD-SB	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	386	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Pj	C-P	1,849	668	220.8	-	-	-	220.83	-	3.5	-	3.5	11.7	34.8	46.4	57.4	-	53.6	-	111.0	0.00%	(3)	(557)	-	3	-	0.00%	(3)	336	352
	SbG	C-SB	144	136	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(136)	-	-	-	0.00%	-	136	136
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	8.0	-	8.0	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

Values may be affected by rounding

The following operating plans contribute to this variance calculation:

Licence	Working Area	Operating Year	Comments
CTLL010017	72124 - Owl River	2015 - 2016	Harvesting is completed. SHS is moved over to as builts
CTLL010017	69134 - Owl River	2020-2021	Partial Harvesting in this area. Harvesting to be completed in 2021-2022. Planned harvest to be moved to Final Harvest after cutblock updates.

SR SHS Tracking between 2015 and 2025 (timber year) — Ed Bobocel Lumber
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned					Unplanned
									Variance							Harvested (ha)					SHS Assessment (Excluding Slivers)			Variance			SHS Assessment (Excluding Slivers)		
									Substantial				Slivers											Substantial					
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	unplanned SHS in Compartment
L02-B	All	All	10,736	1,042	43	1	55	-	99	56	14	17	31	105	30	135	255	-	20	13	288	5.39%	25	(754)	56	14	17	5.39%	25	943	683
	Aw/AwU	D	6,836	-	-	1.46	-	-	1.46	1	-	-	-	17.0	-	17.0	-	-	-	6.84	6.8	100.00%	1	7	1	-	-	100.00%	1	(8)	-
	PjMX	DC-P	28	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(14)	-	-	-	0.00%	-	14	14
	AwSx	DC-S	712	34	-	-	-	-	-	-	-	-	-	1.8	4.1	5.9	31.57	-	-	-	31.6	0.00%	-	(2)	-	-	-	0.00%	-	2	(2)
	SxAw	CD-SW	805	75	-	-	-	-	-	-	4.6	-	4.6	1.9	4.3	6.2	36.9	-	-	-	36.9	0.00%	(5)	(39)	-	5	-	0.00%	(5)	39	30
	PjMx	CD-P	63	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(2)	-	-	-	0.00%	-	2	2
	SxAw	CD-SB	7	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(5)	-	-	-	0.00%	-	5	5
	Sw	C-SW	1,354	400	24.8	-	47.22	-	71.97	47.2	2.9	2.3	5.2	22.7	14.2	36.8	156.4	-	19.68	-	176.1	11.82%	42	(224)	47	3	2	11.82%	42	152	199
	Pj	C-P	569	301	-	-	-	-	-	-	-	8.9	8.9	0.2	4.0	4.2	26.7	-	-	-	26.7	0.00%	(9)	(274)	-	-	9	0.00%	(9)	274	261
	SbG	C-SB	361	212	18.4	-	7.48	-	25.89	7.5	6.0	6.0	12.0	9.5	3.4	12.9	3.7	-	-	-	3.7	3.53%	(5)	(208)	7	6	6	3.53%	(5)	183	175
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	51.8	-	51.8	-	-	-	6.40	6.4	100.00%	-	6	-	-	-	100.00%	-	(6)	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP

Values may be affected by rounding

The following operating plans contribute to this variance calculation:

Licence	Working Area	Operating Year	Comments
CTLL020084	70204	2017 - 2018	Timber harvest operations are completed.
CTLL020084	71194	2019-2020	Timber harvest operations are completed.
CTLL020084	71204	2020-2021	Timber harvesting was completed in 2020-2021. Table to be updated after cutblock updates.

SR SHS Tracking between 2015 and 2025 (timber year) Ed Bobocel Lumber
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)												Asbuilts									Combined As-Built & Planned							
										Variance											SHS Assessment (Excluding Slivers)				Variance			SHS Assessment (Excluding Slivers)				
										Substantial				Slivers											Substantial							Unplanned
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	unplanned SHS in Compartment
L08-A	All	All	4,509	1,451	-	-	-	-	-	-	-	-	-	-	-	-	441	-	40	43	525	0.00%	-	(927)	83	-	-	5.73%	83	1,451	1,010
	Aw/AwU	D	2,832	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.2	-	26.2	100.00%	-	26	26	-	-	100.00%	26	(26)	-
	PjMX	DC-P	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(5)	-	-	-	0.00%	-	5	5
	AwSx	DC-S	228	228	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(228)	-	-	-	0.00%	-	228	228
	SxAw	CD-SW	275	218	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(218)	-	-	-	0.00%	-	218	218
	PjMx	CD-P	10	3	-	-	-	-	-	-	-	-	-	-	-	-	2.3	-	-	-	2.3	0.00%	-	(0)	-	-	-	0.00%	-	0	0
	SxAw	CD-SB	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(2)	-	-	-	0.00%	-	2	2
	Sw	C-SW	307	206	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.1	-	2.1	0.00%	-	(204)	2	-	-	1.00%	2	204	206
	Pj	C-P	649	588	-	-	-	-	-	-	-	-	-	-	-	-	434.4	-	12.1	-	446.5	0.00%	-	(141)	12	-	-	2.06%	12	141	153
	SbG	C-SB	201	201	-	-	-	-	-	-	-	-	-	-	-	-	4.7	-	-	-	4.7	0.00%	-	(196)	-	-	-	0.00%	-	196	196
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42.9	42.9	100.00%	-	43	43	-	-	100.00%	43	(43)	-

Note:
* Deletions and Deferrals to be provided in shapefile format for next FMP
* Values may be affected by rounding

The following operating plans contribute to this variance calculation:

Licence	Working Area	Operating Year	Comments
CTLL08J001	OCR	2017 - 2019	Harvesting is completed.
CTLL08J001	70144	2019-2020	Harvesting is completed.

SR SHS Tracking between 2015 and 2025 (timber year) Ed Bobocel Lumber
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)												Asbuilts									Combined As-Built & Planned							
										Variance											SHS Assessment (Excluding Slivers)				Variance			SHS Assessment (Excluding Slivers)				
										Substantial				Slivers											Substantial							Unplanned
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	unplanned SHS in Compartment
S23-A	All	All	3,719	1,075	242	-	207	-	450	207	106	57	163	103	129	232	488	-	86	32	605	19.30%	45	(470)	325	106	57	30.21%	162	625	53
	Aw/AwU	D	2,150	-	-		6.72		6.72	6.7	-	-	-	38.0	-	38.0	-	-	37.6	-	37.6	100.00%	7	38	44	-	-	100.00%	44	(44)	-
	PjMX	DC-P	19	12	-				-	-	-	-	-	0.1	0.7	0.8	-	-	2.3	-	2.3	0.00%	-	(9)	2	-	-	20.00%	2	9	11
	AwSx	DC-S	188	163	17.91		79.10		97.01	79.1	27.8	-	27.8	3.0	16.3	19.3	81.0	-	11.6	-	92.6	48.60%	51	(70)	91	28	-	55.73%	63	(27)	20
	SxAw	CD-SW	373	270	96.28		11.50		107.78	11.5	22.1	-	22.1	4.5	28.0	32.5	116.2	-	8.3	-	124.5	4.26%	(11)	(145)	20	22	-	7.34%	(2)	38	7
	PjMx	CD-P	54	31	13.84		20.70		34.54	20.7	4.8	-	4.8	1.2	0.9	2.1	22.6	-	0.2	-	22.8	66.05%	16	(9)	21	5	-	66.68%	16	(26)	(11)
	SxAw	CD-SB	7	3	-				-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	(3)	-	-	-	0.00%	-	3	3
	Sw	C-SW	232	130	13.89		62.60		76.49	62.6	-	2.0	2.0	8.0	17.5	25.5	65.6	-	13.5	-	79.1	48.21%	61	(51)	76	-	2	58.61%	74	(26)	31
	Pj	C-P	567	416	93.93		13.30		107.23	13.3	37.0	17.0	54.0	6.1	43.8	49.9	202.2	-	8.8	-	211.0	3.20%	(41)	(205)	22	37	17	5.32%	(32)	97	22
	SbG	C-SB	130	51	6.38		13.47		19.85	13.5	14.2	37.9	52.1	21.4	21.9	43.3	-	-	3.2	-	3.2	26.36%	(39)	(48)	17	14	38	32.62%	(35)	28	(29)
	SBFM	C-SBFM	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	No Strata	-	-	-			-	-	-	-	-	-	20.4	-	20.4	-	-	-	31.8	31.8	100.00%	-	32	32	-	-	100.00%	32	(32)	-

Note:
* Deletions and Deferrals to be provided in shapefile format for next FMP
* Values may be affected by rounding

The following operating plans contribute to this variance calculation:

Licence	Working Area	Operating Year	Comments
CTLS07J001	68-26-4	2016 - 2017	Harvesting is completed. SHS has been moved over to as builts
CTLS07J001	68-25-4	2016 - 2017	Harvesting is completed. SHS has been moved over to as builts
CTLS07J001	67-25-4	2018 -	Timber harvesting started in the 2018 - 2019 operating year and operations are ongoing in the working area. SHS will be moved over at the completion of all operations in the working area.
CTLS07J001	68254	2020-2021	This is a new FHP planned for 2020-2021 operations.

Al-Pac FMA Area – Forest Stewardship Report 2015–2020
Northland Forest Products
FMUs – A14 / A15 / L03 / L01 / L08

- **Approved FMP SHS Variance Assessment**
  - By FMU compartment (see Appendix A)

- **AAC Review**
  - The planned volumes are based on AOP forecasts.

	Year	Conifer Volume Projected (m3/ha)	Conifer Volume Delivered (m3/ha)	Area Hectares
A15	2015-16	160	167	576
	2016-17	152	180	143
	2017-18			
	2018-19			
	2019-20	163	165	80
		158	**171**	**799**

	Year	Conifer Volume Projected (m3/ha)	Conifer Volume Delivered (m3/ha)	Area Hectares
A14	2015-16	150	175	456
	2016-17	148	173	422
	2017-18	142	190	360
	2018-19	155	165	432
	2019-20	160	170	503
		151	**175**	**2,173**

	Year	Conifer Volume Projected (m3/ha)	Conifer Volume Delivered (m3/ha)	Area Hectares
L03	2015-16			
	2016-17			
	2017-18	180	181	723
	2018-19	129	175	152
	2019-20	150	181	222
		153	**179**	**1,097**

	Year	Conifer Volume Projected (m3/ha)	Conifer Volume Delivered (m3/ha)	Area Hectares
L01	2015-16			
	2016-17			
	2017-18	142	159	359
	2018-19	129	151	403
	2019-20	155	165	91
		142	**158**	**853**

	Year	Conifer Volume Projected (m3/ha)	Conifer Volume Delivered (m3/ha)	Area Hectares
L08	2015-16			0
	2016-17			0
	2017-18			0
	2018-19			0
	2019-20			0
	Total			0

➢ Growth and Yield Maintenance Program

- n/a

➢ Seed Availability and Usage

Northland Forest Products (NLF)															
	Seed inventory (kg)	# of sdlgs produced with current inventory	Area planted with current inventory** (ha)	Area to be cut in next 10 yrs (ha)	Minium Density	Seedling required	Seed required for next 10 yrs(kg)	Short fall wildseed next 10 yrs (KG)		seed from Region E1 (kg)	seed from Region E (kg)	total short fall			
White Spruce															
AP1.1	0	0	0	113	1400	158,200	1.2	-1.2		1.20		-0.02			
CM2.1	28.70	3,723,145	2,659	0	1400	0	0.0	28.7				28.70			
CM2.2	10.10	1,310,236	936	3,184	1400	4,457,600	34.4	-24.3		24.30		0.04			
CM2.4	0	0	0	5,092	1400	7,128,800	55.0	-55.0		37.19	17.8	0.04			
CM3.1	1.57	203,670	145	2,237	1400	3,131,800	24.1	-22.6		3.80	18.9	0.13			
LBH1.3	4.88	633,064	452	159	1400	222,600	1.7	3.2				3.16			
LBH1.5	5	648,632	463	2,405	1400	3,367,000	26.0	-21.0		0.40	2.76	-17.79			
LF1.1	0	0	0	0	1400	0	0.0	0.0				0.00			
UBH1.1	0	0	0	0	1400	0	0.0	0.0				0.00		Species	# sdlg/kg
E	15.00	1,945,895	1,390	0	1400	0	0.0	15.0			-39.46	-24.46		PL/PJ	115,089
E1	143.00	########	13,251	0	1400	0	0.0	143.0		-67		76.11		SB	299,110
D1	0.35	45,404	32	0	1400	0	0.0	0.4				0.35		SW	129,726
Pine										P1 (kg)					
AP1.1	13.59	1,564,062	1,117	1,399	1400	1,958,600	17.0	-3.4				-3.43			
CM1.2	13.2	1,519,177	1,085	0	1400	0	0.0	13.2				13.20		Amount of genetic	
CM2.1	7.2	828,642	592	0	1400	0	0.0	7.2				7.20		seed to offset wild	
CM2.2	0.6	69,053	49	1,041	1400	1,457,400	12.7	-12.1		12.70		0.64			
CM2.4	18.9	2,175,185	1,554	467	1400	653,800	5.7	13.2				13.22			
CM3.1	18.4	2,117,641	1,513	1,378	1400	1,929,200	16.8	1.6				1.64			
LBH1.5	12.297	1,415,251	1,011	1,711	1400	2,395,400	20.8	-8.5				-8.52			
LF1.1	0.7	80,562	58	0	1400	0	0.0	0.7				0.70			
P1	23.5	2,704,595	1,932	0	1400	0	0.0	23.5		-12.7		10.80			
Black Spruce										L3 (kg)					
CM2.2	0	0	0	44	1400	61,600	0.2	-0.2		0.20		-0.01			
CM2.4	1.67	499,514	357	457	1400	639,800	2.1	-0.5		0.50		0.03			
CM3.1	0.22	65,804	47	235	1400	329,000	1.1	-0.9		0.83		-0.05			
LBH1.5	6.15	1,839,526	1,314	1,666	1400	2,332,400	7.8	-1.6		0.26		-1.39			
L3	0	0	0	0	1400	0	0.0	0.0		-1.79		-1.79			

➢ VOIT 7 – Wildfire Salvage

- See Al-Pac VOIT 7 metrics – Horse River Wildfire 2016

➢ VOIT 8 – Blowdown Salvage (hectares)

- See Al-Pac VOIT 8 metrics – L1 and L8 events 2017

- **VOIT 10 – Stand Structure**

	Year	Area Harvested (ha)	Retention Area (ha)	Percent Retention (%)
A14	**2015-16**	456.3	21.9	4.8
	2016-17	422.5	5.9	1.4
	2017-18	724.6	21.9	3.0
	2018-19	432.8	3.0	0.7
	2019-20	503.6	4.8	1.0
	Total	**2,539.8**	**57.5**	**2.3**

	Year	Area Harvested (ha)	Retention Area (ha)	Percent Retention (%)
A15	**2015-16**	1360.3	19.0	1.4
	2016-17	143.5	5.5	3.8
	2017-18	0.0	0.0	0.0
	2018-19	66.2	0.0	0.0
	2019-20	80.7	2.9	3.6
	Total	**1,650.7**	**27.4**	**1.7**

	Year	Area Harvested (ha)	Retention Area (ha)	Percent Retention (%)
L3	**2015-16**	0.0	0.0	0.0
	2016-17	0.0	0.0	0.0
	2017-18	723.4	48.4	6.7
	2018-19	152.6	7.3	4.8
	2019-20	222.5	1.4	0.6
	Total	**1,098.5**	**57.1**	**5.2**

	Year	Area Harvested (ha)	Retention Area (ha)	Percent Retention (%)
L1	**2015-16**	0.0	0.0	0.0
	2016-17	0.0	0.0	0.0
	2017-18	359.1	29.6	8.2
	2018-19	403.1	3.3	0.8
	2019-20	91.3	0.0	0.0
	Total	**853.5**	**32.9**	**3.9**

- **VOITs 9, 12, and 13 – OGR Compliance**
  - There has been zero non-compliance related to these items.

- **VOITs 19 and 20 – Silviculture / RSA**

A14	Area Harvested (ha)	Area Planted (ha)	% Area Planted		Area LFN B/D (ha)	SMA (ha)	Area to be planted (ha)	Total Area Reforested (ha)	% Area refored
2015-16	469.5	469.5	100.0%					469.5	100.00%
2016-17	425.9	425.9	100.0%					425.9	100.00%
2017-18	716.7	564.2	78.7%		153.3			717.5	100.11%
2018-19	420	386	91.9%		28.11		6	420.11	100.03%
2019-20	503.6	136.5	27.1%		60.2		307	503.7	100.02%

A15	Area Harvested (ha)	Area Planted (ha)	% Area Planted		Area LFN B/D (ha)	SMA (ha) Salvage	Area to be planted (ha)	Total Area treated (ha)	% Area refored
2015-16	1360.4	231	17.0%		121.6	1007.8		1360.4	100.00%
2016-17	144.5	144.5	100.0%					144.5	100.00%
2017-18	-	-							
2018-19	66	0	0.0%			66		66	100.00%
2019-20	80.4		0.0%		4.5		76.3	80.8	100.50%

L01	Area Harvested (ha)	Area Planted (ha)	% Area Planted		Area LFN B/D (ha)	SMA (ha)	Area Planned plant (ha)	Total Area Reforested (ha)	% Area refored
2015-16	-	-							
2016-17	-	-							
2017-18	326.19	100	30.7%		226.19			326.19	100.00%
2018-19	406.1	14.67	3.6%		394.43			409.1	100.74%
2019-20	91.5	0	0.0%		13.4		75.1	88.5	96.72%

L03	Area Harvested (ha)	Area Planted (ha)	% Area Planted		Area LFN B/D (ha)	SMA (ha)	Area to be planted (ha)	Total Area Reforested (ha)	% Area refored
2015-16	-	-							
2016-17	-	-							
2017-18	757.7	738	97.4%		21.8			759.8	100.28%
2018-19	128.6	119	92.5%		11.1			130.1	101.17%
2019-20	212.9	28.8	13.5%		15.45		171.1	215.35	101.15%

A15/A14/ L03/L01	Year	Establishment Survey Area (ha)	Satisfactorily Regenerated Area (ha)	Percent Meeting SR Standards
	2015-16	1618	1417	**87.58%**
	2016-17	1578	1423	**90.18%**
	2017-18	2484	2433.2	**97.95%**
	2018-19	1711	1711	**100.00%**
	2019-20	1614	1614	**100.00%**
	Total	**9005**	**8598.2**	**95.48%**

- **VOIT 23 – Non-Invasive Species**
  - Zero hectares of invasive / non-native plant species have been found.

- **VOITs 24, 25, and 27 – OGR Compliance**
  - There has been zero non-compliance related to these items.

Appendix A. SHS Variance Tables

SR SHS Tracking between 2015 and 2025 (timber year)

PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)					Variance						Asbuilts						Combined As-Built & Planned						
										Substantial				Slivers		Harvested (ha)				SHS Assessment (Excluding Slivers)			Variance Substantial			SHS Assessment (Excluding Slivers)			Unplanned
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
A14-B	All	All	1,091	707	155			31	27	213	58	100		100	65	32	98	-		-	-	-	8.23%	(42)	(707)	58	64		8.23%	(6)	494	420
	Aw/AwU	D	257	-				0.40	3.84	4.23	4.2			-	23.4		23.4						0.00%	4	-	4	-		0.00%	4	(4)	-
	PjMX	DC-P	5	5	4.43					4.43	-			-	0.0	0.5	0.6						0.00%	-	(5)	-	-		0.00%	-	1	0
	AwSx	DC-S	12	12				12.97		12.97	13.0			-	10.1		10.1						110.99%	13	(12)	13	-		110.99%	13	(1)	12
	SxAw	CD-SW	56	56	33.31					33.31	-	2.2		2.2	0.3	2.8	3.1						0.00%	(2)	(56)	-	2		0.00%	(2)	23	18
	PjMx	CD-P	-	-						-	-			-			-						0.00%	-	-	-	-		0.00%	-	-	-
	SxAw	CD-SB	2	2						-	-			-			-						0.00%	-	(2)	-	-		0.00%	-	2	2
	Sw	C-SW	387	267	52.10				5.04	57.14	5.0	61.6		61.6	8.6	8.4	17.0						1.89%	(57)	(267)	5	62		1.89%	(57)	210	145
	Pj	C-P	94	94	53.87		4.27	0.03		58.17	4.3	13.2		13.2	3.4	14.6	18.1						4.59%	(9)	(94)	4	13		4.59%	(9)	36	13
	SbG	C-SB	278	271	11.00		5.81	18.41		35.21	24.2	22.8		22.8	17.6	5.9	23.5						8.92%	1	(271)	24	23		8.92%	1	236	232
	SBFM	C-SBFM	-	-			7.44			7.44	7.4			-	0.3		0.3						0.00%	7	-	7	-		0.00%	7	(7)	-
	X	NoStrata	-	-						-	-			-	1.5		1.5						0.00%	-	-	-	-		0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP Values may be affected by rounding

SR SHS Tracking between 2015 and 2025 (timber year)

PD 1, Year 1-10 PU: 091124

Harvest Profile					Planned for Harvest (ha)					Variance						Asbuilts						Combined As-Built & Planned						
										Substantial				Slivers		Harvested (ha)				SHS Assessment (Excluding Slivers)			Variance Substantial			SHS Assessment (Excluding Slivers)			Unplanned
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
A15-A	All	All	5,739	228	190	-	-	2	-	192	2	5	8	13	29	26	55	-	-	-	-	-	0.90%	(10)	(228)	2	5	8	0.90%	(10)	36	0
	Aw/AwU	D	3,375	-	-	-	-	-	-	-	-	-	-	-	6.2	-	6.2						0.00%	-	-	-	-		0.00%	-	-	-
	PjMX	DC-P	215	-	-	-	-	-	-	-	-	-	-	-	-	-	-						0.00%	-	-	-	-		0.00%	-	-	-
	AwSx	DC-S	222	18	16.66	-	2.05	-	18.71	2.0	-	-	-	5.4	1.3	6.7						11.42%	2	(18)	2	-		11.42%	2	(1)	0
	SxAw	CD-SW	250	6	5.79	-	-	-	5.79	-	-	-	-	0.4	0.3	0.7						0.00%	-	(6)	-	-		0.00%	-	0	0
	PjMx	CD-P	95	-	-	-	-	-	-	-	-	-	-	-	-	-	-						0.00%	-	-	-	-		0.00%	-	-	-
	SxAw	CD-SB	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-						0.00%	-	-	-	-		0.00%	-	-	-
	Sw	C-SW	854	204	167.13	-	-	-	167.13	-	4.9	7.6	12.5	11.0	24.0	35.0						0.00%	(13)	(204)	-	5	8	0.00%	(13)	37	0
	Pj	C-P	724	-	-	-	-	-	-	-	-	-	-	0.4	-	0.4						0.00%	-	-	-	-		0.00%	-	-	-
	SbG	C-SB	-	-	-	-	-	-	-	-	-	-	-	5.0	-	5.0						0.00%	-	-	-	-		0.00%	-	-	-
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-						0.00%	-	-	-	-		0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	0.6	-	0.6						0.00%	-	-	-	-		0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP Values may be affected by rounding

SR SHS Tracking between 2015 and 2025 (timber year)

PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)					Variance						Asbuilts						Combined As-Built & Planned						
										Substantial				Slivers		Harvested (ha)				SHS Assessment (Excluding Slivers)			Variance Substantial			SHS Assessment (Excluding Slivers)			Unplanned
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	Unplanned SHS in Compartment
A15-B	All	All	1,898	1,898	372	167		32	160	731	360	276	93	369	83	116	199	-	-	-	-	-	18.94%	(10)	(1,898)	360	24	40	18.94%	295	1,167	1,041
	Aw/AwU	D	-	-				10.41	0.06	10.47	10.5			-	13.0		13.0						0.00%	10	-	10	-	-	0.00%	10	(10)	-
	PjMX	DC-P	56	56	16.51					16.51	-	6.5	4.8	11.3	6.1	6.7	12.8						0.00%	(11)	(56)	-	7	5	0.00%	(11)	39	21
	AwSx	DC-S	-	-						-	-			-			-						0.00%	-	-	-	-		0.00%	-	-	-
	SxAw	CD-SW	4	4				3.03		3.03	3.0			-		0.8	0.8						84.20%	3	(4)	3	-	-	84.20%	3	1	3
	PjMx	CD-P	139	139	52.00	2.78			0.00	54.78	2.8	17.6	20.3	37.9	2.4	18.9	21.4						2.00%	(35)	(139)	3	18	20	2.00%	(35)	84	30
	SxAw	CD-SB	-	-						-	-			-			-						0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	109	109				4.69		4.69	4.7		15.2	15.2			-						4.29%	(11)	(109)	5	-	15	4.29%	(11)	105	94
	Pj	C-P	1,591	1,591	303.29	164.6	13.904		160.07	641.88	338.6	251.6	53.1	304.8	60.9	89.7	150.6						21.29%	34	(1,591)	339	252	53	21.29%	34	949	893
	SbG	C-SB	-	-						-	-			-	0.1		0.1						0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	-						-	-			-			-						0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-						-	-			-	0.3		0.3						0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP Values may be affected by rounding

Planning Units submitted with this variance Calculation: Fort Hills (9908, 9909)

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)												Asbuilts								Combined As-Built & Planned						Unplanned
										Variance							Harvested (ha)					SHS Assessment			Variance			SHS Assessment			
										Substantial				Slivers								(Excluding Slivers)			Substantial			(Excluding Slivers)			
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	unplanned SHS in Compartment
A15-D	All	All	8,209	#VALUE!	231	-	110	3	344	113	30	-	30	25	40	65	-	-	-	-	-	#VALUE!	83	#VALUE!	113	30	-	#VALUE!	83	#VALUE!	
	Aw/AwU	D	5,755	-	-	-	-	0	-	-	0	-	-	7.56357466	0	7.6					-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMX	DC-P	23	-	-	-	-	0	-	-	0	-	-	0	0	-					-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	136	136	3.77	-	109.95	3.245430203	116.96	113.2	0	-	-	14.81707547	0.714820828	15.5					-	83.03%	113	(136)	113	-	-	83.03%	113	19	132
	SxAw	CD-SW	580	545	76.54	-	-	0	76.54	-	5.663766883	-	5.7	0.590148473	7.081073435	7.7					-	0.00%	(6)	(545)	-	6	-	0.00%	(6)	468	455
	PjMx	CD-P	4	-	-	-	-	0	-	-	0	-	-	0	0	-					-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	-	-	-	-	-	0	-	-	0	-	-	0	0	-					-	0.00%	-	-	-	-	-	0.00%	-	-	-
	Sw	C-SW	1,664	1,427	150.92	-	-	0	150.92	-	24.07060509	-	24.1	0.220540086	32.23217544	32.5					-	0.00%	(24)	(1,427)	-	24	-	0.00%	(24)	1,276	1,220
	Pj	C-P	47	17	-	-	-	0	-	-	0	-	-	0	0	-					-	0.00%	-	(17)	-	-	-	0.00%	-	17	17
	SbG	C-SB	-	-	-	-	-	0	-	-	0	-	-	1.313050206	0	1.3					-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SBFM	C-SBFM	-	#VALUE!	-	-	-	0	-	-	0	-	-		0	-					-	#VALUE!	-	#VALUE!	-	-	-	#VALUE!	-	#VALUE!	
	X	NoStrata	-	#VALUE!	-	-			-	-			-	0.092779867		0.1					-	#VALUE!	-	#VALUE!	-	-	-	#VALUE!	-	#VALUE!	

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP
Values may be affected by rounding

Planning Units submitted with this variance Calculation: 98124

SR SHS Tracking between 2015 and 2025 (timber year)
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)												Asbuilts								Combined As-Built & Planned						Unplanned
										Variance							Harvested (ha)					SHS Assessment			Variance			SHS Assessment			
										Substantial				Slivers								(Excluding Slivers)			Substantial			(Excluding Slivers)			
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	unplanned SHS in Compartment
L03-A	All	All	9,189	#VALUE!	878	10	109	33	1,030	152	389	-	389	127	171	298	-	-	-	-	-	#VALUE!	(237)	#VALUE!	152	389	-	#VALUE!	(237)	#VALUE!	
	Aw/AwU	D	2,723	14			7.29		7.29	7.3			-	6.302864672		6.3					-	52.16%	7	(14)	7	-	-	52.16%	7	7	14
	PjMX	DC-P	169	146	109.01		16.81		125.81	16.8			-	2.689910558	10.69716726	13.4					-	11.47%	17	(146)	17	-	-	11.47%	17	21	27
	AwSx	DC-S	670	431	89.43	1.18	7.80		98.42	9.0	19.01859366		19.0	15.32997103	12.12476653	27.5					-	2.09%	(10)	(431)	9	19	-	2.09%	(10)	332	310
	SxAw	CD-SW	886	519	90.77	0.08	3.01		93.87	3.1	14.40083859		14.4	3.536157841	15.65162497	19.2					-	0.60%	(11)	(519)	3	14	-	0.60%	(11)	425	398
	PjMx	CD-P	66	61	35.27		3.15		38.41	3.1	2.824705459		2.8	0.030522399	12.60960463	12.6					-	5.13%	0	(61)	3	3	-	5.13%	0	23	11
	SxAw	CD-SB	53	33	7.16	1.16			8.32	1.2	8.01850045		8.0	0.147806629	1.887681586	2.0					-	3.52%	(7)	(33)	1	8	-	3.52%	(7)	25	16
	Sw	C-SW	2,674	1,987	280.98		6.88		287.86	6.9	136.8107723		136.8	9.056624048	54.50398364	63.6					-	0.35%	(130)	(1,987)	7	137	-	0.35%	(130)	1,699	1,515
	Pj	C-P	622	430	146.90			20.71329298	167.61	20.7	102.996364		103.0	8.900722991	21.86994096	30.8					-	4.82%	(82)	(430)	21	103	-	4.82%	(82)	262	158
	SbG	C-SB	1,325	1,117	118.79	7.40	46.87	12.65050779	185.72	66.9	105.1486229		105.1	58.94880121	41.82513999	100.8					-	5.99%	(38)	(1,117)	67	105	-	5.99%	(38)	931	851
	SBFM	C-SBFM	-	#VALUE!			16.84		16.84	16.8			-	14.54121583		14.5					-		17		17	-	-		17		
	X	NoStrata	-	#VALUE!		0.00			0.00	0.0			-	7.026129003		7.0					-		0		0	-	-		0		

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP
Values may be affected by rounding

Planning Units submitted with this variance Calculation: 77154, 76184

SR SHS Tracking between 2015 and 2025 (timber year) 2021-05-03
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)												Asbuilts								Combined As-Built & Planned						Unplanned
										Variance							Harvested (ha)					SHS Assessment			Variance			SHS Assessment			
										Substantial				Slivers								(Excluding Slivers)			Substantial			(Excluding Slivers)			
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	unplanned SHS in Compartment
L03-B	All	All	2,511	1,988	498	-	226	75	799	301	301	2	303	68	119	187	-	-	-	-	-	15.14%	(2)	(1,988)	301	301	2	15.14%	(2)	1,189	1,067
	Aw/AwU	D	524	1	-	-	3.00	5.70	8.69	8.7	-	-	-	4.6	-	4.6	-				-	670.37%	9	(1)	9	-	-	670.37%	9	(7)	1
	PjMX	DC-P	49	49	24.82	-	7.17	0.56	32.54	7.7	7.4	-	7.4	1.6	9.2	10.7	-				-	15.73%	0	(49)	8	7	-	15.73%	0	17	8
	AwSx	DC-S	249	249	65.81	-	0.44	23.80	90.04	24.2	75.3	-	75.3	4.3	16.0	20.3	-				-	9.73%	(51)	(249)	24	75	-	9.73%	(51)	159	92
	SxAw	CD-SW	242	242	86.13	-	0.12	5.35	91.60	5.5	51.8	-	51.8	0.2	11.5	11.7	-				-	2.26%	(46)	(242)	5	52	-	2.26%	(46)	150	92
	PjMx	CD-P	65	65	17.45	-	7.92	0.04	25.41	8.0	4.4	2.4	6.9	2.3	3.8	6.1	-				-	12.23%	1	(65)	8	4	2	12.23%	1	40	37
	SxAw	CD-SB	13	13	2.60	-	3.93	-	6.52	3.9	9.0	-	9.0	-	1.6	1.6	-				-	29.64%	(5)	(13)	4	9	-	29.64%	(5)	7	0
	Sw	C-SW	277	277	98.18	-	1.52	6.14	105.85	7.7	53.3	-	53.3	2.4	30.6	33.0	-				-	2.76%	(46)	(277)	8	53	-	2.76%	(46)	172	95
	Pj	C-P	748	748	173.10	-	53.46	6.73	233.29	60.2	79.6	-	79.6	9.6	28.5	38.1	-				-	8.05%	(19)	(748)	60	80	-	8.05%	(19)	514	467
	SbG	C-SB	343	343	30.20	-	16.78	23.64	70.61	40.4	20.1	-	20.1	11.4	18.2	29.7	-				-	11.77%	20	(343)	40	20	-	11.77%	20	273	275
	SBFM	C-SBFM	-	-	-	-	131.56	-	131.56	131.6	-	-	-	25.3	-	25.3	-				-	0.00%	132	-	132	-	-	0.00%	132	(132)	-
	X	NoStrata	-	-	-	-	0.32	2.90	3.22	3.2	-	-	-	6.0	-	6.0	-				-	0.00%	3	-	3	-	-	0.00%	3	(3)	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP
Values may be affected by rounding

Al-Pac FMA Area – Forest Stewardship Report 2015–2020
Vanderwell Contractors
FMUs – S22 / S18 / L2

- **Approved FMP SHS Variance Assessment**
  - Please see attached Appendix with Variance tables for:
    - L02-A
    - L02-B
    - S18-A
    - S22-D
    - S22-E

- **AAC Review**
  - See Table 1. Vanderwell AAC Review below
  - *Note:* Planned volumes are based on GDP forecasts.

Table 1. AAC Review

	Year	Conifer Volume Projected (m3/ha)	Conifer Volume Delivered (m3/ha)
L2	**2015-16**	0	0
	2016-17	148	150
	2017-18	142	134
	2018-19	129	128
	2019-20	0	0
	Total	**139**	**138**

	Year	Conifer Volume Projected (m3/ha)	Conifer Volume Delivered (m3/ha)
S18	**2015-16**	0	0
	2016-17	0	0
	2017-18	0	0
	2018-19	0	0
	2019-20	0	0
	Total	**0**	**0**

	Year	Conifer Volume Projected (m3/ha)	Conifer Volume Delivered (m3/ha)
S22	**2015-16**	145	150
	2016-17	0	0
	2017-18	115	94
	2018-19	0	0
	2019-20	0	0
	Total	**130**	**122**

- **Growth and Yield Maintenance Program**
  - Zero PSP plots have been established to date.

- **Seed Availability and Usage**

Table 2. Vanderwell Seed Availability

Operator	Base 10 Strata	Species	Seed Zone	Current Inventory (kg)	Number of seedlings that could be planted with current inventory	Area that could be planted with current inventory (ha)	10 year Spatial Harvest Sequence (ha)	Minimum density (sph)	Seedlings Required	Seed required for next 10 yrs (kg)	Seed collection required for next 10 yrs (kg)
VAND	**PI/PIHW/HWPI**	**PL/PJ**	CM 2.4	13.36	1,033,930	862	195	1,200	234,000	3.02	(10.34)
			CM 3.2	17.14	1,326,232	1,105	46	1,200	55,200	0.71	(16.42)
			LF 1.1	97.28	7,528,731	6,274	15	1,200	18,000	0.23	(97.05)
			LF 1.3	93.19	7,211,665	6,010		1,200	0	-	(93.19)
			UF 1.1	12.11	937,270	781		1,200	0	-	(12.11)
			CM3.1	42.94	3,323,281	2,769		1,200	0	-	(42.94)
			LBH1.5	30.16	2,333,773	1,945		1,200	0	-	(30.16)
			LBH1.3	0.00	0	0	39	1,200	46,800	0.39	0.39
			UBH1.1	0.00	0	0	39	1,200	46,800	0.39	0.39
			CM2.2	0.00	0	0	142	1,200	170,400	1.44	1.44
			CM3.3	2.24	173,121	144	17	1,200	20,400	0.26	(1.97)
	SW/SWHW/HWSX	**SW**	CM 2.4	1204.66	143,028,552	119,190	1,332	1,200	1,598,400	13.46	(1,191.20)
			CM2.2	0.00	0	0	968	1,200	1,161,600	9.78	9.78
			CM 3.2	635.97	75,508,438	62,924	311	1,200	373,200	3.14	(632.83)
			CM 3.3	451.75	53,635,588	44,696	115	1,200	138,000	1.16	(450.59)
			LF 1.1	47.78	5,673,347	4,728	104	1,200	124,800	1.05	(46.73)
			LF 1.3	107.23	12,731,548	10,610		1,200	0	-	(107.23)
			UF 1.1	0.00	0	0		1,200	0	-	-
			Region D1	9.50	1,127,451	940		1,200	0	-	(9.50)
			CM2.3	349.30	41,471,565	34,560		1,200	0	-	(349.30)
			CM3.1	23.38	2,775,647	2,313		1,200	0	-	(23.38)
			DM1.3	28.84	3,424,263	2,854		1,200	0	-	(28.84)
			UBH1.1	0.00	0	0	265	1,200	318,000	2.68	2.68
			LBH1.3	16.30	1,935,283	1,613	265	1,200	318,000	2.68	(13.62)
	SB/SBHW	**SB**	CM 2.4	0.60	150,000	125	195	1,200	234,000	0.94	0.34
			CM 3.2	4.50	1,126,000	938	46	1,200	55,200	0.22	(4.28)
			LF 1.1	18.07	4,517,500	3,765	15	1,200	18,000	0.07	(18.00)
			LF 1.3	18.49	4,622,350	3,852		1,200	0	-	(18.49)
			UF 1.1	0.00	0	0		1,200	0	-	-
			CM2.2	0.37	93,500	78	142	1,200	170,400	2.20	1.83
			CM3.3	0.12	29,500	25	17	1,200	20,400	0.26	0.15
			UBH1.1	0.00	0	0	39	1,200	46,800	0.39	0.39
			LBH1.3	0.10	25,000	21	39	1,200	46,800	0.60	0.50

- **VOIT 7 – Wildfire Salvage**
  - n/a – No fire salvage in the reporting period

- **VOIT 8 – Blowdown Salvage**
  - n/a – No blowdown events to report

- **VOIT 10**

Table 3. Vanderwell Retention Summary

	Year	Area Harvested (ha)	Retention Area (ha)	Percent Retention (%)
L2	**2015-16**	0.0	0.0	0.0
	2016-17	222.7	0.8	0.3
	2017-18	701.0	18.9	2.7
	2018-19	112.8	1.6	1.4
	2019-20	0.0	0.0	0.0
	Total	**1,036.5**	**21.3**	**2.1**

	Year	Area Harvested (ha)	Retention Area (ha)	Percent Retention (%)
S18	**2015-16**	0.0	0.0	0.0
	2016-17	0.0	0.0	0.0
	2017-18	0.0	0.0	0.0
	2018-19	0.0	0.0	0.0
	2019-20	0.0	0.0	0.0
	Total	**0.0**	**0.0**	**0.0**

	Year	Area Harvested (ha)	Retention Area (ha)	Percent Retention (%)
S22	**2015-16**	96.2	0.6	0.6
	2016-17	0.0	0.0	0.0
	2017-18	209.1	1.1	0.5
	2018-19	0.0	0.0	0.0
	2019-20	0.0	0.0	0.0
	Total	**305.3**	**1.7**	**0.6**

- **VOITs 9, 12, and 13 – OGR Compliance**
  - There has been zero non-compliance related to these items.

- **VOITs 19 and 20 – Silviculture / RSA**

Table 4. Vanderwell Conifer Reforestation Program

	Year	Area Harvested (ha)	Area Planted (ha)	Percent Planted
L2	**2015-16**	-	-	-
	2016-17	223	214.4	96%
	2017-18	701	613.1	87%
	2018-19	107	102.5	96%
	2019-20	-	-	-
	Total	**1,031**	**930**	**93%**

	Year	Area Harvested (ha)	Area Planted (ha)	Percent Planted
S18	**2015-16**	-	-	-
	2016-17	-	-	-
	2017-18	-	-	-
	2018-19	-	-	-
	2019-20	-	-	-
	Total	**-**	**-**	**-**

	Year	Area Harvested (ha)	Area Planted (ha)	Percent Planted
S22	**2015-16**	96	61.2	64%
	2016-17	-	-	-
	2017-18	209	168.4	81%
	2018-19	-	-	-
	2019-20	-	-	-
	Total	**304.68**	**230**	**72%**

Table 5. Conifer Reforestation Monitoring Program

	Year	Establishment Survey Area (ha)	Satisfactorily Regenerated Area (ha)	Percent Meeting SR Standards
L2/S18/ S22	**2015-16**	275.6	275.6	100.00%
	2016-17	200.5	167.4	83.49%
	2017-18	526.7	526.7	100.00%
	2018-19	1535.6	1535.6	100.00%
	2019-20	0	0	0.00%
	Total	**2538.4**	**2505.3**	**98.70%**

- **VOIT 23 – Non-Invasive Species**
  - Zero hectares of invasive / non-native plant species have been found.

- **VOITs 24, 25, and 27 – OGR Compliance**
  - There has been zero non-compliance related to these items.

Appendix C. SHS Variance

SR SHS Tracking between 2015 and 2025 (timber year) — Vanderwell
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)					Variance							Asbuilts							Combined As-Built & Planned						
										Substantial				Slivers			Harvested (ha)					SHS Assessment (Excluding Slivers)			Variance Substantial			SHS Assessment (Excluding Slivers)			Unplanned
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	unplanned SHS in Compartment
L02-A	All	All	347	347	-	-	-	-	-	-	4	-	4	4	8	13	27	-	-	-	27	0.00%	(4)	(320)	-	2	-	0.00%	(2)	347	307
	Aw/AwU	D	-	-	-	-	-	-	-	-	-	-	-	1.6	-	1.6	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMX	DC-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	AwSx	DC-S	74	74	-	-	-	-	-	-	-	-	-	0.6	2.8	3.4	20.2	-	-	-	20.2	0.00%	-	(54)	-	-	-	0.00%	-	54	51
	SxAw	CD-SW	43	43	-	-	-	-	-	-	-	-	-	0.6	0.1	0.6	1.2	-	-	-	1.2	0.00%	-	(41)	-	-	-	0.00%	-	41	41
	PjMx	CD-P	-	-	-	-	-	-	-	-	-	-	-	0.2	-	0.2	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SB	13	13	-	-	-	-	-	-	2.1	-	2.1	0.0	0.9	0.9	2.0	-	-	-	2.0	0.00%	(2)	(11)	-	2	-	0.00%	(2)	11	8
	Sw	C-SW	150	150	-	-	-	-	-	-	-	-	-	0.0	1.3	1.4	0.4	-	-	-	0.4	0.00%	-	(149)	-	-	-	0.00%	-	149	148
	Pj	C-P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SbG	C-SB	68	68	-	-	-	-	-	-	2.2	-	2.2	0.4	3.4	3.9	3.1	-	-	-	3.1	0.00%	(2)	(65)	-	2	-	0.00%	(2)	65	59
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	0.6	-	0.6	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP
Values may be affected by rounding

SR SHS Tracking between 2015 and 2025 (timber year) — Vanderwell
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)					Variance							Asbuilts							Combined As-Built & Planned						
										Substantial				Slivers			Harvested (ha)					SHS Assessment (Excluding Slivers)			Variance Substantial			SHS Assessment (Excluding Slivers)			Unplanned
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	unplanned SHS in Compartment
L02-B	All	All	10,736	2,835	467	15	20	-	503	35	337	-	337	95	230	325	825	-	44	2	871	1.25%	(302)	(1,964)	81	269	-	2.87%	(187)	2,332	975
	Aw/AwU	D	6,836	-	-	-	18.33	-	18.33	18.3	-	-	-	52.4	-	52.4	-	-	-	-	-	0.00%	18	-	18	-	-	0.00%	18	(18)	-
	PjMX	DC-P	28	14	9.42	8.40	-	-	17.82	8.4	2.7	-	2.7	2.2	2.4	4.5	-	-	-	-	-	58.10%	6	(14)	8	3	-	58.10%	6	(3)	(0)
	AwSx	DC-S	712	678	125.83	3.38	-	-	129.22	3.4	54.6	-	54.6	3.4	52.5	55.8	230.3	-	9.9	-	240.2	0.50%	(51)	(438)	13	55	-	1.96%	(41)	308	215
	SxAw	CD-SW	805	707	73.76	-	-	-	73.76	-	93.0	-	93.0	2.4	53.5	56.0	235.5	-	-	-	235.5	0.00%	(93)	(472)	-	93	-	0.00%	(93)	398	251
	PjMx	CD-P	63	62	19.58	-	-	-	19.58	-	12.8	-	12.8	0.6	8.1	8.7	0.6	-	-	-	0.6	0.00%	(13)	(61)	-	13	-	0.00%	(13)	41	20
	SxAw	CD-SB	7	2	-	-	-	-	-	-	-	-	-	-	0.1	0.1	2.1	-	-	-	2.1	0.00%	-	(0)	-	-	-	0.00%	-	0	(0)
	Sw	C-SW	1,354	955	83.72	-	-	-	83.72	-	105.6	-	105.6	3.6	68.8	72.4	297.9	-	28.7	-	326.6	0.00%	(106)	(628)	29	106	-	3.00%	(77)	544	399
	Pj	C-P	569	268	143.15	3.34	2.01	-	148.50	5.4	24.3	-	24.3	6.8	33.6	40.4	40.2	-	-	-	40.2	2.00%	(19)	(228)	5	24	-	2.00%	(19)	79	27
	SbG	C-SB	361	149	12.04	-	-	-	12.04	-	44.2	-	44.2	18.5	10.9	29.4	18.9	-	5.0	2.4	26.3	0.00%	(44)	(123)	7	44	-	4.97%	(37)	111	63
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	5.2	-	5.2	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP
Values may be affected by rounding

SR SHS Tracking between 2015 and 2025 (timber year) Vanderwell
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned						
										Variance						Harvested (ha)					SHS Assessment (Excluding Slivers)			Variance			SHS Assessment (Excluding Slivers)			Unplanned
										Substantial				Slivers										Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	unplanned SHS in Compartment
S18-A	All	All	12,363	1,096	231	58	-	-	289	58	70	-	70	63	41	103	-	-	-	-	-	5.32%	(12)	(1,096)	58	60	-	5.32%	(2)	807	754
	Aw/AwU	D	7,591	-	-	-			-	-	-	-	-	36.6		36.6	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMX	DC-P	15	3	-	-			-	-	-	-	-	-		-	-	-	-	-	-	0.00%	-	(3)	-	-	-	0.00%	-	3	3
	AwSx	DC-S	1,084	224	15.36	6.91			22.27	6.9	-	-	-	5.4	5.3	10.7	-	-	-	-	-	3.08%	7	(224)	7	-	-	3.08%	7	202	203
	SxAw	CD-SW	1,332	359	60.10	-			60.10	-	17.10991	-	17.1	1.9	7.9	9.8	-	-	-	-	-	0.00%	(17)	(359)	-	17	-	0.00%	(17)	299	274
	PjMx	CD-P	30	22	16.70	2.46			19.16	2.5	3.25899	-	3.3	0.1	1.8	1.9	-	-	-	-	-	11.31%	(1)	(22)	2	3	-	11.31%	(1)	3	0
	SxAw	CD-SB	32	21	-	-			-	-	-	-	-	-		-	-	-	-	-	-	0.00%	-	(21)	-	-	-	0.00%	-	21	21
	Sw	C-SW	1,896	383	102.9	35.3			138.2	35.3	40.0	-	40.0	6.9	19.1	25.9	-	-	-	-	-	9.22%	(5)	(383)	35	40	-	9.22%	(5)	245	221
	Pj	C-P	100	15	4.07	11.5			15.52	11.5	-	-	-	1.7	0.6	2.3	-	-	-	-	-	76.45%	11	(15)	11	-	-	76.45%	11	(1)	10
	SbG	C-SB	282	69	31.63	2.19			33.83	2.2	9.6	-	9.6	9.1	5.9	15.0	-	-	-	-	-	3.18%	(7)	(69)	2	10	-	3.18%	(7)	35	22
	SBFM	C-SBFM	-	-	-	-			-	-	-	-	-	-		-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-			-	-	-	-	-	1.1		1.1	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

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Values may be affected by rounding

SR SHS Tracking between 2015 and 2025 (timber year) Vanderwell
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)											Asbuilts								Combined As-Built & Planned						
										Variance						Harvested (ha)					SHS Assessment (Excluding Slivers)			Variance			SHS Assessment (Excluding Slivers)			Unplanned
										Substantial				Slivers										Substantial						
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	unplanned SHS in Compartment
S22-D	All	All	15,779	2,275	498	-	9	2	509	12	49	-	49	51	64	115	-	-	-	-	-	0.51%	(38)	(2,275)	12	46	-	0.51%	(34)	1,766	1,665
	Aw/AwU	D	10,976	-			4.27		4.27	4.3			-	24.5		24.5					-	0.00%	4	-	4	-	-	0.00%	4	(4)	-
	PjMX	DC-P	82	48					-	-			-			-					-	0.00%	-	(48)	-	-	-	0.00%	-	48	48
	AwSx	DC-S	1,045	-					-	-			-	11.3		11.3					-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	553	297	200.77				200.77	-	19.5		19.5	0.3	18.2	18.4					-	0.00%	(20)	(297)	-	20	-	0.00%	(20)	96	58
	PjMx	CD-P	67	58					-	-			-			-					-	0.00%	-	(58)	-	-	-	0.00%	-	58	58
	SxAw	CD-SB	8	5					-	-			-	1.5	2.2	3.7					-	0.00%	-	(5)	-	-	-	0.00%	-	5	3
	Sw	C-SW	1,195	596	288.64		4.91		293.54	4.9	26.0		26.0	3.0	43.0	46.0					-	0.82%	(21)	(596)	5	26	-	0.82%	(21)	302	238
	Pj	C-P	1,751	1,254					-	-			-			-					-	0.00%	-	(1,254)	-	-	-	0.00%	-	1,254	1,254
	SbG	C-SB	102	17	8.11			2.38	10.49	2.4	3.7		3.7	10.3	0.7	10.9					-	13.75%	(1)	(17)	2	4	-	13.75%	(1)	7	5
	SBFM	C-SBFM	-	-					-	-			-			-					-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-					-	-			-	0.6		0.6					-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP
Values may be affected by rounding

SR SHS Tracking between 2015 and 2025 (timber year) Vanderwell
PD 1, Year 1-10

Harvest Profile					Planned for Harvest (ha)												Asbuilts											Combined As-Built & Planned							Unplanned
										Variance							Harvested (ha)					SHS Assessment (Excluding Slivers)						Variance			SHS Assessment (Excluding Slivers)				
										Substantial				Slivers														Substantial							
Compartment	Company Specific Yield Strata	Provincial Yield Strata	Approved DFA 10 Year SHS	Operator Approved FMP 10 Year SHS	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	Additions	Deletions	Deferrals	Total	Additions	Deletions & Deferrals	Total	SHS 1-10yr	SHS 11-20yr	Contributing Landbase Outside SHS	Non-Contributing Landbase	Total	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Difference in Area Total Harvested - 10yr FMP SHS	Additions	Deletions	Deferrals	SHS Variance (Additions %)	Difference in Area (Subst. Add. - D&D)	Remaining Available Area (SHS & Non-SHS)	unplanned SHS in Compartment
S22-E	All	All	4,205	1,177	483	5	-	-	488	5	91	159	251	60	91	151	-	-	-	-	-	0.43%	(245)	(1,177)	5	78	84	0.43%	(157)	689	352
	Aw/AwU	D	2,425	-	-	-	-	-	-	-	-	-	-	34.89147	-	34.9	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	PjMX	DC-P	30	30	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0.00%	-	(30)	-	-	-	0.00%	-	30	30
	AwSx	DC-S	341	-	-	-	-	-	-	-	-	-	-	4.207555	-	4.2	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	SxAw	CD-SW	234	121	29.3	-	-	-	29.30	-	23.7	13.6	37.3	1.701496	13.6	15.3	-	-	-	-	-	0.00%	(37)	(121)	-	24	14	0.00%	(37)	92	41
	PjMx	CD-P	40	16	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0.00%	-	(16)	-	-	-	0.00%	-	16	16
	SxAw	CD-SB	39	38	0.1	-	-	-	0.11	-	2.4	26.8	29.1	0.000397	1.5	1.5	-	-	-	-	-	0.00%	(29)	(38)	-	2	27	0.00%	(29)	38	7
	Sw	C-SW	846	737	440.5	2.8	-	-	443.3	2.8	51.5	43.9	95.3	2.1	71.5	73.5	-	-	-	-	-	0.38%	(93)	(737)	3	51	44	0.38%	(93)	294	130
	Pj	C-P	217	206	7.5	-	-	-	7.50	-	-	71.9	71.9	0.086287	2.1	2.2	-	-	-	-	-	0.00%	(72)	(206)	-	-	72	0.00%	(72)	199	125
	SbG	C-SB	32	29	5.7	2.2	-	-	7.97	2.2	13.5	3.3	16.8	7.845038	2.0	9.9	-	-	-	-	-	7.74%	(15)	(29)	2	13	3	7.74%	(15)	21	4
	SBFM	C-SBFM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-
	X	NoStrata	-	-	-	-	-	-	-	-	-	-	-	9.4	-	9.4	-	-	-	-	-	0.00%	-	-	-	-	-	0.00%	-	-	-

Note: * Deletions and Deferrals to be provided in shapefile format for next FMP
Values may be affected by rounding