

FORT ST. JAMES DEFINED FOREST AREA SUSTAINABLE FOREST MANAGEMENT PLAN



Public Advisory Group



August 2018

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SIGNATORIES


The following have committed to implement and maintain, on a continuous improvement basis, the Fort St. James Sustainable Forest Management Plan.



Bruce Raby, R.P.F., Forestry Superintendent
Canadian Forest Products Ltd., Forest Management Group

Aug 31, 2018


Date



Nicholas Plett, R.P.F., Forestry Supervisor, Planning
Canadian Forest Products Ltd., Forest Management Group

Aug 31, 2018

Date



Peter Baird, R.P.F., General Manager, Forest Planning
Canadian Forest Products Ltd., Forest Management Group

Aug. 31/18

Date

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COMMITMENTS TO SUSTAINABLE FOREST MANAGEMENT

Canadian Forest Products Ltd. (Canfor) believes in conducting its business in a manner that protects the environment and ensures sustainable forest development. The following Environmental Policy and Sustainable Forest Management (SFM) Commitments will detail the commitments to SFM for the Fort St. James Defined Forest Area (DFA). These commitments are available and communicated publicly.




ENVIRONMENT POLICY

WE ARE COMMITTED TO RESPONSIBLE STEWARDSHIP OF THE ENVIRONMENT THROUGHOUT OUR OPERATIONS.

WE WILL:

- Comply with or exceed legal requirements.
- Comply with other environmental requirements to which the company is committed.
- Achieve and maintain sustainable forest management.
- Set and review objectives and targets to prevent pollution and to continually improve our sustainable forest management and environmental performance.
- Provide opportunities for interested parties to have input into our sustainable forest management planning activities.
- Promote environmental awareness throughout our operations.
- Conduct regular audits of our forest and environmental management systems.
- Communicate our sustainable forest management and environmental performance to our Board of Directors, shareholders, employees, customers and other interested parties.

JUNE 2016  **DON KAYNE**
President and Chief Executive Officer

 **MICHAEL KORENBERG**
Chairman

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SUSTAINABLE FOREST MANAGEMENT COMMITMENTS



SUSTAINABLE FOREST MANAGEMENT

WE WILL MANAGE FORESTS TO MAINTAIN AND ENHANCE THE LONG-TERM HEALTH OF FOREST ECOSYSTEMS, WHILE PROVIDING ECOLOGICAL, ECONOMIC, SOCIAL AND CULTURAL OPPORTUNITIES FOR THE BENEFIT OF CURRENT AND FUTURE GENERATIONS. IN THE MANAGEMENT OF FORESTS, WE WILL HONOUR RELEVANT INTERNATIONAL AGREEMENTS AND CONVENTIONS TO WHICH CANADA IS A SIGNATORY.

ACCOUNTABILITY

We will be accountable to the public for managing forests to achieve current and future values. One way we will demonstrate this is by certifying our forestry operations to internationally recognized, third-party verified sustainable forest management certification standards.

ADAPTIVE MANAGEMENT

We will use adaptive management to continually improve sustainable forest management by identifying values, setting objectives and targets for the objectives, and monitoring results. We will modify management practices as necessary to achieve the desired results.

SCIENCE

We will utilize science to improve our knowledge of forests and sustainable forest management and will monitor and incorporate advances in sustainable forest management science and technology where applicable.

MULTIPLE VALUE MANAGEMENT

We will manage forests for a multitude of values, including biodiversity, timber, water, soil, wildlife, fish/riparian, visual quality, recreation, resource features and cultural heritage resources.

HEALTH AND SAFETY

We will conduct our operations in a manner which will provide a safe environment for employees, contractors, and others who use roads and forest areas we manage.

ABORIGINAL PEOPLES

We recognize and will respect Aboriginal rights, title and treaty rights when planning and undertaking forest management activities.

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OPPORTUNITIES FOR PARTICIPATION

We will provide opportunities for the public, communities, Aboriginal Peoples and other stakeholders and with rights and interests in sustainable forest management to participate in the development and monitoring of our Sustainable Forest Management Plans.

SCALE

We will define objectives over a variety of time intervals (temporal scales) and at spatial scales of stand, landscape and forest. This produces ecological diversity and allows for the management of a range of conditions, from early successional to old growth.

TIMBER RESOURCE

We will advocate for a continuous supply of affordable timber from legal sources in order to carry out our business of harvesting, manufacturing and marketing forest products for the sustained economic benefit of our employees, the public, communities and shareholders, today and for future generations.

FOREST LAND BASE

We will advocate for the maintenance of the forest land base as an asset for current and future generations.

JUNE 2016

A handwritten signature in black ink, appearing to read "Don Kayne".

DON KAYNE

President and Chief Executive Officer

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ACKNOWLEDGEMENTS

The development of this Sustainable Forest Management Plan could not happen without the dedicated efforts and hard work of the people and organizations listed below

Members of the Fort St. James Public Advisory Group

Beulah Broen

Robert Frederick

Henner Grimm

Peter Rooke

Ron Timothy

Joanne Vinnedge

Joe Vogl

Canfor Forest Management Group

Bruce Raby, R.P.F., Planning Coordinator

Nicholas Plett, R.P.F., Forestry Supervisor, Planning

Peter Baird, R.P.F., General Manager, Forest Planning

Facilitator

Brenda Hopkin – Hopkin Forest Management Consulting Ltd.

EXECUTIVE SUMMARY

This Sustainable Forest Management Plan (SFMP) was originally developed between 2004 and 2006 by a local group of forest licensees, stakeholders, and aboriginal representatives for the Fort St. James Defined Forest Area (DFA). Members of the SFM Public Advisory Group (PAG) represented a cross-section of local interests including recreation, tourism, ranching, forestry, conservation, water, community and Aboriginals.

The SFMP includes a set of values, objectives, indicators and targets that address environmental, economic and social aspects of forest management in the Fort St. James DFA. The plan is based on the Canadian Standards Association (CSA) Sustainable Forest Management; Requirements and Guidance, which is one of the primary certification systems currently being used in British Columbia. A SFMP developed according to the CSA standard sets performance objectives and targets over a defined forest area (DFA) to reflect local and regional interests. Consistent with most certifications, and as a minimum starting point, the CSA standard requires compliance with existing forest policies, laws and regulations. Substantive changes to the SFMP occurred in 2011, in order to address the CSA¹ standard requirements, as well as to standardize SFMP content across various operations. This current version of the SFMP reflects the requirements of the CSA standard's requirements (CSA Z809-16).

Irrespective of changes occurring to the CSA SFM standard, the SFMP is an evolving document that is reviewed and revised annually with the PAG to address changes in forest conditions and local community values. Each year the PAG reviews an annual report prepared by the licensees to assess achievement of indicators and targets. This monitoring process provides the licensees, the public and Aboriginals an opportunity to bring forward new information and to provide input concerning new or changing public values that can be incorporated into future updates of the SFMP.

Following completion of the SFMP and the development of an environmental management system, a licensee may apply for registration of its operating area under the CSA standard and will be audited to the current standards of CSA Z809.

The Canfor certification website contains the latest information on the Fort St. James DFA process, including the SFM Plan, and can be viewed at:

<http://canfor.com/responsibility/forest-management/plans>

¹ CSA Z809-08 standard

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1.0 INTRODUCTION & OVERVIEW

The Canadian Standards Association (CSA) Sustainable Forest Management Standard is one of a number of certification systems currently being used in British Columbia. A Sustainable Forest Management Plan (SFMP) developed according to the CSA standard, defines values, objectives, indicators and targets over a defined forest area (DFA) to reflect local and regional interests. This standard requires that SFMP development, maintenance and improvement include significant public involvement. Public Advisory Groups (PAGs) such as the PAG, composed of a cross-section of local interests, including commercial and non-commercial recreation, tourism, ranching, forest contactors, conservation, mining, communities, small business, and Aboriginals, fulfill this role.

Canfor² in the Fort St. James DFA, working with the PAG, develops, maintains and updates, the Fort St. James DFA SFMP to reflect the current version of the CSA Z809 standard.

This most recent SFMP revision reflects the latest CSA Z809-16 standard. The plan was written with the opportunity to provide input into management for the Fort St. James DFA.

The SFMP serves as a “roadmap” to current and long-term management in the DFA, setting performance targets and management strategies that are reflective of the ecological, social, and economic values of the DFA. The plan is consistent with other strategic plans such as the Fort St. James Land and Resource Management Plan (LRMP) and the Forest Stewardship Plan (FSP).

It is the intent that the values, objectives, indicators, targets and guiding principles described in this plan will continue to be adhered to by the licensees in the DFA, supporting sustainable forest management in the DFA. The SFMP is continuously evolving. It is reviewed and revised on an annual basis, with the PAG, to reflect changes in forest condition and local community values.

More information about the DFA certification process, Sustainable Forest Management Planning, meeting summaries, annual reporting and maps can be obtained at the Canfor website: <http://canfor.com/responsibility/forest-management/plans>

² Referred to as ‘licensee’ throughout this document. Refer to Sec 3.2.1 for a more complete description.

2.0 THE DEFINED FOREST AREA

2.1 Area Description³

2.1.1 Overview

The Defined Forest Area (DFA) for each Licensee is delineated by their traditional operating areas (see Table 1 for a map of Canfor Operating Areas). The DFA is defined as the Crown forested land base within each operating area excluding woodlots, private land, highways, utilities, mining, protected areas and parks. No harvesting will be proposed in protected areas or parks.

The Fort St. James DFA is approximately 1,156,255 hectares in total land area and of this total approximately 739,650 ha (Canfor 430,685 ha) are within the Timber Harvesting Land Base (THLB) (Table 1).

This land base contains a diversity of landscapes from the rolling northern interior plateau in the southern portion of the DFA to the extremely mountainous and largely unroaded landscapes in the north. The Fort St. James DFA contains many rivers and lakes, several which are highly valued for tourism and recreational purposes. The DFA also covers portions of three major river systems: the Skeena to the northwest, the Fraser in the south and the Peace in the eastern portion of the DFA (LRMP 1999).

An abundance of wildlife is present in the Fort. St. James DFA, including moose, mule and white-tailed deer, elk, cougar, sheep, mountain goat, black and grizzly bear, coyote, wolf and the woodland caribou (LRMP 1999). The area also supports a diversity of small furbearers including beaver, otter, mink, muskrat, fisher, wolverine and marten, and is home to over 173 bird species. Along with these important species of wildlife, the DFA supports a diversity of wildlife habitat crucial for the long-term survival of resident wildlife species.

Forests within the DFA consist of primarily lodgepole pine and spruce, with balsam fir at higher elevations and scattered patches of aspen. There are some areas of Douglas fir, primarily along the southern portion of the DFA, as this comprises the northern-most range for the species. The Fort St. James DFA also contains significant mineral values including jade, gold, and copper.

³ Description is primarily excerpts from “Fort St. James Land and Resource Management Plan, March 1999”

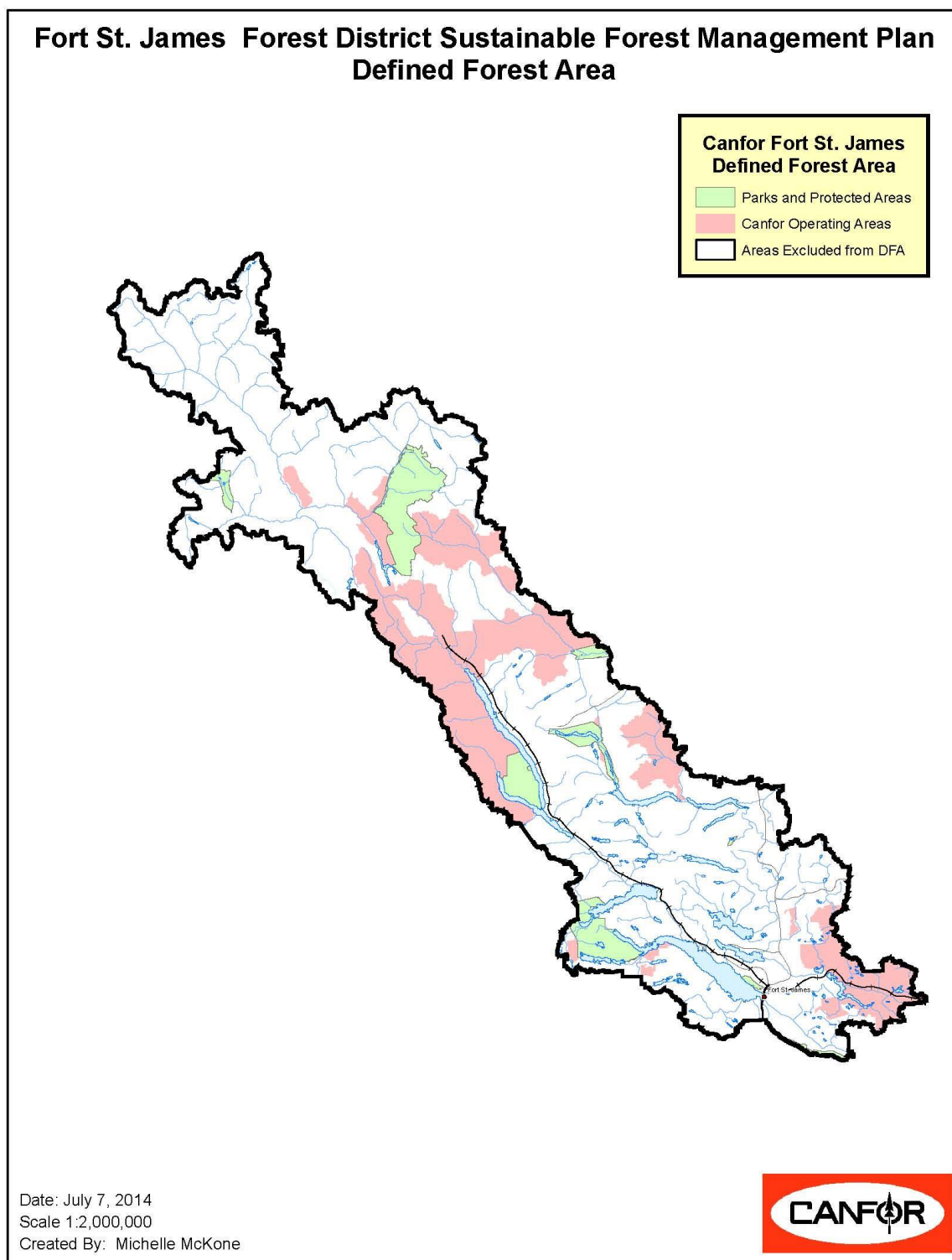


Figure 1: Map of the Fort St. James SFM Plan Defined Forest Area.

2.1.2 Communities

The plan area supported an estimated population of 4460 residents in 2011⁴⁵. The focal point for much of the economic activity is the largest community of Fort St. James (population 1,691 in 2011), which is where Nak'azdli is also located (534). Other communities include Tachie (409), Yekooche Village (88), Middle River, Takla Landing (183), Germansen Landing, and Bear Lake.

Aboriginal communities contribute significantly to the economic and community stability of the DFA. First Nations presently comprise approximately 30 percent of the population of the Fort St. James DFA (2011 census). This may be an underestimation due to the nature of the census process. There are seven First Nations communities (the former or alternate name of the community is in brackets): Yekooche (Portage/Nancut), Nak'azdli (Necoslie), Binché (Pinchi), Tl'azt'en (Tachie), Dzitl'ainli (Middle River), Takla Landing, and Bear Lake. First Nations that do not exist within the DFA but have Traditional Territory overlap are the Lheidli T'enneh First Nation and the McLeod Lake Indian Band. Additionally, the Halfway River and West Moberly First Nation have Treaty 8 overlaps within the DFA.

Fishing, hunting and berry gathering are undertaken on traditional territories. It is important for First Nations to have the opportunity to provide input into forest management planning processes, such as this SFMP, to ensure cultural heritage resources are identified and appropriate practices implemented to mitigate potential impacts resulting from planned forestry activities. Conservation of historical and cultural features within the DFA is important, as is the involvement of First Nations people in management decisions, in order to promote a sustainable forest management. There are no final First Nation Treaty Agreements within the DFA. See the Ministry of Indigenous Relations and Reconciliation website for the current status of BC Treaty Negotiations within the DFA (<https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/consulting-with-first-nations/first-nations-negotiations>).

In appreciation of their association with the DFA, Canfor prepared this SFMP by providing First Nations with the opportunity to participate in its development. This SFMP and the associated processes “recognize Aboriginal and treaty rights and agree that Aboriginal participation in the public participation process will not prejudice those rights”.

2.1.3 Area Economy

The economy of the Fort St. James area is mainly forestry dependant (49%⁶). Forestry employment exists in the form of silviculture activities, harvesting operations, road construction and maintenance, hauling, planning and management activities, and mill-related employment, including a major portion of primary and value-added manufacturing. The DFA contains two active sawmills. Considerable indirect forest industry employment is also generated through logging contractors, trucking firms, equipment supply, machinery repair, fuel distributors and a variety of other support services. Wood chips and sawdust, produced as a by-product of the lumber manufacturing process and from timber unsuitable for lumber, are used for pulp, paper,

⁴ Reference: Statistics Canada. 2012. Census profile. 2011 Census. Statistics Canada Catalogue no. 98-316-XWE. Ottawa. Released February 8 2012. <http://www12.statcan.gc.ca/census-recensement/2011/dp-pd/prof/index.cfm?Lang=E>

⁵ Statistics Canada 2011 Census data is the most current for the 2017 SFMP update.

⁶ Prince George Timber Supply Area Rationale for AAC Determination, effective October 11, 2017

panelboard, post & rail and pellet production in several facilities in and outside the area. The majority of those employed by the forest sector reside within the plan area.

Other major sectors in the area are mining, recreation, tourism and agriculture.

Mineral exploration is also present within the DFA, including industrial mining of gold and copper. Exploration, site development and active mining practices are ongoing activities within the DFA depending on markets and economic viability in extraction of the particular resource.

Recreation opportunities are provided by various interest groups within the DFA (eg. Fort St. James Snowmobile Club). Local residents and commercial tourism operators (guide outfitters, commercial lodges and resorts) make use of the extensive backcountry and wilderness values present within the DFA.

The Caledonia Classic Dogsled Race (founded in 1997) is an annual winter event that attracts mushers and dogsled enthusiasts from across North America. The Caledonia Classic is the only race in Canada that combines sprint, mid-distance, and long-distance races into one exciting weekend. A small core of volunteers has worked hard to diversify the local economy, support local youth and provide a consistent high-quality race experience. Fort St. James is home to the most dog mushers per capita in BC.

Forest Service recreation sites, campgrounds and access to rugged hiking opportunities along rivers, lakes and streams are some of the recreation opportunities available to the public due to the extensive forest road system in the DFA.

Commercial tourism through lodges, resorts and guided wilderness adventure experiences such as hunting, fishing and hiking is another forest dependent sector growing within the DFA. These commercial tourism operators, along with other members of the public, forest licensees, and other interest groups must achieve sustainable and integrated management of the forest resource in order to satisfy all their values. Proper management and forest planning with consideration of all parties will assist in the conservation and enhancement of recreational values for current and future forest use.

Agriculture adds to the economic stability of Fort St. James. In general, the agricultural land resource is characterized by a low level of development, as most current agricultural enterprises in the area are small in size and non-intensive in mode of production. Agricultural operations, including mixed farming and livestock production.

2.1.4 Environment

The DFA presents a diversity of landscapes, from the rolling landscapes of the northern interior plateau in the southern portion of the district to the extremely mountainous and largely unroaded landscapes of the north.

Mountain ranges in the planning area include the Frypan, Driftwood, Sicintine, Groundhog and Mitchell ranges. There are also significant peaks such as Goldway Peak, Sustut Peak and Notchtop Peak.

The DFA contains four Natural Disturbance Units (NDUs) and five biogeoclimatic ecosystem classification (BEC) subzones, which are landscape level classifications based on natural disturbance type and ecosystem respectively. A diverse range of vegetation, wildlife and habitat exists throughout the DFA and these classifications will help to streamline management activities based on the natural landscape and environmental condition.

Major river systems within the DFA include the Stuart, Driftwood, Middle and Necoslie. Each of the river systems supports spawning runs of salmon and other fish species. The Sustut River

drains into the Skeena River system and contains runs of salmon, steelhead and resident fish species.

The DFA supports an abundance of wildlife. Resident mammals include moose, mule and white-tailed deer, elk, cougar, sheep, mountain goat, black and grizzly bear, coyote, wolf and woodland caribou. The area is home to approximately 13 furbearer species, including (but not limited) to beaver, otter, mink, muskrat, fisher, wolverine, and marten. Some 173 bird species are found within the planning area, with 52 species described as winter residents. Owls, cavity nesters and songbirds are widespread, as are waterfowl and some species of shorebirds. The area is home to a number of blue-listed wildlife species, including grizzly bear, trumpeter swan, fisher, great blue heron, and American bittern.

Forests are mostly lodgepole pine and spruce, with balsam at higher elevations and scattered patches of aspen. There are some areas of Douglas-fir, particularly along the shores of Stuart Lake. A history of frequent wildfires has left a mosaic of forest ages. Old and mature balsam stands are found in the northern portion of the planning area and are also associated with some patches of Douglas-fir elsewhere.

2.1.5 Species at Risk

Species at Risk is defined in this SFMP as those species being listed as Endangered, Threatened, or Special Concern by the Canadian government under the *Species at Risk Act* (SARA), recommended for listing on SARA by COSEWIC (Committee for the Status of Endangered Wildlife in Canada), or on the Red (Endangered or Threatened) or Blue (Vulnerable) list by the BC Conservation Data Centre.

Canfor utilizes the BC Species & Ecosystems Explorer website⁷ to produce an ongoing “live” species list for the DFA. It includes current species from Schedule 1 –SARA, COSEWIC, Schedule 1 – BC Identified Wildlife Management Strategy (IWMS) under the Forest and Range Practices Act (FRPA), and Blue & Red listed species listed – BC Conservation Data Center. The species that are considered impacted by forest management activities are called “Species of Management Concern”.

Appendix 3 describes the process that Canfor follows to determine the “Sites of Management Concern”. Current species listings are made available to Canfor staff.

2.1.6 Forest Use

The forests of the Fort St. James DFA provide a wide range of forest land resources, including forest products (timber and non-timber, such as botanical forest products), recreation and tourism amenities, within significant wildlife habitat.

Arable lands and agricultural operations are located in the southern portion of the planning area where soils and climate are favourable. The Stuart, Necoslie and Ocock river valleys have silty clay soils left from glacial-lacustrine soils (lakebeds), which are well suited for agriculture.

The most common products are domestic and game farmed livestock, feed grains and vegetables. The frost-free period of 60 to 90 days, with a low heat-unit accumulation, limits production to cool season crops. Despite climatic limitations, forage crop production forms an integral component of almost all farms and is an important practice for soil conservation in the area.

⁷ BC Species & Ecosystems Explorer website – <https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/conservation-data-centre/explore-cdc-data/species-and-ecosystems-explorer>

There is good potential for forage crops, and some increased agricultural development and intensification. There is some grazing activity, with permits managed through the Forest Service. The growth of developing agricultural lands in the local area over the past twenty years was facilitated by agricultural lease policies, and grazing opportunities on Crown lands

Parks, recreation areas and other Crown lands provide the setting for a host of activities. The Fort St. James District land base provides ample opportunity for hunting and fishing pursuits. The watersheds that characterize the Fort St. James District are world renowned for the combination of variety of species, large size of fish, fly-fishing opportunities, and pristine wilderness situations. Trophy-sized steelhead are sought after on the shores of the world class Sustut River, which is a Class A angling river. There are many Provincial Parks within or adjacent to the DFA. These include: Nation Lakes, Stuart Lake, Mudzenchoot, Trembleur Lake and the Stuart Lake Marine Park. Parks, Protected Areas and Ecological Reserves are excluded from the THLB, and subsequently from timber harvest activities.

The Fort St. James District has abundant supplies of high quality surface water in rivers, streams, wetlands and lakes. Groundwater supplies are also generally of high quality.

2.1.7 Forest Landbase

The Fort St. James DFA, within the FLNRORD Stuart Nechako Natural Resource District covers about 3.1 million hectares in total, of which approximately 91 percent—2.9 million hectares—is forest management land base (FMLB). About 735,441 hectares of the Forest Management Land Base (FMLB) area in the Fort St. James District are in reserves for old growth, wildlife tree patches or riparian areas, in areas of environmental sensitivity or low productivity, support non-merchantable forest types, or for other reasons are unavailable for timber harvesting. About 44 percent of the total TSA area is included in the current timber harvesting land base of 1,396,969 hectares. A detailed area net down for Canfor's DFA in the Fort St. James District is found in Table 1.

Table 1: Area Summary for Canfor DFA⁸⁹

Licensee Operating Area							
	Excluded ³	Non-Forest	Park	Other non-THLB ⁴	THLB ¹	Forested ²	Total Area
Not Assigned	49,591.2	547,598.9	151,056.3	329,256.3	176,124.7	1,052,980.0	1,253,627.6
Pct of area	4.0%	43.7%	12.0%	26.3%	14.0%	84.0%	100.0%
Apollo	4,071.5	5,653.8	366.1	14,565.2	68,595.2	88,814.2	93,251.9
Pct of area	4.4%	6.1%	0.4%	15.6%	73.6%	95.2%	100.0%
BCTS DFA	9,008.6	39,346.0	1,083.5	101,400.6	298,964.4	439,711.0	449,803.0
Pct of area	2.0%	8.7%	0.2%	22.5%	66.5%	97.8%	100.0%
Canfor DFA	1,321.9	103,873.4	4,166.8	166,404.9	430,685.4	700,963.7	706,452.4
Pct of area	0.2%	14.7%	0.6%	23.6%	61.0%	99.2%	100.0%
Carrier	10.9	3,827.1	165.1	9,969.7	27,478.6	41,275.4	41,451.3
Pct of area	0.0%	9.2%	0.4%	24.1%	66.3%	99.6%	100.0%
Conifex	4,549.8	33,893.1	1,237.5	56,159.6	216,717.8	306,770.5	312,557.8
Pct of area	1.5%	10.8%	0.4%	18.0%	69.3%	98.1%	100.0%
Consortium 6	0.0	7,031.3	64.9	12,515.5	35,811.1	55,357.8	55,422.7
Pct of area	0.0%	12.7%	0.1%	22.6%	64.6%	99.9%	100.0%
Lakeland	66.9	12,558.7	287.6	15,353.5	29,945.4	57,857.6	58,212.0
Pct of area	0.1%	21.6%	0.5%	26.4%	51.4%	99.4%	100.0%

⁸ Reference: Data for table provided from Ecosystem Representation Analysis Report Jan 2012 Forest Ecosystems Solutions Ltd.

⁹ NOTE: This table is based on AAC Determination effective 2011, A new AAC Determination for the Prince George TSA has been set, effective October 11, 2017. Apportionment, as determined by FLNRORD, has not been set. This table will be updated following apportionment.

Licensee Operating Area							
	Excluded ³	Non-Forest	Park	Other non-THLB ⁴	THLB ¹	Forested ²	Total Area
Sinclair	373.1	6,153.9	174.8	15,550.3	17,616.3	39,320.6	39,868.4
Pct of area	0.9%	15.4%	0.4%	39.0%	44.2%	98.6%	100.0%
Stuart Lake	1,674.4	4,505.2	105.9	5,892.9	57,024.7	67,422.8	69,203.2
Pct of area	2.4%	6.5%	0.2%	8.5%	82.4%	97.4%	100.0%
Tanizul	47,706.5	309.5	78.7	66.6	127.2	503.3	48,288.5
Pct of area	98.8%	0.6%	0.2%	0.1%	0.3%	1.0%	100.0%
Winton Global	571.2	5,844.9	139.3	8,305.8	37,878.4	52,029.1	52,739.5
Pct of area	1.1%	11.1%	0.3%	15.7%	71.8%	98.7%	100.0%
Total	118,946	770,596	158,926	735,441	1,396,969	2,903,006	3,180,878
	3.7%	24.2%	5.0%	23.1%	43.9%	91.3%	100.0%

1 - Timber Harvesting Landbase. 2 - Excludes parks and excluded areas. 3 - Areas classified as non-crown ownership, agriculture and settlement, and unclassified lands. 4 - Includes wildlife, riparian, VQO, ESA, physically inoperable and economically inoperable.

2.2 Mountain Pine Beetle

2.2.1 Overview

Over the past two decades, mountain pine beetle has severely impacted mature lodgepole pine (PI) stands in the Prince George DFA. A summary of the situation is described based on excerpts from the following publications:

- Omineca Region – Forest Health Strategy 2017-2018. 2017¹⁰
- Mountain Pine Beetle Projections¹¹
- Provincial Forest Health Strategy – 2013-2016¹²
- Prince George TSA – MFLNRORD Rationale for Allowable Annual Cut Determination. 2017¹³.
- Prince George TSA – MFLNRORD Timber Supply Review Public Discussion Paper. 2016¹⁴.
- Provincial-level projection of the Current Mountain Pine Beetle Outbreak¹⁵

The mountain pine beetle (MPB), *Dendroctonus ponderosae* Hopkins (Coleoptera: Scolytidae), is the most damaging insect attacking lodgepole pine forests in BC. Mountain pine beetles exist naturally in mature lodgepole pine forests, at various population levels, depending on pine availability and weather conditions. They play an important role in the natural succession of these forests by attacking older or weakened trees, which are then replaced by younger, healthy forests. During the latest infestation the beetle population levels in BC's interior increased steadily beginning in 1994 with a peak in 2007, followed by steady decline through 2017. During the course of this outbreak approximately 731 million m³ (54%) of B.C.'s merchantable pine volume was likely killed (red- and grey-attack). By the time it is over (by 2020) the infestation will have killed an estimated 55 percent of B.C.'s mature merchantable pine – significantly less than the 80 percent projected mortality published in 2006..

¹⁰ Reference: https://www.for.gov.bc.ca/ftp/HFP/external!/publish/Forest_Health/TSA_FH_Strategies/170828_2017%20OFHS_C_final.pdf

¹¹ Reference: <https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/forest-health/forest-pests/bark-beetles/mountain-pine-beetle/mpb-projections>

¹² Reference: <https://www.for.gov.bc.ca/hfp/health/strategy/Forest%20Health%20Strategy.pdf>

¹³ Reference: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/stewardship/forest-analysis-inventory/tsr-annual-allowable-cut/prince_george_tsa_rationale_2017.pdf

¹⁴ Reference: <https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/timber-supply-review-and-allowable-annual-cut/allowable-annual-cut-timber-supply-areas/prince-george-tsa>

¹⁵ Reference: <https://www.for.gov.bc.ca/hre/bcmpb/>

2.2.2 Area Affected¹⁶

Mountain pine beetle, although still of moderate importance, has been displaced by spruce beetle and Douglas-fir beetle as the top forest health priority in the Prince George District within which the DFA is located. The area infested by the mountain pine beetle continues to decline significantly and the volume lost to mountain pine beetle has decreased steadily since the peak of the infestation in 2007. At the peak of the infestation in 2007, 10 million hectares in BC were impacted. In recent years the majority of the best management strategies for mountain pine beetle in the Prince George DFA focused on salvage of dead and dying lodgepole pine trees.

2.2.3 Strategy & Response

The Prince George TSA Forest Health Strategy has been developed to provide guidance for harvesting of lodgepole pine (PI) stands susceptible to MPB attack. This document is updated annually. Planning and harvesting of stands affected by MPB needs to maintain other resource values, as well as protect mid-term timber supply values. As the outbreak draws to its natural conclusion, there is little short-term action that can be applied beyond the continued salvage of beetle-killed pine where it is economically feasible and ecologically reasonable. The general strategy for mountain pine beetle should be longer term planning of pine-dominated forests while keeping in mind other forest health factors (e.g., blights, mistletoe and rusts). Reforestation of mountain pine beetle-killed stands must be conducted while keeping mind the prevention of future outbreaks. In the long term, this insect population is only temporarily reduced, and given climate predictions for this region, a population outbreak will likely recur when the host population recovers.

Potential rehabilitation of immature stands through the Forests for Tomorrow program is being conducted. .

Management objectives concerning MPB include:

- Ensure that Salvage strategy targets are met;
 - Salvage - minimize unsalvaged losses by harvesting beetle-killed trees through large-scale operations.
- Reduce negative impacts of bark beetle infestations and salvage operations on biodiversity and other forest values;
- Direct harvest into pine-leading stands;
- Retain attacked stands that have a secondary structure component that makes them viable in the mid-term;
- Ensure immediate reforestation of attacked areas.

These objectives are consistent with the Provincial Mountain Pine Beetle Action Plan¹⁷, and the goals and management direction of the Prince George LRMP.

¹⁶ Description is primarily excerpts from “Omenica Forest Health Strategy 2017-18, June 2017”

¹⁷ Reference: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/forest-health/mountain-pine-beetle/mountain_pine_beetle_action_plan_2006.pdf

Management strategies have assisted in securing the maximum value in pine forests that have been killed or threatened by the beetle. The majority of the Prince George District is currently following the Salvage strategy.

2.3 Spruce Beetle

2.3.1 Overview

Spruce beetle, like mountain pine beetle, is native to British Columbia and is a normal component of forest ecosystems in the region. However, since 2014 higher than normal populations have been detected in the Omineca region – which includes the Prince George Forest District. A summary of the situation is described based on excerpts from the following publications:

- Omineca Region – Forest Health Strategy 2017-2018. 2017¹⁸
- Omineca Spruce Beetle Outbreak¹⁹
- Q&A: Omineca Spruce Beetle outbreak – May 2018²⁰
- Spruce Beetles in British Columbia²¹
- Working Together: British Columbia's Spruce Beetle Mitigation Strategy – December 2016²²
- 2017 summary of Forest Health Conditions in British Columbia²³
- Natural Resources Canada – Spruce Beetle fact sheet²⁴

Spruce beetle, *Dendroctonus rufipennis* Kirby (Coleoptera: Scolytidae), is the most destructive pest of mature spruce trees in British Columbia. Spruce beetles exist naturally in mature spruce forests, at various population levels, depending on spruce availability, windthrow events, and

¹⁸ Reference:

https://www.for.gov.bc.ca/ftp/HFP/external!/publish/Forest_Health/TSA_FH_Strategies/170828_2017%20OFHS_C_final.pdf

¹⁹ Reference: <https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/forest-health/forest-pests/bark-beetles/spruce-beetle/omineca-spruce-beetle>

²⁰ Reference: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/forest-health/bark-beetles/qa_spruce_beetle_may_4_2018.pdf

²¹ Reference: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/forest-health/bark-beetles/5782_sprucebeetles_factsheet_flnro_web.pdf

²² Reference: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/forest-health/bark-beetles/4805dc_ominecasprucebeetlestrategy_web.pdf

²³ Reference: https://www2.gov.bc.ca/assets/gov/environment/research-monitoring-and-reporting/monitoring/aerial-overview-survey-documents/aos_report2017.pdf

²⁴ Reference: <https://tidcf.nrcan.gc.ca/en/insects/factsheet/2819>

weather conditions. Recent weather patterns, including warm springs, dry summers, warm winters, and windstorms (resulting in more tree blowdowns) have contributed to the current increase in spruce beetle populations in the region. At low population levels, the spruce beetle prefers weakened or decadent trees and downed spruce trees (i.e., windthrow, fallen logs, and harvesting residue). As the populations of spruce beetle increase, the insects are better able to attack and kill standing spruce trees that are otherwise healthy. A spruce beetle outbreak has the potential to seriously harm or kill spruce trees over large areas wherever mature spruce stands grow. In British Columbia, spruce beetle typically has a two-year life cycle although beetles exhibiting a one-year life cycle can also be found under favourable climatic conditions (e.g., early, warm spring weather). Identifying trees affected by spruce beetles can be a challenge as the dying and dead spruce do not assume the bright red colour common to most other dying conifers. An infested tree does display signs of stress or impending death until 13-15 months after being successfully attacked. The current infestation represents the largest spruce beetle outbreak in British Columbia since the 1980's in which 40,000 ha were impacted in the Bowron Valley east of Prince George. The previous infestation lasted 4 years.

2.3.2 Area Affected

As of fall 2017, more than 341,000 hectares of forest in the Omineca Region was found to be infested by spruce beetles, most of which (251,000 ha) is in the northern half of the Prince George Forest District. This is an increase from 210,000 ha in 2016 and 156,000 ha in 2015. In 2013 only 7,653 ha were infested with spruce beetle.

2.3.3 Strategy and Response

The provincial government is closely monitoring the spread of the spruce beetle and is working collaboratively with licensees, First Nations and public stakeholders to implement mitigation measures where it is feasible and appropriate to do so. The goal is to reduce spruce beetle populations through harvesting of infested timber while ensuring the protection of all forest values, including non-timber values and the mid-term timber supply. The document, "Working together: British Columbia's Spruce Beetle Mitigation Strategy²⁵", describes in more detail the various measures that are currently being implemented and future steps planned. Direction on the protection of other forest values (e.g., wildlife habitat) during spruce beetle control measures are being provided to forest professionals through guidance documents such as the "Omineca Stand and Landscape Level Retention guideline²⁶". This is in addition to other such measures (e.g., designated Ungulate Winter Ranges, Wildlife Habitat Areas, Fisheries Sensitive Watersheds, and Landscape Biodiversity Orders) already in place in the Prince George Forest District.

2.3.4 Impact on timber supply

To date there has been no increase in the Annual Allowable Cut to deal with the outbreak. Current harvesting in the region are strategically targeting stands to reduce beetle populations

²⁵ Reference: December 2016: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/forest-health/bark-beetles/4805dc_ominecasprucebeetlestrategy_web.pdf

²⁶ Reference: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/forest-health/bark-beetles/retentionguidance_spruce_beetle_20sept2017.pdf

and still recover the economic value of timber over the long term. In the Chief Forester's 2017 AAC determination for the Prince George Timber Supply Area it was stated that the expectation is that forest harvest operations over the next five-year period will be focused, to the extent possible, in dead, dying, and damaged stands. It was noted that if the spruce beetle remains of epidemic proportions that the Chief Forester may establish a partition at any time for trees alive and uninfested at the time of harvest to account for the recovery of dead fibre in spruce beetle-impacted stands.

It should be mentioned that the current spruce beetle outbreak differs in a number of ways from the recent mountain pine beetle infestation. The spruce beetle infestation has occurred in mixed species stands, it has exhibited a slower rate of spread, and the beetles don't often kill the entire spruce stand that they have attacked. However, the potential impact of this spruce beetle outbreak on the mid-term timber supply and local ecosystems could still be significant, since its effects would compound the damage already done by mountain pine beetles in British Columbia's forests.

2.4 Other Major Factors at Play in the DFA

Fort St. James Land and Resource Management Plan (LRMP)²⁷

The Government of British Columbia announced the Fort St. James Land and Resource Management Plan (LRMP) in March 1999. The LRMP addresses the long-term balance of environment and economy in the District. It provides access to timber for the local forest industry, certainty for the mining, ranching and tourism industries while also establishing conservation and recreation objectives for many natural values in the District. The stability and security provided by the plan, developed with a significant level of public involvement, provides economic and social stability and increased opportunities for growth and investment throughout the region.

Prince George TSA Biodiversity Order²⁸

In 2004, through a joint partnership between the Prince George Timber Supply Area forest licensees and the Northern Interior Region of the Ministry of Sustainable Resource Management (MSRM), landscape level objectives for biodiversity management were developed using local-level research of Natural Range of Variability (NRV) for the following elements:

- Old forest retention;
- Interior forest condition for old forest;
- Young forest patch size distribution.

The Values, Objectives, Indicators and Targets (VOITs) in this SFMP, have been developed to be consistent with the order to the extent practicable.

Fisheries Sensitive Watersheds (FSW)

A Government Actions Regulation (GAR) order establishing FSW's and associated objectives in the Fort St. James District is being considered by government. The objectives relate to the

²⁷ Reference: https://www.for.gov.bc.ca/tasb/slrp/pdf/LRMP/Fort%20St%20James_LRMP.pdf

²⁸ Reference: ILMB, 2004. Order Establishing Landscape Biodiversity Objectives for the Prince George Timber Supply Area. October 20, 2004

maximum allowable hydrologically disturbed area, managing fine sediment production, the maximum allowable stream crossing densities, maintaining the recruitment of large woody debris, and maintaining channel widths at stream crossings.

The VOITs' in this SFMP, have been developed to be consistent with the draft order as currently proposed to the extent practicable; however, the SFMP may need to be amended once the final order has been put into effect by government

2.5 Licensee Operating Areas

As the mountain pine beetle infestation winds down and the spruce beetle infestation increases Canfor will continue to focus forest management planning and harvesting activities in dead, dying, and damaged stands. The mountain pine beetle epidemic has had an effect on the ecological, social and economic indicators developed for this SFM Plan. The focus on pine harvest has resulted in additional Non - Replaceable Forest Licences (NRFL) being awarded to other licensees. Volume from licences outside the District have been transferred into the District on a short-term basis to help salvage as much pine as possible. Appendix 4 provides a detailed list of the license volumes that could be harvested in the DFA and an assessment of the risk this might pose to the SFMP.

Other licensees may conduct harvesting and associated activities on the DFA under authority given by the British Columbia government. Other licensees are responsible for the construction and maintenance of roads and stream crossings necessary to access the harvest areas approved by the British Columbia government.

Other licensees are responsible for hiring competent and skilled employees and are responsible for the direction, supervision, training and control of their employees. The performance of other licensees is subject to the review and inspection of British Columbia government compliance and enforcement officers and must fully comply with the applicable laws and regulations while operating on the DFA. The signatories to this plan do not have the right to direct or control other licensees and their employees and will not be responsible for their activities in the DFA under this SFM plan.

The signatories to this plan do have good working relationships with other operators in the Fort St. James District and communicate their SFM commitments to all known licensees prior to the commencement of operations in the DFA.

Of all the volume that could be harvested in the DFA, 48.7% is directly controlled by the plan signatory, 40% of the volume is considered low risk or nil risk to the SFMP. Because of this the overall risk of other operators impacting the VOIT's for this plan is considered to be low.

3.0 THE PLANNING PROCESS

3.1 The CSA Certification Process

The CSA Sustainable Forest Management (SFM) Standard²⁹ is Canada's national certification standard. The standard is a voluntary tool that provides independent third-party assurance that an organization is practicing sustainable forest management. Consistent with most certifications, the CSA standard expects compliance with existing forest policies, laws and regulations.³⁰

Participants under the CSA certification system must address the following two components:

- Participants must develop and achieve indicators and targets for on-the-ground forest management, monitored through an annual public review with the input of the public and Aboriginals (Sec 3.1.1 following).
- Participants who choose to be registered to the CSA standard must incorporate CSA-defined systems components into an internal environmental management system (EMS) (Sec 3.1.2 following).

For a licensee seeking certification to the CSA SFM standard, the DFA SFMP or a licensee-specific plan, complimentary to the DFA SFMP, is developed. The licensee-specific plans may contain additional information such as their defined forest area and internal means to monitor and measure the DFA SFMP components.

Applicants seeking registration to the CSA standard require an accredited and independent third-party auditor to verify that these components have been adequately addressed. Following registration, annual surveillance audits are conducted to confirm that the standard is being maintained. A detailed description of these two components and a summary of the CSA registration process are as follows.

3.1.1 Public/Aboriginal Involvement: Performance Requirements & Indicators

The CSA standard includes performance requirements for assessing sustainable forest management practices that influence on-the-ground forestry operations. The performance requirements are founded upon six sustainable forest management criteria:

- conservation of biological diversity;
- conservation of forest ecosystem condition and productivity;
- conservation of soil and water resources;
- forest ecosystem contributions to global ecological cycles;
- provision of economic and social benefits; and
- accepting society's responsibility for sustainable forest management.

Each of these criteria has a number of "elements" that further define the criteria. The criteria and associated elements are all defined under the CSA standard and must be addressed during development of the SFMP. The criteria are endorsed by the Canadian Council of Forest Ministers and are aligned with international criteria.

²⁹ CSA Z809 Standard was initially developed in 1996 and subsequently revised 2002, 2009 and 2016

³⁰ In the case of the SFMP for the Fort St. James DFA, this includes compliance with the strategic direction provided in the Fort St. James Land and Resource Management Plan (LRMP).

For each set of criteria and elements, forest managers, Aboriginals and the public identify local values and objectives. Core and local indicators and targets associated with each are assigned to the values and objectives to measure performance.

Values identify the key aspects of the elements. For example, one of the values associated with “species diversity” might be “sustainable populations of native flora and fauna.”

Objectives describe the desired future condition, given an identified value. For example, the objective to meet the value of sustainable populations of native flora and fauna might be “to maintain a variety of habitats for naturally occurring species.”

Indicators are measures to assess progress toward an objective. Indicators are intended to provide a practical, cost-effective, scientifically sound basis for monitoring and assessing implementation of the SFMP. There must be at least one indicator for each element and associated value. Core indicators have been included in the CSA standard for nearly all elements. Additionally, local indicators can be added to the SFMP.

Targets are a specific statement describing a desired future state or condition of an indicator. Targets provide a clear specific statement of expected results, usually stated as some level of achievement of the associated indicator. For example, if the indicator is “minimize loss to the timber harvesting land base,” one target might be “to have less than ‘x’ percent of harvested areas in roads and landings.”

Values, objectives, indicators, and targets apply to social, economic and ecological criteria and may address process as well as on-the-ground forest management activities. In the SFMP for the Fort St. James DFA, these indicators and targets were developed to be applied to the entire plan area.

As part of the process of developing values, objectives, indicators and targets, the PAG also assisted in the development of forecasts of predicted results for indicators and targets.

Forecasts are the long-term projection of expected future indicator levels. These have been incorporated into the SFMP targets as predicted results or outcomes for each target. Additional forecasting of indicators has occurred where there is some reliance on the TSR process. In these circumstances, forecasting is projected out over the next 250 years. More on the TSR process is available at:

<https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/timber-supply-review-and-allowable-annual-cut>

3.1.2 Public Review of Annual Reports & Third-Party Audits

Each year, the licensees compile a report that summarizes results for each of the indicators in the SFMP. This annual report is provided to the PAG for review and comment. Annual monitoring of achievements against indicators and targets, and comparing the actual results to forecasts, enables the SFMP to be continually improved. Continuous improvement is mandated by the CSA standard.

For a licensee registered to the CSA standard, conformance with the standard is assessed annually through surveillance audits carried out by a registered third-party auditor. The audit confirms that the registrant has successfully implemented the SFMP and continues to meet the CSA Standard. Audit summaries are available to the public.

3.1.3 Internal Infrastructure: Systems Components

The CSA SFM standard mandates a number of process or systems-related requirements called “systems components.” These systems components must be incorporated in a registrant’s internal environmental management system (EMS). Systems components include:

- **Commitment:** A demonstrated commitment to developing and implementing the SFMP.
- **Public and Aboriginal participation:** The CSA standard requires informed, inclusive and fair consultation with Aboriginals and members of the public during the development and implementation of the SFMP.
- **CSA-aligned management system:** The management system is an integral part of implementation of the SFMP and is designed to meet CSA standards. The management system has four basic elements: Planning, Implementing, Checking and Monitoring, and Review and Improvement. The management system, includes the following base components:
 - 1) Identify environmental risks.
 - 2) Identify standard operating procedures or develop performance measures to address significant risks.
 - 3) Develop emergency procedures in the event of an incident causing environmental impacts.
 - 4) Review all laws and regulations.
 - 5) Establish procedures for training. Provide updated information and training to ensure that forestry staff and contractors stay current with evolving forest management information and are trained to address environmental issues during forestry activities.
 - 6) If an incident does occur, conduct an investigation or incident review and develop an action plan to take corrective action, based on the preparation undertaken in steps 1 to 5.
- **Continual improvement:** As part of a licensee’s management system, the effectiveness of the SFMP is continually improved by monitoring and reviewing the system and its components. This includes a review of ongoing planning, public process and Aboriginal liaison to ensure that the management system is being implemented as effectively as possible.

3.1.4 CSA Registration

Following completion of a sustainable forest management plan, and the development of an environmental management system in accordance with the CSA standard, a licensee may apply for registration of its DFA. The determination of whether all the components of an SFM system applied to a DFA are in place and functional involves an on-the-ground audit of the DFA including field inspections of forest sites. The intent of the registration audit is to provide assurance that the objectives of sustainable forest management on the DFA are being achieved. The registration of a licensee’s DFA follows a successful registration audit by an eligible independent third party auditor who has assessed and determined:

- an SFMP, that meets the CSA Standard, has been developed and implemented, including confirmation that quantified targets for meeting sustainable forest management criteria have been established through a public participation process;
- an SFM Environmental Management System has been developed and is being used to manage and direct achievement of the SFMP indicators and targets; and

- progress toward achieving the targets is being monitored, and monitoring results are being used for continual improvement of the SFMP and Environmental Management System.

A typical registration audit may include:

- meeting with the advisory group facilitator to review the public advisory process;
- interviews with public advisory group members;
- a review of monitoring and reporting responsibilities related to CSA indicators and targets;
- meetings with government officials to discuss licensee performance and government involvement in development of the SFMP;
- field reviews visiting harvest and road construction operations;
- interviews with staff and/or contractors to review their understanding of the environmental management system requirements; and
- meetings with management to assess the level of commitment to environmental performance and sustainability.

In addition to the registration audit, regular surveillance audits are conducted to examine performance against all aspects of the SFM System, including the requirement that regulatory standards and policy requirements are met or exceeded.

3.2 The Fort St. James SFM Planning Process

The SFMP was developed by the licensees based on advice and recommendations provided by the PAG. The plan was developed to be in compliance with all existing legislation and policy and consistent with the strategic direction of higher level plans such as the Fort St. James Land and Resource Management Plan (LRMP). The plan is continually updated and improved to incorporate new information, changing values, recommendations from monitoring activities and new circumstances.

3.2.1 Licensee Participation

The licensees who hold replaceable Forest Licenses, worked with the PAG to develop initial performance measures (values, objectives, indicators and targets) for the SFMP that would meet the CSA Z809-02 standard. Originally, Canfor, BCTS, Takla Track and Timber, Carrier Lumber, Apollo Forest Products, and Stuart Lake Lumber were certified to the CSA standard for the Fort St. James SFMP. Apollo Forest Products, BCTS, Carrier Lumber and Stuart Lake Lumber have since dropped their CSA certification and therefore are not signatories to this plan. Takla Track and Timber is no longer an active entity in the DFA and their operating area is now managed by Canfor. On publicly owned land, the responsibility and accountability is ultimately with the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (MFLNRORD); however, the signatories to this plan are held responsible for forest management under legislative and contractual agreement through the tenure agreements.

The licensees make efforts to communicate periodically with Non-Replaceable Forest Licence (NRFL) holders to assess their impact on indicators in the SFM Plan.

To address the impact that other licensees may potentially have on achieving the targets, the licensees have developed a risk ranking matrix (Appendix 4) to display the estimated impact on these operations and provide confidence that the reporting is consistent with the reality of operations on the DFA.

3.2.2 Public Participation

The PAG was formed to assist the licensees in developing the SFMP by identifying local values, objectives, indicators and targets and evaluating the effectiveness of the plan.

Members of the PAG represented a cross-section of local interests including environmental organizations, Aboriginals, resource-based interests and research specialists. An open and inclusive process was used to formulate the public advisory group. Local Aboriginals were formally invited to participate. Various government ministries provided technical support to the SFM planning process, including information on resources and policy issues. The group developed, and was guided by, the Terms of Reference (TOR). The TOR was consistent with the CSA standard, and also specified that the process for developing the SFMP would be open and transparent. As part of updating the SFMP to meet the requirements of the CSA standard, considerable discussion occurred on specific topics related to the six Criteria.

The PAG reviews the annual report prepared by the licensees to assess achievement of indicators and targets. This monitoring process provides the licensees, the public and Aboriginals with an opportunity to bring forward new information and to provide input concerning new or changing public values that can be incorporated into future updates of the SFMP.

4.0 STRATEGY GUIDING THE SFMP

4.1 SFMP Strategy for the DFA

A set of strategies has been developed to progress toward achievement of targets for the indicators in the SFMP. These strategies document the relevance of the indicator to the SFMP and sustainability, and summarize actions required to meet the targets.

The SFMP utilizes indicators and targets that:

- reflect values and objectives related to the LRMP, Fisheries Sensitive Watersheds, Forest Health, Mid-Term Timber Supply, etc.;
- are guided by the Canadian Council of Forest Ministers' Criteria and Elements; and
- are within the ability of the forest industry to influence and manage.

Applicable strategies are documented in the detail sheets for each indicator in Section 5.7 of the SFMP.

4.2 Additional Guidance

Canfor is also guided by the regulations, laws and policies established by the federal, provincial and municipal governments.

The direction set forth in legislation as well as additional policies provided by the District Manager guides strategies to manage forest operations and to provide high quality fibre for licensee operations over the long-term. At the same time, Canfor will make efforts to manage and balance the landscape for biological diversity, global carbon cycles, soil, water and social responsibility.

5.0 INDICATORS & INDICATOR MATRICES

The PAG has identified local values and objectives for each of the CSA defined elements. These values and objectives are summarized in this section.

Core Indicators (included in the CSA standard) as well as local indicators and their respective targets have been developed to meet these local values and objectives. SFMP indicators (core and local) and their targets are described in Section 5.7. A summary table showing all criteria and elements and associated local values, objectives, indicators and targets is provided in Appendix 2.

In an SFMP, it is the indicators and targets that provide the performance measures that are to be met through on-the-ground forest management activities. This section provides a detailed description of each of the indicators and targets in the SFMP for the Fort St. James DFA. Core indicators prescribed within the latest CSA standard (Z809-16) have been integrated into the plan using the numbering system found within the standard. Indicator statements have been developed for each core indicator, and some core indicators incorporate more than one statement. These serve to put the target into context against the core indicator and make the target easily measurable. Many of the previous plan indicators were very close to the set of core indicators, thus the targets used to measure these core indicators are familiar to the SFMP. Full conformance is required for many targets (i.e., there is no variance). Where full conformance may not be achievable, an acceptable level of variance is indicated for the target.

Canfor monitors the achievement of targets annually. Monitoring procedures for each target in the SFMP are described below. Management strategies provide further direction to the performance measures (indicators and targets) and serve as a guide for the licensees in their annual monitoring activities.

5.1 Objectives, Indicators & Targets

The Fort St. James SFMP process has served to further refine the information and concerns of the local public. Incorporating these concerns and ideas into individual licensee operations through the established indicators and targets and ongoing monitoring ensures long-term sustainability of the forest resource. Any indicators established in this SFMP that are conducive to long-term projections are as noted below.

Section 6.2 describes the plans, policies and management strategies that support the achievement of the targets in the SFMP.

5.2 Base Line for Indicators

The primary source of base line information for indicators is the initial monitoring report subsequent to adoption of the indicator. Where existing indicators and targets were used to satisfy a core indicator, the baseline will be identified as that from the previous SFMP. In some instances, particularly in the case of newly developed indicators, a baseline might be difficult to establish and thus be absent in the plan. In those situations, baseline information will become available through subsequent monitoring reports.

5.3 Current Status of Indicators

Current status of each indicator is as reported and updated in SFMP Annual Report. Please refer to the most recent Fort St James SFMP Annual Report on the Canfor website:

<http://canfor.com/responsibility/forest-management/plans>

5.4 Forecasting

Forecasts are the long-term projection of expected future indicator levels. These have been incorporated into the SFMP targets as predicted results or outcomes for each target.

Often, the target for the indicator is in itself the predicted result or outcome. The target is the predicted outcome or forecast for most of the SFMP indicators. Generally, the target is being achieved for SFMP indicators, and it is expected these targets will continue to be met. Indicator forecasts also provide predictions of future state relative to Elements, Values or Objectives.

5.5 Regional Forecasting Related to the SFMP

Prince George TSA Timber Supply Review

The Prince George Timber Supply Area Rationale for AAC Determination, October 11, 2017³¹, is two tiered with a harvest level set for the first five years, followed by a reduced harvest level in the 2nd 5-year period. It assumes that licensees will continue to focus timber harvesting on dead, dying, and damaged stands. The analysis was conducted using information related to the timber harvesting land base, timber volumes, and management strategies to indicate future state projected out for a period of 400 years. Prior to the Chief Forester's determination, the public was invited to review and comment on the Timber Supply Review (TSR). Additional information on the opportunities that were provided for public input can be found in the TSR discussion paper (March 2016) and the data package (April 2015)³². Further information pertaining to assumptions and analysis can be found within the Chief Forester's Rationale for AAC Determination for the Prince George TSA (October 2017).

Apportionment by the Minister of FLNRORD is expected to be set by the fall of 2018. Applicable forecasting of SFMP Indicators will be completed following apportionment.

Ecosystem Representation Analysis

Canfor completed an Ecosystem Representation Analysis across their operations in BC. This analysis was used to determine the relative abundance of ecosystem groups and highlight rare or uncommon groupings that may need special management. This analysis supports the indicator and target for Indicator 1 – Percent representation of ecosystem groups across the DFA. For more details on the analysis, refer to the indicator detail sheet for Indicator 1 in Section 5.7.

5.6 Legal Requirements

Awareness of legal requirements is essential when considering suitable Objectives for an Element and determining appropriate Indicators and Targets. Canfor ensures that specific legislation related

³¹ https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/stewardship/forest-analysis-inventory/tsr-annual-allowable-cut/prince_george_tsa_rationale_2017.pdf

³² Reference: <https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/timber-supply-review-and-allowable-annual-cut/allowable-annual-cut-timber-supply-areas/prince-george-tsa>

to Objectives, Indicators and Targets is known and complied with by staying current with legal requirements. Subscribing to commercial services, reliance on in-house staff or industry associations, and participating in joint legislative review committees are just some of the methods used by Canfor to remain current with legislation.

5.7 Indicators in the SFMP

Table 2: Fort St James DFA Criteria, Element & Indicators – Ecological Values

C1. Biological Diversity
1.1 Ecosystem Diversity
1 – Ecosystem Representation
2 – Forest Type or Species Composition
3 – Forest Area by Seral Stage
4 – Forest Area by Age Class
5 & 6 – Within-Stand Structural Retention
1.2 & 1.3 Species & Genetic Diversity
7 – Habitat Protection & Suitability
8 – Native Species Regeneration
1.4 Protected Areas & Sites
9 – Protected Areas & Sites of Biological & Geological Significance
10 – Sites of Cultural & Heritage Significance
C2. Ecosystem Condition & Productivity
2.1 Forest Ecosystem Resilience
11 – Reforestation Success
12 – Landbase Deletion
13 – Landbase Additions
14 – Volume Harvested & Allocated
C3. Soil & Water
3.1 Soil Quality & Quantity
15 – Soil Disturbance
16 – Downed Woody Material
3.2 Water Quality & Quantity
17, 18, 19, 20 – Water Quality & Water Quantity
C4. Role of Global Ecological Cycles
4.1 Carbon Uptake and Storage
21 – Net Carbon Uptake
4.2 Forest Land Conversion

Table 3: Fort St James DFA Criteria, Element & Indicators – Economic & Social Values

C5. Economic & Social Benefits
5.1 Timber & Non-Timber Benefits
22 – Non-Timber Forest Benefits
23 – Recreational, Commercial and Cultural/Heritage Trails
24 – Road Deactivation
25 – Effective Communication – Resource Users
5.2 Communities & Sustainability
26 – Dollars Spent in Local Communities
27 – Contributions to Local Communities
28 – Training & Skills Development
29 – Direct & Indirect Employment
C6. Society's Responsibility
6.1 Fair & Effective Decision-Making
30 – Satisfaction with the Public Participation Process
31 – Promote Capacity Development and Meaningful Participation
32 – SFM Annual Report
6.2 Safety
33 – Safety Program
C7. Aboriginal Relations
7.1 Aboriginal & Treaty Rights
34 – First Nations Awareness Training
35 – Aboriginal Participation in Forest Economy
7.2 Aboriginal Forest Values, Knowledge & Uses
36 – Aboriginal Participation in Forest Economy
37 – Aboriginal Forest Values, Knowledge & Uses

1 – Ecosystem Representation

Indicator Statement(s)	1 – Retention of rare ecosystem groups across the DFA
Target	Zero hectares harvested for rare/uncommon ecosystem groups in the DFA, subject to the variance.
Basis for Target	Proactive measure to identify and conserve rare and uncommon ecosystems.
Variance	Access construction where no other practicable route is feasible. Harvesting may occur in rare ecosystems for access, forest health, or safety issues as rationalized and documented by a qualified professional.
Description and Background	<p>Maintaining representation of a full range of ecosystem types is a widely accepted strategy to conserve biodiversity. Ecosystem conservation represents a coarse-filter approach to biodiversity conservation. It assumes that by maintaining the structure and diversity of ecosystems, the habitat needs of various species will be provided. For many species, if the habitat is suitable, populations will be maintained. Forestry operations can have a dramatic influence over the composition of plants and trees within managed stands. In order for ecosystems to function effectively and maintain their ability to recover from disturbances (such as forest harvesting) they must retain the natural diversity of communities, particularly plants.</p> <p>Ecosystem area by type can be influenced by managers, and many foresters/ecologists prefer to characterize the forest in terms of ecosystem types (according to forest ecosystem classifications such as Biogeoclimatic Ecosystem Classification – BEC or Predictive Ecosystem Mapping – PEM) rather than by age and type of structures as derived from classic forest inventories. Most ecosystem classification systems use an integrated hierarchical classification scheme that combines climate, vegetation and site classifications. This mapping is used in such applications as:</p> <ol style="list-style-type: none"> Seed zones, Protected area planning, Land management planning, Forest pest risk, Natural disturbance types, and Wildlife habitat management. <p>Rare ecosystems are frequently identified as focal points for conservation concern. Provincially, ecosystems are listed based largely on frequency of occurrence or rarity. There are at least three broad reasons for creating local lists, including:</p> <ul style="list-style-type: none"> to help assess the status of an ecosystem throughout a planning area; to focus attention and tracking on ecosystems that merit conservation concern; and to help rank allocation of resources to conservation efforts, such as parks, Wildlife Habitat Areas, Old Growth Management Areas (OGMA's) or Wildlife Tree Patches (WTPs). <p>An analysis of ecosystem representation across all licensee operations was conducted in 2011³³. This analysis determined the abundance and representation of ecosystem groups within four distinct regions and 13 management units. The following steps were carried out for this analysis:</p> <ul style="list-style-type: none"> Identifying the non-harvesting land base,

³³ *Ecosystem Representation Analysis Final Report January 18th, 2012* Forest Ecosystem Solutions Ltd.

	<ul style="list-style-type: none">• Classifying the forested land base into ecosystem groups, and• Evaluating the amount and how the ecosystem groups are distributed in the harvesting and non-harvesting land base. <p>This management strategy allows for contributions from all areas within the DFA. The objective would be to fill from the non-harvesting land base first. The Fort St. James DFA is mostly within the North – East Mountains region and a portion of the West – Central region and comprises 63 unique forested ecosystem groups.</p> <p>Rare or uncommon ecosystem groups were identified by mapping at the BEC variant level or PEM site series level.</p> <p>The following criteria was used to select the site series that would be considered rare or uncommon</p> <ul style="list-style-type: none">• The ecosystem group is present on the DFA. (area >0%),• The forested area is <= 10,000 ha. in the West-Central and North – East Mountains regions,• The representation class is:<ul style="list-style-type: none">○ Low <20% of the area is in the NHLB,○ Rare/uncommon abundance is <0.1% of the forest area,• < 100% of the area of the ecosystem group is in the NHLB.																																																			
Strategy	Site series in these ecosystem groups are considered rare and should not be harvested. If these site series are encountered during field layout, they will be reserved from harvest by excluding them from the harvest area or reserving them in WTP’s (see Indicator 5) or other designated reserve areas.																																																			
Current Status	<p>There are fifteen ecosystem groups within the DFA identified as rare/uncommon. All sites within this group are to be protected from harvesting. The following table lists the site series groups/associations considered rare or uncommon (2012 Baseline data):</p> <table><tr><th>Region</th><th>Final Ecogroup Number</th><th>Final Group Name</th><th>Site Series</th><th>Moisture-Nutrient regime</th><th>Site Association</th></tr><tr><td>NE Mtns</td><td>4</td><td>xeric SBSmk1</td><td>SBS mk1-02</td><td>Xeric; very poor-medium</td><td>PI - Cladina - Step moss</td></tr><tr><td>NE Mtns</td><td>11</td><td>subxeric SBSwk3a</td><td>SBSwk3a-03</td><td>Subxeric; poor-medium</td><td>SxwFd - Purple peavine</td></tr><tr><td>NE Mtns</td><td>13</td><td>submesic-mesic SBSwk3a</td><td>SBS wk3a-05</td><td>submesic - mesic</td><td>Sb - Labrador tea</td></tr><tr><td rowspan="2">NE Mtns</td><td rowspan="2">20</td><td rowspan="2">subxeric-mesic SBS</td><td>SBS vk-03</td><td>Subxeric-submesic; poor-medium</td><td>Sxw - Fd - Thimbleberry</td></tr><tr><td>SBS wk3a-01</td><td>Mesic; poor-medium</td><td>Sxw - Dogwood - Fairybells</td></tr><tr><td>NE Mtns</td><td>52</td><td>sub-hygic-hygic ESSFmc</td><td>ESSF mc-08</td><td>Subhygric-hygic; medium-rich</td><td>BI - Valerian - Sickie moss</td></tr><tr><td>NE Mtns</td><td>54</td><td>subhygric-hygic SBSmc2(n)</td><td>SBS mc2(n)-07</td><td>Subhygric-hygic; very poor-poor</td><td>Sxw - Scrub birch - Feathermoss</td></tr><tr><td>NE Mtns</td><td>56</td><td>hygric-rich ESSFmc</td><td>ESSF mc-07</td><td>Subhygric-hygic; rich-</td><td>BI - Devil's club - Lady fern</td></tr></table>	Region	Final Ecogroup Number	Final Group Name	Site Series	Moisture-Nutrient regime	Site Association	NE Mtns	4	xeric SBSmk1	SBS mk1-02	Xeric; very poor-medium	PI - Cladina - Step moss	NE Mtns	11	subxeric SBSwk3a	SBSwk3a-03	Subxeric; poor-medium	SxwFd - Purple peavine	NE Mtns	13	submesic-mesic SBSwk3a	SBS wk3a-05	submesic - mesic	Sb - Labrador tea	NE Mtns	20	subxeric-mesic SBS	SBS vk-03	Subxeric-submesic; poor-medium	Sxw - Fd - Thimbleberry	SBS wk3a-01	Mesic; poor-medium	Sxw - Dogwood - Fairybells	NE Mtns	52	sub-hygic-hygic ESSFmc	ESSF mc-08	Subhygric-hygic; medium-rich	BI - Valerian - Sickie moss	NE Mtns	54	subhygric-hygic SBSmc2(n)	SBS mc2(n)-07	Subhygric-hygic; very poor-poor	Sxw - Scrub birch - Feathermoss	NE Mtns	56	hygric-rich ESSFmc	ESSF mc-07	Subhygric-hygic; rich-	BI - Devil's club - Lady fern
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2 – Forest Type or Species Composition

Indicator Statement(s)	2 – Percent distribution of forest type (treed conifer, treed broadleaf, treed mixed) >20 years old across DFA
Target	Treed conifer: Increase Douglas-fir to 2 % within 20 years, Treed Broadleaf: >4%, Treed Mixed: >1%
Basis for Target	The need to maintain the biological diversity of forest ecosystems in future generation forests. Addresses diversity and abundance of naturally occurring tree species on the landscape. Management control restricted to areas of the Timber Harvesting Land Base (THLB).
Variance	None below proposed targets.
Description and Background	<p>Forest area by type is a refinement of the previous indicator – ecosystem area. Tree species composition, stand age, and stand structure are important variables that affect the biological diversity of a forest ecosystem - providing structure and habitat for other organisms. Ensuring a diversity of tree species within their natural range of variation improves ecosystem resilience and productivity and positively influences forest health. The diversity of plant species also directly correlates to genetic diversity within a plant community. Reporting on this indicator provides high level overview information on area covered by broad forest type, forest succession and management practices that might alter species composition.</p> <p>Forests in Canada are classified according to an Ecosystem Classification System, which identifies the tree species that are most suited ecologically for regeneration in any particular site. This guides forest managers in maintaining the natural forest composition in an area and lends itself to long-term forest health and productive forests that uptake carbon.</p> <p>The BC government FREP report #14 on Tree Species Composition and Diversity in British Columbia (BCMOFR 2008) concluded that the amount of deciduous mixed stands at free growing in the Northern Forest Interior Region has increased significantly, from 2,811 hectares before harvest to 55,614 hectares at free growing. This is expected to continue in the short-term in both BC and Alberta as recently harvested areas regenerate naturally with ingress from early successional broadleaf species. While adding to the overall diversity of the DFA, many of these forests will revert back to coniferous mixed forests over time. To remove some of this short-term variation in the reporting of the indicator, forests less than 20 years of age will not be included in the reporting structure.</p> <p>Treed conifer forests are those where conifers dominate the species mix (at least 75% of trees are conifer), treed broad leaf forests are those where mostly deciduous trees dominate the species mix (at least 75% of trees are broad leaf) and mixed forests are those that fall within the middle range where neither conifer or broad leaf trees dominate the species mix.</p>
Strategy	Forest plans will incorporate reforestation strategies that retain the natural balance of broad forest types within the DFA.

Current Status	<p>The table below shows the Current Status of the percent distribution of forest type (coniferous, broadleaf, mixed) >20 years old across the DFA (2012 Baseline data).</p> <table><tr><th>Forest Type</th><th>Forest Area (ha)</th><th>Forest Area (%)</th></tr><tr><td>Coniferous</td><td>2,263,306</td><td>92</td></tr><tr><td>Broadleaf</td><td>54,552</td><td>2</td></tr><tr><td>Mixed</td><td>144,942</td><td>6</td></tr><tr><td>Total</td><td>2,462,800</td><td>100</td></tr></table> <p>Douglas-fir comprises approximately 1.6% of the Forest Area in the DFA.</p> <p>Data includes licensee Operating Areas within the DFA, Parks & Protected Areas Apportionment. Based on the Vegetation Resources Inventory, the areas have been reduced for roads, seismic lines, oil & gas tenures, and other non-THLB areas.</p> <p>(See 2017/18 Annual Report for updated baseline data and current condition)</p>	Forest Type	Forest Area (ha)	Forest Area (%)	Coniferous	2,263,306	92	Broadleaf	54,552	2	Mixed	144,942	6	Total	2,462,800	100
Forest Type	Forest Area (ha)	Forest Area (%)														
Coniferous	2,263,306	92														
Broadleaf	54,552	2														
Mixed	144,942	6														
Total	2,462,800	100														
Forecast	<p>Qualitative forecast: By implementing the above strategy, it is forecast that forest composition will be within the target ranges. Current state analysis shows that composition is consistent with target ranges.</p> <p><i>Methods and Assumptions</i> - This indicator is forecast using data from TSR, however, it is localized and monitored at the DFA level using a standardized Canfor model utilizing VRI, Cengea Resources, Standard Unit information for WTP shapes, and a host of government-supplied layers. An indicator guidance document has been developed and is used to calculate the current state. Trends from previous TSR show the current strategy is resulting in stabilization of the forest composition; in other words, the forecast is assumed to be current state. This should be re-forecast at a minimum after every TSR data update.</p>															
Periodic Measurement	<p>Report the area (total hectares and percent) of treed conifer, treed broad leaf, treed mixed forest types as updated for the most current Timber Supply Review (TSR) for the management unit. Reporting to occur every 5 years. Confirm that forest type reporting is within baseline levels.</p>															

3 – Forest Area by Seral Stage

Indicator Statement(s)	3 – Percent late seral distribution by ecological unit across the DFA.
Target	100% old forest, old forest interior and non-pine targets as per Jul 2014
Basis for Target	<p>The following documents were used as a basis for the targets:</p> <ul style="list-style-type: none"> • The Fort St. James LRMP, • The Prince George TSA Biodiversity Order (Targets Identified as of January 2012), • The Provincial Non-Spatial Old Growth Order, and • Canfor SFM Commitments and Biodiversity Strategy.
Variance	0%
Description and Background	<p>The northern interior forest ecosystems have been historically influenced by the presence or absence of fire as a dominant form of natural disturbance. The similarities in fire return intervals, and disturbance sizes and patterns form the basis for categorizing each of the ecosystems into natural disturbance units (NDU), which in turn is used to provide guidance for maintaining biodiversity. The DFA contains three NDUs and seven biogeoclimatic ecosystem classification (BEC) subzones.</p> <p>Biodiversity can be affected by the disruption of natural processes. Future maintenance of biodiversity and genetic diversity is in part dependent upon the maintenance of representative habitats and seral stages at the landscape and watershed level. Forests in their late seral stage offer unique habitat to certain plant and animal communities. Maintenance of a component of late seral stage forests - within a natural range of variation will contribute to an appropriate balance of forest age classes.</p> <p>Forests have great potential to sequester and store carbon from the atmosphere. Given this, managers should recognize the imperative of keeping forest lands in vigorous tree growth at all times. This often means understanding any age class imbalances and strategies for correction. It also includes ensuring prompt tree regeneration following disturbances such as timber harvests and converting the smallest possible amount of forest land to non-forest land during forest operations (e.g., minimizing roads and landings).</p> <p>Forest carbon has recently become a key SFM value, especially in light of Canada's international commitment to lower its net carbon outputs to the atmosphere. Models for calculating a forest carbon budget (e.g., the Canadian Forest Service's Carbon Budget Model of the Canadian Forest Sector (CBM-CFS3)) are becoming available for use by practitioners particularly where they can be linked to forest inventory and timber supply models. Their use in forest planning can indicate whether a specific forest is expected to be a net carbon source or sink over the period normally used for wood-supply forecasts.</p> <p>In their 2009 summary of carbon management in BC's forests³⁴, Mike Greig and Gary Bull report a need for additional guidance for forest managers and practitioners. "The interest in managing British Columbia's forests for climate control and CO2 offsetting projects has built to the point where forest managers are seeking guidance. Equally important is the public's desire to understand the potential of provincial forests in mitigating climate change and to have this clearly communicated. Some work has taken place in assembling carbon yield curves, researching local carbon storage, and undertaking carbon accounting projects. However, no published handbooks or policies exist to guide forest managers, practitioners,</p>

³⁴ Carbon Management in British Columbia's Forests: Opportunities and Challenges. Forrex Series 24. 2009

	<p>or the public.</p> <p>The level of carbon budget analysis in Canada relies largely on the forest inventory (species and growth rates) and underlying assumptions about the forest management regime and what makes up the timber harvesting land base. Because of some of the uncertainty surrounding the data inputs, it can be difficult to tease out changes in carbon sequestration modeling that are strictly as a result of changes to a particular management regime. This creates difficulties for forest managers who are trying to understand the carbon balance implications of various management regimes.</p> <p>Recent timber supply reviews in the province have included carbon sequestration in the analysis such as that for the Lillooet TSA (May 2009). This trend is expected to continue. In his rationale for the Allowable Annual Cut determination for the Lillooet TSA, the Chief Forester reported “as government and society address the important considerations related to carbon management and climate change mitigation, and reach decisions on how all of the potential uses of forest land should be balanced with carbon management, those decisions will be reflected in future AAC determinations.” Also in his rationale, the Chief Forester recognizes the need for government to take an active role in understanding carbon budgets: “No doubt governments will be called on to analyse and prioritise the many alternative potential uses of the forest, from which to derive and provide a range of socially acceptable management objectives. Analysis of the carbon implications of forest management alternatives will be important information for consideration in the making of such decisions on society’s behalf by our elected representatives.”</p> <p>In the interim, until government has finalized assumptions for carbon budget modeling, Canfor’s carbon strategy will be:</p> <ul style="list-style-type: none"> • Maintain some old growth on the land base for carbon storage. • Prompt reforestation for carbon uptake. • Minimize permanent access structures to maintain forest productivity for carbon uptake. <p>Canfor will continue to report on the target for this indicator (retention of old forest) as well as related indicators and targets for forest land conversion and reforestation success. Collectively, these indicator statements and targets demonstrate the commitment to positively influence carbon balance within the management unit. Retention of old forest throughout the DFA will assist in locking up the carbon already sequestered in these older forests.</p> <p>Canfor will continue to monitor developments in carbon sequestration modeling both at the provincial and regional level and may utilize this information within the SFM Plan. At the very least, Canfor will rely upon forest carbon analysis conducted in conjunction with the next Timber Supply Review.</p>
Strategy	<p>The relative amount of late seral stage or old forests have generally been mandated by Higher Level Plans or provincial orders. Where actual percent late seral is less than the desired target in a given ecological unit, harvesting the remaining late seral stands will be avoided. Exceptions to this may be made for forest protection activities (e.g., beetles, windthrow, etc.). A recruitment strategy will be developed for these ecological units to meet the minimum requirements for late seral stands over time.</p>

Current Status

For the purpose of this DFA indicator, the units, targets, and minimum age definitions for old are defined in the LOWG analysis for the Fort St. James TSA

The distribution of OLD FOREST RETENTION by ecological unit across the DFA is indicated in the following table (2014 baseline data):

NDU/Merged Biogeoclimatic Units	Unit Label	CFLB Area (ha)	Targets		Current Status	
			% Target	Target Area (ha)	Current Area (ha)	Current Percentage (%)
Moist Interior - Mountain ESSFmv1	E1	18,669	41%	7,654	8,053	43%
Moist Interior - Plateau SBSdk	E2	26,457	17%	4,498	11,095	42%
Moist Interior - Plateau SBSmc2	E3	61,249	17%	10,412	28,647	47%
Moist Interior - Plateau SBSmk1	E4	186,270	12%	22,352	44,410	24%
Moist Interior - Plateau SBSdw3	E5	216,789	12%	26,015	77,725	36%
Northern Boreal Mountains ESSFmc	E6	109,700	37%	40,589	92,783	85%
Northern Boreal Mountains SWBmk	E7	28,559	37%	10,567	22,267	78%
Northern Boreal Mountains SBSmc2	E8	35,857	26%	9,323	29,708	83%
Omineca - Mountain ESSFwv	E9	24,921	58%	14,454	21,214	85%
Omineca - Mountain ESSFmc	E10	97,439	41%	39,950	81,061	83%
Omineca - Mountain ESSFmv3	E11	368,221	41%	150,971	250,622	68%
Omineca - Valley SBSdk	E12	10,840	16%	1,734	5,076	47%
Omineca - Valley ICHmc1	E13	13,113	23%	3,016	11,866	90%
Omineca - Valley BWBSdk1	E14	65,170	16%	10,427	41,976	64%
Omineca - Valley SBSmc2	E15	105,171	16%	16,827	77,672	74%
Omineca - Valley SBSmk1	E16	265,473	16%	42,476	113,755	43%
Omineca - Valley SBSwk3	E17	358,280	16%	57,325	133,585	37%
1,992,179			468,591	1,051,514		

The distribution of OLD NON-PINE FOREST RETENTION by ecological unit across the DFA is indicated in the following table (2014 baseline data):

NDU/Merged Biogeoclimatic Units	Unit Label	CFLB Area (ha)	Targets		Current Status	
			% Target	Target Area (ha)	Current Area (ha)	Current Percentage (%)
Moist Interior - Mountain ESSFmv1	E1	18,669	33%	6,161	6,917	37%

	Moist Interior - Plateau SBSdk	E2	26,457	13%	3,439	9,438	36%	
	Moist Interior - Plateau SBSmc2	E3	61,249	10%	6,125	19,445	32%	
	Moist Interior - Plateau SBSmk1	E4	186,270	4%	7,451	30,467	16%	
	Moist Interior - Plateau SBSdw3	E5	216,789	6%	13,007	56,801	26%	
	Northern Boreal Mountains ESSFmc	E6	109,700	0%	0			
	Northern Boreal Mountains SWBmk	E7	28,559	0%	0			
	Northern Boreal Mountains SBSmc2	E8	35,857	0%	0			
	Omineca - Mountain ESSFwv	E9	24,921	0%	0			
	Omineca - Mountain ESSFmc	E10	97,439	0%	0			
	Omineca - Mountain ESSFmv3	E11	368,221	0%	0			
	Omineca – Valley SBSdk	E12	10,840	9%	976	4,014	37%	
	Omineca - Valley ICHmc1	E13	13,113	0%	0			
	Omineca - Valley BWBSdk 1	E14	65,170	10%	6,517	26,721	41%	
	Omineca - Valley SBSmc2	E15	105,171	13%	13,672	66,821	64%	
	Omineca - Valley SBSmk1	E16	265,473	10%	26,547	93,239	35%	
	Omineca - Valley SBSwk3	E17	358,280	12%	42,994	118,240	33%	
				1,992,179		126,889	432,103	
	The distribution of OLD INTERIOR FOREST RETENTION by ecological unit across the DFA is indicated in the following table (2014 baseline data):							
NDU/Merged Biogeoclimatic Units	Unit Label	CFLB Area (ha)	Targets		Current Status			
			% Target	Target Area (ha)	Current Area (ha)	Current Percentage (%)		
Moist Interior - Mountain ESSFmv 1	E1	7,654	40%	3,062	7,815	102%		
Moist Interior - Plateau SBS dk	E2	4,498	10%	450	7,942	177%		
Moist Interior - Plateau SBS mc 2	E3	10,412	10%	1,041	22,639	217%		
Moist Interior - Plateau SBS mk 1	E4	22,352	25%	5,588	23,465	105%		
Moist Interior - Plateau SBS dw 3	E5	26,015	25%	6,504	48,304	186%		
Northern Boreal Mountains ESSFmc	E6	40,589	40%	16,236	91,756	226%		

	Northern Boreal Mountains SWB mk	E7	10,567	40%	4,227	21,162	200%
	Northern Boreal Mountains SBS mc 2	E8	9,323	25%	2,331	28,242	303%
	Omineca - Mountain ESSFwv	E9	14,454	40%	5,782	20,891	145%
	Omineca - Mountain ESSFmc	E10	39,950	40%	15,980	80,167	201%
	Omineca - Mountain ESSFmv 3	E11	150,971	40%	60,388	238,440	158%
	Omineca - Valley SBS dk	E12	1,734	25%	434	3,067	177%
	Omineca - Valley ICH mc 1	E13	3,016	40%	1,206	11,776	390%
	Omineca - Valley BWBSdk 1	E14	10,427	25%	2,607	37,682	361%
	Omineca - Valley SBS mc 2	E15	16,827	25%	4,207	70,060	416%
	Omineca - Valley SBS mk 1	E16	42,476	25%	10,619	84,953	200%
	Omineca - Valley SBS wk 3	E17	57,325	25%	14,331	99,817	174%
			468,591		154,991	898,178	
Forecast	<p>Qualitative forecast: By implementing the above strategy, it is forecast that the amount of late seral forests across the DFA will be above target at a DFA level (as per Fig 33 of the FIA project 2668007 "SFM Indicator Forecasting and Modeling for the Prince George TSA" report). <i>While the average old forest values for each district meet the targets over the entire planning horizon, some of the individual NDU/BEC units are not able to meet their targets in the midterm. Old growth constraints are significant in the TSA and constrain the timber supply, particularly in the medium term. Once the old pine stands hit by MPB are harvested or break up, in 20 to 30 years, many of the old growth targets are no longer met and harvesting in these units is limited.</i> {excerpt from the Forecasting report} This indicator and the resulting target is a legal requirement at the Landscape Unit level and Canfor strives to meet these targets.</p> <p>It is assumed that this forecast (FSJ District level) is applicable to the DFA as Canfor is such a large presence in the TSA.</p>						
Annual Measurement	<p>The LLOWG convenes as required to update the current and future amount of old forest, and the Licensee apportionment (update harvested blocks, newly planned blocks, aging of forest, and Licensee operating area changes). The LLOWG assesses current and anticipated future performances of the signatories in meeting old forest targets and proposed recruitment strategies if targets cannot be met.</p>						

4 – Forest Area by Age Class

Indicator Statement(s)	4 – Maintain a variety of young patch sizes in an attempt to approximate natural disturbance.
Target	As per the "Landscape Biodiversity Objectives for the PG TSA".
Basis for Target	<p>Targets are derived directly from the Order Establishing Landscape Objectives for PG TSA (2004) and are based on the NDU research developed by DeLong (2002). Specific factors will limit how effective Canfor will be at trending toward patch size targets. These include historical harvesting patterns that have fragmented portions of the DFA and natural disturbance events such as wildfire and the mountain pine beetle epidemic. Specific attention will have to be made to change current trends for those NDU patch sizes that are trending away from targets due to mountain pine beetle infestations. The LLOWG has committed to providing rationale to MOE Land Use Stewardship, Ministry of Forests, Lands, Natural Resource Operations and Rural Development for those units and patch sizes that are not trending toward targets when patch size distribution information is updated.</p> <p>There are some measures that can be taken to achieve patch size distribution targets. Forest health will have to be closely monitored and addressed before it creates excessive patches (either alone or by linking existing cut blocks). This will be particularly challenging in areas of high mountain pine beetle infestation. Future practice will involve connecting small and medium patches to create larger patches in order to trend toward larger patch sizes.</p>
Variance	As per the "Landscape Biodiversity Objectives for the PG TSA".
Description and Background	<p>A patch is a forest unit with identifiable boundaries and vegetation different from its surroundings. Often patches are even aged forests established from natural disturbances such as fire, wind or pest outbreaks, or from clearcut harvesting. Patches may be created from a single disturbance event or through a combination of events such as fire and subsequent salvage harvesting. The result of varying disturbance events over time is a landscape of forest stands and patches of different sizes composed of a variety of species, stocking levels and ages. Many natural disturbance events, such as wildfire, have been reduced by forest management practices. In the absence of natural disturbance, timber harvesting is used as a disturbance mechanism and therefore influences the distribution and size of forest patches over much of the DFA. Patch size distribution created by harvesting should emulate the patterns historically created by a natural disturbance regime where patches varied in size and shape.</p> <p>The indicator addresses the pattern of young forest patches distributed across the landscape, where young forests are defined as stands 0 to 20 years of age. 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 young patch size targets based on historical natural disturbance patterns. This indicator will monitor the consistency of harvesting patterns compared to the natural patterns of the landscape.</p> <p>The methodology used by the LOWG to calculate young patch included review of current patch size distribution on maps of each Forest District within the Prince George TSA. Each patch that was 0-20 years old was buffered according to the specifications outlined in the following table. Patches that touched, intersected or overlapped were considered to be one larger patch and buffered according to the combined patch area.</p>

	<table><tr><th>Patch Size Category</th><th>Distance Required to Separate Patches</th></tr><tr><td><50 ha</td><td>150m</td></tr><tr><td>51 - 100 ha</td><td>200m</td></tr><tr><td>101 - 500 ha</td><td>400m</td></tr><tr><td>501 - 1000 ha</td><td>600m</td></tr><tr><td>>1001 ha</td><td>800m</td></tr></table>	Patch Size Category	Distance Required to Separate Patches	<50 ha	150m	51 - 100 ha	200m	101 - 500 ha	400m	501 - 1000 ha	600m	>1001 ha	800m																																																																																																			
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Strategy	The Landscape Objective Working Group (LOWG) has representation from the Land Use Stewardship, the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (MFLNRORD) and timber licensees. This group aided MOE in the development of landscape biodiversity objectives for patch size distribution for the Prince George TSA, which includes the Fort St. James DFA. These objectives utilized Natural Disturbance Unit (NDU) research conducted by DeLong (2002). Young forest patch size distribution objectives have been established for each NDU that occurs within the Fort St. James DFA.																																																																																																															
Current Status	<p>The young forest patch size distribution by NDU across the DFA is indicated in the following table (2010 baseline data):</p> <table><tr><th>Natural Disturbance Unit</th><th>Patch Size Category (ha)</th><th>Current Status March 31, 2010*</th><th>Target (%)</th><th>Trend</th><th>Future Condition (2015)</th></tr><tr><td rowspan="4">Moist Interior Plateau</td><td>≤ 50</td><td>10.9%</td><td>5%</td><td>Toward</td><td>12.9%</td></tr><tr><td>50-100</td><td>12.5%</td><td>5%</td><td>Toward</td><td>15.4%</td></tr><tr><td>100-1000</td><td>22.7%</td><td>20%</td><td>Toward</td><td>35.2%</td></tr><tr><td>>1000</td><td>53.9%</td><td>70%</td><td>Toward</td><td>36.5%</td></tr><tr><td rowspan="4">Moist Interior Mountain</td><td>≤ 50</td><td>0%</td><td>40%</td><td>No change</td><td>0%</td></tr><tr><td>50-100</td><td>91.9%</td><td>30%</td><td>Away</td><td>78.6%</td></tr><tr><td>100-1000</td><td>8.1%</td><td>10%</td><td>Away</td><td>21.4%</td></tr><tr><td>>1000</td><td>0%</td><td>20%</td><td>Away</td><td>0%</td></tr><tr><td rowspan="4">Omineca Valley</td><td>≤ 50</td><td>0%</td><td>20%</td><td>No change</td><td>0%</td></tr><tr><td>50-100</td><td>91.9%</td><td>10%</td><td>Away</td><td>78.6%</td></tr><tr><td>100-1000</td><td>8.1%</td><td>30%</td><td>Away</td><td>21.4%</td></tr><tr><td>>1000</td><td>0%</td><td>40%</td><td>Away</td><td>0%</td></tr><tr><td rowspan="4">Omineca Mountain</td><td>≤ 50</td><td>12.5%</td><td>5%</td><td>Away</td><td>16.3%</td></tr><tr><td>50-100</td><td>21.1%</td><td>5%</td><td>Toward</td><td>20.4%</td></tr><tr><td>100-1000</td><td>39.7%</td><td>30%</td><td>Toward</td><td>42.4%</td></tr><tr><td>>1000</td><td>26.7%</td><td>60%</td><td>Toward</td><td>20.8%</td></tr><tr><td rowspan="4">Northern Boreal Mountains</td><td>≤ 50</td><td>17.5%</td><td>20%</td><td>Toward</td><td>20.6%</td></tr><tr><td>50-100</td><td>32.7%</td><td>10%</td><td>Away</td><td>32.1%</td></tr><tr><td>100-1000</td><td>31.9%</td><td>30%</td><td>No change</td><td>25.4%</td></tr><tr><td>>1000</td><td>17.9%</td><td>40%</td><td>Away</td><td>21.8%</td></tr></table>	Natural Disturbance Unit	Patch Size Category (ha)	Current Status March 31, 2010*	Target (%)	Trend	Future Condition (2015)	Moist Interior Plateau	≤ 50	10.9%	5%	Toward	12.9%	50-100	12.5%	5%	Toward	15.4%	100-1000	22.7%	20%	Toward	35.2%	>1000	53.9%	70%	Toward	36.5%	Moist Interior Mountain	≤ 50	0%	40%	No change	0%	50-100	91.9%	30%	Away	78.6%	100-1000	8.1%	10%	Away	21.4%	>1000	0%	20%	Away	0%	Omineca Valley	≤ 50	0%	20%	No change	0%	50-100	91.9%	10%	Away	78.6%	100-1000	8.1%	30%	Away	21.4%	>1000	0%	40%	Away	0%	Omineca Mountain	≤ 50	12.5%	5%	Away	16.3%	50-100	21.1%	5%	Toward	20.4%	100-1000	39.7%	30%	Toward	42.4%	>1000	26.7%	60%	Toward	20.8%	Northern Boreal Mountains	≤ 50	17.5%	20%	Toward	20.6%	50-100	32.7%	10%	Away	32.1%	100-1000	31.9%	30%	No change	25.4%	>1000	17.9%	40%	Away	21.8%
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	<p>It can be difficult or impossible to trend towards the Young Patch targets in any given year. For this reason, Young Patch is reported out every five years. As harvesting continues, it is anticipated that the distribution of patches in the appropriate size ranges will be achieved. As the table demonstrates, while current trends will take most patch size distributions toward targets, others will actually be further from achieving objectives due to previous harvesting practices and the effects of the current infestation of mountain pine beetle. Openings become largely determined by the distribution of pine.</p>
Forecast	<p>Qualitative Forecast: As forest harvesting continues, it is the expectation that cut blocks will be designed so that the distribution of patches in the appropriate sizes ranges will trend towards the target; however, it will take several decades for some of targets to be realized. Canfor is monitoring young patch on a 5-year basis and will develop strategies to trend towards the targets. Additional forecasting of this indicator will occur during the future indicator supply analysis, which is anticipated to be in five-year intervals.</p> <p>This indicator and the resulting targets are a legal requirement. In the most current analysis (delivered 2011) all analysis units in the FSJ District DFA are trending towards target with the exception of Moist Interior Mountain and Omineca Natural Disturbance Sub-units. By implementing the above strategy, it is forecast that the amount of young patch sizes across the DFA will be as per Appendix 6.</p>
Periodic Measurement	<p>This indicator has a TSA specific target and will be monitored and reported through the Licensee Landscape Objective Working Group (LLOWG). Data sources used in the monitoring process include forest cover inventory, NDU maps, adjacent licensee planning and harvest history information, and database data. Forest cover inventory information with updates from Canfor based on harvesting activities will be reported according to the PG TSA Landscape Biodiversity Objectives Reporting Protocol to ensure forest management is moving toward patch size targets identified through the LOWG and this SFMP.</p> <p>This indicator will be reported every five years.</p>

5 & 6 – Within-Stand Structural Retention

Indicator Statement(s)	5 – Percent of stand structure retained across the DFA in harvested areas. 6 – The number of cut blocks harvested that are not consistent with riparian management commitments.
Target	Indicator 5 – >7% across the DFA. Indicator 6 – 0%.
Basis for Target	Recognition that tree retention and riparian areas are “focus areas” for successfully meeting biodiversity and ecosystem objectives. Stand level plan commitments are site specific, consider landscape conditions and may exceed legal requirements.
Variance	Indicator 5 – 0%. Indicator 6 – 0%.
Description and Background	<p>Complexity of stand structure is a key component of an operational strategy to sustain biodiversity in forested ecosystems (Bunnell et al. 1999). Structural complexity helps to mitigate the potential deleterious effects of large scale stand and landscape simplification associated with intensive short-rotation forest management. It can be provided by the adoption of retention silvicultural systems, a practice broadly applied in the interior of BC (Lindenmayer and Franklin 2002, Bunnell et al. 1999).</p> <p>Wildlife tree retention areas (WTRAs) are a retention tool recommended for use in stand and landscape planning to help sustain biodiversity and ecological processes. They are used to provide protection for known wildlife habitat features (including standing dead and dying trees); to provide attributes important to key ecological processes (including woody debris, tree species diversity and understory vegetation diversity); to protect small, local sites of special biological and geological significance (eg. unclassified riparian or wetlands, rock outcrops or rare plants or ecosystems); or to provide stand level complexity (vertical and horizontal) to harvest areas under even-aged, short-rotation management. At the landscape level WTPs can be used with other protected areas such as riparian reserves, including wetlands, old growth areas and provincial parks to provide landscape structure to help keep landscape complexity more consistent with natural disturbance regimes. All of the above values should be considered when considering where to locate (anchor) WTRAs.</p> <p>By maintaining WTRAs, that are close to their natural distribution, it is expected that landscape level ecological processes such as habitat connectivity and genetic diversity will be maintained within an acceptable proportion of the range of natural variability. This indicator in conjunction with other landscape level indicators, such as seral stage distribution and species composition will provide important information on ecosystem health.</p> <p>Reserve Quality</p> <p>The following points could be considered when choosing reserve locations (particularly in larger openings):</p> <ul style="list-style-type: none"> • Targets for reserve size and location will depend on the opening size. Generally, the larger the opening, the larger the reserves should be; • Create windfirm boundaries where possible; • Design retention adjacent to riparian habitat where possible; • Incorporate important wildlife habitat into reserves; • Incorporate important wetlands into reserves; • Retain a variety of species including hardwoods; • Retain undersized trees that are less likely to be infested by beetles and more likely to provide the characteristics of mature trees in the near future;

	<ul style="list-style-type: none"> • Retain a component of dead trees; • Retain areas that have high amounts of coarse woody debris; • Retain trees with valuable wildlife attributes; • Retain unusual or significant site features; • Connective bridges should be located on known wildlife travel routes, and; • Operational breaks (roads, skid trails, etc) in connective bridges are acceptable <p>Refer to the Chief Foresters Guidance on Landscape and Stand-level Retention³⁵. This report was written due to large mountain pine beetle salvage program. One of the suggestions is to vary retention (leave or future pass) based on patch size.</p> <p>Douglas-Fir Management Strategy</p> <p>Douglas-Fir (Fdi) plays an important role in biodiversity because it is at the northern extent of its range in Fort St. James. It contributes to genetic diversity and species diversity and acts as a unique contributor to vertical forest structure and coarse woody debris. The intent with this strategy is “no net loss” of Fdi across the DFA. For blocks where Fdi exists in the stand implement the appropriate strategy shown below:</p> <table border="1"> <thead> <tr> <th>Percent Fd</th><th>Retention strategy</th></tr> </thead> <tbody> <tr> <td><10%</td><td>retain >90% of Fd stems at the time of harvest</td></tr> <tr> <td>10% to 30%</td><td>retain >30% of Fd stems at the time of harvest</td></tr> <tr> <td>30% to 80%</td><td>retain >10% of Fd stems at the time of harvest</td></tr> <tr> <td>>80%</td><td>retain >5% of Fd stems at the time of harvest</td></tr> </tbody> </table> <p>In addition, where Fdi comprises more than 10% of the stand, and Fdi has been harvested from the site, reforest the site with a proportion of Fdi that is similar to the pre-harvest proportion of Fdi. Fdi can be retained in patches or as individual leave trees. In situations where Fdi cannot be retained cut stems may be left on site to provide coarse woody debris. The amount of Douglas fir on a block can be determined from cruise information, forest cover data, or field reconnaissance information.</p> <p>A variance may be required for blocks where the Fdi that is present exists along roads or in roadside working areas or skid trails, where steep slopes limit harvesting options, where the stand is infested with Douglas fir beetle, where the Fdi stems are too dangerous to be left, or where retaining Fdi restricts the removal of other merchantable timber.</p> <p>Riparian management areas provide opportunities for connectivity of forested cover along waterways, which are generally areas with high value for wildlife habitat and movement. Operational plans influenced by riparian areas contain site specific commitments that range from 100% protection to 100% removal of merchantable trees, generally with efforts to manage existing understory trees and shrubs.</p>	Percent Fd	Retention strategy	<10%	retain >90% of Fd stems at the time of harvest	10% to 30%	retain >30% of Fd stems at the time of harvest	30% to 80%	retain >10% of Fd stems at the time of harvest	>80%	retain >5% of Fd stems at the time of harvest
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Strategy	Canfor will achieve the target through the allocation of retention patches during cutblock development. Where applicable, plans will also contain riparian area commitments, including those described in Indicators 17, 18, 19 and 20.										

³⁵ Reference: Guidance on Landscape- and Stand-level Structural Retention in Large-Scale Mountain Pine Beetle Salvage Operations. 2005. <https://www.for.gov.bc.ca/hfd/library/documents/bib95960.pdf>

Current Status	<p>Indicator 5 – The following table displays the baseline landscape level retention levels in the DFA.</p> <table><tr><td>2012/13</td><td>2013/14</td><td>Target</td></tr><tr><td>16.6%</td><td>14.6%</td><td>>7%</td></tr></table> <p>Indicator 6 – 100% of cutblocks harvested were consistent with riparian management commitments (2014 baseline data).</p>	2012/13	2013/14	Target	16.6%	14.6%	>7%
2012/13	2013/14	Target					
16.6%	14.6%	>7%					
Forecast	<p>Qualitative forecast: by implementing the above strategy, it is forecast that the percent of stand structure across the DFA will continue to meet the minimum target of 7% across the DFA. Current status described in Table 4 of the 2012/13 Annual Report shows that more than the minimum stand structure is being retained across the DFA currently. This forecast trend is expected to continue with the identified strategy.</p>						
Annual Measurement	<p>Indicator 5 – For areas harvested during the annual reporting period, report the (weighted average) percent of area retained.</p> <p>Indicator 6 – For areas harvested during the annual reporting period report the number of riparian related non-conformances to plans occurring during the reporting year as compared to the number of cut blocks that were harvested that had riparian management areas within or adjacent to them.</p>						

7 – Habitat Protection & Suitability

Indicator Statement(s)	7 – Percent of forest management activities consistent with management strategies (both landscape and stand level) for Species at Risk and/or Species of Management Concern.				
Target	100%				
Basis for Target	Legal obligations, use of best available information and habitat supply modeling done at the provincial/regional level for specific focal species.				
Variance	None.				
Description and Background	<p>While ecosystem conservation is the coarse-filter approach to biodiversity management, species diversity is the fine-filter approach. For most species, forest managers can influence habitat only, not species populations. To account for the degree of habitat protection for selected focal species, including at risk species, this indicator looks at the proper execution of operational plans where those plans contain conservation measures for Species of Management Concern.</p> <p>Maintenance of wildlife habitat over the long-term is critical to meeting the genetic diversity requirements of sustainable forest management. Each of the selected focal species have specific habitat attribute requirements (i.e. snags, closed canopy forests, limited road access, etc.) that need to be maintained for optimal habitat value.</p> <p>This indicator, along with several other indicators in the SFM Plan (i.e. 16 – level of downed woody debris) help to protect habitat for selected focal species, including species at risk.</p> <p>Canfor includes commitments in site/logging plans or other operational plans to manage the habitat of the DFA's Species of Management Concern. A current list of species of management concern is developed for the DFA and is provided to Canfor staff.</p>				
Strategy	<p>Government's policy and legally established framework for the protection of biodiversity values and species at risk under provincial and federal legislation includes the establishment of parks and protected areas, as well as the protection of biodiversity, riparian and aquatic habitats, old-growth forests, ungulate winter range, specific wildlife features and the habitat for listed species at risk.</p> <p>For some of these species, specific habitat conservation targets have been established that identify the amount, distribution and attributes of desirable habitat. For the remaining species, desirable habitat conditions have been identified for each species. Canfor manages spatial information that identifies the broad habitat types and locations for each of the Species of Management Concern. Where applicable, this information is brought forward into operational plans to manage for the desired habitat conditions. Plans are properly executed providing desired results. Post harvest evaluations and other applicable post activity forms (i.e. road construction or site preparation) assess plan conformance.</p>				
Current Status	<p>The following table displays the percent of forest management activities consistent with management strategies (both landscape and stand level) for Species at Risk and/or Species of Management Concern (2014 Baseline data).</p> <table border="1"> <thead> <tr> <th>2012/13</th><th>2013/14</th></tr> </thead> <tbody> <tr> <td>100%</td><td>100%</td></tr> </tbody> </table> <p>See Appendix 3 for the complete list of Species of Management Concern within the DFA.</p>	2012/13	2013/14	100%	100%
2012/13	2013/14				
100%	100%				

Forecast	Short- and long-term supply of desirable habitat for all Species of Management Concern resulting in stable populations. Increased emphasis on landscape level planning and retention will help protect values. Support for these plans from the ministry is very good. A recent NRFL overlaying Canfor's operation area had landscape retention incorporated in this new license.
Annual Measurement	For areas where forest activities occurred during the annual reporting period that contained operational plan commitments to manage for a Species of Management Concern, report the number of non-conformances to plans occurring during the reporting year as compared to the total number areas having operational plan commitments.

8 – Native Species Regeneration

Indicator Statement(s)	8 – Regeneration will be consistent with provincial regulations and standards for seed and vegetative material use.
Target	100%
Basis for Target	Legal obligations, use of best available information and application of Canfor's SFM Commitments.
Variance	0%
Description and Background	<p>One of the primary management objectives for sustainability is to conserve the diversity and abundance of native species and their habitats. Silviculture practices that promote regeneration of native species, either through planting or other natural programs, assist in meeting these objectives. The well-being, genetic diversity and productivity of future forests are dependent upon the structure and dynamics of their genetic foundation.</p> <p>Seed used in Crown land reforestation that is consistent with provincial regulations and standards ensure regenerated stands are genetically diverse, adapted, healthy and productive, now and in the future. Suitable seed and vegetative lots must also be of a high quality and available in sufficient quantities to meet the specific stocking and forest health needs of a given planting site.</p> <p>Tree seed used for growing seedlings to meet reforestation requirements on public lands in BC and Alberta must be registered by the province. The provinces have strict procedures pertaining to the collection, transport, testing, storage and use of registered seed. Tree seed having uniformity of species, source, quality and year of collection are referred to as a seedlot. Administrative seed zones identify which seedlot is ecologically suited for a given area. By choosing a seedlot that was suitable to the site it was to be planted in, the resulting plantation would be adapted to its site, local climate, and endemic forest health problems.</p>
Strategy	Canfor's plans will contain site information and reforestation prescriptions that ensure regeneration will be consistent with provincial regulations and standards. Planted trees will be of acceptable species and originate from seedlots that are ecologically suited to the site. Planting reports will be used to confirm proper execution of plans.
Current Status	100% of regeneration was consistent with provincial regulations and standards for seed and vegetative material use (2014 baseline data).
Forecast	Healthy, productive and genetically diverse forests that are ecologically suited to the site.
Annual Measurement	Canfor will report the number of hectares where trees were planted with species and seedlots appropriate to the site as compared to the total number of hectares where planting occurred.

9 – Protected Areas & Sites of Biological and Geological Significance

Indicator Statement(s)	9 – Percent of forest management activities consistent with management strategies for protected areas and sites of biological and geological significance.
Target	100%
Basis for Target	Legal obligations and use of best available information.
Variance	None
Description and Background	<p>While ecosystem conservation is the coarse-filter approach to biodiversity management, species diversity is the fine-filter approach. For most species, forest managers can influence habitat only, not species populations. To account for the degree of habitat protection for selected focal species, including at risk species, this indicator looks at the proper execution of operational plans where those plans contain management strategies for sites of biological or geological significance.</p> <p>Canfor participates in higher level and strategic planning that has delineated a series of protected areas (eg. parks, ecological reserves, aspatial old growth targets, geological) within the DFA. This achieved the geographic and ecological goals of provincial Protected Areas Strategies (PAS), providing representation of the cross-section of ecosystems and of old forest attributes. Ecosystems of special biological significance have generally been given a high priority for inclusion in the protected area strategy. Timber harvesting, mining and hydroelectric development are usually not permitted within protected areas and other resource development activities, such as grazing and commercial tourism development, are permitted only in specified areas and under strict guidelines. Incursions into draft OGMA's are generally tolerated when Canfor replaces that area with other areas of suitable attributes.</p> <p>At the stand level, protected areas include wildlife habitat areas (retention patches or important wetlands), wildlife features (such as a nest tree or mineral lick), geological features (eg. karst) and other resource features. Unique areas of biological significance are identified in the field during the planning phase and are managed through avoidance (either by relocating the road and/or harvest area or by protecting it with a wildlife tree patch or riparian management area) or using an appropriate conservation management strategy to sustain local genetic diversity.</p> <p>Canfor includes commitments in site/logging plans or other operational plans to ensure their activities do not compromise these protected areas or sites of biological or geological significance.</p>
Strategy	<p>Government's policy and legally established framework for the protection of biodiversity values and species at risk under provincial and federal legislation includes the establishment of parks and protected areas, as well as the protection of biodiversity, riparian and aquatic habitats, old-growth forests, ungulate winter range, specific wildlife features and the habitat for listed species at risk, as well as some identified geological features.</p> <p>Canfor manages spatial information that identifies the location of larger scale and stand level protected areas. Where applicable, this information is brought forward into operational plans to ensure roads and harvest activities do not compromise protected areas. Management strategies might include plans for road deactivation or rehabilitation, additional dispersed retention or a unique silviculture regime. Operational plans are then properly executed to provide desired results. Post harvest evaluations and other applicable post activity forms (eg. road construction or site preparation) assess plan conformance.</p>

Current Status	<p>The following table displays the percent of forest management activities consistent with management strategies for protected areas and sites of biological significance (2014 Baseline data).</p> <table border="1"> <tr> <td>2012/13</td><td>2013/14</td></tr> <tr> <td>100%</td><td>100%</td></tr> </table>	2012/13	2013/14	100%	100%
2012/13	2013/14				
100%	100%				
Forecast	Protected areas and unique sites of biological and geological significance are maintained in the DFA.				
Annual Measurement	For areas where forest activities occurred during the annual reporting period that contained operational plan commitments to manage for sites of biological and geological significance, report the number of non-conformances to plans occurring during the reporting year as compared to the total number areas having operational plan commitments.				

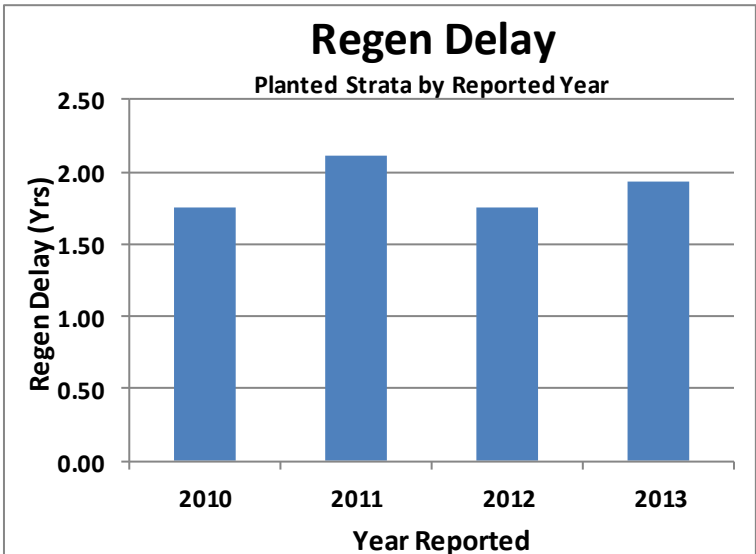
10 – Sites of Cultural & Heritage Significance

Indicator Statement(s)	10 – Percent of identified Aboriginal and non-aboriginal forest values, knowledge and uses considered in forestry planning processes.							
Target	100%							
Basis for Target	Legal obligations, and alignment with Canfor's SFM Commitments.							
Variance	0%							
Description and Background	<p>Meaningful relationships and open communication with local Aboriginal and non-aboriginal communities help to ensure that areas of cultural and heritage importance are managed in a way that retains their traditions and values. This indicator recognizes the importance of managing and protecting culturally important and heritage resources and values during forestry operations. Aboriginals and non-aboriginals, with the benefit of local and traditional knowledge, may provide valuable information concerning the specific location and use of these sites as well as the specific forest characteristics requiring protection or management. The intent of the indicator is to manage and/or protect those truly important sites, thus there is a degree of reasonableness in identifying the sites.</p>							
Strategy	<p>Efforts have been made to understand which First Nation traditional territories fall within the Plan area and company Defined Forest Areas. Canfor engages in information sharing with Aboriginal communities to promote the use and protection of sensitive information.</p> <p>Forest management plans are shared with Aboriginal and non-aboriginal communities. Open communication includes sharing information and enabling Canfor to understand and incorporate traditional knowledge into forest management options.</p> <p>Canfor is aware of culturally important, sacred and spiritual sites leading to appropriate management or protection by specifying measures in operational plans. Plans are properly executed to provide desired results. Post harvest evaluations and other inspections assess plan conformance.</p> <p>Consultation records are completed for each block and road and there is a record of the Aboriginal(s) or non-aboriginal(s) involved, the comments received, the level of consultation carried out, and any adjustment to strategies or accommodation made as a result of this consultation. All cut blocks and roads that fall within the moderate-high categories based on the Fort St. James Archaeological Overview Assessment (AOA) Model have an Archaeological/Cultural Heritage Resource (CHR) assessment completed and strategies implemented to protect resource features.</p> <p>Operational plans incorporate commitments to manage concerns related to those discussions. Plans are properly executed providing desired results. Post harvest evaluations and other inspections assess plan conformance.</p>							
Current Status	<p>The following table displays the % of identified Aboriginal and non-aboriginal forest values, knowledge and uses considered in forestry planning processes (2014 Baseline data).</p> <table border="1"> <thead> <tr> <th></th><th>2012/13</th><th>2013/14</th></tr> </thead> <tbody> <tr> <td></td><td>100%</td><td>100%</td></tr> </tbody> </table>			2012/13	2013/14		100%	100%
	2012/13	2013/14						
	100%	100%						
Forecast	Open and meaningful relationships with local Aboriginals and non-aboriginals leading to a trust in sharing sensitive information. Forest plans contain information on how these sites will be managed or protected.							

<p>Annual Measurement</p>	<p>Retain a record of the Aboriginal communities whose traditional territory (any part) overlaps with the DFA for the purpose of communication with affected parties. Retain a record of the non-Aboriginals whose cultural heritage resource (any part) overlaps with the DFA for the purpose of communication with affected parties.</p> <p>Retain a record demonstrating that forest management plans within the DFA were shared/discussed with Aboriginal and non-Aboriginal communities.</p> <p>Report:</p> <p>Number of instances where discussions lead to the identification of Aboriginal and non-Aboriginal heritage forest values, knowledge and uses that required specific management or protection.</p> <p>Where the above occurred, report the number of times where operational plans specified how these values were considered.</p> <p>Retain a record of the number of blocks and roads having a consultation record.</p> <p>Retain a record of the number of blocks and roads having a CHR assessment completed.</p>
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11 – Reforestation Success

Indicator Statement(s)	11 – Average Regeneration delay for Stands Established Annually
Target	Regeneration established in 3 years or less.
Basis for Target	This target promotes prompt reforestation and meets or exceeds legal requirements outlined in legislation. Early establishment of a viable crop of trees reduces the need for subsequent interventions (i.e. planting, brushing) and positively contributes to carbon sequestration.
Variance	+1 year
Description and Background	<p>Prompt reforestation of harvested areas is a major component of sustainable forest management. Ensuring that a diversity of tree species is maintained improves ecosystem resilience and productivity and positively influences forest health. Prompt reforestation ensures that the productive capacity of the forest land base to grow trees is maintained. Forests in Canada are classified according to an Ecosystem Classification System, which identifies the tree species that are most suited ecologically for regeneration in any particular site.</p> <p>Prompt reforestation also lends itself to long term forest health and productive forests that uptake and store carbon. Young plantations are typically healthy and rapidly growing so they sequester more CO₂ through photosynthesis than they release through decay. By reducing atmospheric greenhouse gases such as CO₂, regenerating cut blocks can contribute to reducing climate change. The sooner cut blocks are regenerated after completion of harvest the sooner this process can begin.</p> <p>In the interim, until government has finalized assumptions for carbon budget modeling, Canfor's carbon strategy will be:</p> <ul style="list-style-type: none"> • To maintain some old growth on the land base for carbon storage, • To ensure prompt reforestation for carbon uptake, and • To minimize permanent access structures in order to maintain forest productivity for carbon uptake. <p>Canfor will continue to report on the target within this indicator (average regeneration delay for stands established annually) as well as related indicators and targets for forest land conversion and retention of old forest. Collectively, these indicator statements and targets demonstrate commitment to positively influence carbon balance within the management unit.</p> <p>Canfor will continue to monitor developments in carbon sequestration modeling both at the provincial and regional level and will utilize this information within the SFM Plan. At the very least, Canfor will rely upon forest carbon analysis conducted in conjunction with the next Timber Supply Review.</p> <p>Prompt reforestation ensures that the productive capacity of forest landbase to grow trees is maintained. Promptness also aids in providing young trees a head start against competing vegetation, helping to reduce the need for manual or chemical brushing treatments. Actively growing, healthy forests will best contribute to carbon uptake and storage.</p> <p>Healthy ecosystems with a diversity of native broadleaf and coniferous species maintained at endemic and sustainable levels. Forests that uptake carbon and positively contribute to a reduction in carbon emissions.</p>

Strategy	Canfor is legally required to declare the Net Area to be Reforested (NAR) of a cut block regenerated by a date specified in the Site Plan. The NAR is the area of a cut block that must be reforested, and does not include permanent access structures, wildlife tree patches, and natural non-productive area (i.e. rock, wetlands). Canfor will also specify in Site Plans tree species that are ecologically suited to the site. Silviculture treatment regimes and forward plans schedule activities consistent with established key dates contained within plans.										
Current Status	<p>The following table summarizes licensee performance to date specific to regeneration delay (2014 Baseline data).</p>  <table border="1"> <caption>Regen Delay Data</caption> <thead> <tr> <th>Year Reported</th> <th>Regen Delay (Yrs)</th> </tr> </thead> <tbody> <tr> <td>2010</td> <td>1.8</td> </tr> <tr> <td>2011</td> <td>2.1</td> </tr> <tr> <td>2012</td> <td>1.8</td> </tr> <tr> <td>2013</td> <td>1.9</td> </tr> </tbody> </table>	Year Reported	Regen Delay (Yrs)	2010	1.8	2011	2.1	2012	1.8	2013	1.9
Year Reported	Regen Delay (Yrs)										
2010	1.8										
2011	2.1										
2012	1.8										
2013	1.9										
Forecast	The productive capacity of forest landbase to grow trees is maintained.										
Periodic Measurement	Periodic monitoring will require tracking harvesting commencement dates for blocks as well as the date that regeneration delay was declared. Tracking of this data will allow for yearly reporting of the area weighted average regeneration delay for all blocks reforested within a given reporting period.										
Annual Measurement	Annually report the average time (weighted by area) for regeneration establishment on areas where regeneration delay was declared during the reporting period. For the purposes of this indicator, commencement of the regeneration delay period is based on the harvesting commencement date.										

12 – Landbase Deletion

Indicator Statement(s)	12 – Percent of gross forest landbase in the DFA converted to non-forest land use through forest management activities.
Target	Less than 3% of the gross forested land base.
Basis for Target	Focused on removal of productive forest land base where forest managers have direct management responsibility. Provides an overall DFA performance measure by the licensee, evaluating land base lost within harvest areas as well as that area lost to access those harvest areas. Inclusive of forests that are not part of the THLB.
Variance	None
Description and Background	<p>Given the crown forest land ownership and associated forest tenure situation in Canada forest companies generally have little influence over additions to or deletions from the forest area, which generally are a result of government land use objectives. Where companies can have an influence is through their practices, particularly as it pertains to permanent access structures within the DFA. A permanent access structure is defined as “a structure, including roads, bridges, landings, gravel pits or other similar structures that provides access for timber harvesting”. The amount of area permanently lost to permanent access structures varies depending on the harvest system, season of harvest, topography and road building standards. Unless rehabilitated, these access structures occupy otherwise productive land suitable for forest establishment resulting in reductions to the gross forest area over time and productive area suitable for the growth of trees. The target for this indicator is focused on those activities where forest companies have direct control (i.e. excludes other permanent losses resulting from other industries sharing the overall forest estate). Actual reporting against the specified targets is anticipated to increase over time until timber harvesting land base is fully roaded. As such a periodic review of the associated targets will be necessary over time.</p> <p>In the interim, until government has finalized assumptions for carbon budget modeling, Canfor’s carbon strategy will be:</p> <ul style="list-style-type: none"> • To maintain some old growth on the land base for carbon storage, • To ensure prompt reforestation for carbon uptake, and • To minimize permanent access structures in order to maintain forest productivity for carbon uptake. <p>Canfor will continue to report on the target within this indicator (percent of gross forested land base in the DFA converted to non-forest land use through forest management activities) as well as related indicators and targets for regeneration delay and retention of old forest. Collectively, these indicator statements and targets demonstrate commitment to positively influence carbon balance within the management unit.</p> <p>Canfor will continue to monitor developments in carbon sequestration modeling both at the provincial and regional level and will utilize this information within the SFM Plan. At the very least, Canfor will rely upon forest carbon analysis conducted in conjunction with the next Timber Supply Review.</p>

Strategy	<p>Reductions to the gross forest area due to permanent access structures resulting from forest management activities can be minimized by:</p> <ul style="list-style-type: none">• Careful total chance access planning to minimize the amount of permanent access structures;• Using proper road construction, maintenance, deactivation and rehabilitation procedures;• Minimizing the degraded width of roads necessary to safely extract timber from an area;• Specifying performance measures in operational plans which include proposed and maximum permanent access area and percent as well as degraded road widths;• Conducting pre-works to communicate road construction expectations and allowable levels of permanent access structures specified in operational plans; and• Conducting harvesting inspections to assess consistency with specifications outlined in preworks and operational plans. <p>Proposed reductions to the gross forest land base resulting from permanent access structures are calculated and included in operational plans (site plans and/or logging plans). Plans are executed providing desired results. Post harvest evaluations and other inspections assess plan conformance with the desired results.</p>								
Current Status	<p>The following table identifies the percentage of gross forested land base in the DFA converted to non-forest land use through forest management activities (2017 baseline data).</p> <table><tr><td>Gross Area = 760,108 ha</td><td>Current Status</td></tr><tr><td>Ha converted</td><td>5,786</td></tr><tr><td>Percent of Gross Area</td><td>0.79%</td></tr></table> <p>The Gross Area includes Canfor’s operating areas, ecological reserves, parks and protected areas but excludes lakes and rivers.</p> <table><tr><td></td></tr><tr><td></td></tr></table>	Gross Area = 760,108 ha	Current Status	Ha converted	5,786	Percent of Gross Area	0.79%		
Gross Area = 760,108 ha	Current Status								
Ha converted	5,786								
Percent of Gross Area	0.79%								
Forecast	Maintenance of productive forest soils with minimized losses in forest productivity and the forest productive area resulting from the construction and maintenance of permanent access structures.								
Periodic Measurement	<p>Permanent access structures as a percent are utilized in provincial Timber Supply Review forecasts.</p> <p>Report percent converted once every 5 years from operational information that tracks area in permanent roads, landings, borrow pits, rock quarries and permanent camps. Deduct any included areas that have been rehabilitated during the reporting period.</p>								
Annual Measurement	None								

13 – Landbase Additions

Indicator Statement(s)	13 – Existing areas of non-forested types artificially converted to forested types.
Target	0 hectares
Basis for Target	Existing non-forested types within cut blocks may represent valuable habitats that should remain without trees. Seasonal wetlands could be converted to forest cover, but these sites can be important waterfowl and amphibian habitat and should be preserved. Grass/ shrub plant communities may be important foraging areas for ungulates and bears. In addition to their ecological value, these areas may also have social value. Open meadows/ wetlands may be valuable hunting or berry picking areas, or popular camping sites. Others may be valued for their aesthetics. These non-forested types are part of the mosaic of ecosystems in the DFA, and should be maintained as a part of SFM.
Variance	0 hectares
Description and Background	<p>Given the crown forest land ownership and associated forest tenure situation in Canada forest companies generally have little influence over additions to or deletions from the forest area, which generally are a result of government land use objectives.</p> <p>The Fort St. James DFA contains a variety of non-forested types that exist at the landscape level. These types may be wetlands, rock outcrops, grasslands, brush, or other areas that are not dominated by trees. These types may be valuable sites for wildlife or may represent unique and unusual features that should be preserved in their non-forested state.</p> <p>All licensees prepare planting contracts that describe areas to be planted. This is usually done through maps and contract schedules that list planting stratus. While most licensees do not have formal policies preventing the planting of naturally occurring non-forested types, it is not common practice to do so. Planting these sites is not legally required (unless the Site Plan included them in the Net Area to Reforest), and it would be uneconomical to pay for the reforestation of sites where trees are probably not suitable to grow.</p> <p>The target for this indicator is focused on those activities where forest companies have direct control (i.e. excludes other permanent losses resulting from other industries sharing the overall forest estate). Sustainable forest management seeks to maintain the landscape diversity of the DFA and this indicator is intended to achieve this by preventing the afforestation of naturally occurring non-forested types.</p> <p>In the interim, until government has finalized assumptions for carbon budget modeling, Canfor' carbon strategy will be:</p> <ul style="list-style-type: none"> • To maintain some old growth on the land base for carbon storage, • To ensure prompt reforestation for carbon uptake, and • To minimize permanent access structures in order to maintain forest productivity for carbon uptake. <p>Canfor will continue to report on the target within this indicator (existing areas of non-forested types artificially converted to forested types) as well as related indicators and targets for regeneration delay, additions and deletions to the forest area and retention of old forest. Collectively, these indicator statements and targets demonstrate commitment to positively influence carbon balance within the management unit.</p> <p>Canfor will continue to monitor developments in carbon sequestration modeling both at the provincial and regional level and will utilize this information within the SFM Plan. At the very least, Canfor will rely upon forest carbon analysis conducted in conjunction with the next Timber Supply Review.</p>

Strategy	<p>Canfor is responsible for monitoring, tracking and reporting this indicator. If existing areas of non-forested types are planted, corrective and preventative actions will be identified to improve consistency. Improvements in operational plan development and planting supervision will be adopted if required</p> <p>In order to maintain naturally occurring non-forested types, Canfor has established a target of 100% of these sites to remain unplanted. Canfor will establish policies to ensure these areas are not included in the Net Area to Reforest of harvested blocks and adjacent cutblocks, and they will ensure planting contracts clearly identify these areas to be excluded from the planting area.</p> <p>Stand level plans (site plans) specifically identify productive and non-productive ground. Non-forest types are excluded from areas to reforest.</p>		
Current Status	<p>The following table identifies the hectares of existing non-forested types artificially converted to forested types.</p> <table><tr><td>From TSR 2012-2017</td></tr><tr><td>0 ha.</td></tr></table>	From TSR 2012-2017	0 ha.
From TSR 2012-2017			
0 ha.			
Forecast	Maintenance of all non-forested types within cutblocks		
Annual Measurement	<p>The locations of existing areas of non-forested types are identified in Forest Development Plans/Forest Stewardship Plans and other operational plans. Planting information is tracked and retained by Canfor in a database or filed in an appropriate manner. Canfor will determine the indicator percent and include the information in the annual SFMP report for the operational year April 1st to March 31st.</p>		

14 – Volume Harvested vs Allocated

Indicator Statement(s)	14 – Percent of volume harvested compared to allocated harvest level
Target	100% over 5 year cut control period, as defined by Timber supply forecast harvest flow.
Basis for Target	Legal requirements.
Variance	As per cut control regulations.
Description and Background	<p>For many, sustainability involves limiting actual timber harvest to levels within the long-term capability of the forest to grow wood. To track this, managers need data on both harvest levels and long-term production capability to make proportional calculations. In many locations, it also requires an understanding of the nature of the transition of forests from harvesting old growth to harvesting second growth. In practice, only the actual harvest level can be physically measured. The amount of wood that can be produced in perpetuity from a forest is a theoretical calculation that depends not only on the inherent wood-growing capacity of the forest ecosystem but also on the kinds and intensities of management inputs (e.g., silvicultural treatments).</p> <p>Because the latter inputs are under human control, a forest can have a wide range of potential long-term sustainable wood harvest levels. One strategy to ensure the wood growing capacity of forests is fully recognized is to retain it in a productive state. Other indicators that directly measure this are 13 (additions and deletions to the forest area by cause) and 11 (reforestation success).</p> <p><u>Timber benefits</u> can be measured by looking at sustainable harvest levels in relation to the allocated supply levels determined by the Chief Forester (BC) or authorized by the Ministry of Sustainable Resource Development (Alberta). The harvest level is set only after considering social, economic and biological criteria. In BC, more information on this rigorous process to determine allowable annual cut (AAC) levels can be found at the website:</p> <p>BC data from most current AAC rationale https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/timber-supply-review-and-allowable-annual-cut</p> <p>Support for local communities through business relationships provides employment diversification and increased local revenue.</p> <p>Timber supply is usually considered within the context of three relative timeframes - short-term, medium-term and long-term. The short-term is typically represented by the first two decades of the harvest forecast and reflects the period in which the scheduled harvest level is defined by immediate concerns of achieving socio-economic objectives and maintaining non-timber values. The medium-term corresponds to the transition from harvesting mostly old growth to harvesting managed stands. The long-term is the period that begins approximately when the harvest reaches the long-term harvest level.</p> <p>Guidance in developing harvest flow objectives is taken from the current economic and social objectives of the Crown. In the short-term, there is often a desire by government to retain the continued availability of good forest jobs and the long-term stability of communities that rely on forests. At the same time, harvest levels in the short-term must not compromise long-term sustainability.</p> <p>In general, a reasonable flow pattern provides for a managed and gradual transition from short-term to medium- and long-term harvest levels and avoids large and abrupt disruptions in timber supply. A reasonable flow has a medium-term level that drops below the long-term level to the minimum extent and only if justified. The long-term level should provide an even level of growing stock over the long-term.</p>

	Initial harvest levels are used by government decision makers in determining the allowable annual cut (AAC). The harvest level is set using a rigorous process that considers social, economic and biological criteria.
Strategy	<p>Canfor contributes to the sustainable harvest level by managing to the determined harvest level for the management unit or in some cases by adhering to their apportioned harvest volume within the TSA. Cut control regulations dictate the short-term harvest flexibility. Essentially, Canfor has flexibility on harvest levels from year to year but must balance every five years or less if desired by the licensee.</p> <p>Currently, Canfor's replaceable Forest Licenses in the DFA have an AAC apportionment of 1,226,771 m³ and the five-year cut control is from 2012 to 2017. This volume is harvested on Canfor's DFA.</p>
Current Status	<p>BC data from most current AAC rationale https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/timber-supply-review-and-allowable-annual-cut</p> <p>Short and long-term harvest flows that reflect forest conditions, forest practices, and the socio-economic objectives of the Crown. Timber Supply Review has detailed timber supply forecasts which then rely on the Chief Forester to provide a determination of harvest levels utilizing forecast information, Crown objectives and input from the public.</p> <p>Effective October 11, 2017, the new allowable annual cut (AAC) for the Prince George Timber Supply Area (TSA) is set at 8,350,000 cubic metres per year for the first five years, and 7,350,000 cubic metres for the following five years.</p> <p>The new cut level includes three partitions:</p> <ul style="list-style-type: none"> ○ A maximum of 1.5 million cubic metres per year is attributed to supply blocks A and B. ○ A maximum of 6.1 million cubic metres per year is attributed to the remaining supply blocks (and reduced to 5.1 million cubic metres in October 2022), of which 62,000 cubic metres per year is attributed to deciduous-leading stands. ○ A maximum of 750,000 cubic metres per year is attributed to bioenergy stands. <p>After five years, beginning on October 1, 2022, the new AAC will be reduced to 7.35 million cubic metres per year. Partitions 1 and 3 will remain unchanged for the second 5-year period. Partition 2, the partition for supply blocks other than A and B (supply blocks C, D, E, F, G, H) is lowered to a total of 5.1 million cubic metres per year of which 62 000 cubic metres per year is attributed to deciduous-leading stands.</p> <p>This AAC will remain in effect until a new AAC is determined, which may take place within 10 years of this determination unless postponed in accordance with Section 8(3.1) of the <i>Forest Act</i>.</p> <p>More information on the timber supply review for the Prince George TSA can be found at: https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/timber-supply-review-and-allowable-annual-cut/allowable-annual-cut-timber-supply-areas/prince-george-tsa</p> <p>The following graph shows the percentage volume that has been harvested from 2007 to 2011 and the percentage volume that is planned to be harvested in 2012 to 2014 compared to the AAC volume that was harvested. Harvest levels have generally been within 50% of the AAC apportionment.</p>

15 – Soil Disturbance

Indicator Statement(s)	15 – Percent of harvested blocks meeting soil disturbance objectives identified in plans							
Target	100% of blocks meet soil disturbance objectives.							
Basis for Target	Maintenance of site productivity is a core prerequisite for achieving sustainability. Managing the area of detrimental soil disturbance will help to retain the productive capacity of the land base.							
Variance	0%							
Description and Background	<p>The objectives of soil conservation under British Columbia's Forest and Range Practices Act (FRPA) includes:</p> <ul style="list-style-type: none"> • Limiting the extent of soil disturbance caused by harvesting and silviculture activities that negatively affect the physical, chemical and biological properties of soil; and • Conducting forest practices in a manner that addresses the inherent sensitivity of a site to soil degrading processes to minimize soil disturbance, landslides, soil erosion and sediment delivery to streams. <p>The objective of placing limits on the amount of soil disturbance allowed within the "Net Area to be Reforested" (NAR) is to ensure that site productivity is maintained and that impacts to other resource values are prevented or mitigated. Net Area to be Reforested (NAR) is defined as the area which the licensees are legally obligated to regenerate to free growing status (i.e. gross harvest area minus deletions for roads, landing, gravel pit, wildlife tree patches, etc.). Harvesting and silviculture activities must be carried out such that the total amount of soil disturbance at any time during operations does not exceed the specified maximum (BCMOF 2001). Objectives set by the provincial government for soils as well as associated practice requirements specific to soil disturbance limits, are outlined in the Forest Planning and Practices Regulation (FPPR).</p> <p>Soil Disturbance types and related categories is a general term and can include temporary access structures, corduroyed trails, compacted areas and dispersed disturbance (dispersed trails, gouges, and scalps). Soil disturbance can have positive (mineral soil exposure for seed germination) or negative (soil compaction) impacts. Managing the detrimental soil disturbance levels will help to retain the productive capacity of ecosystems. Soil compaction, displacement and erosion are components of potentially detrimental soil disturbance. These targets seek to manage soil disturbance levels caused by harvesting and silviculture operations.</p>							
Strategy	<p>Prior to harvest commencement, field data is collected to assess slopes, soil textures, soil moisture regimes, and organic matter content for soils within a block. This information is then used for the identification and delineation of allowable levels of soil disturbance within the block net area to reforest for harvesting and silviculture activities. Soil disturbance objectives are written into plans by committing to the maximum planned levels of soil disturbance for standard units and roadside work areas. Harvest operations are conducted in a way, and during times of the year, that ensures commitments can be achieved. Post harvest evaluations and other inspections assess compliance with soil disturbance limits identified in plans.</p>							
Current Status	<p>The following table shows the status for the percent of harvested blocks meeting legal soil disturbance objectives.</p> <table border="1"> <thead> <tr> <th></th><th>2012/13</th><th>2013/14</th></tr> </thead> <tbody> <tr> <td></td><td>98.5%</td><td>100%</td></tr> </tbody> </table>			2012/13	2013/14		98.5%	100%
	2012/13	2013/14						
	98.5%	100%						

Forecast	Productive forest soils with minimized losses from forest operations will be maintained.
Periodic Measurement	The harvesting and/or silviculture supervisor in conjunction with the contractor will monitor and measure soil disturbance levels during active operations. When levels of soil disturbance are approaching limits specified in pre-works and associated operational controls, the contractor is to suspend operations in the area and contact their licensee supervisor.
Annual Measurement	<p>Reporting based on harvest inspections and/or government inspections. Any non-conformance or non-compliance to plans will be identified and used as the basis for reporting.</p> <p>Report the area (hectares) of cut blocks where soil disturbance commitments were achieved as compared to the total area of cut blocks that were harvested during the reporting year (reporting on net area requiring reforestation). The annual report will provide a description of any corrective actions where this indicator falls below the target.</p>

16 – Downed Woody Material

Indicator Statement(s)	16 – Percent of audited cut blocks where post harvest CWD levels are within the targets contained in Plans.
Target	100% of blocks harvested annually will meet targets.
Basis for Target	Legal requirements, “Coarse Woody Debris Best Management Practices”, “Chief Forester’s Guidance on Coarse Woody Debris Management”, and studies conducted in the DFA on “Post-harvest Monitoring for Coarse Woody Debris and Stand Structural Retention 2008”.
Variance	-10%
Description and Background	<p>This indicator and target addresses the need to manage for Coarse Woody Debris (CWD) given its importance as a stand attribute and component of stand-level biodiversity. Coarse Woody Debris typically includes sound or rotting logs, stumps, or large branches that have been fallen or been cut and left in the woods, or trees and branches that have died but remain standing or leaning. For operational purposes; CWD is defined as material greater than 10cm in diameter, in all stages of decay. CWD plays numerous functional roles in natural and managed forests and aquatic ecosystems including: providing feeding, breeding and shelter substrate for many organisms; providing habitat for many forest plants, animals and microorganisms; providing a nutrient source and growing substrate for various bacteria and fungi; carbon storage; erosion control; microclimates for seedling establishment; shelter and access routes for small mammals; and influencing slope and stream geomorphology. Guiding principles related to CWD management include: minimizing CWD accumulations on landings and roadside; larger pieces are more valuable than smaller pieces (large pieces are defined as greater than 20cm and 10 m long); ecologically, it is advantageous to maintain the full range of decay and diameter classes of CWD; coniferous material lasts many times longer than deciduous material; CWD can be managed in conjunction with wildlife trees and other constrained or reserve areas; manage the composition and arrangement of CWD within acceptable levels of risk of wildfire; insect pest and forest disease outbreaks; and harmonize the retention of CWD with silviculture objectives. This indicator is complimented by Indicators 5 & 6: Degree of within-stand structural retention, and Indicator 7: Percent of forest management activities consistent with management strategies (both landscape and stand level) for Species at Risk and/or Species of Management Concern.</p> <p>Potential sources of CWD in managed stands can include the following:</p> <ul style="list-style-type: none"> • Logs already lying on the forest floor that are left after harvesting; • Uneconomical wood resulting from harvest operations including breakage, short pieces and tops; • Long-term CWD recruitment may be addressed by leaving reserves and wildlife trees, possibly including cull trees; • Dispersed wildlife trees including green trees, stubbed trees and standing dead trees; and • Retention of standing trees below utilization standards (poles and bigger) as a long-term CWD recruitment source. <p>Canfor Best Management Practices (BMP’s) for CWD include:</p> <ul style="list-style-type: none"> • To retain standing deciduous trees where operationally feasible; otherwise, left where felled; <ul style="list-style-type: none"> ○ Same for Douglas-fir, especially vets; • To leave non-merchantable stems & under-utilization stems on block; • To retain, where feasible, large CWD or recruitment stems; • To retain clumps of viable non-pine natural regeneration; • To retain existing CWD in wildlife tree patches and reserve areas; and

	<ul style="list-style-type: none">• To leave stub Trees to varying degrees (e.g. along riparian / Machine Free Zones).						
Strategy	<p>Canfor will achieve objectives and targets specific to CWD through the possible application of the following procedures and controls:</p> <ul style="list-style-type: none">• Training for Canfor staff and contractors specific to CWD management and best management practices;• Adhering to legislative requirements specific to CWD;• Harvesting pre-works and inspections;• Conducting implementation monitoring to assess success of implementation of controls and possible opportunities for improvement; and• Conducting effectiveness monitoring to assess if controls are effective at achieving the desired results. <p>CWD is managed on a rotation basis and, as such, strategies must address recruitment of CWD over the short and long-term.</p>						
Current Status	<p>The following table shows the status from 2009 to 2011 for the percent of audited cut blocks where post harvest CWD levels are within the targets contained in Plans.</p> <table><tr><td></td><td>2012/13</td><td>2013/14</td></tr><tr><td></td><td>100</td><td>100</td></tr></table>		2012/13	2013/14		100	100
	2012/13	2013/14					
	100	100					
Forecast	Maintenance of a range of standing and downed CWD sizes in a range of decay classes that will deliver a supply of CWD in the short through to the long-term.						
Periodic Measurement	Periodic monitoring will be conducted during harvest inspections completed during operations. Harvest inspections will assess consistency with legal requirements and CWD debris best management practices during active operations. When instances of non-compliance or non-conformance are identified, this will be entered into the licensee specific incident tracking system.						
Annual Measurement	Report compliance with legal requirements and conformance with operational guidelines for CWD management based on blocks reviewed as part of implementation monitoring. On an annual basis, a subset of blocks with harvesting completed during the reporting period will be randomly assessed for consistency with legal requirements and CWD Best Management Practices. Current status results will be calculated by determining the number of blocks consistent with legislative and operational controls divided by the total number of blocks assessed during the reporting period.						

17, 18, 19, 20 – Water Quality & Water Quantity

Indicator Statement(s)	<p>17 – Percent of Sensitive Watersheds that are above Peak Flow Index targets will have further assessment if further harvesting is planned.</p> <p>18 – Percent of high risk drainage structures in sensitive watersheds with identified water quality concerns that have mitigation strategies implemented.</p> <p>19 – Percent of road related soil erosion events that introduce sediment into a stream identified in annual road inspections that are addressed.</p> <p>20 – Percent of crossing structures planned and installed on fish streams to a reasonable design and sediment control standard (allow for adequate fish passage - dependant on the presence/absence of fish).</p>
Target	<p>Indicator 17 – 100%</p> <p>Indicator 18 – 100%</p> <p>Indicator 19 – 100%</p> <p>Indicator 20 – 100%</p>
Basis for Target	Places emphasis and resources on most sensitive and high risk areas. Ensures focused assessment of watershed conditions and drainage structures.
Variance	<p>Indicator 17 – 0%</p> <p>Indicator 18 – 0%</p> <p>Indicator 19 – 0%</p> <p>Indicator 20 – 0%</p>
Description and Background	<p>Forest ecosystem conditions at the watershed level have a strong influence on water quality and quantity in rivers, lakes, and wetland systems. Water quality and quantity can be affected by stand-replacing disturbances (human and natural-caused).</p> <p>The effects are normally highest in the initial post-disturbance years and diminish over time as regenerating forest cover is established. The critical threshold at which the disturbance begins to affect water values varies according to topography, soil properties, vegetation types, and climate.</p> <p>Certain watersheds can be classified as more sensitive to the impacts of disturbance either because of their environmental and climatic attributes or because of their inherent value to aquatic life and communities that are dependent on the water. The peak flow of a watershed is directly influenced by the amount of area that is recently harvested or otherwise recently disturbed (Equivalent Clear-cut Area or ECA). These disturbed areas accumulate more snow and subsequently can deliver more water as the snow melts more rapidly in the spring.</p> <p>Forest management activities including infrastructure construction (roads, bridges, landings, etc.) may affect water quality and quantity (possibly, immediate or long-term effects). Direct measurements of water quality and quantity are largely unfeasible across entire working forests. Based on research, regulations and guidelines have been established to minimize effects on water quality and quantity during forest management activities, which include requirements for fish habitat, stream crossings, and riparian areas. Following these regulations and guidelines, forest management planning, operational strategies and site prescriptions are implemented to minimize and mitigate impacts to water quality and quantity.</p> <p>Roads and stream crossings in particular can have a large impact on water quality in a watershed. In general, steps are taken on all drainage structures to minimize the risk of sediment delivery into watercourses. Within sensitive watersheds, local conditions such as soil type, topography, road grade, road construction history and structure type will</p>

	<p>determine how great a risk a drainage structure is to negatively impact water quality.</p> <p>Indicator 17 – Watersheds are assessed for hydrological sensitivity by a qualified professional. Professionals have different approaches for assessing the sensitivity, but generally terrain, channel stability, buffering (lakes, wetlands) and climate are rated to determine a sensitivity for each watershed. Watersheds can also be considered high sensitivity due to social values (e.g. community watershed) or ecological values (e.g. high fish values, ecologically important wetlands). Based on assessed sensitivity, watersheds are assigned a threshold Peak Flow Index (PFI). Refer to the forecast section for details on the PFI calculation. The commitment, for watersheds of high sensitivity, is to conduct further assessments if the threshold is going to be exceeded. Examples of further assessments include:</p> <ul style="list-style-type: none"> • Sediment source surveys; • Channel stability assessments; • Stream crossing quality survey; • Inventory review (ground review of disturbed areas to determine hydrologic recovery); and • Other assessments or actions as recommended by a qualified professional. <p>High Sensitivity Watersheds in the Fort St. James District are listed in the table under “<i>Forecast, Predicted Results or Outcomes</i>” below. These more detailed assessments could lead to different outcomes or recommendations. Possible examples are as follows:</p> <ul style="list-style-type: none"> • A lower actual PFI index that would require no further mitigation; • A revised threshold for PFI; • Repair or maintenance to address problem issues; • Increased riparian buffering; • Deferral of harvest or modified harvest; and • Increased standards around crossings. <p>Indicator 18 – recognizes the importance of identifying high risk drainage structures in those watersheds that were determined to have high sensitivity. In order to manage the risks to water quality, the target requires that a mitigation strategy be in place for each of the identified structures and that it is being followed. A variety of strategies could be employed for mitigation based on site specific situations. These could include:</p> <ul style="list-style-type: none"> • Ditch blocks; • Sumps; • Silt fences; • Cross drains; • Grass seeding the cut or fill slopes and the road bed; and • Water bars. <p>Indicator 19 – recognizes the potential damage of sedimentation on streams. In order to manage the risks to water quality, the target requires licensees to perform annual road inspections to ensure sedimentation does not occur, and where necessary, will continue to take prompt action to mitigate its impact if it does.</p> <p>Indicator 20 – recognizes the potential damage that poorly installed crossing structures can impact on fish streams and the importance of installing stream crossings that allow for fish passage. Stream crossings will continue to be identified in operational plans and procedures will be implemented to ensure that fish passage is maintained and crossing structures are planned and installed to a reasonable design and sediment control standard.</p> <p>Indicator 6 – requires that all cutblocks harvested be in conformance with riparian management commitments provided with in site plans.</p>
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Strategy	<p>Indicator 17 – Conduct an inventory of sensitive watersheds and assign a peak flow target to each. Where peak flow targets are exceeded in a sensitive watershed (either currently or as a result of planned activity), further assessments are conducted. These assessments could include a watershed sensitivity assessment, a stream quality crossing index survey (Indicator 18), a height performance of regenerating stands, road inspections, a channel stability assessment, or other suitable assessment as determined by the qualified professional.</p> <p>Indicator 18 – Conduct an inventory of high hazard drainage structures within sensitive watersheds and develop a mitigation strategy for each of the structures. Implement action plans for each of the identified drainage structures.</p> <p>Indicator 19 – Conduct an inventory of road related soil erosion events that introduce sediment into a stream identified in annual road inspections and develop a mitigation strategy for each of the events. Implement action plans for each of the identified erosion events.</p> <p>Indicator 20 – Conduct an inventory of crossing structures planned and installed on fish streams to a reasonable design and sediment control standard (allow for adequate fish passage - dependant on the presence/absence of fish). Implement action plans for each of the identified drainage structures.</p> <p>Indicator 6 – Harvest in conformance with riparian commitments prescribed in plans.</p>																																																																																															
Current Status	<p>Indicator 17 – The following table identifies the current status and future state of sensitive watersheds in the DFA (2012 Baseline data).</p> <table><tr><th>Watershed Name</th><th>Watershed area (Ha.)</th><th>Threshold PFI</th><th>PFI</th><th>Future PFI</th></tr><tr><td>Gluskie</td><td>4893</td><td>25</td><td>N/A*</td><td>11.1</td></tr><tr><td>Van Decar Creek</td><td>2661</td><td>37</td><td>2.4</td><td>2.4</td></tr><tr><td>Dust</td><td>25,800</td><td>37</td><td>10.3</td><td>11.3</td></tr><tr><td>Forfar</td><td>37.5</td><td>25</td><td>N/A*</td><td>11.8</td></tr><tr><td>Kastberg</td><td>24,642</td><td>37</td><td>18.3</td><td>18.3</td></tr><tr><td>Sakeniche</td><td>8,669</td><td>37</td><td>32.5</td><td>31.3</td></tr><tr><td>Kynoch</td><td>7070</td><td>25</td><td>N/A*</td><td>8.9</td></tr><tr><td>Kotsine</td><td>22,232</td><td>31</td><td>2.1</td><td>2.6</td></tr><tr><td>Minaret</td><td>15,932</td><td>37</td><td>4.2</td><td>4.0</td></tr><tr><td>Bates</td><td>11,566</td><td>37</td><td>22.4</td><td>22.4</td></tr><tr><td>Unnamed 69 (Sustut)</td><td>12,437</td><td>37</td><td>0.1</td><td>0.1</td></tr><tr><td>Ankwill</td><td>11,467</td><td>37</td><td>5.0</td><td>4.8</td></tr><tr><td>Sitlika</td><td>6,647</td><td>37</td><td>5.1</td><td>7.7</td></tr><tr><td>Hudson Bay</td><td>10,903</td><td>37</td><td>20.1</td><td>19.3</td></tr><tr><td>Frypan</td><td>10,970</td><td>37</td><td>3.2</td><td>3.2</td></tr><tr><td>Unnamed 78 (Johns Lake)</td><td>9,827</td><td>37</td><td>4.1</td><td>4.2</td></tr><tr><td>Bivouac</td><td>10,741</td><td>37</td><td>12.4</td><td>12.1</td></tr><tr><td>Lovell</td><td>9,200</td><td>37</td><td>7.6</td><td>7.6</td></tr></table>	Watershed Name	Watershed area (Ha.)	Threshold PFI	PFI	Future PFI	Gluskie	4893	25	N/A*	11.1	Van Decar Creek	2661	37	2.4	2.4	Dust	25,800	37	10.3	11.3	Forfar	37.5	25	N/A*	11.8	Kastberg	24,642	37	18.3	18.3	Sakeniche	8,669	37	32.5	31.3	Kynoch	7070	25	N/A*	8.9	Kotsine	22,232	31	2.1	2.6	Minaret	15,932	37	4.2	4.0	Bates	11,566	37	22.4	22.4	Unnamed 69 (Sustut)	12,437	37	0.1	0.1	Ankwill	11,467	37	5.0	4.8	Sitlika	6,647	37	5.1	7.7	Hudson Bay	10,903	37	20.1	19.3	Frypan	10,970	37	3.2	3.2	Unnamed 78 (Johns Lake)	9,827	37	4.1	4.2	Bivouac	10,741	37	12.4	12.1	Lovell	9,200	37	7.6	7.6
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	<p>The current and future peak flow was calculated as follows:</p> <ul style="list-style-type: none">• The inventory is projected to the current year using an estimate of 0.30m growth per year;• Highways are buffered to 10m, Forest Service Roads (FSR) and mainlines are buffered to 7.5m and block roads are buffered to 5m. All buffers are set to 0% hydrologic recovery;• For harvested cut blocks, the estimated recovery is based on the height of the crop trees that have been established (0-3m tree height 0 %, 3m to 5m tree height 25%, 5m to 7m 50%, 7m to 9m 75%, greater than 9m 100%);• The area of harvesting above the H₆₀ Line (the upper 60% of a watershed (by area)) is multiplied by 1.5; and• Dead pine stand recovery is based on the pine percentage in the stand (Greater than 70% = 50%, 31 to 70% = 80%). <p>Indicator 18 – Mitigation strategies are developed and implemented for 100% of high risk drainage structures in sensitive watersheds.</p> <table><tr><th>2012/13</th><th>2013/14</th></tr><tr><td>100</td><td>100%</td></tr></table> <p>Indicator 19 – The following table shows the percent of road related soil erosion events that introduce sediment into a stream identified in annual road inspections that are addressed.</p> <table><tr><th>2012/13</th><th>2013/14</th></tr><tr><td>100%</td><td>100%</td></tr></table> <p>Indicator 20 – The following table shows the percentage of crossing structures planned and installed on fish streams to a reasonable design and sediment control standard (allow for adequate fish passage - dependant on the presence/absence of fish).</p> <table><tr><th>2012/13</th><th>2013/14</th></tr><tr><td>100%</td><td>100%</td></tr></table>	2012/13	2013/14	100	100%	2012/13	2013/14	100%	100%	2012/13	2013/14	100%	100%																		
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Forecast	Maintenance of acceptable levels of water quality (clean water) and quantity (maintain stream-flow regimes within natural variation). Riparian systems will maintain existing uses and support human and ecological communities and aquatic life. Introduction of sedimentation into watercourses is minimized.																														

Periodic Measurement	Fisheries sensitive watersheds may be developed in the Fort St. James District in the short-term. If a new selection of watersheds is identified, this plan will be updated in accordance with the legislated designation of watersheds. Measurements and analysis may need to occur on the new set of watersheds.
Annual Measurement	<p>Indicator 17 – Report the number of sensitive watersheds where peak flow targets were exceeded and harvesting occurred. Identify the watershed(s) and, for each, whether a further detailed assessment was conducted prior to harvest.</p> <p>Indicator 18 – Report the number of high risk drainage structures within the sensitive watersheds. Further report whether each had a mitigation strategy and whether that strategy was implemented as planned.</p> <p>Indicator 19 – Report the number of road related soil erosion events that introduce sediment into a stream. Identify whether these events were addressed (eg. steps taken to rehabilitate damage).</p> <p>Indicator 20 – Report the number of crossing structures planned and installed on fish streams annually. Further report whether each crossing structure was planned and installed to a reasonable design and sediment control standard (allow for adequate fish passage - dependant on the presence/absence of fish).</p>

21 – Net Carbon Uptake

Indicator Statement(s)	21 – Percent of standards units declared annually that meet free growing requirements on or before the free growing date.
Target	100%
Basis for Target	The target for this indicator has been established at 100% to ensure that all standards units within the DFA achieve free to grow status within prescribed timelines. Once standards units reach the free to grow standard, the area reverts back to Crown land and all Canfor's obligations are considered complete. A performance target of 100% is not only achievable, it is in Canfor's best interest as the completion of silviculture obligations is an important financial benefit. Until the Crown assumes responsibility for a plantation, Canfor must bear the costs of managing that stand, including surveys, thinning, brushing, and, if necessary, replanting. Future practice will involve Canfor continuing to meet free to grow obligations and this data will be reported out to the public annually.
Variance	0%
Description and Background	<p>A free growing stand is 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 (BC MOF 1995b). A free growing assessment is conducted on Standards Units based on a time frame indicated in the Site Plan. A Standards Unit (SU) is defined in the Stocking and Free Growing Survey Procedures Manual (BC MOF 2002) as:</p> <p><i>"An area that is managed through the uniform application of a silvicultural system, stocking standards, and soil conservation standards. These standards are used to determine if legal regeneration, free growing, and soil conservation obligations are met."</i></p> <p>Free growing dates are established based on the biogeoclimatic ecosystem classification of the site and the tree species prescribed for planting after harvest.</p> <p>In order to fulfil 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 fulfilment of a Licensee's obligation to the Crown for reforestation.</p> <p>This indicator measures the percentage of standards units that annually meet free growing obligations across the DFA. While this percentage is important in a legal sense, as licensees have an obligation to meet free growing standards, it is also important for sustainable forest management. Standard units that meet free growing standards are deemed to have reached a stage where their continued presence and development is more assured. They are in numbers, health and height that make them less vulnerable to competition and more likely to reach maturity. Producing a free to grow stand means that the forest ecosystem will continue to develop. It means that carbon sequestration will also continue, locking up additional greenhouse gases as cellulose in the growing plantation. As more blocks reach free to grow status, they could make a significant local contribution to reducing global climate change.</p> <p>In the interim, until government has finalized assumptions for carbon budget modelling, Canfor's carbon strategy will be:</p> <ul style="list-style-type: none"> • To maintain some old growth on the land base for carbon storage; • To ensure prompt reforestation for carbon uptake; and • To minimize permanent access structures in order to maintain forest productivity for carbon uptake. <p>Canfor will continue to report on the target within this indicator (existing areas of non-</p>

	<p>forested types artificially converted to forested types) as well as related indicators and targets for regeneration delay, additions and deletions to the forest area and retention of old forest. Collectively, these indicator statements and targets demonstrate commitment to positively influence carbon balance within the management unit.</p> <p>Canfor will continue to monitor developments in carbon sequestration modeling both at the provincial and regional level and will utilize this information within the SFM Plan. At the very least, Canfor will rely upon forest carbon analysis conducted in conjunction with the next Timber Supply Review.</p>				
Strategy	<p>Free growing dates and standards for each standards unit are recorded and maintained in Canfor's database. Each cut block is surveyed prior to the free growing date to ensure the free growing standards have been met and that the stand of trees is at target heights, fully stocked, and healthy. The results of all surveys are summarized and maintained in Canfor's database. If a survey indicates that the standards unit has not achieved free growing by the required date, corrective actions will be prescribed immediately in order to remedy the situation while still meeting the free growing deadlines. If all free growing standards are met, Canfor will make an application to the Ministry of Forests, Land and Natural Resource Operations and Rural Development for the standards unit to revert to the Crown's responsibility.</p> <p>It is Canfor's responsibility to monitor, track and report this indicator. Opportunities for continuous improvement could be found in the administration of silviculture activities. Currently, failure to meet free to grow objectives generally relates to database tracking, survey methodology and reporting delays. These issues will be reviewed and, if necessary, a resulting action plan will be developed and implemented to minimize future negative impacts to this indicator.</p>				
Current Status	<p>The following table identifies the percent of standards units declared annually that meet free growing requirements on or before the free growing date.</p> <table border="1"> <thead> <tr> <th>2012/13</th><th>2013/14</th></tr> </thead> <tbody> <tr> <td>100%</td><td>100%</td></tr> </tbody> </table>	2012/13	2013/14	100%	100%
2012/13	2013/14				
100%	100%				
Forecast	Continued achievement of reaching Free Growing status on harvested blocks.				
Annual Measurement	Silviculture obligations such as free growing dates for standards units are recorded and maintained in Canfor's database. Once free to grow status has been achieved, Canfor must submit a report to the Ministry of Forests, Lands, Natural Resource Operations and Rural Development that will update the status of the standards units on the government database.				

22 – Non-Timber Forest Benefits

Indicator Statement(s)	22 – Conformance with strategies for non-timber benefits identified in Plans.																
Target	No non-conformances																
Basis for Target	Developed with input from stakeholders, broader public and Aboriginal communities. It is essential that holders of overlapping land use tenures, communicate regularly with one another and with the public and Aboriginal communities. Conforming to commitments in plans will help to measure the company's performance of operating on public lands.																
Variance	0																
Description and Background	<p>Forests represent not only a return on investment for an organization (measured, for example, in profit/loss, or product output) but also a source of income and non-financial benefits for DFA-related workers, local communities and governments. While there is limited information on the ecological services and non-timber benefits produced in the DFA, it is important to consider the costs and benefits of a variety of goods and services. Non-timber resources can be assessed using a variety of measures including communication with local communities, Aboriginal and non-aboriginal, as well as with other tenure holders.</p> <p>For the purpose of this indicator a non-timber forest benefit (NTFB) refers to a specific identified benefit with a spatially definable area that has the potential to be positively or negatively impacted through forestry related activities. This indicator refers to both tenured and non-tenured NTFBs. Tenured NTFB's often are economically based. Non-tenured timber benefits derived from the forest such as botanicals and non-commercial recreation, as well historic and spiritual values, may or may not be exchanged in a marketplace.</p> <p>During the development of forest management plans, it is important to consider a variety of socio-economical and ecological benefits produced in the DFA. The uses and benefits considered should include, but not be restricted to, the following timber and non-timber resources:</p> <table> <tr> <td><u>Tenured</u></td><td><u>Non-tenured</u></td></tr> <tr> <td>- trapping</td><td>- hunting</td></tr> <tr> <td>- guiding</td><td>- fishing</td></tr> <tr> <td>- range</td><td>- gathering (eg. mushroom, berries, ornamentals)</td></tr> <tr> <td>- water licence</td><td>- clubs</td></tr> <tr> <td>- Lodge owners</td><td>- non-commercial recreation</td></tr> <tr> <td>- Commercial Recreation/Ecotourism</td><td></td></tr> <tr> <td>- mining</td><td></td></tr> </table> <p>Non-timber benefits can be assessed on a harvest unit specific basis by assessing operational plan commitments designed to reduce any potential impact of the operation on other forest users and stakeholders. These plan commitments could include specific actions to assist ranchers, trappers, guides, resort owners, mineral rights holders, etc. to manage their licensed obligations on shared public forest land. Actions within plans could also involve public expectations related to forest access, visual quality or specific recreational or ecotourism opportunities. Plan commitments could also include actions to manage or protect sites that are culturally important, sacred or spiritual to local Aboriginals.</p>	<u>Tenured</u>	<u>Non-tenured</u>	- trapping	- hunting	- guiding	- fishing	- range	- gathering (eg. mushroom, berries, ornamentals)	- water licence	- clubs	- Lodge owners	- non-commercial recreation	- Commercial Recreation/Ecotourism		- mining	
<u>Tenured</u>	<u>Non-tenured</u>																
- trapping	- hunting																
- guiding	- fishing																
- range	- gathering (eg. mushroom, berries, ornamentals)																
- water licence	- clubs																
- Lodge owners	- non-commercial recreation																
- Commercial Recreation/Ecotourism																	
- mining																	

Strategy	Continue discussions with existing licence/rights holders, interested public and Aboriginals. These users are encouraged to take advantage of communication strategies, such as those discussed in Indicator 25 – Effective Communication – Resource Users, as well as other opportunities to provide input to forest planning. Operational plans incorporate commitments to manage concerns related to those discussions. Plans are properly executed providing desired results. Post harvest evaluations and other inspections assess plan conformance.			
Current Status		2012/13	2013/14	
		100%	100%	
Forecast	Continued conformance with strategies for non-timber benefits			
Annual Measurement	Report the number of cutblocks harvested having operational plan non-conformances related to non-timber resource users. Also report the total number of cutblocks harvested that contained commitments involving non-timber resource users.			

23 – Recreational, Commercial and Cultural/Heritage Trails

Indicator Statement(s)	23 – Percent of forest operations that are consistent with a landscape level strategy for the management of recreational, commercial and cultural/heritage trails as identified in the DFA.
Target	100%
Basis for Target	Canfor has traditionally managed these values at the Site Plan level and there have been little coordination of information on how to protect and respect them on a broader geographic area. However, through approved operational plans, such as the FSP, Cultural Heritage Resources have legally specific Results and Strategies that must be adhered to. Also, many of the resource features identified in this indicator have been made known, either legally or locally/regionally significant and Canfor's has managed for them as such. Current status therefore cannot be reported in terms of indicator and target to date; however, the current practice is to manage these trails based on the recommendations supplied by the Public, First Nations, Archaeologists, Archaeology Branch and various Ministries.
Variance	-10%
Description and Background	<p>Managing for the retention of existing recreational trails helps to ensure the interests and/or values of other forest users and stakeholders are attained. The intent of this indicator is to cover off all legally made known recreation/general recreation, commercial/stakeholder, and cultural/heritage trails at the Landscape Level. This indicator addresses heritage 'trails', whereas Indicator 10 addresses site-level heritage features.</p> <p>Legally Made Known Recreation Trails will follow the Order to Establish Objectives for a Recreation Site, Recreation Trail or Interpretive Forest Site (MoLNRO, January 2, 2001):</p> <ol style="list-style-type: none"> 1. Cutting, modification, or removal of trees is not permitted within, or where adjacent within 200m of designated site boundaries, unless authorized by the District Manager; 2. Road construction is not permitted within, or where adjacent within 200m of designated site boundaries of recreation trails managed for semi-primitive, non-motorized recreation experience, unless: <ol style="list-style-type: none"> a) a road is required to access areas beyond the trail; b) there is no other practicable option; and c) authorized by District Manager. <p>General Recreation Trails:</p> <ol style="list-style-type: none"> 1. Canfor to GPS the location of general recreation trails where they are impacted by harvest blocks or roads; 2. Road Crossings will ensure construction debris is cleared from both sides of the road and all relevant Visual Quality Objectives will be adhered to; and 3. Harvesting adjacent to recreation trails will have a 5-meter Machine Free Zone established and all non-merchantable conifers and deciduous trees will be retained within that zone, unless authorized by the District Manager. If required to reduce wind throw and future trail maintenance, harvest all mature trees within the Machine Free Zone. <p>Commercial/Stakeholder Trails:</p> <ol style="list-style-type: none"> 1. Canfor to GPS the location of commercial trails where they are impacted by harvest blocks or roads; 2. Attempt to identify stakeholder and attempt to consult and mitigate any potential impacts they may have regarding the trail; 3. Road Crossings will ensure construction debris is cleared from both sides of the road

	<p>and all relevant legislative requirements will be adhered to; and</p> <p>4. Harvesting adjacent to commercial/stakeholder trails will have a 5-meter Machine Free Zone established and all non-merchantable conifers and deciduous trees will be retained within that zone, unless authorized by the District Manager. If required to reduce wind throw and future trail maintenance, harvest all mature trees within the Machine Free Zone.</p> <p>Cultural and Heritage Trails:</p> <p>1. Canfor to adhere to any recommendations made by the Archaeological Impact Assessment (AIA) when these trails are located during the planning phases of blocks or road development; and</p> <p>2. Canfor to adhere to any trail specific strategy developed by First Nations for best management practices on trails within their Traditional Use Area.</p>						
Strategy	<p>Canfor recognizes the importance of the indicator values for many of the residents of the DFA and have set a target of 100% full compliance with Landscape level recognition of these resources. Future practices will include the use of this landscape level strategy during planning processes to ensure these non-timber resource sites are managed appropriately.</p> <p>Canfor is responsible for carrying out the strategies from year to year. Opportunities for improvement may be linked to using local knowledge as it is brought forward and encouraging both Aboriginals and non-Aboriginals to become involved in its creation. These users are encouraged to take advantage of communication strategies, such as responding to the notifications discussed in Indicator 23 – Effective Communication – Resource Users,, as well as other opportunities to provide input to forest planning.</p>						
Current Status	<p>The following table identifies the total percentage of forest operations that are consistent with a landscape level strategy for the management of recreational, commercial and cultural trails as identified in the DFA.</p> <table><tr><td></td><td>2012/13</td><td>2013/14</td></tr><tr><td></td><td>100%</td><td>100%</td></tr></table>		2012/13	2013/14		100%	100%
	2012/13	2013/14					
	100%	100%					
Forecast	Continued conformance with strategies identified to manage important trails in the DFA						
Annual Measurement	This indicator has a DFA-specific target and will be managed at the DFA level. Canfor will track and monitor the success in meeting the target date and results will be reported in the annual SFMP report.						

24 – Road Deactivation

Indicator Statement(s)	24 – Percent of roads deactivated that meet the deactivation criteria.
Target	100%
Basis for Target	Canfor recognizes the importance of the indicator values for many of the residents of the DFA and have set a target for road deactivation. The variance will be revisited in the spring of 2013 when the annual report is finalized. Future practice will include following this deactivation criteria to ensure that road deactivations are consistent and appropriate for each situation.
Variance	-10%
Description and Background	<p>Forests represent not only a return on investment for an organization (measured, for example, in profit/loss, or product output), but also a source of income and non-financial benefits for DFA-related workers, local communities and governments. While there is limited information on the ecological services and non-timber benefits produced in the DFA, it is important to consider the costs and benefits of a variety of goods and services.</p> <p><u>Timber benefits</u> can be measured by looking at sustainable harvest levels in relation to the allocated supply levels determined by the Chief Forester (BC) or authorized by the Ministry of Sustainable Resource Development (Alberta). The harvest level is set only after considering social, economic and biological criteria. In BC, more information on this rigorous process to determine allowable annual cut (AAC) levels can be found at the website: https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/timber-supply-review-and-allowable-annual-cut</p> <p>Support for local communities, through business relationships, provides employment diversification and increased local revenue.</p> <p><u>Non-timber benefits</u> can be assessed on a harvest unit specific basis by assessing operational plan commitments designed to reduce any potential impact of the operation on other forest users and stakeholders. These plan commitments could include specific actions to assist ranchers, trappers, guides, resort owners, mineral rights holders, etc. manage their licensed obligations on shared public forest land. Actions within plans could also involve public expectations related to forest access, visual quality or specific recreational or ecotourism opportunities. Plan commitments could also include actions to manage or protect sites that are culturally important, sacred or spiritual to local Aboriginals.</p> <p>Road deactivation: This indicator looks at the legal requirements for road deactivation while proposing road deactivation criteria that will establish some consistency in practices amongst the licensees. The extent of road deactivation has not been consistent in the DFA over the past 10 years. Under the Forest Practices Code, the extent of road deactivation was heavily governed by regulatory requirements. This is contrary to the requirements under the Forest and Range Practices Act. Sections 82 and 83 of the Forest Planning and Practices Regulation outline 6 conditions that must be met in order to deactivate a road.</p> <p>This indicator will address the “how to” component of road deactivation. The Fort St. James Public Advisory Group to the SFMP have requested a set of guidelines on deactivation because of ongoing difficulties concerning the use of roads. Deactivation is a concern because of various impacts on other forest resources and tenure holders. This deactivation criteria addresses legislative as well as non-legislative requirements identified by the PAG. A specific licensee may exceed the minimum standard to accommodate a specific value if the need arises. Each situation will be assessed by the affected licensee on a site-by-site basis. A</p>

	<p>person who deactivates a road must do the following:</p> <ol style="list-style-type: none">1. Create deactivations that are passable with an all-terrain vehicle unless there is another reason that the road must be closed to motorized use (e.g. site conditions, sites of biological significance, sensitive wildlife habitat, unstable terrain, etc); a deactivation structure shall be considered usable with an all terrain vehicle if it is constructed at a minimum of a 2 to 1 slope. This means that the resulting slope will be twice as long as it is deep;2. Ensure the remaining trench from the deactivation of a culvert is gently sloped and armoured where necessary in order to remain stable and provide access;3. Ensure that material from the deactivation trench that is piled on the roadway does not prevent all-terrain vehicle access, or make an unsafe crossing;4. Armour ditch blocks where necessary;5. Ensure that operations are shutdown during periods of heavy or persistent rainfall that could result in sediment delivery to fish bearing streams;6. Place erodable materials outside the high-water mark of any stream to minimize the risk of erosion or sedimentation in the future;7. Re-vegetate and/or stabilize exposed soils at fish stream crossings in order to minimize the risk of erosion or sedimentation in the future; and8. Ensure that the amount of deactivation is appropriate to the situation to the extent of controlling natural water flow and minimizing surface erosion. <p>This indicator is intended to measure the success of the licensees to implement consistent and appropriate road deactivation within the DFAs.</p>						
Strategy	<p>Currently Canfor deactivates roads for sediment control into streams, to minimize soils erosion and to reduce long-term road liabilities.</p> <p>Canfor is responsible for ensuring that this indicator is met. Opportunities for improvement may be linked to using local knowledge and PAG input into the refinement of the criteria, indicator, target and variance over time.</p>						
Current Status	<p>The following table identifies the percentage of roads deactivated that meet the deactivation criteria.</p> <table><tr><td></td><td>2012/13</td><td>2013/14</td></tr><tr><td></td><td>100%</td><td>100%</td></tr></table>		2012/13	2013/14		100%	100%
	2012/13	2013/14					
	100%	100%					
Forecast	Continued conformance with deactivation plans in the DFA.						
Annual Measurement	This indicator has a DFA specific target and will be managed at the DFA level. Canfor will track and monitor road deactivation activities for compliance with the criteria. This progress and the success in meeting the target date will be reported in the annual SFMP report.						

25 – Effective Communication – Resource Users

Indicator Statement(s)	25 – Effective communication and co-operation with non-timber resources users and interested parties that have expressed interest in forest planning.
Target	100%
Basis for Target	Canfor contacts various stakeholders and members of the public when forestry operations are planned or ready to commence in a given area. Typically this communication is done by letter, but contact is also made by telephone or face to face meetings. There are specific strategies and protocols to direct this communication to ensure the right information is supplied to all interested parties at the right time. Canfor uses a variety of tracking systems to record this communication but have not historically reported out the percentage of communication strategies that have met requirements.
Variance	0%
Description and Background	Canfor maintains a list of directly affected stakeholders and those who have expressed an interest in forest management planning. This list may include individuals who responded to Canfor's general notification. Stakeholders include private landowners, lodge operators, trappers, hunting guides, recreationists, mining tenure holders, and water licensees. Communication of planned forestry activities to these stakeholders should be done in a timely and efficient manner. This communication considers tenured and non-tenured 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 stakeholders to minimize impacts and to plan operations that consider their concerns. This indicator is intended to measure the success in communicating with stakeholders who have expressed an interest in forest planning, and, if necessary, improve that communication.
Strategy	<p>Canfor recognizes the importance of meeting communication strategies and have set a target of 100% to reflect this commitment. Canfor and stakeholders will mutually agree upon communication strategies, including that information is received in a timely manner. Specific issues will have their own communication strategies developed. For example, stands with forest health concerns (such as bark beetles) that are adjacent to private land may have their management discussed with the landowner.</p> <p>Canfor will continue to try and keep contact lists accurate and up to date and will strive to communicate with all identified interested individuals when required. Future practices will include monitoring, tracking and reporting this indicator to the public on an annual basis.</p> <p>It is the intent of Canfor to meet the target, and it is anticipated this goal will be met. The exact level of success is not easy to quantifiably forecast as it relies on unpredictable factors such as human error. Communication with interested individuals directly affects social values and indirectly affects economic values of SFM.</p> <p>If some identified interested parties are not communicated with annually, a variety of interested parties may be unaware of the commencement of forest operations and forestry plans. This could potentially damage the economic interests of some of these parties. For example, a lodge may plan to take clients to a lake for fishing. Unfortunately, a Licensee failed to notify them that harvesting was occurring adjacent to the lake and the fishing experience was diminished. Socially, there may be impacts as well. Forestry operations can involve large machinery, large volumes of logging trucks, and high noise levels. All of these can be serious intrusions for people using the forest for recreational purposes, or for nearby landowners. Communication can prepare them for these activities and allow them to make comments if they wish to question the planned forestry operations.</p> <p>A balance of values can be achieved through meeting communication strategy requirements.</p>

	<p>Therefore, licensees will continue to communicate with identified interested individuals to respect the needs of other inhabitants and stakeholders in the DFA. When significant disagreement occurs, efforts towards conflict resolution are documented. For the purposes of this indicator, 'significant disagreement' requires the complaint to be submitted to Canfor in writing. Canfor will provide a response within 30-days of receipt and document steps to move towards resolution.</p> <p>Canfor is responsible for monitoring, tracking, and reporting this indicator.</p> <p>Opportunities to improve the performance of this indicator may be linked to ongoing technological changes in communication, such as the use of email and websites. Canfor may also explore the opportunities of coordinating their communication strategy requirements and share information on stakeholders and interested parties.</p>				
Current Status	<p>The following table summarizes Canfor's performance.</p> <table> <tr> <th>2012/13</th><th>2013/14</th></tr> <tr> <td>100%</td><td>100%</td></tr> </table>	2012/13	2013/14	100%	100%
2012/13	2013/14				
100%	100%				
Forecast	Continued effective communication between Canfor and affected stakeholders				
Annual Measurement	Canfor will track and monitor this indicator using EMS or other tracking system protocols and databases. For every area in which forestry operations occur, the list of appropriate interested parties that were contacted in accordance with communication requirements will be reviewed. This information will be reported in the annual SFMP report for the operating year of April 1st to March 31st.				

26 – Dollars Spent in Local Communities

Indicator Statement(s)	26 – Investment in local communities																	
Target	% of dollars spent in local communities (5-year rolling average).																	
Basis for Target	Target reflects a desire to maintain or enhance community well-being.																	
Variance	-20%																	
Description and Background	<p>In addition to the many biological and ecological benefits provided by forests, they also contribute social and economic benefits. Forests represent not only a return on investment (measured, for example, in dollar value, person-days, donations, etc.) for the organization but also a source of income and non-financial benefits for DFA-related workers, contractors, and others; stability and opportunities for communities; and revenue for local, provincial, and federal governments.</p> <p>In the same way that larger forest organizations 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 their local community. As the majority of forest workers are hired locally, communities benefit by forest planning and operations.</p> <p>This target measures the amount of spending in forest related activities that occur on the DFA by local contractors/suppliers. For the purposes of this indicator, a local contractor or supplier is defined as one that resides within or in the vicinity of the DFA and will include local vendors and suppliers with postal codes that occur within the Fort St. James Forest District.</p> <p>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 provided. This calculation will be used to derive the percentage of money spent on forest operations and management of the DFA from suppliers and contractors within local communities.</p>																	
Strategy	Canfor will track all spending pertaining to forest related activities (operations, management, donations) within the DFA, separated by that occurring locally.																	
Current Status	<p>The percentage of dollars spent in local communities:</p> <table><tr><td>2007</td><td>2008</td><td>2009</td><td>2010</td><td>Est. 2011</td><td>Average</td></tr><tr><td>84.2%</td><td>70.9%</td><td>48.5%</td><td>67.4%</td><td>64.7%</td><td>66.6%</td></tr></table>						2007	2008	2009	2010	Est. 2011	Average	84.2%	70.9%	48.5%	67.4%	64.7%	66.6%
2007	2008	2009	2010	Est. 2011	Average													
84.2%	70.9%	48.5%	67.4%	64.7%	66.6%													
Forecast	Continued achievement of the target will help keep the communities local to the forest operations benefactors of the economic benefits created.																	
Annual Measurement	Use internal accounting systems to calculate and report out on the percent of dollars spent in local communities (5 year rolling average) during the reporting period.																	

27 – Contributions to Local Communities

Indicator Statement(s)	27 – The number of support opportunities provided in the DFA.													
Target	6													
Basis for Target	Business initiatives and relationships, built on sound principles are not only beneficial to the partners, but also to the economy and vitality of communities within and adjacent to the DFA.													
Variance	-1													
Description and Background	<p>An economically and socially diverse community is often more sustainable in the long-term with its ability to weather market downturns of a particular sector. Support of efforts to increase diversity, the establishment of other enterprises and co-operation with other forest-dependent businesses and forest users is desirable.</p> <p>Support for local communities through business relationships (defined for this indicator as purchases, sales, or trading of primary forest products and forest by-products) provides employment diversification and increased local revenue.</p> <p>For the purposes of this indicator, local area is defined as postal codes that occur within the Fort St. James Forest District.</p>													
Strategy	Canfor seeks and maintains active, mutually beneficial business relationships (purchases, sales, service or trade arrangements) with other forest products businesses within or in the immediate vicinity of the DFA. Examples of primary products include logs, lumber, plywood, strand board and pulp. Examples of by-products include chips, sawdust, shavings, hog fuel and trim blocks.													
Current Status	<p>The following table summarizes Canfor performance for 2013/14</p> <table border="1"> <thead> <tr> <th>Type</th><th>#</th><th>Details</th></tr> </thead> <tbody> <tr> <td>Cash donation</td><td>6</td><td>Nak'azdli Band School District 91 Fort St James Ski Club Society Fort St James Falcons Speed Skating Club Districty of Fort St James Northern United Way</td></tr> <tr> <td>Product donation</td><td>2</td><td>Donated truck loads to Na'azdli for fire wood</td></tr> <tr> <td>Total</td><td>8</td><td></td></tr> </tbody> </table> <p>...</p>		Type	#	Details	Cash donation	6	Nak'azdli Band School District 91 Fort St James Ski Club Society Fort St James Falcons Speed Skating Club Districty of Fort St James Northern United Way	Product donation	2	Donated truck loads to Na'azdli for fire wood	Total	8	
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Product donation	2	Donated truck loads to Na'azdli for fire wood												
Total	8													
Forecast	Continued support for local communities through business relationships, employment diversification and increased local revenue.													
Annual Measurement	Report on the number of purchase, sale, service or trade relationships with other forest dependant businesses within or in the vicinity of the DFA. Tracking is the number of relationships, not the number of transactions, within each relationship.													

28 – Training & Skills Development

Indicator Statement(s)	28 – Training in environmental & safety procedures in compliance with company training plans
Target	100% of company employees and contractors will have both environmental & safety training.
Basis for Target	A trained workforce is critical to safe and proper execution of plans. The variance allows for some discretion with respect to contractors or employees whose work is insulated from forest operations (for example, administrative or clerical work).
Variance	-5%
Description and Background	Sustainable forest management provides training and awareness opportunities for forest workers as organizations seek continual improvement in their practices. Investments in training and skills development generally pay dividends to forest organizations by way of a safer and more environmentally conscious work environment. Assessing whether forest contractors have received both safety and environmental training is a direct way of measuring this investment. Additionally, training plans should be in place for employees of the forest organizations who work in the forest. Measuring whether the training occurred in accordance with these plans will confirm an organization's commitment to training and skills development.
Strategy	Canfor invests in skills development by ensuring forest contractors have adequate safety and environmental training and for woodland employees (staff) by ensuring training occurs in accordance with their plans.
Current Status	In 2014, the level of training in environmental & safety procedures in compliance with company training plans was 100%.
Forecast	Forest planning and operations are conducted with a genuine focus on worker safety and environmental stewardship. Forest contractors and employees have the adequate knowledge and tools to conduct their jobs, performing well even under upset conditions.
Periodic Measurement	When training is completed by contractors or employees, it will be necessary to track training taken by an employee as per the applicable training plan. These results can then be summarized to determine the percentage of training taken relative to the training plan.
Annual Measurement	Report the total number of company employees and forestry contractors, and identify the number of those that had received both environmental and safety training in accordance with training plan expectations.

29 – Direct & Indirect Employment

Indicator Statement(s)	29 – Level of Direct & Indirect Employment
Target	Cut allocation X 1.72/1000m ³ (3994 jobs)
Basis for Target	Allocated AAC by Canfor and employment multiplier statistics from 2006 British Columbia Stats specific to the Fort St. James Forest District provides consistent average measure.
Variance	As per Indicator 14
Description and Background	<p>Forests represent not only a return on investment (measured, for example, in dollar value, person-days, donations, etc.) for the organization but also a source of income and non-financial benefits for DFA-related workers, suppliers, local communities and governments.</p> <p>While employment levels have been declining in many manufacturing industries including the forest industry, there remains a very direct relationship between direct and indirect employment and annual harvest levels. Stable employment is a clear indication of the sustainable economic well-being of individuals and communities. Employment from the forest sector is an important contributor toward community stability, particularly rural communities that tend to be mostly resource-dependant. Within the context of the forest industry, direct employment refers to employment directly related to the production of forest products or services. As a result of this direct employment, employment is also generated in the businesses that supply goods and services to the forest sector. This is referred to as indirect employment. Finally, when these directly and indirectly generated incomes are spent and re-spent on a variety of items in the broader economy (e.g., food, clothing, entertainment), it gives rise to induced employment effects.</p> <p>Based on information compiled from the Socio-Economic Analysis completed for the 2011 Prince George Timber Supply Area Timber Supply Review (TSR), an employment multiplier of 3.26 direct, indirect, and induced jobs per 1000 m³ of harvest is used. This includes direct employment coefficients for harvesting (.21), silviculture (.01), lumber and wood processing (.26), plus indirect and induced employment coefficients of 1.18 jobs per 1000 m³ of volume harvested for logging and 1.26 jobs per 1000 m³ of volume harvested for wood manufacturing.</p> <p>Another approach from BC Statistics provides a multiplier of 1.72jobs/1000m³. This does not include manufacturing facilities. In review with the Public Advisory Group it was determined that this would be the methodology to be used because of the view it fit best with the licensees in this plan.</p> <p>Organizations that harvest at sustainable harvest levels in relation to the allocated supply levels determined by government authorities continue to provide direct and indirect employment opportunities. The harvest level is set using a rigorous process that considers social, economic and biological criteria.</p>
Strategy	Organizations contribute to direct and indirect employment within the region and to sustainable harvesting by adhering to their apportioned harvest volume within each respective TSA. Cut control regulations dictate the short-term harvest flexibility.

Current Status	<p>The overall average annual harvest volume in the DFA by Canfor is 2,322,332m³. Using the multiplier of 1.72 jobs per 1000 m³ of volume harvested and the overall average annual harvest, the average level of direct and indirect employment maintained in the DFA would be 3994. The following table specifies the trends and forecast based on the historical volume harvested and the predicted amount to be harvested in the future.</p> <table border="1" data-bbox="423 369 1429 470"> <tr> <th data-bbox="423 369 927 417">2012/13</th><th data-bbox="927 369 1429 417">2013/14</th></tr> <tr> <td data-bbox="423 417 927 470">4179</td><td data-bbox="927 417 1429 470">5127</td></tr> </table> <p>(See 2017/18 Annual Report for updated baseline data and current condition)</p>	2012/13	2013/14	4179	5127
2012/13	2013/14				
4179	5127				
Forecast	Continued employment and taxation revenue to local communities.				
Periodic Measurement	Update inputs used to derive targets for this indicator. As changes occur over time to the licensee AAC and/or the employment multiplier from British Columbia Stats specific to the Forest Industry in the Fort St. James Forest District, it will be necessary to update as required.				
Annual Measurement	Report the 5-year rolling average harvest volume for the most recent year available and use the employment multiplier to determine the level of direct and indirect employment maintained relative to the target.				

30 – Satisfaction with the Public Participation Process

Indicator Statement(s)	30 – Percent of PAG meeting evaluations completed during the reporting period that obtain a minimum average acceptability score of 3.										
Target	100% satisfaction from surveys.										
Basis for Target	Ensure issues are identified in a timely manner, discussed, and where possible, resolved. Public Advisory Group process is being continuously improved.										
Variance	-10%										
Description and Background	<p>The public participation process is a process of engagement that incorporates a diversity of values into SFM. Implementation of a public participation process as outlined in the CSA standard gives the public an opportunity to be involved proactively in the management of a defined forest area (DFA). An effective public participation process accommodates the public's wide range of knowledge, interests, and involvement with regard to SFM, as well as differing cultural and economic ties to the forest. The SFM Public Advisory Group was established to assist Canfor in:</p> <ul style="list-style-type: none"> • Developing and reviewing the SFM Plan; • Identifying and selecting values, objectives, indicators, and targets based on SFM elements and issues of relevance to the DFA; • Developing, assessing and selecting one or more possible strategies; • Designing monitoring programs, evaluating results and recommending improvements; and, • Discussing and resolving any issues relevant to SFM in the DFA. <p>The SFM Plan is an evolving document that will be reviewed for effectiveness and revised as needed with the assistance of the Public Advisory Group to address changes in forest condition and local community values. Ensuring the continuing interest and participation of the PAG is an integral part of a dynamic and responsive SFM Plan. The ability of people to share information, discuss and solve problems, and set and meet objectives is key to achieving and maintaining meaningful public participation.</p>										
Strategy	<p>At the end of each Public Advisory Group meeting Canfor will provide all Public Advisory Group members in attendance a feedback form (survey) to assess their satisfaction with the meeting and associated process. The survey content and process will be that described in the Public Advisory Group's Terms of Reference. All survey questions will have a 1-5 scoring assessment (1 being very poor, 2 being poor, 3 being average, 4 being good and 5 being very good).</p> <p>The results of the surveys will be collated and reviewed at the subsequent Public Advisory Group meeting with any corresponding actions or recommendations. The results of all surveys completed will be summarized to determine an overall average score for a PAG meeting as well as the average overall score for all meetings that fall within a reporting period. When the average scoring assessment for a PAG meeting falls below 3, corrective action will be developed in conjunction with the PAG.</p>										
Current Status	<p>The following table shows a summary of the average meeting satisfaction score based on responses received.</p> <table border="1"> <thead> <tr> <th></th><th>2011/12</th><th>2012/13</th><th>2013/14</th></tr> </thead> <tbody> <tr> <td></td><td>4.2</td><td>3.9</td><td>4.1</td></tr> </tbody> </table>				2011/12	2012/13	2013/14		4.2	3.9	4.1
	2011/12	2012/13	2013/14								
	4.2	3.9	4.1								
Forecast	Active and engaged Public Advisory Group.										

Periodic Measurement	Periodic monitoring and measurement will be completed for each PAG meeting conducted within a given reporting period. The satisfaction score for a meeting will be determined and presented to the PAG at a subsequent meeting. The results will be discussed, opportunities will be reviewed, and action plans will be developed when the overall average PAG meeting satisfaction score falls below 3.
Annual Measurement	Annual monitoring and measurement will entail summarizing the overall PAG meeting satisfaction score for all meetings that fall within a given reporting period to arrive at an overall score for the year. This will be for monitoring purposes only given that opportunities and actions plans have already been completed as part of the meeting summaries.

31 – Promote Capacity Development and Meaningful Participation

Indicator Statement(s)	31 – Number of educational opportunities for information/training that are delivered.
Target	4
Basis for Target	Additional knowledge provides for better dialogue and ultimately better decisions. Aligns with Canfor's Environmental Policy and SFM Commitments.
Variance	0
Description and Background	<p>Canfor has a well-established history of participation in community meetings, including local planning processes. Canfor is committed to working with the public, members of the PAG and interested and directly affected stakeholders on forest management concerns.</p> <p>The ability of people to share information, knowledge, discuss and solve problems, and set and meet objectives is critical to achieving and maintaining meaningful public participation within the context of forest management and the CSA public participation process. Many types of capacity development initiatives can be used to help achieve meaningful public participation.</p> <p>This indicator recognizes the importance of exchanging information, knowledge and/or training opportunities for members of the public advisory group, as well as directly interested and affected stakeholders. The sharing of knowledge with affected stakeholders and the PAG contributes to informed, balanced decisions and plans acceptable to the majority of those involved. When informed and engaged, members of the public can provide local knowledge and support that contributes to socially and environmentally responsible forest management within the DFA.</p>
Strategy	<p>Canfor is committed to work with members of the PAG and interested or directly affected stakeholders on forest management concerns and to improve the effectiveness of the public processes through capacity development.</p> <p>Canfor will provide informational/educational opportunities and initiatives. Examples of educational outreach initiatives include:</p> <ul style="list-style-type: none"> • Maintaining an open and active public advisory group, • Open houses, • School classroom visits, • Continual improvement projects, • Knowledge transfer sessions, • Participation in trade shows, • Regional District presentations, and • Forestry tours. <p>Canfor will work with the PAG and stakeholders to identify more opportunities to promote capacity development and meaningful participation over time.</p> <p>Canfor will provide informational/educational opportunities for PAG participants on an annual basis as part of regularly held meetings.</p>

Current Status	<p>The following table shows a summary of the number of educational opportunities provided by Canfor 2014</p> <table border="1" data-bbox="625 289 1230 415"> <tr> <th data-bbox="625 289 927 352">2012/13</th><th data-bbox="927 289 1230 352">2013/14</th></tr> <tr> <td data-bbox="625 352 927 415">3</td><td data-bbox="927 352 1230 415">1</td></tr> </table> <p>The following table shows a summary of the number of educational opportunities for information/training delivered to the PAG.</p> <table border="1" data-bbox="625 493 1230 646"> <tr> <th data-bbox="625 493 927 556">2012/13</th><th data-bbox="927 493 1230 556">2013/14</th></tr> <tr> <td data-bbox="625 556 927 646">• one (1) – ecosystem restoration</td><td data-bbox="927 556 1230 646">• one (1) – caribou UWR proposal</td></tr> </table>	2012/13	2013/14	3	1	2012/13	2013/14	• one (1) – ecosystem restoration	• one (1) – caribou UWR proposal
2012/13	2013/14								
3	1								
2012/13	2013/14								
• one (1) – ecosystem restoration	• one (1) – caribou UWR proposal								
Forecast	<p>Public participation in forest planning and operations that is open, inclusive and responsive to public concerns and grounded in science. An educated and informed public with a broad understanding of forestry that can provide local input and support on matters pertaining to forest planning and operations.</p>								
Annual Measurement	<p>Track and report the number of educational opportunities provided. Record attendance level at each meeting or tour (public and stakeholders). PAG meeting minutes will contain supporting documentation specific to the educational opportunity discussed.</p> <p>Provide in the Annual Report a description of each type of opportunity in the Annual Report.</p>								

32 – SFM Annual Report

Indicator Statement(s)	32 – SFM Annual report made available to the public.
Target	SFM monitoring report available to public annually via the web.
Basis for Target	Provides topical information to the local public as well as a worldwide audience. Has contact mechanism for those looking for additional information.
Variance	None
Description and Background	This indicator recognizes the importance of keeping members of the public informed on forestry strategies being developed, planning occurring in their area and results from forest management activities. Issues of concern brought forward by the public are part of the discussions occurring at public advisory group meetings and often work their way into a reporting requirement in the SFM Plan or an action in SFM monitoring reports. Annual reporting of the Plan's performance measures to the advisory group and to the broader public provides an open and transparent means of demonstrating how issues of concern are being managed. It provides the public with an opportunity to respond to results and associated actions outlined in the annual SFM Monitoring report and make recommendations for improvement. Members of the public can provide local knowledge that contributes to socially and environmentally responsible forest management.
Strategy	Canfor maintains an external website that makes the SFM monitoring report publicly available.
Current Status	External website containing the annual SFM monitoring report have been maintained since 2001. http://canfor.com/responsibility/forest-management/plans
Forecast	Public awareness and understanding of the SFM Plan and annual performance relative to the Plan's targets. A continuously improving SFM Plan that has openly informed, included and responded to the public.
Annual Measurement	Report a yes/no answer as to whether the annual monitoring report was made publically available on an external website.

33 – Safety Program

Indicator Statement(s)	33 – Implementation and maintenance of a certified safety program.
Target	100%
Basis for Target	Continuously improve forest worker safety record.
Variance	-10%
Description and Background	<p>Canfor's first measure of success is the health and safety of our people. This philosophy is embraced and promoted from the mill floor to the executive offices. This commitment is reflected in the work practices and safety programs employed at all worksites.</p> <p>Canfor implements their safety programs by assigning responsibilities to managers, supervisors and employees as follows:</p> <p>Management:</p> <ul style="list-style-type: none"> • Develop and maintain a comprehensive occupational health and safety program; • Conduct regular health and safety audits and implement appropriate action steps; • Facilitate active employee participation in health and safety initiatives and programs; and • Provide the necessary education and training in safe work practices and procedures for supervisors, OH&S committee members and all employees <p>Supervisors:</p> <ul style="list-style-type: none"> • Ensure that all employees under their direction receive proper training and instruction and that all work is performed safely; • Ensure that employees are made aware of all known or reasonably foreseeable health or safety hazards in the areas where they work; and • Initiate actions and follow-up in order to maintain a healthy and safe working environment within their areas of responsibility. <p>Employees:</p> <ul style="list-style-type: none"> • Take responsibility for avoiding risk to themselves and others and following all known safe work rules, procedures and instructions; and • Eliminate all accidents by working together to identify any potential hazards in the workplace and to take the appropriate corrective action. <p>All of Canfor's forest operations are third party certified to a safety program that meets or exceeds provincial safety programs - SAFE Company in BC.</p>
Strategy	Forest operations retain their safety program certification.
Current Status	<p>Forest organizations who safely execute their work assignments.</p> <p>Canfor's safety program was initially third party certified in 2009.</p>
Forecast	Continued Safety certification and work environment that keeps workers safe.
Annual Measurement	Report whether third-party safety certification has been maintained on the DFA.

34 – First Nations Awareness Training

Indicator Statement(s)	34 – Employees will receive appropriate First Nations Awareness Training		
Target	100%		
Basis for Target	<p>Legal obligations, communication process with First Nations and Métis.</p> <p>Sharing information and communication with First Nations and Métis on Forest Stewardship Plans supports the provincial government’s legal obligation to consult with First Nations and Métis regarding Aboriginal rights and title. Canfor is committed to assisting the Crown in carrying out its duty to consult by sharing information and endeavouring to address concerns. Training helps employees to understand Aboriginal title and rights, treaty rights and the potential for Aboriginal interests.</p>		
Variance	-10%		
Description and Background	<p>Section 35 of the <i>Constitution Act</i> states “The existing Aboriginal and treaty rights of Aboriginal Peoples of Canada are hereby recognized and affirmed”. Some examples of the rights that Section 35 has been found to protect include hunting, fishing, trapping, gathering, sacred and spiritual practices, and title. SFM requirements are not in any way intended to define, limit, interpret, or prejudice ongoing or future discussions and negotiations regarding these legal rights and do not stipulate how to deal with Aboriginal title and rights, and treaty rights.</p> <p>The first step toward respecting Aboriginal title and rights, and treaty rights is compliance with the law. Section 7.3.3 of the CSA Z809 Standard reinforces legal requirements for many reasons, including the reality that demonstrating respect for Aboriginal title and rights, and treaty rights, can be challenging in Canada’s fluid legislative landscape. Therefore, it is important to identify these legal requirements as a starting point. It is important for companies to have an understanding of applicable Aboriginal title and rights, and treaty rights, as well as the Aboriginal interests that relate to the DFA.</p> <p>Both the desire of Canfor to comply with laws and open communication with local Aboriginals requires that Canfor staff members have a good understanding of Aboriginal title and rights and treaty rights.</p>		
Strategy	Canfor invests in cultural awareness and skill development by ensuring appropriate Forest Management Group employees have received Aboriginal awareness training. Training is to occur as part of a training/orientation program for new employees, as outlined in each company’s training matrix and the job function and responsibilities of each employee. Refresher training to occur every 5 years or sooner if training materials or Aboriginal law substantially change.		
Current Status	<p>The following table shows the percentage of employees receiving Aboriginal awareness training.</p> <table><tr><td>2013/14</td></tr><tr><td>100%</td></tr></table>	2013/14	100%
2013/14			
100%			
Forecast	Forest operations that respect Aboriginal title and rights and reflect the timber and non-timber interests of local Aboriginals.		
Annual Measurement	Utilize the employee training database to plan and record awareness training. Report the number of active employees working within the DFA that have received the training within the past five years compared to the total number of employees required to have training as per the companies training matrix.		

35 – Aboriginal Capacity Development & Meaningful Participation

Indicator Statement(s)	35 – Evidence of best efforts to share interests and plans with Aboriginal communities
Target	100% of management plans.
Basis for Target	Legal obligations and alignment with Canfor's Environmental Policy and SFM Commitments.
Variance	0%
Description and Background	<p>The first step toward respecting Aboriginal title and rights, and treaty rights, is compliance with the law. Section 7.3.3 of the CSA Z809 Standard reinforces legal requirements for many reasons, including the reality that demonstrating respect for Aboriginal title and rights, and treaty rights can be challenging in Canada's evolving legislative landscape. Therefore, it is important to identify these legal requirements as a starting point. It is important for the organization to have an understanding of asserted Aboriginal title and rights, and treaty rights, as well as the Aboriginal interests that relate to the DFA.</p> <p>Canfor has regularly scheduled information sharing dates. With each information sharing process maps and a letter are sent out. A meeting is normally scheduled to review any concerns. There are a few areas where "best efforts" are required:</p> <ul style="list-style-type: none"> • If the band will not reply, two follow up efforts are generally accepted as best efforts; • The band may recommend we talk to specific individuals or bring these individuals into a meeting; and • Discussions can lead to other issues (e.g. employment, long term agreement) and could lead to extensive follow up discussions. <p>Open, respectful communication with local Aboriginal communities includes not only the organization understanding the Aboriginal rights and interests within their asserted traditional territory but for Aboriginals to understand the forest management plans of organizations. With this open dialogue, the two parties can then best work towards plans and operations that are mutually acceptable to both parties. The re-wording of the core indicator statement to include the phrase "share interests and plans" is intended to demonstrate two-way communication, rather than one-way. The reference to "Aboriginal communities" corresponds to Canfor interacting with the Natural Resources Office and Chief and Council (or equivalent positions).</p> <p>For the purpose of this indicator, "management plans" include Forest Stewardship Plans (major amendments), Pest Management Plans, block information sharing, and SFM Plans. "Clear understanding" is very difficult to measure but will be considered as part of the continuum of relationship building between Canfor and Aboriginal communities and will be a qualitative measure based on the summary of interests and concerns.</p>
Strategy	<p>Open, respectful communication of forest management plans with affected local Aboriginals. A balance of values can be achieved through meeting communication strategy requirements. Therefore, Canfor will continue to communicate with local Aboriginals to respect their needs within the DFA. When significant disagreement occurs, efforts towards conflict resolution are documented. For the purposes of this indicator, 'significant disagreement' requires the complaint to be submitted to Canfor in writing. Canfor will provide a response within 30-days of receipt and document steps to move towards resolution.</p>

Current Status	<p>The following table shows the current status of evidence of best efforts to share interests and plans with Aboriginal communities.</p> <table border="1" data-bbox="701 273 1154 394"> <tr> <th data-bbox="701 273 927 331">2012/13</th><th data-bbox="927 273 1154 331">2013/14</th></tr> <tr> <td data-bbox="701 331 927 394">100%</td><td data-bbox="927 331 1154 394">100%</td></tr> </table>	2012/13	2013/14	100%	100%
2012/13	2013/14				
100%	100%				
Forecast	Continued forest operations that respect Aboriginal title and rights and reflect the timber and non-timber interests of local Aboriginals.				
Periodic Measurement					
Annual Measurement	<p>Retain a record of the Aboriginal communities whose asserted traditional territory overlaps with the DFA for the purpose of communication with affected Aboriginal communities.</p> <p>Report for blocks harvested during the reporting period the number of applicable forest management plans pertaining to Crown tenures held by the company within the DFA and the number of those where open communication to describe and obtain acceptance occurred.</p> <p>Annual reporting will address “best efforts” by providing detail about the number of plans, forms of communication initiated, and summary of interests/concerns. “Acceptance” will be reported by highlighting the comments received from Aboriginal communities that take exception to the management plans.</p>				

36 – Aboriginal Participation in Forest Economy

Indicator Statement(s)	36 – Number of opportunities for First Nations to participate in the forest economy.																	
Target	6 opportunities																	
Basis for Target	Canfor engages in building mutually beneficial relationships with Aboriginal peoples. Target ties directly to Canfor’s SFM Commitments.																	
Variance	-3																	
Description and Background	<p>Forests represent not only a return on investment (measured, for example, in dollar value, person-days, donations, etc.) for the organization but also a source of income and non-financial benefits for DFA-related workers, local communities and governments.</p> <p>This indicator and related target looks specifically at Aboriginal participation in the forest economy, evaluating licensees’ efforts to build capacity within Aboriginal communities on matters related to the forest industry. The target recognizes that there are occasions when Aboriginals, after being given the opportunity, elect not to participate and is respectful of those decisions.</p>																	
Strategy	Canfor engages in building mutually beneficial relationships with Aboriginal peoples.																	
Current Status	<p>There were 6.6 opportunities in the DFA for Aboriginals to participate in the forest economy in the last five years (2014 Baseline).</p> <table><tr><th>2009/10</th><th>2010/11</th><th>2011/12</th><th>2012/13</th><th>2013/14</th><th>Average</th></tr><tr><td>9</td><td>6</td><td>6</td><td>6</td><td>6</td><td>6.6</td></tr></table>						2009/10	2010/11	2011/12	2012/13	2013/14	Average	9	6	6	6	6	6.6
2009/10	2010/11	2011/12	2012/13	2013/14	Average													
9	6	6	6	6	6.6													
Forecast	Continued economic benefits to the Aboriginal communities attributable to the forest operations.																	
Periodic Measurement																		
Annual Measurement	<p>Report on the number of working relationships with applicable First Nations (partnerships, joint ventures, co-operative agreements, memorandums of understanding, or business contracts over \$5,000 or over 500 cubic meters in volume) during the reporting year. Examples of a business contract include a specific work/service agreement or joint tenure arrangement with a First Nation Band or First Nation Contractor. For consistency in reporting, count multiple work agreements with one band or contractor or purchase agreements with one band or contractor as a single business contract. Include opportunities by also reporting on contracts for work/services offered directly to First Nations that, for whatever reason, were declined.</p> <p>Report as a 5-year rolling average.</p>																	

37 – Aboriginal Forest Values, Knowledge and Uses

Indicator Statement(s)	37 – Percent of forest operations in conformance with operational/site plans developed to address Aboriginal forest values, knowledge and uses.							
Target	100%							
Basis for Target	Legal obligations and alignment with Canfor's SFM Commitments.							
Variance	0%							
Description and Background	<p>Meaningful relationships and open communication with local Aboriginal communities' help ensure that areas of cultural importance are managed in a way that retains their traditions and values. This indicator recognizes the importance of managing and protecting culturally important practices and activities during forestry operations. Aboriginals, with the benefit of local and traditional knowledge, may provide valuable information concerning the specific location and use of these sites as well as the specific forest characteristics requiring protection or management. The outcome of these discussions, and the means to manage/protect values and uses, are included in operational plans. The intent of the indicator statements are to manage and/or protect those truly important sites; thus, there is a degree of reasonableness in identifying the sites. The targets verify that consideration was given in plans, then follows through with assessing plan execution.</p> <p>This indicator closely aligns with Indicator 9 – Protection of identified sacred and culturally important sites and 10 – Evidence of understanding and use of Aboriginal knowledge through the engagement of willing Aboriginal communities, using a process that identifies and manages culturally important resources and values.</p>							
Strategy	<p>Efforts have been made to understand which First Nation traditional territories fall within the Plan area and company Defined Forest Areas. Information sharing agreements are made with willing Aboriginal communities to promote the use and protection of sensitive information. Forest management plans are shared with Aboriginal communities. Open communication with Aboriginals includes a sharing of information and enables Canfor to understand and incorporate traditional knowledge into operational plans. Canfor is aware of culturally important, sacred and spiritual sites leading to their appropriate management and/or protection. Once incorporated, operational plans are properly executed. Post harvest evaluations and other inspections assess plan conformance. Consultation records are completed for each block and road. There is a record of the Aboriginals involved, the comments received, the level of consultation carried out and any adjustment to strategies or accommodation made as a result of this consultation.</p> <p>All cut blocks and roads have a Cultural Heritage Resource (CHR) assessment completed.</p>							
Current Status	<p>The following table shows the current status of the % of forest operations in conformance with operational/site plans developed to address Aboriginal forest values, knowledge and uses.</p> <table border="1"> <thead> <tr> <th></th><th>2012/13</th><th>2013/14</th></tr> </thead> <tbody> <tr> <td></td><td>100%</td><td>100%</td></tr> </tbody> </table>			2012/13	2013/14		100%	100%
	2012/13	2013/14						
	100%	100%						
Forecast	Open and meaningful relationships with local Aboriginals leading to a trust in sharing sensitive information.							

Annual Measurement	<p>Number of roads constructed or cut blocks harvested where operational plans had specific content requirements to manage or protect Aboriginal forest values, knowledge and uses.</p> <p>Retain a record of the Aboriginal communities whose traditional territory (any part) overlaps with the DFA for the purpose of communication with affected parties.</p> <p>Retain a record demonstrating that forest management plans within the DFA were shared/discussed with Aboriginal communities.</p> <p><u>Report:</u></p> <p>Number of instances where discussions lead to the identification of Aboriginal forest values, knowledge and use that required specific management or protection.</p> <p>Where the above occurred, report the number of times where operational plans specified how these values were considered.</p> <p>Number of cut blocks and roads where CHR assessments were completed.</p> <p>Number of cutblocks and roads where there is a record of consultation.</p>
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6.0 LINKS TO OTHER PLANNING PROCESSES

6.1 Strategic Plans

Fort St. James Land and Resource Management Plan (LRMP)

The Government of British Columbia announced the Fort St. James Land and Resource Management Plan (LRMP) in March 1999. The LRMP addresses the long-term balance of the environment and economy in the District. It provides access to timber for the local forest industry, certainty for the mining, ranching and tourism industries while also establishing conservation and recreation objectives for many natural values in the District. The stability and security provided by the plan provides economic and social stability and increased opportunities for growth and investment throughout the region.

6.2 Plans, Policies and Strategies That Relate to the SFM Plan

The Forest Stewardship Plan

Licensees are required to prepare a Forest Stewardship Plan (FSP) in place of the former Forest Development Plan (FDP). Resource management objectives are set by Government, the Forest and Range Practices Act or by regulation. Forest Stewardship Plans describe the intended results a licensee commits to achieving, or the strategies that the licensee will use, in relation to these established resource management objectives. Licensees are not required to indicate where cut blocks will be located and how harvesting and reforestation will be carried out in FSPs; however, Canfor carries out Information Sharing Processes on a regular basis. Licensees are required to prepare a site plan for planned cut blocks and roads prior to harvesting. A site plan must identify the approximate location of cut blocks and roads, be consistent with the Forest Stewardship Plan and identify how the intended results or strategies described in the Forest Stewardship Plan apply to the site.

Canfor's Sustainable Forest Management Commitments

The Sustainable Forest Management Commitments are based on the tenets of accountability, continuous improvement, Aboriginal and public involvement and third party verification of performance. Canfor views these commitments as a fundamental component in improving its existing sustainable forest management practices, ensuring the transparency of its operations and fulfilling sustainable forest management certification requirements. The Sustainable Forest Management Commitments are found at the beginning of this document.

Canfor's Environmental Management Systems

An Environmental Management System (EMS) is a management tool that enables an organization to control the impacts of its activities, products or services on the environment. It is a structured approach for setting and achieving environmental objectives and targets, and for demonstrating that they have been achieved. The EMS requires an organization to have in place the mechanisms, policies and structure to comply with environmental legislation and regulations and to evaluate such mechanisms, policies and structure with the objective of continual improvement.

The International Organization for Standardization (ISO) is a worldwide federation of national standards bodies from 130 countries. This non-governmental organization was established in 1947 to promote the standardization of related economic activities around the world. In 1996, ISO developed an international standard for environmental management systems: ISO 14001. This standard was subsequently updated in 2004.

The Environmental Management Systems for Canfor's woodlands operations received certification to ISO 14001 following an audit from independent registrars. The EMS standardizes woodlands environmental management for the identified woodlands operations and will help to ensure environmental performance improves over time. Canfor recognizes that the ISO 14001 standard is an essential step in achieving independent recognition of our commitment to sustainable forest management.

LIST OF ACRONYMS

AAC: Allowable Annual Cut
AMP: Access Management Plan
AOA: Archeological Overview Assessment
BCTS: BC Timber Sales
BEC: Biogeoclimatic Ecosystem Classification
CFP: Canadian Forest Products, Ltd. (Canfor)
CHR: Cultural Heritage Resource
CO₂: Carbon Dioxide
COSEWIC: Committee on the Status of Endangered Wildlife in Canada
CSA: Canadian Standards Association
CWD: Coarse Woody Debris
DFA: Defined Forest Area
ECA: Equivalent Clearcut Area
EMS: Environmental Management System
ESA: Environmentally Sensitive Area
ESSF: Engelmann Spruce-Subalpine Fir
FDP: Forest Development Plan
FMLB: Forest Management Land Base
FPPR: Forest Planning and Practices Regulation
FREP: Forest and Range Evaluation Program
FRPA: Forest and Range Practices Act
FSJ: Fort St. James
FSP: Forest Stewardship Plan
FSR: Forest Service Road
FSW: Fisheries Sensitive Watersheds
GAR: Government Actions Regulation
GWM: General Wildlife Measures
IFPA: Innovative Forest Practices Agreement
ISO: International Organization for Standardization
LOWG: Landscape Objective Working Group
LRMP: Land and Resource Management Plan
LT: Licensee Team
MFLNRORD: BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development
MOE: BC Ministry of Environment
MPB: Mountain Pine Beetle
MSRM: Ministry of Sustainable Resource Management
NAR: Net Area to be Reforested
NDT: Natural Disturbance Type
NDU: Natural Disturbance Unit
NHLB: Non – Harvestable Land Base
NRFL: Non-Replaceable Forest License
OAF: Operational Adjustment Factor
OBSCR: Open Burning Smoke Control Regulation
OGMA: Old Growth Management Area
OGSI: Old Growth Site Index
PAG: Public Advisory Group

PAS: Protected Area Strategy
PEFC: Programme for the Endorsement of Forest Certification
PEM: Predictive Ecosystem Mapping
PFI: Peak Flow Index
PIR: Partners in Injury Reduction
PL: Lodgepole Pine
RDI: Road Density Index
RPF: Registered Professional Forester
SARA: Federal Species at Risk Act
SAS: Species Accounting System (group definitions)
SBS: Sub-Boreal Spruce
SFM: Sustainable Forest Management
SFMP: Sustainable Forest Management Plan
SIBEC: Site Index Estimates by Site Series
SU: Standards Unit
THLB: Timber Harvesting Land Base
TOR: Terms of Reference
TSA: Timber Supply Area
TSL: Timber Sale License
TSR: Timber Supply Review
UWR: Ungulate Winter Range
VIA: Visual Impact Assessment
VOIT: Values, Objectives, Indicators, Targets
VQO: Visual Quality Objective
WCB: Workers' Compensation Board
WHA: Wildlife Habitat Areas
WTP: Wildlife Tree Patch

GLOSSARY

Abiotic – pertaining to the non-living component of the environment (e.g., climate, ice, soil and water). (Canadian Council of Forest Ministers)

Aboriginal – “Aboriginal peoples of Canada” [which] include Indian, Inuit, and Métis peoples of Canada (Constitution Act 1992, Subsection 35(2)). (CSA Z808-96)

Abundance – the number of organisms in a population, combining density within inhabited areas with number and size of inhabited areas. (Canadian Council of Forest Ministers)

Access Management Plan - An operational plan that shows how road construction, modification and deactivation will be carried out to protect, or mitigate impacts on, known resources or sensitive areas, while maximizing the efficacy of forest resource development.

Access Structures - a structure, including a road, bridge, landing, gravel pit or other similar structure that provides access for forest management such as harvesting.

Activities – energetic action or movement; liveliness. (The American Heritage Dictionary of the English Language, Third Edition)

Adaptive Management (AM) – a systematic, rigorous approach to improving management and accommodating change by learning from the outcomes of management interventions. (BC Ministry of Forests - Forest Practices Management Branch)

Age Class – any interval of time into which the age range of trees, forests, stands or forest types is decided for classification and use. (BC Ministry of Forests)

Agriculture Land (High Value) – parcels of land, which, based on soil and climate capability hearings, are deemed necessary to be maintained for agricultural use. (Common Usage)

Allowable Annual Cut (AAC) – the allowable rate of timber harvest from a specified area of land. British Columbia’s Chief Forester sets AACs for timber supply areas (TSAs) and tree farm licenses (TFLs) in accordance with Section 8 of the BC Forest Act. (BC Ministry of Forests)

Analysis Units – the basic building blocks around which inventory data and other information are organized for use in forest planning models. Typically, these involve specific tree species or type groups that are further defined by site class, geographic location or similarity of management regimes. (BC MoF Website Glossary)

Anthropogenic – relating to or influenced by the impact of man on nature (e.g., ecosystems) (Webster’s Collegiate Dictionary)

Aquatic – consisting of, relating to, or being in water. (The American Heritage Dictionary of the English Language, Third Edition)

Apportionment – the distribution of the AAC for a TSA among timber tenures by the Minister in accordance with Section 10 of the *Forest Act*. (BC MoF Website Glossary)

Backlog – a Ministry of Forests term applied to forest land areas where silviculture treatments such as planting and site preparation are overdue. Planting is considered backlog if more than 5 years have elapsed since a site was cleared (by harvesting or fire) in the interior and more than 3 years on the coast of British Columbia. (BC MoF Website Glossary)

Basic silviculture – harvesting methods and silviculture operations including seed collecting, site preparation, artificial and natural regeneration, brushing, spacing and stand tending, and other operations that are for the purpose of establishing a free growing crop of trees of a commercially valuable species and are required in a regulation, pre-harvest silviculture prescription or silviculture prescription. (BC MoF Website Glossary)

Best Management Practices – a practice or combination of practices that are determined to be the most technologically or economically feasible means of preventing or managing potential impacts. (Best Management Practices Handbook: Hillslope Restoration in British Columbia; Watershed Restoration Technical Circular No.3 (revised); May 2000; Watershed Restoration Program, BC MoF)

Biodiversity (or biological diversity) – the variability among living organisms from all sources including *inter alia* terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (Canadian Biodiversity Strategy 1995) (CSA Z808-96)

Biogeoclimatic ecosystem classification (BEC) – a hierarchical classification system scheme having three levels of integration: regional, local and chronological; and combining climatic, vegetation and site factors. (BC Ministry of Forests)

Biogeoclimatic zone – a large geographic area with a broadly homogenous macroclimate. Each zone is named after one or more of the dominant climax species of the ecosystems in the zone, and a geographic or climatic modifier. British Columbia has 14 biogeoclimatic zones. (BC Ministry of Forests)

Biota – all of the living organisms in given ecosystem, including microorganisms, plants and animals. (Canadian Council of Forest Ministers)

Biological Richness (species richness) – Species presence, distribution, and abundance in a given area.

Biomass – The total dry weight or volume of all or part of a tree.

Biotic – pertaining to any living aspect of the environment, especially population or community characteristics. (Canadian Council of Forest Ministers)

Blowdown (windthrow) – uprooting by the wind. Also refers to a tree or trees so uprooted. (BC MoF Website Glossary)

Carbon Cycle – The storage and cyclic movement of organic and inorganic forms of carbon between the biosphere, lithosphere, hydrosphere, and atmosphere.

Carbon Sink - Forests and other ecosystems that absorb carbon, thereby removing it from the atmosphere and offsetting CO₂ emissions.

Coarse-filter Ecosystem Group - Is the outcome of grouping site series that have relative similarities of their indicator plant communities. This term is also referred to habitat types in the SFM Plan.

Coarse Woody Debris (CWD) – Downed woody material of a minimum diameter or greater, either resting on the forest floor or at an angle to the ground of 45 degrees or less. Coarse woody debris consists of sound and rotting logs and branches, and may include stumps when specified. CWD provides habitat for plants, animals and insects, and a source of nutrients for soil development.

Community – a group of people with collective, common goals. (Common Usage)

Community Forest Tenures – the control and use of land and resources contained within an area influenced by the urban population. (Dictionary of Natural Resource Management-J. & K. Dunster)

Communities of Interest – sectors of society which share common goals and interests e.g. First Nations, Recreation Associations. (Common usage)

Connectivity – a qualitative term describing the degree to which late-succession ecosystems are linked to one another to form an interconnected network. The degree of interconnectedness and the characteristics of the linkages vary in natural landscapes based on topography and natural disturbance regime. (BC Ministry of Forests)

Cultural Heritage Resource – Unique or significant places and features of social, cultural or spiritual importance, such as an archaeological site, recreational site or trail, cultural heritage site or trail, historic site, or protected area.

Considered – mentally contemplate. (Canadian Oxford Dictionary)

Critical – being in or verging on a state of crisis or emergency. (The American Heritage Dictionary of the English Language, Fourth Edition)

Crown Land – land that is owned by the Crown; referred to as federal land when it is owned by Canada, and as provincial Crown land when it is owned by a province. Land refers to the land itself and the resources or values on or under it. (BC Ministry of Forests)

Cut Control – a set of rules and actions specified in the *Forest Act* that describes the allowable variation in the annual harvest rate either above or below the allowable annual cut (AAC) approved by the chief forester. (BC MoF Website Glossary)

Deactivation – measures taken to stabilize roads and logging trails during periods of inactivity, including the control of drainage, the removal of sidecast where necessary, and the re-establishment of vegetation for permanent deactivation. Road deactivation ranges from temporary to permanent.

Defined Forest Area (DFA) – a specified area of forest, land, and water delineated for the purposes of registration of a Sustainable Forest Management System. (CSA Z808-96)

Disturbed areas – localities which have been impacted by natural events (fire, wind, flood, insects and also by human activities such as forest harvesting or construction of roads (Dictionary of Natural resource management + common usage)

Diverse – made up of distinct characteristics, qualities, or elements. (The American Heritage Dictionary of the English Language, Fourth Edition)

Duly Established Aboriginal and Treaty Rights – existing Aboriginal and Treaty Rights are recognized and affirmed in the Canadian Constitution. When discussed in relation to renewable resources, such Aboriginal and Treaty Rights generally relate to hunting, fishing, and trapping, and in some cases, gathering. (CSA Z808-96 Page 31 Section 2.6.1)

Ecological Reserves – areas of Crown land which have the potential to satisfy one or more of the following criteria:

- areas suitable for scientific research and educational purposes associated with studies in productivity and other aspects of the natural environment;
- areas which are representative of natural ecosystems;
- areas in which rare or endangered native plants or animals may be preserved in their natural habitat; and
- areas that contain unique geological phenomena. (BC MoF Website Glossary)

Ecosystem – a functional unit consisting of all the living organisms (plants, animals, and microbes) in a given area, and all the non-living physical and chemical factors of their environment, linked together through nutrient cycling and energy flow. An ecosystem can be of any size—a log, pond, field, forest, or the earth's biosphere—but it always functions as a whole unit. Ecosystems are commonly described according to the major type of vegetation, for example, forest ecosystem, old-growth ecosystem, or range ecosystem. (BC MoF Website Glossary)

Educational – of or relating to education. (The American Heritage Dictionary of the English Language, Fourth Edition)

Enhance – to make greater (as in value, desirability, or attractiveness). (Webster's Collegiate Dictionary)

Effectiveness Monitoring Plan (wildlife) – The purpose of an effectiveness monitoring plan is to assess trends in wildlife populations related to their habitat to meet SFMP indicator goal(s). Components of an effectiveness monitoring plan include: goals, current information, conceptual model, indicators & measures, sampling design, analysis and implementation. Those wishing more detailed information on general effectiveness monitoring should review "The strategy and design of effectiveness monitoring program for the Northwest Forrest Plan" USDA General Technical report PNW-GTR-437, January 1999.

Environment – the surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation. (CSA Z808-96)

Environmentally Sensitive Area (ESA) – An area requiring special management attention to protect important scenic values, fish and wildlife resources, historical and cultural values, or other natural systems or processes. ESAs for forestry include potentially fragile, unstable soils that may deteriorate unacceptably after forest harvesting, and areas of high value to non-timber resources such as fisheries, wildlife, water, and recreation.

Extension Services – Assistance provided to people to help them learn more about a particular subject from people with specific technical expertise.

Extraction – the act of extracting, or drawing out; as, the extraction of a tooth, of a bone or an arrow from the body, of a stump from earth, of a passage from a book, of an essence or tincture. (Webster's Revised Unabridged Dictionary)

Fauna – the animal community found in one or more regions. (Canadian Council of Forest Ministers)

Flora – the plant species found in one or more regions. (Canadian Council of Forest Ministers)

Forest – a plant community of predominantly trees and other woody vegetation growing more or less closely together, its related flora and fauna, and the values attributed to it. (CSA Z808-96)

Forest and Range Practices Act (FRPA) – The Forest and Range Practices Act and its regulations govern the activities of forest and range licensees in B.C. The statute sets the requirements for planning, road building, logging, reforestation, and grazing. FRPA and its regulations took effect on Jan. 31, 2004.

Forest Land – land supporting forest growth or capable of so doing, or, if totally lacking forest growth, bearing evidence of former forest growth and not now in other use. (CSA Z808-96)

Forest Product – an item that is manufactured from trees. Forest products can be classified as primary (originating from harvested timber, i.e., lumber, pulp, etc.), or secondary (a by-product of the lumber or pulp process, i.e. furniture, wood-based chemicals, etc.). (Common Usage)

Forest Resources – resources and values associated with forests and range including, without limitation, timber, water, wildlife, recreation, botanical forest products, forage and biological diversity. (Forest Practices Code of British Columbia Act)

Fragmentation – the process of transforming large continuous forest patches into one or more smaller patches surrounded by disturbed areas. This occurs naturally through such agents as fire, landslides, windthrow and insect attack. In managed forests timber harvesting and related activities have been the dominant disturbance agents. (BC MoF Website Glossary)

Free-growing Stand – 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.

Free-growing Assessment – the determination for whether young trees have attained free-growing status.

Genetic diversity – variation among and within species that is attributable to differences in hereditary material. (BC MoF Website Glossary)

Genetically improved stock – seed or propagule that originate from a tree breeding program and that have been specifically designed to improve some attribute of seeds, seedlings, or vegetative propagules selection. (BC MoF Website Glossary)

Global Ecological Cycles – The complex of self-regulating processes responsible for recycling the Earth's limited supplies of water, carbon, nitrogen, and other life-sustaining elements

Goal – a broad, general statement that describes a desired state or condition related to one or more forest values. (CSA Z808-96)

Grazing Tenure – the use and control of range land for cattle grazing purposes (common usage)

Habitat – the place where an organism lives and/or the conditions of that environment including the soil, vegetation, water, and food. (BC MoF Website Glossary)

Habitat Types – See Coarse-filter Ecosystem Group

Haylage – Haylage is a name for high dry matter silage of around 45% to 75%.

Healthy – having or indicating good health in body or mind; free from infirmity or disease. (Dictionary.com)

Healthy Community – a community evidencing growth, interdependence, and cooperation in a variety of areas. (Common usage)

High Value Trails – a widely used, unrestricted right of way acknowledged as having local social or cultural significance. (Common usage)

Hydrologic Flows – the movement of groundwater near the surface. (Common Usage)

Hydrogeology – the branch of geology that deals with the occurrence, distribution, and effect of ground water. (The American Heritage Dictionary of the English Language, Fourth Edition)

Hydrology – the science that describes and analyzes the occurrence of water in nature, and its circulation near the surface of the earth. (BC MoF Website Glossary)

Incremental silviculture – a Ministry of Forests term that refers to the treatments carried out to maintain or increase the yield and value of forest stands. Includes treatments such as site rehabilitation, conifer release, spacing, pruning, and fertilization. Also known as intensive silviculture. See Basic silviculture. (BC MoF Website Glossary)

Indicator – a measurable variable used to report progress toward the achievement of a goal. (CSA Z808-96)

Indicator species – species of plants used to predict site quality and characteristics. (BC MoF website glossary)

Indigenous – a species of plant, animal, or abiotic material that is native to a particular area (i.e., occurs naturally in an area and is not introduced). (Dictionary of Natural Resource Management, Julian and Katherine Dunster, 1996)

Independent – autonomous, self regulating. (Common Usage)

Inoperable lands – lands that are unsuited for timber production now and in the foreseeable future by virtue of elevation, topography, inaccessible location, low value of timber, small size of timber stands, steep or unstable soils that cannot be harvested without serious and irreversible damage to the soil or water resources, or designation as parks, wilderness areas, or other uses incompatible with timber production. (BC MoF website glossary)

Interior Forest – Forest that is far enough away from a natural or harvested edge that the edge does not influence its environmental conditions, such as light intensity, temperature, wind, relative humidity, and snow accumulation and melt.

Known – to be able to distinguish; recognize as distinct. (The American Heritage Dictionary of the English Language, Fourth Edition)

Landscape – a spatial mosaic of several ecosystems, landforms and plant communities intermediate between an organism's normal home-range, size and its regional distribution. (Canadian Council of Forest Ministers). A watershed or series of similar and interacting watersheds, usually between 10,000 and 100,000 hectares in size. (BC Ministry of Forests Biodiversity Guidebook pp76.)

Linkage – a physical, biological, cultural, psychological, or policy connection or influence between two or more objects, processes, or policies. (Dictionary of Natural Resource Management, Julian and Katherine Dunster, 1996)

Local Community –resides within or in the vicinity of the Fort St. James Forest District and includes local vendors and suppliers with postal codes that occur within the Fort St. James Forest District.

Log (CWD) – For the purposes of coarse woody debris, a log is considered as being a minimum of 2 m in length and 7.5 cm in diameter at one end.

Mean Annual Increment – the total volume increment for a given area to a given age in years, divided by that age (m³/ha/year). (BC MoF website glossary)

Minimum Harvest Age – The age at which the minimum harvest volume of a stand of trees is reached on the corresponding yield curve.

Minimum Harvest Volume – The minimum amount of merchantable volume (m³/hectare) by leading tree species required before a stand of trees is considered economically suitable for harvest.

Natural – being in accordance with or determined by nature or having a form or appearance found in nature. (Webster' Collegiate Dictionary)

Natural Disturbance – The historic process of fire, insects, wind, landslides, and other natural events in an area not caused by humans.

Natural Disturbance Unit (NDU) – Large geographic areas that have similar topography, climate, disturbance dynamics (e.g., fire cycle, patch size), stand development and successional patterns.

Natural range of variability – the variation in extent or occurrence through time of ecosystems, and species resulting from naturally occurring biotic or abiotic disturbances. (Common Usage)

Net Area to be Reforested (NAR) – (a) the portion of the area under a silviculture prescription or Site Plan that does not include:

- (i) an area occupied by permanent access structures,
 - (ii) an area of rock, wetland or other area that in its natural state is incapable of growing a stand of trees that meets the stocking requirements specified in the prescription,
 - (iii) an area of non-commercial forest cover of 4 ha or less that is indicated in the silviculture prescription as an area where the establishment of a free growing stand is not required,
 - (iv) a contiguous area of more than 4 ha that the district manager determines is composed of non-commercial forest cover, or
 - (v) an area indicated in the silviculture prescription as a reserve area where the establishment of a free growing stand is not required, and
- (b) if there is no silviculture prescription for a cut block in a woodlot license area or community forest agreement area, the portion of the cut block that does not include:
- (i) an area occupied by permanent access structures,
 - (ii) an area of rock, wetland or other area that in its natural state is not capable of supporting a stand of trees that meets the stocking requirements specified in the regulations,
 - (iii) an area of non-commercial forest cover of 4 ha or less that is indicated in an operational plan as an area where the establishment of a free growing stand is not required,
 - (iv) a contiguous area of more than 4 ha that the district manager determines is composed of non-commercial forest cover, or

(v) an area indicated in an operational plan as a reserve area where the establishment of a free growing stand is not required. (Forest Practices Code of BC Act; Part 1 – Definitions)

Non-contributing – having no involvement or effect (Common Usage)

NHLB – Non-Harvestable Land Base. The portion of the total area of the Defined Forest Area considered **not** to contribute to, and **not** to be available for, long-term timber supply. The non-harvestable land base includes parks, protected areas, inoperable areas, and other areas and tends to change slightly over time.

Objective – a clear, specific statement of expected quantifiable results to be achieved within a defined period of time related to one or more goals. An objective is commonly stated as a desired level of an indicator. (CSA Z808-96)

Old Growth Management Areas - areas which contain, or are managed to replace, specific structural old-growth attributes and which are mapped out and treated as special management areas.

Opportunities – potential or possibilities of action and change (Common Usage)

Patch – a stand of similar-aged forest that differs in age from adjacent patches by more than 20 years. When used in the design of landscape patterns, the term refers to the size of either a natural disturbance opening that led to an even-aged forest or an opening created by cut blocks. (BC Ministry of Forests Biodiversity Guidebook pp76.)

Peak Flow Index (PFI) – an index of the maximum water flow rate that occurs within a specified period of time, usually on an annual or event basis. In the interior of British Columbia, peak flows occur as the snowpack melts in the spring.

Period – an interval of time, typically expressed in hours, days, months or years.

Permanent Access Structures – A structure, including a road, bridge, landing, gravel pit or other similar structure, that provides access for timber harvesting and is shown on a forest development plan, access management plan, logging plan, road permit or silviculture prescription / site plan as remaining operational after timber harvesting activities on the area are complete.

Permanent Site Disturbance – roads, landings, gravel pits, and permanent skid trails

Plant Association – A community of plants. A plant association is generally comprised of, at least the three most abundant species found growing on a site, with at least one representative from the tree layer and one or more representatives from either the shrub, herb, or bryophyte layers.

Productive forest land – forest land that is capable of producing a merchantable stand within a defined period of time. (BC MoF Website Glossary)

Predictive Ecosystem Mapping (PEM) – A computer-GIS, and knowledge-based method that divides landscapes into ecologically-oriented map units for management purposes. PEM is a new and evolving inventory approach designed to use available spatial data and knowledge of ecological-landscape relationships to automate the computer generation of ecosystem maps. Spatial data typically includes forest cover, digital elevation models, biogeoclimatic units, and may also include bioterrain information. Spatial data layers are overlaid using GIS to produce resultant maps and attributes. The resultant attributes are passed through the PEM knowledge base to derive final ecosystem maps. Field sampling is used to calibrate the knowledge base and to validate the final classification.

Protect – the action of safe guarding and caring for the welfare of a person, area or thing. (Common Usage)

Public Advisory Group – an assembly that provides local people, community groups and general public that are interested in, or affected by Sustainable Forest Management (SFM) certification. (Common Usage)

Rare Ecosystems – infrequently occurring; uncommon functional unit consisting of all the living organisms (plants, animals, and microbes) in a given area, and all the non-living physical and chemical factors of their environment, linked together through nutrient cycling and energy flow. (Common Usage)

Rare Flora and Fauna – infrequently occurring; uncommon plants and animals in a given area. (Common Usage)

Recreation Feature – a biological, physical, cultural or historic feature that has recreational significance or value. (BC MoF Website Glossary)

Recreation Opportunity Spectrum (ROS) – a mix of outdoor settings based on remoteness, area size, and evidence of humans, which allows for a variety of recreation activities and experiences. The descriptions used to classify the settings are on a continuum and are described as: rural, roaded resource, semi-primitive motorized, semi-primitive non-motorized, and primitive. (BC MoF Website Glossary)

Recruitment – the action of enrolling or enlisting people and resources (Common Usage)

Regeneration – the renewal of a tree crop through either natural means (seeded on-site from adjacent stands or deposited by wind, birds, or animals) or artificial means (by planting seedlings or direct seeding). (BC MoF Website Glossary)

Regeneration Delay – the maximum time allowed in a prescription, between the start of harvesting in the area to which the prescription applies, 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. (BC MoF Website Glossary)

Resource Value – values on Crown land which include but are not limited to biological diversity, fisheries, wildlife, minerals, oil and gas, energy, water quality and quantity, recreation and tourism, natural and cultural heritage resource, timber, forage, wilderness and aesthetic values. (BC Ministry of Forests)

Return on Capital Employed – a key financial statistic reflecting the rate of return that the company's management has obtained, on the shareholders' behalf, by their management of the company's assets. ROCE is determined by dividing net income before income taxes for the past 12 months by Common Shareholder's Equity and Long-term Liability. The result is shown as a percentage. (Common Usage)

Riparian – an area of land adjacent to a stream, river, lake or wetland that contains vegetation that, due to the presence of water, is distinctly different from the vegetation of adjacent upland areas. (BC MoF Website Glossary)

Riparian Habitat – Vegetation growing close to a watercourse, lake, wetland, or spring that is generally critical for wildlife cover, fish food organisms, stream nutrients and large organic debris, and for stream bank stability.

Riparian Management Area (RMA) – Defined in the Forest Practices Code of British Columbia Act Operational Planning Regulation as an area, of width determined in accordance with Part 10 or the regulation, that is adjacent to a stream, wetland or lake with a

riparian class of L2, L3 or L4; and, consists of a riparian management zone and, depending on the riparian class of the stream, wetland or lake, a riparian reserve zone. See Figure 1.

Riparian Management Zone (RMZ) – Defined in the Forest Practices Code of British Columbia Act Operational Planning Regulation as that portion of the riparian management area that is outside of any riparian reserve zone or if there is no riparian zone, that area located adjacent to a stream, wetland or lake of a width determined in accordance with Part 10 or the regulation. See Figure 1.

Riparian Reserve Zone (RRZ) – Defined in the Forest Practices Code of British Columbia Act Operational Planning Regulation as that portion, if any, of the riparian management area or lakeshore management area located adjacent to a stream, wetland or lake of a width determined in accordance with Part 10 of the regulation. See Figure 1.

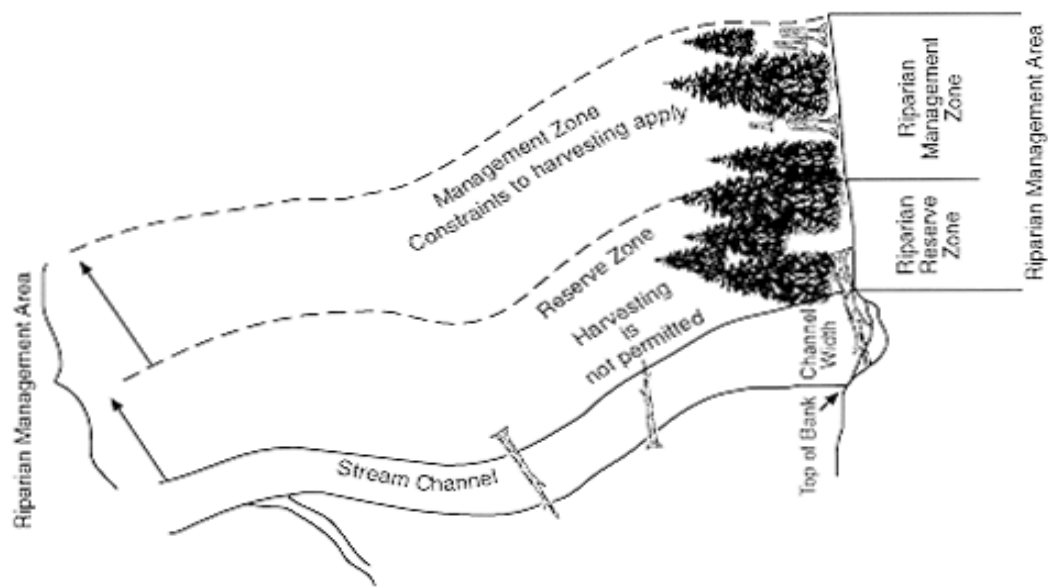


Figure 1. Riparian management area showing a management zone and a reserve zone. Source: Riparian Management Area Guidebook 1995.

Road – A path or way with a specifically prepared surface for use by vehicles.

Road Permit – An agreement entered into under Part 8 of the Forest Act to allow for the construction or modification of a forest road to facilitate access to timber planned for harvest.

Road Density Index – a ratio describing the extent of road development within a given watershed. (Common Usage)

Scenic area – any visually sensitive area or scenic landscape identified through a visual landscape inventory or planning process carried out or approved by the district manager. (BC MoF Website Glossary)

Seral Stages – the stages of ecological succession of a plant community, e.g., from young stage to old stage. The characteristic sequence of biotic communities that successively occupy and replace each other by which some components of the physical environment becomes altered over time. The age and structure of seral stages varies significantly from one biogeoclimatic zone to another. (BC Ministry of Forests Biodiversity Guidebook).

Silviculture – The theory and practice of controlling the establishment, composition, growth and quality of forest stands; can include basic silviculture (e.g., planting and seeding) and intensive silviculture (e.g., site rehabilitation, spacing and fertilization).

Site Index – The height of a tree at 50 years of age (age is measured at 1.3m above the ground) In managed forest stands site index may be predicted using either (1) the biogeoclimatic ecosystem classification for the site or (2) the Site Index Curve which uses the height and age of sample trees over 30 years old.

Site Plan – Replaces the silviculture prescription and is created and kept on file by the licensee and does not need Ministry of Forests approval. The site plan identifies the appropriate standards for:

- Stand-level biodiversity and permanent access structures at the cutblock level; and
- Soil disturbance limits, stocking requirements, regeneration date, and free-growing date at the standards unit level

Site Productivity – The site capacity of the land to produce vegetative cover (biomass).

Site Series – A landscape position consisting of a unique combination of soil edaphic features such as soil nutrient and moisture regimes within a biogeoclimatic subzone or variant. Soil nutrient and moisture regimes define a site series, which can produce various plant associations (see definition of "plant association"). In the BEC system, site series is identified as a number (e.g., 01,02, 03, ...).

Snag – A standing dead tree, or part of a dead tree, found in various stages of decay—from recently dead to very decomposed.

Social – of or relating to human society and its modes of organization. (The American Heritage Dictionary of the English Language, Fourth Edition).

Soil – the naturally occurring, unconsolidated mineral or organic material at the surface of the earth that is capable of supporting plant growth. It extends from the surface to 15 cm below the depth at which properties produced by soil-forming processes can be detected. The soil-forming processes are an interaction between climate, living organisms, and relief acting on soil and soil parent material. Unconsolidated material includes material cemented or compacted by soil-forming processes. Soil may have water covering its surface to a depth of 60 cm or less in the driest part of the year. (BC MoF Website Glossary).

Soil Disturbance – Disturbance caused by a forest practice on an area. This includes areas occupied by excavated or bladed trails of a temporary nature, areas occupied by corduroyed trails, compacted areas, and areas of dispersed disturbance.

Soil Moisture Regime – The amount of moisture in the soil. Generally shown on a scale going from **xeric** (being deficient in moisture - dry) to **mesic** (characterized by moderate or a well-balanced supply of moisture) to **hydric** (characterized by excessive moisture).

Species at risk – A wildlife species that is facing extirpation or extinction if nothing is done to reverse the factors causing its decline, or that is of special concern because it is particularly sensitive to human activities or natural events.

Species Sensitive to Disturbance – plants or animals susceptible to disturbance by natural events (fire, wind, flood, insects) and also by human activities such as forest harvesting or construction of roads. (Common Usage).

Stand – a community of trees sufficiently uniform in species composition, age, arrangement, and condition to be distinguishable as a group from the forest or other growth on the

adjoining area, and thus forming a silviculture or management entity. (BC MoF Website Glossary)

Stakeholder – A person with an interest or concern with resource management within a defined area (i.e. community, forest district, defined forest area).

Standards Unit – An area that is managed through the uniform application of a silvicultural system, stocking standards, and soil conservation standards. These standards are used to determine if legal regeneration, free growing, and soil conservation obligations are met.

Stocking Standard – The required range of healthy, well-spaced, acceptable trees growing on an area to achieve a free-growing stand.

Sustainability – the concept of producing a biological resource under management practices that ensure replacement of the part harvested, by regrowth or reproduction, before another harvest occurs. (BC MoF Website Glossary)

Sustainable Forest Management (SFM) – Management “to maintain and enhance the long-term health of forest ecosystems, while providing ecological, economic, social, and cultural opportunities for the benefit of present and future generations”³⁶

Temporary Access Structures – the area of land within the Designated Forest Area that has been converted through land-use policy (temporarily removed from the productive forest land base to be rehabilitated after use) to provide access for resources development and protection. Temporary access structures include those haul roads, landings and excavated or bladed trails that will be restored to a productive state upon completion of harvesting. Temporary access structures are identified on operational plans and prescriptions. All areas occupied by temporary access structures must be rehabilitated so that all silvicultural obligations are achieved on the whole of the net area to be reforested. (BC Forest Practices Code Soil Conservation Guidebook)

Terrestrial Ecosystem Mapping (TEM) – Terrestrial Ecosystem Mapping is a process of dividing landscapes into ecological units that differ from one another with respect to climate, geomorphology, bedrock geology and vegetation. In British Columbia, a total of four classifications are typically mapped, including: ecoregions, biogeoclimatic units, ecosystem units (site series), and seral community types (structural stage). Ecosystem units are delineated on aerial photographs using biophysical criteria and are confirmed through field sampling. In Alberta, forest cover and other landscape information, augmented by extensive ground sampling, is used to produce ecosystem unit maps (ecosites) within natural subregions.

Timber Harvesting Land Base (THLB) – The portion of the total area of the Defined Forest Area considered to contribute to, and to be available for, long-term timber supply. The harvesting land base is defined by reducing the total land base according to specified management assumptions and tends to change slightly over time.

Understory – any plants growing under the canopy formed by other plants, particularly herbaceous and shrub vegetation under a tree canopy. (BC MoF Website Glossary)

Value – a principle, standard, or quality considered worthwhile or desirable. (CSA Z808-96)

³⁶ *The State of Canada's Forests* 2001/2002, as cited by the CSA.

Viable – an action or proposed action which has a feasible, realistic outcome (Common Usage)

Visually Effective Greenup – the stage at which regeneration is seen by the public as newly established forest. When VEG is achieved the forest cover generally blocks views of tree stumps, logging debris and bare ground. Distinctions in height, colour, and texture may remain between a cutblock and adjacent forest but the cutblock will no longer be seen as recently cut-over. (BC MoF Visual Landscape Design, Training Manual)

Visual Quality Objective – a resource management objective established by the district manager or contained in a higher level plan that reflects the desired level of visual quality based on the physical characteristics and social concern for the area. Five categories of VQO are commonly used: preservation; retention; partial retention; modification; and, maximum modification. (BC MoF Website Glossary)

Unsalvaged Losses – the volume of timber destroyed by natural causes such as fire, insect, disease or blowdown and not harvested, including the timber actually killed plus any residual volume rendered non-merchantable.

Utilization Standards – the dimensions (stump height, top diameter, base diameter, and length) and quality of trees that must be cut and removed from Crown land during harvesting operations. For detailed standards see the Provincial Logging Residue and Waste Measurement Procedures Manual (July 1, 2002 & May 1, 2004 – Draft).

Waste – the volume of timber left on the harvested area that should have been removed in accordance with the minimum utilization standards in the cutting authority. It forms part of the allowable annual cut for cut-control purposes. For detailed standards see the Provincial Logging Residue and Waste Measurement Procedures Manual (July 1, 2002 & May 1, 2004 – Draft).

Water Quality – the physical, chemical and biological properties of water.

Watershed – an area of land, which may or may not be under forest cover, draining water, organic matter, dissolved nutrients, and sediments into a lake or stream. The topographic boundary, usually a height of land that marks the dividing line from which surface streams flow in two different directions. (Dictionary of Natural Resource Management, Julian and Katherine Dunster, 1996)

Windthrow – see Blowdown.

Winter Range – a range, usually at lower elevation, used by migratory deer, elk, caribou, moose, etc., during the winter months and typically better defined and smaller than summer range. (BC MoF Website Glossary)

APPENDIX 1 – LIST OF REFERENCES

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APPENDIX 2 – SUMMARY OF PUBLICLY DEVELOPED VALUES, OBJECTIVES AND INDICATORS

CCFM Criterion	CSA Element	Value	Objective	Core Indicator	Indicator Statement	Target	Previous Fort St. James SFMP Indicator
1. Biological Diversity Conserve biological diversity by maintaining integrity, function, and diversity of living organisms and the complexes of which they are part, including ecological elements that contribute to cultural values.	1.1 Ecosystem Diversity Conserve ecosystem diversity at the stand and landscape level by maintaining the variety of communities and ecosystems that naturally occur in the DFA. Establish forest plantations only in afforestation projects.	Value 1.1 Diversity of natural ecosystems that will support function of natural processes for future generations (Conserve ecosystem diversity for future generations).	Objective 1.1.1 Maintain natural diversity / distribution (Natural biodiversity in natural ratios) (Large variety of diversity that covers all land uses, social, economic values and biota)	1.1.1 Ecosystem Area by Type	1. Retention of rare ecosystem groups across the DFA	0% area harvested for rare ecosystem groups in the DFA. Variance: Access construction where no other practicable route is feasible.	1 - Relative abundance of ecosystems (number / types of habitats)
				1.1.2 Forest area by type or species composition	2. Percent distribution of forest type (treed conifer, treed broadleaf, treed mixed) >20 years old across DFA	Treed conifer: Increase Douglas-fir to 2 % within 20 years, Treed Broadleaf: >4%, Treed Mixed: >1%. Variance: None below proposed targets.	65 - The percent of hardwoods (mixed wood and deciduous leading stands) within the DFA.
							66 - Percent of Douglas fir (mixed stands and Douglas fir leading stands) within the DFA. 13- For blocks where Douglas fir (Fdi) exists in the stand: the percent of Site Plans that incorporate the Douglas fir management strategy.

				1.1.3 Forest area by seral stage or age class	3. Percent late seral distribution by ecological unit across the DFA	100% old forest, old forest interior and non-pine targets as per July, 2014. Variance = 0%.	2 - Maintain "old forest" within each NDU (merged BEC) Target: Maintain average % of total old forest and not go below minimal natural variation (as per the "Landscape Biodiversity Objectives for the PG TSA".
							3 - Maintain "old interior" forest conditions within each NDU (merged BEC).
					4. Maintain a variety of young patch sizes in an attempt to approximate natural disturbance.	As per the "Landscape Biodiversity Objectives for the PG TSA". Variance: As per the "Landscape Biodiversity Objectives for the PG TSA".	4 - Maintain a variety of young patch sizes in an attempt to approximate natural disturbance.
				1.1.4 Degree of within-stand structural retention	5. Percent of stand structure retained across the DFA in harvested areas	>7% across the DFA. Variance: 0%	14 - Percent wildlife trees and/or wildlife tree patches associated with areas harvested annually as measured across the DFA.
					6. The number of cut blocks harvested that are not consistent with riparian management commitments	0. Variance: 0	32 - Percent of cut blocks harvested that are consistent with riparian management commitments.

	1.2 Species Diversity Conserve species diversity by ensuring that habitats and forest conditions for the native species found in the DFA are maintained through time, including habitats for known occurrences of species at risk.	Value 1.2 Sustainable populations of flora and fauna native to the DFA (natural abundance and distribution of species within their natural range)	Objective 1.2 Ensure habitat for species where ecologically appropriate. Maintain a range of temporal and spatial distribution of all natural habitats necessary to support native self sustaining populations	1.2.1 Degree of habitat protection for selected focal species, including species at risk	7. Percent of forest management activities consistent with management strategies (both landscape and stand level) for Species at Risk and/or Species of Management Concern	100%. Variance: none	9 - The percentage of cutblocks and roads harvested consistent with approved provincial Species at Risk Notice/Orders requirements as identified in operational plans.
				1.2.2 Degree of suitable habitat in the long term for selected focal species, including species at risk			10 - Percentage of blocks and roads harvested that adhere to licensee specific management strategies for sites of biological significance; and important wildlife, fish, and bird species; and valuable plants and plant communities within the DFA that are likely to be affected by industrial forestry activities.
				1.2.3 Proportion of Regeneration comprised of native species	8. Regeneration will be consistent with provincial regulations and standards for seed and vegetative material use.	100%. Variance: 0%	
	1.3 Genetic Diversity Conserve genetic diversity by maintaining the variation of genes within species and ensuring that reforestation programs are free of genetically engineered trees.	Value 1.3 Genetic Diversity	Objective 1.3 Maintain natural genetic diversity	No core indicator in Z809-16 for Element 1.3	8 – Regeneration will be consistent with provincial regulations and standards for seed and vegetative material use.	100%. Variance: 0%	2. Percent distribution of forest type (treed conifer, treed broadleaf, treed mixed) >20 years old across DFA
							3. Percent late seral distribution by ecological unit across the DFA

							7. Percent of forest management activities consistent with management strategies (both landscape and stand level) for Species at Risk and/or Species of Management Concern
							8. Regeneration will be consistent with provincial regulations and standards for seed and vegetative material use.
							9. Percent of forest management activities consistent with management strategies for protected areas and sites of biological and geological significance.
	1.4 Protected Areas and Sites of Special Biological and Cultural Significance Respect protected areas identified through government processes. Cooperate in broader landscape management related to protected areas and sites of special biological, geological, heritage and cultural significance. Identify sites of special biological, geological, heritage or cultural significance within the DFA and implement management strategies	Value 1.4 Sites of Special Biological and Cultural Significance	Objective 1.4.1 Sites of Special Biological and Cultural Significance are identified and managed appropriately	1.4.1 Proportion of identified sites with implemented management strategies	9. Percent of forest management activities consistent with management strategies for protected areas and sites of biological and geological significance.	100%. Variance: none.	8 – Percentage of cut blocks and roads harvested that are consistent with legally established ungulate winter range objectives.

	appropriate to their long-term maintenance.						17 – Percentage of cut blocks and roads harvested that are consistent with established guidelines for wildlife habitat features.
				1.4.2 Protection of identified sacred and culturally important sites	10. Percent of identified Aboriginal and non-aboriginal forest values, knowledge and uses considered in forestry planning processes	100%. Variance: 0%	46 - Percent of cut blocks and roads harvested that have incorporated information of known subsistence uses, recreational/cultural trails/sites, or spiritual sites that have been brought forward.
2. Ecosystem Condition and Productivity Conserve forest ecosystem condition and productivity by maintaining the health, vitality, and rates of biological production	2.1 Forest Ecosystem Condition and Productivity Conserve forest ecosystem productivity and productive capacity by maintaining ecosystem conditions that are capable of supporting naturally occurring species. Reforest promptly and use tree species ecologically suited to the site.	Value 2.1 Conserve ecosystem resilience by maintaining both ecosystem processes and ecosystem conditions	Objective 2.1 Maintain the diversity of ecosystem conditions. Maintain ecosystems to support natural processes	2.1.1 Reforestation success	11. Average Regeneration delay for Stands Established Annually	Regeneration established in 3 years or less. Variance: +1 year	34 – Statement: Percentage of blocks > 1.0 ha harvested 3 years prior to the reporting period that have been reforested.
				1.1.3 Forest area by seral stage or age class	4. Maintain a variety of young patch sizes in an attempt to approximate natural disturbance.	As per the "Landscape Biodiversity Objectives for the PG TSA".	
				2.1.2 — Proportion of regeneration comprised of native species	8 – Regeneration will be consistent with provincial regulations and standards for seed and vegetative material use	100% Variance: 5%	5 – Seed Use: Percentage of seed for coniferous species collected and seedlings planted in accordance with FRPA.

		Value 2.2 A productive forest ecosystem	Objective 2.2 Conserving forest ecosystem productivity by maintaining ecosystem conditions (habitats) that are capable of supporting naturally occurring species.	2.1.3 Additions and deletions to the forest area	12. Percentage of gross forest landbase in the DFA converted to non-forest land use through forest management activities.	Less than 3% of the gross forested landbase Variance: None	25 - The total percent of forested land within the Timber Harvesting Landbase that is converted to non-forest land
					13. Existing areas of non-forested types artificially converted to forested types.	Target: 0 ha. Variance: 0 ha.	21 - Percentage of cut blocks harvested having mappable non-forested types (> 0.5 ha) that are artificially converted to forested types through afforestation treatments.
				2.1.4 Proportion of the calculated long-term sustainable harvest level that is actually harvested	14. Percent of volume harvested compared to allocated harvest level	100% over 5 year cut control period, as defined by Timber supply forecast harvest flow. Variance: As per cut control regulations.	22 - Existing areas of non-forested types artificially converted to forested types. 38 - Percent of licensee AAC harvested over a 5 year cut control period.
3. Soil and Water Conserve soil and water resources by maintaining their quantity and quality in forest ecosystems	3.1 Soil Quality and Quantity Conserve soil resources by maintaining soil quality and quantity	Value 3.1 Soil distribution and productivity	Objective 3.1.1 Maintain a natural balance (distribution), dynamic cycles, and productivity	3.1.1 Level of soil disturbance	15. Percent of harvested blocks meeting soil disturbance objectives identified in plans	100% of blocks meet soil disturbance objectives. Variance: 0%	24 - Percent of cut blocks harvested where the soil disturbance limits identified in the site plan are exceeded (typically 5% on sensitive soils and 10% on other soils).

				3.1.2 Level of downed woody material	16. Percent of audited cutblocks where post harvest CWD levels are within the targets contained in Plans.	100% of blocks harvested annually will meet targets. Variance: 10%	23 - Percent of audited cut blocks harvested where post-harvest CWD levels are within the acceptable natural range of variability (as seen in m ³ /ha).
	3.2 Water Quality and Quantity Conserve water resources by maintaining water quality and quantity	Value 3.2 Water quality and quantity	Objective 3.2 Maintain water quality and water quantity in the Defined Forest Area (DFA)	3.2.1 Proportion of watershed or water management areas with recent stand-replacing disturbance 3.2.2 – Proportion of forest management activities, consistent with prescriptions to protect identified water features	17. Percent of Sensitive watersheds that are above Peak Flow Index targets will have further assessment if further harvesting is planned.	100%. Variance: 0%	35 - The percent of watersheds achieving baseline targets for the peak flow index.
							36 - Percent of watershed reviews completed where the baseline target is exceeded, and new harvesting is planned
					18. Percent of high risk drainage structures in sensitive watersheds with identified water quality concerns that have mitigation strategies implemented	100%. Variance: 0%	28 - Percentage of stream crossing inspections and resulting mitigation measures completed according to schedule.
					19. Percent of road related soil erosion events that introduce sediment into a stream identified in annual road inspections that are addressed.	100%. Variance: 0%	26 - Percent of road related soil erosion events that introduce sediment into a stream identified in annual road inspections that are addressed.

					20. Percent of crossing structures planned and installed on fish streams to a reasonable design and sediment control standard (allow for adequate fish passage - dependant on the presence/absence of fish).	100%. Variance: 0%	27 - Percentage of fish stream crossings planned and installed to a reasonable design and sediment control standards.
							31 - Percentage of permanent crossing structures installed on fish streams that will allow for adequate fish passage (dependant on the presence/absence of fish).
4. Role in Global Ecological Cycles Maintain forest conditions and management activities that contribute to the health of global ecological cycles	4.1 Carbon Uptake and Storage Maintain the processes that take carbon from the atmosphere and store it in forest ecosystems	Value 4.1 Carbon Uptake and Storage	Objective 4.1 Maintain processes that take carbon from the atmosphere and store it in forest ecosystems	4.1.1 Net carbon uptake	21. Percent of standards units declared annually that meet free growing requirements on or before the late free growing date.	100%. Variance = 0%.	37 - Percent of standards units declared annually that meet free growing requirements on or before the late free growing date.
					3. Percent late seral distribution by ecological unit across the DFA	100% old forest, old forest interior and non pine targets as per Jan, 2012. Variance = 0%.	2 - Maintain "old forest" within each NDU (merged BEC) Target: Maintain average % of total old forest and not go below minimal natural variation (as per the "Landscape Biodiversity Objectives for the PG TSA".

					11. Average Regeneration delay for Stands Established Annually	Regeneration established in 3 years or less. Variance: +1 year	34 –Percentage of blocks > 1.0 ha harvested 3 years prior to the reporting period that have been reforested.
					12. Percentage of gross forest land base in the DFA converted to non-forest land use through forest management activities.	Less than 3% of the gross forested land base Variance: None	25 - The total percent of forested land within the Timber Harvesting Land Base that is converted to non-forest land
				4.1.2 Reforestation Success	11 – Average Regeneration delay for Stands Established Annually (2.1.1)	Regeneration established in 3 years or less. Variance: +1 year	8 - Free Growing: Percent of harvested standard units meeting the free growing assessment date.
	4.2 Forest Land Conversion Protect forest lands from deforestation. Encourage afforestation where ecologically appropriate.		Objective 4.2 Amount of productive forest land and road in the THLB	4.2.1 Additions and deletions to the forest area	12. Percentage of gross forest land base in the DFA converted to non-forest land use through forest management activities.	Less than 3% of the gross forested land base Variance: None	25 - The total percent of forested land within the Timber Harvesting Land Base that is converted to non-forest land
5. Economic and Social Benefits Sustain flows of forest benefits for current and future generations by providing multiple goods and services.	5.1 Timber and Non-Timber Benefits Manage the forest sustainably to produce a mix of timber and non-timber benefits. Support a diversity of timber and non-timber forest products and forest-based services.	Value 5.1.1 Acceptable and feasible mix of a healthy forest industry and non-timber benefits.	Objective 5.1.1 Maintaining a flow of timber benefits	5.1.1 — Documentation of the diversity of timber and non-timber resources, including products and services produced in the DFA	14. Percent of volume harvested compared to allocated harvest level	100% over 5 year cut control period, as defined by Timber supply forecast harvest flow. Variance: As per cut control regulations.	

					22. Conformance with strategies for non-timber benefits identified in plans	No non-conformances. Variance: 0	39 - Percent of cut blocks and roads harvested, in known scenic areas, which have visual assessments completed and implemented according to the recommendations.
					23. Percent of forest operations that are consistent with a landscape level strategy for the management of recreational, commercial, and cultural/heritage trails as identified in the DFA.	100%. Variance = -10%	68 - Total percentage of forest operations that are consistent with a landscape level strategy for the management of recreational, commercial, and cultural trails as identified in the DFA.
					24. Percentage of roads deactivated that meet the deactivation criteria	100%. Variance = -10%	70 - Percentage of roads deactivated that meet the deactivation criteria
		Value 5.1.2 Community well-being	Objective 5.1.2 Supporting opportunities for maintaining a resilient and stable community	5.1.2 — Evidence of open and respectful communications with forest dependent businesses, forest users and local communities to integrate non-timber resources into forest management planning. When significant disagreement occurs, efforts towards conflict resolution are documented.	32 – Effective communication and co-operation with non-timber resources users and interested parties that have expressed interest in forest planning	100%. Variance: 0%	41 – Percent of individuals who have expressed an identified interest in forest planning are communicated with.
							43 – General notification to request expression of interest (newspaper ad).
							44 – Annual personal notification to every “known” non-timber licensed tenure holder.

	5.2 Communities and Sustainability Contribute to the sustainability of communities by providing diverse opportunities to derive benefits from forests and by supporting local community economies	Value 5.2 Community well-being	Objective 5.2.1 Support opportunities for maintaining a resilient and stable community	5.2.1 Level of participation and support in initiatives that contribute to community sustainability	26. Investment in local communities	Target: % of dollars spent in local communities (5-year rolling average). Variance: -20%.	48 - Percent of operational forestry contract value in dollars within the DFA serviced by north central British Columbia
					27. The number of support opportunities provided in the DFA	6. Variance: -1.	
				5.2.2 Level of participation and support in training and skills development	28. Training in environmental & safety procedures in compliance with company training plans	100% of company employees and contractors will have both environmental & safety training. Variance: -5%.	
				5.2.3 Level of direct and indirect employment	29. Level of Direct & Indirect Employment	Cut allocation X 1.72/1000m3. Variance: As per 2.2.2	49 - Percentage of advertised employment opportunities published in the local paper.
6. Society's Responsibility Sustainable forest management includes society's responsibility for worker and community safety, and the requirement for fair, equitable, and effective forest management	6.1 Fair and Effective Decision-Making Demonstrate that the SFM public participation process is designed and functioning to the satisfaction of the participants and that there is general public awareness of the process and its progress	Value 6.1.1 Public participation in the SFM process	Objective 6.1.1 A well designed and functioning public participation process.	6.1.1 Level of participant satisfaction with the public participation process	30. Percent of PAG meeting evaluations completed during the reporting period that obtain a minimum average acceptability score of 3	100% satisfaction from surveys. Variance: -10%	62 – Percent of PAG meeting evaluations completed during the reporting period that obtain a minimum average acceptability score of 3.
				6.1.2 Evidence of efforts to promote capacity development and meaningful participation in general	31. Number of educational opportunities for information/training that are delivered	4 Variance: 0	63 – Percent of PAG SFM information gap inquiries responded to within 3 months.

decisions		Value 6.1.2 Informed, fair and inclusive decision-making	Objective 6.1.2 Adequate information to make informed decisions	6.1.3 Availability of summary information on issues of concern to the public	32. SFM monitoring report made available to the public	SFM monitoring report available to public annually via web Variance: None	
	6.2 Safety Demonstrate that the organization is providing and promoting safe working conditions for its employees and contractors.	Value 6.2 Community well-being	Objective 6.2.1 Support opportunities for maintaining a resilient and stable community	6.2.1 Evidence of co-operation with DFA-related workers to improve and enhance safety standards, procedures, and outcomes in all DFA-related workplaces and affected communities 6.2.2 Evidence that a worker safety program has been implemented and is periodically reviewed and improved	33. Implementation and maintenance of a certified safety program.	100% Variance: -10%	
7. Aboriginal Relations Recognize and respect the unique rights and values of Aboriginal Peoples.	7.1 Aboriginal and Treaty Rights Recognize and respect Aboriginal title and rights, and treaty rights. Understand and comply with current legal requirements related to Aboriginal title and rights, and treaty right.	Value 7.1 Aboriginal and Treaty Rights	Objective 7.1.1 Recognition and respect for Aboriginal and treaty rights	7.1.1 Evidence of a good understanding of the nature of Aboriginal title and rights	34. Employees will receive appropriate First Nations Awareness Training	100%. Variance: -10%	

				7.1.2 — Evidence of ongoing open and respectful communications with Aboriginal communities to foster meaningful engagement, and consideration of the information gained about their Aboriginal title and rights through this process. Where there is communicated disagreement regarding the organization's forest management activities, this evidence would include documentation of efforts towards conflict resolution.	35. Evidence of best efforts to share interests and plans with Aboriginal communities	100% of management plans. Variance: 0%	56 - Percentage of archaeological assessments completed, on cut blocks and roads harvested during the reporting period, that have been referred to relevant Aboriginal communities for review and comment prior to harvesting.
							59 - Percent of blocks and roads harvested by Canfor that have been previously referred to applicable First Nations.
	7.2 Aboriginal Forest Values, Knowledge & Uses Respect traditional Aboriginal forest values, knowledge, and uses as identified through the Aboriginal input process.	Value 7.2 Aboriginal Forest Values, Knowledge and Uses	Objective 7.2.1 Incorporation of Aboriginal Forest Values, Knowledge and Uses in Forest Management	7.2.1 — Evidence of efforts to promote capacity development and meaningful participation for Aboriginal individuals, communities and forest-based companies	36. Number of opportunities for First Nations to participate in the forest economy	9 opportunities. Variance = -1 6 opportunities. Variance = -3	55 - Solicit participation in forest management from local Aboriginal communities for areas of overlapping interest.
					35. Evidence of best efforts to share interests and plans with Aboriginal communities	100% of management plans. Variance: 0%	

				7.2.2 Evidence of understanding and use of Aboriginal knowledge through the engagement of willing Aboriginal communities, using a process that identifies and manages culturally important resources and values	10. Percent of identified Aboriginal and non-aboriginal heritage forest values, knowledge and uses considered in the forestry planning processes	100%. Variance: 0%	55 - Solicit participation in forest management from local Aboriginal communities for areas of overlapping interest.
				7.2.3 — Level of management and/or protection of areas where culturally important practices and activities occur.	37. Percent of forest operations in conformance with operational/site plans developed to address Aboriginal forest values, knowledge and uses	100%. Variance: 0%	40 – Percent of blocks and roads harvested that are consistent with recommendations contained in site level archaeological assessments.
				Total	37 proposed indicators		

Additional Local Level Indicators Removed from the SFMP	5 - Large Opening Design: Percent of openings (> 100 ha) harvested annually that meet the large opening design criteria.
	7 - Plant Species Diversity Index: The number of site association groups identified in Table 6, achieving plant diversity index baseline targets within managed stands.
	15 - Thinning/Spacing Prescriptions & Conifer Density: Percentage of thinning and spacing prescriptions implemented annually that specify a post-treatment conifer density greater than the original planting density.
	30 - Conformity to the Risk Ranking System: Conformity to the DFA risk ranking system developed for assessing stream crossing.
	39 - Visual Quality Requirements: Percent of cut blocks and roads harvested, in known scenic areas, which have visual assessments completed and implemented according to the recommendations.
	37 – Number of people reached through educational outreach (CSA 6.5.1)

APPENDIX 3 – SPECIES OF MANAGEMENT CONCERN

Definition of Species of Management Concern (April 28, 2014)

Species of Management Concern occur with a Canfor Defined Forest Area, and:

- Are wholly or partially dependent on forested habitat for one or more of their life stages, and
- Are potentially impacted by forestry planning and practices, and
- Meet at least one of the following:
 - Have been assessed and recommended for listing as Endangered, Threatened, or Special Concern by COSEWIC under the Species at Risk Act,
 - Are red- or blue-listed in British Columbia or on the Species at Risk Act in Alberta,
 - Have been identified as Priority 1 species on the Conservation Framework at the Conservation Data Center in British Columbia,
 - Are in SAS (Species Accounting System) grouping number 4 (species using localized habitats),
 - Are ‘focal species’ or of management or cultural concern as identified by a Canfor Public Advisory Group,
 - Are Boreal Priority Species, as identified by the Canadian Boreal Forest Agreement,
 - Are regionally rare or uncommon species that are sensitive to forestry operations,
 - Are a species of concern to local First Nations or the public, and that pass the test of ‘reasonableness’ to manage specifically for (e.g., their habitat is not fully covered by existing legislation or strategies and can be logically and practically managed for by Canfor).

SAS group definitions:

1. Generalists and/or species that benefit from forest practices
2. Species that are associated with broad habitat types.
3. Species with Strong dependencies on specific habitat elements. (riparian, wetlands, cavities, snags, etc.)
4. Species restricted to highly localized and/or specialized habitats.
5. Species for which patch size and connectivity are considered important.
6. Species not dependent on forested environments.

Species at Risk Act - Legal

The federal *Species at Risk Act* requires the development of recovery strategies and action plans for endangered, threatened and extirpated species, and management plans for species of special concern. Strategies include the identification of critical habitat for species needing protection. The *Species at Risk Act* also establishes the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as a legal entity, ensuring that wild Canadian species, subspecies, and separate populations suspected of being at risk are assessed under a rigorous and independent scientific process.

Wildlife Act – Legal

Section 34 of the BC Wildlife Act - Indicates that a person commits an offence if the person, except as provided by regulation, possesses, takes, injures, molests or destroys

- (a) a bird or its egg,
- (b) the nest of an eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl, or
- (c) the nest of a bird not referred to in paragraph (b) when the nest is occupied by a bird or its egg.

Provincial – Non-Legal (Comprehensive):

Specialists at the BC Conservation Data Centre, throughout the province, have identified British Columbia's most vulnerable vertebrate animals, vascular plants and natural plant communities. They are placed on provincial "red" and "blue" lists, according to the degree of rarity.

Red List:

Includes any native species that have, or are candidates for Extirpated, Endangered, or Threatened status in British Columbia.

- Extirpated taxa no longer exist in the wild in British Columbia but do occur elsewhere.
- Endangered taxa are facing imminent extirpation or extinction.
- Threatened taxa are likely to become endangered if limiting factors are not reversed.

Blue List:

Includes any native species considered to be vulnerable in British Columbia. Vulnerable taxa are of special concern because of characteristics that make them particularly sensitive to human activities or natural events. Blue-listed taxa are at risk, but are not Extirpated, Endangered or Threatened.

Canfor has adopted the use of the BC Ecosystems Explorer

(<https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/conservation-data-centre/explore-cdc-data/species-and-ecosystems-explorer>)

Species with provincial conservation status of Red and Blue are available in a “live” version on this provincially developed resource (updated and maintained by MOE), plus species identified in species accounting system.

Utilise the following procedure to establish a list of the red and blue listed species and ecological communities found within Fort St James DFA:

1. Plants and Animals, or Ecological Communities >>> **Must select one or the other.**
2. Identification >>> Search Type - **Select combined (not required for Ecol Comm).**
3. Conservation Status >>> **Select BC List >>> Select Red List and Blue List.**
4. Forest District >>> **Select Fort St James.**
5. **Sort By English Name.**
6. **Search Now.**
7. As per the search criteria, a list of records will be indicated, that can be **printed** and/or **exported** in digital format.
8. Individual **species summaries** and associated **reports** can be printed to aid staff and contractors in field identification of the species and ecological communities.

Sites of Biological Significance:

Sites of biological significance can include sites of unusual or rare forest conditions that are not covered by legislation. These sites cannot be identified from current established lists but may be unique to the DFA and warrant identification. Sites of Biological Significance may include the following:

- Nests
- Snags
- Over story Trees
- Coarse Woody Debris
- Witches Broom
- Mineral Licks
- Rock Features
- Denning Sites
- Avalanche Chutes
- Ecological Reserves
- Springs
- Open habitats
- Sand dunes
- Other sites of significance identified by the PAG from time to time.

Additionally, the website for Approved Ungulate Winter Ranges in BC
(http://www.env.gov.bc.ca/wld/frpa/urp/approved_urp.html)

APPENDIX 4 – NON-REPLACABLE FOREST LICENSE (NRFL) RISK ASSESSMENT

Canfor does not have exclusive rights to harvesting on the DFA. Other license holders, primarily small companies holding non-replaceable forest licenses issued to address the salvage of mountain pine beetle killed timber, also operate within the DFA. As a result, these license holders do have the ability to impact Canfor's ability to achieve their targets for some of the indicators in this plan. To provide confidence that the reporting is representative of what is happening in the DFA, the matrix below describes how each indicator is or is not impacted by other operators, and exactly what is being reported.

This Appendix will be updated following the Minister of FLNRORD apportionment in the fall of 2018, reflecting Prince George TSA AAC Determination, effective October 11, 2017.

Licensee	License	Expiry	Type	AAC	Volume that could be harvested in DFA	Volume managed by SFMP signatories	Total volume for non replaceable licenses	Remarks/Risk assessment	Risk to SFMP
BC Timber Sales Stuart/Nechako	NA		Timber Sales	2,460,000	1,095,561	1,095,561		Signatory to SFM plan until Spring 2013; now certified to SFI.	Nil
Brave Holdings	A78072	Mar-2013	SNRFL	25,000	25,000			North Road Corridor (affected by the volume transfer). Expires in < 1yr.	Low
Canyon Tree Farms	A78073	Mar-2013	SNRFL	25,000	25,000			Expires in < 1yr.	Low
Canfor	A40873	Oct-2021	FL REP	1,597,771	1,226,771	1,226,771		Signatory to plan.	Nil
Carrier	A18158	Nov-2021	FL REP	253,027	253,027			Signatory to SFM plan until Fall 2010; now certified to SFI. Have their own operating areas	Low

								within the Prince George TSA and do not harvest within the DFA.	
Conifex	A77955	Apr-2026	FL REP	640,000	640,000			Certified to SFI. Have their own operating area and do not harvest within the DFA.	Low
Dunkley Lumber	A18169	Oct-2021	FLREP	201,978	201,978			Certified to SFI. Have their own operating areas within the Prince George TSA and do not harvest within the DFA.	Low
	A57544	May-2015	NRFL	50,000	50,000				
Northern Interior Forest Products	A18161	Jul-2013	NRFL	50,000	50,000			Restricted to small diameter, damaged pine. Expires in < 1yr.	Low
T'ugus Timber (Deciduous)	A71016	Jun-2014	NRFL	55,000	55,000			Tachie Hwy/Hart area. Deciduous license. Minor aspen component on land base. Expires in < 1 year.	Low
Ta Da Chun	A64418	May-2016	Sec. 13 NRFL	100,000	100,000	100,000		Ocock/Great Beaver Area. Managed by BCTS.	Nil

Xsu Wii Ax	A70349	Aug-2018	Sec. 13 NRFL	20,000	20,000	20,000		Ocock/Great Beaver Area. Managed by BCTS.	Nil
K&D Logging	A59071	Apr-2019	Sec. 13 NRFL	60,000	60,000	60,000		BCTS Manages this allocation of volume, but this is a Section 13 Licence. Falls under KDL Certification. Outside the DFA.	Nil
Apollo Forest Products Ltd. (Sinclar Group)	A`18156	Oct-2021	FLREP	216,746	216,746			Signatory to SFM plan until 2009 and now certified to SFI. Have their own operating areas within the Prince George TSA, and do not harvest within the DFA.	Low
	A81516	Oct-2012	NRFL	50,000	50,000			Pine NRFL with BCTS overlap. Expires 2012.	Low
	A82364	Oct-2012	NRFL	50,000	50,000			Pine NRFL with BCTS overlap. Expires 2012.	Low
L&M Lumber Ltd. (Sinclar Group)	A17842	Dec-2021	FLREP	49,514	49,514				Mod

	A55578	Jun-2018	NRFL	250,000	250,000				Mod
Lakeland Mills Ltd. (Sinclar Group)	A18163	Nov-2021	FLREP	249,827	249,827			Signatory to SFM plan until 2009 and now certified to SFI. Have their own operating areas within the Prince George TSA, and do not harvest within the DFA.	Mod
	A61216	Dec-2014	NRFL	80,000	80,000				Low
Northern Interior Forest Products	A77813	Sep-2013	NRFL	250,000	250,000			Restricted to 70% conifer damage. Covers limited BCTS area and new Canfor Pine Area. Expires in a year.	Low
Yekooche FN	A81510	Nov-2014	NRFL	49,048	49,048			Canfor: Cunningham/Whitefish. Small amount of volume.	Low
Tl'azt'en FN	A86098	Mar-2015	NRFL	2,999	2,999			No overlap with BCTS, but may include new Canfor pine cells. Very small volume	Low
	A86099	Mar-2015	NRFL	2,999	2,999				Low
	A86100	Mar-2015	NRFL	55,324	55,324				Low
Nak'azdli FN	A89464			30,000	30,000			Canfor: Great Beaver/Ocock. (TO BE	Mod

								AWARDED SHORTLY)	
					5,138,794	2,502,332	0		
	Total volume			6,874,233					
Pct of volume that could be harvested in DFA managed by SFMP signatories						48.7%		L&M - SFI certified, NRFL's - not active, FN NRFL - very minor volume	
Volume that could be harvested in DFA assessed as low risk						2,057,121			
Pct of volume that is low risk to the DFA						40.0%			
Volume that could be harvested assessed as moderate risk						579,341			
Pct of volume that is moderate risk to the DFA						11.3%			

Risk Rank Ref	Expected Impact of Other Licensees on the Indicator
a	Other licensees (NRFL holders) DO have the ability to impact the target, however, the annual report will include these activities in the analysis to the extent the data that is publically available is current.
b	Other licensees (NRFL holders) DO have the ability to impact the target, however, legislation exists that regulates the activity and result. As all licensees are subject to this regulation, the risk of others impacting Canfor's ability to achieve the target is considered LOW
c	This indicator applies only to Canfor's activities on the DFA.

Indicator #	Indicator Statement	Target	Risk Rank Ref
1.1.1	1 – Retention of rare ecosystem groups across the DFA	0% area harvested of for rare ecosystem groups in the DFA. Variance: Access construction where no other practicable practical route is feasible.	a
1.1.2	2 – Percent distribution of forest type (treed conifer, treed broadleaf, treed mixed) >20 years old across DFA	Treed conifer: Increase Douglas-fir to 2 % within 20 years, Treed Broadleaf: >4%, Treed Mixed: >1%. Variance: None below proposed targets.	a
1.1.3(a)	3 – Percent late seral distribution by ecological unit across the DFA	100% old forest, old forest interior and non pine targets as per Jan, 2012. Variance = 0%.	b
1.1.3(b)	4 – Maintain a variety of young patch sizes in an attempt to approximate natural disturbance.	As per the "Landscape Biodiversity Objectives for the PG TSA". Variance: As per the "Landscape Biodiversity Objectives for the PG TSA".	b
1.1.4(a)	5 – Percent of stand structure retained across the DFA in harvested areas	>7% across the DFA. Variance: 0%	b
1.1.4(b)	6 – The number of cut blocks harvested that are not consistent with riparian management commitments	0. Variance: 0	b
1.2.1 & 1.2.2	7 – Percent of forest management activities consistent with management strategies (both landscape and stand level) for Species at Risk and/or Species of Management Concern	100%. Variance: None	b
1.2.3	8 – Regeneration will be consistent with provincial regulations and standards for seed and vegetative material use.	100%. Variance: 0%	b
1.3.1	(Duplicate) 2 – Percent distribution of forest type (treed conifer, treed broadleaf, treed mixed) >20 years old across DFA	100%. Variance: 5%	a
	(Duplicate) 3 – Percent late seral distribution by ecological unit across the DFA	100% old forest, old forest interior and non pine targets as per Jan, 2012. Variance = 0%.	b
	(Duplicate) 7 – Percent of forest management activities consistent with management strategies (both	100%. Variance: none	b

Indicator #	Indicator Statement	Target	Risk Rank Ref
	landscape and stand level) for Species at Risk and/or Species of Management Concern		
	(Duplicate) 8 – Regeneration will be consistent with provincial regulations and standards for seed and vegetative material use.	100%. Variance: 0%	b
	(Duplicate) 9 – Percent of forest management activities consistent with management strategies for protected areas and sites of biological and geological significance.	100%. Variance: none.	b
1.4.1	9 – Percent of forest management activities consistent with management strategies for protected areas and sites of biological and geological significance.	100%. Variance: none.	b
1.4.2	10 – % of identified Aboriginal and non-aboriginal forest values, knowledge and uses considered in forestry planning processes	100%. Variance: 0%	b
2.1.1	11 – Average Regeneration delay for Stands Established Annually	Regeneration established in 3 years or less. Variance: 1 year	b
	(Duplicate) 4 – Maintain a variety of young patch sizes in an attempt to approximate natural disturbance.	As per the "Landscape Biodiversity Objectives for the PG TSA". Variance: As per the "Landscape Biodiversity Objectives for the PG TSA".	b
2.1.2	(Duplicate) 8 – Regeneration will be consistent with provincial regulations and standards for seed and vegetative material use.	100%. Variance: 0%	b
2.1.3	12 – Percentage of gross forest land base in the DFA converted to non-forest land use through forest management activities.	Less than 3% of the gross forested land base in the DFA. Variance: None	a
	13 – Existing areas of non-forested types artificially converted to forested types.	Target: 0 ha. Variance: 0 ha.	b
2.1.4	14 – Percent of volume harvested compared to allocated harvest level.	100% over 5 year cut control period, as defined by Timber supply forecast harvest flow. Variance: As per cut control regulations.	c

Indicator #	Indicator Statement	Target	Risk Rank Ref
3.1.1	15 – Percent of harvested blocks meeting soil disturbance objectives identified in plans.	100% of blocks meet soil disturbance objectives. Variance: 0%	b
3.1.2	16 – Percent of audited cut blocks where post harvest CWD levels are within the targets contained in Plans.	100% of blocks harvested annually will meet targets. Variance: 10%	b
3.2.1 & 3.2.2	17 – Percent of Sensitive watersheds that are above Peak Flow Index targets will have further assessment if further harvesting is planned.	100%. Variance: 0%	a
	18 – Percent of high hazard drainage structures in sensitive watersheds with identified water quality concerns that have mitigation strategies implemented.	100%. Variance: 0%	c
	19 – Percent of road related soil erosion events that introduce sediment into a stream identified in annual road inspections that are addressed.	100%. Variance: 0%	c
	20 – Percentage of crossing structures planned and installed on fish streams to a reasonable design and sediment control standard (allow for adequate fish passage - dependant on the presence/absence of fish).	100%. Variance: 0%	c
4.1.1	21 – Percent of standards units declared annually that meet free growing requirements on or before the late free growing date.	100%. Variance = 0%.	b
	(Duplicate) 3 – Percent late seral distribution by ecological unit across the DFA	100% old forest, old forest interior and non pine targets as per Jan, 2012. Variance = 0%.	b
	(Duplicate) 11 – Average Regeneration delay for Stands Established Annually	Regeneration established in 3 years or less. Variance: +1 year	b
	(Duplicate) 12 – Percentage of gross forest land base in the DFA converted to non-forest land use through forest management activities.	Less than 3% of the gross forested land base Variance: None	a

Indicator #	Indicator Statement	Target	Risk Rank Ref
4.1.2	(Duplicate) 11 – Average Regeneration delay for Stands Established Annually	Regeneration established in 3 years or less. Variance: +1 year	b
4.2.1	(Duplicate) 12 – Percentage of gross forest land base in the DFA converted to non-forest land use through forest management activities.	Less than 3% of the gross forested land base Variance: None	a
5.1.1(a)	(Duplicate) 14 – Percent of volume harvested compared to allocated harvest level.	100% over 5 year cut control period, as defined by Timber supply forecast harvest flow. Variance: As per cut control regulations.	c
5.1.1(b)	22 – Conformance with strategies for non-timber benefits identified in plans.	No non-conformances for plans. Variance: 0	b
5.1.1(c)	23 – Percent of forest operations that are consistent with a landscape level strategy for the management of recreational, commercial, and cultural trails as identified in the DFA.	100%. Variance = -10%	b
5.1.1(d)	24 – Percentage of roads deactivated that meet the deactivation criteria.	100%. Variance = -10%	b
5.1.2	32 – Effective communication and co-operation with non-timber resources users and interested parties that have expressed interest in forest planning	100%. Variance = 0%	c
5.2.1	26 – Investment in local communities.	Target: % of dollars spent in local communities (5-year rolling average). Variance: -20%.	c
	27 – The number of support opportunities provided in the DFA	6. Variance: -1.	c
5.2.2	28 – Training in environmental & safety procedures in compliance with company training plans.	100% of company employees and contractors will have both environmental & safety training. Variance = -5%.	c
5.2.3	29 – Level of Direct & Indirect Employment	Cut allocation X 1.72/1000m ³ . Variance: As per 2.2.2	c

Indicator #	Indicator Statement	Target	Risk Rank Ref
6.1.1	30 – Percent of PAG meeting evaluations completed during the reporting period that obtain a minimum average acceptability score of 3.	100% satisfaction from surveys. (80% = 4/5). Variance = -10%	c
6.1.2	31 – Number of educational opportunities for information / training that are delivered to the PAG.	>=1. Variance = 0.	c
6.1.3	SFM monitoring report made available to the public.	SFM monitoring report available to public annually via web. Variance: None	c
6.2.1 & 6.2.2	33 – Implementation and maintenance of a certified safety program.	100%. Variance = -10%	c
7.1.1	34 – Employees will receive appropriate First Nations Awareness Training	100%. Variance = -10%	c
7.1.2	35 – Evidence of best efforts to share interests and plans with Aboriginal communities	100% of management plans. Variance = 0%	c
7.2.1	36 – Number of opportunities for First Nations to participate in the forest economy	9 opportunities annually. Variance = -1	c
	(Duplicate) 35 – Evidence of best efforts to share interests and plans with Aboriginal communities.	100% of management plans. Variance = 0%	c
7.2.2	(Duplicate) 10 – % of identified Aboriginal and non-aboriginal heritage forest values, knowledge and uses considered in the forestry planning processes	100%. Variance = 0%	c
7.2.3	37 – % of forest operations in conformance with operational/site plans developed to address Aboriginal forest values, knowledge and uses.	100%. Variance = 0%	c

APPENDIX 5: OLD FOREST AREA FORECAST FOR THE FORT ST JAMES FOREST DISTRICT

Table 1: Forecast of old forest by NDU merged biogeoclimatic units (Base Case)

Merged Biogeoclimatic Unit	Age of Old (years)	Minimum area of old forest (ha)	Old Forest Area (ha)						
			current	2027	2057	2107	2157	2207	2257
E1 Moist Interior - Mountain ESSFmv 1	140	7,685	9,324	10,870	9,698	9,327	8,868	12,134	12,155
E2 Moist Interior – Plateau SBS dk	120	4,547	14,286	13,162	11,511	9,868	9,581	10,420	10,607
E3 Moist Interior – Plateau SBS mc 2	120	9,977	34,141	23,337	17,375	15,815	19,105	23,541	23,680
E4 Moist Interior – Plateau SBS mk 1	120	20,704	63,868	30,239	22,898	23,645	29,269	38,955	38,625
E5 Moist Interior – Plateau SBS dw 3	120	24,126	97,241	64,819	46,875	45,670	50,966	63,257	63,062
E6 Northern Boreal Mountains ESSFmc	140	48,601	118,374	105,765	72,582	70,663	65,334	67,106	65,147
E7 Northern Boreal Mountains SWB mk	140	14,005	30,719	30,356	22,216	20,135	18,413	19,163	18,327
E8 Northern Boreal Mountains SBS mc 2	140	9,144	28,635	17,105	10,054	12,519	12,093	12,197	11,976
E9 Omineca - Mountain ESSFwv	140	16,007	26,216	23,382	18,501	19,043	18,971	19,014	18,976
E10 Omineca - Mountain ESSFmc	140	32,795	67,909	62,373	44,420	43,714	39,995	40,444	39,854
E11 Omineca - Mountain ESSFmv 3	140	180,463	312,380	311,839	207,830	188,040	177,331	201,296	193,926
E12 Omineca - Valley SBS dk	120	1,538	5,536	3,792	2,379	2,201	2,261	2,999	2,908
E13 Omineca - Valley ICH mc 1	140	2,811	11,205	8,976	7,997	7,762	7,382	7,303	7,395
E14 Omineca - Valley BWBSdk 1	120	9,885	42,643	30,191	23,289	17,480	20,226	21,619	19,913
E15 Omineca - Valley SBS mc 2	120	15,612	73,155	49,884	40,643	36,088	40,156	40,467	39,965
E16 Omineca - Valley SBS mk 1	120	39,946	126,068	95,678	46,597	40,362	47,082	70,660	69,715
E17 Omineca - Valley SBS wk 3	140	54,550	147,174	112,217	76,622	73,886	80,787	103,897	102,672

Table 2: Forecast of non-pine old forest (Base Case)

Merged Biogeoclimatic Unit	Age of Old (years)	Minimum area of old forest (ha)	Old Forest Area (ha)						
			current	2027	2057	2107	2157	2207	2257
E1 Moist Interior - Mountain ESSFmv 1	140	4,199	7,689	9,053	8,628	8,235	7,725	7,926	8,010
E2 Moist Interior - Plateau SBS dk	140	2,625	4,919	9,252	8,897	8,909	7,610	7,705	7,994
E3 Moist Interior - Plateau SBS mc 2	140	2,915	14,066	14,346	12,648	12,256	12,101	12,034	12,049
E4 Moist Interior - Plateau SBS mk 1	140	2,176	15,673	12,438	13,393	14,416	14,898	15,301	15,241
E5 Moist Interior - Plateau SBS dw 3	140	5,818	28,705	36,916	33,491	35,778	34,993	36,250	36,674

Data currently unavailable for E6-E17

Table 3: Forecast of Interior old forest by NDU merged biogeoclimatic unit (Base Case)

NDU Merged Biogeoclimatic Units	Old Forest Area Target (ha)	Target %	Area (ha)	2007		2027		
				%	Area (ha)	Percent	Area (ha)	
E1 Moist Interior - Mountain ESSFmv 1	7,685	40%	3,074	112%	8,620	96%	7,363	Yes
E2 Moist Interior - Plateau SBS dk	4,547	10%	455	216%	9,833	121%	5,510	Yes
E3 Moist Interior - Plateau SBS mc 2	9,977	10%	998	262%	26,165	89%	8,903	Yes
E4 Moist Interior - Plateau SBS mk 1	20,704	25%	5,176	176%	36,412	17%	3,591	No
E5 Moist Interior - Plateau SBS dw 3	24,126	25%	6,032	265%	63,946	69%	16,656	Yes
E6 Northern Boreal Mountains ESSFmc	48,601	40%	19,440	234%	113,723	168%	81,473	Yes
E7 Northern Boreal Mountains SWB mk	14,005	40%	5,602	209%	29,209	159%	22,299	Yes
E8 Northern Boreal Mountains SBS mc 2	9,144	25%	2,286	279%	25,544	87%	7,998	Yes
E9 Omineca - Mountain ESSFwv	16,007	40%	6,403	158%	25,219	100%	16,033	Yes
E10 Omineca - Mountain ESSFmc	32,795	40%	13,118	195%	63,961	141%	46,241	Yes
E11 Omineca - Mountain ESSFmv 3	180,463	40%	72,185	161%	291,345	124%	223,598	Yes
E12 Omineca - Valley SBS dk	1,538	25%	384	252%	3,878	64%	989	Yes
E13 Omineca - Valley ICH mc 1	2,811	40%	1,124	386%	10,849	111%	3,110	Yes
E14 Omineca - Valley BWBSdk 1	9,885	25%	2,471	373%	36,875	128%	12,630	Yes
E15 Omineca - Valley SBS mc 2	15,612	25%	3,903	400%	62,507	139%	21,772	Yes
E16 Omineca - Valley SBS mk 1	39,946	25%	9,987	250%	99,705	73%	29,279	Yes
E17 Omineca - Valley SBS wk 3	54,550	25%	13,638	193%	105,505	62%	33,576	Yes

APPENDIX 6: EARLY SERAL PATCH SIZE DISTRIBUTION FORECAST FOR THE FORT ST JAMES FOREST DISTRICT WITHIN THE PRINCE GEORGE TSA

Table 1: Current Status of Early Seral Patches in the Fort St James District within the Prince George TSA

Forest District	Natural Disturbance Sub-unit	CFLB Area (ha)	Young Forest Area (ha)	Current Patch Size Distribution (ha)					Current				Target Patch Size Distribution (%)			
				< 50	50-100	100-500	500-1000	> 1000	< 50	50-100	100-1000	> 1000	< 50	50-100	100-1000	> 1000
Fort St. James	Moist Interior - Mountain	18,745	264	0	130	50	78	7	0%	49%	48%	2%	20%	10%	30%	40%
	Moist Interior - Plateau	459,018	72,882	8,479	12,228	15,364	10,384	26,428	12%	17%	35%	36%	5%	5%	20%	70%
	Northern Boreal Mountains	204,372	457	376	62	18	0	0	82%	13%	4%	0%	5%	5%	30%	60%
	Omineca - Mountain	547,739	6,378	1,116	2,031	1,968	345	917	18%	32%	36%	14%	20%	10%	30%	40%
	Omineca - Valley	771,791	74,213	9,046	17,067	22,053	10,897	15,150	12%	23%	44%	20%	5%	5%	30%	60%

Table 2: Forecast of early seral patch distribution in 20 years (Base Case)

Forest District	Natural Disturbance Sub- unit	CFLB Area (ha)	Young Forest Area (ha)	2027					2027				Target Patch Size Distribution (%)			
				Area (ha)					Percent							
				< 50	50-100	100-500	500-1000	> 1000	< 50	50-100	100-1000	> 1000	< 50	50-100	100-1000	> 1000
Fort St. James	Moist Interior - Mountain	18,745	2,500	566	94	0	56	1,784	23%	4%	2%	71%	20%	10%	30%	40%
	Moist Interior - Plateau	459,018	169,596	10,692	4,205	6,548	3,271	144,881	6%	2%	6%	85%	5%	5%	20%	70%
	Northern Boreal Mountains	204,372	38,408	4,195	1,719	4,237	3,442	24,815	11%	4%	20%	65%	5%	5%	30%	60%
	Omineca - Mountain	547,739	77,751	10,913	3,654	7,210	3,669	52,306	14%	5%	14%	67%	20%	10%	30%	40%
	Omineca - Valley	771,791	283,263	13,591	4,560	5,857	4,156	255,100	5%	2%	4%	90%	5%	5%	30%	60%

Table 3: Percent change

Forest District	Natural Disturbance Sub- unit	% Change in Patch Size Distribution in 20 Years			
		< 50	50-100	100-1000	> 1000
Fort St. James	Moist Interior - Mountain	#DIV/0!	0.72	-	0.72
	Moist Interior - Plateau	1.26	0.34	0.43	0.32
	Northern Boreal Mountains	11.16	27.73	235.39	#DIV/0!
	Omineca - Mountain	9.78	1.80	3.66	10.63
	Omineca - Valley	1.50	0.27	0.27	0.38