



Sudbury Forest Independent Forest Audit 2011 – 2016 Risk-Based Pilot Approach

Final Report



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TABLE OF CONTENTS

1	Executive Summary.....	iii
2	Table of Recommendations.....	1
3	Introduction.....	2
3.1	Audit Process.....	2
3.2	Management Unit Description.....	2
3.2.1	Location of the Sudbury Forest	2
4	Audit Findings.....	5
4.1	Commitment.....	5
4.2	Public Consultation and Aboriginal Involvement.....	5
4.2.1	LCC.....	5
4.2.2	Aboriginal Involvement.....	5
4.3	Forest Management Planning	6
4.3.1	Areas of Concern (AOC).....	6
4.3.2	Harvest.....	7
4.3.3	Silviculture.....	7
4.4	Plan Assessment and Implementation	8
4.4.1	Areas of Concern (AOC).....	8
4.4.2	Harvest.....	9
4.4.3	Silviculture.....	9
4.4.4	Access.....	11
4.5	System Support.....	12
4.6	Monitoring.....	13
4.6.1	Compliance	13
4.6.2	Silviculture.....	13
4.6.3	Annual Reporting	14
4.7	Achievement of Management Objectives and Sustainability.....	14
4.7.1	Achievement of Management Objectives – Trends Analysis.....	14
4.7.2	Forest Sustainability	16
4.8	Contractual Obligations.....	17
4.9	Conclusions and Final Recommendation.....	17

Appendix 1 – Recommendations/Best Practice.....	18
Appendix 2 – Management Objectives table	28
Appendix 3 – Contractual Obligations	34
Appendix 4 – Audit Process.....	37
Appendix 5 – List of Acronyms	43
Appendix 6 – Audit Team Members and Qualifications	45

List of Tables

Table 1. Table of Recommendations.....	1
Table 2. Planned vs. Actual activities during the audit period.	10
Table 3. 2011-2016 FTG summary table for the Sudbury Forest.	16
Table 4. Procedures audited by risk category.	38
Table 5. Sampling intensity for each forestry activity examined as part of the field site visits. .	40

List of Figures

Figure 1. Location of the Sudbury Forest.....	4
Figure 2. Photograph of aggregate pit AGP25 showing proximity to Halifax Road (truck parked on road).	12

1 EXECUTIVE SUMMARY

All Crown forests in Ontario must be audited at least every five years. The requirement for Independent Forest Audits (IFAs) arises from MNRF's Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario (2003). Regulation 160/04 of the Crown Forest Sustainability Act (S.O. 1994, c. 25) sets out the specific requirements for conducting the audits.

This report summarizes the results of the Sudbury Forest Independent Forest Audit conducted by KBM Resources Group. The audit covers planning and implementation activities conducted from April 1, 2011 to March 31, 2016. The audit assessed implementation of the last four years of the Phase I, 2010-2020 Forest Management Plan (FMP) and the planning and approval of the Phase II 2015-2020 FMP and its first year of implementation (2015-2016).

For this audit, the auditees are the Vermilion Forest Management Company Limited (VFM) and the Sudbury District Office of the Ministry of Natural Resources and Forestry (MNRF). Further, MNRF Northeast Region, corporate organizational units, overlapping licensees and contractors are considered auditees to the extent that forest management activities they carry out are also the subject of audit examination.

This audit is one of two pilot IFAs completed in 2016 using a risk-based approach and reporting format. Changes to the Independent Forest Audit Process and Protocol resulting from this approach include preparation of a management unit risk assessment as part of the audit process (see Appendix 4).

The audit team found that both VFM and the MNRF are fulfilling their roles and responsibilities. Forest communities and stakeholders are properly consulted. Aboriginal peoples are becoming more involved in the forest economy. The forest has been renewed at appropriate rates and with appropriate species. Harvest rates for some species are well below planned, thus some forest cover and structure objectives are not being met in the expected time frames. Wood supplies are being made available to meet social and economic objectives but market conditions preclude the ability to fully utilize these supplies.

Several areas worthy of improvement and six recommendations are provided as a result of this audit to address findings of non-conformity; VFM is the focus of two recommendations; one recommendation is directed jointly to VFM and the Sudbury District MNRF; and, three recommendations are given to Corporate MNRF.

Of immediate concern is remediation of forestry aggregate pit AGP25 that had recently been operated. The main concern is for public safety since the pit was immediately adjacent to the Halifax Road and had no safety barriers to prevent a vehicle from veering into the pit from the road. Several other conditions for aggregate pit operations were also not met. A recommendation was provided directing VFM to remedy this situation.

Other findings were as follows:

- VFM to begin documenting changes to Forest Operating Prescriptions

- VFM and MNRF Sudbury District to cooperate to strengthen their compliance programs
- Corporate MNRF enhance Declaration Order MNR-75 condition 56 reporting
- Corporate MNRF develop a long-term management approach for seed orchards and complete its review of seed management policy and genetics strategy in the province
- Corporate MNRF provide direction for consistent SEM audit and evaluation

Addressing these findings will improve forest management on the Sudbury Forest.

The audit team concludes that management of the Sudbury Forest was generally in compliance with the legislation, regulations and policies that were in effect during the term covered by the audit, and the Forest was managed in compliance with the terms and conditions of the Sustainable Forest Licence held by Vermillion Forest Management Company Limited. Forest sustainability is being achieved, as assessed through the Independent Forest Audit Process and Protocol. The audit team recommends the Minister extend the term of Sustainable Forest Licence 542442 for a further five years.

Peter Higgelke, R.P.F.



Laird Van Damme, R.P.F.



Co-lead auditors on behalf of the audit team

2 TABLE OF RECOMMENDATIONS

Table 1. Table of Recommendations

Recommendation on License Extension
The audit team concludes that management of the Sudbury Forest was generally in compliance with the legislation, regulations and policies that were in effect during the term covered by the audit, and the Forest was managed in compliance with the terms and conditions of the Sustainable Forest Licence held by Vermillion Forest Management Company Limited. Forest sustainability is being achieved, as assessed through the Independent Forest Audit Process and Protocol. The audit team recommends the Minister extend the term of Sustainable Forest Licence 542442 for a further five years.
Recommendations Directed to Vermilion Forest Management Company (VFM)
Recommendation 3: The audit team recommends Vermilion Forest Management immediately begin documenting FOP changes as required in the FMPM.
Recommendation 4: The audit team recommends that VFM and MNRF continue to cooperate to strengthen their compliance programs.
Recommendation 5: The audit team recommends that aggregate pit AGP25 be immediately remedied to mitigate the potential risks to public safety and to operate it in accordance with the required legal standards.
Recommendations Directed to District MNRF
Recommendation 4: The audit team recommends that VFM and MNRF continue to cooperate to strengthen their compliance programs.
Recommendations Directed to Corporate or Regional MNRF
Recommendation 1: The audit team recommends Corporate MNRF report annually on a community-by-community basis for each of the six points included in the negotiations targets outlined in condition 56 of Declaration Order MNR-75.
Recommendation 2: The audit team recommends Corporate MNRF develop a long-term management approach for seed orchards, including Lumsden Township and complete its review of seed management policy and genetics strategy in the province.
Recommendation 6: The audit team recommends that the Crown Forest and Lands Policy Branch of MNRF advise Regional Operations Division MNRF as to whether the Sudbury District should jointly develop an SEM audit and evaluation methodology with VFM that uses consistent measurement and sample design features, in advance of the 2020-2030 FMP.

3 INTRODUCTION

3.1 AUDIT PROCESS

Every publicly-owned forest management unit in Ontario must be audited by an independent audit team at least once every five years or at such later time as may be determined by the Minister of Natural Resources and Forestry. The requirement for independent forest audits (IFAs) arises from MNRF's Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario (2003). Regulation 160/04 of the Crown Forest Sustainability Act (S.O. 1994, c. 25) sets out the specific requirements for conducting the audits.

The 2016 Independent Forest Audit of the Sudbury Forest was conducted by KBM Resources Group (KBM) for the five-year term April 1, 2011 to March 31, 2016. The audit team consisted of Laird Van Damme, R.P.F., Peter Higgelke, R.P.F., Sarah Bros, R.P.F. and Mike Barten (see Appendix 6).

For this audit, the auditees are the Vermilion Forest Management Company Limited (VFM) and the Sudbury District Office of the Ministry of Natural Resources and Forestry (MNRF). Further, MNRF Northeast Region, corporate organizational units, overlapping licensees and contractors are considered auditees to the extent that forest management activities carried out by them are the subject of audit examination.

The audit assessed implementation of the last four years of the Phase I, 2010-2020 Forest Management Plan (FMP) and the planning and approval of the Phase II 2015-2020 FMP and its first year of implementation (2015-2016). This report provides a summary of the audit. Appendix 4 provides more detailed information about the audit process including the management unit risk assessment, field sampling for the audit, and a summary of consultation and input into the audit.

3.2 MANAGEMENT UNIT DESCRIPTION

The following description of the Forest is based primarily on the material included in the Phase I, 2010-2020 FMP for the Sudbury Forest. This information has been paraphrased for this audit report.

3.2.1 Location of the Sudbury Forest

The Sudbury Forest is in the Sudbury District of MNRF's Northeast Region, with small sections in the North Bay and Timmins Districts. The Forest is administered by the MNRF District in Sudbury, and is managed by VFM under the terms and conditions of the Sustainable Forest Licence (SFL). The Forest extends northward from Georgian Bay and the French River, to the boundary of Lady-Evelyn Smoothwater Provincial Park. It is bounded on the east by Lake Nipissing and on the west by the Town of Nairn Centre. The city of Sudbury is located near the middle of the Forest (see Figure 1).

The Sudbury Forest straddles the Boreal Forest Region to the north and the Great Lakes-St. Lawrence Forest Region to the south, with a large area of transition forest between. The Forest

comprises a total area of nearly 1.1 million ha of which 447,855 ha are Crown-managed production forest. The northern portion of the Forest is predominated by jack pine, black spruce, white birch and poplar. The south and central portion contains a significant component of white and red pine. Maple, yellow birch, white spruce, hemlock, cedar, larch, balsam fir, basswood, oak, white ash and black ash are also present.

The current Sudbury Forest originated through the combining of several separate management units (Killarney, Wanapitei, and Trout Lake). VFM manages the Sudbury Forest from its Sudbury office. At the time of this report, VFM was owned by the following eight shareholders, each of which has a share of the allowable harvest from the Forest:

- Gervais Forest Products
- EACOM Timber Corp
- Domtar Inc.
- Goulard Lumber (1971) Ltd.
- N'Swakamok Forestry Corporation
- Lahaie Lumber
- H&R Chartrand Lumber
- G.W. Sutherland Contracting Co. Ltd.

The Sudbury Forest is interspersed with a significant amount of private land (approximately 26% of its land base) and a complex pattern of mining claims. In addition to the City of Sudbury, the Forest contains numerous towns and Aboriginal communities. With a population base of more than 250,000 inhabitants, users of the forest for recreation, business and subsistence are extensive.

Human activities (logging, mining, human-caused forest fires and fire suppression) on the Sudbury Forest have caused considerable changes to its species composition with a substantial reduction in pine and increases in birch, maple and spruce prior to the introduction of the Crown Forest Sustainability Act (1994).



Figure 1. Location of the Sudbury Forest.

4 AUDIT FINDINGS

Discussion of findings is limited to the protocols that were the subject of the audit. This includes all mandatory procedures, plus those optional procedures found through the management unit risk assessment to warrant examination. The management unit risk assessment process, including a list of the optional procedures examined in this audit, is provided in Appendix 4.

4.1 COMMITMENT

The commitment principle is deemed to be met since the Sudbury Forest is certified under the Forest Stewardship Council (FSC) certification standard. This is in accordance with the IFAPP.

4.2 PUBLIC CONSULTATION AND ABORIGINAL INVOLVEMENT

4.2.1 Local Citizens Committee

The Sudbury District Local Citizens Committee (SDLCC or LCC in this report) makes recommendations on activities on the Sudbury Forest. This is a long-standing and very active committee.

Membership represented a range and balance of interests and is regularly reviewed by MNRF who, when vacancies exist, makes attempts to fill these positions with appropriate stakeholders. Aboriginal stakeholders are now represented by one member, after years of efforts to encourage representation.

Through interviews with the District Manager, the MNRF representative on the SDLCC and seven members of the SDLCC, it was determined that the SDLCC effectively met its purpose during the audit term.

The audit team acknowledges the level of involvement and participation of the SDLCC throughout the audit term. It is an example of a highly functioning and effective LCC that engages many, and often divergent, viewpoints at the table.

4.2.2 Aboriginal Involvement

Representation of Aboriginal communities was achieved in the forest management planning process. Dokis First Nation and Wikwemikong Unceded First Nation had representatives on the planning team.

As a condition (#56) of the Environmental Assessment Declaration Order MNRF-75, MNR's District Managers shall conduct negotiations at the local level with Aboriginal peoples whose communities are situated in a management unit, to identify and implement ways of achieving a more equal participation by Aboriginal peoples in the benefits provided through forest management planning. "MNR shall report on the progress of these on-going negotiations district-by-district in the Provincial Annual Report on Forest Management that will be submitted to the Legislature."

These negotiations will include, but are not limited to, the following matters:

1. providing job opportunities and income associated with forest and mill operations in the vicinity of Aboriginal communities;
2. supplying wood to wood processing facilities such as sawmills in Aboriginal communities;
3. facilitation of Aboriginal third-party licence negotiations with existing licensees where opportunities exist;
4. providing forest resource licences to Aboriginal people where unallocated Crown timber exists close to reserves;
5. development of programs to provide jobs, training and income for Aboriginal people in forest management operations through joint projects with Aboriginal Affairs and Northern Development Canada; and
6. other forest resources that may be affected by forest management or which can be addressed in the forest management planning process.”

Three of these reports generated by the District within the audit term were reviewed by the audit team and found to be lacking in detail related to the above points. There are significant gaps in information regarding negotiations with Aboriginal communities. Although the Declaration Order does not require annual reports, the IFAPP directs the audit team to examine annual reports.

The audit team could not determine the level of progress in these negotiations. Reporting on a community-by-community level for each of the six points within condition 56 MOECC would help better track progress. To address the noted deficiencies in the reports, the following recommendation is made:

Recommendation 1: The audit team recommends Corporate MNRF report annually on a community-by-community basis for each of the six points included in the negotiations targets outlined in condition 56 of Declaration Order MNR-75.

4.3 FOREST MANAGEMENT PLANNING

The Year Three Annual Report suggested that the long-term management direction (LTMD) was valid and operations were consistently in line with planned operations, notwithstanding lower than planned harvest levels to proceed to the Phase II forest management plan. The forest resources inventory is quite dated (1989) but has been updated and proved sufficient to enable proper planning. A new inventory will be ready for the next plan.

4.3.1 Areas of Concern

Since the approval of the Phase I FMP, new guidelines and technical briefings were introduced for forest management planning (e.g. The Forest Management Guide for Conserving Biodiversity at the Stand and Site Level, and Regional Benchmark for the Development of Lake Trout Prescriptions in Forest Management Plans). As well, updated values and species at risk information were available to support the development of the Phase II FMP.

The Phase II planning team decided to update the Area of Concern (AOC) prescriptions for the remainder of the Phase I Plan and thereby permit their rollover into the Phase II Plan. This would provide a consistent suite of prescriptions for both planning and implementation

purposes. A complete listing of AOC changes was provided in the Plan including AOCs that were added, updated, replaced, removed or have become a condition on regular operations.

4.3.2 Harvest

Operating areas that were unharvested in Phase I were rescheduled for harvest in Phase II. Additional operating areas were selected for harvest to meet the forest composition and structure objectives of the currently approved FMP. Operational planning for the Phase II harvest was completed in a manner consistent with the planning requirements identified in the Forest Management Planning Manual for Ontario's Crown Forests (FMPM) 2009.

The Annual Work Schedules (AWSs) were completed on time and followed the planning manual requirements. As operations commenced during the audit term amendments and revisions were required and properly documented. These amendments appeared reasonable given the operating conditions found within the forest.

4.3.3 Silviculture

Two new Silviculture Ground Rules (SGRs) were amended to the Phase I FMP and remained for Phase II operations. Both new SGRs are for PWUS and allow for additional tending options to meet the expectation of a higher white pine component at Free To Grow (FTG) as described in each SGR. Phase II silviculture planning considered results from the Year Ten and Year Three Annual Reports in developing renewal and expenditure forecasts on the forest. The planned operations for silviculture were determined by applying the suite of silvicultural treatments (extensive, basic, intensive) by forest unit across the five-year planned harvest allocation for Phase II. These treatments were then reviewed to ensure the planned silviculture is consistent with the LTMD.

A total of 42,236 ha were planned for renewal: 19,185 ha (65.6%) natural regeneration and 10,058 ha (34.4%) artificial regeneration; 12,155 ha site preparation (mechanical, chemical & prescribed burning) and 1,855 ha supplemental planting to augment natural regeneration. Planned tending operations were forecast on 16,822 ha of renewal as well as 200 ha of tree improvement.

Planned renewal support, revenue and expenditures were found to be sufficient to meet planned silviculture operations during the Phase II FMP.

The Sudbury Forest has one inactive seed orchard (Lumsden) and two family test sites (Lumsden Township and Street Township) within its boundaries. VFM met with the previous orchard manager and a representative from the Northeast Seed Management Association (NESMA) in 2014 to determine if the Lumsden orchard could be salvaged and if there was any interest in managing it. Due to the uncertainty of the tree improvement program in the province both organizations declined. When asked about the status of the two family test sites, auditors were told no work has been done on either site during the audit period and none will be undertaken due to the uncertainty of the tree improvement program in the province.

Discussions were held with various levels of government regarding seed and forest genetics management in the region and province. The last provincial genetics strategy document is dated 1987. The policy on seed management is dated 2010. The government is currently

reviewing and updating the genetics strategy and seed management policy. The following recommendation is given to underscore the need for MNRF to update its policies/strategies regarding seed and forest genetics management in a timely manner.

Recommendation 2: The audit team recommends Corporate MNRF develop a long-term management approach for seed orchards, including Lumsden Township and complete its review of seed management policy and genetics strategy in the province.

Forest Operations Prescriptions (FOPs) are developed as required and silviculture treatments for both forest regions found on the Sudbury Forest are adjusted based on ground verification at the appropriate stage of plan implementation. There were no revisions or changes to FOPs for any of the five Annual Work Schedules prepared during the audit period. An error in one of the audit field visit maps revealed that VFM is not tracking FOP changes regularly as specified in the FMPM (Part D, 3.5.2); instead waiting until FTG to update the FOP in the GIS database.

Recommendation 3 is issued to VFM to record FOP changes annually as required in the FMPM. Additionally, the FMPM requires VFM to share any changes to SGRs with MNRF. The auditors suggest that VFM provide any changes to SGRs or FOPs to MNRF when they occur, or at the very least on an annual basis.

Recommendation 3: The audit team recommends Vermilion Forest Management immediately begin documenting forest operations prescription (FOPs) changes as required in the FMPM.

4.4 PLAN ASSESSMENT AND IMPLEMENTATION

4.4.1 Areas of Concern

A number of AOCs were examined in the field. The target values (e.g. cold water fisheries) were found to have been afforded sufficient protection to maintain their integrity (i.e. RSA21 – Trout Lake AOC; viewed from the air). AOC boundaries were well-marked to ensure visibility to equipment operators involved in the harvesting operations. In one instance a difference in interpretation of a modified harvest layout along an AOC was viewed. MNRF provided remediation measures, which have been carried out. The intent of the AOC was to provide a barrier to viewing the harvest from an adjacent road - no environmental or wildlife concerns were affected.

The updated AOC for Blanding's turtle habitat (AOC identifier BT) has caused significant impact to forest operations on the south part of the Sudbury Forest. This direction as provided by the Stand and Site Guide blocks the use of operations that may cause injury to a turtle within 150m of aquatic habitats between May 1 and September 30 (active season) and within 300m of aquatic habitats between June 1 and September 30 (nesting period). On the south part of the Sudbury Forest, the number and distribution of suitable aquatic habitats has caused some licencees to halt operations from May 1 to September 30 in this part of the Forest.

Stand and Site Guide direction for Blanding's turtle was revised on January 21, 2016, to reflect a less conservative approach for protecting its habitat from forestry operations. An amendment

to the 2010-2020 FMP (Amendment 2010-031) was developed to update the Plan AOC to match this provincial direction.

4.4.2 Harvest

Harvested areas were below planned levels due to market conditions and other operational constraints. This has been a persistent problem in Ontario and the Sudbury Forest is no exception. Evidence collected during the audit suggests that VFM is proactively working with shareholders and stakeholders to increase harvest levels. Some cover types dominated by spruce and pine have harvest levels more closely aligned with planned levels, due to favourable markets and proximity of mills that use these species. The situation does affect the extent to which plan objectives are being met (see Appendix 2).

Although two licensees were successful in wood supply competitions to increase their mill capacity they have yet to receive wood supply agreements. MNRF is currently engaged in a tenure modernization process, which includes, among other objectives, improved use of the available wood supply across the province. Ontario's harvest costs remain relatively high compared to other North American jurisdictions due to terrain, wood quality and other operational constraints. This creates a challenge in attracting new investors.

The harvest operations viewed by the audit team were very well executed. The uniform shelterwood harvest followed prescribed tree cutting prescriptions and there was very little damage to residual stems. All aspects of the stand and site guides were properly implemented to protect soil and water values on clear cut and partially cut stands. Operational control from site supervisors and boundary marking ensured other values were protected.

There were minor problems with excessive landing areas on one site. Some wasteful practices were noted on two sites. Right-of-way widths exceeded prescriptions on two sites. In several instances these were not reported; hence, the audit team recommends the MNRF and VFRM continue work in strengthening their compliance programs (Appendix 1).

Recommendation 4: The audit team recommends that VFM and MNRF continue to cooperate to strengthen their compliance programs.

4.4.3 Silviculture

Table 2 shows the level of activities conducted versus planned for Phase I and the first year of Phase II (2015-2016) covering the audit period. The table also allows comparison of actual harvest levels to actual regeneration levels.

Table 2. Planned vs. Actual activities during the audit period.

Renewal Activities	Planned (ha)			Actual (ha)			Total (%)
	2011-15	2015-16	Total	2011-15	2015-16	Total	
Natural Regeneration	20,212	2,262	22,474	3,328	1,108	4,436	20%
Planting	9,056	2,332	11,388	4,244	1,017	5,261	46%
Seeding + Scarification	240	60	300	140	0	140	47%
Total Regeneration	29,508	4,654	34,162	7,712	2,215	9,837	29%
Site Preparation (mechanical)	3,784	862	4,646	2,164	787	2,951	64%
Site Preparation (chemical)	9,824	1,472	8,296	702	292	994	12%
Site Preparation (prescribed burn, slash piles)	428	97	5250	0	0	0	0%
Tending (cleaning)	14,328	3,325	17,653	6,055	2,478	8,533	48%
Spacing, pre-commercial thinning, improvement cut (even-aged*)	160	40	200	0	0	0	0%
Spacing, pre-commercial thinning, improvement cut (uneven-aged**)	0	0	0	0	0	0	-
Harvest ***	30,410	6,527	36,937	11,189	2,185	13,374	36%

Notes: * even-aged includes clearcut & shelterwood

** uneven-aged includes selection

*** figures not yet reported in AR and does not include carryover from Phase I

Figures are from AR tables and AR-9_IFA_2016Fina01

The figures presented in Table 2 show there were 13,374 ha depleted and 9,837 ha treated during the audit term. The auditors conclude that renewal efforts are keeping pace with harvesting and the silviculture observed in the field was successful, with minor exceptions where natural regeneration was not present as expected. Follow-up treatments will be required in these areas to meet the silviculture standards and the company has indicated they will be carrying out surveys of these areas to determine a course of action. The actual area tended compared to planned is low for Phase I but increases considerably in Phase II.

Based on field observations, the auditors conclude that the tending treatments were generally appropriate and effective. VFM utilized two herbicides, during the audit period, specific to the target competition: Vision (glyphosate) is used in clearcuts primarily to control boreal species (poplar and birch) while Garlon (Triclopyr) is used in white pine shelterwoods to control soft maple. The use of Garlon has helped VFM regenerate PWUS stands back to PWUS. This issue was the subject of a recommendation in the 2011 IFA.

A Specified Procedures Audit (SPA) was completed for the 2014-2015 operating year and the audit sample for that year confirms that the maps associated with invoices to the Forest Renewal Trust Fund are reflective of the areas treated.

During the helicopter field day, the auditors noted several patches of damage across the Sudbury Forest due to both Jack Pine and Spruce budworm. VFM confirmed there were isolated spruce budworm occurrences but that no outbreaks of sufficient magnitude had been brought to the attention of VFM.

4.4.4 Access

The field portion of the audit included a review of road construction and maintenance activities, water crossing installation and aggregate pit operations. Reasonable care and attention was found to have been given to road construction and water crossing installations. Several water crossing removals were viewed and found to have been given care during their decommissioning and rehabilitation (e.g. Stop 1: WX105 – bridge removal at Surgeon River; WX105 - culvert removal).

Road construction within AOCs was examined and generally found to have been well done. In one case where the water crossing was located at the bottom of a road grade, the operators made special efforts to ensure that runoff would be directed off the road surface and into the forest.

A number of aggregate pits were examined. Most pits followed direction provided in the FMP with the exception of aggregate pit AGP25, examined as part of Stop 19. This pit contravened several conditions provided for aggregate pit operations. Further, this pit was located immediately adjacent to the Halifax Road without any deterrent to prevent vehicles from driving into the pit (see Figure 2). This, in the opinion of the audit team, represented a potential risk to public safety. Therefore, the following recommendation is provided.

Recommendation 5: The audit team recommends that aggregate pit AGP25 be immediately remedied to mitigate the potential risks to public safety and to operate it in accordance with the required legal standards.



Figure 2. Photograph of aggregate pit AGP25 showing proximity to Halifax Road (truck parked on road).

4.5 SYSTEM SUPPORT

VFM was deemed in compliance with the System Support/Human Resources principle since the Sudbury Forest is certified under the Forest Stewardship Council certification standard. This is in accordance with the IFAPP.

Noteworthy for this audit was the creation of the “Guide to Best Management Practices for Logging Contractors” by N’Swakamok for use by its operators in September 2016. This shareholder independently created this handbook to address potential compliance issues in operations under its licence on the Sudbury Forest. VFM is currently in the process of creating its own BMP manual for use by all operators on the forest. While not mandatory, this will increase the level of awareness and effectiveness of its training for subcontractors.

4.6 MONITORING

4.6.1 Compliance

Compliance reporting on the Sudbury Forest experienced some challenges during the audit period. Staffing changes at VFM resulted in low numbers of compliance inspections and reports being completed in 2013-2014. MNRF has similarly incurred compliance inspection challenges primarily because of staff turnover and the MNRF corporate transformation process that occurred during the audit period. The Sudbury District MNRF is meeting this challenge through staffing replacements and compliance training. Staffing replacements and accompanying training have now largely been completed for both organizations, leading the audit team to conclude that this challenge has been overcome.

A review of compliance reporting for the audit period showed that the number of “not in compliance” inspection reports peaked in 2012-2013. Efforts by VFM to reduce “not in compliance” reports have been ongoing, and results have been positive as verified in the field by the audit team.

4.6.2 Silviculture

During the audit period, monitoring was carried at both the pre- and post-harvest stage depending on the silvicultural system (clearcut or partial cutting). Additionally, visual surveys were carried out before and after each treatment to evaluate treatment effectiveness and if any changes to prescriptions (SGRs) were required. Shelterwood and selection silvicultural systems are frequently intermixed on the Sudbury Forest resulting in regular changes from plan to implementation.

A recommendation in the 2011 IFA directed VFM to address FTG backlog. During the first years of the audit period the company completed 9,447 ha of FTG surveys. In the last plan period (2005-2009) only 132 ha were surveyed. Over the past five plan periods VFM has surveyed an average of 4,798 ha for FTG. The auditors are confident that VFM has fully addressed the 2011 recommendation.

A recommendation from the 2011 IFA directed VFM to address the backlog of XYZ lands. The XYZ lands are a classification system for forest renewal liabilities from the period prior to the SFL signing date. During this audit, approximately 6% (1,954 ha) is remaining to be assessed as Free to Grow or requiring additional treatment. The company has confirmed this area is comprised of slivers and small isolated areas that will be captured in the new e-FRI. The auditors are satisfied that VFM have completed its XYZ obligation on the Sudbury Forest.

Over the period of the audit, the District MNRF carried out Silvicultural Effectiveness Monitoring (SEM) surveys on approximately 1,200 ha of FTG (10%) submitted by VFM for 2009-2014. The SEM is part of MNRF Core Task requirements. The auditors found the results of MNRF ground-based survey did not always agree with the aerial surveyed FTG results reported by the company. This difference in survey methodology and associated differences in results is a common complaint across the province but the auditors found it particularly noticeable on the Sudbury Forest. The following recommendation is provided to address this finding:

Recommendation 6: The audit team recommends that the Crown Forest and Lands Policy Branch of MNRF advise Regional Operations Division MNRF as to whether the Sudbury District should jointly develop an SEM audit and evaluation methodology with VFM that uses consistent measurement and sample design features, in advance of the 2020-2030 FMP.

4.6.3 Annual Reporting

Annual reporting, including the electronic shape files received to determine sample sites, matched the field operations viewed by the audit team during the field audit. MNRF reviewed annual report and annual work schedule submissions and provided written comments to VFM. The reports were well written and met FMPM and Forest Information Manual (FIM) requirements. Progress towards implementation and deviation from FMP targets was appropriately tracked in the annual reports. A review of circumstances that have affected or are expected to affect lower than planned harvested area such as poor market conditions was also discussed.

4.7 ACHIEVEMENT OF MANAGEMENT OBJECTIVES AND SUSTAINABILITY

4.7.1 Achievement of Management Objectives – Trends Analysis

VFM prepared a Trend Analysis Report (TAR) following direction provided in the 2009 FMPM. While FMPM direction requires that the TAR include the current as well as the previous three plans, VFM included one additional plan (1990-1995).

The TAR provides the reader with an understanding of historically significant events that impacted trends. Important points included:

- An administrative transfer of 48,155 ha from the Spanish Forest;
- Utilization of statistically rigorous yield curves show with some minor exceptions that expected peak volumes are greater and that forest stands hold the volume longer than the previously used Plonski yield estimates; and,
- Reduced volume utilization during times of depressed markets.

Underutilization of planned harvest areas and volumes is a long-standing concern. Should the trend continue, objectives related to economic and social objective targets will be less than expected. Forest diversity objectives will take longer than expected to achieve the desired target levels. This is not uncommon in Ontario where industrial demand for forest products often does not match the allowable harvest level. Appendix 2 provides a detailed assessment of objective achievement.

Renewal targets were also underachieved but are aligned with harvest levels. Site preparation was increased in response to FTG results with lower than anticipated stocking in jack pine intensive renewal areas. Aerial tending numbers also were in line with harvest. VFM has changed from glyphosate products to triclopyr for white pine tending to reduce damage to crop trees with positive results reported by VFM and confirmed by the audit team.

Difficulties in tracking harvest and regeneration due to changing forest units over the period of the trend analysis is noted. To provide a consistent base for comparison, the author provided

“...a summary of the forest condition by working group – a common denominator between each planning land base.” This analysis provided evidence to show trends that were consistent with objectives of past FMPs, including:

- increases in red pine, white pine and oak. This is consistent with past plan objectives that focussed on restoration of species thought more abundant in pre-industrial forest condition;
- increases in areas dominated by jack pine and decreases in areas dominated by balsam fir.

Table 3 provides a summary of FTG results on the Sudbury Forest during the audit period. While regeneration success (FTG survey results show that regeneration meets standards set for height and stocking) is high (100%), silviculture success (FTG survey results show that regeneration meets standards set for height, stocking and the desired FU) was achieved on only 39% of the area (3,291 of 8,498 ha).

The following factors temper this underachievement:

- The ‘Failures’ in BW are under the Bw-BwE SGR (extensive). The majority (~75%) are moving towards PO FU with the remainder moving to assorted hardwood leading FUs. This is in line with modelling assumptions and hence will not compromise plan objectives.
- 95% of the ‘Failures’ in the MW1 FU are for extensive SGR’s (MW1-MW1 E & PJSB-MW1 E). Nearly 70% are moving towards PO or BW FU. This is in line with modelling assumptions and hence will not compromise plan objectives.
- In the PJSB FU 95% of the ‘Failures’ are moving towards PJ FU. This is in line with modelling assumptions and hence will not compromise plan objectives.
- PR failures are trending toward PWST. This is likely an FRI issue as well as SGR’s not being changed (see Appendix 1, Recommendation 3).
- The SGRs define “target” and “acceptable” FUs which, when combined, lead to an overall silvicultural success of 78%. This performance is consistent with the audit team’s observations in the field but not always with MNRF SEM survey results (see Appendix 1, Recommendation 6).

Table 3. 2011-2016 FTG summary table for the Sudbury Forest.

Forest Unit	Forest Unit Description	FTG Results 2011-2016 (ha)			Percent	
		Silviculture Success	Regeneration Success	NSR	Silviculture Success	Regeneration Success
BW	White Birch, Hardwood Mix	550.6	2187.5	0	25%	100%
HDSEL	Tolerant Hardwood Selection	0	0	0	-	-
HDUS	Tolerant Hardwood Uniform Shelterwood	0	0	0	-	-
MW1	Mixedwood Dry	133.4	966.9	0	14%	100%
MW2	Mixedwood Moist (Rich)	204.5	359	0	57%	100%
PJ	Jack Pine	968	1260.6	0	77%	100%
PJSB	Jack Pine Upland Black Spruce Mix	487.7	2002.4	0	24%	100%
PO	Poplar	747.9	981.5	0	76%	100%
PR	Red Pine	0	0	0	-	-
PWST	White Pine Seed Tree	90.7	314.4	0	29%	100%
PWUS	White Pine Uniform Shelterwood	25.3	25.3	0	-	-
SF	Spruce/Fir	83.4	400.7	0	21%	100%
Total		3291.5	8498.3	0	39%	100%

In conclusion, the TAR describes conditions and trends consistent with the audit team's observations in the field, document reviews and interviews with management.

4.7.2 Forest Sustainability

The Sudbury Forest was generally in compliance with the legislation, regulations and policies that were in effect during the term covered by the audit, and the Forest was managed in compliance with the terms and conditions of the Sustainable Forest Licence held by VFM. Forest sustainability is being achieved, as assessed through the Independent Forest Audit Process and Protocol Contractual Obligations.

Forest sustainability is also measured by criteria and indicators (C&I) developed by the Canadian Council of Forest Ministers. These C&I are used in Ontario's forest management planning process and are the basis for many objectives developed in the approved forest management plan. The audit team concludes that the forest is being managed sustainably by these measures, with the exceptions as noted in Appendix 2 related to market-driven lower than planned utilization of available volumes.

Forest sustainability is supported by three pillars consisting of operations that are socially acceptable, economically feasible and ecologically viable. Forest operations were seen to be consistent with these pillars of forest sustainability.

4.8 CONTRACTUAL OBLIGATIONS

VFM met all contractual obligations under its Sustainable Forest License with minor variances noted as follows:

- There was a small amount (\$1,428.28) of Forestry Futures Trust and Crown dues were found to be in arrears. This amount was not deemed to be material in significance by the audit team.
- VFM implemented its compliance plan with minor exceptions as noted in Appendix 1 where a small number of non-compliant observations made by the audit team were not identified in VFM and/or MNRF compliance reports.
- Silviculture standards and assessment program obligations were met, with minor exceptions as noted in Appendix 1. VFM and MNRF use different sampling methods sometimes leading to different conclusions related to silvicultural success.

Appendix 3 provides a more detailed assessment of the achievement of contractual obligations.

4.9 CONCLUSIONS AND FINAL RECOMMENDATION

The audit team concludes that management of the Sudbury Forest was generally in compliance with the legislation, regulations and policies that were in effect during the term covered by the audit, and that the Forest was managed in compliance with the terms and conditions of the Sustainable Forest Licence held by Vermillion Forest Management Company Limited. Forest sustainability is being achieved, as assessed through the Independent Forest Audit Process and Protocol. The audit team recommends the Minister extend the term of Sustainable Forest Licence 542442 for a further five years.

APPENDIX 1 – RECOMMENDATIONS/BEST PRACTICE

Recommendation #1
<p>Principle 2: Public Consultation and Aboriginal Involvement.</p> <p>Criterion 2.5.2: Participation of Aboriginal peoples in the benefits provided through forest management planning</p> <p>Procedure 1: Review whether Aboriginal peoples were provided with, and whether they availed themselves, of opportunities to achieve more equal participation in the benefits provided through forest management planning and assess the results. Include the following</p> <ul style="list-style-type: none"> • interviews with MNRF District Manager, Aboriginal community leaders • whether there were any negotiations with Aboriginal communities at the district level relevant to the applicable Environmental Assessment condition and whether the management unit was involved • assess the results of negotiations including opportunities offered and opportunities that were implemented examine whether the actual results have been appropriately reflected in the annual district condition 34 (formerly Term & Condition 77) reports
<p>Background Information and Summary of Evidence and Discussion: The shareholder group of VFM includes N'Swakamok Forestry Corporation, a partnership of five local First Nations. This partnership includes Wahnapiatae First Nation, Henvey Inlet First Nation, Wikwemikong Unceded Reserve, Whitefish Lake First Nation and Dokis First Nation. N'Swakamok holds licence to harvest timber on the Sudbury Forest which serves to provide opportunities to the First Nations.</p> <p>Evidence was not found of other negotiations with Aboriginal communities on the Sudbury Forest to develop opportunities.</p> <p>Two annual district condition 34 reports were provided for the audit. In 2015, Declaration Order MNR-75 condition 56 reporting essentially replaced the condition 34 reports. One district condition 56 report was provided for this audit.</p> <p>The reports were found to be lacking in detail with significant gaps in providing information regarding negotiations with Aboriginal communities. These reports provide the base of a five-year reporting requirement to the MOECC and the public.</p>
<p>Discussion: The information provided in the annual reports regarding negotiations with Aboriginal communities should provide sufficient detail to enable an assessment of progress to be developed. Reporting on a community-by-community level for each of the six points within the condition would facilitate the development of comprehensive reporting for the MOECC and the public as well as providing the information required as part of the IFA process.</p>
<p>Conclusion: These reports form the base for five-year reporting for the MOECC and the public. As well they provide information important to the IFA process as required by the IFAPP. In both cases, detailed information would ensure that all relevant information is included.</p>
<p>Recommendation 1: The audit team recommends Corporate MNRF report annually on a community-by-community basis for each of the six points included in the negotiations targets outlined in condition 56 of Declaration Order MNR-75.</p>

Recommendation #2

Principle 3: Forest Management Planning.

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

Procedure 2: Assess whether the renewal support requirements for planned operations:

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

Background Information and Summary of Evidence and Discussion:

The Sudbury Forest has a Jack Pine seed orchard (Lumsden Township) within its license boundaries. The seed orchard established in the 1980's by MNRF, to service a variety of agencies, has not been managed for some time. Additionally, there are also a family test and progeny test sites on the Forest.

There is funding being provided through Forestry Futures as interim funding for two years (2015 and 2016) that allows for monitoring the health of the trees and cone production at active seed orchards. Additionally, the funding provides for advice through the NESMA.

In 2014, VFM arranged a site visit to the orchard with previous managers of the orchard (College Boreal) and NESMA to discuss whether the seed orchard could be salvaged. At that time VFM indicated interest in seed from the orchard but could not put up money for the cone collection. Both College Boreal and NESMA could not agree to take on the management of the seed orchard without a commitment of money from the SFL or MNRF. Additionally, two small (400 x 400 m) family testing sites at Lumsden and Street Township are "in limbo".

More broadly in Ontario, forest genetics and seed production strategies have received little attention or resources from MNRF for at least a decade or more. There is no longer a provincial geneticist position within MNRF and, currently the Northeast Region position is vacant. The audit team was informed that Corporate MNRF is reviewing the outdated policy (1987) on seed management and genetics but there is little communication with seed orchard managers, the District or SFLs.

Discussion: MNRF spent a lot of time and money to develop the Lumsden Township seed orchard. Interviews with District staff indicate they are "out of the loop" with respect to tree improvement and forest genetics direction. Interviews with Corporate MNRF confirm the policy on seed management (2010) and the genetics strategy are being reviewed. The lack of a current provincial policy on forest genetics and seed management and lack of direction on the current tree improvement program for managing seed orchards and other programs puts at risk the previous investments made by the Crown, the tree improvement organizations and the forest industry, such as the Lumsden Township orchard. The absence of staff in key positions to provide advice and direction to SFLs and seed orchard managers is of concern to the auditors. Additionally, tree improvement programs add value by providing information useful for climate change adaptation/mitigation strategies.

Conclusion: The Lumsden Township seed orchard is representative of the lack of direction or general guidance on forest genetic resource management in the province. For Lumsden Township it is unclear to all parties involved who is responsible for seed orchard management and who pays. Also, many other tree improvement programs (i.e. family testing sites) have an

uncertain future. The following recommendation is given to underscore the need to update MNRF's policies/strategies regarding seed and forest genetics in a timely manner.

Recommendation 2: The audit team recommends Corporate MNRF develop a long-term management approach for seed orchards, including Lumsden Township and complete its review of seed management policy and genetics strategy in the province.

Recommendation #3

Principle 3: Forest Management Planning.

Criteria 3.14.3: Forest Operation Prescriptions (FOPs)

Procedure 2. Determine whether any additions or changes during the year have been conducted in accordance with the applicable FMPM (i.e. appended to the AWS for operations under the 2004 FMPM and certified and the documentation maintained by the sustainable forest licensee for operations under the 2009 FMPM) and whether additions or changes are consistent with the SGRs and applicable FMPM.

Background Information and Summary of Evidence and Discussion:

The FMPM requires SFLs to maintain records of changes to forest operations prescriptions (FOPs) and, to provide a copy of any changes to FOPs to MNRF. VFM has a very robust silviculture program and staff spend considerable time developing silvicultural prescriptions (FOPs). However, the SFL admitted they do not formally track FOP changes until the FTG stage and, MNRF indicated they have not received a summary of FOP changes during the audit period. Both actions are contrary to the FMPM and can result in recording and/or reporting errors.

Field observations confirm that treatments are appropriate for the sites viewed during the audit but the treatment does not always agree with the SGR indicated on the map. As an example, one IFA site visit map for Stop #2 indicated one stand as being natural regeneration to Poplar but also showed it had been tended with herbicide. Field verification showed abundant natural jack pine and spruce regeneration present and it had been sprayed. The auditors agreed the herbicide treatment was appropriate but the FOP had not been updated to reflect the change in management direction from Poplar to conifer. Furthermore, these changes in management were not shared with MNRF as confirmed in interviews with District staff.

Discussion: VFM carries out pre-harvest surveys in partial cut systems to determine the FOP. In clearcut harvest systems the FOP is determined initially using imagery to confirm the forest unit. The SGR is prescribed based on past treatments and the default or preferred treatment as described in the FMP. VFM staff walk every site to determine how to best treat the site and prescribe the silvicultural treatment method that will achieve the desired outcome on that site. The treatments are proposed in the Annual Work Schedule and implemented. Site observations over the audit week confirm silvicultural treatments are appropriate for the sites.

The FMPM is less clear about how or when to share FOP changes with MNRF.

Conclusion: The audit team believes there is value in annually tracking and recording changes made to FOPs to avoid the errors described above. Additionally, changes to FOPs should be shared with District MNRF so there is no confusion during compliance inspections.

Recommendation 3: The audit team recommends VFM immediately begin documenting FOP changes as required in the FMPM.

Recommendation #4

Principle 4: Plan Implementation.

Criterion 4.3: Harvest

Procedure 1: Review and assess in the field the implementation of approved harvest operations. Include the following:

- select a representative sample of each of the various types of operations (winter and summer harvest, different harvest and logging methods, all stand types within the forest, salvage) from the areas where operations have been conducted during the five year period of the audit, including any exception prescriptions implemented, bridging operations, second pass harvest
- an examination of aerial photographs, FOIP reports, annual report information, including maps, for these operations
- determine whether the harvest operations implemented were consistent with the locations in the approved FMP, AWS
- assess whether: the harvest and logging methods implemented were consistent with the FOP; the FOP was consistent with the SGRs; the FOP was certified by an R.P.F. or other qualified individual, and actual operations, were appropriate and effective for the actual site conditions encountered including
 - residual stand structure required of the FMP including individual residual tree retention and downed woody material
 - whether harvest operations were conducted to minimize site disturbance taking soil and weather conditions into account
 - whether wood utilization followed the Scaling Manual by considering items such as stump heights, wood left on site
 - for selection silviculture system harvest and thinning projects assess and report on the percentage of residual damage and comment on the impact on future forest conditions and sustainability

Background Information and Summary of Evidence and Discussion:

The sample of forest harvest and AOCs revealed high levels of compliance with the plans and associated guidelines. These observations are consistent with Forest Operations Inspection reports and Annual Reports.

Several operational non-compliances were found by the audit team that were not recorded in FOIP reports as follows:

- Wasteful practices high stumps (2 locations) and merchantable trees left behind (1 location)
- Excessive right-of-way width within a cold-water fishery reserve.

Discussion: Compliance plans are developed and effectively implemented by both VFM and MNRF. The above evidence suggests room for improvement. Interviews with VFM and MNRF staff revealed that the two agencies sometimes hold different views on compliance reporting and judgments on what constitutes unacceptable practices in some cases. Unlike other SFLs, VFM does not have best practices manuals readily accessible to its operators but plans are underway to develop these tools. Joint training with MNRF and VFM and co-development of best practices manuals may help develop more consistent approaches to compliance monitoring.

Conclusion: The compliance programs in place can be made more effective and consistent in detecting operational issues and non-compliant conditions thus improving plan implementation.

Recommendation 4: The audit team recommends that VFM and MNRF continue to cooperate to strengthen their compliance programs.

Recommendation #5

Principle 4: Plan Implementation.

Criterion 4.7: Access

Procedure 1: Review and assess in the field the implementation of approved access activities. Include the following

- select a representative sample of each type of access activity (road construction, various types of water crossings - winter, culverts, bridges, road maintenance, decommissioning, and reclamation) from primary, secondary/branch and tertiary/operational roads constructed during the five-year period of the audit; include category 14/forestry aggregate pits for new roads and existing roads
- an examination of aerial photographs, FOIP reports, annual report information, including maps, for these operations
- determine whether the operations implemented were consistent with
 - locations in the approved FMP, AWS
 - conditions on construction including the approved water crossings structure, *Fisheries Act* review, and conditions on crossings of other AOCs
 - use management (maintenance, access control, any decommissioning provisions)
- assess whether roads have been constructed, maintained, and decommissioned to minimize environmental impacts and provide for public and operator safety

Background Information and Summary of Evidence and Discussion: As part of this procedure, a number of forestry aggregate pits were included in the field sample. In general, these pits were found to have been operated in accordance with the operational standards set out in the 2009 FMPM Appendix VII: Operational Standards for Forestry Aggregate Pits. In one instance, however; the deviations from the standards were found to be significant and to present a potential public safety hazard.

Stop 19 was a review of aggregate pit AGP25. The pit was in an active harvesting block and thus still being operated for aggregate extraction. At the time of examination, no equipment was present.

The following concerns were found:

- a working face of the pit was within 4 m of an operational road
- this working face was not maintained at an angle of repose
- proper rehabilitation of this pit will be challenging without bringing material from elsewhere

Representatives of the licensee and the contractor were present at the time of this examination. A discuss was held with them to provide a summary of the above concerns as well as the potential public safety risk.

Discussion: The conditions found in this aggregate were not in accordance with legal requirements. Further, the position of the pit and one of its working faces were immediately adjacent to an operational road giving cause for concern about public safety. As well, the geophysical and topographic conditions around this pit will challenge proper rehabilitation.

Conclusion: Efforts should be made to immediately remedy the potential risks to public safety found in this pit. Once these concerns are addressed the pit must continually be operated in accordance with the required legal standards.

Recommendation 5: The audit team recommends that aggregate pit AGP25 be immediately remedied to mitigate the potential risks to public safety and to operate it in accordance with the required legal standards.

Recommendation #6

Principle 6: Monitoring.

Criterion 6.3: Silviculture Standards and Assessment Program

Procedure 2: Assess whether the management unit assessment program (SFL and District) is sufficient and is being used to provide the required silviculture effectiveness monitoring information including whether it

- assesses overall effectiveness of treatments, including those that are exceptions to silvicultural guides i.e. documented program, survey methodology such as survival, stocking, free-to-grow surveys, records, use and evaluation of results e.g. appropriateness of treatment for actual site conditions, area regenerated to the projected forest unit (silvicultural success) or to another forest unit (regeneration success)
- determines the need for and the type of remedial action required if an area is not successfully regenerated (e.g. in fill plant, tending)
- assesses reasons where eligible areas are not determined to be successfully regenerated to the projected forest unit (silvicultural success)
- is appropriately used to update the FRI
- assesses progress towards achieving the management strategy
- compare district MNRF SEM results with those of the SFL

Background Information and Summary of Evidence and Discussion:

VFM has surveyed approximately 12,000 ha for FTG from 2010-2014. As part of their FTG survey program VFM initiated an interim renewal survey on PWUS harvest areas 7-12 years post seed cut because they recognized shelterwood does not normally reach FTG until approximately 20-30 years post-harvest. This additional survey provides valuable information and gives both VFM and MNRF a “level of comfort” of regeneration success. In addition, basal area (m^3/ha) is collected on the overstory.

The auditors confirmed this survey information is reported to MNRF through the annual reporting mechanism (FIPortal). The MNRF acceptance of the AR implies the FTG information as submitted is accepted. The SEM carried out by MNRF on that AR FTG area does not occur until the following year.

During the audit period MNRF carried out SEM surveys on 10% (1200 ha) of the FTG area reported in Annual Reports from 2009-2014. The form used by MNRF reports the results of their 10% survey by using the SOiSTARS methodology, location of survey, area, species composition and resulting FU based on the species composition. Additional information recorded includes the SFL reporting year, amount of area reported as surveyed by the SFL, type of survey (e.g. aerial, SOiSTARS), location (block), original FU, Target FU, species composition and FTG FU. Additionally, the form includes whether MNRF considered the block a silvicultural success or a regeneration success based on the target FU and any comments. All of MNRF's surveys are ground-based and most of VFM surveys sampled during the audit period were ocular. Sometimes MNRF will share this information with the SFL, but this is not done regularly or formally. The MNRF SEM summary is submitted to the Regional Rep. From discussions with both auditees, there is no follow up or outcome from the results of the SEM.

Discussion: The problems identified during this audit are not unique to the Sudbury Forest.

Over the last 20 years SFLs have conducted FTG surveys on every stand harvested. MNRF implemented a silvicultural effectiveness monitoring (SEM) audit program approximately ten years ago. MNRF SEM targets samples of 10% of SFL FTG survey areas.

The SEM program uses fixed area plot data and was intended to be quantitatively rigorous. However, MNRF data collection methods differ from SFL data collection methods and differ between Districts in rigour and application. As a result, the program generated different results across the province from those reported by SFLs that were hard to consolidate and evaluate. This has been a long-standing issue since the SEM program was introduced.

The reports detail some of the key SEM program issues that include, among other things, inconsistencies in survey block selection, survey methods, survey implementation, stratification, and renewal standards. The MNRF SEM data does not provide a precise assessment of the accuracy of SFL reported FTG data because the determination of the FTG forest unit is made using different methods (i.e. aerial ocular, ocular, ground extensive, density plots, WSFG, or combinations of all the above).

To address this issue and other concerns, Corporate MNRF has formed a working group of SFL and MNRF foresters that are in the development of a “purpose driven” system that will provide more consistent and useful results. There has been no announcement when the new system will be introduced. In the meantime, VFM and MNRF could develop a local solution whereby MNRF uses the same measurement procedures used by the SFL on a sample audit basis. For example, MNRF and the SFL could jointly fly aerial observation based FTG surveys. The exercise may lead to an agreed SEM monitoring and audit/evaluation framework that can be applied in the 2020 FMP in the event a solution evades the working group efforts led by Corporate MNRF.

The TAR discusses clearcut forest unit transitions and the change in species abundance on the Sudbury Forest using a method pioneered by VFM called “*Index of Species Abundance (ISA)*”. The information collected at the FTG survey is added to the ISA database to update the status of the Sudbury Forest. This information is compared to the FMP objective targets and can result in changes to silviculture implemented.

Conclusion: The current SEM program is lacking a clear purpose and needs to be refocused from Corporate MNRF or a local solution should be developed. The additional information being collected by VFM should be investigated to determine if there is value in utilizing this information in the SEM program.

Recommendation 6: The audit team recommends that the Crown Forest and Lands Policy Branch of MNRF advise Regional Operations Division MNRF as to whether the Sudbury District should jointly develop an SEM audit and evaluation methodology with VFM that uses consistent measurement and sample design features, in advance of the 2020-2030 FMP.

APPENDIX 2 – MANAGEMENT OBJECTIVES TABLE

Summary of the status of the 2010-2020 FMP Objectives

<i>Objective</i>	<i>Auditor Assessment (achieved, partially achieved, not achieved)</i>	<i>Auditor Comments</i>
Forest Diversity		
Move toward a distribution of disturbances that more closely resembles the expected natural disturbance landscape pattern.	Partially achieved	Targeted 90/10 NDPE ratio was actually 91.7/8.3. Preharvest field work can result in changes to FUs and harvest prescription, an artifact of the old FRI used in the development of the FMP. Planned PWUS verified as PWST moves a harvest into clearcut and vice versa.
Increase the frequency of old growth area occurring in larger patch sizes.	Achieved	Under-harvest (actual vs planned) leading to over achievement.
With consideration given to the current landscape, ensure that an even distribution across the Sudbury Forest of old growth stands and old aged stands, is allowed to occur.	Achieved	Under-harvest (actual vs planned) leading to over achievement.
To maintain the area of forest cover types that would occur naturally on the Sudbury Forest, similar to the expected natural landscape dynamics with consideration of the pre-settlement forest condition.	Partially achieved	Under achieved for FUs that are under-harvested due to lack of markets which is beyond the control of VFM. Achieved for those FUs where actual harvest levels approach planned.
Provide Red and White Pine forest area not less than 1995 levels, consistent with the Conservation Strategy for Old Growth Red and White Pine Forests Ecosystems in Ontario, 1996.	Achieved	1995 desired levels PR+PWUS $\geq 97,897$ ha was achieved at plan start (107,657 ha).
Restore to the PWUS or PR forest unit, a proportion of all harvested area in the white pine seed tree, mixedwood and offsite poplar and white birch forest units.	Not achieved	Within the applicable FUs and SGRs that targeted movement to PWUS or PR, only 116 of 604 ha actually did move. (figures from Table AR-13). FMP identifies restoration levels in 2020 at 70% of PWST harvested, 5% of

		MW1, 5% of MW2 and 5% of BW. Achievement is 14% PWST, 9% MW1, 20% MW2 and 2% BW.
Move towards a more natural age class distribution for each forest unit over the entire forest in mature and old-aged condition, similar to that of a natural forest dynamic.	Partially achieved	FMP model outputs show achievement at 140% of the desired level. Low harvest levels have helped exceed the targets in some FUs thus failing to move toward natural levels.
Protect and maintain genetic diversity of rare tree species, and species at the northern end of their range on the Sudbury Forest (i.e. hemlock, yellow birch, black cherry, red oak, beech, white ash, burr oak, elm, silver maple, red spruce, green ash, and basswood).	Achieved	The Supp Doc Section 8.9.28 "Conditions & Prescriptions for Harvest Renewal & Tending" includes section 2 Tree Marking Instructions. The list of "to stay" tree species includes those in the objective. Further and similar direction is provided in section 3.2 Tree Species Diversity.
To achieve wildlife habitat levels similar to the natural condition for forest dependent provincially and locally featured species on the Sudbury Forest.	Partially achieved	Suitable targets were established in the FMP. Under achieved for FUs that are under-harvested due to lack of markets which is beyond the control of VFM. Achieved for those FUs where actual harvest levels approach planned. See below.
Create and maintain a landscape that ensures the long term sustainability of preferred red-shouldered hawk, pileated woodpecker, moose, deer and marten habitat on the Sudbury Forest.	Partially achieved	Suitable targets were established in the FMP. Harvest rates and AOCS currently favour old growth associated species (e.g. pileated woodpecker and marten) but some species such as deer that favour younger forests will have lower than forecasted areas.
Maintain the health of the Sudbury Forest under changing climate conditions.	Partially achieved	VFM and MNRF monitor insect and disease activity on the Forest and implement salvage where appropriate. The audit team is concerned over the outdated forest genetics policies and strategies and urge MNRF to proceed on updates in a timely manner (Appendix 1).
Measure carbon emissions changes in the forest influenced by harvest operations.	Achieved	Modelling analysis on the natural benchmark compared to managed run performed using FORCARB-ON (Ontario Forest Research Institute) considered the complete effects of harvest on forest carbon accounting for carbon not

		just in standing forest but also for carbon removed from forest and retained in wood products. Desired levels were shown to have been achieved.
Protect critical sites for any wildlife species including vulnerable, threatened, endangered or species of special consideration known to occur on the Sudbury Forest.	Achieved	Section 2.2.4. of the Phase I FMP outlines the approach used to meet this objective. Field examination during the audit confirmed its implementation.
Ensure land use direction is being followed in enhanced management areas as well as adjacent to parks and conservation areas.	Achieved	Phase I FMP provides details for achieving this objective: <ul style="list-style-type: none"> • Section 2.4.1. Land Use Areas (including EMAs) • Section 2.4.2. Parks and Protected Areas <ul style="list-style-type: none"> • 12 regulated Parks • One unregulated Park • 9 Conservation Reserves • 4 Forest Reserves
Protect cultural heritage values within the Sudbury Forest.	Achieved	Section 4.2.1.8. of the Phase I FMP describes measures to insure protection of cultural heritage values on the Forest. AOC protection provided accordingly. These measures are carried through to the Phase II FMP.
Minimize the potential impact of forest operations on recreation areas that are identified on the values map.	Achieved	Various AOCs were developed in the Phase I FMP to protect recreation areas. Required changes were completed for the Phase II FMP.
Minimize the amount of productive forest land negatively impacted, causing site damage and loss of forest productivity.	Achieved	Phase I FMP Supp Doc Section 6.1.28 and Phase II FMP Section include numerous prescriptions to guide forest operations. Pre-harvest site inspections are completed to confirm or change the operating prescriptions.
Protect water quality and fish habitat within watercourses and water bodies affected by forest management.	Achieved	AOC prescriptions provided in the Phase I FMP, some of which were updated in the Phase II FMP.
Increase the amount of early successional shoreline forest habitat.	Achieved	Three harvest to shoreline operations had been completed: Phase I Block 2010-045; Phase II Block 2010-045; and, Phase II Block 2010-72.
Respect the presence of resource-based tourism as well	Achieved	Phase II FMP includes 19 AOCs that provide protection for tourism values

as other commercial businesses on the Sudbury Forest.		derived through Resource Stewardship Agreements with tourism business.
Maintain the area of Managed Crown Productive Forest available for timber production at the highest possible level and minimizing conversion of Crown forest area to non-forest land.	Achieved	Target was less than 1% at year 2020. At Year 7, mapped losses to in-block roads was 541 ha since 2010 or 0.1%.
Silviculture		
Conduct a range of intensities related to silvicultural activities on the Sudbury Forest.	Achieved	VFM has reported that from 2010-2015 36% of the depletion area has been treated intensively.
Ensure silvicultural activities create the desired future forest condition or successful regeneration in harvested areas on the Sudbury Forest. <i>Target: Silvicultural success 60% Regeneration success 100%</i>	Partially achieved	During the plan period (2010-2015) VFM surveyed 11,466 ha for FTG. 38% of the area surveyed regenerated to the target forest unit (silvicultural success). VFM has developed an ISA to track how FTG survey results of species composition compare to objectives for future forest composition. This information is compared to modeling assumptions in the current FMP and is then used to inform management decisions in future plans.
Social and Economic		
To ensure that enough roads are in place to allow for effective and efficient forest operations, with consideration to the impact of roads on the landscape.	Achieved	Operational effectiveness and efficiency form part of overall road planning during FMP preparation. When new harvest areas are scheduled, road development follows the FMP. With regards to road impacts on the landscape, the length of decommissioned roads (i.e., roads that become overgrown and not longer passable with motorized vehicles) now exceeds the length of new roads, resulting in a decrease in road density on the same land base.
Provide a sustainable, continuous and predictable wood supply from the Forest that will meet, as closely as possible and for as long as possible, the current recognized industrial demand of the Forest.	Achieved	Modelling analysis showed that targets were achieved in 102 of the possible 112 indicators measuring projected volume through time. Desired levels were achieved and/or exceeded in 57 of the possible 112 measures. Although the wood supply is being "provided"

		market conditions limit the use to below planned levels
First Nations and Aboriginal Communities are involved in forest management both during the development of the forest management plan and also with the implementation of the plan.	Achieved	One Aboriginal representative on the Planning Team for the Phase II FMP. N'Swakamok is a shareholder of VFM and holds 14.2% of the harvesting rights thereby participating directly in plan implementation.
First Nations and Aboriginal Communities will benefit economically through partnerships, employment opportunities and new business relationships.	Achieved	N'Swakamok has been the primary means of providing economic benefit to First Nations and Aboriginal communities. Tree planting stock production contract was given to the Thessalon Tree Nursery (Thessalon First Nation).
First Nations and Aboriginal Communities will continue to benefit from forest management through educational and social opportunities.	Achieved	VFM participates in AWS meetings with First Nations communities on the Forest to identify concerns with scheduled treatments, educate communities with respect to forest operations on traditional lands. These efforts ensure have ensured that social opportunities are not impacted by planned harvesting activities.
To reduce and eventually eliminate the use of herbicides used in forest management on the Sudbury Forest.	Achieved	The 2005-2009 level of herbicide use on regenerated areas on the Sudbury Forest was 46%. That level is currently at 27%. The addition of the herbicide Garlon has contributed to the early success of White Pine regeneration in shelterwood cuts and decreased the need for two treatments with VisionMax.
To encourage support of the Local Citizens Committee in the development of the FMP for the Sudbury Forest.	Achieved	The Sudbury District LCC has been very active in the development of the Phase I and Phase II 2010-2020 FMP on the forest. The LCC has also endorsed each Phase.
To encourage support of the Local Citizens Committee in the monitoring the implementation of the FMP on the Sudbury Forest.	Achieved	LCC members are actively involved in monitoring and implementation discussions during meetings. Amendments to AWS are discussed with LCC prior to approval. Monthly monitoring reports are also provided to the LCC.

Maintain and increase the level of compliance on the forest.	Achieved	From 2005-2010, 6.4% of reports were non-compliances. This has dropped to less than 5% between 2010 and 2016.
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APPENDIX 3 – CONTRACTUAL OBLIGATIONS

The following table provides the contractual obligations of the Vermillion Forest Management (VFM) from SFL # 542442. Each condition is provided on a separate row with comments by the audit team to report on the degree of attainment of the condition.

Obligation	Manager Performance
Payment of Forestry Futures and Ontario Crown charges	Not Met A minimal arrear of \$1,428.28 exists for outstanding Crown and Forestry Futures dues. This amount was not deemed to be insignificant by the audit team.
Wood supply commitments, MOAs, Sharing Agreements, special conditions.	Met The SFL document has no wood supply agreements to supply local mills (Appendix E) but does make references to honoring agreements to traditional harvesting operators and First Nations enterprises (Appendix F). The body of the SFL makes references to the shareholder agreements and was last amended in 2004 to account for transfers of land from the Spanish Forest to offset areas protected under the Lands for Life process. Interviews confirmed annual report records that show these commitments are being honored within the limits of market forces.
Preparation of FMP AWS reports, abiding by the FMP and all other requirements of the FMPM and CFSA	Met VFM has submitted all required plans and reports in a timely manner and abides by all other requirements with minor exceptions as noted in Appendix 1.
Conduct inventories, surveys, tests and studies; provision and collection of information in accordance with FIM	Met VFM conducts regular pre- and post-harvest surveys and has participated in studies (i.e. VisionMax rates) during the audit period with minor exceptions as noted in Appendix 1. VFM has developed ISA that compares the amount of species present in a stand pre-harvest and at FTG. The ISA allows for a

	<p>comparison of species shift across the forest and is an early trigger to adjust silviculture prescriptions.</p> <p>VFM aerially surveyed 13,756 ha (2010-2015) for FTG exceeding average historic FTG survey levels. VFM also conducted 11,945 ha of ground regeneration surveys in 7-12 yr old PWUS seed cuts from 2010-2014.</p>
Wasteful practices not to be committed	<p>Met</p> <p>VFM met this condition with minor exceptions noted in Appendix 1.</p>
Natural disturbance and salvage SFL conditions must be followed	<p>Met</p> <p>VFM had an approved amendment (FMPM 16 approximately 250 ha) to conduct salvage operations from wind damage.</p>
Protection of the licence area from pest damage, participation in pest control programs	<p>This was an optional procedure and not audited although auditors did note pest damage due to spruce and pine budworm during helicopter flight.</p>
Withdrawals from licence area	<p>This was an optional procedure and not audited.</p>
Audit action plan and status report	<p>Met</p> <p>The 2011 IFA report was received in November, 2011. The Action Plan was submitted on time, in January, 2012; approved February, 2012.</p> <p>The Status Report was submitted in May, 2014; completed with a slight delay. This addressed a recommendation from the previous audit, where the Status Report was late. This Status Report was approved in June 2014, which is acceptable.</p>
Payment of forest renewal charges to Forest Renewal Trust Fund (FRTF)	<p>Met</p> <p>The minimum balance for the Sudbury Forest was maintained throughout the audit period. At the start of the audit period the FRTF was \$1.2 million above the minimum balance and</p>

	by the end of the audit period is \$500,000 above.
Forest Renewal Trust eligible silviculture work	Met The company maintains detailed records of invoices for eligible silviculture work including maps. Records were found to be consistent with field observations with minor exceptions as noted in Appendix 1.
Forest Renewal Trust forest renewal charge analysis	Met A formal renewal charge analysis was completed for each year of the audit period. There were minor changes to the renewal charge for some species groups (i.e. HWD1 \$6.40/m ³ (2011/12)-\$6.08/m ³ (2013/14)-\$6.38/m ³ (2015/16)) over the audit period.
Compliance inspections and reporting; compliance with compliance plan	Met VFRM met this commitment with minor exceptions as noted in Appendix 1.
Forest Renewal Trust Account minimum balance	Met There were no monies owing for forest renewal charges.
Silviculture standards and assessment program	Met VFRM met this commitment with minor exceptions as noted in Appendix 1.
Aboriginal opportunities	Met N'Swakakmok licence continues to provide opportunities. Thessalon Tree Nursery (Thessalon First Nation) was also a supplier to VFM, albeit briefly.
SFL forestry operations on mining claims	Met VFM has participated in the notification and discussion process and abides by all other requirements.

APPENDIX 4 – AUDIT PROCESS

The Independent Forest Audit Process and Protocol: Risk-Based Pilot 2016 (IFAPP) was developed by MNRF to provide a comprehensive and consistent method of evaluating forest management activities on Crown land. The IFAPP states that the purpose of an Independent Forest Audit is to:

- a) assess to what extent forest management planning activities comply with the FMPM and the CFSA;
- b) assess to what extent forest management activities comply with the CFSA and with the forest management plans, the manuals approved under the CFSA, and the applicable guides;
- c) assess the effectiveness of forest management activities in meeting the forest management objectives set out in the FMP, as measured in relation to the criteria established for the audit;
- d) compare the forest management activities carried out with those that were planned;
- e) assess the effectiveness of any action plans implemented to remedy shortcomings revealed by a previous audit;
- f) review and assess a licensee's compliance with the terms and conditions of the SFL;
- g) provide a conclusion regarding sustainability of the Crown forest.

The MNRF initiated a project to modernize the audit program as part of the mandatory five-year review of the IFA program conducted in 2011. Included in that modernization project was the development of a risk-based approach to the audit scope. The Sudbury Forest is one of two forests selected to test the risk-based approach as part of the 2016 IFA program.

The IFAPP provides direction for performing the audit. In this approach, all of the protocols have been assigned a "Mandatory" or "Optional" designation and the audit teams are responsible for completing a risk assessment to determine which, if any, optional procedures are to be included in the audit.

The audit Co-Leaders reviewed the TAR; previous IFA results (audit report, action plan, and status report); compliance reporting as accessed through FOIP; and, SEM information. A Co-Leader has also completed several certification audits over the last ten years, providing experiential data. In addition, telephone interviews were completed with the following:

- General Manager of VFM
- District Forester Sudbury District MNRF
- Three members of the LCC for the Sudbury District
- Representatives of four Aboriginal communities

There were seven associated optional protocols that were identified as posing sufficient risk to be included in the audit using KBM's Impact/Likelihood Matrix. Table 4 summarizes the number of procedures selected by the team for audit based on the direction provided by the IFAPP and KBM's Risk Assessment.

Table 4. Procedures audited by risk category.

Procedures Audited, by Risk Category					
Principle	Optional			Mandatory	Comments
	Applicable (#)	Selected (#)	% Audited	Audited (#) (100% Audited)	
1. Commitment	2	1		-	Principle, Criteria & Procedure - 1.2.1
2. Public Consultation and Aboriginal Involvement	5	-	-	3	
3. Forest Management Planning	19	-	-	38	
4. Plan Assessment & Implementation	2	-	-	9	
5. System Support	2	1		-	Principle, Criteria & Procedure - 5.1.1
6. Monitoring	12	5		6	Principle, Criteria & Procedures: 6.1.1, 6.2.1.2, 6.2.1.4, 6.2.2.1, 6.2.2.2
7. Achievement of Management Objectives and Forest Sustainability	-	-	-	15	
8. Contractual Obligations	5	-	-	25	
Totals	47	7		96	

The audit process for the Sudbury Forest IFA consisted of eight components:

1. Risk Assessment: KBM completed a risk assessment as described above.
2. Audit Plan: KBM prepared an audit plan that described the schedule of audit activities, audit team members and their qualifications, audit participants, and auditing methods. The audit plan was submitted to VFM, MNRF, the Forestry Futures Trust Committee (FFTC), and the Sudbury District LCC.
3. Public Consultation: KBM placed an advertisement in Northern Life and Wawatay News prior to the pre-audit meeting advising the public of the upcoming audit. The advertisement identified the purpose of the audit and invited the public to submit comments to KBM by using an online survey or by contacting KBM directly. The link to the online survey was provided in the advertisement.
4. Aboriginal Engagement: Attempts were made to contact each of the Aboriginal groups as indicated by MNRF. Phone calls were made to each, and where telephone contact was not achieved, emails were sent as follow-up. Five interviews were completed. One

interviewee represented two groups so six groups were represented in the completed interviews.

5. Field Site Selection: The audit team conducted a preliminary site selection prior to the pre-audit meeting. Annual Work Schedules and Annual Reports were used to ascertain the amount and type of forest operations carried out on the Forest during the audit period. A stratified random sample of sites was then selected to ensure that selected sites were representative of a cross section of all activities conducted on the Forest during the audit period. The auditees were informed of the site selections before the field visit.
6. Pre-audit Document Review: Prior to the five-day site visit, the audit team reviewed documents provided by the auditees, including the:
 - a. 2010-2020 Phase I/II FMPs for the Sudbury Forest;
 - b. AWS and AR associated with the above FMPs for the audit term;
 - c. Sudbury Forest Independent Forest Audit 2006-2011 Report; and,
 - d. Sudbury Forest 2006-2011 Independent Forest Audit Action Plan and the Sudbury Forest 2009-2011 Independent Forest Audit Action Plan Status Report.
 - e. The TAR.
7. On-Site Audit: The objectives of the field site visits were to confirm that activities were conducted according to plan, that they conformed to provincial laws, regulations, and guidelines, and that they were effective. The site visit began on September 12, 2016. Two days were spent in the field, with the remainder spent reviewing documents and conducting interviews. The closing meeting was held in Sudbury on September 16, 2016. The meeting provided a forum for the audit team to present and discuss preliminary audit findings with the auditees.

Table 5. Sampling intensity for each forestry activity examined as part of the field site visits.

Treatment	Source	2011-2016 Audit (values in ha and percentages)					Total
		2011-12	2012-13	2013-14	2014-15	2015-16	
Plant	AR Total	842	1,106	1,466	1,089	1,092	5,595
	Sample Size	213	67	417	22	166	885
	%	25.3%	6.1%	28.4%	2%	15.2%	15.8%
Natural	AR Total	0	585	0	1,628	1,108	3,321
	Sample Size	0	141	0	141	135	417
	%	-	24.1%	-	8.7%	12.2%	12.6%
SIP	AR Total	783	894	849	531	1,019	4,136
	Sample Size	111	19	319	138	0	587
	%	14.2%	2.1%	37.6%	26.0%	-0%	14.2%
Harvest	AR Total	2,206	2,638	2,667	1,997	2,200*	11,708
	Sample Size	271	652	279	282	0	1,484
	%	12.3%	24.7%	10.5%	14.2%	0%	12.7%
Tending	AR Total	1,529	1,157	104	2,213	2,478	7,481
	Sample Size	90	226	0	113	341	770
	%	5.9%	19.5%	-	5.1%	13.8%	10.3%
FTG	AR Total	4,919	0	1,590	0	2,020	8,529
	Sample Size	542	0	125	0	204	871
	%	11%	-	7.9%	-	10.1%	10.2%

* AR not available at the time of the audit. Estimated values provided by VFM. Shapefiles were not available for depletions at the time of site selection.

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

Recommendations from this audit must be addressed in an action plan developed by VFM, MNRF Sudbury District, with input and review by MNRF Regional and Forest Management Branch representatives. MNRF Forests Branch will develop an action plan to address the recommendations applicable to Corporate MNRF.

Suggestions are no longer highlighted in audit reports, nor do they need to be addressed in action plans. Any suggestions of the audit team have been incorporated within the regular text of this report.

Public Response

There were three comments received from the public regarding the Sudbury Forest IFA.

A comment from a citizen regarding overharvesting of moose was outside the scope of the audit.

There was one comment regarding harvesting on the Sudbury Forest in the Joe Lake area. This comment suggested the area was still recovering from acid rain issues and should be left for recreational uses for the Greater Sudbury Region. The comment also expressed dissatisfaction for clear-cut and mechanized harvest practices.

Another response was from a First Nation owned seedling supply business that expressed concerns regarding VFM's seedling procurement process. This supplier has concerns with VFM practices with First Nation businesses. Interviews with several VFM staff prior to the receipt of this comment by the audit team, provided both background and rationale for VFM's seedling procurement decision. The audit team is satisfied with VFM's position.

Local Citizens Committee

A presentation was emailed to the MNRF LCC contact in early May. A co-lead auditor gave a teleconference presentation to the LCC using the presentation to introduce the concept of a Risk Based IFA and to solicit interviews. The auditor then interviewed three LCC members as part of the Risk Assessment process. A letter was emailed to each of current LCC members to notify them of the audit and invite their input. Follow-up phone calls and emails were sent approximately two weeks after the letters were sent. No written responses were received. An email was sent to the LCC members three weeks leading up to the field audit. There were two email responses from LCC members. A survey link was also distributed to the LCC members on the week of the audit with a reminder that KBM would be in Sudbury if anyone wished to be interviewed. The audit team then attempted to contact more members of the LCC through phone calls and emails on the first day of the field audit week. Two LCC members volunteered to come out on the field truck day with the audit team; however, on the morning of the field day they sent their regrets. There was an LCC meeting during the field audit week, which was attended by two members of the audit team. Six LCC members were then interviewed either by phone or in person during the remainder of the field audit week.

Aboriginal Communities

The Sudbury MNRF District Resource Liaison Officer provided KBM with a list of Aboriginal communities and organizations with contact names for the audit. Efforts were made to contact each by telephone, and email if telephone contact was not achieved. Five interviews were completed for the audit.

Overlapping Licensees, Contractors and Commitment Holders

There was no mailout for this audit. Shareholders, contractors and commitment holders were informed of the audit by VFM as well as with the newspaper advertisement, with a link to the online survey. Two Licensees were interviewed to verify contractual obligations were met by the SFL manager and to gain insight on wood utilization issues.

Ministry of Natural Resources and Forestry

MNRF District staff participated in all aspects of the audit. Interviews were held with the District Manager, Area Supervisor, Management Forester, Resource Liaison Specialist, Technicians and other support staff. Sudbury District personnel also accompanied the audit

team in the field during the truck day. A Regional MNRF representative also participated in the audit through delivery of needed documents, attendance of a portion of the field component of the audit and the main audit meetings.

Forestry Futures Trust Committee

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

APPENDIX 5 – LIST OF ACRONYMS

AOC	Area of Concern
AR	Annual Report
AWS	Annual Work Schedule
BMP	Best Management Practice
C&I	Criteria and Indicators
CFSA	Crown Forest Sustainability Act
FFTC	Forestry Futures Trust Committee
FIM	Forest Information Manual
FMP	Forest Management Plan
FMPM	Forest Management Planning Manual
FOIP	Forest Operations Information Program
FOP	Forest Operations Prescription
FRI	Forest Resource Inventory
FRT	Forest Renewal Trust
FSC	Forest Stewardship Council
FTG	Free-To-Grow
IFA	Independent Forest Audit
IFAPP	Independent Forest Audit Process and Protocol
KBM	KBM Resources Group
LCC	Local Citizens Committee
LTMD	long-term management direction
MNRF	Ministry of Natural Resources and Forestry
MOECC	Ministry of the Environment and Climate Change
NDPE	Natural Disturbance Pattern Emulation
NESMA	Northeast Seed Management Association
RPF	Registered Professional Forester

SDLCC	Sudbury District Local Citizens Committee
SEM	Silviculture Effectiveness Monitoring
SFL	Sustainable Forest Licence
SGR	Silviculture Ground Rule
SPA	Specified Procedures Audit
TAR	Trends Analysis Report
VFM	Vermillion Forest Management Company Limited

APPENDIX 6 – AUDIT TEAM MEMBERS AND QUALIFICATIONS

Name	Responsibility	Qualifications
Laird Van Damme	Co-Lead auditor, core team member (harvest operations, planning, monitoring, contractual obligations, determination of sustainability)	R.P.F., M.Sc.F.; 30 years experience as a practicing forester, educator and consultant; primary areas of practice are silviculture, forest management and forest research; completed ISO 14001 EMS Lead Auditor training; worked on many previous IFAs as either Lead, Harvest, Silviculture or Planning Auditor. Extensive 3 rd party audit experience.
Peter Higgelke	Co-Lead Auditor (Wildlife, ecological planning and implementation, access planning and implementation, Aboriginal involvement, contractual obligations, determination of sustainability)	R.P.F.; MScF; 30 years forestry experience in Ontario; Peter has completed numerous IFAs in various roles including lead, harvest, silviculture, wildlife, planning, Aboriginal involvement and public consultation; FSC 5 certification audits and 8 surveillance audits;
Sarah Bros	core team member (Silviculture planning, implementation, and monitoring, contractual obligations, determination of sustainability)	R.P.F.; BScF; 33 years forestry experience across Canada; Lead Auditor on 4 FSC audits and team member in various roles on 11 annual and certification audits; completed 2 IFAs and FFT contract IFA Audit Analyst for 13 years; 17 years as industry Forest Manager on > 1 million ha.
Mike Barten	Audit team member (secretariat, consultation, socioeconomic impacts and other supervised components as needed)	H.B.E.Sc. and Geography. Works on KBM forestry-related projects, Aboriginal projects, jurisdictional policy scans, and research support. Has been a member of 1 previous IFA.