ABITIBI RIVER INDEPENDENT FOREST AUDIT
2010 – 2017

February 28, 2018

KBM RESOURCES GROUP

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1 EXECUTIVE SUMMARY

This report summarizes the results of the Abitibi River Forest Management Unit Independent Forest Audit conducted by KBM Resources Group following regulation 160/04 of the Crown Forest Sustainability Act (S.O. 1994, c. 25). The audit covers forest management planning and implementation activities carried out during the seven-year period from April 1, 2010, through March 31, 2017. Four forest management plans are included in the scope of this audit: the 2010–2012 Contingency Plan (implementation only), 2012–2013 Contingency Plan (planning and implementation), Phase I (planning and implementation) and the Phase II Forest Management Plan (plan development only) of the 2012–2022 Forest Management Plan.

The Abitibi River Forest is in the Ministry of Natural Resources and Forestry (MNRF) Northeast Region. The Forest falls within the boundaries of the Cochrane, Kirkland Lake and Timmins Districts and is licensed to Abitibi River Forest Management Inc. (ARFMI). First Resource Management Group Inc. (FRMG), a forest management service provider, administers all the forest management and business requirements of the SFL, acting as the agent for ARFMI.

The audit included opportunities for stakeholder input, and a review of all documentation and records associated with management of the Abitibi River Forest during the audit term. The audit team selected a stratified random sample of sites consisting of a representative cross-section of all activities conducted on the Abitibi River Forest during the audit period. These sites were accessed by either helicopter or road for inspection. The procedures used during this audit were in accordance with the Independent Forest Audit Process and Protocol (IFAPP 2017).

The forest planning process was properly implemented during the audit term. The forest management plans met all requirements with one exception related to forest renewal support requirements.

Two issues followed the dispute resolution process, culminating in an individual environmental assessment (IEA) request for Abitibi River Forest. IEA decision timelines for Phase II are significantly longer than prescribed by the Forest Management Planning Manual (FMPM) causing delays in operations.

Field inspections, document reviews and interviews revealed that the planned objectives are being achieved by implementing the forest operations according to plan at the stand and site scale. This is accomplished by skilled operators and management support staff following Area of Concern prescriptions, Silvicultural Ground Rules and adhering to the Stand and Site guide requirements. There is one exception: larch appears to be increasing in abundance at higher rates than forecasted in the current plan for forest renewal areas.

The forest operations deviate significantly from the plan at the forest scale. The rate of harvest is approximately half of planned levels. Forest cover composition and age class structure related objectives for wildlife, social and economic values will take longer than expected to be realized. Annual reports and trends analysis were deficient in their discussion of these issues. These conditions and management implications should be addressed in future annual reports and the next FMP.

The evidence collected by the audit team shows that the forest Manager is meeting its contractual obligations. The shareholder agreement has proven to be resilient to new challenges. The ARFMI shareholder model has enabled effective participation of three Aboriginal communities in forest management decisions, resulting in ongoing involvement and significant economic benefits from the

Forest to all three communities. This was considered a best practice. Not all shareholders are satisfied with the current arrangement, but their concerns were considered to be outside the scope of this audit.

The evidence shows that sufficient local knowledge was retained through amalgamation and subsequent shareholder changes. The new management regime has been effective in delivering a cost-effective forest management program.

There are five findings and one best practice as identified in the following summary table. The audit team concludes that management of the Abitibi River Forest followed regulatory requirements and contractual obligations. Forest sustainability is being achieved, as assessed through the Independent Forest Audit Process and Protocol. The audit team recommends the Minister extend the term of Sustainable Forest License #551832 for a further five years.

Laird Van Damme, R.P.F. Stéphane Audet, R.P.F.

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Co-lead auditors on behalf of the audit team

February 28, 2018

2 TABLE OF FINDINGS AND BEST PRACTICES

CONCLUDING STATEMENT ON LICENSE EXTENSION
The audit team concludes that management of the Abitibi River Forest was generally in compliance with the legislation, regulations, and policies that were in effect during the term covered by the audit, and the Forest was managed in compliance with the terms and conditions of the Sustainable Forest Licence held by Abitibi River Forest Management Inc. Forest sustainability is being achieved, as assessed through the Independent Forest Audit Process and Protocol. The audit team recommends the Minister extend the term of Sustainable Forest Licence #551832 for a further five years.
FINDINGS
Best Practice #1: The ARFMI shareholder model has enabled effective participation of three Aboriginal communities in forest management decisions, resulting in ongoing involvement and significant economic benefits from the Forest to all three Aboriginal communities.
Finding #1: IEA decision timelines for Phase II are significantly longer than prescribed by the FMPM. These cause delays in operations, unnecessarily angsts in participants, and increase administrative costs for forest managers.
Finding #2: The renewal support section lacked the mandatory requirements of the FMPM for including a FMU-level strategy for the long-term use of improved seed on the forest.
Finding #3: No progress has been made in experimental testing to determine inexpensive yet effective ways to rehabilitate roads back to the natural state as soon as possible after the cessation of forest operations, as outlined in the 2012-2022 FMP (Supplemental Documentation, ARFMI Implementation Toolkit).
Finding #4: The total area of declared natural renewal is not being amended to account for changes to the renewal prescriptions in the Trends Analysis Report.
Finding #5: Annual Reports and the Trends Analysis Report were deficient in describing analyses, trends and implications for operations and future plans. A harvest profile that varies significantly from the planned profile requires careful consideration in developing the next plan.

3 INTRODUCTION

3.1 AUDIT PROCESS

Independent Forest Audits (IFAs) are a requirement of the Crown Forest Sustainability Act (S.O. 1994, c. 25) (CFSA). Every publicly-owned forest management unit in Ontario must be audited by an independent audit team at least once every five to seven years. The auditees usually include the Sustainable Forest License (SFL) holder, District Ministry of Natural Resources and Forestry (MNRF), Regional MNRF and Corporate MNRF.

In Abitibi River Forest (ARF), the auditees are the SFL holder Abitibi River Forest Management Inc. (ARFMI) (SFL no. 551832), the Cochrane, Kirkland Lake and Timmins MNRF Districts, MNRF Northeast Region and MNRF Corporate.

KBM Resources Group (KBM) conducted an IFA on the Abitibi River Forest for the seven-year term from April 1, 2010, to March 31, 2017.[1] Four forest management plans are included in the scope of this audit: the 2010-2012 Contingency Plan (implementation only), 2012–2013 Contingency Plan (planning and implementation), 2012–2022 Forest Management Plan Phase I (planning and implementation) and the Phase II Forest Management Plan (plan development only). The on-site portion of the audit occurred in two parts: October 23–25, 2017 (helicopter audit) and November 6–10, 2017 (on-site audit). Document examination and interviews were completed prior to, during, and after the on-site period.

IFAs are governed by eight guiding principles as described in the 2017 Independent Forest Audit Process and Protocol (IFAPP):

1. Commitment;
2. Public consultation and aboriginal involvement;
3. Forest management planning;
4. Plan assessment and implementation;
5. System support;
6. Monitoring;
7. Achievement of management objectives and forest sustainability; and
8. Contractual obligations.

Findings arise from audit team observations of material non-conformances and the identification of situations in which there is a significant lack of effectiveness in forest management activities. Similarly, the audit team may highlight best practices for the cases where auditees' actions go above and beyond legal requirements and result in positive outcomes for forest and communities. The IFA findings will be analyzed by the auditees to determine the action(s), and identify the appropriate responsible party(s) to address the non-conformance. Non-conformances to be addressed by the SFL holder and MNRF Districts will be described in the Abitibi River IFA Action Plan with results reported in IFA Status Reports. The non-conformances to be addressed by the MNRF Region and Corporate will be addressed in Region's action plan that summarises all audit findings from the Region.

[1] KBM also conducted the (2005-2010) IFAs of Cochrane-Moose River FMU, Iroquois Falls FMU, and Smooth Rock Falls FMU.

Technical details supporting findings and best practices that are listed in Section 2 can be found in Appendix 1. A review of the achievement of objectives and contractual obligations are summarized in the Appendices 2 and 3, respectively. Detailed information on the audit process, including the sampling intensity, is provided in Appendix 4. A list of acronyms is compiled in Appendix 5. Audit team members and their qualifications are presented in Appendix 6.

3.2 Management Unit Description

The Abitibi River Forest is located om Northeastern Ontario within the Cochrane, Kirkland Lake and Timmins administrative districts of the MNRF's Northeast Region with Cochrane District acting as the lead (Figure 1). The original SFL for the ARF was issued in 2010, resulting from the amalgamation of the and Cochrane-Moose River Crown Management Unit, the Iroquois Falls Forest, the Nighthawk Forest and the Smooth Rock Falls Forest. The Forest is currently licensed to Abitibi River Forest Management Inc. (ARFMI) (SFL no. 551832), a cooperative of 17 shareholders including harvesting companies, forest product producers and First Nations partners. First Resource Management Group Inc. (FRMG) has been contracted to provide forest management services. The Forest is both SFI and Forest Stewardship Council (FSC) certified since 2013.The Abitibi River Forest consists of more than 35,000 square kilometers of managed forested land within Boreal zone. The Forest consists of 3,300,000 ha of Crown Land of which ~3,000,000 ha is managed. The productive area is 2,500,000 ha, with 2,300,000 ha eligible for forest management. Protected forest encompasses 283,000 ha of the Forest.

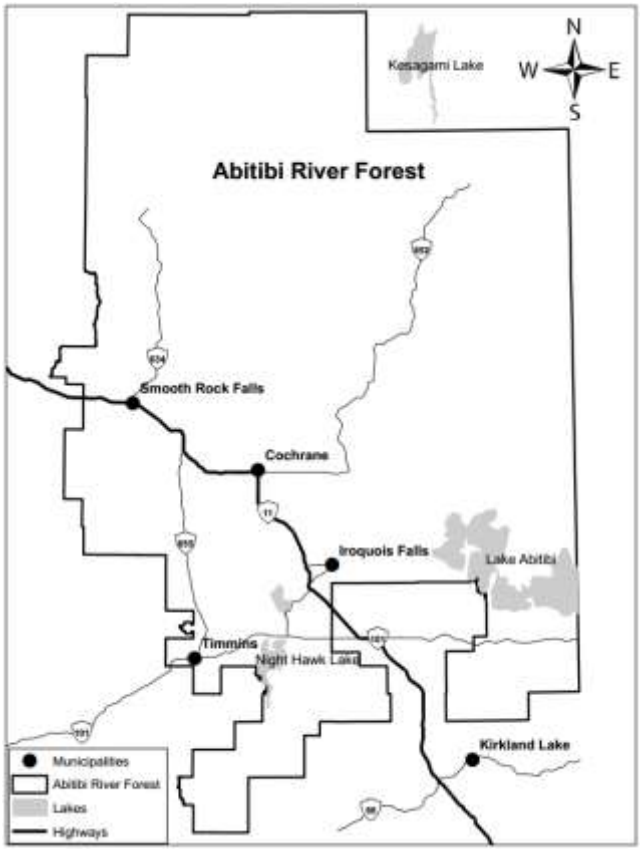

Figure 1. Map showing the location of Abitibi River Forest, associated communities and management zones (From Abitibi River 2012-2022 FMP, Phase I).

The 2012–2022 ARF Forest Management Plan (FMP) sub-divides the Forest into two strategic management zones (SMZs). These zones are delineated based on the boundary between ecodistricts 3E-1 and 3E-6, and further refined with the southern boundary of the Kesagami Woodland Caribou (*Rangifer tarandus caribou*) range. Dynamic caribou habitat modeling was completed for the Abitibi River North SMZ.

There is a well-established road network in the Abitibi River South SMZ as well as in the southern portion of the North SMZ, with a combination of provincial highways, municipal roads and forest access roads. The northern section of the North SMZ is not accessed primarily due to the high costs for crossing a large river, road construction within large expanses of lowland areas with low volumes and long-haul distances.

The municipalities of Smooth Rock Falls, Cochrane, Iroquois Falls, Timmins and Kirkland Lake lay within the boundaries of the Forest. Seven Aboriginal communities are located within or adjacent to the Forest, each of which was invited to participate in the development of the 2012–2022 FMP: Moose Cree First Nation; Taykwa Tagamou Nation; Beaver House Community; Matachewan First Nation; Mattagami First Nation; Flying Post First Nation; and Wahgoshig First Nation. The Forest has three Local Citizens Committees (LCCs): Cochrane, Timmins, and Kirkland Lake. The Cochrane LCC acts as the lead among the three committees.

4 AUDIT FINDINGS

4.1 COMMITMENT

The commitment principle is deemed to be met because the Abitibi River Forest is certified under the FSC Boreal and SFI forest management standards.

4.2 PUBLIC CONSULTATION AND ABORIGINAL INVOLVEMENT

4.2.1 Public Consultation

The public consultation processes for the plan and amendments were effective and met the requirements of the 2009 Forest Management Planning Manual (FMPM). Several opportunities for all stakeholders to consult with MNRF and ARFMI were provided and the records indicated strong public interest from different community groups. The audit team noted opportunities for improvement for District MNRF and the Cochrane LCC to increase representation of the tourism industry, cottage associations and aboriginal communities, and contribute to the education of LCC members in key areas in preparation for the new planning cycle starting in 2019.

There were many issue resolution requests relating to the impacts of Caribou Conservation Plan (CCP), and harvesting on trap lines and around cottaging lakes in both planning phases. Two parties, one in each planning phase, engaged MNRF and ARMFI in dispute resolution processes related to the harvesting around cottaging lakes. The dispute resolution processes culminated in two requests for Individual Environmental Assessments (IEAs), one in each FMP phase. Another IEA request in Phase II was made directly to the Ministry of the Environment and Climate Change (MOECC) by a First Nation.

The IEA request for Phase I was denied by the MOECC within two months following the receipt of the IEA request letter. However, the two IEA requests in Phase II have yet to receive a decision after longer than 11 months. The period of review is supposed to be 45 days (under the FMPM guidelines), after which the MOECC may request additional information or make a decision.

During the audit period, approval was granted to forbid harvesting operations from over 800,000 ha of the forest, including 13,500 ha allocated for harvest in Phase II. A significant delay in this decision has deferred 2017–2018 harvest operations, resulting in increased costs to the SFL and MNRF due to re-planning requirements and meetings with IEA request stakeholders. This delay has caused significant difficulties to stakeholders and hardships to at least one operator on the Forest. The MOECC handled the two unrelated IEA requests under the same case file, which may have resulted in delays for one or both IEA requests. The audit team felt this issue should yet again be brought to the attention of MOECC. The audit team believes the MOECC needs to make decisions in a timely manner on future IEA requests **(see Finding #1, Appendix 1)**.

4.2.2 Aboriginal Involvement

There are seven Aboriginal Communities associated with the ARF. These communities were invited to participate in the forest management planning process for both Phases I and II. The Northern Lights Metis Council and the MNO Timmins Metis Council were also invited to participate in Phase II plan production, including participation on the Aboriginal Task Team. The level of participation varied by communities. Lack of resources, both forest management related knowledge and available funds, was identified to limit communities' ability to participate. Interviewees also expressed concerns regarding the impacts of herbicide spraying and clearcutting on forest and wildlife**.**

The ARFMI shareholder agreement, effective April 1, 2010, resulted in significant harvesting opportunities for three of the seven aboriginal communities associated with the ARF: Taykwa Tagamou Nation (TTN), Moose Cree First Nation and Wahgoshig First Nation. The allocations were further increased in Phase II after Resolute Forest Products relinquished its harvest rights. Currently, these three communities, or their resource management companies, hold harvesting rights collectively to nearly 44% of the volume allocated in Phase II. Additionally, 34% of the wood allocated to Tembec can be harvested by TTN's company, Island Falls Forestry. As a result, nearly 78% of total volume of Phase II is currently allocated to be harvested by loggers associated with First Nation communities, providing significant economic and social benefits to these three communities.

This is a significant change from the last IFAs when no SFL harvest rights and responsibilities were held by First Nations. The audit team recognized the effort made by the ARFMI shareholders to increase Aboriginal participation in the Forest as worthy of study as part of MNRF's tenure modernization initiative **(see Best Practice #1; Appendix 1**).

4.3 Forest Management Planning

The forest management planning process was found to be implemented as per the direction of the FMPM. There were several significant challenges.

The forest management plan is based upon the Forest Resources Inventory (FRI). The ARF is an amalgamation of forest management units with seven FRI-base data sets. The FRI's original aerial photography ranges from 1983–2009. Organizing these data sets into a seamlessly updated planning inventory was a significant accomplishment.

The amalgamated ARF planning process started with a two-year contingency plan (CP) to help address the issues arising from writing a single FMP for four separate management units and staff from two companies and MNRF. The development the Caribou Conservation Plan delayed the development of the 2012-2022 FMP, which was approved in January of 2013. A one-year CP based upon the Long-Term Management Direction (LTMD) of the 2012–2022 FMP was approved in 2012 to fill the gap.

4.3.1 Access

The CP and FMP were both included the "*Implementation Toolkit: Abitibi River Forest Management Plan*" as a supplementary document. The Toolkit includes an introductory module plus 18 subsequent modules to guide successful implementation of the FMP. Its intent is to provide direction to field staff and contractors on the ARF to ensure consistent implementation of regular operations. The toolkit explains the procedures in a way that is accessible to the operators.

The 2012–2022 FMP included a large number of primary and branch roads proposed for construction during the term of the Plan. The 2012–13 CP used a subset of the same roads proposed for its one-year term. Numerous adjustments were made to individual road corridors in the Phase I Plan after corridors were reviewed with forest licensees using recently acquired imagery from the new enhanced forest inventory (eFRI). A summary of the adjustments is provided in the text of the Phase II Plan. In addition, Phase II included roads not constructed during Phase I.

4.3.2 Area of Concern (AOC)

Both contingency plans and the 2012-2022 FMP included Area of Concern (AOC) prescriptions that were prepared in accordance with applicable FMPM direction. AOC prescriptions developed for the CP were included in the 2012 FMP with additions based on newer directions, requests or negotiations with specific stakeholder groups. The previously negotiated Cochrane District Remote (Wilderness) Tourism Strategy is included in the Plans for the protection of identified tourism areas across the forest. As a result, no individual Resource Stewardship Agreements (RSAs) were requested or negotiated.

Many revisions to AOC prescriptions were included in the Phase II Plan based primarily on the specific direction in the Stand and Site Guide. In all cases, Tables FMP-10 and FMP-19 were prepared in accordance with FMPM direction. Where applicable, AOC prescriptions reference specific modules of the Implementation Toolkit for the Abitibi River Forest Management Plan, providing clear direction to supervisors and operators.

4.3.3 Species at Risk

New direction from the Stand and Site Guide and planning for 17 Species at Risk was included in the 2012–2022 Phase I and II FMP. The Plan features the application of the Caribou Conservation Plan (CCP) and Dynamic Caribou Habitat Schedule (DCHS).

4.3.4 Harvest

There is a considerable decrease in the projected harvest area between Term 1 of the 2010–2012 CP and the current term (2012–2022 Phase I FMP), which was attributed to the introduction of the DCHS on the landbase through the application of the CCP. The harvest planning and allocation process met all planning requirements specified in the FMPM.

The lack of summer harvesting ground in the ARF was highlighted by several parties as a serious issue. In a management unit dependent largely on winter harvesting and frozen conditions, climate change impacts are expected to become challenges for winter access, shortening the harvesting season on

wetlands. This will make planning harvesting activities to keep the operators running year-round in the next plan more challenging (**see Finding # 5, Appendix 1**).

4.3.5 Silviculture

Silviculture planning for the 2012–2013 CP and the 2012–2022 Phase I and Phase II FMPs was found to be compliant with the requirements of the FMPM. The Silviculture Ground Rules (SGR) developed in the three plans were determined to be appropriate to the conditions of the Forest Management Unit (FMU) and in line with the current silvicultural guides. Very few changes were made to the Phase II SGRs other than allowing for the aerial seeding of upland mixed forest units.

The planned renewal activities in the one-year CP were found to be disproportionately leaning towards natural renewal when compared to the LTMD (87% vs. 70%). However, only a single year's worth of renewal was planned in the CP, which was based on a mix of the previous year's outstanding silviculture blocks and the completion of planned harvesting areas in the current term. These areas were subsequently reconciled in the 2012–2022 Phase I FMP. A review of the planned renewal activities in the Phase I and Phase II 2012–2022 FMPs found them to be in line with the renewal intensity profile of the LTMD.

It was determined that key information in the renewal support sections of the CP, and Phase I and II FMPs was not included in the plans. Missing information was related to planned seedling numbers, species splits and seed collection targets. The lack of successional planning for the current improved seed orchards will lead to an inevitable deficiency in available seed. A FMU-level strategy is needed in order to outline the long-term use of improved seed on the forest (**See Finding # 2, Appendix 1**).

A common phenomenon across the clay belt is an increase of larch (*Larix spp.*) following harvesting. This was confirmed during the field audit. Historically, Larch was more abundant across Ontario before the European larch sawfly (*Pristiphora erichsonii*) outbreak 100 years ago. Larch and the boreal ecosystem has adapted to reduce the level and number of sawfly outbreaks over time. Since there are limited markets for larch, these trees are often left as residual trees following the Stand and Site guide, thus providing seed to further enhance larch regeneration on many harvested areas.

Regardless of the causes of this increase, neither the forest management plan nor forest policy addresses the increasing larch portion in the landscape and its impact on the long-term sustainability of Management Unit, including impacts to the wildlife and forest industry. For example, both Boreal Landscape Guide Natural Range of Variation (NRV) targets lump all lowland conifers into one class – LC1, including spruce (*Picea spp.*), larch, and cedar (*Cedrus spp.*) (**See Finding #5, Appendix 1**).

4.4 Plan Assessment and Implementation

4.4.1 Areas of Concern (AOC)

A wide variety of AOCs were sampled during the field portion of the audit. This included waterbodies where harvest to shoreline was implemented following direction in the FMPs and the Stand and Site Guide. AOC boundaries were found to follow prescriptions and operators stayed within the boundaries.

An on-site discussion with an operations supervisor provided insight on occasional difficulties in having harvesting equipment operators completing the new "harvest to shoreline" prescriptions. Some equipment operators have difficulty with this concept, based on years of training and implementing

strict shoreline buffer AOCs. The flat and wet landscapes of the northern ARF increases the likelihood of getting equipment stuck while approaching a waterbody. Hence, operators are wary of harvesting to shoreline in clay belt situations. Nonetheless, the audit team found that the modified "harvest to shoreline" prescriptions were properly implemented.

ARFMI provided examples of the document and mapping direction that is provided to the operators. These products are well designed for the intended purpose of providing guidance to field operations personnel.

4.4.2 Access

The field audit included an inspection of road and water crossing construction and decommissioning activities. There were relatively few water crossing installations, primarily due to terrain conditions and hydrology patterns. The southern portion of the ARF North SMZ has many pre-existing road networks, thereby reducing the need for new water crossing installations. The water crossing installations and decommissioned crossings that were examined as part of the sample by the audit team were found to be well done.

Harvesting operations have been ongoing in many blocks for several years with very limited road decommissioning. Road decommissioning was only found to have been completed in a small portion at one of the field stops.

While the limited level of decommissioning at this stage in the plan implementation process may be reasonable, no real progress has been made to test decommissioning approaches as described in the Implementation Toolkit. Specifically, the toolkit states that:

> *"…conduct(ing) experimental testing to determine inexpensive yet effective ways to rehabilitate roads back to the natural state as soon as possible after the cessation of forest operations."*

Progress on road decommissioning is necessary to achieve two FMP objectives related to road densities. There is a need to make progress on road decommissioning and to link it to the experimental testing as provided in the Implementation Toolkit. The design of experimental testing, including the types of rehabilitation to test, should include staff from both ARFMI and MNRF. There was some discussion among the managers and auditors that concentrating operations within one or two caribou blocks might speed up the process of experimentation (**see Finding #3, Appendix 1**).

4.4.3 Harvest

The effort to communicate with the operators through the Implementation Toolkit, supported by MNRF and FRMG compliance monitoring, has resulted in a high rate of compliance at the stand and site scales. There was no evidence of site damage. Residual tree and patch retention met the prescribed levels.

Harvest utilization levels were excellent despite the lack of pulp markets. There were occasional stray logs and bundles left behind as an inevitable consequence of some winter operations.

The above speaks to a high operator skill and experience level coupled with strong management support and feedback. This high performance was maintained amidst considerable restructuring of the forest sector and changes to the shareholder composition of ARFMI.

The SFL Manager and shareholders have implemented a slash management program on productive sites that help to minimize productive forest losses to forest management activities. The forest estate

projection modeling accounts for this loss of productivity correctly, if not conservatively. Although lowland sites are less productive, additional progress might be made with slash management on these sites.

According to the Trends Analysis Report (TAR), the harvest implementation at the forest scale deviated significantly from the planned harvest level and profile of stand conditions. The present harvest level is half of the planned level. The higher-than-planned yields and the harvest area breakdown by forest unit in the TAR indicate that more productive upland stands, favouring Jack Pine (*Pinus banksiana*) near mills, were harvested at higher-than-planned levels on a proportional basis due to pulp mill closures. These observations raise concerns over achieving some of the plan objectives (**see Section 4.7; Finding #5, Appendix 1**).

4.4.4 Silviculture

Renewal treatments examined during the field audit were found to be well executed and conducted in accordance with the prescribed SGR and site conditions. The treatment areas for seeding, planting, site preparation (mechanical and chemical) and tending all exceeded planned FMP targets during the audit term. The overachievement can be attributed to the harvesting profile favoring upland forest units and the prescription of remedial silvicultural treatments following the silvicultural liabilities assessment conducted at the beginning of the audit period. The declared natural renewal was found to be in line with the total area harvested during the audit period considering the underachievement of LC1, SB1, and SF1 Forest Unit (FU)[2] planned harvest levels.

4.5 System Support

Since the ARF has been certified to both FSC and SFI standards, the system support principle was optional under the terms of the IFAPP. The risk assessment found sufficient uncertainty with respect to MNRF compliance monitoring staffing to warrant examination.

The audit team found that Cochrane District MNRF compliance monitoring was short staffed due to the corporately mandated transformation process and due to personnel transfers. New certified compliance staff are filling vacancies and compliance plan targets are now being met.

4.6 Monitoring

4.6.1 Compliance

Compliance monitoring on the ARF presented considerable challenges to both ARFMI and the MNRF. ARFMI was initially faced with developing a working formula for its large group of shareholder companies to manage and operate on the recently formed ARF. Further, the closure of the Resolute Forest Products paper mill in Iroquois Falls and the subsequent transfer of its shares in ARFMI to three First Nation-owned forest resource licensees added to the complexity of the arrangement and compliance monitoring on the unit.

Despite these challenges, both parties have managed their respective compliance monitoring obligations quite well. Certified compliance inspectors are retained by the SFL as well as each of the

[2] Definitions for forest units: LC1 – Lowland Conifer; SB1 – Black Spruce dominated, high quality sites; and SF1 – Spruce/Fir Mix.

licensees that operate on the unit. All inspections are submitted to ARFMI for recording into its own SFL records-keeping system, and resubmitted into MNRFs online Forest Operations Inspection Program (FOIP) after review. The resulting SFL FOIP submissions contain only the information considered obligatory by both the Forest Compliance Handbook and Forest Information Manual (FIM). Background information that is not reported in FOIP submissions is retained in ARFMI records.

Interviews with MNRF compliance staff led to discussions about ARFMI's FOIP submissions. ARFMI's FOIP submissions met the Forest Information Manual and Compliance Handbook requirements. Background information like maps, photographs, and comments are held by ARFMI on file. This makes uploading FOIP more efficient but puts MNRF in an uncertain position of not knowing what additional data should be accessed prior to inspections. This communication issue should be easy to resolve between the two parties as ARFMI makes this information available to MNRF upon request.

MNRF district offices dealt with the MNRF transformation process, which included staff reductions and transfers for the Cochrane District office. MNRF did manage to maintain a reasonable forest compliance monitoring presence on the ARF and is augmenting its compliance staff numbers

4.6.2 Silviculture

ARFMI has a rigorous and effective Silvicultural Effectiveness Monitoring (SEM) program in place, that assesses renewal progress throughout the development of a regenerating stand. The SFL relies heavily on the use of a helicopter to complete their surveys due to the size and access restriction of the FMU. Survey information is accurately tracked in FRMG's GIS database, allowing for the updating of renewal prescriptions where needed.

Free-to-grow (FTG) surveys were conducted on 91,653 ha of candidate stands during the audit term, surpassing the planned survey target of 61,420 ha. All the FTG surveys conducted by ARFMI were completed using the aerial extensive methodology outlined in the FMP. Between 2010–2015, 32,958 ha were declared in the Annual Reports (AR) as not meeting the FTG requirements. Subsequent surveys of these areas netted down the total Not Sufficiently Regenerated (NSR) area to 15,801 ha. The balance of these areas either received remedial treatments or were deemed as needing additional height growth to meet the SGR standard.

A supplementary 1,275 ha sample of the NSR areas was added to the field audit program in order assess the status of current NSR blocks on the ARF. This decision resulted from the risk analysis completed at the beginning of the audit process. All the NSR blocks viewed during the field audit were found to meet the target species and stocking requirements of the applicable SGR, although some cases still needed additional time to meet the minimum height requirements.

ARFMI's silvicultural monitoring and renewal operations efforts had a direct effect on the total amount of areas classified as being below mandatory regeneration standards during the audit term (2012: 211,414 ha vs. 2015: 131,073 ha). Of the total area outstanding in 2015, 55% (72,115 ha) has since been confirmed for natural renewal, 35% (46,156 ha) has been treated artificially, with the balance of the areas (12,802 ha) prescribed to future treatments. The audit team concluded that the renewal and associated survey program is keeping up with the rate of harvest on the ARF while addressing pre-amalgamation silvicultural liabilities.

The MNRF SEM program on the ARF was largely led by the Cochrane District, with help from the Kirkland Lake and Timmins Districts. In total, 7,723 ha of the submitted FTG areas in the ARs were surveyed, surpassing the 10% sampling requirement stipulated in Core Task 1. Approximately 80% of the areas were surveyed intensively on the ground, with the remainder assessed aerially with supplementary ground calibration plots as part of the enhanced SEM program conducted in 2010. There was a general accord between the SFL and MNRF species calls, although some of the FTG FUs were improperly assigned by the SFL due to an error in the Structured Query Language that led to the erroneous assignment of SP1, SF1, SB1 and SB3 FUs.[3] It was noted that the MNRF's declared stocking was ~13% less than the SFL (2011-2015), however the gap was significantly reduced in the 2015 submission (~3%). This does highlight some inherent differences between the two survey methodologies and difficulties with developing clear conclusions when comparing the results between different methodologies.

it was determined that the species and stocking calls made by the SFL were consistent with the audit team's observations during the field audit. The next FMP will be developed under the direction of the 2017 FMPM, which has more stringent requirements for the assessment and validation of the regeneration surveys.

Table AR-13 in the TAR shows that 57% of the stands declared FTG between 2012–2015 (28,503 ha) reached the targeted forest unit. Figure 2 provides a further breakdown of the FTG results submitted during the audit period (2010–2015), further broken down by the total area in hectares for the Disturbance Forest Unit, Target SGR Forest Unit, Original AR FTG Forest Unit and the Correct FTG Forest Unit. The corrected FTG Forest unit calls largely impacted the SF1 and SB1 totals. The FTG trends are showing that the regenerating forest of the ARF is developing in accordance with the planned targets.

[3] The description of Forest Units: SP1 – pure black spruce upland, SF1 – mixed conifer on mineral soil, SB1 – black spruce dominated, high quality site, and SB3 -black spruce dominated, low quality site.

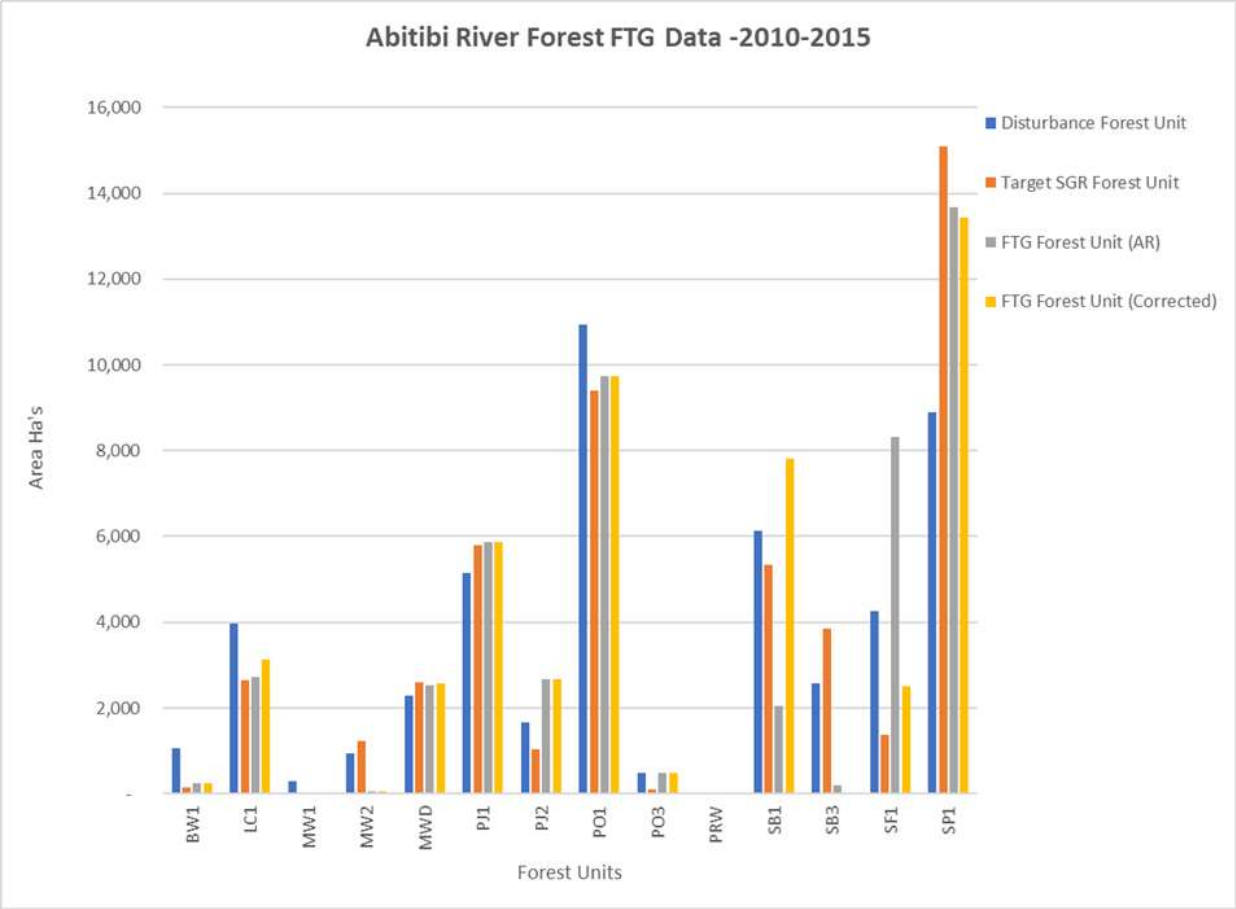

Figure 2. Abitibi River Forest FTG trends

4.6.3 Annual Reporting

A review of the ARs and TAR found them to comply with all FMPM requirements, with two exceptions. The total area of declared natural renewal is not being amended to account for changes to the renewal prescriptions **(See Finding #4, Appendix 1**). The ARs and the TAR were deficient in describing analyses, trends and implications for operations and future plans. Although these reports suggest the planned objectives are being met, there is evidence that the achievement of management objective is uncertain given the significant variance between planned and actual harvest profiles **(see Section 4.7; Finding #5, Appendix 1)**.

4.7 Achievement of Management Objectives and Sustainability

Skilled operators supported by management are implementing the forest operations according to the Plan at the stand and site scale. This is accomplished by following AOC prescriptions, SGRs and adhering to the Stand and Site guide requirements. There is one exception: larch appears to be increasing in abundance at higher rates than forecast in the current plan for forest renewal areas.

The forest operations deviate significantly from the plan at the forest scale. The rate of harvest is approximately half of planned levels. Forest cover composition and age class structure related objectives for wildlife, social and economic values will take longer than expected to be realized. This is a common

issue across Northern Ontario due to economic limitations imposed by markets and harvest costs associated with long-haul distances and or poor conditions.

There is an unspecified gap between available harvest volumes and economically feasible harvest volumes, with no mechanism to address this issue in the forest management planning manual. The size of the gap will vary depending upon market conditions. This situation is not unique to the ARF.

The actual harvest profile for area and volume varies significantly from planned levels. Planned yields of 109 m^3/ha are much lower than actual yields of 130 m^3/ha. Lowland stands and pulpwood dominated stands are being bypassed in favour of higher-yielding sawlog-leading stands near the mills on the southern portion of the forest. This harvest profile change matches current market conditions since the pulp mills have closed.

Although concentrating harvests on more productive sites nearer to the mills makes good economic sense, this trend raises questions about forest sustainability. If managed properly, this harvest profile may be sustained over the long term. The next plan should test if the new harvest profile that favours more productive sites near mills and an increasing representation of larch is sustainable over the long run (**See Finding #5, Appendix 1**).

Despite some concerns over the uncertainty of meeting forest scale longer-term objectives, the planning process supported by the framework of adaptive management will lead to corrective actions. Combined with the strong performance of operations at the stand and site scales, the audit team concludes that principles of sustainable forest management are being effectively followed on the ARF.

4.8 Contractual Obligations

The evidence collected by the audit team shows that the forest manager is meeting its contractual obligations. There was an exception where payment of funds to the Renewal and Forestry Futures Trust was interrupted due to the recession and debt restructuring of AbitibiBowater (renamed Resolute Forest Products Inc.). Appendix 3 provides a break down and an assessment of each obligation.

The forest manager is First Resources Management Group (FRMG) under contract to Abitibi River Forest Management Inc. (ARFMI) that holds SFL#551832. FRMG has a done a commendable job of managing this complex forest in a manner that meets the contractual obligations of the SFL.

Many of the audit team members were part of the previous audit team evaluating the performance of the subordinate forests that had been amalgamated to create the ARF. There were concerns that local expertise might be lost due to the restructuring and demographic changes, producing an unwieldy management system. However, the evidence shows that sufficient local knowledge was retained and the new management regime has been effective in delivering a cost-effective forest management program.

The contractual obligation to respond to previous IFA recommendations with action plans and status reports is an example of the challenges that the forest manager was facing after amalgamation. The previous IFAs are associated with the individual Forests prior to their amalgamation into the Abitibi River Forest. The audit of the Nighthawk Forest included the five-year audit period ending March 31, 2008, resulted in 13 recommendations and the preparation of an action plan and status report. IFAs for the Smooth Rock Falls, Iroquois Falls and Cochrane-Moose River Forests were completed by KBM for the five-year audit period ending March 31, 2010. These audits included 25, 26, and 19 recommendations,

respectively, with many of the recommendations overlapping in nature. As a result, a consolidated Abitibi River Forest action plan and status report were prepared to respond to the findings from these three audit reports, including a total of 23 consolidated recommendations and associated actions.

ARFMI shareholders represent wood consuming mills and producers (loggers), many of which are owned by First Nations. The current shareholder agreement is in alignment with many ideals supported by MNRF's tenure modernization efforts, with specific reference to increased First Nations participation in the forest-based economy.

The shareholder agreement has proven to be a considerably resilient arrangement. This was demonstrated by the sudden withdrawal of the largest shareholder (Resolute Forest Products), which under other circumstances may have lead to a collapse of forest management activities. The SFL potentially could have been surrendered to the government, as has been the case elsewhere in the province. Instead, ARFMI survived, remaining intact and diversified, now even thriving and demonstrating increased resilience to new challenges in the future.

Not all shareholders are satisfied with the current arrangement. There are issues with pricing and supply agreements within an imperfect market that challenge the fairness of the system. These complaints were heard by the audit team, but were judged to be beyond the scope of the audit as defined by the IFAPP. Ideally, these issues will be resolved at the boardroom table. Failing boardroom diplomacy, these issues can be the subject of mediation by MNRF or decisions by the Courts.

4.9 Conclusions and Final Recommendation

The audit team concludes that management of the Abitibi River Forest was generally in compliance with the legislation, regulations and policies that were in effect during the term covered by the audit, and the Forest was managed in compliance with the terms and conditions of the Sustainable Forest License held by Abitibi River Forest Management Inc. Forest sustainability is being achieved, as assessed through the Independent Forest Audit Process and Protocol.

The audit team recommends the Minister extend the term of Sustainable Forest License #551832 for a further five years.

APPENDIX 1 – FINDINGS/BEST PRACTICES

Independent Forest Audit – Record of Finding **Best Practice #1**
PRINCIPLE 2: PUBLIC CONSULTATION AND ABORIGINAL INVOLVEMENT **Criteria 2.5** Aboriginal Involvement in Forest Management Planning To examine the involvement of Aboriginal communities in forest management planning and its benefits. 1. Review and assess whether reasonable efforts were made to engage each Aboriginal community in or adjacent to the management unit in forest management planning as provided by the applicable FMPM and assess the resulting involvement and consideration in the plan or amendment.
Background Information and Summary of Evidence: There are seven Aboriginal Communities associated with the ARF. Three of these communities are shareholders in the ARFMI and hold significant harvesting rights. Provisions in the ARFMI exist to enable other communities to become shareholders and use this membership as a platform to negotiate harvesting rights. An expression of interest was made by another community to become a shareholder, but this request was not followed through by the community. The shareholder model has enabled active participation and economic benefits to three First Nations: Moose Cree First Nation, Taykwa Tagamou Nation (TTN) and Wahgoshig First Nation. These communities and/or their resource management companies hold harvesting rights that collectively account for nearly 44% of the wood volume allocated in Phase II. Additional 34% of the wood allocated to Tembec is currently harvested by TTN's harvesting company Island Falls Forestry. As a result, nearly 78% of the available volume in Phase II is currently allocated to be harvested by loggers associated with First Nation communities, providing significant economic and social benefits to these three communities through employment and revenue, recognized also by the interviewees. With the exception of one member of a First Nation community, there was strong support to the shareholder model from the interviewed First Nation license holders, operations managers and community members. It was found that ARFMI provides an effective forum to meet and find consensus on management related issues. The concerns of the one community member were related to the low proportion of upland allocation. However, this is a common issue for most shareholders in the Forest, as lowland forms a significant portion of the productive forest.
Best Practice #1: The ARFMI shareholder model has enabled effective participation of three Aboriginal communities in forest management decisions, resulting in ongoing involvement and significant economic benefits from the Forest to all three Aboriginal communities.

Independent Forest Audit – Record of Finding
Finding #1

PRINCIPLE 2 – PUBLIC CONSULTATION
Criterion 2.4: Individual Environmental Assessments (IEA)

Procedure(s) 1: Review the opportunities provided for, and the actual incidence of, requests for IEAs.

Background Information and Summary of Evidence: There are three IEA requests associated with the 2012–2022 FMP. The MOECC decision on IEA request regarding harvesting near cottages for the Phase I FMP was resolved within FMPM suggested timelines of 60 days following the receipt of the the IEA request letter by MOECC.

However, both Phase II IEA requests, one regarding planned operations around recreational/cottage lakes and other on a trapline, are still outstanding eleven months after the submission of the IEA request. The area that is currently excluded from the management because of the MOECC concurrence decision covers over 800,000 ha, of which 13,500 ha is allocated for harvest in Phase II. The audit team requested correspondence between MNRF and MOECC to verify the timelines associated with these two IEA requests, as listed below:

- Two parties submit IEA requests: Dec 20, 2016 (Tri-Lakes) and December 24, 2016 (Moose Cree First Nation).
- MNRF requests MOECC for concurrence: March 23 and provision of map on March 28, 2017.
- Concurrence decision of the Director of Environmental Assessment and Approvals Branch, Ministry of the Environment was received April 5, 2017.
- MOECC Information request: July 25, 2017
- MNRF response to MOECC with information packages: August 11, 2017

According to the FMPM, MNRF shall normally have 15 days to respond to the MOECC on the request and MOECC shall normally decide on the request within 45 days of the receipt of all necessary information from MNRF or provide reasons of delay and expected timeframe for decision. Whether this procedure was followed by MNRF and MOECC is currently unclear to the audit team based on the evidence received from MNRF.

The concurrence decision was received over three months later, after a stakeholder had approached local Member of Provincial Parliament to draw attention to the delay, and after which MNRF requested for concurrence. MOECC information request was received nearly three months following this request, to which MNRF responded in two and a half weeks. The required additional information on the IEA requests was received by MOECC over three months ago. Again, no reasons for the delay or predicted timelines were provided, based on the evidence made available to the audit team. Further, MOECC has handled these two separate requests under one case file, which again raises the question whether one request is unnecessary and responsible for holding back the decision on other.

The delays in permitting have suspended operations from 13,500 ha of planned operational areas for Phase II of the FMP, leading to unnecessary hardship for at least one operator, unnecessary angst among parties and increased administrative costs for forest managers. The current decision period for the Phase II IEAs is considerably longer than the suggested 45 days; a decision has not been reached after 11 months.

Finding #1: IEA decision timelines for Phase II are significantly longer than prescribed by the FMPM. These cause delays in operations, unnecessarily angsts in participants, and increase administrative costs for forest managers.

Independent Forest Audit – Record of finding
Finding #2

Principle: PRINCIPLE 3 – FOREST MANAGEMENT PLANNING
Criterion: 3.5.8 FMP renewal, tending, protection and renewal support

3.9.6 Phase II planned operations renewal, tending, protection and renewal support

Procedure(s): 3.5.8 Assess whether the renewal support requirements for planned operations

- have been documented in the plan as required of the applicable FMPM
- whether the renewal support is appropriate for the proposed management strategy

3.9.6 Assess whether the renewal support requirements for planned operations

- Have been documented in the Phase II planned operations as required of the applicable FMPM
- Whether renewal support is appropriate to support the renewal program

Background information and summary of evidence:

The renewal support sections in the Phase I and II 2012–2022 FMPs did not sufficiently meet the requirements of the FMPM. The planning requirements for renewal support are outlined in the 2009 FMPM as follows:

2009 FMPM B-30 ln 10-18

"The sustainable forest licensee's program for the collection of seed and the production of nursery stock, during the first five-year term will be described in the plan text. A forecast of the volume of seed to be used (by species), and the quantity of nursery stock to be planted (by species), for the first five-year term will also be documented in the plan text.

Tree improvement activities scheduled during the first five-year term to support the production of improved seed will be described in the plan text, with reference to existing seed orchards and tree improvement strategies. The locations of tree improvement activities will be portrayed"

The Phase I and II plans did not provide any information related to the forecasted volume of seedlings needed to support the planned levels of artificial renewal operations. Furthermore, no information was provided outlining forecasted seed utilization volumes (i.e., general collection and improved seed) needed to meet target seedlings numbers and planned aerial seeding operations. Also, the cFMP (2012–2013) and the Phase I and II plans did not provide any information outlining the planned seed collection program and volume targets. Lastly, the Phase I and II plans did not provide information related to planned tree improvement activities.

Currently, five 1st generation tree improvement orchards are used to source improved seed for the Abitibi River Forest. On average these orchards are approximately 30 years old, which was the original intended lifespans when they were initially established. There are two Pj orchards, of which only one is currently viable. The Aidie Creek orchard had its last cone collection in 2013. Currently the Raymore Pj orchard is the only source of improved Pj seed for the ARF. The current inventory of improved Pj seed is 216,000 for seed zone 18 and 2,600,000 for seed zone 24. There are three Sb orchards, of which two are currently viable. The Aidie Creek orchard is currently being evaluated and steps will be implemented to maximize a final cone collection when the orchard is cut. A final topping has occurred on the Evelyn and Island Sb orchards, though a maximum 5–10 year

lifespan is expected for improved seed production. The current inventory of improved Sb seed is 9,800,000 for seed zone 18 and 13,800,000 for seed zone 24.

An extensive breeding program was implemented between 2002–2004 for the 1st generation Pj and Sb orchards, which resulted in the extraction of seed for the establishment of second generation seed orchards. At the time, the NESMA partners decided not to proceed with funding the establishment of orchards due to a lack of further Provincial funding and policy direction. Some of the Sb 2nd generation test sites have been rogued and subject to GA injections, however their production capacity is unknown. Since a successional plan was not established, the availability of improved Pj and Sb seed for the ARF will be severely constrained following the end of life of the current 1st generation orchards.

Current corporate policy relies on guidance from the Tree Improvement Master Plan (1987) that provides the sole strategic direction for Ontario tree improvement programs. The forest sector in Ontario has changed dramatically since 1987, and initiatives related to provincial forest genetic resources policy have yet to be finalized. Currently, the tree improvement programs are managed by the tree seed associations and their members, leading to variation in terms of commitment to tree improvement and succession planning across the province. None the less, a FMU-level strategy is required to address the inevitable constraint of available improved seed for the Abitibi River Forest. Certain stopgap measures have been discussed, including converting current plantations to seed orchard and using improved seed from southern zones, although a plan addressing these measures has not been completed yet.

Finding #2: The renewal support section lacked the mandatory requirements of the FMPM for including a FMU-level strategy for the long-term use of improved seed on the forest.

Independent Forest Audit – Record of finding
Finding #3

Principle: PRINCIPLE 4 – PLAN ASSESSMENT AND IMPLEMENTATION

Criterion: 4.7 To review and assess through field examination whether information used in preparation of the FMP was appropriate and assess the implementation of the management strategy.

Procedure(s):

1. Review and assess in the field the implementation of approved access activities. Include the following
   - select a representative sample of each type of access activity (road construction, various types of water crossings - winter, culverts, bridges, road maintenance, decommissioning, and reclamation) from primary, secondary/branch and tertiary/operational roads constructed during the five-year period of the audit
   - determine whether the operations implemented were consistent with
     - locations in the approved FMP, AWS
     - use management (maintenance, access control, any decommissioning provisions)
   - assess whether roads have been constructed, maintained, and decommissioned to minimize environmental impacts and provide for public and operator safety

Background information and summary of evidence:

As required by the 2009 FMPM, the FMP describes road use management strategies included consideration of woodland-dwelling caribou. Since provincial caribou direction was still being developed at the time of the writing of this Plan, the relevant components were well done. In addition, the Supplemental Documents includes the ARFMI Implementation Toolkit "…to provide operators with relevant information needed to successfully implement the 2012–2022 Abitibi River Forest Management Plan."

The Toolkit includes several modules to guide operators through specific circumstances. Module 5.0 provides Road and Water Crossing Decommissioning Conditions and Procedures, including directions for decommissioning within the forest-dwelling caribou occupied range. This Module considers a range of potential impacts to caribou habitat, including recreational use, wolf travel and moose travel with its incidental draw for wolves. Furthermore, Module 5 speaks to "…the need to conduct experimental testing to determine inexpensive yet effective ways to rehabilitate roads back to the natural state as soon as possible after the cessation of forest operations."

During the field assessment, road decommissioning was only found to have been performed in a small portion of one field stop, though water crossing decommissioning was found on several sites. Harvesting operations have been ongoing in many blocks for several years with very limited road decommissioning. While the limited level of decommissioning may be reasonable, no real progress has been made with respect to "…conduct(ing) experimental testing to determine inexpensive yet effective ways to rehabilitate roads back to the natural state as soon as possible after the cessation of forest operations." The design of experimental testing, including the types of rehabilitation to test, should include staff from both ARFMI and MNRF.

Finding #3: No progress has been made in experimental testing to determine inexpensive yet effective ways to rehabilitate roads back to the natural state as soon as possible after the cessation of forest operations, as outlined in the 2012-2022 FMP (Supplemental Documentation, ARFMI Implementation Toolkit).

Independent Forest Audit – Record of finding
Finding #4

Principle: PRINCIPLE 7 – ACHIEVEMENT OF MANAGEMENT OBJECTIVES & FOREST SUSTAINABILITY

Criterion: 7.4.2 To draw conclusions on the achievement of management objectives and forest sustainability. To assess whether the associated analyses, reviews and reports have been prepared in accordance with the applicable FMPM and whether they are accurate and represent effective analyses and progress reviews.

Procedure(s): Procedure(s) number; relevant procedure wording (or paraphrasing/excerpts and cross reference to IFAPP in instances where procedure wording is lengthy).

Background information and summary of evidence:

During the field audit, some of the blocks selected for natural renewal were found to have received subsequent artificial renewal treatments (e.g. Dokis 100 & A-160). It was determined through field verification that the implementation of these treatments was justifiable based on the site conditions and the implemented SEM monitoring program. The auditee noted that areas are declared for natural renewal shortly after harvest based on the post harvest SGR assessment, to comply with FMPMs timelines for natural declaration.

2009 FMPM E-10 ln 36-38

"Areas planned for natural regeneration will normally be reported in the year in which the disturbance (harvest or natural) occurred. If salvage harvest is being considered in areas of natural disturbance, reporting of natural regeneration may be delayed for one or two years."

Based on subsequent SEM assessments of these naturally declared stands, the silvicultural forester may assign artificial renewal treatments if it become evident that species and stocking targets will not be achieved. These areas are subsequently declared as being renewed artificially in the ARs. Further to this, the SGRs are updated to correspond to the most recent Forest Operations Prescription (FOP).

FRMG demonstrated that they have an effective system for tracking these areas and updating the associated SGRs. However, these updates are not being retroactively corrected when the AR data is being rolled up for the trends analysis reports. Double declarations were found to total 745 ha in the 2010 FMP period and 395 ha in the current 2012–2022 FMP period.

Finding #4: The total area of declared natural renewal is not being amended to account for changes to the renewal prescriptions in the Trends Analysis Report.

Independent Forest Audit – Record of finding
Finding #5

Principle; Criterion and Procedure;

6.5.2 Examine whether the [annual] report[s] assess[es] progress towards the objectives and targets identified in the FMP, explains any significant deviations between the scheduled/planned activity versus the actual activity and assesses the potential implications on future operations.

7.5.1. Review and assess the conclusions related to sustainability and the recommendations in the latest Year Ten AR including: 1) comparison to FMPM requirements, and 2) appropriateness of the conclusions.

Background information and summary of evidence:

A review of the Annual Reports (ARs) and the Trends Analysis Report (TAR) found them to comply with all requirements. However, the assessment and explanation of trends was deficient in some details, and in describing implications for operations and future plans.

For example, a forest unit classifications system error was identified by the planning team related to the classification of SP1, SB1, SB3 and SF1 forest units. The SF1 FU is meant to capture a late successional stand using balsam fir and white spruce as key indicators while the SP1 FU is meant to be reflective of a fire origin conifer stand or a Sb/Sw plantation. The Structured Query Language for SP1 limits Sw content to 20% after which the stand is deferred to an SF1 classification. Based on this criterion, planted Sw stands are typed as SF1 FUs which is contrary to the direction of technical note 21 (Standard Forest Units for Northeastern Ontario Boreal Forests). Currently the distinction between lowland and upland spruce stands (SB1, SB3 vs SP1) is defined by ecosite, which is determined by a photo interpreted inventory. Since small variation in elevation (<1m) can alter stand ecosites, these three FUs can often be miss-assigned, leading to inaccurate FU calls. These issues were identified during the development of the base inventory and corrections were made to address these discrepancies.

The audit team, however, did not consider the implications for reporting and monitoring. Subsequently, the report author noted this issue after the ARs and TAR had been submitted. This error was not detected by MNRF reviewers. The error contributed to showing a strong deviation in forest composition targets to more SF1 cover type area being regenerated, rather than less. Ultimately, this ran contrary to plan objectives. Despite this erroneous trend, the assessments suggested that plan targets were being achieved or were consistent with the Long-Term Management Direction (LTMD). Clearly the author noted the trend and took corrective action, but the reports do not reflect the same level of thoughtful analysis.

The TAR shows a striking change in the actual versus planned harvest profile. Higher-yielding stands containing sawtimber are disproportionately favoured over the full allocation that includes lower yielding pulpwood stands on lowlands in the most recent term. Previous five-year terms showed a much more consistent actual versus planned harvest profile and yields. The closure of two pulp mills during the recent term explains this trend.

In addition, forest access will become more challenging under climate change. Larch regeneration is more abundant than was planned for. The Boreal Landscape Guide assumes historical climate regimes will persist in the future, making desired future forest conditions uncertain.

It is unlikely the LTDM objectives will be achieved under these conditions, but the ARs and TAR do not flag these major issues. This calls into question the appropriateness of the conclusions presented in these reports (see audit

team assessment of objective achievement in Appendix 2). There are significant issues with implications for wildlife habitat and future wood supply that should be taken into account in future plans.
Finding #5: Annual Reports and the Trends Analysis Report were deficient in describing analyses, trends and implications for operations and future plans. A harvest profile that varies significantly from the planned profile requires careful consideration in developing the next plan.

APPENDIX 2 – MANAGEMENT OBJECTIVES TABLE

Summary of the status of the 2012-22 FMP Objectives

OBJECTIVES	AUDITOR ASSESSMENT (Achieved, partially achieved or not achieved)	AUDITOR ASSESSMENT AND COMMENTS
Objective 1. To provide for a distribution of disturbances patches that more closely resemble the expected size, composition and age produce by wildfire.		
1.1 Frequency distribution (in percent) of forest disturbances by size class.	Achieved	Planned operations have shown movement towards the natural disturbances template when compared to plan start. The forest is currently underutilized due to economic conditions, but utilization levels seem to be increasing. The assessment will be done upon completion of the Plan.
1.2 Young Forest Patch Size - Demonstrate the current and planned young forest patch size move towards the draft landscape guide ranges for 3E Ecoregion.	Partially achieved	The desirable level and target were partially achieved as three of the nine young forest patch size frequencies moved towards the SRNV (2501–5000, 5001–10000, 10001–20000), applicable to the application of DCHS, while five indicate movement away from the SRNV (1–100, 101–250, 251–500, 501–1000, 20000+), and one size class (1001–2500) did not change.
1.3 Texture of the Mature and Older Forest Matrix - Demonstrate that current and planned texture of the mature and older forest matrix moves towards the draft landscape guide ranges for 3E Ecoregion.	Not achieved	The desirable levels and targets for 500 km^2 and 5000 km^2 patches were not achieved. Decreases in the smaller proportion classes and increases in the larger proportion classes is a function of defragmenting the landscape through the application of the DCHS coupled with the current forest composition and structure in the southern and central portions of the Forest.
1.4 Area by forest type and age class (Landscape Classes and Forest Unit Groupings consistent with Milestones identified in the draft Landscape Guide Region 3E) and total amount of young forest and mature and old forest (all FU).	Achieved	Most landscape classes move towards or are maintained within NRVs (target level), except for the mature and older upland conifer landscape class and the mature and older lowland conifer class. However, considering the current underutilization of lowlands and increasingly restricted access due to winter logging, the lowland

		mature and old conifer class will likely increase.
1.5 Amount and distribution of overmature forest on the Forest (Old Growth Forest by FU consistent with milestones identified in the draft landscape guide 3E).	Achieved	Amount and distribution of over mature forest fall within or move towards NRVs for most forest units. The exception is LC1 that is below NRVs and is projected to further decrease medium term. However, considering the increasing proportion of larch in the landscape, this forest unit is likely to increase long-term.
1.6 Amount and distribution of overmature forest on the South SMZ (Old Growth Forest by FU consistent with milestones identified in the draft landscape guide 3E (area weighted by Initial Total Forest by Forest Unit).	Achieved	The desirable level and target have been achieved for most of the forest unit indicators relating to overmature forest unit area in the South SMZ, except for the desirable level for PJ2.
Objective 2. To maintain or increase the amount of PRW forest unit.		
2.1 Amount of area in the PRW forest unit grouping in the SMZ.	Achieved	The target level is to plant 5,000 red/white pine seedlings per year in other forest units and monitor and maintain PRW area over time. The desirable level and target were achieved for both by the end of Phase I.
Objective 3. Provide habitat area for forest-dependent provincially and locally featured species.		
3.1 Area of habitat for forest dependent Provincially and locally featured species on the North SMZ.	Achieved	The projected preferred habitat levels trend toward the natural benchmark. Exceptions are short-term for Black bear foraging and lynx denning as well as moose browse in the latter terms.
3.2 Area of habitat for forest dependent Provincially and locally featured species on the South SMZ.	Achieved	Desirable levels and targets achieved for each of the wildlife species throughout the planning horizon in the South SMZ.
3.3 Percent of capable area in suitable condition within core marten habitat areas in the South SMZ.	Achieved	At plan start, there was 10.5% of the capable area on the South SMZ in suitable condition for marten habitat. This was projected to increase to 11.9% by the year 2072, with all projections showing achievement of the indicator.
3.4 Quality and size of marten cores in the South SMZ.	Achieved	Lower quality marten cores were created at 2012 for spatial arrangement. By 2072 marten core targets are projected to be met.
Objective 4. To ensure the protection of habitat required by the endangered species act for identified species at risk inhabiting the Forest.		
4.1 Compliance with prescriptions developed for species at risk.	Partially Achieved	2012 FMP states “Timing of Assessment: Assessment to be completed upon completion of the 2012–2022 FMP.”

		The Caribou Recovery Plan is in place, but road decommissioning practices need to be accelerated **Finding #3 Appendix 1**
Objective 5. Provide habitat for forest dwelling woodland caribou within the local population range.		
5.1 Area of Caribou winter suitable habitat within the Abitibi River Forest portion of the Kesagami Range (North SMZ).	Achieved	The desirable level and target is achieved for the projected Caribou winter suitable habitat.
5.2 Area of Caribou mature conifer within the Abitibi River Forest portion of the Kesagami Range (North SMZ).	Achieved	The target of mainlining within IQRs is achieved for the projected Caribou mature conifer habitat. The area is predicted to reduce short-term and then increase long-term towards median value.
5.3 Texture/arrangement of mature conifer habitat (6,000 ha size class)(North SMZ).	Achieved	The slight increase in the >28% texture size class was achieved by plan end.
5.4 Texture/arrangement of mature conifer habitat (30,000 ha size class) (North SMZ)	Achieved	The slight increase in the >28% texture size class was achieved by plan end.
5.5 Texture/arrangement of winter suitable habitat (6,000 ha size class) (North SMZ).	Achieved	The slight increase in the >75% texture size class was achieved by plan end, but there was a reduction in texture and arrangement of the 61–75% size class.
5.6 Texture/arrangement of winter suitable habitat (30,000 ha size class) (North SMZ).	Achieved	The increase in the 61–75% texture size class was achieved by plan end, but there was a reduction in texture and arrangement of the >75% size class.
5.7 Percentage of DCHS in "online" condition by area in the North SMZ.	Achieved	Target and desirable level is 40% of online blocks per area. 46% is predicted medium term and 45% long-term.
5.8 To track CLAAG and HARP areas on the Forest harvested during the term of the 2012-22 FMP.	Achieved	The SFL Manager tracks CLAAG and Harp areas.
Objective 6. Maintaining and enhancing forest ecosystem condition and productivity.		
6.1 Area and percent of natural disturbance area that receives a salvage harvest.	Achieved	This FMPM requirement has been met There where no large disturbances requiring salvage during the audit term.
6.2 Salvage and regeneration of poplar decline area	Achieved	2,038 ha of Poplar decline areas harvested during the P1 2012–2022 FMP of which 1,264 ha have received a primary silvicultural treatment.
6.3 Proportion of conifer (Pj, Sb and Sw) in the future pure conifer forest units in the DCHS 'A' blocks within the North SMZ.	Not measured at the time of the audit	The assessment is to be completed upon the end of the 2012–2022 FMP implementation. Current area harvested, treated and declared free-to-grow since the start of the 2012 FMP is in South SMZ.

6.4 Percent of harvested forest area declared as free growing by forest unit.	Partially Met	68% of the areas surveyed during the P1 2012–2012 FMP were determined to free growing. The balance of the areas was determined to need additional time to meet the SGR height requirements. A sample of the current NSR areas was viewed during the field audit.
6.5 Planned and actual percent of the 2012-2022 harvest area treated by silviculture intensity.	Achieved	Areas treated during the audit terms were in line with the planned renewal intensity and actualized forest unit harvest profile
6.6 Planned and actual percent of area successfully regenerated to the projected forest unit by forest unit.	Partially Met	Six forest units (BW1, MWD, PJ1, PO1, SF1 & SP1) met the silvicultural success targets set in the PI 2012-2022 FMP. These forest units total 66% of the total area declared FTG. Figure 1 (section 4.6.2) provides an area based summary of renewal trends on the ARF showing that renewing stands are developing in accordance with the plan model. **See also Finding #5 Appendix 1**
6.7 Establish a benchmark for the use of herbicides on the Abitibi River Forest and explore viable alternatives that may influence future herbicide levels (qualitative objective).	Achieved	The SFL has been FSC certified since 2013 and the FSC certification requires the achievement of this objective and the audit team concurs with the FSC findings.
Objective 7. Provide a sustainable, continuous and predictable harvest level and supply of fibre from the Forest		
7.1 Long-term projected available harvest area	Uncertain	The planning team produced a credible projected harvest area meeting FMPM requirements. The next plan should test if the current harvest profile favouring more productive sites near mills is sustainable over the long run (**Finding #5, Appendix 1)**
7.2 Long-term projected available harvest volume by species group	Uncertain	The planning team produced a credible projected harvest volume meeting FMPM requirements. The next plan should test if eth current harvest profile favouring more productive sites near mills is sustainable over the long run (**Finding #5, Appendix 1)**
7.3 Actual harvest area, by forest unit	Not Achieved	Actual harvest area targets not achieved for the majority of forest units as a result of economic conditions. The harvest profile for area and volume varies significantly from planned levels (109 m^3/ha planned vs 130 m^3/ha actual) compared to previous longer-term planned and actual values that aligned

		with each other at 90-100 m^3/ha (**Finding #5, Appendix 1)**
7.4 Actual harvest volume by species group	Not Achieved	Actual harvest volume targets not achieved for the majority of species as a result of economic conditions. The harvest profile for area and volume varies significantly from planned levels (109 m^3/ha planned vs 130 m^3/ha actual) compared to previous longer-term planned and actual values that aligned with each other at 90–100 m^3/ha (**Finding #5, Appendix 1)**
Objective 8. Forestry operations follow the FMP in order to minimize conflicts with non-timber resource users and to protect non-timber values so that all users have the opportunity to benefit from the Forest.		
8.1 Percent of forest operation inspections in compliance, by activity and remedy type.	Achieved	Table AR-6 compliance numbers show: 2012–2013 = 96%; 2013–2014 = 100%; 2014–2015 = 98%; 2015–2016 = 98%; and 2016–2017 = 97%.
8.2 Compliance with management practices that prevent, minimize or mitigate site damage (% of inspections by noncompliance by remedy type).	Achieved	100% of the FOIP reports are in compliance with management practices that prevent, minimize or mitigate site damage
8.3 Compliance with management practices that protect water quality and fish habitat (% of inspections in non-compliance, by remedy type).	Achieved	FOIP shows non-compliances for water quality and fish habitat AOCs but overall numbers verify that targets were achieved (see 8.1 above). Targets for specific values can only be assessed with more detailed information.
8.4 Compliance with the prescriptions for the protection of resource-based tourism values (% of inspections in noncompliance, by remedy type).	Achieved	Only one non-compliance for AOC protecting resource-based tourism value found in a review of FOIP for the 2012–2017 period.
8.5 Compliance with prescriptions for the protection of First Nation values (% of inspections in non-compliance, by remedy type).	Achieved	No non-compliances found for AOCs protecting First Nation values in a review of FOIP for the 2012–2017 period.
Objective 9. Provide opportunities for social and economic benefits to a to a variety of sources		
9.1 Kilometers of SFL roads per square kilometer of Crown forest in the North SMZ.	Not Achieved	Kilometres of SFL-responsible roads has increased 10% (vs “maintain or reduce” target in FMP), during the first 4 years of FMP implementation in the North SMZ. Due to a shift in harvest profile and a slow rate of harvest. **Finding #3 and #5 Appendix 1**

9.2 Kilometers of SFL roads per square kilometre of Crown forest in the South SMZ.	Not Achieved	Kilometres of SFL-responsible roads has increased 20% (vs. the 15% target) during the first 4 years of FMP implementation in the South SMZ. Due to shift in harvest profile **Finding #3 and #5 Appendix 1**
Objective 10. To minimize productive forest area lost by forest management activities		
10.1 Managed Crown forest available for timber production.	Achieved	The SFL Manager and shareholders have implemented a slash management program on productive sites that helps to minimize productive forest are lost to forest management activities. Although lowland sites are less productive, additional progress might be made with slash management on these sites. The forest estate projection modeling accounts for this loss of productivity correctly if not conservatively
Objective 11. Provide opportunities for local Aboriginal communities for increased participation in the forest management planning process		
11.1 Assessment of the quality of the level of participation of the Aboriginal communities in the development in the forest management plan.	Partially achieved	Out of five communities surveyed with the Forest, only one community provided feedback through a survey sent out by the planning team. The audit team spoke with three community representatives who acknowledged that opportunities for participation are generally provided through information letters, opportunities to attend planning team, open houses and draft document reviews. However, active participation is generally limited by both human resource and funding limitations within communities.
11.2 Number of Aboriginal communities contacted to review and provide comment on AWS.	Achieved	All seven communities associated with the Forest were contacted to provide opportunities to review and comment upon AWSs 2012/13–2016/16.
11.3 In addition to normal FMP consultation requirements, actively identify and participate in opportunities to transfer forest management information to aboriginal communities (qualitative objective).	Achieved	First Nation participation in a Desired Future Forest Condition meeting occurred to identify and/or align management objectives. In addition to First Nation planning team membership, information centers were held in each community as requested and additional meetings with First Nation members took place to address outstanding concerns. As well, AWS reviews and meetings are held annually with First Nations as requested.

Objective 12. Respect for aboriginal values, knowledge and uses.		
12.1 Identified and addressed aboriginal values using aboriginal traditional knowledge.	Achieved	Opportunities to identify values and recommend protection measures, and contribute to the Desired Future Forest Condition were provided through management planning and AWS reviews. Three community representatives interviewed were general agreement with the planning direction and values management, except for one ongoing issue resolution regarding planned harvesting on a trapline.
Objective 13. LCC involvement in the development of the FMP		
13.1 LCC self-evaluation of its effectiveness in plan development	Achieved	Of the approximately 40 survey recipients of the three LCCs, a total of 17 surveys were completed. At the completion of the 2012–22 Abitibi River Forest FMP, LCC members agreed that their participation in the FMP was effective and informed. An area of improvement will be to expand the membership of the Cochrane LCC and maintain the interest of its current members. It will also be important to continue to provide educational opportunities for LCC members, building capacity to understand current FMP requirements as well as new developments.
Objective 14. Innovation and research		
14.1 Evaluate the use of new methodologies resulting from innovative forest management research.	Achieved	Innovations introduced during the audit term are well documented in the Trends Analysis Report
14.2 Explore opportunities to reintroduce fire to the landscape as a silvicultural tool.	Achieved	There were no complex prescribed burns during the audit period. These opportunities are being explored but the costs and risks currently outweigh perceived benefits.
Objective 15. Promote sustainable forest management		
15.1Track the events attended by MNR and/or Industry promoting Sustainable Forest Management	Achieved	MNRF and ARFMI staff attended 38 events promoting sustainable forest management. This objective is linked to SFI certification requirements and the forest was certified and passed surveillance audits during the audit period

APPENDIX 3 – CONTRACTUAL OBLIGATIONS

The following table provides the contractual obligations of the Abitibi River Forest. The list of obligations in the table below includes Criterion 8.1.1.1-8.1.21.2. Each condition is provided on a separate row with comments by the audit team to report on the degree of attainment of the condition.

OBLIGATION	MANAGER PERFORMANCE
Payment of Forestry Futures and Ontario Crown charges	There are currently ~$708,000 in outstanding Crown Charges and ~$104,000 in outstanding Forestry Futures dues for the Abitibi River Forest. These arrears are associated with the AbitibiBowater insolvency process. All other crown charges and Forestry Futures charges were payed during the audit term.
Wood Supply Commitments, MOAs, sharing arrangements, special conditions	The wood supply requirements have been met based on interviews and a review of annual reports. Many of these issues are now part of the daily business of the Manager under contract to the SFL shareholders. The shareholder model shows great resilience under extraordinary changes during the audit term. There have been new opportunities for First Nations Communities (see **Best Practice #1 in Appendix 1**). Some shareholders are deeply unsatisfied with the shareholder system outcomes in terms of wood supply commitments; however, their grievances are beyond the scope of this audit.
Preparation of FMP, AWS and reports; abiding by the FMP, and all other requirements of FMPM and CFSA	The Manager completed all required plans and reports to the required standards.
Conduct inventories, surveys, tests, and studies; provision and collection of information in accordance with FIM	The Manager completed required surveys in accordance with regulated manuals although there is room for improvement in the subsequent analysis and reporting of these data (see **Finding #5 Appendix 1**)
Wasteful practices not to be committed	There were very few instances observed in the field of wasteful practices. These observations are consistent with compliance reports. These minor occurrences were related to site and weather conditions.
Natural disturbance and salvage SFL conditions need to be followed	There were limited areas of salvage operations that required special conditions, during the term of the audit. These included 2,038 ha of aspen stands affected by prior insect outbreaks and a fire that was not economical to salvage.
Protection of the license area form pest damage, participation in pest control programs	Not audited following risk assessment
Withdrawals from license area	Not audited following risk assessment

Audit action plan and status report	Action plan and status reports were prepared by the manager in accordance with contractual obligations and action items were observed to be effectively implemented by the audit team
Payment of forest renewal charges to Forest Renewal Trust (FRT)	The majority of the FRT charges were payed during the audit term however an arrears of ~$420,000 was noted on the FRT fund. The non-payment of these renewal charges was directly related to the AbitibiBowater insolvency process. ARFMI is in the process of applying to the FFTF for re-imbursement of these outstanding FRT funds.
FRT eligible silviculture work	The Manager completed FRT eligible work in accordance with planned specifications and funding eligibility requirements.
FRT forest renewal charge analysis	The Manager completed the required renewal charge analysis and the assumptions were considered to be consistent with the field conditions observed by the audit team. Since 2014 the Regional MNRF has taken over the responsibility of approving the renewal charge analysis.
FRT account minimum balance	The minimum balance was slightly underachieved from March 2014–2017 (avg. of $184,683). This represents a marginal shortcoming of ~ 2%. The current minimum balance is based on the aggregated totals from the previous FMU and should be updated to represent the current cost of addressing one year's worth of renewal liabilities on the ARF.
Silviculture standards and assessment program	The Manager complies with standards and assessment programs required by the SFL.
Aboriginal opportunities	The Manager, MNRF, and shareholders have created exceptional aboriginal opportunities during the audit period for three First Nation communities (see **Appendix 1; Best Practice #1**)
Preparation of compliance plan	Not audited following risk assessment
Internal compliance prevention/education program	The Manager has developed a toolkit and programs that enable compliance through education and prevention.
Compliance inspections and reporting; compliance with compliance plan	The Manager completes compliance inspections in accordance with eth compliance plan
SFL forestry operations on mining claims	The Manger's toolkit specifies procedures to protect mining claims. These procedures were not sampled in this audit, as this aspect of the forest management was assessed low risk and applicable optional protocols were not included.

APPENDIX 4 – AUDIT PROCESS

The Independent Forest Audit Process and Protocol (IFAPP) was developed by MNRF to provide a comprehensive and consistent method of evaluating forest management activities on Crown land. The IFAPP is based on eight guiding principles and contains 106 procedures that are applicable to the Abitibi River Forest. The audit procedure serves as a framework to provide a structured approach to evaluating whether forest management activities meet the requirements governing forestry practices on Crown land in Ontario.

RISK ASSESSMENT

The audit team conducted a risk analysis of the management unit that included the reviews of trends analysis and the district silvicultural effectiveness monitoring (SEM) data. These documents were combined with the previous IFAs (and related Action Plan and Status Report), current forest certification status and summary data from preliminary interviews with the auditees and key stakeholders to complete the risk assessment. The assessment followed IFAPP protocols that were considered as "optional" and ranked based on their potential impact on forest sustainability and the likelihood of occurrence.

The Risk Assessment revealed following concerns:

- Limited road decommissioning activities in the Woodland Caribou zone. Lack of timelines in the FMP for decommissioning. Lack of prescriptive guidance on road decommissioning leaves it up to interpretation what kind of activities will be prescribed. Concerns that Overlapping Licensees do not have sufficient capacity to undertake decommissioning of former Resolute roads.
- Concerns related to the forest unit definitions and yield curves and whether the forest is tracking as per FMP, especially in the caribou zone. Concerns were also expressed on the vintage of data used in planning and on monitoring programs for ongoing data collection and ensuring that yield curves are accurate. Monitoring issues were pointed out also for the SEM, roads, and water crossings.
- There were concerns related to the FMU progressing as per identified future desired benefits.
- There is a high number of issue resolution processes and bump-ups with delayed MOECC response during the past seven years that have caused significant delays in the FMP implementation.
- There are concerns regarding the information flow between MNRF and SFL (e.g. limited information is available to MNRF how the requests from the public are dealt with). There are delays in notifying MNRF about start-ups. From the SFL point of view, dealing with three Districts can be challenging. Although Cochrane District is leading, interpretations of SFL obligations can vary between districts.
- There were concerns related to insufficient human resources for compliance monitoring.
- Operators may have difficulties identifying and avoiding dried up and masked seepages. There is currently a lack of proper guidance in the Stand and Site Guide. There is limited capacity within the District to utilize models provided by MNRF science staff.
- Concerns were expressed regarding the effectiveness and role of the LCCs in forest management planning, specifically the LCC members' knowledge and ability to input and understand FMP process. In addition, four forest management units were amalgamated to form one large Abitibi River Forest,

resulting in three LCCs to be attached to the FMU. Two of the LCCs have updated their Terms of Reference to reflect the amalgamation, but the third LCC is still in the process of doing so.

- The proportion of NSR found in the FTG surveys is high. While NSR values normally lie around the 5–10% mark, NSR values for the FTG surveys provided are in the 40% range. We believe this warrants further investigation.

There were 17 associated optional protocols that were identified posing sufficient risk to be included in the audit.

Table 1 summarizes the number of procedures selected by the audit team for audit based on the direction provided by the IFAPP.

Table 1. IFA Procedures audited, by risk category

Principle	Optional - Applicable (#)	Optional - Selected (#)	Optional - % Audited	Mandatory – Audited (#) (100%) Audited)	Comments
1. Commitment	2	0	0	0	
2. Public Consultation and Aboriginal Involvement	5	4	4	3	2.1.1; 2.2; 2.3; 2.4
3. Forest Management Planning	41	5	5	38	3.3.2.2; 3.5.11.1; 3.5.11.2; 3.5.12.1; 3.13.2
4. Plan Assessment & Implementation	2	0	0	9	
5. System Support	2	1	1	0	
6. Monitoring	12	6	6	6	6.1.1; 6.1.2; 6.2.1.2; 6.2.1.4; 6.2.2.1; 6.2.2.2
7. Achievement of Management Objectives and Forest Sustainability	0	0	0	15	
8. Contractual Obligations	5	1	1	18	8.1.17
Totals	**69**	**17**	**17**	**89**	**-**

Notes:

1. Audit Procedures:

a. Optional – only those optional procedures identified through management unit risk assessment or determined to be required through the audit process are audited; and

b. Mandatory – all mandatory procedures are to be audited.

2. Applicable procedures do not include those which are excluded because the forest is currently certified to CSA, FSC or SFI standards.

AUDIT PLAN

KBM prepared an audit plan that described the schedule of audit activities, audit team members and their qualifications, audit participants, and auditing methods. The audit plan was submitted to MNRF, ARFMI, FFTC, Cochrane LCC, Timmins LCC and Kirkland Lake LCC.

SUMMARY OF CONSULTATION AND INPUT TO AUDIT

Public Response

The invitation to fill in an online survey and contact auditors for in-person or phone meeting were made through following platforms: Cochrane Times Post, Timmins Daily Press, and CJKL FM radio station. The advertisement identified the purpose of the audit and invited the public to submit comments to KBM by using an online survey or by contacting KBM directly. All three LCCs were emailed with the request to distribute the survey and audit information in their communities, and this request was repeated during the IFA information presentations during the LCC meetings of all three LCCs. The add was also placed by a Cochrane LCC member to the Iroquois Falls town website.

The audit team received a phone call from a person in Iroquois Falls concerned about the harvesting of old-growth stands, and the competitive advantage of Quebec loggers to harvest in ARF due to lower licensing fees in Quebec. This person was also concerned about wood leaving for Quebec mills while Iroquois Falls mill was shut down. It was also pointed out that Ontario loggers cannot operate in Quebec due to regulation. Another person, based out of Iroquois Falls, was concerned about the transparency of the ARFMI and the limited information available on operations. Concerns were expressed on how and whether areas formerly operated by Resolute are renewed.

Two emails with surveys were received from Snowmobile Club members who were satisfied with ARFMI informing the Club on operations. A survey was received via mail that highlighted an area where herbicide treatment had carried over to private land. This area was in Timiskaming Forest and the information was provided to Kirkland Lake MNRF District staff.

Two surveys were received via Survey Monkey. One person expressed concerns regarding herbicide, wood leaving Ontario and the tenure modernization process. The other person was concerned about road building, maintenance and compliance monitoring.

Local Citizens Committee

A letter was emailed to each of member of all three LCCs associated with the Forest to notify them of the audit and invite their input. Follow-up emails were sent approximately two weeks after the letters were sent. Prior to the field audit, all LCCs received information presentation delivered by an audit team member clarifying the purpose of the audit and LCC's role in the audit. An auditor also solicited input to the risk assessment and asked for advice on which communication channels for advertising would be most effective. An auditor also had the opportunity to attend a Cochrane LCC meeting, which took place during the field audit. This was especially useful as the Cochrane LCC is the lead LCC for the ARF. Four members of the Cochrane LCC were interviewed.

Aboriginal Communities

Following email discussions with the MNRF Resource Liaison Officer, KBM contacted the Chief or Lands and Resource specialist of each of these Aboriginal communities through email and telephone to

request their input, encourage them to contact KBM if they wished to participate in the audit, and ask if they required more information before making a decision. KBM also offered to arrange in-person meetings with each of these Aboriginal communities. Follow up emails and at least two phone calls were made to each community in an attempt to set up an interview.

In-person interviews were conducted with two of the TTN community members, one being the Lands and Resources specialist who had been at this position through the audit period. The other community member was associated with the ongoing Issue Resolution request regarding planned harvesting on community traplines. A telephone interview was conducted with a former Lands and Resource specialist of the Community of the Beaver House, and the Chief of the Flying Post First Nation. In addition, interviews were conducted with the managers of the two First Nation owned resource companies that hold significant harvest share in the ARF: Island Falls Forestry and Wahgoshig Resources Inc.

Overlapping Licensees, Contractors and Commitment Holders

There was no mailout for this audit. The newspaper advertisement, with a link to the online survey, provided the notice of audit for these groups. Interviews were conducted during the field audit with several license holders and operators.

Ministry of Natural Resources and Forestry

MNRF District staff participated in all aspects of the audit. Interviews were held with the former District Manager, Area Supervisors, Management Forester, Biologist, Technicians and other support staff. The MNRF District personnel also accompanied the audit team in the field during the truck day. A Regional MNRF representative also participated in the audit through the delivery of needed documents, attendance of a portion of the field component of the audit and the main audit meetings. An MNRF Integration Branch representative also participated through telephone attendance of the closing meeting.

Forestry Futures Trust Committee

Two members of the Forestry Futures Trust Committee participated in the pre-audit meeting and the closing meeting. One member participated in the truck field tour.

Field Site Selection

The audit team conducted the preliminary site selection prior to the pre-audit meeting. Annual Work Schedules and Annual Reports were used to ascertain the amount and type of forest operations carried out on the ARF during the audit period. A stratified random sample of sites was then selected to ensure that sites were representative of a cross-section of all activities conducted on the ARF during the audit period. The auditees were informed of the site selections before the helicopter audit and truck day.

Table 2. Sampling intensity for each forestry activity examined as part of the field site visits.

Treatment	Sample	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017*	Total
Natural Regeneration	AR Total Ha's	2,655	11,991	3,475	1,653	1,815	2,255	3,974	27,817
	Sample Area Ha's	242	863	362	444	340	317	250	2,818
	Sample %	9.1%	7.2%	10.4%	26.9%	18.7%	14.1%	6.3%	10.1%
Seeding	AR Total Ha's	185	-	-	307	367	439	583	1,882
	Sample Area Ha's	70	-	-	300	-	93	294	757
	Sample %	37.8%	0.0%	0.0%	97.7%	0.0%	21.2%	50.4%	40.2%
Planting	AR Total Ha's	1,807	1,361	1,777	3,282	3,471	3,804	2,155	17,656
	Sample Area Ha's	199	157	110	405	180	363	389	1,803
	Sample %	11.0%	0.0%	0.0%	12.3%	5.2%	9.5%	18.1%	10.2%
Mechanical Site Preparation	AR Total Ha's	804	-	872	3,160	2,797	2,056	1,221	10,910
	Sample Area Ha's	183	-	361	367	165	372	265	1,713
	Sample %	22.8%	0.0%	0.0%	11.6%	5.9%	18.1%	21.7%	15.7%
Chemical Site Preparation	AR Total Ha's	419	481	1,541	806	199	1,202	1,054	5,701
	Sample Area Ha's	-	257	-	-	204	115	-	576
	Sample %	0.0%	53.4%	0.0%	0.0%	102.3%	9.6%	0.0%	10.1%
Chemical Tending	AR Total Ha's	5,051	9,465	4,259	5,219	5,174	4,219	4,493	37,879
	Sample Area Ha's	630	715	365	575	545	480	495	3,805
	Sample %	12.5%	7.6%	8.6%	11.0%	10.5%	11.4%	11.0%	10.0%
Spacing	AR Total Ha's	-	-	-	-	-	-	-	-
	Sample Area Ha's	-	-	-	-	-	-	-	-
	Sample %	-	-	-	-	-	-	-	-
Harvest	AR Total Ha's	8,403	6,007	4,541	7,857	7,783	8,428	7,162	50,181
	Sample Area Ha's	812.0	662.0	450.0	928.0	605.0	909.0	758.0	5,124
	Sample %	9.7%	11.0%	9.9%	11.8%	7.8%	10.8%	10.6%	10.2%
FTG including NSR sample	AR Total Ha's	18,693	1,437	690	8,825	9,299	9,701	7,975	56,619
	Sample Area Ha's	2,535.0	505.0	421.0	948.0	838.0	1,044.0	779.0	7,070
	Sample %	13.6%	35.1%	61.0%	10.7%	9.0%	10.8%	9.8%	12.5%

*2016-17 areas are based on information provided by the SFL

PRE-AUDIT DOCUMENT REVIEW

Prior to the five-day site visit, the audit team reviewed documents provided by the auditees, including the:

a. Two contingency plans: 2010–2012 and 2012/2013;
b. 2012–2022 Phase I/II FMPs for the ARF;
c. Annual Work Schedules and Annual Reports associated with the above FMPs for the audit term;
d. Four previous Independent Forest Audit Report for the management units that were amalgamated to ARF: Nighthawk Forest (2003–2008), Smooth Rock Falls, Iroquois Falls and Cochrane-Moose River Forests (2005–2010);
e. Nighthawk Forest and ARF Independent Forest Audit Action Plans and the Action Plan Status Reports;
f. Provincial Independent Forest Audit Action Plan and Provincial Independent Forest Audit Status Report; and
g. The Trend Analysis Report.

On-Site Audit

The objectives of the field site visits were to confirm that activities were conducted according to the FMP, that they conformed to provincial laws, regulations and guidelines, and that they were effective. The helicopter audit was conducted over a three-day period on October 23–25, 2017. The site visit began on November 6, 2017. One day was spent in the field, with the remainder spent reviewing documents and conducting interviews. Every day of the field audit, the audit team provided auditees with updates on the preliminary findings and areas where auditors would be concentrating for the next days. The closing meeting was held in via teleconference November 20th, 2017. The meeting provided a forum for the audit team to present and discuss preliminary audit findings with the auditees. Appendix 1 with the preliminary technical findings was also provided to the auditees prior to the meeting.

Audit Report

The audit results are presented in this report, following a brief description of the audit process and the forest license area under review. Within the report, the audit team has provided findings to address instances of a non-conformance to a law and/or policy, or an identified lack of effectiveness in forest management activities.

Findings from this audit must be addressed in an action plan developed by ARFMI, MNRF, and the Cochrane, Timmins and Kirkland Lake Districts, with input and review by MNRF Regional and Integration Branch representatives. MNRF Integration Branch will develop an action plan to address the recommendations applicable to Corporate MNRF.

Suggestions and recommendations are no longer highlighted in audit reports, nor do they need to be addressed in action plans. Any suggestions concerning forest management from the audit team have been incorporated into the text of this report.

APPENDIX 5 – LIST OF ACRONYMS

AOC	Area of Concern
AR	Annual Report
ARF	Abitibi River Forest
ARFMI	Abitibi River Forest Management Inc.
AWS	Annual Work Schedule
CLAAG	Careful Logging Around Advanced Growth
CP	Contingency Plan
CCP	Caribou Conservation Plan
cFMP	Contingency Forest Management Plan
CFSA	Crown Forest Sustainability Act
DM	District Manager
DCHS	Dynamic Caribou Habitat Schedule
eFRI	Enhanced Forest Resource Inventory
FFTC	Forestry Futures Trust Committee
FIM	Forest Information Manual
FMP	Forest Management Plan
FMPM	Forest Management Planning Manual
FRMG	First Resource Management Group
FMU	Forest Management Unit
FOIP	Forest Operations Information Program
FOP	Forest Operations Prescription
FRI	Forest Resource Inventory
FRT	Forest Renewal Trust
FSC	Forest Stewardship Council
FTG	Free-To-Grow
FU	Forest Unit
GIS	Geographic Information System

HPA High Priority Aspect

IEA Individual Environmental Assessment

IFA Independent Forest Audit

IFAPP Independent Forest Audit Process and Protocol

IQRs Interquartile ranges

KBM KBM Resources Group

LCC Local Citizens Committee

LTMD long-term management direction

MNO Metis Nation of Ontario

MNRF Ministry of Natural Resources and Forestry

MOECC Ministry of Environment and Climate Change

NRV Natural Range of Variation

NSR Not Sufficiently Regenerated

RD Regional Director

RPF Registered Professional Forester

RSA Resources Sharing Agreement

SEM Silviculture Effectiveness Monitoring

SFI Sustainable Forestry Initiative

SFL Sustainable Forest Licence

SFMM Strategic Forest Management Model

SGR Silviculture Ground Rule

SMZ Strategic Management Zones

TAR Trend Analysis Report

TTN Taykwa Tagamou Nation

APPENDIX 6 – AUDIT TEAM MEMBERS AND QUALIFICATIONS

Name	Responsibility	Qualifications
Laird Van Damme	Co-lead auditor, core team member (harvest operations, planning, monitoring, contractual obligations, determination of sustainability)	R.P.F., M.Sc.F.; 30 years of experience as a practicing forester, educator and consultant; primary areas of practice are silviculture, forest management and forest research; completed ISO 14001 EMS Lead Auditor training; worked on 20 previous IFAs serving many roles and he has extensive 3rd party forest certification audit experience. He also spent two years as guide for commercial back country canoe trips for adults in Temagami.
Stéphane Audet	Co-lead auditor, core team member (silviculture planning, implementation, and monitoring, contractual obligations, determination of sustainability)	R.P.F., H.B.Sc.F.; 15 years of forestry experience with a primary focus on silviculture. Stephane has been the silviculture auditor on eight previous IFAs and has conducted 6 FSC and SFI audits in Ontario and Quebec. Mr. Audet has completed the ISO 14000 EMS Lead Auditor Training.
Peter Higgelke	Core team member (Wildlife, ecological planning and implementation, access planning and implementation, determination of sustainability)	R.P.F.; M.Sc.F; 30 years forestry experience in Ontario; Peter has completed 24 IFAs in various roles including lead, harvest, silviculture, wildlife, planning, Aboriginal involvement and public consultation; FSC 5 certification audits and 8 surveillance audits.
Triin Hart	Core team member and co-auditor for Aboriginal involvement (contractual obligations, determination of sustainability; secretariat, consultation, socioeconomic impacts)	Ph.D. in Forest Sciences; 8 years of forestry experience in Ontario. Triin has been a team member of two IFAs. Triin's projects include areas of forest management and conservation, natural resource policy analysis, jurisdictional scans, and public consultations.
Rike Burkhardt	Core team member and co-auditor for Aboriginal involvement	M.F.C., R.P.F. Rike has completed ISO 14001 internal auditor training and has participated as a team member on nine independent forest audits and three Forest Stewardship Council audits across Ontario. Her focus as an auditor has been on stakeholder and Aboriginal engagement, as well as assessing whether the Province has

		met its consultation requirements and fulfilled its mandate of facilitating the participation of Aboriginal communities in the benefits of forest management in Ontario.
Keith Hautala	Core team member (modelling, determination of sustainability)	Keith has participated in 15 IFAs in the position of Forest Modeling Auditor and an additional four in the position of Secretariat. Keith is currently a faculty member of the Confederation College's Forestry program. He possesses a thorough understanding of GIS and decision support systems using spatial and aspatial modelling software.