Big Pic Forest

Independent Forest Audit

2009 – 2014

Arbex Forest Resource Consultants Ltd.

January, 2015

TABLE OF CONTENTS

List of Tables

List of Figures

1.0. Executive Summary

This report presents the findings of an Independent Forest Audit (IFA) of the Big Pic Forest (BPF) conducted by Arbex Forest Resource Consultants Ltd. for the period of April 1, 2009 to March 31, 2014.

This audit addressed the forest management activities of the Ontario Ministry of Natural Resources and Forestry (MNRF) Wawa District (primary auditee) and Nawiinginokiima Forest Management Corporation (NFMC) during the audit term. NFMC assumed management responsibilities as an Enhanced Forest Resource Licensee (EFRL) in 2013. The audit scope covers five years implementation (years 3-7) of the 2007-2017 FMP. The audit also examined the development of Phase II of the 2007 FMP.

Procedures and criteria for the IFA are specified in the 2014 Independent Forest Audit Process and Protocol (IFAPP). The FMP was reviewed in relation to relevant provincial legislation, policy guidelines and Forest Management Planning Manual (FMPM) requirements including required monitoring and reporting functions. Field site inspections (71 sites) were completed by helicopter and truck over a three day period to determine whether actual results in the field were comparable with planned results, if silvicultural strategies had been effective for the achievement of management objectives and if the results of field activities had been accurately reported. Public input was solicited through a notice in the Marathon Mercury and a mail out survey to 60 individuals/organizations on the 2007 FMP mailing list. Local Citizens Committee (LCC) members, First Nations communities and Métis organizations with an interest in the BPF were advised of the audit and invited to participate in the field audit and/or express their views on the forest management program implemented during the audit term.

During the audit term the delivery of the forest management program was challenged by;

1) A major economic downturn in the forest sector which resulted in weak markets for forest products, mill curtailments and closures. The inability to achieve planned harvest levels has significant negative implications on the ability to achieve forest management objectives linked to harvest and the social and economic benefits that are derived from forest management activities.

2) The bankruptcy of the SFL holder and the transition of management responsibility to the Crown and subsequently to the NFMC resulted in uncertainty and disruption to the delivery of the silviculture program and services.

3) A Ministry-wide restructuring (transformation) that included the closure of the Manitouwadge Area Office, and associated staff retirements, resignations and relocations contributed to MNRF having a limited field presence, the often inadequate management oversight of service/providers and/or contractors and the inability to fully meet obligations in the delivery of the planned silviculture program. Concurrently, other SFLs administered by the Wawa District were also returned to the Crown.

4) Inadequate oversight of service providers resulted in the acceptance of inaccurate/incomplete data and contributed to issues associated with the planning, delivery and reporting of silviculture activities. There were also issues associated with the transfer of records from the previous SFL holder.

5) The protracted start-up period for the Local Forest Management Corporation (LFMC).

We provide fifteen recommendations to address the issues identified. Four recommendations are directed at the MNRF Wawa District, eight recommendations are directed to NFMC (as the new management entity responsible for the implementation of the silviculture program) and, two recommendations are made jointly to the MNRF Wawa District and NFMC. One recommendation is directed to Corporate MNRF. It is noteworthy, that six of the recommendations provided in this report repeat recommendations that were made in the 2009 IFA.

The transfer of management responsibilities places the onus on NFMC to implement corrective actions to address forest management shortcomings which would normally be the responsibility of the MNRF as the principal manager and administrator of the Forest during the audit term. Nevertheless, MNRF has a continuing critical role in the sustainable management of the BPF and its poor management performance must not continue with respect to its remaining forest management responsibilities.

The audit team concludes that the management of the Big Pic Forest was not in compliance with the legislation, regulations and policies that were in effect during the term covered by the audit and the MNRF did not fully meet its forest management obligations. The audit team identifies the following reasons for this assessment:

- MNRF had a limited field presence, relied heavily on service providers to deliver forest management services, and had placed an emphasis on other work priorities all of which contributed to a failure by MNRF to fully meet its obligations and responsibilities for the delivery of the planned silviculture program.

- MNRF oversight of service providers and quality control for contracted products was often inadequate which contributed to issues and problems in the planning, delivery and reporting of silvicultural activities.

- MNRF's management of silviculture records and associated data/products was often inadequate. Records had not been made available to the LFMC, had not been retrieved from the previous SFL holder, or had been misplaced or remained in storage and were unavailable to the forest management process. Some records and map products contained inaccuracies which contributed (to varying degrees) to operational issues in the planning and delivery of silviculture projects.

Long term forest sustainability, as assessed through the Independent Forest Audit Process and Protocol is at risk unless corrective measures are taken to:

- Ensure the maintenance of the conifer dominated forest.

- Ensure the accuracy of records and silvicultural data.

2.0. Table of Recommendations

TABLE 1. RECOMMENDATIONS

Conclusion and Recommendation on Licence Extension
The audit team concludes that the management of the Big Pic Forest was not in compliance with the legislation, regulations and policies that were in effect during the term covered by the audit and the MNRF did not fully meet its forest management obligations. The audit team identifies the following reasons for this assessment: • MNRF had a limited field presence, relied heavily on service providers to deliver forest management services, and had placed an emphasis on other work priorities, all of which contributed to a failure by MNRF to fully meet its obligations and responsibilities for the delivery of the planned silviculture program. • MNRF oversight of service providers and quality control for contracted products was often inadequate which contributed to issues and problems in the planning, delivery and reporting of silvicultural activities. • MNRF's management of silviculture records and associated data/products was often inadequate. Records had not been made available to the LFMC, had not been retrieved from the previous SFL holder, or had been misplaced or remained in storage and were unavailable to the forest management process. Some records and map products contained inaccuracies which contributed (to varying degrees) to operational issues in the planning and delivery of silviculture projects. Long term forest sustainability, as assessed through the Independent Forest Audit Process and Protocol is at risk unless corrective measures are taken to: • Ensure the maintenance of the conifer dominated forest. • Ensure the accuracy of records and silvicultural data.

Recommendations Directed to NFMC

Recommendation # 4:

NFMC must ensure that all harvested areas are assessed for debris and slash management in accordance with the direction of the 2007 FMP.

Recommendation # 5:

NFMC must ensure that tree planting contractors are adequately supervised and conduct quality assessments of tree planting operations to ensure that quality standards/requirements are met.

Recommendation # 6:

NFMC must deliver an effective vegetation management program to ensure the renewal of conifer forest units. The tending program must consider a suite of treatment options (i.e. chemical site preparation, manual tending, ground based herbicide treatments, alternative silviculture approaches).

Recommendation # 8:

NFMC must conduct a review of its forest management records to 1) identify information/record gaps 2) implement a process with MNRF, the previous SFL holder and service providers to retrieve missing data/records/information and 3) verify the records for accuracy and completeness.

Recommendation # 9:

a) NFMC must move quickly to acquire the capacity and infrastructure necessary to complete its start-up phase and undertake its full management obligations and responsibilities.

b) NFMC must prepare, for approval by Corporate MNRF, a business plan (or an update its existing business plan) to articulate a business management strategy and model that meets its obligations and responsibilities as an EFRL.

Recommendation # 10:

NFMC must address the backlog in area requiring regeneration assessment and maintain an annual regeneration assessment program approximating the annual allowable harvest area.

Recommendation # 11:

NFMC must design and implement a sampling program to verify the accuracy of FTG information acquired during the audit term.

Recommendation # 12:

NFMC must verify the status of the 2007 FTG work and if required, secure the records for input in the forest resource inventory.

Recommendations Directed to the Wawa District MNRF

Recommendation # 2:

The Wawa District MNRF must immediately undertake actions to meet FMPM Section 3.2.1 and 3.2.2 requirements to fulfill the purposes of an LCC. Actions must include meaningful involvement of the remaining PRPCC members in discussions including an assessment of the barriers to participation in the LCC, the LCC Terms of Reference vis a vis stakeholder perceptions of the LCC role in the forest management planning process and FMPM/CFSA requirements, and the costs and benefits of single versus multiple LCCs**.**

Recommendation # 3:

The MNRF District Manager must make every effort to ensure that FMP Planning Team Members (MNRF staff and appointed volunteers) actively participate on the planning team and provide advice and support to the forest management process in a manner consistent with their level experience and expertise.

Recommendation #14 :

a) The MNRF District Manager must ensure that the Action Plan is prepared in accordance with the schedule specified in the IFAPP.

b) The MNRF District Manager must ensure that all Action Plan items are adequately and effectively addressed.

Recommendation # 15:

The MNRF Wawa District Manager must ensure that sufficient work priority and related resources are assigned to meet the Crown's forest management responsibilities and obligations.

Recommendations Directed Jointly to NFMC and the Wawa District MNRF
Recommendation #7: The MNRF District Manager and NFMC must ensure that contracted service providers have the capacity to deliver timely, accurate and high quality information and results and that the information received is reviewed for accuracy and completeness. **Recommendation # 13:** The District MNRF and NFMC must be more diligent in the review of ARs to ensure that the reports and associated products meet all FIM and FMPM requirements.
Recommendations Directed to Corporate MNRF
Recommendation # 1 Corporate MNRF must redouble its efforts to work towards the timely delivery of FRI products to enable the inclusion of the best available forest inventory information in forest management plans.

3.0. Introduction

This report presents the findings of an Independent Forest Audit (IFA) of the Big Pic Forest (BPF) conducted by Arbex Forest Resource Consultants Ltd. for the period of April 1, 2009 to March 31, 2014.

In 2010 the Ministry of Natural Resources and Forestry (MNRF)[1] Wawa District assumed forest management responsibilities for the BPF[2] and entered into service agreements with the Pic River First Nation to complete the preparation of the 2011-2012 Annual Report and the 2013-2014 Annual Work Schedule (AWS). The MNRF also entered into a service agreement with GreenForest Management Inc. (GFMI) for the completion of Phase II planning and the preparation of the 2011-2012 and 2012-2013 AWSs and the 2010-2011 Annual Report. Renewal and maintenance agreements were signed with the Forest Resource Licensees (FRL) operating on the Forest[3] for the delivery of the silviculture program.

In 2013, forest management responsibilities were assigned to the Nawiinginokiima Forest Management Corporation (NFMC)[4] under an Enhanced Forest Resource Licence (EFRL). NFMC is Ontario's first Local Forest Management Corporation (LFMC). Under its licence to harvest the company must meet all the obligations of a Sustainable Forest Licence (SFL) holder as set out in the Forest Management Planning Manual (FMPM), the Forest Information Manual (FIM), and the Forest Compliance Handbook. The objects of Nawiinginokiima Forest Management Corporation are:

1. To hold forest resource licences and manage Crown forests in accordance with the CFSA and to promote the sustainability of Crown forests.

2. To provide for economic development opportunities for Aboriginal peoples.

3. To manage its affairs to become a self-sustaining business entity that optimizes value from Crown forest resources while recognizing the importance of local economic development.

4. To market, sell and enable access to a predictable and competitively priced supply of Crown forest resources.

5. To carry out such other objects as may be prescribed by regulation made under the *Ontario Forest Tenure Modernization Act, 2011* and Regulation.

Two contractors have Forest Operations Agreements with NFMC to facilitate forestry operations on the unit.

[1] In 2014, the Ontario Ministry of Natural Resources (MNR) was renamed the Ontario Ministry of Natural Resources and Forestry (MNRF).
[2] The SFL held by Marathon Pulp Inc. was revoked in July 2010. MNRF managed the BPF directly for 32 months of the 60 month audit term.
[3] 686860 Ontario Limited (2011-2012 & 2012-2013) and B&M Hauling Ltd. (2010-2011))
[4] NFMC was established on May 29, 2012.

3.1. Audit Process

The Crown Forest Sustainability Act (CFSA) requires that all Sustainable Forest Licences (SFL) and Crown Management Units be audited every five years by an independent auditor.

An IFA reviews the applicable Forest Management Plans (FMP) in relation to relevant provincial legislation, policy guidelines and Forest Management Planning Manual (FMPM) requirements, including a review of field operations and required monitoring and reporting functions. The audit also reviews whether actual results in the field are comparable with planned results and determines if the results were accurately reported. The results of each audit procedure are not reported on separately but collectively provide the basis for reporting the outcome of the audit. Recommendations within the report "*set out a high level directional approach to address a finding of non-conformance*"[5]. In some instances the audit team may develop recommendations to address situations where "*a critical lack of effectiveness in forest management activities is perceived even though no non-conformance with the law or policy has been observe*d"[6]. A Best Practice is reported when the audit team finds the forest manager has implemented a highly effective novel approach to forest management or when established forest management practices achieve remarkable success. A further discussion of the audit process is provided in Appendix 4.

The procedures and criteria for the IFA are specified in the 2014 Independent Forest Audit Process and Protocol (IFAPP). The audit scope covers five years of implementation (years 3-7) of the 2007-2017 FMP and the development of Phase II of the 2007 FMP.

This audit addresses the forest management activities of the MNRF Wawa District, NFMC and all licencees who conducted forest management operations during the audit term.

3.2. Management Unit Description

The Big Pic Forest is located primarily in MNRF's Wawa District in the Northeast Administrative Region[7]. The communities of Marathon, Heron Bay, Caramat, and Hillsport are located within the boundaries of the Forest with the town of Manitouwadge located just to the east of the Forest boundary (Figure 1). The nearest large centre is Thunder Bay which is situated approximately 280 kilometers to the west.

There are five aboriginal communities and two Métis Organizations with an identified interest in forest management activities on the Big Pic Forest: Constance Lake First Nation (FN), Ginoogaming FN, Long Lake No. 58 FN, Pic Mobert FN, the Pic River FN as well as the Greenstone Area Métis Council and the Superior Northshore Métis

[5] 2014 Independent Forest Audit Process and Protocol.
[6] 2014 IFAPP.
[7] A small portion of the Forest is in the MNRF's Nipigon District.

Council. The Pic River and Pic Mobert First Nations were engaged in the forest management planning process.

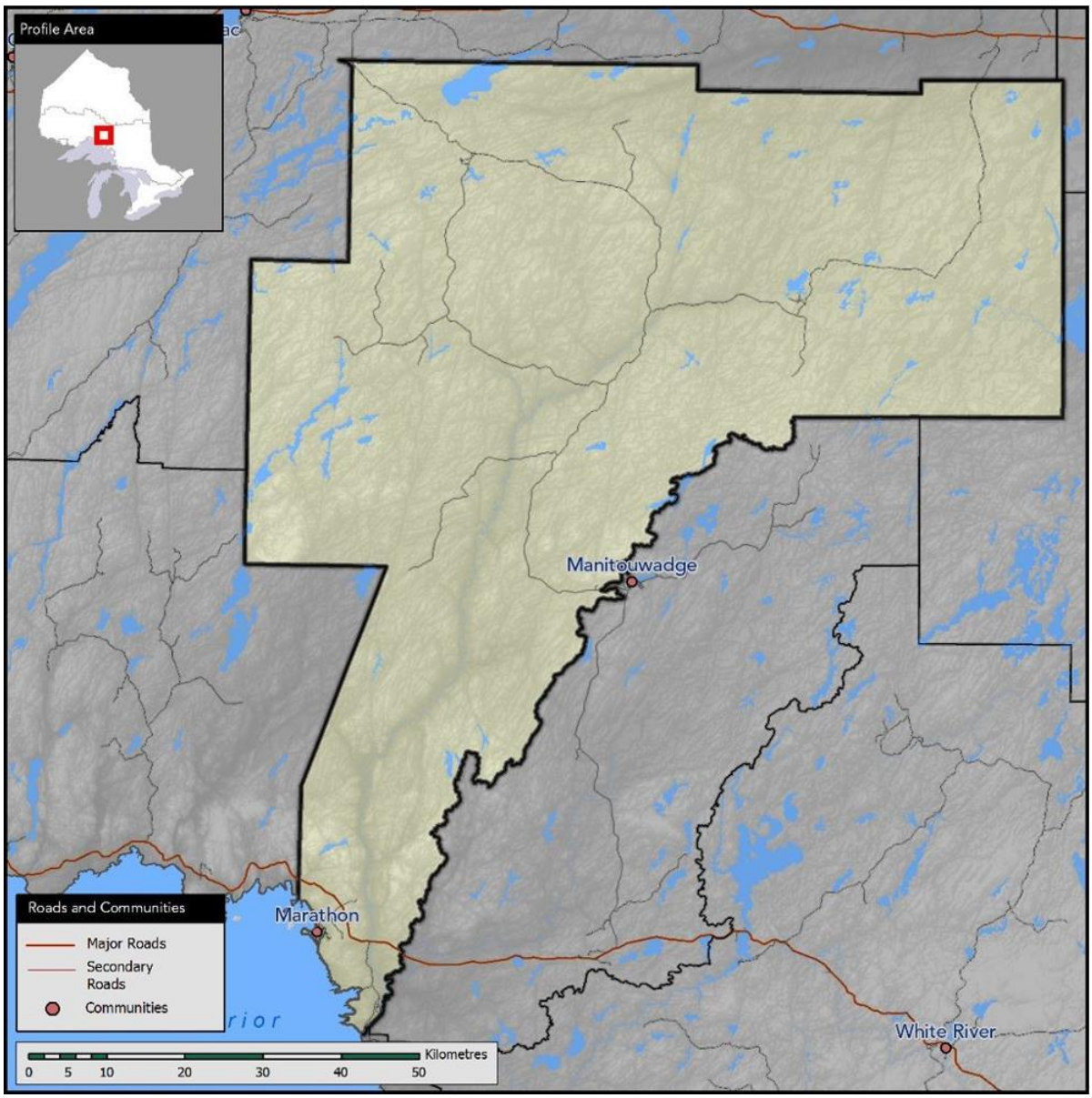
The total area of Crown managed land is 638,132 hectares (ha) of which 90% (575,665 hectares) is classified as productive forest area (Table 2). Water and non-forested land account for approximately 5% of the managed crown land base.

Harvested conifer species were directed to AV Terrace Bay, Lecours Lumber and the Olav Haavaldsrud Timber Company. Hardwood veneer originating from the BPF was processed by Columbia Forest Products. Markets for other hardwood products were very limited during the audit term.

TABLE 2. AREA SUMMARY OF MANAGED CROWN LAND BY LAND TYPE
SOURCE: TABLE 1 2007 FMP

Managed Crown Land Type	Area (Ha)
Unsurveyed	200.4
Water	28,850.8
Non-Forested	4,307.7
Non-Productive Forest	29,108.1
Protection Forest[8]	10,803.9
Production Forest[9]	
Forest Stands	426,281.9
Recent Disturbance	121,183.8
Below Regeneration Standards[10]	17,396.3
Total Forested:	604,774.0
Total Crown Managed:	638,132.8

[8] Protection forest land is land on which forest management activities cannot normally be practiced without incurring deleterious environmental effects because of obvious physical limitations such as steep slopes and shallow soils over bedrock.
[9] Production forest is land at various stages of growth, with no obvious physical limitations on the ability to practice forest management.
[10] Areas where regeneration treatments have been applied but the new forest stands have yet to meet free-to-grow standards.



MAP 1. LOCATION OF THE BIG PIC FOREST (SOURCE: MNRF)

Forest conditions are typical of the Boreal Forest Region with mixedwood forests being the dominant forest cover type. Common tree species include black spruce, jack pine, trembling aspen, white spruce white birch and balsam fir. Past wildfire events have influenced species composition, age class structure, disturbance patterns and residual forest stand structures. Figure 1 presents the proportional representation by provincial forest type on the Crown productive forest land.

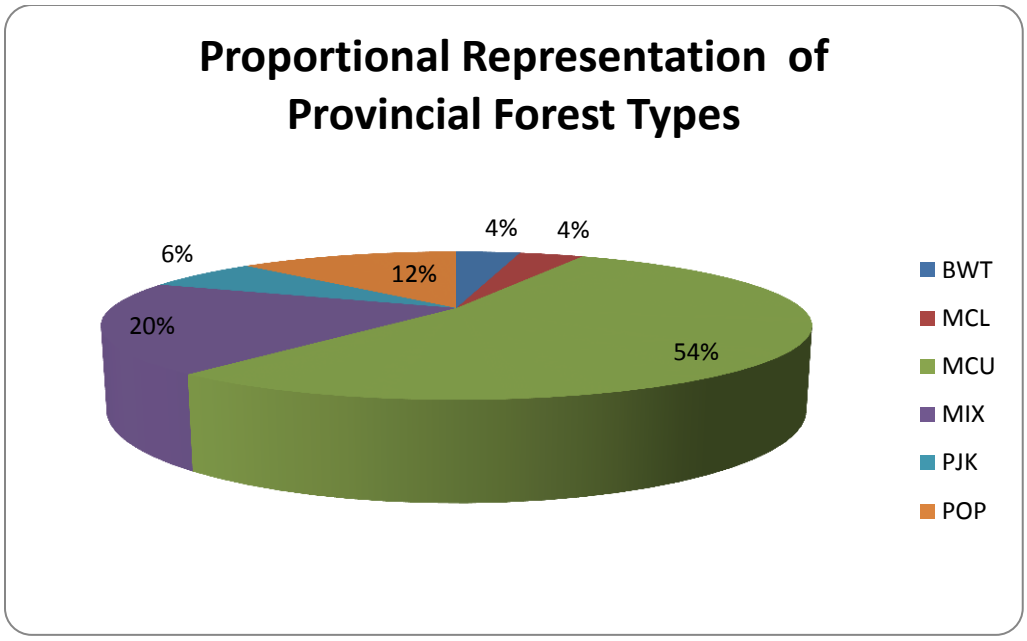


FIGURE 1. PROPORTIONAL REPRESENTATION OF PROVINCIAL FOREST TYPES ON CROWN PRODUCTIVE LAND (SOURCE: FMP-2, 2007 FMP)[11]

The age class area distribution of forest units is shown in Figure 2. An age class area imbalance occurs in the 1-20 age class (reflecting natural disturbances (e.g. wildfires)) and harvesting) and within the 121-160 age classes (reflecting areas inaccessible for harvest). These age class area imbalances have implications with respect to the provision of a balanced wood supply[12] and habitat supply[13] for some wildlife species over subsequent planning terms.

Forest Resource Inventory (FRI) information utilized in the preparation of the 2007 FMP was based on 1989 inventory information updated for harvest depletions and natural disturbances. Issues with the FRI which arose during the development of the 2007 FMP included problems in the identification of inoperable areas, AOC reserves and areas of harvest bypass, as well as inaccuracies in stand ages which presented challenges for operational planning and wood supply modeling. A new Enhanced FRI is tentatively scheduled for delivery in 2014 based on aerial imagery acquired in 2007. We discuss the issue of the timing of the FRI products in Section 3.3 and provide a recommendation (Recommendation # 1, Appendix 1).

[11] Provincial Forest Types are as follows: POP=poplar dominated stands, PJK=jack pine dominated even-age stands MIX=mixedwood stands, MCU=mixed conifer upland stands MCL=mixed conifer lowland stands BWT=white birch dominated stands

[12] Table FMP-3 indicates that the allowable harvest area declines from 6,333 ha/year during the 2007-2017 plan term to 3,882 ha/year in 2027

[13] For example AR-12 in the Trends Analysis Report shows a long term (100 year) decline in habitat for lynx, marten, and winter moose habitat. Favourable habitat conditions for these species include those associated with older forest conditions.

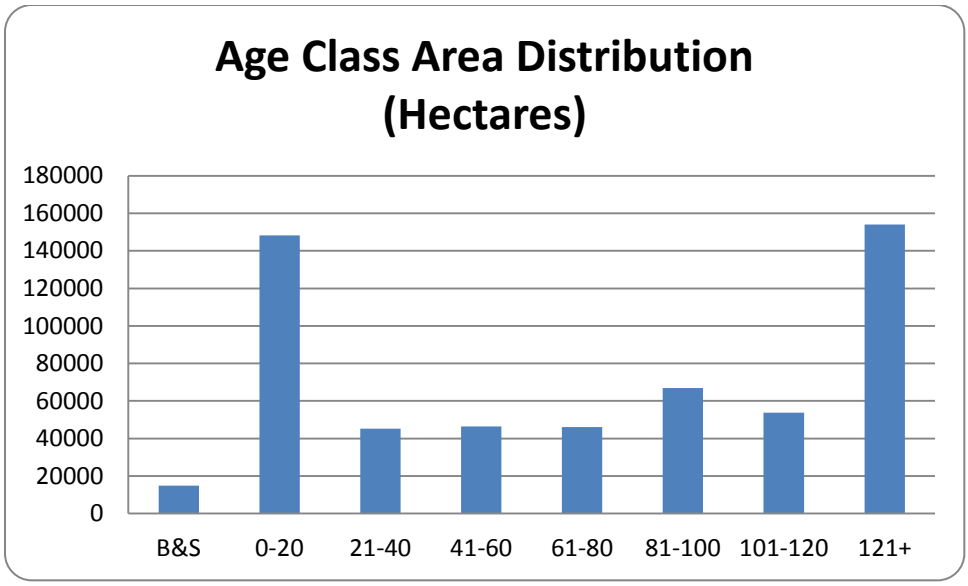


FIGURE 2. AGE CLASS AREA DISTRIBUTION (CROWN MANAGED LAND).
Source: AR11 Trends Analysis Report.

The BPF supports a diversity of wildlife species. Commonly occurring species include moose, black bear, and marten. Small game species include ruffed grouse, hare and a variety of waterfowl. Several species at risk (SAR); woodland caribou (threatened), bald eagle (special concern) and the great grey owl (special concern) are known to occur. Caribou habitat management is achieved through a dynamic caribou habitat schedule (DCHS) consistent with the Caribou Conservation Plan (CCP) and Area of Concern (AOC) prescriptions.

There are eight provincial parks or protected areas wholly or partially within the BPF.

3.3. Current Issues

Arbex Forest Resource Consultants Ltd. conducted the previous IFA and made 16 recommendations (5 SFL holder, 2 MNRF District, 5 joint ((SFL holder and District MNRF) and 4 Corporate MNRF). At the time of the audit, the SFL holder was in receivership so a recommendation regarding the extension of the SFL license was not made.

Our document and record review yielded a number of issues which were considered as high priority aspects during the delivery of this audit.

Several Forest Management Service providers: A number of organizations have had forest management responsibilities under service agreements to the MNRF during the audit term.

Vintage of the Forest Resource Inventory (FRI): The FRI utilized for the production of the 2007 FMP is based on a 1989 FRI. Inventory related issues which arose during the development of the FMP included problems in the identification of inoperable areas,

AOC reserves and areas of harvest bypass, as well as inaccuracies in stand ages which presented challenges for operational planning and wood supply modeling.

Backlog in Free-to-Grow (FTG) surveys and the Lack of Silviculture Assessments: Information on the status of past renewal and the effectiveness of silvicultural treatments is lacking and is particularly relevant to the forest management program given the projected wood supply shortfall.

Prevailing poor markets for wood fibre: The lack of markets for wood fibre has resulted in the underachievement of FMP objectives and targets which has implications for the projected wood supply shortfall and the provision of wildlife habitat. Poor markets also influence the ability of logging contractors to implement slash management strategies and the Natural Disturbance Pattern Emulation Guidelines (NDPEG).

Integrating the Draft Caribou Conservation Strategy (CCP) in the Phase II FMP: Meeting the requirements of the Draft CCP in the Phase II FMP, was a significant challenge which required considerable staff time and resources. The caribou strategy resulted in the allocation of a wide range of age classes for harvest and a scattering of harvest patterns to meet disturbance pattern guidelines.

Action of recommendations from the previous audit: Many of the previous audit recommendations have an on-going status in the Action Plan Status Report or have not been satisfactorily addressed.

3.4. Summary of Consultation and Input to the Audit

Details on public consultation and input to the audit are provided in Appendix 4. Briefly, the following approaches were adopted:

- A public notice and an invitation to provide comment and/or complete a questionnaire on the Arbex website was placed in the Marathon Mercury.

- A random sample of 60 individuals and organizations listed in the 2007 FMP mailing list were sent a letter and questionnaire requesting input to the audit process.

- LCC members, First Nations communities and Métis organizations with an identified interest in the BPF were contacted by mail and invited to participate in the field audit and/or express their views on the implementation of the forest management during the audit term.

Follow-up contacts were made and interviews were held with interested respondents.

MNRF District and Regional staff, NFMC staff and consultants, and an FRL holder participated in the field audit and/or were interviewed by the audit team.

4.0. Audit Findings

4.1. Commitment

MNRF has updated policy and mission statements that are prominently displayed on office bulletin boards and the MNRF website. All interviewed staff were aware of MNRF direction, sustainable forestry commitments and Codes of Practice. Our assessment is that the IFAPP administrative commitment criteria were met.

However, several shortcomings are identified by this audit with respect to MNRF's forest management program. In its 2012 budget, the Ontario Government signaled its intent to "*conduct resource management with a stronger regional focus and fewer field offices, and redesign its science and delivery activities to shift away from a species-by-species approach to a risk-based ecosystem/regional approach*". This policy direction resulted in a Ministry-wide restructuring (transformation) that included the closure of the Manitouwadge Area Office, and associated staff retirements, resignations and relocations which contributed to MNRF having a limited field presence (e.g. compliance monitoring, silviculture assessments and surveys), inadequate management oversight of service/providers and/or contractors and their products, and several significant data and record management issues. These factors contributed to problems with the planning and delivery of forest management operations and the delivery of several aspects of this audit (audit scheduling, and the collection and assessment of evidence to support our audit findings).

4.2. Public Consultation and Aboriginal Involvement

Standard Public Consultation

FMPM public consultation requirements for the development of the Phase II FMP, Annual Work Schedules (AWS), and Plan Amendments for years three to seven of the 2007 FMP were met. The constituencies contacted during the audit indicated that they had been made aware of the FMP process and that they were provided with opportunities to become involved and to identify values. Information centres were well attended and included participation by planning team members. Our review of FMP correspondence records indicated that correspondence was well documented, responses were timely and comments were considered in the approved Phase II FMP.

Issue Resolution and Individual Environmental Assessment

Opportunities to make a request for Issue Resolution or an Individual Environmental Assessment (IEA) were clearly identified in the planning process. There were no requests for an IEA.

Prior to the public review of planned operations, a written request for issue resolution was received to address the protection of specific trapline trails. The Plan Author met

with the concerned individual and the issue was resolved. We concluded that the requirements in the 2009 FMPM for issue resolution were met.

Local Citizens Committee

Historically, the Big Pic and Black River Forest Management Units were located within the Wawa District, Northeastern Region. The Pic River Ojibway Forest Management Unit was located within the Nipigon District, Northwest Region. The three FMU's operated with two LCCs. The Manitouwadge Public Consultation Committee (MPCC) dealt with the Big Pic and Black River Forests in the Wawa District; and the Terrace Bay Area Resource Advisory Committee (TBARAC) dealt with the Pic River Ojibway Forest in the Nipigon District.

For the development of the 2011-2021 FMP the Pic River Ojibway and Black River Forest were amalgamated and named the Pic River Forest. The MPCC and the TBARAC were combined into a single LCC to deal with Forest Management Planning over the Big Pic Forest and the new Pic River Forest. The new combined LCC is the Pic River Public Consultation Committee (PRPCC). The decision was to hold the LCC meetings in Marathon. This requires an approximate 160 km round trip for Terrace Bay members and an approximate 200 km round trip for Manitouwadge members. The previous IFA expressed concerns about the practicality of amalgamating the LCC's stating "… *that the much larger land base made it impossible to provide knowledgeable, local input on forest management issues. The location of meetings for the amalgamated LCC (in Marathon) also required all members to travel considerable distances to attend meetings. LCC representative's felt this would make recruiting and maintaining* members *more difficult."*

Our review indicated that all the concerns expressed in the 2009 IFA proved to be correct and the effectiveness of the LCC has declined significantly and the committee has become non-functional. Over the audit term the membership on the PRPCC dropped from 20 to 6, well over half the meetings did not have a quorum, MNRF has been unable to recruit new members and relations between the MNRF and LCC members has significantly deteriorated. We provide a recommendation to address this issue (Recommendation # 2, Appendix 1).

Aboriginal Involvement in Forest Management Planning

For the development of the Phase II FMP notifications and invitations to participate on the planning team were sent to all communities. The Pic Mobert and Pic River FN's and the Pic River Development Corporation were represented on the planning team (See Section 4.3).

The MNRF met all FMPM notification requirements associated with Aboriginal communities. Background Information Reports, and Reports on Protection of Identified Aboriginal Values were updated, where required. MNRF staff made numerous formal and informal contacts with the various communities over the audit term.

The MNRF produced Condition 34 Reports[14] during each year of the audit term. These reports met FMPM format and content requirements.

4.3. Forest Management Planning

The Terms of Reference (TOR) for the 2007 Phase II FMP met all 2009 FMPM requirements. The TOR identified planning team membership including representation from the Local Citizen's Committee and First Nations. Plan advisors included people with the necessary skills and experience. A Steering Committee was appointed and the Committee provided resolution to an access issue related to a potential road link between the BPF and the Nagagami Forest.

The planning team met formally six times during the initial part of the planning process leading up to Stage1 (October, 2011 to June 2012). Planning team minutes were clear and included a precise recording of required action items and follow-up. The team did not meet formally during the balance of the planning stages. While it might have been expected that formal planning team meetings would have occurred during Stage 2 and Stage 3 of the plan preparation we determined that ongoing discussions amongst core planning team members occurred and that all FMPM requirements for the development of a Phase II FMP were met. However, we were concerned with the poor participation of some planning team members during the planning process. Six seats on the planning team were allotted for First Nation members, however only three positions were filled. The FN planning team representatives attended two of the six meetings. Given this low level of FN participation and requirements to engage Aboriginal peoples in the forest management planning process, we were concerned that the MNRF Resource Planner/First Nation Liaison staff member appointed to the planning team did not attend any of the planned meetings. We provide a recommendation to address our concerns regarding participation on planning teams (Recommendation # 3, Appendix 1).

Operations for the Phase II FMP were planned under the 2009 FMPM. Since the Phase I FMP provided for a six year term of operations the Phase II FMP was to provide for operations between 2013 and 2017. When developing a Phase II FMP an analysis of operations based on the original LTMD is required (Year 3 Annual Report) to determine if it is still valid and the analysis must be endorsed by the MNRF Regional Director. This endorsement was obtained in October 2011.

The results of the long term strategic planning developed for Phase 1 of the 2007 FMP were used to plan operations for the second term of the plan. Planned operations in Phase II of the FMP were appropriately reviewed with regards to new guidelines, policies, updated values information and new strategic/operational strategies and landscape changes (e.g. harvest depletions, wildfires). The Long Term Management Direction (LTMD) for the Phase I FMP was approved prior to the release of Ontario's Woodland Caribou Conservation Plan (CCP). In order to meet MNRF CCP

[14] Condition 34 from the Class Environmental Assessment requires the MNRF District Manager to conduct negotiations with Aboriginal peoples to identify and implement ways of achieving a more equal participation in the benefits provided through forest management planning.

requirements for caribou habitat a dynamic caribou habitat schedule (DCHS) was developed which deferred forest operations from specific areas in the Forest. This resulted in the revision of the area of operations contemplated in the Phase 1 FMP and changes to planned road construction and road use strategies (to address road decommissioning/rehabilitation and renewal) and the update of some silvicultural ground rules to ensure sufficient conifer renewal for the provision of caribou habitat. A DCHS was developed for the portion of the BPF within the continuous and coastal caribou distribution zones. It is our assessment that the DCHS and mature forest deferred for marten habitat will ensure sufficient levels of suitable caribou habitat and the planning to meet the objectives of the CCP was well done.

Other species at risk (SAR) listed under the Endangered Species Act and dependent on the BPF were appropriately considered in the Phase II FMP. Habitats for SAR species were managed using species specific guidelines and/or by recognizing specific habitats as values and developing appropriate AOC prescriptions.

In general, spatial and non-spatial wildlife habitat levels were maintained within the targeted ranges. Habitat descriptions, management guidelines and operational prescriptions (where required) were included in the FMP and/or its supporting documentation.

AOC prescriptions were revised, maintained or redeveloped as required based on the guidelines developed since the preparation of the Phase I plan (e.g. The Forest Management Guide for Conserving Biodiversity at the Stand and Site Level (SSG), Forest Management Guide for Cultural Heritage Values). There were no exceptions to the forest management guides for planned operations.

For Phase II planning silvicultural ground rules (SGR) are reviewed and updated as required. No new SGRs were developed and no Phase I SGRs were dropped in the Phase II plan.

Planned harvest areas in the Phase II plan were comprised of remaining Phase I harvest areas and new Phase II harvest areas in accordance with the 2009 FMPM. No planned salvage areas were identified for Phase II planned operations.

Our review of amendments and revisions to years 3-7of the 2007 FMP found that they were appropriate, well documented, and prepared in accordance with the requirements of the 2009 FMPM. We sampled 20% of the approximately 95 final required alterations to the Phase II FMP. Most were incorporated into the FMP; where the required alterations were not fully accepted, rationale was provided.

As discussed in Section 4.2, the transitions in management responsibility and new planning requirements (i.e. CCP) resulted in a delay in the preparation of planned operations for the second five-year term. When there is a delay in the approval of Phase II planned operations, the FMPM allows for the preparation of the first Annual Work Schedule (AWS) for the second five–year term. Consequently a Year Six AWS Schedule (April 1, 2012 to March 31, 2013) was developed to provide continued operations pending the approval of the Phase II FMP. The Year Six AWS used

remaining Phase I operational areas consistent with the caribou-based operational strategy for Phase II planning. An analysis of the remaining Phase I planned harvest areas was performed which indicated that there would be sufficient (approximately 2-years of AHA) area remaining after year five of the FMP. This AWS met 2009 FMPM requirements. Our review of other audit term AWS's determined that they were prepared in accordance with the requirements of the 2009 FMPM.

4.4. Plan Assessment and Implementation

The Trends Analysis Report states "*The forest industry downturn between 2008-2012, coupled with the bankruptcy of the Sustainable Forest Licensee and the transition of management responsibility to the Crown and subsequently to the Local Forest Management Corporation, have resulted in some uncertainty and disruption in the smooth annual delivery of the silviculture program and services on the Big Pic Forest*."

Many of the planning and operational issues reported in this audit arise from issues we identified with respect to the transformation process within the MNRF and the start-up period at NFMC, both of which culminated in a heavy dependency on contracted service providers to meet forest management obligations and responsibilities on the BPF. MNRF shortcomings in the managerial oversight and quality control of some contracted services/products also contributed to issues and problems in the planning, delivery (e.g. insufficient area identified for SIP contracts, revisions to tree plant prescriptions), and reporting of silvicultural activities (e.g. map/data/reporting errors and omissions, inconsistencies between map products). We discuss the delivery of the silviculture program and services further in the sections below.

Table 3 presents the planned vs. actual area treated by silvicultural activity for the audit term. The 2009 FMPM permits any forest management activities that had been approved in the first five year plan but had not been completed to be implemented without any additional planning requirements. However, the implementation of the caribou management strategy (strategic and operational) necessitated some changes to areas planned for operations in the 2007 FMP (i.e. planned harvest areas deferred from harvest for caribou habitat were re-allocated to areas available for harvest).

TABLE 3. PLANNED VS. ACTUAL SILVICULTURE TREATMENTS 2009-2014.

Activity	2009/10 Actual (Ha)	2010/11 Actual (Ha)	2011/12 Actual (Ha)	2012/13 Actual (Ha)	2013/14 Estimated (Ha)	Total Ha	Planned Ha	Percent Of Planned
Harvest	1,419	2,385	3,841	2,724	3,933	14,302	31,515	45.4
Natural Regeneration	0	1,132	906	934	0	2,972	18,495	16.1
Plant	3,058	661	774	2,099	4,051	10,643	14,700	72.4
Total Regeneration	3,058	1,793	1,680	3,033	4,051	13,615	33,195	41.0
Site Preparation (mechanical)	257	0	527	694	0	1,478	12,315	12.0
Site Preparation (Chemical)	0	0	0	301	529	830	650	127
Total Site Preparation	257	0	527	792	529	2,105	12,965	15.5
Tending (Aerial)	1,051	1,240	264	2,910	1,871	7,436	6,635	112
Total Area Treated	5,785	5,418	6,312	9,459	9,844	37,458	84,310	44.4

Harvest

Harvest operations were conducted by B&M Hauling Limited and 686860 Ontario Ltd. utilizing the clear cut silvicultural system under Forest Resource Licences (FRLs). Harvesting was based on the *Forest Management Guide for Natural Disturbance Pattern Emulation* (NDPEG) in order to achieve stand and landscape level characteristics commonly associated with stand replacing wildfire events in the boreal forest.

The downturn in the forest sector economy resulted in the idling and/or closure of many of the wood processing facilities which utilized wood/fibre from the BPF. As a result of the persistence of weak markets harvest levels were below planned levels (~ 45%) with the low level of harvest achievement negatively affecting the achievement of other FMP targets linked to harvesting (e.g. site preparation, aerial tending). The Phase II available harvest area was in accordance with the AHA determined by the LTMD in the 2007 FMP. Table 4 presents the planned vs. actual harvest for the audit term. The harvest data provided for 2013-2014 is an estimate as reporting is not required until the submission of the AR in November 2015.

TABLE 4. PLANNED VS. ACTUAL HARVEST 2009-2014.

Year	Planned Harvest (Ha)	Actual Harvest (Ha)	Percent of Planned
2009 - 2010	6,303	1,419	22.5
2010 - 2011	6,303	2,385	37.8
2011 - 2012	6,303	3,841	60.9
2012 - 2013	6,303	2,724	43.2
2013 - 2014	6,303	3,993	63.4
Total	31,515	14,302	45.4

Table 5 presents the wood utilization during the audit term (no volume data was available for 2013-2014). Total wood utilization was 35%. Conifer utilization achieved 38% of the planned forecast volume (685,443 m^3) while hardwood utilization achieved 4% of the forecast volume (39,384 m^3). The higher level of conifer utilization reflected a greater availability of markets for conifer species. The lack of markets for hardwoods served to constrain the availability of conifer species from mixed wood forest units and restricted the capability to conduct harvest operations in planned second pass harvest areas (i.e. none of the second pass harvest areas from the 2002-2007 FMP have been completed). These areas will need to be re-assessed as to their harvest potential during the preparation of the next FMP. Biofibre utilization[15] comprised 32 % of the fibre utilized during the audit term. Markets for biofibre were available in Hearst and Terrace Bay.

[15] Biofibre volume is derived from tops, branches, and undersize and defective trees.

TABLE 5. PLANNED VS. ACTUAL VOLUME UTILIZATION 2009-2013.

Year	Planned Harvest Conifer (M^3)	Actual Harvest Conifer (M^3)	Planned Harvest Hardwood (M^3)	Actual Harvest Hardwood (M^3)	Percent Conifer Utilization (%)	Percent Hardwood Utilization (%)	Biofibre Harvest (m^3)
2009-2010	457.522	92.218	253,138	6.969	20.1	2.7	75,406
2010-2011	457.522	220,914	253,138	8,748	48.2	3.4	119,146
2011-2012	457.522	163,882	253,138	12,995	35.8	5.1	94,796
2012-2013	457.522	208,366	253,138	10,672	45.5	4.2	57,219
2013- 2014	457.522	N/A	253,138	N/A	N/A	N/A	N/A
Total	1,830,088	685,443	1,265,690	39,384	37.4	3.8	346,569

All inspected harvest areas were approved for operations in the AWSs. Harvest prescriptions were implemented in accordance with the SGRs and individual forest operations prescriptions were prepared and appropriately implemented for each harvest block. Post-harvest residual tree retention requirements met or exceeded MNRF guidelines with respect to the number of trees retained per hectare, retained tree species composition and retained tree diameter distributions. There was little evidence of site or environmental damage arising from harvest operations, although some limited occurrences of rutting were observed on some lowland sites. Based on the low number of observed instances, we concluded that rutting was not widespread problem.

The site inspections also indicated that Area of Concern (AOC) prescriptions associated with harvest activities were appropriately implemented[16]. We found that the AOCs provided appropriate protection for the identified values and were implemented in accordance with the FMP and the Annual Work Schedules (AWS). There were two incidences of non-compliance for harvest operations during the audit term (for harvest outside of the planned and licenced area) and two other reports of non-compliance which have yet to be formalized and therefore are not considered in the audit term compliance reporting. We also concluded that the long experience (30+ years) of the primary harvest contractor (B&M Hauling Ltd.) benefited the delivery of the forest management program.

The Phase II FMP requires that all non-merchantable logging debris brought to or generated at roadside as part of a harvesting operation is to be managed to limit the loss of productive forest lands, reduce/eliminate visual impacts of the debris on the landscape and to reduce the potential fire hazard associated with unmanaged debris piles. The plan objective is that >50% of the harvested area will be assessed and

[16] AOC sampling included an examination of AOCs which were established to protect known values (i.e. nests, streams & lakes etc.) from both the air and the ground and supplemental aerial photography

managed under a slash management program. Two broad management strategies are employed which recognize the likelihood of whether the slash/debris would be utilized for biofibre within a two year period. In instances where the debris was to be merchandized it could remain untended (pending future piling/manipulation) for a two year period. In instances where the debris was not scheduled for merchandizing a number of management options were to be adopted including piling, burning, redistribution, rowing etc.

During our site inspections we encountered areas where slash and debris had been managed and other areas where no management activities had been implemented. In managed areas slash had been piled and then merchandized by grinding (in instances where markets were available for biofibre), or alternatively chipper debris had been spread within the cutover and/or piled. We were also informed of applications where slash had been used as bush mats and for stream stabilization during operations. No slash pile burning occurred during the audit term. We note that the Trends Report indicates that up to the 2012-2013 reporting period 16,152 ha had been harvested with only 217 ha (1%) of the harvest area being assessed and managed under the slash management plans[17]. We provide a recommendation on slash and debris management (Recommendation # 4, Appendix 1).

Renewal, Tending and Protection

Renewal

Planned targets for renewal were not achieved as a result of the lower than planned level of harvest, however, over the audit term the area renewed was in balance with the area harvested (13,615 ha treated for renewal vs 14,362 ha harvested (95%)).

We examined 12% of the forest renewal activities implemented during the audit term (See Appendix 4). Problems were encountered with the availability and reliability of some silvicultural records for some of the audited sites (e.g. based on tree size planting dates were perceived as incorrect etc.). The issue of record management is discussed in Section 4.5. Where the field records were complete, we concluded that the sites were approved in Annual Work Schedules (AWS) and the renewal activities were in accordance with the applicable SGR and Silvicultural Treatment Package (STP).

Natural renewal comprised 22% of the renewal program implemented during the audit term, reflecting the low level of harvest in hardwood dominated forest units which are typically allocated for natural renewal in the management planning process and the limited availability of conifer sites deemed appropriate for natural renewal. Natural renewal areas visited during the field audit were well stocked to the desired tree species. We are concerned that MNRF and NFMC undertook only a limited program of regeneration assessments during the audit term. A backlog in the area requiring assessment is accumulating and we provide a recommendation to address this concern (See Section 4.6, Recommendation # 10, Appendix 1). Additionally, we were informed

[17] Some areas that received treatment may not yet be reported and some slash has been merchandized as biofibre which has reduced the amounts of roadside logging debris.

that NFMC does not have a consolidated database for tracking and recording areas of natural regeneration (See Recommendation # 8, Appendix 1).

As a result of the higher level of conifer utilization, artificial renewal comprised 78% of the renewal program. Planting was the only artificial renewal method utilized as seeding is not carried out due to the competitive nature of most harvest sites.

We were informed of problems with the quality of tree plant prescriptions for some sites and problems with accuracy/quality of some map products required for planned silviculture projects (e.g. planting, site preparation). During our site inspections we observed a number of instances of poor quality planting (e.g. discarded trees, poor spacing, poor microsite selection) which were likely due to poor field supervision of the planting crews and/or insufficient auditing of planting contractors by the MNRF, NFMC and/or the service providers (See Recommendation # 5, Appendix 1).

NFMC experienced difficulties in both the tendering process and field delivery of its silviculture program. As a Crown agent, NFMC is required to adhere to Ontario Government procurement and purchasing policies. There were significant problems and delays in the tendering process for the 2013 tree plant (including the late issuance of the tender, delayed viewing of proposed planting sites, and the late award of the contract). These issues culminated in several experienced contractors not bidding on the work and ultimately in the late completion of the plant in August. It is reasonable to assume that problems with the tendering process will be resolved over time as experience is garnered at NFMC in silviculture project management and the organization fills its staff positions.

Site Preparation

Site preparation (SIP) achieved 16% of the planned target over the audit term (12,965 ha planned vs. 2,015 ha actual) reflecting the low level of harvest. The ARs also indicated that on some sites conditions for planting were favourable and a site preparation treatment was not required.

Mechanical site preparation (Bracke) was the most frequently adopted technique accounting for 70% of the planned SIP activities. Our site inspections indicated that mechanical SIP treatments were effective in exposing mineral soil and there were no observed instances of environmental damage arising from the operations.

Over the audit term, 830 ha were treated by chemical site preparation. During our site inspections, we encountered several areas where a chemical site preparation treatment would have been beneficial as a vegetation control measure (Recommendation # 6, Appendix 1).

Tending

Aerial herbicide tending treatments[18] were applied on 7,336 ha. Our field audit assessed 12% of the area tended during the audit period. In general, the tending

[18] Aerial tending achieved 112% of the planned target for the audit term.

program achieved mixed results. We observed a number of sites where the treatments were ineffective in controlling competition (particularly grasses), sites where we questioned the appropriateness of the chemical tending prescription (either due to low initial seedling survival and/or the apparent lack of site competition) and sites where an initial chemical site preparation treatment or subsequent tending treatment would have been beneficial. Competition assessment records for all years of the audit term were not available.

The 2009 IFA provided a recommendation that conifer renewal sites be diligently monitored to ensure the delivery of timely tending interventions and that planned tending treatments be appropriate to the stand/site conditions. We repeat this recommendation on the basis of the low silviculture success rate reported for intensively managed conifer renewal sites (Trends Report and Section 4.6.), our field observations of site competition, issues encountered with respect to the availability of competition assessment records and the observed variable effectiveness of the tending treatments (Recommendation # 6, Appendix 1).

Protection

No pesticides were applied during the audit term.

Access Planning and Management

Forest access planning met all FMPM requirements. The Annual Work Schedules reflected FMP requirements and all access roads were constructed in accordance with the relevant forest management guidelines. During the audit term 84 kilometers (kms) of primary road and 1.3 kms of secondary road were constructed. Road maintenance work was completed on 1,979 kms of primary road and 67.5 kms of secondary road. Monitoring of roads and water crossings consists of regular forest operations inspections and information provided by woodlands staff and the general public.

There were no instances of non-compliance in the FOIP reports related to access construction or maintenance. We inspected several sites where road decommissioning or the removal of temporary bridges had occurred. These works were well done and water courses were adequately protected from erosion (e.g. water bars, berms, mounds, ditching and/or the seeding of grasses) and vehicular traffic (e.g. logs/slash on roadways). The experience and professionalism of the FRL's substantially contributed to the high quality of road and water crossings observed during the field audit. Thirty-two water crossings were constructed and existing crossings on active haul roads were maintained. All inspected water crossings (11) were well constructed.

Our inspections of forestry aggregate pits (4) found that the pits generally met required operating standards. One inspected pit had steep slopes. We were informed that this pit had escaped notice during the management transition between MNRF and NFMC and that corrective steps were being implemented to address the issue.

Our review of invoices submitted under the *Road Construction and Maintenance Agreement* found the invoices to be complete and accurate.

Renewal Support

No seed collection or tree improvement activities were undertaken during the audit term. The existing inventory of seed was deemed sufficient to support the planned silvicultural program.

4.5. System Support

Records management and the quality of work provided by service providers during the audit term is a significant concern. Records and data management issues are highlighted throughout this report. We were informed in interviews that the use of multiple service providers and inadequate quality control oversight by the MNRF of their products added inaccurate and/or incomplete data to records and contributed to operational issues in the field delivery of the silviculture program (See Section 4.4). Accurate and up-to-date information is required to deliver a high quality forest management program (planning and operations). The MNRF had the responsibility to manage and maintain an effective information management system and to ensure that all work contracted to service providers was complete and accurate and met format requirements. (Recommendation # 7, Appendix 1).

The process to operationalize NFMC was protracted. Established in May 2012, front line management positions (i.e. General Manager) were filled by secondment from the MNRF until the hiring of full-time staff commenced in October 2013. At the time of the audit, some key front line staff positions were vacant or were being filled on a temporary basis by external consultants (e.g. Silviculture Technician, Operations Forester). Consultants also provide Geographic Information System (GIS) related services. We note that some of the professional forest management functions required to meet NFMC's EFRL obligations (e.g. Registered Professional Forester certifications as required under the Ontario Professional Forester Act 2000) were also undertaken by consultant(s).

We were also concerned that the full transfer of forest management information and records (e.g. source data, tally sheets) to NFMC (from the MNRF and/or its contracted service providers) had not been completed prior to the audit, despite the significant period of time that the company has been functioning (May 2012 – October 2014). Additionally, gaps in the record management system exist. For example there is a requirement that a consolidated database be developed for the tracking and recording of natural regeneration (See Recommendation # 8, Appendix 1).

It is also noteworthy that at the time of the audit, not all planned in-house infrastructure (e.g. server, GIS) to support the mandate of the LFMC was in place. This was somewhat surprising given the period of time that the company had been operating. We provide a recommendation to NFMC to finalize and operationalize its business plan to address the managerial and operational issues identified at NFMC (Recommendation # 9, Appendix 1).

4.6. Monitoring

Exceptions to Forest Management Guidelines

There are no exceptions to forest management guidelines in either the Phase I or the Phase II FMP.

Compliance Monitoring

MNRF compliance planning was completed on an annual basis. It included targets and identified individuals responsible for completing the work. Our sampling of inspection reports indicated that they conformed to the requirements in the *Forest Compliance Handbook (2010).*

During the audit period there were 132 compliance inspections, with an in-compliance rate of 97%. Four minor not-in-compliance issues associated with harvest boundaries, sediment control and a spray program (an administrative mix-up) were reported. All of the issues were satisfactorily resolved. We concluded that the number of inspections was appropriate to the level of forest management activity that occurred.

Monitoring of Silvicultural Activities

As indicated elsewhere in this report, the MNRF transformation process, an emphasis on other work priorities (by both the MNRF and NFMC), the bankruptcy of the SFL holder and the transfer of management responsibility for the Forest all contributed to a limited field presence of forestry staff and disruptions to planned silviculture and monitoring activities during the audit term. Some planned operations (i.e. aerial tending, site preparation) were postponed and other silvicultural projects (i.e. surveys and assessments) were not undertaken. The Annual Reports indicate that 5,462 ha of competition surveys[19] and 1,148 ha of natural regeneration surveys (2011-2012) were completed. The Trend Analysis Report indicates that "*approximately 5,360 ha of harvest/salvage area (some of which is from the 2002-2007 period), still requires formal reporting of either natural or assisted (artificial) regeneration treatment*."

In the last reported period (2012-2013 AR) assessments had been completed on 16,305 ha with 4,662 ha (28%) reported as a silvicultural success (successfully regenerated to the projected forest unit) and 11,158 ha (68%) being classed as a regeneration success (regenerated to a different forest unit). Four hundred and fifty-eight hectares (4%) had not achieved free-to-grow status at the time of the assessments. A recommendation is provided to address our concerns with the limited amount of regeneration assessment work completed during the audit term (Recommendation # 10, Appendix 1).

The effectiveness of the silvicultural ground rules must be understood to facilitate reporting on forest sustainability and to provide reliable inputs for the broader forest

[19] 4,758 ha 2011-12 and 704 ha 2012-13

management planning process. A backlog in the area requiring free-to-grow[20] (FTG) survey has persisted over a number of audit terms with approximately 20,500 ha requiring assessment at the end of this audit term[21]. The persistence of the backlog was attributed to factors such as the changes in management responsibility that occurred over the audit term and staff availability due to other work priorities. While the area requiring assessment reported in the last audit has been reduced, we repeat the recommendation of the previous audit to address the FTG survey requirement (Recommendation # 10, Appendix 1). We are also concerned that results from a FTG assessment in 2007-2008 (3,906 hectares) have yet to be reported in the forest inventory[22] (See Recommendation # 12, Appendix 1).

Table 6 indicates that the silviculture success rate is low (28.6%). Forest unit transitions are occurring mainly within intensively treated conifer units (SB1 and PJ1 forest units). Interview respondents attributed the low level of silviculture success within these units to higher than anticipated levels of natural ingress (particularly larch ingress in SB1 lowland sites), retention of other species (i.e. eastern white cedar), the time scale adopted to achieve free growing status (8-12 years after harvest), inaccuracies in the original FRI, and inconsistencies in forest unit descriptions over successive management terms. The Trends Analysis Report offers the following insight with respect to the low silvicultural success rate: "*Higher regeneration success rates to the projected/prescribed forest units (silviculture success) are needed particularly when funds are invested in artificial/assisted regeneration treatments. This may be achieved with diligent monitoring and the timely application of tending treatments; with improved initial renewal prescriptions and effort allocation and with a better understanding of natural ingress abundance".* Given the backlog in area requiring assessment, it is also possible that more regeneration surveys are required to ascertain the true status of renewal.

MNRF Silviculture Effectiveness Monitoring (SEM) data and reports[23] highlight discrepancies in the SEM results between extensive aerial assessments (observations) and intensive ground-based assessments[24] (silvicultural success is higher when using aerial observations). It is unclear whether these differences represent a systemic error inherent in the survey methodologies (ground surveys lack the stand wide perspective of aerial surveys, but it is difficult to accurately determine stand composition based on extensive aerial assessment). The reports also indicate that the comparison of SEM results is difficult because of the lack of available information to assess silviculture success in Annual Reports. Information on the species composition descriptions from FTG surveys conducted during the audit term were unavailable for our aerial survey so

[20] Free-to-Grow is defined in the FMPM as stands that meet, stocking, height, and/or height growth rate as specified in the ground rules and are judged to be (healthy and) essentially free from competing vegetation.
[21] The area surveyed in the 2007-2017 FMP term represents 22% of the forecast target for regenerations surveys.
[22] The 2011-2012 AR indicates that the submission status of these surveys remains unknown. The work was completed by a contractor and there were issues with data formats.
[23] SEM requirements were met during all years of the audit term, although records for 2012 and 2013 were not readily available at the Wawa District Office and were in the format of a spreadsheet only.
[24] Well-spaced free growing survey system.

we are unable to comment as to whether or not stand descriptions in the FTG surveys are erroneous. Given these issues, and the persistence of a concern (over two consecutive audit terms) with respect to the effectiveness of the SGRs for the SB1 forest unit a recommendation is provided to NFMC to conduct a sampling of stands declared FTG during the audit term (Recommendation # 11, Appendix 1).

TABLE 6. SILVICULTURAL AND REGENERATION SUCCESS BY FOREST UNIT (HARVEST DEPLETION AREAS).

Forest Unit	Total Area Assessed (Ha)	Area Regenerated to the Projected Forest Unit (Ha)	Area Regenerated to Other Forest Unit (Ha)	Area Not Successfully Regenerated (Ha)	Percent Area Silvicultural Success
BW1	183	41	136	6	22.4
LC1	133	39	94		29.3
MW2	968	536	430	2	55.4
PJ1	927	221	690	17	23.8
PJ2	16	7	9		43.8
PO1	3,239	1,704	1,455	78	52.6
SB1	8,513	686	7,456	372	8.1
SF1	597	420	167	9	70.4
SP1	1,731	1,008	722		58.2
Total:	16,305	4,662	11,158	485	28.6

Source: AR-13 Summary of Assessment and Silvicultural Success. Big Pic Forest Trend Analysis

Annual Reports

Audit term Annual Reports (ARs) were prepared by various contracted service providers retained by the MNRF or NFMC. The FMPM schedule for report submission was generally met. The 2013-2014 AR was not due, or available, for the audit.

The ARs met FMPM content requirements although we were informed during interviews that the use of multiple service providers (3) and inadequate quality control resulted in errors in the digital map products and some of the areas of the activities reported in the ARs. We provide a recommendation to address issues related to the production of Annual Reports (Recommendation # 13, Appendix 1).

4.7. Achievement of Management Objectives & Sustainability

In accordance with IFAPP requirements a Trends Analysis Report was prepared by a contracted service provider to support the audit. The overarching conclusion of the report is that the implementation of the 2007 FMP planned operations "*continue to provide for the sustainability of the Big Pic Forest".* The report also concludes that "*The idling and closure of wood utilizing facilities, the limited area and volume harvested, the slowing of forest management activities during the critical 2008-2012 downturn period, and changes in forest managers due to bankruptcy has resulted in an overall delay in achievement of many targets".*

Significant forest management trends over the past four management terms are as follows:

- An average of 71% of the planned harvest area was harvested.
- Conifer-dominated forest units have had a higher and more consistent level of utilization than hardwood dominated forest units, reflecting the availability of markets for spruce-pine-fir.
- Regeneration has kept pace with the level of harvest. Artificial renewal treatments have been applied more frequently than natural renewal due to the focus of harvesting on conifer species which are commonly renewed by tree planting.
- The backlog in the area requiring regeneration survey is accumulating. The area surveyed for regeneration success has not kept pace with area harvested since 1992. In the current management term only 22% of the area forecast for assessment has been surveyed.
- The area of purer conifer forest units is modestly declining and the area of purer hardwood dominated forest is modestly increasing (particularly poplar).
- The inability to achieve planned harvest levels will delay the achievement of the desired future forest condition and this will adversely affect the projected abundance of some specific wildlife habitats.
- Forest unit transitions are occurring particularly within intensively treated conifer forest units. The level of silvicultural success is low (30%)[25].

In our assessment of sustainability we examined factors such as, the achievement of plan objectives, progress towards the desired future forest condition, the level of benefit derived from implementation of the FMP and observations from the field audit and other audit evidence (i.e. trends in silvicultural success, trends in regeneration success etc.).

[25] Our calculations indicate a 28.6% silvicultural success rate.

We concluded that while progress is being made towards some of the indicators of sustainability (e.g. SAR species are being appropriately managed, AOC are protecting identified values, SGRs, STPs and FOPs were appropriate and forest operations were 97% compliant) there are risks to sustainability: These include:

- A continued inability to achieve planned harvest levels will negatively affect the achievement of several FMP objectives and will jeopardize the achievement of the LTMD with respect to the attainment of the desired future forest condition.

- Weak markets are also constraining the achievement of several social, economic and environmental criteria associated with forest sustainability.

- Forest unit transitions are occurring particularly within intensively treated conifer forest units. The level of silvicultural success is low (28.6%) and more diligence is required in the monitoring of site competition and the effectiveness of tending treatments.

- Regeneration surveys have not kept pace with the level of harvesting since 1992.

- Poor records management also contributed to problems in the planning, delivery and the reporting of silviculture activities.

4.8. Contractual Obligations

Appendix 3 presents our findings with respect to MNRF obligations for Crown Management Units (CMU).

The auditor is also required to assess the effectiveness of the actions developed to address the recommendations of the previous audit. The past audit provided 16 recommendations**.** At the time of the audit, the SFL holder was in receivership so a recommendation regarding the extension of the SFL license was not made.

It is our assessment that many of the issues and recommendations of the past audit have not been adequately addressed. For example:

Recommendation # 8: Records management is a significant concern during the audit term. We provide a recommendation to address this concern (Recommendation # 8, Appendix 1).

Recommendation # 9: During the audit term there was limited monitoring of renewal sites. Given the competitive nature of sites and our observations of the effectiveness of the tending program, we repeat a recommendation to monitor renewal sites for tending requirements and to implement tending treatments as required (Recommendation # 6, Appendix 1).

Recommendation # 10: Some progress has been made in addressing the slash and debris management issues raised in the last audit and efforts were made to merchandize roadside debris during the later years of the audit term. However, as indicated in the Trends Report only 217 ha (1%) of the harvested area had been assessed and managed under the slash management plans. We provide a recommendation (Recommendation # 4, Appendix 1).

Recommendation # 12: While ARs met FMPM content requirements, errors in the reports and associated data products persist. The FMPM schedule for reporting was met. The requirement of the previous audit to submit the 2006-2007 AR immediately was addressed with the initial submission of the AR in May, 2010. Final acceptance of the AR by the MNRF occurred in June, 2010. We provide a recommendation to address the issue of data inconsistencies and to improve the managerial oversight of service providers preparing AR documents (Recommendation # 13, Appendix 1).

Recommendation # 14: The Action Plan was submitted late and not all recommendations from the previous audit have been adequately addressed. We provide a recommendation (Recommendation # 14, Appendix 1).

Recommendation # 16: A backlog in the area requiring FTG survey still exists. (Recommendation # 10, Appendix 1).

4.9. Conclusions and Licence Extension Recommendation

We conclude that there are risks to forest sustainability, as assessed through the IFAPP. The issues and shortcomings identified by this audit need to be addressed to provide for the delivery of an effective forest management program and to reduce risks to forest sustainability. It is our assessment that the delivery of the forest management program was challenged by;

1. A major economic downturn in the forest sector which resulted in weak markets for forest products, mill curtailments and closures. The inability to achieve planned harvest levels has significant negative implications on the ability to achieve forest management objectives linked to harvest and the social and economic benefits that are derived from forest management activities

2. The bankruptcy of the SFL holder and the transition of management responsibility to the Crown and subsequently to the NFMC resulted in some uncertainty and disruption to the delivery of the silviculture program and services.

3. A Ministry-wide restructuring (transformation) that included the closure of the Manitouwadge Area Office, and associated staff retirements, resignations and relocations contributed to; MNRF having a limited field presence, the often inadequate management oversight of service/providers and/or contractors and the inability to fully meet obligations in the delivery of the planned silviculture

program. Concurrently, other SFLs under the jurisdiction of the Wawa District were also returned to the Crown.

4. Inadequate oversight of service providers resulted in the acceptance of inaccurate/incomplete data and contributed to issues associated with the planning, delivery and reporting of silviculture activities. There were also issues associated with the transfer of records from the previous SFL holder.

5. The protracted start-up period for the Local Forest Management Corporation (LFMC).

We provide fifteen recommendations to address issues identified by this audit. Four recommendations are directed at the MNRF Wawa District, eight recommendations are directed to NFMC (as the new management entity responsible for the implementation of the silviculture program) and, two recommendations are made jointly to the MNRF Wawa District and NFMC. One recommendation is directed to Corporate MNRF. Six of the recommendations provided in this report repeat recommendations that were made in the 2009 IFA.

It is noteworthy that the transfer of management responsibilities places the onus on NFMC to implement corrective actions to address forest management shortcomings which would normally be the responsibility of the MNRF as the principal manager and administrator of the Forest during the audit term. Nevertheless, MNRF has a continuing critical role in the sustainable management of the BPF and its poor management performance must not continue with respect to its remaining forest management responsibilities (Recommendation # 15, Appendix 1).

The audit team concludes that the management of the Big Pic Forest was not in compliance with the legislation, regulations and policies that were in effect during the term covered by the audit and the MNRF did not fully meet its forest management obligations. The audit team identifies the following reasons for this assessment:

- MNRF had a limited field presence, relied heavily on service providers to deliver forest management services and had placed an emphasis on other work priorities, all of which contributed to a failure to fully meet its obligations and responsibilities for the delivery of the planned silviculture program.

- MNRF oversight of service providers and quality control for contracted products was often inadequate which contributed to issues and problems in the planning, delivery and reporting of silvicultural activities.

- MNRF's management of silviculture records and associated data/products was often inadequate. Records had not been made available to the LFMC, had not been retrieved from the previous SFL holder, or had been misplaced or remained in storage and were unavailable to the forest management process. Some records and map products contained inaccuracies which contributed (to varying degrees) to operational issues in the planning and delivery of silviculture projects.

Long term forest sustainability, as assessed through the Independent Forest Audit Process and Protocol is at risk unless corrective measures are taken to:

- Ensure the maintenance of the conifer dominated forest.
- Ensure the accuracy of records and silvicultural data.

Appendix 1

Recommendations

Independent Forest Audit – Record of Finding Recommendation # 1
Principle: 3 Forest Management Planning **Criterion:** 3.3.2. Forest Resource Inventory **Procedure(s):** 1. Assess whether the FRI has been updated, reviewed and approved to accurately describe the current forest cover that will be used in the development of the FMP.
Background Information and Summary of Evidence: Forest Resource Inventory (FRI) information utilized in the preparation of the 2007 FMP was based on 1989 inventory information updated for harvest depletions and natural disturbances. Issues with the FRI which arose during the development of the 2007 FMP included problems in the identification of inoperable areas, AOC reserves and areas of harvest bypass, as well as inaccuracies in stand ages which presented challenges for operational planning and wood supply modeling. A new Enhanced FRI is tentatively scheduled for delivery in 2014 based on aerial imagery acquired in 2007.
Discussion: The delivery of FRI products is seriously out of synchronization with the forest management planning cycle. This circumstance is not unique to the BPF Forest. The vintage of FRI also resulted in challenges for operational planning and wood supply modeling.
Recommendation # 1: Corporate MNRF must redouble its efforts to work towards the timely delivery of FRI products to enable the inclusion of the best available forest inventory information in forest management plans.

Independent Forest Audit – Record of Finding

Recommendation # 2

Principle: 2 Public Consultation and Aboriginal Involvement

Criteria: 2.1.1 …committee establishment and terms of reference

2.1.2 …purpose and activities

Background Information and Summary of Evidence:

The 2009 FMPM describes the intent, direction, and presumably the spirt, of the applicable EA Order and CFSA requirements with respect to Local Citizen Committees. The introductory section of the 2009 FMPM, Part A, 1.1.3 states…

This committee may be established for the particular management unit for which the forest management plan is being prepared, or it may be an MNR district committee established to assist in the production of forest management plans for all management units in the district. For some management units, the MNR District Manager may establish additional local citizens committees or sub-committees.

Additional detail is provided in Part A, 3.2.3 of the FMPM…

Normally, there will be a local citizens committee for a management unit. However, the MNR District Manager may establish additional local citizens committees or sub-committees, where a management unit encompasses a large geographic area with many communities.

While the FMPM provides the option for a LCC that represents many forest units, in Section 3.2.3 it describes a "…*committee for a management unit*" and provides the District Manager with the option to "… *establish additional* "committees. Section 3.2.2 of the FMPM also describes a total of 14 purposes for a LCC covering all aspects of forest management (e.g. providing plan input, reviewing plan implementation, reviewing plan amendments, providing local advice, etc.). It also specifically describes 16 potential stakeholder groups to be considered for LCC membership (e.g. local municipality, naturalists, trappers, etc.).

In the 2009 IFA the MNR provided financial reasons for the amalgamation of several LCC's. At that time LCC members expressed concerns that travel time and distance and the loss of "local knowledge" would result in problems retaining members and the reluctance of members to provide input on issues and for geographic areas they were not familiar with. The auditors agreed, and provided a recommendation that the "…*costs and benefits*" of the amalgamation option be carefully considered in the light of member concerns. The Corporate MNR response indicated, "*Nothing….indicated a need to change Condition 5 of the Declaration*

Order" and "Decisions *related to…Local Citizen's Committees …are made at the local level…"*

Five years later the amalgamated PRPCC membership has plummeted from approximately 20 members to 6 (at the time of this audit). Approximately 50% of all meetings did not have a quorum and many meetings had more MNRF and/or Company staff in attendance than LCC members. Meeting minutes describe the ongoing frustration and discontent of the remaining members. For example March 9, 2010…

"We used to have 13-20 people at every meeting when we were discussing issues. What's happened is that Grant and one other person showed up at the Oct 29 meeting. The next meeting only 5 people showed up. This meeting began to be scheduled sometime back in December---these things that are happening to us do not make well for regular meetings. There are guys on our committee, and they are 60 miles north in the bush—they have a hard time getting to the meeting. We're not getting the representation that the LCC is supposed to provide. We also have replacement of members, which is next to impossible".

Our interviews with existing and past LCC members indicated a high level anger and frustration with the demise of the once effective and productive LCC's. There was also a firm perspective amongst LCC members that the MNRF did not really want an effective and engaged LCC, but rather a group to be called upon, when needed, to rubber stamp FMPM requirements (e.g. amendments). Past members indicated they would not participate in a process where they were commenting on issues and a land base they were not familiar with.

Discussion

The issues reported in the 2009 IFA, and the concerns expressed by LCC members at that time have all proven to be correct. Our investigations indicated that funding is at the root of the MNRF decision to amalgamate the LCC's. Corporate statements that the decision rests with the District Manager are misleading in that the corporate level provides the funding, essentially removing options from the District Manager Corporate MNRF does not appear to be concerned that LCC's may lose their "local" focus and it is hard not to agree with LCC member allegations that their purpose is to "rubber stamp" FMPM requirements, when required.

Our assessment, similar to the 2009 IFA conclusion, is that the MNRF is selectively interpreting the Environmental Assessment (EA) Order wording while ignoring the intent and spirt which is to engage local citizens and communities in the management of their forests. With the continuing government focus on partnerships, public consultation and community involvement this implementation interpretation of the LCC model is difficult to understand. Compared against most government public consultation initiatives the LCC model has proven to work and, relatively speaking, the financial cost is minimal.

The Wawa District's attempt to interpret FMPM intent and directions to support a current economic decision is wrong, and disrespectful to volunteer citizens who were recruited by the District Manager to provide local input. It has clearly not been accepted by past and remaining

LCC members, creating confusion and anger. The issues are clearly known and have been repeatedly brought to the attention of the MNRF and recorded in LCC minutes.
Recommendation # 2: The Wawa District MNRF must immediately undertake actions to meet FMPM Section 3.2.1 and 3.2.2 requirements to fulfill the purposes of an LCC. Actions must include meaningful involvement of the remaining PRPCC members in discussions including an assessment of the barriers to participation in the LCC, the LCC Terms of Reference vis a vis stakeholder perceptions of the LCC role in the forest management planning process and FMPM/CFSA requirements, and the costs and benefits of single versus multiple LCCs**.**

Independent Forest Audit – Record of Finding

Recommendation # 3

Principle: 3 Forest Management Planning

Criterion: 3.7 Confirmation of Phase II Planned Operations and Plan Author Planning Team, Chair and Advisor Activities

Procedure(s):
3.7.1.2 Assess the updated FMP planning team, terms of reference, and project plan compared to the applicable FMPM requirements including whether there was sufficient representation of professionals to address all planning requirements of the applicable FMPM in the composition of the planning team.

3.7.2.1 Assess the effectiveness of the plan author, planning team, chair and advisors…….

Background Information and Summary of Evidence:

Section 2.5 of the approved Planning team Terms of Reference states: "….*All planning team members are expected to attend planning team meetings*…." A review of the planning team minutes indicates that the MNRF Resource Planner/First Nation Liaison member did not attend any of the planning team meetings.

The planning team minutes also contain several (4 of the 6 meetings) references where meeting follow-up was required to obtain information or information updates (mostly related to First Nation attendance and values) from the absent MNRF Resource Planner/First Nation Liaison member.

Of the six places allotted for First Nation members only three were filled. First Nations represented attended two of the six planning team meetings. The MNRF Section 34 Reports for 2011-12 and 2012-13 state that "*The communities of Pic Mobert First Nation, Pic River First Nation and Pays Plat First Nation were active participants on the Forest Management Planning Team. Ginoogaming First Nation, Long Lake No. 58 First Nation and Constance Lake were also participating, but not as active*." The BPF is undergoing a major transition in management responsibilities from the Crown to a LFMC which has a responsibility to create more diverse economic opportunities for local aboriginal communities.

Discussion:

Achieving First Nation participation in forest management planning is often difficult and there is good documentation of the efforts of planning team members to encourage First Nation participation in the planning process.

In light of the attendance record at planning team meetings we disagree with statements in the MNRF Section 34 Reports that First Nation communities were active participants on the

Forest Management Planning Team.

We are also concerned that the MNRF Resource Planner/First Nation Liaison member did not attend any meetings. Attendance at meetings is clearly required in the Terms of Reference approved by the District Manager, and the position in question reports to that District Manager.

It is also hard to understand the lack of attendance in this critical forest management activity when the Big Pic Forest is undergoing a major transition in management responsibilities from the Crown to a Local Forest Management Corporation. The Corporation has a strong role in creating more diverse opportunities for local aboriginal communities located on its land base and "*the Aboriginal communities of Pic Mobert First Nation, Pic River First Nation and Hornepayne Aboriginal Community have been identified to participate in the development and Board for the LFMC*". We feel that attendance by MNR Resource Planner/First Nation member could only have helped with attempts to enhance First Nation involvement in forest management.

Conclusion:

Attendance at the 2007 FMP Phase II planning team meetings by First Nation members was poor and attendance by the MNR Resource Planner/First Nation Liaison was nonexistent.

Recommendation # 3:

The MNRF District Manager should make every effort to ensure that FMP Planning Team Members (MNRF staff and appointed volunteers) actively participate on the planning team and provide advice and support to the forest management process in a manner consistent with their level experience and expertise.

Independent Forest Audit – Record of Finding

Recommendation # 4

Principle: 4 Plan Assessment and Implementation

Criterion: 4.4. Renewal

Procedure(s): 4.4.1. Assess the effectiveness of operations to reduce areas of slash piles and chipping debris and treatments to regenerate those areas.

Background Information and Summary of Evidence:

The previous audit had provided a recommendation addressed at the slash and debris management program. The Phase II FMP requires that all non-merchantable logging debris that are brought to or generated at roadside as part of a harvesting operation are to be managed to limit the loss of productive forest lands, reduce/eliminate visual impacts of the debris on the landscape and to reduce the potential fire hazard associated with unmanaged debris piles. The plan objective is that >50% of the harvested area will be assessed and managed under a slash management program. Two broad management strategies are utilized which recognize the likelihood of whether the slash/debris would be utilized for biofibre within a two year period. If debris were to be merchandized they could remain untended, pending future piling/manipulation for a two year period. In instances where the debris would not be merchandized a number of management options were to be adopted including piling, burning, redistribution, rowing etc.

During our site inspections we encountered areas where slash and debris had been managed and other areas where no management activities had been implemented. In managed areas slash had been piled and then merchandized by grinding (in instances where markets were available for biofibre), or alternatively chipper debris had been spread within the cutover and/or piled. We were also informed of applications where slash had been used as bush mats and for stream stabilization during operations. No slash pile burning occurred during the audit term.

During the later years of the audit term, it was apparent that more concerted efforts were made to manage slash and debris. However, the Trends Report indicates up to the 2012-2013 reporting period 16,152 ha had been harvested with only 217 ha (1%) of this area being assessed and managed under the slash management plan. We are concerned that productive forest land is being removed from the land base when slash management strategies are only partially implemented, not implemented or are poorly timed.

Conclusion:

We are concerned that productive forest land is being removed from the land base when slash management strategies are only partially implemented, not implemented or are poorly timed.

Recommendation # 4:

NFMC must ensure that all harvested areas are assessed for debris and slash management in accordance with the direction of the 2007 FMP.

Independent Forest Audit – Record of Finding Recommendation # 5
Principle: 4 Plan Assessment and Implementation **Criterion:** 4.4. Renewal **Procedure(s):** 4.5.1. Review and assess in the field the implementation of approved renewal operations
Background Information and Summary of Evidence: The field audit revealed problems with the availability and reliability of some silvicultural records for some of the audited renewal sites. Additionally, we observed a number of instances of poor quality planting (e.g. discarded trees, poor spacing, and poor microsite selection). The poor planting quality was attributed to poor field supervision of the planting crews and/or insufficient auditing of planting contractors by the MNRF and/or its service providers.
Recommendation # 5: NFMC must ensure that tree planting contractors are adequately supervised and conduct quality assessments of tree planting operations (as necessary) to ensure that quality standards/requirements are met.

Independent Forest Audit – Record of Finding

Recommendation # 6

Principle: 4 Plan Assessment and Implementation

Criterion: 4.5. Renewal, Tending and Protection

Procedure(s): 4.5.1. Review and assess in the field the implementation of approved tending and protection operations and determine if actual operations were appropriate for actual site conditions encountered.

Background Information and Summary of Evidence:

Vegetative competition, particularly in areas with clay, loam or silt soils poses a significant management challenge for renewal of conifer species on the Big Pic Forest. Our field observations indicated that monitoring and timely tending interventions are required on these sites in order to ensure adequate conifer stocking levels.

We encountered problems with the availability and reliability of some silvicultural records for some sites during the field audit. In general the tending program achieved mixed results. We visited a number of sites where the treatments were ineffective in controlling competition (particularly grasses), sites where we questioned the appropriateness of the chemical tending prescription (either due to low initial seedling survival and/or the apparent lack of site competition) and sites where a subsequent tending treatment would prove beneficial.

Chemical site preparation was not widely adopted as a vegetation control method. We visited several areas where a chemical site preparation treatment would have proven effective in reducing competition.

Our field investigations lead us to conclude that in some instances vegetative competition has resulted in some forest unit transitions and lower stocking levels of desired species. These observations are collaborated by MNRF Silvicultural Effectiveness Monitoring (SEM) reports and Free to Grow (FTG) survey data which indicate that the silvicultural success rate is very low (28%). The Trends Analysis Report states the following with respect to the low silvicultural success rate: "*Higher regeneration success rates to the projected/prescribed forest units (silviculture success) are needed particularly when funds are invested in artificial/assisted regeneration treatments. This may be achieved with diligent monitoring and the timely application of tending treatments; with improved initial renewal prescriptions and effort allocation and with a better understanding of natural ingress abundance".*

Conclusion:

In the absence of an effective tending program the investment in conifer renewal can be lost. In addressing tending issues and requirements it is suggested that NFMC consider all available techniques and approaches to vegetation management (i.e. chemical site preparation, ground-based herbicide treatments, manual brushing, alternative silvicultural practices).

Recommendation # 6:

NFMC must deliver an effective vegetation management program to ensure the renewal of conifer forest units. The tending program must consider a suite of treatment options (i.e. chemical site preparation, manual tending, ground based herbicide treatments, alternative silviculture approaches).

Independent Forest Audit – Record of Finding

Recommendations # 7 & 8

Principle: 5 Systems Support

Criterion: 5.2 Document and Record Quality Control

Procedure(s): 1. Assess the organization's information management system processes …

Background Information and Summary of Evidence:

Many of the planning and operational issues reported arise from issues we identified with respect to the transformation process within the MNRF and the start-up period at NFMC, both of which resulted in a heavy dependency on contracted service providers to meet forest management obligations and responsibilities on the BPF. MNRF shortcomings in the managerial oversight and quality control of some contracted services/products also contributed to issues and problems in the planning and delivery (e.g. insufficient area identified for SIP contracts, revisions to tree plant prescriptions), and reporting of silvicultural activities (e.g. map/data/reporting errors and omissions, inconsistencies between map products). We encountered problems in the delivery of our field audit with the availability (i.e. FTG stand descriptions and competition records were unavailable) and reliability of some silviculture records on some of the inspected sites (i.e. silviculture activities not recorded).

We were also informed of errors and inaccuracies in digital map products and other errors in GIS products, the forest inventory, and some area tabulations (e.g. FTG). Problems with the consistency of map products between the various service providers were also identified as an issue.

An additional concern for the audit team was that some forest management records had yet to be transferred to NFMC by the MNRF or its service providers. Some records had not been retrieved from the previous SFL holder, had been misplaced or were still in storage. Additionally, gaps in the NFMC records management system exist. For example, a consolidated database for the tracking and recording of natural regeneration has not been developed.

Conclusion:

Accurate and up-to-date information is required to deliver a high quality forest management program (planning and operations). The MNRF had the responsibility to manage and maintain an effective information management system and to ensure that all work contracted to service providers was complete and accurate and met format requirements.

MNRF's management of silviculture records and associated data was inadequate. Records had not been made available to the LFMC, had not been retrieved from the previous SFL

holder, or had been misplaced or remained in storage and were unavailable to the forest management process. Some records and map products contained inaccuracies which contributed (to varying degrees) to operational issues in the planning and delivery of silviculture projects.

NFMC must conduct a review of its forest management records to identify information/record gaps (i.e. database for tracking of natural regeneration) and implement a process with MNRF, the previous SFL holder and service providers to retrieve missing data/records/information. Given the data errors and inconsistencies found during the audit a thorough review of all silvicultural and forest management records is warranted to verify their accuracy and completeness.

Recommendation # 7:

The MNRF District Manager and NFMC must ensure that contracted service providers have the capacity to deliver timely, accurate and high quality information and results and that the information received is reviewed for accuracy and completeness.

Recommendation # 8:

NFMC must conduct a review of its forest management records to 1) identify information/record gaps 2) implement a process with MNRF, the previous SFL holder and service providers to retrieve missing data/records/information and 3) verify the records for accuracy and completeness.

Independent Forest Audit – Record of Finding

Recommendation # 9

Principle: 5 Systems Support

Criterion: Systems support concerns resources and activities needed to support plan development and implementation so as to achieve desired objectives.

Background Information and Summary of Evidence:

In 2013, forest management responsibilities were assigned to the NFMC under an Enhanced Forest Resource Licence (EFRL). Under its licence to harvest the company must meet all the obligations of a Sustainable Forest Licence (SFL) holder as set out in the Forest Management Planning Manual (FMPM), the Forest Information Manual (FIM), and the Forest Compliance Handbook. The objects of Nawiinginokiima Forest Management Corporation are:

1. To hold forest resource licences and manage Crown forests in accordance with the CFSA and to promote the sustainability of Crown forests.

2. To provide for economic development opportunities for Aboriginal peoples.

3. To manage its affairs to become a self-sustaining business entity that optimizes value from Crown forest resources while recognizing the importance of local economic development.

4. To market, sell and enable access to a predictable and competitively priced supply of Crown forest resources.

5. To carry out such other objects as may be prescribed by regulation made under the *Ontario Forest Tenure Modernization Act, 2011* and Regulation.

The start-up phase of NFMC has been protracted. This audit noted front-line staffing vacancies, issues associated with the tendering process for the delivery of silviculture activities, incomplete forest management records and delays in acquiring the infrastructure necessary for the day-to-day operations.

Discussion:

Ontario's forest management system is structured around the delegation of various forest management responsibilities to forest resource licence holders (i.e. SFL, EFRL) with the capacity to meet the requirements of the CFSA and its regulated manuals. There is an implicit expectation that the forest management entity will have the necessary professional and technical staff, financial resources and infrastructure to

meet its obligations and responsibilities as the manager of the public forest.

Typically a business plan articulates amongst other things, an organizations structure, vision, policy statements and the human resource and capital requirements for the operations of the entity. Procurement procedures for the acquisition of goods and/or services may also be articulated. The business and operational challenges observed during the audit and our review of the draft business plan lead us to conclude that there is a requirement for NFMC to finalize and fully implement its business plan.

Conclusion:

NFMC needs to finalize its draft business plan. The final business plan should articulate and operationalize a business model which fully addresses all the forest management obligations and responsibilities that have been delegated to the corporation.

Recommendation # 9:

a) NFMC must move quickly to acquire the capacity and infrastructure necessary to complete its start-up phase and undertake its full management obligations and responsibilities.

b) NFMC must finalize a business plan for approval by the MNRF which articulates and operationalizes its business model.

Independent Forest Audit – Record of Finding

Recommendations # 10 & 11

Principle: 6 Monitoring

Criterion: 6.3 Silvicultural Standards Assessment Program

Procedure(s): Assess whether the management unit assessment program is sufficient and is being used to …. Appropriately update the FRI.

Background Information and Summary of Evidence:

The MNRF transformation process, an emphasis on other work priorities (by both the MNRF and NFMC), the bankruptcy of the SFL holder and the transfer of management responsibility for the Forest all contributed to a limited field presence of forestry staff and disruptions to planned silviculture and monitoring activities during the audit term. As a result limited silvicultural assessment work was undertaken during the audit term. Audit term Annual Reports indicate that 5,462 ha of competition surveys[26] and 1,148 ha of natural regeneration survey (2011-2012) were completed. The Trend Analysis Report indicates that "*approximately 5,360 ha of harvest/salvage area (some of which is from the 2002-2007 period), still requires formal reporting of either natural or assisted (artificial) regeneration treatment*."

Seventy-two thousand five hundred and forty (72,540) ha of regeneration assessments were planned in the 2007-2017 FMP. In the last reported period (2012-2013 AR) assessments had been completed on 16,305 ha with 4,662 ha reported as a silvicultural success (successfully regenerated to the projected forest unit) and 11,158 ha being classed as a regeneration success (regenerated to a different forest unit). Four hundred and fifty-eight hectares had not achieved free-to-grow status at the time of the assessments.

The backlog in the area requiring regeneration survey is accumulating since the area surveyed for regeneration success has not kept pace with the area harvested since 1992. In the current management term only 22% of the area forecast for assessment has been surveyed (Trends Report). A recommendation of the previous audit required that the backlog in FTG surveys be addressed. The current backlog is 20,500 hectares. The persistence of the backlog is attributed to factors such as the changes in management responsibility that occurred over the audit term and staff availability due to other work priorities.

The silviculture success rate is low (28.6%). Forest unit transitions are occurring mainly within intensively treated conifer units (SB1 and PJ1 forest units). Interview respondents attributed the low level of silviculture success within these units to higher than anticipated levels of natural ingress (particularly larch ingress in SB1 lowland sites), retention of other species (i.e. eastern white cedar), the time scale adopted to achieve free growing status (8-12 years after harvest), inaccuracies in original FRI, and inconsistencies in forest unit descriptions over

[26] 4,758 ha 2011-12 and 704 ha 2012-13

successive management terms. The Trends Analysis Report states the following with respect to the low silvicultural success rate: "*Higher regeneration success rates to the projected/prescribed forest units (silviculture success) are needed particularly when funds are invested in artificial/assisted regeneration treatments. This may be achieved with diligent monitoring and the timely application of tending treatments; with improved initial renewal prescriptions and effort allocation and with a better understanding of natural ingress abundance".* Given the backlog in area requiring assessment, it is also possible that more regeneration surveys are required to ascertain the true status of renewal on the Forest.

MNRF Silviculture Effectiveness Monitoring (SEM) data and reports highlight discrepancies in the SEM results between extensive aerial assessments (observations) and intensive ground-based assessments (silvicultural success is higher when using aerial observations). It is unclear whether these differences represent a systemic error inherent in the survey methodologies (ground surveys lack the stand wide perspective of aerial surveys, but it is difficult to accurately determine stand composition based on extensive aerial assessment).

The reports also indicate that the comparison of SEM results is difficult because of the lack of available information to assess silviculture success in Annual Reports. Information on the species composition descriptions from FTG surveys conducted during the audit term were unavailable for our aerial survey so we are unable to comment as to whether or not stand descriptions in the FTG surveys are erroneous.

Conclusion:

A limited amount of silvicultural assessment work was completed during the audit term. Regeneration surveys have not kept pace with the level of harvesting since 1992. A backlog in the area requiring regeneration survey is accumulating. In the current management term only 22% of the area forecast for assessment has been surveyed.

Given 1) the reported inconsistencies between the aerial and ground survey assessments 2) the reported difficulties in assessing silvicultural success from information in the Annual Reports 3) the inability of the audit team to comment on stand species compositions in areas declared FTG because of records management issues and 4) the persistence of a concern (over two consecutive audit terms) with respect to the effectiveness of the SGRs for the SB1 forest unit we conclude that it would be prudent for NFMC to conduct verification sampling of areas declared FTG during the audit term.

Recommendation #10::

NFMC must address the backlog in area requiring regeneration assessment and maintain an annual regeneration assessment program approximating the annual allowable harvest area.

Recommendation # 11:

NFMC must design and implement a sampling program to verify the accuracy of FTG information acquired during the audit term.

Independent Forest Audit – Record of Finding Recommendation # 12
Principle: 6 Monitoring **Criterion:** 6.3 Silvicultural Standards Assessment Program **Procedure(s):** Assess whether the management unit assessment program is sufficient and is being used to …. Appropriately update the FRI.
Background Information and Summary of Evidence: In 2007-2008, 3,906 ha were assessed for FTG status by a contractor but the results of the survey were not provided in a useable format. The 2011-2012 Annual Report indicates that the submission status of this work remains unknown.
Conclusion: NFMC must secure the records for the 2007 FTG survey.
Recommendation # 12: NFMC must verify the status of the 2007 FTG work and secure the records for input in the forest resource inventory.

Independent Forest Audit – Record of Finding Recommendation # 13
Principle: 6 Monitoring **Criterion:** 6.5. Annual Reports **Procedure(s):** 6.5.1. Determine if Annual Reports have been prepared in accordance with the applicable FMPM including associated deadlines.
Background Information and Summary of Evidence: Annual Reports are to be submitted in accordance with the requirements of the FMPM and the Forest Information Manual (FIM). The AR is to be prepared and submitted by November 15. MNRF staff review the report for accuracy and completeness and are to provide results of the review to the report author within 30 days of the receipt of the AR. Comments provided by the MNRF are to be addressed and, if required, a revised AR is to be submitted by February 15th. Audit term Annual Reports (ARs) were prepared by various contracted service providers retained by the MNRF or NFMC. The FMPM schedule for reporting was met. The 2014 AR was not due, or available, for the audit. While the ARs met FMPM content requirements we were informed during interviews that the use of multiple service providers (3) and inadequate quality control resulted in errors in the digital map products and errors in the reporting of the area of forest management activities.
Discussion: MNRF has the responsibility to ensure that ARs are reviewed for accuracy and completeness. The previous audit recommendation that the 2006-2007 Annual Report be re-submitted was addressed.
Recommendation # 13: NFMC and the District MNRF must be more diligent in the review of ARs to ensure that the reports and associated products meet all FIM and FMPM requirements.

Independent Forest Audit – Record of Finding

Recommendation # 14

Principle: 8. Contractual Obligations

Criterion: 8.2.2. Audit action plan and status report

Procedure: An action plan responding to audit recommendations … is to be completed within 2 months of receiving the final audit report.

Background Information and Summary of Evidence:

The previous audit was submitted January 4, 2010. The IFAPP requires that the Action Plan to address audit recommendations must be prepared within 2 months of the receipt of the audit report. The Action Plan was submitted approximately 7 months late (October 30, 2010).

As identified in this report (Section 4.8) a number of recommendations from the previous audit have not been not properly addressed.

Recommendation # 8: Records management is a significant concern during the audit term. We provide a recommendation to address this concern (Recommendation # 8, Appendix 1).

Recommendation # 9: During the audit term there was limited monitoring of renewal sites. Given the competitive nature of sites and our field observations of the varied effectiveness of tending treatments, we repeat a recommendation to monitor renewal sites for tending requirements and to implement tending treatments as required (Recommendation # 6, Appendix 1).

Recommendation # 10: Some progress has been made in addressing the slash and debris management issues raised in the last audit and efforts were made to merchandize roadside debris during the later years of the audit term. However, as indicated in the Trends Report, only 217 ha (1%) of the harvested area had been assessed and managed under the slash management plans. We provide a recommendation (Recommendation # 4, Appendix 1).

Recommendation # 12: While ARs met FMPM content requirements errors in the reports and associated data products persist. The FMPM schedule for reporting was met. The requirement of the previous audit to submit the 2006-2007 AR immediately was addressed with the initial submission of the AR in May, 2010. Final acceptance of the AR by the MNRF occurred in June, 2010. We provide a recommendation to address the issue of data inconsistencies and to improve the managerial oversight of service providers preparing AR documents (Recommendation # 13, Appendix 1).

Recommendation # 14: The Action Plan was submitted late and not all recommendations from the previous audit have been adequately addressed. We provide a recommendation (Recommendation # 14, Appendix 1).

Recommendation # 16: A backlog in the area requiring FTG survey (approximately 20,500

hectares) still exists (Recommendation # 10, Appendix 1).
Recommendation # 14 : a) The MNRF District Manager must ensure that the Action Plan is prepared in accordance with the schedule specified in the IFAPP. b) The MNRF District Manager must ensure that all Action Plan items are adequately and effectively addressed.

Independent Forest Audit – Record of Finding

Recommendation # 15

Principle: 7: Achievement of Management Objectives and Forest Sustainability
8: Contractual Obligations

Criteria: 7.5 Conclusions regarding sustainability of the Crown forest.
8.2.7 Concluding Statement

Procedures:

7.5.3. Based on consideration of audit results for all criteria and procedures in 7, as well as other audit findings, including forest management practices as viewed in the field, draw conclusions as to whether forest sustainability is being achieved, as assessed through the Independent Forest Audit Process and Protocol; document the conclusion in the audit report.

8.2.7.1. Based on consideration of audit results for the preceding criteria in this IFAPP Appendix the auditor will make a concluding statement related to the management of the forest.

Background Information and Summary of Evidence:

This audit identifies a number of shortcomings with respect to the delivery of MNRF's forest management program. These include:

- A number of recommendations from the previous IFA were not properly addressed.
- MNRF oversight of service providers and quality control for contracted products was often inadequate and resulted in poor quality records and map products.
- The management of silviculture records and associated data/products was often inadequate and contributed to issues and problems in the planning and delivery (e.g. insufficient area identified for SIP contracts, revisions to tree plant prescriptions), and reporting of silvicultural activities (e.g. map/data/reporting errors and omissions, inconsistencies between map products).
- A limited amount of silvicultural assessment work was completed. Regeneration surveys have not kept pace with the level of harvesting and as a result a backlog in the area requiring regeneration survey is accumulating.
- Slash management strategies were only partially implemented, not implemented or were poorly timed.
- Forest management records had not been made available to NFMC, had not been retrieved from the previous SFL holder, or had been misplaced or remained in storage and were unavailable to the forest management process and the IFA.
- The reported silviculture success rate is low (28.6%).
- Poor planting quality was attributed to poor field supervision of the planting crews and/or insufficient auditing of planting contractors by the MNRF and/or its service providers.

- The Action Plan was not prepared in accordance with the IFAPP schedule.
- The LCC is dysfunctional.

Conclusion:

MNRF had a limited field presence, provided inadequate management oversight of its forest management service providers and/or contractors and did not fully meet its obligations in the delivery of the planned silvicultural program.

Although many forest management responsibilities have been transferred to NFMC, MNRF will have a continuing critical role in the sustainable management of the BPF and must therefore ensure that sufficient work priority and related resources are assigned to meet the Crown's mandate, responsibilities and obligations for forest management.

Recommendation # 15 :

The MNRF Wawa District Manager must ensure that sufficient work priority and related resources are assigned to meet the Crown's forest management responsibilities and obligations.

Appendix 2

Achievement of Management Objectives

Note: The table below provides our assessment of the achievement of the objectives of the Phase I 2007 FMP.

2007 FMP Objectives	Assessment of Objective Achievement (Met, Not Being Met, Partially Met, Uncertain)	Auditor Comments
OBJECTIVE 1. FOREST DIVERSITY **To develop over time, a forest with characteristics which, to the extent possible, resemble those of fire-driven boreal forests at both the stand and landscape levels while providing for provincially and locally featured species habitat and species-at-risk habitat**		Note: Forest diversity objectives are long term and were created and tested in the production of the 2007 FMP. It is too early to assess any changes since the approval of the 2007 FMP. However we have included some comment (below) for each of the indicators identified in the FMP for this objective.
1.1 Landscape Pattern	Partially Met	The targets for forest disturbance distribution were generally achieved. The targets for marten habitat will be achieved over time.
1.2 Forest Structure; Composition and Abundance	Partially Met	The trend is toward desirable forest structure composition and levels of abundance for all forest units with the exception of two.
1.3 Amount and Distribution of Mature Forest.	Met	All measures fell within target levels with the majority of measures achieving desirable levels. Where desirable measures were not achieved the result was attributed to requirements to balance plan objectives.
1.4 Amount and Distribution of Old Growth Forest.	Met	All measures fell within target levels with the majority of measures achieving desirable levels. Where desirable measures were not achieved the result was attributed to requirements to balance plan

		objectives.
1.5 Area of Habitat for Forest-Dependent Provincially and Locally Featured Species.	Met	In general, spatial and non-spatial wildlife habitat levels were maintained within the targeted ranges. A change in caribou habitat management direction was implemented with the Phase II FMP. This direction resulted in an additional harvest deferral area in the northern continuous population zone. As such, this objective indicator became null and void. Revised policy direction related to the *Endangered Species Act* and the *Forest Management Guide for Boreal Landscapes* will be implemented with the next FMP.
1.6 Area of Habitat for Forest-Dependent Species at Risk.	Met	All measures fell within the target levels and meet or exceed desirable levels.
OBJECTIVE 2. SOCIAL AND ECONOMIC: **To maintain a level of access on the Forest to provide for the efficient delivery of forest management activities while providing opportunities for other commercial and recreational user on the forest.**		
2.1 Road Density.	Met	Primary and branch road densities remain within the target range with a 1% increase in road density.
2.2 Road Classification (Primary and Branch Roads on Crown Land)		This is a monitoring indicator only.

OBJECTIVE 3. SOCIAL AND ECONOMIC: **To provide continuous and predictable harvest levels (area and volume) that, to the extent possible, meet the wood supply demands over the short-, medium-, and long-terms based on the 2006 Management Unit Contribution (MUC) by species group, contributing to Ontario's economy.**		
3.1 Long-term projected available harvest area and volume by species group.	Partially Met	In the 2007 FMP the mix of species was optimized to meet volume targets. The mid-term downward trend in available harvest area correlated with the downward trend in available harvest volumes. The areas and volumes trend back to the target range toward the end of the 100 year timeframe.
3.2 Available, forecast and actual harvest area by forest unit.	Not Met	Harvest levels were below planned levels due to the persistence of weak markets for forest products. The downturn in the forest sector economy resulted in the idling and/or closure of many of the wood processing facilities which utilized wood/fibre from the BPF. As a result of the persistence of weak markets during the audit term harvest levels were well below planned levels (~ 45%) with the low level of harvest achievement negatively affecting the achievement of other FMP targets linked to harvesting (e.g. site

		preparation, aerial tending).
3.3 Available, forecast and actual harvest volume, by species.	Not Met	The downturn in the forest sector economy resulted in the idling and/or closure of many of the wood processing facilities which utilized wood/fibre from the BPF. As a result of the persistence of weak markets during the audit term harvest levels were well below planned levels (~ 45%) Conifer utilization was higher than hardwood utilization reflecting the availability of markets for conifer species. The lack of markets for hardwoods served to constrain the availability of conifer species from mixed wood forest units and restricted the capability to conduct harvest operations in planned second pass harvest areas.
3.4 Percent of forecast volume actually utilized by Mill.	Not Met	The majority of mill destinations projected to utilize volume in the 2007 FMP were idled or closed for some or all of the 2007-2009 operating period. Conifer utilization achieved 38% of the planned forecast volume (685,443 m^3) while hardwood utilization achieved 3 % of the forecast volume (39,384 m^3).
OBJECTIVE 4. SOCIAL AND ECONOMIC: **To ensure that the Managed Crown forest that is available over time is maintained to meet the long-term harvest levels (area) thus contributing to Ontario's economy**.		

4.1 Managed Crown Forest available for timber production.	Partially Met	This indicator is to be reported at the time of the Year 7 & 10 ARs. However, the trends report indicates "*The area of purer conifer forest units is modestly declining and the area of purer hardwood dominated forest is modestly increasing*". Overall there have not been significant removals from the productive Crown forest land base.
OBJECTIVE 5. SOCIAL AND ECONOMIC: **To develop a consultation approach that will provide opportunities for Aboriginal, local communities, and the Local Citizens Committee (LCC) for input in plan development.**		
5.1 Opportunities for involvement in plan development provided to aboriginal communities.	Partially Met	Aboriginal Communities were contacted at least 6 months prior to the Invitation to Participate and all 5 Aboriginal Communities were contacted on an ongoing basis throughout the planning process. The target of having FN attendance at 75% of meetings was not met.
5.2 Local citizens committee's self-evaluation of its effectiveness in plan development.	Met	The LCC indicated their general support for the FMP. However, members were concerned about having inadequate time to understand plan contents and to communicate with their constituents.
OBJECTIVE 6. SILVICULTURE:	Not Met	We found that there were significant silvicultural related problems on the BPF during

To ensure harvested lands are renewed through appropriate silviculture practices and meet the related regeneration standards.		the audit period. In addition to commenting on the specific FMP objectives and indicators we have outlined these additional issues below: We observed a number of instances of poor quality planting due to poor field supervision of the planting crews and/or insufficient auditing of planting contractors by the MNRF and/or its service providers. Delays in issuing the tree plant tender and in the awarding of the contract resulted in experienced bidders not being available for the project. The successful proponent was under-staffed, which resulted in the late completion of the project in August. We are also informed of additional problems with the quality of tree plant prescriptions for some sites and problems with accuracy/quality of some map products required for planned silviculture projects. There were a number of sites where the treatments were ineffective in controlling competition (particularly grasses), sites where we questioned the appropriateness of the chemical tending prescription and sites where an initial chemical site preparation treatment and/or subsequent tending treatment(s) would prove beneficial. Competition assessment records were not available to the audit team. The issue of record

		management is an issue in the silvicultural program. The reported low silviculture success rate (28%) is in part attributed to a need for the forest manager to be more diligent in monitoring artificial renewal sites and ensure the timely and effective application of tending treatments. The area renewed is in balance with the area harvested. SGRs, STPs and FOPs were appropriate to site conditions
6.1 Percent of harvested forest assessed as free growing by forest unit	Not Met	There are backlogs in the area requiring regeneration assessment and free-to-grow survey.
6.2 Area (ha) of Pre-commercial thinning	Not Met	No pre-commercial thinning occurred during the 2007-2009 operating period.
6.3 AR measure of slash management activities (% of allocation)	Partially Met	During our site inspections we encountered areas where slash and debris had been managed and other areas where no management activities had been implemented. In managed areas slash had been piled and then merchandized by grinding (in instances where markets were available for biofibre), or alternatively chipper debris had been spread within the cutover and/or piled. We were also informed of applications where slash had been used as bush mats and for stream stabilization during operations. No slash pile burning occurred during the audit term.

		We are concerned that productive forest land is being removed from the land base when slash management strategies are only partially implemented, not implemented or are poorly timed. The Trends Report indicates up to the 2012-2013 reporting period 16,152 ha had been harvested with only 217 ha (1%) of this area being assessed and managed under the slash management plan.
OBJECTIVE 7. PROVISION OF FOREST COVER FOR THOSE VALUES THAT ARE DEPENDENT ON THE CROWN FOREST: **To ensure protection of natural resources, non-timber values and maintain a healthy forest ecosystem through the development and implementation of a compliance plan and the monitoring of operational prescriptions.**		Note: The indicators and measures under this objective will be formally assessed at the Year 7 and Year 10 Annual reports. The desirable level is 100%, however, the target has been set at >90%.
7.1 Compliance with prescriptions for the protection of natural resource features, land uses, or values dependent on the forest	Met	All inspected sites were approved for operations in the AWSs. Harvest prescriptions were properly implemented. Guidelines were met with respect to the number of trees retained per hectare, retained tree species composition and retained tree diameter distributions. There was little evidence of site or environmental damage arising from harvest operations. AOC prescriptions for harvest operations were appropriately

		implemented. There were two incidences of non-compliance for harvest operations during the audit term (for harvest outside of the planned and licenced area).
7.2 Compliance with the prescriptions for the protection of resource based tourism values	Met	There were no instances of non-compliance reported regarding prescriptions for the protection of resource-based tourism values
7.3 Compliance with Management practices that prevent, minimize or mitigate site damage	Met	There was little evidence of site or environmental damage arising from harvest operations although limited occurrences of rutting were observed on some lowland sites. Based on the low number of observed instances, we concluded that rutting was not a widespread problem.
7.4 Compliance with prescriptions developed for the protection of water quality and fish habitat	Met	Fisheries habitat and water quality was adequately protected in areas inspected during the audit. Water crossings construction and maintenance was well done.
7.5 Compliance with utilization standards	Met	There were 4 non-compliance instances in the 132 inspections completed by the company or the MNRF during the first three years of the 2007 FMP. Three of the four non-compliant operations do not belong with the above compliance indicators. Two non-compliant operations involved harvesting a small amount of wood beyond the marked boundary and one involved cleaning with herbicide in an unapproved block.
7.6 Compliance with	Met	We are not aware of any non-

Aboriginal AOC prescriptions		compliance with Aboriginal AOC prescriptions.
7.7 Non-compliance in forest operations inspections	Met	The number of inspections carried out was appropriate to the level of activity on the Forest. There were no major non-compliance issues or trends.

Appendix 3

Compliance with Obligations for Crown Management Units

Obligation	Comment
Payment of Forestry Futures and Ontario Crown charges.	As of March 31, 2014 there were outstanding charges for the Forest Futures Trust. (NFMC $ 10,569.43, FRLs $ 15,258.14). Crown charges are owed by the FRLs in the amount of $ 71,699.61. A funding agreement based on the Forestry Futures LFMC Program will enable NFMC to address its outstanding balance. The MNRF is working with the companies to arrange the settlement of the arrears.
Audit Action Plan and Action Plan Status Report prepared.	The Action Plan was submitted 7 months late (Recommendation # 14(a), Appendix 1). The Action Plan Status Report was submitted on time. A number of the recommendations in the Action plan have on-going status, won't be addressed until the next phase of planning or were not adequately addressed (Recommendation # 14 (b), Appendix 1).
Payment of forest renewal charges to Forest Renewal Trust (FRT).	There were monies owed to the FRT as of March 31, 2014. (NFMC $ 82,780.30, FRLs $ 35,452.84). A funding agreement based on the Forestry Futures LFMC Program will enable NFMC to address its outstanding balance. The MNRF is working with the companies to arrange the settlement of the arrears.
Forest Renewal Trust eligible silviculture work.	A sample of sites invoiced in the "*Forest Renewal Trust Specified Procedures Report"* was visited to ensure conformity between invoiced and actual activities. No non-conformities were found.
Forest Renewal Trust forest renewal charge analysis.	A forest renewal charge analysis was completed for each year of the audit term.
Forest Renewal Trust account minimum balance.	The minimum balance ($ 2,797,900) was maintained during the audit term.

Appendix 4

Audit Process

This IFA consisted of the following elements:

Audit Plan: An audit plan describing the schedule of audit activities, audit team members, audit participants and the auditing methods was prepared and submitted to the MNRF Wawa District, Regional MNRF, NFMC, Forestry Futures Trust Committee and the LCC Chair in May, 2014. A change in the field audit schedule necessitated a re-submission of the plan in July, 2014.

Public Notices: Public participation in the audit was solicited through the placement of a public notice in the Marathon Mercury (September 16, 2014) prior to the field audit. These notices invited the public to provide comments and/or complete a survey on the Arbex website. Additionally, a random sample of 60 individuals and organizations listed in the 2007 FMP mailing list were sent a letter and a survey questionnaire which invited comment on the forest management activities of the forest manager during the audit term.

All FNs and Métis organizations with an interest in the Forest were contacted to participate and/or express their views.

LCC members were advised of the audit and invited to participate in the audit process and a representative attended the field audit.

Field Site Selection: Field sample sites were selected randomly by the Lead Auditor (with the assistance of the Arbex GIS specialist) in June 2014. Sites were selected on the basis of operating year, forest management activity, species treated or renewed, and access using GIS shapefiles provided by the GFMI. Site selections were confirmed and finalized with NFMC and MNRF District Staff at the Pre-Audit Meeting (July 15, 2014).

Site Audit: The audit team spent 5 days on site during September/October conducting the field audit, document and record reviews and interviews. The field audit sampled between 10% and 100% of the forest management activities (including road construction and maintenance) that occurred during the audit term. (See the IFA Field Sampling Intensity on the BPF below).

Sample sites were stratified to ensure representation by silvicultural activity and year of operation. The audit team also inspected the application of Areas of Concern prescriptions, aggregate pits and water crossing installations. Areas listed in the "*Road Construction and Maintenance Agreement*" and sites invoiced in the "*Forest Renewal Trust Specified Procedures Report*" were visited to ensure conformity between invoiced and actual activities. The field inspection included site-specific (intensive) and landscape-scale (extensive helicopter) examinations. Individual sites were selected to represent a primary activity (i.e. harvesting, site preparation); however, all associated activities at the site were assessed at the same time, allowing the team to augment the planned sampling intensity.

Report: This report provides a description of the audit process and a discussion of audit findings and conclusions. Recommendations are directed at deficiencies in forest management and associated processes that require a corrective action.

Procedures Audited, by Risk Category								
Principle	**Low Risk**			**Medium Risk**			**High Risk**	**Comments**
	Applicable (#)	**Selected (#)**	**% Audited**	**Applicable (#)**	**Selected (#)**	**% Audited**	**Audited (#) (100% Audited)**	
1. Commitment	0	0	0	2	2	100	0	All procedures were audited.
2. Public Consultation and Aboriginal Involvement	0	0	0	6	6	100	2	All procedures were audited.
3. Forest Management Planning	7	5	71	12	11	92	41	The following procedures were not audited; 3.2.1., 3.2.2. & 3.6.2.
4. Plan Assessment & Implementation	1	1	100	1	1	100	10	All procedures were audited.
5. System Support	0	0	0	1	1	100	1	All procedures were audited.
6. Monitoring	0	0	0	7	7	100	11	All procedures audited.
7. Achievement of Management Objectives and Forest Sustainability	0	0	0	2	2	100	15	All procedures audited.
8. Contractual Obligations	0	0	0	2	2	100	5	All procedures for CMUs were audited.
Totals	**8**	**6**	**85**	**33**	**32**	**99**	**85**	

IFA Field Sampling Intensity Primary Activity Selection on the Big Pic Forest[27]

Activity	Total Area (Ha) / Number[28]	Planned Sample Area (Ha)	Actual Area (Ha) Sampled[29]	Number of Sites[30] Visited	Percent Sampled
Harvest	10,275[31]		1,084	13	11
Renewal	12,530	1,448	1,448	25	12
Site Preparation	2,106	351	351	10	17
Free-to-Grow	16,305	1,755	1,755	17	11
Tending	6,651	784	784	19	12
Specified Procedures Report Sites	21,031	2,111	2,111	24	10
Water Crossings (# of Crossings)	32	11		11	33
Forest Resource Aggregate Pits (# of Pits)	40	4	4	4	10
Road Construction and Maintenance Agreement Work	85 kms constructed 2,046 kms maintained	85 kms	85 kms	N/A	100

[27] During the field audit we observed numerous areas where AOCs had been implemented in either linear buffer strips or in association with an identified value. We cannot provide an accurate estimate of the sample intensity given the linear nature of many of the buffers. All AOCs associated with sample sites were observed. These included riparian reserves and nest buffers.
[28] Areas were provided by GFMI in June 2014. *At the time of sampling information on the 2013-20114 silviculture program was not available so estimates and GIS data were used to determine the sampling area intensity
[29]Not every hectare of the area sampled is surveyed, as this is not feasible.
[30] Sites are where the activity was sampled as the primary activity.
[31] 2013 Blocks not included

Summary of Consultation and Input to the Audit

Public Stakeholders

A public notice stating the purpose of the IFA and soliciting public input in the audit was placed in the Marathon Mercury in September in advance of the field audit. This notice also invited interested individuals to contact the audit firm with comments or complete a survey questionnaire on forest management during the audit term on the Arbex website. A random sample of 60 individuals and organizations on the 2007 FMP mailing list received a letter and the survey questionnaire in early September. No responses to the mail out survey were received and no individuals responded to the on-line survey.

NFMC

NFMC staff and consultants participated in the field audit and/or were interviewed. A member of the Board participated in all audit activities. Harvest contractors participated in the field audit and in the Opening and Closing Meetings.

Issues and concerns identified included:

- A concern with the quality of data and map products provided by service providers and the requirement to check the work provided by the service providers.
- A concern that forest management records were still in the possession of the previous SFL holder.
- A concern that the new FRI will contain errors which will require correction.
- A concern that last minute planning had resulted in contracts lacking important elements and other errors that made the implementation of silvicultural projects difficult.
- Concerns with respect to potential silvicultural liabilities and funding associated with the transfer of the SFL.

MNRF

MNRF District and Regional staff participated in the field audit and/or were interviewed. Issues and concerns identified included:

- A shortage of staff and funding to fully respond to MNRF management obligations on the forest.
- Difficulties setting work priorities when the Wawa District has to respond to issues and obligations on 5 Forests.
- A concern that MNRF is losing experience, knowledge and continuity with the retirement of staff.
- A concern with travel distances from Wawa to the Big Pic Forest to carry out assigned duties.

- An opinion that the long term amalgamation of LCC's into a single District LCC complies with the intent of the FMPM. With the right selection of members it will work.

Local Citizens Advisory Committee

Individual members of the LCC received a letter inviting their participation in the audit and 7 current and past members were interviewed. Comments and concerns expressed by the LCC respondents included:

- The PRPCC membership has dropped from a high of approximately 20 to 6 over the past 5 years.
- Travel distances to meetings in Marathon have contributed to member resignations and absences.
- A strong sense that MNRF only calls LCC meetings when it wants something. This has contributed to resignations.
- A failure of different MNRF District Mangers (3 in 5 years) to understand LCC issues and to listen to LCC concerns.
- A general consensus that the LCC is dysfunctional (over 50% of meetings do not have a quorum.

First Nations

All First Nations communities with an interest in the Forest were contacted by mail, telephone and/or email and asked to express their views on forest management during the audit term. Conversations with respect to the intent and delivery of the IFA were held with individuals from six First Nations and the Greenstone Area Métis Council. These conversations were primarily dominated with the Auditor explaining the IFA process and inviting comments and participation. Five individuals indicated a desire to participate in the field inspections; however, none were able to attend.

None of those contacted purported to speak for their community, however, as individuals they indicated;

- A desire for additional employment opportunities from the Forest.
- Very pleased with the First Nation involvement with NFMC.
- A hope that the Long Lac mill will open.
- Disillusionment with results from previous audits where their comments were not acted upon.
- Good relations with MNRF staff.

Others

We normally contact other members of the community (e.g. hunters, trappers, tourism operators, trail users) with no direct involvement (i.e. planning team or LCC) in the forest management process affected by forest management activities. The low population base associated with the BPF made contacting other stakeholders difficult. However we did talk to one employee in the tourist industry and one member of a trails

organization. Both were aware of forest management activities, and identified no specific issues or concerns.

Appendix 5

List of Acronyms Used

AHA	Available Harvest Area
AOC	Area of Concern
AR	Annual Report
AWS	Annual Work Schedule
BPF	Big Pic Forest
B.Sc.F.	Bachelor of Science in Forestry
CCP	Caribou Conservation Plan
CFSA	Crown Forest Sustainability Act
CMU	Crown Management Unit
DCHS	Dynamic Caribou Habitat Schedule
EA	Environmental Assessment
EFRL	Enhanced Forest Resource Licence
FIM	Forest Information Manual
FMP	Forest Management Plan
FMPM	Forest Management Planning Manual
FN	First Nation
FOIP	Forest Operation Inspection Program
FOP	Forest Operations Prescription
FRI	Forest Resource Inventory
FRL	Forest Resource Licence
FTG	Free-to-Grow
GFMI	GreenForest Management Inc.
Ha	Hectares
IEA	Individual Environmental Assessment
IFA	Independent Forest Audit
IFAPP	Independent Forest Audit Process and Protocol
KMS	Kilometers

LCC	Local Citizens Advisory Committee
LFMC	Local Forest Management Corporation
LTMD	Long Term Management Direction
m^3	Cubic Metres
NDPEG	Natural Disturbance Pattern Emulation Guideline
MNRF	Ministry of Natural Resources and Forestry
MPCC	Manitouwadge Public Consultation Committee
NFMC	Nawiinginokiima Forest Management Corporation
PRPCC	Pic River Public Consultation Committee
R.P.F.	Registered Professional Forester
SAR	Species at Risk
SEM	Silvicultural Effectiveness Monitoring
SFL	Sustainable Forest Licence
SGR	Silvicultural Ground Rule
SPR	Specified Procedures Report
SSG	Forest Management Guide for Conserving Biodiversity at the Stand and Site Level
STP	Silvicultural Treatment Package
TBARA	Terrace Bay Area Resource Advisory Committee
VS	Versus

Appendix 6

Audit Team Member Qualifications

Name	Role	Responsibilities	Credentials
Mr. Bruce Byford R.P.F. Arbex Forest Resource Consultants Ltd.	Lead Auditor Forest Management & Silviculture Auditor	Audit Management & coordination Liaison with MNRF Review documentation related to forest management planning and review and inspect silviculture practices Determination of the sustainability component.	B.Sc.F. ISO 14001 Lead Auditor Training. FSC Assessor Training. 34 years of consulting experience in Ontario in forest management planning, operations and resource inventory. Previous work on 26 IFA audits with lead auditor responsibility on 234 IFAs. 27 FSC certification assessments with lead audit responsibilities on 7.
Mr. Al Stewart Arbex Senior Associate	First Nations & LCC Participation in Forest Management Process Auditor Forest Compliance	Review & inspect AOC documentation & practices. Review of operational compliance. First Nations consultation.	B.Sc. (Agr) ISO 14001 Lead Auditor Training. FSC Assessor Training. 43 years of experience in natural resource management planning, field operations, policy development, auditing and working with First Nation communities. Previous work experience on 26 IFA audits.
Mr. David Watton Arbex Senior Associate	Forest Management Planning & Public Participation Auditor	Review documentation and practices related to forest management planning & public participation. Determination of the sustainability component.	B.Sc., M.Sc. ISO 14001 Lead Auditor Training. 43 years of experience in natural resource management planning, land use planning, field operations, and policy development. Previous work experience on 25 IFA

			audits.
Mr. Trevor Isherwood R.P.F. Tri-lac Forestry Services Arbex Senior Associate	Silvicultural, Forest Management and Contractual Compliance Auditor	Review and inspect silvicultural practices and related documentation. Review and inspect documents related to contractual compliance.	B.Sc.F. Former General Manager of an SFL. 43 years of experience in forest management and operations. Previous work experience on 22 IFA audits.
Dorothy Dobrik *GIS Specialist* Arbex Forest Resource Consultants Ltd.	Administrative Assistant	Administrative support to the audit including GIS support for the selection of sample sites.	B.A. Geography, Diploma Forestry Tech Diploma GIS Specialist Previous administrative support in IFA and FSC audits.

APPENDIX 7

TRENDS ANALYSIS

The Comparison and Trend Analysis of Planned vs. Actual Forest Operations was prepared by GreenForest Management Inc. under contract to the MNRF. The report is included in this audit report without modification or adjustment.

FINAL

COMPARISON & TREND ANALYSIS REPORT:

PLANNED VERSUS ACTUAL FOREST OPERATIONS

for the

BIG PIC FOREST – MU 067

In support of the

April 1st, 2009 to March 31st, 2014

Independent Forest Audit

Prepared by GreenForest Management Inc.

on behalf of the

Ontario Ministry of Natural Resources – Wawa District

I hereby certify that this Comparison and Trend Analysis Report has been prepared in accordance with the requirements of the *Forest Management Planning Manual* (2009) and the *Independent Forest Audit Process and Protocol* (2014).

J Ladouceur

Joseph Ladouceur, R.P.F.
GreenForest Management Inc.

Date: July 17, 2014

Accepted by:

D. Tirschmann

Derrick Tirschmann, R.P.F.
Management Forester
Ministry of Natural Resources – Wawa District

Date: July 21, 2014

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

INTRODUCTION

This Comparison and Trend Analysis Report for the Big Pic Forest has been prepared by GreenForest Management Inc. on behalf of the Ministry of Natural Resources (MNR) (Wawa District). It has been prepared in accordance with the Year Ten Annual Report requirements of the *Forest Management Planning Manual for Ontario's Crown Forests* (FMPM) (2009); and Appendix C of the MNR's 2014 *Independent Forest Audit Process and Protocol* (IFAPP). The report supports the Big Pic Forest Independent Forest Audit (IFA) for the period of April 1st, 2009 to March 31st, 2014, and it has several objectives, primarily to:

- Evaluate the implementation forest management operations on the Big Pic Forest over the IFA period, comparing planned versus actual forest management activities, and discuss the implications;
- Present a comparison of planned vs. actual management activities over the last 20 years and discuss any trends and implications;
- Assess the progress to-date in the movement towards achievement of management objectives for the current Big Pic Forest 2007-2017 Forest Management Plan (FMP), recognizing that the current management plan is not fully implemented;
- Provide a statement on overall forest sustainability.

As per the requirements of the FMPM (2009), the Trend Analysis Report is to present and discuss trends in planned versus actual forest management activities for the current ten-year 2007-2017 Forest Management Plan (FMP) and for the three previous five-year FMP terms. Furthermore, as per the IFAPP, the report should include the latest Annual Report information available. As such, the following periods will be covered by this Trend Analysis Report:

- 1992-1997 five-year period of the 1992-2012 FMP (Past Plan)
- 1997-2002 five-year period of the 1997-2017 FMP (Past Plan)
- 2002-2007 five-year period of the 2002-2022 FMP (Past Plan)
- 2007-2013 six-year period of the 2007-2017 FMP (Current Plan)

Phase I of the current Big Pic Forest 2007-2017 FMP was the five-year the period 2007-2012. There are five approved Annual Reports for that period: 2007-2008; 2008-2009; 2009-2010; 2010-2011; & 2011-2012. Due to a delay in the approval of the Phase II portion of the current FMP in 2012, a Year 6 Annual Work Schedule was approved and implemented based on Phase I. As such, the most recently approved Annual Report is for the 2012-2013 fiscal year. All amendments relevant to the current FMP up to the end of the 2012-2013 fiscal year are reflected in the report.

ONTARIO FOREST INDUSTRY DOWNTURN: 2008-2012

An unprecedented economic downturn in the Ontario forest industry occurred between 2008 and 2012, during the period of this Independent Forest Audit (IFA) (2009-2014). This downturn resulted in the idling and/or closure of several sawmills, pulp mills and composite board mills in the vicinity of the forest. This included the idling and subsequent bankruptcy of the two main users of fibre from the Big Pic Forest – Marathon Pulp Inc. in 2009 and the Dubreuil Forest Products Ltd. sawmill in 2011. During the downturn, there continued to be a modest level of forest management activity on the Big Pic Forest, which has been increasing in the later years of the IFA period.

FOREST MANAGEMENT RESPONSIBILITY CHANGES: 2007-2013

As a result of the economic downturn, the Big Pic Forest Sustainable Forest Licence (SFL) holder, Marathon Pulp Inc., went into bankruptcy in 2009, and the forest management responsibility for the Big Pic Forest reverted to the Crown (MNR – Wawa District) for a few years. As of April 1st, 2013, a new management entity, the Nawiinginokiima Forest Management Corporation (NFMC) assumed the forest management responsibilities for the Big Pic Forest.

DESCRIPTION OF FOREST UNIT CHANGES OVER TIME: 1992-2007

A forest unit is an aggregation of forest stands into groupings for management purposes. These groups of forest stands have similar species composition; develop / naturally succeed in a similar manner; are managed under the same silviculture system; and respond reasonably similar to disturbances. Forest units provide a means of categorizing and managing forest cover over large areas without having to deal with thousands of individual forest stands.

Prior to 1996, the requirement to use Forest Resource Inventory (FRI) working group species as the basis for classifying forest units did not really hold to the above definition of forest unit. However, since 1997, the forest unit classification on the Big Pic Forest has evolved to meet the changing provincial planning requirements and to facilitate management practice of professional foresters and planning teams. The continual refinement and adjustment of definitions, though warranted, can complicate the evaluation of trends, and the tracking of silvicultural ground rules and the monitoring and management activities over time and between forest management plans. As such, the Northeast Region MNR now strongly encourages the use of regional-based standardized forest unit definitions by planning teams, to facilitate common understanding for modeling, strategic and operational planning, and the monitoring and reporting of activities, regardless of which forest management unit they occur on.

A description of the forest units used in the 1992-2012, 1997-2017, 2002-2027 and the 2007-2017 FMPs is presented in Appendix A. Below is a brief description of the changes which have occurred to forest unit classification over the last four management plans.

1992-1997

In 1992, working group species from the FRI was used as the primary descriptor of forest unit, in accordance with the provincial Timber Management Planning process. This classification was relatively simple, with the leading tree species in the FRI defining the forest unit (jack pine, poplar, white birch, etc.). Black and white spruce was combined into a single Spruce forest unit, but there was no distinction of upland vs. lowland Spruce forest conditions, nor any recognition of differing management / silvicultural practices that are associated with uplands and lowlands. Cedar and larch working group forest was combined into the Other Conifer forest unit. Finally, there was no recognition of or classification for mixedwood forest conditions.

1997-2002

In 1997, the forest unit classification for the Big Pic Forest was revised to better address pure stands and mixtures, as well as FRI site class, where relevant for forest management purposes. As such, nine forest units were defined. Among the changes from the previous plan, there was a distinguishing of site class 3 spruce stands

from the better sites (site classes X, 1 & 2); a separation of jack pine + hardwood mixed wood conditions; and a separation of poplar leading mixedwoods and white birch leading mixedwoods.

2002-2007

In 2002, the forest unit classification for the Big Pic Forest was again revised as the Regional standardized forest unit system promoted by the Northeast Region MNR was adopted. The ten forest units for this plan period were based on FRI species composition and were categorized as generally pure conifer; generally pure hardwood; and mixedwood forest conditions. Spruce Bog (SBOG) was a forest unit added to classify site class 4 lowland black spruce and larch stands, and although it does not represent forest area available for harvest.

2007-2017

In 2007, management planners continued to use the ten standardized forest unit system promoted by the Northeast Region MNR. Modest refinements were made from the previous plan, particularly with respect to a better distinguishment between conifer and hardwood leading mixedwoods.

Grouping of Forest Units

For the purpose of this Trend Analysis Report, and to address the differing forest unit classifications used over the last four planning periods, the forest units have been aggregated into six forest groups/types, as presented in Table 1.

Table 1: Grouping of forest units for this trend analysis report.

Aggregation of Forest Units for the 1992 through 2007 Forest Management Plans (FMP) for the Trend Analysis Report

Forest Grouping	Forest Unit Code			
	1992 FMP	1997 FMP	2002 FMP	2007 FMP
Spruce Dominant (SpDom) (Upland & Lowland)	Spruce, Balsam Fir	BS1, BS3, S	SB1, SP1, SF1, SBOG	SB1, SP1, SF1, SBOG
Jack Pine Dominant (PjDom)	Jack Pine	JP	PJ1, PJ2	PJ1, PJ2
Other Conifer (OC)	Other Conifer	N/A	LC1	LC1
Poplar Dominant (PoDom)	Poplar	PO	PO1	PO1
White Birch Dominant (BwDom)	White Birch	BW	BW1	BW1
Mixedwood (MxWd)	N/A	JPM, MA, MB	MW1, MW2	MW1, MW2

ASSESSMENT OF HARVEST AREA

Table AR-7 in Appendix B presents a summary of the planned and actual harvest area by forest unit over the 1992-2013 period. Variables affecting planned harvest area over the last 21 years include, but are not limited to:

- Reductions of the available Crown productive forest landbase with the addition of parks and protected areas;
- Updated forest condition through updates to the forest resource inventory;
- Differing strategic modeling tools employed for calculating annual allowable harvest levels (e.g. Maximum Allowable Depletion Calculation (MADCALC) was used for the 1992 and 1997 FMPs & the Strategic Forest Management Model (SFMM) was used in for 2002 and 2007 plans);
- Differing operability ages applied to forest units for strategic modeling; and,
- Changes to forest unit classification over the past 21 years, particularly between the 1992-2012 Timber Management Plan, and the subsequent Forest Management Plans (FMPs) (e.g. an increase in the number of forest units generally results in a decrease of allowable harvest area).

Figure 1 illustrates annualized planned harvest area compared to actual annualized harvest area over the last 21-year period.

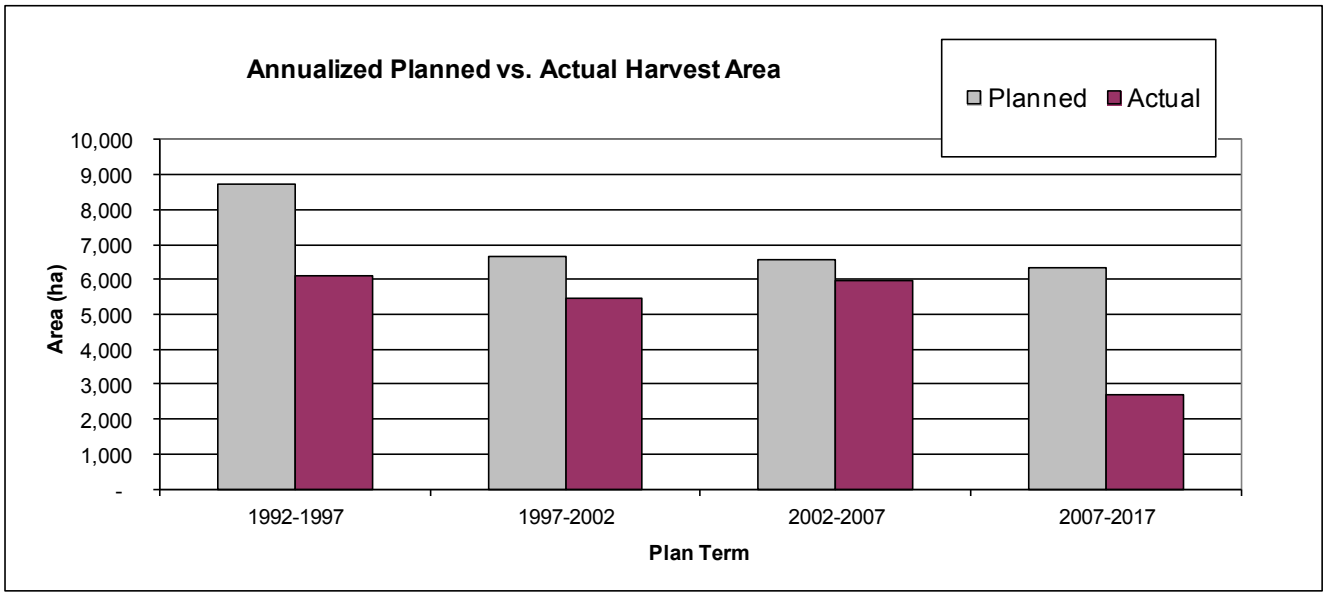


Figure 1: Comparison of annualized planned to actual harvest area over the 1992-2013 period.

Actual annualized harvest area has ranged from 42% of planned in the current FMP, to 91% of planned in the 2002-2007 period. The low actual harvest of 42% of planned is directly attributable to the forest industry downturn during the current plan between 2008 and 2012, which resulted in the idling and/or closure of several sawmills, pulp mills and composite board mills in the vicinity of the forest. Overall, an average of 71% of planned harvest area actually being harvested over the last 21 years. All harvest values include a modest amount of road right-of-way harvest.

Furthermore, in the 2002-2007 period, there was 6,770 hectares of wildfire area salvaged. This translates to an annualized salvage harvest area of 1,354 hectares, additional to the actual normal harvest area presented in Figure 1 for that period.

As illustrated in Table 2, in general over the last 21 years, conifer-dominated forest units tend to have higher achievement of planned harvest more consistently; while the harvest of hardwood dominated forest units tends to have a less consistent achievement of planned harvest. This is directly attributable to markets for hardwood being limited and irregular than those for spruce-pine-fir. Furthermore, the abundance of mixedwood forest condition will also directly negatively impact harvest levels, as the lack of market for hardwood content within mixedwood forest condition reduces conifer availability.

Table 2: Actual harvest by forest unit group as a percentage of planned.

	% Planned vs Actual Harvest			
Forest Unit Grouping	**1992-1997**	**1997-2002**	**2002-2007**	**2007-2017**
Spruce Dominant - SpDom	76%	87%	92%	46%
Jack Pine Dominant - PjDom	89%	82%	94%	70%
Other Conifer - OC	0%	0%	0%	29%
Poplar Dominant - PoDom	61%	74%	86%	34%
White Birch Dominant - BwDom	18%	85%	50%	30%
Mixedwood - MxWd	n/a	79%	95%	39%
Overall	**70%**	**82%**	**91%**	**42%**

2007-2017 Planned versus Actual Harvest Area

In the current 2007-2017 FMP, only 2,692 hectares have been harvested annually, compared to the 6,333 hectares planned (42%). As illustrated in Figure 2, actual annual harvest area has ranged from 22% to 55% of that planned. The lowest annual harvest to-date in the FMP occurred during the 2009-10 fiscal year, which essentially coincides with the lowest point of the woods industry downturn in Ontario.

With respect to the continuation of harvest operations from the 2002-2007 period into the 2007-2017 FMP, there were no bridging harvest operations in the first year of the 2007-2017 FMP. There was a total of 1,911 hectares of second pass harvest planned for completion, however none has occurred as of the end of the 2012-2013 fiscal year.

General Trends

- In general, total actual harvest area is lower than the planned harvest area in management plans over the last 21 years; averaging 71%. Up until 2007, actual harvest was continually improving over the three previous planning terms. Actual harvest was within 30% of that which was planned during the past three management plans; but is very much below what is planned in the current 2007-2017 FMP. This is attributable primarily to the unprecedented downturn in the Ontario forest industry between 2008 and 2012.
- The actual harvest of conifer-dominated stands tends to be more complete compared to the actual harvest of hardwood dominated stands over the last 21 years, and during the current FMP period (2007-2017); and,
- Generally poor market conditions for hardwood are a secondary major contributor to the lack of harvest activity.

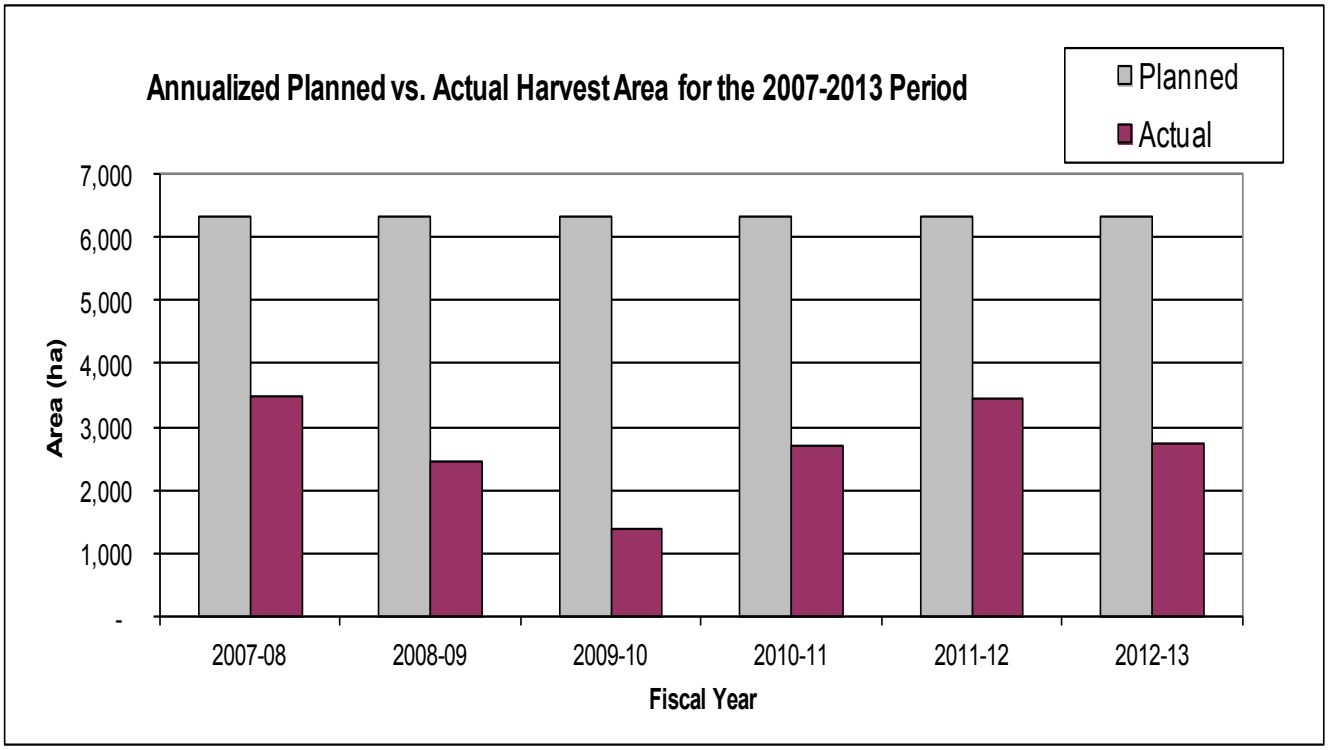


Figure 2: Comparison of annualized planned to actual harvest area for the 2007-2013 period.

Implications

The implications of not harvesting the planned area over the last 21 years can be construed as having been negative for those expected to derive direct and in-direct socio-economic benefit. Furthermore, local mills have not required the available hardwood from the Big Pic Forest, which, in turn constrains the availability of conifer from mixedwood stands. In the three management plans prior to the current one, the actual harvest levels averaged 80% of planned, and, as such, the level of achievement of management objectives would be expected to be reasonable for those plans.

However, with actual harvest areas being a maximum of 55% of planned for the first six years of the current 2007-2017 management plan, it may be expected that there will be short-comings/delays in the achievement of the desired future forest condition and benefits, such as future conifer wood supply and specific wildlife species habitat abundance. The reason for this is that the intended post-harvest renewal succession and silvicultural treatments cannot actually be implemented if forest stands are not actually harvested. In addition, movement toward the desired frequency distribution of forest disturbances by size class may not occur as expected if portions of the planned harvest area is not being harvested, or only smaller portions of harvest blocks containing the marketable forest units are harvested.

Conversely, with the reduced actual harvest, desirable level and target achievement for objectives related to maintaining minimum preferred wildlife habitat area and old growth forest area will likely be above that projected at plan end in 2017.

Optimistically, harvest levels are expected to increase for the duration of the 2007-2017 FMP, with the relatively recent restart of the pulp mill in Terrace Bay in the fall of 2012; and the re-opening of a nearby sawmill in White River in 2013.

ASSESSMENT OF HARVEST VOLUME

Table AR-8 in Appendix B presents the annualized planned and actual harvest volume by species for the four FMP terms during the 1992-2013 period. Variables affecting the achievement of planned harvest volume over the last 21 years are much the same as those influencing the previously discussed achievement of planned harvest area. The primary reason for the reduced achievement of harvest volume is the lack of harvest of the planned harvest area. Figure 3 illustrates a comparison of annualized planned to actual harvest volumes over the last 21-year period.

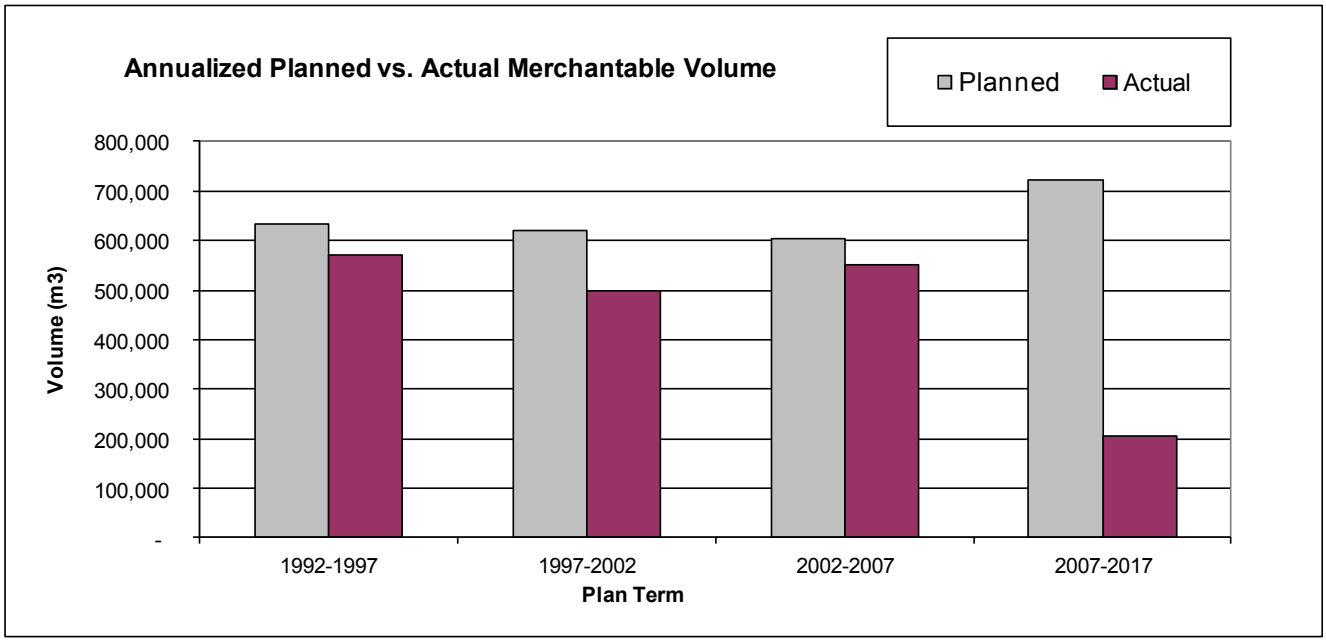


Figure 3: Comparison of annualized planned to actual harvest volumes over the 1992-2013 period.

The actual annualized merchantable harvest volume as a percentage of planned was as follows: 1992-1997 – 90%; 1997-2002 – 81%; 2002-2007 – 90%; and 2007-2013 – 28%. In the three previous plan terms, actual volume utilization correlates well with actual harvest area (particularly in the 1997-2002 and 2002-2007 periods). As with harvest area, the low actual harvest volume of 28% of planned in the current management plan is directly attributable to the forest industry downturn between 2008 and 2012, which resulted in the idling and/or closure of several sawmills, pulp mills and composite board mills in the vicinity of the forest. Overall, an average of 73% of planned harvest volume was actually harvested over the last 21 years. Furthermore, in the 2002-2007 period, there was wildfire area salvage activity, which translated to an annualized salvage harvest volume of 100,777 m^3, above the actual normal harvest volume illustrated in Figure 3.

The two main factors contributing to the lower achievement of actual harvest volume mirror those regarding the achievement of actual harvest area; being lack of overall market during the 2008-2012 economic downturn; and the general historical lack of a stable market for hardwood species.

It appears that the higher level of utilization of hardwoods in historical management plans is somewhat attributable to the fact that not all the hardwood volume, particularly white birch, was actually planned to be utilized. For example, prior to 2002, only about 1,250 m^3 of white birch was planned to be utilized annually; while 26,182 m^3 and 68,371 m^3 of white birch was planned to be utilized annually during the 2002-2007 period and in the current FMP, respectfully. In the three previous plan terms, jack pine actual harvest volume appears to be

consistently higher than planned, which may suggest a need for better jack pine volume estimates. Unfortunately, the current low level of harvest to-date in the current plan precludes a more thorough evaluation of jack pine yields at this time.

Table 3 presents the results of a basic analysis of total planned and actual volume per hectare over the last four management plans. It appears that actual volume per hectare has been averaging 92 m^3/ha relatively consistently over the 1992-2007 period, with a relatively high degree of planned harvest completion. The planned volume per hectare harvest for the 1997-2002 and the 2002-2007 periods has been consistent with actual harvest volume per hectare.

Table 3: Comparison of planned versus actual volume over the 1992-2013 period.

Merchantable Volume (m^3) Per Hectare - Normal Harvest	Period				21 -Year Average
	1992-1997	1997-2002	2002-2007	2007-2017	
Average Planned	73	93	92	114	93
Average Actual	93	91	92	78	89
Actual Volume as a % of Planned	127%	98%	100%	68%	95%

The average planned volume per hectare increased to 114 m^3/ha for the 2007-2017 FMP. However, actual volume per hectare harvested has declined, based on the limited harvest area in the current FMP. As such, it may be premature to speculate on actual yields for the current plan until more area is harvested.

It can be expected that a minor amount of volume is left unharvested per hectare due to residual/wildlife tree requirements (5-10 m^3/ha). However, in the absence of a detailed evaluation of the actual characteristics of stands selected for harvest compared to the average stand characteristics used to calculate planned volumes in each FMP term (usually based on the average yield curve used for strategic modeling), one cannot determine if the estimated planned volumes are too high, or lower than average stands were selected for harvest. Differences as little as 10% composition for some larger tree species (e.g. Poplar); and / or, the selection of younger or older stands, etc., can readily culminate to the volume per hectare differences noted in the 2007-2017 planning period.

2007-2013 Planned versus Actual Harvest Volume

Figure 4 presents the annualized planned and actual harvest volume for the 2007-2013 period. There was a total of 722,725 m^3 of merchantable volume scheduled for harvest annually in the current FMP, along with an additional 179,752 m^3 of unmerchantable volume (biofibre). On average, only 20% to 40% of the planned volume has been harvested annually during this period. Only 42% of the planned conifer volume and 25% of the planned hardwood volume was harvested.

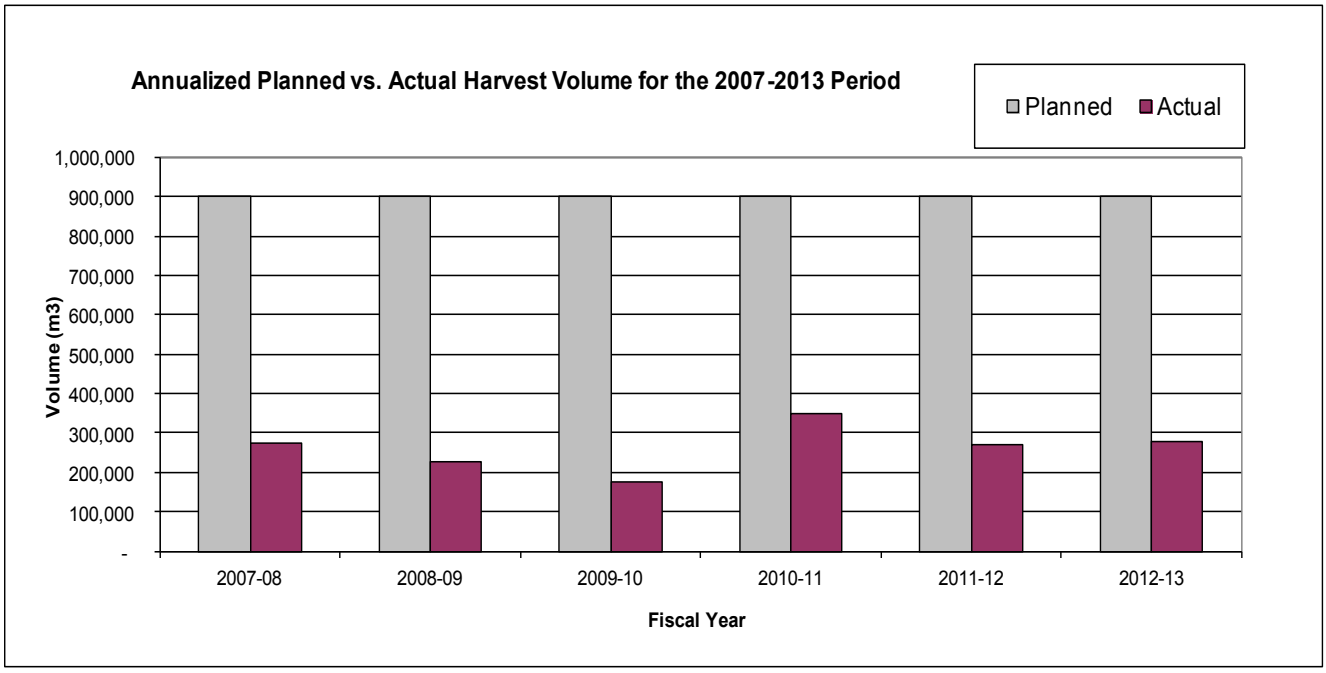


Figure 4: Comparison of annualized planned to actual harvest volume for the 2007-2013 period.

General Trends

- Actual harvest volume was within 30% of planned harvest volume over the 1992-2007 period, and was improving up until 2007. It is dramatically lower than planned to-date in the 2007-2017 FMP, at only 20%-40% of that planned annually by forest unit;
- The actual harvest and utilization of conifer tends to be more complete compared to the actual harvest of hardwood species. This is the direct result of the marketability of spruce-pine-fir species;
- Poor market conditions particularly for hardwood over the last 21 years, and the unprecedented downturn period is a major contributor to the lack of harvest during the current 2007-2017 FMP;
- Strategically, the average planned volume per hectare has modestly increased over the past for planning terms from 73 m^3/ha to 114 m^3/ha, with an average planned volume of 93 m^3/ha. The actual volume harvested averages 89 m^3/ha.

Implications

As with harvest area, the implications of not harvesting the entire planned volume over the last 21 years can be generally construed as having been negative for those expected to derive the full direct and in-direct socio-economic benefits. However, this is most applicable to the current 2007-2017 FMP period. Furthermore, local mills have not required all the available hardwood from the Big Pic Forest, which, in turn can constrain the availability of conifer from mixedwood stands.

Optimistically, harvest levels and the associated volumes are expected to increase for the duration of the 2007-2017 FMP, with the relatively recent restart of the pulp mill in Terrace Bay in the fall of 2012, which uses hardwood biofibre. In addition, the nearby sawmill in White River re-opened in 2013.

ASSESSMENT OF RENEWAL, TENDING & PROTECTION OPERATIONS

Table AR-9 in Appendix B presents a summary of the annualized planned and actual renewal, tending and protection operations for the four FMP terms during the 1992-2013 period. These figures include all renewal activities associated with the normal harvest areas and the wildfire salvage harvest areas during the 2002-2007 period. Below are descriptions of the natural and artificial / assisted regeneration activities on the Forest.

Natural Regeneration

Figure 5 presents a comparison of planned versus actual natural regeneration area (annualized) over the past 21 years. Over that period, approximately 65% of planned natural regeneration treatments actually occurred.

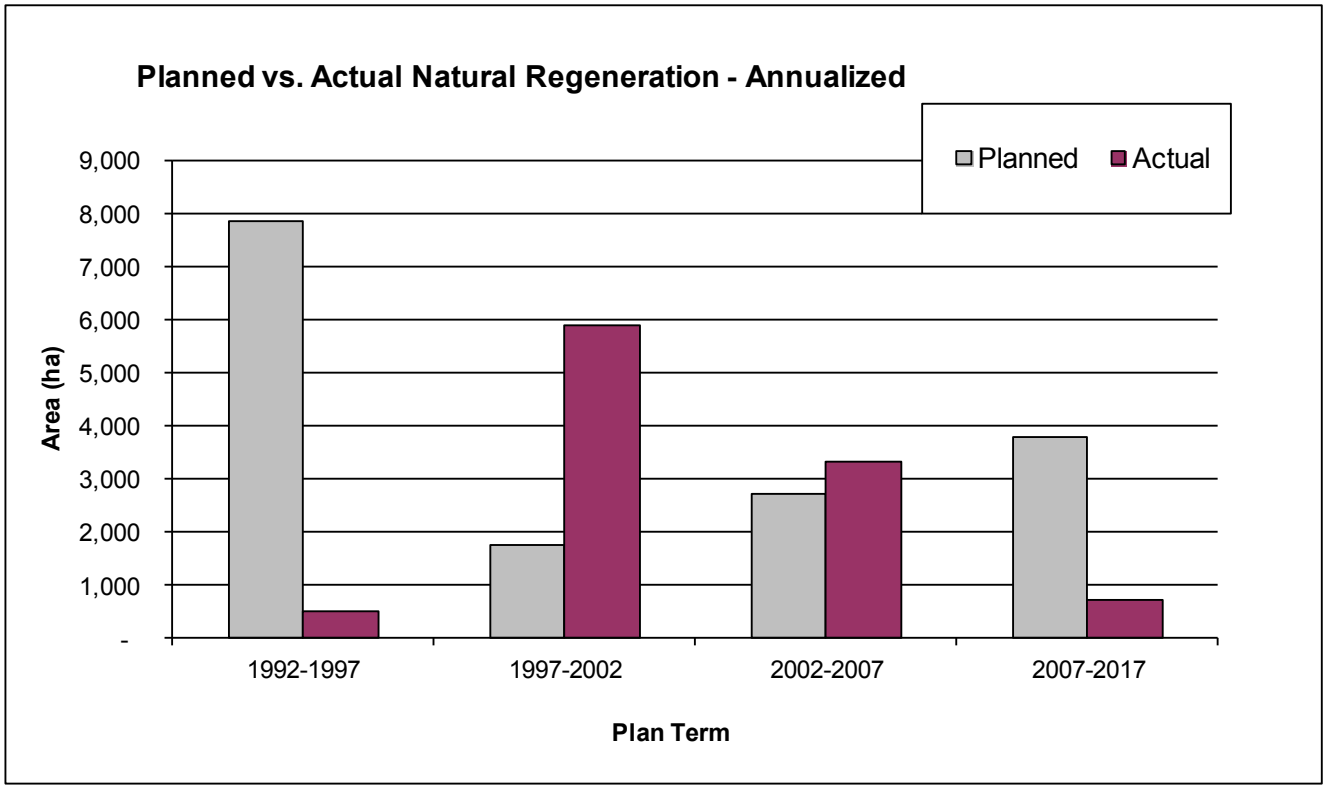


Figure 5: Comparison of annualized planned to actual natural regeneration area over the 1992-2013 period.

As described in the 1997-2004 IFA Trend Analysis Report, the low achievement of natural regeneration treatment in the 1992-1997 period was attributed to an oversight in harvest areas not being formally declared/reported as naturally regenerating. This reporting occurred during the 1997-2002 period, resulting in a relatively large increase in natural regeneration occurring relative to what was planned in that period. Historical (pre-2000) annual reporting of renewal treatments generally focused on areas treated artificially; whereas areas prescribed for natural regeneration were often not reported until such time as the actual Free-to-Grow assessments were conducted.

During the 2002-2007 period, the actual area treated via natural regeneration was modestly higher than planned. Due to wildfires, the assisted silvicultural treatment programs were disrupted during that period, as indicated in

the 2004-2009 IFA Trend Analysis Report. This likely contributed to more area being treated naturally. Furthermore, the generally poor marketability of hardwoods results in hardwood dominated stands not being harvested and thus needing regeneration. Hardwood dominated stands are most often naturally regenerated. This fact, and the unprecedented economic downturn in the forest industry market between 2008 and 2012 accounts for the low proportion of natural regeneration reported in the current 2007-2017 FMP (only 18% of planned). In addition, as a result of the Marathon Pulp Inc. bankruptcy, there was a period of disruption in silviculture activity, including natural regeneration survey and prescription work for harvest areas.

Assisted Regeneration

Assisted regeneration is also termed artificial regeneration. It normally involves some form of site preparation (mechanical, chemical or prescribed fire) to assist with the establishment of seedlings. Seedlings may be established via natural or direct application of tree seed; or through the planting of seedlings. Regeneration through seeding has been planned to a modest degree historically, but has lost favour as a regeneration method on the Big Pic Forest due to the competitive nature of most harvested areas. Tree planting is the predominant method of assisted regeneration on the Big Pic Forest. Tending (cleaning) of regenerating areas using herbicide may occur to promote desired conifer survival and the desired future forest condition.

Site Preparation

Figure 6 presents a comparison of planned versus actual site preparation area (annualized) over the past 21 years. Mechanical site preparation is the dominant treatment method. Overall, across the period, actual area site prepared was approximately 67% of planned. The two main reasons why less site preparation occurs than planned are:

- Reduced harvest area requiring conifer regeneration treatment due to poor markets, particularly in conifer-dominated mixedwoods if the hardwood cannot be marketed; and due to the recent 2008 to 2012 forest industry downturn;
- Opportunities to direct plant harvest areas without mechanical site preparation where feasible (e.g. thin duff layer), to more efficiently use the available silvicultural budgets.

In the current 2007-2017 plan, the reduced level of harvest activity is the main reason for the reduced area of site preparation.

Tree Planting

Figure 7 presents a comparison of planned versus actual assisted regeneration area (annualized) over the past 21 years. The actual annualized area of assisted regeneration, predominantly tree planting that has occurred in the 1992-1997, 1997-2002, 2002-2007 and 2007-2017 periods is 52%, 93%, 81% and 73% of planned, respectively. Overall, across the period, the actual area treated was approximately 76% of planned. The focus of harvest operations has been in conifer-dominated stands (due to marketability) and these sites are generally regenerated through artificial means. Only a small amount of direct seeding occurred in the 1992-1997 period. Seeding is a difficult treatment to employ due to a lack of suitable post-harvest site conditions for seeding, and/or the inability to aggregate sufficient area to justify a seeding program. In the current 2007-2017 plan, the reduced level of harvest activity is the main reason for the reduced area of tree planting.

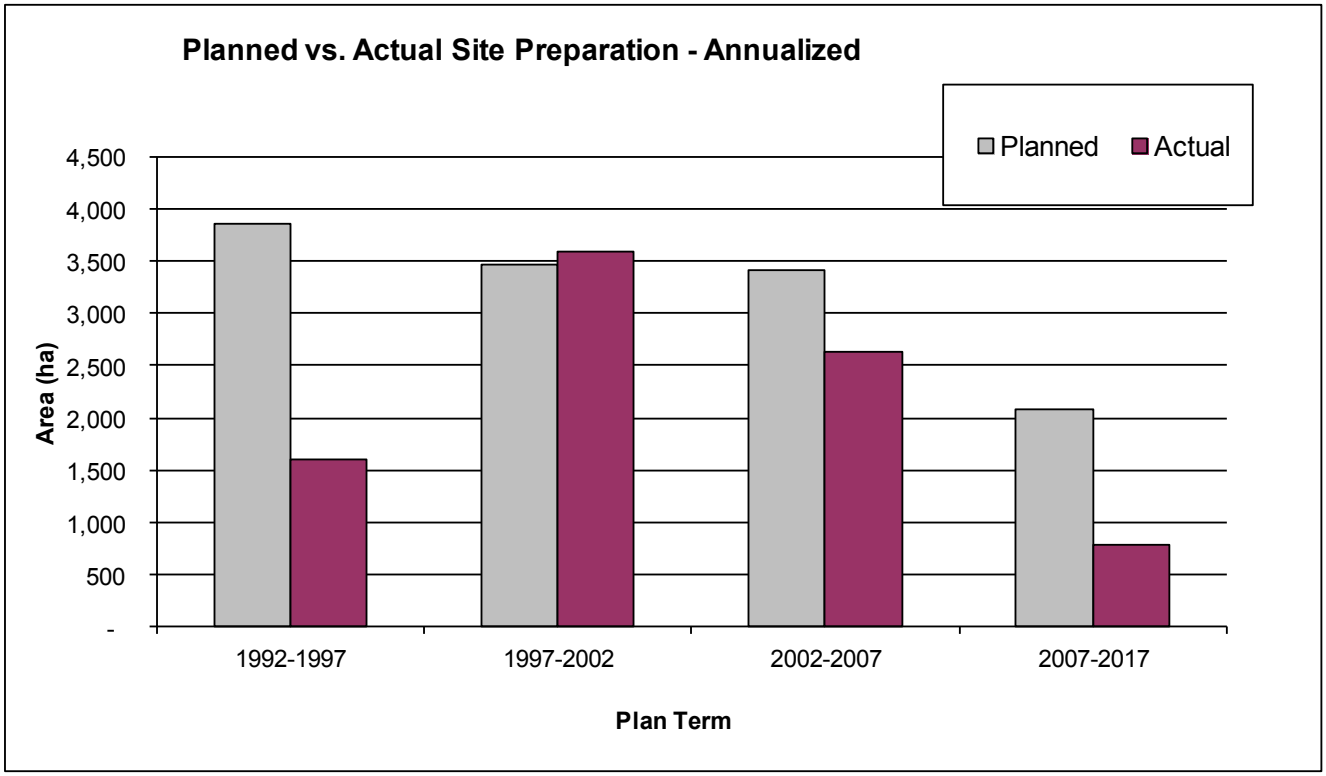


Figure 6: Comparison of annualized planned to actual site preparation area over the 1992-2013 period.

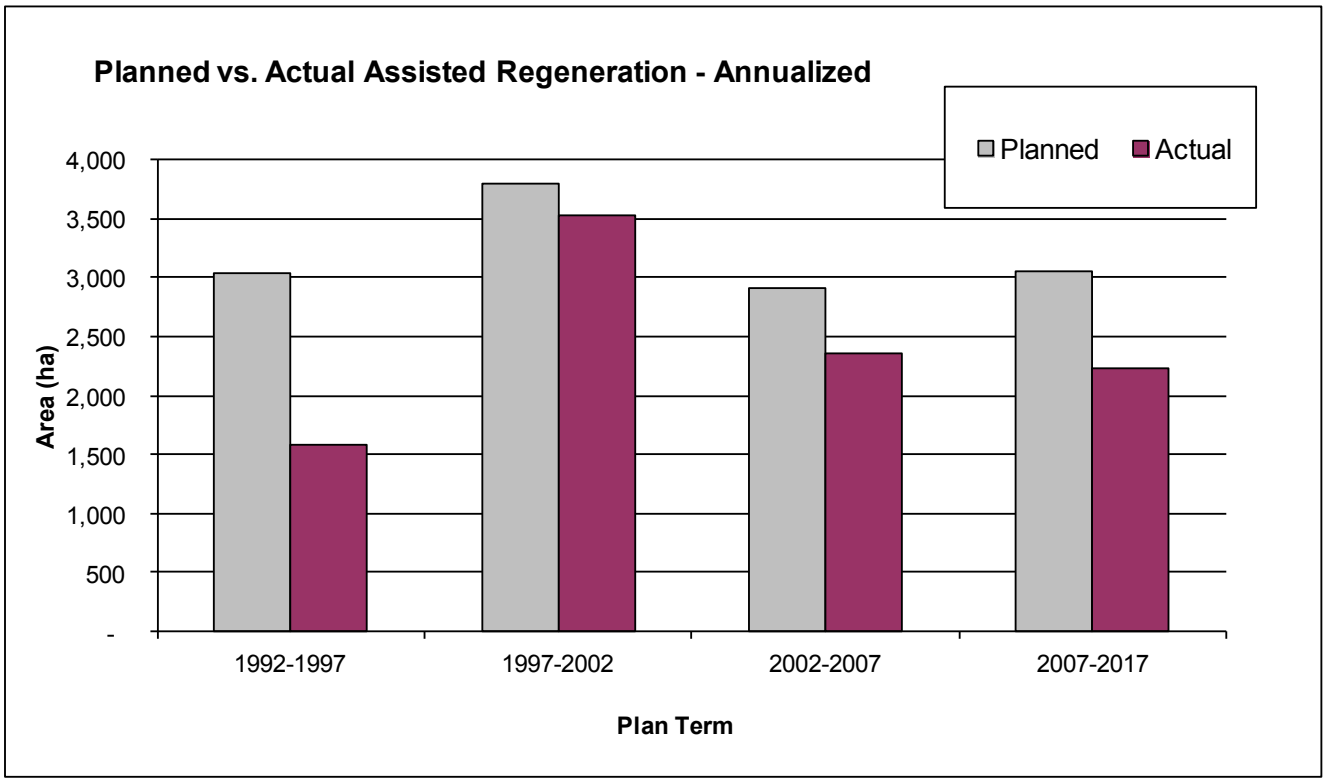


Figure 7: Comparison of annualized planned to actual assisted regeneration area over the 1992-2013 period.

Tending

Tending (cleaning) established conifer regeneration and plantations with herbicide is the primary means of securing the silvicultural investment and facilitating the achievement of the desired future forest unit on the Big Pic Forest. Figure 8 presents the annualized planned tending area versus actual tending area over the 1992-2013 period (cleaning with herbicide only).

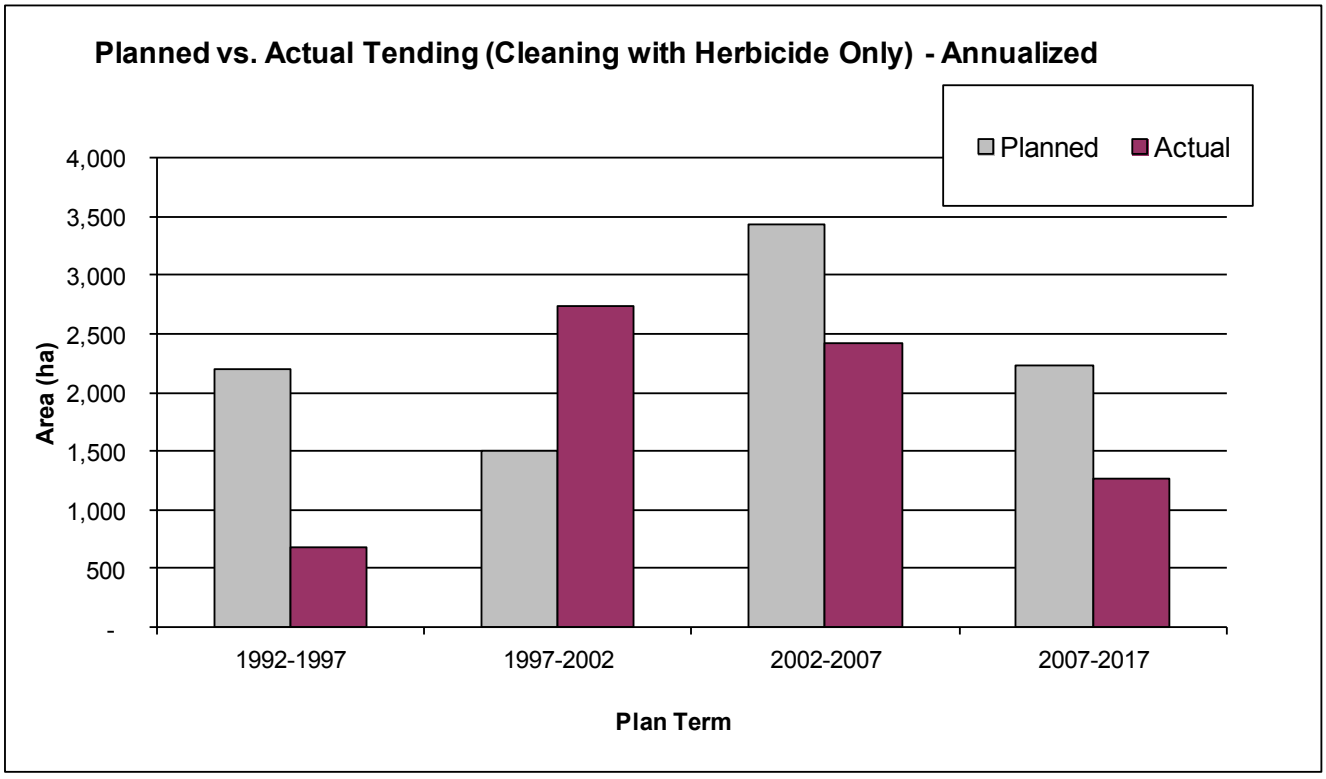


Figure 8: Comparison of annualized planned to actual tending area over the 1992-2013 period.

Overall, across the period, actual area tended / cleaned was approximately 76% of planned. In the 1992-1997 period, the area tended was considerably lower than planned, however, according to the 1997-2002 IFA Trend Analysis Report, a considerable amount of backlog area was treated in the 1997-2002 period, as is evident in the considerable amount of area treated above the planned level (82% more than planned). [Note: The 1997-2017 FMP tables do not appear to have been updated to reflect an appropriate planned tending area.]

Since 2002, the actual annualized tending (cleaning with herbicide) area has been lower than planned for several reasons, including:

- Lower than planned harvest area is actually harvested, particularly with the 2008-2012 forest industry downturn, thus directly affecting the area being renewed and subsequently requiring tending;
- Once artificial regeneration sites have been established an assessment for the requirement of tending is conducted (typically one year post-plant). Based on the results of the assessment, tending treatments are scheduled as necessary. This is done in an effort to maximize the efficiency of tending programs and likely contributes to an overall reduction in tending applications where FMP projections may be more broadly applied; and,

- Sites harvested may not be in need of tending activity to reach FTG requirements. As the focus of harvest operations was in conifer dominated stands due to marketability, some sites may have less need for competition control.

In the current 2007-2017 plan, the annualized actual area of cleaning with herbicide is 57% of planned. This is due to the reduction in harvest operations (less than half of planned annually) during the 2007-2013 period, and the subsequent reduction of area tree planted.

Planned Versus Actual Total Regeneration Activities

Overall, the combined annualized actual area of natural and assisted regeneration is 70% of that which was planned over the 1992-2013 period. As illustrated in Figure 9, total area regenerated in the 1992-1997 period was significantly less than planned, however this was due to the under-reporting of natural regeneration area. This subsequently was compensated for the 1997-2002 period. The area regenerated in the current 2007-2013 FMP is notably lower due to the reduced harvest activity.

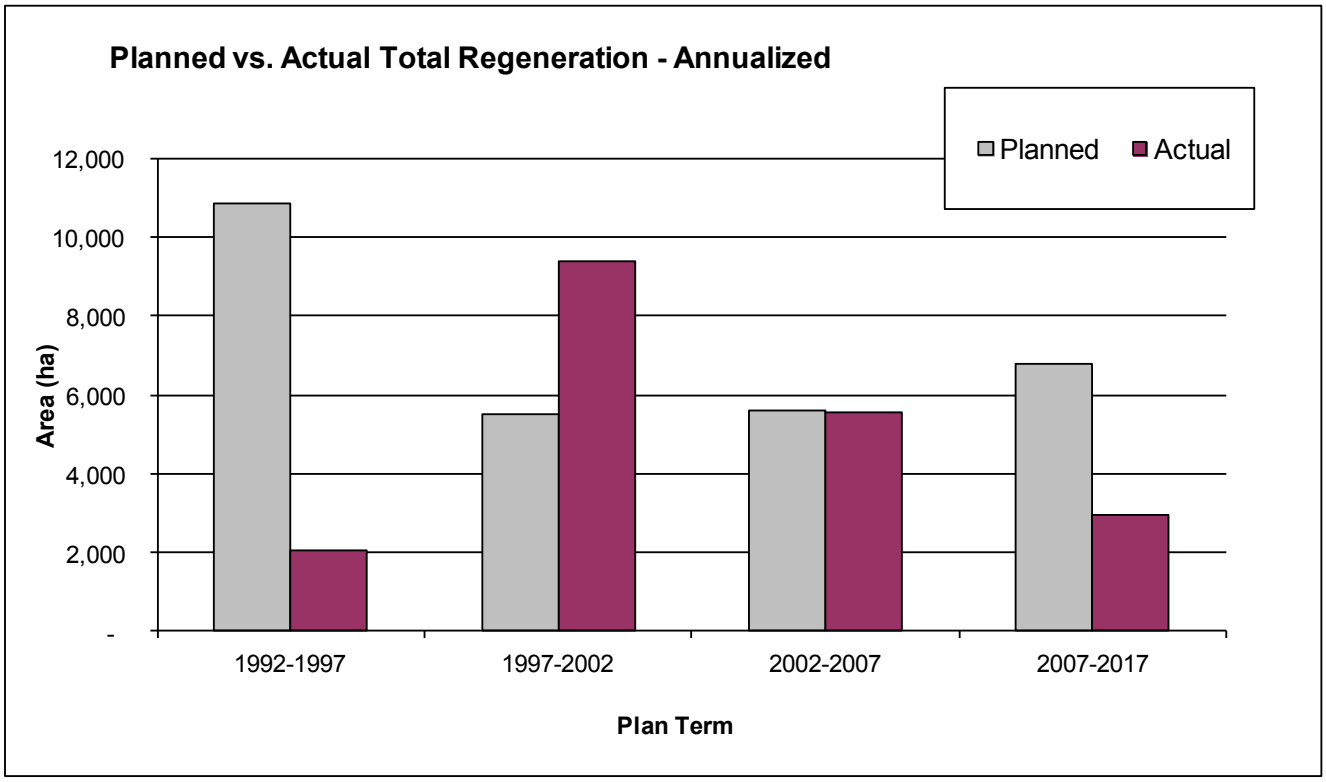


Figure 9: Comparison of annualized planned to actual total regeneration area over the 1992-2013 period.

Figure 10 illustrates the annualized actual harvest area, normal + salvage, compared to actual total regeneration. The reduced area of regeneration during the 1992-1997 period is almost equally compensated for by the reporting of natural regeneration area in the 1997-2002 period.

During the 2002-2007 period, the area harvested through normal and wildfire salvage operations is not equally regenerated. Some of this regeneration activity is planned in the 2007-2017 FMP. However, although actual regeneration area to-date actually exceeds that which is planned annually in the 2007-2017 FMP, it is not necessarily sufficient to offset the amount of area harvested in the 2002-2007 period.

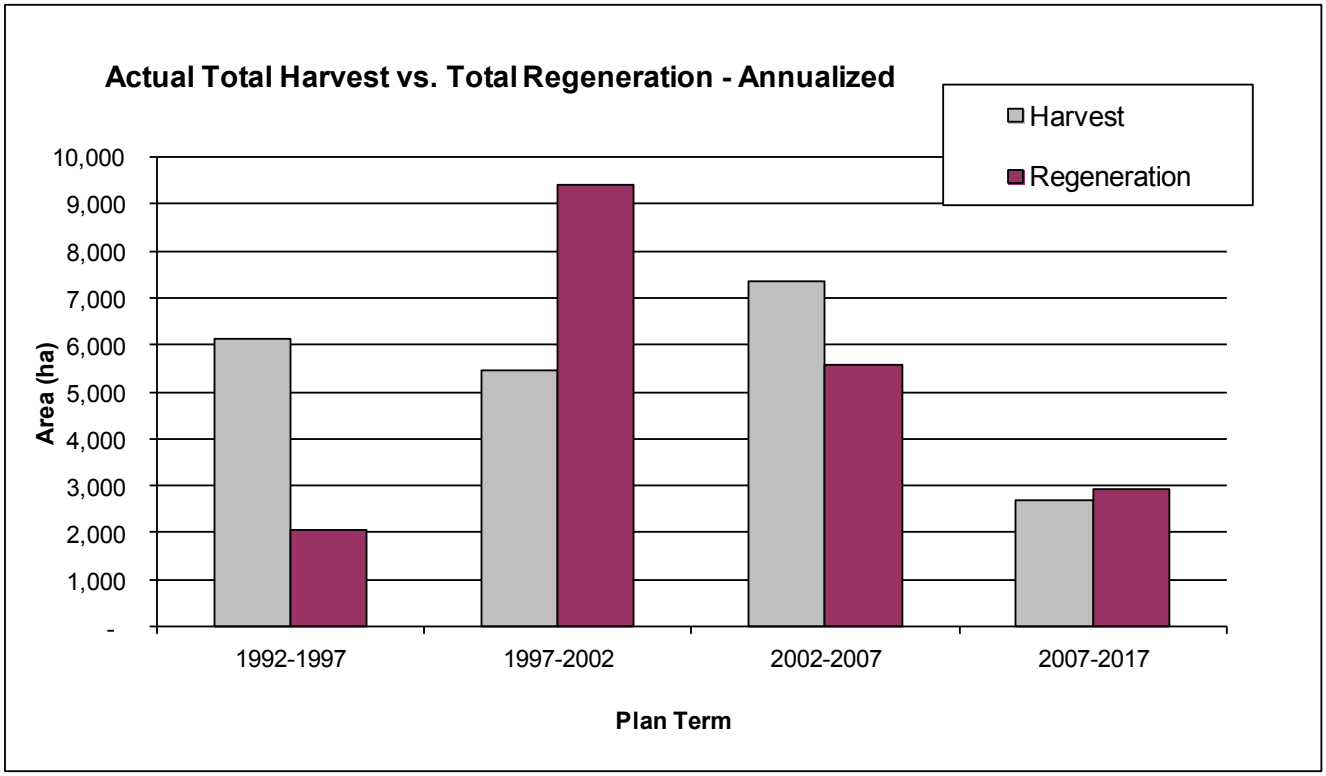


Figure 10: Comparison of annualized actual harvest to actual regeneration area over the 1992-2013 period.

As presented in Table 4, it is estimated that approximately 5,600 hectares of harvest / salvage area, some of which is from the 2002-2007 period, still requires formal reporting of either natural or assisted regeneration treatment. This is based upon review of the total actual area harvested compared to the total area reported as regenerated during the 1992-2013 period; considering:

- the incomplete second pass harvest of hardwood stands in the current FMP;
- a modest amount of harvest area is not available for regeneration due to roads, landings, pits, etc.; and
- the fact that there normally a few years of delay between harvest and regeneration initiation;

This statement is made given that six full fiscal years of the 2007-2017 FMP have been reported upon since the end of the 2002-2007 planning period. However, to put this magnitude of area into perspective, it amounts to less than one year's current annual allowable harvest area on the Big Pic Forest.

General Trends

- The level of achievement for silviculture operations is directly related to harvesting; as the harvest level decreases, so does the area requiring silvicultural treatment.
- Overall, regeneration activity has been keeping pace with harvest over the 1992-2013 period, however there is an estimated 5,350 hectares that need to be formally reported as regenerating that was likely harvested in the latter portion of the 2002-2007 period.
- Artificial / assisted regeneration treatments tend to have a higher degree of completion as planned than natural regeneration treatments. This is due to the focus of harvest operations on the more marketable conifer dominated forest units which require these artificial regeneration treatments.

Table 4: Total harvest versus regeneration & the potential regeneration reporting backlog.

Period	Annualized Area (ha)			
	Harvest	Regeneration	Difference	
1992-1997	6,121	2,061	- 4,060	Harvest/Regeneration Essentially Balanced
1997-2002	5,467	9,400	3,933	
2002-2007	7,338	5,656	- 1,682	Harvest / Regeneration is Not Balanced: ~ 1,450 ha/yr unaccounted for in 2002-2007
2007-2017	2,692	2,925	234	

1,911 ha of 2007 FMP second pass harvest not yet completed (/5 yrs) =	~ 380 ha per year harvest not yet completed

Estimate of area that appears to require the formal reporting of natural or assisted regeneration treatment is =	~ 1,070 ha x 5 yrs = 5,350 ha

Implications

As with harvest area, the implications of not being able to conduct the planned renewal and tending operations over the last 21 years can be construed as negative for those expected to benefit socio-economically directly and indirectly from the provision of renewal and tending services.

Forest renewal activities are dependent on harvest for the contribution of funds to the Forest Renewal Trust Account. Without the harvest of the planned areas in each FMP, there may be a shortage of silvicultural funds. There will also be a delay in the achievement objectives related to the desired future forest condition; future associated wood supply; and the future preferred wildlife habitat area that would result from post-harvest renewal activities.

ASSESSMENT OF HARVEST & REGENERATION

Table AR-10 in Appendix B presents a summary of harvest and regeneration trends for the 1992-2013 period. The intent of this table is to track each specific hectare harvested and its regeneration status. However, it is challenging to correlate specific harvest areas by forest unit (spatially) with the area surveyed for regeneration for several reasons:

- The FMPM instructions for the completion of Table AR-10 indicate that one must report the total harvest and salvage area should equate to the total actual area surveyed, regenerated, unavailable for regeneration and unsurveyed, in the same 5-year term. This is not possible. Regenerating forest areas are normally surveyed for FTG/regeneration status between 8 to 12 years after harvest. Therefore the areas being surveyed in a plan term most often have been harvested one, two or sometimes three management plans previous (5-15 years ago).
- Digital records are limited for harvest depletions, prior to 2002 as they were not required by the *Forest Information Manual*;
- Updates to forest resource inventories prior to an area being free-to-grow resulted in the changing of stand characteristics and often a loss of information related to the harvested forest unit;
- Inconsistencies in forest unit classification between planning periods complicate the evaluation (e.g. the addition of the Mixedwood forest units); and,
- Mandatory forest operation prescription record keeping did not come into effect until the late 1990's. As such, it is difficult to differentiate the proportion of silvicultural successes from the regeneration successes where the original prescription was not recorded.
- The area unavailable for regeneration that is associated with the actual footprints for roads, gravel pits, and landings that area not readily regenerated has not been tracked consistently over time, if at all in some planning periods.

For these reasons, Table AR-10 is merely a non-spatial accounting of area harvested compared to area surveyed / deemed regenerated for the 1992-2013 period. The area surveyed / deemed regenerated will include considerable area that harvested prior to 1992. For trend evaluation purposes in Table AR-10, the forest unit groupings have been applied as described in Appendix A. In Table AR-10, the area Surveyed by forest unit for a given FMP period is the total area surveyed to ascertain if it meets regeneration standards. Regenerated area is area which was surveyed that did meet regeneration standards.

Due to Table AR-10 completion challenges described above; and the changing classifications to and addition of forest units; limited "trend" information can be gleaned.

Surveys Keeping Pace with Past Actual Harvest Concept

As presented in Table AR-10, over the 21-year 1992-2013 period, 110,779 hectares were harvested (normal + salvage). Over the same period, 86,257 hectares were surveyed, of which 80,626 hectares of harvest area were deemed successfully regenerated. This surveyed area includes area harvested and treated silviculturally prior to 1992. This equates to 78% of harvest area surveyed over the 21-year period. The proportion of area deemed successfully regenerated over that period was 73%.

As a basic concept, it is desirable to annually survey for regeneration success the actual area harvested area 8-10 years prior to avoid a backlog of survey work (e.g. if 4,500 hectares were harvested in 2005-06, then the equivalent area should be ready for survey between 2014 and 2016).

As such, if following this basic concept of surveys keeping pace with harvest, the results in Table AR-10 would be closer to 100% achievement. In theory, based on the actual average annual harvest area over the 1992-2013 period, this would approximate at least 5,000 hectares per year. Then 21 years x 5000 hectares would equal 105,000 hectares → the amount of actual harvest between 1992 and 2013 (104,834 hectares).

On this basis, regeneration survey activity must be increased to keep pace with actual harvest, even though the level of 2007-2017 FMP harvest slowed due to the economic downturn.

Forecast of Regeneration Assessment in the 2007-2017 FMP

The current 2007-2017 FMP forecasts 72,500 hectares to be assessed for regeneration success (Table FMP-25) from past harvest / salvage operations. Only 16,305 hectares have been surveyed as of the end of the 2012-2013 fiscal year – well behind the area forecasted.

General Trends

- As formally reported through annual reports, the equivalent of 78% of harvest area from 1992 to 2013 has been surveyed, with 73% being deemed successfully regenerated to-date.
- Overall, the regeneration survey area over the 1992-2013 period has not kept pace with the average harvest level. The actual area surveyed in the current 2007-2017 is only 22% of forecasted, when it should be over half completed.

Implications

With respect to tracking of harvest and regeneration, it is imperative to maintain a database that facilitates the evaluation of regeneration and silvicultural success over the short to medium term (10-20 years). Table AR-10 is designed to be a spatial evaluation of activity on a given hectare. However, a non-spatial accounting exercise of total area harvested by forest unit group and successful regeneration survey has been made with the available information. As digital records and GIS layers accrue over the next two planning periods, more robust evaluation of trends can be made as to the regeneration status of older harvest areas by year of harvest and forest unit harvested.

A backlog of survey area is building, as annual surveys have not been completed in the current FMP as forecasted. Some of this backlog is attributable to changes in management responsibility for the Big Pic Forest following the Marathon Pulp Inc. bankruptcy; but much of it could be addressed with significant survey effort over the next few years. If this survey work can be completed, it would be beneficial for the updating of the latest Forest Resource Inventory and for use in the strategic model for the next management plan.

ASSESSMENT OF FOREST CONDITION

Table AR-11 in Appendix B presents a summary of forest condition for the managed Crown productive forest, by forest unit and age class. As previously described, forest units have been aggregated into Forest Unit Groupings. Given the changes in forest unit classification over the last four management plans, a meaningful evaluation of trends in forest condition by forest unit group and age class is challenging, particularly because of the implementation of mixedwood forest unit classifications in the 2002 and 2007 FMPs; and differences in forest data management and reporting methods (e.g. productive forest vs. production forest; forest area permanently lost versus temporarily lost to roads). As harvesting in the current plan is not completed, the strategic model projected area by forest unit group has been provided for the year 2017 from the Long Term Management Direction (LTMD).

Overall, total Crown managed productive forest area has remained relatively stable, ranging from a high of 578,590 hectares in 1992 to a low of 570,746 hectares in 2002. In general, changes in area by forest unit group and age class are the result of harvesting and natural depletions, as well as through post-harvest regeneration activities and post-disturbance natural succession.

Figure 11 presents the forest area by 20-year age class group over for the last four planning periods, with the projected forest condition at 2017 based on the current plan's Long Term Management Direction.

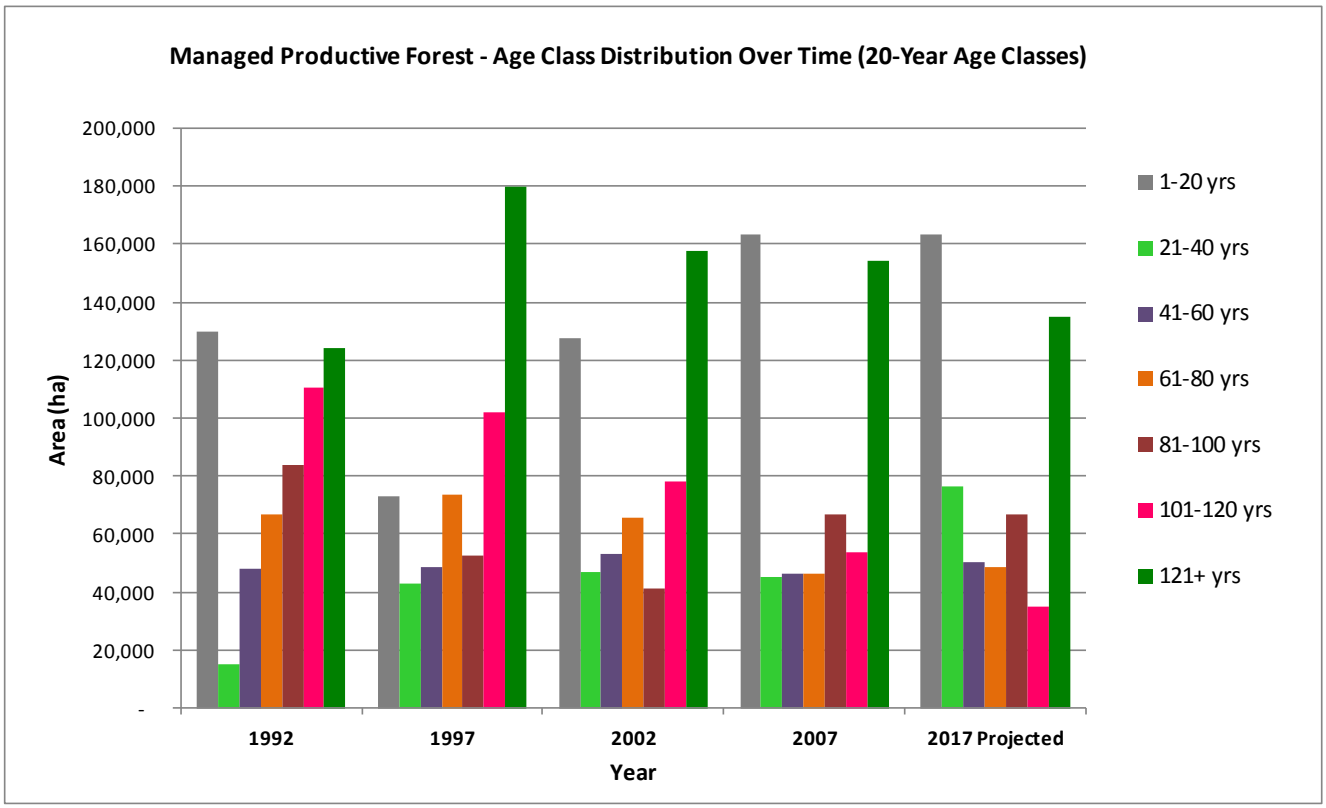


Figure 11: Managed productive forest area by age class over the 1992-2013 period.

Figure 11 illustrates that there has generally been a decline in 61-80 year and 81-100 year age classes over time. Old forest 121+ years is higher in than in 1992, but appears to be on a declining trend. These changes are related

to harvest, natural disturbances, and natural succession of older stands to younger forest condition (1-20 and 21-40 year age classes). The forest area in the 41-60 year age class has remained very stable over the last 21 years.

Figure 12 illustrates this same age class distribution information at three specific time periods: 1992, 2007 and projected at 2017. Between 1992 and plan start at 2007, there has been an increase of about 40,000 hectares of 1-20 year old forest; an increase of about 20,000 hectares of 21-40 year old forest; and an increase in 121+ year old forest of about 35.000 hectares. A comparable area decrease has occurred in the 61-120 year age range.

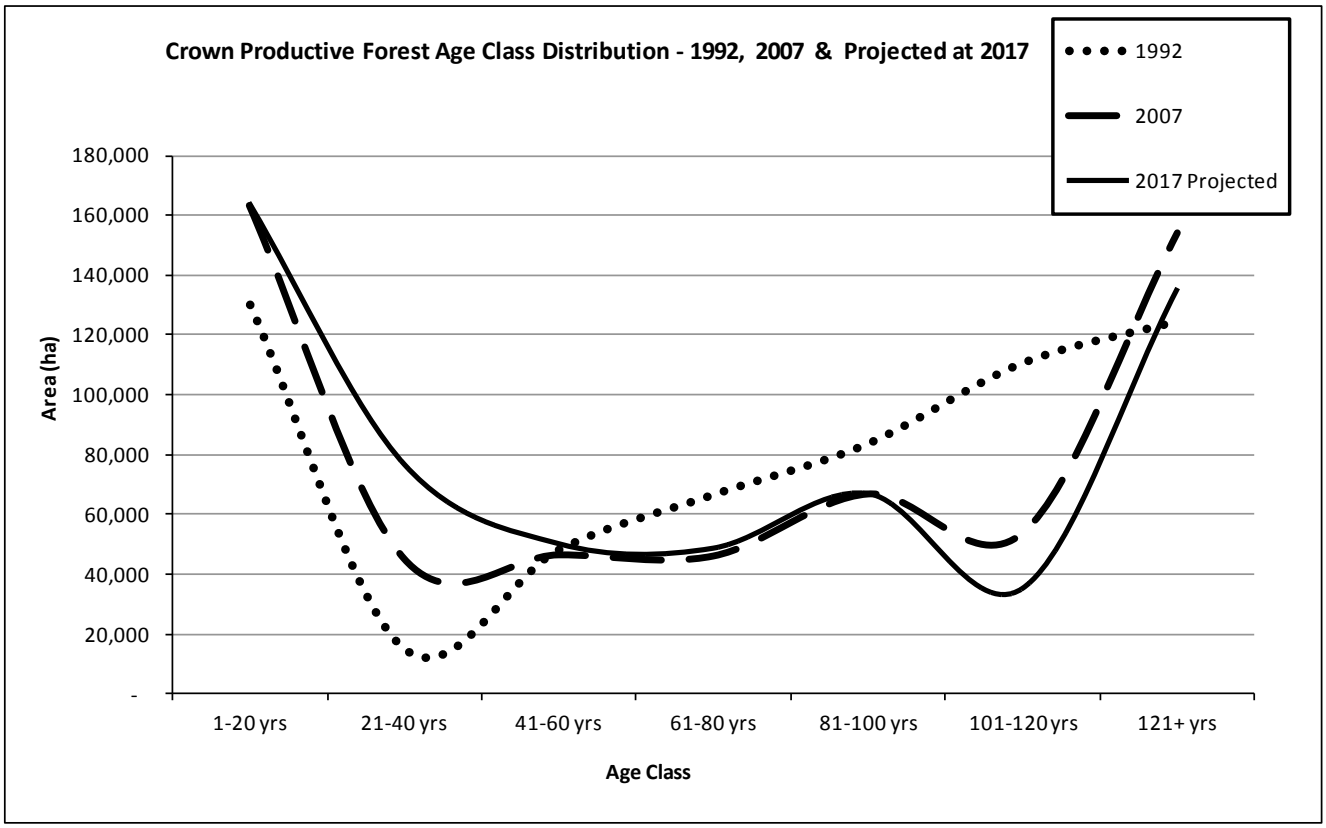


Figure 12: Managed productive forest area by age class at 1992, 2007 & projected at 2017.

A simple calculation reveals the weighted average forest age over time as 79, 89, 78, 73 years in 1992, 1997, 2002 and 2007, respectfully. Based on the LTMD, with the planned harvest in the current plan, the weighted average age is projected to drop to 67 years.

General Trends

- The forest unit group for 1992 and 1997 was based on working group species, and because of this, the proportion of forest in the Mixedwood forest unit group could not be synthesized. Based on the decreases in other forest unit groups at 2002, the Mixedwood area was associated mainly with the upland Spruce Dominant, Poplar Dominant and White Birch Dominant forest unit groupings.
- There is a modest increase in the area of Jack Pine Dominant forest unit group over time;
- A decrease in Spruce Dominant forest group area is also a function of some post-disturbance conversion to other forest units, such as Jack Pine Dominated and Other Conifer (lowlands).
- The increase in Other Conifer total area is likely the result of changes to forest unit classification, and the propensity for larch to rapidly colonize certain disturbed black spruce lowland sites.

- In addition to harvesting, over 23,000 hectares burned by wildfire during the 2002-2007 period.
- The area of Barren & Scattered / Not Sufficiently Restocked (NSR) has declined steadily since 1992. This is attributable to efforts to reclassify NSR area in the 2002-2022 FMP to FTG using survey information and professional judgement, and likely, in some part, to differences in reporting methods, where newly harvested area is accounted for in the 1-20 year age class.
- Mixedwood forest area aside, the area of purer conifer dominated forest is modestly declining and the area of purer hardwood dominated forest is modestly increasing (particularly Poplar Dominant forest).
- Planned harvest, natural disturbances, and to some degree, natural succession have and will continue to result in a decrease in overall weighted average age of the forest, from the 81-100 year age class to the 61-80 year age class.

Implications

Total forest area has remained stable for the last four plan periods, and it is projected to be the same over the next 100 years in the strategic model. With what appears to be a general decrease in area by age class in almost all forest unit groupings, there may begin to be a constraint on forest area of operable harvest age in order to maintain specific forest units in specific ages (e.g. old growth condition). However, the completion of the plan harvest in the 2007-2017 period, coupled with the latest Forest Resource Inventory that will be available for the preparation of the next forest management plan, will better reflect the Big Pic Forest's the actual current forest condition.

ASSESSMENT OF HABITAT FOR SPECIES AT RISK & SELECTED WILDLIFE SPECIES

Wildlife habitat area is considered through strategic-level forest management planning and operational-level management plan implementation.

Non-Spatial Wildlife Habitat Area

Non-spatial habitat is the cumulative habitat area for selected wildlife species on all Crown forest (including parks and protected areas), based on forest/habitat unit type and age, regardless of its actual physical location. On the Big Pic Forest, the area of preferred habitat for selected wildlife species is addressed through strategic-level planning using current forest resource inventory information and projections of future forest condition. Strategic-level planning decisions are made as to the long-term desirable area or trends in abundance of specific habitat, and modeling provides projections of habitat abundance based on the planned and projected harvest and silvicultural activities. These desirable wildlife habitat areas are generally derived on the basis of observations of the natural benchmark scenario – the natural forest in the absence of human intervention and wildfire suppression. The suggested levels of harvest and renewal by the model are then derived to not compromise the desired short and long-term abundance of wildlife habitat.

The abundance of non-spatial wildlife habitat at 2002 and 2007 was based on the projected forest condition as of those dates (forest unit and age class distribution), which, in turn relates to Habitat Units definitions in the strategic model (SFMM).

Table AR-12 in Appendix B presents a summary of the preferred habitat area for species at risk and selected wildlife species. Based on MNR direction, the implementation of habitat area targets for 20 selected wildlife species was initiated in the 2002-2022 Forest Management Plan (FMP). For the 2007-2017 FMP, the number of species habitat types to be evaluated was refined to ten; nine of which were consistent with the previous management plan. The refinement to ten species was based on the Crown's direction that the habitat needs spectrum for boreal wildlife species can be addressed through the sustainable management of a fewer, key habitat types preferred by a few "featured" wildlife species (e.g. caribou, marten, moose, lynx, black-backed woodpecker).

The area of habitat for most of the species modeled at 2002 and 2007 are strikingly different. For example, the area classified as preferred boreal chickadee habitat was 51,000 hectares at plan start in 2002; while over 228,000 hectares were classified only five years later. In the absence of a new Forest Resource Inventory, the likely reason for this massive discrepancy is differences in the wildlife habitat matrix definitions and/or correlations that are input into the strategic model (SFMM) between planning periods. There is no mention in the Analysis Package for the current 2007-2017 FMP as to a review of species habitat preferences or of the wildlife habitat matrix. For future modeling of these species habitats in FMPs, the wildlife habitat matrix should be reviewed for accuracy and/or consistency.

Overall, as presented in Table AR-14, non-spatial wildlife habitat area desirable levels and targets were all projected to be achieved with the planned 2007-2017 harvest, with the exception of ruffed grouse habitat area desirable level. As less than planned harvest has actually occurred as of the end of the 2012-2013 fiscal year, all habitat levels will likely exceed the projected areas at 2017.

Spatial Wildlife Habitat Area & Values

Spatial wildlife habitat area encompasses the area that either currently and/or is projected to geographically exist on the forest. Examples where wildlife habitat needs has been considered spatially through forest management planning over the last 15-20 years are for moose, marten, and caribou. Management guidelines provided direction for forest management planning teams to address the spatial habitat needs for these species. Meeting the spatial habitat needs for moose was generally conducted at a stand or group of stands level (e.g. aquatic feeding habitat, travel corridors, shelter patches and summer/winter cover etc.).

The spatial habitat needs for marten and woodland caribou was accommodated through the deferral of harvest for decades in larger aggregations of generally conifer-dominated stands ranging from a few, to many thousands of hectares in size, depending on spatial availability of suitable habitat for the marten/woodland caribou.

As discussed in Table AR-14 (Assessment of Objective Achievement), the desirable levels and targets for the long-term (60 year) deferral of marten core habitat area were met. There were 22 cores deferred across the Big Pic Forest, all except one exceeding 3,000 hectares in area. In addition, 16.1% of the capable marten habitat was in suitable condition and arranged in cores at plan start, meeting the 10-20% goal directed by the *Forest Management Guidelines for the Provision of Marten Habitat*. The density of suitable habitat improves over time, with more than 60% of the marten cores having >75% suitable habitat within them by 2047. As there has been no harvest, nor any wildfires within core areas, the core habitat statistics remain as they were estimated at plan start 2007.

As discussed in Table AR-14 (Assessment of Objective Achievement), the desirable levels and targets for woodland caribou core habitat deferrals were achieved for refuge habitat and winter habitat. Revised policy direction from the MNR related to the Species at Risk Act was addressed as part of the Year 3 Review of the 2007-2017 FMP, and changes in caribou habitat management direction was implemented with the Phase II FMP. As such, the objective indicator was no longer valid. Revised policy direction related to the *Endangered Species Act* and the *Forest Management Guide for Boreal Landscapes* will be implemented in the next FMP.

Table AR-14 (Assessment of Objective Achievement) resents presents several indicators for operational compliance with prescriptions related to the provision of forest cover for values that are dependent on a healthy forest ecosystem; and related to the protection of water quality and fish habitat. Prescriptions were developed in accordance with applicable guidelines. The desirable level was to have zero of instances of non-compliance. During the course of the 2007-2013 period, there were four instances of non-compliance, which are described later in this report. Overall, however, the targets established for forest operation compliance have been achieved.

Area of concern prescriptions are developed in forest management plans under the direction of MNR's various management guidelines. These prescriptions are applied during the implementation of harvest, road construction, renewal and tending activities. They provide for the protection of specific identified wildlife values, such as eagle nests; heron colonies; rare or endangered flora; general water quality and critical fish habitat; moose aquatic feeding areas; etc.

Species at Risk

The 2007-2017 FMP considered the potential impact of forest management operations on listed flora and fauna species at risk, of special concern or which are provincially rare. Wildlife species and their habitats considered include: Bald Eagle, Woodland Caribou, Great Grey Owl, Wolverine and Eastern Cougar. An area of concern

prescription was developed by the planning team to address bald eagle nesting sites adjacent to planned forest management operations.

There are no documented threatened, endangered or special concern species of flora on the Big Pic Forest. However, the locations of eleven locally significant flora species, predominantly mosses and lichens, were reviewed by MNR to ensure no potential impact of forest management operations.

General Trends

- Due to differences in preferred habitat types evaluated between terms, and the short duration of tracking of habitat area, limited information can be gleaned from Table AR-12 with respect to the changes in area of preferred non-spatial wildlife habitat. However, given that the strategic planning for the 2007-2007 FMP projected achievement of non-spatial wildlife habitat area objectives into the future. However, not completing the harvest as planned will delay the achievement of the desired future forest condition and the projected abundance of specific wildlife species habitats, as post-harvest succession and silvicultural treatment cannot occur if stands aren't harvested;
- Identified habitat values (e.g. stick nests) have been considered over the last 21 years and the protection of critical habitats addressed by area of concern operational prescriptions; and,
- Habitats for species at risk, of special concern or provincially rare have been addressed through strategic and operational planning.
- Through Phase II planning of the 2007-2017 FMP, there have been some changes made to wildlife area of concern prescriptions to reflect direction in the new *Forest Management Guide for the Conservation of Biodiversity at the Stand and Site Level*.

Implications

With respect to the achievement of objectives related to non-spatial habitat area over the last 21 years, preferred habitat levels have been considered and maintained in accordance with provincial policy/direction, either through the application of guideline direction in area of concern prescriptions or through strategic modeling (maintaining habitat area at above a desired level over time). Spatial habitat objectives have, in general, been achieved on balance with other objectives for desired future forest condition and benefits. Forest management plans over the last 21 years have considered and addressed, as required by the Crown policy, the habitat needs of species at risk. Policy direction for species at risk will continue to be addressed as directed by the Crown policy in the 2017-2027 FMP.

Continued diligence is needed with respect to the protection of water quality and fish habitat as it pertains to forest management operations adjacent to lakes and streams, and in the construction of roads and water crossings.

MONITORING & ASSESSMENT

Significant Events

The most significant event over the 2007-2017 period that influenced the implementation of the forest management plan was the unprecedented economic downturn in the forest industry in Northwestern Ontario between 2008 and 2012. This downturn resulted in the idling and/or closure of several sawmills, pulp mills and composite board mills in the vicinity of the Big Pic Forest. As previously discussed actual harvest area and volume fell well below that which was planned.

As a result of this economic downturn, the Big Pic Forest Sustainable Forest Licence (SFL) holder, Marathon Pulp Inc., went into bankruptcy in 2009, and the forest management responsibility for the Big Pic Forest reverted to the Crown (MNR – Wawa District) for a few years. As of April 1st, 2013, a new management entity, the Nawiinginokiima Forest Management Corporation (NFMC) assumed the forest management responsibilities for the Big Pic Forest.

As a result of the changes in forest management responsibility that occurred on the Big Pic Forest, the 2007-2017 FMP *Compliance Strategy* was amended (Amendment 005) to revise aspects of the strategy that referenced the SFL holder's management responsibility perspective. This provided clearer direction to the MNR who formally assumed management responsibilities of the Forest in July, 2010. As per the approved amendment, in the event an SFL holder assumes management responsibility of the Big Pic Forest, the 2007-2017 *Compliance Strategy* will require amending to reflect that change.

Areas Harvested under the Clearcut Silviculture System

The preparation of the 2007-2017 FMP was consistent with the direction in the *Forest Management Guidelines for Natural Disturbance Pattern Emulation* (2001). Planned operations for the 2007-2017 period were projected to result in 81% of planned clearcuts being less than 260 hectares. There were 28 planned clearcuts exceeding 260 hectares. However, only 26% of planned harvest has actually occurred to date in the 2007-2017 period (as of the end of the 2012-2013 fiscal year). Re-analysis of the proportion of planned clearcuts less 260 hectares, based on actual harvest will be required when the current plan is completed.

As of the end of the 2012-2013 fiscal year, none of the planned second pass harvest areas from the 2002-2007 plan term have been completed. These areas should be reevaluated.

Monitoring of Roads and Water Crossings

The monitoring of roads and water crossings has occurred on an annual basis as reported in the Annual Reports during the 2007 FMP up the end of the 2012-2013 fiscal year. The purpose of road monitoring is to pre-empt environmental and safety issues. Silviculture staff, foreman and operators observed and reported where maintenance was needed for primary, branch and operational roads.

The roads/ road networks monitored were reported annually via the Annual Reports. No problems or changes for public access controls have been reported upon during the 2007-2013 period.

Compliance Monitoring - Occurrences of Non-Compliance

There were four SFL-related instances of non-compliance reported on the Big Pic Forest during the 2007-2013 period. There were two other reports (one in 2011-2012 and one in 2012-2013) identifying a non-compliance that are classed as compliance "pending" related to harvest operations. Until these reports are closed and formalized, they are not considered as part of the compliance objective achievement results in Table AR-14.

Harvest

There were two instances of non-compliance related to harvest operations. Both instances involved a minor amount of harvesting outside of the planned and licenced area. In one instance, there was a review of harvest operation control procedures with the contractor by the company, and the operator was suspended from operations for a period of time. In the other instance, there was a review of harvest operation control procedures with the contractor by the company.

There were two other reports (one in 2011-2012 and one in 2012-2013) identifying a non-compliance that are classed as compliance "pending" related to harvest operations. Until these reports are closed and formalized, they are not considered as part of the compliance objective achievement results in Table AR-14.

Access

There was one instance of non-compliance related to road / water crossing repair. There was a failure to have sediment control measures in place during water crossing repair work. The MNR was to clarify with the company the definition of regular maintenance versus emergency repair.

Renewal

There was one instance of non-compliance related to renewal activity on the Big Pic Forest in 2007. A silviculture treatment block was scheduled for chemical site preparation (herbicide application) in the Annual Work Schedule, and it was included on the application to the Ministry of Environment (MOE) for an aerial pesticide application permit. It was mistakenly omitted by the MOE from the aerial pesticide application permit. This omission was not noticed until after the block had received chemical site preparation with herbicide. Thus, the block was not actually approved by the MOE for herbicide application. No enforcement action was recommended since the MOE acknowledged they were partially responsible for the non-compliance, along with the applicant and spray contractor. The MOE recommended actions the following actions:

- the cover letter requesting the permit approval should specifically indicate the type of work to be done (e.g. tending or chemical site preparation)
- approval packages (permit) should be checked thoroughly; and
- aerial exterminators need to ensure that the approval package they receive from permit holders contain all of the spray blocks they are expected to treat.

Monitoring for Exceptions

There were no exceptions to forest management guidelines in any approved area of concern prescriptions or silvicultural prescriptions in the 2007-2017 FMP.

Assessment of Regeneration Success

Table AR-13 in Appendix B presents a summary of assessment of regeneration and silviculture success. A total of 72,540 hectares was planned for assessment of regeneration success for the 2007-2017 FMP. There was 16,305 hectares assessed and reported upon in annual reports as of the end of the 2012-2013 fiscal year – 22% of that which was planned. Of the 16,305 hectares, 4,662 hectares were assessed as successfully regenerated to the projected forest unit (silviculture success); 11,158 were successfully regenerated to a different forest unit (regeneration success); and 485 hectares were not free-to-grow at the time of survey.

Please refer to the Analysis and Trend in Regeneration Success section for more discussion.

ANALYSIS OF FOREST DISTURBANCES

As previously mentioned, as of the end of the 2012-2013 fiscal year, only 26% of the planned area has been harvested during the current 2007-2017 plan. The low level of actual harvest achievement may impact on the ability to move toward the natural forest disturbance template for the frequency distribution of disturbances by size class. There have been no natural disturbances of significance during the 2007-2013 period that would impact on this review of forest disturbances.

Table 5 presents a comparison of the frequency distribution of disturbances by size class projected for the natural forest (desired), to the frequency distribution at plan start (2007) and the frequency distribution projected to result as of 2017, if all planned harvest is completed. The desired frequency distribution of disturbances was already achieved at plan start, and is projected to be at plan end following the completion of Phase I and Phase II harvest operations.

Table 5: Comparison of frequency distribution of disturbances by size class.

Disturbance Size Class	Desired Natural Disturbance Frequency Distribution	Plan Start Disturbance Frequency Distribution (2007)	Projected Plan End Disturbance Frequency Distribution (2017)*
< 100 hectares	55%-65%	62%	62%
101-200 hectares	11%-18%	12%	11%
201-500 hectares	0%-13%	10%	8%
501-1,000 hectares	0%-7%	4%	4%
1,001-5,000 hectares	8%-28%	8%	11%
5,001-10,000 hectares	0%-1%	1%	2%
>10,000 hectares	0%-5%	2%	2%

*Big Pic Forest 2007-2017 FMP Phase II

In the absence of an updated forest inventory with: the actual harvest from the last few years of the 2002-2007 period (when harvest was projected for the 2007 FMP); with the actual harvest during the 2007-2013 period; and aging the forest; a spatial analysis of the frequency distribution of forest disturbances cannot be completed for this assessment. With Phase II planning for the current 2007-2017 FMP, the frequency distribution of disturbances at the end of the ten-year plan was projected to be 62%, 11%, 8%, 4%, 11%, 2%, and 2%,for the respective size classes. These frequencies are all within the desired ranges, with the exception of the 5001-10000 hectare size class, which exceeds the desired range by 1%.

A cursory review of planned harvest and actual harvest was conducted as of the end of the 2012-2013 fiscal year (six years). Although the total actual harvest level is only 26% of planned on the Forest, where planned disturbances (i.e. harvest operations) have occurred, they appear to be very thorough and complete (extending to planned boundaries), with little to no bypass area.

Overall, it is unlikely that the frequency distribution of disturbances as of the end of the 2012-13 fiscal year would notably differ from the desired frequency distribution ranges within the 10-year period, even if the planned harvest is incomplete, because the desired ranges are relatively wide. At this time, there are no recommendations to be made regarding the planning of disturbances, as revised policy direction related to the *Caribou Conservation Plan* and the *Forest Management Guide for Boreal Landscapes* will be implemented with the next FMP.

ANALYSIS OF RENEWAL & TENDING ACTIVITIES

Trends in Renewal & Tending

As previously discussed in the assessment of renewal, tending and protection operations, the level of achievement for silviculture operations is directly related to harvesting; as the harvest level decreases, so does the area requiring silvicultural treatment. Overall, over the previous three planning periods (1992 through 2007), the actual normal harvest area has been very consistent at around 5,000-6,000 hectares annually. In addition, salvage harvest activities occurred during the 2002-2007 period. During the current 2007-2017 plan period however, actual harvest has been very low (only 2,700 hectares annually) and so has the area available for silvicultural treatment.

Although silvicultural activity has been relatively low during the current plan, over the whole 1992-2013 period, 65% of planned natural regeneration and 70% of planned assisted regeneration activities have occurred. The approximate ratio of natural regeneration to assisted regeneration treatments is 52% to 48%, respectively. However, most recently in the 2007-2017 period, 24% of harvest area was naturally regenerated.

It is estimated that approximately 5,600 hectares of harvest / salvage area, some of which is from the 2002-2007 period, still requires formal reporting of either natural or assisted regeneration treatment. This is based upon review of the total actual area harvested compared to the total area reported as regenerated during the 1992-2013 period; considering:

- the incomplete second pass harvest of hardwood stands in the current FMP;
- a modest amount of harvest area is not available for regeneration due to roads, landings, pits, etc.; and
- the fact that there normally a few years of delay between harvest and regeneration initiation;

This statement is made given that six full fiscal years of the 2007-2017 FMP have been reported upon since the end of the 2002-2007 planning period. However, to put this magnitude of area into perspective, this only amounts to less than one year's annual allowable harvest on the Big Pic Forest.

Site preparation area over the 1992-2013 period is modestly lower (9%) than the area of assisted / artificial regeneration. This is a positive achievement, and is as expected, as the preparation of harvested areas for tree planting is not always required, particularly where the duff / LFH layers are shallow and seedlings can be planted directly into easily exposed mineral soil.

On average, 76% of the planned area scheduled for tending (cleaning with herbicide) has been tended over the last 21 years. This is a very positive achievement. During the current 2007-2017, however, tending activities have only been at 57% of planned. With the reduced harvest level in the current plan, the level of regeneration activity has also been reduced. In addition, sites harvested may not be in need of tending activity to reach FTG requirements. As the focus of harvest operations is often on conifer dominated stands due to marketability, some sites may have less or delayed requirement for competition control.

Overall:

- The level of achievement for silviculture operations is directly related to harvesting; as the harvest level decreases, so does the area requiring silvicultural treatment.
- Overall, regeneration activity has been keeping pace with harvest over the 1992-2013 period, however there is an estimated 5,350 hectares that need to be formally reported as regenerating that was likely harvested in the latter portion of the 2002-2007 period.
- Artificial / assisted regeneration treatments tend to have a higher degree of completion as planned than natural regeneration treatments. This is due to the focus of harvest operations on the more marketable conifer dominated forest units which require these artificial regeneration treatments.
- The forest industry downturn between 2008 and 2012, coupled with the bankruptcy of the Sustainable Forest Licensee and the transition of management responsibility to the Crown and subsequently to the Local Forest Management Corporation, have resulted in some uncertainty and disruption in the smooth annual delivery of the silviculture program and services on the Big Pic Forest.

Expenditures on Renewal &Tending Operations

Table 6 presents a summary of silvicultural expenditures for the 2007-2017 period from the Forest Renewal Trust Fund (FRTF) and the Forestry Futures Trust Fund (FFTF). The variation in expenditures by activity for each fiscal year reflects:

- the impact of the forest industry downturn;
- the concerns over expenditures when revenues to the Forest Renewal Trust were reduced due to reduced harvest activity;
- differing interpretations for the reporting of expenditures by activity, such the inclusion of ancillary costs associated with an activity that may be deemed by others as “Renewal Support” or “Other Eligible Expenses” (e.g. supervision salary cost included with artificial regeneration expenditures).

Based on a complete renewal and tending program for all harvest area in the 2007-2017 FMP, annual expenditures for renewal and tending were projected to be $2.46 million. As of the end of the 2012-2013 fiscal year, total expenditures are only 39% of the total combined FRTF and FFTF planned silvicultural expenditures projected to occur during the 2007-2017 period. However, given the reduced levels of harvest, the silvicultural expenditures are likely appropriate for the 2007-2013 period, which are $1.75 million on an annualized basis, which represents 71% of the planned annualized expenditure.

Table 6: Summary of 2007-2017 renewal & tending expenditures from the FRTF & FFTF.

	(000s $)							
	FOREST RENEWAL TRUST FUND (FRTF)						Forest Renewal To Date	Forest Renewal Planned
ACTIVITY	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13		
Natural Regeneration	6.87	-	-	-	-	-	6.87	187.61
Artificial Regeneration	1,547.95	1,105.46	1,262.39	316.65	185.00	885.86	5,303.30	12,305.47
Site Preparation**	313.07	308.08	50.73	-	115.80	200.33	988.00	4,173.94
Tending	193.27	63.00	97.52	219.85	125.20	281.94	980.79	2,609.74
Renewal Support	72.41	366.19	239.05	122.27	550.40	398.42	1,748.74	5,326.43
Other Eligible Activities	-						-	
Protection (Insect Pest Control)								
Total	2,133.56	1,842.72	1,649.69	658.77	976.40	1,766.55	9,027.69	24,603.19

**Slash piling is included within site preparation

	(000s $)							
	FORESTRY FUTURES TRUST FUND (FFTF)						Forest Renewal To Date	Forest Renewal Planned
ACTIVITY	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13		
Natural Regeneration	-	-	-	-	-	-	-	-
Artificial Regeneration	1,101.74	162.37	-	-	-	-	1,264.11	1,558.97
Site Preparation	141.75	-	-	-	-	-	141.75	-
Tending	47.13	-	-	-	-	-	47.13	600.13
Renewal Support	-	-	-	-	-	-	-	-
Other Eligible Activities	-	-	-	-	-	-	-	-
Protection (Insect Pest Control)		-	-	-	-	-		-
Total	1,290.62	162.37	-	-	-	-	1,452.98	2,159.10

Sources: 2007-2017 FMP Table FMP-24
2007-2017 Big Pic Forest approved Annual Reports

Trends in Harvest & Regeneration

Table AR-10 in Appendix B presents a summary of areas of harvest and regeneration for the last three terms. The intent of this table is to track each specific hectare harvested and its regeneration status. For reasons previously discussed, it is difficult to spatially correlate the specific actual areas harvested by year and by forest unit with the actual area surveyed for regeneration success. With mandatory depletion year digital record keeping since 2002, coupled by the mandatory forest operation prescription record keeping since the late 1990's, it will be easier in the future to track in a more meaningful way the regeneration and silvicultural successes of each individual hectare harvested, by forest unit and year of harvest as more and more of these areas become eligible for assessment.

In theory, based on the actual average annual harvest area over the 1992-2013 period, the area eligible for assessment would approximate at least 5,000 hectares per year. If free-growing regeneration is expected, depending on treatment and forest unit, 8 to 10 year post harvest, then on average, 40,000 to 50,000 hectares of harvested area on the Big Pic Forest would be expected to be in a management stage of either: recently harvested; silviculturally treated (natural or artificial) and establishing; or treated and waiting to reach regeneration standards (e.g. height growth).

Based on a non-spatial account of area harvested compared to area surveyed, over the 1992-2013 period, regeneration survey activities are not keeping pace with harvest. The same conclusion can be made by comparing the 2007-2017 FMP forest of assessment of regeneration success to the actual areas assessed. Again, this does not imply that the forest is not regenerating, but more annual regeneration success surveys are needed to ascertain the true status of 8-12 year old harvest areas.

Trends in Silviculture & Regeneration Success

Table AR-13 in Appendix B presents a summary of assessment of regeneration and silviculture success. A total of 72,540 hectares was planned for assessment of regeneration success for the 2007-2017 FMP. There was 16,305 hectares assessed and reported upon in annual reports as of the end of the 2012-2013 fiscal year – 22% of that which was planned. Of the 16,305 hectares, only 4,662 hectares were assessed as successfully regenerated to the projected forest unit (silviculture success); 11,158 were successfully regenerated to a different forest unit (regeneration success); and 485 hectares were not free-to-grow at the time of survey.

Of the area successfully regenerated, only 30% achieved the prescribed/projected forest unit, and the transitions to other forest units appear related to harvested and intensively treated conifer forest units. This does not necessarily mean that the achievement of another forest unit is always unfavorable, just that a better understanding of silvicultural success, natural ingress abundance, and allocation of effort may be required.

For example, as presented in Table AR-13, 8,104 hectares (over 73%) of the area successfully regenerated to a different forest unit than projected was associated with harvested SB1 and PJ1 forest units. Table 7 presents a summary of the assessment results for these harvested and regenerated two forest units.

Table 7: Summary of PJ1 & SB1 harvest area regenerated to different forest units than prescribed.

Harvested Forest Unit	Prescribed SGR	Area (ha)Successfully Regenerated To Forest Unit						TOTAL
		MW1	MW2	LC1	PJ2	SF1	SP1	
PJ1	PJ1-INT-PJ1	63	2	66	345	60	111	647

Harvested Forest Unit	Prescribed SGR	Area (ha) Successfully Regenerated To Forest Unit									TOTAL
		BW1	MW1	MW2	LC1	PJ1	PJ2	PO1	SF1	SP1	
SB1	SB1-EXT-SB1	-	25	156	678	1	16	8	163	64	1,111
SB1	SB1-INT-SB1	1	102	239	1,836	173	991	12	837	2,153	6,344

Please refer to Appendix A for a description of the 2007-2017 FMP forest unit classification.

PJ1-INT-PJ1

With respect to the 647 hectares of harvested PJ1 forest unit treated intensively (assisted regeneration), with the intent of achieving a PJ1 future forest unit, over half was assessed as becoming PJ2 forest unit. The PJ1 and PJ2 are both jack pine dominated forest units, however the PJ2 forest unit is classified as having less jack pine purity and more of other conifer species such as black spruce, balsam fir in its species composition. This would likely result from natural ingress into the regeneration area. The same would be true for the other assessed regeneration to the other forest unit, such as SP1, SF1 and MW1. The achievement of LC1 forest unit area

following the intensive silvicultural treatment for jack pine is likely related to the natural ingress of regeneration adjacent to lowland forest areas.

SB1-EXT-SB1

With respect to the 1,111 hectares of harvested SB1 forest unit treated naturally, with the intent of achieving an SB1 future forest unit, over half (61%) was assessed as becoming LC1 forest unit. The SB1 forest unit is characterized as a pure black spruce dominated lowland forest type. LC1 is characterized as a lowland conifer forest unit comprised of larch, cedar and black spruce. The transition to LC1 may be the result of aggressive post-harvest natural ingress of larch, dominating the species composition over black spruce. Also Lowland harvest sites often have white cedar left as residual, and cedar regeneration may again dominate the natural black spruce regeneration in the species composition. The variety of other upland forest units assessed as successful regeneration from the lowland SB1 harvest may be the result of adjacency to upland sites.

In addition, as discussed in the section on Review of Modeling Assumptions, there was concern with insufficient Forest Resource Inventory information to properly classify the lowland pure black spruce forest units. For planning purposes, all pure (100%) black spruce stands were classified as lowland. Some of these harvested areas were actually upland forest units when harvested (e.g. SP1) and thus should have been corrected at that time, depending on their area (in accordance with FRI inventory specifications). The presence of upland species such as jack pine and poplar on certain sites in the survey results indicates this to be the case.

SB1-INT-SB1

Regarding the 6,344 hectares of harvested SB1 forest unit treated intensively (assisted regeneration), with the intent of achieving an SB1 future forest unit, one third (34%) was assessed as becoming SP1 forest unit. This is most likely the result of an upland site being artificially regenerated (either with black or white spruce), and the harvested forest unit not being corrected at time of harvest to the SP1 forest unit.

Almost one third (29%) of the area was assessed as LC1 forest unit. The transition to the LC1 forest unit from SB1 is likely the result of aggressive post-harvest natural ingress of larch, dominating the species composition over black spruce. Also, lowland harvest sites often have white cedar left as residual, and cedar regeneration may again dominate the natural black spruce regeneration in the species composition.

The 17% and 13% of SB1 harvest area was assessed as PJ2 and SF1 forest unit following intensive treatment (as was a minor area assessed to a variety of other forest units) is likely the result of natural ingress into the artificially treated areas; or the actual pre-harvest forest unit was an SP1 upland forest unit; or the pre-harvest condition had patches of other upland forest units too small to have been typed separately in the FRI, but large enough to influence the regeneration.

Recommended Changes to Improve the Effectiveness of Renewal & Tending Operations

Based on the available information, some opportunities for the improvement of the effectiveness of renewal and tending operations are:

- Ensure that information linkages through the harvest-renewal-tending-assessment sequence of activities are maintained to facilitate easier evaluation of trends. This will continue to improve with increased digital record keeping, and as regeneration assessments are conducted for renewal areas which have been assigned silvicultural ground rules and forest operation prescriptions since the late 1990's.

- Given the apparent difficulty with the SB1 (lowland) versus SP1 (upland) forest unit classification in the FMP, more effort at the time of harvest to document actual forest condition and to correct harvested forest unit / Silvicultural Ground Rule (SGR) is needed.

- It is estimated that approximately 5,350 hectares of harvest / salvage area, some of which is from the 2002-2007 period, still requires formal reporting of either natural or assisted regeneration treatment. This is based upon review of the total actual area harvested compared to the total area reported as regenerated during the 1992-2013 period.

- The tending assessment program should occur annually in order to identify areas requiring treatment in a timely fashion. Scheduling of these activities will be done to minimize any accumulation of area in need of treatment while considering economies of scale and operational feasibility.

- Meet or exceed the annual silvicultural effectiveness monitoring program as forecasted in the current FMP.

- Higher regeneration success rates to the projected/prescribed forest units (silviculture success) are needed, particularly when funds are invested in artificial /assisted regeneration treatments. This may be achieved with diligent monitoring and timely application of tending treatments; with improved initial renewal prescriptions and effort allocation (e.g. do not waste effort trying to convert a harvested PO1 or MW2 area to a PJ1 forest unit); and with better understanding of natural ingress abundance.

- Ensure that the regeneration standards in future silvicultural ground rules by forest unit and silvicultural intensity are robust enough such that, upon assessment and free-to-grow declaration, the desired future forest unit condition and projected yield is achievable with a good degree of confidence.

- The use of the new Forest Resource Inventory, with Ecosite attribution, for the next FMP should allow for more accurate silvicultural ground rule prescriptions and identification of the current and projected forest units.

REVIEW OF ASSUMPTIONS IN MODELING

The strategic base model used for the development of the 2007-2017 FMP Long-Term Management Direction was approved by the Crown, consistent with policy direction at the time. However, there are some items for planner consideration with the strategic model for the next forest management plan.

- Continued consistency of forest unit classification would be beneficial to negate future variability in the evaluation of trends between forest management plan periods. However, through discussions with the plan author, there was concern with the use of the Northeast Regional Standard Forest Unit classification for Lowland Spruce (SB1). The Forest Resource Inventory (FRI) used for planning did not have sufficient attribute coding to confidently distinguish lowland from upland black spruce stands. As such, all pure 100% black spruce stands were classified as SB1 forest unit, when they could be Upland Spruce-Pine (SP1) forest unit. It is expected that the next FRI to be used for the next FMP will address this concern.

- Based on the modest amount of information related to post-harvest regeneration success to the SB1 forest unit, the post-harvest forest succession proportions in the future strategic model should be examined. The proportion of LC1 forest unit for both natural and assisted regeneration may need to be increased (modeled in the 2007 FMP as only 10% transition to LC1 for natural regeneration; and 0% transition to LC1 for assisted

regeneration). However, the actual amount of area that transitions with the proportion needs to be carefully considered, as a high proportion can translate to an unrealistic amount of area.

- Strategic-level average yield curves should continue to be reaffirmed with actual harvest volumes. The current FMP planned average yield was increased from the 1997 and 2002 FMP periods, but actual average volume appears to be less. This may be alleviated with the availability of a newer FRI and the use of new yield curve generation capabilities in the MNR's *Modeling Inventory Support Tool* (MIST) for the next FMP.

- The approved strategic model should have the wildlife habitat matrices reviewed by the planning team biologist. This would facilitate proper representation of preferred habitat conditions by the various species; and hopefully allow for a meaningful evaluation of wildlife habitat area trends over time. However, with recent changes in MNR policy direction and the use of the Simulated Ranges of Natural Variation (SRNV) for forest structure/age/composition/distribution, as per the *Forest Management Guide for Boreal Landscapes*, targets for specific preferred wildlife habitat types in modeling may no longer be necessary.

- The categorization of inoperable stands will have to be reviewed with the new 2007 FRI prior to strategic modeling. Inoperable ground (steep slopes) should be reflected in the model so as to not inflate the annual allowable harvest. There were 30,441 hectares identified as inoperable in the 2007 FMP planning inventory.

- It would be beneficial to have a more formalized review of the assumptions around the "natural rehabilitation of non-forest to forest" succession pathways. This may involve actual field surveys. The assumptions used in the 2007-2017 base model were derived from the best information available at the time. Prior to the next planning cycle, a full inventory of the non-FTG areas should be analyzed prior to determination of these inputs.

- Landscape-level, "spatial" wildlife habitat management direction for species such a marten and woodland caribou will require new strategic level planning consistent with the latest provincial policy direction. This will likely involve lengthy review and modifications to previous 2007-2017 FMP modeling assumptions for the landscape-level desired future forest condition as directed by *Forest Management Guide for Boreal Landscapes.*

- Given the introduction of the new *Forest Management Guide for the Conservation of Biodiversity at the Stand and Site Scales*, a review of guideline direction for Area of Concern prescriptions should be conducted when establishing model assumptions for the proportion of accumulating reserves through harvesting, particularly for the most significant AOCs related to water quality/fisheries habitat protection.

ASSESSMENT OF OBJECTIVE ACHIEVEMENT

Table AR-14 in Appendix B presents the assessment of objective achievement. Presented is each of the Big Pic Forest 2007-2017 FMP objectives, indicators, desirable levels, targets. It also presents the results and projections for the FMP, along with the assessment of objective achievement at the time of FMP approval in 2007. A Trend Analysis Assessment Update has been provided where applicable, as of the end of the 2012-2013 fiscal year, recognizing that the current management plan is not fully implemented.

As this report has been prepared as of the end of Year 6 of the current FMP, several objectives, such as those related to forest condition and disturbance pattern, cannot be thoroughly assessed in the absence of a formal update to the forest resource inventory. Such an update would be conducted in preparation for the next forest management plan (2017-2027), and it would include an update of all harvest and natural depletions; free-to-grow regenerated forest; and an update of current forest ages. Other objectives would be assessed on the basis of a new 2018 FMP strategic model, such as non-spatial wildlife habitat area. As such, for some objectives, only a general assessment on progress toward target / objective achievement could be made.

Differences in targeted and actual levels of achievement have been due to the unprecedented economic downturn in the forest industry and the subsequent reduced timber harvest activity. Overall, the lack of harvest during the 2007-2013 period has been a significant factor translating into a general delay the achievement of several of the objectives in the 2007-2017 FMP. For other objectives, the lack of harvest is resulting in a current degree of "over-achievement" (e.g. wildlife habitat). There is nothing noted in the strategic modeling assumptions or predictions that have contributed to the lack of progress toward objective achievement.

The following is a discussion of the assessment of objective achievement for the more significant management objectives and indicators, as per *Crown Forest Sustainability Act* Objective Categories (where applicable); being Forest Diversity, Forest Cover, Social and Economic, and Silviculture.

Forest Diversity & Forest Cover

Table AR-14 presents one main objective related to Forest Diversity, which is "*to develop, over time, a forest with characteristics which, to the extent possible, resemble those of a fire-driven boreal forest at both the stand and landscape level while providing for provincially and locally featured species habitat and species at risk habitat.*" There are several indicators for this objective.

Forest landscape pattern is a measure of forest diversity, which essentially involves the maintenance of a patchwork of young, mature and old forest across the landscape as would occur in a wildfire-driven system. The patches of forest also vary in size. In the absence of wildfire however, harvest activities are planned to create these patches. The desired landscape pattern for the most part, was achieved at plan start as the existing disturbances met the targeted ranges for forest disturbances (percent frequency distribution and area distribution, by size class).

To maintain the desired distribution of forest disturbances by size class as the forest grows and ages, harvest or fire disturbance would still be required. Given the lack of harvest in the 2007-2013 period, there may be a delay in creating/maintaining the planned disturbances on the landscape. However, the desirable levels and targets for these indicators are fairly wide ranges, and even with the delay in harvest, it is unlikely that the forest condition will notably detract from the size class ranges at plan start. Upon review of areas where harvest operations have

occurred, they appear to be relatively complete (in accordance with planned boundaries), with minimal bypass. There have been no significant natural disturbances on the forest during the 2007-2013 period that could have otherwise affected the achievement of this disturbance pattern objective.

For Forest Diversity and Forest Cover, indicators were established related to the maintenance habitat in forest patches for specific wildlife species. Habitat patches, or cores, for marten are areas of mature and old conifer dominated / conifer-mixed forest that have been spatially planned and retained across the forest, and ineligible for harvest for a period of 60 years. The provision of marten habitat through the deferral of large areas of conifer-dominated and conifer mixed forest from harvest also provides habitat for wildlife species requiring similar forest conditions for lifecycle processes, spatially and non-spatially. As such, though serving the purpose for marten and other wildlife, the maintenance of forest patches 3,000 to 5,000 hectares in size, also contributes to the maintenance of forest diversity distributed across the forest. As no harvest is permitted within the marten cores, and no wildfires have occurred to disturb those cores, all targets associated with the provision of marten cores on the landscape, as well as for habitat suitability and habitat quality continue to be achieved.

Forest Diversity has also been addressed through the maintenance of specific forest unit groups, on a non-spatial basis (i.e. area of forest unit group). All targets related to the trends in the abundance of forest unit groupings (mature conifer lowland; mature conifer mixedwood; spruce-fir upland; hardwood and mixedwoods) were projected to be achieved at the time of plan preparation. The Forest Diversity objective was also evaluated through desired level and target trends for the maintenance of mature and old growth forest area by forest unit. The targets for these were achieved. With the lack of timber harvesting in the 2007-2013 period, there is less change in the abundance and distribution of mature and old forest area than projected/planned. As such, these targets are still achieved and the current forest condition is relatively unchanged since 2007.

With respect to forest condition, as presented in Table AR-11, the total managed Crown productive forest area has remained relatively unchanged over the last 21 years (1992-2013). However, there have been changes the overall forest age class distribution, with an increase in young forest area (<40 years old) due to harvest and wildfire depletions. Conversely, there has been a general decline in the area of 61-120 year old forest. There was an increase in older aged forest (121+ years) in the 1990's, which appears to be now modestly declining. The weighted average age of the forest is decreasing, from 79 years in 1992 to 73 years in 2007. If all planned harvest area is actually harvested in the current 2007-2017 FMP, the average forest age is projected to be 67 years by 2017. A younger average-aged forest is consistent with what which is generally understood to be created in a natural forest ecosystem influenced solely by natural disturbances and natural succession.

The few years of lower than planned harvest in the first half of the current 2007-2017 is, in the big picture, relatively insignificant when considering the 100+ year forest management goals. However, the lack of harvest in the current forest management plan will delay the development of the desired future forest condition by forest unit. Quite simply, if forest area is not harvested, it cannot be regenerated to the desired future forest unit, using the appropriate silvicultural ground rule and the post-harvest projected pathway.

It is generally understood that a forest influenced solely by natural disturbances and natural succession would tend to have a higher proportion of purer forest (conifer and hardwood dominated) adapted to wildfire, with less mixedwood forest condition. With the lack of a mixedwood forest unit classification prior to 2002, it is difficult to evaluate trends in conifer-dominated, hardwood dominated and true mixedwood forest types. Mixedwood forest conditions aside, the area of purer conifer dominated forest is modestly declining and the area of purer hardwood dominated forest is modestly increasing (particularly Poplar Dominant forest). Based on long-term strategic modeling, the areas and trends over time, by forest unit are projected to be achieved, even if current harvest is behind schedule.

Additional indicators of Forest Diversity and Forest Cover in Table AR-14 include the non-spatial maintenance of old growth forest wildlife habitat area for indicator species such as black bear, lynx, red-breasted nuthatch and black backed woodpecker. Habitat abundance for other forest dependent provincially and locally-featured wildlife species was also evaluated, including that for moose, marten, grouse and boreal chickadee. All targets for trends in wildlife habitat area were projected to be achieved with the projected 10-year harvest level. As of the end of the 2012-2013 fiscal year, the actual harvest is behind schedule, and no other significant natural disturbances have occurred. Habitat levels will currently exceed the projected 2017 levels.

The area of refuge and winter habitat for woodland caribou (Species at Risk) was evaluated in terms of density of suitable habitat and deferral of woodland caribou core areas. The goal was to maintain suitable refuge and winter habitat within specific caribou deferral areas at a higher density than in the general caribou management zone. Targets were achieved at plan start in 2007. However, revised policy direction with the Year 3 Annual Report changed landscape level caribou habitat planning for the Phase II, and these indicators are no longer applicable. New MNR direction was implemented in Phase II of the FMP, consistent with the *Woodland Caribou Conservation Plan*, including the addition of more habitat area being deferred from harvest operations. ***Recommendation: Review and update woodland caribou habitat objectives/indicators in the next forest management plan in accordance with the latest MNR policy direction.***

With respect to habitat targets for selected wildlife species, habitat levels in general have been maintained within the targeted ranges established by the planning team. The lack of harvesting over the 2007-2013 period may result in some delay in the changes for future forest condition (forest composition and age class) associated with harvest and regeneration treatments. As previously discussed, a few years of reduced harvest is a relatively insignificant delay considering the long term 100+ year management planning goals.

Due to differing / inconsistent reporting requirements over the last 21 years, it is not possible to evaluate trends in non-spatial habitat area for selected / at risk wildlife species habitats listed in Table AR-12. To date in the current management plan, the objectives for non-spatial and spatial habitat area have been achieved. Identified wildlife values have been considered through the development of area of concern prescriptions. Identified habitat values for flora and fauna species at risk has been protected as directed through MNR policy.

There are number of forest operation compliance-related objectives in the current FMP to address the provision of forest for values dependent on it. This includes following all area of concern and non-area of concern operational prescriptions through the implementation of forest operations. Although desirable levels were established for the current management plan to have zero non-compliance instances, it is generally recognized that it would be unrealistic to expect that there would never be an incident of non-compliance. Therefore, targets were established at >90%. Overall, there have been four instances of non-compliance out of 238 reports prepared during the 2007-2013 period, translating to 98% in compliance. As such, target levels have been achieved.

Overall, on balance, objectives related to Forest Diversity and Forest Cover were achieved at the start of the FMP in 2007. With the lower than planned harvest, indicator values have remained relatively static, or are slowly moving towards the desirable levels established for the indicators. Upon completion of the 2017 FMP, this will require fuller assessment.

Social & Economic

A primary socio-economic objective for the current FMP is "*to provide continuous and predictable harvest levels (area and volume) that, to the extent possible, meet the wood supply demands over the short-, medium-, and long-terms based on the 2006 Management Unit Contribution (MUC) by species group, contributing to Ontario's economy."* As presented in Table AR-14, there are a number of indicators for evaluating the achievement of this objective.

Overall over the last 21 years, harvest area and associated wood utilization has not been maximized to the planned potential. The harvest activities over the past three forest management plans presumably resulted in greater socio-economic benefits than the current 2007-2017 forest management plan. Actual harvest area has been relatively high and increasing, with 70%, 82% and 91% of planned harvest occurring in the 1992, 1997 and 2002 forest management plans, respectively. Similarly, actual volumes harvested have followed the same trend, with 90%, 80% and 91% of planned harvest occurring in the 1992, 1997 and 2002 forest management plans, respectively.

Relatively poor and unstable markets for hardwood species have persisted over the past 21 years, and it has also contributed to the lack of full and complete harvest of stands; particularly of pure hardwood and of mixedwood forest types. The actual harvest of conifer-dominated stands and the utilization of conifer species are always more complete compared to that of hardwood species.

The 2007-2017 FMP provides the means to conduct harvesting, road construction, silviculture, etc., to provide timber volumes to mills and the associated social and economic benefits to communities. Harvest area and volume targets were projected to be achieved over the short, medium and long term. However the downturn in the forest industry between 2008 and 2012, and ongoing lack of markets for hardwood species in general, has negatively impacted the ability for facilities, businesses, people and communities to achieve these benefits. The reduced harvest has also translated to less area requiring silvicultural treatment and a reduction in the potential benefits to the suppliers of silviculture-related services.

As presented in Table AR-14, by the end of the 2012-2013 (Year 6), only 26% of the planned total harvest area and 24% of the planned total harvest volume has been harvested. Almost all of the facilities in the vicinity of the Big Pic Forest intended to utilize harvested timber were idled for a period of time and/or have now closed. As such, it will not be possible to achieve targets for wood utilization by those facilities. However, the majority of the wood that was harvested in the 2007-2013 period was delivered to other mills, which presumably provided those facilities and communities with economic benefits. ***Recommendation: Review objectives/indicators related to wood utilization by mill in the next forest management plan, in light of the significant changes in the available wood facility destinations.***

Different than the impact on long-term goals for Forest Diversity and Forest Cover, the 2008-2012 forest industry downturn has had a dramatic negative impact on the potential to derive socio-economic benefit from the forest. As of the end of the 2012-2013 fiscal year, the desired socio-economic benefits from forest management activities have not been obtained on the intended annual schedule. There is the remote possibility that full socio-economic benefit of forest management activities could to be achieved by the end of the current FMP, but it is unlikely.

A second socio-economic objective for the current FMP is "*to ensure that the Managed Crown forest that is available over time is maintained to meet the long-term harvest levels (area) thus contributing to Ontario's economy."* The plan start (2007) area by forest unit was based on the initial landbase information and availability of forest area for management. The plan end area by forest unit is projected by the strategic model based on the

planned 10 year harvest level, the amount of area transitioned to non-forest, and the area of non-forest rehabilitated to forest. As the actual harvest level is only 26% of planned as of the end of the 2012-2013 fiscal year, the area transitioned to non-forest, such as for forest access roads, will likely be less than projected, and the managed Crown forest that is available will likely be more than projected at the end of the plan term. As such, the target is expected to be achieved. There are no concerns noted with respect to the area available for forest management.

A third socio-economic objective for the current FMP is *"to maintain a level of access on the Forest to provide for the efficient delivery of forest management activities while providing opportunities for other commercial and recreational user on the forest."*

Roads are required to access the forest for management purposes. They also provide access to the general public for recreational activities, but in some instances, the public is restricted or prohibited from using some roads as it may impact on other values, such as the socio-economic interests of tourism establishments. Roads also remove productive forest area from the landbase through their construction and long-term use. The indicators to measure road density were established by the planning team to assist with an evaluation of forest management road density, balancing the needs for commercial forestry activities; recreational user access to the forest; protection of tourism establishments and managing available productive forest area.

Road density (km of road/km2 of Crown production forest) was used as a measure for this objective. For all forest road classes, road density changes as of the end of the 2012-2013 fiscal year are still within +/- 10% of the established fluctuation targets. With respect to operational road density, there appears to be some discrepancy in the road density calculation for the plan start, which should be reconfirmed. With adjustments being made for revised road length of existing operational roads at plan start (2007), road density changes as of the end of the 2012-2013 fiscal year exceed the +/- 10% fluctuation targets. To address this, actual length of operational road should be confirmed and/or there should be more road abandonment and thorough reporting of rehabilitation of operational roads.

Although road density targets are currently being achieved, the following ***Recommendations*** are being made:

- ***Based on the difficulties encountered to evaluate road density, it is recommended that more detail be documented in the FMP with respect to road-related assumptions and the factors used for road density calculations. This will enable those involved in future evaluations/assessments properly duplicate the process.***

- ***Furthermore, it is recommended that prior to the preparation of the next FMP, efforts be made to improve the road information digital database to more accurately reflect actual drivable road length through the removal of operational roads which no longer exist.***

- ***To accurately reflect actual operational road length on the Forest, it is recommended that there be more effort in conducting and tracking natural and physical road abandonment activities, and in the reporting of rehabilitation/regeneration of roads through silviculture activities.***

A fourth socio-economic objective for the current FMP is "*to develop a consultation approach that will provide opportunities for Aboriginal, local communities, and the Local Citizens Committee (LCC) for input in plan development.*" During the course of preparation of the 2007-2017 FMP, all targets related to public, local citizen committee and aboriginal community for involvement in the planning process were achieved.

Silviculture

The main objective for silviculture Table AR-14 is "*to ensure harvested lands are renewed through appropriate silviculture practices and meet the related regeneration standards*."

Over the 1992-2013 period, actual natural regeneration treatments were at 65% of planned; and artificial / assisted regeneration treatments were at 76% of planned. However, the level of achievement of planned versus actual silviculture treatment is directly related to actual area harvested and requiring renewal; as the harvest level decreases, so does the area requiring regeneration. Overall, regeneration activity has been keeping pace with harvest over the 1992-2013 period, but there appears to be an estimated 5,350 hectares that need to be formally reported as regenerating, that was likely harvested in the latter portion of the 2002-2007 period. (This estimated 5,350 hectares translates to less than one year's harvest level).

Artificial / assisted regeneration treatments tend to have a higher degree of completion as planned than natural regeneration treatments. This is due to the focus of harvest operations on more marketable conifer dominated forest units or mixedwoods with higher conifer content, which require these artificial regeneration treatments. In general, the lack of harvest and the difficulties associated with the marketability for hardwood influences the area available for regeneration. The lack of hardwood harvest can impact on opportunities to convert mixedwood and hardwood forest conditions to conifer-dominated ones.

More effort is required to assess regeneration success as planned. As of the end of the 2012-2013 fiscal year, only 22% of the projected area in the FMP had been assessed. With respect to the results of silviculture success surveys, only 30% of the area assessed as a regeneration success was deemed a silvicultural success to the prescribed projected forest unit. Higher regeneration success rates to the projected / prescribed forest units (silviculture success) are needed, particularly when funds are invested in artificial / assisted regeneration treatments. This may be achieved with more diligent monitoring and timely application of tending treatments; or with improved initial renewal prescriptions and effort allocation (e.g. do not waste effort trying to convert a harvested PO1 or MW2 area to a PJ1 forest unit); or with better estimates of natural ingress abundance. The poor rate of silviculture success may be inaccurate due to the small amount of area being evaluated. If more area is assessed as forecasted in the FMP, there would be a larger pool of information to analyze.

A specific indicator in the current FMP was the percent of harvested forest assessed as free growing by forest unit. As of the end of the 2012-2013, the targets for this indicator are not on track to being achieved. However, based on the distribution of area by forest unit projected to be harvested and deemed FTG during the course of the 2007-2017 FMP, it is highly improbable that this objective could ever be achieved. Only the area harvested and regenerated to forest units with fast growing tree species (e.g. PJ1 & PO1) could, in theory, be harvested during the initial years of the 2007-2017 period, and reach a free growing condition within the same period. There has been no area harvested during the 2007-2013 period and assessed as free growing. All area assessed as free-growing was harvested during previous forest management plans.

Another important indicator for silviculture is the percent of area harvested that is assessed and managed under slash management programs. This is important in that it relates to minimizing of the loss of productive forest land to roadside logging debris. As of the end of the 2012-2013 fiscal year, 16,152 hectares have been harvested. Only 217 hectares (1%) have been reported as being assessed and managed under slash management plans. Though still possible to be achieved by the end of the 2007-2017 FMP, the target of >50% is obviously not on track to being achieved. Although this is a very poor current result, it does not necessarily mean that roadside logging debris in harvest areas has not been receiving treatment; it simply has not been formally reported. There is a considerable amount of volume (345,000 m^3) being delivered to mills as biofibre, and there is use of hogging

equipment which has reduced the amount of roadside logging debris. ***Recommendation: Review objective/indicator related to roadside logging debris management, and the strategies to address logging debris and the reporting of treatments activities (e.g. where biofibre has been removed as part of the harvest operation).***

Overall, renewal of harvested area is occurring. However, more effort is required in assessing and documenting roadside logging debris and ensuring it is subsequently managed to minimize loss of productive forest land. Improvements are needed to ensure in the achievement of silviculture success to the projected future forest units. However, this statement needs to be substantiated by actually surveying sufficient regeneration area annually as forecasted in the FMP to allow for an improved evaluation of results. These observations were based on a very small sample of surveyed area.

UPDATE TO THE 2004-2009 INDEPENDENT FOREST AUDIT (IFA) ACTION PLAN STATUS REPORT

The following section presents the 2004-2009 Independent Forest Audit (IFA) recommendations that pertain to objective achievement and sustainability. The Action Plan Status Report was prepared and approved in October 2012. The Status Report information is presented, along with an update to the end of the 2012-2013 fiscal year (March 2013).

Recommendation # 7

The SFL holder should ensure that logging operations are appropriately timed and that operators are trained and supervised in order to minimize rutting during harvest operations.

Action Required:

1. In development of the AWS, consideration will be given to Block selection with regards to season of harvest.
2. Prior to start-up of logging operations, the operator will be briefed by the Foreman on the acceptable site disturbance that is expected in the block.
3. The Foreman will supervise the active logging operations.
4. Compliance inspections to report on occurrences of rutting
5. Annual Reports will document compliance with rutting standards

Method of Tracking Progress:

1. Annual Work Schedule.
2. Block start-up forms.
3. In-progress reports as required.
4. FOIP Reports
5. Annual Reports

Status October 2012:

1. **Complete & Ongoing.** The 2010-11, 2011-12 & 2012-13 AWS's included a suite of summer and winter harvest blocks.
2. **Complete & Ongoing.** The harvest foreman for the one active FRL holder brief's the operators prior to start-up in each block including identification of stands (on hard copy maps and in GPS units on each machine) with harvest on frozen ground or requiring high floatation tires. The harvest foreman notes the dates of these briefings in his journal.
3. **Complete & Ongoing.** The harvest foreman supervises active harvest operations on a daily basis. The one active FRL holder utilizes 10 skidders with an assortment of tire widths; 35 inches (7), 40 inches (1), 44 inches (1) and 50 inches (1) to match site conditions.
4. **Complete & Ongoing.** Compliance inspections reported 12 occurrences of rutting in 2009-10, 8 occurrences in 2010-11 and 10 occurrences in 2011-12.
5. **Ongoing**. The rutting standards as defined in the Stand & Site Guide come into effect for the start of the Phase II FMP on April 1, 2013. Stand & Site Guide training (including identification of sites sensitive to rutting and rutting standards) was provided to harvest foreman and operators on June 13 and 14, 2012.

Update as of March 2013:

In the 2012-2013 fiscal year, compliance inspections noted 7 instances of rutting; 6 of which were described as non-issues; and the seventh is a compliance "pending" report.

Recommendation # 8

The District OMNR and the SFL holder must ensure that adequate records are maintained to enable the assessment of the "silvicultural effectiveness" of renewal treatments on all forest unit sites (with particular emphasis on SB1 forest unit sites).

Action Required:

1. The SFL holder will maintain records of silvicultural treatments and assessments of treatments as required by the Forest Information Manual and related Technical Specification.
2. The SFL holder will report assessments of treatments as required by the Forest Information Manual and related Technical Specification.
3. The MNR will maintain records of silvicultural effectiveness monitoring and report the results annually.
4. The MNR and SFL holder will meet to discuss the results of the silvicultural assessments and silvicultural effectiveness monitoring.

Method of Tracking Progress:

1. SFL silvicultural records
2. Annual Report submissions
3. Annual SEM report
4. Meeting minutes

Status October 2012:

1. **Complete & Ongoing**. Under the Renewal & Maintenance Agreement (with an FRL holder), copies of maps and coverages for all renewal treatments and FTG surveys (and plot data) for 2011-12 have been provided to the MNR.
2. **Complete & Ongoing**. FTG area (1269 ha) was reported in the 2010-11 AR. FTG area will be reported for 2011-12.
3. **Complete & Ongoing**. SEM monitoring for Core Task #1 area (83.9 ha) was reported in the 2010-11 Wawa District SEM Report.
4. **Complete & Ongoing**. The results of the silviculture assessments (FTG) reported in 2011-12 were discussed with the Service Provider tasked with implementing the renewal and monitoring program on the forest on June 7, 2012. The results of the MNR conducted SEM monitoring were not provided to the SFL holder as there currently is no SFL holder.

Update as of the end of the 2012-13 fiscal year:

There were 936 hectares and 13,615 hectares of FTG area reported in the 2011-2012 and 2012-2013 fiscal years, respectively.

Recommendation # 9

The SFL holder must ensure that conifer renewal sites are monitored to ensure timely tending interventions and ensure that the planned tending strategies are appropriate for the site/stand conditions on the treatment area.

Action Required:

1. SFL will follow the new pre and post-spray procedures, and document the SEM program assessments, as described in Section 4.7.3 (pg. 204) of the 2007-17 FMP.

Method of Tracking Progress:

1. SFL silviculture records.

Status October 2012:

1. **Complete & Ongoing**. The Service Provider tasked with implementing the renewal and maintenance and monitoring program on the forest for 2010-11 and 2011-12 implemented the pre and post-spray assessments. These pre-spray assessments were a component of the 'natural regeneration' and 'survival/competition' surveys. The results of these surveys lead to the identification of areas requiring tending in the following year's AWS (4270 ha in 2011-12 and 3675 ha in 2012-13). Post-spray assessments indicated successful treatments for 2010-11 and 2011-12. If an unsuccessful treatment is found, the affected area is scheduled for a 'competition' survey.

Update as of March 2013:

No update available

Recommendation # 10

The SFL Holder should critically review and evaluate the effectiveness of its "*Interim Debris Management Strategy*" to ensure that the adopted management procedures are implemented and that slash management techniques are satisfactorily achieving the strategy goals and objectives.

Action Required:

1. The company will evaluate the effectiveness of its Debris management strategy to ensure that the desired outcomes are being achieved. This strategy will ensure the integration of techniques that support developing Bio-fibre markets and reduce area of slash piles and chipping debris to aid in the regeneration of these areas.
2. Document the results/recommendations of the evaluation in a summary report

Method of Tracking Progress:

1. Company records
2. Summary Report

Status October 2012:

1. **Completed**. The Planning Team for the Phase II FMP reviewed the 'Interim Debris Management strategy (July 2012) resulting in revised strategy which was included in the Draft Plan.
2. **Completed.** The revised Debris Management Strategy (Section 8.3.5.1) was included in the Draft Plan (August 6, 2012).

Note: The one FRL holder operating in 2010-11 and 2011-12 employed a grinder to grind slash and chipper debris. This technique utilized the majority of debris from harvest operations. Other techniques included slash for brush mat and stream crossing stabilization and spreading chipper piles into the cutover.

Update as of March 2013:

Current forest management plan has an objective and indicator regarding the percent of area harvested that is assessed and managed under a slash management program. The target is >50% of harvested area be assessed and managed under a slash management program. As of the end of the 2012-2013 fiscal year, only 1% of harvested area has been formally assessed and reported as managed under a slash management program.

Recommendation # 16

The SFL holder must address the backlog in area requiring free-to-grow survey.

Action Required:

1. The Company will work toward assessing the current backlog FTG.
2. The company will work toward assessing the forecasted assessment areas.
3. Report the results of the FTG assessments in the Annual Report
4. Ensure incorporation of FTG results in Big Pic 2017 FMP Planning inventory.

Method of Tracking Progress:

1. Company FTG records
2. Company FTG records
3. Annual Report
4. Inventory Check point

Note: A new FRI for the forest is expected by the fall of 2010. The new FRI will likely have classified some of the area not meeting a regeneration standard from the previous FRI, as new stands. In particular areas harvested in the 1960's and 1970's which were classified as B & S (LowNat) in the previous FRI.

Status October 2012:

1, 2, 3 & 4. **Ongoing** as deadline date is beyond Status Report timeline. FTG area (1269 ha) was reported in the 2010-11 AR. FTG area will be reported for 2011-12.

Update as of the end of the 2012-13 fiscal year:

There were 936 hectares and 13,615 hectares of FTG area reported in the 2011-2012 and 2012-2013 fiscal years, respectively. As of the end of the 2012-2013 fiscal year, only 22% of the forecasted regeneration surveys have been completed.

DETERMINATION OF SUSTAINABILITY

The collective achievement of management objectives was assessed using the results of the modeling for the selected management alternative; the results of the spatial assessments; and other plan components developed for the preparation of the 2007-2017 Forest Management Plan (FMP). The FMP objectives, indicators, desirable levels and targets established in the FMP have been evaluated / assessed in light of the *Crown Forest Sustainability Act* objective categories of forest diversity, forest cover, social and economic and silviculture effectiveness.

An assessment of objective achievement is presented strategically and/or operationally in Table AR-14 (Appendix B), and was previously discussed in this report. There is a broad spectrum of management considerations on the Big Pic Forest; including but not limited to:

- Marten and woodland caribou habitat area and other wildlife habitat values;
- Species at risk flora and fauna;
- Forest composition, disturbance sizes and distribution;
- Harvest area and wood supply; and,
- Road access.

The Sustainable Forest Management Model (SFMM) was used to project and evaluate the effect of the proposed types and levels of harvest, renewal and tending operations on the achievement of progress towards a balanced selected management alternative.

Area of concern prescriptions to protect identified and potential values were developed and implemented for this FMP, including those for: water quality, fish and wildlife habitats, Species at Risk flora and fauna, cultural heritage and aboriginal values and resource-based tourism.

During the implementation of the 2007-2017 FMP, the unprecedented economic downturn in Ontario's forest industry, coupled with lack of markets for hardwood species has had the far greatest impact on progress toward the achievement of management plan objectives. The idling and closure of wood utilizing facilities, the limited area and volume harvested, the slowing of forest management activities during the critical 2008-2012 downturn period, and changes in forest managers due to bankruptcy has resulted in an overall delay in achievement of many targets. Overall, these are circumstances beyond the control of the Big Pic Forest 2007-2017 FMP and the forest managers. These are not a function of poor planning or improper modeling.

For some objectives, the levels of objective achievement were within the desirable levels and targets at the time of plan preparation. Where progress toward or maintenance of achievement is dependent on harvest activities occurring as planned, such as those for landscape pattern or future forest condition, there will be a delay in achievement. For example, simply stated, if an area is not harvested, it cannot contribute to a desired disturbance frequency distribution or landscape pattern; it cannot be regenerated through silviculture to a new future forest with a projected volume yield or habitat value; it will not need a regeneration assessment.

The current level of objective achievement for some objectives, however, is better than projected, simply because harvest activity has been so limited. For example, the area of mature and old growth forest by forest unit, and the area of evaluated wildlife habitat is higher than projected as of 2012-2013 because of the lack of harvest and the absence of any natural disturbances.

The overall impact of a 4-year forest industry downturn and delay in forest management activities on the achievement of Forest Diversity and Forest Cover objectives is relatively negligible, considering the larger 100+ year forest management horizon over which these objectives are achieved.

However, with respect to the achievement of Socio-economic and Silviculture objectives, the impact of a 4-year forest industry downturn and delay in forest management activities on has had greater, more immediate negative implications. People, communities and businesses cannot tolerate these extended periods of unemployment, and regenerating forest stands still require tending, maintenance and monitoring, regardless of whether timber harvest is occurring on the Forest.

Until such time as the forest management plan has been completed in 2017, one cannot fully assess the achievement of all objectives and the associated indicators. As of plan start in 2007, and as of the end of the 2012-2013 fiscal year, there was collective achievement of objectives with respect to moving towards, meeting or exceeding the associated desirable levels and targets. For objectives reliant on harvest, not all are progressing to the degree projected following six years of plan implementation. Over the last four years of the 2007-2017 FMP, it is unlikely that forest management activities will be able to fully catch up from the economic downturn to sufficiently achieve some of the objectives.

This being said, overall, it is concluded that the implementation of the planned operations continue to provide for the sustainability of the Big Pic Forest.

APPENDIX A

DESCRIPTION OF FOREST UNITS – 1992 TO 2007

&

SUMMARY OF FOREST UNIT GROUPINGS

Trend Analysis Report Forest Unit Summary

Aggregation of Forest Units for the 1992 through 2007 Forest Management Plans (FMP) for the Trend Analysis Report

Forest Grouping	Forest Unit Code			
	1992 TMP	1997 FMP	2002 FMP	2007 FMP
Spruce Dominant (SpDom) (Upland & Lowland)	Spruce, Balsam Fir	BS1, BS3, S	SB1, SP1, SF1, SBOG	SB1, SP1, SF1, SBOG
Jack Pine Dominant (PjDom)	Jack Pine	JP	PJ1, PJ2	PJ1, PJ2
Other Conifer (OC)	Other Conifer	N/A	LC1	LC1
Poplar Dominant (PoDom)	Poplar	PO	PO1	PO1
White Birch Dominant (BwDom)	White Birch	BW	BW1	BW1
Mixedwood (MxWd)	N/A	JPM, MA, MB	MW1, MW2	MW1, MW2

Forest units in the Big Pic Forest 1992-2012 TMP

Forest Unit		Forest Type	Main Working Group	Site Type(s)	Silvicultural System	FRI Parameters & Criteria	Additional Information
Code	Name						
Spruce	Spruce	Conifer	Sp		Clearcut		The Spruce working group - all site classes
Balsam Fir	Balsam Fir	Conifer	Bf		Clearcut		The Balsam Fir working group - all site classes
Jack Pine	Jack Pine	Conifer	Pj		Clearcut		The Jack Pine working group - all site classes
Other Conifer	Other Conifer	Conifer	La, Ce		Clearcut		The Other Conifer working group - all site classes
Poplar	Poplar	Intolerant Hardwood	Po		Clearcut		The Poplar working group - all site classes
White Birch	White Birch	Intolerant Hardwood	Bw		Clearcut		The White Birch working group - all site classes

Forest units in the Big Pic Forest 1997-2017 FMP

Forest Unit		Forest Type	Main Working Group	Site Type(s)	Silvicultural System	FRI Parameters & Criteria	Additional Information
Code	Name						
BS1		Conifer	Sp	V-types: 34, 35,36,30,24, 25,33	Clearcut - CLAGG		Comprised of black spruce, spruce and, rarely white spruce working group stands growing on site class X, 1, 2 and which are comprised of more than 70% all spruce
BS3		Conifer	Sp	V-types: 22, 23,35,36	Clearcut - CLAGG		Comprised of black spruce, spruce and, infrequently white spruce working group stands growing on site class 3 sites. It also includes all other conifer (cedar and larch) working group stands.
JP		Conifer	Pj - Sp - Po	V-types: 30, 18,20,28,29, 31	Clearcut		Comprised of stands that are 30% or more jack pine, and hardwood species combined accounts for less than 30% of the stand. Typically these are the pure jack pine stands or jack pine - black spruce mixtures.
JPM		Mixedwood	Po - Pj - Sp - Bw	V-types: 10, 11,17,18	Clearcut		Comprised of stands that are 30% or more jack pine and hardwood species combined accounts for 30% of the stand or more. This type of stand is a mixedwood stand where jack pine is the primary conifer species.
S		Conifer	Sp - Bf	V-types: 15, 16,24,25,33, 14,15,16,25, 33	Clearcut		Comprised of stands in the balsam fir, black spruce, spruce, and white spruce working groups which are less than 30% jack pine, less than 30% hardwood speices (poplar, birch, ash) and less than 80% spruce. These stands are typically the upland spruce-fi
MA		Mixedwood	Po - Sp - Bf	V-types: 6,7, 8,9,10,11,14, 15,16,19,20	Clearcut		Comprised of stands that are less than 30% jack pine, and from 30 to 60% hardwood species, of which poplar and balsam poplar accounts for 50% or more of the hardwood species.
MB		Mixedwood	Bw - Sp - Bf	V-types: 4,6, 8,14,15,16,20, 5,7,9,19	Clearcut		Comprised of stands that are less than 30% jack pine, and from 30 to 60% hardwood species, of which white birch accounts for 50% or more of the hardwood species.
PO		Intolerant Hardwood	Po	V-types: 1,5	Clearcut		Comprised of stands in the poplar working group which are less than 30% jack pine and more than 60% hardwood
BW		Intolerant Hardwood	Bw	V-types: 4,5	Clearcut		Comprised of stands in the white birch working group which are less than 30% jack pine and more than 60% hardwood

Forest units in the Big Pic Forest 2002-2022 FMP

Forest Unit		Forest Type	Main Working Group	Site Type(s)	Silvicultural System	FRI Parameters & Criteria	Additional Information
Code	Name						
SBOG	Spruce Bog	Conifer	Sb	13	NA	Sb+La>=0.7 and SC = 4	Sb9La1 - Avg. Stocking 48%
SB1	Black Spruce	Conifer	Sb	5,6,8,9,11, 12,13	Clearcut	Sb<=0.7 and Pj<=0.1	Sb9Po1 -Avg. SC 1.8 - Avg. Stocking 71%
PJ1	Jack Pine	Conifer	Pj	2,3,4	Clearcut	Pj>=0.7 and Po+Bw<=0.2	Pj8Sb1Po1 -Avg. SC 1.9 - Avg. Stocking 81%
LC1	Lowland Conifer	Conifer	Sb	1,9,12,13	Clearcut	Ce+La+Sb>=0.8 and Pj<=0.1	Sb6Ce3La1 -Avg. SC 2.3 - Avg. Stocking 69%
PJ2	Pine/Spruce Mixed	Conifer	Pj	1,3,4	Clearcut	(Pj+Sb>0.7 or (Pj>=0.5 and Pj+Sb+Bf+Sw+Ce+La>=0.7 and Bf+Sw+Ce+la<0.2)) and Pj>=Sb	Pj5Sb3Po2 -Avg. SC 1.9 - Avg. Stocking 75%
SP1	Spruce/Pine Mixed	Conifer	Sb	3,5	Clearcut	Sb+Sw+Bf+Pj+Ce+La>0.7 and (Bf+Ce+La+Sw<=0.2 and Pj>=0.3)	Sb6Pj3Po1 -Avg. SC 1.3 - Avg. Stocking 74%
SF1	Spruce/Fir	Conifer	Sb	3,5,6,8,9, 11	Clearcut	Sb+Sw+Bf+Ce+La+Pj>=0.7	Sb5Bf2Po1Bw1Pj1 -Avg. SC 1.4 - Avg. Stocking 69%
PO1	Poplar	Intolerant hardwood	Po	1,3,6,7,10	Clearcut	Po+Bw>=0.7 and Po>=0.5	Po7Sb1Bw1Bf1 -Avg. SC 2.1 - Avg. Stocking 84%
BW1	White Birch	Intolerant hardwood	Bw	1,3,6,7,10	Clearcut	Po+Bw>0.7	Bw6Sb2Po1 -Avg. SC 2.1 - Avg. Stocking 76%
MW1	Mixedwood Pine	Mixedwood	Po	1,3,10	Clearcut	Pj>0.2	Po4Pj3Sb2Bw1 -Avg. SC 2.1 - Avg. Stocking 80%
MW2	Mixedwood Spruce	Mixedwood	Po	1,6,10	Clearcut	Sb+Sw>0.2 or Po+Bw>0.2	Sb3Po3Bw2Bf2 -Avg. SC 1.9 - Avg. Stocking 73%

Forest units in the Big Pic Forest 2007-2017 FMP

Forest Unit		Forest Type	Site Type(s)	Silvicultural System	FRI Parameters & Criteria	Additional Information
Code	Name					
SBOG	Spruce Bog	Conifer Lowland	14	Clearcut	SB + LA >= 70 And PW = 0 And SC = 4	Included since it can provide some habitat characteristics
SB1	Black Spruce	Conifer Upland	8, 11	Clearcut	SB >= 80 And MH + UH + PR = 0 And PW + PJ <= 10	Lowland black spruce, or black spruce dominated conifer lowland
PJ1	Jack Pine Pure	Conifer Jack Pine	2	Clearcut	PJ >= 70 And PO + BW + MH + UH + LH <= 20	Pure jack pine, usually on coarse sand
LC1	Lowland Conifer	Conifer Lowland	12, 13r, 13p	Clearcut	(CE + LA + SB >= 80 And MH + UH + PR = 0 And PW + PJ <= 10)	Lowland conifer, mixture of black spruce, larch and cedar
PJ2	Jack Pine Dominated	Jack Pine	4	Clearcut	(PJ + SB + PR >= 70 Or (PJ >= 50 And SFT >= 70 And BF + SW + HE + PW + CE + LA <= 20)) And PJ >= SB	Jack pine dominated mixed conifer on sandy soils
SP1	Spruce-Pine	Conifer Upland	5f, 5m	Clearcut	SB + SW + BF + CE + LA + PW + PJ + PR + HE >= 70 And (BF + CE + PW + LA + SW + HE <= 20 Or PJ >= 30)	Black spruce pure upland (may contain jack pine), does not contain white spruce or cedar
SF1	Spruce-Fir	Conifer Upland	9r	Clearcut	SB + SW + BF + CE + LA + PW + PJ + PR + HE >= 70	Mixed conifer on moist mineral soil, will contain white spruce (and often cedar)
PO1	Poplar	Poplar	10,7c,6m,6c,7f,7m	Clearcut	PO + BW + MH + UH + LH >= 70 And PO >= 50	Pure poplar and poplar-dominated hardwood mix
BW1	White Birch	White Birch	3	Clearcut	PO + BW + MH + UH + LH >= 70	Pure white birch and white birch dominated hardwood mix
MW1	Mixedwood Conifer	Mixed Wood	3	Clearcut	PJ + PR >= 20	Mixedwood on coarse soil
MW2	Mixedwood Hardwood	Mixed Wood	6f,6m,10,6c,7f	Clearcut	SFU='-'	Mixedwood on moist and/or fine soils

APPENDIX B

REPORT TABLES

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-7: Summary of Planned & Actual Harvest Area - Annualized

Forest Unit Grouping [1]	Area (ha) - Annualized										
	PLANNED HARVEST			ACTUAL HARVEST				Current Plan			
	Past Plans			Past Plans							
	1992-1997 (a)	1997-2002 (a)	2002-2007 (b)	1992-1997 (a)	1997-2002 (a)	2002-2007 (b)	2002-2007 Salvage (b)	Planned Harvest 2007-2017 (c)	Actual Harvest 2007-2013 (d)	Projections (e)	
										Medium-Term	Long-Term
										Year 2027	Year 2107
Spruce Dominant - SpDom	5,856	2,857	4,320	4,452	2,481	3,965	688	3,161	1,447	2,334	1,818
Jack Pine Dominant - PjDom	484	606	315	433	496	296	24	280	197	52	671
Other Conifer - OC	1	-	-	-	-	-	1	87	25	197	47
Poplar Dominant - PoDom	1,849	987	847	1,136	730	724	363	1,122	379	261	950
White Birch Dominant - BwDom	546	39	46	100	33	23	28	86	25	147	153
Mixedwood - MxWd	n/a	2,176	1,030	n/a	1,727	976	251	1,597	618	892	1,219
									-		
Total	8,736	6,665	6,558	6,121	5,467	5,984	1,354	6,333	2,692	3,883	4,858

[1] Please refer to Appendix A for a description of the Forest Unit Groupings.

Sources:

(a) 2004-2009 Big Pic Forest Independent Forest Audit Trend Analysis Table 4
(b) Big Pic Forest 2006-2007 Year 10 Annual Report
(c) Big Pic Forest 2007-2017 FMP Phase II Planned Operations FMP-11
(d) Big Pic Forest 2007-2017 FMP approved annual reports
(e) Big Pic Forest 2007-2017 FMP Long Term Management Direction strategic model SFMM case file

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-8: Summary of Planned & Actual Harvest Volume - Annualized

Species	Volume (m^3) - Annualized										
	PLANNED VOLUME			ACTUAL VOLUME				Current Plan			
	Past Plans			Past Plans							
	1992-1997 (a)	1997-2002 (a)	2002-2007 (b)	1992-1997 (a)	1997-2002 (a)	2002-2007 (b)	2002-2007 Salvage (b)	Planned Harvest 2007-2017 (c)	Actual Harvest 2007-2013 (d)	Projections (e)	
										Medium-Term Year 2027	Long-Term Year 2107
Jack Pine (Pj)	69,701	67,396	41,182	118,676	86,462	88,806	7,858	63,171	-	30,349	94,520
Spruce All (Sp) [1]	405,338	368,102	407,908	343,411	302,101	362,388	55,246	339,125	-	243,691	214,886
Balsam Fir (Bf)	29,294	15,977	2,097	13,841	3,025	850	962	56,753	-	46,790	13,499
Cedar (Ce)	-	-	3,163	18	1,358	633	-	6,655	-	3,562	1,855
Larch (L)	-	-	2,430	33	2,049	2,600	11	887	-	1,372	1,806
Poplar (Po)	128,727	166,520	119,296	94,853	102,015	94,476	36,544	187,763	-	122,341	263,868
White Birch (Bw)	1,203	1,240	26,182	828	809	1,120	157	68,371	-	34,591	36,713
Total Merchantable	634,263	619,235	602,258	571,660	497,819	550,873	100,777	722,725	-	482,696	627,147
Biofibre Mixedwood [2]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	179,752	-	n/a	n/a
Total All Volume	634,263	619,235	602,258	571,660	497,819	550,873	100,777	902,476	-	482,696	627,147

[1] Sp All = Sb+Sw, with Sb being the predominent species.

[2] Biofibre volume not available for past management plans. Biofibre assumed to be unmerchantable volume, and is reported as a total volume (i.e. no species separation).

Sources:

(a) 2004-2009 Big Pic Forest Independent Forest Audit Trend Analysis Table 3
(b) Big Pic Forest 2006-2007 Year 10 Annual Report
(c) Big Pic Forest 2007-2017 FMP Phase II Planned Operations FMP-13
(d) Big Pic Forest 2007-2017 FMP approved annual reports
(e) Big Pic Forest 2007-2017 FMP Long Term Management Direction strategic model SFMM case file (Phase I Table FMP-10 incorrectly used Term 10 values instead of Term 11 for the 100-year projection)

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-9: Summary of Planned & Actual Renewal, Tending & Protection Operations - Annualized

OPERATION	Area (ha) - Annualized							
	PLANNED			ACTUAL			PLANNED	ACTUAL
	Past Plans			Past Plans			Current Plan	Current Plan
	1992-1997 (a)	1997-2002 (a)	2002-2007 (b)	1992-1997 (a)	1997-2002 (a)	2002-2007 (b)	2007-2017 (c)	2007-2017 (d)
Renewal								
Natural Regeneration								
Clearcut Silvicultural System including CLAAG (even-aged)	7,282	1,720	2,691	476	5,871	3,295	3,752	693
Seed Tree Silvicultural System (even-aged)	540	-	-	-	-	-	-	-
Shelterwood Silvicultural System (even-aged)	-	-	-	-	-	-	-	-
Selection Silvcultural System - Selection Harvest (uneven-aged)	-	-	-	-	-	-	-	-
Artificial Regeneration								
Planting	1,966	3,452	2,870	1,415	3,529	2,361	3,053	2,233
Seeding	626	341	40	170	-	-	-	-
Scarification	440	-	-	-	-	-	-	-
Total Renewal	**10,854**	**5,513**	**5,601**	**2,061**	**9,400**	**5,656**	**6,805**	**2,925**
Site Preparation (mechanical, chemical, prescribed burn)								
Mechanical	2,722	3,102	2,620	1,403	3,161	1,147	2,022	576
Chemical	145	280	800	134	423	456	65	173
Prescribed Burn	990	87	-	60	-	1,036	-	36
Total Site Preparation	**3,857**	**3,469**	**3,420**	**1,597**	**3,584**	**2,639**	**2,087**	**785**
Tending								
Cleaning Chemical Ground	169	-	100	0	-	-	-	68
Chemical Aerial	2,035	1,500	3,337	688	2,732	2,411	2,221	1,200
Spacing, Pre-Commercial Thinning, Improvement Cutting								
Clearcut and Shelterwood Silvicultural Systems (even-aged)	-	-	-	-	-	-	-	-
Selection Silvicultural System (uneven-aged)	415	-	-	-	-	-	-	-
Total Tending	**2,619**	**1,500**	**3,437**	**688**	**2,732**	**2,411**	**2,221**	**1,268**
Protection (Insect Pest Control)								

Sources:
(a) 2004-2009 Big Pic Forest Independent Forest Audit Trend Analysis Table 4
(b) Big Pic Forest 2006-2007 Year 10 Annual Report
(c) Big Pic Forest 2007-2017 FMP Phase I FMP-21
(d) Big Pic Forest 2007-2017 FMP approved annual reports

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-10: Summary of Harvest & Regeneration Trends

Forest Grouping [1]	Area Category	1992-1997 (a)	1997-2002 (b)	2002-2007 (c)	2007-2013 (d)	21-Year Period 1992-2013
Spruce Dominant - SpDom	Harvest/salvage (ha)	22,260	12,405	23,261	8,683	66,609
	Surveyed (ha) [2]	1,389	32,186	12,650	10,841	57,066
	Regenerated (ha) [2]	922	30,231	11,038	10,459	52,650
	Unavailable for Regeneration (ha)	N/A	N/A	N/A	N/A	N/A
	Unsurveyed (ha) [3]	19,949	- 50,012	- 426	- 12,617	- 43,106
	Percent FU Successfully Regenerated	4%	244%	47%	120%	79%
Jack Pine Dominant - PjDom	Harvest/salvage (ha)	2,165	2,480	1,599	1,183	7,427
	Surveyed (ha) [2]	1,011	8,380	1,620	943	11,954
	Regenerated (ha) [2]	1,011	8,001	1,533	927	11,472
	Unavailable for Regeneration (ha)	N/A	N/A	N/A	N/A	N/A
	Unsurveyed (ha) [3]	143	- 13,901	- 1,554	- 687	- 15,999
	Percent FU Successfully Regenerated	47%	323%	96%	78%	154%
Other Conifer - OC	Harvest/salvage (ha)	-	N/A	4	152	156
	Surveyed (ha) [2]	-	N/A	42	133	175
	Regenerated (ha) [2]	-	N/A	42	133	175
	Unavailable for Regeneration (ha)	N/A	N/A	N/A	N/A	N/A
	Unsurveyed (ha) [3]	-	N/A	- 80	- 114	- 194
	Percent FU Successfully Regenerated	N/A	N/A	1040%	88%	112%
Poplar Dominant - PoDom	Harvest/salvage (ha)	5,680	3,650	5,438	2,271	17,039
	Surveyed (ha) [2]	126	4,255	3,854	3,238	11,473
	Regenerated (ha) [2]	126	4,144	3,578	3,160	11,008
	Unavailable for Regeneration (ha)	N/A	N/A	N/A	N/A	N/A
	Unsurveyed (ha) [3]	5,428	- 4,749	- 1,994	- 4,127	- 5,442
	Percent FU Successfully Regenerated	2%	114%	66%	139%	65%
White Birch Dominant - BwDom	Harvest/salvage (ha)	500	165	253	153	1,071
	Surveyed (ha) [2]	-	1,140	584	183	1,907
	Regenerated (ha) [2]	-	1,140	560	177	1,877
	Unavailable for Regeneration (ha)	N/A	N/A	N/A	N/A	N/A
	Unsurveyed (ha) [3]	500	- 2,115	- 890	- 207	- 2,712
	Percent FU Successfully Regenerated	0%	691%	221%	116%	175%
Mixedwood - MxWd	Harvest/salvage (ha)	N/A	8,635	6,134	3,708	18,477
	Surveyed (ha) [2]	N/A	2,052	663	967	3,682
	Regenerated (ha) [2]	N/A	1,874	606	965	3,445
	Unavailable for Regeneration (ha)	N/A	N/A	N/A	N/A	N/A
	Unsurveyed (ha) [3]	N/A	4,709	4,865	1,776	11,350
	Percent FU Successfully Regenerated	N/A	22%	10%	26%	19%
Total	Harvest/salvage (ha)	30,605	27,335	36,690	16,150	110,779
	Surveyed (ha) [2]	2,526	48,013	19,413	16,305	86,257
	Regenerated (ha) [2]	2,059	45,390	17,356	15,821	80,626
	Unavailable for Regeneration (ha)	N/A	N/A	N/A	N/A	N/A
	Unsurveyed (ha) [3]	26,020	- 66,068	- 79	- 15,976	- 56,104
	Percent Successfully Regenerated	7%	166%	47%	98%	73%

[1] Please refer to Appendix A for a description of the Forest Unit Groupings.

[2] Regenerated area is a subset of Surveyed area.

[3] Unsurveyed area is recently harvested area or area that has been regenerated/treated but has not yet old enough for survey.

Sources:
(a) 1997-2004 Big Pic Forest Independent Forest Audit Trend Analysis Table 7
(b) 2004-2009 Big Pic Forest Independent Forest Audit Trend Analysis Table 7
(c) Big Pic Forest 2006-2007 Year 10 Annual Report AR-1 (Includes Salvage) and AR-14
(d) Big Pic Forest 2007-2017 FMP approved annual reports

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-11: Summary of Forest Condition for the Available Managed Crown Productive Forest

Forest Unit Grouping [1]	Age / Condition Class	Area (ha)							
		Past Plans			Current Plan (2007-2017)				
							Projections (c)		
		1992-1997 (a)	1997-2002 (a)	2002-2007 (b)	Plan Start 2007 (c)	Plan End 2017 [2]	Short-Term Year 2017 [2]	Medium-Term Year 2027	Long-Term Year 2107
Spruce Dominant - SpDom									
	B&S	97,293	56,212	21,721	12,671		6,138	3,020	12
	1-20	1,029	1,572	72,425	93,864		84,541	49,309	44,630
	21-40	2,221	16,248	15,024	16,553		44,325	103,814	32,539
	41-60	18,529	25,868	18,253	15,799		18,975	24,038	32,626
	61-80	28,771	43,734	31,999	21,295		17,137	16,765	38,991
	81-100	25,609	32,308	19,984	28,158		30,732	22,168	34,142
	101-120	87,934	64,740	43,745	28,121		17,470	19,644	61,922
	121 +	123,526	134,951	107,213	97,997		84,215	67,784	17,257
	Subtotal	**384,912**	**375,633**	**330,362**	**314,459**	**-**	**303,534**	**306,542**	**262,119**
Jack Pine Dominant - PjDom									
	B&S	6,419	5,335	1,024	478		24	1	-
	1-20	566	828	13,826	11,302		15,650	20,730	19,424
	21-40	435	4,335	4,923	6,624		10,815	11,380	17,004
	41-60	7,869	3,124	2,444	2,766		4,229	6,398	13,508
	61-80	7,486	11,849	9,533	3,135		2,384	2,672	4,273
	81-100	7,007	2,980	1,952	8,051		10,465	1,675	985
	101-120	2,517	3,418	2,219	1,754		540	6,033	900
	121 +	-	4,860	2,328	2,267		2,209	1,591	286
	Subtotal	**32,299**	**36,729**	**38,249**	**36,377**	**-**	**46,316**	**50,480**	**56,380**
Other Conifer - OC									
	B&S	5	85	22	42		21	11	-
	1-20	-	-	101	1,623		2,778	3,929	2,600
	21-40	-	-	873	1,652		916	1,622	2,045
	41-60	-	20	65	513		1,449	1,617	3,772
	61-80	9	58	93	261		383	519	5,687
	81-100	198	79	91	742		703	256	4,383
	101-120	478	415	1,107	1,913		464	753	1,822
	121 +	872	1,604	4,121	10,460		11,261	10,188	2,377
	Subtotal	**1,562**	**2,261**	**6,474**	**17,206**	**-**	**17,975**	**18,895**	**22,686**
Poplar Dominant - PoDom									
	B&S	22,840	5,473	1,638	652		33	2	-
	1-20	-	1,812	4,537	21,193		32,531	27,800	43,598
	21-40	10,787	21,448	9,326	8,028		9,676	21,265	29,997
	41-60	12,263	15,014	10,726	11,051		9,400	7,831	27,911
	61-80	17,361	13,177	7,324	4,172		8,137	10,769	17,376
	81-100	41,808	11,168	6,052	9,864		7,589	4,091	4,311
	101-120	17,412	24,679	10,264	7,245		4,241	4,620	1,827
	121 +	-	31,182	13,198	10,857		8,201	4,060	682
	Subtotal	**122,471**	**123,953**	**63,063**	**73,062**	**-**	**79,808**	**80,438**	**125,702**

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-11: Summary of Forest Condition for the Available Managed Crown Productive Forest

Forest Unit Grouping [1]	Age / Condition Class	Area (ha)							
		Past Plans			Current Plan (2007-2017)				
							Projections (c)		
		1992-1997 (a)	1997-2002 (a)	2002-2007 (b)	Plan Start 2007 (c)	Plan End 2017 [2]	Short-Term Year 2017 [2]	Medium-Term Year 2027	Long-Term Year 2107
White Birch Dominant - BwDom									
	B&S	1,806	1,636	828	760		228	68	-
	1-20	-	12	3,217	3,092		3,975	4,373	6,522
	21-40	1,793	625	129	267		2,382	3,806	4,014
	41-60	9,632	4,650	3,308	775		335	634	3,886
	61-80	13,013	4,799	2,681	4,296		3,644	769	3,956
	81-100	9,004	5,822	1,148	2,096		2,780	4,269	445
	101-120	2,098	8,948	3,212	3,089		1,702	2,288	437
	121 +	-	7,089	5,248	6,389		7,663	4,875	2,200
	Subtotal	**37,346**	**33,581**	**19,771**	**20,764**	**-**	**22,709**	**21,082**	**21,460**
Mixedwood - MxWd [3]									
	B&S			-	228		46	9	-
	1-20			8,418	17,246		17,346	8,641	17,757
	21-40			16,592	12,126		8,437	23,137	21,209
	41-60			18,103	15,591		15,763	12,375	15,231
	61-80			14,096	12,954		16,989	18,097	10,675
	81-100			12,220	17,912		14,647	13,084	10,810
	101-120			17,748	11,691		10,744	11,552	9,744
	121 +			25,650	26,051		21,165	13,723	5,965
	Subtotal	**-**	**-**	**112,826**	**113,799**	**-**	**105,137**	**100,618**	**91,391**
TOTAL									
	B&S	128,363	68,741	25,233	14,831	-	6,490	3,111	12
	1-20	1,595	4,224	102,523	148,320	-	156,821	114,782	134,531
	21-40	15,236	42,656	46,866	45,249	-	76,551	165,024	106,808
	41-60	48,293	48,676	52,899	46,496	-	50,151	52,893	96,934
	61-80	66,640	73,617	65,726	46,112	-	48,674	49,591	80,958
	81-100	83,626	52,357	41,447	66,823	-	66,916	45,543	55,076
	101-120	110,439	102,200	78,294	53,814	-	35,161	44,890	76,652
	121 +	124,398	179,686	157,758	154,021	-	134,714	102,221	28,767
	Grand Total	**578,590**	**572,157**	**570,746**	**575,666**	**-**	**575,479**	**578,055**	**579,738**

[1] Please refer to Appendix A for a description of the Forest Unit Groupings.

[2] Actual forest condition at Plan End, based on actual depletions, cannot be reported until the conclusion of the current plan & an update of the forest inventory. Projected Plan End for 2017 has been provided from the LTMD strategic model.

[3] For the 1992 and 1997 plan periods, working group species was used as forest unit descriptor. Therefore, unable to aggregate stands into the Mixedwood forest unit group for these two periods.

Sources:
(a) 2004-2009 Big Pic Forest Independent Forest Audit Trend Analysis Table 5
(b) 2002-2022 Big Pic Forest FMP Table FMP-9
(c) Big Pic Forest 2007-2017 FMP Long Term Management Direction strategic model SFMM case file / FMP-7

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-12: Summary of Habitat for Species at Risk & Selected Wildlife Species

	AREA (ha)							
	Past Plans			Plan Start (Year 2007) (b)	Current Plan (2007-2017) (b)			Plan End (Year 2017) [2]
WILDLIFE SPECIES [1]	1992-1997	1997-2002	2002-2007 (a)		Short-Term (Year 2017)	Medium-Term (Year 2027)	Long-Term (Year 2107)	
Bay-breasted Warbler	n/a	n/a	184,100	-	-	-	-	
Black-backed Woodpecker	n/a	n/a	54,200	117,536	107,771	86,937	23,982	
Black Bear (Foraging)	n/a	n/a	7,300	68,997	57,433	40,941	23,055	
Black Bear (Winter)	n/a	n/a	151,100	-	-	-	-	
Boreal Chickadee	n/a	n/a	50,800	228,682	206,184	189,225	230,284	
Deer Mouse	n/a	n/a	21,700	-	-	-	-	
Great Grey Owl	n/a	n/a	39,700	-	-	-	-	
Least Flycatcher	n/a	n/a	63,200	-	-	-	-	
Lynx	n/a	n/a	131,700	94,018	77,764	55,380	29,436	
Marten	n/a	n/a	201,400	231,029	200,334	169,391	152,415	
Moose (Foraging)	n/a	n/a	17,100	45,537	38,888	22,538	44,531	
Moose (Winter)	n/a	n/a	200,600	138,936	117,838	101,541	62,640	n/a
Northern Flying Squirrel	n/a	n/a	237,000	-	-	-	-	
Pileated Woodpecker	n/a	n/a	17,800	-	-	-	-	
Red Breasted Nuthatch	n/a	n/a	n/a	121,253	97,867	70,927	37,136	
Ruby-crowned Kinglet	n/a	n/a	100,800	-	-	-	-	
Ruffed Grouse	n/a	n/a	52,700	69,919	82,434	102,357	140,124	
Snowshoe Hare	n/a	n/a	131,700	-	-	-	-	
Spruce Grouse	n/a	n/a	3,700	-	-	-	-	
White-throated Sparrow	n/a	n/a	45,300	-	-	-	-	
Woodland Caribou	n/a	n/a	2,800	196,358	179,294	159,045	196,565	

[1] Not all of the indicator species habitats listed were evaluated in the Big Pic Forest 2007-2017 FMP compared to the previous 2002-2022 FMP.

[2] Actual habitat area at Plan End, based on actual depletions, cannot be reported until the conclusion of the current plan &an update of the forest inventory.

Sources: (a) Big Pic Forest 2002-2007 FMP Table FMP-5; Big Pic Forest 2007-2017 FMP Tables FMP-8 & FMP-13
(b) Big Pic Forest 2007-2017 FMP Long Term Management Direction strategic model SFMM case file

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-13: Summary of Assessment of Regeneration & Silvicultural Success

		Area Assessed (ha)				
		Area Successfully Regenerated To			Area Not Successfully Regenerated	Total Area Assessed
2007-2017 FMP Forest Unit	Silvicultural Ground Rule	Projected Forest Unit	Other Forest Unit	Total		
Harvest						
BW1	BW1-INT-PJ2	2	3	5	-	5
	BW1-INT-SP1	39	133	172	6	178
LC1	LC1-EXT-LC1	39	88	127	-	127
	LC1-INT-SB1	-	6	6	0	6
MW2	MW2-EXT-MW2	188	38	226	-	226
	MW2-EXT-PO1	130	-	130	-	130
	MW2-INT-SP1	218	392	610	2	612
PJ1	PJ1-EXT-MW1	2	42	44	-	44
	PJ1-INT-PJ1	219	648	867	17	883
PJ2	PJ2-EXT-MW1	7	1	7	-	7
	PJ2-INT-PJ1	-	8	8	-	8
PO1	PO1-EXT-PO1	300	434	734	4	739
	PO1-INT-SF1	590	69	659	-	659
	PO1-INT-SP1	814	952	1,766	74	1,841
SB1	SB1-EXT-SB1	454	1,112	1,565	147	1,713
	SB1-INT-SB1	232	6,344	6,575	225	6,800
SF1	SF1-EXT-MW1	4	68	72	-	72
	SF1-INT-SF1	188	80	268	9	277
	SF1-INT-SP1	228	19	248	-	248
SP1	SP1-EXT-MW2	518	137	656	-	656
	SP1-EXT-PO1	4	-	4	-	4
	SP1-EXT-SF1	31	376	407	-	407
	SP1-INT-PJ2	59	47	106	-	106
	SP1-INT-SP1	396	162	558	0	558
	Harvest Subtotal	4,662	11,158	15,820	485	16,305
Natural Disturbance						
	Natural Disturbance Subtotal	**-**	**-**	**-**	**-**	**-**
	Grand Total	**4,662**	**11,158**	**15,820**	**485**	**16,305**

Sources: Big Pic Forest 2007-2017 FMP approved annual reports

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

					Management Strategy - Projections						
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
1. Forest Diversity: To develop, over time, a forest with characteristics which, to the extent possible, resemble those of a fire-driven boreal forest at both the stand and landscape level while providing for provincially and locally featured species habitat and species at risk habitat.	**1.1 Landscape Pattern** 1.1.1 Percent Distribution of Forest Disturbances Size Class (ha) <100 101-200 201-500 501-1,000 1,001-5,000 5,001-10,000 >10,000	 62% 12% 10% 4% 8% 1% 2% 100.0%	 @2007 55%-65% 11%-18% 0%-13% 0%-7% 8%-28% 0%-1% 0%-5%	 @2007 55%-65% 11%-18% 0%-13% 0%-7% 8%-28% 0%-1% 0%-5%	 @2012 74% 7% 5% 6% 4% 1% 3% 100%						
	2007 FMP Assessment: The desired and target levels have been achieved for all size classes except <100, 101-200, and 1001-5000. The reason for the results falling out side the desirable and target levels is the requirement to meet the 80/20 requirement of NDPEG. **Trend Analysis Assessment Update:** In the absence of an updated forest inventory with: the actual harvest from the last few years of the 2002-2007 period (when harvest was projected for the 2007 FMP); with the actual harvest during the 2007-2013 period; and aging the forest; a spatial analysis of the frequency distribution of forest disturbances can not be completed for this assessment. With Phase II planning, the frequency distribution of disturbances at the end of the ten-year plan was projected to be 62%, 11%, 8%, 4%, 11%, 2%, and 2%,for the respective size classes. These frequencies are all within the desired ranges, with the exception of the 5001-10000 hectare size class, which exceeds the desired range by 1%. A cursory review of planned harvest and actual harvest over the 2007-2017 period was conducted as of the end of the 2012-2013 fiscal year (six years). Although the total actual harvest level is only 42% of planned on the Forest, where planned disturbances (i.e. harvest operations) have occurred, they appear to be very thorough and complete (extending to planned boundaries), with little to no bypass area. Overall, it is unlikely that the frequency distribution of disturbances as of the end of the 2012-13 fiscal year would notably differ from the desired frequency distribution ranges within the 10-year period, even if the planned harvest is incomplete, because the desired ranges are relatively wide.										
	1.1.1a Area Distribution of Forest Disturbances Size Class (ha) <100 101-200 201-500 501-1,000 1,001-5,000 5,001-10,000 >10,000	 2% 1% 3% 3% 15% 10% 66%	 2-6% of disturbance area 1-7% 0-4% 1-4% 5-29% 4-18% 41-86%	@2007 2-6% of disturbance area 1-7% 0-4% 1-4% 5-29% 4-18% 41-86%	@2012 Area inside range 2% 1% 1% 5% 8% 7% 76%						
	2007 FMP Assessment: The desired and target levels have been achieved for all size classes except 5001-1000. The reason for the results falling out side the desirable nad target levels is mainly due to past cuts. All other size classes are at the low end of the ranges which has pushed this one up. **Trend Analysis Assessment Update:** In the absence of an updated forest inventory with: the actual harvest from the last few years of the 2002-2007 period (when harvest was projected for the 2007 FMP); with the actual harvest during the 2007-2013 period; and aging the forest; a spatial analysis of the area distribution of forest disturbances can not be completed for this assessment. With Phase II planning, the area distribution of disturbances at the end of the ten-year plan was projected to be 1%, 1%, 2%, 2%, 19%, 10%, and 64%,for the respective size classes. These results are all within the desired ranges, with the exception of the <100 hectare size class, which is lower than the desired range by 1%. A cursory review of planned harvest and actual harvest over the 2007-2017 period was conducted as of the end of the 2012-2013 fiscal year (six years). Although the total actual harvest level is only 42% of planned on the Forest, where planned disturbances (i.e. harvest operations) have occurred, they appear to be very thorough and complete (extending to planned boundaries), with little to no bypass area. Overall, it is unlikely that the area distribution of disturbances as of the end of the 2012-13 fiscal year would notably differ from the desired frequency distribution ranges within the 10-year period, even if the planned harvest is incomplete, because the desired ranges are relatively wide.										

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

						Management Strategy - Projections					
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
1. Forest Diversity: To develop, over time, a forest with characteristics which, to the extent possible, resemble those of a fire-driven boreal forest at both the stand and landscape level while providing for provincially and locally featured species habitat and species at risk habitat.	1.1.2 Interior	100.0%			100%						
	1.1.2.1 Marten Habitat Area Quantity										
	Southern Zone			for all terms 0-60	@2007		@2027	@2047			
	Number of cores < 3000 ha	1	None	None	1		1	1			
	Number of cores 3000 - 5000 ha	10	All	All	10		6	6			
	Number of cores > 5000 ha	4	None	None	4		3	3			
	Caramat Zone										
	Number of cores < 3000 ha	0	None	None	0		0	0			
	Number of cores 3000 - 5000 ha	0	None	None	0		0	0			
	Number of cores > 5000 ha	2	All	All	2		2	2			
	Nagagami Zone										
	Number of cores < 3000 ha	0	None	None	0		0	0			
	Number of cores 3000 - 5000 ha	0	None	None	0		0	0			
	Number of cores > 5000 ha	5	All	All	5		5	1			
	2007 FMP Assessment: This measure is met for the Caramat and Nagagami zones with a majority in the Southern Zone meeting the targets. The one core that is smaller in size is due to maintaining distribution south of Caramat, and the other 4 larger cores were expanded to increase the % of suitable habitat deferred within cores. **Trend Analysis Assessment Update:** Marten cores habitat deferral areas are not subject to harvest activities. As there have been no natural disturbances, the desirable levels and target should still be achieved.										
	1.1.2.2 Marten Habitat Area Quality										
	Marten Habitat within core areas:										
	Marten Suitable	16.1%	10-20% in ha	2007 - 15% 2027-12% 2047-10%	16.1%		15.3%	10.4%			NA
	Core Quality (cores >75% suitable/total cores)	36% (8/22)	100% of cores >75% suitable	>60% of cores >75% suitable @2047	@2047 62%		53% (9/17)	62% (8/13)			NA
	2007 FMP Assessment: The target and desirable levels have been met for suitable marten habitat over the 0-20, 21-40, and 41-60 year time frames. The percent of suitable marten habitat within cores increases over time and the target is met at 41-60 year period. **Trend Analysis Assessment Update:** Marten cores habitat deferral areas are not subject to harvest activities. As there have been no natural disturbances, the desirable levels and target should still be achieved.										
	1.2 Forest Structure, Composition, and Abundance										
	1.2.1 Forest Unit Area (hectares)			@2107	@2107						
	MCL (SB1&LC1)	167,388	185,322	167,388-175,447	175,282	167,388	172,942	175,289	176,048	175,447	175,282
	MCMx (PJ1, PJ2, & SP1)	134,267	92,092	92,092-138,797	113,407	134,267	138,797	135,639	132,625	120,373	113,407
	SF1 (SF1)	55,967	25,581	25,581-75,433	67,632	55,967	56,087	64,630	69,757	75,433	67,632
	HRDW (BW1&PO1)	93,852	141,549	93,852-147,161	131,664	93,852	102,257	101,522	107,782	120,560	131,664
	MIX (MW1&MW2)	116,998	123,927	87,748-123,927	91,716	116,998	105,092	100,617	93,004	87,748	91,716
	Total	568,472			579,702	568,472	575,175	577,698	579,217	579,562	579,702
	2007 FMP Assessment: The targets are met for all forest unit groupingsand the trend is toward the desirable level for all forest unit groupings except two. These are in the SF1 where our plantations have increased the amount above the historic and in the MIX where the level is below the target as a result of inflated historic levels. In the historic analysis the M forest unit was a catch all similar to the current MW2 FU. The desirable levels are based on historical distribution on the forest. Target levels are a range from the current level to the desired level. **Trend Analysis Assessment Update:** In the absence of an updated forest inventory, with all depletions, FTG survey results, etc., an assessment of forest unit area as of the end of the 2012-13 fiscal year cannot be made at this time. However, with the low level of harvest activity to date and no natural disturbances, the forest unit area will still be within target ranges.										

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

						Management Strategy - Projections					
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
1. Forest Diversity: To develop, over time, a forest with characteristics which, to the extent possible, resemble those of a fire-driven boreal forest at both the stand and landscape level while providing for provincially and locally featured species habitat and species at risk habitat.	**1.3 Amount and Distribution of Mature Forest.**										
	Area (hectares)			@2107	@2107						
	BW1 - M	5,999	2,608	≥1,739	4,195	4,835	3,864	878	4,150	5,820	4195
	LC1 - M	2,685	1,380	≥920	6,205	1,168	1,010	795	2,115	3,392	6205
	MW1 - M	6,170	2,625	≥1,750	1,824	5,772	3,850	3,988	2,089	1,567	1824
	MW2 - M	17,861	21,766	≥14,510	14,511	17,474	19,472	20,915	12,620	23,684	14511
	PJ1 - M	4,054	1,169	≥779	1,169	3,806	2,505	1,169	1,169	1,169	1169
	PJ2 - M	7,852	1,390	≥927	1,390	7,786	1,952	2,091	2,441	1,390	1390
	PO1 - M	9,088	11,739	≥7,826	17,777	10,907	12,128	11,613	15,971	23,771	17777
	SB1 - M	21,537	12,964	≥8,643	78,130	12,211	9,067	9,548	10,635	67,134	78130
	SF1 - M	13,578	9,343	≥6,229	9,343	16,036	14,767	6,742	9,343	10,089	9343
	SP1 - M	15,169	5,060	≥3,373	5,060	16,457	14,997	5,797	5,060	14,851	5060
	Total	103,991	70,044		139,604	96,452	83,611	63,536	65,593	152,867	139,604
	2007 FMP Assessment: Reporting Function Only **Trend Analysis Assessment Update:** In the absence of an updated forest inventory, with all depletions, an assessment of mature forest condition as of the end of the 2012-13 fiscal year cannot be made at this time. However, with the low level of harvest activity to date and no natural disturbances, the mature forest unit area will still be at or above desired levels and targets.										
	FU / M - trend over time			@2007-2107	@2007-2107						
	BW1 - M	100%			100% (10 of 10)						
	LC1 - M	100%			100% (10 of 10)						
	MW1 - M	100%			100% (10 of 10)						
	MW2 - M	100%	At or above the	90% of Occurrences	100% (10 of 10)						
	PJ1 - M	100%	Base Level trend	above MGR level from	100% (10 of 10)						
	PJ2 - M	100%	over time for	2007-2107 for each forest	100% (10 of 10)						
	PO1 - M	100%	each forest unit	unit	100% (10 of 10)						
	SB1 - M	100%			100% (10 of 10)						
	SF1 - M	100%			100% (10 of 10)						
	SP1 - M	100%			100% (10 of 10)						
	2007 FMP Assessment: All measures fall within the Target levels. The majority of the measures meet the Desirable levels. Those measures that do not meet the desirable level are due the balancing of objectives. **Trend Analysis Assessment Update:** In the absence of an updated forest inventory, with all depletions, an assessment of mature forest condition as of the end of the 2012-13 fiscal year cannot be made at this time. However, with the low level of harvest activity to date and no natural disturbances, the mature forest unit area trend will still be at or above desired levels and targets.										

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

					Management Strategy - Projections						
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
1. Forest Diversity: To develop, over time, a forest with characteristics which, to the extent possible, resemble those of a fire-driven boreal forest at both the stand and landscape level while providing for provincially and locally featured species habitat and species at risk habitat.	**1.4 Amount and Distribution of Old Growth Forest.**										
	Area (hectares)			@T10	@T10						
	SB1-L	58,962	9,439	≥6,293	9,439	60,304	50,845	29,583	15,672	9,439	9,439
	PJ1-L	595	215	≥143	269	372	272	1,075	271	215	269
	LC1-L	10,692	2,354	≥1,569	2,377	11,261	10,188	6,845	3,923	3,122	2,377
	PJ2-L	3,742	816	≥544	816	2,196	5,984	4,292	1,071	816	816
	SP1-L	35,481	3,847	≥2,565	3,847	22,051	14,498	12,962	7,342	3,847	3,847
	SF1-L	8,658	6,898	≥4,599	7,503	5,359	5,419	6,352	6,719	4,457	7,503
	PO1-L	23,831	6,418	≥4,279	6,418	17,261	11,413	7,261	6,418	6,418	6,418
	BW1-L	10,354	2,122	≥1,415	2,843	10,954	8,338	6,977	5,791	4,444	2,843
	MW1-L	4,374	1,436	≥957	1,915	3,880	4,085	3,485	2,785	2,159	1,915
	MW2-L	34,812	8,444	>5,629	13,794	28,030	21,189	17,656	18,970	13,794	13,794
		191,503	41,989		49,221	161,668	132,231	96,488	68,962	48,711	49,221
	2007 FMP Assessment: Reporting Function Only **Trend Analysis Assessment Update:** In the absence of an updated forest inventory, with all depletions, an assessment of old growth forest condition as of the end of the 2012-13 fiscal year cannot be made at this time. However, with the low level of harvest activity to date and no natural disturbances, the old growth forest unit area will still be at or above desired levels and targets.										
	FU / L - trend over time			@2007-2107	@2007-2107						
	BW1 - L	100%			100% (10 of 10)						
	LC1 - L	100%			100% (10 of 10)						
	MW1 - L	100%			100% (10 of 10)						
	MW2 - L	100%	At or above the	90% of Occurrences	100% (10 of 10)						
	PJ1 - L	100%	Base Level trend	above MGR level from	100% (10 of 10)						
	PJ2 - L	100%	over time for	2007-2107 for each forest	100% (10 of 10)						
	PO1 - L	100%	each forest unit	unit	100% (10 of 10)						
	SB1 - L	100%			100% (10 of 10)						
	SF1 - L	100%			100% (10 of 10)						
	SP1 - L	100%			100% (10 of 10)						
	2007 FMP Assessment: All measures fall within the Target levels. 37 of the measures meet the Desirable levels, 37 measures are between Base and MGR, and 26 measures are equal to the MGR level. Those measures that do not meet the desirable level are due the balancing of objectives. **Trend Analysis Assessment Update:** In the absence of an updated forest inventory, with all depletions, an assessment of old growth forest condition as of the end of the 2012-13 fiscal year cannot be made at this time. However, with the low level of harvest activity to date and no natural disturbances, the old growth forest unit area trend will still be at or above desired levels and targets.										

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

						Management Strategy - Projections					
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
1. Forest Diversity: To develop, over time, a forest with characteristics which, to the extent possible, resemble those of a fire-driven boreal forest at both the stand and landscape level while providing for provincially and locally featured species habitat and species at risk habitat.	**1.4 Amount and Distribution of Old Growth Forest. - continued**										
	Old Growth Species Area (ha):			@T10	@T10						
	Black-backed woodpecker	117,536	29,050	≥19,367	23976	107,771	86,932	59,936	34,727	21,675	23,976
	Red-breasted nuthatch	121,253	49,210	≥32,807	37130	97,867	69,305	59,140	49,096	35,928	37,130
	Lynx (denning)	94,018	34,442	≥22,961	29430	77,764	54,735	47,265	39,739	27,373	29,430
	Black bear (foraging)	68,997	29,562	≥19,708	23055	57,433	38,679	32,050	31,179	24,656	23,055
	2007 FMP Assessment: All measures fall within the Target levels. **Trend Analysis Assessment Update:** With the low level of harvest activity to date and no natural disturbances, the old growth forest unit area and the associated old growth wildlife species habitat areas will still be at or above desired levels and targets.										
	Old Growth Species Trend through time:			@2007-2107	@2007-2107						
	Black-backed woodpecker	100%	At or above the Base Level trend over time for each forest unit	90% of Occurrences above MGR level from 2007-2107 for each measure	100% (10 of 10)						
	Red-breasted nuthatch	100%			100% (10 of 10)						
	Lynx (denning)	100%			100% (10 of 10)						
	Black bear (foraging)	100%			100% (10 of 10)						
	2007 FMP Assessment: All measures fall within the Target levels. 17 of the measures meet the Desirable level and 23 measures are between base and MGR. Those measures that do not meet the desirable level are due the balancing of objectives. **Trend Analysis Assessment Update:** With the low level of harvest activity to date and no natural disturbances, the old growth forest unit area and the associated old growth wildlife species habitat area trend will still be at or above desired levels and targets.										

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

					Management Strategy - Projections						
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
1. Forest Diversity: To develop, over time, a forest with characteristics which, to the extent possible, resemble those of a fire-driven boreal forest at both the stand and landscape level while providing for provincially and locally featured species habitat and species at risk habitat.	**1.5 Area of Habitat for Forest-Dependent Provincially and Locally Featured Species.**										
	Area										
	Moose:			@T10	@T10						
	Winter Habitat	138,936	61,233	≥40,822	62,701	117,838	98,031	77,815	65,894	76,821	62,701
	Foraging Habitat	45,537	27,448	≥18,299	49,909	38,888	26,558	21,813	26,626	36,609	49,909
	Marten:										
	Habitat Area	231,029	113,366	≥75,577	152,525	200,334	165,514	122,725	95,851	155,746	152,525
	Ruffed Grouse:										
	Habitat Area	69,919	105,930	≥70,620	133,836	82,434	102,321	112,194	118,491	111,234	133,836
	Boreal Chickadee:										
	Habitat Area	228,682	168,032	≥11,2021	230,569	206,184	187,910	254,032	273,723	262,896	230,569
	2007 FMP Assessment: All measures fall within the Target levels and meet or exceed the Desirable levels. **Trend Analysis Assessment Update:** At plan start, the projected desirable habitat area for ruffed grouse was not achieved as originally assessed, but the target area was projected to be achieve. With the low level of harvest activity to date and no natural disturbances, the area of preferred wildlife habitat by species will still be meeting or exceeding desired levels and targets, with the exception of the ruffed grouse habitat area desirable level.										
	Trend										
	Moose:										
	Winter Habitat	100%			100% (10 of 10)						
	Foraging Habitat	100%			100% (10 of 10)						
	Marten:		At or above the	90% of Occurrences							
	Habitat Area	100%	Base Level trend	above MGR level from	100% (10 of 10)						
	Grouse:		over time for	2007-2107 for each							
	Habitat Area	100%	each forest unit	measure	100% (10 of 10)						
	Boreal Chickadee:										
	Habitat Area	100%			100% (10 of 10)						
	2007 FMP Assessment: All measures fall within the Target levels and meet the Desirable levels. **Trend Analysis Assessment Update:** With the low level of harvest activity to date and no natural disturbances, the area of preferred wildlife habitat by species trends will still be at or above desired levels and targets.										

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

						Management Strategy - Projections					
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
1. Forest Diversity: To develop, over time, a forest with characteristics which, to the extent possible, resemble those of a fire-driven boreal forest at both the stand and landscape level while providing for provincially and locally featured species habitat and species at risk habitat.	**1.6 Area of Habitat for Forest-Dependent Species at Risk.** Caribou:			@T1	@T1						
	Refuge Habitat - caribou zone vs. caribou deferrals	caribou deferral 1.17 times more suitable habitat than general caribou mgmt zone	cores more dense in suitable habitat than general caribou mgmt area.	cores more dense in suitable habitat than general caribou mgmt area.	caribou deferral 1.17 times more suitable habitat than general caribou mgmt zone						
	Winter Habitat - caribou zone vs. caribou deferrals	caribou deferral 1.44 times more suitable habitat than general caribou mgmt zone	cores more dense in suitable habitat than general caribou mgmt area.	cores more dense in suitable habitat than general caribou mgmt area.	caribou deferral 1.44 times more suitable habitat than general caribou mgmt zone						
	2007 FMP Assessment: Targets and desirable levels have been met. The deferrals were selected as higher quality habitat than the general zone habitat quality. **Trend Analysis Assessment Update:** Revised policy direction from the MNR Regional direction related to the Species at Risk Act was addressed as part of the the Year 3 Review of the FMP, and change in caribou habitat management direction was implemented with the Phase II FMP, which included additional harvest deferral area in the Northern Continuous Population zone of the Forest. As such, this objective indicator became null and void. Revised policy direction related to the *Endangered Species Act* and the *Forest Management Guide for Boreal Landscapes* will be implemented with the next FMP.										
	Total Scheduled Core Habitat Area	42,479 (Cores A,B,C,D)				42,479 (Cores A,B,C,D)		12,790 (Core E)		57,410 (Cores F,G,H)	
	2007 FMP Assessment: Scheduled Caribou habitat over time (current, near future, and far future). Reporting Function Only **Trend Analysis Assessment Update:** Revised policy direction from the MNR related to the Species at Risk Act was addressed as part of the Year 3 Review of the FMP, and change in caribou habitat management direction was implemented with the Phase II FMP. As such, this objective indicator became null and void. Revised policy direction related to the Endangered Species Act and the Forest Management Guide for Boreal Landscapes will be implemented with the next FMP.										

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

					Management Strategy - Projections						
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
2. Social and Economic: To maintain a level of access on the Forest to provide for the efficient delivery of forest management activities while providing opportunities for other commercial and recreational user on the forest.	**2.1 Road Density.**			@2017							
	2.1.1 Km of Road (all road classes) per sq. km of crown forest	0.81	0.81	0.81 +/- 10%							
	2.1.2 Density of all operational roads within harvest blocks	0.18	0.18	0.18 +/- 10%							
	2007 FMP Assessment: Reporting Function Only **Trend Analysis Assessment Update**: For the pupose of this measurement, 'Crown forest' is the amount of Crown Productive Forest (production and protection) specified in FMP-1 which is 5,756.66 km^2. Based on calculations, the plan start density for all roads is 0.81 km/km2, based on a plan start length of 4,643 km (as described in the FMP Text Sect. 2.3.). The road density for all road classes was calculated by adding the length of new road construction (472 km) to the existing road distance of 4,643 km (= 5,115 km). As of the end of the 2012-2013 fiscal year, the road density has increased to 0.89 km/km2. This is still within the target range of +/- 10% change by 2017. For this report/update difficulties were encountered in that the factors used to calculate operational road density were not described in the FMP. The plan start road density of 0.18km/km2 could not be duplicated from existing available information. Furthermore, there was confusion regarding the wording of the indicator statement 'operational roads **within** harvest blocks' as operational road exist both within and outside of harvest blocks on the forest. Therefore, an evaluation has been provided based road length information in the FMP road layer. There are 3,326 km of operational road as of 2007 (plan start). This translates to a road density of 0.58 km/km2. As of the end of the 2012-2013 fiscal year, new operational road construction has amounted to 427 km (=3,753 km), therefore resulting in a operational road density of 0.65 km/km2. At this time in the current FMP, the maximum target is being exceeded (+/- 10% change by 2017). Prior to plan end, either operational road existence and/or classification requires confirmation; and/or more abandonment activity of operational roads is necessary to reduce the ratio.										
	2.2 Road Classification (Primary and Branch Roads on Crown Land)										
	2.2.1 Zone 1										
	Density of all Roads in Zone (km/km2)	0.67									
	-open to public Km of all roads	1124									
	-restricted to public Km of all roads	85									
	-prohibited to public Km of all roads	0									
	2.2.2 Zone 2										
	Density of all Roads in Zone (km/km2)	1.02									
	-open to public Km of all roads	1038									
	-restricted to public Km of all roads	0									
	-prohibited to public Km of all roads	0									
	2.2.3 Zone 3										
	Density of all Roads in Zone (km/km2)	0.96									
	-open to public Km of all roads	1667									
	-restricted to public Km of all roads	69									
	-prohibited to public Km of all roads	0									
	2.2.4 Zone 4										
	Density of all Roads in Zone (km/km2)	0.58									
	-open to public Km of all roads	608									
	-restricted to public Km of all roads	52									
	-prohibited to public Km of all roads	0									
	2.2.5 Total of All Zones										
	Density of all Roads in Zone (km/km2)	0.81									
	-open to public Km of all roads	4437									
	-restricted to public Km of all roads	206									
	-prohibited to public Km of all roads	0									
	2007 FMP Assessment: Reporting Function Only **Trend Analysis Assessment Update:** As this is a report prepared for trend analysis purposes at Year 6 of the 2007-2017 FMP which is interim to Year 7, the road density for each Road Zone is not reported at this time.										

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

					Management Strategy - Projections						
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
3. Social and Economic: To provide continuous and predictable harvest levels (area and volume) that, to the extent possible, meet the wood supply demands over the short-, medium-, and long-terms based on the 2006 Management Unit Contribution (MUC) by species group, contributing to Ontario's economy.	**3.1 Long-term projected available harvest area and volume by species group.**										
	3.1.1 projected available harvest area (ha) by forest unit	@2007	Maintain FU mix to meet Indicator 3.1.2 targets	@2107	@2107						
	BW1	86.1		33.9 ha-214.8 ha	149.9	136.0	143.2	33.9	70.2	214.8	149.9
	LC1	87.5		54.2 ha-197.0 ha	54.2	131.3	197.0	195.1	61.2	95.9	54.2
	MW1	191.6		36.4 ha to 330.0 ha	125.6	330.0	231.9	216.0	112.3	36.4	125.6
	MW2	1,405.9		417.5 ha-939.3 ha	939.3	822.2	532.7	763.2	480.1	417.5	939.3
	PJ1	62.1		42.4 ha to 547.0 ha	402.0	169.7	42.4	157.4	547.0	275.5	402.0
	PJ2	217.8		61.6 ha to 316.5 ha	284.5	185.8	61.6	316.5	150.9	308.8	284.5
	PO1	1,122.0		326.2 ha to 1,107.7 ha	1,107.7	558.0	326.2	646.6	874.2	1,078.7	1,107.7
	SB1	950.0		279.9 ha to1,330.0 ha	1,054.0	1,330.0	1,013.2	777.4	279.9	537.7	1,054.0
	SF1	634.6		114.8 ha to 1,284.1 ha	281.3	659.6	594.5	114.8	1,284.1	917.5	281.3
	SP1	1,576.0		477.1 ha to 1,791.4 ha	557.6	477.1	597.8	656.5	555.2	1,791.4	557.6
	Total	6,333.6				4,799.7	3,740.5	3,877.4	4,415.1	5,674.2	4,956.1
	2007 FMP Assessment: The area and volume targets have been met in the short and long-terms. The mix of forest area has been optimized to meet volume targets. The mid-term downward trend in available harvest area correlates with the downward trend in available harvest volumes. The desired levels have not been reached as a result of the age class imbalance on the forest. The areas and volumes also trend back to the target range toward the end of the 100 year time frame. **Trend Analysis Assessment Update:** n/a - strategic model										
	3.1.2 projected available harvest volume (m3) by species group	m3/year	MUC	Minimum Target At 2107	@2107						
	Spruce, pine (jackpine), fir	456,000	456,000 m3/yr	456,000 m3/yr -10%	322,904	377,000	320,829	276,726	271,000	432,000	322,904
	poplar	164,000	164,570 m3/yr	164,570 m3/yr -10%	263,868	137,500	122,341	173,848	190,877	274,863	263,868
	white birch	44,542	35,380 m3/yr	35,380 m3/yr -10%	36,713	30,000	34,591	28,378	30,259	49,066	36,713
	cedar	3,467	3,000 m3/yr	3,000 m3/yr -10%	3,661	4,111	4,934	3,742	2,500	3,000	3,661
	Total	668,009	654,550		627,146	548,611	482,695	482,694	494,636	758,929	627,146
	2007 FMP Assessment: The volume decline is most pronounced in the SPF species group with a 40% drop in the mid-term trending back to the target toward the final term. The poplar species group experiences a minor dip of 25% at term 2 and then recovers in the 3rd term and trends upward to an 82% increase above the target by term 10. **Trend Analysis Assessment Update:** n/a - strategic model										

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

					Management Strategy - Projections						
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
3. Social and Economic: To provide continuous and predictable harvest levels (area and volume) that, to the extent possible, meet the wood supply demands over the short-, medium-, and long-terms based on the 2006 Management Unit Contribution (MUC) by species group, contributing to Ontario's economy.	**3.2 Available, forecast and actual harvest area by forest unit.**										
	3.2.1 actual harvest area (ha) by forest unit										
	BW1	860.5	depletions equal to 100% of allocations for each FU	depletions >90% of allocations for each FU	Annual Reports 7 and 10						
	LC1	874.8									
	MW1	1,915.5									
	MW2	14,059.2									
	PJ1	621.3									
	PJ2	2,178.1									
	PO1	11,219.6									
	SB1	9,500.0									
	SF1	6,345.8									
	SP1	15,760.0									
	Total	63,334.7									
	2007 FMP Assessment: Report at 7 & 10 Year AR **Trend Analysis Assessment Update:** During the 2007-2013 period, only 26% (16,152 ha) of the planned harvest has actually occurred. As expected, conifer dominated forest units have been targeted for marketable species. The percent of forest unit planned area harvested is as follows: PJ1 46%; PJ2 41%; MW1 33%; SB1 30%; SP1 29%; MW2 22%; PO1 20%; SF1 19%; BW1 18%; and LC1 17%.With the poor market conditions, to-date, the desirable levels and targets are not on track to being achieved.										
	3.2.2 available harvest area (ha) by forest unit (10 year)										
		@2007			@Draft Plan						
	BW1	860.5	Forecast area equal to 100% of the available harvest area for each FU	Forecast area to be greater than 90% of the available harvest area for each FU	100%						
	LC1	875.4			100%						
	MW1	1,915.6			100%						
	MW2	14,059.2			100%						
	PJ1	621.3			100%						
	PJ2	2,178.1			100%						
	PO1	11,219.9			100%						
	SB1	9,500.0			100%						
	SF1	6,345.8			100%						
	SP1	15,760.0			100%						
	Total	63,335.9			100%						
	2007 FMP Assessment: The desirable and target levels have been achieved. **Trend Analysis Assessment Update:** n/a										

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

						Management Strategy - Projections					
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
3. Social and Economic: To provide continuous and predictable harvest levels (area and volume) that, to the extent possible, meet the wood supply demands over the short-, medium-, and long-terms based on the 2006 Management Unit Contribution (MUC) by species group, contributing to Ontario's economy.	3.2.3 planned harvest area (ha) by forest unit (5 Year)										
		@2007			@2007						
	BW1	860.5	Planned area equal to 50% of the available harvest area for each FU	Planned area to be 40%-60% of the available harvest area for each FU	49%						
	LC1	875.4			29%						
	MW1	1,915.6			51%						
	MW2	14,059.2			51%						
	PJ1	621.3			48%						
	PJ2	2,178.1			52%						
	PO1	11,219.9			49%						
	SB1	9,500.0			50%						
	SF1	6,345.8			50%						
	SP1	15,760.0			50%						
	Total	63,335.9			50%						
	2007 FMP Assessment: The desirable and target levels have been achieved. **Trend Analysis Assessment Update:** n/a										
	3.2.4 Beaver Foraging Habitat Creation - planned shoreline harvest (for PO1, BW1, MW1, MW2)	ha									
	Area of WQ-2 AOC's within allocations within the noted FU's to be harvested to create beaver forage habitat	15.6	100% of planned area to be harvested	>90% of planned area to be harvested	Annual Reports 7 and 10						
	2007 FMP Assessment: Report at 7 & 10 Year AR **Trend Analysis Assessment Update:** As of the end of the 2012-2013 fiscal year, no harvest activity has occurred within WQ-2 AOC's to promote the creation of beaver foraging habitat. The new *Forest Management Guide for Conserving Biodiversity at the Stand and Site Level now* allows for more operational flexibility closer to shoreline areas, which should benefit achievement of targets for this indicator.										

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

						Management Strategy - Projections					
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
3. Social and Economic: To provide continuous and predictable harvest levels (area and volume) that, to the extent possible, meet the wood supply demands over the short-, medium-, and long-terms based on the 2006 Management Unit Contribution (MUC) by species group, contributing to Ontario's economy.	**3.3 Available, forecast and actual harvest volume, by species.**										
	3.3.1 actual harvest volume (m3) by species group										
	Spruce, pine (jack pine), fir poplar white birch other conifer (cedar, larch, hemlock)	4,590,492 1,877,628 683,715 75,413	actual harvest volumes equal to or exceed 100% of planned volumes for each	actual harvest volumes >90% of planned volumes for each species group	Annual Reports 7 and 10						
	2007 FMP Assessment: Report at 7 & 10 Year AR **Trend Analysis Assessment Update:** During the 2007-2013 period, only 24% (1,103,832 m3) of the planned merchantable spruce, jack pine and balsam fir has been harvested; only 5% (99,360 m3) of the planned merchantable poplar has been harvested; only 5% (14,382 m3) of the planned merchantable white birch has been harvested; only 11% (8,382 m3) of the planned merchantable other conifer has been harvested. With the poor market conditions, to-date, the desirable levels and targets are not on track to being achieved.										
	3.3.2 available harvest volume (m3) by species group (10 year)										
		SFMM -2007	MUC	@T1	@T1						
	Spruce, pine (jackpine), fir	4,560,000	100% of AHV	>90% of AHV	101%						
	poplar	1,640,000	100% of AHV	>90% of AHV	114%						
	white birch	445,420	100% of AHV	>90% of AHV	153%						
	other conifer (cerdar, larch)	34,670	100% of AHV	>90% of AHV	218%						
	2007 FMP Assessment: The desirable and target levels have been achieved. **Trend Analysis Assessment Update:** n/a										
	3.3.3 planned harvest volume (m3) by species group (5 year)										
		2007-2012			@T1						
	Spruce, pine (jackpine), fir	4,590,492.1			49%						
	poplar	1,877,627.5	50% of available	40-60% of available at T1	50%						
	white birch	683,714.6			48%						
	other conifer (cerdar, larch)	75,412.6			44%						
	2007 FMP Assessment: The target level has been acheived. The desirable level has not been reached due to the inbalance of the harvest by term. For all forest units the harvest in the first term is 49.8%. **Trend Analysis Assessment Update:** n/a										

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

						Management Strategy - Projections					
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
3. Social and Economic: To provide continuous and predictable harvest levels (area and volume) that, to the extent possible, meet the wood supply demands over the short-, medium-, and long-terms based on the 2006 Management Unit Contribution (MUC) by species group, contributing to Ontario's economy.	**3.4 Percent of forecast volume actually utilized by Mill.**										
	3.4.1 forecast wood utilization (m3) by mill	10 year			T1						
	Dubreuil Forest Products Ltd.- Dubreuilville (SPF)	4,560,000	100% of forecast vol	80%-120% of forecast volume	101%						
	Marathon Pulp Inc - Marathon (Bw)	445,420	100% of forecast vol	80%-120% of forecast volume	153%						
	Longlac Wood Industries - Longlac (Po)	420,000	100% of forecast vol	80%-120% of forecast volume	100%						
	Longlac Wood Industries - Longlac (Po)	229,120	100% of forecast vol	80%-120% of forecast volume	100%						
	MPI / DFPL (Po)	931,928	100% of forecast vol	80%-120% of forecast volume	100%						
	Terrace Bay Pulp Inc (Po)	165,000	100% of forecast vol	80%-120% of forecast volume	100%						
	Grant FP - Englehart (Po)	131,580	100% of forecast vol	80%-120% of forecast volume	100%						
	2007 FMP Assessment: The desirable level has been achieved. The target level was not acheived in the case of MPI with respect to birch volumes and in the case of MPI / LWI with respect to the poplar volume. **Trend Analysis Assessment Update:** During the 2007-2013 period the forest industry in Ontario experienced an unprecedented economic downturn. As such, only 2 mills forecasted to receive merchantable volume from the Big Pic Forest still remain in operation - Terrace Bay Pulp Inc. and Grant Forest Products. As of the end of the 2012-2013 fiscal year, targets for wood utilization for specific mills and species are not on track to being achieved. Terrace Bay Pulp Inc., now operating as AV Terrace Bay, has utilized <1% of its 10 year forecasted merchantable Poplar volume as of the end of the 2012-2013 fiscal year. Grant Forest Products, now operating as Georgia Pacific did not utilize any volume from the Big Pic Forest. Longlac Wood Industries waferboard and veneer utilized 5% and 7% of the 10 year forecasted merchantable Poplar volume respectively. Dubreuil Forest Products Ltd. and Marathon Pulp Inc. utilized conifer volume during the 2007-2013 period until each mill's respective closure. Dubreuil Forest Products Ltd. utilized 0.9% of the 10 year forecasted SPF volume. Biomass untilization is not included in this interim trend analysis of mill utilization. Marathon Pulp Inc. used only 2.5% of its white birch directive. Other open market mill destinations across northern Ontario, received 833,130 m3 of wood from the Big Pic Forest. For the facilities that have now closed, it is not possible for wood utilization targets to be achieved. However, the majority of the wood that was harvested in the 2007-2013 period was delivered to other mills, which presumably provided those facilities and communities with economic benefits.										

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

					Management Strategy - Projections						
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
4. Social and Economic: To ensure that the Managed Crown forest that is available over time is maintained to meet the long-term harvest levels (area) thus contributing to Ontario's economy.	4.1 Area of productive, managed crown forest available for timber production, in (ha) by forest unit	2007	@2017	@2017	@2017						
	BW1	11,808									
	LC1	15,370									
	MW1	19,176									
	MW2	76,135									
	PJ1	13,952									
	PJ2	18,665									
	PO1	66,079									
	SB1	137,373									
	SF1	47,072									
	SP1	82,756									
	Total	488,386	493,395	493,395	493,395						
	2007 FMP Assessment: Report at 7 & 10 Year ARs. **Trend Analysis Assessment Update:** The plan start area by forest unit is based on the initial landbase information and availability of forest area for management. The plan end area by forest unit is projected by the strategic model based on the planned 10 year harvest level, the amount of area transitioned to non-forest, and the area of non-forest rehabilitated to forest. As the actual harvest level is only 26% of planned as of the end of the 2012-2013 fiscal year, the area transitioned to non-forest, such as for forest access roads, will likely be less than projected, and the managed Crown forest that is available will likely be more than projected at the end of the plan term. As such, the target is anticipated to be achieved.										

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

					Management Strategy - Projections						
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
5. Social and Economic: To develop a consultation approach that will provide opportunities for Aboriginal, local communities, and the Local Citizens Committee (LCC) for input in plan development.	**5.1 Opportunities for involvement in plan development provided to aboriginal communities.**										
	5.1.1 Aboriginal Consultation										
	Each aboriginal community contacted at least 6 months prior to commencing public consultation and opportunities to be involved in the planning and implementation were discussed.		5 (i.e. 100%)	5 (i.e. 100%)	@ Invitation to Participate 5						
	2007 FMP Assessment: Targets have been met. All 5 Aboriginal Communities were contacted at least 6 months prior to the Invitation to Participate. **Trend Analysis Assessment Update:** n/a										
	Ongoing efforts to consult with aboriginal communities in the development of the FMP		5 (i.e. 100%)	5 (i.e. 100%)	@LTMD 5						
	2007 FMP Assessment: Targets have been met. All 5 Aboriginal Communities have been contacted on an ongoing basis throughout the planning process. **Trend Analysis Assessment Update:** n/a										
	5.1.2 Planning Team participation										
	# of meetings attended by aboriginal members		100%	75%	50%						
	2007 FMP Assessment: The desirable and target levels have not been met as a result of scheduling difficulties and competing priorities. **Trend Analysis Assessment Update:** n/a										
	5.1.3 Aboriginal values										
	Opportunities provided through requests at the appropriate stages		100%	100%	100%						
	Assessment: This target has been achieved. The District Manager provided opportunites to participate at all the appropriate stages. **Trend Analysis Assessment Update:** n/a										
	5.2 Local citizens committee's self-evaluation of its effectiveness in plan development.										
	5.2.1 number of individuals that believed the citizens committee met the following criteria Average Scores (1-10)										
	# informed		6+	6	9.2						
	# involved		6+	6	9.2						
	# influential		6+	6	8.3						
	# representative		6+	6	8.1						
	# functioning		6+	6	9.5						
	2007 FMP Assessment: A desirable level of greater than 6 was selected to reflect a better than moderate level of overall satisfaction by the LCC. A level of 6 was set as a target to reflect a moderate level of overall satisfaction by the LCC. Both the targets and desirable level were acheived. **Trend Analysis Assessment Update:** n/a										

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

						Management Strategy - Projections					
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
6. Silviculture: To ensure harvested lands are renewed through appropriate silviculture practices and meet the related regeneration standards.	**6.1 Percent of harvested forest assessed as free growing by forest unit**										
	BW1	458.5	100% of harvested areas assessed as FTG by term	>90% of harvested areas assessed as FTG by term	Annual Reports 7 and 10						
	LC1	348.0									
	MW1	795.9									
	MW2	5787.0									
	PJ1	79.4									
	PJ2	409.0									
	PO1	4987.0									
	SB1	1900.6									
	SF1	1276.6									
	SP1	3152.0									
	2007 FMP Assessment: This will be assessed at 7 & 10 Year ARs. The goal is to have 100% of harvested areas assessed as FG by term (see AR-16). However it is not reasonable to expect there would not be factors which result in an area not achieving FG, therefore the target has been set at >90% as FG by term. **Trend Analysis Assessment Update:** Based on the distribution of area by forest unit projected to be harvested and deemed FTG during the course of the 2007-2017 FMP, it is highly improbable that this objective could ever be achieved. Only the area harvested and regenerated to forest units with fast growing tree species (e.g. PJ1 & PO1) could, in theory, be harvested during the initial years of the 2007-2017 period, and reach a free growing condition within the same period. As such, this objective is not expected to be achieved. There has been no area harvested during the 2007-2013 period assessed as free growing. All area assessed as free-growing was harvested during previous forest management plans.										
	6.2 Area (ha) of Pre-commercial thinning										
	Number of hectares thinned	0 ha	>0 ha	>0ha @T1	Annual Reports 7 and 10						
	2007 FMP Assessment: This will be assessed at 7 & 10 Year ARs. The goal is to increase the level of PCT over the current 0 ha per year. **Trend Analysis Assessment Update:** To date, no area has been pre-commerically thinned.										
	6.3 AR measure of slash management activities (% of allocation)										
	% of area harvested assessed and managed under slash management plans	<50%	100%	>50%	Annual Reports 7 and 10						
	2007 FMP Assessment: Report at 7 & 10 Year AR **Trend Analysis Assessment Update:** As of the end of the 2012-2013 fiscal year, 16,152 ha have been harvested. Only 217 ha (1%) have been reported as being assessed and managed under slash management plans. Though possible to be achieved by the end of the current FMP, it is obviously not on track. Although this is a very poor curretn result, it does not necessarily mean that roadside logging debris in harvest areas has not been receiving treatment; it has not been formally reported. There is a considerable amount of volume (345,000 m3) being delivered to mills as biofibre, and there is use of hogging machines by some of the forest operators. Phase II of the 2007-2017 FMP includes a Roadside Debris Strategy (Section 8.3.5.1).										

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

					Management Strategy - Projections						
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
7. Provision of forest cover for those values that are dependent on the Crown forest: To ensure protection of natural resources, non-timber values and maintain a healthy forest ecosystem through the development and implementation of a compliance plan and the monitoring of operational prescriptions.	**7.1 Compliance with prescriptions for the protection of natural resource features, land uses, or values dependent on the forest**	Total of 2002-2003 and 2003-2004			Annual Reports 7 and 10						
	7.1.1 Percent of inspections in compliance	93%	100%	Protect >90% of values throughout plan							
	7.1.2 number of non-compliance incidences Minor Moderate Significant	 7 0 0	 0 0 0	 Not more than 3 annually 0 annually 0 annually							
	2007 FMP Assessment: This will be assessed at the 7 and 10 year Annual reports. The desirable level is 100%, however it is unrealistic to expect that there would never be an incident of non-compliance at some level of significance therefore the target has been set at >90%. **Trend Analysis Assessment Update:** *Compliance Reports are no longer categorized as minor, moderate or significant.* There have been 238 SFL related forest operations inspections during the 2007-2013 period, and to-date, the desirable level has not been achieved, but the target has been. There have been three reports prepared that indicate non-compliance with management practices that prevent, minimize or mitigate site damage (235 reports in compliance), resulting in 99% compliance. Two instances involved a minor area of timber harvesting outside of approved harvest block boundaries. A third instance involved an Ministry of Natural Resources-approved aerial herbicide application activity not being formally permitted by the Ministry of the Environment. These three incidences are discussed in detail in the text of this report.										
	7.2 Compliance with the prescriptions for the protection of resource based tourism values	Total of 2002-2003 and 2003-2004			Annual Reports 7 and 10						
	7.2.1 Percent of inspections in compliance	100%	100%	Protect >90% of values throughout plan							
	7.2.2 number of non-compliance incidences Minor Moderate Significant	 0 0 0	 0 0 0	 Not more than 1 annually 0 annually 0 annually							
	2007 FMP Assessment: This will be assessed at the 7 and 10 year Annual reports. The desirable level is 100%, however it is unrealistic to expect that there would never be an incident of non-compliance at some level of significance therefore the target has been set at >90%. **Trend Analysis Assessment Update:** *Compliance Reports are no longer categorized as minor, moderate or significant.* There have been 238 SFL related forest operations inspections during the 2007-2013 period. All (100%) are in compliance with prescriptions for the protection of resource based tourism values. As such, to-date, the desirable level and target has been achieved.										
	7.3 Compliance with Management practices that prevent, minimize or mitigate site damage	Total of 2002-2003 and 2003-2004			Annual Reports 7 and 10						
	7.3.1 percent of inspections in compliance	100%	100%	Protect >90% of values throughout plan							
	7.3.2 number of non-compliance incidences Minor Moderate Significant	 0 0 0	 0 0 0	 Not more than 1 annually 0 annually 0 annually							
	2007 FMP Assessment: This will be assessed at the 7 and 10 year Annual reports. The desirable level is 100%, however it is unrealistic to expect that there would never be an incident of non-compliance at some level of significance therefore the target has been set at >90%. **Trend Analysis Assessment Update:** *Compliance Reports are no longer categorized as minor, moderate or significant.* There have been 238 SFL related forest operations inspections during the 2007-2013 period. All (100%) are in compliance with management practices that prevent, minimize or mitigate site damage. As such, to-date, the desirable level and target has been achieved.										

2009-2014 BIG PIC FOREST INDEPENDENT FOREST AUDIT
TREND ANALYSIS REPORT

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

						Management Strategy - Projections					
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
7. Provision of forest cover for those values that are dependent on the Crown forest: To ensure protection of natural resources, non-timber values and maintain a healthy forest ecosystem through the development and implementation of a compliance plan and the monitoring of operational prescriptions.	**7.4 Compliance with prescriptions developed for the protection of water quality and fish habitat**	Total of 2002-2003 and 2003-2004			Annual Reports 7 and 10						
	7.4.1 percent of inspections in compliance	94%	100%	Protect >90% of values throughout plan							
	7.4.2 number of non-compliance incidences Minor Moderate Significant	 7 0 0	 0 0 0	 Not more than 3 annually 0 annually 0 annually							
	2007 FMP Assessment: This will be assessed at the 7 and 10 year Annual reports. The desirable level is 100%, however it is unrealistic to expect that there would never be an incident of non-compliance at some level of significance therefore the target has been set at >90%. **Trend Analysis Assessment Update:** *Compliance Reports are no longer categorized as minor, moderate or significant.* There were 238 forest operstions inspections; 237 (99%) were in compliance. To-date, there has been one non-compliance instance regarding water quality and fish habitat which occurred in 2008-2009. As described in this report, a water crossing was installed without approved sediment / erosion control in place. As such, the desirable level has not been achieved, but the target has been achieved.										
	7.5 Compliance with utilization standards	Total of 2002-2003 and 2003-2004			Annual Reports 7 and 10						
	7.5.1 percent of inspections in compliance	100%	100%	Protect >90% of values throughout plan							
	7.5.2 number of non-compliance incidences Minor Moderate Significant	 2 0 0	 0 0 0	 Not more than 1 annually 0 annually 0 annually							
	2007 FMP Assessment: This will be assessed at the 7 and 10 year Annual reports. The desirable level is 100%, however it is unrealistic to expect that there would never be an incident of non-compliance at some level of significance therefore the target has been set at >90%. **Trend Analysis Assessment Update:** *Compliance Reports are no longer categorized as minor, moderate or significant.* There have been 238 SFL related forest operations inspections during the 2007-2013 period. All (100%) are in compliance with utilization standards. As such, to-date, the desirable level and target has been achieved.										

AR-14: Assessment of Objective Acheivement

The following table provides a summary of objectives, indicators, desirable levels and targets for objectives with the assessment at the time of FMP production. Where possible, an assessment update is provided for this IFA Trend Analysis Report.

					Management Strategy - Projections						
Management Objective	**Indicator / Measure**	**Plan Start Level**	**Desirable Level**	**Target (how much, when)**	**Achievement at Target Year**	**Short (10 years) 2017**	**Medium (20 years) 2027**	**Medium (40 years) 2047**	**Medium (60 years) 2067**	**Medium (80 years) 2087**	**Long (100 years) 2107**
7. Provision of forest cover for those values that are dependent on the Crown forest: To ensure protection of natural resources, non-timber values and maintain a healthy forest ecosystem through the development and implementation of a compliance plan and the monitoring of operational prescriptions.	**7.6 Compliance with Aboriginal AOC prescriptions**	Total of 2002-2003 and 2003-2004			Annual Reports 7 and 10						
	7.6.1 percent of inspections in compliance	no inspections done	100%	Protect >90% of values throughout plan							
	7.6.2 number of non-compliance incidences Minor Moderate Significant	 0 0 0	 0 0 0	 Not more than 1 annually 0 annually 0 annually							
	2007 FMP Assessment: This will be assessed at the 7 and 10 year Annual reports. The desirable level is 100%, however it is unrealistic to expect that there would never be an incident of non-compliance at some level of significance therefore the target has been set at >90%. **Trend Analysis Assessment Update:** *Compliance Reports are no longer categorized as minor, moderate or significant*. There have been 238 SFL related forest operations inspections during the 2007-2013 period. All (100%) are in compliance with Aboriginal AOC prescriptions. As such, to-date, the desirable level and target has been achieved.										
	7.7 Non-compliance in forest operations inspections	Total of 2002-2003 and 2003-2004			Annual Reports 7 and 10						
	7.7.1 percent of inspections non-compliant	6%	0%	Protect >90% of values throughout plan							
	7.7.2 number of non-compliance incidences Minor Moderate Significant	 16 0 0	 0 0 0	 Not more than 8 annually 0 annually 0 annually							
	2007 FMP Assessment: This will be assessed at the 7 and 10 year Annual reports. The desirable level is 100%, however it is unrealistic to expect that there would never be an incident of non-compliance at some level of significance therefore the target has been set at >90%. **Trend Analysis Assessment Update:** *Compliance Reports are no longer categorized as minor, moderate or significant*. During the 2007-2013 period there were 238 forest operations inspections completed by the company and the MNR, of these four were non-compliant which is 2% of inspections. This is 98% in compliance and within the compliance target of > 90%. As such, to-date, the desirable level has not been achieved, but the target has been. There were two other reports (one in 2011-2012 and one in 2012-2013) that are classed as compliance "pending" related to harvest operations. Until these reports are closed and formalized, they are not considered as part of the compliance objective achievement results in Table AR-14.										