



Millar Western Forest Products Ltd.

Peer Review Summary

2007-2016 Detailed Forest Management Plan

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1. Introduction

Forest management planning for Canada's public forestlands is becoming increasingly complex. The National Forest Strategy, Alberta's forest regulations and third party certification systems (e.g. CSA Z8008/809, FORESTCARE) all align well with the principles of sustainable forest management (SFM). The core principle of SFM is the balance of ecological, economic and social values, with full public disclosure.

Millar Western Forest Products is committed to SFM and commissioned numerous studies in social and natural sciences to support the development of the 2007 Detailed Forest Management Plan (DFMP). A cornerstone of science is the peer review process through publications. In this manner new theories are shared and challenged by the scientific community, creating a unique quality assurance system.

There is a continuum from basic science to applied science. Basic science is concerned with developing and testing new theories while applied science connects those theories to practice. This continuum is also the case with the MWFP studies.

For example, the Forest Watershed and Riparian Disturbance Project (FORWARDS) is an ongoing series of studies that fit with the above definition of basic science. These studies are using traditional or formal peer review mechanisms. An abbreviated list of publications provides a sample (see <http://forward.lakeheadu.ca/> for details). FORWARDS embodied the aquatic impact assessment group.

The studies that fit within the definition of applied science present a unique challenge for peer review. The outcomes from these studies were, by design, used directly in the development of the DFMP. The specific nature of the material is different from a generalized application that is suitable for peer reviewed publications in scientific journals. Furthermore, the outcomes needed to be embedded into the plan in shorter time intervals than those associated with peer review publications.



For these reasons, MWFP commissioned KBM Forestry Consultants Inc. to organize a peer review process to address the unique challenges associated with the applied science group of studies. In addition, a peer review of the final DFMP was organized to complement the regulatory review process.



2. Methodology

The DFMP was divided into several components, each with an assigned developer and reviewer. The components were as follows:

1. overall plan
2. public participation
3. timber supply
4. biodiversity
5. aquatics
6. FireSmart
7. carbon
8. climate change
9. wildfire
10. oil and gas
11. landscape dynamics
12. vegetation response
13. human population

2.1 Overall Plan

Jonathan Russell, the Woodlands Manager for Millar Western, served as the plan author, responsible for the completion of the overall plan. With over 28 years of experience in forest



management, Mr. Russell provided a strong link between the science developers and the management planning process.

Dennis Quintillio is the past Director of the Forest Management Division of Alberta Environment's Land and Forest Service and served as the peer reviewer for the overall plan.

2.2 Public Participation

Deb Choma led the development of the public participation component of the DFMP. Ms. Choma is President of the Inside Education Society of Alberta, a non-profit organization that provides students, teachers and other interested Albertans with educational programming specific to environment sustainability and use of the province's natural resources.

Debra Davidson was the peer reviewer assigned to the public participation component. Dr. Davidson is a professor at the University of Alberta's Department of Renewable Resources, specializing in natural resource politics and governance, environmental risk, state theory and rural sociology.¹

2.3 Timber Supply

Ted Gooding, of the Forestry Corp, developed the wood supply analysis for the DFMP. Ted has an MScF that focused on forest economics and wood supply, 25 years experience in the forest industry with the last ten years as a principle at the Forestry Corp.

Jeremy Williams conducted the peer review of the timber supply analysis for the Plan. Dr. Williams has a Ph.D. in forest economics and is a principal of Arbor Vitae Environmental Services Ltd. He has worked in every province in Canada, except PEI, as well as for the FAO and World Bank. The mix of consulting projects undertaken by Dr. Williams has shifted over the past decade; recent years have seen a greater emphasis on sustainable forest management, socio-economic assessment and analysis, auditing, and program review.²

¹ <http://www.rr.ualberta.ca/People/Index.asp?Page=Directory&id=864>

² <http://www.avesltd.ca/about.htm>



2.4 Biodiversity

Frédéric Doyon is a researcher at the Institut Québécois d'Aménagement de la Forêt Feuillue (IQAFF) and co-author of *A Review of Spatial Distribution Guidelines for the Managed Canadian Boreal Forest*, prepared for the Sustainable Forest Management Network, among numerous other publications in scientific peer reviewed journals. An expert in the management of boreal broad-leaved forests, Dr. Doyon was a natural choice to lead the development of the biodiversity component of the DFMP.

Jim Beck is a well-known and respected forester and educator in Canada. As one of the founding two professors of the forestry program at the University of Alberta, Dr. Beck was instrumental in developing the university's internationally renowned forestry program. Dr. Beck has served as professor of forest management, Chair of the Department of Forest Science and the Department of Renewable Resources and as the Acting Associate Dean-Forestry at the University of Alberta³. As a specialist in wildlife habitat modelling research (both spatial and aspatial), Dr. Beck provided the peer review for the biodiversity component of the DFMP.

2.5 Aquatics

Ellie Prepas led the development of the aquatics component of the DFMP. Dr. Prepas is the Canada Research Chair of Sustainable Water Management, and a professor at Lakehead University in Thunder Bay, Ontario. Dr. Prepas's work focuses on the linkage between watershed disturbance and surface water quality, including drinking water supplies. With the recent expansion of industrial activity (forest harvest, primary resource extraction) in the Canadian boreal forest, and the threat of increased fire incidence associated with climate change in western Canada, her focus has broadened further to quantifying and modeling processes that link watershed disturbance and climate factors to surface water quality and biota. She is now pursuing an approach that can be applied to watershed management across the Canadian boreal forest.⁴

Randy Kolka is a Project Leader at the USDA Forest Service North Central Research Station. His studies specialize in the effect of land management (forest, agriculture and urban land uses) on the terrestrial and aquatic cycling of nutrients, carbon, heavy metals (notably mercury) and water. He is also the administrator of the USDA's Research Work Unit entitled "Ecology and Management of Riparian and Aquatic Ecosystems", and supervises the use of the Marcell Experimental Forest and the Soil and Water Laboratory located at the Forestry Sciences Lab in

³ <http://www.cif-ifc.org/english/e-awards-cfaa-jbeck2004.shtml>; <http://www.experts.ualberta.ca/>

⁴ <http://flash.lakeheadu.ca/~eprepas/PrepasMainPage.html>



Grand Rapids, MN.⁵ Dr. Kolka organized the peer review for the aquatics component of the DFMP. Most of the peer review followed scientific journal publication procedures.

2.6 FireSmart

Ray Hilts is the Engineering and Planning Supervisor at Millar Western, and conducted the FireSmart modelling for the DFMP.

It was determined that a reviewer was not required for FireSmart.

2.7 Carbon, Climate Change, Wildfire, Oil & Gas, and Landscape Dynamics

Stephen Yamasaki developed the carbon, climate change, wildfire, oil and gas, and landscape dynamics components of the DFMP. As a researcher at the Institut Québécois d'Aménagement de la Forêt Feuillue (IQAFF) and associate professor at the Université du Québec en Outaouais.

Mark Johnston, a Senior Research Scientist with the Saskatchewan Research Council, conducted the peer review for the carbon, climate change and wildfire components of the DFMP. Dr. Johnston specializes in research related to forest ecology, forest fire ecology, climate change impacts and adaptations in the forestry sector, environmental effects of forestry operations, and ecosystem-based approaches to sustainable forest management⁶.

David Larsen provided the peer review of the landscape dynamics component of the DFMP. Dr. Larsen is the Forestry Faculty Chair and associate professor at the University of Missouri's School of Natural Resources. Dr. Larsen's current research includes the synthesis of the various factors that influence forest stand dynamics, including disturbance, stand development, competition and resource use.⁷

2.8 Vegetation Response

Robin Duchesneau is a researcher at the Institut Québécois d'Aménagement de la Forêt Feuillue (IQAFF), and developed the vegetation response component of the DFMP

⁵ <http://ncrs.fs.fed.us/people/Kolka>

⁶ http://www.src.sk.ca/html/our_people/src_staff/index.cfm?pid=63

⁷ <http://www.snr.missouri.edu/forestry/faculty/larsen-d.php>



Jian Wang is a professor of silviculture at Lakehead University in Thunder Bay, Ontario.

2.9 Human Population

Richard Loreto is president of Richard A. Loreto (R.A.L.) Consulting Limited, a firm specializing in the development of business strategy and market research and the facilitation of stakeholder consultation processes. Dr. Loreto speaks frequently to businesses and governments on the topic of demographic trends in Canada and the United States and the implications for consumer products and services, marketing, and the labour market.⁸ Dr. Loreto developed the human population component of the DFMP.

John McHenry is president of Demographic Data For Decision-Making, Inc., a Florida-based firm specializing in geo-demographic analysis. Prior to establishing his own firm, Dr. McHenry worked as a Demographer/Senior Forecasting Analyst for Florida Power & Light Company and as a Population Affairs Officer/Demographer for the United Nations. He has made numerous presentations for various public and private organizations on related topics and is currently researching ways to improve local area population estimates and projections using tax assessor and census data.⁹ Dr. McHenry provided the peer review of the human population component of the DFMP.

⁸ <http://www.ralconsulting.ca/aboutral.htm>

⁹ http://www.seflorida.uli.org/events/region_02/speaker%20bios.pdf



3. Outcomes

In order to facilitate the development and review process, several aspects were combined into the terrestrial environment group. A workshop was held to address this group. Other aspects of the Plan were addressed through correspondence between the developers and reviewers on working papers and early drafts. The outcomes of the peer review are summarized in the following sections.

3.1 Overall Plan

This portion of the review process is under separate cover.

3.2 Public Participation

Millar Western's objectives for the public participation process were:

1. To ensure relevant stakeholder perspectives were reflected in the development of the DFMP.
2. To achieve public awareness, understanding and acceptance of Millar Western's forest management practices and preferred strategies as outlined in the DFMP.

The Public Participation Process followed the requirements of Alberta's new Forest Management Planning Standard (Alberta Sustainable Resource Development, 2004) and incorporated the Canadian Standards Association (CSA, 2002) guidelines for public participation in sustainable forest management, including the basic requirements for public participation, general target audiences, process, content and communications.



The peer review of the public participation process suggested that Millar Western has gone to great lengths to abide by the Canadian Standards Associations policies regarding public participation in forest management, and has in fact gone beyond the minimum requirements and is quite progressive by Canadian forest industry standards. The greatest strengths of Millar Western's approach include: a Public Participation Group that has been established early in the planning process; a concerted effort to disseminate information to citizens; and the establishment of a Communication Tracking Application to ensure systematic response to concerns or ideas raised by citizens and stakeholders. Some weaknesses identified in the approach included: the limited inclusiveness of members of the Public Participation Group; lack of involvement with regional Aboriginals; and the readability and effectiveness of disseminated materials by lay citizens.

The peer review comments were considered in the development of the final draft of the plan.

3.3 Timber Supply

The timber supply analysis was lead by an Impact Assessment Group (IAG), a component of the Plan Development Team (PDT) for the DFMP. The purpose was to provide a framework for forest managers to determine the impacts and tradeoffs between competing forest management objectives that would ultimately lead to the creation of a Preferred Forest Management (PFM) scenario. The Preferred Forest Management Scenario determines the specific location, extent and pattern of harvesting, regeneration and road construction activities for the next 10 years and provides general direction for the following 10 years.

The timber supply analysis made use of a deterministic modeling process using Woodstock™ and Patchworks™ timber supply models to develop the PFM scenario, SHS, recommended harvest level and DFMP implementation targets.

The overall timber supply planning approach shifted quite dramatically in the spring of 2006, as it was recognized that there was a significant risk that the mountain pine beetle (MPB) epidemic will spread into the Millar Western Forest Management Units #11 and #13, and indeed into the western and central part of boreal Alberta, and the potential level of damage was deemed to be very high.

The peer reviewer met with the timber supply planners to discuss options to address this issue. In response to the growing threat, Millar Western reworked its 10-year harvest plans to focus on susceptible pine stands, and developed a number of scenarios. The reviewer also suggested setting targets for both “old” and “very old” forest.

The peer review comments were considered in the development of the final draft of the plan.

3.4 Terrestrial Environment Group

As noted previously, Millar Western retained analysts at the Institut Québécois d'Aménagement de la Forêt Feuillue (IQAFF) to play a lead role in the following groups:

- ❖ Biodiversity Impact Assessment Group (IAG)
- ❖ Carbon IAG
- ❖ Landscape Projection Group (LPG), which was subdivided into:
 - Climate and Vegetation (stand level)
 - Landscape Dynamics (forest change)
 - Wildfire
 - Oil and Gas

A workshop was held August 28-30, 2006 in Montebello, Quebec, to obtain peer reviews of IQAFF's work in stand modelling in response to climate change, landscape modelling and biodiversity assessment. Fairmont Le Château Montebello hosted the workshop, and as the largest log structure in the world, provided a rustic and comfortable setting within close proximity to IQAFF's facility.

Objectives for the workshop were to: (a) obtain presentations from IQAFF analysts on the work accomplished to date; (b) provide opportunities for reviewers to query the analysts for further clarification and justification of the analytical decisions made; (c) assess the quality and relevance of the work accomplished; and (d) report the group's findings to MWFP.

The workshop was attended by nine individuals, as follows:

Name	Organization	Role
Laird Van Damme	KBM Forestry Cons.	Co-organizer
Peter Duinker	Dalhousie University	Co-organizer
Mark Johnston	SK Research Council	Reviewer
David Larsen	University of Missouri	Reviewer
Jim Beck	University of Alberta	Reviewer
Jian Wang	Lakehead University	Reviewer
Robin Duchesneau	IQAFF	Analyst - stand modelling
Stephen Yamasaki	IQAFF	Analyst - landscape modelling
Frédéric Doyon	IQAFF	Analyst - biodiversity assessment

The workshop agenda included a full day of presentations from analysts to reviewers on the work accomplished so far, further plenary discussions on the morning of the second day, creation of peer reviews through the rest of day two, and presentations of review findings to the analysts on the third morning.



The peer review found that the IQAFF team are working in a manner consistent with the Terms of Reference, principles of sound science, sustainable forest management and adaptive management. This is a credit to the commitment of Millar Western to these core principles and bodes well for the sustainable management of the forests under their license.

There have been several delays in developing some of the tools and analyses. None the less, the analyses and tools represent important advances and are likely to have positive effects upon the evolution of forest and land management policies and practices in the decade to come.

A final review of all material made available by the terrestrial group in support of the final plan was reviewed by Keith Hautala of KBM Forestry Consultants during the final stages of plan production. Mr Hautala had worked on the development of Biodiversity assessment tools and validated the Goshawk model through his graduate studies leading to an MScF. His review found the work to be professionally rendered and now serious analytical flaws were detected.

3.5 Aquatics:

The aquatics group relied on conventional peer review processes through journal publications as described above in the introduction section.

3.6 Human Population

In order to assess the human population component of the DFMP, a two-hundred year “most plausible” base case projection was developed for the population by age and gender, employment by industry, and implied land use for the study area (Census Divisions 11 and 13). This base case projection took into consideration probable future world and Canadian trends in climate change, energy use and production, technological advancement, economic shifts (including international trade patterns and industrial restructuring), demographic developments (including fertility, mortality and migration), and socio-political shifts.

The peer reviewer provided an assessment of the two-hundred year base case projections and offered several suggestions to improve the presentation of results. There were also some concerns over a model that relied on economic migration. The developer and Millar Western remain satisfied that these economic drivers are suitable for Alberta while the other peer review comments were considered in the development of the final draft of the plan.



4. Summary and Conclusions

Millar Western Forest Products engaged highly qualified people to develop basic and applied science projects to assess environmental impacts of the proposed operations. They also solicited input from peer reviewers of similar caliber at several points during the development of the projects and the overall plan. These comments were considered by the developers and lead to improvements in the material that was used in the final plan.



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