

Mackenzie

Sustainable Forest Management Plan



Mackenzie SFMP



2008/09 Annual Report



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1.0 Introduction

This is the second Annual Report of the Mackenzie Sustainable Forest Management Plan. It covers the reporting period of April 1, 2008 to March 31, 2009. The Sustainable Forest Management Plan (SFMP) is a result of the combined efforts of Canfor and British Columbia Timber Sales (BCTS) to achieve and maintain Canadian Standards Association (CSA) certification to the CSA Z809-02 standard. The signatories to the plan are:

1. BC Timber Sales, Mackenzie Business Area – Mackenzie Operations
2. Canadian Forest Products Ltd., Mackenzie Operations

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 and BCTS have existing management systems that contribute to the overall SFM strategy. These may include existing management systems such as ISO 14001 Environmental Management Systems, standard operating 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. Canfor and BCTS established a PAG to assist with the development of the SFMP. 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.

This Annual Report measures the signatory's performance in meeting the measure targets outlined in the SFMP over the Mackenzie Defined Forest Area (DFA). The DFA is the Crown Forest land base within the Mackenzie Forest District and the traditional operating areas of Canfor and BCTS, excluding woodlots, 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 measures, 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
CSA – Canadian Standards Association
CWD – Coarse Woody Debris
DFA – Defined Forest Area
ESSF – Engelman Spruce Sub-alpine Fir
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
 Non-Harvestable Land Base
 OGMA – Old Growth Management Area
 PAG – Public Advisory Group
 PFI – Peak Flow Index
 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 **107** measures listed in Table 1, **93** measures were met within the prescribed variances, **1** measure is pending, and **13** measures were not met within the prescribed variances. A corrective and preventative action plan is contained in the measure discussions for each non-conformance measure.

Table 1: Summary of measure Status, April 1, 2008 to March 31, 2009.

No	Indicator Reference	Measure Number	Measure Description	Target Met	Pending	Target Not Met
1.	1-1	1-1.1	Old forest	X		
2.	1-1	1-1.2	Interior forest	X		
3.	1-1	1-1.3	Biodiversity Reserves	X		
4.	1-1	1-1.4	Biodiversity reserve effectiveness	X		
5.	1-1	1-1.5	Productive forest representation	X		
6.	1-2	1-2.1	Patch size	X		
7.	1-2	1-2.2	Coarse Woody Debris Levels	X		
8.	1-2	1-2.3	Wildlife tree patch requirements	X		
9.	1-2	1-2.4	Riparian Management area effectiveness	X		
10.	1-2	1-2.6	Caribou ungulate winter range effectiveness	X		
11.	1-2	1-2.7	Sedimentation	X		
12.	1-2	1-2.8	Stream crossings	X		
13.	1-2	1-2.9	Peak flow index	X		
14.	1-2	1-2.10	Road re-vegetation			X
15.	1-2	1-2.12	Road environmental risk assessments	X		
16.	1-3	1-3.1	Caribou ungulate winter range	X		
17.	1-3	1-3.2	Species at risk identification	X		
18.	1-3	1-3.3	Species at risk management			X
19.	1-3	1-3.4	LRMP wildlife management			X
20.	1-3	1-3.5	Species at risk management effectiveness	X		
21.	1-3	1-3.6	LRMP wildlife management effectiveness	X		
22.	1-3	1-3.7	Mugaha Marsh Report	X		
23.	1-4	1-4.1	Biodiversity reserves	X		
24.	1-4	1-4.2	Biodiversity reserves effectiveness	X		
25.	1-4	1-4.3	Sites of biological significance identification	X		
26.	1-4	1-4.4	Sites of biological significance management	X		
27.	1-4	1-4.5	Sites of biological significance effectiveness	X		
28.	2-1	2-1.1	Coarse woody debris	X		
29.	2-1	2-1.2	Soil conservation effectiveness			X
30.	2-1	2-1.3	Terrain management effectiveness	X		

No	Indicator Reference	Measure Number	Measure Description	Target Met	Pending	Target Not Met
31.	2-1	2-1.4	Reportable spills	X		
32.	2-1	2-1.5	Site Index			X
33.	2-2	2-2.1	Site conversion	X		
34.	2-2	2-2.2	Permanent access structures	X		
35.	2-2	2-2.3	Access management communication	X		
36.	2-3	2-3.1	Regeneration delay	X		
37.	2-3	2-3.2	Free growing	X		
38.	2-3	2-3.3	Stocking and species composition	X		
39.	2-4	2-4.1	Terrain management effectiveness	X		
40.	2-5	2-5.1	Accidental fires	X		
41.	2-5	2-5.2	Risk factor management			X
42.	3-1	3-1.1	Site conversion	X		
43.	3-1	3-1.2	Coarse woody debris	X		
44.	3-1	3-1.3	Regeneration delay	X		
45.	3-1	3-1.4	Free growing	X		
46.	3-1	3-1.5	Stocking and species composition	X		
47.	3-1	3-1.6	Soil conservation effectiveness			X
48.	3-2	3-2.1	Site conversion	X		
49.	3-2	3-2.2	Stocking and species composition	X		
50.	3-2	3-2.3	Regeneration delay	X		
51.	3-2	3-2.4	Free growing	X		
52.	4-1	4-1.1	Harvest volumes		X	
53.	4-1	4-1.2	Waste and Residue	X		
54.	4-2	4-2.1	Wood purchases	X		
55.	4-2	4-2.2	First-order wood products	X		
56.	4-2	4-2.3	Local investment	X		
57.	4-2	4-2.4	Support of public initiatives	X		
58.	4-2	4-2.5	Support of environmental projects	X		
59.	4-3	4-3.1	Taxes	X		
60.	4-3	4-3.2	Stumpage	X		
61.	4-4	4-4.1	Support of First Nations	X		
62.	4-4	4-4.2	Contract opportunities to First Nations	X		
63.	4-4	4-4.3	Value of transactions with First Nations	X		
64.	4-5	4-5.1	Competitive sale of timber	X		
65.	4-5	4-5.2	Primary milling facilities			X
66.	4-6	4-6.1	Risk factor management			X
67.	4-6	4-6.2	Forest stand damaging agents	X		
68.	4-6	4-6.3	Accidental fires	X		
69.	5-1	5-1.1	Non-timber benefits	X		
70.	5-1	5-1.2	SFM implication on non-timber values	X		
71.	5-1	5-1.3	Range management effectiveness	X		
72.	6-1	6-1.1	Employment	X		
73.	6-1	6-1.2	Income	X		
74.	6-1	6-1.3	Business opportunities	X		
75.	6-1	6-1.4	First order wood products	X		
76.	6-1	6-1.5	Support opportunities	X		
77.	7-1	7-1.1	List of affected parties	X		
78.	7-1	7-1.2	SFMP review (PAG)	X		
79.	7-1	7-1.3	Meetings (PAG)	X		
80.	7-1	7-1.4	Satisfaction (PAG)	X		
81.	7-1	7-1.5	TOR review (process)	X		
82.	7-1	7-1.6	Satisfaction (affected parties)	X		
83.	7-1	7-1.7	Representation (PAG)			X
84.	7-1	7-1.8	Communication (PAG)	X		
85.	7-1	7-1.9	SFMP consistency with LRMP	X		
86.	7-2	7-2.1	Concerns (affected parties)	X		
87.	7-2	7-2.3	Response to concerns	X		
88.	7-2	7-2.4	SFMP availability (affected parties)	X		
89.	7-2	7-2.5	SFMP training (affected parties)			X
90.	7-2	7-2.6	Communication strategy effectiveness	X		
91.	7-3	7-3.1	Adaptive management	X		
92.	7-3	7-3.2	Monitoring plan	X		

No	Indicator Reference	Measure Number	Measure Description	Target Met	Pending	Target Not Met
93.	7-3	7-3.3	Annual report	X		
94.	8-1	8-1.1	Heritage conservation	X		
95.	8-1	8-1.2	TOR review (First Nations Rights)	X		
96.	8-2	8-2.1	Participation (First Nations)	X		
97.	8-3	8-3.1	Concerns (First Nations)			X
98.	8-3	8-3.2	Participation effectiveness (First Nations)	X		
99.	8-4	8-4.1	Participation effectiveness (First Nations)	X		
100.	8-4	8-4.2	Implementation effectiveness (First Nations)	X		
101.	9-1	9-1.1	Recreation	X		
102.	9-2	9-2.1	Visual quality	X		
103.	9-2	9-2.2	Green-up buffers	X		
104.	9-3	9-3.1	Resource features	X		
105.	9-4	9-4.1	Safety policies	X		
106.	9-4	9-4.2	Accidents	X		
107.	9-5	9-5.1	Signage			X
			Totals	93	1	13

1.3 SFM Performance Reporting

This annual report will describe the success of Canfor and BCTS in meeting the measure 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 and BCTS have reported individual performance within their traditional operating areas as well as the performance which contributes to shared measures and targets across the plan area. Both Canfor and BCTS are 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, Measures, Targets and Variances

Indicator 1-1 | Measure 1-1.1 Old forest

Measure Statement	Target and Variance
Percent area of old and mature+old seral stage by landscape unit group and BEC variant for CFLB within the DFA.	Target: As per the Mackenzie TSA Biodiversity Order Variance: 0%

This measure was chosen to monitor the amount of mature and 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 regenerate in younger forests.

The targets for Mackenzie TSA biodiversity order are based on the targets in the provincial order in that a Biodiversity Emphasis Option (BEO) is assigned to LU groups. Instead of reporting the current percentages by each LU and BEC variant, the order combines smaller landscape units with larger ones and also combines certain BEC units for the practicality of providing a reasonable landbase area on which to achieve the targets.

Table 2: Old, Old/Mature, and Old Interior Forest Retention on the Mackenzie Defined Forest Area
(See appendix 1 for Table 2)

Source: April 2009 Analysis Results
Measure Discussion:

Indicator 1-1 | Measure 1-1.2 Interior Forest

Measure Statement	Target and Variance
Percent of interior old forest by landscape unit group and BEC variant for CFLB within the DFA.	Target: As per the Mackenzie TSA Biodiversity Order 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 measure is important because provision of habitat for old-forest dependent species (see measure 1-1.1) 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 measure is to have interior old forest conditions represented within all ecosystem types to further enhance ecosystem resilience.

Table 2: Old, Old/Mature, and Old Interior Forest Retention on the Mackenzie Defined Forest Area
(See appendix 1 for Table 2)

Source: April 2009 Analysis Results
Measure Discussion:

Indicator 1-1 | Measure 1-1.3 Biodiversity Reserves

Measure Statement	Target and Variance
The amount of established landscape biodiversity reserves within the DFA.	Target: > area set aside across the DFA Variance: - 0.5%

We classify two kinds of reserves based on their relative size and hence the spatial resolution at which they are most effective: 1) the stand level, including mapped wildlife tree patches and riparian reserve areas and 2) the landscape level, including provincial parks and all other large reserve areas that are removed from the timber

harvesting land base. This measure is used to evaluate the amount of productive forest reserved within the DFA.

Table 2: Biodiversity Reserves across the DFA

Landscape Level Biodiversity Reserves	Reserve Area (ha.)	DFA Area (ha.)	Percent of DFA
Bijoux Falls Park	35.3	2,117,199	0.69%
Blackwater Creek Ecological Reserve	292.0		
Muscovite Lakes Park	5,711.5		
Patsuk Creek Ecological Reserve	538.2		
Tudyah Lake Park	52.1		
Ungulate Winter Range	7,925		
Totals	14,554.1		

Source: GIS

Measure Discussion: There has been no change to the total areas set aside for biodiversity reserves since the Sustainable Forest Management Plan was written.

Indicator 1-1 | Measure 1-1.4 Biodiversity Reserve Effectiveness

Measure Statement	Target and Variance
Hectares of unauthorized forestry-related harvesting or road construction within protected areas or established old growth management areas (OGMA)	Target: 0 ha. Variance: 0 ha.

The area of landscape level biodiversity reserves in the DFA is described in the measure 1-1.3. Current practice is to adhere to all legislative requirements, including the respecting of protected areas. Using GIS and spatial databases, operational plans are planned and reviewed to ensure no forestry activities are planned within protected areas or OGMA's.

Table 3: Hectares of unauthorized harvest or road construction within the DFA

Signatory	Protected Area or Established Old Growth Management Area		Total in DFA
	Area of Harvest	Area of road Construction	
Canfor	0.0	0.0	0.0
BCTS	0.0	0.0	0.0
Total	0.0	0.0	0.0

Source: GIS

Indicator 1-1 | Measure 1-1.5 Productive Forest Representation

Measure Statement	Target and Variance
Percent productive forest by BEC variant represented within the Non-harvestable land base	Target: To be established following analysis (Sept 2007) Variance:

Canfor and BCTS will be working with the PAG in the 2009-10 fiscal year to identify reasonable targets for each BEC Variant. Proposed targets are detailed in table 4 below.

Table 4: Productive Forest Ecosystem by BEC

BEC Variant	DFA Area (ha)	THLB Area (ha)	THLB Percent of DFA (%)	NHLB Area (ha)	NHLB Percent of DFA (%)	Proposed Target (%)
AT	137,420	64	0.0%	553	0.4%	0.4%
BWBS dk1	129,526	76,054	58.7%	46,110	35.6%	35.6%
BWBS mw1	10,247	3,689	36.0%	5,953	58.1%	58.1%
BWBS wk2	21,097	12,442	59.0%	7,641	36.2%	36.2%
ESSF mv2	10,880	6,205	57.0%	3,873	35.6%	35.6%
ESSF mv3	314,568	200,277	63.7%	92,126	29.3%	29.3%
ESSF mv4	330,448	113,448	34.3%	152,437	46.1%	46.1%
ESSF mvp	92,940	2,489	2.7%	18,608	20.0%	20.0%
ESSF wc3	174,961	46,040	26.3%	68,444	39.1%	39.1%
ESSF wcp	58,320	1,359	2.3%	8,187	14.0%	14.0%

ESSF wk2	111,798	62,900	56.3%	39,488	35.3%	35.3%
SBS mk1	257,289	189,083	73.5%	41,785	16.2%	16.2%
SBS mk2	175,296	115,469	65.9%	37,831	21.6%	21.6%
SBS vk	6,720	4,798	71.4%	1,819	27.1%	27.1%
SBS wk1	8,872	6,766	76.3%	1,257	14.2%	14.2%
SBS wk2	226,617	154,520	68.2%	57,015	25.2%	25.2%
SBS mk	14,672	5,105	34.8%	7,201	49.1%	49.1%

Source: GIS

Measure Discussion:

Indicator 1-2 | Measure 1-2.1 Patch Size

Measure Statement	Target and Variance
Percent area by patch size class by landscape unit group and Natural Disturbance Types.	Target: Trend towards targets in LRMP Variance: N/A

Harvesting activities serve to mimic natural disturbance events characteristic within the Mackenzie DFA. Past social constraints associated with harvesting and resulting patch size have lead 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 measure will monitor the consistency of harvesting patterns compared to the landscape unit group and the natural patterns of the landscape.

The data in tables 6, 7, and 8 within Appendix 1 represent both the current status of the measure as of March 31, 2009, and the future status of the measure factoring all planned blocks.

Table 6, 7, and 8: Patch size Distribution on the Mackenzie Defined Forest Area

(See appendix 1 for Table 6, 7, and 8)

Indicator 1-2 | Measure 1-2.2 Coarse Woody Debris Levels

Measure Statement	Target and Variance
The percent of cutblocks that exceed coarse woody debris requirements.	Target: 100% Variance: 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 measure following harvesting to quantify CWD retained in blocks, wildlife tree patches, riparian areas, and in areas of unsalvaged 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.

Table 5: Cut Blocks Exceeding Course Woody Debris Requirements

Signatory	Total Number of Blocks Harvested	Number of Cutblocks Harvested exceeding CWD requirements	Overall %
Canfor	4	4	100.0%
BCTS	5	5	100.0%
TOTAL	9	9	100.0%

Source: GIS

Measure Discussion:**Indicator 1-2 | Measure 1-2.3 Wildlife Tree Patch Requirements**

Measure 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 each signatory 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. 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.

Table 6: Percent of cutblocks exceeding WTP requirements

Signatory	Total Number of Cutblocks Harvested	Number of Cutblocks Harvested exceeding WTP requirements	Overall %
Canfor	0	0	100.0%
BCTS	5	5	100.0%
TOTAL	5	5	100.0%

Source: Signatory Site Plans

Measure Discussion:**Indicator 1-2 | Measure 1-2.4 Riparian Management Area Effectiveness**

Measure 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. Appropriate buffers are then applied, considering other factors such as operability and windfirmness. Prescribed measures, if any, to protect the integrity of the RMA are then written into the Operational 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.

Table 7: Riparian Management Area Effectiveness

Signatory	Number of Forest Operations with Riparian Management Strategies identified in Operational Plans				Number of Forest Operations completed in accordance with identified strategies	%in DFA
	Roads	Harvest	Silviculture	Total		
Canfor	0	0	0	0	0	100%
BCTS	21	4	6	31	31	100%
TOTAL	21	4	6	31	31	100%

Source: Signatory Operational Plans

Measure Discussion:**Indicator 1-2 | Measure 1-2.6 Caribou Ungulate Winter Range Effectiveness**

Measure Statement	Target and Variance
The percentage of forest operations consistent with approved provincial Caribou Ungulate Winter Range requirements.	Target: 100% Variance: 0%

All cutblocks in approved ungulate winter ranges will be consistent with the management guidelines in the approved Order for Ungulate Winter Range #U-7-009. The order prescribes specific objectives to maintain mountain caribou winter range, to provide high suitability snow interception, cover, and foraging opportunities. Site plans prepared for these areas will reflect these objectives. This is a legal obligation of the signatories, modeling does not apply to this measure, although it is anticipated that caribou populations would be negatively impacted if targets are not achieved. Forecasting for this measure is that 100% of blocks will be consistent with approved provincial Caribou Ungulate Winter Range requirements.

Table 8: Forest Operations Consistent with Caribou Ungulate Winter Range requirements

Signatory	Number of Forest Operations with Caribou Ungulate Winter Range Strategies				Forest Operations Consistent with Identified Strategies	% in DFA
	Roads	Harvesting	Silviculture	Total		
Canfor	0	0	0	0	0	100.0
BCTS	25	5	6	36	36	100%
TOTAL	25	5	6	36	36	100%

Source: Signatory Operational Plans

Measure Discussion:

Indicator 1-2 | Measure 1-2.7 Sedimentation

Measure 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.

Table 9: Unnatural sediment occurrences and mitigating actions

Signatory	Number of identified unnatural sediment occurrences	Number of identified unnatural sediment occurrences with mitigating actions taken	% in DFA
Canfor	1	1	100%
BCTS	0	0	100%
TOTAL	1	1	100%

Source: Inspection monitoring reports

Canfor: A partially failed culvert was discovered in the fall of 2008. The crossing had stabilized by that time and was no longer depositing sediment to the stream. A plan was entered into Genus ITS to repair the crossing in summer 2009.

Indicator 1-2 | Measure 1-2.8 Stream Crossings

Measure 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 measure 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.

Table 10: Appropriately designed and installed stream crossings

Signatory	Number of Stream Crossings			Number of Stream Crossings			% Total
	Installed	Removed	Total	Appropriately designed and properly installed	Properly removed	Total	
Canfor	0	0	0	0	0	0	
BCTS	26	27	53	26	27	53	100%
TOTAL	26	27	53	26	27	53	100%

Source: Inspection monitoring reports

Indicator 1-2 | Measure 1-2.9 Peak Flow Index

Measure Statement	Target and Variance
Percent of watersheds containing approved or proposed development with Peak Flow Index calculations completed.	Target: 100% by September 2007

	<u>Variance:</u> + 7 months
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The signatories have determined that 100% of PFIs can be calculated by September, 2007 for watersheds where the signatories have approved or proposed development. Once the PFI calculations are complete, the results will be reported back to the PAG. Watersheds will then be evaluated to establish PFI targets. Once these targets are established, harvesting plans will have to consider the impact harvesting will have on the watershed in which it occurs. The goal is to maintain peak flows within the target PFI to avoid excessive amounts of peak flow runoff. Licensees are collaborating on the development of Peak Flow Indices on or before September of 2007.

Table 11: Peak Flow Index

Signatory	Number of watersheds with approved/proposed development in the DFA	Number of watersheds with Peak Flow Index calculations	Total % DFA
Both	99	99	100%
TOTAL	99	99	100%

Source: GIS analysis

Measure Discussion: Peak flow calculations are complete for all watersheds within the DFA, other than the large watersheds that span outside the DFA – for example, the Williston/Peace watershed.

Indicator 1-2 | Measure 1-2.10 Road Re-vegetation

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

This measure 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 measure 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.

Table 12: Road re-vegetation within 12 months of disturbance

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	0	0	N/A
BCTS	44	1	2.3%
TOTAL	44	1	2.3%

Source:

Measure Discussion:

What Happened?

This measure has not been met due to the fact that there has been a decision to not use or enforce the grass seeding clause on TSL Licensees for their respective TSL Roads. BCTS has also been building most of their FSRs in the winter requiring more than 12 months building a road as additional work is usually required the following year.

BCTS Rationale Why (Root Cause)?

Within BCTS Mackenzie, there has not been an adequate amount of resources within the Field Team to get caught up on grass seeding projects for a number of years for both TSL roads and FSRs.

Action Plan

BCTS Mackenzie is in the process of seeding their backlog of roads. Pending a consistent level of resources, buy-in to consider having Licensees carry out grass seeding, as well as completing road construction repair work during the summer, Mackenzie could be caught up within 2 years and able to meet this measure.

See APN-TPG2008-ITS0029 for follow up action

Indicator 1-2 | Measure 1-2.12 Road Environmental Risk Assessment

Measure Statement	Target and Variance
Percentage of planned roads that have an environmental risk assessment completed.	<u>Target:</u> 100% <u>Variance:</u> <10%

Environmental risk assessments provide a measure 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 and is inputted into the signatories’ respective databases. The assessments provide the basis for future road inspection requirements and highlight areas of special concern that may require professional geotechnical or design work. All assessments are completed in accordance to documented procedures.

Table 13: Planned roads with environmental risk assessments completed

Signatory	Total Number of roads constructed	Number of constructed roads with environmental risk assessments completed	% in DFA
Canfor	0	0	100%
BCTS	46	46	100%
TOTAL	46	46	100%

Source: Genus

Measure Discussion:

Indicator 1-3 | Measure 1-3.1 Caribou Ungulate Winter Range

See Measure 1-2.6

Indicator 1-3 | Measure 1-3.2 Species at Risk Identification

Measure Statement	Target and Variance
Percentage of appropriate personnel trained to identify Species at Risk in the DFA.	Target: 100% Variance: <10%

Identification of those animal and bird species and plant communities that have been declared to be at risk by appropriate personnel 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 at Risk 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.

Table 14: Appropriate personnel trained in Species at Risk Identification

Signatory	Number of appropriate personnel	Number of appropriate personnel trained in Species at Risk Identification	Percent in DFA (%)
Canfor	3	3	100%
BCTS	14	14	100%
TOTAL	17	17	100%

Source: Signatory training records

Measure Discussion:

Indicator 1-3 | Measure 1-3.3 Species at Risk Management

Measure Statement	Target and Variance
Percent of Species at risk in the DFA that have management strategies developed by April 2007.	Target: 100% Variance: 0%

Development and implementation of management strategies for Species at Risk requires knowledge of how many forest dependant species inhabit a managed area. While the concept of biodiversity includes all organisms of a particular region, assessing forest dependant species at all trophic levels is neither feasible nor operationally practical. A review of Species at Risk flora and fauna in relation to the Mackenzie DFA should ideally consider all forest dependent species. For this indicator, the review of fauna will generally focus on vertebrates such as fish, mammals, birds, amphibians and reptiles currently identified as provincial red and blue listed species. Provincially Identified Wildlife, red and blue listed Plant communities, and Red listed plants will

also be reviewed for the DFA based on a summary listing from the BC Conservation Data Center. Licensees have been collaborating on the development of management strategies for species at risk in the DFA.

Table 15: Management Strategies for Species at Risk in the DFA

Signatory	Number of Species at Risk in the DFA	Number of Species at Risk with Management Strategies Developed by April 2007	% in DFA
Canfor	67	41	61%
BCTS	67	67	100%
TOTAL			

Source: BCTS SAR training manual – June 2008 version

Measure Discussion: Canfor: Due to the date constraint in the measure description, the Canfor result will not change from previous reports. Canfor moving forward will be consolidating and coordinating the entire Wildlife Management program into one indicator / measure consisting of training, identification, management strategies and implementation. A measure focussing on the result rather than the process will be more meaningful. Canfor Operations across the Western Canada are moving down the path of a Biodiversity Centric - Species Accounting system. This Species Accounting System will take a plentitude of existing wildlife data and provide for grouping species according to habitat and management requirements. Application of the species accounting system, particularly when applied with coarse filter analysis would indicate what species merit special attention. It is much more important to gain an understanding of the forest dependant species that will be most impacted by forest activities vs. developing site specific strategies for each and every species across the landbase. This approach will lend itself well to the priorities we place on wildlife project funding, research and development. This project and direction is deemed to be an improvement to the current wildlife management regime as well as ensuring resource managers are focusing on the most impacted species first.

Indicator 1-3 | Measure 1-3.4 LRMP Wildlife Management

Measure Statement	Target and Variance
Percent of LRMP Resource Management Zone (RMZ) specific wildlife species with management strategies before April 2007.	Target: 100% Variance: 0%

The Mackenzie LRMP established strategic direction for the conservation of regionally significant wildlife species within each Resource Management Zone in the Mackenzie Timber Supply Area. In principle, these strategic directions are consistent with the maintenance of productive populations of selected species and therefore provide a measure of our trend toward biological richness. We assume that maintaining individual species contributes directly to biological diversity. Concurrently, through the use of this measure we also subscribe to the social balance of ecological, economic, and social values created through consensus at the Mackenzie LRMP. The Mackenzie LRMP prescribes objectives for 14 different species, either as general management directions applicable throughout the TSA, or as direction applicable only to specific RMZs. (See April 25, 2006 handout to PAG). The following species are listed in the LRMP as having specific management objectives; arctic grayling, bull trout, eagles, elk, lake trout, marten, moose, mountain goat, northern goshawk, osprey, peregrine falcon, rainbow trout, stone sheep, and trumpeter swan. Of these, bull trout, arctic grayling, eagles, osprey, peregrine falcon, northern goshawk, and marten are subject to general management direction.

Going forward, the signatories are collaborating on the development of management strategies for site of biological significance in the DFA by April of 2007.

Table 16: LRMP specific Wildlife Management Strategies

Signatory	Number of RMZ-Specific Wildlife Species	Number of RMZ-Specific Wildlife Species with Management Strategies Developed by April 2007	% in DFA
Canfor	14	3	21%
BCTS	14	11	78.6%
TOTAL			

Source: Signatory Operational Plans

Measure Discussion:

Canfor: See comments in Measure 1-3.3

BCTS: Of the 14 species identified in the LRMP, 11 have existing management strategies in place. Artic Grayling and Bull Trout are within our Species-At-Risk management strategies. Elk, Stone Sheep, and Mountain Goat are covered off within Ungulate Winter Range management strategies. Eagles, Northern Goshawks, Osprey, and Peregrine Falcon nests are all protected under the Wildlife Act and BCTS has appropriate management strategies in place for them. Management for Rainbow and Lake Trout are covered off by

strategies contained with BCTS's Forest Stewardship Plan. This leaves Marten, Moose, and Trumpeter Swan without management strategies. Canfor and BCTS will be examining the relevance of this measure with the PAG over the 2009-2010 reporting period. If the measure remains as is, then management strategies for the 3 remaining species will be developed by March 31, 2010.

Indicator 1-3 | Measure 1-3.5 Species at Risk Management Effectiveness

Measure Statement	Target and Variance
Percentage of forest operations consistent with Species at Risk in the DFA management strategies as identified in operational plans, tactical plans, and/or site plans.	Target: 100% Variance: <5%

The measure is intended to monitor the consistency between forest operations with approved provincial Species at Risk Notice/ Orders requirements as identified in operational plans. Being consistent with these requirements will ensure that the habitats that are required to support these Species at Risk will be maintained. Overall ecosystem productivity will be maintained by ensuring these species continue to play their roles in the healthy functioning of the DFA's forests. Notices and Orders are legal entities created through Government Regulations. As such, approved species at Risk Notice/ Orders requirements identified in operational plans must be adhered to.

Table 17: Forest Operations consistent with Management Strategies for Species at Risk in the DFA

Signatory	Number of Forest Operations with Species at Risk 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%
BCTS	2	0	0	2	2	100%
TOTAL	2	0	0	2	2	100%

Source: Signatory Operational Plans

Measure Discussion:

Indicator 1-3 | Measure 1-3.6 LRMP Wildlife Management Effectiveness

Measure Statement	Target and Variance
Percentage of forest operations consistent with LRMP Resource Management Zone (RMZ) specific wildlife species management strategies as identified in operational plans, tactical plans, and/or site plans.	Target: 100% Variance: <5%

Through use of this measure we extend that of 1-3.4 by addressing actual implementation of strategic direction identified within the Mackenzie LRMP for the conservation of specific wildlife species. In principle, these strategic directions are consistent with the maintenance of productive populations of selected species and therefore provide a measure of our trend toward biological richness. We assume that maintaining individual species contributes directly to biological diversity. Concurrently, through the use of this measure we also subscribe to the social balance of ecological, economic, and social values created through consensus at the Mackenzie LRMP.

Table 18: Forest Operations consistent with Management Strategies for LRMP specific wildlife in the DFA

Signatory	Number of Forest Operations with RMZ-Specific Wildlife 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%
BCTS	20	2	6	28	28	100%
TOTAL	20	2	6	28	28	100%

Source: Signatory Operational Plans

Indicator 1-3 | Measure 1-3.7 Mugaha Marsh Report

Indicator Statement	Target and Variance
Report out on the annual results from the Mugaha Marsh bird banding station.	Report out on

This measure was proposed by the PAG and accepted as a measure in part to recognize the important work that is being completed at the banding station and the data that is resulting from it. The bird-banding station at Mugaha Marsh has been a long-standing (since 1995) monitoring station collaboratively operated by the Mackenzie Nature Observatory and the Canadian Wildlife Service. Through operation of the station, trends in migratory birds can be assessed locally and contribute to a broader program at national and international levels. The data help provide a measure of species, and therefore, biological richness under the assumption that maintenance of individual species contributes directly to biological diversity. Banding at the station was completed for the year with a total of 3189 birds being banded comprised of 68 different species. A detailed breakdown of species captured, number captured, and the number of return captures for 2006 will be available following publication of the Mugaha Marsh banding station annual report.

Table 19: Mugaha Marsh Report

Standard Banding Totals				
Species	July	August	Sept	2008
Sharp-shinned Hawk		2		2
Sora			1	1
Yellow-bellied Sapsucker	2			2
Red-breasted Sapsucker	2	1		3
Hybrid Sapsucker	3	3		6
Downy Woodpecker	10	8		18
Yellow-shafted Flicker		1		1
Flicker Intergrade	2		1	3
Olive-sided Flycatcher		1		1
Western Wood-Pewee	13	3		16
Yellow-bellied Flycatcher		1	1	2
Alder Flycatcher	9	31	10	50
Least Flycatcher	59	32		91
Hammond's Flycatcher	9	23	3	35
Dusky Flycatcher	6	18	2	26
Ash-throated Flycatcher		1		1
Eastern Kingbird	1	2		3
Solitary Vireo	1			1
Cassin's Vireo	4			4
Blue-headed Vireo			2	2
Warbling Vireo	6	17	3	26
Red-eyed Vireo	1			1
Tree Swallow		1		1
Northern Rough-winged Swallow	1			1
Barn Swallow		1		1
Black-capped Chickadee	7	7	57	71
Mountain Chickadee			1	1
Hybrid Chickadee		2		2

Chestnut-backed Chickadee			4	4
Red-breasted Nuthatch	11	12	9	32
Brown Creeper		2	2	4
Winter Wren		1		1
Golden-crowned Kinglet	3	27	83	113
Ruby-crowned Kinglet	18	72	237	327
Swainson's Thrush	36	43	20	99
Hermit Thrush	1	7	17	25
American Robin	4	3	3	10
Varied Thrush		2	2	4
Cedar Waxwing	10	3		13
Tennessee Warbler		5	1	6
Orange-crowned Warbler	4	51	84	139
Yellow Warbler	37	119	10	166
Magnolia Warbler	15	65	12	92
Yellow-rumped Warbler	7	6	47	60
Audubon's Warbler	1	10	16	27
Myrtle Warbler	3	1	22	26
Townsend's Warbler		10	3	13
Western Palm Warbler			1	1
Bay-breasted Warbler		1		1
Blackpoll Warbler	4	14	2	20
American Redstart	72	252	23	347
Ovenbird	1	6		7
Northern Waterthrush	55	108	16	179
MacGillivray's Warbler	1	15	3	19
Common Yellowthroat	23	33	63	119
Wilson's Warbler	1	65	21	87
Western Tanager	8	1		9
Rose-breasted Grosbeak	1			1
American Tree Sparrow			1	1
Chipping Sparrow	7	4	2	13
Clay-colored Sparrow		1		1
Savannah Sparrow	1	5	8	14
Fox Sparrow		1	5	6
Song Sparrow	14	2	3	19
Lincoln's Sparrow	6	3	9	18
Swamp Sparrow	1	1	1	3
White-throated Sparrow	6	3	4	13
White-crowned Sparrow			1	1
Gambel's White-crowned Sparrow		5	12	17

Golden-crowned Sparrow			1	1
Dark-eyed Junco	7	3	8	18
Oregon Junco		4	12	16
Slate-colored Junco			2	2
Red-winged Blackbird	2			2
Rusty Blackbird	4	1	1	6
Brown-headed Cowbird	2	1		3
Pine Siskin	15	54	3	72
Totals	517	1177	855	2549

2008 Returns				
Species	July	Aug.	Sep	2008
Yellow-bellied Sapsucker	0		1	1
Hybrid Sapsucker	0	2		2
Downy Woodpecker	0	4		4
Hairy Woodpecker	1		1	2
Yellow-shafted Flicker	1			1
Western Wood-Pewee	2			2
Alder Flycatcher		1		1
Least Flycatcher	9	1		10
Dusky Flycatcher	0	2		2
Cassin's Vireo	1			1
Blue-headed Vireo			1	1
Warbling Vireo	5	1		6
Red-eyed Vireo	1			1
Black-capped Chickadee	2	11	19	32
Mountain Chickadee			1	1
Hybrid Chickadee		2	4	6
Red-breasted Nuthatch	1	3		4
Golden-crowned Kinglet		1	4	5
Ruby-crowned Kinglet	3	21	25	49
Swainson's Thrush	20	5		25
Hermit Thrush	0		1	1
American Robin	3		1	4
Cedar Waxwing	1	1		2
Orange-crowned Warbler	0	6	1	7
Yellow Warbler	30	58	2	90
Magnolia Warbler	0	6		6
Myrtle Warbler	1			1
Blackpoll Warbler	0	3		3

American Redstart	32	84	8	124
Northern Waterthrush	14	30	4	48
Common Yellowthroat	4	14	14	32
Wilson's Warbler	0		1	1
Western Tanager	1			1
Chipping Sparrow	3			3
Fox Sparrow	0	2		2
Song Sparrow	8	2	6	16
Swamp Sparrow		1		1
White-throated Sparrow	3		1	4
Dark-eyed Junco	1			1
Oregon Junco	0		1	1
Pine Siskin	0	2		2
totals	147	263	96	506

Source: Mugaha Marsh Annual Report

Indicator 1-4 | Measure 1-4.1 Biodiversity Reserves

See Measure 1-1.3

Indicator 1-4 | Measure 1-4.2 Biodiversity Reserves Effectiveness

See Measure 1-1.4

Indicator 1-4 | Measure 1-4.3 Sites of Biological Significance identification

Measure Statement	Target and Variance
Percentage of appropriate personnel trained to identify sites of biological significance in the DFA.	Target: 100% Variance: <10%

Sites of biological significance are sites that may support red and blue listed plant communities and rare ecosystems. Sites of biological significance also include protected areas which the Canadian Standards Association defines as "an area protected by legislation, regulation, or land-use policy to control the level of human occupancy or activities" (Canadian Standards Association, 2002). Protected areas can include national, provincial parks, multiple use management areas, and wildlife reserves. Sites of biological significance also include such features as bald eagle or osprey nest, mineral licks, species at risk habitats and other habitats designated by government. 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. The protection of all forest components is an integral aspect of Sustainable Forest Management, which recognizes the value of all organisms to the health of the forest ecosystem. Tracking the percent of personnel trained to identify sites of biological significance will allow licensees to ensure their knowledge is used appropriately to protect these sites in the DFA.

Table 20: Appropriate personnel trained in sites of biological significance Identification

Signatory	Number of appropriate personnel	Number of appropriate personnel trained in Sites of Biological Significance Identification	Percent in DFA (%)
Canfor	3	3	100%
BCTS	14	14	100%
TOTAL	17	17	100%

Source: Signatory training records

Measure Discussion:**Indicator 1-4 | Measure 1-4.4 Sites of Biological Significance Management**

Measure Statement	Target and Variance
Percent of sites of biological significance that have management strategies developed by April 2007.	Target: 100% Variance: 0%

In the Mackenzie DFA the application of landscape and stand level biodiversity management measures contribute to the maintenance of most biodiversity needs. These management approaches are "coarse filter", i.e., they represent general measures to conserve a variety of wildlife species. However, coarse filter guidelines may not be sufficient to ensure the conservation of sites of biological significance. Specific management strategies may be required to ensure that these sites are maintained within the DFA. This measure 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. This measure is not due until April of 2007. Going forward, the signatories are collaborating on the development of management strategies for site of biological significance in the DFA by April of 2007.

Table 21: Management Strategies for Sites of biological Significance in the DFA

Signatory	Number of sites of biological significance in the DFA	Number of Sites of biological significance with Management Strategies Developed by April 2007	% in DFA**
Canfor	9	9	100%-
BCTS	9	9	100%
TOTAL	9	9	100%

Source:**Measure Discussion:****Indicator 1-4 | Measure 1-4.5 Sites of Biological Significance Effectiveness**

Measure Statement	Target and Variance
Percentage of forest operations consistent with sites of biological significance management strategies as identified in operational plans, tactical plans, and/or site plans.	Target: 100% Variance: <5%

This measure evaluates the success of implementing specific management strategies for sites of biological significance as prescribed in operational, tactical and/or site plans. As discussed in previous measures, various sites of biological significance exist in the Mackenzie DFA and the signatories have set a target date of April 2007 to develop management strategies for these sites. Once these strategies are in place, 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.

Table 22: Forest Operations consistent with Management Strategies for sites of Biological Significance in the DFA

Signatory	Number of Forest Operations consistent 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%
BCTS	0	0	0	0	0	100%
TOTAL	0	0	0	0	0	100%

Source: Signatory Operational Plans

Indicator 2-1 | Measure 2-1.1 Coarse Woody Debris

See Measure 1-2.2

Indicator 2-1 | Measure 2-1.2 Soil Conservation Effectiveness

Measure 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 measures outlined in the site plans. Once an activity is complete the final EMS 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

Table 23: Forest Operations consistent with soil conservation standards in the DFA

Signatory	Number of Forest Operations				Forest Operations Completed in Accordance with Soil Conservation Standards	% in DFA
	Roads	Harvesting	Silviculture	Total		
Canfor	0	0	3	3	3	100%
BCTS	25	5	6	36	35	97.2%
TOTAL	25	5	9	39	38	97.4%

Source: Signatory Operational Plans

BCTS: Soil disturbance survey on TSL A77173 Block 6790. 2009 soil disturbance surveys showed that PAS on this block was over the prescribed percentage of 3.7% in the Site Plan by 1.1%, bringing the block into non-conformance with the Site Plan, but not in non-compliance with the Forest Planning and Practices Regulation default level of 7%. There is a discrepancy in the wording for this measure. Operational plans (FSP) and the Site Plan document are usually different. The FSP states that BCTS will not exceed the allowable amount of Permanent access structures detailed in regulation, whereas the Site Plan is more specific and usually states a percentage for access structures that is below the allowable amount in the FSP. Canfor and BCTS to take a look at the wording and propose more specific wording for this measure.

Indicator 2-1 | Measure 2-1.3 Terrain Management Effectiveness

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

Table 24: Forest Operations consistent with Terrain Management Requirements

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	0	0	0	0	100%
BCTS	1	0	0	1	1	100%
TOTAL	1	0	0	1	1	100%

Source: Signatory Operational Plans

Indicator 2-1 | Measure 2-1.4 Reportable Spills

Measure Statement	Target and Variance
The number of EMS reportable spills	Target: 0 Variance: < 5

All signatories currently have procedures in place for reducing and reporting spills. EMS checklists and monitoring procedures require the proper storage, handling, and labeling of controlled products. Such measures include proper storage tank construction, the use of shut off valves, availability of spill kits, and the construction of berms where required. EMS plans also include the measures to be taken in the event of a spill.

Table 25: The Number of EMS Reportable Spills

Signatory	Number of EMS Reportable Spills						
	Petroleum Products	Pesticides	Antifreeze	Battery Acid	Grease	Paints and Solvents	Total
Canfor	0	0	0	0	0	0	0
BCTS	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0

Source: Signatory Incident Tracking System

Measure Discussion:

Indicator 2-1 | Measure 2-1.5 Site Index

Measure Statement	Target and Variance
Variance between average pre-harvest and post harvest site index (at free growing) by inventory type group for cutblocks.	Target: >0 Variance: 0 %

Site index is an expression of the forest site quality of a stand, defined as the height of the dominant or codominant trees in a stand at a specified age. Site index equations are calculated for individual species using mensuration data. It is commonly used as an indicator of site productivity as it infers that trees or stands with greater growth at a given age have access to more key resources required for biomass production. The higher the site index for a given species in a given region, the higher the productivity or the quality of the site. Site index is sensitive to changes in ecological variables including soil nutrients, soil moisture, and others.

This measure provides a relative comparison of a post-harvest average site index (at free growing) compared to the pre-harvest site index (as represented by inventory estimates) in the THLB. Current condition for this measure is not known on a block-by-block basis as pre-harvest site index data is not readily available for blocks that are currently becoming free growing. The signatories are taking steps to remedy this and pre-harvest site index data now being tracked.

Table 26: Site Index Variance by Subzone and leading species

BEC Zone - Leading Species	Subzone	Inventory SI	Canfor - SI at Free Growing			BCTS - SI at Free Growing			Met (Y/N)
			# of SUs	Avg. Predicted SI	Variance %	# of SUs	Avg. Predicted SI	Variance %	
SBS-Pine	mk1	15.7	17	18.7	19%	3.0	17.0	8%	Y
	mk2	16.9	5	19.8	17%	1.0	21.0	24%	Y
	wk1	19.2			0%			0%	

	wk2	16.8			0%			0%	
SBS-Spruce	mk1	13.6			0%	2.0	15.5	14%	Y
	mk2	14.2	4	17.3	22%			0%	Y
	wk1	15.7			0%	1.0	18.0	15%	Y
	wk2	14.0	3	20.7	48%	8.0	20.5	16%	Y
BWBS-Pine	dk1	15.0	8	12.8	-15%	6.0	15.0	0%	N
BWBS-Spruce	dk1	12.3	6	15	22%	2.0	17.0	38%	Y
ESSF-Pine	mv3	14.1	3	15.7	11%			0%	Y
	mv4	13.9			0%			0%	
ESSF-Spruce	mv3	10.3	10	14.1	37%			0%	Y
	mv4	10.3			0%			0%	

Source: N/A

Measure Discussion:

Indicator 2-2 | Measure 2-2.1 Site conversion

Measure Statement	Target and Variance
Area of THLB converted to non-forest land used through forest management activities.	Target: <5% Variance: 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. In order to assess the maintenance of the productive capability of the land base, this measure 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 THLB 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. This data collection and analysis is essentially a GIS exercise that can be completed at 5 year intervals concurrently with the Timber Supply Review process.

Table 27: Area of THLB converted to Non-forest land

Signatory	Total THLB	Area Converted to Non-forest Land	Percent of THLB Area
Canfor	624,762	20,402	3.4%
BCTS	411,007	19,152	4.7%
TOTAL	1,035,770	39,554	3.8%

Source: GIS analysis

Indicator 2-2 | Measure 2-2.2 Permanent Access Structures

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

This indicator measures the amount of area developed as permanent access structures (PAS) within cutblocks, in relation to the area harvested during the same 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.

Table 28: Percent of permanent access structures in cutblocks within the DFA.

Signatory	Total Cutblock Area Harvested	Total Cutblock Area in Permanent Access Structures	Percent
Canfor	0	0	0
BCTS	699.0	18.9	2.7%
TOTAL	699.0	18.9	2.7%

Source:

Indicator 2-2 | Measure 2-2.3 Access Management Communication

Measure Statement	Target and Variance
Inclusion of access management in communication strategies with stakeholders.	Target: 100% Variance: 0%

Lack of coordinated plans for access to resources among multiple proponents seeking a range of resource development opportunities can lead to excessive and inefficient road networks. In turn, such road networks can lead to reduced forest productivity among other anthropogenic effects. Our assumption with this measure is simply that – by increasing communication about access plans among stakeholders, we can increase the efficiency of access to resources and thereby reduce any negative subsequent effects on forest productivity. Through use of this measure we expect to track our performance in this communication and hence our “due diligence” in indirectly maintaining forest productivity.

Table 29: Communication strategies with stakeholders regarding Access Management.

Signatory	Number of Communication Strategies with Stakeholders	Number of Communication Strategies That Include Access Management	Percent
Canfor	0	0	100.0%
BCTS	0	0	100.0%
TOTAL	0	0	100.0%

Source: Signatory communication records

Indicator 2-3 | Measure 2-3.1 Regeneration Delay

Measure Statement	Target and Variance
Percent of harvested cutblocks declared stocked prior to the regeneration date consistent with operational plans	Target: 100% 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 two years, where planting is prescribed and five years where the stand is expected to reforest naturally. 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. A regeneration survey is completed after planting to ensure adequate stocking of harvested blocks. The current status of this measure was derived from a review of signatories' records for the reporting period.

Table 30: Cutblock compliance to meeting the required regeneration delay date

Signatory	Area Required to Meet Regeneration Date During Period	Area Meeting Regeneration Date	% in DFA
Canfor	3926.2	3926.2	100.0%
BCTS	683.4	683.4	100.0%
TOTAL	4609.6	4609.6	100.0%

Source: Genus

Indicator 2-3 | Measure 2-3.2 Free Growing

Measure Statement	Target and Variance
Percent of harvested cutblocks declared free growing prior to the late free growing date consistent with operational 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 on 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 measure illustrates the percentage of harvested blocks that meet free growing obligations across the DFA.

Table 31: Cutblock compliance to meeting the required late free growing date

Signatory	Area Required to Meet Late Free Growing Date During Period	Area Meeting Late Free Growing Date	% in DFA
Canfor	1898.6	1898.6	100.0%
BCTS	575.6	575.6	100.0%
TOTAL	2474.2	2474.2	100.0%

Source: Genus

Indicator 2-3 | Measure 2-3.3 Stocking and Species Composition

Measure Statement	Target and Variance
Percent compliance with stocking levels and species composition requirements contained in operational plans.	Target: 100% Variance: <5%

Regeneration standards exist to ensure that appropriate species are reforested on harvested areas to within acceptable numbers. The Ministry of Forests sets out what species are preferred and acceptable for specific biogeoclimatic site series. Natural ingress of species that are not preferred or acceptable may occur. The stocking standard is linked to AAC calculations in terms of meeting the desired density and species composition of future stands. Once harvested, each cutblock is surveyed to ensure reforestation has occurred and that the stand is fully stocked with acceptable species. The results of all surveys are maintained in the signatories' respective databases. If a survey indicates that the stand has not regenerated successfully, corrective actions will be prescribed immediately in order to remedy the situation while still meeting regeneration delay deadlines. This information is also tracked in the signatories' respective databases.

Table 32: Percent compliance with stocking and species composition in harvested areas within the DFA

Signatory	Area Reforested During Period	Area Compliant With Stocking Levels and Species Composition Requirements	% in DFA
Canfor	2457.5	2457.5	100%
BCTS	1829.2	1829.2	100%
TOTAL	4286.7	4286.7	100%

Source: Genus

Indicator 2-4 | Measure 2-4.1 Terrain Management Effectiveness

See Measure 2-1.3

Indicator 2-5 | Measure 2-5.1 Accidental Fires

Measure Statement	Target and Variance
Number of hectares (area) damaged by accidental forestry-related	Target: <100 ha.

industrial fires.	Variance: +5 ha.
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This measure calculates the number of hectares lost to industrial forest fires. As fire can result in catastrophic losses to the timber supply, wildlife, and private property, a high value has been placed on reducing the impact of these fires in the DFA. Accidental industrial fires can be caused by various sources, including escapes from the use of prescribed fire (e.g. burning slash piles) or from human induced error (e.g. machinery, cigarette smoking, etc.).

Industrial fires are usually brought under control quickly due to the availability of firefighting equipment and the signatories Fire Preparedness Plans. In contrast, naturally caused fires have the potential to quickly grow in size before fire control efforts can be undertaken. However the area and extent of accidental industrial fires must be minimized throughout the DFA in order to contribute to the overall health of the forest and long-term sustainability of the resource.

Table 33: Area of accidental fires within the DFA

Signatory	Number of Accidental Forestry Related Industrial Fires	Total Hectares Damaged	Area in DFA
Canfor	0	0	0
BCTS	0	0	0
TOTAL	0	0	0

Source:

Indicator 2-5 | Measure 2-5.2 Risk Factor Management

Measure Statement	Target and Variance
Percentage of identified risk factors with updated management strategies.	Target: 100%. Variance: 0%.

Natural disturbance levels due to biotic and abiotic factors and associated risk levels are managed for resistance to catastrophic change and to ensure that the ability to recover on the landscape level is sustained. It is important to ensure that effective management strategies are in place in order to address the impacts of forest health factors on the range of forest related values in the DFA. Currently an annual Forest Health Strategy and Tactical Plan ([BC MoFR, 2006](#)) is produced by the Ministry of Forest and Range in conjunction with major licensees and BCTS. Although the Plan identifies 26 risk factors, strategies are focused on mountain pine beetle and spruce bark beetles. Management strategies have also been developed through the Pine Stem Rust Working Group for western gall rust, stalactiform blister rust, and commandra blister rust. Signatories also have management strategies in place for such abiotic factors as windthrow, fire (fire preparedness plans), and landslides (terrain stability requirements, see Measure 2-1.3). Of the 26 risk factors identified, management strategies have been developed for 13.

Table 34: Percent of risk factors with updated management strategies in the DFA

Signatory	Number of Identified Risk Factors	Number of Identified Risk Factors with Updated Management Strategies	% in DFA
All	26	13	50.0%
TOTAL	26	13	50.0%

Source: Mackenzie TSA Forest Health Strategic Plan

Measure Discussion:

What Happened?

Only 13 of the 26 identified risk factors have management strategies.

BCTS Rationale Why (Root Cause)?

In the Ministry of forests annual Forest Health Strategy and Tactical Plan, only the ranked risk factors (13) are identified as a priority for management. The remainder are classed as not ranked, or considered a lower priority at this time.

Action Plan

Propose to the PAG to revise the indicator statement to the following:

“Percentage of ranked risk factors with corresponding forest health management strategies identified”.

This will focus the management strategy efforts on the highest priority forest health factors within the DFA.

Indicator 3-1 Measure 3-1.1 See Measure 2-2.1	Site conversion
Indicator 3-1 Measure 3-1.2 See Measure 1-2.2	Coarse Woody Debris
Indicator 3-1 Measure 3-1.3 See Measure 2-3.1	Regeneration Delay
Indicator 3-1 Measure 3-1.4 See Measure 2-3.2	Free Growing
Indicator 3-1 Measure 3-1.5 See Measure 2-2.3	Stocking and Species Composition
Indicator 3-1 Measure 3-1.1 See Measure 2-2.1	Site conversion
Indicator 3-1 Measure 3-1.6 See Measure 2-1.2	Soil Conservation Effectiveness
Indicator 3-2 Measure 3-2.1 See Measure 2-2.1	Site conversion
Indicator 3-2 Measure 3-2.2 See Measure 2-3.3	Stocking and Species Composition
Indicator 3-2 Measure 3-2.3 See Measure 2-3.1	Regeneration Delay
Indicator 3-2 Measure 3-2.4 See Measure 2-3.2	Free Growing

Indicator 4-1 | Measure 4-1.1 Harvest volumes

Measure 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 Mackenzie DFA is part of the larger Mackenzie TSA, comprising about 42% of the TSA area.

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. In the case of BC Timber Sales, they are mandated to offer timber sale licenses matching the allocated AAC. Each truckload of wood is assessed and accounted for at an approved Ministry of Forests and Range (MOFR) scale site. The MOFR 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. BC Timber Sales tracks volume for timber sale licenses issued based on volume cruised, and compares this to its AAC allocation. Canfor tracks the scaled volume of wood harvested.

Table 35: Harvest levels relative to AAC apportionment / Sales Schedule volume in the DFA

Signatory	5 year volume apportioned	Actual volume cut in cut control period	Years into cut control	Percent of 5 year cut control
Canfor	5,414,520	86,369	1	1.6%
BCTS	3,594,430	831,260	2	23.1%
TOTAL	9,008,950	917,629	N/A	N/A

Source:

Measure Discussion:

Indicator 4-1 | Measure 4-1.2 Waste and Residue

Measure Statement	Target and Variance
Percent compliance with waste and residue standards.	Target: 100%. Variance: ≤ 5%.

The purpose of this measure is to ensure that the use of wood fiber is maximized given reasonable consideration of fiber quality and milling efficiency, Government has set targets on allowable waste and residue for forest harvesting operations. This measure simply allows us to monitor compliance with already established standard targets under the assumption that these targets adequately minimize any loss of economic potential from undue waste and residue of wood fiber.

Table 36: Percent compliance with Waste and Residue standards in the DFA

Signatory	Number of blocks harvested	Number of Blocks Compliant with Waste and Residue Standards	% in DFA
Canfor	0	0	0
BCTS	5	5	100%
TOTAL	5	5	100%

Source: Waste and residue surveys

Measure Discussion:

Indicator 4-2 | Measure 4-2.1 Wood Purchases

Measure Statement	Target and Variance
Canfor to provide opportunities to purchase wood from private enterprises.	Target: Opportunity exists Variance: 0%

This measure is intended to address the ability of small businesses to sell wood in the DFA. Ensuring that businesses can sell their wood in the DFA provides a measure of economic diversification. It also ensures that timber harvested within the DFA has the opportunity to be processed within the DFA, providing further economic benefit. This measure applies only to Canfor log purchases from private enterprises.

Table 37: Summary of Canfor log purchases from private enterprises

Purchaser	Vendor Group	Volume Purchased (m3)
Canfor	BCTS	0
	Woodlots	0

	NRFL holders	0
	Salvage Sales	0
	Private	0
	Other	0
TOTAL		0

Source:

Measure Discussion:

Indicator 4-2 | Measure 4-2.2 First-Order Wood Products

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

This measure 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 measure, 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 houses 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.

Table 38: Summary of First-Order wood products produced from trees harvested within the DFA

Signatory	Raw 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	0	0	1	0	1	1	0	1	0	0	0	0	0	1	0	0	5
BCTS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL	1	0	1	0	1	1	0	1	0	0	0	0	0	1	0	0	6

Source:

Measure Discussion:

Indicator 4-2 | Measure 4-2.3 Local Investment

Measure Statement	Target and Variance
The percent of money spent on forest operations and management on the DFA provided from the northern central interior (NCI) suppliers (stumpage not included).	Report out on

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.

The north central interior is defined in this SFMP as the region that includes communities from 100 Mile House to Fort St. John (south to north) and from Smithers to McBride (west to east). The total dollar value of goods and services considered to be local 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 suppliers in north central BC.

Table 39: Percent of money spent in the NCI

Signatory	Money Spent On Forest Operations/Management	Money Spent in NCI	% in DFA
Canfor	\$2,741,501.00	\$2,741,501.00	100%
BCTS	\$4,614,855.45	\$3,709,227.12	80.4%
TOTAL	\$7,356,356.45	\$6,450,728.12	87.7%

Source: Signatory accounting records

Indicator 4-2 | Measure 4-2.4 Support of Public Initiatives

Measure Statement	Target and Variance
The number of support opportunities provided to the public (stakeholders, residents, and interested parties)	Report out on

This measure was considered by the PAG to be an appropriate index of the more general economic benefits received by local people from the forest industry and the sustainability of those benefits. Generally, we assume - the greater the industry is able to create opportunities for the public; the healthier the local economy is as a result of sustainable forestry.

Table 40: Support Opportunities Provided

Signatory	Support Opportunities					Total for DFA
	Lumber donations	Scholarships	Community events			
Canfor	\$6750.00	\$2000.00	\$2500.00	-	-	
BCTS	0	0	0	0	0	
TOTAL	\$6750.00	\$2000.00	\$2500.00	0	0	\$11,250.00

Source: N/A

Measure Discussion:

Indicator 4-2 | Measure 4-2.5 Support of Environmental Projects

Measure Statement	Target and Variance
Report out on the amount of money directed towards environmental projects.	Report out on

Project that focus on testing, monitoring, or general inventory of environmental factors are often fraught with a lack of tangible economic return. Rather most benefit from these projects is tangible in non-economic measures and for this reason, most environmental projects require support funding from a wide variety of sources. We used this measure to reflect the magnitude of support for these projects from the forest industry under the assumption that environmental information will directly contribute toward forest stewardship, toward forest sustainability, and therefore, economic stability. Most of the money directed towards environmental projects, as defined below in "Monitoring and Reporting", is funded through provincial programs such as the Forest Investment Account (FIA), Forest Sciences Program (FSP), or Forest Innovation Investment (FII). These funds are provided to eligible recipients to complete a variety of activities. Although there are guidelines on what activities may be completed, how the money is spent is largely at the discretion of the recipient.

Table 41: Money spent on environmental projects within the DFA

Signatory	Total Dollars Directed to Environmental Projects
Canfor	\$442,141.11
BCTS	\$314,942.93
TOTAL	\$757,084.04

Source: Signatory accounting and contract records

Measure Discussion:**Indicator 4-3 | Measure 4-3.1 Taxes**

Measure Statement	Target and Variance
Municipal Taxes paid to governments.	Target: 100% Variance: 0%

Payment of taxes (including Federal, Provincial, and local government taxes) by the signatories is a quantifiable indicator of how the public is receiving a portion of the economic benefits derived from forests. It is important to note that the signatories do not control how municipal and other taxes are spent and whether the public within the DFA receives these benefits or not. However, it should be assumed that a portion of the monies received from taxes will be returned to communities within the DFA. The DFA's forests provide many ecological benefits and they also provide significant socio-economic benefits. In order to ensure sustainable socio-economic conditions will continue for local communities associated with the DFA, all taxes will be paid on time.

Landowners are invoiced for municipal taxes on an annual basis. The invoice is directed to its accounting and payroll departments for immediate processing. The signatories' respective accounting and payroll departments also track all provincial sales taxes and federal Goods and Services taxes received and expended and provide money owing to the governments on a monthly basis. Business tax forms are filed annually and business taxes are paid as an annual lump sum or in quarterly installments.

Table 42: Taxes paid within the DFA

Signatory	Taxes Owed	Taxes Paid	% in DFA
Canfor	\$641,153.13	\$641,153.13	100%
BCTS	\$0.00	\$0.00	N/A
TOTAL	\$641,153.13	\$641,153.13	100%

Source: Signatory accounting records

Measure Discussion: BCTS, as a division of the provincial government is GST exempt and is not subject to corporate taxes. In addition, BCTS does not own property but leases property for its offices and therefore does not control payment of taxes by the owner.

Indicator 4-3 | Measure 4-3.2 Stumpage

Measure Statement	Target and Variance
Stumpage Paid to Government	Target: 100% Variance: 0%

The payment of stumpage owing on the timber harvested by Licensees is a quantifiable measure of how the public in the Mackenzie DFA is receiving a portion of the economic benefits derived from forests. It is important to note that Licensees do not control how stumpage royalties are spent across the province or whether the public receives benefits from stumpage or not. However, it should be assumed that a portion of the royalties received from stumpage would be returned to communities within the DFA.

Forests provide many ecological benefits to areas that surround them and also generate significant socioeconomic benefits. In order to ensure continual sustainable socio-economic conditions for local DFA communities, all stumpage billings will be paid on time.

Table 43: Stumpage paid to government within the DFA

Canfor	Stumpage Owed	Stumpage Paid	% in DFA
Quota Wood	\$973,051.56	\$973,051.56	100%
Purchase Wood	\$1,521,591.24	\$1,521,591.24	100%
TOTAL	\$2,494,642.80	\$2,494,642.80	100%

Source: Signatory accounting records

Measure Discussion: Each month, the provincial government invoices the Licensees for stumpage. For Canfor this invoice is directed to the accounting and payroll departments for immediate processing. BCTS does not have direct control of payments of stumpage from tenures issued by the Timber Sales Manager.

Indicator 4-4 | Measure 4-4.1 Support to First Nations

Measure Statement	Target and Variance
The number of support opportunities provided to First Nations with treaty area and/or asserted traditional territory within the DFA.	Report out on

This measure indicates how the Steering Committee member companies provide economic and social benefits to First Nations over and above wages, taxes and stumpage fees through donations and involvement in local First Nations communities. Types of support opportunities within the DFA vary from providing personnel, equipment and/or facilities, to providing cash and product donations. This measure is an important component of a community's economic and social stability, but it is also difficult to quantify as support opportunities often go unrecorded. Support opportunities help to increase awareness of sustainable forest management and its role within the DFA. This can indirectly lead to building a strong community and creating a viable labour force.

Table 44: Support opportunities for First Nations within the DFA

Signatory		Support Opportunities						Total for DFA
		Cash Donations	Product Donations	Resource or Worker Donations	Community/ cultural support and donation	Capacity building	Training/ education	
Canfor	Number	0	0	0	0	0	0	0
	Value							
BCTS	Number	0	0	0	0	0	0	
	Value							
TOTAL		0	0	0	0	0	0	

Source:

Measure Discussion: BCTS as a division of government does not have a mandate to expend taxpayer dollars. BCTS revenues contribute to general revenue and are allocated to the ministry allocations at the direction of cabinet.

Indicator 4-4 | Measure 4-4.2 Contract Opportunities to First Nations

Measure Statement	Target and Variance
The number of contract opportunities provided to First Nations with treaty area and/or asserted traditional territory within the DFA.	Report out on

This measure 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 measure is not intended to assess how successful First Nations are at taking advantage of the opportunities.

Table 45: Contract opportunities for First Nations within the DFA

Signatory		Contract Opportunities						Total for DFA	
		Employment	Road Building	Other Volume Purchased	Logging	Silviculture Forestry	Other Contracts		Management Services
Canfor		0	0	0	3	2	0	0	5
BCTS		0	9	0	18	3	5	0	35
TOTAL		0	9	0	21	5	5	0	40

Source: Signatory contract records

Measure Discussion: 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 measure tracks the existence of opportunities available. BCTS provides opportunities for all eligible bidders including First Nations.

Indicator 4-4 | Measure 4-4.3 Value of Transactions to First Nations

Measure Statement	Target and Variance
The total value of transactions undertaken with First Nations with treaty area and/or asserted traditional territory within the DFA.	Report out on

With this measure we intend 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 measure is not intended to assess how successful First Nations are at taking advantage of the opportunities.

Table 46: Total value of transactions with First Nations within the DFA

Transaction Type	Signatory		Total in DFA (\$)
	Canfor (\$)	BCTS (\$)	
Employment	\$0.00	\$0.00	\$0.00
Road Building	\$0.00	\$0.00	\$0.00
Volume Purchased	\$0.00	\$0.00	\$0.00
Community Cultural Support and Donation	\$0.00	\$0.00	\$0.00
Logging	\$1,548,176.60	\$2,917,113.00	\$4,465,289.60
Silviculture / Forestry	\$46,132.40	\$0.00	\$46,132.40
Capacity Building	\$0.00	\$0.00	\$0.00
Other Contracts	\$0.00	\$0.00	\$0.00
Purchases	\$0.00	\$0.00	\$0.00
Education / Training	\$0.00	\$0.00	\$0.00
Management Services	\$0.00	\$0.00	\$0.00
Total	\$1,594,309.00	\$2,917,113.00	\$4,511,422.00

Source: Signatory accounting records

Measure Discussion: 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 measure tracks the existence of opportunities available. BCTS provides opportunities for all eligible bidders including First Nations.

Indicator 4-5 | Measure 4-5.1 Competitive Sale of Timber

Measure Statement	Target and Variance
The percentage of DFA volume advertised for sale through open competitive bid.	Target: 40% Variance: -5%

Most of the timber harvested in the DFA is collectively cut under major licenses held by Forest Licensees. However, a percentage of the annual volume cut is advertised for sale through open competitive bid. This volume is sold by the Crown through BC Timber Sales (BCTS). BCTS develops and sells publicly owned timber to establish market prices and optimize net revenue to the Crown. Reliant on the highest bid, BCTS sells units of timber across the DFA to a variety of customers, including sawmill operators, small-scale loggers, and timber processors. In addition to helping establish market prices and providing revenue to the Crown, BCTS provides the opportunity for customers to purchase timber in a competitive and open market. In this way people who might not have access to Crown timber have an opportunity to purchase it in an equitable manner.

The measure will evaluate the volume of timber advertised for sale through open competitive bid. This process contributes to the social and economic aspects of SFM by creating opportunities for forest sector employment, and by providing revenue to the Crown that reinvests the money back into the DFA through government programs and institutions. Tracking the measure will ensure that the volume of timber offered for sale in this manner is sufficient to meet the goals of sustainable forest management.

Table 47: DFA related volume advertised as competitive bid

Signatory	Total annual volume apportioned (m3)	Volume Advertised For Sale Through Open Competitive Bid (m3)	% in DFA
Canfor	1,082,904		

BCTS	718,886	954,746	
Non-signatory	0	0	
TOTAL	1,801,790	954,746	53.0%

Source:

Measure Discussion: Canfor is exempt from the requirements of this measure.

Indicator 4-5 | Measure 4-5.2 Primary Milling Facilities

Measure Statement	Target and Variance
A competitive primary milling facility is sustained.	Target: ≥ 2 Variance: 0

The existence of a forest industry primary processing facility can have a stabilizing affect on the economy of a DFA. A primary processing facility attracts other businesses and provides revenue to all level of government. The economic sustainability of many parts of BC, including Mackenzie depends in part on a competitive primary processing facility.

Table 48: Number of primary milling facilities maintained in the DFA.

Signatory	Number of primary milling facilities
Canfor	1
TOTAL	1

Source: Self evident

Measure Discussion: BCTS is exempt from the requirements of this measure.

Indicator 4-6 | Measure 4-6.1 Risk Factor Management

See Measure 2-5.2

Indicator 4-6 | Measure 4-6.2 Forest Stand Damaging Agents

Measure Statement	Target and Variance
Areas with stand damaging agents will be prioritized for treatment.	Target: 100% Variance: -10%

Damaging agents are considered to be 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. 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 uninfested 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.

It should be noted that prioritizing a stand for treatment might not guarantee the stand would be treated. The size of the stand, the threat the agent poses, the location, and the merchantability of the timber all have to be considered when prioritizing which stands will be treated first. Some stands may have such a low priority that the only "treatment" is to monitor the area until such a point when more active operations are deemed necessary. Treating areas with stand damaging agents will provide other societal benefits. Burned and diseased killed stands may be aesthetically displeasing, and their harvesting and reforestation will create a more pleasing landscape. Windthrown 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.

Table 49: Forest Stand Damaging Agents within the DFA

Signatory	Total area of cut blocks Harvested (ha)	Area of cut blocks harvested that are a priority to harvest for stand damaging agents	% in DFA
Canfor	0	0	100%
BCTS	699.8	699.8	100%
TOTAL	699.8	699.8	100%

Source:

Measure Discussion: Canfor and BCTS target damaged stands in a similar manner. Each year the volume of damaged timber is assessed within the DFA. Of this volume, licensees prioritize planning and harvesting activities based on levels of attack, stage of attack, wood quality and milling capacity/needs. This measure reports out on the Licensees' and BCTS' success in ensuring blocks with stand damaging agents have been assessed and have been prioritized for treatment if required and thereby minimizing value losses.

Indicator 4-6 | Measure 4-6.3 Accidental Fires

See Measure 2-5.1

Indicator 5-1 | Measure 5-1.1 Non-timber Benefits

Measure Statement	Target and Variance
List of existing and documented potential for marketed non-timber benefits.	Report out on

The measures of this indicator will highlight trends in the marketed non-timber economic benefits from local forests and assist in developing strategies for sustaining these benefits over time, within the limitations of the signatories' current forest management activities. The goal for the signatories is to not degrade the current or future potential for marketed non-timber benefits as a result of forest management activities and that they contribute to improving the potential, where possible. The term "marketed" implies that the non-timber forest resource is available for a viable business and information on it is readily accessible. The term "benefit" implies an economic benefit.

The list for this measure will establish a baseline that the signatories can use when developing management strategies. These management strategies will ensure that the signatories are not degrading current or potential marketed non-timber benefits.

Table 50: Non-timber benefits within the DFA

List of Marketed Non-Timber Benefits Developed	Reported
All	2008-10-01

Source: N/A

Measure Discussion: Presentation of a preliminary list of potential non-timber benefits will be presented to PAG at the fall 2008 meeting. Forecasting for this measure entails that the report will exist on or before June 30, 2007. Now that it is in place, this measure will no longer be needed and will be removed from the SFMP

Indicator 5-1 | Measure 5-1.2 SFM Implications of Non-timber values

Measure Statement	Target and Variance
Description of potential implications of SFM practices on the amount and quality of marketed non-timber values.	Report out on

This measure will highlight the potential effects of implementing SFM practices on the quantity and quality of marketed non-timber economic benefits from local forests. This measure takes the information provided from measure 5-1.1 and places it within the continuous improvement/adaptive management framework of the SFM Plan by identifying how forest management under the SFM Plan may impact non-timber economic benefits. The information derived will then be used in consultation with stakeholders in determining what, if any, changes may be required to current strategies and the potential trade-offs involved. The goal for the signatories is to not

degrade the current or future potential for marketed non-timber benefits as a result of forest management activities and that they contribute to improving the potential, where possible.

Table 51: SFM implications on Non-timber values within the DFA

Existing Marketed Non-timber Value	SFM Implications
All	2008-10-01

Source: N/A

Measure Discussion: Presentation of a preliminary list of potential non-timber benefits and the potential impacts of forest management activities will be presented to PAG at the fall 2008 meeting. Description of SFM implications requires that a list of marketed non-timber benefits be developed. As per Measure 5-1.1, a description of implications is to be developed on or before June 30, 2007. Now that it is in place, this measure will no longer be needed and will be removed from the SFMP

Indicator 5-1 | Measure 5-1.3 Range Management Effectiveness

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

Range resources can include grazing or hay cutting permits, or areas with potential for these ventures. Range managers and forest managers share the forest for their particular purposes, and must work cooperatively in order to achieve sustainable development and management of its resources. The measure is designed to ensure that operational plans with identified range requirements have those requirements implemented on the ground. Maintenance of range resources is an important aspect of sustainable forest management because it contributes to the social and economic needs of people who traditionally and currently use the DFA for purposes other than forestry. This measure will help to ensure that various range values are conserved for current and future generations.

Table 52: Forest Operations consistency with Range requirements

Signatory	Total Number of Forest Operations with Range Requirements				Number of Forest Operations Consistent With Requirements	Percent
	Roads	Harvesting	Silviculture	Total		
Canfor	0	0	0	0	0	100.0%
BCTS	0	0	0	0	0	100.0%
TOTAL	0	0	0	0	0	100.0%

Source: Signatory operational plans

Indicator 6-1 | Measure 6-1.1 Employment

Measure Statement	Target and Variance
Employment supported by each sector of the local economy (actual and percentage of total employment).	Report out on

Although the forest industry cannot directly control the diversity of the economy for the community in which it operates, understanding the impact of that diversity is an important component of SFM. If the community is not economically diverse, it will not be resilient to economic shocks. Services could decline and thus skilled workers and their families may move to more stable areas. As important economic players, the signatories can potentially influence local policies that would encourage economic diversity in their communities.

Table 53: Employment within the DFA

Employment Sector	Number Employed	Percent
Forestry	2022	66.9%
Mining and processing	12	0.4%

Fishing and Trapping	15	0.5%
Agriculture and Food	23	0.8%
Tourism	261	8.6%
High Tech.	17	0.6%
Public Sector	576	19.1%
Construction	50	1.7%
Other	45	1.5%
TOTAL	3021	

Source: BC Stats

Measure Discussion: The Table above reflects the labour force profile in the Mackenzie TSA using 2001 Employment Estimates by Sector. The data was derived from "2001 Economic Dependency Tables for Forest Districts" available at http://www.bcstats.gov.bc.ca/pubs/econ_dep/tab_fd.pdf. This information will be updated with the latest census information from Statistics Canada.

Indicator 6-1 | Measure 6-1.2 Income

Measure Statement	Target and Variance
Contribution of income sources from each sector of the local economy (actual and percentage of total income).	Report out on

This measure is directly related to 6-1.1 and is meant to measure the contribution of income sources as part of the economic benefit derived from each sector of the local economy. This information can be used to analyze the economic diversity for the DFA.

Table 54: Income within the DFA

Employment Sector	Total Income (millions)	Percent
Forestry	\$97.0	80.4%
Mining and processing	\$0.2	0.2%
Fishing and Trapping	\$0.0	0.0%
Agriculture and Food	\$0.0	0.0%
Tourism	\$4.7	3.9%
High Tech.	\$0.0	0.0%
Public Sector	\$16.9	14.0%
Construction	\$1.5	1.2%
Other	\$0.4	0.3%
TOTAL	\$120.7	

Source: BC Stats

Measure Discussion: The table above indicates the current income estimates for the Mackenzie TSA from BC Stats. This information will be updated with the latest census information from Statistics Canada.

Indicator 6-1 | Measure 6-1.3 Business Opportunities

Measure Statement	Target and Variance
The number of opportunities given to businesses within or immediately adjacent to the TSA to provide non-tendered services to forest management activities.	Report out on

Woodlands operations of the signatories purchase a wide variety of products and services in order to produce timber and to manage forestry activities. This measure identifies the number of opportunities given to businesses within, or immediately adjacent to the TSA to provide non-tendered services to forest management activities. This measure is important as some goods and services required in forest management are not put up for tender, instead they are directly purchased or awarded. This measure identifies opportunities for the local private sector to secure work and opportunities for direct access to both timber and non-timber benefits. This measure also indirectly looks at the diversity of the local forest employment opportunities associated with forest industry activities. For the purposes of this SFMP, local is defined as those residences or businesses that have mailing addresses within or immediately adjacent (i.e. McLeod Lake) to the TSA.

Table 55: Opportunities for non-tendered services within or adjacent to the TSA

Signatory	Opportunities to Provide Non-Tendered Services		Number in DFA
	Canfor	BCTS	
Logging and hauling	1	0	1
Road construction and maintenance	2	0	2
Silviculture	4	0	4
Operations	3	0	3
Planning and Administration	0	1	1
Miscellaneous Goods/Services	0	11	11
TOTAL	10	12	22

Source: Signatory contract and accounting records

Measure Discussion:

Indicator 6-1 | Measure 6-1.4 First-Order Wood Products

See Measure 4-2.2

Indicator 6-1 | Measure 6-1.5 Support Opportunities

Measure Statement	Target and Variance
The number of support opportunities provided within, or immediately adjacent to the TSA.	Report out on

This measure indicates how economic and social benefits to the public over and above wages, taxes and stumpage fees through donations and involvement in local community organizations are provided. Types of support opportunities within the TSA vary from providing personnel, equipment and/or facilities, to providing cash and product donations. This measure is an important component of a community's economic and social stability, but it is also difficult to quantify as support opportunities often go unrecorded. Support opportunities help to increase awareness of sustainable forest management, its role within the TSA, and the quality of life in the DFA. This can indirectly lead to building a strong community and creating a viable labour force.

Table 56: Number of support opportunities within the DFA

Signatory	Support Opportunities (#)				Total for DFA
	Cash Donations	Product Donations	Resource or Worker Donations	Community Events	
Canfor	\$2500.00	\$6750.00	-	\$2000.00	\$11,250.00
BCTS	N/A	N/A	N/A	N/A	N/A
TOTAL	\$2500.00	\$6750.00	-	\$2000.00	\$11,250.00

Source: Canfor

Measure Discussion: BCTS has no requirement to report out on this measure.

Indicator 7-1 | Measure 7-1.1 List of Affected Parties

Measure Statement	Target and Variance
Implement and update a comprehensive list of stakeholders and affected or interested parties.	<u>Target:</u> annually <u>Variance:</u> none

As forest management recognizes a broader range of forest values, particularly on public land, it is increasingly important that all stakeholders have input into management concerns. The public, through a public participation process, has an opportunity to be involved proactively in the management of a DFA. Effective sustainable forest management planning for public land requires appropriate involvement of stakeholders and the general public in the development and implementation of plans. In order for a public process to be effective, a comprehensive list of affected and interested parties must be considered. A Stakeholder Analysis ensures that all the interests in a defined area of forest are considered. A stakeholder analysis provides the structured, explicit identification of human uses and interests in a particular management unit. By identifying the organizations and individuals associated with those uses and interests it allows a fresh, transparent assessment of the stakeholders who

should be included in these processes. This measure ensures that an objective and transparent identification of a wide variety of stakeholders' interests exists. It also helps define appropriate public input processes for the sustainable forest management plan for the DFA. This measure is directly linked to the subsequent measures listed.

Table 57: Update status of the list of affected parties within the DFA

	List of Stakeholders and Affected or Interested Parties Developed	List Updated	List Updated	List Updated	List Updated	List Updated
Date	Jul-03	Aug-03	Jan-06	Mar-08	Mar-09	

Source: SFM Stakeholder contact database

Measure Discussion: Triton Environmental Consultants Ltd. developed a list of stakeholders in July 2003. This list was subsequently updated in August 2003 and again in January 2006. For the Mackenzie DFA, an Excel spreadsheet was created listing all the interests and stakeholders. Contact lists were gathered from a variety of sources, including forest companies, government agency consultation lists, tenure holders listings and other process participant lists, such as LRMP. Groups and stakeholders were categorized according to primary interest, geographic area of interest and previous level of process participation. A FIA funded project to solicit updates to the stakeholder list is to be concluded in March 2008. In March of 2009, BCTS updated all contact information in GENUS and in the communication tracking system (Outlook).

Indicator 7-1 | Measure 7-1.2 SFMP Review (PAG)

Measure Statement	Target and Variance
The number of opportunities for the PAG to review and provide comment on the SFMP.	<u>Target:</u> at least annually <u>Variance:</u> none

This measure is one of a group of measures that will help to increase the overall understanding of SFM. This SFMP and the resulting annual reports will be communicated to the public at least once per year through a public open house and by posting them on a publicly accessed internet site.

Table 58: PAG SFMP review opportunities within the DFA

Opportunities for PAG to Provide Review and Comment.				Total for DFA
Dates Opportunities Provided				
2008-12-12	2008-04-29			2

Source: PAG meeting summaries

Measure Discussion:

Indicator 7-1 | Measure 7-1.3 Meetings (PAG)

Measure Statement	Target and Variance
Number of Public Advisory Group meetings per year.	<u>Target:</u> at least 1 annually <u>Variance:</u> none

The Mackenzie PAG is made up of a diverse set of representatives that have various defined interests, values or specific uses of the forest resource within the DFA. The PAG provided valuable input on the initial development of values, indicators, measures and targets for this SFMP. PAG members helped to identify local issues and values for the Mackenzie DFA for forestry managers to consider during management and planning processes. The PAG will continue to provide guidance, input and evaluation throughout the SFMP process, including all aspects of implementation and continual improvement of the plan over time. This measure provides information regarding how often the PAG will meet on an annual basis.

Table 59: PAG meetings within the DFA

Year	PAG Meeting Dates							Total:
2005-2006	31-Jan-06	14-Feb-06	28-Feb-06	14-Mar-06	28-Mar-06			5
2006-2007	11-Apr-06	25-Apr-06	09-May-06	17-Oct-06	20-Feb-07	28-Mar-07		6
2007-2008	13-Mar-08							1
2008-2009	29-Apr-08	27-May-08	28-Oct-08	21-Jan-09				4

Source: PAG meeting summaries

Measure Discussion:

Indicator 7-1 | Measure 7-1.4 Satisfaction (PAG)

Measure Statement	Target and Variance
The level of satisfaction of the PAG members with the 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 the signatories have a positive and meaningful working relationship with the PAG, where the signatories are able to respond to all issues and concerns the PAG may have during the process. This measure will use an average of the PAG meeting evaluation forms to determine the level of satisfaction of the PAG with the public participation process.

Table 60: PAG satisfaction within the DFA

Mackenzie DFA SFM Plan PAG Meeting Evaluation Question April 1, 2006 - March 31, 2007	Meeting Date	Score	Percent (score / 5)	Variance (from 100%)
Question M12 - Are you satisfied with PAG process	2008-04-29	4.0	80.0%	20.0%
Question M12 - Are you satisfied with PAG process	2009-05-27	5.0	100.0%	0.0%
Question M12 - Are you satisfied with PAG process	2009-10-28	4.2	84.0%	16.0%
Question M12 - Are you satisfied with PAG process	2009-01-21	4.3	86.0%	14.0%
	AVERAGE	4.4	88.0%	12.0%

Source: PAG satisfaction surveys

Measure Discussion: Meeting evaluations will be conducted after each PAG meeting. The results will be made available before or during the next meeting. The average of the summary of the PAG meeting evaluation forms will be used to determine this indicator percent.

Indicator 7-1 | Measure 7-1.5 TOR Review (PAG)

Measure Statement	Target and Variance
Maintain and review at least annually and as required the Mackenzie SFMP PAG TOR to ensure a credible and transparent process.	<u>Target:</u> at least annually <u>Variance:</u> none

This measure indicates that a Terms of Reference document has been developed in consultation with the PAG, and that these Terms of Reference have been accepted for use in all future PAG meetings. The Terms of Reference document is an important part of the public participation component of this SFMP. SFM requires public participation and the PAG Terms of Reference ensure these requirements are met in a credible and transparent fashion. The Terms of Reference document will be reviewed annually unless consensus from the group suggests otherwise.

Table 61: PAG TOR review opportunities within the DFA

Review of ToR				Total for DFA
Meeting Dates				
29-Apr-08	28-Oct-08			2

Source: PAG meeting summaries

Measure Discussion:

Indicator 7-1 | Measure 7-1.6 Satisfaction (Affected Parties)

Measure Statement	Target and Variance
Survey residents, stakeholders, and First Nations regarding their satisfaction with forest management (process and outcomes).	<u>Target:</u> at least every 3 years <u>Variance:</u> none

This measure was developed in order to provide information relating to the level of satisfaction of residents, stakeholders, and First Nations people with forest management activities conducted by the signatories.

Satisfaction levels will be determined through the use of a survey, to be conducted every third year, which will be widely distributed to randomly selected households with residents in, or near (eg. McLeod Lake) the DFA. While the signatories recognize the value of the interactions with the public during such activities as the PAG or during planning processes, these interactions are generally with those people that have a specific interest in the forest resource.

Table 62: Satisfaction of affected parties with forest management within the DFA

Dates	Survey of Residents, Stakeholders and First Nations			
	Dates Surveys Reported			
Target	31-Mar-07	31-Mar-10	31-Mar-13	31-Mar-16
Actual	31-Mar-07			
Variance	0			

Source: Survey document

Measure Discussion:

Indicator 7-1 | Measure 7-1.7 Representation (PAG)

Measure Statement	Target and Variance
Percentage of the public sectors as defined in the TOR invited to participate in the PAG process.	Target: 100% Variance: 0%

The Mackenzie PAG is comprised of a variety of representatives that have various defined interests, values or specific uses of the forest resource within the DFA. An important component of the PAG is the representatives from the various public sectors as defined in the Terms of Reference. Their involvement in the PAG process is crucial for the success of the SFMP as they represent a broad range of interests, both commercial and non-commercial, within the DFA. They also possess experience and expertise that the signatories can draw on in achieving the SFMP objectives. Their participation will enhance the co-operation between the forest industry and other parties interested in the management of public lands in the DFA to meet the social, economic, and ecological goals of sustainable forest management.

Table 63: PAG representation within the DFA

Number of sectors with a representative identified	Number of Sectors with no Representative With Invitations on File	Total Number Invited	Number of Public Sectors in Terms of Reference	Percent in DFA
19	5	23	24	95.8%

Source: PAG meeting summaries

Measure Discussion:

What Happened?	Rationale Why (Root Cause)?	Action Plan
PAG representation in all sectors was not realized during the reporting period.	Of the 23 sectors, an attempt to assign a representative for 1 sector was not realized. This is in part due to the lack of public interest in the SFMP process, coupled with the downturn in the local forest economy.	Propose to the PAG to revise the measure variance to the following: Variance: -20% Further to this is a commitment to revise the wording in the TOR so that full sector representation is not required.

Indicator 7-1 | Measure 7-1.8 Communication (PAG)

Measure Statement	Target and Variance
Percentage of PAG satisfaction with the amount and timing of information presented for informed decision making.	Target: 100% Variance: -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. In order for the PAG to make decisions in regards to the content of the SFMP, such as measures, targets, and levels of responsibility, they must have the information to support those decisions. This information must be sufficient in amount and quality and delivered

in a timely manner for the PAG to make sound decisions for the SFMP process. This measure is intended to measure and report the level of satisfaction the PAG has with the amount and timing of information presented for informed decision making. While it is hoped that there will be high satisfaction with the information, it is also acknowledged that with any group of diverse backgrounds and opinions that it is difficult to achieve unanimous satisfaction in any regard. However, if the SFMP is to succeed, the people who are involved in its evolution must have a certain level of satisfaction with the information they are using to direct that development.

Table 64: PAG satisfaction with communication process

Mackenzie DFA SFM Plan Public Advisory Group Meeting Evaluation Question April 1, 2006 - March 31, 2007						
Meeting Date	Question MQ 10 – Your overall satisfaction with the amount & timing of information presented?			Question MQ11 – Your overall satisfaction with the information?		
	Score	Percent (score / 5)	Variance (from 100%)	Score	Percent (score / 5)	Variance (from 100%)
2008-04-29	4.4	88.0%	12.0%	3.80	76.0%	24.0%
2009-05-27	4.8	96.0%	4.0%	5.00	100.0%	0.0%
2009-10-28	3.9	78.0%	22.0%	4.00	80.0%	20.0%
2009-01-21	4.5	90.0%	10.0%	4.30	86.0%	14.0%
Average	4.4	88.0%	12.0%	4.3	85.5%	14.5%

Source: PAG satisfaction surveys

Measure Discussion:

Indicator 7-1 | Measure 7-1.9 SFMP consistency with LRMP

Measure Statement	Target and Variance
Report out on consistency of indicators or measures with LRMP objectives.	Report out on

The Mackenzie LRMP represents a substantial effort to balance ecological, economic, and social values within the Mackenzie TSA and stands as a record of consensus among the diverse social structure of the local area. Many of the people who are members of the current PAG also worked long hard hours in developing the LRMP. This measure acknowledges the importance of that work and will be used to gauge the extent to which the SFMP aligns with the objectives developed in the LRMP. The closer the SFMP indicators and measures reflect the resource management objectives of the LRMP, the closer we will be to the same social consensus arrived at through the LRMP.

Table 65: Development and reporting of SFM Indicators and Measures with the LRMP

	Consistency with Indicators Developed and Reported	Consistency with Measures Developed and Reported
Meeting Date	14-Feb-06	21-Jan-09

Source:

Measure Discussion:

Indicator 7-2 | Measure 7-2.1 Concerns (affected parties)

Measure Statement	Target and Variance
The number of opportunities given to the public and stakeholders to express forestry-related concerns and be involved in our planning processes.	<u>Target:</u> 6 <u>Variance:</u> -2

Forestry activities can impact a wide section of the public and individual stakeholders within the DFA. This measure 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 Mackenzie Licensees' and BCTS' planning framework.

Table 66: Communication opportunities given to the public and stakeholders within the DFA

Opportunity	The Number of Opportunities For Public And Stakeholders			
	Canfor	BCTS	Joint	Total
FSP original ads	0	0	0	0
FSP amendment ads	0	1	0	1
FSP letters to stakeholders	0	198	0	1
PMP original ads	0	0	0	0
PMP letters to stakeholders	0	0	0	0
PMP signage	0	0	0	0
FDP original ads	0	0	0	0
FDP amendment ads	0	0	0	0
FDP letters to stakeholders	0	0	0	0
Field tours	0	0	0	0
Newsletters	0	0	0	0
Open houses	0	0	0	0
PAG Meetings	0	0	4	1
LRMP meetings	0	0	0	0
Documented phone calls	0	14	0	1
Documented meetings	0	5	0	1
TOTAL	0	4	1	5

Source:

Measure Discussion:

Indicator 7-2 | Measure 7-2.3 Response to Concerns

Measure Statement	Target and Variance
The percent of timely responses to written and documented concerns.	Target: 100% Variance: -5%

All signatories solicit feedback for their public forest management plans in the DFA. They also receive ongoing general comments and inquiries regarding practices and management of forest lands. These inquiries represent a public concerned with how forest resources are managed, and as such should receive a timely response by all signatories. This measure has established that a timely response is one that is made within 30 days of written inquiry for public or stakeholder concerns.

Table 67: Timely response to concerns raised by public and stakeholders within the DFA

Signatory	Number of Written and Documented Concerns	Number Responded to in a Timely Manner	Percent
Canfor	0	0	100%
BCTS	15	15	100%
TOTAL	15	15	100%

Source:

Measure Discussion:

Indicator 7-2 | Measure 7-2.4 SFMP availability (affected parties)

Measure Statement	Target and Variance
Distribution/access to SFM Plan, annual reports, and audit results.	Target: 1 annually

Variance: 0

With this measure 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.

Table 68: SFMP availability within the DFA

Opportunity	The Number of Distribution/Access Opportunities			
	Canfor	BCTS	Joint	Total
Newsletters	0	0	0	0
Open houses	0	0	0	0
PAG Meetings	0	0	4	4
Website	1	1	0	1
Documented meetings	0	0	0	0
TOTAL	1	1	4	6

Source:

Measure Discussion:

Indicator 7-2 | Measure 7-2.5 SFMP training (affected parties)

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

This measure 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 measure is intended to ensure that the signatories provide the required opportunities for residents and stakeholders to learn about SFM. Such opportunities may include field tours, training programs, presentations regarding aspects of SFM, etc.

Table 69: SFMP training opportunities within the DFA

Opportunity	The Number of SFM Educational Opportunities			
	Canfor	BCTS	Joint	Total
Field tours	0	0	0	0
Newsletters	0	0	0	0
Open houses	0	0	0	0
Presentations	0	0	0	0
Press Releases	0	0	0	0
Trade Shows, etc.	0	1	0	1
TOTAL	0	1	0	1

Source:

Measure Discussion:

Indicator 7-2 | Measure 7-2.6 Communication Strategy Effectiveness

Measure Statement	Target and Variance
Percentage of mutually agreed upon communication strategies met.	Target: 100% Variance: <5%

The signatories maintain a list of interested parties that they notify when forestry operations/developments are to occur. These interested parties may be private landowners, lodge operators, trappers, or hunting guides. Strategies have been designed to ensure that information is communicated to these individuals in a timely and

efficient manner. This communication considers non-timber users and inhabitants of the DFA and realizes that forestry operations can disrupt lives and businesses. As sustainable forest management includes non-timber values, it is important that the forest industry works with these individuals to minimize impacts and to plan operations that consider their concerns. This measure is intended to calculate the success of meeting communication strategy requirements that are designed to achieve these goals.

Table 70: Effectiveness of communication strategies within the DFA

Signatory	Total Number of Communication Strategies Required	Number of Communication Strategies Completed	Percent
Canfor	0	0	100.0%
BCTS	232	232	100.0%
TOTAL	232	232	100.0%

Source:

Measure Discussion: Canfor initiated efforts to develop communication strategies with various stakeholders during the reporting period however no responses to the inquiries were received. BCTS maintains a strategy for communications with stakeholders for referring out operating plans and forest stewardship plan amendments to relevant stakeholders with overlapping tenures.

Indicator 7-3 | Measure 7-3.1 Adaptive Management

Measure Statement	Target and Variance
Adaptive Management strategy is developed, documented, acted upon, and reviewed.	<u>Target:</u> at least once annually <u>Variance:</u> 0

Adaptive management (AM) is the process by which a commitment to learning is used to adjust management strategies so as to better cope with change while simultaneously seeking to better understand how management goals can be achieved. An adaptive management approach recognizes change as a constant factor. Therefore it is necessary to understand the root causes of what has, and may be changing. To do so requires learning as to how the economic, social and ecological systems are constantly moving through a cycle that involves change and reconfigurations in response to human attempts to manage them. If the system is resilient, then it can absorb a degree of change without a major reconfiguration. The first step is to understand the current state of the systems in terms of their existing resiliency. A desired concept of resiliency is then defined for each system, including an acceptable range of variation. This does not preclude society choosing to undergo a major reconfiguration, or that such a significant change is required in order to get the system to a point where it can be resilient. The concept of resiliency is then used to socially define sustainability across the three systems through an iterative process that considers trade-offs in terms of impacts to system resiliency within selected spatial and temporal scales.

Table 71: Develop, document, act, and review of Adaptive Management strategies within the DFA

Date	Adaptive Management Strategy				Total for DFA
	Developed (Y/N)	Documented (Y/N)	Acted Upon (Y/N)	Reviewed (Y/N)	
27-Nov-08	Y	Y			1
09-Jan-09			Y	Y	
21-Jan-09			Y	Y	
TOTAL	1	1	1	1	1

Source:

Measure Discussion:

Adaptive management has been incorporated into the joint SFMP reporting process. In preparing the annual report Canfor and BCTS review the process and sources of information used to report performance and look for opportunities to improve. The intent of the November 27th LSC meeting was to review SFMP and set direction for the plan. The intent of the January 9th, 2009 LSC meeting was to review the changes required to the plan. During the January 21st, 2009 PAG meeting, the LSC reviewed the possible changes with the PAG and suggested an overall direction for the SFMP.

Indicator 7-3 | Measure 7-3.2 Monitoring Plan

Measure Statement	Target and Variance
Monitoring plan for indicators is developed, documented, acted upon, and reviewed.	<u>Target:</u> at least once annually <u>Variance:</u> 0

As local public advisory groups select indicators and measures of sustainability, credible and cost effective monitoring plans for each are developed. The information gathered during monitoring is used in modeling/forecasting and assists in the development of management scenarios. The monitoring data also allows managers to determine if their management activities are effectively achieving the targets set out in SFM plans, LRMPs, FSPs, etc.

Table 72: Develop, document, act, and review of Monitoring Plans within the DFA

Date	Monitoring Plans				Total for DFA
	Developed (Y/N)	Documented (Y/N)	Acted Upon (Y/N)	Reviewed (Y/N)	
2008-12-12	Y	Y	Y		
2009-01-21				Y	
TOTAL	1	1	1	1	

Source: PAG meeting summaries

Measure Discussion:

Indicator 7-3 | Measure 7-3.3 Annual Report

Measure Statement	Target and Variance
Reports and analysis of monitoring information – annual report.	<u>Target:</u> at least once annually <u>Variance:</u> 0

Analysis of the results of status and trend monitoring is an important aspect of adaptive management. It is a component of accountability and allows the public to see how progress is being made in implementing resource management strategies. Analysis of monitoring data will be reported to area resource managers and the public so that changes to the SFM Plan, to practices or to measures can be evaluated. The SFMP Annual Report will provide the reports and discussion on analysis of the measures. The development and use of the SFMP Annual Report will assist with the improving of the measures and improving with SFM in an ongoing basis.

Table 73: SFM Annual Report

Annual Report Dates				
May 27, 2008	October 28, 2008	December 12, 2008	January 21, 2009	

Source: PAG meeting summaries

Measure Discussion: Opportunities to review the annual report at the May 27, October 28, and January 21 PAG meetings, as well as an email sent out on December 12th to all PAG members.

Indicator 8-1 | Measure 8-1.1 Heritage Conservation

Measure 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 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 measure 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 the signatories to evaluate how successful this implementation is and improve procedures if required.

Table 74: Forest Operations consistency with the Heritage Conservation Act

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	0	0	0	0	100.0%
BCTS	0	0	0	0	0	100.0%
TOTAL	0	0	0	0	0	100.0%

Source: Signatory operational plans

Measure Discussion: There were no operations with associated sites protected under the Heritage Conservation Act conducted during the reporting period.

Indicator 8-1 | Measure 8-1.2 TOR Review (First Nations Rights)

Measure Statement	Target and Variance
Maintain and review at least annually and as required the Mackenzie SFMP PAG Terms of Reference to recognize that First Nation participation in the public process will not prejudice First Nations rights and Treaty rights.	<u>Target:</u> At least once annually <u>Variance:</u> none

It is the intent of the signatories to respect all duly established First Nations and Treaty rights. This measure was designed to ensure the PAG Terms of Reference respects First Nations treaty right and participation without prejudice.

Table 75: Review of Public Advisory Group Terms of Reference

Review of ToR and Recognition of Aboriginal and Treaty Rights				Total for DFA
Meeting Dates				
October 28, 2008				1

Source: PAG Meeting Summaries

Measure Discussion:

Indicator 8-2 | Measure 8-2.1 Participation (First Nations)

Measure Statement	Target and Variance
The number of opportunities for First Nations to provide meaningful input into our planning processes.	<u>Target:</u> >= 2 per First Nation <u>Variance:</u> none

This measure 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 measure 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.

Table 76: Opportunities for First Nations to participate in planning processes

Opportunity	Signatory	First Nation								Total
		Tsay Keh	Kwadacha	Takla Lake	Nak'azdli	McLeod Lake	West Moberly	Saulteau	Halfway River	
Open House	Canfor	0	0	0	0	0	0	0	0	0
	BCTS	0	0	0	0	0	0	0	0	0
Scheduled Meetings	Canfor	0	0	0	0	0	0	0	0	0
	BCTS	1	1	0	3	2	1	0	0	8

Letters	Canfor	0	0	0	0	0	0	0	0	0
	BCTS	1	1	1	6	5	5	2	5	26
Newspaper Ads	Canfor	0	0	0	0	0	0	0	0	0
	BCTS	1	1	1	1	1	1	1	1	8
Pest Management Prescriptions	Canfor	0	0	0	0	0	0	0	0	0
	BCTS	0	0	0	0	0	0	0	0	0
Natural Resource Committee	Canfor	0	0	0	0	0	0	0	0	0
	BCTS	0	0	0	0	0	0	0	0	0
TOTAL		3	3	2	10	8	7	3	6	42

Source: Signatory communication records.

Measure Discussion:

Indicator 8-3 | Measure 8-3.1 Concerns (First Nations)

Measure Statement	Target and Variance
Percentage of issues raised by First Nations peoples evaluated and responded to in a timely manner by Canfor and BCTS.	Target: 100% Variance: 10%

Incorporating management strategies into the planning process in order to resolve issues raised by First Nations leadership is a key aspect to sustainable forest management. This measure 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.

Table 77: Concerns raised by First Nations and corresponding response from Canfor or BCTS

Signatory	Number of Issues Raised by First Nations' Peoples	Number of Issues Evaluated and Responded to in a Timely Manner	Percent
Canfor	0	0	100%
BCTS	9	8	88.9%
TOTAL	9	8	88.9%

Source: Signatory communication records and operational, tactical, or site plans.

Measure Discussion:

What Happened?	BCTS Rationale Why (Root Cause)?	Action Plan
BCTS response was sent after 30 days.	There was uncertainty around BCTS' ability to engage parties in discussions on issues which appeared to be outside management obligations. Lack of awareness around SFM target. There has been ongoing communication to resolve issue.	Where responses are required to written inquiries, BCTS staff will utilize the tracking and reminder tools in ITS or the Genus Planning Module to record, assign responsibility, and set actions in place to ensure that response are made within the 30 day window.

Indicator 8-3 | Measure 8-3.2 Participation Effectiveness (First Nations)

Measure Statement	Target and Variance
Percentage of issues raised by First Nations' Chief and Council or their authorized representative developed into mutually agreed upon strategies.	Target: 100% Variance: 50%

The intent for this measure is to monitor actual resolution to concerns that arise through measure 8-3.1. In this way, the measure becomes an effectiveness monitoring measure and we make the assumption that more resolution to concerns raised by First Nations contributes to social value in general.

Table 78: The effectiveness of participation with First Nations

Signatory	Number of Issues Raised by First Nations' Chief & Council or Authorized Representatives	Number of Issues Developed Into Mutually Agreed Upon Strategies	Percent
Canfor	0	0	100%
BCTS	9	5	55.6%
TOTAL	9	5	55.6%

Source: Signatory operational, tactical, or site plans.

Measure Discussion:

Indicator 8-4 | Measure 8-4.1 Participation Effectiveness (First Nations)

Measure Statement	Target and Variance
Incorporation of mutually agreed upon strategies to address First Nation peoples' values, knowledge, and uses into SFMP, operational plans, tactical plans, and/or site plans.	<u>Target:</u> 100% <u>Variance:</u> 50%

The development of mutually agreed upon management strategies is only the first step in SFM. Incorporation of those strategies into the SFMP, operational plans, tactical plans and/or site plans demonstrates recognition of First Nations forest values, knowledge, and uses. Monitoring adherence to these strategies is a measure of the success of these strategies to address the issues they were developed for.

This measure will report on the incorporation of the strategies that were developed to address First Nations issues. As these strategies are put into place tracking of plans incorporating these strategies will begin to determine whether these concerns are being addressed appropriately and the process developed to do so is working.

Table 79: Incorporation of First Nations strategies

Signatory	Number of Mutually Agreed Upon Strategies	Number of Strategies Incorporated Into SFM, Operational, Tactical, or Site Plans.	Percent
Canfor	0	0	100%
BCTS	5	5	100%
TOTAL	5	5	100%

Source: Signatory operational, tactical, or site plans.

Measure Discussion:

Indicator 8-4 | Measure 8-4.2 Implementation Effectiveness (First Nations)

Measure Statement	Target and Variance
Percentage of forest operations consistent with mutually agreed upon strategies developed with First Nations.	<u>Target:</u> 100% <u>Variance:</u> 0%

The consistency of forest operations with mutually agreed upon strategies "closes the loop" by taking the strategy and ensuring that it has been implemented as intended. Monitoring adherence to the implementation of these strategies is a measure of the success of the process outlined in Measures 8-3.1, 8-3.2, and 8-4.1 and monitors the success of these strategies to address the issues they were developed for.

This measure will report on the implementation of the strategies that were developed to address First Nations issues. As these strategies are put into place tracking of forest activities compliance with these strategies will begin to determine whether these concerns are being addressed appropriately.

Table 80: Implementation of First Nations strategies

Signatory	Total Number of Forest Operations				Number of Forest Operations Completed in Accordance with Agreed Upon Strategies	Percent
	Roads	Harvesting	Silviculture	Total		
Canfor	0	0	0	0	0	100.0%
BCTS	0	0	0	0	0	100.0%

TOTAL	0	0	0	0	0	100.0%
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Source: Signatory operational plans

Measure Discussion: None of the previously agreed to strategies for blocks and roads have been yet been implemented on the ground.

Indicator 9-1 | Measure 9-1.1 Recreation

Measure Statement	Target and Variance
The percentage of harvest operations consistent with results and strategies for recreation values as identified in operational plans, tactical plans, and/or site plans.	<u>Target:</u> 100% <u>Variance:</u> 0%

This measure was designed to monitor the signatories' success at implementing planned requirements for recreation. Areas used for industrial forestry are also important to many others for their recreational values. Resources and opportunities for recreation include; berry picking, wildflowers (sensitive), bird watching, hiking, snowmobiling, canoeing, hunting, fishing, camping, skiing, etc. Plans, such as Site Plans, describe the activities forest operations must be consistent with to meet recreation objectives. By monitoring and tracking the consistency of operations with operational plans, forest managers can assess the success of their activities and take steps to improve operations if required. The consideration of non-timber values such as recreation is important to sustainable forest management as it recognizes the multiple benefits forests can provide to society.

Table 81: The percentage of harvest operations consistent with recreation strategies

Signatory	Total Number of Harvest Operations	Number Completed in Accordance with Recreation Requirements	Percent
Canfor	0	0	100.0%
BCTS	5	5	100.0%
TOTAL	5	5	100.0%

Source: Signatory operational plans

Measure Discussion:

Indicator 9-2 | Measure 9-2.1 Visual Quality

Measure Statement	Target and Variance
The percentage of harvesting and road building operations consistent with visual quality requirements as identified in operational, tactical, and/or site plans.	<u>Target:</u> 100% <u>Variance:</u> 0%

The measure is designed to ensure that those operational plans with identified strategies to conserve visual quality have those strategies implemented on the ground. The maintenance of visual quality in scenic areas is an important aspect of sustainable forest management because this measure contributes to overall landscape condition and social acceptance of industrial forestry. Monitoring the success of the requirements of the operational, tactical and/or site plans to meet VQOs will help to ensure that visual quality is conserved for future generations.

Visually sensitive areas are defined as viewsapes that have been identified through a previous planning process. During Forest Stewardship Plan preparation, scenic areas are identified on a map and if harvesting operations are planned for an area that contains VQOs, information will be further identified in a Site Plan. Visual Impact Assessments (VIAs) help determine block shape, location and internal retention options. At the site level, strategies are included in the Site Plan to minimize visual impacts.

Table 82: The percentage of harvest operations consistent with visual quality requirements

Signatory	Total Number of Forest Operations			Operations with visual quality Requirements	Number of Forest Operations Completed in Accordance with Results or Strategies	Percent
	Roads	Harvesting	Total			
Canfor	0	0	0	0	0	100.0%
BCTS	25	5	30	1	1	100.0%
TOTAL	25	5	30	1	1	100.0%

Source: Signatory operational plans

Measure Discussion:

Indicator 9-2 | Measure 9-2.2 Green-up buffers

Measure Statement	Target and Variance
The percentage of harvest operations consistent with visually effective green-up buffer along roads as identified in the Mackenzie LRMP.	Target: 100% Variance: 0%

The public generally has a negative perception of large disturbance events regardless whether they are unmanaged-natural events or those associated with resource development. Often these events change our view of landscapes over large areas for long periods of time. The magnitude of anthropogenic change, both spatially and temporally, can be mitigated by retaining visual barriers (e.g., along road ways) in the form of green trees and other vegetation. There is also a safety hazard associated around FSRs and main haul roads where blowing snow can hamper visibility. Our intent with this measure is to monitor our commitment to minimizing the safety hazard and the apparent negative visual effect of large disturbances caused by forest harvesting, in those locations referenced in the Mackenzie LRMP.

Table 83: The percentage of harvest operations consistent with green-up buffers along roads

Signatory	Total Number of Harvest Operations	Number Consistent with Green-Up Buffers	Percent
Canfor	0	0	100.0%
BCTS	5	5	100.0%
TOTAL	5	5	100.0%

Source: GIS

Measure Discussion:

Indicator 9-3 | Measure 9-3.1 Resource Features

Measure Statement	Target and Variance
Percent of identified unique and/or significant places and features of social, cultural, or spiritual importance that are managed or protected.	Target: 100% Variance: 0%

Resource features are site-specific elements that have a unique importance because specific ecological factors exist in combination at one place and don't often occur similarly elsewhere. Examples are caves, Karst, or culturally modified trees but in general can be declared through regulation as any of the following:

- Karst;
- A range development;
- Crown land used for research;
- Permanent sample sites;
- A cultural heritage resource;
- An interpretive forest site or trail;
- A recreational site or trail; or
- A recreational feature.

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. Our intent with this measure is to monitor our commitment to manage and protect regulated resource features.

Table 84: The percentage of resource features that are managed or protected

Signatory	Number of Identified Resource Features Within Areas of Operation	Number of Identified Resource Features Managed or Protected	Percent
Canfor	0	0	100.0%
BCTS	0	0	100.0%
TOTAL	0	0	100%

Source:

Measure Discussion:**Indicator 9-4 | Measure 9-4.1 Safety Policy**

Measure Statement	Target and Variance
Written safety policies in place and full implementation are documented.	<u>Target:</u> 2 <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.

Table 85: The number of safety policies in place

Signatory	Written Safety Policies in Place and Implementation Documented ? (Y/N)
Canfor	1
BCTS	1
TOTAL	2

Source: Signatory safety records

Measure Discussion:**Indicator 9-4 | Measure 9-4.2 Accidents**

Measure 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. All signatories consider 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 EMS policies. This measure was developed to track and report out on the number of lost time workplace accidents that occur within Canfor's woodlands division and the field operations of BCTS. Operations conducted outside the woodlands division and field operations have been excluded from this measure; however the signatories currently promote 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 measure, only LTA will be tracked and monitored.

Table 86: The number of lost time accidents

Signatory	Number of Lost Time Accidents
Canfor	0
BCTS	0
TOTAL	0

Source: Signatory safety records

Measure Discussion:**Indicator 9-5 | Measure 9-5.1 Signage**

Measure Statement	Target and Variance
Signage on FSRs and main haul roads to be kept current.	<u>Target:</u> 100% <u>Variance:</u> -5%

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 measure 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.

Table 87: The percentage of industrial activities that have signs removed following completion of activities

Signatory	Number of Completed Industrial Activities with Signs Posted to Advise the Public	Number of Signs Removed Following Completion	Percent
Canfor	0	0	
BCTS	36	33	91.7%
TOTAL	36	33	91.7%

Source:**Measure Discussion:**

Appendix 1

Table 2: Old, Old/Mature, and Old Interior Forest Retention on the Mackenzie Defined Forest Area

Mackenzie Old Growth and Old Interior Summary Table Defined Forest Area

Assessment Date - April 2009

Targets based off of the Ministerial Order for Non-spatial Landscape Biodiversity Objectives in the Mackenzie Forest District.

Future assumes that all planned blocks are harvested within the DFA (BCTS, Canfor, and Abitibi)

Current reflects all known harvest blocks completed within the DFA as of March 31, 2008 (BCTS, Canfor, and Abitibi)

Landscape Unit Group within the DFA	B.E.O.	B.E.C Group	CFLB (ha)	Old Growth						Old Interior					
				Target Minimum %	Target Area (ha.)	Current Area (ha.)	Current %	Future Area (ha.)	Future %	Target Minimum % of Old	Target Area (ha.)	Current Area (ha.)	Current %	Future Area (ha.)	Future %
Blackwater (includes Muscovite Lakes Park)	L	2	20979.87	9	1888.2	17735.87	85	16955.08	81	10	188.8	12715.64	673	11481.51	608
	L	3	0	9	0.0	0	0	0	0	25	0.0	0	0	0	0
	L	4,7	94711.25	11	10418.2	52225.47	55	46897.09	50	10	1041.8	20197.32	194	15577.21	150
	L	5	61070.88	11	6717.8	38350.91	63	35250.79	58	10	671.8	14276.76	213	11668.44	174
	L	8	43.07	13	5.6	42.61	99	42.61	99	10	0.6	25.92	463	25.92	463
Akie River	L	2	58076.25	9	5226.9	54495.5	94	54268.86	93	10	522.7	40594.6	777	40043.58	766
	L	7	28346.88	11	3118.2	25142.53	89	22631.2	80	10	311.8	17016.61	546	13302.47	427
	L	8	3723.41	13	484.0	2235.44	60	2203.57	59	10	48.4	1333.41	275	1284.11	265
Bufflohead (includes Ed Bird Estella Park)	L	2	75223.61	9	6770.1	61204.28	81	60591.43	81	10	677.0	44129.34	652	43049.66	636
	L	5	0	11	0.0	0	0	0	0	10	0.0	0	0	0	0
	L	7	84186.52	11	9260.5	58930.74	70	53917.38	64	10	926.1	27484.29	297	22484.55	243
	L	8	10140.34	13	1318.2	4666.23	46	4646.56	46	10	131.8	2394.25	182	2290.72	174
Collins Davis	L	2	49793.88	9	4481.4	43615.12	88	41288.63	83	10	448.1	27574.28	615	24414.2	545
	L	3	34226.48	19	6503.0	28999.21	85	28584.53	84	25	1625.8	15547.65	239	14638.76	225
	L	4	22031.72	11	2423.5	15182.15	69	14201.81	64	10	242.3	5421.82	224	4493.31	185

	L	5	32183.38	9	2896.5	24764.78	77	23744.99	74	10	289.7	13982.41	483	12444.67	430
	L	7	9563.14	11	1051.9	7594.93	79	6577.53	69	10	105.2	3673.5	349	2547.83	242
	L	8	4461.73	13	580.0	3752.2	84	3749.4	84	10	58.0	1939.09	334	1936.16	334
Germansen Mtn.	L	2,7	7856.06	9	707.0	7810.7	99	7614.76	97	10	70.7	5412.75	766	5412.75	766
	L	8	5.22	13	0.7	5.22	100	5.22	100	10	0.1	4.46	657	4.46	657
Gaffney, Manson River	L	2	79867.94	9	7188.1	66320.56	83	69437.04	87	10	718.8	43418.78	604	49658.14	691
	L	5	5712.27	9	514.1	4810.02	84	5145.77	90	10	51.4	2358.17	459	3641.47	708
	L	4	76301.08	11	8393.1	58930.32	77	41271.09	54	10	839.3	26130.66	311	21469.9	256
	L	8	0	13	0.0	0	0	0	0	10	0.0	0	0	0	0
Clearwater	I	3	43778.14	19	8317.8	39317.52	90	38351.52	88	50	4158.9	21052.77	253	21052.77	253
	I	2	10024.68	9	902.2	9119.79	91	8484.14	85	25	225.6	6035.68	669	6035.68	669
	I	5	22023.81	9	1982.1	16623.56	75	15933.82	72	25	495.5	7192.71	363	7192.71	363
	I	8	0	13	0.0	0	0	0	0	25	0.0	0	0	0	0
Morfee	I	3	2415.71	19	459.0	2315.92	96	2315.92	96	50	229.5	1597.22	348	1597.22	348
	I	4	6532.05	11	718.5	4820.33	74	4695.33	72	25	179.6	1869.81	260	1828.55	254
	I	5	4464.63	9	401.8	3872.99	87	3754.95	84	25	100.5	1958.63	487	1818.31	453
Pesika	I	2	24256.45	9	2183.1	23281.86	96	23264.06	96	25	545.8	13255.2	607	13217.11	605
	I	7	6969.87	11	766.7	6774.99	97	6697.52	96	25	191.7	4808.76	627	4671.38	609
	I	8	960.44	13	124.9	912.3	95	907.23	94	25	31.2	619.94	497	594.75	476
Schooler	I	2	36974.96	9	3327.7	31514.07	85	31327.96	85	25	831.9	21010.4	631	20760.89	624
	I	6	13033.11	11	1433.6	10142.18	78	10100.14	77	25	358.4	5827.82	407	5772.76	403
	I	8	2079.02	13	270.3	1498.69	72	1497	72	25	67.6	1061.48	393	1055.44	391
Lower Ospika	I	2	35905.96	9	3231.5	31279.97	87	30637.68	85	25	807.9	15313.82	474	14347.34	444
	I	3	14020.97	19	2664.0	11663.87	83	11466.34	82	50	1332.0	6033.21	226	5730.77	215
	I	4	20762.84	11	2283.9	14597.88	70	12958.89	62	25	571.0	6534.36	286	4671.75	205
	I	5	6140.45	9	552.6	4384.61	71	3822.13	62	25	138.2	2921.73	529	1939.34	351
Gillis, Klawli	I	2	80053.77	9	7204.8	72300.13	90	67120.4	84	25	1801.2	39655.64	550	35232.99	489
	I	4	13894.05	11	1528.3	12106.57	87	10507.82	76	25	382.1	4798.78	314	2981.23	195
	I	7	5221.08	11	574.3	5173.98	99	4797.06	92	25	143.6	2907.03	506	2347.85	409
	I	8	173.94	13	22.6	173.94	100	172.82	99	25	5.7	95.77	424	94.59	418
Nabesche	I	2	24426.75	9	2198.4	22423.17	92	21956.07	90	25	549.6	12066.56	549	11685.26	532
	I	3	43190.67	19	8206.2	37735.15	87	37259.11	86	50	4103.1	23313.24	284	22929.38	279
	I	4	4324.63	11	475.7	2994.49	69	2994.49	69	25	118.9	1312.69	276	1312.69	276
	I	5	12926.09	9	1163.3	10031	78	9600.69	74	25	290.8	6132.88	527	5858.94	504
	I	6	9025.1	11	992.8	6425.5	71	6173.66	68	25	248.2	2576.85	260	2370.21	239
	I	8	357.69	13	46.5	181.66	51	180.26	50	25	11.6	93.47	201	92.07	198
Parsnip	I	3	48334.23	19	9183.5	46734.67	97	46362.14	96	50	4591.8	31763.64	346	31198.73	340

(includes Heather Dina Lake Park)	I	2	0	9	0.0	0	0	0	0	25	0.0	0	0	0	0
	I	5	25695.23	9	2312.6	21559.78	84	19474.2	76	25	578.1	14315.78	619	11159.32	483
	I	4	22868.95	11	2515.6	15062.3	66	12125.1	53	25	628.9	4156.75	165	2584.66	103
	I	8	0	13	0.0	0	0	0	0	25	0.0	0	0	0	0
Twenty Mile	I	2	12457.34	9	1121.2	12246.08	98	11290.02	91	25	280.3	9290.82	829	7667.12	684
	I	7	3018.54	11	332.0	3013.4	100	2531.43	84	25	83.0	2020.73	609	1293.99	390
	I	8	99.94	13	13.0	99.94	100	99.94	100	25	3.2	69.48	535	69.48	535
Misinchinka, Tudyah B	L/I	2	0	9	0.0	0	0	0	0	25	0.0	0	0	0	0
	L/I	5	34892.88	9	3140.4	23829.68	68	20671.37	59	25	785.1	9451.94	301	6869.86	219
	L/I	4	19126.97	11	2104.0	12682.51	66	10027.85	52	25	526.0	4435.81	211	2806.32	133
	L/I	3	31282.95	19	5943.8	30545.77	98	30148.16	96	50	2971.9	23968.98	403	23127.77	389
	L/I	8	0	13	0.0	0	0	0	0	25	0.0	0	0	0	0
Philip	L/I	2	58639.75	9	5277.6	45678.79	78	41805.98	71	25	1319.4	25640.13	486	21398.83	405
	L/I	5	4868.02	9	438.1	3419.24	70	2766.99	57	25	109.5	836.4	191	539.73	123
	L/I	4	107592.7	11	11835.2	80945.61	75	72819.95	68	25	2958.8	31063.68	262	24200.59	204
	L/I	8	0	13	0.0	0	0	0	0	25	0.0	0	0	0	0
Philip, Philip Lake, Tudyah A	L/I	2	62801.07	9	5652.1	48623.21	77	44573.38	71	25	1413.0	26881.09	476	22518.4	398
	L/I	5	4868.02	9	438.1	3419.24	70	2766.99	57	25	109.5	836.4	191	539.73	123
	L/I	4	118828.5	11	13071.1	88381.18	74	79968.89	67	25	3267.8	32837.81	251	25733.42	197
	L/I	8	0	13	0.0	0	0	0	0	25	0.0	0	0	0	0
Connaghan Creek, Eklund, Jackfish, South Germansen – Upper Manson	H	2,5	33438.44	13	4347.0	31387.96	94	30595.72	91	25	1086.7	24100.44	554	22751.8	523
	H	7	14823.93	16	2371.8	13958.66	94	13407.16	90	25	593.0	8008.79	338	7197.39	303
	H	4	5105.21	16	816.8	4677.21	92	4581.91	90	25	204.2	2681.63	328	2392.61	293
	H	8	1457.48	19	276.9	1446.21	99	1446.2	99	25	69.2	935.05	338	925.4	334
Kennedy	H	3	13037.72	28	3650.6	12585.65	97	12574.7	96	50	1825.3	8385.87	230	8349.04	229
	H	5,4	5772.37	13	750.4	4428.22	77	4162.61	72	25	187.6	2035.78	271	1754.77	234
	H	8	0	19	0.0	0	0	0	0	25	0.0	0	0	0	0
Lower Akie, Lower Pesika	H	2	4450.61	13	578.6	3429.5	77	3429.5	77	25	144.6	2143.26	370	2143.26	370
	H	7	12727.91	16	2036.5	10426.49	82	9810.31	77	25	509.1	4994.33	245	4291.15	211
	H	8	3370.12	19	640.3	1202.86	36	1202.36	36	25	160.1	441.03	69	433.35	68
Upper Ospika	H	2, 3	18570.49	13	2414.2	18139.28	98	18139.28	98	50	1207.1	14321.15	593	14321.15	593
	H	4	2660.05	16	425.6	2500.26	94	2500.26	94	25	106.4	1679.25	395	1679.25	395
Nation	H	4,5	12243.63	16	1959.0	10326.11	84	8716.97	71	25	489.7	4724.21	241	3653.4	186
	H	8	0	19	0.0	0	0	0	0	25	0.0	0	0	0	0
Selwyn	H	3	13276.42	28	3717.4	13116.88	99	13013.49	98	50	1858.7	7401.78	199	7212.17	194
	H	5,2	18229.96	13	2369.9	14195.41	78	13852.42	76	25	592.5	7465.36	315	6959.75	294
	H	6,4	2700.14	16	432.0	1921.58	71	1861.64	69	25	108.0	890.2	206	792.08	183

	H	8	2820.06	19	535.8	2206.83	78	2202.54	78	25	134.0	1143.95	213	1124.51	210
LU's Enhanced Deciduous Leading BWBS	L	8		13						10					
LU's General Deciduous Leading BWBS	I	8		13						25					
LU's Special Deciduous Leading BWBS	H	8		19						25					

Table 6, 7, and 8: Patch size Distribution on the Mackenzie Defined Forest Area

April 2009 Patch size Analysis

Current State of depletions as of March 31, 2008

Table 6

Enhanced Management Strategy Resource Management Zones																				
Landscape Unit Group within the DFA	NDT	Current Total Area of patches (ha)	Future Total Area of patches (ha)	NDT 1, 2, and 3 =<40					NDT 1 and 2 = 40-80, NDT 3 = 40-250					NDT 1 and 2 = 80-250, NDT 3 = 250-5000					over maximum	
				Target Range %	Current Area (ha)	Current %	Future Area	Future %	Target Range %	Current Area (ha)	Current %	Future Area	Future %	Target Range %	Current Area (ha)	Current %	Future Area	Future %	Current %	Future %
Blackwater	1	0.0	0.0	30-40	0.0	0	0.0	0	30-40	0.0	0	0.0	0	20-40	0.0	0	0.0	0	0%	0%
	2	8091.6	12225.8	30-40	97.4	1%	127.6	1%	30-40	1180.3	15%	1535.6	13%	20-40	1983.7	25%	2885.4	24%	60%	63%
	3	10894.9	16297.1	10-20	196.1	2%	341.5	2%	10-20	2271.8	21%	4216.6	26%	60-80	8427.0	77%	11739.0	72%	0%	0%
Germansen Mtn.	1	0.0	0.0	30-40	0.0	0	0.0	0	30-40	0.0	0	0.0	0	20-40	0.0	0	0.0	0	0%	0%
	2	66.6	266.4	30-40	0.0	0%	0.0	0%	30-40	0.0	0%	0.0	0%	20-40	0.0	0%	64.9	24%	100%	76%
	3	2.9	2.9	10-20	0.0	0%	0.0	0%	10-20	0.0	0%	2.9	100%	60-80	2.9	100%	0.0	0%	0%	0%
Philip	1	0.0	0.0	30-40	0.0	0	0.0	0	30-40	0.0	0	0.0	0	20-40	0.0	0	0.0	0	0%	0%
	2	7318.8	12361.2	30-40	139.8	2%	365.9	3%	30-40	863.6	12%	1506.8	12%	20-40	2109.3	29%	3976.0	32%	57%	53%
	3	15482.2	23697.5	10-20	144.9	1%	337.8	1%	10-20	1957.5	13%	5906.8	25%	60-80	8829.4	57%	191062.6	806%	29%	-733%
Morfee	1	0.0	0.0	30-40	0.0	0	0.0	0	30-40	0.0	0	0.0	0	20-40	0.0	0	0.0	0	0%	0%
	2	460.9	614.4	30-40	25.6	6%	43.6	7%	30-40	114.3	25%	133.0	22%	20-40	187.1	41%	283.0	46%	29%	25%
	3	1061.7	1365.1	10-20	4.9	0%	61.0	4%	10-20	430.1	41%	637.0	47%	60-80	626.8	59%	802.7	59%	0%	-10%
Akie	1	0.0	0.0	30-40	0.0	0	0.0	0	30-40	0.0	0	0.0	0	20-40	0.0	0	0.0	0	0%	0%
	2	454.3	1111.8	30-40	0.0	0%	34.5	3%	30-40	69.5	15%	330.1	30%	20-40	277.2	61%	352.8	32%	24%	35%
	3	2180.5	4375.7	10-20	34.4	2%	9.3	0%	10-20	438.1	20%	1049.8	24%	60-80	1708.0	78%	3256.7	74%	0%	1%
Buffalohead	1	0.0	0.0	30-40	0.0	0	0.0	0	30-40	0.0	0	0.0	0	20-40	0.0	0	0.0	0	0%	0%
	2	5645.1	6945.4	30-40	117.3	2%	131.5	2%	30-40	630.6	11%	740.3	11%	20-40	859.3	15%	868.4	13%	72%	75%
	3	18830.4	23271.4	10-20	275.5	1%	398.8	2%	10-20	2786.8	15%	3706.0	16%	60-80	8268.0	44%	11114.5	48%	40%	35%
Collin Davis	1	0.0	0.0	30-40	0.0	0	0.0	0	30-40	0.0	0	0.0	0	20-40	0.0	0	0.0	0	0%	0%
	2	5549.2	9367.3	30-40	65.4	1%	178.2	2%	30-40	460.4	8%	807.9	9%	20-40	994.5	18%	1917.4	20%	73%	69%
	3	4829.7	6379.4	10-20	102.7	2%	0.0	0%	10-20	1121.8	23%	0.0	0%	60-80	3605.3	75%	6379.4	100%	0%	0%

Table 7

General and Special Management Strategy Resource Management Zones																				
Landscape Unit Group within the DFA	NDT	Current Total Area of patches (ha)	Future Total Area of patches (ha)	NDT 1, 2, and 3 =<40					NDT 1 and 2 = 40-80, NDT 3 = 40-250					NDT 1 and 2 = 80-250, NDT 3 = 250-1000					over maximum	
				Target Range %	Current Area (ha)	Current %	Future Area	Future %	Target Range %	Current Area (ha)	Current %	Future Area	Future %	Target Range %	Current Area (ha)	Current %	Future Area	Future %	Current %	Future %
Clearwater	1	1015.5	2705.2	30-40	20.0	2%	117.5	4%	30-40	238.3	23%	579.9	21%	20-40	426.3	42%	810.0	30%	33%	44%
	2	1073.7	1693.2	30-40	104.3	10%	180.2	11%	30-40	381.8	36%	488.2	29%	20-40	293.9	27%	298.3	18%	27%	43%
	3	0.0	0.0	10-20	0.0	0	0.0	0	10-20	0.0	0	0.0	0	60-80	0.0	0	0.0	0	100%	100%
Lower Akie Peskia	1	0.0	0.0	30-40	0.0	0	0.0	0	30-40	0.0	0	0.0	0	20-40	0.0	0	0.0	0	100%	100%
	2	7.1	7.1	30-40	0.0	0%	0.0	0%	30-40	0.0	0%	0.0	0%	20-40	0.0	0%	0.0	0%	100%	100%
	3	1689.0	2333.5	10-20	14.7	1%	30.4	1%	10-20	96.6	6%	183.7	8%	60-80	533.2	32%	707.4	30%	62%	61%
Nation	1	0.0	0.0	30-40	0.0	0	0.0	0	30-40	0.0	0	0.0	0	20-40	0.0	0	0.0	0	100%	100%
	2	93.5	93.5	30-40	12.6	13%	12.6	13%	30-40	0.0	0%	0.0	0%	20-40	80.9	87%	80.9	87%	0%	0%
	3	402.9	2061.6	10-20	1.6	0%	21.2	1%	10-20	20.2	5%	274.7	13%	60-80	0.3	0%	1.2	0%	94%	86%
Parsnip	1	304.4	331.2	30-40	28.6	9%	29.2	9%	30-40	133.6	44%	316.5	96%	20-40	111.7	37%	178.6	54%	10%	-58%
	2	1781.5	3923.3	30-40	70.8	4%	134.1	3%	30-40	288.4	16%	681.3	17%	20-40	662.7	37%	1054.4	27%	43%	52%
	3	3207.2	6224.3	10-20	40.3	1%	43.9	1%	10-20	649.8	20%	928.8	15%	60-80	450.4	14%	554.2	9%	64%	75%
Philip Lake Tudyah A	1	0.0	0.0	30-40	0.0	0	0.0	0	30-40	0.0	0	0.0	0	20-40	0.0	0	0.0	0	100%	100%
	2	8048.0	13359.3	30-40	147.4	2%	234.9	2%	30-40	1128.5	14%	1510.0	11%	20-40	2176.6	27%	2774.4	21%	57%	66%
	3	17388.8	25815.0	10-20	208.9	1%	329.3	1%	10-20	2264.3	13%	3753.7	15%	60-80	3000.6	17%	4366.0	17%	69%	67%
Selwyn	1	0.0	126.7	30-40	0.0	0	0.0	0%	30-40	3.2	0	3.2	3%	20-40	0.0	0	0.0	0%	100%	97%
	2	428.3	860.3	30-40	63.9	15%	105.6	12%	30-40	167.9	39%	147.7	17%	20-40	121.1	28%	121.1	14%	18%	56%
	3	69.4	106.8	10-20	0.0	0%	0.0	0%	10-20	69.4	100%	69.4	65%	60-80	0.0	0%	37.4	35%	0%	0%
Lower Ospika	1	0.0	0.0	30-40	0.0	0	0.0	0	30-40	0.0	0	0.0	0	20-40	0.0	0	0.0	0	100%	100%
	2	939.2	1940.6	30-40	0.0	0%	16.4	1%	30-40	36.6	4%	305.8	16%	20-40	83.4	9%	339.0	17%	87%	66%
	3	2192.2	4262.3	10-20	51.4	2%	84.4	2%	10-20	444.2	20%	1115.2	26%	60-80	710.7	32%	1579.7	37%	45%	35%
Nabesche	1	380.5	1095.4	30-40	83.0	22%	268.0	24%	30-40	68.8	18%	379.8	35%	20-40	144.4	38%	371.5	34%	22%	7%
	2	2262.9	2169.2	30-40	123.0	5%	189.4	9%	30-40	264.1	12%	522.2	24%	20-40	525.3	23%	366.2	17%	60%	50%
	3	1596.7	1328.6	10-20	38.1	2%	38.1	3%	10-20	337.5	21%	565.9	43%	60-80	334.1	21%	367.4	28%	56%	27%
Pesika	1	0.0	0.0	30-40	0.0	0	0.0	0	30-40	0.0	0	0.0	0	20-40	0.0	0	0.0	0	100%	100%
	2	72.0	72.7	30-40	0.0	0%	0.0	0%	30-40	0.0	0%	0.0	0%	20-40	72.0	100%	72.7	100%	0%	0%
	3	179.0	278.7	10-20	9.3	5%	9.3	3%	10-20	169.7	95%	269.4	97%	60-80	0.0	0%	0.0	0%	0%	0%
Schooler	1	0.0	0.0	30-40	0.0	0	0.0	0	30-40	0.0	0	0.0	0	20-40	0.0	0	0.0	0	100%	100%
	2	2495.0	2728.4	30-40	24.9	1%	24.9	1%	30-40	112.0	4%	112.0	4%	20-40	558.6	22%	558.6	20%	72%	75%
	3	243.4	245.2	10-20	20.7	8%	20.7	8%	10-20	88.7	36%	88.7	36%	60-80	7.4	3%	9.2	4%	52%	52%
Upper Ospika - no blocks	1	0.0	0.0	30-40	0.0	0	0.0	0	30-40	0.0	0	0.0	0	20-40	0.0	0	0.0	0	100%	100%
	2	0.0	0.0	30-40	0.0	0	0.0	0	30-40	0.0	0	0.0	0	20-40	0.0	0	0.0	0	100%	100%

	3	0.0	0.0	10-20	0.0	0	0.0	0	10-20	0.0	0	0.0	0	60-80	0.0	0	0.0	0	100%	100%
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Table 8

Caribou Management Strategy Resource Management Zones																				
Landscape Unit Group within the DFA	NDT	Current Total Area of patches (ha)	Future Total Area of patches (ha)	<40					40-250					250-5000					over maximum	
				Target Range %	Current Area (ha)	Current %	Future Area	Future %	Target Range %	Current Area (ha)	Current %	Future Area	Future %	Target Range %	Current Area (ha)	Current %	Future Area	Future %	Current %	Future %
Connaghan Creek, Eklund, Jackfish, S. Germansen	1	0.0	0.0		0.0	0	0.0	0		0.0	0	0.0	0		0.0	0	0.0	0	0%	0%
	2	1455.5	2434.8	30-40	11.4	1%	11.4	0%	30-40	1091.0	75%	1241.8	51%	20-40	353.1	24%	1181.7	49%	0%	0%
	3	810.0	1275.5	10-20	71.3	9%	115.3	9%	10-20	551.6	68%	757.1	59%	60-80	187.1	23%	403.1	32%	0%	0%
Gaffney - Manson River	1	0.0	0.0		0.0	0	0.0	0		0.0	0	0.0	0		0.0	0	0.0	0	0%	0%
	2	10021.8	14527.3	30-40	200.0	2%	342.2	2%	30-40	5763.2	58%	7078.1	49%	20-40	4058.5	40%	6822.4	47%	0%	2%
	3	10310.8	18857.6	10-20	145.5	1%	173.5	1%	10-20	2250.6	22%	2493.9	13%	60-80	7501.3	73%	13939.5	74%	4%	12%
Gillis - Klawli	1	0.0	0.0		0.0	0	0.0	0		0.0	0	0.0	0		0.0	0	0.0	0	0%	0%
	2	4799.5	11412.1	30-40	63.6	1%	65.2	1%	30-40	812.9	17%	970.1	9%	20-40	3923.0	82%	10376.7	91%	0%	0%
	3	259.3	911.3	10-20	1.6	1%	6.5	1%	10-20	59.0	23%	282.3	31%	60-80	198.7	77%	622.6	68%	0%	0%
Kennedy	1	0.0	25.5		0.0	0	0.0	0%		0.0	0	13.0	51%		0.0	0	12.5	49%	0%	0%
	2	928.5	1175.2	30-40	47.4	5%	47.4	4%	30-40	25.7	3%	113.4	10%	20-40	855.5	92%	1014.4	86%	0%	0%
	3	0.0	18.1	10-20	0.0	0	0.0	0%	10-20	0.0	0	18.1	100%	60-80	0.0	0	0.0	0%	0%	0%
Misinchinka TudyahB	1	81.1	433.6		22.9	28%	30.5	7%		50.5	62%	265.0	61%		7.7	9%	138.1	32%	0%	0%
	2	4186.8	7145.8	30-40	162.5	4%	229.7	3%	30-40	1182.4	28%	1926.9	27%	20-40	2841.9	68%	4989.2	70%	0%	0%
	3	3715.3	6910.4	10-20	83.8	2%	145.1	2%	10-20	252.8	7%	950.7	14%	60-80	3378.7	91%	5771.2	84%	0%	1%
Twenty Mile	1	0.0	0.0		0.0	0	0.0	0		0.0	0	0.0	0		0.0	0	0.0	0	0%	0%
	2	150.7	1330.2	30-40	0.0	0%	0.0	0%	30-40	0.0	0%	297.0	22%	20-40	157.1	104%	1299.1	98%	-4%	-20%
	3	6.3	266.0	10-20	0.0	0%	0.0	0%	10-20	0.0	0%	238.2	90%	60-80	6.3	100%	245.7	92%	0%	-82%