

# Alberta-Pacific Forest Products Inc. Forest Management Agreement Area



ALBERTA  
PACIFIC  
FOREST INDUSTRIES INC.

## Forest Stewardship Report Reporting Period 2011–2015



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## List of Acronyms and Abbreviations

AAC	Annual Allowable Cut
AAF	Alberta Agriculture and Forestry
ABMI	Alberta Biodiversity Monitoring Institute
ACIMS	Alberta Conservation Information Management System
ACO	Aboriginal Consultation Office
AEP	Alberta Environment and Parks
AER	Alberta Energy Regulator
AFPA	Alberta Forest Products Association
Al-Pac	Alberta Pacific Forest Industries
ARIS	Alberta Regeneration Information System
AME	Adaptive Management Experiment
AOP	Annual Operating Plan (one-year plan)
AITF	Alberta Innovates Technology Futures
APOS	Alberta Professional Outfitters Society
ARIS	Alberta Regeneration Information System
ATK	Aboriginal Traditional Knowledge
AVI	Alberta Vegetation Inventory
BCC	Boreal Caribou Committee
CBFA	Canadian Boreal Forest Agreement
CBI	Canadian Boreal Initiative
CCFM	Canadian Council of Forest Ministers
CMU	Caribou Monitoring Unit (see ABMI)
CSA	Canadian Standards Association
CTP	Coniferous Timber Permit / Community Timber Program
CES	Community Engagement Strategy (Al-Pac)
CoC	Chain of Custody (see FSC)
CPAWS	Canadian Parks and Wilderness Society
CPP	Controlled Parentage Program

DMI	Daishowa Marubeni International (now Mercer Peace River)
DUC	Ducks Unlimited Canada Inc.
ESBM	Ecosystem Based Management
EFM	Enhanced Forest Management
EMEND	Ecosystem Management Emulating Natural Disturbances Experiment
FGRMS	Forest Genetic Resource Management and Conservation Standards
FGROW	Forest Growth Organization of Western Canada
FHP	Final Harvest Plan
FMA	Forest Management Agreement
FMAA	Forest Management Agreement Area
FMP	Forest Management Plan
FPAC	Forest Products Association of Canada
FPIC	Free, Prior and Informed Consent
FRIAA	Forest Resource Improvement Association of Alberta
fRI	fRI Research (formerly Foothills Research Institute)
FSC	Forest Stewardship Council
FWMIS	Fisheries and Wildlife Management Information System GoA
G&Y	Growth and Yield
GDP	General Development Plan (5-year plan)
HCVF	High Conservation Value Forests
ILM	Integrated Land Management
IRP	Integrated Resource Plan
IRMS	Integrated Resource Management System
ISO	International Standards Organization
LAG	AI-Pac Forest Landscape Advisory Group
LARP	Lower Athabasca Regional Plan
LRSY	Long run sustained yield
LUF	Land-use Framework
MOSA	Mineable Oil Sands Area (former term for Surface Mineable Area or SMA)
MSL	Mineral Surface Lease

MTU	Miscellaneous Timber Unit
NRV	Natural Range of Variability
NPHF	Non-permanent human footprint
NSRP	North Saskatchewan Regional Plan
OGR	Operating Ground Rules
PAR	Progressive Aboriginal Relations
PFMS	Preferred Forest Management Strategy
PSP	Permanent Sample Plot
QH	Quota Holder
RICC	Regional Industry Caribou Collaborative
RMWB	Regional Municipality of Wood Buffalo
RSA	Regeneration Standards of Alberta
SAGD	Steam Assisted Gravity Drainage
SARA	Species at Risk Act (Federal Government)
SFI	Sustainable Forest Initiative
SFM	Sustainable Forest Management
SHS	Spatial Harvest Sequence
SMA	Surface Mineable Area (formerly MOSA)
TEK	Traditional Environmental Knowledge
TLE	Treaty Land Entitlement
TLUS	Traditional Land Use Study
TSA	Timber Supply Analysis
TSP	Temporary Sample Plot
UDR	Urban Development Region
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
VOIT	Values / Objectives / Indicators / Targets
WWF	World Wildlife Fund

# Alberta-Pacific Forest Products Inc. Forest Management Agreement Area *Forest Stewardship Report Overview* (Reporting Period 2011–2015)

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## Volume I: Overview

### A: Setting the Scene

#### About this Report

This stewardship report documents progress toward the goals and objectives described in the 2006 Forest Management Plan (FMP) for the Alberta-Pacific Forest Products Ltd. (Al-Pac) Forest Management Agreement (FMA) area. The report specifically covers the years 2011 to 2015, or approximately the second half of the 10-year lifespan of the FMP.

This is the third 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 crownland operations in 1993 under Al-Pac's 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. Al-Pac has also published other reports on its forestry and corporate performance. These reports are available from the company or on their website at [www.alpac.ca](http://www.alpac.ca).

This document has two components. The Overview (Volume I) uses the same format and covers the same topics as the 2006–2010 report. The Technical Information (Volume II) has a new format to meet the provincial government's *Forest Management Planning Standard Interpretive Bulletin, Stewardship Reporting Requirements*, issued in June 2017.\*

The stewardship report is meant to satisfy both the regulatory requirements of the Government of Alberta (GoA) 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) Certification. Al-Pac continues to obtain FSC to assist in kraft pulp market access and in retaining world-wide pulp market share.

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\* Government of Alberta. 2017. *Forest Management Planning Standard Interpretive Bulletin: Stewardship Reporting Requirements*. Edmonton, AB. [https://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/formain15749/\\$FILE/af-fdp-2017-03-stewardship-reporting-requirements-interpretive-bulletin.pdf](https://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/formain15749/$FILE/af-fdp-2017-03-stewardship-reporting-requirements-interpretive-bulletin.pdf)

## Seeking Advice

Al-Pac realized that advice from people who knew the company well and had the ability to provide constructive advice and criticism on Al-Pac's forest management performance would assist in producing a consistent, credible, and usable document for the range of intended audiences.

Several steps aided this process:

Bob Bott, a technical writer familiar with the forest industry generally and Al-Pac specifically, was engaged to support the development of the report's content and consistency through his expert understanding of the industry and his editorial and document-sequencing skills.

A dual format was adopted:

1. Overview section for a general audience and detailed technical section based on the Government of Alberta *Stewardship Reporting Requirements*; and
2. Recruitment of a subcommittee from the company's Landscape Advisory Committee (LAG) to review the draft document prior to publication.

## Presentation of the Stewardship Report

The complete 2006 FMP can be viewed on request from Al-Pac.\*

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 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. When available, relevant information on quota holder activities is included in this report when we refer to "the forest companies."

## 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) (Acquired St. Jean Lumber quota in L8)  
 Northland Forest Products Ltd. – Fort McMurray (A15, A14, L3, L1, L8)  
 Vanderwell Contractors (1971) Ltd. – Slave Lake (L2, S18, S22)

### Small Quota Holders:

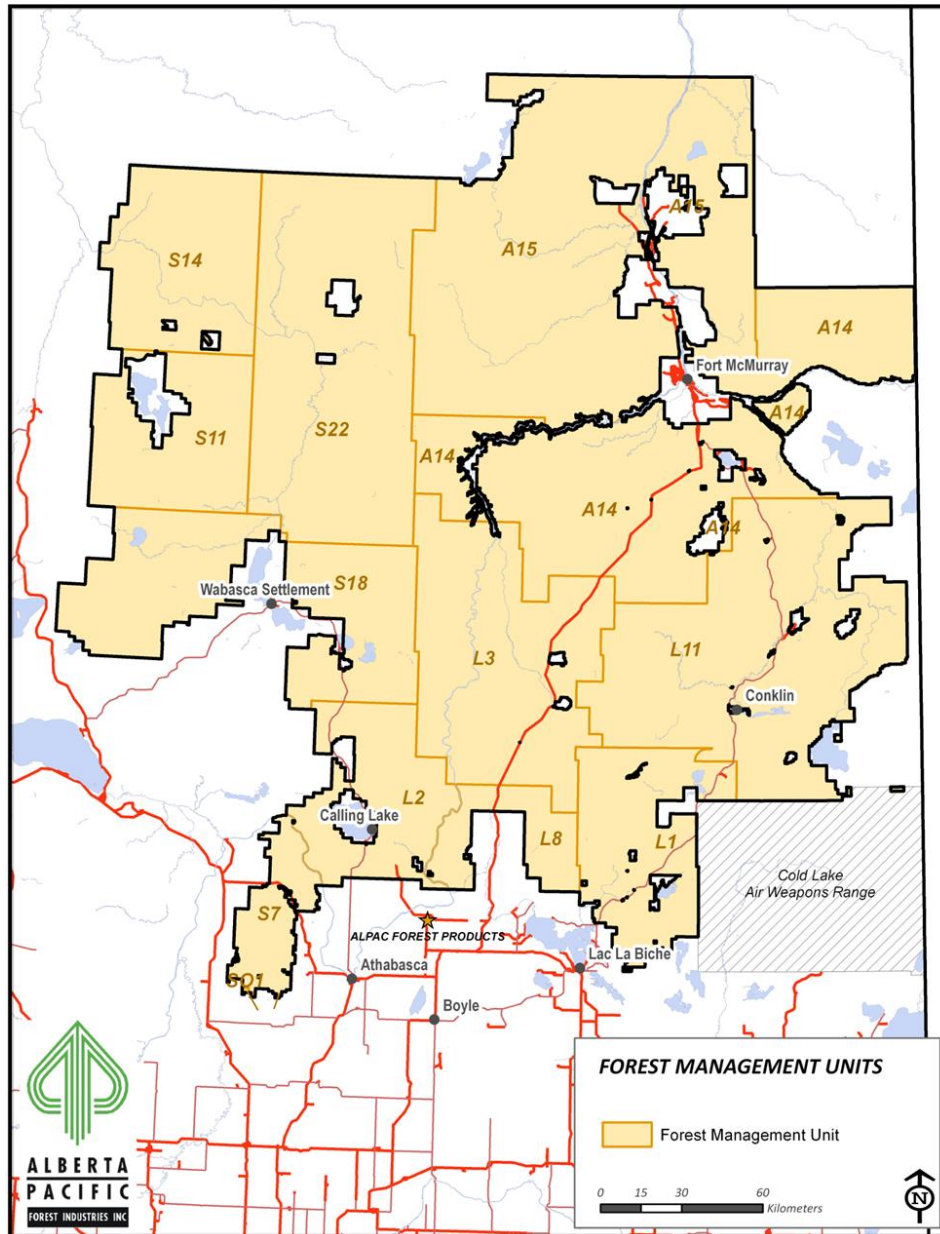
Alberta Forest Industries – Lac La Biche (L1)  
 Kee-Tas-Kee-Now Tribal Council (S14) (acquired the former Seehta quota)  
 S-11 Logging Company Ltd. – Trout Lake (S11)

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\* Alberta-Pacific Forest Industries - [www.alpac.ca](http://www.alpac.ca); 1-780-525-8000; 1-800-661-5210 ext. 8000

The Forest Management Agreement (FMA) area is currently divided into 12 Forest Management Units (FMUs). There were 11 FMUs for the period 2006–2011. FMU S14 was added in the third quarter of 2011 with the signing of the new FMA. 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, it 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 photograph and specialty papers, corrugated paper products, and hygienic tissue papers. Al-Pac Pulp Sales Inc. (APSI) is based in Vancouver, British Columbia, and markets pulp produced by Al-Pac.

The kraft mill requires approximately 3 million cubic metres ( $\text{m}^3$ ) per year of deciduous and coniferous fibre. This requirement is based on a nominal pulp mill capacity of 1,900 air-dried metric tonnes (ADt) of deciduous pulp or 1,330 ADt of coniferous pulp per day. At these rates, the mill output is approximately 530,000 ADt of bleached deciduous pulp and 85,000 ADt of bleached coniferous pulp per year. The average annual wood requirements and supply are summarized in Table 1.

**Table 1. Approximate annual pulp production and wood requirements**

	Deciduous	Conifer	Total
<b>Annual Pulp Production (ADt/yr)</b>	530,000	85,000	615,000
<b>Approximate Fibre Requirements (<math>\text{m}^3/\text{yr}</math>)</b>	2,560,000	510,000	3,070,000

*Note:* Deciduous Yield is approximately  $4.8 \text{ m}^3/\text{ADt}$  – roundwood; Coniferous Yield is approximately  $6.0 \text{ m}^3/\text{ADt}$  – 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 6.3 million hectares** in northeastern Alberta, within a gross area of 7.3 million hectares. **About 1.9 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 transportation and energy 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),<sup>\*</sup> the *General Development Plan* (GDP), and the *Annual Operating Plan* (AOP). These plans are all prescribed by the *Alberta Forest Management Planning Standard*.<sup>†</sup> The 2006 FMP was the second 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 land base. 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 2016, 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 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.

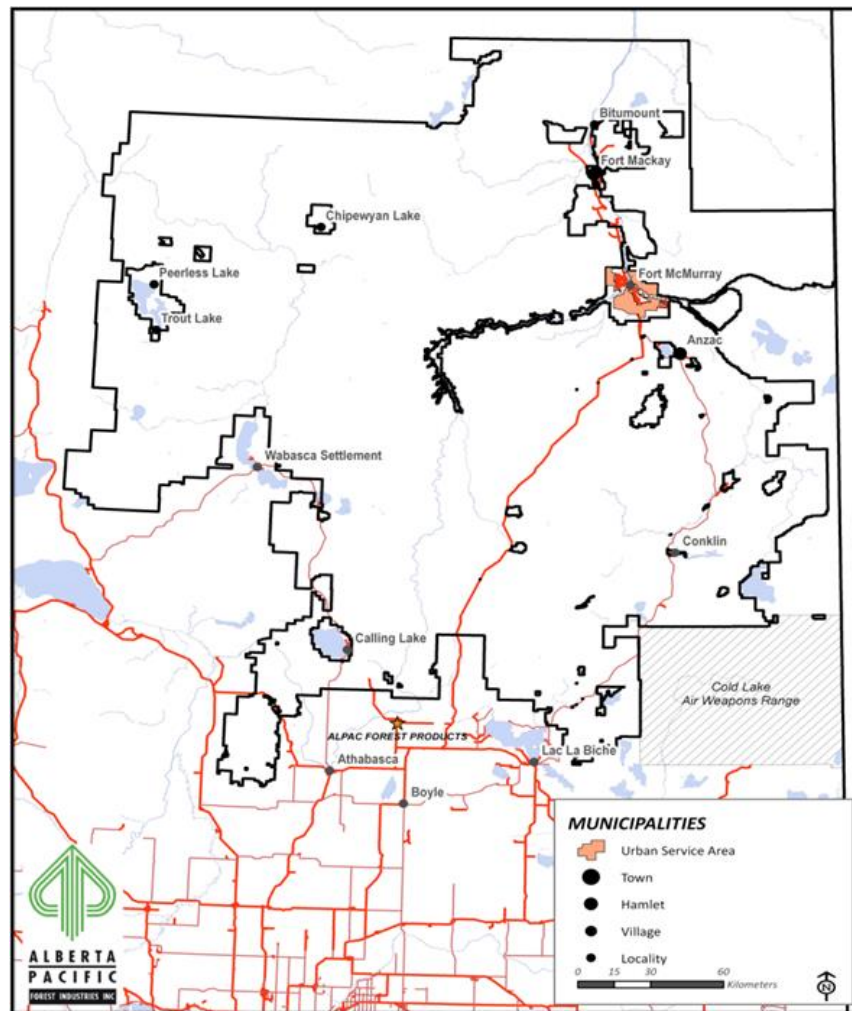
Forest management in the FMA area is integrated with many other uses and users of the landscape and resources. These include Indigenous peoples, energy and transportation sectors, and hunting, fishing, trapping, outfitting, gathering, and recreational uses.

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), as do a number of communities and First Nations reserves, including Janvier, Wabasca, 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).

<sup>\*</sup> *Northeast Alberta Operating Ground Rules*: <https://open.alberta.ca/publications/northeast-alberta-operating-ground-rules>

<sup>†</sup> *Alberta Forest Management Planning Standard*:

[https://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/formain15749/\\$FILE/ForestManagementPlanningStandard-2006.pdf](https://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/formain15749/$FILE/ForestManagementPlanningStandard-2006.pdf)

**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 very large energy sector, which is dependent on the 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.

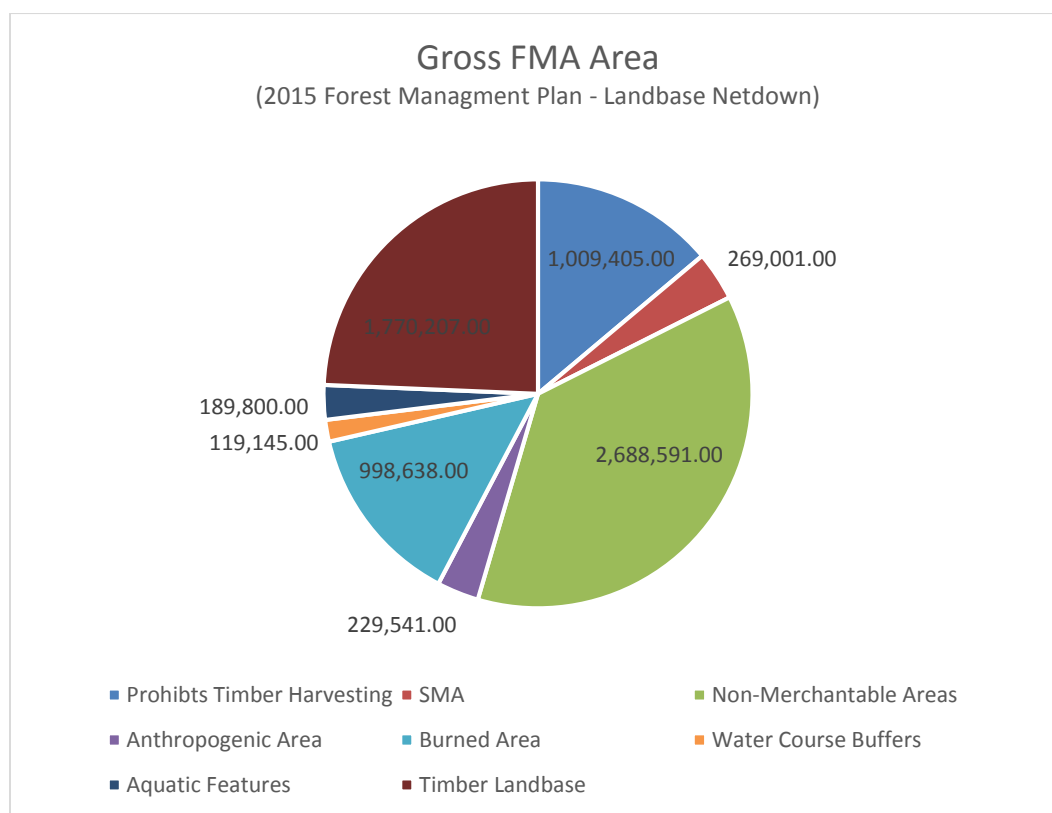
The southern part of the FMA area lies within a three-hour drive from major population centres around Edmonton. Several lakeside summer villages are established along the southern edge of the FMA area.

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 almost 7 million hectares, the majority of the area comprises wetlands and non-harvestable areas such as river valleys, water bodies, slopes, protected areas, parks, riparian buffers, and black spruce bogs. Fire is the predominant natural disturbance on the landscape. More than 500,000 hectares burned within the previous 20 years. Insects and disease also affect 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, while the FMA is based on the area managed.

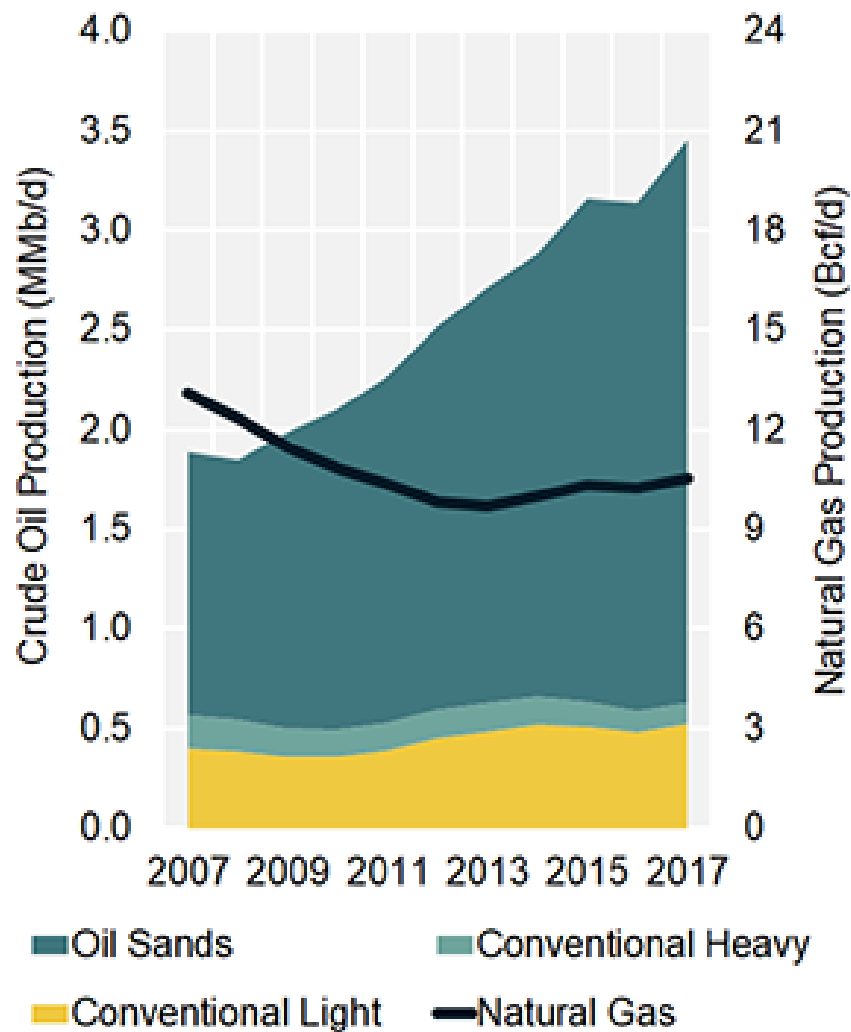
**Figure 3. FMA area netdown land base**



*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. Oil sands production increased by about 60 percent between 2011 and 2015. Figure 4 illustrates this growth trend.



**Figure 4. Alberta hydrocarbon production\***

(Crude oil in millions of barrels per day; natural gas in billions of cubic feet per day)

### The FMA Area Stakeholders

In addition to Al-Pac, 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.

\* National Energy Board. 2017. *Provincial and Territorial Energy Profiles – Alberta*. <https://www.neb-one.gc.ca/nrg/ntgrtd/mrkt/nrgsstmprfls/ab-eng.html>

**Table 2: FMA area resource users and influencers**

<b>FMA Area Resource Users and Influencers</b>		
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

## About the Landscape Advisory Group (LAG)

The Landscape Advisory Group (LAG), and its predecessor, the Forest Management Task Force (FMTF), have provided input to Al-Pac forest management planning since 1992, a year before mill operations began. The LAG was established in 2007 to succeed the 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 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 sub-committees undertake special assignments on behalf of the group.

In 2006, the GoA published a new planning standard with generic operating grounds rules (OGRs). This prescriptive approach defined the scope for stakeholder groups and forest companies to innovate and customize their forest management plans and operational practices. In addition, in 2005, Al-Pac opted to certify its sustainable management practices through the FSC. As part of the certification, FSC required that Al-Pac demonstrate the extent and inclusiveness of its stakeholder, community, and public engagement and Indigenous consultation. To better address the changes in government direction and the requirements for FSC certification, new terms of reference were developed and adopted along with the new LAG name.

*The Al-Pac FMA Area Landscape Advisory Group – Field Day in FMU A14*



## Definitions

We define a goal as a broad, general statement that describes a desired state or condition related to one or more forest values. An objective is a clear, specific statement of expected results to be achieved within a defined period of time related to one or more goals. Strategies are means employed to reach the objective.

To measure progress, the FMP suggested potential criteria or indicators; these are benchmarks or means from which to measure progress toward a given objective. For example, the number and amount of fines imposed might be an indicator of regulatory compliance. Where proposed criteria proved impractical, alternative indicators may have been selected to measure progress. Ideally, indicators should reflect outcomes (i.e., actual effects on people, resources, or ecosystems).

*Harvest block and stand structure – Al-Pac FMA Area*



## B: Highlights of Performance

Forest management is considered sustainable when all of the economic, environmental, and social values of the landscape are maintained or enhanced, today and over the long term.

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 second half of the implementation of the 2006 AI-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 AI-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; and
- Designing harvest patterns to approximate natural disturbances.

Maintaining biological diversity on the landscape is a central goal of sustainable forest management. AI-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 AI-Pac FMA area. The GoA attempted to address this goal through the Land-use Framework (LUF) and the Alberta Land Stewardship Act (2009).

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 a particular concern in the FMA area. AI-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. AI-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 (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 understory 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 occurs 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 fires and a few large ones across the landscape, with the large ones accounting for most of the total hectares burned. As a result, cutblock size has been made more variable and under the FMP could include blocks of up to 500 hectares, although the average cutblock size in the period 2011–2015 was 25.26 hectares.

**Table 3. 2011–2015 Al-Pac harvest blocks (hectares)**

Average harvest block size	25.26
Largest block	353.98
Smallest block	0.53
Number of blocks	1,616
Total hectares	34,733

*Note:* Includes both deciduous and coniferous harvest

The retention of trees as structure in cutblocks 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.

When surveys of harvest areas showed that Al-Pac's target of 5 percent average structure retention was not being met, new training was instituted for harvest contractors, and the monitoring of structure retention was increased. In some instances, retention areas are now selected in advance and flagged.

## Economic and Social Sustainability

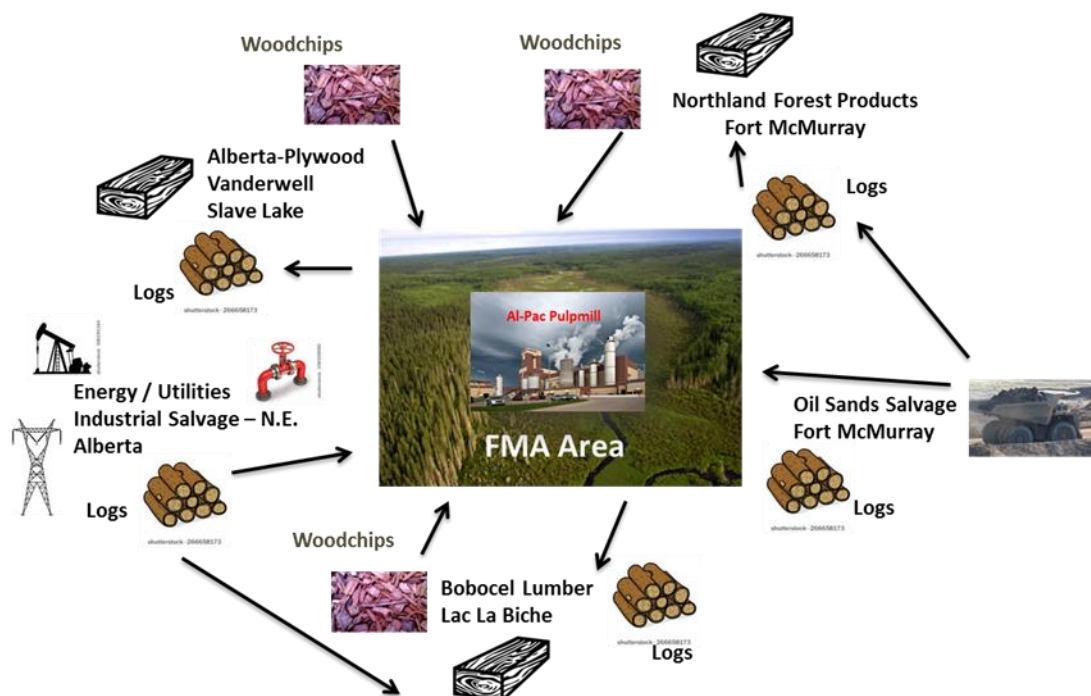
The following is an overview of some of the factors affecting the economic and social sustainability of forest operations in Al-Pac's FMA area.

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 LUF 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. 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 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 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**



Fibre-trading arrangements among forest companies ensure that maximum value is obtained from each cubic metre harvested.

## Economic Sustainability

Al-Pac makes substantial contributions to the economic and social well-being of the area within a 100-kilometre radius of the mill. 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 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. 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 work force 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 within a 100-kilometre radius of the mill site. Recipients included community and school groups, a seniors' association, a library, and two fire departments. A complete list appears on page 12 of the SEIA (socio-economic) vignette, available on the Al-Pac website under "other publications."

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 at least 10 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 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 and Indigenous commitments and consultation, as well as environmental performance.

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*. Al-Pac 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 a number of 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 integration challenges 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 a number of 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.

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\* 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.

Dollars and organizations are input indicators; the outcomes of the research are much more difficult to track and measure, but outcomes are the aspects that affect forest management options. The numbers of dollars expended annually (over the past five years) by Al-Pac on forest ecology research and monitoring is indicated in Figure 6.

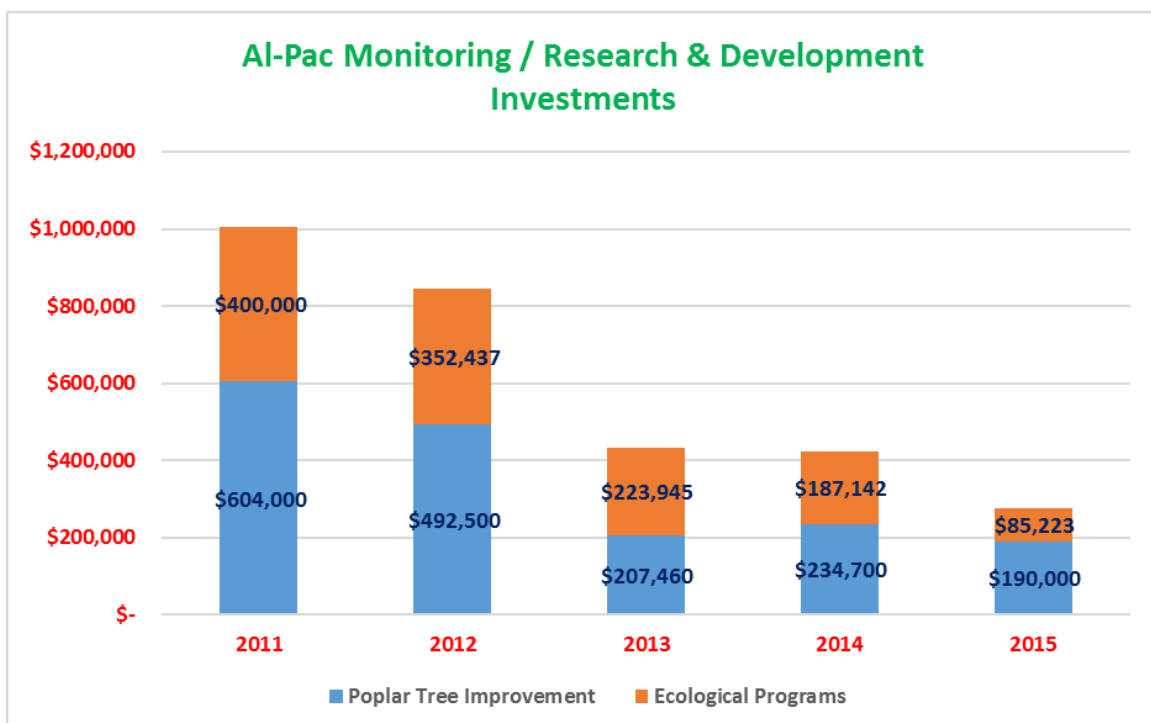
Alberta-Pacific continues to invest company resources in the development and implementation of research projects to enhance understanding of the boreal forest system and its processes. Although research is a primary means to address knowledge gaps, Al-Pac also strives to “learn while doing” in an adaptive 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. In particular, collaboration with energy and pipeline companies has been important. In addition to valuable funding contributions, the energy and utility sector must be included in the development of land-management solutions because of the extensive nature of the energy and utility footprint on the Al-Pac FMA area.

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 as well.

**Figure 6. Al-Pac monitoring and research and development investments**

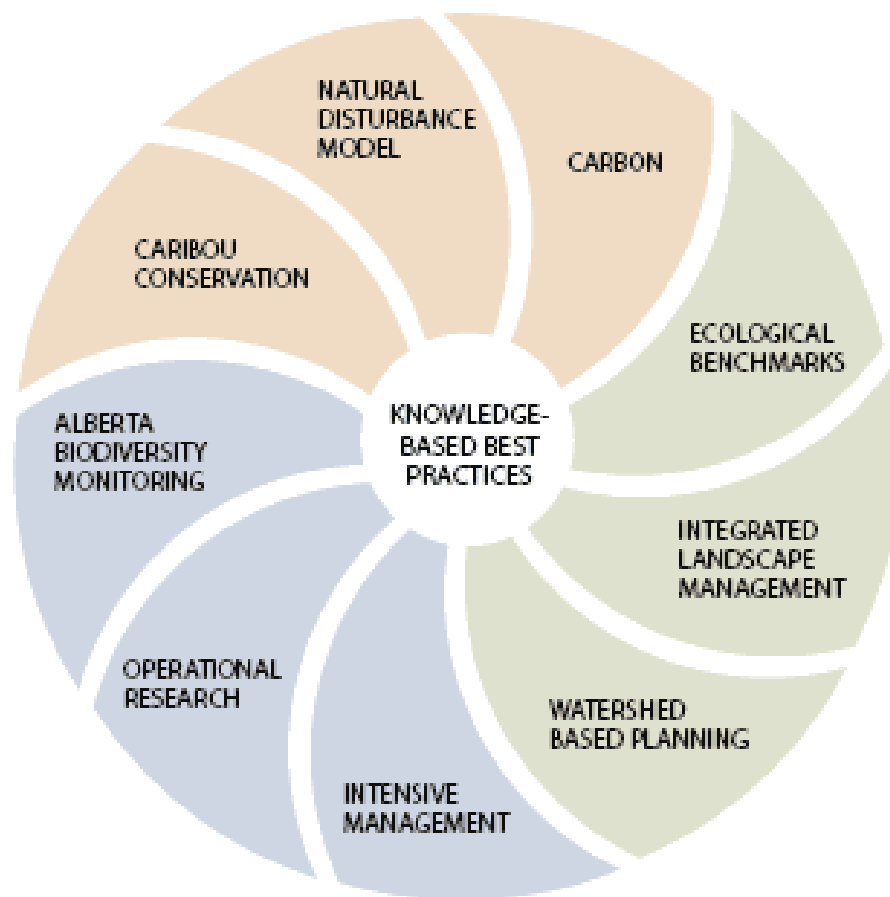


AI-Pac research and development declined significantly during the five-year period (2011-2015) as several major programs were completed or moved into less intensive stages. Expenditures for the Alberta Biodiversity Monitoring Institute dropped from about \$250,000 annually in 2011 and 2012 to about \$50,000 annually in the following years. Other funding, in areas ranging from integrated management to avian health and caribou recovery, varied considerably from year to year. Spending on the Superior Tree/Hybrid Poplar Program declined during this period.

The knowledge-based best practices wheel (See Figure 7) was presented as a framework for AI-Pac's research and monitoring programs in the 2006 *Forest Management Plan* and the 2011 *Stewardship Report*. AI-Pac has continued to be active in most research areas depicted in the wheel.

The AI-Pac research and development initiatives listed on the following page provide an overview of AI-Pac's research topics.

**Figure 7. Knowledge-Based Best Practices Wheel – Framework for Research & Monitoring**



During the 2011-2015 period, active collaborations were underway relative to caribou conservation, integrated land management, natural disturbance patterns, operational research (and effectiveness), and biodiversity. Central to these collaborations, and underlying many of these research areas, was the focus on the restoration of industrial footprint and caribou habitat through coordinated ILM activities such as seismic line restoration, reclamation of well sites, and access management.

The following projects and associated research collaborators were supported by Al-Pac:

- *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, Alberta-Pacific Forest Industries Inc., Canadian Oil Sands Innovation Alliance (COSIA), University of Alberta, Government of Alberta, Alberta Innovates
- *Healthy Landscapes Program*  
Foothills Research Institute, Bandiloo Consulting (Dr. Dave 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 and University of Alberta, Dr. Erin Bayne and Canadian Wildlife Service, Dr. Fiona Schmiegelow
- *Forest Management and Wetland Stewardship Initiative*  
Partners include Ducks Unlimited Canada, Weyerhaeuser Canada, Canadian Forest Products Ltd., Daishowa-Marubeni 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
- *Superior Tree / Hybrid Poplar Program*  
University of Alberta



## **Developments Affecting Forest Management Planning**

### ***2010 – New Operating Ground Rules (OGRs) for Northeastern Alberta***

Prior to 2010, the Al-Pac FMA area was governed by a unique set of OGRs that had been developed by Al-Pac, the QHs, the GoA, and the Forest Management Task Force (FMTF, predecessor of LAG).

A new set of OGRs were produced by the GoA for the northeastern region in 2010 to align with the GoA's new planning manual, the requirements for standardization across companies and regions, and a more prescriptive forest planning policy. The forest companies and QHs provided input into the content, which is reviewed and updated on an annual basis. A further revision of the OGRs was done after the new FMA was signed by GoA in 2011.

The new OGRs were based on the provincial OGR template. They were successfully implemented throughout the FMA area, and the forest companies continued to provide timely updates to the GoA to enable their continual currency. The revised OGRs greatly enhanced the management of water crossings by providing better definitions of water bodies. They also provided improved clarity and direction for post-harvest stand structure implementation and high-effort understorey protection harvesting.

### ***2011 – New Al-Pac Forest Management Agreement***

A new FMA was signed in 2011 to replace the original 1991 FMA. The new document followed the GoA template for all FMAs in Alberta. This design removed most of the directive actions and forest management requirements from the agreement and transferred them to the FMP. The new FMA also redrew the FMA area map to align with the Lower Athabasca Regional Plan (LARP) landscape initiatives, including the former “non-J,” or “doughnut holes”<sup>\*</sup> (primarily treed muskeg) into the gross FMA area. It also added FMU S14 into the FMA area. The result is a net FMA area of approximately 6.3 million hectares.

The new FMA expanded the gross area of the previous FMA, and thus has required Al-Pac to have forest management responsibility for an extra 1 million hectares. The primary cost implication is an increase in forest inventory costs.

### ***2011 - Elimination of Al-Pac's Incidental Conifer Replacement Program***

When the Al-Pac FMA was initiated in 1991, there was an embedded clause (FMA – Appendix C) related to the replacement of conifer volume within post-harvest deciduous cutblocks calling for the regeneration or protection of sufficient conifer growing stock to produce an equivalent volume of conifer at rotation—the replacement of “incidental conifer.” Incidental conifer refers to conifer trees cut in the harvest of a primarily deciduous block. The harvested conifer volume was offered to the conifer industry through sales agreements.

Al-Pac was the only FMA in Alberta with the incidental conifer replacement clause. The 2011 FMA, following the template of all other Alberta FMAs, did not contain this clause. Al-Pac approached the GoA in 2011 to remove the incidental conifer replacement objective (Objective 15) from the 2006 FMP, as the original FMP Objective 15 was prepared to meet the 1992 FMA clause. An agreement was reached and the program was eliminated in 2012; the FMP was amended at that time.

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<sup>\*</sup> The term “non-J” (also called “doughnut holes”) pertains to the 1998 FMA agreement's non-FMA areas of the Northeastern Boreal Forest Region inside the outer boundaries of the original FMA area. These non-FMA areas (approximately 1.1 million hectares) are primarily muskeg and non-productive forest area.

The former requirement necessitated a comprehensive AI-Pac-managed conifer silviculture program entailing site selection, site preparation, planting of conifer stock, and long-term monitoring of the conifer sites. Over the duration of the program (1993–2011) upward of 10 million conifer seedlings were planted throughout the FMA area, gradually eroding the deciduous land base. Dropping the requirement reduced AI-Pac’s conifer silviculture liability and reduced the loss of deciduous growing stock over time. Continual monitoring will be required to evaluate whether there is a net loss of conifer growing stock over time. There is now a reliance on natural regeneration to replace that conifer component on the deciduous land base.

*Conifer seedlings*



### **2012 – Lower Athabasca Regional Plan Approval**

The first regional plan under the Land-use Framework (LUF), the *Lower Athabasca Regional Plan (LARP)*,\* identifies and sets resource and environmental management outcomes for air, land, water, and biodiversity, and is intended to guide future resource decisions while considering social and economic impacts.

In 2012, the Government of Alberta approved the LARP, which was a product of more than three years of consultations with Albertans, Indigenous peoples, and experts on social, economic, and environmental issues. The plan sets the stage for potential economic growth in northeastern Alberta balanced with environmental monitoring. The LARP system includes five management frameworks for monitoring and reporting on the GoA’s role in managing cumulative effects in the region:

1. Air Quality Management Framework
2. Surface Water Quality Management Framework
3. Groundwater Management Framework
4. Tailings Management Framework
5. Biodiversity Management Framework (*draft only*)

These frameworks outline monitoring, evaluation, and reporting requirements; set early warning triggers to determine the need for action; and identify what actions may be taken. A biodiversity framework has not yet been implemented.

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\* *Lower Athabasca Regional Plan (LARP)*: <https://www.landuse.alberta.ca/RegionalPlans/LowerAthabascaRegion/Pages/default.aspx>

The LARP changed FMA area boundaries through the creation of two new, large wildland parks and has initiated landscape planning for northeastern Alberta. Until the biodiversity framework, which must include a caribou recovery plan, is delivered to Albertans, the forest companies need to continue forest management planning without the GoA regional direction.

### **2013 – Federal Recovery Strategy for Woodland Caribou**

The federal recovery strategy for the woodland caribou (*Rangifer tarandus caribou*) boreal population was released in 2013. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has designated these caribou as “threatened.” The FMA area is home to five caribou herds.

Boreal caribou require large areas of undisturbed habitat rich in mature to over-mature coniferous forest, lichens, muskegs, peatlands, and upland or hilly areas. Large, continuous areas with suitable quality habitat allow boreal caribou to disperse across the landscape when conditions are unfavourable (e.g., natural fire disturbance, anthropogenic disturbance) and to maintain low population densities to reduce their risk of predation.

Due to the specific life history characteristics they possess, boreal caribou is limited in their potential to recover from rapid, severe population declines. The combination of factors from habitat alteration (i.e., habitat loss, degradation, and fragmentation) through both anthropogenic and natural sources, and increased predation that changes the predator-prey dynamics, as a result of habitat alteration and climate change have led to local population declines throughout their distribution. Threats are closely interrelated and act cumulatively to have direct and indirect impacts on boreal caribou and their habitat. Recovery of all boreal caribou local populations across Canada was considered technically and biologically feasible by Environment Canada in 2012.

The Environment Canada recovery goal for boreal caribou is to achieve self-sustaining local populations in all boreal caribou ranges throughout their current distribution in Canada, to the extent possible. Achieving the recovery goal could allow for local population levels sufficient to become self-sustaining within their critical habitat. This recovery strategy provides broad strategies and general approaches to achieve the population and distribution objectives, which will assist in the development of subsequent range plans and action plans. The suite of actions needed to maintain or recover the self-sustaining status of a boreal caribou local population will be determined and managed by the responsible jurisdictions in collaboration with Environment Canada and will be consistent with this recovery strategy. The recovery actions most appropriate for a specific range will be governed by local opportunities and constraints, and the level of urgency for a given recovery action will be determined by both the population and habitat conditions within the range.

The FMA area does not meet the 65 percent undisturbed habitat\* goal of the recovery strategy for any of the caribou ranges. Recognizing the FMA area as one of the busiest industrial landscapes in North America, how the GoA strategies will meet this habitat target, without causing the slowdown of portions of the resource industry sector, is currently unknown to the forest companies. The forest companies look forward to participating in upcoming GoA-led caribou recovery planning processes.



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\* The “disturbed” area calculation is based on a 500-metre buffer around anthropogenic disturbance features, including seismic cutlines.

### ***2014 to present – Low Oil Prices Reduced Pace in Oil and Gas Activity***

Oil prices fell sharply in 2014 and remained depressed. As a result, new oil and gas activity declined in the FMA area, although existing facilities continued operations. The cancellation of several major capital projects indicated that a lower level of activity could continue for some time. Reduced activity would lessen pressure on some environmental and socio-economic indicators. In the short term, there could be fewer timber salvage opportunities, but the resulting smaller industrial footprint may improve the long-term sustainability of the fibre resource.

*SAG-D Facility – Conklin Alberta*



### **Forest Resources, Harvest Patterns, and Fire – The Natural Disturbance Model**

Fire has been the main natural disturbance that has shaped Alberta's boreal forests for 10,000 years. Plants, animals, and ecosystems have adapted to forest fires that sweep through the forest every 40 to 150 years. Fire creates unique new habitats for wildlife and helps maintain the natural balance of young and old forests found in the AI-Pac FMA area.

AI-Pac has patterned its forest harvesting strategies after this force of nature. The company has invested considerable research into fire ecology and how forest fires historically maintained biodiversity across the boreal forest landscape. The goal is to minimize the effects of AI-Pac's harvesting operations and restore the ecological benefits of fire by approximating this natural disturbance as closely as possible.

This research has investigated a number of aspects of fire ecology, including the following:

- Frequency – How often does fire occur on a given piece of land?
- Size – What range of fire sizes occur on different parts of the FMA?
- Intensity – How hot do the fires burn? What are the distribution and size of skips (patches of trees left unburned)?
- Biotic response – How do the plants, animals, and insects respond to wildfire?

These characteristics of fire are now used by AI-Pac as a guideline for establishing the type, size, and distribution of cutblocks and retained stand structure.

AI-Pac's planning is based on the company's commitment to operate within an ecosystem management or sustainable forest management framework. This includes approximating the stand structure retained after forest fires by leaving on average 5 percent merchantable volume of trees standing in cutblocks. In addition to work done at the stand or cutblock level, AI-Pac has initiated landscape-level strategies to implement the natural disturbance model (NDM) more effectively. AI-Pac's landscape-level harvest approach is designed to maintain landscape patterns created by forest fires at large scales while ensuring a continued fibre supply. This approach contrasts with traditional cutblock patterns, which were relatively small and regular in shape.

Al-Pac's harvest sites follow natural stand boundaries, are a variety of shapes and sizes, and leave a mix of different-aged stands across the landscape. Imitating large forest fire patterns requires a mix of harvesting techniques and bigger disturbance sizes that differ from conventional two- and three-pass harvest practices, which may cause fragmentation by reducing forest patch sizes.

Studying natural disturbances, their differences and similarities compared to forest harvesting, and the associated responses of biodiversity to both, is an ongoing process. By applying this knowledge, managers of the boreal forest are able to reduce the differences between the two types of disturbance. The more harvesting practices and other human disturbances conform to natural variability, the more likely it is that a healthy ecosystem will be maintained.

## **Integrated Land Management**

In the late 1990s, as energy development began to accelerate in and near the FMA area, Al-Pac recognized that working cooperatively with energy companies could reduce impacts on the ecosystem, provide fibre supply for the mill, and produce economic benefits for both parties. The first ILM agreements were reached in 2000, and the Integrated Land Services team was established in 2006 to maximize the benefits from ILM. The Alberta government has now adopted the ILM approach as a key component of its LUF.

One result of cooperation has been the adoption of narrow seismic cutlines in the FMA area. The standard cutline today is a trail of mulched brush, less than 3 metres wide, compared to previous bulldozed corridors 6 to 8 metres wide. Since 2000, this practice avoided clearing more than 200,000 hectares of forest in the Al-Pac FMA area.

Another major benefit has come from jointly planning roads, reducing the amount of road building by up to 30 percent, and the resulting roads and bridges are often built to higher standards. Al-Pac's detailed knowledge of the landscape (gained through mapping its vegetation, soils, hydrology, etc.) has become another valuable asset. Providing this data to energy companies helps them make better-informed decisions about sites and access.

Al-Pac has joined energy companies to support research at the University of Alberta to improve the reclamation and reforestation of abandoned well sites. The company also supported research demonstrating that building exploratory wells on ice pads could greatly improve the success of later reforestation. Al-Pac strongly supports efforts to monitor and address the cumulative effects of all activities on the landscape through support of the University of Alberta's ILM research chair.

## **Land Use and Biodiversity**

A fundamental test of sustainable forest management is whether the ecosystem continues to support all species, from fungi and insects to large mammals. Al-Pac endeavours to maintain biological diversity primarily by making sure that the distribution of ages and types of forest stays within the natural range of variability (NRV), thus providing habitat for plants and animals. Due to the effects of wildfire, however, the ranges of variability are quite wide in the boreal forest.

Much of Al-Pac's research has focused on monitoring and improving an approach to forest management based on habitat, which is sometimes referred to as the coarse-filter approach. Al-Pac has maintained that an important means of verifying the effectiveness of management in the FMA area is to set aside ecological benchmarks—large and representative portions of land where there would be no harvest or industrial development. Such benchmarks would be used to compare processes in undisturbed forests with those in similar forests under management so that divergences could be studied and addressed. Al-Pac identified potential benchmark areas and gathered considerable support from stakeholders. However, this initiative was superseded by the adoption of the *Alberta Land Stewardship Act*, which led to the creation of the LARP. The LARP includes provisions for protected areas within the FMA area that could serve as benchmarks, including one potential benchmark area (Gipsy-Gordon Wildland Provincial Park) that had been identified through Al-Pac's earlier initiatives.

Protected areas, with minimal human disturbance, are one component of the triad management philosophy espoused by Al-Pac and the Alberta government in the 1990s. The other two components in this three-pronged approach were ecologically based, multiple-use forest management (as practised by Al-Pac in the FMA area), and intensive tree farming. However, Al-Pac's establishment of poplar plantations in the agricultural White Zone did not produce the intended results, and the company began phasing out the program in 2011.

## Climate Change

Climate change has had several significant impacts on forest management in the FMA area.

Recent research (Dawe 2011 – U of A)\* indicates that warmer regional climate is the largest factor leading to northerly range expansion of white-tailed deer populations in Alberta. These deer provide additional food supply for predators of at-risk caribou populations and increase the likelihood of predation. Declining caribou populations have led to protection strategies that could reduce harvestable timber supply.

Climate change has been linked to increased infestations and range expansion of the mountain pine beetle in Western Alberta. In the future, the mountain pine beetle could spread into the FMA area and become a threat to the jack pine timber supply.

Warmer winters also shorten the period of frozen ground, curtailing harvest activities and shifting some Al-Pac activity to the summer months. Summer activity can have detrimental effects on future natural regeneration through deleterious actions to forest soils such as compaction.

## Alberta Land-use Framework

Under the Land-use Framework (LUF), the GoA is developing watershed-based regional plans for Alberta. The Al-Pac FMA area intersects three regional plan areas—Lower Athabasca, Lower Peace, and Upper Athabasca. Fifty-five percent of the FMA area lies within the Lower Athabasca Regional Plan (LARP) area.

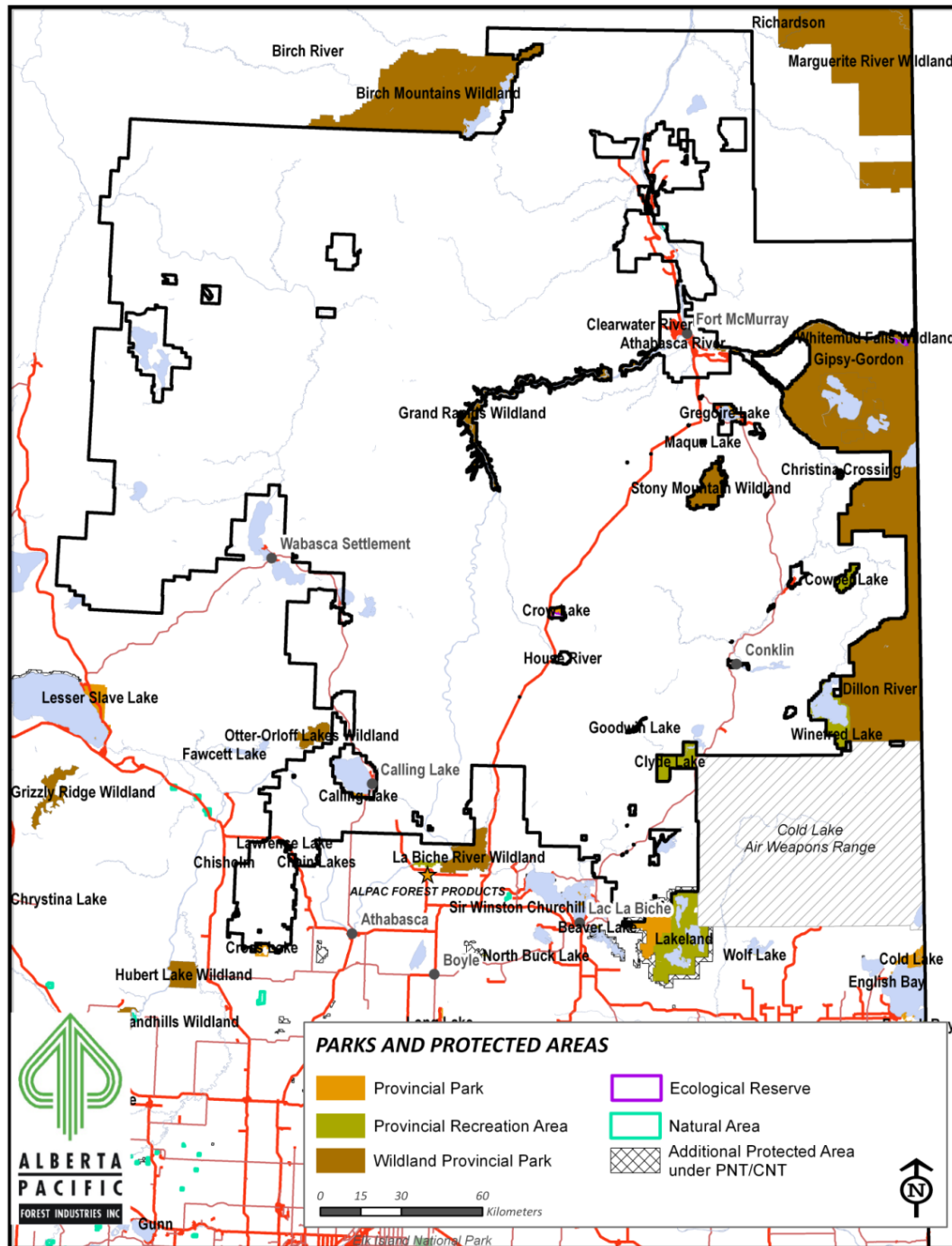
Two new protected areas that were designated as wildland parks under the LARP were removed from Al-Pac's FMA area under the 2011 Forest Management Agreement (FMA). These areas may serve as ecological benchmark areas for comparison with multi-use areas in the FMA area. Establishment of such representative benchmark areas was a key commitment of both Al-Pac's 2006 FMP and the company's FSC certification. Al-Pac had voluntarily deferred harvest in the Gipsy Lake and Dillon River areas, amounting to approximately 200,000 hectares that have now been incorporated in the wildland parks under the LARP. Deferred harvest allowed the government to further assess and advance these areas toward legislative protection.

The Gipsy Lake Wildland Provincial Park is 158,542 hectares in size. It is located within the Regional Municipality of Wood Buffalo, encompassing lands south of the Clearwater River and west of the Saskatchewan boundary that surround Gipsy Lake Wildland Provincial Park. (A large portion of this park was burned in the 2016 Horse River fire.)

The Dillon River Wildland Provincial Park is 191,544 hectares in size. It is located within the Regional Municipality of Wood Buffalo, encompassing lands west of the Saskatchewan boundary between Gipsy-Gordon Wildland Park to the north and the Cold Lake Air Weapons Range to the south.

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\* Dawe, Kimberly Louise. 2011. "Factors driving range expansion of white-tailed deer, *Odocoileus virginianus*, in the boreal forest of northern Alberta, Canada." Doctoral dissertation. <https://era.library.ualberta.ca/public/view/item/uuid:1cf592e1-a4ea-44f5-9005-b30d8abad962>

**Figure 8. Ecological Benchmark Areas and Existing Protected Areas in and around the AI-Pac FMA area**

### AI-Pac FMA Area Monitoring and the Alberta Biodiversity Monitoring Institute

The ABMI, an initiative strongly supported by AI-Pac since its inception, represents another important way to measure biodiversity, human impacts, and the effectiveness of management. ABMI surveys on a 20-kilometre grid pattern measured the status of more than 2,000 species and habitat types.

The first ABMI survey of the Al-Pac FMA area in 2009 found that the human footprint affected about 7 percent of the landscape: 4 percent by forestry, 2 percent by energy development, and 1 percent by transportation infrastructure. Species were judged 93 percent intact compared to reference conditions, and habitats were 97 percent intact. Future surveys are being broadened to include status and trends reporting for lichens, mosses, soil arthropods, and wetland invertebrates. Over time, the ABMI results will provide important guidance for Al-Pac's management and practices.

The *ABMI Preliminary Report* on the Al-Pac FMA area can be found at <http://www.abmi.ca/abmi/reports/reports.jsp?categoryId=163>

(Subsequent to this reporting period, in 2016, the ABMI released a new report titled *The Status of Biodiversity in the Alberta-Pacific Forest Management Agreement Area: Five-Year Update*.<sup>\*</sup> The study was among the first of its kind and provides valuable information on status and predicted trends in a broad suite of biodiversity elements. In addition, it features a recent study supporting predictions that Al-Pac's natural disturbance-inspired approach to forest management is on the right track in terms of accelerating convergence toward natural conditions following harvest.)

Al-Pac also supports research and monitoring specific to animals and habitat types of concern. For example, woodland caribou, listed as a threatened species in Alberta, has been a particular concern because of declining population trends. Al-Pac participates in various initiatives whose goals are to conserve caribou while maintaining resource development. Research to date indicates that caribou are affected by a complex interaction of predator-prey relationships, including the northward movement of deer, in addition to human activities and possibly climate change.

## Water Resources

Al-Pac's FMA area includes many small and seasonal streams, some large rivers, and extensive bogs, fens, muskegs, and other wetlands. The forest companies do not harvest near waterways, in black spruce bogs, or near other water-dominated sites. However, road development and adjacent harvesting may indirectly have a longer-term effect on these areas.

Al-Pac has invested in a number of major research projects to understand how water moves at or near the surface in the boreal forest and how this movement may be influenced by forestry (harvesting or road building). The goal is to minimize impacts and ensure compliance with provincial and federal regulations regarding water and fisheries. Al-Pac continues to improve standards and practices for the placement, construction, and maintenance of roads, bridges, and culverts.

*FMA area wetland*



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<sup>\*</sup> *The Status of Biodiversity in the Alberta-Pacific Forest Industries Inc. Forest Management Agreement Area:*  
<https://abmi.ca/home/publications/401-450/416.html?mode=detail>

## Regulatory Compliance

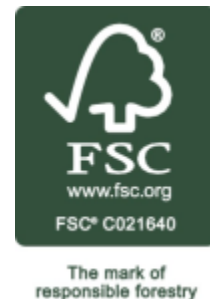
Government agencies regulate virtually every aspect of Al-Pac's operations. Compliance with regulations is a primary requirement for team members and contractors. Government inspections and internal audits provide further verification that high standards are being met. Voluntary certifications provide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

There was only one forestry infraction that resulted in a penalty during the 2011–2015 period. Removal of the buffer around a stick nest in 2012 led to a \$500 penalty assessed in 2014.

## Certifications

### *Forest Stewardship Council*

In November 2004, a team of experts assessed Al-Pac's operations for potential sustainable forest management certification under the demanding standards established by the FSC. Al-Pac received the experts' report in early 2005 and responded to its comments and recommendations. A decision on certification was made later in 2005, and Al-Pac's FMA area became the largest single certified forest in the world to receive this certification, the first in the western boreal forest. In 2010 and 2015, Al-Pac underwent a complete successful re-certification to the FSC standard.



### *ISO*

Al-Pac participates in various ISO certification processes, which includes:

- ISO 9001:2008 is primarily concerned with quality management and sets out guidelines to ensure that an organization's products or services satisfy the customer's quality requirements.
- ISO 14001:2004 is primarily concerned with environmental management and ensures an efficient and effective management of processes that affect the environment.\*
- ISO 17025:2005 outlines general requirements for competence of testing and calibration laboratories.

### *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 is currently certified to a PAR Gold level. PAR is a program of the Canadian Council for Aboriginal Business (refer to <https://www.ccab.com>).

### *Partners in Injury Reduction (PIR)*

PIR is a program of the Workers' Compensation Board, Alberta Human Services, and the Alberta Safety Council to increase safety awareness and reduce accidents.




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\* Al-Pac Woodlands, as of 2018, is no longer participating in ISO 14001.

## C: Meeting Expectations

This section is a report card on how the forest companies have met the expectations in the FMP. In many areas, the companies get a “passing grade” because the objectives have been met as planned; most of these satisfactory performances are discussed in detail in Volume II, and there is no need to elaborate here. Instead, we discuss only those FMP objectives that have not been fulfilled satisfactorily and strategies that have not been implemented as intended, including strategies that were identified in the previous stewardship report. The unattributed judgments in the discussion are a composite of input from AI-Pac, other forest companies, and the LAG.

There are several instances where, although the objectives and strategies have been fulfilled as described in the FMP, concerns or questions arose that LAG members wanted to see addressed in the next FMP.

For another version of the report card, see the Table 1 matrix in Volume II.

### Objectives or Strategies Not Completed as Described

The following objectives and strategies were not carried out as described in the FMP:

**FMP Chapter 3 – Objective 2:** Upgrade the Alberta Vegetation Inventory (AVI) and continue to provide sound data for planning.

FMP Page 77	Strategy	Indicator	Report Card
3.2.9	Monitor regeneration success on roads, decking, and processing areas.	Program dropped as per GoA instructions (2007); now included in RSA surveys of all forest company cutblocks	Incomplete – Part of Objectives 7 and 17

Regeneration on roads, decking and processing areas remains a challenge for AI-Pac.

**LAG Commentary:** Regeneration on roads, decking, and processing areas remains a concern for LAG. LAG believes this should be a focus for research and trials to improve regeneration performance.

**FMP Chapter 3 – Objective 5:** To develop an efficient road network for log deliveries throughout the FMA area that minimizes the amount, distribution, and duration of the roading footprint, and to mitigate the effects of roads on fish and wildlife and sustaining ecosystem functions.

FMP Page 89	Strategy	Indicator	Report Card
3.5.8	Use signs to notify the public of the status of AI-Pac’s temporary access roads.	Number of signs in the FMA area	Incomplete – Signs do not delineate temporary status

**LAG Commentary:** The intent of Strategy 3.5.8 was that temporary roads should not become “traditional access” and, thus, remain open indefinitely. This requirement, posting the temporary nature of the roads, was not included in the OGRs and has not been accomplished. LAG members urge AI-Pac to reconsider their practice and comply with Strategy 3.5.8.

**FMP Chapter 3 – Objective 6:** To ensure that human development, use, and management of roads take into account the safety of all users (industrial, recreational, Indigenous) and mitigate the potential negative environmental effects associated with access.

FMP Page 92	Strategy	Indicator	Report Card
3.6.3	The forest companies working with GoA may investigate the feasibility of the establishment of “no hunting zone” corridors (possibly 0.4 kilometres on each side of the centre) on all new permanent roads for three years following construction. After this period, the need for the no hunting corridors would be reviewed in consultation with local community groups within the scope of an overall wildlife management strategy. Trapping activities would not be affected.	No Hunting Zone program in effect	Incomplete – Not feasible

Prior to 2011, Al-Pac did a minor investigation of a No Hunting Zone program on corridors surrounding their permanent roads. The strategy is not feasible. Hunting regulations, access management related to hunting, and enforcement is a provincial mandate. Al-Pac would comply with GoA if a project were initiated but cannot implement or enforce a No Hunting Zone program in the FMA area.

**LAG Commentary:** The safety component of the objective is achievable by Al-Pac. It is being accomplished through signage, the OGRs, road monitoring, and the education of users of access in the FMA area through forest planning meetings. However, mitigation of negative environmental effects associated with access is impossible for a forest company in Alberta. This would require the complete cooperation of all users and industries, a coherent and finalized land-use plan, and a strong enforcement effort from the province.

**FMP Chapter 3 – Objective 8:** Protect species identified as “at risk” or as socially important, and meet Alberta government guidelines and ground rules relevant to concerns over specific species.

FMP Page 93	Strategy	Indicator	Report Card
3.8.1	Administer a furbearer monitoring program throughout the FMA area. Review the program every three years to determine future requirements of the program.	Number of trappers involved in the program	Incomplete – Program terminated

Al-Pac no longer has a furbearer monitoring program since 2006, when it became apparent that trapper success and selected species population trends were not management areas in the control of the forestry companies—these areas are the responsibility of the GoA. Currently, through Al-Pac’s woodlands trapper coordinator, the company communicates with all affected trappers in our planning units. Trapper notification is typically up to three years ahead of actual harvest and can result in a combination of shifting of block boundaries or special buffers around selected furbearer habitat or cabin locations.

**LAG Commentary:** Regarding furbearer monitoring, our concern is the health of the furbearer populations rather than the specific monitoring program. Assurances are needed that the combination of trapper consultations and the ABMI will provide sufficient information about furbearers. LAG members are of the opinion that Al-Pac should revive the furbearer program or assist ABMI in designing monitoring protocols suited to furbearer species.

Because of the continuing high public interest, more information is needed about moose in the FMA area. The intensive research conducted in the 1990s,\* and any research in the past 20 years, should be summarized and analyzed in the context of social importance of the species to stakeholders and resource users, and reported in a clear, concise manner with areas of data deficiency and further study.

We agree with AI-Pac foresters and ecologists that the coarse-filter or landscape approach is the accepted technique for forest management. The fine-filter approach could be very useful to complement landscape approaches when dealing with species at risk and other taxonomic categories besides vertebrates. We believe that new approaches, such as the ABMI monitoring and the designation of true ecological benchmark areas, help to ensure that socially important and at-risk species are conserved. We urge continued cooperation on wildlife research and management with government agencies and academic, conservation, hunting, and trapping organizations.

In the case of Cape May and Bay-breasted Warblers, the models showed declining habitat supply, and this should be addressed in the 2015 FMP. For the Barred Owl, there was insufficient data to assess habitat; this should also be addressed.

Migratory songbirds have been subject to extensive research in the FMA area since the early 1990s. The questions addressed by the bird research and monitoring program have helped guide the forest companies' management strategies at a stand level. The program results highlighted the need to consider the landscape context within which a disturbed area lies. Best management practices developed through the Forest Products Association of Canada assist the forestry companies in their efforts to contribute to migratory bird conservation.

With respect to songbirds, the 2015 AI-Pac FMA area FMP prepared Habitat Suitability Indices (HSI) models and TSA strategies to protect the habitats of five bird species identified as "at risk" or as socially important, and to meet Alberta government guidelines and ground rules relevant to concerns over specific species.

HSI and projecting habitat availability within the PFMS was done for the following selected species: Canada warbler, Black throated green warbler, Bay breasted warbler, Ovenbird, and Brown Creeper

The PFMS also investigated Barred Owl habitat through a "Resource selection function model".

*Brown Creeper*




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\* Osko, T. J., and S. M. Wasel. 1996. *Habitat associations of female moose in northeastern Alberta*. Oral presentation at the 32nd North American Moose Conference and Workshop, Banff, AB, April 1996.

Osko, T. J., and S. M. Wasel. 1996. *Habitat associations of female moose in northeastern Alberta*. Oral presentation at the Annual Meeting of the Wildlife Society: Northwest Section, Banff, AB, March 1996.

Quinn, T., J. A. Beck, R. J. Hudson, and T. J. Osko. 1996. *Voronoi measures of wildlife landscapes: a case study of the Alberta moose (Alces alces)*. Proceedings of The Future of our Environment: Research at the University of Alberta, April 1996.

Osko, T.J., S.M. Wasel, and R.J. Hudson. 1998. *Moose home range composition and habitat selection in response to habitat availability*. Oral presentation at the annual meeting of the Alberta Chapter of the Wildlife Society, Calgary, March 1998.

**FMP Chapter 3 – Objective 10:** Provide the opportunity to investigate/evaluate the feasibility of improving fibre supply through intensive conifer forest management (i.e., EFM\*) in the FMA area.

FMP Page 113	Strategy	Indicator	Report Card
3.10.1	A conifer quota holder will prepare a conceptual intensive conifer forest management case study within the AESRD EFM technical protocols.	Plan prepared and approved by AESRD	Incomplete – No quota holder prepared an EFM plan
3.10.2	Develop expected yield curves, crop plans, and yield verification protocols.	Plan prepared and approved by AESRD	N/A
3.10.3	Determine the economics, magnitude, and specifics of implementation.	Plan prepared and approved by AESRD	N/A
3.10.4	Develop a framework to rank and/or manage fibre objectives versus societal and ecological objectives.	Plan prepared and approved by AESRD	N/A
3.10.5	Delineate monitoring techniques.	Plan prepared and approved by AESRD	N/A
3.10.6	Prepare the EFM plan by year 10 of the FMP and present the results to all FMA area forest companies and AESRD.	Plan prepared and approved by AESRD	N/A

Al-Pac and the quota holders have concluded that EFM is not economical in the FMA area. EFM carries high risks due to the potential destruction of infrastructure and loss of investment given the frequency of natural disturbances in the boreal forest, as well as the amount of industrial activity in the FMA area.

**LAG Commentary:** None

**FMP Chapter 3 – Objective 12:** Retain forest structure in harvested cutblocks in varying amounts across the FMA area landscape.

FMP Page 119	Strategy	Indicator	Report Card
3.12.6	Al-Pac – In 10 FMUs, an average of 5 percent of the deciduous merchantable volume and 5 percent of the merchantable conifer volume will be retained in cutblocks, in addition to unmerchantable structure (MOSA (now SMA) cutblocks in FMU A15 are excluded from this strategy).	Stand structure percent per year	Incomplete – Non-compliance with OGR 7.4.1

*Post-Harvest Stand Structure*



\* EFM is the use of various techniques to increase growth and yield.

**Table 4. Average post-harvest retained stand structure**

Year	Percentage (%)
2006	3.1
2007	4.9
2008	4.4
2009	4.9
2010	8.1
2011	5.9
2012	3.7
2013	3.7
2014	5.4
2015	4.2

Al-Pac had relied on harvest contractors to estimate how much structure they were leaving. To reach the target, the company has implemented a review process with the operators, as well as marking out larger retention patches prior to harvesting. Under current harvest practices, clumps and individual trees are left in the block to approximate the structure left after natural disturbance. Al-Pac monitors contractors and interprets post-harvest aerial imagery to attain compliance.

**LAG Commentary:** Al-Pac has adopted a number of strategies to address the issue of adequate stand structure retention. It should be noted that the strategies are all interdependent. The OGRs now capture this interdependence.

**FMP Chapter 3 – Objective 16:** Continual integration of all forest management activities by quota holders, Al-Pac, and the GoA-administered Conifer Timber Permit (CTP) Program through the cooperative implementation of forest management strategies on the FMA area.

FMP Page 132	Strategy	Indicator	Report Card
3.16.5	Explore the initiation of timber supply zone–based silvicultural liability accounts and/or joint reforestation working groups.	Liability account	Requirement not met

This strategy would pool the FMA area forest companies' silvicultural funds, but it has not been pursued. A formal joint silviculture committee of the forest companies has not evolved since the approval of the FMP. However, the Forest Growth Organization of Western Canada (FGROW) has a silvicultural working group that continually explores challenges common to forest companies in general. This does not deal with liability but may assist in reforestation strategies.

**LAG Commentary:** None

**FMP Chapter 4 – Objective 26:** Implement biodiversity, forest renewal, and forest monitoring systems to evaluate changes in landscape pattern, forest growth and yield, habitat structure, and species diversity.

**LAG Commentary:** All of the strategies are being technically fulfilled except trapper monitoring (refer to Objective 8). A number of the strategies have limited applicability to forest management. We suggest that the next FMP specify only monitoring programs with relevance to forest management (this was in fact initiated in the 2015 FMP). The U of A bird monitoring program, for example, provides an important measure of avian biodiversity in the FMA area.

**FMP Chapter 4 – Objective 29:** Continue to develop a stewardship reporting program that provides stakeholders with a review of the forest companies' forest management activities and performance on its forest management plan commitments.

**LAG Commentary:** The LAG agrees with Al-Pac that an annual stewardship update (refer to Strategy 3.29.2) is not needed. Al-Pac reports regularly to LAG meetings and through other means, in addition to the regulatory requirement for formal stewardship reporting every five years.

## Objectives and Strategies Completed, with LAG Commentary

**FMP Chapter 1 – Objective 1:** Continue community engagement strategy (CES) initiatives (also referred to as public involvement) and consultative processes that involve stakeholders in the management planning process and encourage public input at all stages of planning.

**LAG Commentary:** Most of the strategies are being fulfilled, but it has been difficult to include LAG members in other public engagement activities such as community meetings. LAG members have also expressed concern that quota holders are not fully involved in the community engagement and consultative processes. Although some quota holders participate regularly in LAG meetings, others rarely attend.

**FMP Chapter 3 – Objective 2, Strategy 2:** Continue to utilize existing leaf-off colour-infrared (CIR) photography to enhance the identification of conifer understorey and crown components in mixedwood stands and map to AVI standards.

Since 2013, all FMA area inventory has been based on digital high-resolution “leaf-off” digital aerial photography (DAP) imagery. LiDAR is also incorporated into the forest inventory.

**LAG Commentary:** The LAG's main concern had been whether or not the inventory should be further enhanced through the use of leaf-off CIR photography. This has been addressed since 2013.

**FMP Chapter 3 – Objective 3:** Salvage suitable timber that can be utilized, recognizing economic and ecological constraints.

**LAG Commentary:** The technical requirements of this objective are being met, but LAG members have several concerns and questions:

- When salvage is purchased by Al-Pac from the agricultural White Zone (outside the FMA area), the land is typically used for agricultural purposes such as cattle grazing rather than being reforested. This raised questions from LAG members: How does this affect biological diversity in Alberta? What is the effect on the “carbon budget” of the landscape? Is this included in Al-Pac's carbon

calculations? How does this salvage, along with Al-Pac's poplar farms, affect agricultural incomes? Are there risks of agriculture moving into the Green Zone?

- How does industrial salvage in the FMA area affect biodiversity? What are the cumulative effects of fire salvage and industrial salvage, and how does salvage affect the future forest landscape? How will salvage affect the future annual allowable cut (AAC) for the forest companies?
- Although only about 25 percent of the pre-burn fibre is harvested in fire salvage, the spatial distribution of the salvage had not been well documented, but the revised OGRs stipulate planning and monitoring to the same spatial standard as regular harvest blocks within the FMA area.

Al-Pac addressed some of these questions in presentations to the LAG from 2012 to 2015. Third-party research has been undertaken by the Canadian Forest Service to determine more accurately the effects of forestry operations on the carbon budget.

**FMP Chapter 3 – Objective 7:** To utilize soils research in the FMA area to minimize in-block road and harvest equipment impacts to ensure vigorous post-harvest regeneration.

**LAG Commentary:** The technical requirement has been met, but Al-Pac and the LAG have concerns about the effectiveness of the monitoring of roads and landings. These areas are still, and will continue to be, areas of potential reduced tree growth. Although roads and landings are incorporated in Alberta's RSAs, LAG members ask whether a system should be installed that specifically monitors the growth and performance of trees on roads and landings.

Regeneration on roads, decking, and processing areas remains a challenge for Al-Pac and a concern for LAG. LAG believes this should be a focus for research and trials to improve regeneration performance.

To assist in addressing this concern, Al-Pac has worked with a soil scientist on methods to ameliorate damage to forest soils and thus to improve regeneration. In addition to soil recovery plans, Al-Pac had a balsam poplar provenance program (Controlled Provenance Program – CPP) in the 2011–2015 period, intended to develop a supply of suitable hardwood seedlings for the regeneration of roads and landings.

**FMP Chapter 3 – Objective 11:** Maintain forest cover patterns by designing and implementing landscape-level harvest plans, including aggregated harvesting systems that more closely resemble natural disturbance patterns at the landscape level.

**LAG Commentary:** There is a conflict between strategies because one assumes that the average cutblock size will be similar to the old two-pass system. However, as forest management moves toward aggregated harvest systems, the former two-pass cutblock system will no longer be relevant. The 2015 FMP used an aggregated harvest system to plan the entire future forest footprint on the basis of planning units up to about 10,000 hectares.

Reporting on planning unit size is justified, but their hectare size is misleading. The critical metric is the total disturbance on a given landscape. Landscape size and heterogeneity are the important timber and non-timber metrics. There also needs to be agreement from all stakeholders on the definitions of planning unit, disturbance unit, and aggregation of cutblocks.\*

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\* Alberta-Pacific Forest Industries Inc., *Landscape and Stand Level Structure Monitoring Vignette*, March 2018.

Stakeholders generally agree that forest landscape forecast models are of limited value if they do not include the effects of natural disturbance and anthropogenic activity. The requirement to include these models in an FMP needs to be examined to ensure that delivered products have and add value to the planning process.

**FMP Chapter 3 – Objective 18:** Al-Pac and the quota holders will continue to explore models that reflect succession and silvicultural treatments.

**LAG Commentary:** The LAG is concerned that the current timber supply models used to forecast AAC do not reflect the cumulative effects of fire and industrial activity in the FMA area.

**FMP Chapter 3 – Objective 20:** Identify a series of ecological benchmarks representative of the habitat diversity of the FMA area.

**LAG Commentary:** Al-Pac fulfilled the objective in the sense that it did identify potential benchmarks, but the actual designation was in the hands of the provincial government. The benchmark areas and parks that were created by government, including those designated under the *Lower Athabasca Regional Plan* in 2012, may not be adequate as ecological benchmarks. The LAG is concerned that the range and scale of habitat types are not fully represented at present and in the designations under the LARP.

**FMP Chapter 3 – Objective 23:** Identify spatially explicit, sustainable harvest levels (Timber Supply Analysis, TSA – AAC calculation) that are sufficient for FMA area timber users and attempt to sustain the environmental and social values of the FMA area. Model and retain old forest stands on the FMA area landscape within  $\pm 25$  percent of the mean of the natural range of variation (NRV).

The model was completed, but did not include future fire and industrial activity.

**LAG Commentary:** See LAG commentary on Objective 24.

**FMP Chapter 3 – Objective 24:** Within the gross FMA area, retain old-forest stand (over-mature forest stand) areas for each of the five main forest cover types within  $\pm 25$  percent of the mean of the NRV.

**LAG Commentary (Objectives 23 and 24):** LAG members note that although the strategies were all completed, they dealt solely with modelling. The stated objective is to retain old forest on the landscape, not just in the models. Thus, the forest companies can complete the strategies and still not achieve the objective.

Current timber supply models do not take into account fire and industrial activity, including the energy sector. As a result, there is a disconnect between the models and the reality on the landscape.

Models can provide guidance for planning and management. Modelling in this instance was a necessary precondition for planning, but it did not achieve the objective as written.

**FMP Chapter 4 – Objective 25:** Continue to conduct and facilitate research and development and implement innovations realized from R&D and other sources of input (e.g., operational experience, traditional knowledge studies, and regulatory change) through an active adaptive management (AAM) process.

**LAG Commentary:** Research has formed the basis for AAM. Some research has had immediate practical value and has led to changes in operations. Other research, while more theoretical, has contributed to maintaining the knowledge base as well as regional intellectual capital. We note that Al-Pac has recently focused more of its research support toward specific programs such as the ABMI, the ILM, boreal bird programs at the University of Alberta, and boreal plains hydrology.

### **Satisfactory Objectives with No LAG Commentary**

**FMP Chapter 3 – Objective 4:** Support GoA in its strategies to minimize losses from epidemics of forest insects, diseases, infestations of restricted and noxious weeds, and large catastrophic fires on the FMA area.

**FMP Chapter 3 – Objective 9:** 1. Manage eight FMUs under an integrated (empirical yield curve set) planning system on the discreet land base; 2. Manage two FMUs under a mixedwood land base system (mixedwood yield curve set) to maintain or increase both coniferous and deciduous fibre flows from the FMA area and; 3. Manage FMU A15 through the GoA's mineable oil sands area (MOSA) principles. In 2011, FMU S14 was added to the FMA area.

In 2015, the use of empirical yield curves was discontinued, as per GoA direction, and all 12 FMUs are now managed using growth models for both coniferous and deciduous fibre flows from within the FMA area. The surface mineable area (SMA) (formerly MOSA) is now managed through its own set of OGRs.

**FMP Chapter 3 – Objective 13:** Utilize reforestation treatments that provide for vigorous forest regeneration to meet or exceed reforestation standards in order to achieve yield objectives as set out in the TSA.

**FMP Chapter 3 – Objective 14:** Continue the maintenance and enhancement of a block-level silvicultural record-keeping system that is compatible with GoA requirements.

**FMP Chapter 3 – Objective 15:** Replace incidental conifer by regenerating or protecting sufficient conifer growing stock to produce an equivalent volume of conifer at rotation. (The new FMA in 2011 removed the clause with this requirement.)

**FMP Chapter 3 – Objective 17:** Al-Pac, the quota holders, and GoA will design and implement Alternative Regeneration Standards (now called Reforestation Standards of Alberta, or RSA) for FMA area forest growth and yield at the FMU level.

**FMP Chapter 3 – Objective 19:** Contribute toward the economic good of the region and the responsible use and protection of its many social and cultural values.

**FMP Chapter 3 – Objective 21:** Minimize, through the integration of industrial activities on the FMA area, the industrial footprint in terms of its size, intensity, distribution, and duration on the land base.

**FMP Chapter 3 – Objective 22:** Continue to develop and refine a system for predicting where heritage resources are potentially located and develop a process for incorporating potentially sensitive sites into operational planning.

**FMP Chapter 4 – Objective 27:** The forest companies will continue to participate in GoA compliance audits.

**FMP Chapter 4 – Objective 28:** Al-Pac will maintain ISO 14001 and Forest Stewardship Council (FSC) certification of all applicable FMA lands.