



Mackenzie SFMP



Mackenzie Sustainable Forest Management Plan

Facilitator Report

March 31, 2018



101-2666 Queensway,
Prince George, BC,
V2L 1N2

March 31, 2018

Sarah Curtis, FIT
Forestry Supervisor - Planning
Canadian Forest Products Ltd.
Admin Building – Mill Road
Box 310
Mackenzie, BC
V0J 2C0

Dear Sarah,

Here is the 2017/2018 Facilitator's Report for the "Mackenzie SFM Plan Public Advisory Group."

This report contains the following:

1. Terms of Reference for the PAG
2. PAG Meetings (schedule of meetings, agendas, sign-in sheets, minutes)
3. Evaluations (sample of evaluation forms, feedback chart, feedback comments)
4. Mailing list and attendance list
5. Public Correspondence
6. First Nations Correspondence
7. CII Matrix and SFM Indicator Matrix
8. Annual Report
9. Audit Reports
10. Meeting Handouts

Sincerely,

A handwritten signature in black ink, appearing to read "Alan Wiensczyk". The signature is fluid and cursive, with a large loop at the end.

Alan Wiensczyk, RPF
Trout Creek Collaborative Solutions

Alan Wiensczyk, RPF
P · 250-614-4354 | C · 250-640-0496
alan@tccsolutions.ca | www.tccsolutions.ca



Mackenzie SFMP



Mackenzie Sustainable Forest Management Plan

Public Advisory Group

Facilitator Report 2017-2018

Table of Contents

1	Terms of Reference
2	PAG meetings Schedule of Meetings Meeting Attendance Agendas Sign-in sheets Summaries
3	Meeting Evaluations Sample Evaluation Form Feedback chart Feedback comments
4	Letters of Invitation Advertisements
5	Mailing Lists
6	Public Correspondence
7	First Nations Correspondence
8	SFMP Mandatory Discussion Item Gap Analysis
9	Annual Report
10	Audit Reports
11	Meeting Handouts



Mackenzie SFMP



Mackenzie Sustainable Forest Management Plan

Public Advisory Group

Terms of Reference

Jan 25, 2017

Background

1.1.1 Purpose of a Sustainable Forest Management Plan

As society has been increasingly affirming a wider set of values that forests can provide, the forest industry has witnessed a distinct change in the philosophy of forest management. Though timber may still be the primary economic value from the forests, a wider range of economic, environmental and social values is being demanded.

Forest management now involves the sustainable management of a much larger spectrum of values and at the same time ensuring that the benefits we enjoy from the forests today do not impact on the ability of subsequent generations to enjoy benefits from the forests in the future. This concept is commonly referred to as "Sustainable Forest Management" (SFM). Sustainable Forest Management (SFM) refers to being economically sustainable on public land, respecting the social needs of the public, and sustaining viable ecosystems. The objective of SFM is to concurrently balance the sustainability of forestry-related ecological, social and economic values for a defined area.

SFM has gained acceptance at the international, national, and local levels. Furthermore, SFM has attracted the attention of buyers of forest products who are increasingly demanding that the industry demonstrate that products are derived from forests managed on a sustainable basis. As a result, forest certification has emerged as a dominant factor in the forest industry in order to provide assurances to buyers of wood products that the management of forests meets identified standards that are considered critical for SFM. As British Columbia forest companies have evolved and have become dependent on the global marketplace for the export of forest products, the issues of sustainable forest management and forest certification have become paramount.

Canadian Forest Products Ltd., in partnership with other licensees, academics, resource specialists, government agency staff, interested parties, and other related organizations has designed an integrated framework for sustainable forest management across its divisions. This Sustainable Forest Management (SFM) Framework has become a credible alternative to current forest management planning in the interior of British Columbia.

The primary purposes of Canadian Forest Products Ltd. are to:

- a. Rely on the SFM Framework as the conceptual forest management strategy for the certification effort in Mackenzie;
- b. Jointly develop a Sustainable Forest Management Plan (SFMP) within the geographic area of the Mackenzie Forest District to meet the SFM standard requirements (Z809-08) developed by the Canadian Standards Association (CSA). This standard and subsequent revisions may be viewed online at <http://shop.csa.ca> by searching CSA Z809;
- c. Support a public advisory process to:
 - Identify and select indicators, and targets, based on the SFM framework and any other criteria relevant to the DFA;
 - Develop, assess, and select from alternative strategies;
 - Review the SFMP;
 - Design monitoring programs, evaluate results and recommend improvement; and
 - Discuss and resolve any issues relevant to SFM in the DFA;
- d. Work together to fulfill the SFMP commitments including data collection and monitoring, participating in public processes, producing public reports, and continuous improvement.

The SFMP may be used by Canadian Forest Products Ltd. to prepare for eventual certification under the Canadian Standards Association's (CSA) SFM Standard (Z809-08).

This SFMP is intended to be consistent with all existing legislation and other strategic plans.

1.1.2 Mackenzie SFMP Steering Committee

The current Mackenzie SFMP Steering Committee for the Mackenzie SFMP consists of representatives from Canadian Forest Products Ltd. (Canfor).

1.1.3 Defined Forest Area

The SFMP applies to only the Defined Forest Area (DFA). A DFA is a specified area of forest, including land and water. The DFA for this SFMP is within the Mackenzie Forest District, excluding areas such as private lands, woodlots, the Mackenzie/McLeod Lake Community Forest, Williston Reservoir, Indian reserves, Large Parks and Treaty 8 Lands¹. The DFA boundaries are shown on the map provided in Appendix A.

1.1.4 Public Advisory Group

The Public Advisory Group (PAG) for the Mackenzie SFMP is comprised of individuals representing the interests listed in Appendix B and First Nations listed in 6.1.1 who voluntarily participate in the PAG process. As outlined in these terms of reference, the PAG will specifically work under the Defined Goals (section 2) as an open, transparent and accountable process. The Mackenzie SFMP Steering Committee and the PAG recognize and agree that Aboriginal participation in the public participation process will not prejudice Aboriginal and Treaty rights.

1.1.5 Legislation

The Mackenzie SFMP Steering Committee and the PAG shall ensure that the indicators, and targets are consistent with current relevant government legislation, regulations and policies. The Mackenzie SFMP Steering Committee and the PAG must also respect the findings of any formal public participation processes that have developed values, objectives, indicators, or targets relating to the CSA SFM elements at a landscape or regional level in the area in which the DFA is situated.

2. Defined Goal

The goal of the Mackenzie SFMP is to demonstrate commitment to sustainable forest management for the DFA. The Mackenzie SFMP Steering Committee, with input from the PAG, will be responsible for developing and implementing the SFMP.

The PAG will have the opportunity to work with the Mackenzie SFMP Steering Committee to:

- a. Identify and select indicators, and targets, based on the SFM framework and any other criteria relevant to the DFA;
- b. Develop, assess, and select from alternative strategies;
- c. Review the SFMP;
- d. Design monitoring programs, evaluate results and recommend improvement; and
- e. Discuss and resolve any issues relevant to SFM in the DFA.

¹ Refers to fee simple and reserve lands

3. Timelines

Key dates for developing the SFMP:

	<u>To be completed by:</u>	<u>Completed on:</u>
a. Invitations sent to potential participants and newspaper ads published	January 15, 2006	Letters - January 10, 2006 Ads - January 17 & 24, 2006
b. Public Open House	January 21, 2006	January 23, 2006
c. Initial Public Advisory Group meeting	January 28, 2006	January 31, 2006
d. PAG input into the CSA matrix	June 2006	May 9, 2006
e. Strategic scenario analysis	September 2006	October 17, 2006
f. Review of draft SFMP by PAG	October 2006	October 2006
g. SFM Certification Audits	November 2006	November 2006 – February 2007
h. Review of Final SFMP by PAG	April 29, 2008	April 29, 2008
i. Plan updated and reviewed by the PAG		January 2010
j. Plan updated to the Z809-08 Standard and reviewed by the PAG		March 1, 2012
k. Plan updated to new format and reviewed by the PAG		March 25, 2015
l. Plan updated to the Z809-16 Standard and reviewed by the PAG	January, 2018	

Following the completion of the SFMP, it is estimated that the PAG meeting schedule would include 3–4 meetings per year (as required) beginning in 2007.

4. Communication

4.1.1 Between the PAG and Mackenzie SFMP Steering Committee

- The Mackenzie SFMP Steering Committee will ensure that the PAG meeting summaries are distributed to the PAG with the meeting notice.
- The Mackenzie SFMP Steering Committee will strive to provide background and technical information to the PAG as related to the PAG's defined role, including information related to the DFA and SFM requirements. Confidential business information of the Mackenzie SFMP Steering Committee such as financial or human resource information may be deemed sensitive or proprietary and may not be released.
- The Mackenzie SFMP Steering Committee will respond to all recommendations from the PAG. The Mackenzie SFMP Steering Committee will indicate how they applied the recommendations or provide reasons for not applying them. The meeting summary will capture the reasons for not implementing any PAG recommendations, whole or in part.
- The Mackenzie SFMP Steering Committee will provide a copy of the SFMP and annual reports to the PAG.
- The Mackenzie SFMP Steering Committee may caucus prior to responding to the PAG.

4.1.2 With the Public

- The Mackenzie SFMP Steering Committee will make copies of the SFMP and annual reports available to the public.

- b. When communicating to the media and external parties about the SFMP and PAG process, the PAG and the Mackenzie SFMP Steering Committee will speak only on behalf of their own personal perspectives, will be respectful of each other, and avoid characterizing their comments as representing the PAG or the Mackenzie SFMP Steering Committee. They will also inform the PAG and Mackenzie SFMP Steering Committee of their communication with the media.
- c. The PAG and Mackenzie SFMP Steering Committee may invite the media to attend meetings as observers with advance notification to the PAG and Mackenzie SFMP Steering Committee.

5. Resources

5.1.1 Travel Expenses

- a. Air travel from Tsay Keh and Fort Ware will be reimbursed for PAG representatives (or in their absence, their alternates). When necessary, mileage between these villages to catch flights to attend Mackenzie PAG meetings will be reimbursed.
- b. Mileage to and from PAG meetings for those PAG representatives (or in their absence, their alternates) traveling more than 25 kilometers each way to the meeting site will be reimbursed per kilometer at the provincial government rate. Mileage for those PAG representatives (or in their absence, their alternates) traveling between Tsay Keh or Kwadacha to/from Mackenzie will be reimbursed at the discretion of the Mackenzie SFMP Steering Committee. PAG representatives (or in their absence, their alternates) traveling from outside the Mackenzie Forest District must obtain approval for travel expenses from the Mackenzie SFMP Steering Committee before the meeting.
- c. Overnight accommodation for PAG representatives and alternates traveling to PAG meetings will be reimbursed if pre-approved by the Mackenzie SFMP Steering Committee. As a general principle, accommodation should be economical.
- d. Expense forms with copies of receipts for the above must be submitted to the facilitator within two weeks following the PAG meeting.

5.1.2 Meeting Expenses

- a. The Mackenzie SFMP Steering Committee will provide meeting rooms, meals, refreshments, a facilitator, and a scribe.
- b. The Mackenzie SFMP Steering Committee will provide adequate material and other resources to assist the PAG in understanding the relevant concepts.

6. Responsibilities

6.1.1 Public Advisory Group

6.1.2 Membership Structure

The PAG reflects a range of interests in the DFA. Members of each identified sector will select one representative and one alternate to participate in the PAG. Each representative and alternate will be allowed to represent only one of the sectors listed in Appendix B.

In addition to members of the public participating in the PAG, Aboriginal peoples have a unique legal status and may possess special knowledge concerning Sustainable Forest Management based on their traditional practices and experience. Each of the local First Nations listed below will be encouraged to invite their members to participate in the Mackenzie SFMP PAG. Members of each of the local First Nations attending PAG meetings will be invited to select a representative and alternate to participate in the PAG:

- Halfway River First Nation
- Kwadacha First Nation
- McLeod Lake Band
- Nak'azdli First Nation
- Sauleau First Nations
- Takla Lake First Nation
- Tsay Keh Dene
- West Moberly First Nations

6.1.3 Selection of the PAG

- a. The Mackenzie SFMP Steering Committee will recruit potential local PAG representatives and alternates through mailed invitations to individuals, an open house, posters, and advertisements through local media.
- b. Interested parties and the Mackenzie SFMP Steering Committee will review the potential membership at the initial PAG meeting. The Mackenzie SFMP Steering Committee will compile all names of potential representatives. Potential representatives for each interest area will discuss and agree as to who will stand as representative(s) and alternate(s). If they are unable to select a representative or alternate for the interest area, then the Mackenzie SFMP Steering Committee will recommend a solution.
- c. Once the PAG is established, the PAG and the Mackenzie SFMP Steering Committee can recommend changes in PAG structure, list of interests, and potential members.
- d. The Mackenzie SFMP Steering Committee, in consultation with the PAG, approves appointments and replacement of PAG representatives and alternates.

6.1.4 Responsibilities of PAG Representatives

PAG representatives are responsible for:

- a. Providing input related to the Defined Goals (defined in Section 2);
- b. Being prepared, informed and ready for meetings;
- c. Requesting of the Mackenzie SFMP Steering Committee an advisor to provide information when the PAG considers this necessary;
- d. Acting as a liaison between the PAG and others from the interest area they are representing;
- e. Assuming responsibility towards reaching consensus on recommendations to the Mackenzie SFMP Steering Committee;
- f. Attending meetings. It is recognized that PAG representatives may miss some meetings due to the nature of their work or other activities;
- g. Informing their alternate and the facilitator if unable to attend a PAG meeting. If a PAG representative misses more than two consecutive meetings without a valid reason and without notifying his/her alternate

and the facilitator, the Mackenzie SFMP Steering Committee may, based on consultation with the PAG, replace or remove that representative;

- h. Ensuring that the alternate is informed, up-to-date and prepared prior to the alternate participating in a PAG meeting. This includes providing the alternate with a past meeting summary in a timely, effective fashion; and
- i. Providing their input on upcoming agenda items when they are aware that they will be absent from a PAG meeting. They may provide their information to another PAG member or the Mackenzie PAG Steering Committee to present at the PAG meeting or forward it in writing to the facilitator who will then provide to the Mackenzie PAG Steering Committee or a specified PAG member to present at the meeting.

6.1.5 Responsibilities of PAG Alternates

An alternate may be appointed for each PAG representative. The PAG alternate is responsible for:

- a. Attending PAG meetings on behalf of the representative. When doing so, the alternate agrees to work according to the Terms of Reference; and
- b. Coming informed, up-to-date, and prepared for discussions and decision-making based on briefings by the representative when attending on behalf of the representative.

6.1.6 Mackenzie SFMP Steering Committee

The Mackenzie SFMP Steering Committee is responsible for:

- a. Providing and clarifying information to the PAG as related to the Defined Goals. Where possible, this material will be provided in advance of the meeting;
- b. Providing the PAG with necessary and reasonable human, physical, financial, information and technological resources;
- c. Where possible, informing the PAG (via the agenda) of any advisor attending a meeting;
- d. Not participating in reaching consensus on recommendations by the PAG;
- e. Considering and responding to the recommendations of the PAG;
- f. Making decisions regarding sustainable forest management and certification; and
- g. Preparing the PAG meeting agendas and summaries.

6.1.7 Advisors

The Mackenzie SFMP Steering Committee will invite advisors, as required, to provide technical information and advice to the PAG. These advisors could be from government agencies, professional organizations, academia, consulting firms, or other sources. Advisors are responsible for:

- a. Providing and/or clarifying technical or legal information as requested; and
- b. Not participating in reaching consensus on recommendations by the PAG.

6.1.8 Observers

The public is welcome to participate in discussions at PAG meetings. They may not participate in reaching consensus on recommendations by the PAG.

6.1.9 Facilitator

The PAG facilitator is responsible for:

- a. Ensuring that PAG meetings address the agreed-upon agenda items;
- b. Starting and ending meetings at the times stated in the agenda;
- c. Managing and implementing the Terms of Reference, including the appropriate participation of the PAG, the Mackenzie SFMP Steering Committee, advisors, and observers;
- d. Enabling equitable opportunity by all PAG representatives (or in their absence, their alternates) to participate in the meetings;
- e. Working to clarify interests and issues, and help the PAG build recommendations;
- f. Not participating in reaching consensus on recommendations by the PAG;
- g. Distributing the agenda prior to each PAG meeting; and
- h. Distributing the PAG meeting summaries following each PAG meeting.

7. Conflict of Interest

The PAG recognizes that a conflict of interest could occur if there is a potential for a representative (or his or her alternate) to personally and directly benefit from specific recommendations from the PAG. Therefore, if a PAG representative or alternate has a perceived or real conflict of interest that could result in a potential exclusive personal economic benefit in relation to his or her input to the Defined Goals, that representative or alternate, other PAG representatives and alternates, or a member of the Mackenzie SFMP Steering Committee must state the potential conflict. The PAG and the Mackenzie SFMP Steering Committee will then decide on what actions are needed.

Potential actions could include asking the representative or alternate to:

- a. Serve as an observer for the relevant specific issue(s) and recommendation(s);
- b. Take a leave from the PAG (length of term to be defined); or
- c. Carry on with normal participation.

8. Operating Guidelines

8.1.1 Meetings Guidelines

All participants in this process agree to:

- a. Arrive on time;
- b. Be prepared for each meeting;
- c. Follow the speakers list;
- d. Be respectful;
- e. Be concise; and
- f. Stay on topic.

8.1.2 Meeting Agenda and Schedule

The meeting agenda and schedule may change if agreed to by the PAG and Mackenzie SFMP Steering Committee.

8.1.3 Meeting Agenda

- a. Meeting agendas will address the needs of the SFMP and CSA requirements.
- b. The PAG may provide input to meeting agendas during each meeting.
- c. The agenda will include proposed objectives for the meeting.

8.1.4 Meeting Schedule

- a. The PAG and Mackenzie SFMP Steering Committee will agree upon meeting dates.
- b. Meetings will be held as needed to monitor and review the SFMP.

9. **PAG Satisfaction**

- 9.1.1 PAG satisfaction with the meeting and public participation process is gauged and measured at each meeting through a satisfaction survey. The results and comments from these surveys are then reported out at the following PAG meeting. Specific sections are measured and reported out through the SFMP Indicator entitled "Satisfaction (PAG)" in the Annual Report.

10. **Decision Making and Methodology**

- a. Anyone attending PAG meetings may participate in the discussions. However, only representatives will participate in making decisions, that is, recommendations to the Mackenzie SFMP Steering Committee.
- b. The PAG agrees to work by consensus. Consensus is defined as no PAG representative substantially disagreeing on an issue and being willing to proceed to the next step. The PAG will work to identify the underlying issues, seek compromise, identify alternatives, and clarify information. The PAG shall make every effort to achieve consensus in a positive and respectful manner, and commits to arriving at the best solution possible.
- c. The PAG will not revisit past decisions unless the PAG representatives agree to do so.
- d. A quorum for any meeting of the PAG shall be greater than 50% of the average number of PAG representatives attending the past five (5) meetings to a minimum of three (3).

11. **Dispute Resolution Mechanism**

11.1.1 Process Issues

The facilitator will resolve process issues.

11.1.2 Technical Issues

- a. Where an impasse is reached, the representation(s) with the outstanding issue shall offer solutions or options for resolution.
- b. If the impasse remains, the generally agreed-upon decision, along with the dissenting view(s), will be forwarded to the Mackenzie SFMP Steering Committee.

12. Review and Revisions

The PAG and Mackenzie SFMP Steering Committee will review and agree upon the Terms of Reference upon request from either/or the PAG or Mackenzie SFMP Steering Committee.

Approved:

Public Advisory Group

Date: January 31, 2006

Mackenzie SFMP Steering Committee

Date: January 31, 2006

Revised:

Public Advisory Group

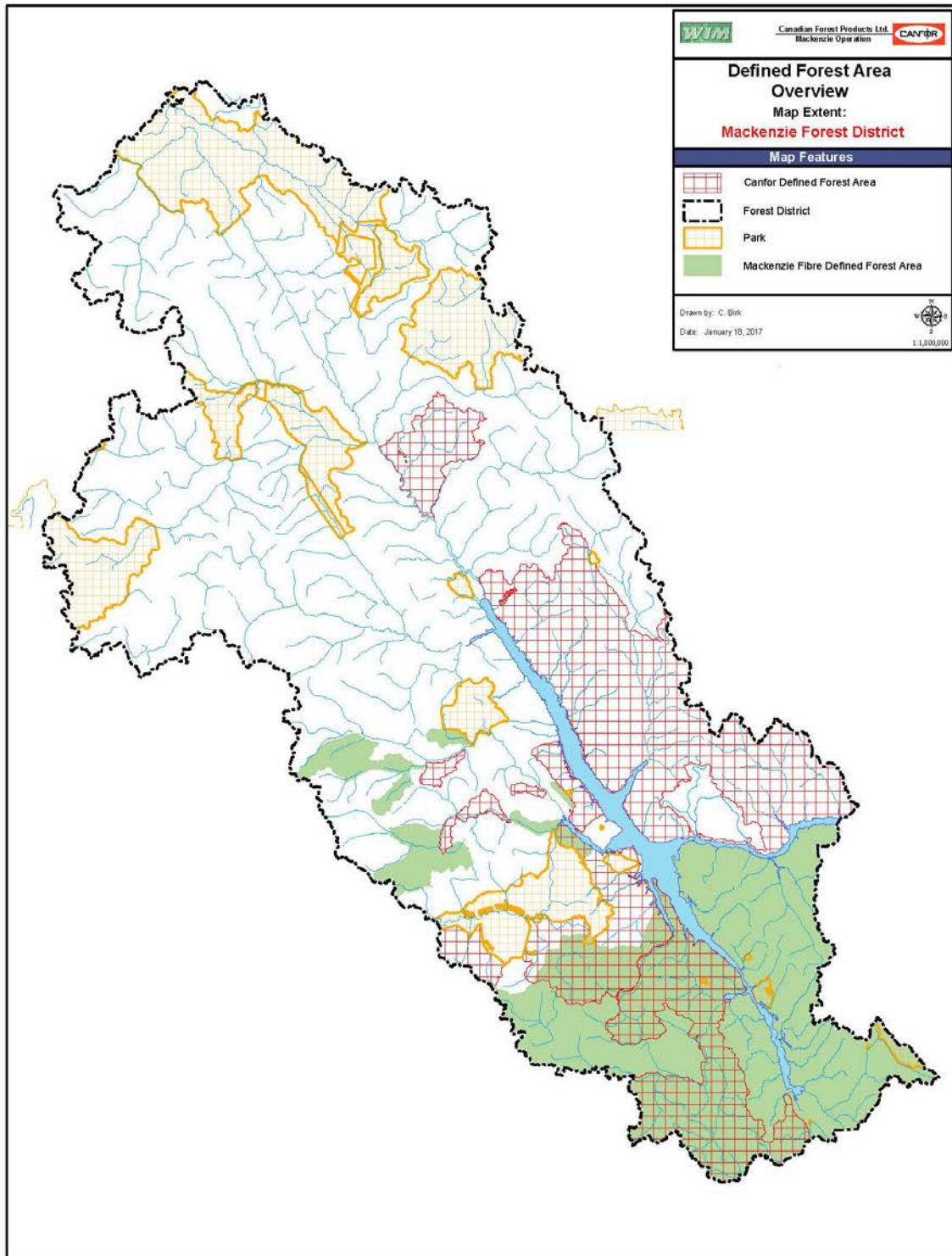
Date: Jan 25, 2017

Mackenzie SFMP Steering Committee

Date: Jan 25, 2017

Appendix A

Map of the Defined Forest Area (DFA)



Appendix B

Public Advisory Group Sectors

Academia
Agriculture/Ranching
Contractors – Forestry
Environment/ Conservation
First Nations²
General Public
Germansen Landing
Labour – CEP
Labour – PPWC
Local Government
McLeod Lake Indian Band
Mining/Oil & Gas
Noostel Keyoh
Public Health & Safety
Recreation – Commercial
Recreation – Non-commercial
Recreation – Non-commercial (motorized)
Saulteau First Nations
Small Business – Germansen Landing
Small Business – Mackenzie
Trapping
West Moberly First Nations
Woodlot

Approved:

Public Advisory Group	Date: January 31, 2006
Mackenzie SFMP Steering Committee	Date: January 31, 2006

Revised:

Public Advisory Group	Date: January 25, 2017
Mackenzie SFMP Steering Committee	Date: January 25, 2017

² This sector is open to allow participation of any First Nations person wishing to contribute



Mackenzie SFMP



PAG Schedule of Completed Meetings

Date	Time	Key Agenda Items
April 5, 2017	10:30 AM – 2:30 PM	<ul style="list-style-type: none">- Forest Carbon presentation- Transition to new Z809-16 CSA standard- Terms of Reference
Oct 4, 2017	10:30 AM – 4:30 PM	<ul style="list-style-type: none">- Field Trip- Soil disturbance- Wetland importance
December 6, 2017	10:30 AM – 1:30 PM	<ul style="list-style-type: none">- SFMP Annual Report- Transition to the new Z809-16 standard- Winter 2018 harvest plans



Mackenzie SFMP



**PAG Meetings
Quorum Table**

A quorum for any meeting of the PAG shall be greater than 50% of the average number of PAG members attending the past five (5) meetings to a minimum of three (3). (Mackenzie PAG Terms of Reference)

Date	PAG members present	Quorum required
February 10, 2010	8	3
June 2, 2010	9	3
October 20, 2010	4	4
February 23, 2011	7	3
October 26, 2011	5	4
March 7, 2012	4	4
June 19, 2012	4	3
October 24, 2012	5	3
March 27, 2013	6	3
August 21, 2013 (field tour)	3	3
March 19, 2014	8	3
June 4, 2014	7	3
Dec 3, 2014	5	3
March 25, 2015	3	3
Sept 30, 2015 (field tour)	4	3
Oct 28, 2015	7	3
May 18, 2016	6	3
Oct 5, 2016 (field tour)	7	3
Jan 25, 2017	4	3
Apr 5, 2017	6	3
Oct 4, 2017 (field tour)	3	3
Dec 6, 2017	5	3



Mackenzie SFMP



PAG Meeting

April 5, 2017

10:30 AM – 2:30 PM

Canfor Mackenzie Office
Conference Room

Meeting Objectives

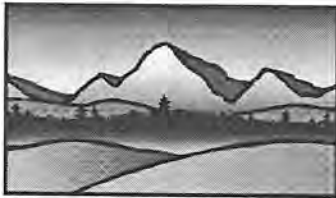
- 1) Presentation related to SFMP Discussion item “The role of forest ecosystems and their management in the global carbon cycle
- 2) Discuss SFMP Discussion Gap Analysis
- 3) Discuss SFMP indicator updates
- 4) Approve modified Terms of Reference

Agenda

1. Welcome and Introductions
2. Review Agenda
3. Review and Approve Meeting Summary – Jan 25, 2017
4. Evaluation Results (Jan 25, 2017)
5. Presentation related to the SFMP discussion item “The role of forest ecosystems and their management in the global carbon cycle” – Dr. Art Fredeen (UNBC)

~ Lunch ~ (12:00 – 12:45)

6. Transition to the new Z809-16 CSA standard
 - a. SFMP Discussion Item Gap Analysis – Sarah Curtis
 - b. Indicator change analysis – Sarah Curtis
7. Approval of revised Terms of Reference – Al Wiensczyk
8. Review of previous actions – Sarah Curtis and Al Wiensczyk
9. Evaluation forms
10. Next PAG meeting:
 - a. TBD



Mackenzie SFMP



PAG Meeting

April 5, 2017

Mackenzie, BC

NAME (Please Print)	SIGNATURE	PAG Rep / Alt Observer SC / Advisor
Al Wiensczyk		Facilitator
Art Fredson		Guest
David Breault		Scribe
Stephanie KILLAM		District
Beata Opalinska		Guest / Canfor
Sarah Curtis		Canfor
Vi Lambie		Pag Rep
Ron Crosby		PAG
G. Desjarlais		PAG
J. Stokmans		SARAH
Cornelia Thum		PAG



- Members Present:** Vi Lambie, Ron Crosby, John Stokmans, George Desjarlais, Stephanie Killam, Cornelia Thomi
- Absent:** Lawrence Napier, Dave Forshaw, Jim Besherse, Janet Besherse, Bruce Bennett, Pat Crook, Esa Aatelma, Alec Chingee, Peter Weeber, Cinnamon Neumeyer, Lyle Mortenson
- Ex-Officio Members Present:** Sarah Curtis, Beata Opalinska
- Advisors/Guests:** Dr. Art Fredeen
- Chair:** N/A
- Facilitator:** Alan Wiensczyk
- Scribe:** David Breault
- Quorum Present:** Yes: No:

1.0 Welcome and Introductions:

- Round table introductions.

2.0 Review of Agenda for this Meeting:

- Agenda accepted.

3.0 Minutes of Previous Meeting:

- Minutes from Jan 25, 2017 Mackenzie meeting reviewed.
- Question about whether Sarah sent updates on SFMP update process out and Sarah clarified that updates would be sent out following this meeting.
- Motion to accept the minutes as written.
- Minutes accepted.

4.0 Evaluation Results:

- The results of the PAG evaluations from the Jan 25, 2017 meeting were reviewed.
- At or above target on all indicators.
 - Will work to improve communication between meetings by sending out information in a timely manner when/if it's available.
 - There was a question about if alternate PAG members get notices about meetings because an alternate was missed. Facilitator said he would add the missed alternate, Barb Patterson, to the distribution list.

5.0 Forest Carbon Presentation

- Dr. Art Fredeen provided a presentation on GHG emissions, Disturbance, Climate Change, BC Forests, and Forest Products

Presentation Summary Notes:

- Contribution of BC forestry's sector to GHG emissions is a growing concern.
- Seasonal greening of forests draw CO₂ out of the atmosphere in spring and release it back into the atmosphere in the fall, but year-to-year atmospheric CO₂ is increasing by 3ppm/year (Mauna Loa Observatory).
- Changes in temperature and precipitation are much greater at northern latitudes like BC.



- The feedback between loss of biodiversity and climate change is a concern: there is 5-10 times more biomass in 5 domestic animal species than in all the wild terrestrial animals in the world.
 - Boreal forests are home to iconic wildlife and hold more surface freshwater than any other forest ecosystems globally.
 - This water provides breeding grounds for more than 300 bird species.
 - The boreal zone is home to over 600 aboriginal and forest-resource-dependent communities.
 - Kurtz et al. (2008) made models suggesting that MPB-killed forests would be major sources of atmospheric Carbon, and that they needed to be harvested or else it would be “armageddon”.
 - One of Art’s research questions was: How has MPB and salvage logging influenced Carbon-dynamics of BC pine-dominated forests? To answer this, flux sites were set up in three locations in Northern BC to determine when stand is a sink or a source of Carbon.
 - Eddy-covariance data from these sites suggests stands were acting as Carbon sinks in half the years following the kill.
 - These empirical findings were very different from the model outputs published in 2008, and suggest that we can’t predicate salvage logging based on the Carbon source argument alone.
 - Art also asked about other management options. For example, partial vs clear-cut systems? His results suggest partial cutting maintains Carbon in systems, and that clearcutting reduces Carbon uptake by forests. Clearcuts take about ten years to become Carbon neutral.
 - Art’s team also used dendrochronology methods to determine how long MPB killed trees take to fall and decompose.
- Question:** PAG member asked if levels of ant colonies in fallen trees were measured since they speed up falling and decomposition.
- Answer:** Art replied that they didn’t measure it but that would certainly have an effect.
- Question:** PAG member asked if there was eddy-covariance monitoring in stands in the Peace that hadn’t been hit hard by MPB, to get baselines for comparison with MPB-killed stands.
- Answer:** Art said the problem is with remoteness of locations for monitoring; there is too much travel involved and logistical issues with monitoring in that region.
- Art went on to explain how MPB forest products can contribute to reductions in GHG emissions in BC. An example of how this is possible is that the Prince George bioenergy plant uses waste from the mill to heat the UNBC campus, displacing 80% of GHG emissions from UNBC.
 - Art concluded that other values of boreal forests must be more important than forest Carbon for battling climate change, such as biological and structural diversity, and we have to consider old-growth as a non-renewable resource.

6.0 Transition to the new Z809-16 CSA standard

a. SFMP Discussion Item Gap Analysis

- A document was handed out which outlined discussion questions from past PAG meetings
- It identifies topics which have not been covered at meetings in a number of years and options to revisit topics in 2017

Main topics discussed:

Criterion 1 - Biological diversity

Connectivity and conservation at landscape level

- The group agreed that a guest speaker would be good for this because it is hard to demonstrate in the field. A strategic planning speaker was suggested, to demonstrate concepts with maps. Various guest speakers from different walks of life could demonstrate



this. There could be a First Nations perspective on caribou habitat, or perhaps a CANFOR person from Fort St. John could talk about warblers and other forest birds with regards to corridors.

Question: Guest asked about the Cumulative Impacts Research Consortium (CIRC) in B.C.. When estimating impact, does CANFOR consider impacts from other resource-use on the same landbase?

Answer: Sarah explained that sharing information between different land-users is difficult. Companies don't want to disclose information to one another and often adhere to different standards.

Role and importance of wetlands

- This was seen as an easy discussion for a field tour. Al asked if there were new indicators relating to this and Sarah said the indicators were currently sufficient to address wetlands. Vi asked if this was in consideration of natural wetlands only, and Sarah thought that it was.

Gene pool of native seed stock and GMO and regulatory/policy requirements

- Sarah will review GMO regulations. According to some members there is a good speaker for that who spoke at another meeting.

Question: There was a question about addressing endangered species again this year because there are several new species recommended for SARA listing in BC.

Answer: Kari with CANFOR is making a list of species of concern and Sarah said she will try to get her to come to one of the PAGs this year to talk about it.

Follow up from Sarah: The Ministry of Forests, Lands and Natural Resource Operations (FLNRO) – Tree Improvement Branch – Genetic Resource Management had the following statement on their website: “Tree Improvement Branch is not involved in any genetic engineering, gene insertion, gene splicing or biotechnology that results in genetically modified organisms. In keeping with the broad stewardship responsibilities of the Ministry of Forests, Lands and Natural Resource Operations for crown land, the Branch has ensured that no genetically modified tree seed has been registered or used in operational forest planting on crown land in British Columbia.”

Criterion 3 - Soil and water

- The group agreed this is a good topic for a field trip to see mitigation strategies. Things that could be covered with a field trip are: logging impact on thin soil duff on top of sand, land sliding, the role of wetlands in soil and water, hydrology, effects of MPB on water table, the effects of water tables on wildlife areas, soil productivity, seasons of operations (operating windows, impacts on soil during freezing/unfrozen), site rehab in areas of severe soil disturbance.

Criterion 4 - Role in global ecological cycles

- Carbon emissions from fossil fuels in forestry operations
- Dr Fredeen offered that one of his graduate students would be a good presenter for this topic because he has studied it in detail.

Criterion 5 - Economic and social benefits

Vulnerability of community sustainability linked to forest and timber supply conditions over time

- This could be another topic to discuss at a meeting



Economic and social benefits

- Cultural, spiritual, economic benefits for local and aboriginal communities (2006; 2010); fair distribution of costs and benefits (2009; 2010); proportion of goods and services sourced from local communities (2006; 2009); could discuss supermills and their implications for community sustainability and social benefits

b. Indicator Change analysis

Removal of Indicators:

- 5.2.4 - Level of Aboriginal Participation in the Forest Economy
- SFMP 5.2.4 (Contract Opportunities for First Nations)
- Remove from SFMP indicator and replace with another indicator
- Within indicator 5.2.4 there are three CSA statements. Therefore, removal of 1 statement would not impact 2 other statements. Sarah will track changes to SFMP, leave the old indicator in place and circulate it to the group so people can see what changes were made.
- 6.5.1 - Number of people reached through educational outreach
- The statement is covered by two CSA indicators (SFMP 6.5.1a SMA: educational opportunities; and SFMP 6.5.1b: people reached through educational outreach. PAG members can take home the documentation and consider if the indicator should be removed or kept. Sarah is going to look at the option of combining both indicators and reporting on both numbers (number of opportunities provided and number of people actually reached).

New Indicators:

CSA 3.2.2 - Proportion of forest management activities consistent with prescriptions to protect identified water features.

- Would fit within the existing SFMP indicators:
 - 1.1.4b – Riparian Area Management Effectiveness
 - 3.1.1a – Sedimentation
 - 3.1.1b – Stream Crossings
 - 3.2.1 – Peak flow
- Would put new indicator “3.2.2 statement” within the four SFMP indicators

CSA 5.1.2 - Evidence of open and respectful communications with forest dependent businesses, forest users and local communities to integrate non-timber resources into forest management planning. When significant disagreement occurs, efforts towards conflict resolution are documented.

- Would fit within the existing SFMP indicators:
 - 1.4.2a – Heritage Conservation
 - 5.1.1a – Non-timber benefits
 - 6.1.2a – First Nations concerns
 - 6.1.2b – First Nations input into Forest Planning
- There was a question about if Heritage values only include First Nations and Sarah clarified that the indicators consider recreational and heritage value for all people. Sarah said she could change the statement to include trails/other recreational uses.



CSA 7.1.2 - Evidence of ongoing open and respectful communications with Aboriginal communities to foster meaningful engagement, and consideration of the information gained about their Aboriginal title and rights through this process. Where there is communicated disagreement regarding the organization's forest management activities, this evidence would include documentation of efforts towards conflict resolution.

- There was a question about types of evidence for this indicator. Sarah's interpretation of the indicator is that evidence is required that *effort* was made to understand the concerns but not necessarily that all issues were addressed.
- Would fit within the existing SFMP indicators:
- 1.4.2a – Heritage Conservation
- 1.4.2b – Protection of identified sacred and culturally important sites
- 6.1.2a – First Nations Concerns
- 6.1.2b – First Nations input Forest Planning

Standardization

- The Canfor divisions worked together to standardize indicators to be used in SFMPs that would address various CSA Criteria. Reports were created to address those standardized elements. Sarah would like to change some of the current SFMP indicators to the standardized ones so that she can take advantage of the standardized reports and make Annual Reporting more streamlined. We do not want to weaken indicators by standardization and will only make changes that will maintain or strengthen the current Mackenzie SFMP indicators.
- Documentation was handed out with indicators highlighted with three colors:
- Red: do not standardize.
- Yellow: opportunity to standardize.
- Green: standardize! Small changes to wording but same intent; no impact to standardize.
- The group agreed that Sarah can make changes to green indicators as long as she presents both before and after versions side-by-side and shares them with the group.

ACTION: PAG members are asked to please review the material provided and provide any comments to either Sarah or Al. These items will be discussed at future PAG meetings.

7.0 Approval of revised Terms of Reference:

- Membership attendance of PAG meeting should be 50% of the last 5 meetings or a minimum of 3 people.

Question: Do new alternate members need to come to a minimum number of meetings and then the group votes on whether to accept the new member or not?

Answer: Facilitator said alternates need to come to a few meetings on a regular basis and show commitment before they can be voted in as a new alternate member.



8.0 Review of Previous Actions:

Action Item #	Action Item - Description	Status
May 18/16 – 01	Canfor to provide facilitator with a clear, updated map of the Defined Forest Area for inclusion in the Terms of Reference.	Complete
May 18/16 – 02	Facilitator, Steering Committee and PAG members to work on recruiting representatives for sectors in appendix B	In progress, some success
May 18/16 – 03	Facilitator and Steering Committee to work on improving access to PAG/SFMP documents via Canfor's website A separate Mackenzie PAG website with a bit of history and documentation	In progress, significant progress has been made
May 18/16 – 04	Facilitator to include meeting objectives as part of future meeting agendas.	Complete – will be ongoing
May 18/16 – 05	Facilitator to update the Mackenzie PAG Terms of Reference and obtain PAG approval	Complete
May 18/16 – 06	Steering Committee to present proposed changes to indicator 2.2.2a in the SFMP to the PAG	Complete – will be reflected in new SFMP.
Jan 25/17 – 04	Sarah Curtis will provide monthly progress updates regarding indicators and the transition to the new CSA standard.	March 2017 - Ongoing
Jan 25/17 – 05	PAG members will forward suggestions for fall field tours to Al or Sarah. *John suggested learning about operations in the field (ie. process at the stump).	June 2017 Meeting

9. Evaluation Forms

- Evaluation forms were distributed, completed, and collected.

10. Upcoming PAG Meetings

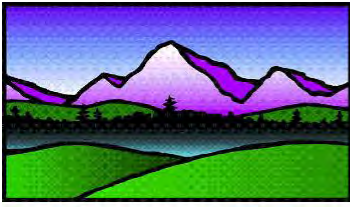
- June 2017
- Fall Tour
- November 2017



11. Action Item Summary:

New Action Items:

Action Item #	Action Item - Description	Status
Apr 05/17 – 01	Sarah to share the timber sales list of endangered species and species at risk with the group.	Next meeting
Apr 05/17 – 02	AI to forward a copy of Art's presentation to the group	With Minutes
Apr 05/17 – 03	Members to review old discussion topics and let Sarah know which topics they would like to review this year.	Next meeting
Apr 05/17 – 04	Sarah to make changes to green indicators and present both before and after versions side-by-side and shares them with the group.	On-going (standardization will be completed as SFMP indicators are updated to new certification)
Apr 05/17 – 05	PAG members to provide feedback on whether indicator 6.5.1 should be removed or kept.	Next meeting
Apr 05/17 – 06	Sarah will track changes to SFMP 5.2.4, leave the old indicator in place and circulate it to the group so people can see what changes were made.	On-going



Mackenzie SFMP



PAG Field Tour

Oct 4, 2017

10:30 AM – 4:30 PM

Mackenzie Defined Forest Area

Draft Agenda

Item	
Welcome and organizing transportation; Mackenzie Rec Center	Al Wiensczyk (facilitator)
1) Soil Conservation, Disturbance, and mitigation	Sarah Curtis (Canfor)
<i>Lunch</i>	
2) Role and Importance of wetlands – biologically	Mark Thompson (DWB Consultants)
3) Importance of wetlands – First Nations perspective	George Desjarlais (WMFN)
Travel back to Mackenzie Rec Center	
Wrap-up	Al and Sarah



- Members Present:** Alec Chingee, Vi Lambie, Cinnamon Neumeyer
- Absent:** Dave Forshaw, Jim Besherse, Janet Besherse, Stephanie Killam, Ron Crosby, Esa Aatelma, Pat Crook, Cornelia Thomi, Lawrence Napier, George Desjarlais, John Stokmans, Lyle Mortenson, Barb Patterson (Alt)
- Ex-Officio Members Present:** Sarah Curtis
- Advisors/Guests:** Beata Opalinska (Canfor), Matt Moore (Canfor), John Lambie, Mark Thompson (DWB Consultants)
- Chair:** N/A
- Facilitator:** Alan Wiensczyk
- Scribe:** None
- Quorum Present:** Yes: No:

1.0 Welcome and Introductions:

- Met at the Mackenzie Rec Centre
- Boarded vehicles for field trip

2.0 Review of Agenda for this Meeting:

- Reviewed Field trip itinerary.
- Itinerary accepted.

3.0 Minutes of Previous Meeting:

- Minutes from last Mackenzie meeting deferred until next Mackenzie PAG meeting.

4.0 PAG Satisfaction Survey Results:

- Deferred until next Mackenzie PAG meeting.

5.0 Stop 1 – Soil Conservation (Sarah Curtis, Beata Opalinska, Matt Moore – Canfor)

- Soil conservation is one of the 11 resource values identified under the Forest and Range Practices Act (FRPA).
- The FRPA objectives for soil conservation are:
 - To limit the extent of soil disturbance caused by harvesting and silviculture activities that negatively affect the physical, chemical, and biological properties of the soil
 - To conduct forest practices in a manner that addresses the inherent sensitivity of a site to soil-degrading processes to minimize detrimental soil disturbance, landslides, soil erosion, and sediment delivery to streams
 - To limit the area of productive forest land that is occupied by permanent roads, landings, pits, quarries, and trails to the minimum necessary to safely conduct forest practices
- Under the CSA certification standard the conservation of soils is covered under Criterion 3 – Soil and Water. In the standard there are two indicators 3.1.1 Level of Soil Disturbance and 3.1.2. Level of downed woody debris.
- The Mackenzie SFMP has 6 indicator sheets related to CSA indicator 3.1.1.
- These include
 - Sedimentation
 - Stream Crossings
 - Road re-vegetation
 - Road Environmental Risk Assessments



- Soil conservation, and
- Terrain management
- Beata discussed the importance of soils in terms of site productivity
- The top soil, which includes the organic layers plus the upper 10-15 cm of mineral soil is critical to plant and tree growth.
- Soil compaction caused by repeated traffic over a certain area will also affect soil productivity
- Compaction will decrease soil pore space which limits the amount of oxygen in the soil that tree roots need to grow.
- Compacted soils also tend to stay colder longer in the spring thereby limiting the time available for tree root growth.
- Severe compaction can also physically limit plant and tree root growth.
- Can use tillage to break up any compaction
- Can also harvest in the winter on frozen soils
- Soils in this area are loam and silty loam, podzolic soils with small stones – morainal
- Role of Field Operations staff
- Part of their job is to collect soil data from a dug soil pit
- Measure the soil profile
- Also document plant species
- Record all of this information on a plot card which is used to help create the site prescription.

Question: What about blowdown and soil – is there a relationship?

Answer: Yes, other factors include the rooting habit of the species (spruce tends to have wide spreading shallow roots, pine tends to have deeper roots), and soil moisture content.

Question: For tree planting are soils used to determine species to be planted?

Answer: Yes, they are factored in, as well as what species was growing on the site and was harvested.

- Soils can also influence forest health
- For example – too dry, can lead to drought conditions which stress the trees and make them more susceptible to bark beetles
- Matt Moore discussed how Canfor works to prevent soil disturbance and what they do should soil disturbance happen
- Important step is to have an accurate map of soil types and identify any challenging areas (e.g., fine-textured soils, wet areas, etc.)
- This gets used during the development of the site plan
- Standard soil disturbance level allowed is 10%
- May have some areas where the allowable soil disturbance limit is 5%
- Roadside areas will sometimes have up to 25% soil disturbance
- Decide on when to harvest – frozen ground, snow
- During the harvest operations the feller buncher operator may be first to notice a wet area if it was missed during the block layout stage
- They may leave stubs around the area to identify it to other operators
- If operations require that there be multiple passes over a wet area, they may put harvested trees down as a corduroy path.
- Those trees would be removed afterwards and then the site rehabilitated
- Can also use tops and branches and drive over them.
- Some machines have high floatation tires.



- Benches on slopes can be water collection areas and can be wetter
- Also areas near streams and draws
- Compaction is the biggest issue
- Compacted areas can be 'fluffed' back up by using the bucket on the front of a piece of equipment.
- If the plan is to rehab roads then the organic matter is usually taken off and left beside the road.
- The road is built on mineral soil.
- When rehabbing the road the running surface is decompacted and recontoured to match the terrain and the organic matter is put back.

Question: Steep ground – how to stop sloughing?

Answer: Sloughing is usually caused by putting more water where there wasn't water before. So we have to try and control water movement on the site by correct placing and use of drainage structures.

Question: Doesn't the water table come up after harvesting when the trees removed?

Answer: It can, but exposure of the ground also increases temperature which can increase evaporation.

Question: What would trigger road rehab?

Answer: To reduce access to protect other values (e.g., caribou) or a stakeholder concern.

Other discussion

- Consideration of the migration of animals
- Through government orders
- Through SFMP – do more than required.
- Rusty blackbird – at risk species
- Management of at risk species usually covered at planning stage
- If missed and something found by contractor, then work stops until an expert can be brought out to look and determine appropriate actions
- Wildlife tree patches – how are they determined/located?
- Deciduous trees, or inoperable ground, tie in to riparian or other high wildlife value areas.
- Mandated to leave a certain percentage.
- Small mammals
- Like to see some debris left on-site to provide cover.
- Mice and voles are food for other fur bearers
- 1 m tall piles – longer, shorter rows
- Protect marten and fisher from predators

Stop 2 – Importance of Wetlands (Mark Thompson – DWB Consulting)

- Mark is an amphibian biologist
- Studied the genetic diversity of long-toed salamanders
- Was also involved in outdoor education for students
- Conducting a research project through the Fish and Wildlife Compensation Program
- Amphibian and wetland connectivity
- Workshops on best management practices to protect amphibians and wetlands – also FWCP
- Wetlands of British Columbia: A guide to Identification – by Mackenzie and Moran, 2004 describes a system of wetland classification
- >0.5 ha in size of wet area considered to be a wetland, >0.25 ha in the Douglas Fir-Cariboo Region
- Amphibians need a matrix of wetlands and uplands to complete their lifecycle



- 2 amphibian species have been known to have gone extinct in the last 500 years in North America
- Coarse Woody Debris can be a little like a 'wetland' for an amphibian as all of the components are there.
- Amphibians play a big role in ecosystem function.
- We know nothing about them in terms of forestry.

Question: What about wood frogs?

Answer:

- Widely distributed in North America
- Will freeze solid in the winter
- Will congregate in wetlands in the spring
- Then distribute into the forest to find small wetlands
- Live 2 years – rapid colonizers with fast turnaround
- Water collects post-harvest – compaction / ditches creates mini-wetlands (vernal pools)
- Mini-wetlands become habitat traps – population sinks
- All amphibians very weather dependent
- Can be elusive to study
- Marshes – important for birds/small mammals
- Using GIS to study the extent of wetlands
- Garter snakes – moving further north according to Tsay Keh Dene Nation peoples
- We know very little about ecology of amphibians in northern environments
- First Nations know that all animals use water in some capacity
- Need a full complement of species to ensure wetlands continue to exist - resilience
- Wetlands also provide habitat for ungulates
- Western toads are a major group in wetland ecosystems
- Remove them and you will change the vegetation in the wetland resulting in a change in the habitat value of the wetland

Comment/Discussion

- Draw down zone in the reservoir
- Very hard for vegetation to develop and persist there due to fluctuating water levels, reservoir debris and wave action.
- Western toads on the SAR list
- Not able to get \$ to study long-toed salamanders in the north because people think they are okay. But we're not studying them, so how do we know for sure that they're okay.
- Tsay Keh Dene have to deal with huge dust storms when the reservoir is down
- Trying to find plants that can grow in the draw-down zone.
- Ecologists for DWB consultants are working on these issues.
- Discussion on what can be done to stabilize the draw down zone.
- Need to answer the questions on the whole system – need a suite of plants that can grow. Community assembly is key.
- Takes a unique set of skills to find amphibians in the field and to study them.



7.0 Evaluation Forms

8.0 Next PAG Meeting

- Late fall/early winter meeting

9.0 Action Summary:

Action Item #	Action Item - Description	Status
May 18/16 – 01	Canfor to provide facilitator with a clear, updated map of the Defined Forest Area for inclusion in the Terms of Reference.	Next meeting
May 18/16 – 02	Facilitator, Steering Committee and PAG members to work on recruiting representatives for sectors in appendix B	In progress
May 18/16 – 03	Facilitator and Steering Committee to work on improving access to PAG/SFMP documents via Canfor’s website	In progress
May 18/16 – 04	Facilitator to include meeting objectives as part of future meeting agendas.	Next Meeting
May 18/16 – 05	Facilitator to update the Mackenzie PAG Terms of Reference and obtain PAG approval	Next meeting
May 18/16 – 06	Steering Committee to present proposed changes to indicator 2.2.2a in the SFMP to the PAG	Next meeting



Mackenzie SFMP



PAG Meeting

Dec 6, 2017

10:30 AM – 2:30 PM

Canfor Mackenzie Office
Conference Room

Agenda

1. Welcome and Introductions
2. Review Agenda
3. Review and Approve Meeting Summary – Apr. 5, 2017 and Oct. 4, 2017
4. Evaluation Results (Apr. 5, 2016 and Oct. 4, 2017)
5. 2016/17 SFMP Annual report presentation – Sarah Curtis (Canfor)

~ Lunch ~ (12:00 – 12:45)

6. Transition to the new Z809-16 CSA standard – Sarah Curtis
7. Update on planned winter harvest areas – Beata Opalinska
8. Review of previous actions – Sarah Curtis and Al Wiensczyk
9. Evaluation forms
10. Next PAG meeting:
 - a. TBD



Mackenzie SFMP



PAG Meeting

Dec 6, 2017

Mackenzie, BC

NAME (Please Print)	SIGNATURE	PAG Rep / Alt Observer SC / Advisor
Al Wiensczyk		Facilitator
Anna Monetta		Scribe
Sarah Curtis		Canfor
Beata Opalinska		Canfor
Vi Lambie		Pag rep
Barb Paterson		Alt.
Ron Crosby		PAG
Cornelia Thorne		PAG.
Cinnamon Neumeyer		CNO



Members Present: Vi Lambie, Ron Crosby, Cinnamon Neumeyer, Barb Paterson, Cornelia Thomi
Absent: Lawrence Napier, Dave Forshaw, Jim Besherse, Janet Besherse, Bruce Bennett, Pat Crook, Esa Aatelma, Alec Chingee, Peter Weeber, Lyle Mortenson, George Desjarlais, Stephanie Killam, John Stokmans
Ex-Officio Members Present: Sarah Curtis, Beata Opalinska
Advisors/Guests: N/A
Chair: N/A
Facilitator: Alan Wiensczyk
Scribe: Anna Monetta
Quorum Present: Yes: No:

1.0 Welcome and Introductions:

- Round table introductions.

2.0 Review of Agenda for this Meeting:

- Agenda accepted.

3.0 Minutes of Previous Meetings:

- Minutes from the April 5th and October 4th, 2017 meetings reviewed.
- Motion to accept the minutes as written.
- Minutes accepted.

4.0 Evaluation Results:

- The results of the PAG evaluations from the two previous meetings were reviewed.
- At or above target on all indicators except for .
 - April 5th, 2017 : **A5** – provide better communication between meetings.
 - October 4th, 2017 (field tour): **A3** – meeting agenda reviewed and followed. **A8** – PAG members involved in the meeting. There could be a misunderstanding about the meaning of this indicator. The objective is to determine if the facilitator ensured all members were able to speak and participate during the meeting NOT whether or not PAG members showed up to the meeting. There will be a separate evaluation form created for field tours.

5.0 2016/17 SFMP Annual Report: Sarah Curtis

Presentation Summary Notes:

- The reporting period for the annual report is April 1st, 2016 to March 31, 2017 and this is still a draft report.
- Indicators not met in the previous year (2015/16) were:
 - **1.2.1a** : *Percent of blocks and roads harvested that adhere to management strategies for Species at Risk, Ungulate Winter Ranges, and other local Species of Importance.* There was a small section of a block that overlapped a UWR that is meant to protect low elevation caribou lichen habitat. This part of the block was scheduled to be harvested in the winter so



that the snow pack would cushion the lichen, however this was missed and harvested in the summer along with the rest of the block. This target was met this year.

- 6.5.2b: *Percentage of off-block road deactivation projects that are communicated with applicable First Nations and Stakeholders.* There was a major deactivation in the Clearwater that had no record of stakeholder or public communication. There were no major deactivations during this year's reporting period so this indicator was met this time.
- For the 2016/17 reporting period, out of 48 indicators, 47 objectives were met, and one objective is pending.
- The indicator that is pending is 2.2.2a: Actual harvest volume compared to the apportionment across the Defined Forest Area (DFA) over each 5-year cut control period. As of 2016 98% of the apportionment has been harvested. 2016b was the fourth year, and Canfor will need to harvest over the annual allowable cut (AAC) in order to meet the five-year cut control.

Question: What happens if you don't meet it?

Answer: There is a lost harvest opportunity but don't think there is a penalty for the next cut control period.

ACTION ITEM #1: Sarah will find out if there is a penalty for the next cut control period.

- Opportunities for improvement were:
 - **6.2.1a** : *First Nations Concerns.* There is only one reported concern brought forward and incorporated into operational plans. This is not representative of Canfor's process and the communications that are occurring between Canfor and First Nations. This is a documentation issue making it challenging to report. Earlier this year we developed a new process for tracking concerns and how we incorporate these into our operational plans. Future reporting of this indicator will show a more realistic view.
 - *Reportable spills:* there were three spills reported, two on the transporter and one on a road.
- Honourable mentions were as follows:
 - **2.2.2b** : *Prioritizing harvest of damaged stands.* Out of 82 blocks harvested, 52 blocks addressed mountain pine beetle and 26 blocks addressed spruce beetle. Of a total harvest of 5410 hectares, 5241 hectares were harvested in stands considered a high risk to stand damaging agents.
 - **6.1.2b and 6.4.2a** : *First Nation input into forest planning and Input into forest planning.* Sarah showed a table listing all the opportunities for input. These numbers are a large improvement over past years, with many of the communications being attributed to the Forest Stewardship Plan re-write that is currently underway.

Question: Are these actual or approximate times?

Answer: This measures opportunities such as letters, advertisement and meetings.

Question: Do you track contacts you make with First Nations and stakeholders?

Answer: Canfor has a database that records all phone calls, emails, meetings and notes.

ACTION ITEM #2: Sarah handed out a copy of the annual report. The PAG has 30 days to review and comment on the annual report. It will then be posted on the Canfor website.



6.0 Transition to the new Z809-16 CSA standard: Sarah Curtis

- The objective is to update the 2008 CSA standard to the 2016 standard. There is a two-year transition period and Canfor must be audited in September 2018. The changes will involve less work than anticipated.
- Tasks completed to date include comparison of old and new indicators, and review of criteria indicators #1 to 7.
- The next steps are: PAG endorsement of changes at today's meeting; develop the draft Sustainable Forest Management Plan(SFMP), which is 90% complete; present the draft SFMP to the PAG mid-January 2018; following a 30-day review by the PAG finalize the SFMP by the end of February 2018; PAG acceptance of the SFMP in March 2018.
- Today's work is to endorse two CSA core indicators.
- Sarah handed out a chart with updated timelines.
- There are also some administrative changes that streamlines the wording for each statement and how the tables are arranged. The Canfor Standardized Indicator statements have been removed. These statements were put in place in an attempt to standardize Canfor's SFMP's across divisions. The statements do not apply to Mackenzie's SFMP and were mainly used by Canfor's planners.

Question: How different are the Canfor standardized indicators?

Answer: Some are very different and some are similar.

Question: How much of your time is spent on certification?

Answer: Should be 25% but is more than that. Most of time is spent on operational planning.

- Sarah handed out the SFMP matrix that shows the changes required shaded in orange.
 - **SFMP Indicator 1.4.1** : *Protection of sites of special significance*. Percentage of forest management activities that adhere to strategies for sites of biological, geological, heritage, or cultural significance, as contained in operational plans. Two words were added – geological and heritage. Target = 100% Variance = 0%.

Question: Do you have a definition for "significance" or is it an opinion?

Answer: The certified part of the statement has a clause that reads – "Respect protected areas identified through government processes. Co-operate in broader landscape management related to protected areas and sites of special biological or cultural significance. Identify sites of special biological, geological, geritage, or cultural significance within the DFA, and implement management strategies appropriate to their long-term maintenance. Examples of sites of significance include: critical areas for wildlife habitat, spiritual sites, rare forest conditions, heritage sites, etc.

Comment: Need all types of forest conditions.

Answer: Difficult to find all conditions.

ACTION ITEM #3: The Prince George PAG will be inviting Kari Stuart-smith, bird specialist, for a field trip. Perhaps the Mackenzie PAG can join the Prince George field trip or invite Kari to come up to Mackenzie that same week.



Change to CSA element 1.4 endorsed.

- **CSA Indicator 5.1.2** : Evidence of open and respectful communications with forest-dependent businesses, forest users, and local communities to integrate non-timber resources into forest management planning. When significant disagreement occurs, efforts towards conflict resolution are documented. There are two new indicator statements being proposed:
 - **SFMP Indicator 5.1.2a**: Percentage of timely responses to written public enquiries. Target = 100% of written enquiries responded to within 30 calendar days of receipt. Variance = 0%
 - **SFMP Indicator 5.1.2b**: Efforts made to resolve 100% of significant disagreements. Variance = 100%.

Question: How would you respond – by email or letter?

Answer: If we get a letter, will write a letter back. Send emails and/or call. We check to see if that group or individual is in our database and how to contact them. We can't always accommodate but will try and mitigate the situation. This indicator serves to show that Canfor is trying to respond in a timely manner, that there is effort towards conflict resolution.

Comment: There was a situation where Canfor had to build a road through the Community Forest(CF). The community forest had been negotiating with Canfor regarding the final price for the wood removed. Canfor commenced road building without notifying the Community Forest which resulted in the CF begin in non-compliance with the Ministry of Forests, because they had not notified the government of these operations.

ACTION ITEM #4: Sarah will ask the harvesting supervisor to follow-up on this infringement on the Community Forest.

Question (Canfor): Would these indicator statements (5.1.2a and 5.1.2b) cover this situation? .

Answer: This indicator would not cover this situation as the Community Forest is considered a Licensee whereas this indicator addresses First Nations and Stakeholders (for example, we wouldn't cover our communications with Conifex under our certification standard). Additionally, the Community Forest is not included in the SFMP Defined Forest Area (CSA) so it is not certified under the CSA standard. However, were this conflict between Canfor and a stakeholder (ex: guide/outfitter), the communications would be documented and reported under this indicator.

Question: If you go away for a few weeks, would you be able to meet this timeline?

Answer: The 30 days is from receipt of the enquiry. If Canfor staff are away someone else can respond.

Question: Has the glossary appendix changed?

Answer: No.

ACTION ITEM #5: Add a definition for stakeholder.

Change to CSA core indicators 5.1.2 a and b endorsed.

Question: Does this include documentation?

Answer: No change in our process, just documenting and reporting.



Question: Does this apply to silviculture as well as harvesting operations?

Answer: Silviculture does referrals for spraying or other activities that impact stakeholders. These are also documented. Were there to be conflicts, they would be documented and reported under this indicator.

Question: Do you ever run into a situation where you cannot get a hold of someone?

Answer: We leave voice mails, send emails and document everything. The indicators are ensuring that an effort is made, so as long as we are trying to get ahold of the stakeholder, the indicator is being met.

7.0 Update on planned winter harvest areas: Beata Opalinski

- Beata showed the winter harvest plan on a large wall map. There is 1.5 million meters³ planned so far.
- The harvest areas are dispersed throughout the defined forest area. Spruce beetle affected areas as well as some pine salvage are being targeted. There are also three subalpine fir leading stands planned for harvest.

Question: Is there any trap tree sanitation going on?

Answer: Not a lot. Canfor is establishing trap-trees during road pre-development, resulting in trap tree trails where the logs are left and then removed after the beetle flight.

Comment: There has been some mountain pine beetle trees falling on trails and now will have spruce beetle affected trees fall on trails.

Comment: There will be some spruce in Old Growth Management Areas(OGMA's) that cannot be harvested. Ministry stewardship foresters manage and set criteria for OGMA's and the order is signed by the Regional Executive Director. Canfor has argued that the OGMA's are no longer functioning but government staff noted that there is integrity even in dead stands.

Question: Are you done north of Community Forest (in the Misinchinsinlinka)?

Answer: After this winter, will be finished in that area.

Comment: The structure is not working for ungulates in some OGMA's and Canfor should look at replacing these areas.

Answer: This could a topic for joint discussions among licensees and government to review OGMA's.

8.0 Changes to Green Indicators: Sarah Curtis

- Sarah handed out documents detailing proposed changes to green indicators in the Mackenzie DFA Sustainable Forest Management Plan. The documents compared the present 2015 wording to the proposed 2017 wording. The statements for these indicators have been re-ordered and there are minor wording changes. The PAG was given time to review the documents and endorse the changes as follows:
 - **3.1.1e** : Soil Conservation – **changes endorsed**
 - **1.1.1a** : Species within the DFA
 - Question: What about species identified locally?
 - Answer: Yes these are included.
 - **6.3.3b** : Safety Policies - **changes endorsed**



- **2.2.2a** : Harvest Volume - *changes endorsed*
- **2.1.1a** : Regeneration Delay. Canfor already reports on this annually.
 Question: Why is it calculate annually??
 Answer: It is calculated on stands planted annually..
-changes endorsed

9.0 Review of Previous Actions:

Action Item #	Action Item - Description	Status
May 18/16 – 01	Canfor to provide facilitator with a clear, updated map of the Defined Forest Area for inclusion in the Terms of Reference.	Complete
May 18/16 – 02	Facilitator, Steering Committee and PAG members to work on recruiting representatives for sectors in appendix B	In progress, some success Dec 6, 2017
May 18/16 – 03	Facilitator and Steering Committee to work on improving access to PAG/SFMP documents via Canfor’s website A separate Mackenzie PAG website with a bit of history and documentation	In progress, significant progress has been made
May 18/16 – 04	Facilitator to include meeting objectives as part of future meeting agendas.	Complete – will be ongoing
May 18/16 – 05	Facilitator to update the Mackenzie PAG Terms of Reference and obtain PAG approval	Complete
May 18/16 – 06	Steering Committee to present proposed changes to indicator 2.2.2a in the SFMP to the PAG	Complete – will be reflected in new SFMP.
Jan 25/17 – 04	Sarah Curtis will provide monthly progress updates regarding indicators and the transition to the new CSA standard.	March 2017 - Ongoing
Jan 25/17 – 05	PAG members will forward suggestions for fall field tours to Al or Sarah. *John suggested learning about operations in the field (ie. process at the stump).	Dec 6, 2017 meeting: Coarse woody debris(CWD) – Scott McLean Small mammal research – Dexter Hodder Birds – field trip with Kari Stuart-smith
Apr 05/17 – 01	Sarah to share the timber sales list of endangered species and species at risk with the group.	List handed out at Dec 6, 2017 meeting



Apr 05/17 – 02	AI to forward a copy of Art’s presentation to the group	Done
Apr 05/17 – 03	Members to review old discussion topics and let Sarah know which topics they would like to review this year.	Ongoing
Apr 05/17 – 04	Sarah to make changes to green indicators and present both before and after versions side-by-side and shares them with the group.	Completed Dec 6, 2017
Apr 05/17 – 05	PAG members to provide feedback on whether indicator 6.5.1 should be removed or kept.	Completed Dec 6, 2017 (keep in Mackenzie SFMP)
Apr 05/17 – 06	Sarah will track changes to SFMP 5.2.4, leave the old indicator in place and circulate it to the group so people can see what changes were made.	Completed Dec 6, 2017

9. Evaluation Forms

- Evaluation forms were distributed, completed, and collected.

10. Next PAG Meeting

- TBD

11. Action Item Summary:

New Action Items:

Action Item #	Action Item - Description	Status
Dec 06/17 – 01	Sarah will find out if there is a penalty for the next cut control period.	By next meeting.
Dec 06/17 – 02	Sarah handed out a copy of the annual report. The PAG has 30 days to review and comment on the annual report. It will then be posted on the Canfor website.	January 4 th , 2018
Dec 06/17 – 03	Invite Kari Stuart-Smith (Canfor biologist) to present at a Mackenzie PAG Field Tour	2018
Dec 06/17 – 04	Sarah will ask the harvesting supervisor to follow-up on this infringement on the Community Forest.	By next meeting
Dec 06/17 – 05	Add a definition for stakeholder in the SFMP Glossary	January 2018



Public Advisory Group (PAG) Evaluation Form

PAG Meeting Date: _____ **PAG Member** _____ **Licensee Team** _____ **Guest** _____

The purpose of this form is to provide an opportunity for PAG members to evaluate the effectiveness of the public participation process with the goal of facilitating continual improvement.

Please evaluate the following:	Very poor (1)	Poor (2)	Average (3)	Good (4)	Very good (5)
A. Meeting and PAG Process					
1. I have a good understanding of the purpose of the PAG and my role as part of that group.					
2. Information provided in advance of meetings allows me to effectively contribute at meeting.					
3. The meeting agenda is reviewed prior to the meeting and followed					
4. The meeting minutes capture important aspects of the meeting including actions, progress updates, and any decisions.					
5. Communication with PAG members between meetings is adequate.					
6. Licensees' share new information with PAG members regarding impacts to the environment, sustainability, forestry, etc.					
7. The PAG Terms of reference are followed.					
8. Were most PAG members involved in meeting?					
9. Was there a positive atmosphere for the meeting?					
10. Was information presented clearly at the meeting?					
11. What is your overall satisfaction with the PAG process?					
12. Ex-officio, licensee, or technical team members were organized and prepared for meeting.					
B. PAG Meeting Facilitation:					
13. PAG meeting facilitator was organized and prepared.					
14. PAG meeting facilitator strived for consensus decision making.					
15. Facilitator actively listened to concerns and viewpoints expressed during the meeting.					
16. PAG meeting facilitator addressed process issues.					
17. PAG meeting facilitator remained neutral on content issues					
18. PAG meeting facilitator kept the meeting focused and moving.					
C. Meeting Logistics:					
19. Was the meeting location convenient?					
20. Was the timing of the meeting convenient?					
21. Was the meal provided for the meeting good?					
D. Yearly Assessment (Pertains to Annual Reporting, PAG Recruitment and PAG Representation):					
22. Efforts have been made to incorporate concerns related to SFM values and objectives into the SFM Plan.					
23. Concerns related to SFM indicators and targets are being adequately listened to at PAG meetings.					
24. Efforts have been made to incorporate my concerns related to SFM indicators and targets into the SFM Plan.					
25. The outputs generated through discussion with the PAG (SFM Plan and annual monitoring reports) are clear and concise.					
26. Licensees' have made an effort to recruit new PAG members as needed.					
27. A broad cross-section of the community is represented at PAG meetings.					

(OVER)



Mackenzie SFMP



Public Advisory Group (PAG) Evaluation Form

Your Suggestions – Please list ways to improve on subsequent PAG meetings:

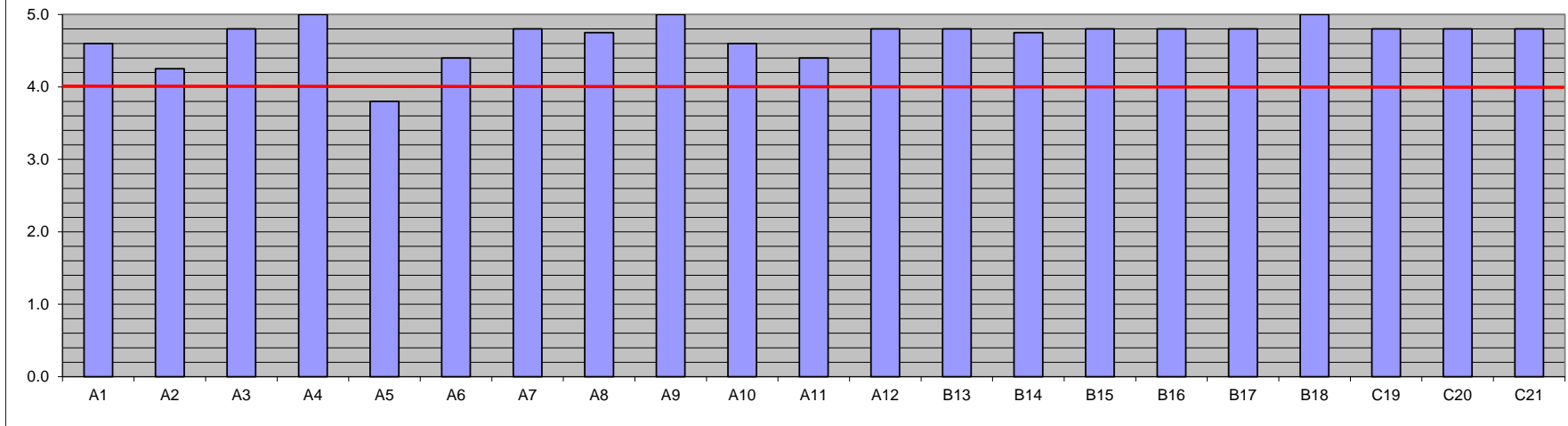
1.

2.

3.

General Comments – Please provide any comments or suggestions that you feel would improve the PAG process, the SFM Plan or Annual Report or subsequent meetings:

Mackenzie PAG Satisfaction Survey Results - Apr 5, 2017



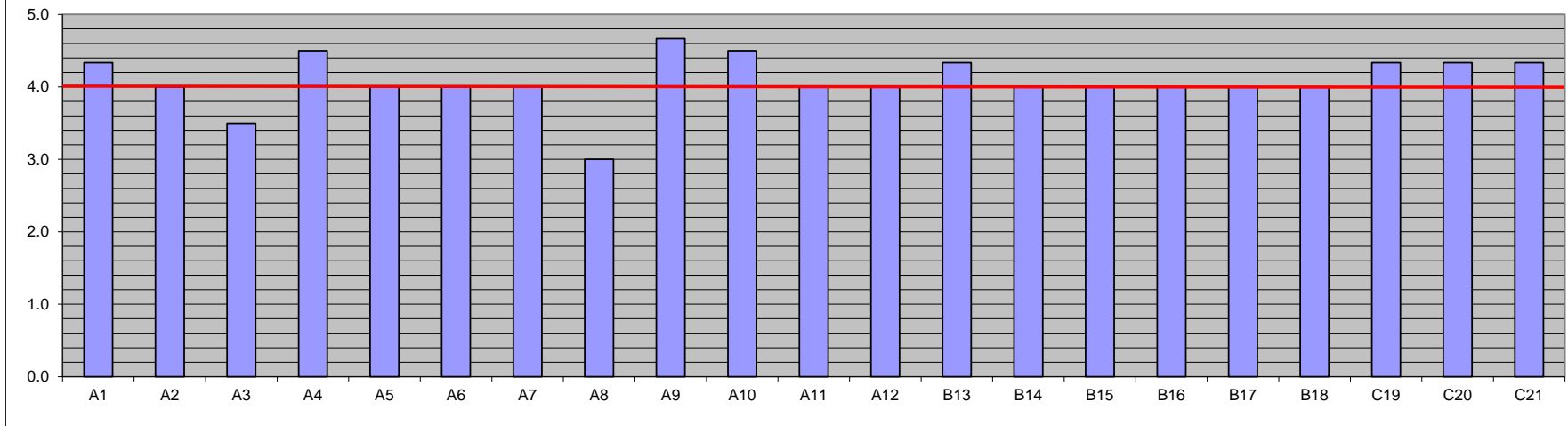
I found it somewhat confusing moving around the various documents. Maybe use the screen more and show the documents on the screen.

During the day is awesome

Well informed speaker - very nice

Doing well

Mackenzie PAG Satisfaction Survey Results - Oct 4, 2017



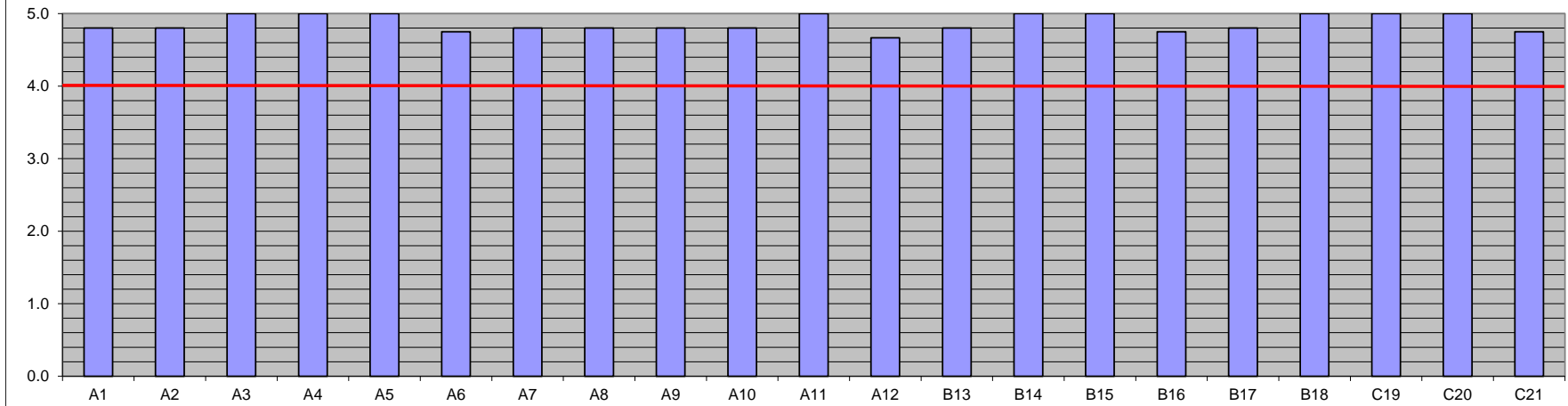
It is difficult to complete these questions as they relate to a meeting.

Agenda could be more detailed

Creating a study area after logging maybe ? To study

Removing trees and creating exposed soil needs to understand that all life needs more forest. Creating wildlife patches are not large enough and only may blow down.

Mackenzie PAG Satisfaction Survey Results - Dec 6, 2017



Salty soup
Everything was good today
Salty soup



Mackenzie SFMP



Letters of Invitation

During the 2017-18 Fiscal Year there were no:

- Letters of Invitation
- Advertisements and Articles

Mackenzie SFMP Public Advisory Group

(as of Mar 31, 2018)

Sector:	Representative	Alternate
Academia	Cinnamon Neumeyer	
Agriculture/Ranching		
Contractors – Forestry	Cornelia Thomi	
Environment/ Conservation	Vi Lambie	Barb Paterson
First Nations		
General Public		
Germansen Landing		
Halfway River First Nation	Lyle Mortenson	
Labour – CEP		
Labour – PPWC		
Local Government	Pat Crook	Stephanie Killam
McLeod Lake Indian Band	Esa Aatelma	Alec Chingee
Mining/Oil & Gas	Dave Forshaw	
Noostel Keyoh	Jim Besherse	Sadie Jarvis
Public Health & Safety		
Recreation – Commercial		
Recreation – Non-commercial		
Recreation – Non-commercial (motorized)		
Saulteau First Nations	John Stokmans	Chief Harley Davis
Small Business – Germansen Landing	Janet Besherse	Don Jarvis
Small Business – Mackenzie	Bruce Bennett	
Small Community		
Trapping	Lawrence Napier	
West Moberly First Nations	George Desjarlais	
Woodlot	Ron Crosby	
Prov Government	Erin Ward	

Contact Information

Mackenzie PAG Members

Alec Chingee	alchingee@mlib.ca	General Delivery, McLeod Lake, BC, VOJ 2G0
Bruce Bennett	b-bvent@telus.net	Box 955 300 Oslinka Blvd., Mackenzie, BC VOJ 2C0
Dave Forshaw	dave@district.mackenzie.bc.ca	Box 419, Mackenzie, BC, VoJ 2C0
Don and Sadie Jarvis	sjarvis@xplornet.com	5570 Reed Lake Road, Prince George, BC V2K 5N8
George Desjarlais	forestry@westmo.org	PO Box 90, Moberly Lake, BC, VOC 1X0
Jim and Janet Besherse	Besherse.noostel@outlook.com	General Delivery, Germansen Landing, BC VOJ 1T0
Lawrence Napier	napierlr@hotmail.com	Box 51, Mackenzie, BC, VOJ 2C0
Ron Crosby	crosbyr@cnc.bc.ca	Box 454, Mackenzie, BC VOJ 2C0
Ryan Bichon	rbichon@mlib.ca	General Delivery, McLeod Lake, BC VOJ 2G0
Stephanie Killam	Stephkillam46@gmail.com	Box 762, Rainbow Place, Mackenzie, BC, VoJ 2C0
Galena and Kurtis Trainor	Trainor.noostel@outlook.com	PO Box 28 Germansen Landing, BC VOJ 1T0
Vi Lambie	jlambie@telus.net	PO Box 1598, Mackenzie BC, VOJ 2C0
Lyle Mortenson	lyle@lrm.ca	9133 8 th Street, Dawson Creek, BC V1G 3N5
John Stokmans	forestry@saulteau.com	PO Box 1020 Chetwynd, BC VOC 1J0 1-250-788-7290
Cornelia Thomi	cthomi@forsite.ca	5-600 Mackenzie Blvd. Mackenzie, BC VOJ 2C0 Tel: 1-888-976-0410
Peter Weeber	pweeber@district.mackenzie.bc.ca	Bag 340, 1 Mackenzie Blvd Mackenzie, BC, VOJ 2C0 1.250.997.3221 1.877.997.9940
Pat Crook	pat@district.mackenzie.bc.ca	
Erin Ward	Erin.ward@gov.bc.ca	

Correspondence only

Chief Richard Mclean	chief.mclean@tahltan.ca	Box 46, Telegraph Creek, BC, V0J 2W0
Chief Fred Sam	chief@nakazdli.ca	PO Box 1329, Fort St. James, BC V0J 1P0
Chief Roland Willson	rwillson@westmo.org	PO Box 90, Moberly Lake, BC V0C 1X0
Chief Darlene Hunter	dhunter@hrfn.ca	Halfway River First Nation
Daniel Pierre	dpierre@tkdb.ca	
Dave Jeans	r19ddt@telus.net	Box 2220, Mackenzie, BC, V0J 2C0
Elke Lepka	forestry.takla@gmail.com	
Ingo Hinz	Ingo.Hinz@canfor.com	
Judi Vander Maaten	Judi@district.mackenzie.bc.ca	Box 340, 60 Centennial Dr. Mackenzie, BC V0J 2C0
Mel Botrakoff	mel@district.mackenzie.bc.ca	PO Box 340, 1 Mackenzie Blvd., Mackenzie, BC, V0J 2C0
Michael Schneider	michael@going-fishing.com	Box 405, Prince George, BC V2L 4S2
Micheline Snively	msnive@hotmail.com	Box 701, Mackenzie, BC, V0J 2C0
Michelle Gunter	danshellade@hotmail.com	
Mike Broadbent	mrstar58@telus.net	PO Box 398 Osilinka St. Mackenzie, BC V0J 2C0
Nancy Perreault		Bag 24, Germansen Landing, BC - V0J 1T0
PPWC (Local 18)	ppwc18@persona.ca	PO Box 398 Osilinka St. Mackenzie, BC V0J 2C0
Rob Weaver	weaver00@telus.net	Box 1143, Mackenzie, BC, V0J 2C0
Todd Walter	twalter@bpei.ca	



Mackenzie SFMP



March 20, 2017

Individual letters sent to
Jim and Janet Basherse, and
Nancy Perrault

Dear First Name,

The next meeting of the Mackenzie Public Advisory Group is scheduled for **Wednesday, April 5, 2017**.

Time: 10:30 am – 2:30 pm

Location: Canadian Forest Products Ltd (Canfor) Office Boardroom, 1801 Mill Road, Mackenzie.

Action Requested: Please contact the facilitator, Alan Wiensczyk, (phone: 250-614-4354 or alan@tccsolutions.ca) if you plan to attend this meeting.

At this meeting we will be covering the following topics;

1. Presentation related to the SFMP Discussion Item – “The role of forest ecosystems and their management in the global carbon cycle.”
2. Transition to the new CSA Z809-16 standard
 - a. SFMP Discussion Item Gap analysis
 - b. Indicator change analysis
3. Approval of the Terms of Reference.

The draft agenda for the meeting is attached.

Respectfully,

A handwritten signature in black ink, appearing to read "Alan Wiensczyk".

Alan Wiensczyk, RPF
Trout Creek Collaborative Solutions
Tel: 250.614.4354 email: alan@tccsolutions.ca



Mackenzie SFMP



April 25, 2017

Individual letters sent to:
Jim and Janet Besherse, and
Nancy Perrault

Dear First Name,

Here are the minutes from the Mackenzie Public Advisory Group that was held on Wednesday, April 5, 2017.

Please let me know if you have any comments, questions, or concerns.

Respectfully,

A handwritten signature in black ink, appearing to read "Alan Wiensczyk".

Alan Wiensczyk, RPF
Trout Creek Collaborative Solutions
Tel: 250.614.4354 email: alan@tccsolutions.ca



Mackenzie SFMP



March 20, 2017

Individual letters sent to
Jim and Janet Besherse, and
Nancy Perrault

Dear First Name,

The next meeting of the Mackenzie Public Advisory Group is scheduled for **Wednesday, October 4, 2017**. This meeting will be a field tour to selected sites throughout the Designated Forest Area.

Time: 10:30 am – 4:30 pm

Location: Mackenzie Recreation Centre and then travelling to selected sites.

Action Requested: Please contact the facilitator, Alan Wiensczyk, (phone: 250-614-4354 or alan@tccsolutions.ca) if you plan on attending this field tour.

On the field tour we will be visiting sites to discuss the following topics;

1. Soil conservation, disturbance, and mitigation
2. The role and importance of wetlands from different perspectives.

The draft itinerary for the field tour is attached.

Respectfully,

A handwritten signature in black ink, appearing to read "Alan Wiensczyk".

Alan Wiensczyk, RPF
Trout Creek Collaborative Solutions
Tel: 250.614.4354 email: alan@tccsolutions.ca



Mackenzie SFMP



November 17, 2017

Individual letters sent to
Jim and Janet Besherse, and
Nancy Perrault

Dear First Name,

The next meeting of the Mackenzie Public Advisory Group is scheduled for **Wednesday, December 6, 2017**.

Time: 10:30 am – 2:30 pm

Location: Canadian Forest Products Ltd (Canfor) Office Boardroom, 1801 Mill Road, Mackenzie.

Action Requested: Please contact the facilitator, Alan Wiensczyk, (phone: 250-614-4354 or alan@tccsolutions.ca) if you plan on attending this meeting.

At this meeting we will be covering the following topics;

1. Transition to the new CSA Z809-16 standard
 - a. Review of proposed changes to Indicators
2. Presentation on the 2016-17 SFMP Annual Report.
3. Presentation on planned winter harvest activities.

The draft agenda for the meeting is attached.

Respectfully,

A handwritten signature in black ink, appearing to read "Alan Wiensczyk".

Alan Wiensczyk, RPF
Trout Creek Collaborative Solutions
Tel: 250.614.4354 email: alan@tccsolutions.ca

From: Alan Wiensczyk
To: ["alan@tccsolutions.ca"](mailto:alan@tccsolutions.ca)
Cc: ["Curtis, Sarah"](#)
Bcc: ["alchingee@mlib.ca"](#); ["Cinnamon Neumeyer \(neumeyerc3\)"](#); ["Cornelia Thomi"](#); ["crosby@cnc.bc.ca"](#); ["dave@district.mackenzie.bc.ca"](#); ["Esa Aatelma"](#); ["forestry@westmo.org"](#); ["Jim & Janet Besherse \(besherse.noostel@outlook.com\)"](#); ["jlambie@telus.net"](#); ["John Stokmans"](#); ["lyle@lrm.ca"](#); ["napierlr@hotmail.com"](#); ["pat@district.mackenzie.bc.ca"](#); ["Peter WEEBER"](#); ["Stephanie Killam \(stephkillam46@gmail.com\)"](#); ["Trevor Horrock"](#); ["Ward, Erin FLNR:EX"](#)
Subject: Mackenzie PAG meeting - Wednesday, April 5, 2017
Date: March 20, 2017 11:39:53 AM
Attachments: [MacPAG agenda Apr 5 2017.pdf](#)
[Mac PAG ToR - Jan 2017.pdf](#)
[Mac PAG Meeting Summary January 25 2017 draft.pdf](#)

Hello Mackenzie PAG members,

The next meeting of the Mackenzie Public Advisory Group is scheduled for **Wednesday, April 5, 2017**.

Time: 10:30 am – 2:30 pm

Location:** **Canadian Forest Products Ltd (Canfor) Office Boardroom, 1801 Mill Road, Mackenzie.**

Action Requested: Please contact the facilitator, Alan Wiensczyk, (phone: 250-614-4354 or alan@tccsolutions.ca) if you plan on attending this meeting.

At this meeting we will be covering the following topics;

1. Presentation related to the SFMP Discussion Item – “The role of forest ecosystems and their management in the global carbon cycle.”
2. Transition to the new CSA Z809-16 standard
 - a. SFMP Discussion Item Gap analysis
 - b. Indicator change analysis
3. Approval of the Terms of Reference.

The draft agenda for the meeting, the meeting summary from Jan 25th and the updated (Jan 25, 2017) Mackenzie PAG Terms of Reference are attached.

**Please note the change in location for the Mackenzie PAG meeting – unfortunately neither of the meeting rooms were available at the Mackenzie Rec Center on the 5th of April so we had to move to the Canfor office.

Respectfully,



Al Wiensczyk

Trout Creek Collaborative Solutions

Phone: 250-614-4354

Cell: 250-640-0496

Email: alan@tccsolutions.ca

Website: www.tccsolutions.ca

Facilitating informed natural resource management decision-making

From: Alan Wiensczyk
To: ["alan@tccsolutions.ca"](mailto:alan@tccsolutions.ca)
Bcc: ["alchingee@milib.ca"](mailto:alchingee@milib.ca); ["Cinnamon Neumeyer \(neumeyerc3\)"](mailto:Cinnamon Neumeyer (neumeyerc3)); ["Cornelia Thomi"](mailto:Cornelia Thomi); ["crosbyr@cnc.bc.ca"](mailto:crosbyr@cnc.bc.ca); ["dave@district.mackenzie.bc.ca"](mailto:dave@district.mackenzie.bc.ca); ["Esa Aatelma"](mailto:Esa Aatelma); ["forestry@westmo.org"](mailto:forestry@westmo.org); ["Jim & Janet Besherse \(besherse.noostel@outlook.com\)"](mailto:Jim & Janet Besherse (besherse.noostel@outlook.com)); ["jlambie@telus.net"](mailto:jlambie@telus.net); ["John Stokmans"](mailto:John Stokmans); ["lyle@lrm.ca"](mailto:lyle@lrm.ca); ["napierlr@hotmail.com"](mailto:napierlr@hotmail.com); ["pat@district.mackenzie.bc.ca"](mailto:pat@district.mackenzie.bc.ca); ["Peter WEEBER"](mailto:Peter WEEBER); ["Stephanie Killam \(stephkillam46@gmail.com\)"](mailto:Stephanie Killam (stephkillam46@gmail.com)); ["Trevor Horrock"](mailto:Trevor Horrock); ["Ward, Erin FLNR:EX"](mailto:Ward, Erin FLNR:EX); ["Andy Meints \(ameintscl@telus.net\)"](mailto:Andy Meints (ameintscl@telus.net)); ["Bill Miller \(millbill@telus.net\)"](mailto:Bill Miller (millbill@telus.net)); ["Dungate Community Forest \(dungatecomfor@houston.ca\)"](mailto:Dungate Community Forest (dungatecomfor@houston.ca)); ["Gary Page"](mailto:Gary Page); ["James Rakochy"](mailto:James Rakochy); ["Jim David"](mailto:Jim David); ["Jonathan VanBarneveld \(jonathan.vanbarneveld@houston.ca\)"](mailto:Jonathan VanBarneveld (jonathan.vanbarneveld@houston.ca)); ["kelk51@live.com"](mailto:kelk51@live.com); ["Larry Tiljoe \(larandertiljoe@hotmail.com\)"](mailto:Larry Tiljoe (larandertiljoe@hotmail.com)); ["Les Austin \(lauston@telus.net\)"](mailto:Les Austin (lauston@telus.net)); ["Marion Shepherd"](mailto:Marion Shepherd); ["Naomi Himech \(lavender.naomi.h@gmail.com\)"](mailto:Naomi Himech (lavender.naomi.h@gmail.com)); ["Rick Barden \(rickbarden@gmail.com\)"](mailto:Rick Barden (rickbarden@gmail.com)); ["shane.brienen@houston.ca"](mailto:shane.brienen@houston.ca); ["sonny@moosehunting.bc.ca"](mailto:sonny@moosehunting.bc.ca); ["Steve Wright \(tutshi1@telus.net\)"](mailto:Steve Wright (tutshi1@telus.net)); ["sundog05@telus.net"](mailto:sundog05@telus.net); ["Whelan, Darrell J FLNR:EX"](mailto:Whelan, Darrell J FLNR:EX)
Subject: FW: Moose Winter Tick - The App is Back!
Date: March 20, 2017 4:29:24 PM
Attachments: [image001.png](#)
[2017 Moose Winter Tick Survey Electronic.pdf](#)

Hey folks

Some information from the BC government with respect to monitoring moose for ticks.

Cheers

Al

Al Wiensczyk

Trout Creek Collaborative Solutions

Phone: 250-614-4354

Cell: 250-640-0496

Email: alan@tccsolutions.ca

Website: www.tccsolutions.ca

Facilitating informed natural resource management decision-making

From: Bridger, Michael C FLNR:EX
Sent: Friday, March 17, 2017 2:29 PM
To: FLNR North Area All Staff
Subject: Moose Winter Tick - The App is Back!

Good afternoon everyone,

Hopefully most of you are aware of the Moose Winter Tick Surveillance Program by now. It is the time of year when we can expect to really start seeing signs of moose infested with ticks. We are relying on you and the general public to help us document these observations in order to understand the severity and distribution of winter ticks within our moose populations.

For more information about this program, or to fill out an online survey for moose that you have observed, please visit the following website: <http://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/wildlife/wildlife-health/wildlife-health-matters/moose-health/moose-winter-tick-survey>

Surveys can also be completed using the fillable .pdf form attached to this email.

And finally, there is an app that can be downloaded on your smart phone or tablet that allows for

very easy reporting of moose sightings. The instructions for downloading this app are found below.

We really appreciate the help with this citizen-science based program. We are interested in documenting all observations of moose, whether they are infested with ticks or not. So please spread the word!

Happy moose observing!

Cheers,

Mike Bridger



Mike Bridger, M.Sc.

Wildlife Biologist | Fish and Wildlife Section

Ministry of Forests, Lands and Natural Resource Operations

Suite 400, 10003-110th Avenue, Fort St. John, BC, V1J 6M7

Ph: 250-787-3294

From: FLNR Moose Tick Survey FLNR:EX
Sent: Friday, March 17, 2017 1:29 PM
To: FLNR Moose Tick Survey FLNR:EX
Subject: Moose Winter Tick - The App is Back!

Hello Everyone,

The ticks are adults now and feeding heavily. With only about 6 weeks left in this years program, this is the time of year where sightings tend to ramp up.

After completing some updates, **the ESRI app is back** in service! This app is a great way to record and submit observations of moose when you don't have access to a computer. Its easy to use and you can even add in a photo! **If you used this app last year**, please note there is a **new password** to login. You will also have to remove the old survey and download the new one from the top right hand corner.

As usual, if you have any questions about the program, the app or anything else, please feel free to contact me.

Thanks again everyone,

Dustin Walsh

INSTRUCTIONS FOR DOWNLOADING THE SMARTPHONE/TABLET APP:

Please use one of the following methods to download the app onto your device. This app uses ESRI software. ESRI (Environmental Systems Research Institute, Inc) is a well known company based out of Toronto that develop and deliver GIS (Geographic Information System) services and solutions. See more at: <http://www.esri.ca/en/content/about-us#sthash.ceibZDAr.dpuf>

1. DOWNLOADING THE APP

On your **iOS Products** including Apple iPhone and iPad, open the App Store and search for "Survey123" by ESRI.

OR

On your **Android device** (Samsung, HTC, LG, Motorola, Nexus and Sony Products), open the "Google Play Store" App and search for "Survey123" by ESRI.

Download this free app and once downloaded, you can log in using our Guest ID and Password.

Username: Guest123

Password: Guest1234

*Note: Both Username and Password are Case Sensitive

Once logged in, the next page you will see is the "Download Surveys" page. Please click and download the "Moose Winter Tick Survey 2017". You should be notified after the download has completed, this should only take a few seconds.

After the download, the screen should remain on the "Download Surveys" page. Simply click on the "Moose Winter Tick Survey 2017" again to open it.

You should now be viewing the survey form. For more information on the interactive map please read **Using The Interactive Map**, in this email.

*Please ignore the DATE STAMP and TIME STAMP fields at the very bottom of the survey form.

APPLE USERS: For initial setup, please scroll down to and click on the interactive map. A notification should pop up asking for the app to use your location services. Please accept this as it makes the map more functional, then close the current survey.

Using The Interactive Map

This is probably one of the best features about this app! Not only will it find your current location by pressing the target button, but you can also click on the map itself and move the pin around to the location the moose was spotted if filling out the form at a later time.



From: Alan Wiensczyk
To: ["alan@tccsolutions.ca"](mailto:alan@tccsolutions.ca)
Cc: ["Curtis, Sarah"](#)
Bcc: ["alchingee@mlib.ca"](#); ["Cinnamon Neumeyer \(neumeyerc3\)"](#); ["Cornelia Thomi"](#); ["dave@district.mackenzie.bc.ca"](#); ["Esa Aatelma"](#); ["forestry@westmo.org"](#); ["Jim & Janet Besherse \(besherse.noostel@outlook.com\)"](#); ["Trevor Horrock"](#); ["Ward, Erin FLNR:EX"](#)
Subject: Reminder: Mackenzie PAG meeting - Wednesday, April 5, 2017
Date: March 29, 2017 9:18:19 AM
Attachments: [MacPAG agenda Apr 5 2017.pdf](#)
[Mac PAG ToR - Jan 2017.pdf](#)
[Mac PAG Meeting Summary January 25 2017 draft.pdf](#)

Hello Mackenzie PAG members,

Just a reminder to please let me know if you plan on attending the next meeting of the Mackenzie Public Advisory Group which is scheduled for **Wednesday, April 5, 2017**.

Time: 10:30 am – 2:30 pm

Location:** **Canadian Forest Products Ltd (Canfor) Office Boardroom, 1801 Mill Road, Mackenzie.**

Action Requested: Please contact the facilitator, Alan Wiensczyk, (phone: 250-614-4354 or alan@tccsolutions.ca) if you plan on attending this meeting.

At this meeting we will be covering the following topics;

1. Presentation related to the SFMP Discussion Item – “The role of forest ecosystems and their management in the global carbon cycle.”
2. Transition to the new CSA Z809-16 standard
 - a. SFMP Discussion Item Gap analysis
 - b. Indicator change analysis
3. Approval of the Terms of Reference.

The draft agenda for the meeting, the meeting summary from Jan 25th and the updated (Jan 25, 2017) Mackenzie PAG Terms of Reference are attached.

**Please note the change in location for the Mackenzie PAG meeting – unfortunately neither of the meeting rooms were available at the Mackenzie Rec Center on the 5th of April so we had to move to the Canfor office.

Respectfully,



Al Wiensczyk
Trout Creek Collaborative Solutions

Phone: 250-614-4354

Cell: 250-640-0496

Email: alan@tccsolutions.ca

Website: www.tccsolutions.ca

Facilitating informed natural resource management decision-making

From: Alan Wiensczyk
To: ["alan@tccsolutions.ca"](mailto:alan@tccsolutions.ca)
Cc: ["Curtis, Sarah"](#)
Bcc: ["Cinnamon Neumeyer \(neumeyerc3\)"; "Cornelia Thomi"; "crosbyr@cnc.bc.ca"; "forestry@westmo.org"; "jlambie@telus.net"; "John Stokmans"; "lyle@lrm.ca"; "Stephanie Killam \(stephkillam46@gmail.com\)"](#)
Subject: Reminder - Mackenzie PAG meeting tomorrow - 10:30 am
Date: April 4, 2017 9:28:55 AM

Hey folks

Just a reminder about the Mackenzie PAG meeting tomorrow at 10:30.

Please remember that the venue for this meeting is the boardroom at the Canfor Administration Office - 1801 Mill Road, Mackenzie.

Safe travels and see you tomorrow

Cheers

Al

Al Wiensczyk
Trout Creek Collaborative Solutions
Phone: 250-614-4354
Cell: 250-640-0496
Email: alan@tccsolutions.ca
Website: www.tccsolutions.ca

Facilitating informed natural resource management decision-making

From: Alan Wiensczyk
To: ["alan@tccsolutions.ca"](mailto:alan@tccsolutions.ca)
Cc: ["Curtis, Sarah"](#)
Bcc: ["alchingee@mlib.ca"](#); ["Barb and Ron Paterson"](#); ["Cinnamon Neumeyer \(neumeyerc3\)"](#); ["Cornelia Thomi"](#); ["crosby@cnc.bc.ca"](#); ["dave@district.mackenzie.bc.ca"](#); ["Esa Aatelma"](#); ["forestry@westmo.org"](#); ["Jim & Janet Besherse \(besherse.noostel@outlook.com\)"](#); ["jlambie@telus.net"](#); ["John Stokmans"](#); ["lyle@lrm.ca"](#); ["napierlr@hotmail.com"](#); ["pat@district.mackenzie.bc.ca"](#); ["Peter WEEBER"](#); ["Stephanie Killam \(stephkillam46@gmail.com\)"](#); ["Trevor Horrock"](#); ["Ward, Erin FLNR:EX"](#)
Subject: Mackenzie PAG meeting summary - April 5, 2017
Date: April 25, 2017 4:46:01 PM
Attachments: [Mac PAG Meeting Summary April 5 2017 final draft.pdf](#)

Hello folks,

Attached is the meeting summary from the Mackenzie PAG meeting held on Wednesday, April 5, 2017.

Please let me know if you have any questions, comments, or concerns.

Respectfully,

Al Wiensczyk
Trout Creek Collaborative Solutions
Phone: 250-614-4354
Cell: 250-640-0496
Email: alan@tccsolutions.ca
Website: www.tccsolutions.ca
Facilitating informed natural resource management decision-making

From: Alan Wiensczyk
To: ["alan@tccsolutions.ca"](mailto:alan@tccsolutions.ca)
Cc: ["Curtis, Sarah"](#)
Bcc: ["alchingee@mlib.ca"](#); ["Barb and Ron Paterson"](#); ["Cinnamon Neumeyer \(neumeyerc3\)"](#); ["Cornelia Thomi"](#); ["crosby@cnc.bc.ca"](#); ["dave@district.mackenzie.bc.ca"](#); ["Esa Aatelma"](#); ["forestry@westmo.org"](#); ["Jim & Janet Besherse \(besherse.noostel@outlook.com\)"](#); ["jlambie@telus.net"](#); ["John Stokmans"](#); ["lyle@lrm.ca"](#); ["napierlr@hotmail.com"](#); ["pat@district.mackenzie.bc.ca"](#); ["Stephanie Killam \(stephkillam46@gmail.com\)"](#); ["Trevor Horrock"](#); ["Ward, Erin FLNR:EX"](#)
Subject: Mackenzie PAG fall field tour - October 4, 2017
Date: September 21, 2017 2:16:00 PM
Attachments: [MacPAG agenda_Oct_4_2017_draft.pdf](#)

Hi folks

The next meeting of the Mackenzie Public Advisory Group will be a Field tour and is scheduled for **Wednesday, October 4, 2017.**

Time: 10:30 am – 4:30 pm

Location: Mackenzie Recreation Centre and then travelling to selected sites.

Action Requested: Please contact the facilitator, Alan Wiensczyk, (phone: 250-614-4354 or alan@tccsolutions.ca) if you plan on attending this field tour.

On the field tour we will be visiting sites to discuss the following topics;

1. Soil conservation, disturbance, and mitigation
2. The role and importance of wetlands from different perspectives.

The draft itinerary for the field tour is attached.

Cheers

Al

Al Wiensczyk

Trout Creek Collaborative Solutions

Phone: 250-614-4354

Cell: 250-640-0496

Email: alan@tccsolutions.ca

Website: www.tccsolutions.ca

Facilitating informed natural resource management decision-making

From: Alan Wiensczyk
To: ["alan@tccsolutions.ca"](mailto:alan@tccsolutions.ca)
Cc: ["Curtis, Sarah"](#)
Bcc: ["alchingee@mlib.ca"](#); ["Cornelia Thoni"](#); ["dave@district.mackenzie.bc.ca"](#); ["Esa Aatelma"](#); ["forestry@westmo.org"](#); ["Jim & Janet Besherse \(besherse.noostel@outlook.com\)"](#); ["jlambie@telus.net"](#); ["lyle@lrm.ca"](#); ["napierlr@hotmail.com"](#); ["pat@district.mackenzie.bc.ca"](#); ["Trevor Horrock"](#); ["Ward, Erin FLNR:EX"](#)
Subject: Reminder: Mackenzie PAG fall field tour - October 4, 2017
Date: September 27, 2017 9:29:00 AM
Attachments: [MacPAG agenda Oct 4 2017 draft.pdf](#)

Hi folks

Just a reminder to please let me know asap if you are able to attend the field tour next week (Wed, Oct 4, 2017).

Cheers

Al

The next meeting of the Mackenzie Public Advisory Group will be a Field tour and is scheduled for **Wednesday, October 4, 2017**.

Time: 10:30 am – 4:30 pm

Location: Mackenzie Recreation Centre and then travelling to selected sites.

Action Requested: Please contact the facilitator, Alan Wiensczyk, (phone: 250-614-4354 or alan@tccsolutions.ca) if you plan on attending this field tour.

On the field tour we will be visiting sites to discuss the following topics;

1. Soil conservation, disturbance, and mitigation
2. The role and importance of wetlands from different perspectives.

The draft itinerary for the field tour is attached.

Cheers

Al

Al Wiensczyk

Trout Creek Collaborative Solutions

Phone: 250-614-4354

Cell: 250-640-0496

Email: alan@tccsolutions.ca

Website: www.tccsolutions.ca

Facilitating informed natural resource management decision-making

From: Alan Wiensczyk
To: ["alan@tccsolutions.ca"](mailto:alan@tccsolutions.ca)
Cc: ["Curtis, Sarah"](#); ["Opalinska, Beata"](#)
Bcc: ["alchingee@mlb.ca"](#); ["Barb and Ron Paterson"](#); ["Cinnamon Neumeyer \(neumeyerc3\)"](#); ["Cornelia Thomi"](#); ["crosby@cnc.bc.ca"](#); ["dave@district.mackenzie.bc.ca"](#); ["Esa Aatelma"](#); ["forestry@westmo.org"](#); ["Jim & Janet Besherse \(besherse.noostel@outlook.com\)"](#); ["jlambie@telus.net"](#); ["John Stokmans"](#); ["lyle@lrm.ca"](#); ["napierlr@hotmail.com"](#); ["pat@district.mackenzie.bc.ca"](#); ["Peter WEEBER"](#); ["Stephanie Killam \(stephkillam46@gmail.com\)"](#); ["Trevor Horrock"](#); ["Ward, Erin FLNR:EX"](#)
Subject: Mackenzie PAG field tour summary - October 4, 2017
Date: October 31, 2017 2:47:08 PM
Attachments: [MK PAG Field tour draft summary Oct 4 2017.pdf](#)

Hello folks

Attached is the final draft summary from the Mackenzie PAG field tour held on October 4, 2017 for your review.

Please let me know if you have any questions, comments, or concerns.

Cheers

Al

Al Wiensczyk
Trout Creek Collaborative Solutions
Phone: 250-614-4354
Cell: 250-640-0496
Email: alan@tccsolutions.ca
Website: www.tccsolutions.ca
Facilitating informed natural resource management decision-making

From: Alan Wiensczyk
To: ["alan@tccsolutions.ca"](mailto:alan@tccsolutions.ca)
Cc: ["Curtis, Sarah"](#)
Bcc: ["alchingee@mlib.ca"](#); ["Barb and Ron Paterson"](#); ["Cinnamon Neumeyer \(neumeyerc3\)"](#); ["Cornelia Thomi"](#); ["crosby@cnc.bc.ca"](#); ["dave@district.mackenzie.bc.ca"](#); ["Esa Aatelma"](#); ["forestry@westmo.org"](#); ["Jim & Janet Besherse \(besherse.noostel@outlook.com\)"](#); ["jlambie@telus.net"](#); ["John Stokmans"](#); ["lyle@lrm.ca"](#); ["napierlr@hotmail.com"](#); ["pat@district.mackenzie.bc.ca"](#); ["Peter WEEBER"](#); ["Stephanie Killam \(stephkillam46@gmail.com\)"](#); ["Trevor Horrock"](#); ["Ward, Erin FLNR:EX"](#)
Subject: Mackenzie PAG field tour - handouts
Date: November 6, 2017 4:09:47 PM
Attachments: [Mackenzie Public Advisory Group - Soil Distrubance Field Tour.pdf](#)
[Wetland PAG handout.pdf](#)

Hello folks

I just realized that I forgot to include the two handouts from the Mackenzie PAG field tour on October 4, 2017 when I sent out the minutes/summary last week.

So here they are.

Cheers

Al

Al Wiensczyk

Trout Creek Collaborative Solutions

Phone: 250-614-4354

Cell: 250-640-0496

Email: alan@tccsolutions.ca

Website: www.tccsolutions.ca

Facilitating informed natural resource management decision-making

From: Alan Wiensczyk
To: ["alan@tccsolutions.ca"](mailto:alan@tccsolutions.ca)
Cc: ["Curtis, Sarah"](#); ["Opalinska, Beata"](#)
Bcc: ["alchingee@mlb.ca"](#); ["Barb and Ron Paterson"](#); ["Cinnamon Neumeyer \(neumeyerc3\)"](#); ["Cornelia Thomi"](#); ["crosbyr@cnc.bc.ca"](#); ["dave@district.mackenzie.bc.ca"](#); ["Esa Aatelma"](#); ["forestry@westmo.org"](#); ["Jim & Janet Besherse \(besherse.noostel@outlook.com\)"](#); ["jlambie@telus.net"](#); ["John Stokmans"](#); ["lyle@lrm.ca"](#); ["napierlr@hotmail.com"](#); ["pat@district.mackenzie.bc.ca"](#); ["Peter WEEBER"](#); ["Stephanie Killam \(stephkillam46@gmail.com\)"](#); ["Trevor Horrock"](#); ["Ward, Erin FLNR:EX"](#)
Subject: Mackenzie PAG meeting - December 6, 2017
Date: November 20, 2017 10:14:30 AM
Attachments: [MacPAG agenda Dec 6 2017.pdf](#)
[MK PAG Field tour draft summary Oct 4 2017.pdf](#)
[Mac PAG Meeting Summary April 5 2017 final draft.pdf](#)

Hello folks

The next meeting of the Mackenzie Public Advisory Group is scheduled for **Wednesday, December 6, 2017**.

Time: 10:30 am – 2:30 pm

Location: Canadian Forest Products Ltd (Canfor) Office Boardroom, 1801 Mill Road, Mackenzie.

Action Requested: Please contact the facilitator, Alan Wiensczyk, (phone: 250-614-4354 or alan@tccsolutions.ca) if you plan on attending this meeting.

At this meeting we will be covering the following topics;

1. Transition to the new CSA Z809-16 standard
 - a. Review of proposed changes to Indicators
2. Presentation on the 2016-17 SFMP Annual Report.
3. Presentation on planned winter harvest activities.

The draft agenda for the meeting and the minutes from the previous meeting and from the field tour are attached.

Cheers

Al

Al Wiensczyk

Trout Creek Collaborative Solutions

Phone: 250-614-4354

Cell: 250-640-0496

Email: alan@tccsolutions.ca

Website: www.tccsolutions.ca

Facilitating informed natural resource management decision-making

From: Alan Wiensczyk
To: ["alan@tccsolutions.ca"](mailto:alan@tccsolutions.ca)
Cc: ["Curtis, Sarah"](#); ["Opalinska, Beata"](#)
Bcc: ["alchinge@mlib.ca"](#); ["Barb and Ron Paterson"](#); ["dave@district.mackenzie.bc.ca"](#); ["Esa Aatelma"](#); ["Jim & Janet Besherse \(besherse.noostel@outlook.com\)"](#); ["John Stokmans"](#); ["lyle@irm.ca"](#); ["pat@district.mackenzie.bc.ca"](#); ["Peter WEEBER"](#); ["Stephanie Killam \(stephkillam46@gmail.com\)"](#); ["Trevor Horrock"](#); ["Ward, Erin FLNR:EX"](#)
Subject: Reminder: Mackenzie PAG meeting - December 6, 2017
Date: November 28, 2017 11:19:47 AM
Attachments: [MacPAG agenda Dec 6 2017.pdf](#)
[MK PAG Field tour draft summary Oct 4 2017.pdf](#)
[Mac PAG Meeting Summary April 5 2017 final draft.pdf](#)

Hello folks

Just a reminder to please let me know if you are planning on attending the next Mackenzie Public Advisory Group meeting which is scheduled for **Wednesday, December 6, 2017**.

Time: 10:30 am – 2:30 pm

Location: Canadian Forest Products Ltd (Canfor) Office Boardroom, 1801 Mill Road, Mackenzie.

Action Requested: Please contact the facilitator, Alan Wiensczyk, (phone: 250-614-4354 or alan@tccsolutions.ca) if you plan on attending this meeting.

At this meeting we will be covering the following topics;

1. Transition to the new CSA Z809-16 standard
 - a. Review of proposed changes to Indicators
2. Presentation on the 2016-17 SFMP Annual Report.
3. Presentation on planned winter harvest activities.

The draft agenda for the meeting and the minutes from the previous meeting and from the field tour are attached.

Cheers

Al

Al Wiensczyk

Trout Creek Collaborative Solutions

Phone: 250-614-4354

Cell: 250-640-0496

Email: alan@tccsolutions.ca

Website: www.tccsolutions.ca

Facilitating informed natural resource management decision-making

From: Alan Wiensczyk
To: ["alan@tccsolutions.ca"](mailto:alan@tccsolutions.ca)
Cc: ["Opalinska, Beata"](#); ["Curtis, Sarah"](#)
Bcc: ["Barb and Ron Paterson"](#); ["Cinnamon Neumeyer \(neumeyerc3\)"](#); ["Cornelia Thomi"](#); ["crosby@cnc.bc.ca"](mailto:crosby@cnc.bc.ca); ["jlambie@telus.net"](mailto:jlambie@telus.net); ["napierlr@hotmail.com"](mailto:napierlr@hotmail.com)
Subject: Reminder - Mackenzie PAG meeting tomorrow (Dec 6) - Canfor office: 10:30 am
Date: December 5, 2017 4:10:59 PM

Hello folks

Just a friendly reminder about the Mackenzie PAG meeting tomorrow at 10:30 am at the Canfor Mackenzie office.

See you tomorrow

Cheers

Al

Al Wiensczyk

Trout Creek Collaborative Solutions

Phone: 250-614-4354

Cell: 250-640-0496

Email: alan@tccsolutions.ca

Website: www.tccsolutions.ca

Facilitating informed natural resource management decision-making

From: Alan Wiensczyk
To: ["alan@tccsolutions.ca"](mailto:alan@tccsolutions.ca)
Cc: ["Curtis, Sarah"](#); ["Opalinska, Beata"](#)
Bcc: ["alchingee@mlb.ca"](#); ["Barb and Ron Paterson"](#); ["Cinnamon Neumeyer \(neumeyerc3\)"](#); ["Cornelia Thomi"](#); ["crosby@cnc.bc.ca"](#); ["dave@district.mackenzie.bc.ca"](#); ["Esa Aatelma"](#); ["forestry@westmo.org"](#); ["Jim & Janet Besherse \(besherse.noostel@outlook.com\)"](#); ["jlambie@telus.net"](#); ["John Stokmans"](#); ["lyle@lrm.ca"](#); ["napierlr@hotmail.com"](#); ["pat@district.mackenzie.bc.ca"](#); ["Peter WEEBER"](#); ["Stephanie Killam \(stephkillam46@gmail.com\)"](#); ["Trevor Horrock"](#); ["Ward, Erin FLNR:EX"](#)
Subject: Dec 6, 2017 Mackenzie PAG final draft meeting summary
Date: December 19, 2017 9:49:39 AM
Attachments: [MK_SFMP_Annual_Report_16_17_DRAFT.pdf](#)
[Mac PAG Meeting Summary Dec 6 2017 final draft.pdf](#)

Hello Mackenzie PAG members

Attached is the Meeting summary from the December 6, 2017 Mackenzie PAG meeting.

Please let me know if you have any questions, comments, or concerns.

Also attached is a digital version of the Mackenzie SFMP Annual Report – Hard copies were provided at the PAG meeting. Please review and if you have any comments please send them to me by January 18, 2018.

And all the best for a happy, healthy and safe holiday season.

Sincerely,

Al Wiensczyk
Trout Creek Collaborative Solutions
Phone: 250-614-4354
Cell: 250-640-0496
Email: alan@tccsolutions.ca
Website: www.tccsolutions.ca
Facilitating informed natural resource management decision-making

**Mackenzie PAG First Nations Contact List
March 31, 2017**

Chief Roland Willson
West Moberly First Nation
PO Box 90
Moberly Lake, BC
V0C 1X0

Chief Rena Benson
Gitksan Nation (Nii Kyap)
PO Box 128
Kitwanga, BC
V2J 2A0

Chief Darlene Hunter
Halfway River First Nation
PO Box 59
Wonowon, BC
V0C 2N0

Chief Rick McLean
Tahltan First Nation
PO Box 46
Telegraph Creek, BC
V0L 2W0

Chief Donny Van Somer
Kwadacha Band Office
497 3rd Ave
Prince George, BC
V2L 3C1

Chief Harley Chingee
McLeod Lake First Nation
General Delivery
McLeod Lake, BC
V0J 2G0

Chief Dennis Izony
Tsay Keh Dene Band
1877 Queensway St.
Prince George, BC
V2L 1L9

Chief John French
Takla Lake First Nation
General Delivery
Takla Landing, BC
V0J 1T0

Chief Alexander McKinnon
Nak'azdli First Nation
P.O. Box 1329
Fort St. James, BC
V0J 1P0

Chief Nathan Parenteau
Saulteau First Nations
PO Box 1020
Chetwynd, BC
V0C 1J0



Mackenzie SFMP



March 20, 2017

First Nations Distribution List

Dear Chief Surname,

The next meeting of the Mackenzie Public Advisory Group is scheduled for **Wednesday, April 5, 2017**.

Time: 10:30 am – 2:30 pm

Location: Canadian Forest Products Ltd (Canfor) Office Boardroom, 1801 Mill Road, Mackenzie.

Action Requested: Please contact the facilitator, Alan Wiensczyk, (phone: 250-614-4354 or alan@tccsolutions.ca) if you plan on attending this meeting.

At this meeting we will be covering the following topics;

1. Presentation related to the SFMP Discussion Item – “The role of forest ecosystems and their management in the global carbon cycle.”
2. Transition to the new CSA Z809-16 standard
 - a. SFMP Discussion Item Gap analysis
 - b. Indicator change analysis
3. Approval of the Terms of Reference.

The draft agenda for the meeting is attached.

Respectfully,

A handwritten signature in black ink, appearing to read "Alan Wiensczyk".

Alan Wiensczyk, RPF
Trout Creek Collaborative Solutions
Tel: 250.614.4354 email: alan@tccsolutions.ca



Mackenzie SFMP



March 20, 2017

First Nations Distribution List

Dear Chief Surname,

The next meeting of the Mackenzie Public Advisory Group is scheduled for **Wednesday, October 4, 2017**. This meeting will be a field tour to selected sites throughout the Designated Forest Area.

Time: 10:30 am – 4:30 pm

Location: Mackenzie Recreation Centre and then travelling to selected sites.

Action Requested: Please contact the facilitator, Alan Wiensczyk, (phone: 250-614-4354 or alan@tccsolutions.ca) if you plan on attending this field tour.

On the field tour we will be visiting sites to discuss the following topics;

1. Soil conservation, disturbance, and mitigation
2. The role and importance of wetlands from different perspectives.

The draft itinerary for the field tour is attached.

Respectfully,

A handwritten signature in black ink, appearing to read "Alan Wiensczyk".

Alan Wiensczyk, RPF
Trout Creek Collaborative Solutions
Tel: 250.614.4354 email: alan@tccsolutions.ca



Mackenzie SFMP



November 17, 2017

First Nations Distribution List

Dear Chief Surname,

The next meeting of the Mackenzie Public Advisory Group is scheduled for **Wednesday, December 6, 2017**.

Time: 10:30 am – 2:30 pm

Location: Canadian Forest Products Ltd (Canfor) Office Boardroom, 1801 Mill Road, Mackenzie.

Action Requested: Please contact the facilitator, Alan Wiensczyk, (phone: 250-614-4354 or alan@tccsolutions.ca) if you plan on attending this meeting.

At this meeting we will be covering the following topics;

1. Transition to the new CSA Z809-16 standard
 - a. Review of proposed changes to Indicators
2. Presentation on the 2016-17 SFMP Annual Report.
3. Presentation on planned winter harvest activities.

The draft agenda for the meeting is attached.

Respectfully,

A handwritten signature in black ink, appearing to read "Alan Wiensczyk".

Alan Wiensczyk, RPF
Trout Creek Collaborative Solutions
Tel: 250.614.4354 email: alan@tccsolutions.ca

Mandatory Discussion Items	Date(s) Discussed	Actions/follow up needed
Criterion 1-Biological diversity		
Forest Fragmentation and forest loss	Aug 21 2013 field tour - discussion of furbearer corridor and importance of maintain forest connectivity . March 27, 2013 meeting - indicator #19 - Site Conversion. Discussion of how to calculate % of area converted to not-forest use - change from THLB to gross area in DFA. Existed in previous plan(indicators 1 and 5),June 2 2010 meeting, old plan measure 2-2 (fib 28, 2006), also March 14, 2006 measure 3-1.1. Presentation from ILMB on new OGMAs in the Mackenzie TSA at the OCT 14, 2009 PAG meeting.	
Management in the context of natural disturbance regimes and patterns and the range of natural variation	Existed in previous plan, June 2 2010 meeting. March 27, 2013 meeting - review of indicator #5 (Patch Size) - removal of the word roads from the indicator as roads to not contribute to patch size calculations.	
Maintenance of populations and communities over time	June 2 2010, February 23 2011 meeting, Presentation from ILMB on new OGMAs in the Mackenzie TSA at the OCT 14, 2009 PAG meeting. March 19, 2014 meeting very brief discussion of harvest protection of rare and uncommon plants within context of annual report presentation. March 27, 2013 meeting - disussion of change in an indicator (#4 Productive Forest Representation) to an indictor emphasizing preservation of rare and endangered ecosystems within the THLB. Oct 24, 2012 meeting - short presentation on planned update to targets for Productive Forest Representation indicator	
Local and regional protected areas and integrated landscape management	February 23 2011, meeting, Presentation from ILMB on new OGMAs in the Mackenzie TSA at the OCT 14, 2009 PAG meeting. Some discussion on Protected Areas indicator and OGMA and block boundaries - avoid isolating timber in March 27, 2013 meeting.	
Silvicultural regimes and tools such as plantations, pesticides (including integrated pest management and pesticide-used regulations), structural retention, and timber harvest practices (including clear-cutting)	Oct 5, 2016 field tour - discussed Wildlife tree patches with respect to stick nest management. Sept 30, 2015 field tour - recently planted plantation - high rust hazard, higher density planting. Dec 3, 2014 - Discussion of timing of burning of waste piles and potential addition of a new indicator. These piles are used by Marten during certain periods of the year and burning should be timed to avoid high use times. Dec 3, 2014 meeting - discussion of retention of mature aspen during harvesting and silviculture operations. June 4, 2014 meeting initial discussion of timing of burning of Marten piles. Issue was raised by a PAG member. March 14, 2014 meeting - brief discussion of retention of Coarse Woody Debris and mention of the study done by Scott McNay of Wildlife Infometrics the results of which were posted the SFMP website. August 21, 2013 field tour visit to site with Drag Scarification for natural regeneration of pine. Also discussion of retenion of piles following harvesting and what was done with those piles (burning), Aug 21, 2013 field tour discussion of roadside vs in-block processing and pro's and con's of each. March 27, 2013 meeting - discussion of regen delay and reforestation success. Oct 24, 2012 - update on CWD work being done by Canfor (baseline sampling). June 19, 2012 field tour - several stops looking at salvage harvesting, site preparation, planting, regeneration and free growing. June 2 2010 meeting--brief mention, free growing, regen delay.	There seems to have been quite a bit of effort on this discussion item over the past few years. This MDI could use some re-freshing if the PAG sees a need for it. Action to review this with PAG and see if they are comfortable with their knowledge on this subject. If they are not comfortable then a presentation and discussion will occur at a later date.
Practices to limit the spread of invasive alien species, and the regulatory prohibitions related to adverse ecological effects and the use of exotic tree species	Previous plan (indicator 12). This topic came up at the June 2, 2010 PAG meeting. Dec 3, 2014 meeting - Andrea Eastham from the NW Invasive Plant Council spoke to the PAG about invasive plants and their management in northern BC. George Desjarlais - WMFN spoke about the Twin Sisters Native Plant nursery who grow traditional plants and teach people how to pick and sow seeds.	
The gene pool of native seed stock, and genetically, modified organisms(GMOs) and the associated regulatory/policy requirements	Previous plan (indicator 12, 4,7) Class A seed discussed October 17, 2006 at PAG Meeting. Handout given March 14, 2006 on Chief Foresters Standards for Seed use, Presentation on stocking standards at the Feb 28, 2006 PAG meeting. Also discussed on June 2nd, 2010 when developing new indicator statements for the 08 plan.	

Management and protection of biological resources of cultural heritage significance	previous plan, October 20 2010 meeting, discussion of biological richness and associated values(march 14, 28, 2006). Sept 30, 2015 Field tour - Looked at CMT's on the Duz Cho Grease Trail and discussed how to identify them, why they were created and efforts to protect them and the trail. Also talked about training for field crews to identify CMT's, use of archaeologists (when and why).	
Management of cultural values and resources	October 20 2010 meeting, October 14, 2009, discussion around new indicator pertaining to resource features. Sept 30, 2015 Field tour - Looked at CMT's on the Duz Cho Grease Trail and discussed how to identify them, why they were created and efforts to protect them and the trail. Also talked about training for field crews to identify CMT's, use of archaeologists (when and why). Dec 3, 2014 meeting - presentation from George Desjarlais (WMFN) on nursery which grows traditional plants for outplanting - includes medicinal plants - also teaches community members how to collect and sow seed. Dec 3, 2014 meeting - discussion of management of CMT's.	
Locally available processes and methods for identifying sites with special biological and cultural significance	February 23 2011 meeting, June 24th, 2009 meeting, also discussed and indicator 9-3 accepted by the PAG during the May 9, 2006 meeting. Oct 5, 2016 field trip - discussed stick nest management procedures. March 7, 2012 meeting - presentation by Scott McNay on Ungulate Winter Range management in the Mackenzie TSA. Oct 26, 2011 meeting - Jim McCormick made a presentation on species accounting related to fish populations.	
Conservation of old-growth forest attributes	previous plan, talked about during October 17, 2006 PAG Meeting. Presentation from ILMB on new OGMA's in the Mackenzie TSA at the OCT 14, 2009 PAG meeting. Discussion of indicators #1 Late Seral and indicator #2 Interior Old at March 27, 2013 meeting in context of discussion removing 'roads' from the indicator statements.	
Participation in government programs to protect threatened and endangered species	previous plan, Presentation by John Deal went over a Case Study of TFL 37, but also tied in aspects of Species at Risk @ Feb 28, 2006 Meeting. Reference to certain species that are managed as species at risk during May 26, 2009 PAG Meeting. Oct 5, 2016 field tour - discussed Northern Goshawk with respect to stick nest retention.	
Forest habitat connectivity and conservation at the landscape level	Aug 21 2013 field tour - discussion of furbearer corridor and importance of maintain forest connectivity	
Role and importance of wetlands		
Criterion 2- Ecosystem condition and productivity		
Climate change impacts and adaptation	Climate change and associated changes to peak flows was mentioned during the March 13, 2008 PAG Meeting. Discussion of impacts of climate change on spruce beetle life cycle stages at Oct 5, 2016 field tour. Also similar discussion on spruce beetle and climate change at May 18, 2016 meeting.	
Trends in natural and human-caused disturbances	old plan, discussion and acceptance of Indicator 2-5 (Natural disturbance levels and risk levels are managed for such resistance to catastrophic change and the ability to recover on the landscape level is sustained) at March 14, 2006 Meeting, Presentation at meeting on Feb 14 and March 28, 2006. March 27, 2013 - presentation on Nov 2010 blowdown event in teh McLeod Lake Community Forest - within the BCTS operating area. Discussion of spruce beetle at May 18, 2016 meeting and on Oct 5, 2016 field trip. June 19, 2012 field trip, discussion of spruce beetle in blowdown,	
Proportion of naturally disturbed area that is not salvage harvested	Review of salvage logging and creation of indicator to deal report on number of blocks that are harvested for forest health reasons at June 24 2009 PAG meeting. At Feb 23rd PAG meeting a discussion about Pine Marten and the MPB went on and the LSC mentioned that not all pine will be salvaged. Oct 5, 2016 field tour and May 18, 2016 meeting there was discussion on spruce beetle management and harvest of infested areas.	After TSR is complete the LSC will review with the PAG the amount of timber that is affected by stand damaging agents that likely will not be harvested with the current amount of AAC in the TSA.
Biomass utilization	Discussions occurred and this subject was brought up during the June 2 2010 PAG meeting as discussions around removing the old waste and residue indicator went on. August 21, 2013 field trip, dicussion of the use of waste piles after harvesting for bioenergy.	
Criterion 3-Soil and water		
Sensitive Sites		
Soil disturbance prevention and mitigation measures		

Role and importance of wetlands		
Soil productivity(long-term nutrient levels, shallow soils, best management practices for soil protection)	Old plan, Criterion II, discussions were had around this criterions and handouts were given to the PAG Feb 28, 2006, presentation at FEB 14, 2006 Pag meeting	
Seasons of operations(operating windows, impacts on soil during frozen and unfrozen conditions)	old plan, presentation on practices that minimize disturbance and loss of productive land. (Feb 14, 2006) Discussed in current plan (indicator 16).	
Site rehabilitation in areas of severe soil disturbance	Presentation on different types and severities of soil disturbance, and which require rehabilitation at Feb 28, 2006 PAG Meeting. Discussed in current plan (indicator 16).	
Water quality and quantity in watersheds supplying domestic water	previous plan - Oct 5, 2016 field tour had a stop that focused on watershed assessment process used by Canfor - discussed peak flows, ECA, recovery times, etc. March 7, 2012 meeting - presentation on maangement practices and regulatory requirements that protect water quality and quantity.	These 3 MDI's could use some refreshing. Although indicators existed in previous plans there is not much for documented discussion on these topics other than discussions around peak flow analysis
Healthy watersheds	previous plan - Oct 5, 2016 field tour had a stop that focused on watershed assessment process used by Canfor - discussed peak flows, ECA, recovery times, etc. June 19, 2012 field trip - discussed riparian management at one stop.	
Management practices and regulatory requirements that protect water quality and quantity	previous plan - Oct 5, 2016 field tour had a stop that focused on watershed assessment process used by Canfor - discussed peak flows, ECA, recovery times, etc.	
Criterion 4-Role in global ecological cycles		
Carbon emissions from fossil fuels used in forest operations		
Role of forest ecosystems and their management in the global carbon cycle		
Maintain forest conditions and management activities that contribute to the health of global ecological cycles.	Old Plan, Criterion III. Discussed on March 14, 2006.	
Criterion 5-Economic and social benefits		
The significant vulnerabilities for community sustainability linked to forest and timber supply conditions over time.		
Benefits for local communities and Aboriginal Peoples(cultural, spiritual, economic, health, etc) for hunting and trapping • Access for tourism opportunities	Dec 3, 2014. Brief discussion of Mackenzie 2014 TSR release - general overview of allocated volume. Nothing too indepth. Oct 24, 2012 meeting - discussion of Mid-term timber supply action plan and how it may affect the Mackenzie TSA. Discussion about "Forest management sustains ongoing opportunities for a range of quality of life benefits" , and subsequent indicators and measures agreed upon by the PAG-May 9, 2006. Also mentioned October 20, 2010 PAG Meeting.	
Fair distribution of benefits and costs Forestry wages • Employment trends • Training and development	• In terms of employment trends... December 15, 2009 PAG meeting indicator to report on number of contract opportunities that involve First Nations, this translates to employment within the DFA. Indicator developed to offer training opportunities to the public, discussed at October 20, 2010 PAG Meeting (indicator 51..now called 46)	
Proportion of goods and services sourced from local communities(to the extent that they are available and reasonably cost competitive) contractors • Local manufacturing	• Local previous plan, old plan-PAG agreed on Indicator 6-1 and associated measures to deal with local employment and contribution to the local economy on May 9, 2006. Discussed in June 2009 PAG meeting when 4 existing measures were combined to create one new indicator.	
Criterion 6-Society's responsibility		
Development of working relationships with willing Aboriginal communities Sharing of information and open discussion • Building partnerships	• October 20 2010, Discussion at December 15, 2009 PAG meeting regarding indicators around First Nations input into forest planning, and block referrals. Discussion at February 23rd, 2011 PAG Meeting about culturally significant sites...the LSC is open to discussion with the First Nations and working toward developing relationships, resultant is indicator 48(52 at time of development). August 21, 2014 field trip - discussion of harvest planning and retention areas with local trapper to address their concerns about forest connectivity. March 27, 2013 - review of indicator and discussion related to training of Canfor staff on First Nations Awareness.	

**there are no discussion topics for Criterion 7 - Aboriginal Relations

Mackenzie

Sustainable Forest Management Plan



Mackenzie SFMP



2016 - 2017 Annual Report

TABLE OF CONTENTS

1.0 Introduction.....	4
1.1 List of Acronyms	4
1.2 Executive Summary	5
1.3 SFM Performance Reporting	6
2.0 SFM Indicators, Targets and Variances	7
Indicator 1.1.1 Productive Forest Representation	7
Indicator 1.1.2 Forest Area by species composition	7
Indicator 1.1.3a Old forest	8
Indicator 1.1.3b Interior Forest	9
Indicator 1.1.3c Biodiversity Reserve Effectiveness	11
Indicator 1.1.3d Patch Size	11
Indicator 1.1.4a Wildlife Trees	12
Indicator 1.1.4b Riparian Management Area Effectiveness.....	12
Indicator 1.1.4c Dispersed retention levels	13
Indicator 1.2.1a Species within the DFA	13
Indicator 1.2.1b Sites of Biological Significance.....	14
Indicator 1.2.3 Proportion of genetically modified trees in reforestation efforts	15
Indicator 1.4.2 Heritage Conservation	15
Indicator 1.4.2b Protection of identified sacred and culturally important sites.....	16
Indicator 2.1.1a Regeneration Delay	17
Indicator 2.1.1b Free Growing	18
Indicator 2.2.1a Site conversion.....	18
Indicator 2.2.1b Permanent Access Structures.....	19
Indicator 2.2.2a Harvest volume	19
Indicator 2.2.2b Prioritizing harvest of damaged stands	20
Indicator 3.1.1a Sedimentation	21
Indicator 3.1.1b Stream Crossings	21
Indicator 3.1.1c Road Re-vegetation	22
Indicator 3.1.1d Road Environmental Risk Assessment.....	22
Indicator 3.1.1e Soil Conservation.....	22
Indicator 3.1.1f Terrain Management.....	23
Indicator 3.1.2 Coarse Woody Debris	24
Indicator 3.2.1 Peak Flow Index	24
Indicator 5.1.1a Non-timber Benefits	25
Indicator 5.1.1b First-Order Wood Products.....	25
Indicator 5.2.2 Investment in training and skills development	26
Indicator 5.2.3 Level of direct and indirect employment	26
Indicator 5.2.4 Contract Opportunities to First Nations	27
Indicator 6.1.1 Understanding of the nature of Aboriginal Rights and Title.....	27
Indicator 6.1.2a First Nations Concerns	28
Indicator 6.1.2b First Nations Input into Forest Planning	29
Indicator 6.3.1 Local Investment	29
Indicator 6.3.2 Accidents	30
Indicator 6.3.3a Signage	30
Indicator 6.3.3b Safety Policy.....	31
Indicator 6.4.1 Satisfaction (PAG).....	31
Indicator 6.4.2a Input into Forest Planning.....	32
Indicator 6.4.2b Public and Stakeholder Concerns	33
Indicator 6.5.1a SFM Educational Opportunities	34
Indicator 6.5.1b People reached through educational outreach.....	34
Indicator 6.5.2a Access to SFM information	35
Indicator 6.5.2b Communication of Planned Deactivation Projects	35
Indicator Reportable Spills.....	35
Appendix 1.....	37

1.0 Introduction

This Annual Report of the Mackenzie Sustainable Forest Management Plan covers the reporting period of April 1, 2016 to March 31, 2017. This annual report is solely reporting the efforts of Canadian Forest Products Ltd. operating under Forest License A15384 within the Mackenzie TSA. Canfor completed a revision to the SFM plan with a significant change to the format/ template of the plan to align with a number of other Canfor SFMP's. Indicators were rearranged and re-numbered to align with the CSA standard, however there were no specific changes to the wording of the indicator statements. Additional background and support information was added to the SFM plan to complement the new plan format/ template. These minor changes to the plan will not change the operational practices of Canfor.

The CSA Standard provides SFM specifications that include public participation, performance, and system requirements that must be met to achieve certification. These specifications were the framework for the development of the Mackenzie SFMP. Canfor has existing management systems that contribute to the overall SFM strategy. These may include existing management systems such as ISO 14001 Forest Management Systems, standard work procedures, and internal policies.

One of the public participation strategies suggested in the CSA SFM Standard is the formation of a local group of interested and affected members of the public to provide input on an ongoing basis. This strategy provides the base for the formation of a Public Advisory Group (PAG) whose purpose is to achieve CSA standard's public participation requirements. A PAG was initially developed to assist with the development of the SFMP, this group is maintained to date and meets regularly to discuss changes to the plan when necessary as well as to discuss licensee performance and review audit results etc. A wide range of public sector interest groups from within the Mackenzie Forest District were invited to participate in the SFM process through the PAG. After completing the Terms of Reference in January 2006, the PAG established the SFMP Criteria and Elements Performance Matrix with the SFMP being completed in June of 2006. It is important to note, the Mackenzie SFMP is a working document and is subject to continual improvement. Over time, the document will incorporate new knowledge, experience and research in order to recognize society's environmental, economic and social values. For example, PAG involvement during 2010-11 was critical in updating the SFMP from the CSA Z809-02 to the CSA Z809-08 standard. There will be even further involvement in the coming years as Canfor transitions to the CSA Z809-16 standard.

This Annual Report summarizes Canfor's performance in meeting the indicator targets outlined in the SFMP over the Mackenzie Defined Forest Area (DFA). The DFA is the Crown Forest land base within the Mackenzie Resource Management District and the operating areas of Canfor, excluding woodlots, Community Forest, Parks, Protected Areas and private land. The intent of this Annual Report is to have sustainable forest management viewed by the public as an open, evolving process that is taking steps to meet the challenge of managing the forests of the Mackenzie DFA for the benefit of present and future generations.

The following Table summarizes the results for the current reporting period. For clarification of the intent of the indicators, indicators, objectives or the management practices involved, the reader should refer to the Mackenzie Sustainable Forest Management Plan Document.

1.1 List of Acronyms

Below is a list of common acronyms used throughout this annual report. For those wishing a more comprehensive list should consult the Mackenzie Sustainable Forest Management Plan.

AAC – Annual Allowable Cut
BCTS – BC Timber Sales
BEC – Biogeoclimatic Ecosystem Classification
BEO – Biodiversity Emphasis Option
BWBS – Black and White Boreal Spruce

CFLB – Crown Forested Land Base
 CSA – Canadian Standards Association
 CWD – Coarse Woody Debris
 DFA – Defined Forest Area
 ESSF – Engelmann Spruce Sub-alpine Fir
 FMG – Forest Management Group
 FRPA – Forest and Range Practices Act
 FSR – Forest Service Road
 GIS – Geographic Information System
 LOWG – Landscape Objective Working Group
 LRMP – Land and Resource Management Plan
 LU – Landscape Unit
 MoFR – Ministry of Forest and Range
 NCI – North Central Interior
 NDT – Natural Disturbance Type
 NDU – Natural Disturbance Unit
 NHLB - Non-Harvestable Land Base
 OGMA – Old Growth Management Area
 PAG – Public Advisory Group
 PFI – Peak Flow Index
 RMA – Riparian Management Area
 RMZ – Resource Management Zone (landscape-level planning)
 RMZ – Riparian Management Zone (riparian management)
 RRZ – Riparian Reserve Zone
 SAR – Species at Risk
 SBS – Sub-Boreal Spruce
 SFM – Sustainable Forest Management
 SFMP – Sustainable Forest Management Plan
 SWB – Spruce Willow Birch
 THLB – Timber Harvesting Land Base
 TOR – Terms of Reference
 TSA – Timber Supply Area
 VIA – Visual Impact Assessment
 VQO – Visual Quality Objective

1.2 Executive Summary

Of the **48** indicators listed in Table 1, **45** indicators were met within the prescribed variances, **1** indicator is pending due to incomplete information, and **2** indicators were not met within the prescribed variances.

Table 1: Summary of results for the 2012-13 Reporting Year.

Indicator Number	Indicator Description	Target Met	Pending	Target Not Met
1.1.1	Productive forest representation	X		
1.1.2	Forest Area by Species Composition	X		
1.1.3a	Old forest	X		
1.1.3b	Interior forest	X		
1.1.3c	Biodiversity reserve effectiveness	X		
1.1.3d	Patch size	X		
1.1.4a	Wildlife Trees	X		
1.1.4b	Riparian Management area effectiveness	X		
1.1.4c	Dispersed Retention Levels	X		
1.2.1a	Species within the DFA	X		
1.2.1b	Sites of Biological Significance	X		
1.2.3	Proportion of Genetically Modified Trees in Reforestation Efforts	X		

Indicator Number	Indicator Description	Target Met	Pending	Target Not Met
1.4.2a	Heritage Conservation	X		
1.4.2b	Protection of Identified Sacred and Culturally Important Sites	X		
2.1.1a	Regeneration Delay	X		
2.1.1b	Free Growing	X		
2.2.1a	Site Conversion	X		
2.2.1b	Permanent Access Structures	X		
2.2.2a	Harvest Volumes		X	
2.2.2b	Prioritizing harvest of damaged stands	X		
3.1.1a	Sedimentation	X		
3.1.1b	Stream Crossings	X		
3.1.1c	Road re-vegetation	X		
3.1.1d	Road environmental risk assessments	X		
3.1.1e	Soil Conservation	X		
3.1.1f	Terrain Management	X		
3.1.2	Coarse Woody Debris	X		
3.2.1	Peak Flow Index	X		
5.1.1a	Non-Timber Benefits	X		
5.1.1b	First-order Wood Products	X		
5.2.2	Investment in Training and Skills Development	X		
5.2.3	Level of Direct and Indirect Employment	X		
5.2.4	Contract Opportunities for First Nations	X		
6.1.1	Understanding the Nature of Aboriginal Rights and Title	X		
6.1.2a	First Nations Concerns	X		
6.1.2b	First Nations Input into Forest Planning	X		
6.3.1	Local Investment	X		
6.3.2	Accidents	X		
6.3.3a	Signage	X		
6.3.3b	Safety Policies	X		
6.4.1	Satisfaction (PAG)	X		
6.4.2a	Input into Forest Planning	X		
6.4.2b	Public and Stakeholder Concerns	X		
6.5.1a	SFM Educational Opportunities	X		
6.5.1b	People Reached through Educational Outreach	X		
6.5.2a	Access to SFM Information	X		
6.5.2b	Communication of planned Deactivation Projects	X		
	Reportable Spills	X		
	Totals	47	1	0

1.3 SFM Performance Reporting

This annual report will describe the success in meeting the indicator targets over the DFA. The report will be available to the public and will allow for full disclosure of forest management activities, successes, and failures. Canfor has reported performance within its operating areas. Canfor is committed to work together to fulfill the Mackenzie SFMP commitments including data collection and monitoring, participation in public processes, producing public reports, and continuous improvement.

2.0 SFM Indicators, Targets and Variances

Indicator 1.1.1 Productive Forest Representation

Indicator Statement	Target and Variance
Total hectares logged in rare and un-common ecosystems.	Target: 0 ha Variance: 0%

Maintaining representation of a full range of ecosystem types is a widely-accepted strategy to conserve biodiversity in protected areas. Most species, especially those for which knowledge is sparse or absent, are best sustained by ensuring that some portion of each distinct ecosystem type is represented in a relatively unmanaged state. It is assumed that by maintaining the structure and diversity of ecosystems, the habitat needs of various species will be provided, resulting in populations being maintained.

A target of 0 hectares of rare or uncommon ecosystems logged per reporting period was selected in order to identify and conserve rare and uncommon ecological communities. These ecosystems were identified by mapping at the BEC variant and site series level. If these site series are encountered during field layout, they are assessed and reserved from harvest either through exclusion from the harvest area or through the designation of reserves around the site. Reported are the past 3 years of harvesting in rare and uncommon ecosystems according to an analysis of all ecology units harvested. The table below shows all of the ecosystems which are considered to “rare” or “un-common” as well as the amount in hectares harvested over the past three years.

Rare and Un-Common Ecosystems

Rare Ecosystem	Amount harvested by year in hectares		
	2014/2015	2015/2016	2016/2017
SBSvk\03	0	0	0
SBSWk1\05	0	0	0
ESSFmv3\06	0	0	0
ESSFmv2\06	0	0	0
ESSFmv4\05	0	0	0
BWBSdk1\09	0	0	0
BWBSdk1\07	0	0	0

Source: GIS analysis of all Site Plans harvested. WIM report for eco summary.

Indicator Discussion: GIS analysis identified 12 blocks that overlapped with rare eco polygons from the GIS layer. These areas were then field verified and either determined to be incorrectly typed in the GIS layer or removed from the block boundary.

Indicator 1.1.2 Forest Area by species composition

Indicator Statement	Target and Variance
Percent composition of forest type (treed conifer, treed broad leaf, treed mixed) >20 years old across DFA.	Target: Maintain baseline ranges and distribution into the future (measured every 5 years) Variance: +/-1%

Tree species composition, stand age, and stand structure are important variables that affect the biological diversity of a forest ecosystem - providing structure and habitat for other organisms. Ensuring a diversity of tree species within their natural range of variation, improves ecosystem resilience and productivity and positively influences forest health. Reporting on this indicator provides high level overview information on area covered by broad forest type, forest succession and management practices that might alter species composition.

The different stand types will be run using GIS analysis and VRI data. The baseline data was revised in 2013 after the DFA changed as a result of BCTS operating areas being removed from the DFA. Subsequent analysis will be done every 5 years in an effort to eliminate any bias from short term trends on the land-base, and to allow for the periodic updating of data sources. The indicator will be considered to have been met if the area for the 5-year reporting window maintains its area spread within 1 percent of baseline areas.

Analysis Year	Treed Conifer	Treed Broadleaf	Treed Mix
2013 (baseline)	90%	3%	7%
2014	90%	3%	7%
2015	90%	3%	7%
2016	90%	3%	7%
2017	90%	3%	7%

Source: GIS analysis of VRI data.

Indicator Discussion:

Indicator 1.1.3a Old forest

Indicator Statement	Target and Variance
Percent of blocks that are within LU/BEC Groups that meet prescribed old-growth targets.	Target: 100% Variance: 0%

This indicator was chosen to monitor the amount of old forest within each Landscape Unit (LU) group. It is assumed that maintenance of all seral stages across the landscape will contribute to sustainability because doing so is more likely to provide habitat for multiple species as opposed to creating landscapes of uniform seral stage. Emphasis is placed on old forest because many species use older forests and the structural elements found therein (e.g. large snags, coarse woody debris, and multilayer canopies). These structural elements are difficult to recreate in younger forests. The Mountain Pine Beetle epidemic has presented challenges as older pine-leading stands are the most susceptible to infestation.

The Landscape Objectives Working Group (LOWG), which has representation from the Ministry of Forests, Lands and Natural Resource Operations and timber licensees, has developed Landscape Biodiversity Objectives for the Mackenzie Tiber Supply Area. The current status of Old Forest within the Mackenzie DFA is shown in the table below.

Old Forest:

Landscape Unit	BEC Group	Number of Blocks	Target % of Old Growth	Actual % of Old Growth	Number of Blocks that meet Old Growth Targets	Result
Blackwater	2	1	9	15	1	
	3	16			16	
	4	23	11	14.7	23	
*Connaghan Creek	2	1			1	
	4	2			2	
*Eklund	2	1			1	
	4	3			3	
	7	1			1	
*Gaffney	4	3			3	
*Gillis	7	1			1	
*Jackfish	2	4			4	
	7	8			8	
*Manson River	4	3			3	
Nation	4	3	16	12	3	
Philip	2	2	9	14.5	2	
	4	3	11	14.2	3	
Philip Lake	4	2	11	14.5	4	
*South Germanson - Upper Manson						
	7	5			5	
Total Blocks		82		Total blocks that meet target	82	100

Source: Mackenzie LOWG Analysis.

Indicator Discussion: The 2016-2017 Analysis for old and old interior forest was completed by BCTS. In the 2016/1 reporting year, there were 82 blocks harvested in 11 LUs. Connaghan Creek, Gaffney, Eklund, Manson River, Gillis, Jackfish and South Germansen LU's contain spatially defined OGMAs, therefore there are no targets for old growth as it is spatially defined and protected. These blocks automatically meet the objective.

Analysis shows that all other blocks harvested during the reporting period met Old Growth targets for their respective landscape units, except for 3 blocks within the Nation LU. These blocks were harvested for sanitation purposes at the direction of Mackenzie FLNRO to address a severe spruce bark beetle infestation, and therefore still meet the target for this indicator.

Indicator 1.1.3b Interior Forest

Indicator Statement	Target and Variance
Percent of blocks that are within LU/BEC Groups that meet prescribed Interior Old targets.	Target: 100% Variance: 0%

Interior forest conditions refer to a situation where climatic and biotic characteristics are not significantly affected by adjacent and different environmental conditions (e.g., other seral stages, other forest or non-forest types, etc.). This indicator is important because provision of habitat for old-forest dependent species (see Indicator #1) can only occur if old forests are not significantly affected by adjacent

environmental conditions. Historically, natural disturbance events such as fire, insects, and wind led to diverse landscapes characterized by forests having these interior old forest conditions. Thoughtful planning of harvesting patterns can minimize "fragmentation" of the forested landscape and help create interior old forest conditions. Furthermore, the intent of this indicator is to have interior old forest conditions represented within all ecosystem types to further enhance ecosystem resilience. The targets for interior old are taken from the approved Mackenzie TSA Biodiversity Order and the current status of Old Interior forests for the Mackenzie DFA are listed in the table below.

Interior Old:

Landscape Unit	BEC Group	Number of Blocks	Target % of Old Interior	Actual % of Old Interior	Number of Blocks that meet Old Interior Targets	Result
Blackwater	2	1	10	425	1	
	3	16			16	
	4	23	10	115	23	
*Connaghan Creek	2	1			1	
	4	2			2	
*Eklund	2	1			1	
	4	3			3	
	7	1			1	
*Gaffney	4	3			3	
*Gillis	7	1			1	
*Jackfish	2	4			4	
	7	8			8	
*Manson River	4	3			3	
Nation	4	3	25	107	3	
Philip	2	2	10	233	2	
	4	3	10	100	3	
Philip Lake	4	2	11	14.5	4	
*South Germanson - Upper Manson	7	5			5	
Total Blocks		82		Total blocks that meet target	82	100

Source: Mackenzie LOWG Analysis

Indicator Discussion: The 2016/2017 Analysis for old and old interior forest was completed by BCTS. In the 2016/2017 reporting year, there were 82 blocks harvested in 11 LUs. Connaghan Creek, Gaffney, Eklund, Manson River, Gillis, Jackfish and South Germansen LU's contain spatially defined OGMAs, therefore there are no targets for old growth as it is spatially defined and protected. These blocks automatically meet the objective.

Analysis shows that all other blocks harvested during the reporting period met Old Interior targets for their respective landscape units.

Indicator 1.1.3c Biodiversity Reserve Effectiveness

Indicator Statement	Target and Variance
Percentage of blocks and roads harvested that do not comply with Orders which legally establish protected areas, ecological reserves, or OGMAs.	Target: 0% Variance: 0%

Landscape level biodiversity reserves/ Protected Areas are areas protected by legislation, regulation, or land-use policy to control the level of human occupancy or activities (Canadian Standards Association, 2003). These include legally established Old Growth Management Areas (OGMAs), parks, ecological reserves, and new protected areas. As forestry activities may occur near these areas the chance exists for unauthorized harvesting or road construction to happen within these sites. The OGMAs in Mackenzie do allow for small amounts of disturbance for certain circumstances outlined within the Sustainable Forest Management Plan.

Biodiversity Reserves

Signatory	Number of Blocks and roads harvested			Blocks and roads harvested that are within protected areas, ecological reserves, or OGMAs	%in DFA
	Blocks	Roads	Total		
Canfor	82	214	296	0	0%

Source: GIS query.

Indicator Discussion: No unauthorized harvesting or road construction occurred during the reporting period. If OGMAs are harvested, this will be summarized here, but not reported as a violation of this indicator.

Indicator 1.1.3d Patch Size

Indicator Statement	Target and Variance
Percentage of blocks harvested that meet the prescribed patch size target ranges or are trending towards the target range.	Target: 100% Variance: -30%

Patches often consist of even aged forests because most are the result of either natural disturbances such as fire, wind or pest outbreaks, or anthropogenic disturbance such as timber harvesting. Patches may be created through single disturbance events or through a series of events (i.e. a combination of natural disturbance and harvesting). Mature forests and younger forest patches represent a land base created from a history of disturbances, natural and otherwise. As such, forest stands and patches are often composed of a variety of species, stocking levels and ages. Currently, forest management practices have impacted the occurrence of many natural disturbance events, such as wildfire suppression. In the absence of natural disturbance, timber harvesting is employed as a disturbance mechanism and thus influences the distribution and size ranges of forest patches in a fashion that emulates historical natural disturbance events within the Mackenzie DFA. Past social constraints associated with harvesting and resulting patch size have led to fragmentation of the landscape beyond the natural ranges of variability, which has developed over centuries from larger scale natural disturbance. In order to remain within the natural range of variability of the landscape and move toward sustainable management of the forest resource, it is important to develop and maintain patch size targets based on historical natural patterns. This indicator monitors the consistency of harvesting patterns as it compares to the landscape unit group and the natural patterns of the landscape.

Patch Size

Signatory	Number of Blocks Harvested	Blocks harvested that meet or trend towards prescribed patch size target ranges	Percent
Canfor	82	82	100

Source: Mackenzie LOWG Analysis Results.

Indicator Discussion: Blocks that are harvested for pest or disease (salvage, sanitation) are considered to have met patch objectives, as harvesting for forest health reasons takes precedence over patch size targets. Through the Landscape Objectives Working Group (LOWG) more precise data has been provided by adjacent licensees (BCTS, Conifex, MK Fibre, Three Feathers Consortium) and the LOWG is jointly managing Landscape Biodiversity.

The 2016-2017 Patch analysis was completed by BCTS.

Analysis information from 2013 and 2014 indicated that the patch distribution was resulting in larger patch size classes where Canfor had been harvesting. Higher percentages within the larger patch size classes is a positive trend for NDT3 areas, however is not trending towards the targeted distribution range for NDT2 areas. Pine salvage harvesting is the leading cause for the higher percentage of larger patch size classes as there has been an increase in large blocks that have been harvested. However, during this reporting period, Canfor's harvesting activities have been geared towards small and medium patch distributions. As the larger areas of pine beetle infested wood have been addressed, Canfor is moving towards harvesting the smaller patches to clean up the remaining pine beetle infested trees, resulting in smaller patches than previous years.

Indicator 1.1.4a Wildlife Trees

Indicator Statement	Target and Variance
Percentage of cutblocks that meet or exceed wildlife tree patch requirements.	Target: 100% Variance: 0%

Stand level retention, including wildlife tree patches, is managed by Canfor in the DFA on a site-specific basis. During the development of a cut block, retention areas are delineated based on a variety of factors. Stand level retention generally occurs along riparian features and will include non-harvestable and sensitive sites if they are present in the planning area. Stand level retention also aims to capture a representative portion of the existing stand type to contribute to ecological cycles on the land base. Wildlife tree patch percentage requirements are determined based on the landscape unit, BEC, and natural disturbance type. These values can be found in Canfor's Forest Stewardship Plan. Retention level in each block is documented in the associated Site Plan, recorded in the signatories' respective database systems and reported out in RESULTS on an annual basis.

Wildlife Trees

Signatory	Total Number of Cutblocks Harvested	Number of Cutblocks Harvested exceeding WTP requirements	Overall %
Canfor	82	82	100%

Source: Site Plans

Indicator Discussion: WTP targets come from Canfor's approved Forest Stewardship Plan and are specific to ecotype and Landscape Unit. Wildlife tree patches are tracked on a block by block basis but is managed at a landscape level. Of the 11 landscape units in which blocks were harvested, all had WTP % exceeding retention targets outlined in the Canfor Mackenzie FSP. The Connaghan Creek landscape unit had the lowest amount of WTP at 5.5%, however, this exceeded the landscape unit targets are 3.0% (ESSFmv3) and 5.2% (SBSmk1). The Nation LU had the highest amount of retention with WTPs of 18.2%, which exceeds the targets of 4.0% (SBSmk2), 4.4% (SBSmk1), and 4.7% (SBSwk2).

Indicator 1.1.4b Riparian Management Area Effectiveness

Indicator Statement	Target and Variance
The percentage of forest operations consistent with riparian management area requirements as identified in operational plans and/or site plans.	Target: 100% Variance: 0%

Riparian features found in the field are assessed during the block lay-out stage to determine its riparian class and associated RRZ/RMZ/RMA. Appropriate buffers are then applied, considering other factors such as operability and wind firmness. Prescribed measures, if any to protect the integrity of the RMA are then written into the Site Plan. The target is a legal requirement. The target value of 100% has been established to reflect this and to ensure that all riparian management practices, specifically RRZ designation and management, continue to remain consistent with the pre-harvest operational plans.

Riparian Management

Signatory	Number of Forest Operations with Riparian Management Strategies identified in Operational Plans				Forest Operations Completed in Accordance with riparian management requirements	%in DFA
	Roads	Harvest	Silviculture	Total		
Canfor	214	82	0	296	296	100%

Source: Site Plans, Incident Tracking Systems.

Indicator Discussion: There were no instances identified and reported where riparian areas were compromised, other than where required for road crossings during harvesting, road building or site preparation activities.

Indicator 1.1.4c Dispersed retention levels

Indicator Statement	Target and Variance
Percent of blocks meeting dispersed retention levels as prescribed in the site plan/logging plans	Target: 100% Variance: 0%

Operationally, harvest plans often include retention of dispersed trees such as snags, large live trees, deciduous trees, stub trees and understory trees. Dispersed retention provides stand level complexity and long term recruitment of coarse woody debris. Harvest value and ecological value can be optimized by selecting the variety of tree types (e.g., species, size, live and dead, etc.) that have high ecological value and low economic value, and through the number of trees retained.

Signatory	Total Number of Blocks Meeting Dispersed Retention Levels Defined in Site Plan	Total Number of Blocks Harvested	Percent
Canfor	82	82	100.0%

Source: Internal databases, and Incident Tracking Systems.

Indicator Discussion: There were no instances identified and reported where dispersed retention levels were not met. Harvesting supervisors review levels of dispersed retention post-harvest.

Indicator 1.2.1a Species within the DFA

Indicator Statement	Target and Variance
Percentage of blocks and roads harvested that adhere to management strategies for Species at Risk, Ungulate winter ranges, and other local species of importance.	Target: 100% Variance: -10%

Fundamental to the correct identification of species and habitats is the incorporation of appropriate management strategies where forest activities have the potential to impact species and habitats. Identification of those animals, invertebrates, bird species, vascular plants, and plant communities that have been declared to be at risk is crucial if they are to be conserved. Appropriate personnel are key staff and consultants that are directly involved in operational forest management activities. By implementing training to identify species within the DFA, the potential for disturbing these species and their habitat decreases. Maintaining all populations of native flora and fauna in the DFA is vital for sustainable forest management, as all organisms are components of the larger forest ecosystem.

There are various sources to draw upon when developing the comprehensive list of species that are legally protected or species of importance within the DFA. The list of species in Appendix C includes species from the following sources:

1. Species at Risk Act
2. Legally established Ungulate Winter Ranges
3. Local species of importance.

Incorporation of local species of importance recognizes potential species that are not legally protected. Local species of importance can be proposed by First Nations, PAG members, the licensees, or by members of the public.

Species within the DFA

Signatory	Number of Forest Operations that coincide with Species at Risk, Ungulate Winter Ranges, or other local species of importance as identified in Operational Plans				Number of Forest Operations with Species at Risk, Ungulate Winter Ranges, or other local species of importance as identified in Operational Plans that adhere to specific management strategies.	% in DFA
	Roads	Harvesting	Silviculture	Total		
Canfor	113	24	19	156	156	100%

Source: Site Plans

Indicator Discussion: During the reporting period Canfor harvested 22 blocks that were overlapped by Ungulate Winter Range Order U-7-025 which protect high elevation caribou habitat. Of those 22 blocks, 17 blocks fell within the Specified Area which requires silviculture activities to minimize moose browse in order to reduce predation. The remaining 5 blocks were within the Core Area which restricts all harvest activities. However, these blocks were declared in 2014 under Section 14 of the *Forest Planning and Practices Regulation* (FPPR) which means that these areas are not subject to mandatory amendments under Section 8 of the *Forest and Range Practices Act* (FRPA).

Additionally, during the reporting period, 2 harvested blocks were overlapped by Ungulate Winter Range Order U-7-007 which protects low elevation, high value lichen habitat. The General Wildlife Measures outlined in the Order were followed during harvest which included in-block road deactivation to prevent snowmobile activity, as well as harvesting in winter with snow pack to protect at least 40% of the lichen. Finally, 19 blocks were planted that overlapped Ungulate Winter Ranges where specific management strategies were implemented where applicable.

Indicator 1.2.1b Sites of Biological Significance

Indicator Statement	Target and Variance
Percentage of blocks and roads harvested that adhere to management strategies for sites of biological significance.	Target: 100% Variance: -10%

Sites of biological significance include areas that are critical for wildlife habitat, sensitive sites, and unusual or rare forest conditions or communities. Specific management strategies may be required to ensure that these sites are maintained within the DFA. This indicator will ensure that specific management (fine filter) strategies are developed to conserve and manage sites of biological significance. Many types of sites of biological significance are sufficiently known to allow the development of special management areas, or prescribe activities that will appropriately manage these areas. The management strategies will be based on information already in place (e.g., National Recovery Teams of Environment Canada, IWMS Management Strategy), legislation (provincial and national parks), Land and Resource Management Plans (LRMPs), and recent scientific literature. Management strategies will be implemented in operational plans such as site plans to ensure the protection of these sites. Training of appropriate personnel in the identification of these sites of biological importance is critical to the management and protection of these sites. Appropriate personnel include key signatory staff and consultants that are directly involved in operational forest management activities. Having appropriate personnel trained to identify sites of biological significance will reduce the risks of forestry activities damaging these sites.

This indicator evaluates the success of implementing specific management strategies for sites of biological significance as prescribed in operational, tactical and/or site plans. Operational plans such as site plans describe the actions needed to achieve these strategies on a site-specific basis. Once harvesting and other forest operations are complete, an evaluation is needed to determine how well these strategies were implemented. Developing strategies and including them in operational, tactical and/or site plans are of little use if the actions on the ground are not consistent with them. Tracking this consistency will ensure problems in implementation are identified and corrected in a timely manner.

Sites of Biological Significance

Signatory	Number of Forest Operations with Sites of Biological Significance Management Strategies Identified in Operational Plans				Forest Operations Completed in Accordance with Identified Strategies	% in DFA
	Roads	Harvesting	Silviculture	Total		
Canfor	0	0	0	0	0	100%

Source: Site Plans

Indicator Discussion: During the reporting period Canfor did not have any blocks or roads that had management strategies pertaining to sites of biological significance.

Indicator 1.2.3 Proportion of genetically modified trees in reforestation efforts

Indicator Statement	Target and Variance
Regeneration will be consistent with provincial regulations and standards for seed and vegetative material use	<u>Target:</u> 100% conformance with the standards <u>Variance:</u> 0%

One of the primary management objectives for sustainability is to conserve the diversity and abundance of native species and their habitats. Silviculture practices that promote regeneration of native species, either through planting or other natural programs, assist in meeting these objectives. The well-being and productivity of future forests is dependent upon the structure and dynamics of their genetic foundation.

Seed used in Crown land reforestation that is consistent with provincial regulations and standards ensure regenerated stands are genetically diverse, adapted, healthy and productive, now and in the future. Suitable seed and vegetative lots must also be of a high quality and available in sufficient quantities to meet the specific stocking and forest health needs of a given planting site.

Regeneration will be consistent with provincial regulation and standards for seed and vegetative material use. Target - 100% conformance with the standards (0 percent variance). The Chief Forester's Standards for seed use allows for up to 5 percent of the seedlings planted in a year to be outside the seed transfer guidelines. In addition, there is an avenue in the standards to apply and receive approval for an Alternative Seed Use Policy. This built-in variance and flexibility with the standard is why there is no acceptable variance in the target of the SFMP indicator.

Signatory	Total Number of Seedlings Planted in Compliance with Legislative Requirements	Total Number of Seedlings Planted	Percent
Canfor	5,737,861	5,737,861	100%

Source: Internal databases.

Indicator Discussion: No trees were planted outside of the transfer limit during the reporting period, therefore, we are in compliance with legislative requirements.

Indicator 1.4.2a Heritage Conservation

Indicator Statement	Target and Variance
Percentage of forest operations consistent with the Heritage Conservation Act.	<u>Target:</u> 100% <u>Variance:</u> 0%

The protection of cultural heritage values assures that they will be identified, assessed, and their record available to future generations. A cultural heritage value is a unique or significant place or feature of social, cultural, or spiritual importance. It may be an archaeological site, recreation site or trail, cultural heritage site or trail, historic site, or a protected area. Cultural heritage values often incorporate First Nation's heritage and spiritual sites, but they can also involve features protected and valued by non-Aboriginal people. Maintenance of cultural heritage values is an important aspect to sustainable forest management because it contributes to respecting the social and cultural needs of people who traditionally and currently use the DFA for a variety of reasons.

The indicator is designed to ensure that operational plans with identified strategies to conserve cultural heritage values have those strategies implemented on the ground. Tracking the level of implementation will allow Canfor to evaluate how successful this implementation is and improve procedures if required.

Heritage Conservation

Signatory	Total Number of Forest Operations that have associated sites protected under the Heritage Conservation Act (pre-1846)				Number of Forest Operations Completed in Accordance with the Heritage Conservation Act	Percent
	Roads	Harvesting	Silviculture	Total		
Canfor	0	1	0	1	1	100.0%

Source: Site plans.

Indicator Discussion: There was one block (GER017) harvested where a pre-1846 archaeological site was found during the Archaeological Impact Assessment (AIA). Additionally, two Areas of Archaeological Potential (AOP) were found. The pre-1846 archaeological site was excluded from the net merchantable area and buffered 30 meters to form part of one of the external Wildlife Tree Patches (WTP). Blocks 6807, GER013, MAN015, and MAN011 all had AIAs completed and had CMTs and/or AOPs found. Any AOPs found were excluded from the merchantable area of the block and included in the gross block area as WTPs. The CMTs were flagged in the field, identified on the map, and stubbed above the scars where operationally feasible.

Finally, an Archaeological Overview Assessment was completed for block GER014. Nothing of significance was found so no AIA was needed.

Indicator 1.4.2b Protection of identified sacred and culturally important sites

Indicator Statement	Target and Variance
Percent of identified Aboriginal forest values, knowledge and uses accommodated in forestry planning processes.	Target: 100% Variance: 0

Efforts have been made to understand which First Nation traditional territories fall within the Plan area and company Defined Forest Areas. Information sharing agreements are made with willing First Nation communities to promote the use and protection of sensitive information.

Planned blocks are shared with Aboriginal communities. Open communication with First Nations that includes a sharing of information enables the participants to understand and incorporate traditional knowledge into forest management options is the means to achieve the objective of the indicator.

The objective will be achieved as the participants become aware of culturally important, sacred and spiritual sites leading to appropriate management of and protection. This will be achieved by specifying measures in operational plans. The proper execution of plans will provide desired results of First Nations culturally important values and resources. Post-harvest evaluations and other inspections will assess plan conformance.

Signatory	Number of Aboriginal forest values, knowledge and uses brought forward that have been considered	Number of Aboriginal forest values, knowledge and uses brought forward	Percent
Canfor	2	2	100.0%

Source: Internal tracking databases.

Indicator Discussion: In the fall of 2013 Canfor, FLNRO and representatives from the Takla Lake FN met to discuss Canfor's proposed harvesting in the Manson and Germansen areas. A large area was identified as to be no harvesting, however no specific sites were identified by the Takla Lake FN within the area. The input was considered, however not included into operational plans. In the fall of 2014 the Takla Lake FN and Canfor had further discussions regarding their area of concern and some of the specifics. The area of concern was narrowed down to one drainage and a proposed road and blocks within that drainage. The FN family in the area has a trapline and historic trails they want to protect as

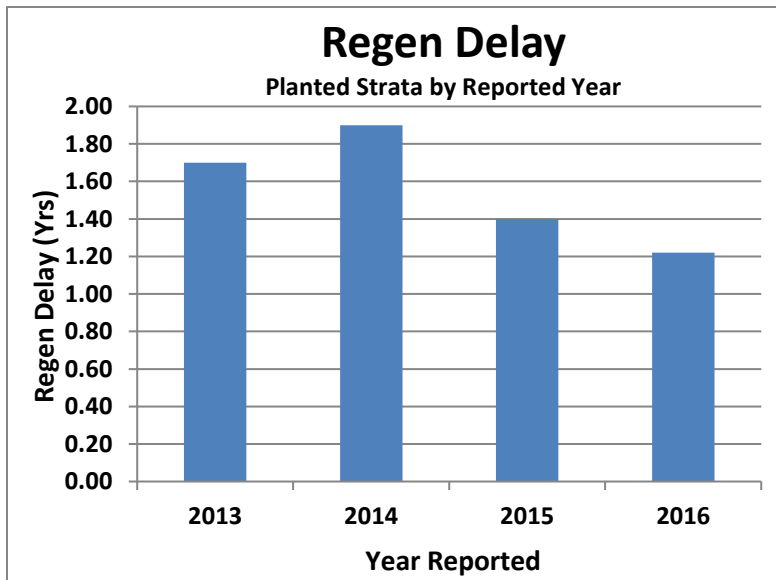
well as they have concerns about opening access to the area. Canfor proposed a number of operational controls and practices to the Takla Lake FN to address their concerns. Further discussions were had during the current reporting period with regards to the Manson and Germanson areas. Some accommodations made to address their concerns included dropping blocks related to significant cultural features, providing buffers on sacred areas, and the completion of Archaeological Impact Assessments. The Mcleod Lake Indian Band brought forward concerns relating to the protection of important habitat as well as traditional use areas. Canfor agreed to protect identified berry patches where possible.

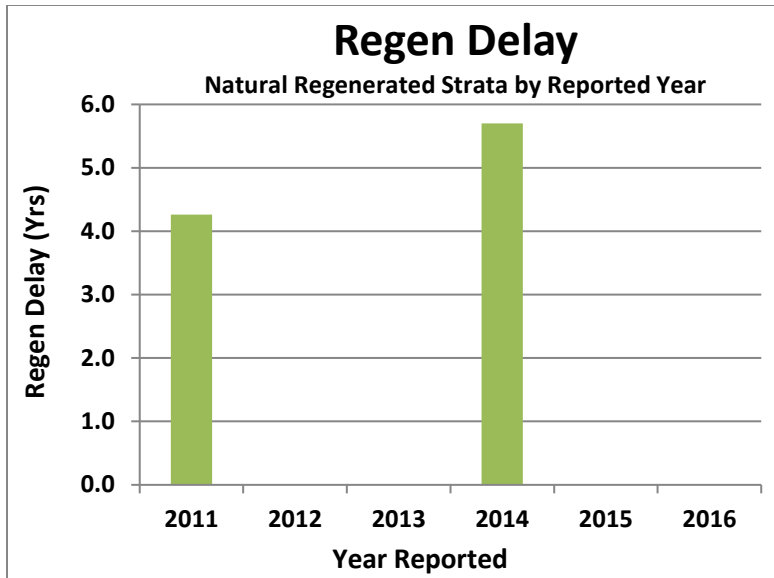
Indicator 2.1.1a Regeneration Delay

Indicator Statement	Target and Variance
The regeneration delay, by area, for stands established annually.	Artificial Regen: <4yrs Natural Regen: <7yrs Variance: +/- 5%

Regeneration delay is defined in this SFM plan as the time allowed in a prescription between the start of harvesting in the area and the earliest date by which the prescription requires a minimum number of acceptable, well-spaced trees per hectare to be growing in that area. There is a maximum permissible time allowed and comes from standards developed and/or approved by government. The regeneration delay period is usually within four years where planting is prescribed and seven years where the stand is expected to reforest naturally. Operationally, it is desirable to reforest as soon as possible post-harvest and the majority of blocks artificially regenerated (e.g. planted) meet regeneration delay within 2 years. Ensuring that all harvested stands meet the prescribed regeneration delay date within the specified time frame is an indication that the harvested area has maintained the ability to recover from a disturbance, thereby maintaining its resiliency and productive capacity. It also helps to ensure that a productive stand of trees is beginning to grow for use in future rotations. The current status of this indicator was derived from a review of signatories' records for the reporting period.

Regeneration Delay





Source: Canfor Resources database.

Indicator Discussion: Included previous years as well to show trends where they exist. In 2015 there was 4050 ha declared Regen met through artificial (planted) regen, and no hectares declared as naturally regenerated.

Indicator 2.1.1b Free Growing

Indicator Statement	Target and Variance
The % of block area that meets free growing requirements as identified in site plans.	Target: 100% Variance: -5%

A free growing stand is defined in this SFM plan as a stand of healthy trees of a commercially valuable species, the growth of which is not impeded by competition from plants, shrubs or other trees. The free growing status is somewhat dependent upon the regeneration delay date of a forest stand and could be considered the next reporting phase. A free growing assessment is conducted on stands based on a time frame indicated in operational plans. The late free growing dates are established based on the biogeoclimatic classification of the site and the tree species prescribed for planting after harvest.

In order to fulfill mandates outlined in legislation, standards are set for establishing a crop of trees that will encourage maximum productivity of the forest resource (BC MOF 1995b). The free growing survey assesses the fulfillment of a Licensee’s obligations to the Crown for reforestation and helps to ensure that the productive capacity of the forest land base to grow trees is maintained. Continued ecosystem productivity is ensured through the principle of free growing. This indicator illustrates the percentage of block area that meets free growing obligations across the DFA.

Free Growing

Signatory	Number of hectares Required to Meet Free Growing During Period	Number of hectares declared Free Growing	% in DFA
Canfor	5379	5379	100%

Source: Resources.

Indicator Discussion: During the reporting period, there were 234 Standards Units due for free growing. Everything met the due date.

Indicator 2.2.1a Site conversion

Indicator Statement	Target and Variance
---------------------	---------------------

The percent of gross land base in the DFA converted to non-forested land use through forest management activities.	<u>Target:</u> <5% <u>Variance:</u> 0%
--	---

In addition to maintaining the resources necessary for sustaining the resiliency of forest ecosystems, a stable land base within which productive capability is assessed is also required. To assess the maintenance of the productive capability of the land base, this indicator specifically tracks the amount of productive land base loss due to various non-forest uses. Removal of the productive land base occurs as a result of permanent access structures, including roads, landings and gravel pits, as well as converting forested areas to non-forest land use, such as range, seismic lines and other mineral exploration.

Conversion of the landbase to non-forest land also has implications for carbon sequestration. A permanent reduction in the forest means that the removal of carbon from the atmosphere and carbon storage will be correspondingly reduced. The data that is required for monitoring is the number of hectares of productive forest area lost due to conversion to a non-forest use.

Site Conversion

Signatory	Total CFLB	Area Converted to Non-Forest Land	Percent of THLB Area
Canfor	1,309,132	12,455	0.95%

Source: GIS analysis

Indicator Discussion: The area converted to non-forested land during the reporting period is less than 1%, therefore the site conversion target has been met.

Indicator 2.2.1b Permanent Access Structures

Indicator Statement	Target and Variance
The percentage of gross cutblock area occupied by total permanent access structures.	<u>Target:</u> <5% <u>Variance:</u> +1%

This indicator measures the amount of area developed as permanent access structures (PAS) within cutblocks, in relation to the gross area of the blocks logged during that period. Limits are described in legislation in the Forest Planning and Practices Regulation, section 36. Permanent access structures include roads, bridges, landings, gravel pits, or other similar structures that provide access for timber harvesting. Area that is converted to non-forest, as a result of permanent access structures and other development is removed from the productive forest land base and no longer contributes to the forest ecosystem. Roads and stream crossings may also increase risk to water resources through erosion and sedimentation. As such, minimizing the amount of land converted to roads and other structures protects the forest ecosystem as a whole.

Permanent Access Structures

Signatory	Total Gross Cutblock Area	Total Cutblock Area in Permanent Access Structures	Percent
Canfor	4494.3	145.1	3.2%

Source: Site Plans

Indicator Discussion: This is a calculation using all of the blocks that had active harvesting during the reporting period.

Indicator 2.2.2a Harvest volume

Indicator Statement	Target and Variance
Actual harvest volume compared to the apportionment across the DFA over each 5-year cut control period.	<u>Target:</u> 100%. <u>Variance:</u> +/- 10%.

To be considered sustainable, harvesting a renewable resource such as timber cannot deteriorate the resource on an ecological, economic or social basis. It is expected that certain resource values and uses will be incompatible; however, a natural resource is considered sustainable when there is a balance between the various components of sustainability. During Allowable Annual Cut (AAC) determination,

various considerations are examined including the long term sustainable harvest of the timber resource, community stability, wildlife use, recreation use, and the productivity of the DFA. The AAC is generally determined every five years by the Chief Forester of British Columbia, using a number of forecasts to assess the many resource values that need to be managed. On behalf of the Crown, the Chief Forester makes an independent determination of the rate of harvest that is considered sustainable for a particular Timber Supply Area (TSA).

The harvest level for a TSA must be met within thresholds that are established by the Crown. By following the AAC determination, the rate of harvest is consistent with what is considered by the province to be sustainable ecologically, economically and socially within the DFA. As stated above, the Chief Forester makes a determination of the rate of harvest for a particular TSA. The licensee then by law must achieve the AAC within the specified thresholds. Each truckload of wood is assessed and accounted for at a scale site if the cutting permit is billed as “scale-based” and if the cutting permit is “cruise-based” the timber is billed according to the volume in the timber cruise. The MFLNRO uses this information to apply a stumpage rate to the wood, and monitors the volume of wood harvested and compares it to the AAC thresholds.

The volume of timber actually harvested within the DFA will be determined annually by a review of MFLNRO timber scale billing summaries for the period of January 1st to December 31st each year, on an annual basis. Canfor will report the volumes harvested for the current cut control period they are in.

Harvest Volumes

Signatory	Volume Harvested						5-year Apportionment	Percent of 5 year cut in DFA
	Year 1	Year 2	Year 3	Year 4	Year 5	Total		
	2013	2014	2015	2016	2017			
Canfor	860,326	909,303	1,173,381	1,070,425		4,013,435	5,414,520	74%

Source: Cut control letters, Harvest Billing System

Indicator Discussion: 2013 was the beginning of a new cut-control period and Canfor expects that at the end of that period the entire cut will be harvested. Canfor’s annual allowable cut (AAC) is 1,082,904 m3. In 2016 Canfor cut 98.8% of the annual allocation. The next reporting year is the 5th year of the cut control period after which the cut control will start over. Canfor will have to cut above their AAC in 2017 in order to meet the 5-year apportionment target.

Indicator 2.2.2b Prioritizing harvest of damaged stands

Indicator Statement	Target and Variance
Percentage of area (ha) harvested that are damaged or considered a high risk to stand damaging agents.	Target: 100%. Variance: -20%.

Damaging agents are biotic and abiotic factors (fire, wind, insects etc.) that reduce the net value of commercial timber. To reduce losses to timber value it is necessary to ensure that if commercially viable timber is affected by damaging agents, that the timber is recovered before its value deteriorates. At the time of this SFMP's preparation, the most serious stand damaging agent in the Mackenzie DFA is the Mountain Pine Bark Beetle, which has killed millions of mature, commercially viable lodgepole pine. During the current reporting period, a Spruce Bark Beetle epidemic has become a serious concern to the Mackenzie Forest District. Efforts have been made to slow the spread using trap tree programs, pheromone lures, and sanitation harvests. Prioritizing infested stands for treatment can contribute to sustainable forest management in several ways. Removing infested trees can slow the spread of beetles to adjacent un-infested stands and allow Licensees to utilize trees before they deteriorate. Also, once harvesting is complete the area can be replanted, turning an area that would have released carbon through the decomposition of dead trees into the carbon sink of a young plantation.

Treating areas with stand damaging agents will provide other societal benefits. Burned and diseased killed stands may be aesthetically unpleasing, and their harvesting and reforestation will create a more pleasing landscape. Wind thrown stands restrict recreational use and can foster the growth of insect

pests such as the spruce bark beetle. Thus, prioritizing areas with stand damaging agents for treatment will help to maintain a more stable forest economy and achieve social benefits through enhanced aesthetics and recreational opportunities.

Prioritizing Harvest of Damaged stands

Signatory	Number of hectares harvested in the stands considered a high risk to stand damaging agents	total number of hectares harvested during the reporting period	% in DFA
Canfor	5241	5410	97%

Source: Site plans, cruise compilations.

Indicator Discussion: Calculated using net area to reforest (NAR + Rd area). 82 blocks harvested with 53 of those having more than 40% net pine at the cruise, therefore were deemed to be salvage. In addition, 26 blocks were prioritized due to spruce bark beetle attack and are considered damaged stands.

Indicator 3.1.1a Sedimentation

Indicator Statement	Target and Variance
The percentage of identified unnatural sediment occurrences where mitigating actions were taken.	Target: 100% Variance: -5%

Sedimentation occurrences are detected by forestry personnel during stream crossing inspections, road inspections, silviculture activities, and other general activities. In addition, Canfor supervisors routinely fly their operating areas annually following spring freshet to look for any such occurrences. While in some situations the sites may have stabilized so that further sedimentation does not occur, in other cases mitigating actions may have to be conducted. This may involve re-contouring slopes, installing siltation fences, re-directing ditch lines, grass seeding, or deactivating roads.

Sedimentation

Signatory	Number of identified unnatural sediment occurrences	Number of identified unnatural sediment occurrences with mitigating actions taken	% in DFA
Canfor	1	1	100%

Source: ITS

Indicator Discussion:

In May of 2016, a layout contractor discovered a slump on a portion of the Chundoo Nu road that was constructed in the winter of 2016. The slump caused an unknown amount of sediment to enter a stream. A Registered Professional Engineer visited the site immediately after slump was discovered. A full investigation was completed, a remediation strategy identified, and the strategy fully implemented.

Indicator 3.1.1b Stream Crossings

Indicator Statement	Target and Variance
Percentage of stream crossings appropriately designed and properly installed and/or removed.	Target: 100% Variance: -5%

Forestry roads can have a large impact on water quality and quantity when they intersect with streams, particularly by increasing sedimentation into water channels. Sediment is a natural part of streams and lakes as water must pass over soil in order to enter a water body, but stream crossings can dramatically increase sedimentation above normal levels. Increased sedimentation can damage spawning beds, increase turbidity, and effect downstream water users. When stream crossings are installed and removed properly, additional sedimentation may be minimized to be within the natural range of variation. Erosion control plans and procedures are used to ensure installations and removals are done properly. To calculate the success of this indicator it is important to ensure that a process is in place to monitor the quality of stream crossings, their installation, removal, and to mitigate any issues as soon as possible.

Stream Crossings

Signatory	Number of Stream Crossings			Number of Stream Crossings			% Total
	Installed	Removed	Total	Appropriately designed and properly installed	Properly removed	Total	
Canfor	18	20	38	18	20	38	100%

Source: Incident Tracking System, Supervisor Communication.

Indicator Discussion: No issues were identified in ITS and in conversations with harvesting supervisors.

Indicator 3.1.1c Road Re-vegetation

Indicator Statement	Target and Variance
Percentage of road construction or deactivation projects where prescribed re-vegetation occurs within 12 months of disturbance.	Target: 100% Variance: -10%

This indicator was chosen as a way to assess our ability to minimize or at least reduce the anthropogenic effect of forest roads on adjacent ecosystems. In keeping with the common assumption of coarse-and medium-resolution biodiversity, our underlying assumption with this indicator was – re-vegetating roads will reduce the potential anthropogenic effects that roads have on adjacent ecosystems by minimizing potential for silt runoff or slumps, the amount of exposed soil, the potential for invasive plants to become established, and returning at least a portion of forage and other vegetation to conditions closer to those existing prior to management. Typically, Canfor vegetates and mulches stream crossings which show a potential for erosion, as well as any other sections of road deemed necessary by Forestry Supervisors.

Road Re-vegetation

Signatory	Total Number of Projects Where Re-vegetation is Prescribed	Number of Prescribed Re-vegetation Projects Completed within 12 months of disturbance	% in DFA
Canfor	20	20	100%

Source: Licensee tracking systems, Supervisor communication.

Indicator Discussion: This indicator is measured by identifying the number of bridge and major culverts installations and deactivations and then determining the number of these sites that are re-vegetated (seeded). It's Canfor's policy to re-vegetate these sites to control water flow and reduce siltation risk.

Indicator 3.1.1d Road Environmental Risk Assessment

Indicator Statement	Target and Variance
Percentage of planned roads that have an environmental risk assessment completed.	Target: 100% Variance: -10%

Environmental risk assessments provide an indicator of “due diligence” in avoiding accidental environmental damage that has potential to occur from forest development in conditions of relatively unstable soil. Through the implementation of risk assessments, we expect to maintain soil erosion within the range that would normally occur from natural disturbance events under unmanaged conditions. Our assumption was – the more we can resemble patterns of soil erosion existing under unmanaged conditions, the more likely it will be that we do not introduce undue anthropogenic effects, from road construction, on adjacent ecosystems. The completion of environmental risk assessments on roads is completed by field staff during road layout. The assessments highlight areas of special concern that may require professional geotechnical or design work.

Road Environmental Risk Assessment

Signatory	Total Number of roads constructed	Number of constructed roads with environmental risk assessments completed	% in DFA
Canfor	214	214	100%

Source: Genus

Indicator Discussion: All layout is signed off by the person conducting this work as well as their supervisor in the layout package Certification Statement.

Indicator 3.1.1e Soil Conservation

Indicator Statement	Target and Variance
Percentage of forest operations consistent with soil conservation standards as identified in operational plans and/or site plans.	Target: 100% Variance: 0%

Conserving soil function and nutrition is crucial for sustainable forest management. To achieve this, forest operations have limits on the amount of soil disturbance they can create. These limits are described in legislation in the Forest Planning and Practices Regulation, section 35. Soil disturbance is defined in this SFM plan as disturbance caused by a forest practice on an area, including areas occupied by excavated or bladed trails of a temporary nature, areas occupied by corduroy trails, compacted areas, and areas of dispersed disturbance. Soil disturbance is expected to some extent from timber harvesting or silviculture activities, but these activities are held to soil conservation standards in Site Plans (where they are more commonly known as "soil disturbance limits"). The Site Plan prescribes strategies for each site to achieve activities and still remain within acceptable soil disturbance limits.

Soil information is collected as a component of site plan preparation, and soil conservation standards are established based on the soil hazards for that block. To be within those limits there are several soil conservation strategies currently used. Forest operations may be seasonally timed to minimize soil disturbance. For example, fine-textured soils such as clays and silts are often harvested when frozen to reduce excessive compaction. EMS prework forms require equipment operators to be aware of soil conservation indicators outlined in the site plans. Once an activity is complete the final inspection form assesses the consistency with site plan guidelines. If required, temporary access structures are rehabilitated to the prescribed standards. Road construction within blocks is minimized, and low ground pressure equipment may be used where very high soil hazards exist.

Soil Conservation

Signatory	Number of Forest Operations			Forest Operations Completed in Accordance with Soil Conservation Standards	% in DFA
	Harvesting	Silviculture	Total		
Canfor	82	0	82	82	100%

Source: Site Plans, ITS, Harvest Inspections.

Indicator Discussion: There were no instances where operations were not consistent with targets for soil conservation set out in site plans.

Indicator 3.1.1f Terrain Management

Indicator Statement	Target and Variance
The percentage of forest operations consistent with terrain management requirements as identified in operational plans and/or site plans.	<u>Target:</u> 100% <u>Variance:</u> 0%

Some areas subject to forest operations occur on slopes that warrant special terrain management requirements in operational plans (usually the site plan). These unique actions are prescribed to minimize the likelihood of landslides or mass wasting. Terrain Stability Assessments (TSA) are completed on areas with proposed harvesting or road development that has been identified as either unstable or potentially unstable. The recommendations of the TSA are then integrated into the site plan or road layout/design and implemented during forest operations.

Terrain Management

Signatory	Number of Forest Operations with Terrain Management Requirements Identified in Operational Plans				Forest Operations Completed in Accordance with Requirements	% in DFA*
	Roads	Harvesting	Silviculture	Total		
Canfor	0	3	0	3	3	100%

Source: Site Plans

Indicator Discussion: During the reporting period there were 3 blocks harvested (1648, 6717, MAN030) that had Terrain Stability Assessments completed on them prior to harvesting. Recommendations from the assessments were incorporated into the site plans and operations were consistent with the recommendations.

Indicator 3.1.2 Coarse Woody Debris

Indicator Statement	Target and Variance
The percent of blocks harvested that exceed coarse woody debris requirements.	<u>Target:</u> 100% <u>Variance:</u> 0%

Coarse woody debris (CWD) as a habitat element provides: 1) nutrients for soil development, 2) structure in streams to maintain channel stability, 3) food and shelter for animals and invertebrates, and 4) growing sites for plants and fungi. Past forestry practices have encouraged the removal of CWD from sites for a number of economic and/or safety reasons, presumably to the detriment of biological diversity. We use this indicator following harvesting to quantify CWD retained in blocks, wildlife tree patches, riparian areas, and in areas of un-salvaged timber. Within the NHLB we assume that natural processes will result in the maintenance of appropriate levels of CWD.

Post-harvest CWD levels will be measured as a standard component of either the silviculture survey or residue and waste survey. The interim target for CWD was taken from the FRPA *Forest Planning and Practices Regulation, Sec. 68* default requirements (BC. Reg 14/2004). Although the PAG members felt that this number was inadequate to protect this element of biodiversity, they recognized that insufficient information exists to determine either the amount of CWD left behind after harvesting or the amount of CWD that occurs in natural pre-harvest stands. Even so, we expect significantly more CWD than the target is retained after harvest and have committed to developing a more comprehensive CWD strategy pending availability of more data supporting a new CWD regulation.

Coarse Woody Debris

Signatory	Number of Blocks harvested	Number of blocks harvested that exceed CWD requirements	%in DFA
Canfor	82	82	100%

Source: Final harvest inspections, Incident Tracking Systems.

Indicator Discussion: This indicator applies to blocks only.

Indicator 3.2.1 Peak Flow Index

Indicator Statement	Target and Variance
Percent of watersheds containing approved or proposed development with Peak Flow Index calculations completed.	<u>Target:</u> 100% <u>Variance:</u> 0%

The peak flow index is an indicator that indicates the potential effect of harvested areas on water flow in a particular watershed. The H60 is the elevation for which 60% of the watershed area is above. The ECA or "Equivalent Clear-cut Area" is calculated from the area affected by logging and the hydrologic recovery of that area due to forest re-growth. After an area has been harvested, both winter snow accumulation and spring melt rates increase. This effect is less important at low elevations, since the snow disappears before peak flow. Harvesting at high elevations will have the greatest impact and is, therefore, of most concern. As a result, areas harvested at different elevations are weighted differently in the calculation of peak flow index. Most hydrologic impacts occur during periods of the peak stream flow in a watershed. In the interior of British Columbia, peak flows occur as the snowpack melts in the spring.

With PFI calculations now complete, the watersheds will next be evaluated to establish the watershed sensitivity and thereby the PFI risk (low to high). With the PFI risk ratings established, harvesting plans will have to consider the impact harvesting will have on the watershed in which it occurs. The goal, in watersheds with a high PFI risk rating, is to either postpone harvesting, or refer to a qualified registered professional for a detailed review.

Peak Flow Index

Licensee	Number of watersheds with harvest activities in the DFA	Number of those watersheds with Peak Flow Index calculations	Total % DFA
Canfor	29	29	100%

Source: GIS analysis – See Appendix 1 for a table with the current Peak Flow Index status of all watersheds Canfor was active in during the harvest period.

Indicator Discussion: Sensitivity calculations were completed in 2010 and 2011 for the majority of the watersheds we are/will be active in. Canfor GIS staff recalculate the current state and future state ECA/PFI on a regular basis.

Indicator 5.1.1a Non-timber Benefits

Indicator Statement	Target and Variance
Conformance with strategies for non-timber benefits identified in plans.	Target: No non-conformances for site level plans Variance: 0

For the purpose of this plan non-timber benefits include; resource features, range features as well as visual quality. Resource features are elements that have a unique importance because specific ecological factors exist in combination at one place and don't often occur similarly elsewhere. Examples of resource features are caves, karst, recreation sites or crown land used for research to name a few. These features are generally considered to have value to society so we assume that through conservation of these features we are contributing to social value. Range features are often used by ranchers to allow livestock to feed and thus very important to the ranching industry. Conservation of these areas will help to assure their availability in the future. Examples of such features include naturally occurring grass lands, naturally occurring barriers which contain livestock to a specific area as well as any area that a rancher has grazing or hay cutting permits on, or identified areas that may be suitable for such permits in the future. Visual quality is managed in order to maintain areas of perceived beauty within the DFA.

The signatories currently plan and design their activities and/or blocks so as to manage or adequately protect non-timber benefits when they become known. Once a non-timber benefit becomes known, means of managing or protecting the feature are either iterated in the operational plan or tactical and/or site plans. These requirements are tracked and managed by Canfor as well as by the Compliance and Enforcement branch of the MFLNRO.

Signatory	Number of blocks and roads harvested with non-timber benefits identified in the site plan	Number of blocks and roads harvested with non-timber benefits whereby the associated results and strategies were not achieved	Variance
Canfor	6	0	0

Source: Site plans.

Indicator Discussion: There were 6 blocks harvested during the reporting period that had visual impact assessments completed for the areas of these blocks. Blocks RUP007, RUP006, MAN011, GER026, 6809, and 5590. Timber harvesting operations were consistent with the established visual quality objectives for the areas and the procedures for the assessments were followed.

Indicator 5.1.1b First-Order Wood Products

Indicator Statement	Target and Variance
The number of first-order wood products produced from trees harvested from the DFA.	Target: 5 Variance: -2

This indicator helps to show how forest management activities can contribute to a diversified local economy based on the range of products produced at the local level. Forest management's contribution to multiple benefits to society is evident through this indicator, as well as an indication of the level of diversification in the local economy. First order wood products are often used to supply value-added manufacturers with raw materials for production, such as pre-fabricated house components. These provisions help to maintain the stability and sustainability of socio-economic factors within the DFA. By

ensuring a large portion of the volume of timber harvested in the DFA is processed into a variety of products at local facilities, the local economy will remain stable, diverse, and resilient.

First-Order Wood Products

Signatory	Saw logs	Pulp Logs	House logs	Lumber	Custom cut lumber	Trim Blocks	Pulp chips	OSB strands	Hog	Wood shavings	Plywood	Veneer	Pole Logs	Railway tie logs	Sawdust	Instruments	Finger joint	Total
Canfor	1	1	0	1	0	1	1	0	1	1	0	0	0	0	1	0	0	8

Source: Canfor: Site Superintendent communication/contractor communications.

Indicator Discussion: Primary and by-products sold to other local manufacturing facilities were counted.

Indicator 5.2.2 Investment in training and skills development

Indicator Statement	Target and Variance
Training in environmental and safety procedures in compliance with company training plans.	<u>Target:</u> 100% of company employees and contractors will have both environmental and safety training. <u>Variance:</u> -5%

Sustainable forest management provides training and awareness opportunities for forest workers as organizations seek continual improvement in their practices. Investments in training and skill development generally pay dividends to forest organizations by way of a safer and more environmentally conscious work environment. Assessing whether forest contractors have received both safety and environmental training is a direct way of measuring this investment. Additionally, training plans should be in place for employees of the forest organizations who work in the forest. Measuring whether the training occurred in accordance with these plans will confirm an organizations commitment to training and skills development.

Signatory	Total Number of Employees and Contractors Trained in EMS, FMS and Safety	Total Number of Employees and Contractors	Percent
Canfor	380	380	100.0%

Source: Eclipse, contractor records.

Indicator Discussion: Canfor supervisors train contractor foremen, principals and supervisors on our FMS, SFM and SWPs. It is then the responsibility of the contractor to train all other employees using the materials presented by Canfor.

Indicator 5.2.3 Level of direct and indirect employment

Indicator Statement	Target and Variance
Maintain the level of direct and indirect employment.	<u>Target:</u> 265 direct 53 indirect

Forests represent not only a return on investment (measured, for example, in dollar value, person-days, donations, etc.) for the organization but also a source of income and non-financial benefits for DFA-related workers, local communities and governments.

Organizations that harvest at sustainable harvest levels in relation to the allocated supply levels determined by government authorities continue to provide direct and indirect employment opportunities. The harvest level is set using a rigorous process that considers social, economic and biological criteria.

Targets for this indicator are based on 2010 baseline data of actual direct employment. Direct employment includes all staff and contractors paid directly by Canfor. Indirect employment levels are generated using the employment multiplier from the 2000 Timber Supply Review. Indirect employment is difficult to calculate therefore the multiplier is used, and is based on the number of direct jobs. If full-time employment targets are being met it will be assumed that indirect employment targets are also met.

Signatory	Number of Direct Jobs				Indirect Jobs Met (y/n)			
	2013-14	2014-15	2015-16	2016-17	2013-14	2014-15	2015-16	2016-17
Canfor	329	431	514	575	Y	Y	Y	Y

Source: Human Resources documents, contractor communication.

Indicator Discussion: If the amount of direct jobs is met, it is assumed the amount of in-direct jobs will also be met. For this reporting period, there was an increase in woodlands employment as volumes harvested increased and silviculture manpower increased. Previous reporting did not include block and road development workers. Unionized mill employment remained steady with an increase in mill salary staff.

Indicator 5.2.4 Contract Opportunities to First Nations

Indicator Statement	Target and Variance
The number of contract opportunities with First Nations within the DFA.	Target: >5 Variance: -2

This indicator is intended to monitor the impacts of forest industry and government activities on the ability of First Nations to access forestry related economic opportunities. At present, this indicator is not intended to assess how successful First Nations are at taking advantage of the opportunities. Canfor has explored forestry related opportunities with First Nations in the past. Capacity amongst the First Nations to take advantage of opportunities will likely have to be addressed in order for available opportunities to be acted upon. This indicator tracks the existence of opportunities available.

Contract Opportunities to First Nations

Signatory	Contract Opportunities							Total for DFA
	Employment	Road Building & Deactivation	Other Volume Purchased	Logging	Silviculture Forestry	Other Contracts	Management Services	
Canfor	0	0	0	3	3	0	0	6

Source: Signatory contract records.

Indicator Discussion: Contracts are established with three separate First Nations for harvesting opportunities. One First Nation manages the harvesting themselves while two of the First Nations subcontract their volume to other harvesting contractors. Silviculture contracts to First Nations consist of manual brushing, stand spacing activities, some pile burning, and site preparation activities.

Indicator 6.1.1 Understanding of the nature of Aboriginal Rights and Title

Indicator Statement	Target and Variance
FMG employees will receive First Nations Awareness training as per the FMG Training Matrix.	Target: 100% Variance: 10%

Section 35 of the Constitution Act states "The existing aboriginal and treaty rights of Aboriginal Peoples of Canada are hereby recognized and affirmed". Some examples of the rights that Section 35 has been

found to protect include hunting, fishing, trapping, gathering, sacred and spiritual practices, and title. SFM requirements are not in any way intended to define, limit, interpret, or prejudice ongoing or future discussions and negotiations regarding these legal rights and do not stipulate how to deal with Aboriginal title and rights, and treaty rights.

The first step toward respecting Aboriginal title and rights, and treaty rights is compliance with the law. Section 7.3.3 of the CSA Z809-08 Standard reinforces legal requirements for many reasons, including demonstrating that Aboriginal title and rights, and treaty rights have been identified and respected. The reality in demonstrating respect for Aboriginal title and rights, and treaty rights can be challenging in Canada's fluid legislative landscape and therefore it is important to identify these legal requirements as a starting point. It is important for companies to understand applicable Aboriginal title and rights, and treaty rights, as well as the Aboriginal interests that relate to the DFA.

Both the desire of licensees to comply with laws and open communication with local First Nations requires that company staff members have a good understanding of Aboriginal title and rights and treaty rights.

Signatory	Number of staff who have completed First Nations Awareness training	Total number of staff who require the training.	Percent
Canfor	21	21	100%

Source: Employee training databases.

Indicator Discussion: Of the 23 FMG staff in Mackenzie, only 20 require this training as per the FMG training Matrix, WIM staff are exempt. There was a significant increase in the reporting period due to the addition of field operations and Transporter staff.

Indicator 6.1.2a First Nations Concerns

Indicator Statement	Target and Variance
Percentage of operational concerns raised by First Nations that are considered and incorporated into operational and/or tactical plans.	<u>Target:</u> 100% <u>Variance:</u> -10%

Incorporating management strategies into the planning process to resolve issues raised by First Nations leadership is a key aspect to sustainable forest management. This indicator contributes to respecting the social, cultural heritage and spiritual needs of people who traditionally and currently use the DFA for the maintenance of traditional aspects of their lifestyle.

Forest planning can include information sharing for both operational and tactical plans. The FSP process is an example of operational plans referred to First Nations. AIAs, operating plans, block and road referrals, and annual operating maps are examples of tactical plans that may be referred to First Nations. Active forest operations are current harvesting, road construction, and mainline deactivation projects, planned vegetation management projects, as well as forest planning of new blocks and roads.

First Nations Concerns

Signatory	Number of concerns brought forward that have been considered and incorporated into operational plans	Total number of operational concerns brought forward	Percent
Canfor	1	1	100%

Source: Signatory communication records and operational plans.

Indicator Discussion: One First Nation identified concerns with harvesting within a large general area, however did not provide any specific sites/areas/features within the larger general area therefore we were unable to incorporate the concern into operational plans. There were several meetings and conversations with the First Nation. A general plan including access strategies and concessions have been incorporated into our operational plans to accommodate the First Nation.

Indicator 6.1.2b First Nations Input into Forest Planning

Indicator Statement	Target and Variance
The number of opportunities for First Nations to provide meaningful input into our planning processes where active operations are within their respective traditional territories.	<u>Target:</u> >= 2 per First Nation <u>Variance:</u> 0

This indicator was designed to list and report out on all documented opportunities provided to First Nations people to be involved in forest management planning processes. Incorporation of First Nations people and their unique perspective into the forest planning process is an important aspect of SFM. This indicator will contribute to respecting the social, cultural and spiritual needs of the people who traditionally and currently use the DFA for the maintenance of traditional aspects of their lifestyle. The Mackenzie SFM PAG is a process designed to identify public values and objectives within the DFA. Within the PAG process, First Nations has been identified as an important sector for representation.

First Nations Input into Forest Planning

Opportunity	Signatory	FIRST NATION								
		Tsay Keh	Kwadacha	Takla Lake	Nak'azdli	Mcleod Lake	West Moberly	Saulteau	Halfway River	Horse Lake
Operational planning referrals	Canfor	3		3	3	3	3	2		
Open house meetings	Canfor									
AIA referrals	Canfor	6		6	6	2	6			
Trade shows	Canfor	1	1	1	1	1	1	1	1	1
Formal operational meetings	Canfor	3		2	1			1	1	
Pest management prescription meetings and referrals	Canfor				2					
FSP referrals / consultation	Canfor	5	5	7	5	5	4	5	6	1
TOTAL		18	6	19	18	11	14	9	8	2

Source: Signatory communication records, COPI.

Indicator Discussion: Communication was in the form of information sharing for block planning, AIA referral as well as information sharing of the NIT and Pest Management Plan (PMP). The Kwadacha, Halfway River First Nation and Horse Lake First Nations were not included in referrals since Canfor has not been harvesting within these First Nations traditional territories in the recent past. Many referrals and discussions relating to the FSP occurred as the Canfor Mackenzie FSP is expiring in February 2018. A re-write is currently being completed.

Indicator 6.3.1 Local Investment

Indicator Statement	Target and Variance
The percent of money spent on forest operations and management on the DFA provided from local suppliers.	<u>Target:</u> 30% <u>Variance:</u> -5%

Forests provide many ecological benefits but they also provide substantial socio-economic benefits. In order to have sustainable socio-economic conditions for local communities associated with the DFA, local forest related businesses should be able to benefit from the work that is required in the management of the DFA. Furthermore, for small forestry companies to contribute to and invest in the local economy there must be assurances that there will be a consistent flow of work. In the same way that larger licensees depend on a secure flow of resources to justify investment in an area, small businesses depend on a sustained flow of opportunities to develop and invest in the local community.

Local is defined in this SFMP as the communities of Mackenzie, McLeod Lake, Germansen Landing, Manson Creek, Tsay Keh Dene, and Fort Ware. The total dollar value of goods and services purchased within the local communities will be calculated relative to the total dollar value of all goods and services used. This calculation will be used to derive the percentage of money spent on forest operations and management of the DFA from local suppliers. Woodlands employee salaries are considered goods purchased where the employee lives within the local area and therefore contribute to community stability.

Forest Operations and Management consider all money spent within the signatory's woodlands departments, excluding stumpage. Harvesting and road building costs, where applicable, will be included in the total.

Local Investment

Signatory	Money spent in local area on Forest operations and management	Total money spent on forest operations and management	% in DFA
Canfor	\$48,344,339.76	\$88,292,600.95	54.7%

Source: Accounting records

Indicator Discussion: Local spending includes logging, road building and maintenance, silviculture activities, woodlands related purchases at local vendors, staff salaries, etc. 2014-2015 saw a significant increase in total dollars spent in Canfor forest operation. The increase is a result of increased volume harvested, higher costs for harvesting and a couple of large road and infrastructure projects that were completed during the year. There was an increase in local spending from 46% to almost 55% between the last reporting period and this year's. This could be explained by an expansion of businesses and industry within the Mackenzie District.

Indicator 6.3.2 Accidents

Indicator Statement	Target and Variance
Number of lost time accidents in woodlands operations.	<u>Target:</u> 0 <u>Variance:</u> 0

Health and safety of forest workers and members of the public is an important quality of life objective that is essential to SFM. Canfor considers employee and public safety as a primary focus of all forestry related operations. Evidence of this high priority can be seen in various company mission statements and individual safety policies. This indicator was developed to track and report out on the number of lost time workplace accidents that occur within Canfor's Forest Management Group (FMG). Operations conducted outside the woodlands division and field operations have been excluded from this indicator; however, Canfor promotes safety in all aspects of forest management operations. Two types of workplace accidents are the most common within the forest industry including lost time accidents (LTA) or incidents where medical aid or treatment was necessary but no loss of work time was experienced by the employee. Through this indicator, only LTA will be tracked and monitored.

Accidents

Signatory	Number of Lost Time Accidents
Canfor	0

Source: Signatory safety records

Indicator Discussion: There were no lost time accidents reported for the Mackenzie FMG woodlands group during the reporting period.

Indicator 6.3.3a Signage

Indicator Statement	Target and Variance
The percentage of operational activities in place that have the appropriate signage in place during the activity, and removed following the completion.	<u>Target:</u> 100% <u>Variance:</u> -20%

People value being informed of most activities that take place on public lands including those associated with industrial forestry. Signage establishes a standard for safety and otherwise helps inform public about the nature and extent of industrial activity. Conversely, if signage is not kept current, credibility of the signs declines resulting in a potential safety hazard. With this indicator, we will monitor our commitment to making information about our activities current and available to those traveling the roads and trails of the Mackenzie DFA.

Signage

Signatory	Number of completed operational projects requiring signage where the signs were posted during the activity and removed following completion	Number of Completed Operational Activities requiring signage	Percent
Canfor	82	82	100%

Source: Operational staff communication.

Indicator Discussion: This is managed almost exclusively by our logging contractors. Signs are posted for safety reasons during active operations, and the appropriate signs are removed when operations are complete.

Indicator 6.3.3b Safety Policy

Indicator Statement	Target and Variance
Written safety policies in place and full implementation are documented.	<u>Target:</u> 1 <u>Variance:</u> 0

Each signatory has a written safety policy in place which is reviewed by the safety committee a minimum of once every year and revised as necessary and approved by management. If an incident occurs the cause of the incident is determined and recommendations are put forward. These recommendations may result in a change to a specific policy. Annual audits will be conducted and Action Plans developed for any item that requires attention detailing the person responsible for the item and the deadline for completion.

Safety Policy

Signatory	Written Safety Policies in Place and Implementation Documented? (Y/N)
Canfor	Y

Source: Canfor OH&S Manual and Occupational Health and Safety Statement.

Indicator Discussion: Canfor has a corporate safety policy that is reviewed and updated on a regular basis. The policy is part of the Safety Manual that is reviewed annually by the Canfor FMG and the Mackenzie Woodlands Safety committees.

Indicator 6.4.1 Satisfaction (PAG)

Indicator Statement	Target and Variance
The average overall percent of the PAG's satisfaction with PAG meeting process.	<u>Target:</u> 100% <u>Variance:</u> -20%

The PAG is one of the key elements of public involvement in the SFM process. The Mackenzie PAG provides guidance, input and evaluation during development of the SFMP. It is also instrumental in maintaining links to current local values and forest resource uses within the DFA. Therefore, it is important that Canfor has a positive and meaningful working relationship with the PAG. This indicator will use an average of the PAG meeting evaluation forms to determine the level of satisfaction of the PAG with the public participation process.

Following all PAG meetings to date, PAG participants completed meeting evaluations. One question in the PAG meeting evaluation form to address this indicator which asked participants "What is your overall

satisfaction with the PAG process?" This indicator is specific to responses to question 11 during the reporting period.

PAG Satisfaction

Mackenzie DFA SFM Plan Public Advisory Group Meeting Evaluation Question			
Meeting Date	Score out of 5	Percent	Variance (from 100%)
May 8, 2016	4.5	90%	10%
October 5, 2016	4.5	90%	10%
January 25, 2017	4.7	94%	6%
Overall Score =		91%	9%

Source: PAG satisfaction surveys

Indicator Discussion: PAG satisfaction surveys are conducted at the end of each PAG meeting and the results are presented and discussed at the next PAG meeting. The results are a measure for the PAG facilitator and the licensee to identify areas to address or work on to improve the PAG process and communication.

Indicator 6.4.2a Input into Forest Planning

Indicator Statement	Target and Variance
The number of opportunities for the public and/or stakeholders to provide meaningful input into forest planning.	Target: 6 Variance: -2

Forestry activities can impact a wide section of the public and individual stakeholders within the DFA. This indicator was designed to monitor the signatory’s success at providing effective opportunities to residents and stakeholders to express concerns and be proactively involved in the planning process. This involvement may include the identification of areas of interest, definition of the nature of their interest in the land base, and any specific forestry activity that may impact their specific interests. This process ensures that when forestry activities are planned, information is exchanged in an effective and timely manner, so as to resolve potential conflicts before they occur. This process will help to identify the public values, interests and uses of the forest that will be considered within the signatories planning framework.

Stakeholders include the following forest sectors; trappers, guide outfitters, water license holders, range tenure holders, woodlot owners, private land owners, other licensees, and specific government agencies. Opportunities for input into forest planning will be offered to stakeholders where their tenured area coincides with the signatories planned activities.

Input into Forest Planning

Opportunity	The Number of Opportunities For Public And Stakeholders
	Canfor
FSP ads	2
FSP letters to stakeholders	106
LRMP meetings	
PMP original ads	
PMP letters to stakeholders	
PMP signage	
Other ads (deactivation plans)	
Field tours	1
Newsletters	
Open houses	

PAG Meetings	3
Documented meetings	9
Documented phone calls/emails	18
Information Sharing	31
TOTAL	170

Source: Signatory database/tracking systems.

Indicator Discussion: Canfor had many correspondences with members of the public including trappers, guides, general public as well as First Nations throughout the reporting period. There were 9 documented meetings with various stakeholders and 18 documented phone calls and meetings exchanged. A large portion of the opportunities for public and stakeholder involvement related to the new FSP that is currently being written.

Indicator 6.4.2b Public and Stakeholder Concerns

Indicator Statement	Target and Variance
The number of operational concerns raised by the public and/or stakeholders that are considered and incorporated into operational and/or tactical plans.	<u>Target:</u> 100% <u>Variance:</u> -10%

All signatories solicit feedback for their public forest management plans in the DFA. As mentioned in previous indicators, public involvement is an important aspect of SFM as it promotes inclusiveness in how Crown forests are managed. Considering a diverse range of opinions and concerns will result in operational forest management decisions that consider views other than those of the forest industry. A forest industry that respects public and stakeholder input will maintain the support of the public, creating a more economically stable and open forest economy. Operational concerns from the public may be provided in many ways, including written letters, e-mails, or faxes received by Canfor. There may also be written comments made during an in-person or telephone meeting between a staff member and the person providing comment. This indicator will compare the number of operational concerns that have been acted on relative to the total number of operational concerns raised.

Public and Stakeholder Concerns

Signatory	Number of concerns brought forward that have been considered and incorporated into operational plans	Number of operational concerns brought forward	Percent
Canfor	4	4	100%

Source: COPI

Indicator Discussion: A Manson Creek community member came forward with concerns regarding a block adjacent to their property line. The block boundary was moved back from the property as well as the road to provide visual buffers. An area was also excluded to protect a water source.

A trapper expressed concern at our operations around his trapline. A buffer on the trap trail was offered as a solution but the trapper instead wanted Canfor to log up to the trail. All debris was removed from the trail so that the trapper could maintain access. Another block had adjustments made to harvest timing as to not interfere with the individual's winter trapping plans.

Finally, a guide/outfitter came forward with concerns relating to wildlife and access within one of Canfor's operating areas. As a result, Canfor dropped 3 blocks and excluded a large area from a 4th block. A trapper came forward with concerns around our plans near his trapline. Canfor provided a buffer along his trap trail and agreed to leave some logs once the bridge accessing the block was removed. Another concern was raised by the Manson Creek community members regarding a block that would impact their water source. Canfor was not aware of the source and was not informed until logging had commenced. Canfor made a number of accommodations that included deactivations of in-block roads, the installation of water controls, and the creation of a reserve along the gully above the water source. A trapper also raised a concern about a block (MAN061) that overlapped his trail. The block boundary was moved to exclude the trail from the block area.

Indicator 6.5.1a SFM Educational Opportunities

Indicator Statement	Target and Variance
The number of SFM educational opportunities and interactions provided.	Target: 2 Variance: 0

This indicator was designed to monitor the signatories' success at providing training and educational opportunities in sustainable forest management. SFM relies on residents and stakeholders making informed decisions on forest management. To achieve this, it is incumbent on the signatories to ensure the public are sufficiently informed about SFM to make the choices we request of them. The indicator is intended to ensure that the signatory provides the required opportunities for residents and stakeholders to learn about SFM. It is anticipated that educational opportunities will come in the form of open houses, public presentations, PAG meetings, the Mackenzie Trade Fair, and field tours of the signatory's operations.

SFM Educational Opportunities

Opportunity	The Number of SFM Educational Opportunities
Field tours	1
Newsletters	
Open houses	
Presentations	
PAG Meetings	3
Trade Shows, etc.	1
TOTAL	4

Source: Planning forester documentation.

Indicator Discussion: Three PAG meetings occurred during the reporting period, with one being a field tour. Staff also participated in an elementary school ecology field tour and set up a table at the Mackenzie Trade Show.

Indicator 6.5.1b People reached through educational outreach

Indicator Statement	Target and Variance
The number of stakeholders and members of the public who took part in an educational opportunity.	Target: 50 Variance: -10

The signatories are committed to working with directly affected stakeholders and members of the public on forest management issues and have a well-established history of participation in community meetings, including local planning processes. The sharing of knowledge and contributes to informed, balanced decisions and plans acceptable to the majority of public. When informed and engaged, members of the public can provide local knowledge and support that contributes to socially and environmentally responsible forest management. Canfor staff provided educational opportunities both at the request of their employer and of members of educational community in Mackenzie. The Participants have held open houses and participated in local trade fairs. Staff have also provided field tours and in class presentations for the local secondary school.

Signatory	Number of stakeholders who attended educational opportunities
Canfor	450

Source: Attendance records from events held.

Indicator Discussion: The Mackenzie Trade Fair had approximately 400 public attendees, PAG meetings, and an elementary school ecology program.

Indicator 6.5.2a Access to SFM information

Indicator Statement	Target and Variance
The number of opportunities provided annually for access to SFM related documents.	Target: 3 Variance: 0

With this indicator we intend to monitor our effort to ensure effective and comprehensive distribution of the SFMP, annual reports, and audit results for the Mackenzie DFA. In order to gain trust and confidence in the SFMP process, it must be an open and transparent process. By ensuring access to the Plan, annual reports, and audit results, the results of our efforts in achieving sustainable forestry and continuous improvement can be clearly seen and monitored by the public, stakeholders, and First Nations. In this manner, the public, stakeholders and First Nations can hold the signatories accountable for achieving the desired results and have confidence that forest resources are being managed sustainably.

Access to SFM Information

Opportunity	The Number of Distribution/Access Opportunities
Newsletters	
Open houses / Trade Shows	1
SFM & PAG Meetings	2
Website	1
Distribution of SFM information	
TOTAL	4

Source: Signatory database and tracking systems, planning forester documentation.

Indicator Discussion: Canfor participated in the Annual Mackenzie spring trade fair where the SFMP is available and staff are available to discuss the contents and the PAG process.

Indicator 6.5.2b Communication of Planned Deactivation Projects

Indicator Statement	Target and Variance
Percentage of off-block road deactivation projects that are communicated with applicable First Nations and Stakeholders.	Target: 100% Variance: -10%

The forest is utilized by a variety of users. Access to the forest resource is important to First Nations, stakeholders, and the general public. Deactivation of off-block access roads can limit or remove access to the forest for other users. Where the signatories need to deactivate off-block roads, communication of their intention is required. Our assumption with this indicator is simply that – by increasing communication regarding signatory deactivation plans among stakeholders, we can increase the efficiency of access to resources. For the purpose of this indicator, stakeholders include trappers, guides, private land owners, and woodlots.

Communication of Planned Deactivation Projects

Signatory	Number of deactivation projects communicated to First Nations and Stakeholders	Total number of deactivation projects completed	Percent
Canfor	0	0	100%

Source: Signatory communication records

Indicator Discussion: There were no major deactivation projects completed within the reporting period.

Indicator Reportable Spills

Indicator Statement	Target and Variance
The number of FMS reportable spills.	Target: 0 Variance: ≤ 5

Canfor uses the Emergency Response and Preparedness Plan (EPRP) to prevent, manage and report spills. Canfor's Fuel Management Guidelines also apply to managing and preventing spills. Reportable spills are entered into ITS where they are tracked.

Reportable Spills

Signatory	Number of EMS Reportable Spills						
	Petroleum Products	Pesticides	Antifreeze	Battery Acid	Grease	Paints and Solvents	Total
Number of spills	3	0	0	0	0	0	3
Amount (L)							

Source: ITS

Indicator Discussion: There were 3 reportable spills during the reporting period. The first occurred when a subcontracted fuel transportation truck rolled into the ditch and spilled diesel in the ditch which permeated the soil adjacent to the road. A Geotechnical Site Assessment for the Contaminated Materials Removal was completed and implemented.

The second incident occurred when a piece of heavy equipment spilled hydraulic fluid. The engineers had used the wrong size fitting resulting in a leak. The spill was cleaned up with sawdust, absorbent pads, and granules. The machine was repaired and the crew received additional training.

The final spill occurred on the Transporter. A high deck operator was cleaning debris and caused a log to dislodge a hydraulic line. The line sprayed into the air and a small amount went into the Williston Reservoir. The crew used absorbent pads to clean up the spill on deck and repaired the hydraulic line. The spill was reported to the Provincial Emergency Program (PEP).

Appendix 1

2016-2017 ECA Analysis for Active Watersheds

Watershed	Watershed Area (ha)	Sensitivity Score	Max ECA Target (% Watershed)	Current Harvest Area (ha)	Current ECA Below	Current ECA Area (ha)	Current PFI	Future Harvest Area (ha)	Future ECA Below	Future ECA Area (ha)	Future PFI
Chu 1	1,056	2.8	49.6	243.9	299.5	299.5	28.4	243.9	481.1	481.1	45.6
Chu 2	610	2.5	55.4	345.4	134.9	134.9	22.1	345.4	162.1	162.1	26.6
Chu 3	861	2.0	60.0	586.2	339.2	339.2	39.4	586.2	373.3	373.3	43.3
Chu 4	1,641	2.4	57.7	435.4	263.1	263.1	16.0	435.4	268.3	268.3	16.4
Chusmon Creek	3,756		46.7	1,470.0	679.4	679.4	18.1	1,470.0	735.9	735.9	13.6
Mica Creek	2,537	3.1	44.4	205.2	140.2	140.2	5.5	205.2	128.8	128.8	5.1
Omin 1	622	2.4	58.4	113.2	163.4	163.4	27.2	113.2	180.9	180.9	29.1
Omin 2	1,002	2.5	56.0	443.5	440.0	440.0	43.9	443.5	458.0	458.0	45.7
Omin 3	1,359	1.8	60.0	574.2	618.1	618.1	31.6	574.2	782.0	782.0	39.9
Pete Fry Creek	2,177	2.5	55.9	493.8	291.8	291.8	13.4	493.8	268.8	268.8	12.4
Ominca-1	1,835	2.5	55.4	0.8	309.1	309.1	16.9	0.8	411.1	411.1	22.4
Ominca-2	855	1.7	60.0		170.3	170.3	19.9		170.3	170.3	19.9
Twenty Mile Creek	15,633	2.5	56.2	61.4	2,021.4	2,021.4	12.9	61.5	3,309.1	3,309.1	21.2
Ali Lock Creek	1,603	2.0	60.0	179.1	417.9	417.9	26.1	179.1	454.2	454.2	28.3
Germanzon Rivet	58,506	3.1	45.1	2,972.8	10,474.8	10,474.8	17.9	2,972.8	10,982.0	10,982.0	18.6
Goodazany Creek	5,808	2.4	58.4	594.0	1,724.3	1,724.3	29.7	594.0	1,814.9	1,814.9	31.3
Granite Creek	4,038	3.4	40.8	251.9	403.6	403.6	10.0	251.9	430.7	430.7	12.2
Jackfish Creek	13,329	1.9	60.0	890.3	3,183.0	3,183.0	23.8	932.9	4,137.7	4,137.7	31.0
Lost Creek	765	3.0	46.5	2.5	59.7	59.7	7.8	2.5	63.1	63.1	8.3
Manzon Above the Lake	29,256	1.7	60.0	875.1	4,983.4	4,983.4	17.0	875.1	6,360.2	6,360.2	21.7
Plughat Creek	1,913	3.4	40.6	36.2	205.2	205.2	10.7	36.2	239.6	239.6	12.5
Slate Creek	1,800	2.0	60.0	230.0	571.0	571.0	30.1	230.0	701.7	701.7	36.8
South Germanzon River	20,138	1.7	60.0	1,077.4	3,073.1	3,073.1	15.9	1,082.7	3,131.7	3,131.7	15.6
Treb Creek	1,569	2.9	48.7		441.4	441.4	28.1		677.2	677.2	43.2
Upper Manzon Creek	20,303	3.1	44.7	259.0	3,052.5	3,052.5	15.0	259.0	3,303.1	3,303.1	13.2
Wassie Creek	263	1.6	60.0	57.2	121.6	121.6	46.9	57.2	122.7	122.7	46.7
Volynine Creek	3,696	1.9	60.0	133.3	1,046.0	1,046.0	28.3	133.3	1,446.7	1,446.7	39.2
Bruin Creek	13,820	5.2	26.8	2,094.0	1,672.8	1,672.8	12.1	2,094.0	1,627.9	1,627.9	11.7
Chowika Creek	47,560	3.1	27.0	12,052.5	767.4	767.4	1.6	12,052.5	851.8	851.8	1.6
Collins Creek	12,100	5.8	23.9	1,173.1	1,525.1	1,525.1	12.5	1,173.1	1,733.1	1,733.1	14.3
Davis Rivet	48,040	3.6	39.1	17,189.6	1,702.2	1,702.2	3.5	17,189.6	1,684.6	1,684.6	3.5
Lafferty Creek	18,070	3.9	35.2	4,357.4	1,732.3	1,732.3	9.5	4,357.4	2,035.4	2,035.4	11.2
Delinka Rivet	210,270	3.9	35.9	44,294.1	29,801.5	29,801.5	14.1	44,294.1	31,552.0	31,552.0	14.9
Shovel Creek	3,740	2.8	50.2	1,400.2	391.5	391.5	10.4	1,400.2	488.5	488.5	13.0
South of Collins	11,150	3.0	46.1	2,061.4	2,620.1	2,620.1	23.4	2,061.4	3,098.3	3,098.3	27.7
South of Lafferty	20,160	2.6	53.9	5,287.4	3,370.2	3,370.2	16.6	5,287.4	4,632.2	4,632.2	22.9
South of Shovel	20,900	3.1	45.3	6,309.3	3,042.2	3,042.2	14.5	6,309.3	3,216.2	3,216.2	15.3
Tutaika Rivet	69,130	4.5	30.8	17,030.7	4,353.2	4,353.2	6.3	17,030.7	4,365.2	4,365.2	6.3
AKIE RIVER	65,609	2.0	63.0	977.2	3,252.6	3,252.6	5.0	977.2	3,502.9	3,502.9	5.3
AKIE00002	1,974	2.0	63.0		48.7	48.7	2.5		48.7	48.7	2.5
AKIE00003	6,671	2.0	63.0		20.0	20.0	0.9		20.0	20.0	0.9
AKIE00004	10,123	2.0	63.0		2.4	2.4	0.0		2.4	2.4	0.0
AKIE00005	7,627	2.0	63.0		23.1	23.1	0.9		23.1	23.1	0.9
AKIE00006	3,219	2.0	63.0		30.2	30.2	0.9		30.2	30.2	0.9
AKIEKA CREEK	4,091	2.0	63.0		33.6	33.6	0.8		33.6	33.6	0.8
ALEY CREEK	14,962			273.0	534.9	534.9	4.0	273.0	581.4	581.4	3.9
ATUNATCHE CREEK	59,515	2.0	63.0	3,967.8	3,241.6	3,241.6	5.5	3,967.8	2,981.6	2,981.6	5.0
BALDEN CREEK	17,361			0.1	204.5	204.5	1.2	0.1	228.8	228.8	1.3
BEVEL CREEK	8,750				453.4	453.4	5.2		453.4	453.4	5.2
BLACKWATER CREEK	49,590	2.0	63.0	17,424.6	12,833.9	12,833.9	25.9	17,555.5	14,219.0	14,219.0	28.1
BLANCHARD CREEK	6,691	2.0	63.0	183.7	463.9	463.9	6.9	183.7	457.3	457.3	6.8
BRUIN CREEK	13,931			1,318.0	2,465.8	2,465.8	17.7	1,318.0	2,383.9	2,383.9	17.1
CARPW/SD000003	4,350	1.0	75.0	525.8	519.6	519.6	11.9	525.8	653.4	653.4	15.0
CARPW/SD000006	3,868	2.0	63.0	1,163.1	1,126.1	1,126.1	29.1	1,163.1	1,060.8	1,060.8	27.4
CHICHOUYENILY CREEK	7,415	2.0	63.0	517.2	669.2	669.2	9.0	517.2	641.8	641.8	8.7
CHOWIKA CREEK	47,458			132.4	2,790.8	2,790.8	5.9	132.4	2,851.0	2,851.0	6.0
CIARELLI CREEK	11,745	2.0	63.0	2,145.7	2,615.5	2,615.5	22.3	2,145.7	2,754.2	2,754.2	23.5
CLEARWATER RIVER	63,101	2.0	63.0	2,659.9	2,396.9	2,396.9	3.6	2,659.9	2,292.3	2,292.3	3.6
COLBOURNE CREEK	28,904	2.0	63.0	2,728.8	2,765.2	2,765.2	9.6	2,728.8	2,906.5	2,906.5	10.1
COLIN CREEK	4,558	2.0	63.0		191.3	191.3	4.2		191.3	191.3	4.2
COLLINS CREEK	13,764			1,841.8	3,204.6	3,204.6	23.3	1,841.8	3,487.3	3,487.3	25.9
DASTAIGA CREEK	9,141	2.0	63.0	1,654.3	2,454.6	2,454.6	30.2	1,665.1	2,375.0	2,375.0	29.2
DAVIS RIVER	47,502			580.9	3,205.9	3,205.9	6.8	580.9	3,182.5	3,182.5	6.7
DEL CREEK	26,433	2.0	63.0	1,195.7	2,886.0	2,886.0	10.9	1,195.7	2,823.5	2,823.5	10.7
DES CREEK	3,332	1.0	75.0	673.0	767.2	767.2	23.0	673.0	773.8	773.8	23.2
DUCETTE CREEK	18,692	2.0	63.0	2.5	1,239.0	1,239.0	6.6	2.5	1,239.0	1,239.0	6.6
DUNNE CREEK	3,431	2.0	63.0	1,065.4	1,355.0	1,355.0	14.4	1,065.4	1,437.5	1,437.5	15.2

2017 ECA Analysis for Active Watersheds (continued)

Watershed	Watershed Area (ha)	Sensitivity Score	Max ECA Target (% Watershed)	Current Harvest Area (ha)	Current ECA Below	Current ECA Area (ha)	Current PFI	Future Harvest Area (ha)	Future ECA Below	Future ECA Area (ha)	Future PFI
EKLUND CREEK	24,626	2.0	63.0	4,748.7	3,660.1	3,660.1	14.3	4,748.7	4,317.5	4,317.5	17.5
FINA\WSD000020	3,543			392.1	339.5	339.5	3.6	392.1	321.7	321.7	3.1
FINA\WSD000035	5,922			41.0	336.6	336.6	6.7	41.0	334.0	334.0	6.7
FINA\WSD000036	3,709				151.5	151.5	4.1		151.5	151.5	4.1
FINA\WSD000039	3,437	2.0	63.0	63.2	461.7	461.7	13.4	63.2	458.1	458.1	13.3
FINA\WSD000040	5,092	2.0	63.0	580.3	572.8	572.8	11.3	580.3	639.1	639.1	12.6
FINA\WSD000043	1,683	2.0	63.0	1,637.5	2,384.5	2,384.5	31.0	1,637.5	2,348.8	2,348.8	30.6
FINA\WSD000044	3,662	2.0	63.0	127.6	1,118.0	1,118.0	30.4	127.6	1,312.7	1,312.7	35.7
FINA\WSD000046	4,960	1.0	75.0	2,733.3	2,433.3	2,433.3	49.1	2,733.3	2,324.6	2,324.6	46.3
FINA\WSD000050	3,403	2.0	63.0	1,906.2	1,236.2	1,236.2	36.3	1,906.2	1,162.3	1,162.3	34.1
FINL\WSD000021	18,351	2.0	63.0		55.3	55.3	0.3		55.3	55.3	0.3
FINL\WSD000028	14,583	2.0	63.0		0.0	0.0	0.0		0.0	0.0	0.0
FINL\WSD000035	12,088	2.0	63.0		66.2	66.2	0.6		66.2	66.2	0.6
FINL\WSD000066	5,205			303.3	1,231.4	1,231.4	23.7	303.3	1,217.2	1,217.2	23.4
FINL\WSD000073	7,460	2.0	63.0	664.3	1,245.0	1,245.0	16.7	664.3	1,206.7	1,206.7	16.2
FRIES CREEK	7,544	2.0	63.0	1,603.9	1,125.5	1,125.5	14.3	1,603.9	1,091.1	1,091.1	14.5
GAFFNEY CREEK	49,277	2.0	63.0	15,872.5	15,276.2	15,276.2	31.0	15,874.5	15,365.5	15,365.5	31.2
GAGNON CREEK	11,303	2.0	63.0	2,445.7	1,366.5	1,366.5	12.1	2,445.7	1,290.0	1,290.0	11.4
GAUVREAU CREEK	20,292			162.3	232.5	232.5	1.2	162.3	222.3	222.3	1.1
GILLIS CREEK	62,390			3,339.3	17,868.5	17,868.5	28.6	3,339.3	17,333.4	17,333.4	27.8
HOLDER CREEK	8,198	1.0	75.0	3,112.7	2,721.5	2,721.5	33.2	3,112.7	2,722.1	2,722.1	33.2
IVOR CREEK	4,536			33.2	34.5	34.5	2.1	33.2	391.2	391.2	19.7
KIMTA CREEK	13,080	2.0	63.0	438.6	169.5	169.5	1.3	438.6	156.8	156.8	1.2
LAFFERTY CREEK	25,306			1,359.3	5,179.5	5,179.5	20.0	1,359.3	5,171.5	5,171.5	20.0
LAMONTI CREEK	4,243	2.0	63.0	331.2	136.3	136.3	3.2	331.2	127.2	127.2	3.0
LIGNITE CREEK	16,543	2.0	63.0	2,015.5	2,312.7	2,312.7	14.0	2,015.5	2,630.0	2,630.0	15.3
LOST CABIN CREEK	3,283			235.1	234.3	234.3	3.6	235.1	285.1	285.1	3.4
MANSON RIVER	41,103	2.0	63.0	12,190.4	10,483.8	10,483.8	25.5	12,190.4	10,444.4	10,444.4	25.4
MCDUGALL RIVER	40,440	1.0	75.0	8,740.1	10,602.5	10,602.5	26.2	8,740.2	10,593.1	10,593.1	26.2
MISCHINSILIKA CREEK	23,373	2.0	63.0	3,145.8	2,119.2	2,119.2	3.1	3,145.8	1,918.8	1,918.8	3.2
MUNRO CREEK	8,833	2.0	63.0	2,123.7	1,643.6	1,643.6	18.7	2,123.7	1,581.5	1,581.5	17.3
MUNRO LAKE	19,383	2.0	63.0	5,820.5	7,282.3	7,282.3	37.6	5,820.5	6,954.7	6,954.7	35.3
NABESCHE RIVER	64,695			5,119.3	3,843.3	3,843.3	5.9	5,119.3	3,551.8	3,551.8	5.5
NATION RIVER	68,740	2.0	63.0	20,231.5	27,080.4	27,080.4	39.4	20,270.2	26,942.0	26,942.0	39.2
NATRWSD000006	6,193	2.0	63.0	4,205.8	1,417.0	1,417.0	22.3	4,230.4	1,267.4	1,267.4	20.5
NATRWSD000018	12,267	2.0	63.0	2,065.6	2,236.3	2,236.3	18.2	2,113.8	2,225.3	2,225.3	18.1
OSPIKA RIVER	108,945			1,834.6	5,148.1	5,148.1	4.7	1,834.6	5,176.4	5,176.4	4.8
OSPK\WSD000016	12,541				280.0	280.0	2.2		280.0	280.0	2.2
OSPK\WSD000023	3,970			1.7	771.3	771.3	7.7	1.7	781.3	781.3	7.8
OSPK\WSD000027	6,154			29.0	244.2	244.2	4.0	29.0	244.0	244.0	4.0
OSPK\WSD000030	4,020				141.0	141.0	3.5		141.0	141.0	3.5
OSPK\WSD000032	6,334			858.3	591.5	591.5	3.3	858.3	538.7	538.7	3.5
OSPK\WSD000034	8,321			450.4	833.5	833.5	10.0	450.4	805.0	805.0	9.7
PARA\WSD000024	2,386	2.0	63.0	1,331.8	643.3	643.3	27.2	1,331.8	623.2	623.2	26.1
PARA\WSD000036	5,226	2.0	63.0	472.5	1,293.1	1,293.1	20.8	472.5	1,261.0	1,261.0	20.3
PARA\WSD000057	5,604	2.0	63.0	1,162.2	1,257.1	1,257.1	22.4	1,162.2	1,188.8	1,188.8	21.2
PAUL RIVER	71,343			4,184.5	7,293.4	7,293.4	10.2	4,184.5	7,245.3	7,245.3	10.2
PCEA\WSD000040	3,463			0.1	527.3	527.3	6.2	0.1	527.3	527.3	6.2
PEACE WILLISTON	93,017	2.0	63.0	37,506.3	33,835.3	33,835.3	17.7	37,521.4	31,036.3	31,036.3	17.2
PESIKA CREEK	71,368	2.0	63.0	187.6	4,591.7	4,591.7	6.4	187.6	4,582.5	4,582.5	6.4
PHILIP CREEK	69,339	2.0	63.0	26,277.2	24,538.5	24,538.5	35.4	26,532.6	24,836.1	24,836.1	35.8
POINT CREEK	3,959	2.0	63.0	792.1	327.1	327.1	3.3	792.1	271.2	271.2	2.7
POLICE CREEK	5,258			319.7	547.4	547.4	10.4	319.7	527.8	527.8	10.0
RAINBOW CREEK	30,872	2.0	63.0	10,091.5	12,440.7	12,440.7	40.3	10,120.0	12,385.5	12,385.5	40.1
RUBYRED CREEK	4,380			4.1	46.5	46.5	1.1	4.1	46.3	46.3	1.1
SCHOOLES CREEK	26,869			518.0	5,724.6	5,724.6	21.3	518.0	5,774.9	5,774.9	21.5
SCOTT CREEK	20,463	2.0	63.0	830.0	372.2	372.2	4.8	833.8	341.5	341.5	4.6
SCOVIL CREEK	11,497	2.0	63.0	2,802.5	2,484.6	2,484.6	21.7	2,802.5	2,329.3	2,329.3	20.3
SELWYN CREEK	15,339	2.0	63.0	147.8	32.4	32.4	0.2	147.8	21.1	21.1	0.1
STEVENSON CREEK	13,302			385.6	643.7	643.7	4.8	385.6	620.5	620.5	4.7
STRANDBERG CREEK	16,308	2.0	63.0	4,803.1	3,008.6	3,008.6	15.4	4,803.1	3,706.3	3,706.3	20.3
SYLVESTER CREEK	28,764	2.0	63.0	5,031.2	6,742.4	6,742.4	23.4	5,031.2	6,437.9	6,437.9	22.4
TRUNCATE CREEK	7,238	2.0	63.0	295.0	328.3	328.3	12.8	295.0	338.3	338.3	13.0
TSEDEKA CREEK	13,300	2.0	63.0	3,200.9	3,382.2	3,382.2	25.4	3,200.9	3,215.4	3,215.4	24.2
WEASEL CREEK	3,221			106.8	101.3	101.3	3.2	106.8	34.3	34.3	3.0
WEST NABESCHE RIVER	25,612			525.7	418.3	418.3	1.6	525.7	386.0	386.0	1.5
WESTON CREEK	10,749	2.0	63.0	1,388.8	935.1	935.1	8.7	1,388.8	873.1	873.1	8.1

Forest UPDATE Certification



Canadian Forest Products Ltd. 2017 ISO 14001 Re-certification/CSA Z809 Surveillance Audit Public Summary Report

Between February and September 2017 an audit team from KPMG Performance Registrar Inc. (KPMG PRI) carried out a combined ISO 14001 re-certification/CSA Z809 surveillance audit of Canadian Forest Products Ltd.'s (Canfor's) B.C. and Alberta woodlands operations. This Certification Summary Report provides an overview of the audit process and KPMG's findings.

Canfor's B.C. and Alberta Woodlands Operations

Canfor's ISO 14001 and CSA Z809 certifications apply to the following defined forest areas (NB: The DFAs listed are based on the gross area under management, and are prorated estimates in the case of some of the volume-based forest tenures):

Defined Forest Areas (Canfor operations only)	DFA Areas (hectares)	Allowable Annual Cut (m ³)
Radium ¹	392,400	221,005
Vavenby	140,620	284,638
Prince George ²	2,216,362	4,034,866
Morice	870,013	1,326,751
Mackenzie	2,188,430	1,082,904
Fort Nelson	7,045,416	1,163,716
Chetwynd	532,080	1,203,613
Grande Prairie	<u>644,695</u>	<u>715,000</u>
Total	14,030,016	10,032,493

- The above figures do not include operations in relation to 10,000 m³/year of Canfor's AAC in the Cranbrook Timber Supply Area which are certified to the ISO 14001 standard only.
- Canfor manages 3 DFAs within the Prince George Timber Supply Area (TSA). These 3 DFAs include Canfor's operating areas under the Prince George Forest District/TFL 30, Fort St. James and Vanderhoof sustainable forest management (SFM) plans. Operations under these plans are managed or co-managed by Canfor Forest Management Group East and West Operations.

Audit Scope

The 2017 audit included site visits to all of the DFAs listed above to evaluate the forest management plans and practices carried out by the Company since the completion of the 2016 audit. It included an assessment against all of the requirements of the CSA Z809 standard, including those related to:

- Public participation;
- Maintenance of the sustainable forest management (SFM) plan;
- Monitoring of SFM performance, and;
- Implementation of the various management system components (e.g., rights & regulations, DFA specific performance requirements, operational controls, monitoring and inspections, corrective & preventive actions, internal audits, management review) that are required under the CSA Z809 standard.





Note: Full scope ISO 14001/CSA Z809 site visits were only conducted at 5 DFAs (Vavenby, Prince George, Chetwynd, Mackenzie and Vanderhoof), with the remaining DFAs being the subject of limited scope site visits that were used to evaluate those CSA Z809 requirements that are unique at the site level (i.e., DFA level SFM plans, annual monitoring reports and the functioning of the local Public Advisory Group (PAG)). This level of audit sampling exceeds the IAF audit sampling requirements for multi-site certifications.

The Audit

- **Background** – The CSA Z809 and ISO 14001 standards require annual surveillance audits by an accredited Certification Body to assess the operation’s continuing conformance with the requirements of these standards. In addition, full scope re-certification audits are required once every 3 years.
- **Audit Team** – The audit was conducted by a 6 person audit team comprising Dave Bebb, RPF, EP(EMSLA) – Lead Auditor, Yurgen Menninga, RPF, EP(EMSLA), Branden Beatty, RPBio, EP(EMSLA), Chris Ridley-Thomas, RPBio, EP(EMSLA), Dennis Lozinsky, RPF, EP (EMSLA) and Bodo von Schilling, RPF, EP(EMSLA). All members of the audit team have considerable experience conducting audits against the requirements of the ISO 14001 and CSA Z809 standards.
- **Document Review** – DFA-specific off-site document reviews were completed prior to the field audit in order to assess forest management system (FMS) documentation (e.g., SFM Plan and associated values, objectives, indicators and targets, documentation pertaining to the Public Advisory Group (PAG) process, etc.) and increase the efficiency of the field portion of the audit.
- **Field Audit** – The on-site field audit included interviews with a large sample (more than 100 Company staff and an equal or greater number of contractors, PAG members and external stakeholders) and examination of forest management system (FMS) and SFM system records, monitoring information and public involvement information. The audit team conducted field assessments of a large number of field sites (79 roads, 71 harvesting blocks, 32 silviculture sites and 8 logging camps) to assess the Company’s planning, harvesting, silviculture, camps and road construction, maintenance and deactivation practices. The 2017 audit took approximately 68 days to complete, 49 of which were on-site. The balance of audit time was spent preparing the audit plan, conducting off-site document reviews, completing various audit checklists and preparing the main and public summary audit reports.

Audit Objectives

The objective of the audit was to evaluate the sustainable forest management (SFM) system at Canadian Forest Products Ltd. to:

- Determine its conformance with the requirements of the ISO 14001 and CSA Z809 standards;
- Evaluate the ability of the SFM system to ensure that Canfor meets applicable regulatory requirements;
- Evaluate the effectiveness of the system in ensuring that Canfor meets its specified SFM objectives, and;
- Where applicable, identify opportunities for improvement.

Canfor 2017 ISO 14001 Re-certification/CSA Z809 Surveillance Audit Findings

Open non-conformities from previous audits	0
New minor non-conformities	3
Systemic opportunities for improvement	8

Types of audit findings

Major non-conformities:

Are pervasive or critical to the achievement of the SFM Objectives.

Minor non-conformities:

Are isolated incidents that are non-critical to the achievement of SFM Objectives.

All non-conformities require the development of a corrective action plan within 30 days of the audit. Corrective action plans to address major non-conformities must be fully implemented by the operation within 3 months or certification cannot be achieved / maintained. Corrective action plans to address minor non-conformities must be fully implemented within 12 months.

Opportunities for Improvement:

Are not non-conformities but are comments on specific areas of the SFM System where improvements can be made.

Audit Conclusions

The audit found that the Company's SFM system:

- Was in conformance with the ISO 14001 and CSA Z809 requirements included within the scope of the audit, except where noted otherwise in this report;
- Continues to be effectively implemented, and;
- Is sufficient to systematically meet the commitments included in the Company's SFM Plans, provided that it continues to be implemented and maintained as required.

As a result, a decision has been reached that Canfor's B.C. and Alberta woodlands: (1) be re-certified to the ISO 14001 standard, and (2) continue to be certified to the CSA Z809 standard.

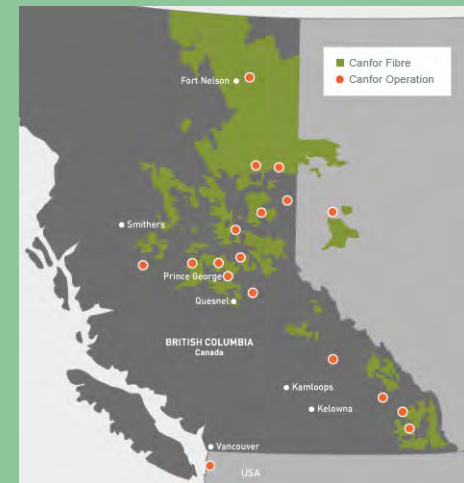
Good Practices

A number of good practices were noted during the 2017 audit. The following list highlights some of the examples noted:

- ISO 14001 element 4.4.6/CSA Z809 element 7.4.6: Field review of planned harvesting and road maintenance/upgrade work in the Upper Clearwater area found that a road upgrade plan for the Trophy Mountain FSR (Forest Service Road) and related roads had been prepared by a consulting hydrologist to address a number of drainage issues on the existing road network, and various assessments (including terrain, visual and hydrological) had been completed for the area and the Company's harvesting and road plans had taken these into account. In addition, the 5 blocks in question (which were originally scheduled for logging in 2017 but have since been deferred) are located on relatively benign ground, and the Company had taken a conservative approach to their layout and design in attempting to address the concerns of local stakeholders. (Vavenby)
- ISO 14001 Element 4.4.6/CSA Z809-08 Element 7.4.6 (Operational Control): Although not formally prescribed, the audit noted several harvest blocks where non-classified drainages (NCDs) had machine free zones, stubs and understory retention applied. This practice helps reduce the potential for impacts on water quality and sensitive soils. In addition, the increased level of retention in riparian areas has a beneficial effect on stand level biodiversity. (Vavenby)
- ISO 14001 Element 4.4.6/CSA Z809-08 Element 7.4.6 (Operational Control): Field review of planned harvesting and road construction work in the Tagetochlain Lake area found that the prescriptions included the protection of a wide range of non-timber values (e.g., fisheries values, an adjacent ungulate winter range, cultural heritage features, wildlife features such as stick nests, migratory birds, range improvements, etc.). In addition, the input of First Nations was found to have resulted in new approaches to managing various non-timber values, including the retention of significant amounts of understory/non-merchantable trees by the harvesting contractor. (Houston)
- ISO 14001 Element 4.4.6/CSA Z809-08 Element 7.4.6 (Operational Control): The audit noted a harvesting contractor who was tracking tidy tank inspections and certifications in a folder that is maintained in each pickup truck. This practice is helping to ensure compliance with Transportation of Dangerous Goods (TDG) and FMS requirements while promoting operator awareness of fuel management requirements. (Prince George)
- ISO 14001 Element 4.4.6/CSA Z809-08 Element 7.4.6 (Operational Control): The Company is making increased use of tethered harvesting systems as a means to address the recent shift of operations into steeper ground and help ensure that they are able to harvest the full timber profile. (Corporate)



Canfor holds a multi-site certificate to the CSA Z809-08 standard issued by KPMG PRI. The certificate covers a total of 10 Defined Forest Areas in B.C. and Alberta and is valid until September 20, 2018.





- ISO 14001 Element 4.4.6/CSA Z809-08 Element 7.4.6 (Operational Control): As a means to help reduce the risk of harvest boundary trespasses, the Company now requires its contractors to have GPS units in all bunchers and road building equipment. (Corporate)
- ISO 14001 Element 4.4.6/CSA Z809-08 Element 7.4.6 (Operational Control): The Chetwynd site visit noted a number of examples of proactive measures to help address fuel storage and transportation requirements, including: (1) a harvesting supervisor who was using the Project Monitoring Sheet to document his inspections of tanks, spill kits and related items such as fire extinguishers and fire tools, and (2), a road construction contractor who was observed to be tracking his inspection of these same elements on a self-developed checklist that is filled out weekly. (Chetwynd)
- ISO 14001 Element 4.4.6/CSA Z809-08 Element 7.4.6 (Operational Control): The audit found that the Chetwynd operation demonstrated a high level of performance regarding water management which is a significant challenge to the operation, particularly on steep slopes. For example, one contractor faced significant challenges on several blocks in a small geographic area with soils prone to slumping by cleaning ditches continuously during logging operations. (Chetwynd)
- ISO 14001 Element 4.4.6/CSA Z809-08 Element 7.4.6 (Operational Control): The audit found that the Mackenzie operation had applied buffers adjacent to provincial park boundaries during harvesting, reducing wind-throw and potential edge-effects in the adjacent park. (Mackenzie)
- ISO 14001 Element 4.4.6/CSA Z809-08 Element 7.4.6 (Operational Control): The audit found that the Mackenzie operation had voluntarily applied caribou best management practices (BMPs) such as road rehabilitation to a harvest block located in a caribou zone, even though the caribou GAR (Government Actions Regulation) Order did not apply to this area. (Mackenzie)
- CSA Z809 Element 5.1: The combination of a range of relevant and informative activities and a core of dedicated PRISM members has allowed the PRISM public participation process to continue throughout the extended shutdown of harvesting operations at the Fort Nelson operation. (Fort Nelson)
- CSA Z809-08 Element 6.1 (DFA-Specific Performance Requirements): Canfor Houston has a relationship with a consulting firm that specializing in landscape and scenario planning, and modeling is used at the operation on a regular basis as a means to evaluate the impacts of conservation, harvesting and other forest management strategies or alternatives on the SFM plan targets that have been set. (Houston)

Follow-up on Findings from Previous Audits

At the time of this assessment there were a total of 3 open minor non-conformities from previous external audits that related to ISO 14001 and/or CSA Z809 requirements. The audit team reviewed the implementation of the action plans developed by Canfor to address these issues, and found that they: (1) had been implemented as required, and (2) were in most cases effective in addressing the root cause(s) of these findings. As a result, 2 out of the 3 of the open minor non-conformities identified during previous audits have now been closed, and 1 non-conformity (which relates to a weakness in the implementation of various operational controls) has been downgraded to an opportunity for improvement. The Company's continued progress towards addressing the remaining finding will be revisited during the 2018 audit.



The audit team conducted field assessments of a large number of field sites (79 roads, 71 harvesting blocks, 32 silviculture sites and 8 logging camps) to assess the Company's planning, harvesting, silviculture, camps and road construction, maintenance and deactivation practices.



New Areas of Nonconformity

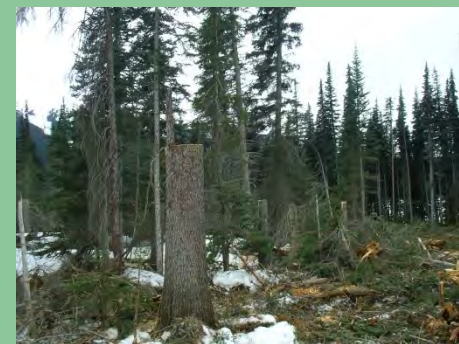
A total of 3 new minor non-conformities were identified during the 2017 ISO 14001/CSA Z809 audit, as follows:

- ISO 14001 element 4.4.6 and CSA Z809-08 element 7.4.6 require the organization to develop and implement operational controls to ensure that operations are carried out under specified conditions and SFM requirements are met. The Company has addressed this requirement by developing a series of standard work procedures (SWPs) and guidelines (e.g., Canfor Fuel Management Guidelines) that give direction to both staff and contractors regarding the implementation of various components of the FMS. The audit found that these operational controls had been implemented as required in the majority of instances. However, inspection of a sample of active and recently completed sites during the audit identified the following weaknesses in the implementation of operational controls:
 - The Canfor Emergency Preparedness and Response Plan (EPRP) states that used spill pads must be disposed of properly. However, the harvesting contractor working on an active harvest block explained that while they use an environmental service to dispose of used oil, filters, etc., the contractor does not have the same arrangement for used spill pads or contaminated soil, which are instead disposed of at the regional landfill. (Houston)
 - At a road turnaround where a logging contractor was loading equipment out of a harvest block, a recent spill of hydraulic fluid (approximately 2 metres by 0.8 metres) was observed on the snow cover on the ground. A few hours later it was found that the spilled oil had been bladed/spread into a snow bank by the contractor rather than implementing the Company's spill response procedure as required. (Vavenby)
 - The Contract Worker SWP requires contractors to remove all waste from the work site. However, inspection of a recent harvest block during the Fort St. James site visit found that large amounts of used synthetic road geotextile had been placed in roadside burn piles. (Fort St. James)
- ISO 14001 element 4.4.6 and CSA Z809-08 element 7.4.6 require the organization to develop and implement operational controls to ensure that operations are carried out under specified conditions and SFM requirements are met. The Company has addressed this requirement by developing a series of standard work procedures (SWPs) and guidelines (e.g., Canfor Fuel Management Guidelines) that give direction to both staff and contractors regarding the implementation of various components of the FMS. The audit found that these operational controls had been implemented as required in the majority of instances. However, inspection of a sample of active and recently completed sites during the audit identified the following weaknesses in the implementation of operational controls for the transportation and storage of fuel:
 - Inspection of a sample of active field sites at the Prince George operation identified a total of 7 instances where truck-mounted fuel tanks were not adequately secured to the vehicle. In most cases the tank was only tied down with a nylon tension strap affixed to the tie-down hooks in the bed of the truck (which is inadequate to keep the tank in the vehicle in the event of a rollover), although in 1 instance the tank was not tied down at all. (Prince George)
 - Inspection of an active field site at the Grande Prairie operation identified one instance where a truck-mounted fuel tank was not adequately secured to the vehicle. (Grande Prairie)



The 2017 Canfor ISO 14001/CSA Z809 audit took place between the months of February and September 2017. Site visits were scheduled at different times of the year (including a few that occurred in the winter) in order to observe the Company's forest management operations under as wide a range of operating conditions as possible.

- The Chetwynd site visit identified 3 truck-mounted fuel tanks that were not adequately secured to the vehicle and a large fuel tank with an expired TDG certification. (Chetwynd)
- ISO 14001 element 4.5.1 and CSA Z809 element 7.5.1 require documented procedures to monitor key characteristics that can have an environmental impact. These requirements are addressed in FMS Manual section 12 and a number of related procedures and forms (e.g., various Standard Work Procedures (SWPs), Pre-work and Inspection Forms, etc.). The audit found that the Company's monitoring and measurement procedures had been implemented as required in the majority of instances. However, the following weaknesses in the implementation of these procedures were noted:
 - The Mackenzie site visit noted weaknesses in the implementation of the FMS monitoring and measurement procedures for several harvest blocks (e.g., the interim or final inspection due date was not identified on several pre-work-inspection-hazard assessment forms, the required inspection frequency based on environmental risk was not recorded for several harvest blocks, and interim inspection dates and inspection notes were not included on the pre-work-inspection-hazard assessment forms for several harvest blocks). (Mackenzie)
 - The Vanderhoof site visit noted 1 winter 2016 harvest block that required 1 interim inspection and a final inspection by June 30, 2017. However, as of September 6, 2017 there has been no interim or final inspections as per the prescribed inspection frequency. (Vanderhoof)
 - The Fort St. James site visit noted 1 harvest block that had been completed in winter/spring 2017 that required 2 interim inspections and a final inspection by June 30, 2017. However, as of September 6, 2017 there has been no interim or final inspections as per the prescribed inspection frequency. (Fort St. James)



Although not formally prescribed, the audit noted several harvest blocks where non-classified drainages (NCDs) had machine free zones, stubs and understory retention applied. This practice helps reduce the potential for impacts on water quality and sensitive soils. In addition, the increased level of retention in riparian areas has a beneficial effect on stand level biodiversity. (Vavenby)

Systemic Opportunities for Improvement

A total of 8 new systemic opportunities for improvement was identified during the 2017 ISO 14001/CSA Z809 audit, as follows:

- The audit found that that FMS training requirements had been met in the majority of instances. However, isolated weaknesses in contractor training and awareness were noted at the Vavenby and Houston operations (e.g., 3 out of 5 subcontractor employees interviewed at the Vavenby operation has not received the required FMS training, and a harvesting contractor foreman interviewed at the Houston operation was not aware of the tree retention requirements for the block he was working on). (Vavenby and Houston)
- Review of the most recent SFM plan annual reports at the 10 Company divisions visited during the audit found that these met the requirements of the CSA Z809 standard for SFM plan annual reports in the majority of instances. However, the following weaknesses were noted:
 - The 2015 Radium Annual Report included a table summarizing the indicator monitoring results. Six of the indicators had “variable” results, which actually meant that the associated targets were not met. In addition, isolated weaknesses in the analysis and/or reporting of performance in relation to the SFM plan targets were also identified. (Radium)
 - Fort Nelson SFM Plan Indicator 1.1.3 tracks forest area by seral stage and under the SFM plan is to be updated every 5 years. However, the indicator



data was last updated in 2011 and there is an opportunity to update the data based on the recently released TSR 4 data. (Fort Nelson)

- The data presented in the Fort Nelson SFM plan in relation to permanent deletions addresses deletions created by all industries in contrast to the target which is based solely on the impacts of forest management activities. (Fort Nelson)
- While an annual report is produced for the Fort Nelson operation that provides an assessment of performance for the year, most of the data tables presented are directly from the SFM plan and have not been updated.
- The Fort Nelson SFM plan has targets related to direct and indirect employment that are reported in the annual report. However, the multiplier used for indirect employment is based on 2001 data and may no longer be appropriate. (Fort Nelson)
- The audit identified a number of isolated weaknesses in the content of operational controls, including:
 - No evidence that a terrain stability field assessment referenced in a site plan was ever completed. (Vavenby)
 - Inconsistencies in the mapping of machine free zones prescribed for S6 streams on some harvest plan maps. (Vavenby).
 - Lack of practice restrictions in a road site plan regarding a road that was recently constructed adjacent to the RMA of an S3 (fish-bearing) stream. (Mackenzie)
 - The Forest Management Group (FMG) Prince George Field Operations Multisite Standard, which applies in Mackenzie, does not require wind-throw assessments. (Mackenzie)
 - The Mackenzie site visit identified 1 harvest block where a stream was mapped that did not actually exist. (Mackenzie)
 - The Canfor Mackenzie operational procedure is to default all riparian management zone prescriptions to a moderate to high wind-throw hazard level, and does not provide for alternatives to the generic prescription as a means to promote enhanced retention in association with internal S4 (small fish-bearing) streams where wind-throw is not a significant consideration. (Mackenzie)
- The Canfor Fuel Management Guidelines require that fuel storage and refueling occur outside of any “riparian area” to avoid spillage into any body of water. However, the guidelines are not clear on what is meant by the term “riparian area”, and interviews with some equipment operators found that that were unclear on what this clause actually requires. If the term is taken to mean the RMA (Riparian Management Area, which is a defined term in Regulation), then this will vary depending on the type of watercourse to which it applies, and in the case of an S-6 stream could be interpreted as allowing fuel storage and dispensing as close as 20 metres from the waterbody. (Corporate)
- The audit identified a number of isolated weaknesses in the content and/or implementation of the Company’s emergency response procedures (e.g., missing or incomplete spill kits on some machines, examples of fire extinguishers that had missing or outdated inspection tags, a few machines with discharged fire extinguishers or missing fire tools, etc.). (Houston, Chetwynd, Prince George, Mackenzie and Vavenby)



The Company is making increased use of tethered harvesting systems as a means to address the recent shift of operations into steeper ground and help ensure that they are able to harvest the full timber profile. (Corporate)

- A recent camp inspection by Canfor Mackenzie staff did not detect an expired fire extinguisher, which according to the FMG Fuel Management Guidelines is a requirement for fuel dispensing locations. In addition, review of the FMG Operations Camp Inspection form in the petroleum handling section found that the form does not include consideration of the required fire extinguishers. (Mackenzie/Corporate)
- The audit noted a number of isolated weaknesses in the implementation of the Company's non-conformance and corrective and preventive action procedures (e.g., open action items relating to bridge inspections conducted at Fort Nelson identified in 2016, a lack of evidence contained in the incident tracking system (ITS) to support the closure of some previous external audit findings, and a few incidents in ITS that had not been closed by the due date specified in the applicable action plan). (Fort Nelson, Grande Prairie and Mackenzie)
- The audit noted the following isolated weaknesses in the targets included in the Company's SFM plans:
 - The target for shrub habitat (CSA Z809 Core Indicator 1.1.5) presented in the Fort Nelson SFM plan is no longer valid as the underlying data sources have changed and this target can no longer be reported on in the manner envisaged in the SFM plan. The target also lacks clarity as to how the 5% allowable variance is calculated, which if calculated based on the TSA area would be inappropriate as it would allow for the complete elimination of shrub habitat. (Fort Nelson)
 - A recently completed steep slope analysis of the timber harvesting land base may indicate that the current Chetwynd SFM plan target for non-conventional harvest methods is no longer valid. It is also not clear whether or not there is a variance in place defining the acceptable level of departure from the target and if Canfor has taken this variance into account. Further, the most recent Chetwynd SFM plan annual report did not clearly conclude on the degree to which Canfor has not met the target. (Chetwynd)



Inspection of a recent bridge deactivation project at the Company's Fort St. James operation found that the operation had done a good job of protecting the stream channel during the deactivation of the crossing.

Isolated Issues

A number of isolated (i.e., non-systemic) weaknesses in the implementation of FMS requirements were also identified during the 2017 audit. These have been reported to the woodlands operations where the issue(s) were noted, and the Company has developed divisional-level action plans to address these issues.

Corrective Action Plans

Corrective action plans designed to address the root cause(s) of the non-conformities identified during the 2017 audit have been developed by Canfor's woodlands operations and reviewed and approved by KPMG PRI. The 2018 audit will include a follow-up assessment of these issues to confirm that the corrective action plans developed to address them have been implemented as required.

Focus Areas for the Next Audit

The following issues/topics have been identified as focus areas for the next audit:

- Implementation of the action plans developed by the Company to address the open findings from the 2017 and previous ISO 14001/CSA Z809 audits.
- ISO 14001:2004 certificates will no longer be valid as of September 15, 2018. However, Canfor has indicated that they may not pursue certification to the new ISO 14001:2015 standard. As a result, it is expected that the requirements of the ISO 14001 standard will not be in scope for the 2018 audit.

- CSA Z809-16 was published on September 16, 2016. The standard has a 2 year transition period, and existing CSA Z809-08 certificates will no longer be valid after September 16, 2018. As a result, a full-scope CSA Z809-16 certification audit will be required in 2018.
- Actions taken by the Company to address the results of the hydrologic and terrain stability assessments completed for proposed cutblocks in the Upper Clearwater area (i.e., modifications to blocks identified as potentially posing an elevated risk to downstream resources, implementation and effectiveness of the Trophy Mountain FSR road upgrade plan).
- The Company's continued efforts to address the expanding spruce bark beetle infestation at the Prince George and Mackenzie operations.
- Water management and pre-development of roads in the more challenging terrain that the Prince George and Mackenzie operations are now moving into.
- Development and implementation of procedures to track the completion of post-harvest fire hazard assessments.
- Efforts to reduce rutting in sensitive areas containing small wetlands and NCDs.
- Implementation of various actions (e.g., designation of sensitive watersheds and associated SFM plan targets, review and (where necessary) updating of the NRV (natural range of variability) basis underlying the SFM plan, etc.) in the event that harvest operations resume at the Fort Nelson operation.

Date of the Next Audit

The next CSA Z809/ISO 14001 audit of Canfor's B.C. and Alberta woodlands operations will take place over several months, commencing in winter 2018.



Inspection of a sample of silviculture field sites during the audit noted a high level of compliance with the reforestation requirements specified in the applicable Forest Stewardship Plan.

Contacts:

Chris Ridley-Thomas, RPBio, EP(EMSLA) (604) 691-3088
David Bebb, RPF, EP(EMSLA) (604) 691-3451

This report is the property of KPMG. It may only be reproduced by the intended client, Canfor, with the express consent of KPMG. Information in this issue is of a general nature with respect to audit findings and is not intended to be acted upon without appropriate professional advice. © 2017 KPMG.

GHG emissions, Disturbance, Climate Change, BC Forests, and Forest Products

Dr. Art Fredeen

Professor, Ecosystem Science & Management Program
University of Northern British Columbia



Mackenzie PAG/NSC Meeting
5 April 2017



Outline

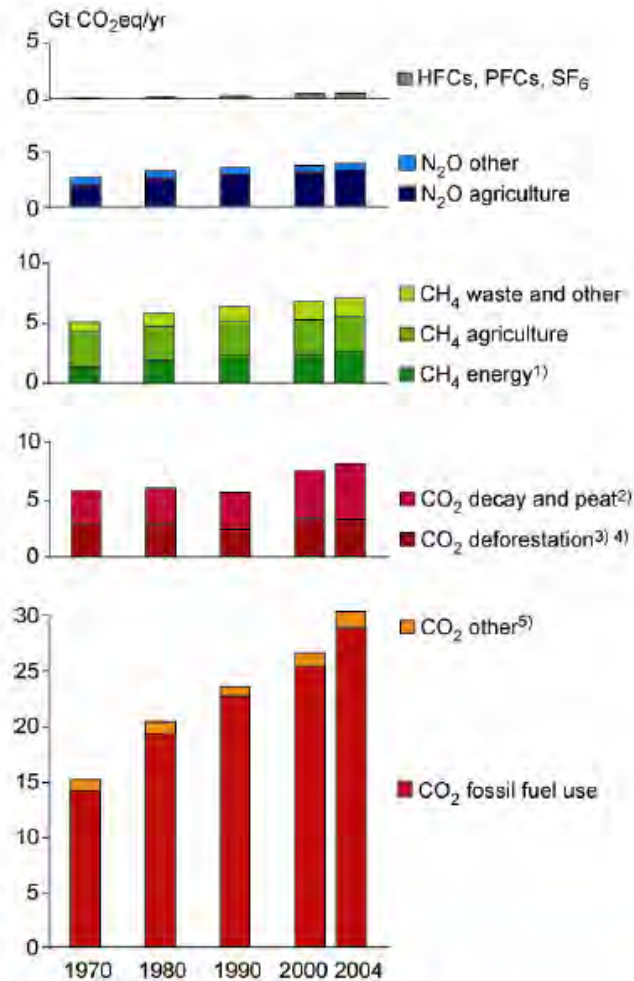
1. GHGs (*esp.* CO₂): Growing concern
2. My recent forest C research
3. 'Potential Contribution of BC's Forest Sector to GHG Emission Reduction Targets'
4. Concluding thoughts on 'forest values'



"Yes, the planet got destroyed. But for a beautiful moment in time we created a lot of value for shareholders."

1. GHGs (*esp.* CO₂): Growing concerns

Carbon dioxide
is the largest
contributor

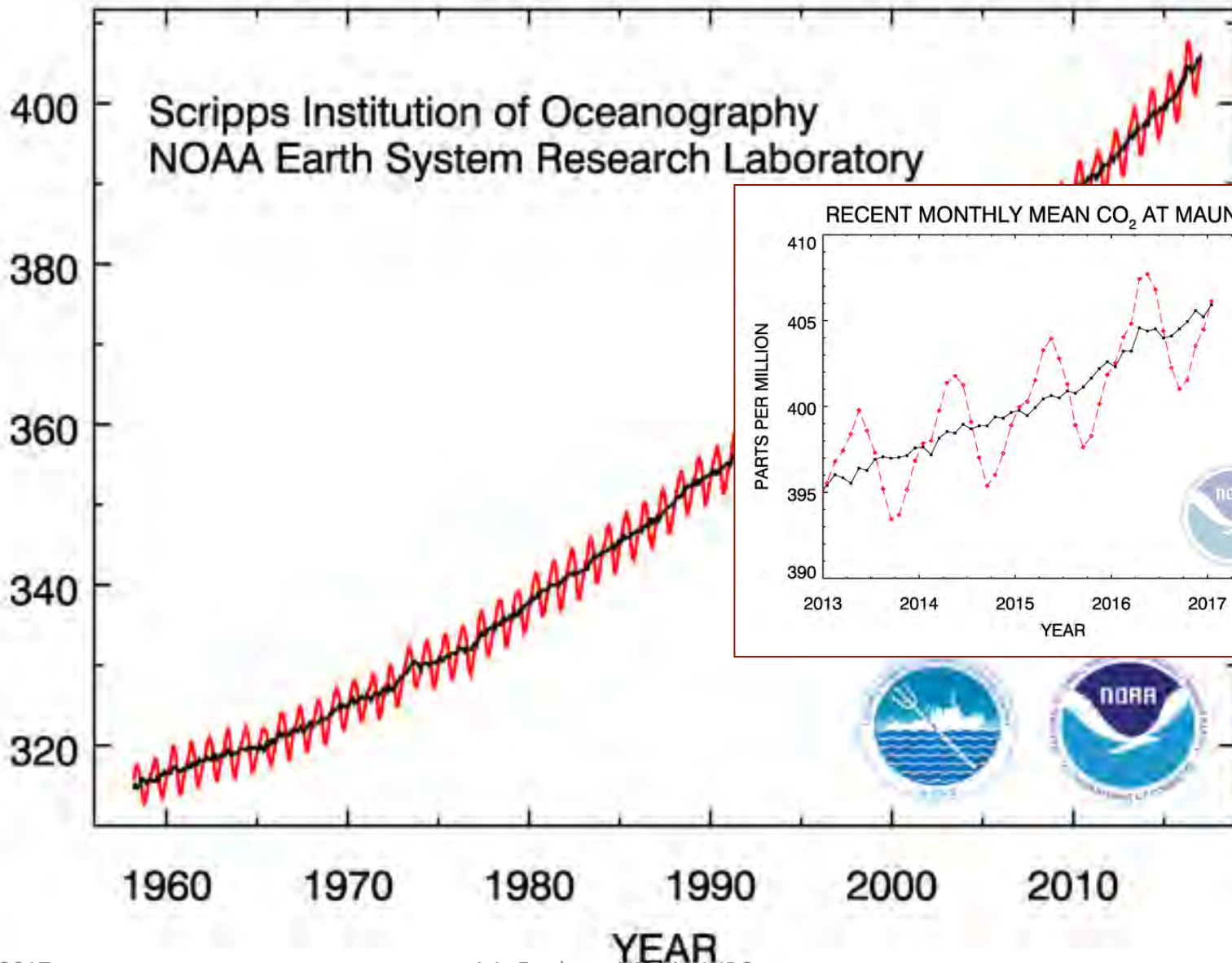


IPCC

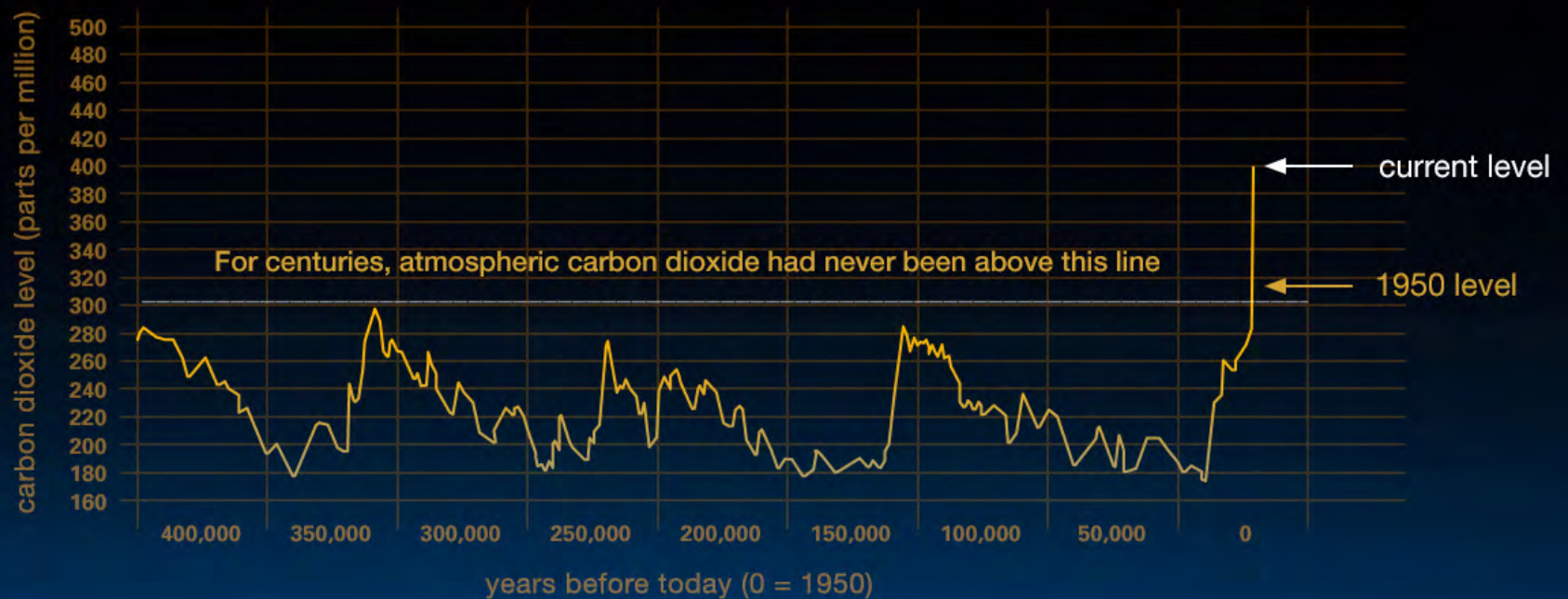
Atmospheric CO₂ at Mauna Loa Observatory

Scripps Institution of Oceanography
NOAA Earth System Research Laboratory

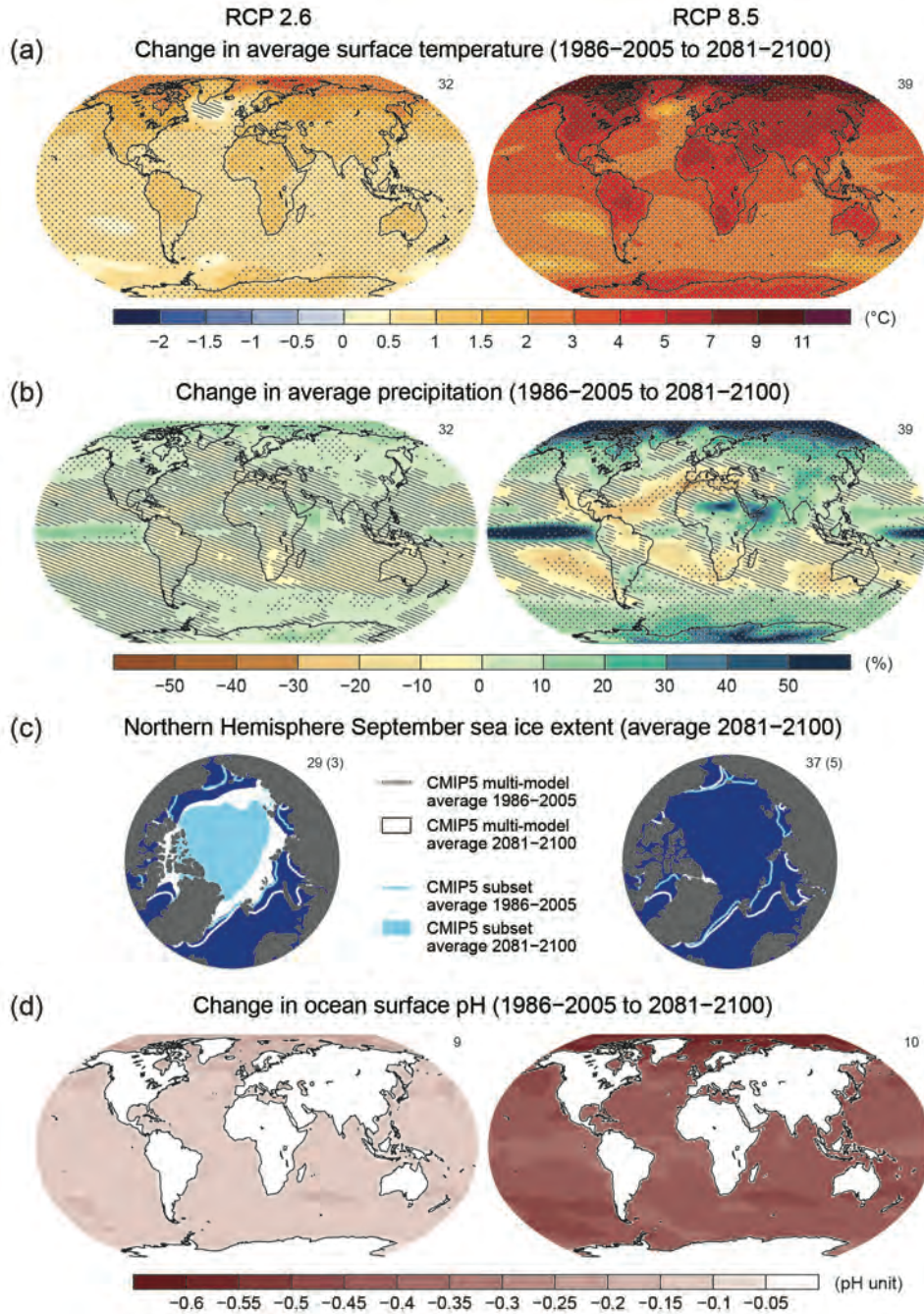
PARTS PER MILLION



Charting an uncertain future

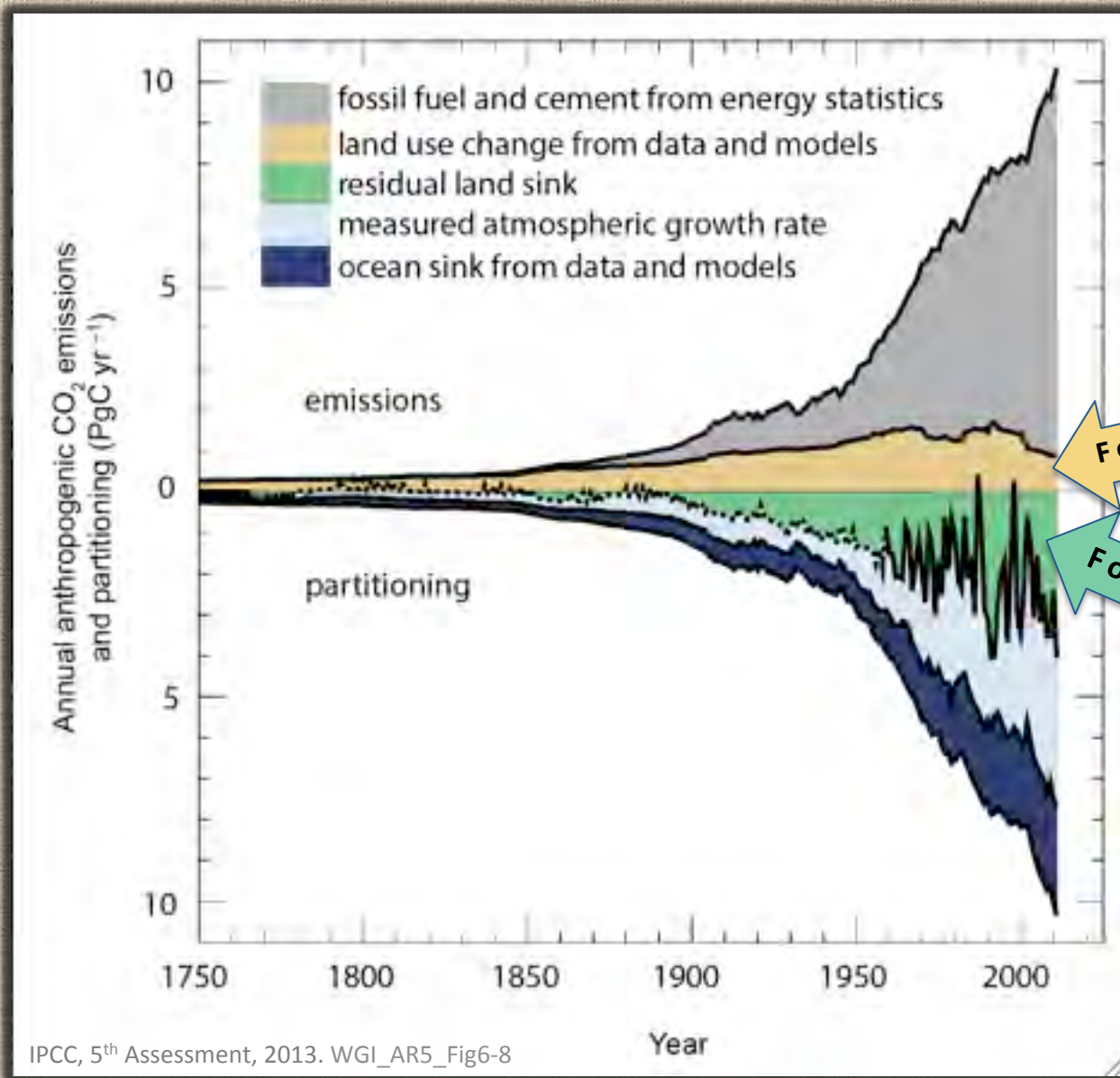


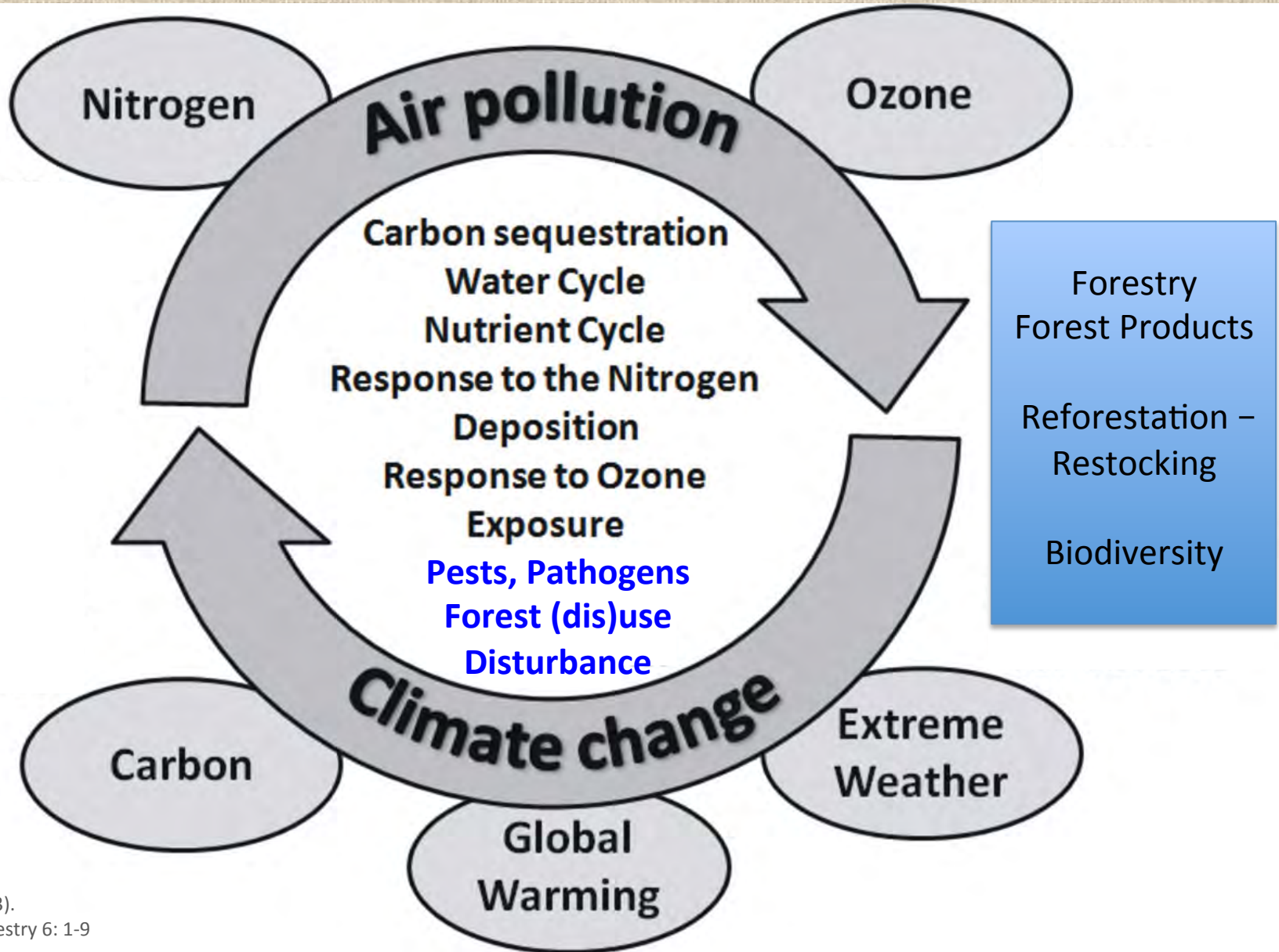
https://climate.nasa.gov/system/downloadable_items/194_co2-graph-021116.jpeg



It's not just about global 'warming'!

IPCC, 2013





Danielewska et al. (2013).
Biogeosciences and Forestry 6: 1-9

'Canada Boreal Forest Values'

(International Boreal Conservation Science Panel):

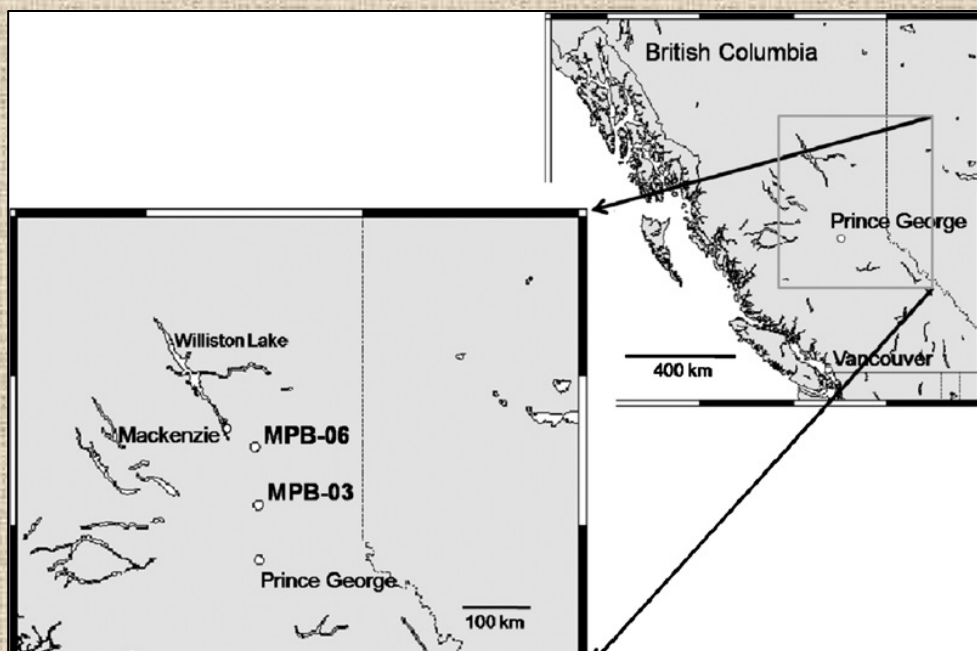
- Hold more surface freshwater than any other forest ecosystem globally
- Breeding grounds for more than 300 bird species, many of these migratory
- Home to some of Canada's most iconic wildlife species: e.g. bear, moose, caribou, beaver, & wolf
- Features more than 600 Aboriginal and many forest resource-dependent communities
- **Canadian forests contain high levels of C storage**

<http://www.borealscience.org/boreal/values/>

2. My current forest C-research projects

i. How has the mountain pine beetle (MPB) and salvage logging influenced the C-dynamics of northern BC pine-dominated forests?

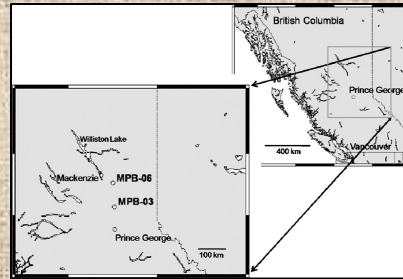




2007/2008	MPB-03 (Crooked River)	MPB-06 (Kennedy Siding)
Stand age (y)	~ 110	~ 80
Canopy height	17 m (~ 90% pine)	15 m (~ 100% pine)
Stand density (> 10m)	558	1275
Leaf Area Index (overstory)	0.85	1.35
Tree seedling/sapling density (stems ha ⁻¹)	5290 (53% pine)	7680 (97% pine)
Percent attacked pine	> 90%	< 5%

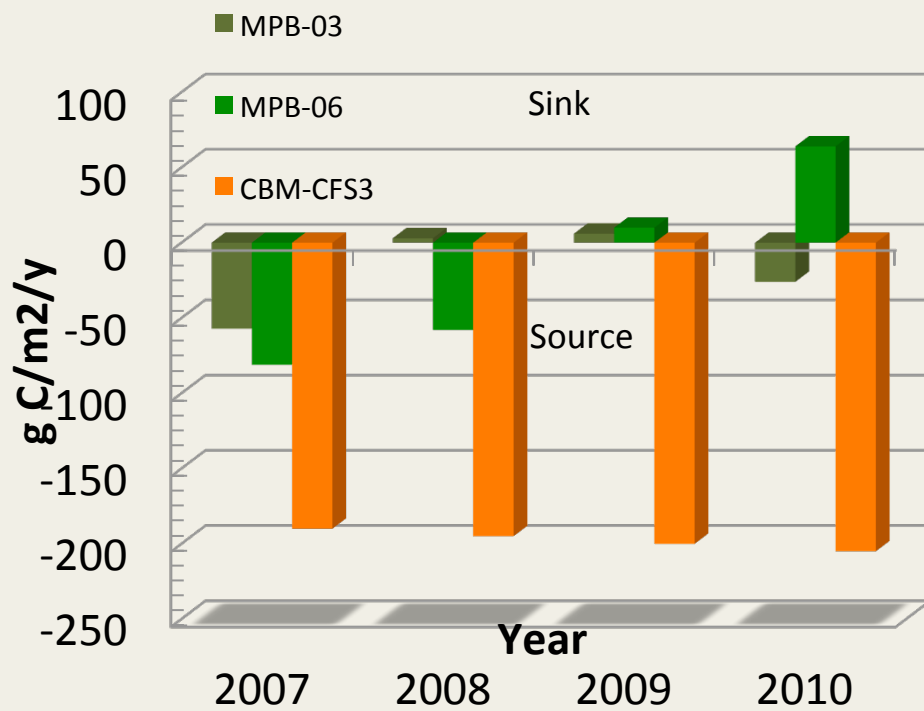
Brown MG, Black TA, Nestic Z, Fredeen AL, Foord VN, Spittlehouse DL, Bowler R, Burton PJ, Grant NJ, D Lessard 2012. The carbon balance of two lodgepole pine stands recovering from mountain pine beetle attack in British Columbia. *Agricultural and Forest Meteorology* 153: 82-93.

Modelling suggested that MPB forests would be major C sources for years to come. [Kurz et al. 2008. Mountain pine beetle and forest carbon feedback to climate change. *Nature* **452**, 987-990]



Modelling suggested that MPB forests have 19% summer reductions in evapotranspiration. [Manness et al. 2012. Summertime climate response to mountain pine beetle disturbance in British Columbia. *Nature Geoscience* doi:10.1038/ngeo164]

Our eddy-covariance results suggest MPB stands are net C sinks in half of the years



Our measurements suggest that E may not be affected in all cases.

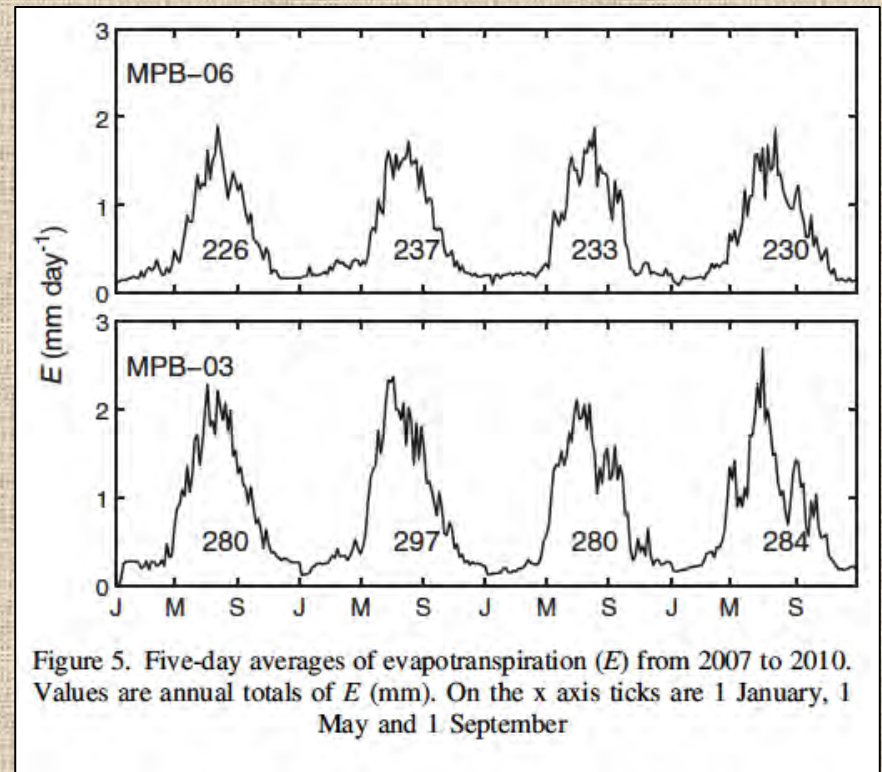
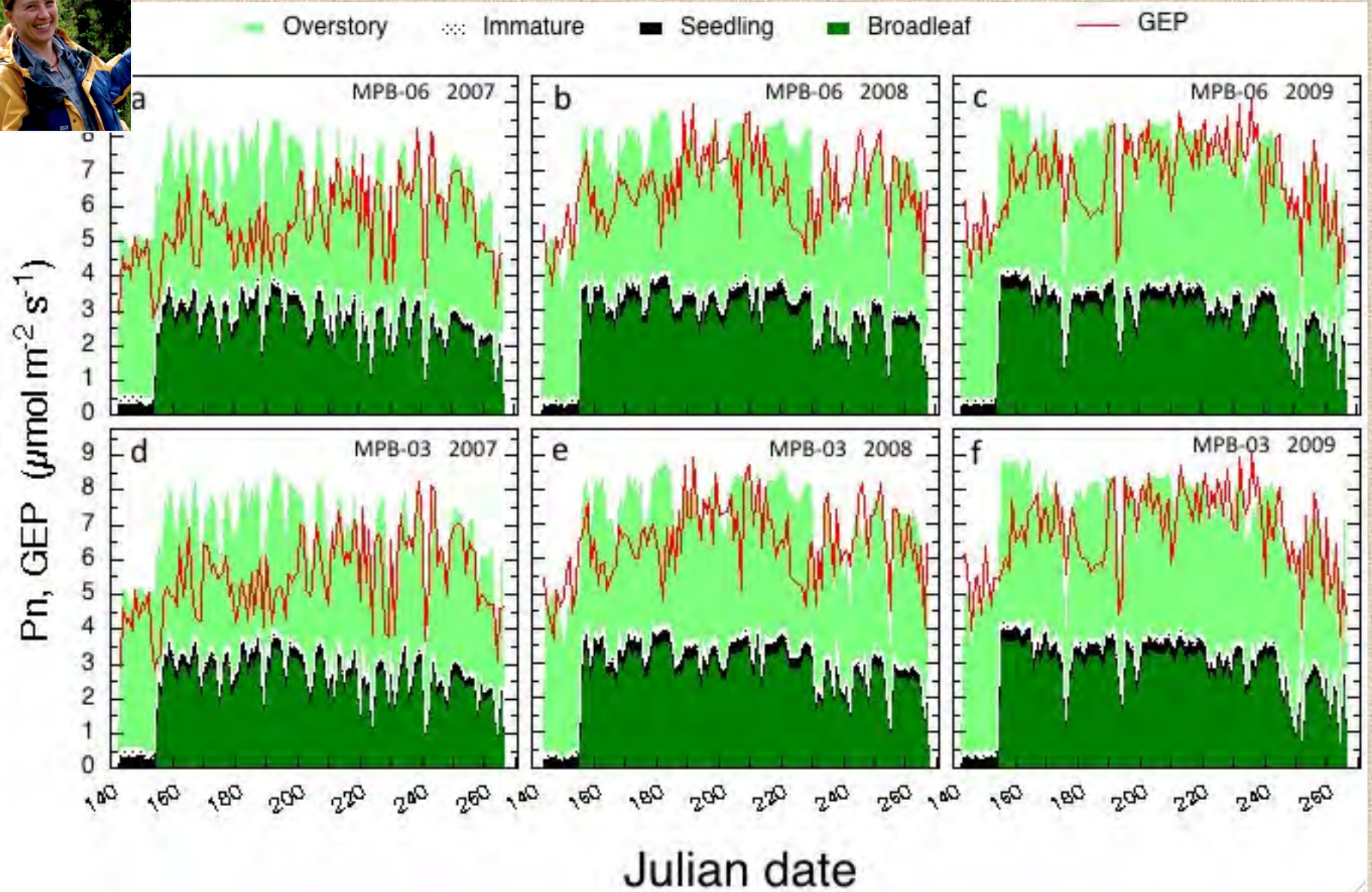


Figure 5. Five-day averages of evapotranspiration (E) from 2007 to 2010. Values are annual totals of E (mm). On the x axis ticks are 1 January, 1 May and 1 September

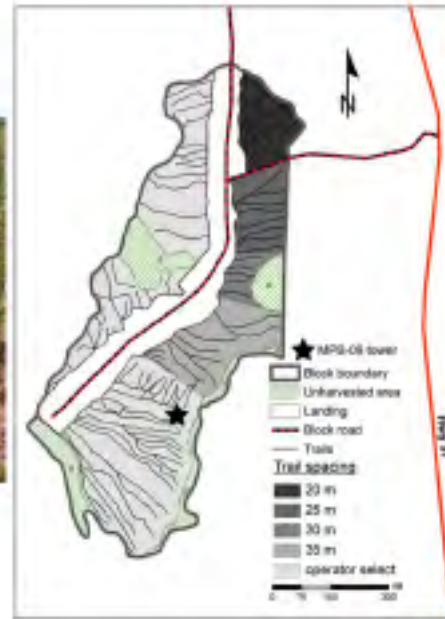
Brown et al. 2012. The C balance of two lodgepole pine stands recovering from MPB attack in BC. *Agricultural & Forest Meteorology* 153: 82-93.

Brown et al. 2014. Evapotranspiration & canopy characteristics of two pine stands following MPB attack. *Hydrological Processes* 28:3326-3340.

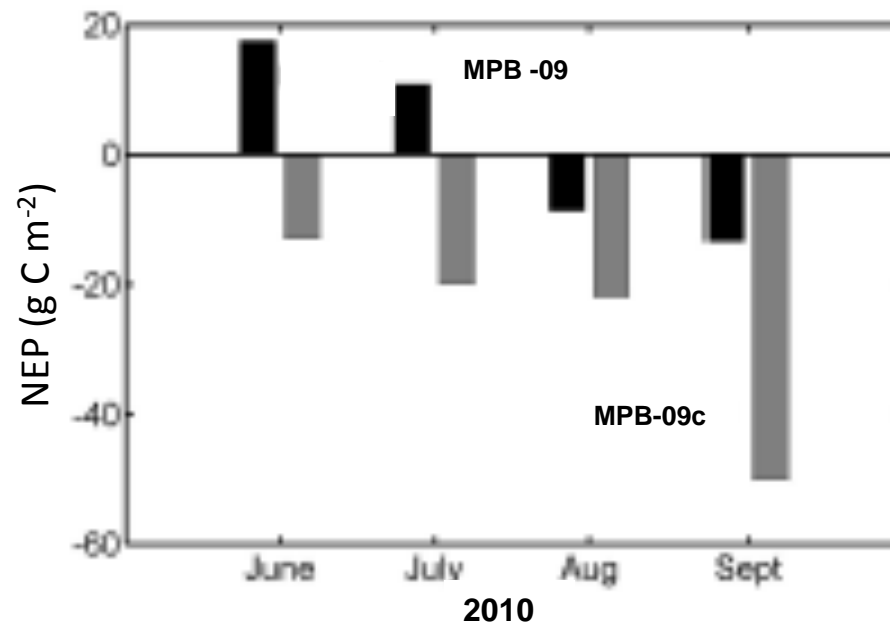


Bowler et al. 2012. Residual vegetation importance to net CO₂ uptake in pine-dominated stands following MPB attack in central BC, Canada. *Forest Ecology & Management*. 269: 82-91.

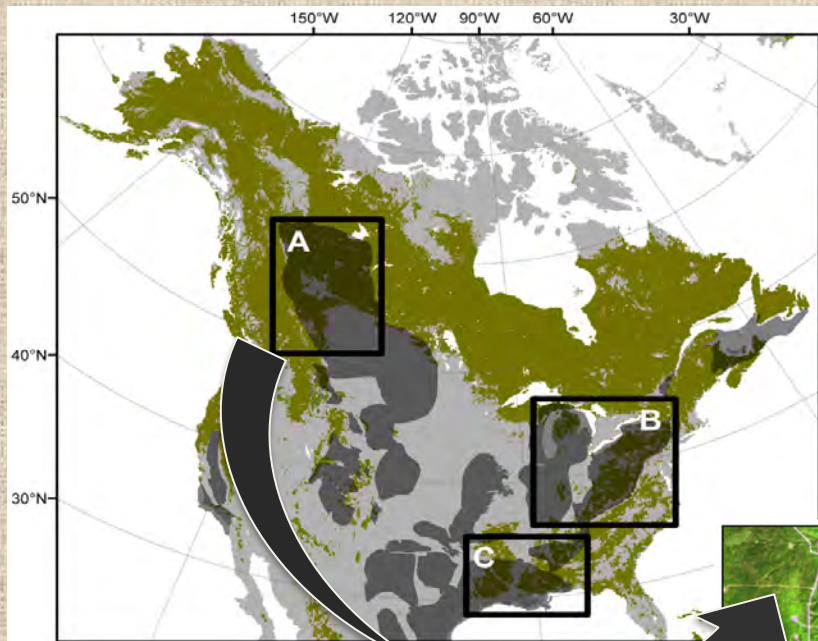
MPB-09: Partial-cut MPB stand at Summit Lake, BC



MPB-09c: Clear-cut MPB stand near Summit Lake, BC

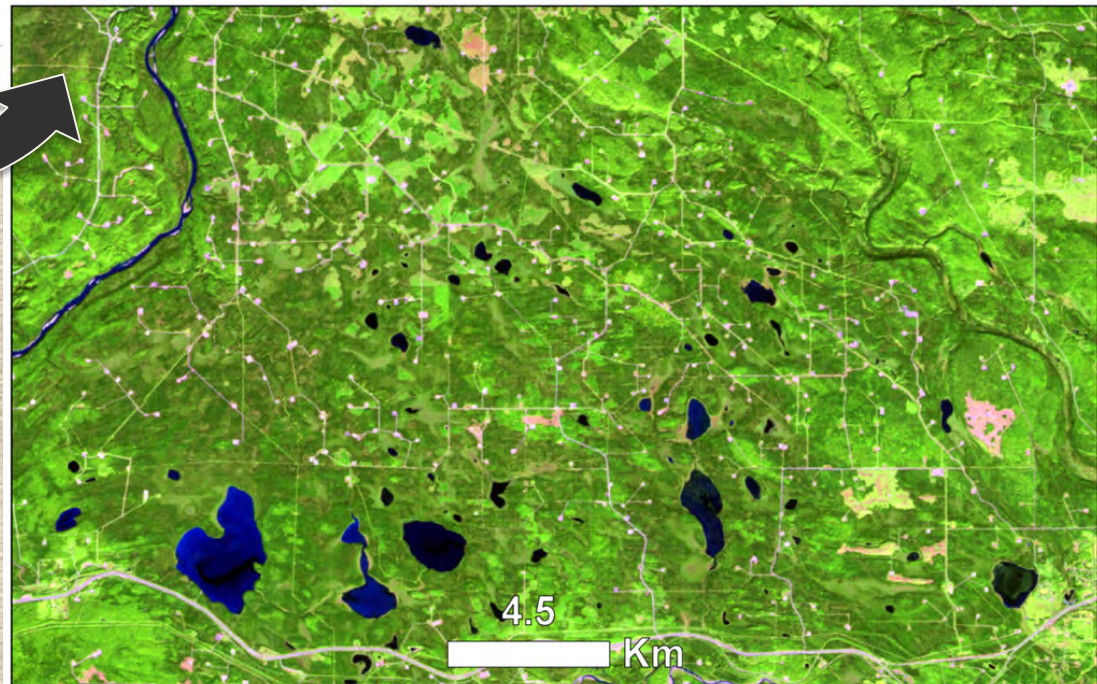


Mathys et al. 2013.
Biogeosciences 10:
5451-5463.



“Despite the stability of overall forest cover in North America, substantive changes in the arrangement and fragmentation of forest cover has occurred driven by forest management and fire suppression, and increasingly from energy development.”

“The small size of individual well sites gives the impression that the footprint of the oil and gas industry is relatively small, however, approximately 400,000 well sites have been established in Alberta alone.”



Pickell et al. 2014. Forest Change in Landscapes Under-Going Rapid Energy Development: Challenges & New Perspectives. Land 3(3), 617-638

2. Current forest C-research projects

ii. How long does it take for MPB-attacked pine trees to fall and decompose?

Benita Kaytor



Pacific Forestry Center, CFS

Mitacs



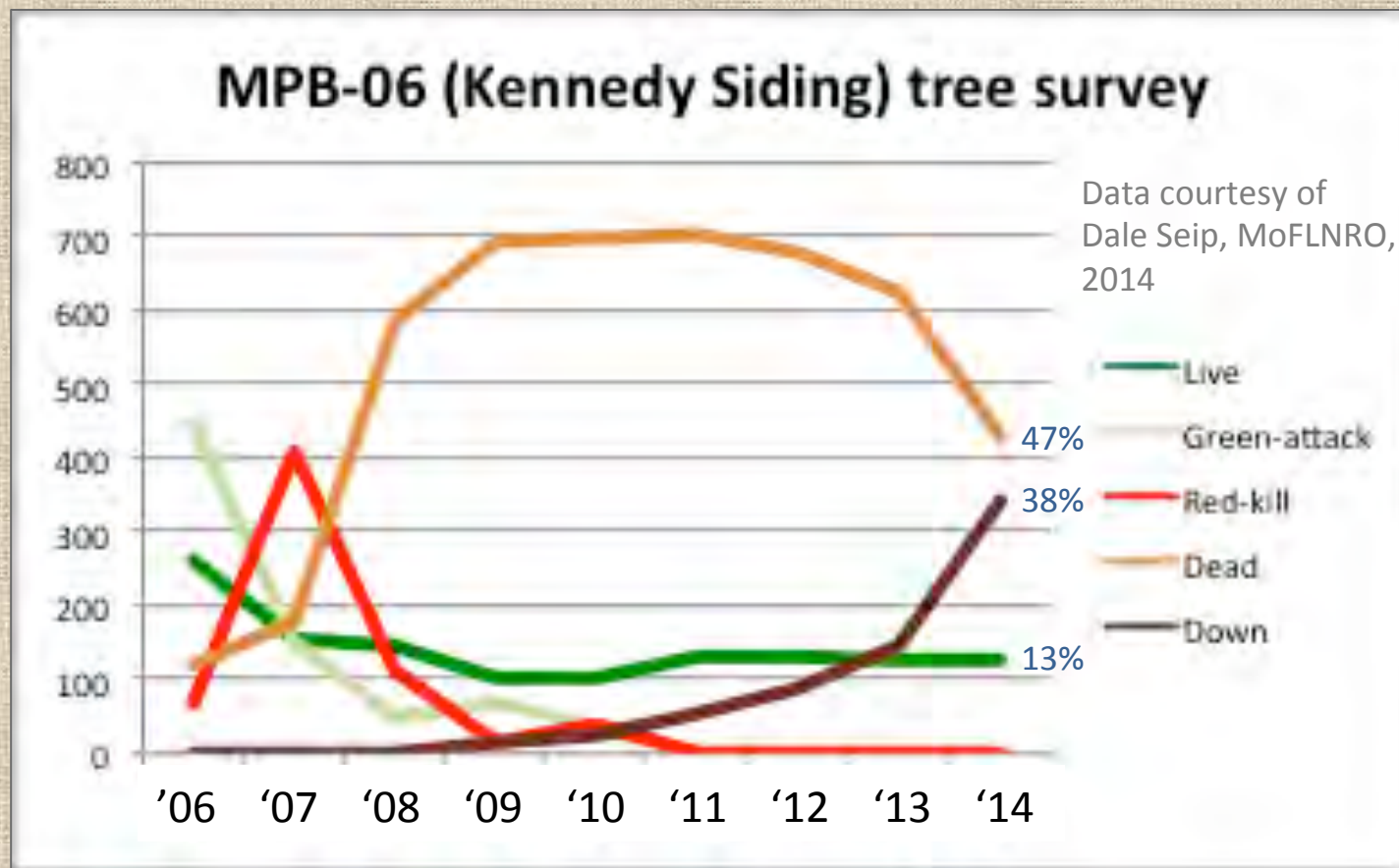
5 April 2017

A.L. Fredeen, NRESi, UNBC

19

2. Current forest C-research projects

ii. How long does it take for MPB-attacked pine trees to fall and decompose?



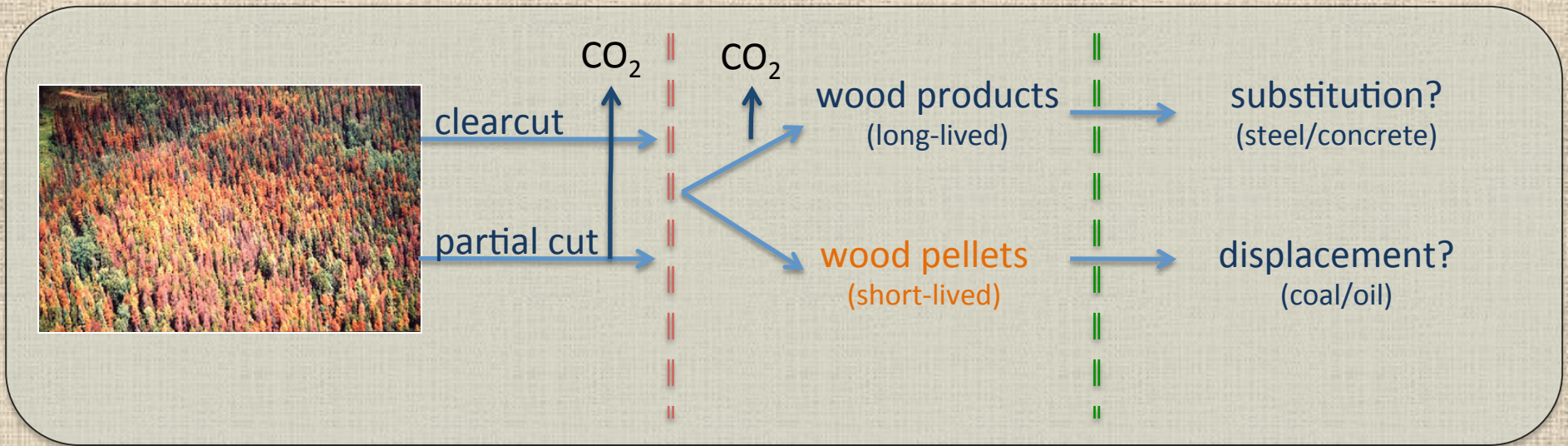
2. Current forest C-research projects

iii. Can forest products contribute to GHG emissions reductions for BC?

Wyatt Klopp



iii. Can MPB forest products contribute to GHG emissions reductions for BC?



Klopp, W. and A.L. Fredeen. 2014. Harvesting the dead and decaying forests: Potential carbon storage in harvested wood products. *The Forestry Chronicle*. 90(5): 614-619.

2. Current forest C-research projects

iv. Carbon economies of forest understory plants after MPB: Autotrophs, Mixotrophs & Myco-heterotrophs.



NSERC
CRSNG

2. Current forest C-research projects

v. Do epiphytic N_2 -fixing lichens enhance growth of sub-boreal spruce and fir forests?

Ania (Kobylinski) Javorski



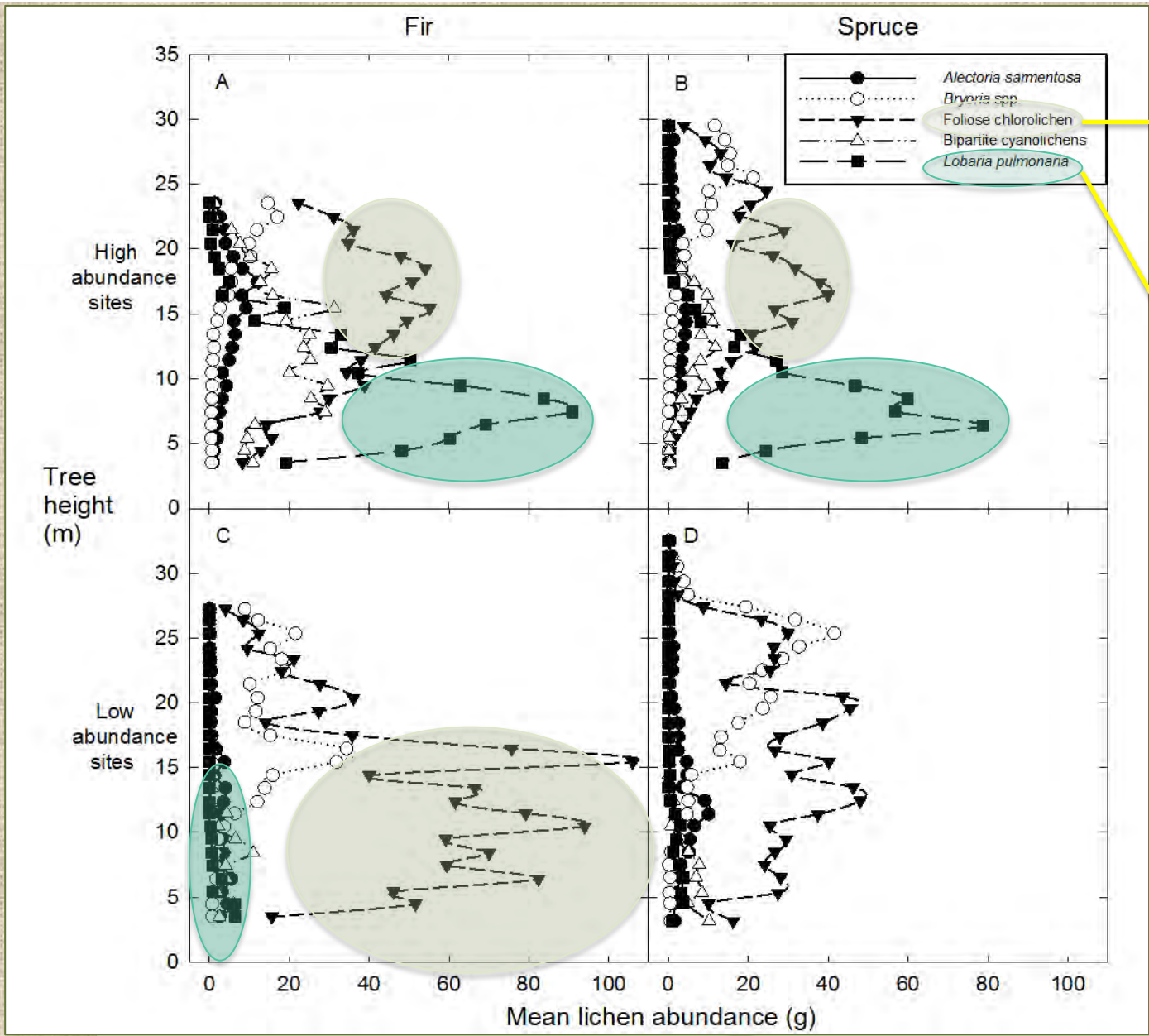
5 April 2017



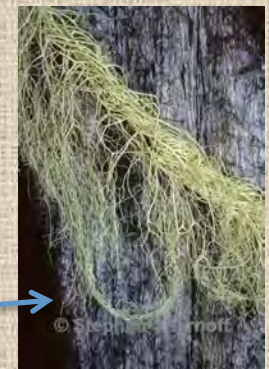
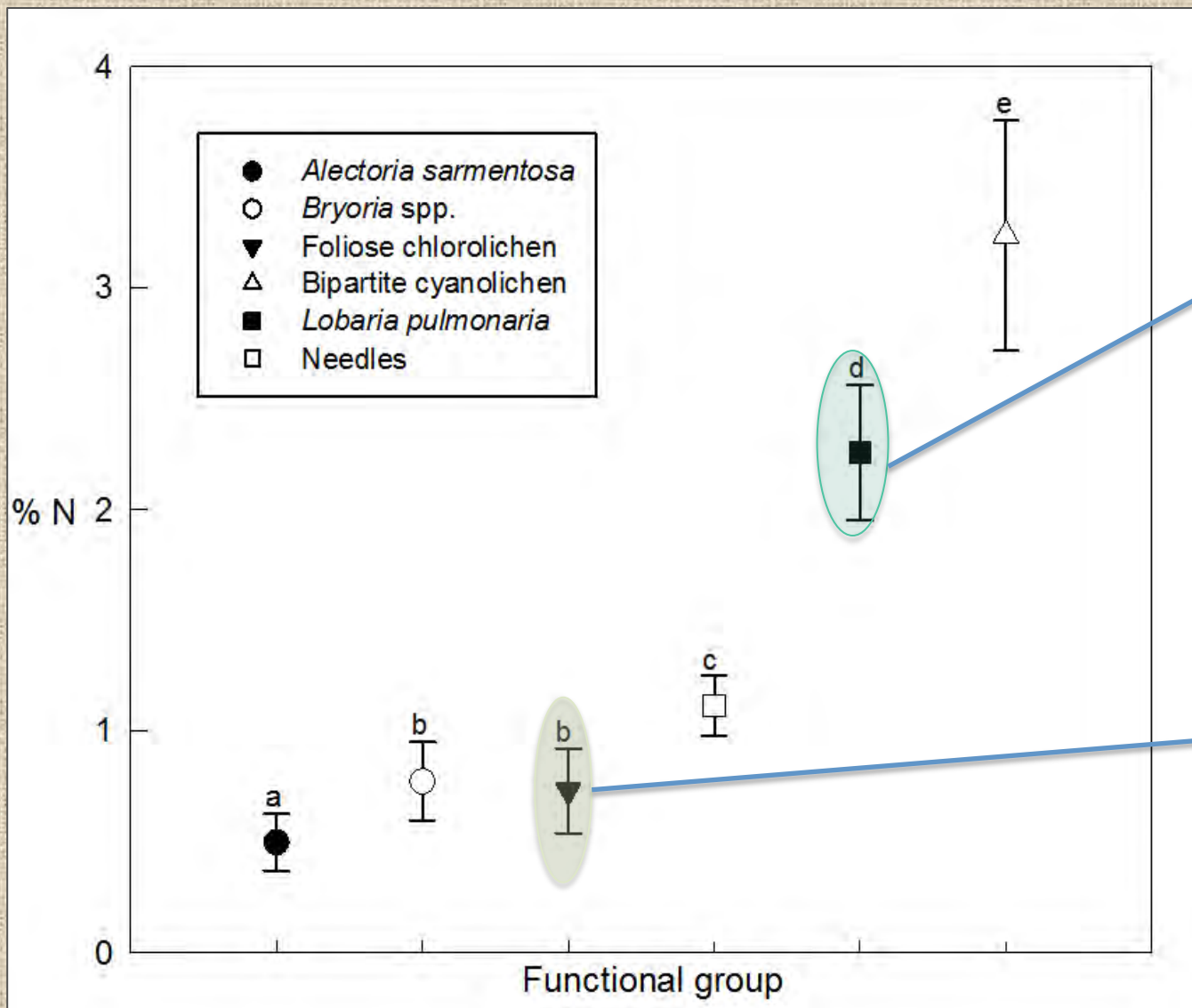
A.L. Fredeen, NRESi, UNBC



24

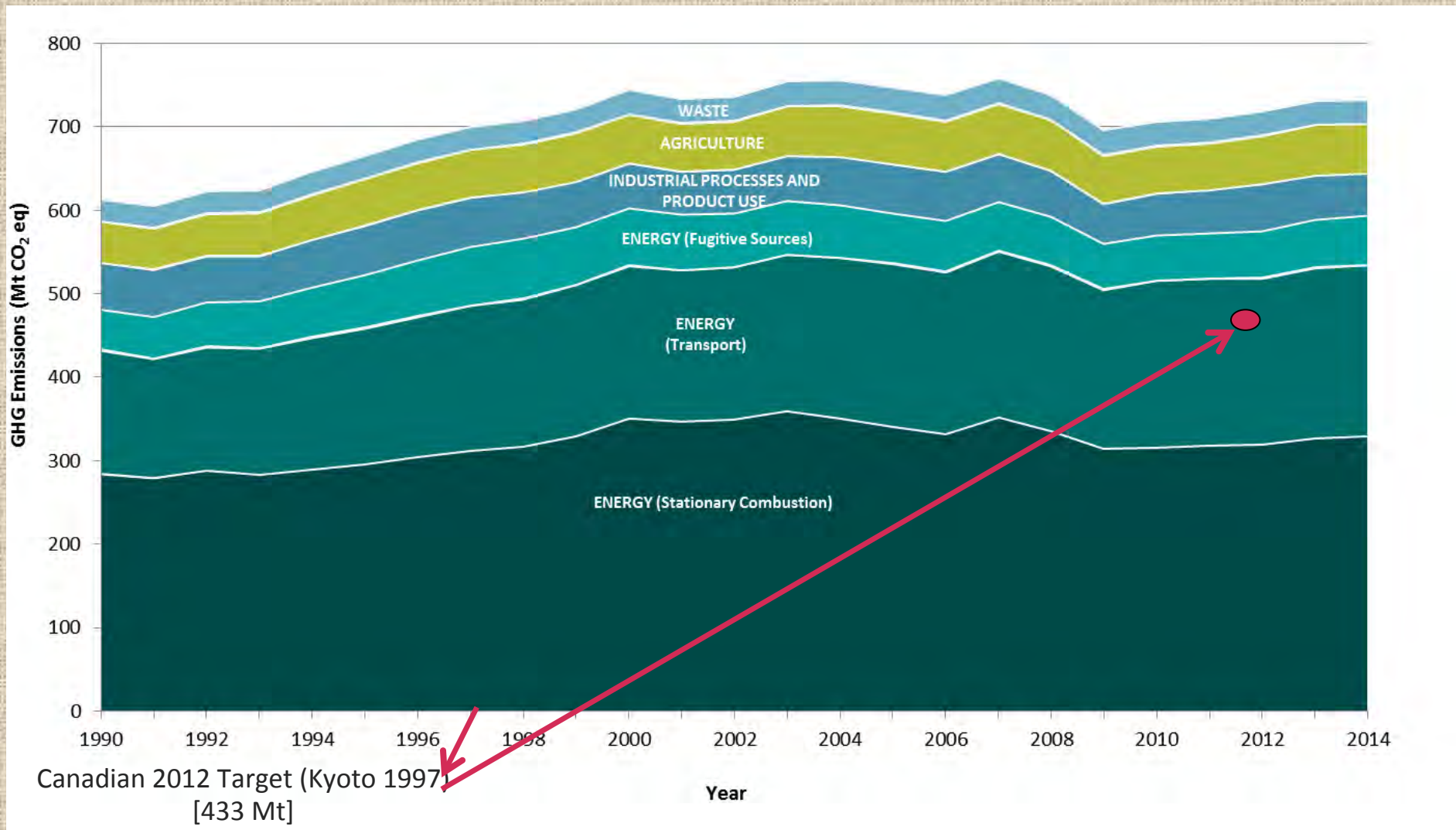


Kobylnski, A., AL Fredeen 2014. Vertical distribution and nitrogen content of epiphytic macrolichen functional groups in sub-boreal forests of central British Columbia. Forest Ecology and Management 329:118-128.



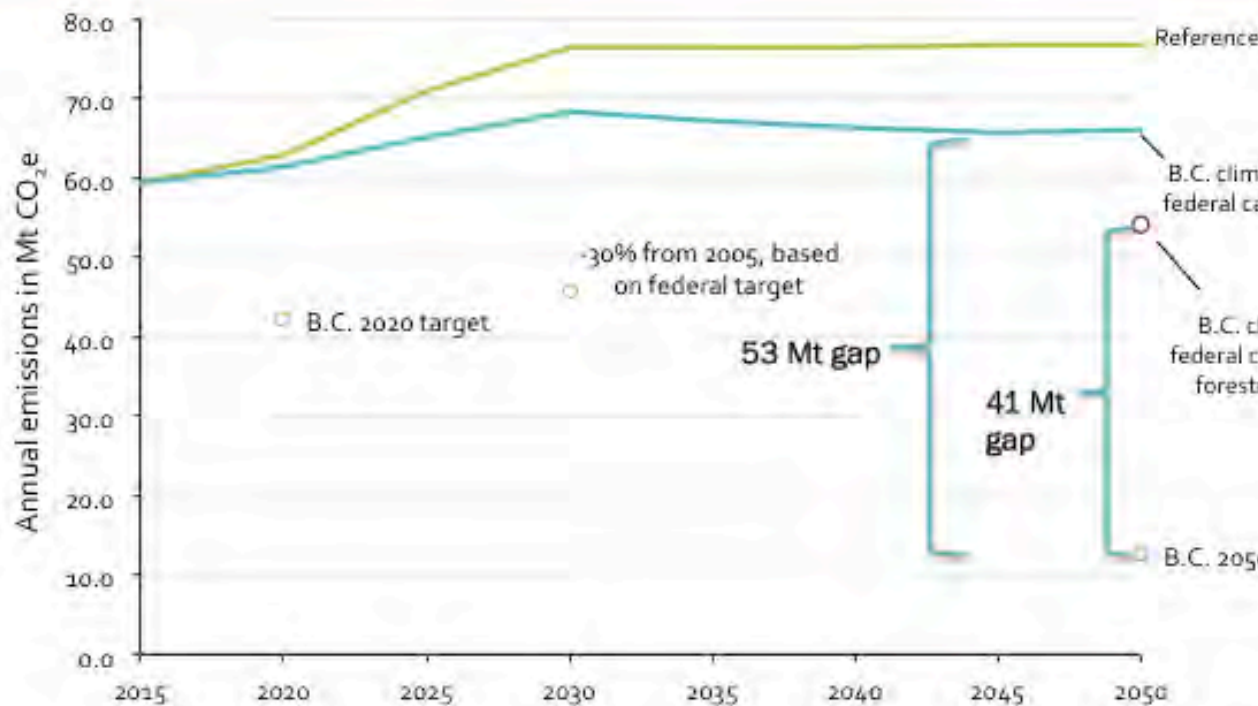
Kobylinski, A., AL Fredeen 2014. Vertical distribution and nitrogen content of epiphytic macrolichen functional groups in sub-boreal forests of central British Columbia. *Forest Ecology and Management* 329:118-128.

Canada's Kyoto response



British Columbia ...

B.C.'s carbon pollution forecast



B.C.'s climate plan fails to limit emissions.

Under the plan, Pacific NorthWest LNG could result in:

258
Extra shale gas wells drilled/year

9.2
million tonnes (Mt) of
carbon pollution per year

5.1 million m³
freshwater use per year

This is equivalent to:

1.9 million cars
on the road

annual residential
freshwater use of
56,000 Canadians

Concluding thoughts

- Global warming potential of boreal forests is more related to reflectivity (white-ness) of landscape than to forest C.
- Thus, many values of the boreal forest (e.g. biodiversity) likely more important than 'forest C'.
- Already significant climate change and warming - Need to facilitate/maintain resilience and diversity in our forests (genetic, species, ecosystem, structure...). *Old growth is a non-renewable resource.*
- Forest products have potential to store C (e.g. long-lived wood products).
- Our forests may or may not maintain C in the future (many unknowns about our future forests). Hence, our forests should not be repurposed to clean up our fossil fuel emissions. They do not have the capacity and may not restrict global warming in doing so.

thankyou!



Questions, Comments



Mackenzie Public Advisory Group:
Soil Disturbance Field Tour

The conservation of soil function is critical for sustainable forest management. In our FSP, to limit soil disturbance we follow standards described within the Forest Planning and Practices Regulation. These standards aim to ensure conservation of site productivity and to minimize impacts to other resource values. For instance, we ensure that permanent access structures do not exceed 7 % of the total area under prescription, unless engineering and safety constraints warrant otherwise. Soil disturbances of a very high sensitivity rating do not occupy more than 5 % of the net area to be reforested (NAR), and those of a high to low sensitivity do not occupy more than 10 %. In addition, soil disturbance at roadside work areas, which can express the highest levels of soil disturbance found within the NAR, are regulated to not exceed 25 %.

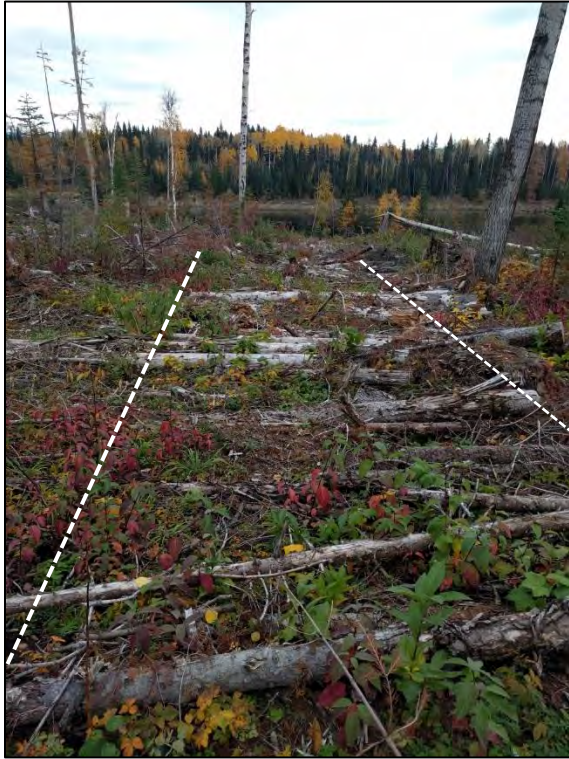
Soil disturbance includes; soil erosion, soil displacement and soil compaction caused by both temporary and permanent constructions.

Types of Structures/Disturbances:

Spur Roads



Corduroyed Trails



Wheel and Rut Tracks



Skid Trails



Gouges



Landings



Soil erosion is the removal of soil materials by wind and water exposing mineral soil. Forest operations accelerate the process of erosion by creating exposed surfaces such as cut banks and removing features that stabilize soils such as tree root systems. Site factors that determine erosion hazards are; **climate** (precipitation), **topography** (slope gradient and length), and **soil properties** (texture, structure, coarse fragments, permeability)

Soil displacement is the exposure of underlying mineral material and burial of surface soils caused by the mechanical movement of soil by equipment. This activity can lead to the exposure of unfavorable soils, cause soil nutrient losses and alter slope hydrology. Site factors that determine displacement hazards are; **slope gradient**, **soil depth**, and **soil chemistry**.

Soil is considered compacted if (a) it exhibits a coarse platy structure (b) there is a loss of normal structure evident when compared to undisturbed soil (b) a noticeable change in density is present. Compacted soils often exhibit puddling of water, and forest debris partially embedded into mineral soil. Site factors that determine compaction hazards are; **soil texture**, **coarse fragments**, **moisture**, and **organic content**.

Soil Productivity

To maintain soil productivity during logging activities we want to limit adverse alterations to nutrient and hydrological regimes. A large part of the nutrient cycle occurs within the topsoil, which is comprised of litterfall and top 20-25 cm of mineral soil. Following harvesting, topsoils are displaced by heavy machinery leaving them susceptible to leaching of key limiting nutrients such as nitrogen, potassium and phosphorous. Several practices

can be implemented to reestablish productive soils, focusing on topsoil formation, such as; conserving and redistributing topsoil following activities and the use of soil amendments.

Often times, soil productivity is limited by changes in the physical properties of soils. Soil compaction caused by repeated equipment pressure and trampling of wet soils, especially those with a clayey texture, severely reduces productivity. Maintaining soil porosity is essential for draining excess water, warming soils, and providing oxygen for respiration. To decompact soils, tillage can be used, which loosens soils into more porous aggregates and encourages increased rooting depth.

Maintaining Soil Productivity by Mitigating/Rehabilitating Soil Disturbance

Timber harvesting and silviculture activities are held to soil conservation standards in site plans, which prescribe site specific strategies to allow activities while remaining within soil disturbance limits. Prior to harvest, during the layout phase, field information concerning slope, soil texture, type and moisture regime is collected to assess compaction, erosion and displacement hazards. This information is used to implement mitigating strategies such as;

- Seasonally timing forest operations
- Road layout on soils less susceptible to disturbance

During harvesting operations the following practices are implemented to limit soil disturbance;

- In-block processing
- Use of corduroyed trails
- Soil disturbance surveys

Following harvesting operations disturbed soils can be rehabilitated through;

- The removal or distribution of woody materials
- Decompacting soils and returning displaced soils
- Re-vegetation of exposed mineral soils (roads etc.)
- Recountouring of slopes
- Installation of siltation fences

Indicators within the SFMP Addressing Soil Quality and Quantity

2.2.1b Permanent Access Structures

3.1.1a Sedimentation

3.1.1c Road Re-vegetation

3.1.1d Road Environmental Risk Assessments

3.1.1e Soil Conservation

3.1.1f Terrain Management

3.1.2 Coarse Woody Debris

Marsh Wetland Class (Wm)

A marsh is a shallowly flooded mineral wetland dominated by emergent grass-like vegetation. A fluctuating watertable is typical in marshes, with early-season high watertables dropping through the growing season. Exposure of the substrate in late season or during dry years is common. The substrate is usually mineral, but may have a well-decomposed organic veneer derived primarily from marsh emergents. Nutrient availability is high (eutrophic to hyper-eutrophic) due to circum-neutral pH, water movement, and aeration of the substrate.

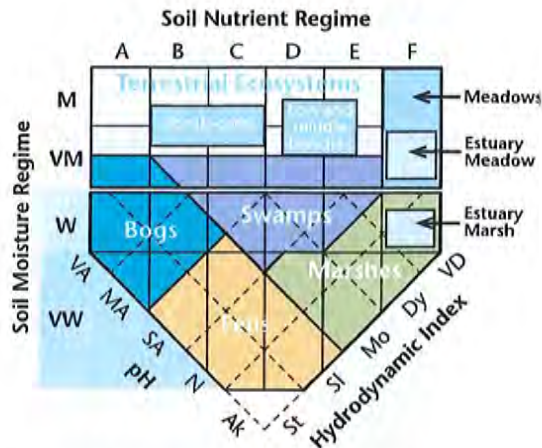


FIGURE 4.2 Site Class distribution on the modified edatopic grid. Shallow-water wetlands do not fit this conceptual model and are not indicated. The wetland edatopic grid is described in detail in Chapter 5.0.

Swamp Wetland Class (Ws)

A swamp is a forested, treed, or tall-shrub, mineral wetland dominated by trees and broadleaf shrubs on sites with a flowing or fluctuating, semipermanent, near-surface watertable. Tall-shrub swamps are dense thickets, while forested swamps have large trees occurring on elevated microsites and lower cover of tall deciduous shrubs. Both types of swamps have abundant available nutrients from groundwater and often have surface standing water. Swamps may be underlain with peat but this is well decomposed, woody, and dark.

Shallow-water (Aquatic) Wetland Class (Wa)

Aquatic wetlands are shallow waters dominated by rooted, submerged and floating aquatic plants. These communities are always associated with permanent still or slow-moving waterbodies such as shallow potholes or deeper ponds and lakes. Shallow-water sites are usually permanently flooded; rarely they may become exposed during extreme drought years. Shallow-water communities most commonly occur where standing water is less than 2 m deep in midsummer. Aquatic plants may root in mineral soils or in well-humified sedimentary peat.

Saline meadow Transition Class (Gs)

Saline meadows are grass-, rush-, or halophyte-dominated sites that occur on periodically saturated and occasionally inundated sites, where

Estuarine meadow Class (Ed)

Estuarine meadows occur in the high intertidal and supratidal zones of estuaries, where tidal flooding occurs less frequently than daily and is tempered by freshwater mixing. Species composition is relatively diverse, typically with a mix of graminoids and forbs.



Polygonum amphibium, water smartweed

**Estuarine System:**

Sites at the confluence of fluvial and marine environments affected by tides

**Fluvial System:**

Sites associated with flowing water and subject to flooding, erosion, and sedimentation

**Lacustrine System:**

Sites at lakeside, directly affected by lake hydrological processes (e.g., wave action, flooding, and sedimentation)

**Palustrine System, Basins and Hollows:**

Sites in depressions and other topographic low points with the watertable near or at the surface; receive water mainly from groundwater and precipitation

**Palustrine System, Ponds and Potholes:**

Sites associated with small waterbodies

**Palustrine System, Seepage slopes:**

Sloping sites with near-surface groundwater seepage

Climate change has already increased the scale and intensity of drying in wetlands in northern environments (Klein, Berg & Dial 2005) and it is contributing to a greater range of hydrodynamic variability in the province of BC (Déry et al. 2012; Kang et al. 2016). This issue has put temporary wetlands high on the conservation priority list (Calhoun et al. 2017).

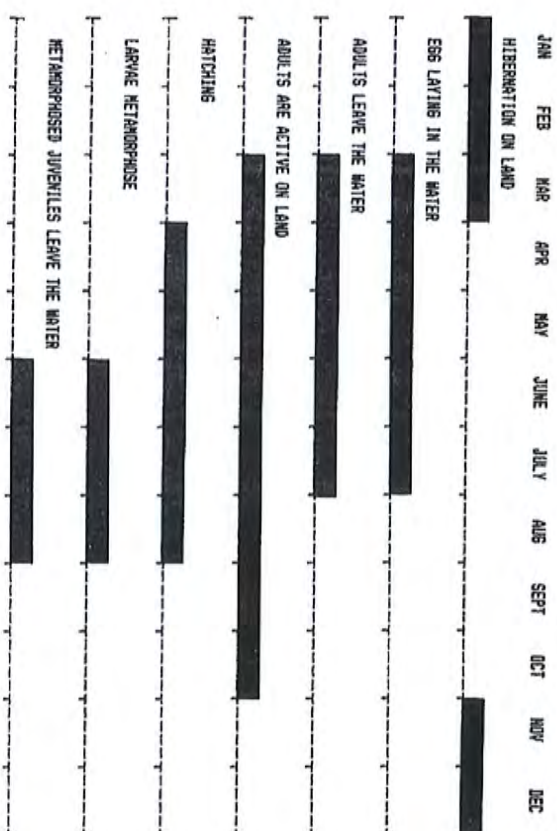
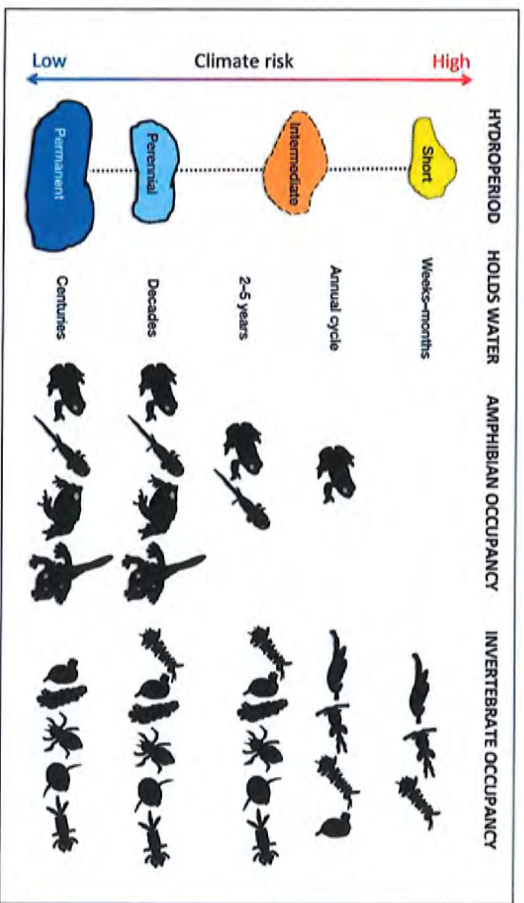
Calhoun, A.J.K., Mushet, D.M., Bell, K.P., Boix, D., Fitzsimons, J.A. & Isselin-Nondedeu, F. (2017). Temporary wetlands: Challenges and solutions to conserving a 'disappearing' ecosystem. *Biological Conservation*, 211, 3–11.

Déry, S.J., Hernández-Henríquez, M.A., Owens, P.N., Parkes, M.W. & Petticrew, E.L. (2012). A century of hydrological variability and trends in the Fraser River Basin. *Environmental Research Letters*, 7, 024019.

Klein, E., Berg, E.E. & Dial, R. (2005). Wetland drying and succession across the Kenai Peninsula Lowlands, south-central Alaska. *Canadian Journal of Forest Research*, 35, 1931–1941.



LONG-TOED SALAMANDER
Ambystoma macrodactylum



REVIEWS REVIEWS REVIEWS

Amphibians in the climate vise: loss and restoration of resilience of montane wetland ecosystems in the western US

Maureen E Ryan^{1,2*}, Wendy J Palen³, Michael J Adams¹, and Regina M Roehrborn⁴

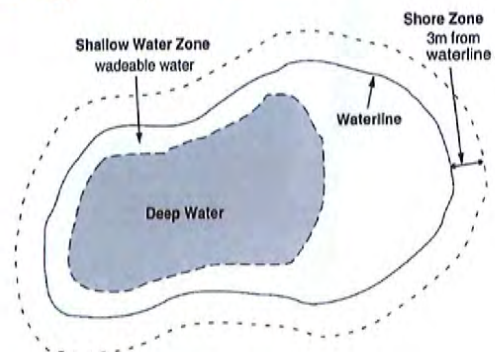
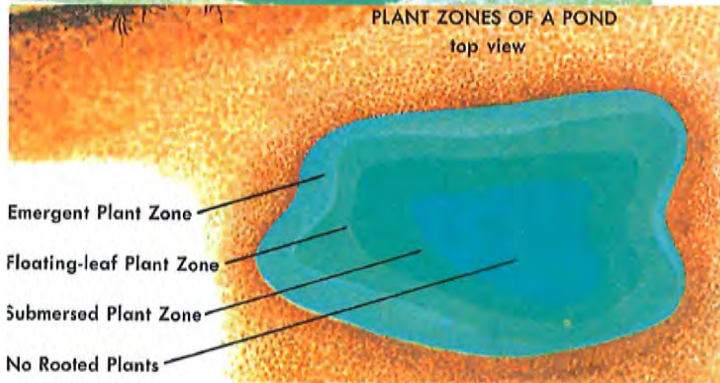
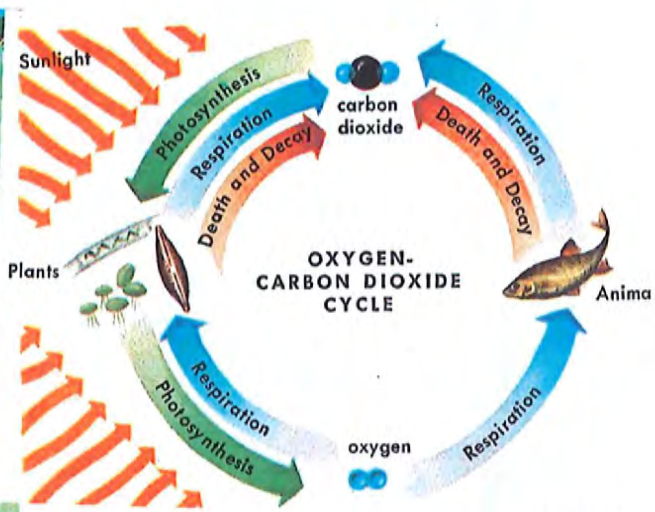
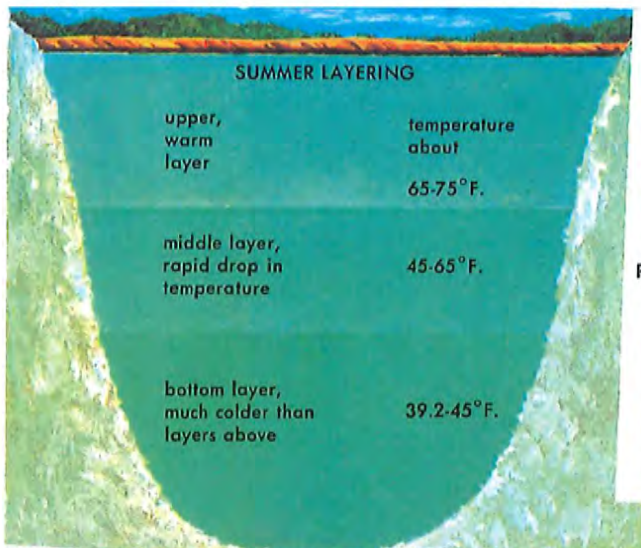


FIGURE 1. Survey zones for the Basic Survey.

Oxygen level in a pond builds up by day, drops at night. Carbon dioxide follows reverse cycle.

day night

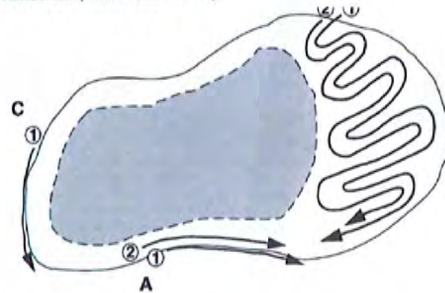
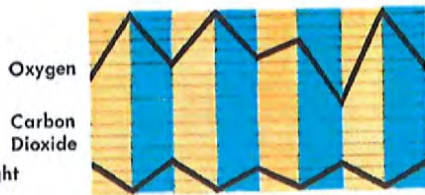


FIGURE 2. Basic Survey search patterns.

