Nicola Thompson Fraser

Sustainable Forest Management Plan

September 2010

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Vision Statement

The Nicola Thompson Fraser Sustainable Forest Management Plan will foster forest management practices based on science, professional experience and local public and First Nations input that contribute to the long-term health and productivity of forest ecosystems, a strong economy and thriving communities throughout the Plan area.

Executive Summary

Between February 2000 and May 2001 the forest Licencees operating in the Merritt and Kamloops Timber Supply Areas worked with local public groups and First Nation representatives (the SFM Advisory Group) to develop Sustainable Forest Management (SFM) Plans for the Merritt and Kamloops areas. A similar process occurred in the Lillooet Timber Supply Area in 2004. Members of all three of these SFM Advisory Group represented a cross-section of local interests including recreation, ranching, forestry, conservation, water, community, and First Nations.

The Nicola Thompson Fraser SFM Plan brings together these three separate SFM Plans into one larger area plan with involvement of forest licencees, First Nations and public members from the broader area.

The SFM Plan includes a set of values, objectives, indicators and targets that address environmental, economic and social aspects of forest management in the Nicola Thompson Fraser area. 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. An SFM Plan developed according to the CSA standard sets performance objectives and targets over a defined forest area 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. This SFM Plan has undergone substantive revisions with both the merging of SFM Plans and the rewriting of the CSA SFM Standard (Z809-08). Changes to this plan reflect the 2008 standard requirements and the public meetings held to implement these changes.

Irrespective of changes occurring to the CSA SFM Standard, the SFM Plan is an evolving document that is reviewed and revised on an annual basis with the SFM Advisory Group to address changes in forest conditions and local community values. All participating forest licencees are committed to the achievement of the SFM Plan. Each year the SFM Advisory Group reviews an annual report prepared by the licencees to assess achievement of performance measures. This monitoring process provides the licencees, public and First Nations 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 SFM Plan.

The Nicola Thompson Fraser Sustainable Forest Management Plan, annual reporting and other relevant information can be obtained at Nicola Thompson Fraser Certification website:

http://www.for.gov.bc.ca/dcs/sustainable_forestry/sustainable_forestry.htm

1.0 Introduction and Overview

In recent years there has been an increasing demand worldwide for "certified" wood products. This has led to the development of a number of certification systems to provide assurance to consumers that forest products have been produced using environmentally and socially responsible forest practices.

The Canadian Standards Association (CSA) *Sustainable Forest Management Standard (CAN/CSA Z809);* is one of the primary forest certification programs currently being used in British Columbia and Canada. The CSA system requires the development of performance objectives and targets over a defined forest area to reflect local and regional interests. The process of CSA certification includes advisory committees composed of a range of public, stakeholders with specified interests and First Nations.

Ardew Wood Products Ltd., Aspen Planers Ltd., B.C. Timber Sales (BCTS), Canadian Forest Products Ltd., Gilbert Smith Forest Products Ltd., and Tolko Industries Ltd. are the participating entities in the Nicola Thompson Fraser Sustainable Forest Management Plan. These organizations are commonly referred to in the plan as the "participating licencees" or "Licencees". The Licencees, with advice from the SFM Public Advisory Group, have used the CSA certification system as the basis to develop the Nicola Thompson Fraser Sustainable Forest Management (SFM) Plan. This Plan provides management direction for all of Ardew's operating areas within the Merritt Timber Supply Area (TSA), Canfor and Gilbert Smith's operating areas in the Kamloops TSA , Tolko's operting area within the Kamloops and Merritt TSAs and Aspen and BCTS operating areas in the Kamloops Lillooet and Merritt TSAs.

The licencees have been consulting with the public to develop responsible forest management plans for over 25 years. Many planning processes, including those for Forest Stewardship Plans, provide for public and First Nations review and comment. The Licencees prepare Forest Stewardship Plans that incorporate the direction provided through these various planning processes. Licencee standards and operating plans are continuously updated as new information comes forward. The SFM Plan is one component of the licencees' commitment to adapt their management practices in response to changes in societal values.

The Sustainable Forest Management (SFM) Plan is a "roadmap" to current and future strategies related to long-term performance. The values, objectives, indicators and targets described in this document were developed with advice from the SFM Advisory Group. The Licencees adherence to these values, objectives, indicators and targets will support sustainable forest management within their respective operating areas and within the Plan area as a whole.

The SFM Plan is an evolving document that will be reviewed and revised on an annual basis with the SFM Advisory Group to address changes in forest conditions and local community values. More information about the Nicola Thompson Fraser Sustainable Forest Management planning, meeting summaries, annual reporting and maps can be obtained at Nicola Thompson Fraser Certification webpage:
http://www.for.gov.bc.ca/dcs/sustainable_forestry/sustainable_forestry.htm

2.0 The Plan Area

2.1 Area Description

The SFM Plan area consists of operating areas within the Kamloops, Lillooet and Merritt Timber Supply Areas (TSAs) as well as Tree Farm Licence 18. Unless identified specifically in the Plan, all publicly developed sustainable forest management values, objectives, indicators and targets and their associated forecasts and strategies apply to all participating licencees within the overall Plan area. For the purposes of CSA certification, the Licencee specific plan areas (their Defined Forest Areas) are a subset of the overall Plan area. Below is information for each of the management units taken from recent Timber Supply Reviews, followed by overall Plan area information for these areas combined. The DFA specific information for each of the participating licencees concludes this section. Participating Licencees in this SFM Plan and their combined Defined Forest Area comprise over 50% of the allocated volume harvested within the three TSAs. It is reasonable therefore to expect that at the DFA level, forest inventory characteristics such as species and age distribution, site ecology, and resource use are similar to those found within each of the management units.

Description of the Kamloops, Merritt and Lillooet timber supply areas

The **Kamloops TSA** is located in south central BC and covers approximately 2.77 million hectares of the Southern Interior Forest Region. Ranging from Logan Lake in the south to Wells Gray Park and TFL 18 in the north-west, the TSA includes the Blue River area and surrounds TFL 35. The TSA is bounded by the Columbia mountains to the east and the Cariboo area to the west. Administratively, the Kamloops TSA consists of the Kamloops and Headwaters Forest Districts.

The topography of the Kamloops TSA is diverse ranging from hot, dry grasslands in the valley bottoms in the south to wet rugged mountains in the north. The TSA is bisected by the North Thompson River which joins the South Thompson River at Kamloops.

Excluding Wells Gray Park, the timber harvesting land base makes up about 45% of the Kamloops TSA. The species composition of the forests that comprise the timber harvesting land base is depicted in Figure 2. Apart from lodgepole pine stands, which occupy about 30% of the timber harvesting land base, other commonly found tree species within the TSA include Douglas-fir (33%), spruce (18%), ponderosa pine, western red cedar, western hemlock, trembling aspen and subalpine fir.

The diverse landscapes of the Kamloops TSA provide a variety of wildlife habitats, including grasslands, lakes and wetlands, forested slopes, and alpine areas. Grizzly bear, black bear, mule deer, moose, bighorn sheep, and many smaller furbearers, as well as many species of birds and amphibians, are common. In addition, the TSA includes portions of the range of three herds of mountain caribou.

Water is a primary and fundamental resource of the Kamloops TSA. Numerous rivers, lakes and streams support many species of fish, such as rainbow trout, kokanee, steelhead, brook trout and white fish. Significant demands are also placed on water resources for domestic and agricultural purposes. There are currently 16 community watersheds within the Kamloops TSA.

Parks, recreation sites and trails, in addition to roaded and non-roaded areas, provide opportunities for numerous outdoor activities. Residents and tourists enjoy recreation activities such as hiking, camping, hunting, fishing, wildlife viewing, boating, mountain-biking, snowmobiling, downhill and cross country skiing, and ski touring. The TSA includes a number of parks and popular recreation areas.

Timber harvesting land base determination (from most recently available TSR data package – Kamloops TSA)

Land Classification	TSR 3 Reduction (ha)	TSR 4 no harvest reduction
Total Area	**2,666,375**	**2,770,266**
Wells Gray Provincial Park	528,000	539,102
Total Area Without Wells Gray Park	**2,138,375**	**2,231,164**
Non-crown	364,894	367,187
Non-productive, non-forest	364,371	356,420
Existing Roads	24,045	28,553
Non-productive Reductions	**753,310**	**752,159**
Productive Forest	**1,385,065**	**1,479,005**
Parks	0	68,021
Non-commercial brush	2,466	1,650
Inoperable	95,709	96,471
Environmentally Sensitive	108,967	66,656
Deciduous	37,878	0
Low Site Growing Potential	31,141	30,138
Non-merchantable stands	45,938	79,435
Riparian	21,841	21,527
Hudson's Bay Trail	103	342
Tod Mountain (Sun Peaks)	159	2,148
Community Watershed Intakes	2	4
Wells Gray Community Forest	0	11,128
Old Growth Management Areas	0	92,177
Total Productive Reductions	344,204	469,700
Long Term THLB	**1,040,861**	**1,009,305**

The **Merritt TSA** is located in south-central BC and covers approximately 1.13 million hectares of the Southern Interior Forest Region. The Merritt TSA includes the mountainous terrain and steep river valleys of the Cascade Mountains in the west and the relatively dry, flat Thompson Plateau in the east.

The TSA encompasses two major river systems: the Similkameen and the Nicola. To the north of the Merritt TSA is the Kamloops TSA, to the west are the Lillooet and Fraser TSAs, and to the east is the Okanagan TSA. Manning Park, Cathedral Park and the Canada-United States border lie to the south.

Apart from lodgepole pine stands, which occupy about two-thirds of the timber harvesting land base, the forests of the Merritt TSA include Douglas-fir, spruce, ponderosa pine, trembling aspen, and subalpine fir. The timber harvesting land base — the area considered available for harvesting — makes up about 58% of the Merritt TSA.

The diverse landscapes of the Merritt TSA provide a variety of wildlife habitats, including grasslands, lakes and wetlands, forested slopes, and alpine areas. At lower elevations mule deer, moose, black bear and many smaller furbearers, as well as many species of birds and amphibians, are common. Grizzly bears also occur within the TSA and although their population is low, this area is part of the Canada/USA North Cascades grizzly bear population unit and may be subject to future recovery planning efforts.

Water is a primary and fundamental resource of the Merritt TSA. Numerous rivers, lakes and streams support many species of fish, such as rainbow trout, kokanee, burbot, mountain whitefish, eastern brook trout, bull trout, and steelhead. Coho, Chinook, and pink salmon spawn in the Nicola River. Significant demands are also placed on water resources for domestic and agricultural purposes. There are currently 10 community watersheds within the Merritt TSA.

Parks, recreation sites and trails, and roaded and non-roaded areas provide opportunities for numerous outdoor activities. Residents and tourists enjoy recreation activities such as hiking, camping, hunting, fishing, wildlife watching, boating, mountain-biking, snowmobiling, and ski touring. The TSA includes a number of small parks and popular recreation areas in the vicinity including the Coquihalla Summit, Cascade Recreation Area, Manning Park and Cathedral Park. Recreation visits have increased significantly since the completion of the Coquihalla highway and the Okanagan connector.

Timber harvesting land base determination (from most recently available TSR data package – Merritt TSA)

Land Classification	Total Area (ha)	Crown Productive Area (ha)	Net Area Removed (ha)
Total Area	**1,130,282**		
Non-crown (includes woodlots, Community Forest)	210,130		
Total Crown Land base	**920,151**		
Non-productive, non-forest, non-commercial	107,467		
Productive Forest		**812,684**	
Parks, ecological reserves	15,935	10,984	10,984
Environmentally Sensitive Areas (ESAs)	66,406	35,219	34,408
Unstable terrain, inoperable	105,676	59,513	38,678
Problem forest types	45,011	24,933	15,664
Cultural heritage resources	1,198	824	541
Riparian management areas	50,939	23,654	19,988
Heritage trails	584	485	117
Water intakes for community watersheds	15	8	4
Existing roads, trails and landings	17,428	13,791	13,112
Wildlife tree patches (WTPs)	9,122	8,686	7,578
Old growth management areas (OGMAs)	114,771	112,666	47,487
Total Productive Reductions			188,561
Current Timber Harvesting Land base			**624,123**

The **Lillooet TSA** is situated in southwestern British Columbia between the Coast Mountains and the Thompson-Okanagan Plateau and covers approximately 1.125 million hectares. About 528 000 hectares within the Lillooet TSA are considered productive forest land and 47 percent of this is considered available and suitable for timber harvesting. The timber harvesting land base therefore represents approximately 250 000 hectares or 22 percent of the total area within the TSA.

The Lillooet TSA is characterized by rugged topography and dramatic climatic variations associated with the mountainous terrain found in this region. In the western portion of the TSA, temperate rain forest conditions predominate, while the eastern portion is dominated by the dry grasslands and semi-arid landscapes that comprise the interior dry belt. Given the climatic diversity, the forests of the Lillooet TSA are fairly diverse. Lodgepole pine, Douglas-fir and spruce-leading stands dominate, but other tree species are also present including ponderosa pine, whitebark pine, subalpine fir (balsam), western red cedar, and hemlock.

About 80 percent of the forests in the TSA are currently over the age of 60 years. Over time, as harvesting and mortality due to mountain pine beetle occurs, younger forests will become more predominant.

The diverse forests and landscapes of the Lillooet TSA are home to a wide range of wildlife species. A variety of ungulates are found within the TSA including elk, mule deer, moose, bighorn sheep, and mountain goat. Other large mammals include grizzly and black bear. Also found are various furbearers such as beaver, mink, muskrat, otter, marten, weasel, wolverine, bobcat, and lynx. The rivers and lakes of the TSA support many fish species, including; steelhead trout, rainbow trout, bull trout, whitefish, white sturgeon, cutthroat trout, whitefish, and all five species of pacific salmon.

Forested areas both inside and outside the timber harvesting land base help to provide critical forest habitats for many species. In the Lillooet TSA about 53 percent of the productive forest land is not considered available for timber harvesting.

Timber harvesting land base determination (from most recently available TSR data package – Lillooet TSA)

	Land Base		Eligible(1)
Land Classification	**Area (ha)**	**Volume (m^3)**	**Area (ha)**
Total Area	**1,125,025**	**124,906,601**	
Not administered by MoF Service	166,313	20,190,889	166,313
Total TSA	**958,712**	**104,715,712**	
Non-forest / Non-productive	453,534	6,449,728	546,904
Productive Forest	**505,178**	**98,265**	**984**
Inoperable	97,964	20,272,528	97,964
Operable Forest	**407,214**	**77,993,456**	
Non-commercial	404	427	523
Environmentally sensitive – terrain mapping	18,032	3,695,483	23,838
Environmentally sensitive – forest cover	25,831	4,534,726	129,376
Sites with low growing potential	41,046	6,055,369	75,316
Unmerchantable	4,302	545,492	23,896
Community watershed intakes	6	1,256	8
Riparian	6,961	2,033,867	9,651
Existing roads, trails, and landings	4,380	615,908	5,331
Spruce Lake protected area OIC	12,912	4,171,145	20,811
Cultural heritage resources,	984 235	667	1,770
Total Reductions	*114,858*	*21,88 9,340*	
Current Timber Harvesting Land Base	**292,357**	**56,104,116**	
Less future roads	18,207		
Future Timber Harvesting Land Base	**274,150**		

(1) These values represent the total area of the land base that meets the criteria for the removal at each step, regardless of area removed previously

Description of Tree Farm Licence 18

Tree Farm Licence (TFL) 18 is held by Canadian Forest Products Limited (Canfor). In 2004, Canfor acquired Slocan Forest Products Ltd who previously held the TFL.

TFL 18 is located in central British Columbia (BC) in an area known as the North Thompson region. The TFL is located west of the town of Clearwater and Canfor's mill in Vavenby, and south of Wells Gray Provincial Park. The TFL is administered by the BC Forest Service (BCFS) having an office based in Clearwater, within the Southern Interior Forest Region.

The total land base within the TFL boundary is 74 542 hectares, with a high percentage considered productive forest (90 percent). The majority of the TFL area is characterized by high-elevation plateau with gently rolling terrain. Numerous small lakes and swamp complexes are located within the TFL. Three biogeoclimatic zones occur: the Engelmann Spruce-Subalpine Fir zone, which occupies about 51 percent of the TFL, the Sub-Boreal Spruce which occupies 32 percent, and the Interior Cedar-Hemlock zone representing about 16 percent of the area.

The main commercial tree species are Engelmann and white spruce, lodgepole pine, subalpine fir (also known as balsam), Douglas-fir, western hemlock, and western red cedar.

Forestry is the principal employment sector in the North Thompson region. Also significant are the tourism, ranching and transportation sectors. Road access is provided by provincial Highway 5, which serves the North Thompson region including Wells Gray Park. There is also a connecting railway that is used to transport forest products from local processing facilities.

Description of the Area for the Nicola Thompson Fraser SFM Plan

The Nicola Thompson Fraser Plan area is situated in the southern interior, east of the Coast Mountains and encompassing the Thompson-Okanagan Plateau. The area extends south to the Canada-USA border and northward to Wells Gray Provincial Park. The overall Plan area follows the administrative boundaries of the Kamloops, Merritt, and Lillooet Timber Supply Areas.

The topography of Nicola Thompson Fraser is one of sharp contrasts, from dry hot grasslands to wet areas and rugged mountains. The Nicola and Thompson Rivers join to meet the Fraser River within the Plan area. In the northern portion of the area, the North Thompson River is bounded by the high peaks of the Monashee and Cariboo Mountains. Wet conditions, with high snowfalls, are the norm. In the central and southern portion, the mountains give way to high plateaus dissected by steep valleys and dotted with lakes and rivers. The landscape continues to become drier and gentler, with rolling uplands and numerous lakes. The dense forests of the north give way to mixed pine and pine-fir forests with grasslands in the river valleys. The western boundary is influenced by the Coastal Mountains, where wet coastal conditions predominate.

Approximately 39 percent of the total area of the combined area comprises the long term timber harvesting land base. The table below provides summary information from the preceding TSA tables and that of TFL 18.

Land base summary for the SFM Plan Area.

	Kamloops	TFL 18	Lillooet	Merritt	Plan Area
Total Area (ha)	**2,770,266**	**74,542**	**1,125,025**	**1,130,282**	**5,100,115**
Non-crown	378,315		166,313	210,130	754,758
Non-productive, non-forest	356,420	5,847	453,534	107,467	923,268
Productive Forest (ha)	**2,046,659**	**67,315**	**504,774**	**812,685**	**3,431,433**
Parks, protected areas, OGMA's, reserves	699,300	795	20,811	15,935	736,841
Inoperable	96,471		97,964	105,676	300,111
Environmentally Sensitive	66,656	39	43,863	66,406	176,964
Existing Roads	28,553	1402	4,380	17,428	51,763
Low site, reforestation potential	30,138	901	41,046	45,011	117,096
Non-merchantable stands	79,435	175	4,302		83,912
Riparian	21,527	1,991	6,961	50,939	81,418
Long Term THLB (ha)	**1,009,305**	**63,184**	**292,357**	**624,123**	**1,988,969**

Based on licenced volume allocations, the participating licencees have forest management responsibility for just over 50% of the total Plan area. In addition, licencees certified to the Sustainable Forestry Initiative (SFI) forest certification program contribute to SFM objectives and are of low risk to impact the successful achievement of this Plan's objectives. The table below reveals volume allocation by management unit, volume allocation for each of the company specific Defined Forest Areas (for individual CSA certification purposes) and volume allocation of all Program for the Endorsement of Forest Certification (PEFC) certified organizations.

AAC apportionment summary for the SFM Plan Area.

	AAC (m^3)	Percent
Management Unit		
Kamloops	4,000,000	52.1
TFL 18	290,000	3.8
Lillooet	570000	7.4
Merritt	2,814,171	36.7
Total Plan Area	**7,674,171**	**100**
Volume allocation participating licencees	**AAC (m^3)**	Percent of Plan Area (based on volume)
Ardew DFA	148,969	1.9
Aspen DFA	1,070,285	13.9
BCTS DFA	1,359,712	17.7
Canfor DFA	489,138	6.4
Gilbert Smith DFA	61,940	0.8
Tolko DFA	811,206	10.6
	3,941,250	**51.4**
Volume allocation SFI certified licencees		
Ainsworth, Interfor, West Fraser, Weyerhaeuser	1,559,125	20.3
Long Term THLB (ha)	**5,500,375**	**71.7**

Maps for the Cascades, Headwaters and Kamloops Forest Districts can be found at the websites:

Cascades - http://www.for.gov.bc.ca/dcs/geomatics/maps_dcs.htm
Headwaters - http://www.for.gov.bc.ca/dhw/DHW_Maps.htm
Kamloops - http://www.for.gov.bc.ca/dka/Maps.htm

The Defined Forest Area (DFA) for Ardew's operating areas fall within the Merritt Timber Supply Area (TSA). The DFA for Canfor and Gilbert Smith's operating areas are within the Kamloops TSA. Tolko's DFA includes operating areas within the Kamloops and Merritt TSA. Finally, the DFA for Aspen and BCTS includes operating areas in the Kamloops, Lillooet, and Merritt TSAs. The boundary of the DFA is specified in the licencees' geographic information system (GIS) inventory. A map of the area, depicting the Licencees primary operating areas, is shown in Appendix 1. In order to generate a legible map for the SFM Plan, land ownership status is incomplete. It should be noted that private land, federal land, and other reserves are not part of the DFA. Licencees have access to more detailed mapping that can identify ownership should their be an interest in looking at a refined map area of their specific DFA.

The scope of the DFA by company includes Crown land within the following agreements (includes Licences issued to others with management responsibilities assigned to the Company):

Ardew Wood Products	Forest Licence (FL) A18039, A55524 and A65442
Aspen Planers	FL A18695, A75062, A18700, A18701, A81042, A81043, and Logan Lake Community Forest Licence CFAK2E. Also for A65006, all cutting permits managed by Aspen including all those under the authority of Aspen's FSP ID# 76 (as opposed to those managed independently by Stuwix). Additionally, Aspen manages numerous Forestry Licences to Cut and Non-Replaceable Forest Licences which are identified within one of two Forest Stewardship Plans – FSP ID#76 (Merritt TSA) and FSP ID#379 (Lillooet TSA).
B.C. Timber Sales	Approximately 105 BCTS operating areas scattered across the DFA, ranging in size from a few hundred hectares to several thousand hectares. Additionally, BCTS requires the ability to develop and sell timber throughout the three TSAs to meet government' timber pricing objectives.
Canadian Forest Products	FL A18688, TFL 18
Gilbert Smith Forest Products	Additionally, Gilbert Smith may manage other Licenses (i.e. Non-Replaceable Forest Licences) which are identified in its Forest Stewardship Plan – FSP ID#141 (Kamloops TSA).
Tolko Industries	FL A18696, A18697, A74911 A18686, A84658 Additionally, Tolko manages other Licenses (i.e. Non-Replaceable Forest Licences) which are identified within it's Forest Stewardship Plan(s) – FSP ID#103 (Merritt TSA) and FSP ID#116 (Kamloops TSA).

The above referenced forest tenures provide the participating licencees the authority to access and harvest trees on Crown land along with responsibilities for forest planning, reforestation, and road maintenance. Management plans, including Forest Stewardship Plans are developed for most of the Licences or allocations listed in the above table. Results and strategies that align with government objectives are identified in these plans and guide how the tenures are managed. The implementation of these results and strategies are described as inputs into the Timber Supply Review process. A separate, unique management plan is developed for area-based tenures such as that for TFL 18. Located with the Plan area are other forest and non-forest tenure holders that occupy or manage natural resources. The participating licencees understand that the Crown has issued multiple tenures on the land base and where this has occurred the licencees recognize and respect those other tenures.

In addition to the listed licences, there may be other licences that are assigned to participating Licencees within the Plan area through such mechanisms as Non-Replaceable Forest Licences or Forestry Licences to Cut. Where this occurs, these licences will be listed in the respective company's Forest Stewardship Plan. Activity on these licences may occur inside the Licencees primary operating areas or outside the primary areas . Annual reporting will occur for these licences where they are under the control of the participating Licencees or where the Ministry of Forests and Range has included the requirement for reporting in the licence document. Reporting data for blocks outside the primary operating area will be cutblock specific. Thus inventory reporting information will be restricted to the primary operating areas only, however for reporting of block specific targets (such as area in permanent access structures) reporting will be for the entire DFA (activities within primary operating areas and block specific activities outside the primary area).

2.2 Communities

The Nicola Thompson Fraser Plan area is made up of the Kamloops, Merritt, and Lillooet Timber Supply Areas (TSAs) as well as TFL 18. A brief description of the communities within these areas follows (information taken from most current Timber Supply Review public discussion papers):

Kamloops

Almost 80% of the area's residents live in the City of Kamloops. Other communities include Ashcroft, Cache Creek, Savona, Chase, and Logan Lake in the south, and Barriere, Blue River, Avola, Clearwater, Little Fort, and Vavenby in the north. The 2006 Census data indicate a total population of 107,298 people residing in the TSA, a 5% increase from 1996.

Merritt

The major population centres are Merritt and Princeton, where about 60% of the TSAs population reside. Smaller communities include Tulameen, Brookmere, Missezula Lake, Douglas Lake, Lower Nicola, Osprey Lake, and Allison Lake.

Lillooet

Lillooet is the largest community in the TSA. As of the 2006 census, the District of Lillooet had an estimated population estimate of 2,324 people. Including the surrounding communities that use Lillooet as their trading centre, the total is estimated at 5,000. Several smaller communities occur within the TSA including Seton Portage/Shalalth, Xaxli'p, Lytton, Pavilion, Spences Bridge, Bralorne, and Gold Bridge.

2.3 The Natural Resources

The forests of the Nicola Thompson Fraser provide numerous natural resource values, including forest products, forage, mineral, fish, wildlife, and recreation and tourism opportunities. Extensive grassland and forested areas provide forage vegetation for both livestock and wildlife.

Parks, recreation areas and other Crown lands provide the setting for a host of activities including camping, hiking, wildlife and scenic viewing, fishing, hunting, hang-gliding, boating, river rafting, mountain-biking, four-wheel driving, ATV use, snowmobiling, and downhill, helicopter, and cross country skiing.

Major highways pass through areas of exceptional natural scenery, providing easy access to provincial parks, such as Wells Gray Provincial Park, Manning Park, Cathedral Park, and the Stein Valley Park.

The diverse ecology of the area provide habitat for a wide range of fish and wildlife species. Wildlife include black bear, moose, mule deer, elk, mountain goat, California bighorn sheep, marten, badger and over 200 bird species. Predator species such as spotted owls, grizzly bear, wolf and wolverine are also found. Many wildlife species range over large areas and some have specific habitat requirements at different times of the year. The numerous lakes and watercourses within the area also give rise to numerous fish species, including all five species of salmon, steelhead, rainbow trout, kokanee, brook trout, bull trout, and white sturgeon.

2.4 Mountain Pine Beetle

The Mountain Pine Beetle (MPB) is the most damaging insect that attacks lodgepole pine in B.C.. Beetles attack pine trees by laying eggs under the bark. When the eggs hatch, the larvae mine the phloem beneath the bark and eventually cut off the tree's supply of nutrients.

The beetles also carry a fungus that causes dehydration and inhibits a tree's natural defenses against beetle attacks. The fungus stains the wood blue or grey. Despite the discoloration, the wood remains structurally sound and can still be used for high-quality products such as sawlogs for a number of years after the tree has been killed.

Forests of mature lodgepole pine are prime habitat for the mountain pine beetle, and the beetle thrives under warm weather conditions. The Thompson Nicola Fraser Plan area has an abundance of mature lodgepole pine, and has experienced several consecutive mild winters and drought-like summers. As a result, mountain pine beetle populations have reached a level unprecedented in their recorded history. It is estimated that for the Plan area the volume of mature lodgepole pine on the timber harvesting land base exceeds 130 million m^3 – all susceptible to the pine beetle.

Management strategies have been aggressive and successful in reducing the spread of the infestation and limiting the amount of killed timber in some areas. The strategies have also assisted in securing the maximum value in pine forests that have been killed or threatened by the beetle. To this point in time most of the harvest has been concentrated on higher value stands for the recovery of sawlogs. However, this aggressive strategy has led to large harvest areas within even larger areas of natural disturbance caused by the beetle.

Going forward, additional landscape level retention strategies are urgently needed, particularly in forests consisting primarily of lodgepole pine. Areas of higher potential biological diversity need to be identified and reserved as necessary from future salvage operations looking to recover value from dead lodgepole pine.

Short of running out of suitable host trees, there is no indication the spread of the MPB infestation will slow significantly without sufficiently cold weather to kill the developing beetle brood. Temperatures need to reach -30°C in the early Fall or late Spring when the beetles are not fully in their "over-wintering state" or have sustained winter temperatures of less than -40°C to kill the brood. If the beetle is not stopped due to climatic conditions, populations will only collapse when they encounter a shortage of acceptable, mature pine. Additionally, 30 year and older pine plantations are starting to be impacted by MPB, specifically when adjacent to high beetle populations in the mature pine.

As the impacts to the SFM plan from the MPB are better understood, further refinements to this plan may be required. Provincial information related to the current MPB situation can be found at the website: http://www.for.gov.bc.ca/hfp/mountain_pine_beetle/.

Regional information related to the MPB situation can be found on the Kamloops and Cascades Forest District's forest health web pages:

Kamloops- http://www.for.gov.bc.ca/dka/Forest_Health/ForestHealth.htm

Cascades- http://www.for.gov.bc.ca/dcs/foresthealth/forest_health.htm

3.0 The Planning Process

3.1 The CSA Certification Process

The CSA Sustainable Forest Management (SFM) Standard, initially developed in 1996 and subsequently revised and improved in 2002 and again in 2009 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.

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

- Participants must develop and achieve performance measures for on-the-ground forest management, monitored through an annual public review with the input of the public and First Nations (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).

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 involvement: Performance Requirements and Measures

The CSA standards include 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:

1. Conservation of biological diversity,
2. Maintenance and enhancement of forest ecosystem condition and productivity,
3. Conservation of soil and water resources,
4. Forest ecosystem contributions to global ecological cycles,
5. Multiple benefits to society, and
6. Accepting society's responsibility for sustainable development.

Each criterion has a number of "elements" that further define the intent. The criteria and associated elements are all defined under the CSA standards and must be addressed during development of the SFM Plan. The criteria are endorsed by the Canadian Council of Forest Ministers and are aligned with international criteria. New to the CSA Standard (Z809-08 version) is the need to have specific discussion on selected forest management topics during the public participation process. Also new are the requirements for the SFM Plan to contain core indicators for nearly all of the elements.

For each set of criteria and elements, forest managers, and the advisory group must identify local values and objectives. Indicators and targets are assigned to the values and objectives to measure performance.

Discussion Items identified in the CSA Z809 Standard for each of the six SFM criteria have been reviewed and discussed as needed by the public advisory group in conjunction with the development of this SFM Plan. Detailed information on the topics discussed can be found in the meeting summaries and reference material associated with the development of this Plan.

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 SFM Plan. 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 SFM Plan.

Targets are specific short-term (one or two year) commitments to achieve identified objectives. 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 "reduction in area of the timber harvesting land base", a target might be "to have less than x percent of harvested areas in roads and landings.".

Values, objectives, indicators, and targets apply to socioeconomic and ecological criteria and may address process as well as on-the-ground forest management activities.

As part of the process of developing values, objectives, indicators and targets, the SFM Advisory Group also assisted in the development of forecasts of predicted results for indicators and targets. This information and interrelationship is further described in Section 5. **Forecasts** are the long-term projection of expected future indicator levels. These have been incorporated into the SFM Plan targets as predicted results or outcomes for each objective. Forecasting is further described in Section 5.

3.1.2 Environmental Management System Components

The CSA SFM system includes a number of processes or systems-related requirements called "systems components" as follows:

- **Commitment:** A demonstrated commitment to developing and implementing the SFM Plan.
- **Public participation:** The CSA standards require informed, inclusive, and fair consultation with the Advisory Group during the development and implementation of the SFM Plan.
- **CSA-aligned management system:** The management system is an integral part of the implementation of the SFM Plan and is designed to meet CSA standards. The management system has four basic elements: 1) Planning; 2) Implementing; 3) Checking and Monitoring; and 4) Review and Improvement. Each of the Licencees management systems have the following base components:
    - Identify environmental commitments including those within the SFM Plan.
    - Identify standard operating procedures or develop performance measures to assess and achieve environmental commitments.
    - Develop emergency procedures in the event of an incident causing environmental impact.
    - Establish procedures for training. (Providing updated information and training ensures that forestry staff and contractors stay current with evolving forest management information and are trained to address environmental issues during forestry activities.)
    - If an incident does occur, conduct an investigation or incident review and develop an action plan to correct and prevent subsequent occurrences.
- **Continual improvement:** within the context of the management system, monitoring and reviewing the system and its components continually improve the effectiveness of the SFM Plan. This includes a review of ongoing planning, and public process to ensure that the management system is being implemented as effectively as possible. SFM Plan improvements generally occur on an annual basis. Changes are generally made as a result of annual plan performance reporting and changes in science and technology. The change can be initiated by the public (often those participating in the advisory group) or by licencees (for example as a result of internal discussions that occur during their management review).

Audits and Public Review

Each year the participating licencees compile a report that summarizes results for each of the performance measures (see Appendix 3: SFM Plan reporting format). This annual report is provided to the SFM Advisory Group for review and comment. Annual monitoring of the achievement of the Plan and comparison of the actual results to forecasts will enable the effectiveness of the SFM Plan to be continually improved, in keeping with CSA standards. Additionally, participating Licencees will provide summary information of their individual results, specific to their Defined Forest Area.

The achievement of performance measures (indicators and targets) will be assessed annually through surveillance audits carried out by a registered third party auditor. The audits will determine whether the registrant has successfully implemented the SFM Plan and continues to meet the CSA Standard. Audit summaries are available to the public.

3.2 Nicola Thompson Fraser SFM Planning Process

The SFM Plan was developed by Licencees based on advice and recommendations provided by the SFM Advisory Group. The Plan is a combination of three TSA SFM Plans (Kamloops, Lillooet and Merritt) and TFL 18 located west of Clearwater. It has been developed to be in compliance with all existing legislation and policy and consistent with the strategic direction and intent of the Kamloops and Lillooet LRMPs. The licencees participate in the maintenance and continual improvement of the plan.

3.2.1 Licencee Participation

Participating Licencees operating within the Nicola Thompson Fraser SFM Plan area worked with the SFM Advisory Group to develop performance measures (values, objectives, indicators, and targets) for this SFM Plan. Having all the majority of licencees represented during the development of a single SFM Plan helped to address the complexities of overlapping licences and volume-based harvesting tenures within the Plan area. It is the intent that all participating Licencees continue to remain committed to the achievement of the Plan and the annual reporting of their performance.

The following licencees are actively involved in performance reporting and the continual improvement of the Nicola Thompson Fraser Sustainable Forest Management Plan:

- Ardew Forest Products Ltd.
- Aspen Planers Ltd.
- BC Timber Sales
- Canadian Forest Products Ltd.
- Gilbert Smith Forest Products Ltd
- Tolko Industries Ltd

Non-participating Licencees within the Plan area commit to reporting on the Plan as follows:

- Non-Replaceable Forest Licences (NRFLs)

  Licencees holding NRFLs have a limited ability to influence achievement of Targets for some SFM Plan Indicators. These licencees are committed to reporting against Targets they do influence. These licencees report against Targets 2, 5, 6, 11-12, 14, 16, 18, 20-21, 23, 27, 30, and 36.

- Small Scale Salvage Program (SSSP)

  Over the past several years, the small scale salvage operations, managed by the BC Ministry of Forests and Range, have significantly increased their operations to deal with the increasing need to salvage trees killed by Mountain Pine Beetle with this program as well as the Forests for Tomorrow program. The Ministry of Forests and Range are committed to the achievement of the Plan and will report on their performance against the Targets they do influence. The Ministry of Forests and Range Small Scale Salvage Program and the Forests For Tomorrow Program will report against the following Targets: 2, 5, 6, 12, 14, 16, 18, 20-21, 23, 27, 30, and 36.

A map of the current Licencee operating areas within the TSA can be found in Appendix 1.

3.2.2 Public Participation

SFM Advisory Groups were established during the development of the three individual Kamloops, Merritt, and Lillooet SFM Plans that existed prior to the creation of the Nicola Thompson Fraser Plan. They were formed to assist the participating licencees in developing and maintaining their SFM Plans by identifying local values, objectives, indicators, and targets and evaluating the effectiveness of each Plan.

Members of these Groups represented a cross-section of local interests including environmental organizations, forest workers, fish and wildlife, agriculture, and research specialists. An open and inclusive process was used to establish each of the public advisory groups. Local First Nations, LRMP table members and other interested community members were formally invited to participate. Periodic reviews of the membership have been made with an objective of seeking participants from underrepresented sectors. The Ministry of Forests and Range and the Ministry of Environment provide technical support to the SFM planning process including information and advice on land and resource and policy issues.

In the development of the Nicola Thompson Fraser SFM Plan, all members of these three existing advisory groups were asked to be a part of one larger advisory group to develop this Plan. The Nicola Thompson Fraser SFM Advisory Group agreed upon and is guided by a Terms of Reference (ToR) consistent with the CSA standard. The Terms of Reference specifies that the process for developing/adjusting the SFM Plan will be open and transparent. A copy of the current ToR is included as Appendix 2 of this Plan.

As part of the updating of the SFM Plan to meet the requirements of the revised 2008 CSA standard (Z809-08), considerable discussion occurred on specific topics related to the six Criteria. Where possible existing Plan indicators and their targets were used to meet requirements of newly assigned "core" indicators. Conclusions drawn from company specific management reviews also contributed to the Plan update. Potential indicators and targets suggested by the SFM Advisory Group that have not been incorporated into the SFM Plan because of either a lack of data or a means to measure the indicator are included in Appendix 5 and will be considered as part of the continual improvement process during subsequent reviews of the plan.

The SFM Plan is an evolving document that will be reviewed and revised on an annual basis with the SFM Advisory Group to address changes in forest condition and local community values.

3.2.3 Government and First Nations Participation

Government agencies participate in the SFM planning process in two roles: 1) as a forest licencee, and 2) to provide technical support to the planning process (see section 3.2.1). The Ministry of Environment also participated in the development of the initial Plan in a resource/support capacity. First Nations have had varying levels of participation in the process within the three separate SFM Plans and this has continued with the Nicola Thompson Fraser SFM Plan. They continue to be kept advised throughout Plan development.

Section 35 of the *Constitution Act* states "The existing aboriginal and treaty rights of Aboriginal Peoples of Canada are hereby recognized and affirmed". Some examples of the rights that Section 35 has been found to protect include hunting, fishing, trapping, gathering, sacred and spiritual practices, and title. This SFM planning process is in no 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.

3.3 Strategy Guiding the SFM Plan

Resource use planning in British Columbia occurs at a variety of levels ranging from strategic land use plans (LRMPs) to Landscape Unit plans to site specific plans for small areas (e.g., silvicultural prescriptions for individual cutblocks).

Strategic land use plans provide broad direction for the sustainable management of land and resources through the establishment of resource management zones (e.g., protected areas, special management areas, and general resource management zones), management objectives, and strategies to guide land and resource management activities.

Landscape Unit Plans occur at a smaller scale than strategic land use plans and are intended to ensure that biodiversity objectives identified in provincial forest legislation are met. Landscape Unit Plans address Old Growth Management Areas and wildlife tree retention.

Operational and site plans address resource management at a site specific level and are guided and often regulated by objectives and strategies in strategic land use plans and Landscape Unit plans.

In the course of these strategic level planning process plus additional analysis of sensitivities during the TSA Timber Supply Review process, alternative management strategies were evaluated against a base case. A determined strategy was selected following opportunities for public review and comment. Because Timber Supply Reviews occur for each of the three TSAs as well as TFL 18 at five year intervals, the SFM Plan area continually undergoes comparative analysis of the planned or expected outcome and the actual outcome of forest management strategies. The selected strategies that define the outcome of the Timber Supply Reviews become in essence, the management plan for the specific management unit (TSA or TFL).

The Nicola Thompson Fraser SFM Plan is aligned with the strategic direction of the most current version of these management unit plans. The plans, in conjunction with Timber Supply Reviews, both guide and forecast sustainability. SFMP strategy recognizes the Goals, Objectives and Strategies in these strategic plans, which support achievement of sustainable forest management. The SFMP strategy includes appropriate communication with and consideration for First Nations, Public and Integrated Resource Management interests. A SFMP strategy is to choose appropriate indicators to confirm forest management practices are aligned with the Goals and Objectives of higher level plans. The SFMP utilizes indicators and targets that:

- reflect key goals, objectives and direction of the strategic plans
- address the Canadian Council of Forests Ministers Criteria and CSA defined Elements
- are within the purview of the forest industry to influence and manage

A set of strategies has been developed to achieve the SFMP objectives and targets. These strategies document the relevance of the Indicator to the SFMP and sustainability, and summarize actions required to meet the target. Applicable strategies are documented by indicator/target in Section 5 of the SFMP. More extensive information is provided in Section 6 for many of these strategies.

4.0 Values and Objectives

The SFM Advisory Group 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. SFM Plan indicators (core and local) and their targets are described in Section 5. A summary table showing all criteria and elements and associated local values, objectives, and indicators is provided in Appendix 3.

Criterion 1: Biological Diversity

Conserve biological diversity by maintaining integrity, function, and diversity of living organisms and the complexes of which they are part.

Element 1.1: Ecosystem Diversity

Conserve ecosystem diversity at the stand and landscape levels by maintaining the variety of communities and ecosystems that naturally occur in the DFA.

Description of Local Values	Description of Objectives	Indicators & Targets
Healthy, functioning ecosystems that support natural processes.	Healthy, connected ecosystems with a representation of natural attributes.	1.1.1, 1.1.2, 1.1.3, 1.1.4

Element 1.2: Species Diversity

Conserve species diversity by ensuring that habitats for the native species found in the DFA are maintained through time, including habitats for known occurrences of species at risk.

Description of Local Values	Description of Objectives	Indicators & Targets
Abundance and distribution of habitat to conserve populations of native flora and fauna	Maintain a variety of habitats for naturally occurring species. Use practices to reduce the spread of invasive plant populations within forested ecosystems	1.2.1, 1.2.2, 1.2.2, 1.2.4

Element 1.3: Genetic Diversity

Conserve genetic diversity by maintaining the variation of genes within species and ensuring that reforestation programs are free of genetically modified organisms.

Description of Local Values	Description of Objectives	Indicators & Targets
Genetic diversity within all native tree species	Maintain genetic diversity of all tree species native to the DFA	1.1.2, 1.1.3, 1.2.3

Element 1.4: Protected Areas and Sites of Special Biological and Cultural Significance

Respect protected areas identified through government processes. Co-operate in broader landscape management related to protected areas and sites of special biological and cultural significance.

Identify sites of special geological, biological, or cultural significance within the DFA, and implement management strategies appropriate to their long-term maintenance.

Description of Local Values	Description of Objectives	Indicators & Targets
Appropriate management of protected areas and sites of special geological, biological, and/or cultural significance.	Protected areas and sites of special significance are identified and appropriately managed.	1.4.1, 1.4.2, 1.4.3

Criterion 2: Forest Ecosystem Condition and Productivity

Conserve forest ecosystem condition and productivity by maintaining the health, vitality, and rates of biological production.

Element 2.1: Forest Ecosystem Resilience

Conserve ecosystem resilience by maintaining both ecosystem processes and ecosystem conditions.

Description of Local Values	Description of Objectives	Indicators & Targets
Sustainable forest ecosystems	Forest management does not compromise forest ecosystem resilience	2.1.1

Element 2.2: Forest Ecosystem 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.

Description of Local Values	Description of Objectives	Indicators & Targets
Productive, well functioning forest ecosystems	Well functioning connected ecosystems that are managed for timber and non timber forest values	2.2.1, 2.2.2, 2.2.3

Criterion 3: Soil and Water

Conserve soil and water resources by maintaining their quantity and quality in forest ecosystems.

Element 3.1: Soil Quality and Quantity

Conserve soil resources by maintaining soil quality and quantity.

Description of Local Values	Description of Objectives	Indicators & Targets
Conservation of soil quality and quantity	Maintain productive capacity of forest soils. Minimize compaction and detrimental disturbance	3.1.1, 3.1.2

Element 3.2: Water Quality and Quantity

Conserve water resources by maintaining water quality and quantity.

Description of Local Values	Description of Objectives	Indicators & Targets
Conservation of water quality and quantity.	Water quality and quantity that maintains pre-existing conditions and supports communities (human and ecological) and aquatic life	3.2.1, 3.2.2, 1.2.4, 2.2.3

Criterion 4: Role in Global Ecological Cycles

Maintain forest conditions and management activities that contribute to the health of global ecological cycles.

Element 4.1: Carbon Uptake and Storage

Maintain the processes that take carbon from the atmosphere and store it in forest ecosystems.

Description of Local Values	Description of Objectives	Indicators & Targets
Healthy, functioning ecosystems that support natural processes	Conduct forest activities to maintain ecological processes that facilitate carbon uptake and storage • actively growing, healthy forests • maintain natural sources of nutrient cycling	4.1.1, 2.1.1

Element 4.2: Forest Land Conversion

Protect forestlands from deforestation or conversion to non-forests, where ecologically appropriate.

Description of Local Values	Description of Objectives	Indicators & Targets
Maintenance of the forest land-base	Minimal loss of forest land within the DFA	2.2.1

Criterion 5: Economic and Social Benefits

Sustain flows of forest benefits for current and future generations by providing multiple goods and services.

Element 5.1: Timber and Non-Timber Benefits

Manage the forest sustainably to produce an acceptable and feasible mix of both timber and non-timber benefits. Evaluate timber and non-timber forest products and forest-based services.

Description of Local Values	Description of Objectives	Indicators & Targets
A sustainable flow of timber and non-timber benefits that contribute to quality of life	Manage forests for timber values and prosperous forest-based industries while conserving or enhancing non-timber values	5.1.1

Element 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.

Description of Local Values	Description of Objectives	Indicators & Targets
Sustained social and economic stability and vitality of all local communities	A productive forest resource that maintains a continual and balanced flow of benefits	5.2.1, 5.2.2, 5.2.3, 5.2.4

Criterion 6: Society's responsibility

Society's responsibility for sustainable forest management requires that fair, equitable, and effective forest management decisions are made.

Element 6.1: 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 rights.

Description of Local Values	Description of Objectives	Indicators & Targets
Aboriginal title and rights and treaty rights	Recognition of Aboriginal title and rights and treaty rights as related to forest management	6.1.1, 6.1.2, 6.1.3

Element 6.2: Respect for Aboriginal Forest Values, Knowledge, and Uses

Respect traditional Aboriginal forest values, knowledge and uses as identified through the Aboriginal input process.

Description of Local Values	Description of Objectives	Indicators & Targets
Aboriginal title and rights, treaty rights and traditional knowledge are respected	Manage and/or protect important archaeological sites (as interpreted by First Nations) a. Cultural, archaeological, and heritage sites and values, including spiritual. b. Use of traditional knowledge. c. Meaningful and informed participation of First Nations	6.2.1

Element 6.3: Forest Community well-being and resilience

Encourage, co-operate with, or help to provide opportunities for economic diversity within the community.

Description of Local Values	Description of Objectives	Indicators & Targets
Economic benefits to society	A prosperous forest based economy with a sustainable supple of forest resources	6.3.1, 6.3.2, 6.3.3

Element 6.4: 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.

Description of Local Values	Description of Objectives	Indicators & Targets
Recognition of advisory group values, shared knowledge, and informed decisions	Engaged, dynamic public participation process	6.4.1, 6.4.2, 6.4.3

Element 6.5: Information for Decision-Making

Provide relevant information and educational opportunities to interested parties to support their involvement in the public participation process, and increase knowledge of ecosystem processes and human interactions with forest ecosystems.

Description of Local Values	Description of Objectives	Indicators & Targets
Opportunities to increase knowledge and understanding	A wide range of public educational opportunities. Adaptive forest management is responsive to research, experience and public input	6.5.1, 6.5.2

5.0 Indicators and Indicator Matrices

In an SFM Plan 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 SFM Plan for the Nicola Thompson Fraser area. Core indicators prescribed within the latest CSA standard (Z809-08) have been integrated into the Plan using the numbering system found within the standard. 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 SFM Plan. 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.

Licencees monitor the achievement of targets annually. Monitoring procedures for each target in the SFM Plan are described below. Management strategies provide further direction to the performance measures (indicators and targets) and serve as a guide for licencees in their annual monitoring activities. The format individual licencees use to complete annual reporting is shown in Appendix 3.

Provincial Forecasting Related to the SFM Plan

Provincial Level Timber Supply Analysis of regulatory requirements of the Forest Practices Code occurred in February, 1996. The analysis reviewed timber supply impacts of Code requirements related to: riparian management areas, biodiversity at the stand and landscape level, watershed assessment sensitivity, identified wildlife species at risk, soil conservation, and visual quality management.

The harvest level impact related to biodiversity and riparian management was based on analysis using the BC Forest Service Simulation Model (FSSIM). Impact assessments related to remaining Code requirements were based on professional estimates. Analysis was then completed at both the provincial and regional levels to determine the short-term effects of the FPC requirements.

Regional Forecasting Related to the SFM Plan

The land use planning process in Kamloops and Lillooet provided for multiple accounts analysis assessing the social, economic and environmental impacts of different scenarios depicting differing combinations of management alternatives. The analysis assisted LRMP table members in understanding impacts of different management alternatives in their goal to seek plan approval in principle. These predictions made in the multiple accounts analysis are incorporated into the indicator matrix where applicable.

In addition, forecasting of strategies occur on the Plan area once every 5 years as part of Timber Supply Reviews (separate reviews for each of the Kamloops, Lillooet, and Merritt Timber Supply Areas as well as for TFL 18).

The most recent Timber Supply Area Rationale for AAC Determination, (Kamloops -June 1st, 2008, Lillooet – May 1st, 2009, Merritt July 1st, 2005) included sensitivity analysis around IRM objectives. 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 making his 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 preceeding TSR discussion papers for each of the TSRs. Further information pertaining to assumptions and analysis can be found within the Chief Foresters Rationale for AAC Determination for the Kamloops, Lillooet, and Merritt TSAs and TFL 18 can be found on the government's Timber Supply Review website.

Additional Guidance

The Licencees are guided by the regulations, laws and policies established by the federal, provincial, and municipal governments. Adherence to federal and provincial laws assists the licencees in demonstrating sustainable forestry. Compliance with legislation, together with conformance to the SFM Plan Indicators and Targets, leads to the achievement of the SFM Plan's vision statement. As well, within this Plan area, higher level plans guide forest management. The licencees strive to meet the intent of any approved land use plans, derived from extensive public input. Licencees are obligated to incorporate results and strategies into their Forest Stewardship Plans that meet the resource objectives set by government under the Forest and Range Practices Act.

Public participation and input into forest operations is a key component of the participating licencee's social Licence to operate on Crown land. The licencees have policies to help control and regulate their performance and guide its direction relative to environmental and forest management.

The direction in legislation and corporate policies (noted above) guide the licencee's strategies for managing its forest operations to provide high quality fibre over the long term. At the same time, legislation and licencee policies help to manage and balance the landscape for biological diversity, global cycles, soil, water and social responsibility. The Nicola Thompson Fraser Sustainable Forest Management Plan public participation process assists to further refine information and clarify concerns of the local public. Incorporating these concerns and ideas into the licencee's operations through the established performance measures and ongoing monitoring will ensure long-term sustainability of the forest resource. Any indicators established in this Sustainable Forest Management Plan that are conducive to long term projections are as noted below. Section 6 describes the plans, policies and management strategies that support the achievement of the targets in the SFM Plan.

Indicators and Targets

The following matrices are used to provide linkages between SFM Elements, Indicators and Targets. The also provide detail for the indicators and targets, specifying strategies, forecasts, and monitoring of targets. In some cases, indicators (core and non-core) are used to demonstrate performance against different SFM Elements. Targets are often used repeatedly for different indicators– even when indicators/targets are not repeated, this does not imply any limitation of their applicability to other elements. Individual licencees will determine their staff's specific reporting responsibilities for the indicators/targets. In general, Canfor's TFL 18 area is not specifically identified in the indicators – for the purpose of defining the broad areas associated with indicators, references to Kamloops or the Kamloops TSA do include the TFL 18 area.

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 that from the previous SFM Plan. In some instances, particularly in the case of newly developed indicators, a baseline might be difficult to establish and thus be absent in the SFM Plan. In those situations, baseline information will become available through subsequent monitoring reports.

Current Status

Current status of each indicator will be as reported and updated in annual SFM Plan performance reporting. To obtain current information please refer to the most recent monitoring report at the website:

Kamloops TSA: www.kamloopssustainableforestry.ca

Lillooet and Merritt TSAs:
http://www.for.gov.bc.ca/dcs/sustainable_forestry/sustainable_forestry.htm

Indicator	**1.1.1 Ecosystem Area by Type**
Element(s)	1.1 Ecosystem Diversity
Strategy(s) Description	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. 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) rather than by age and type of structures as derived from classic forest inventories. The biogeoclimatic ecosystem classification (BEC) used throughout BC is an integrated hierarchical classification scheme that combines climate, vegetation and site classifications. Within the Kamloops, Lillooet and Merritt TSAs, BEC mapping has occurred down to the subzone level (a combination of ecological features, primarily climate and physiography). The broad biogeoclimatic (zonal) units are used in such applications as: • Seed zones • Protected area planning • Land management planning • Forest pest risk • Natural disturbance types • Wildlife habitat management This broad classification is used in combination with detailed site information to derive site series classification—a level that provides operational guidance. Common interpretations for each site series include: a. Most suitable tree species for regeneration b. Stocking, stock type, and 'free-to-grow' standards for tree species c. Vegetation competition after harvesting d. Site limiting factors, harvest season and reforestation considerations e. Site index by tree species
Means of achieving objective and target	BEC mapping has occurred throughout the three TSAs to the subzone level. Slight changes to the area distribution of these subzones occurs when new data is collected in poorly sampled areas. Reporting at the TSA level not anticipated to be substantially different from that found at the Plan area level. Climate change may alter representation, particularly drier sites. Licencees ability to influence change is limited.
Forecast; Predicted Results or Outcome	Forest licencees will have access to and utilize BEC data to guide their strategic and operational plans. Licencee operations will not contribute to any change in the presence and representativeness of Biogeoclimatic Zones (most recent TSR for each TSA is baseline data).
Forecast	Healthy ecosystems with a diversity and abundance of native species and habitats. The greatest risk to changes in the presence and representativeness of Biogeoclimatic Zones is climate change. A detailed report on these risks - forecasting how ecological conditions may change over time with a warming climate was prepared for the Kamloops TSA in June, 2009 (Kamloops Future Forest Strategy – June 2009). Impacts were deemed to be greatest in the drier pine and fir BEC subzones (MSxk, IDFdk, IDFxh, PPxh). Similar findings would likely occur for the Lillooet and Merritt TSAs.
Target	**1.** Maintain the presence of Biogeoclimatic Zones to the subzone level within the Plan area.
Basis for the Target	The province's ecological classification system is recognized as world class. Utilizing the BEC classification system and mapping was seen to be the best way to report on the indicator. While Licencees have little influence on the presence and representative area of these BEC subzones, the classification system provides tremendous support to both strategic and operational decision making.
Legal Requirements	Use of the BEC classification system is inherent in the Forest and Range Practices Act and the Forest Planning and Practices Regulation.
Monitoring & Measurement Periodic	Part of periodic Timber Supply Review (TSR) - used to define of Analysis Units for timber supply modeling. Licencees will report the area for all Biogeoclimatic subzones as updated for the most current TSR for the TSA. Reporting to occur periodically – in the year following completion of subsequent TSR's and determination of the allowable annual cut.
Annual	N/A
Variance	None.

Indicator	**1.1.2 Forest Area by type or species composition**
Element(s)	1.1 Ecosystem Diversity, 1.3 Genetic Diversity
Strategy(s) Description	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 is maintained improves ecosystem resilience and productivity and positively influences forest health and genetic diversity. Reporting on this indicator provides information on area covered by forests, forest succession and management practices that might alter species composition.
Means of achieving objective and target	Maintain diversity of native species through individual tree and patch retention and through natural regeneration in harvested areas. Licencee plans will incorporate strategies that promote multi species regeneration and consider the potential implications of climate change.
Forecast; Predicted Results or Outcome	Target 2 78% percent of the areas declared free growing during the reporting year had three or more tree species. The average of the leading tree species was 54.3% (2006 Kamloops baseline data). The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data.
Forecast	Healthy, genetically diverse ecosystems with a mix of native species. Species composition information is utilized in the Provincial Timber Supply Review.
Target	**2.** 70 percent of areas submitted as free growing will have three or more tree species, including conifer and deciduous comprising one percent or more in the inventory label (all biogeoclimatic Zones except ESSF). Also report on the percent of first, second and third leading species for each area, then averaged for all areas. 70 percent of areas submitted as free growing will have two or more tree species, including conifer and deciduous comprising one percent or more in the inventory label (ESSF only). Also report on the percent of first, second and third leading species (where 3rd species is present) for each area, then averaged for all areas.
Basis for the Target	The need to maintain the biological diversity of forest ecosystems in managed second-growth and third-growth forests. Addresses diversity and abundance of naturally occurring tree species on the landscape.
Legal Requirements	Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	
Annual	On area (i.e. standard unit area or cutblock area) declared free growing in the reporting year, licencees will use the inventory label to determine areas having 3 or more species (non ESSF) or 2 or more species (ESSF). For those areas having 3 or more species (non ESSF), Licencees will also identify the percent of first, second and third leading species for each area, then average these for reporting on all areas.
Variance	None

Indicator	**1.1.3 Forest area by seral stage or age class**
Element(s)	1.1 Ecosystem Diversity, 1.3 Genetic Diversity
Strategy(s) Description	A balanced age class distribution provides on going habitat opportunities for all forest dwellers, some which occupy forests only when specific habitat attributes are present. Often, these attributes are time sensitive. Balanced age classes also allow for a more even flow of timber values and benefits. A reduction of the current imbalance of mature to over mature stands also reduces forest health risks. Forecasted forest age class distribution over time provides an indication of sustainability. Balanced age classes will result in a larger proportion of hectares in younger faster growing stands with a net carbon intake. Biodiversity can be affected by the disruption of natural processes. Future maintenance of biodiversity, including genetic diversity, is in part dependent upon the maintenance and connectivity of representative habitats and seral stages at the landscape and watershed level. Retention of Old Growth Management Areas (OGMA's) throughout the DFA will assist in providing a supply of late seral habitat.
Means of achieving objective and target	Maintain current harvest priority: Forest health management – harvesting attacked and susceptible stands (generally older stands) "Available" stands with the most years beyond culmination (maximum mean annual increment) The Licencees will be guided by commitments within their Forest Stewardship Plans pertaining to the retention of old forests and will look to find innovative solutions to manage for old forest attributes. There are provisions for Licencees to make changes to existing OGMA's with replacement area.
Forecast; Predicted Results or Outcome	All age classes except age class 1 have less than 8.5% area representation in each TSA. Age classes 2 to 4 will approach the 8.5% target over time (current TSR data).
Forecast	Continuation of current harvest priorities will lead to balanced age classes on the available productive forest land. Protected Area, Old Growth Management Area (OGMA), and Wildlife Tree Patch Strategies , together with inaccessible areas, ensure retention of sufficient old growth to sustain biodiversity and ecosystem objectives. Progress to age class target will be steady: In 50 years three age classes will meet 8.5% target. Retention of 195,995 ha of spatially located OGMA as referenced in the latest TSR documents.
Target	**3.** Progress towards a stable forest age class distribution on the timber harvesting land base where each age class to 80 years old [1 (1 to 20), 2 (21-40), 3 (41-60), and 4 (61 to 80)] occupies at least 8.5% of the timber harvesting land base in each of the 3 TSAs (Kamloops, Lillooet, Merritt). Three of the four age classes meet this target within 50 years for each TSA. Reporting to occur in conjunction with subsequent Timber Supply Reviews by TSA. **4.** Maintain the existing old growth management area (no net loss).
Basis for the Target	Relatively even flow of value to industry and the community
Legal Requirements	N/A
Monitoring & Measurement Periodic	**3.** Licencee report the current age class distribution as last reported by Timber Supply Review documents. Reporting to occur periodically – in the year following completion of subsequent TSR for each TSA.
Annual	**4.** Licencees report the total area of draft OGMA's within their operating area and the area of net OGMA reduction as a result of their operations.
Variance	Two age classes meet this target within 50 years (attaining target sooner than 50 years seen as a benefit).

Indicator	**1.1.4 Degree of within-stand structural retention or age class**
Element(s)	1.1 Ecosystem Diversity
Strategy(s) Description	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 interior BC (Lindenmayer and Franklin 2003, Bunnell et al. 1999). Wildlife tree patches (WTPs) 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 habitat features (i.e. 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 OGMAs to provide landscape structure to help keep landscape complexity more consistent with natural disturbance regimes. Operationally retention of wildlife trees/stubs in cutblocks is subject to worker safety considerations as specified in the WorkSafe BC requirements for wildlife and danger trees. Note that wildlife tree patches may be located outside of cutblocks, along their edge, and still be consistent with provincial policy on wildlife tree retention. Where wildlife tree stubs are left, they should form only one part of the stand level tree retention found on a cutblock.
Means of achieving objective and target	Companies will achieve targets through allocation of WTPs and dispersed retention (individual trees and stubs) during forest development planning. Company plans and practices support retention and protection of designated wildlife trees/stubs (e.g. use of no work zones, etc vs felling at the silviculture stage where appropriate). Harvest value and ecological value can be optimized by selecting the variety of tree types (e.g., species, size, live and dead, etc.) that have high ecological value and low economic value, and through the number of trees retained. An over reliance on stubs will be avoided. While suitable stubs provide some benefits, retention should be primarily WTs and WTPs. If a licencee identifies a unique feature (e.g. nesting site, rare habitat, unique landform, etc.) at anytime, best efforts will be made to incorporate the feature into planned operations.
Forecast; Predicted Results or Outcome	Ninety-one percent of harvested cutblocks greater than 10 hectares in size had Wildlife Tree Patches (WTPs) and/or individual leave trees (WT)/stubs identified in operational plans. Of these, 79% had dispersed individual trees, stubs or small patches retained (2007 baseline data).
Forecast	Healthy ecosystems with a diversity and abundance of native species and habitats. Majority of harvested areas (at least 4/5) will have habitat attributes that will help to sustain biodiversity and ecological processes.
Target	**5a.** 80 percent of cutblocks greater than 10 hectares will have individual wildlife trees/stubs and/or wildlife tree patches within the block. **5b.** Of the blocks that have individual wildlife trees/stubs and/or wildlife tree patches; at least 50 percent of the time these blocks will have dispersed individual trees, stubs or small (<0.25 ha) patches retained. Objectives for location of WTPs include: a. Inclusion of as broad a representation of site types as possible b. WTPs are anchored on any District listed wildlife habitat features where they occur c. WTPs are preferentially anchored on classified and unclassified riparian areas where they occur Desirable characteristics for stub trees include: a. Dead or defective trees (particularly if defects exist in the lower bole of the tree). b. Larger diameter trees that are more suitable for nesting
Basis for the Target	Recommended best practice. Target designed to offer diversity in approach (varying size, location, presence of Wildlife Tree Patches or Wildlife Trees)
Legal Requirements	Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	N/A
Annual	**5a.** Licencees will report, for cutblocks greater than 10 hectares, the number of cutblocks with wildlife tree patches and/or individual trees/stubs within the cutblock versus the total number of cutblocks greater than 10 ha in size upon completion of harvest, during the reporting year. **5b.** On the blocks that do have individual wildlife trees/stubs and/or associated wildlife tree patches, licencees will also report the percentage of blocks that had dispersed individual trees, stubs or small (<0.25 ha) patches. Reporting against target "5b" is limited to blocks harvested during the reporting year that had the original SP signed after January 1st, 2011.
Variance	For Targets 5a and 5b: 10%

Indicator	**1.2.1 Degree of habitat protection for selected focal species, including species at risk**[1]
Element(s)	1.2 Species Diversity
Strategy(s) Description	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 species at risk, this indicator looks at short-term habitat needs, particularly for critical and core habitats. Licencees track critical species using the data base at the Conservation Data Centre. List (see Appendix 6) will include provincial "blue" listed species and species deemed at risk from both the provincial and federal list.
Means of achieving objective and target	Licencees will achieve the strategy by fully supporting and implementing: Government's policy and legally established framework for the protection of biodiversity values and species at risk under the Forest and Range Practices Act, the Land Act (Higher Level Plans), the Wildlife Act and Amendments, the Park Act, and the Integrated Pest Management Act. This government framework includes the establishment of parks and protected areas, 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. Legal requirements the licencees adhere to include: a. Section 7 (FPPR) notice requirements until such time that all required Wildlife Habitat Areas have been approved by government. b. Legally established Objectives and/or General Wildlife Measures (GWM) for approved Ungulate Winter Range (UWR) and Wildlife Habitat Areas (WHAs). c. Objectives, strategies and practices for: a) riparian area management b) wildlife tree retention; c) coarse woody debris, and d) old growth management, as specified in approved Forest Stewardship Plans. d. Licencee obligations established under any higher level plans and the Government Action Regulations. Additional voluntary actions that participating licencees adhere to include: • Consideration of decision support tools such as published guidelines and best management practices, use of available wildlife, fish and habitat inventories etc. • Seeking expert advice from professional biologists. • Valuing advice and suggested actions brought forward by stakeholders and First Nations within the Plan area. • Conformance to strategies in licencee plans to protect a Wildlife Habitat Feature. • Achieve 100% conformance with interim agreements, as endorsed by the Province and participating licencees, respecting: a) Recovery Action Plan; b) revisions to the location of ungulate winter range and appropriate practices within these areas. These interim agreements will expire once the ungulate winter ranges and associated General Wildlife Measures are legally approved by government.
Forecast; Predicted Results or Outcome	Red listed species location were determined by 94% of Licencees (2007 Kamloops baseline data). The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data including blue listed species. All affected Licencees adhered to the management strategies for Mountain Caribou (2000 baseline data – applicable to Kamloops TSA only). All affected Licencees adhered to the management strategies for Northern Spotted Owl (2008 baseline data – applicable to Lillooet TSA only).
Forecast	Full compliance with all applicable laws governing forest planning and practices. Adoption and use of best available information and guidelines will provide an effective means for protecting biodiversity and species at risk. Within the current rotation, licencees face a number of significant challenges with respect to the protection of biodiversity and species at risk. The mountain pine beetle outbreak, for example, will certainly result in the loss of mature forested habitat for biodiversity in general, as well as habitat for species at risk. Licencees forest planning and practices promote a diversity of healthy ecosystems while maintaining "rare" attributes as well as a diversity and abundance of naturally occurring wildlife and their habitats. Through proposed protected areas and management guidelines for modified harvest zones, critical habitat for Mountain Caribou and Northern Spotted Owl will receive a higher level of preservation.

[1] List as provided by the Conservation Data Centre (for instructions on accessing the current list go to the TSA SFM website: http://thompsonokanagansustainableforestry.ca/documents.htm)

Target	**6.** Proactive habitat protection targets established in accordance with non-legally binding guidelines and best practices: • On an annual basis, obtain from the Conservation Data Centre, the known locations/occurences of Red-listed and Blue-listed species within the Plan area • Where there is a documented mapped (GPS/UTM) and field verified occurrence of a critical habitat feature (e.g. den, lick, nest) for a Red-listed or Blue-listed species, operations will achieve 100% consistency with SP measures deemed necessary by the participating licencee to prevent adverse harm. • Based on the potential level of impact to any of the 3 TSAs, participate in the consultation process led by the Ministry of Environment and the Ministry of Forests and Range, in the identification of Ungulate Winter Range and Wildlife Habitat Areas and the development of General Wildlife Measures. **7.** Affected licencees adhere to the current management strategies for mountain caribou. **8.** Affected licencees adhere to the current management strategies for northern spotted owl.
Basis for the Target	Legal obligations, use of best available information and application of resource stewardship principles. Strategies to assist in the protection of biodiversity and species at risk have been included as regulatory requirements. Under FRPA, the licencees are required to indicate results and strategies to manage objectives set by government for wildlife (including species at risk) and for biodiversity at the stand and landscape levels.
Legal Requirements	Forest and Range Practices Act; Forest Planning and Practices Regulation; Government Actions Regulation; Wildlife Act.
Monitoring & Measurement Periodic	
Annual	**6a.** Licencees report the number of cutblocks where there is a documented, mapped (GPS/UTM) and field verified occurrence of a critical habitat feature (e.g. den, lick, nest) for a Red-listed or Blue-listed species and the number of these cutblocks where 100% consistency with SP measures, deemed necessary to prevent adverse harm, were achieved. Reporting against the target is limited to blocks harvested during the reporting year that had the original SP signed after January 1st, 2011. **6b.** Licencees summarize applicable WHA, UWR or GWM consultation processes they participated in. **7.** Affected licencees will report the area (ha) harvested that is consistent with Government Action Regulation orders and/or higher level plan orders against all of the area harvested within the designated Mountain Caribou recovery strategy during the reporting year. **8.** Affected licencees will report the area (ha) harvested that is consistent with Government Action Regulation orders and/or the Spotted Owl Habitat Management Plan against all of the area harvested within designated Northern Spotted Owl habitat during the reporting year.
Variance	None, other than what is provided for within the legal framework (statutory decision makers may approve variances from standard requirements provided adequate rationale is provided and long-term objectives continue to be met).

Indicator	**1.2.2 Degree of suitable habitat in the long term for selected focal species, including species at risk**
Element(s)	1.2 Species Diversity
Strategy(s) Description	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 species at risk, this indicator looks at more long term habitat needs, particularly for critical and core habitats.
Means of achieving objective and target	Licencees will achieve the strategy by fully supporting and implementing: Government's policy and legally established framework for the protection of biodiversity values and species at risk under the Forest and Range Practices Act and Regulations, the Wildlife Act and Amendments, and the Park Act. This government framework includes the establishment of parks and protected areas, 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. It also includes specific habitat commitments for Mountain Caribou with the goal of restoring the provincial population to 2500 animals within 20 years (2007). Focal species identified and managed for long term habitat requirements include Flammulated Owl, Interior Western Screech Owl, Lewis's Woodpecker, Spotted Bat, Badger, Coastal Tailed Frog, Great Basin Gopher Snake, Spotted Owl and Grizzly Bear. These species and long term habitat requirements were first identified in government's FPPR Section 7 notices. The conservation targets for these species have been allocated at the forest district or timber supply area level. The participating licencees' responsibility will be to manage the proportionate area within the Plan area that has been identified having regard for the distribution of this unique habitat. Additionally, the Mountain Caribou Recovery Implementation Plan identified long term habitat protection within the Well Gray Thompson Planning Unit to be 429,004 ha. Orders to restrict harvesting on an additional 5,937 ha of area of forest within the Timber Harvesting Land Base (THLB) were issued in December, 2008 as well as requirements to locate 1800 ha of high suitability habitat within the modified harvest zone (Government Action Regulation Order u-3-004).
Forecast; Predicted Results or Outcome	Conserve or manage a set amount of habitat in a condition suitable for the survival of the following focal species: Flammulated Owl, Interior Western Screech Owl, Lewis's Woodpecker, Spotted Bat, Badger, Coastal Tailed Frog, Great Basin Gopher Snake, Spotted Owl and Grizzly Bear. As this is a new target, 2011 Monitoring Report results will be used to establish the baseline data. Existing Wildlife Habitat Areas and other conservation areas already provide enough suitable habitat to accommodate some of the focal species. All affected Licencees adhered to the management strategies for Mountain Caribou (2000 baseline data – applicable to Kamloops TSA only). All affected Licencees adhered to the management strategies for Northern Spotted Owl (2008 baseline data – applicable to Lillooet TSA only).
Forecast	Long term supply of critical habitat for all focal species (Flammulated Owl, Interior Western Screech Owl, Lewis's Woodpecker, Spotted Bat, Badger, Coastal Tailed Frog, Great Basin Gopher Snake, Spotted Owl, Grizzly Bear and Mountain Caribou) resulting in stable populations. Full compliance with all applicable laws governing forest planning and practices. Adoption and use of best available information and guidelines will provide an effective means for protecting biodiversity and species at risk. Licencees may be challenged to meet the desired amount of critical habitat for the selected focal species where mature forested habitat is desired, particularly in pine forests that have been severely impacted by the Mountain Pine Beetle. Through proposed protected areas and management guidelines for modified harvest zones, critical habitat for Mountain Caribou and Spotted Owl will receive a higher level of preservation.
Target	**9.** Conserve or manage within the Kamloops TSA and in the Cascades Forest District habitat for selected focal species (listed below) by retaining 100% of the amount of habitat (provided for in government's FPPR Section 7 notice) in a condition suitable for the survival of the species. <u>Kamloops TSA:</u> Flammulated Owl – 3300 ha, Interior Western Screech Owl – 60 ha, Lewis's Woodpecker – 650 ha, Spotted Bat – 120 ha, Badger – 35 ha. <u>Cascades Forest District:</u> Coastal Tailed Frog – 2793 ha, Great Basin Gopher Snake – 4000 ha, Flammulated Owl – 4050 ha, Interior Western Screech Owl – 44 ha, Spotted Owl – 5000 ha within Lillooet TSA, Spotted Bat – 16 ha, Grizzly Bear – 5211 ha (521ha impact to timber harvesting land base) in the Merritt TSA, unspecified large area having a THLB impact of 8000 ha in the Lillooet TSA. **7.** Affected licencees adhere to the current management strategies for mountain caribou. **8.** Affected licencees adhere to the current management strategies for northern spotted owl.
Basis for the Target	Habitat supply modeling done at the provincial/regional level for each of the focal species. More detail provided within the specific GAR orders and determinations.
Legal Requirements	Forest and Range Practices Act; Forest Planning and Practices Regulation; Government Actions Regulation; Wildlife Act.

Monitoring & Measurement Periodic	
Annual	**9.** For areas harvested, Licencees will report on the number of locations where the presence of the species or an occurrence site for each of the focal species was identified and the number of locations where the focal species habitat was conserved or managed. At the Kamloops TSA and Cascades District level, hectares of Wildlife Habitat Areas by focal species will be provided. **7.** Affected licencees will report the area (ha) harvested that is consistent with Government Action Regulation orders and/or higher level plan orders against all of the area harvested within the designated Mountain Caribou recovery strategy during the reporting year. **8.** Affected licencees will report the area (ha) harvested that is consistent with Government Action Regulation orders and/or the Spotted Owl Habitat Management Plan against all of the area harvested within designated Northern Spotted Owl habitat during the reporting year.
Variance	None, other than what is provided for within the legal framework (statutory decision makers may approve variances from standard requirements provided adequate rationale is provided and long-term objectives continue to be met).

Indicator	**1.2.3 Proportion of regeneration comprised of native species.**
Element(s)	1.2 Species Diversity, 1.3 Genetic Diversity
Strategy(s) Description	One of the primary management objectives for sustainability is to conserve the diversity and abundance of native species and their habitats. This objective aligns very well with the SFM Plan objectives to maintain a variety of habitats for naturally occurring species and to maintain genetic diversity of native tree species. Silviculture practices that promote regeneration of native species, either through planting or other natural programs assist in meeting these objectives. Considerable effort has been made within the province to map biogeoclimatic zones, subzones and variants. Management interpretations including the preferred and acceptable commercial tree species have been developed for all zones. The mapped zones and interpretations are periodically reviewed and updated with new information such as that developed by the Kamloops Future Forest Strategy (incorporating climate change forecasts into changing future ecological conditions).
Means of achieving objective and target	Licencee plans will contain reforestation prescriptions that ensure that naturally occurring species are planted. This information is contained within the stocking standards of their Forest Stewardship Plans.
Forecast; Predicted Results or Outcome	Where planting is prescribed, native species will be planted on all areas following harvest. As this is a new target, 2011 Monitoring Report results will be used to establish the baseline data.
Forecast	Diversity and abundance of naturally occurring tree species on the landscape. Native species are maintained at endemic and sustainable levels. Species composition information is utilized in the Provincial Timber Supply Review.
Target	**10.** 100% of trees planted will conform to plan commitments related to the species requirements within approved stocking standards (requires reforestation with commercially valuable and ecologically suitable tree species).
Basis for the Target	Demonstrate that reforestation performance meets government objectives and that of the NTF SFM Plan.
Legal Requirements	Forest and Range Practices Act; Forest Planning and Practices Regulation.
Monitoring & Measurement Periodic	
Annual	Licencees will report the number of hectares where trees were planted with species appropriate to the site as outlined in the stocking standards of their Forest Stewardship Plan. Additionally, Licencees will report the total number of hectares where planting occurred.
Variance	None, other than what is provided for within the legal framework (statutory decision makers may approve variances from standard requirements provided adequate rationale is provided and long-term objectives continue to be met).

Indicator	**1.2.4 Grass seeding application on newly constructed roads (non-core indicator).**
Element(s)	1.2 Species Diversity, 3.2 Water Quality and Quantity
Strategy(s) Description	Prompt revegetation of road cuts and fill slopes will minimize potential for soil movement and sedimentation. This will contribute to maintenance of water quality and long-term productivity of the land and help to control the spread of invasive plants – the second SFM Plan objective under Species Diversity. Certified seed has a higher assurance of pure seed without contaminants.
Means of achieving objective and target	Timely revegetation of exposed soils on newly constructed road cut and fill slopes is completed per licencee plans.
Forecast; Predicted Results or Outcome	Road cuts and fill slopes were seeded or planted on average within 3.4 months of disturbance, compared to a target of 12 months (2000 baseline data for Kamloops). Road cuts and fill slopes were seeded or planted on average within 5.9 months of disturbance, compared to a target of 12 months (2005 baseline data for Merritt).
Forecast	Timely revegetation of exposed soils on newly constructed road cut and fill slopes will reduce the potential for soil movement and sedimentation thereby contributing to the maintenance of water quality. Application of certified grass seed will reduce invasive plant establishment.
Target	**11.** All planned road cut and fill slope seeding application will be carried out using certified seed and within 12 months of completed road construction on disturbed sites suitable for germination.
Basis for the Target	Legal Requirements. Reduce soil erosion and sedimentation delivery into streams, and reduce invasive plant establishment.
Legal Requirements	Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	
Annual	Licencees will report the use of certified seed and the average time for road cut and fill slope seeding application on areas of new road construction during the reporting year.
Variance	3 months

Indicator	**1.4.1 Proportion of identified sites with implemented management strategies**
Element(s)	1.4 Protected Areas and Sites of Special Biological and Cultural Significance.
Strategy(s) Description	The forest licencees participated in higher level and strategic planning that delineated a series of protected areas and spatially located old growth management areas with the three TSAs. This achieved the geographic and ecological goals of the provincial Protected Areas Strategy, providing representation of the cross-section of ecosystems and of old forest attributes. Logging, mining and hydroelectric development are generally 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. While incursions into OGMAs are tolerated, the participating licencees are committed to replacing any OGMA area with areas of suitable attributes. Targets for this indicator include sites identified primarily for their biological/ecological significance. 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: • 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 (OGMAs) or Wildlife Tree Patches (WTPs). Location of potentially rare ecosystems is unlikely to be facilitated by Terrestrial Ecosystem Mapping or Predictive Ecosystem Mapping as they do not map at a scale sufficient to detect rare site series. Consequently, the strategy will be applied at the stand level through identification of rare sites or rare habitat in the SP process and through the application of retention (see Indicator 1.1.4). Site plans will be written to help ensure that operational activities do not impact the potential contribution that these rare site provide.
Means of achieving objective and target	Licencee objectives are to manage the attributes of those ecosystems that are truly rare within their defined forest area. This requires analysis beyond the broad information that can be located at the B.C. Conservation Data Centre. The work has been completed for the Kamloops area, but not for Merritt. In the Lillooet area a local forest ecologist identified rare landscape units within the TSA. Because of the varying availability of rare ecosystem data sets, separate targets have been identified for each of the three TSAs. <u>Kamloops</u> Ecological zones have been prioritized for rare ecosystem assessment based on the following; a. number of CDC listed rare ecosystems (Red-listed ecological communities[2]) within the variant, b. the proportion of the provincial extent of the BEC variant in the TSA, and c. the proportion of the BEC variant in the TSA that is in the Non-THLB. For those prioritized BEC variants/site series with Red-listed ecological communities higher levels of WTPs and OGMAs[3] will be planned (i.e. beyond legislation and policy targets). WTPs or other reserves will favor older seral stages. For the remaining BEC variants/site series lower levels of WTPs and OGMAs will be planned (i.e. below legislation and policy targets). Retention to protect rare ecosystems should be designed to complement the existing Non-THLB reserves wherever possible. If a licencee identifies a rare ecosystem at anytime, best efforts will be made to incorporate the ecosystem into planned operations. <u>Lillooet</u> The target is refined by reporting by rare Landscape Unit / Biogeoclimatic Zones. Rare Landscape Unit / Biogeoclimatic Zones are areas that are uncommon on the landscape[4]. This indicator will provide information on the level of disturbance that occurs within the identified areas. This indicator also reports on the area of rare Landscape Unit / Biogeoclimatic Zones actually harvested both within the THLB and non-THLB areas. <u>Merritt</u> Refer to previously identified means provided for Indicator 1.2.1.
Forecast; Predicted Results or Outcome	<u>Kamloops:</u> Out of 280 cutblocks harvested (with original SPs signed after January 1st, 2007) there were two instances where documented Red-listed communities occurred and in both cases (100%) the substantial part of the identified occurrence was included in WTP's (2007 baseline data). <u>Lillooet:</u> There has been no logging in rare landscape unit / biogeoclimatic variant combinations in the Lillooet TSA since the inception of this indicator (2004-2009 reporting). <u>Merritt:</u> The 2011 Monitoring Report results for the NTF Plan area (Merritt TSA only) will be used to establish the combined baseline data including blue listed species.

[2] Refer to Appendix 7 for a list and description of prioritized red listed ecological communities

[3] Recognizing there is potential to move OGMAs to include red or blue listed ecosystems.

[4] Suggested by a local Forest Ecologist with extensive field experience in the Lillooet TSA (Jones 2004).

Forecast	A diversity of ecosystems while maintaining "rare" attributes, as well as a diversity and abundance of naturally occurring wildlife and their habitats. Through proposed protected areas and management guidelines for low intensity zones rare habitats will receive a higher level of preservation. Rare ecosystems should be maintained in an undisturbed state to ensure that the potential rare plants and/or communities found within them are not lost due to disturbance. Licencees forest planning and practices promote a diversity of healthy ecosystems while maintaining "rare" attributes as well as a diversity and abundance of naturally occurring wildlife and their habitats.
Target	**12 (Kamloops TSA only).** Prioritized Red-listed ecological communities will be protected with retained existing forest. a. Where the ecological community is "documented, mapped (GPS/UTM) and field verified" for the cutting permit or TSL area where operations are being planned and: a. the ecological community represents less than 10% of the cutting permit or TSL area, then the majority of the identified occurrence is protected. b. the ecological community is greater than 10% of the gross area of either tenure noted above, then WTP placement will be weighted towards those communities. b. Where the ecological community is not well documented (i.e. ecological mapping at the site series level is not available), the prioritized list of Red-listed ecological communities is used as a support tool to weight WTP placement, or other reserves, to the applicable site series in the block. **13 (Lillooet TSA only).** Harvesting not to exceed greater than 50% of the total of each identified rare landscape unit / BEC zone variants. **Merritt TSA-utilizes existing target #6.** **6.** Proactive habitat protection targets established in accordance with non-legally binding guidelines and best practices: • On an annual basis, obtain from the Conservation Data Centre, the known locations/occurences of Red-listed and Blue-listed species within the Plan area • Where there is a documented mapped (GPS/UTM) and field verified occurrence of a critical habitat feature (e.g. den, lick, nest) for a Red-listed or Blue-listed species, operations will achieve 100% consistency with SP measures deemed necessary by the participating licencee to prevent adverse harm. • Based on the potential level of impact to any of the 3 TSAs, participate in the consultation process led by the Ministry of Environment and the Ministry of Forests and Range, in the identification of Ungulate Winter Range and Wildlife Habitat Areas and the development of General Wildlife Measures.
Basis for the Target	Legal obligations, use of best available information and application of resource stewardship principles. Proactive measure to identify and conserve Red-listed ecological communities.
Legal Requirements	Forest and Range Practices Act, Operational Planning and Practices Regulation
Monitoring & Measurement Periodic	
Annual	**12 (Kamloops).** a. Licencees report the number of cutblocks where occurrence of ecosystems identified as "prioritized Red-listed ecological communities" was "documented", and the number of these cutblocks where the Target was met. b. Licencees report the number of cutblocks where non-documented ecosystems identified as "prioritized Red-listed ecological communities" occurred, and the number of these cutblocks where the Target was met. A rationale is provided for each cutblock where the Target is not met. Reporting against targets 2a and 2b is limited to blocks harvested during the reporting year that had the original SP signed after January 1st, 2007. **13 (Lillooet).** Licencees report the area harvested annually by Rare Landscape Unit and Biogeoclimatic Zone (separately for THLB and non-THLB) for the six identified sites – all in Aspens operating area. **6 (Merritt).** Licencees report the number of cutblocks where there is a documented, mapped (GPS/UTM) and field verified occurrence of a critical habitat feature (e.g. den, lick, nest) for a Red-listed or Blue-listed species and the number of these cutblocks where 100% consistency with SP measures, deemed necessary to prevent adverse harm, were achieved. Reporting against the target is limited to blocks harvested during the reporting year that had the original SP signed after January 1st, 2011.
Variance	**12b** target to be met on at least 90% of cutblocks where ecosystems identified as "prioritized Red-listed ecological communities" occurred. For remaining targets there is no variance other than what is provided for within the legal framework (statutory decision makers may approve variances from standard requirements provided adequate rationale is provided and long-term objectives continue to be met).

Indicator	**1.4.2 Protection of identified sacred and culturally important sites**
Element(s)	1.4 Protected Areas and Sites of Special Biological and Cultural Significance.
Strategy(s) Description	This indicator recognizes the importance of managing and protecting culturally important, sacred and spiritual sites, during forestry operations. First Nations, 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.
Means of achieving objective and target	Efforts have been made to understand which First Nation traditional territories fall within the Plan area and company Defined Forest Areas. Information sharing agreements are made with willing First Nation communities to promote the use and protection of sensitive information. Open communication with First Nations that includes a sharing of information that enables forest Licencees to understand and incorporate traditional knowledge into forest management options. Written requests for communication are responded to. Licencees are aware of culturally important, sacred and spiritual sites leading to appropriate management or and protection.
Forecast; Predicted Results or Outcome	Where forest operations occur, culturally important, sacred and spiritual sites are managed or protected. As this is a new target, 2011 Monitoring Report results will be used to establish the baseline data.
Forecast	Open and meaningful relationships with local First Nations leading to a trust in sharing sensitive information. Forest plans contain information on how these sites will be managed or protected. Forest operations that properly execute the forest plans.
Target	**14.** 100 % protection of culturally important, sacred and spiritual sites that have been identified and mapped **and** 100% conformance to all plan commitments specifically designed to manage for culturally important, sacred and spiritual sites that have been identified and mapped.
Basis for the Target	Developed by Licencees with First Nations input.
Legal Requirements	Heritage Conservation Act, Forest and Range Practices Act, Forest Planning and Practices Regulation, Constitution Act (and subsequent Supreme Court decisions).
Monitoring & Measurement Periodic	
Annual	Licencees will report: • Number of roads constructed or cutblocks harvested where culturally important, sacred or spiritual sites had been identified, mapped. • Number of roads constructed or cutblocks harvested where the identified sites were managed or protected in accordance with forest plans.
Variance	None

Indicator	**1.4.3 Management and or protection of special geological features (non-core indicator).**
Element(s)	1.4 Protected Areas and Sites of Special Biological and Cultural Significance.
Strategy(s) Description	This indicator recognizes the importance of identifying and managing for special geological features that are discovered in the course of fieldwork. Features such as caves, waterfalls, or other geology felt to be particularly unique by a Licencee are generally detected during fieldwork, as they are not often included in any established spatial databases like other features that can be identified at the planning stage. The emphasis of the indicator is to manage for those features that are truly unique and where operations may impact the feature. For example, waterfalls are relatively abundant in certain areas of the DFA, and it was not the intent to report on all waterfalls.
Means of achieving objective and target	Licencees conduct fieldwork on all areas planned for harvesting including how the sites will be accessed. Any unique features picked up in the course of the fieldwork will be managed for either by relocating the road or cutblock to avoid the feature or to design the road or harvest unit so that the integrity of the feature is retained.
Forecast; Predicted Results or Outcome	Where forest operations occur, unique geological features are managed or protected. As this is a new target, 2011 Monitoring Report results will be used to establish the baseline data.
Forecast	Diligent fieldwork and management prescriptions that retain the integrity of unique geological features. Forest operations that properly execute the forest plans.
Target	**15.** Report the special geological features that were identified and managed. Additionally, Licencees will report the management activities that they undertook for each special geological feature.
Basis for the Target	Developed by Licencees with public input.
Legal Requirements	Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	
Annual	Licencees will report in situations where these features fell within a new road r/w or cutblock area and were managed for or where the road or block were specifically relocated to manage for the feature. Report: 1. Number and type of special geological features (include karst formations/caves, inactive volcano cones and waterfalls) that were identified and managed. For waterfalls, only include S1, S2, S3, and S5 streams having a vertical drop greater than 5 metres. 2. Specific management activities that were taken for each special geological feature.
Variance	None

Indicator	**2.1.1 Reforestation Success**
Element(s)	2.1 Forest Ecosystem Resilience, 4.1 Carbon Uptake and Storage
Strategy(s) Description	Ensuring 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 forest land base to grow trees is maintained. Forests in British Columbia are classified according to the Biogeoclimatic Ecosystem Classification System, which identifies the tree species that are most suited ecologically for regeneration on any particular site. This not only helps to maintain the natural forest composition in an area, but it also lends itself to long term forest health and productive forests that uptake carbon.
Means of achieving objective and target	Licencees will specify tree species that are ecologically suited to the site in a timely manner. The desired silviculture regime and forward plan for an area will schedule activities consistent with established key dates.
Forecast; Predicted Results or Outcome	During September to December, a limited amount of regeneration activity occurred. Average regeneration delay was 22.1 months (2000 Kamloops baseline data). Ninety-nine percent (3,981 hectares of 4,020 hectares) of harvested areas met free growing requirements on or before the latest date (2001 Merritt baseline data). The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for both targets.
Forecast	Prompt reforestation ensures that the productive capacity of forest land base 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. Achievement of the earliest free growing date will help ensure that the productive capacity of the forest land base to grow trees is maintained. The Ministry of Forests and Range conducts research and provides guidance on key dates such as free growing, based on specific biogeoclimatic information for each site.
Target	**16.** 90% of area prescribed for planting is completed within the third growing season from start date of harvest. **17.** All cutblocks will reach free growing requirements on or before the latest date. Also report area on those cutblocks that outperformed late free growing requirements and average time by which requirements were exceeded.
Basis for the Target	Prompt reforestation target exceeds legal requirements. Early establishment of a viable crop of trees reduces the need for subsequent interventions (re-planting, brushing). Achievement of the free growing date will help ensure that the productive capacity of the forest land base to grow trees is maintained with species ecologically suited to the site.
Legal Requirements	Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	
Annual	**16**. Licencees will report the average time (weighted by area) for regeneration establishment on areas where regeneration delay was declared during the reporting period. **17.** Licencees will report on the cutblock area (hectares) that achieved free growing status on or before their late free growing date and the average time (years) that the cutblock outperformed it's late free growing date (weighted average).
Variance	**16.** 12 months beyond the 3-year target **17.** None, other than what is provided for within the legal framework (statutory decision makers may approve variances from standard requirements provided adequate rationale is provided and long-term objectives continue to be met).

Indicator	**2.2.1 Additions and deletions to the forest area**
Element(s)	2.2 Forest Ecosystem Productivity 4.2 Forest Land Conversion
Strategy(s) Description	Given the Crown tenure situation in BC forest companies generally have little influence on any additions or deletions to the forest area, which generally are a result of government land use objectives. Where companies can have an influences is through their practices, particularly as it pertains to access structures such as roads and landings. These access structures compact soil, making regeneration difficult, and disrupt the natural connectivity within forest stands.
Means of achieving objective and target	Loss of the land base to access structures can be minimized with • careful access planning to minimize the length of permanent road required for harvesting and the number of landings • and use of proper road construction, maintenance and deactivation procedures
Forecast; Predicted Results or Outcome	The percentage area of harvested roads and landings within the total harvested area averaged 4.2% (2000 Kamloops baseline data), 4.7% (2001 Merritt baseline data) and 3.8% (2006 Lillooet baseline data).
Forecast	Productive forest soils with minimized losses to forest development.
Target	**18.** Less than 6 percent (7% for the Lillooet TSA), on average, of harvested areas will be in permanent roads and landings.
Basis for the Target	Meets or exceeds legal requirements. Reflective of current performance level. Continued success with results at less than original 7% target for Kamloops and Merritt resulted in a reduced maximum target to 6%. The percent target refers specifically to loss to the timber harvesting land base due to access structures within harvested areas. It does not include land area lost to roads connecting harvested areas.
Legal Requirements	Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	Permanent access structures percent (NPUNN) are utilized in Provincial Timber Supply Review forecasts.
Annual	Licencees will report the area (ha) of permanent roads and landings identified in operational plans over gross block area (ha) for cutblocks harvested during the reporting year, using information contained within Licencee plans.
Variance	None

Indicator	**2.2.2 Proportion of the calculated long-term sustainable harvest level that is actually harvested**
Element(s)	2.2 Forest Ecosystem Productivity 4.2 Forest Land Conversion
Strategy(s) Description	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 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). 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 core indicators that directly measure this are 2.2.1 (additions and deletions to the forest area by cause) and 2.1.1 (reforestation success). The sustainable harvest level for the Kamloops, Lillooet and Merritt TSAs, and TFL 18, is determined by the Chief Forester after considering social, economic and biological criteria. More information on this rigorous process to determine allowable annual cut (AAC) levels can be found at the website: http://www.for.gov.bc.ca/hts/pubs/tsr/tsrbkg.htm
Means of achieving objective and target	Licencees contribute to the sustainable harvest level by adhering to their apportioned harvest volume within a given TSA. Cut control regulations dictate the short-term harvest flexibility. Essentially, licencees have flexibility on harvest levels from year to year but must balance every five years or less if desired by the licencee.
Forecast; Predicted Results or Outcome	Existing harvest level: a. Kamloops TSA - 2,393,180 m^3 can be maintained for 20 years (2000 baseline data) b. Lillooet TSA – 635,900 m^3 can be maintained for 30 years (2002 baseline data) c. Merritt TSA - 1,454,250 m^3 can be maintained for 60 years (2002 baseline data) d. TFL 18 - 177,650 m^3 can be maintained for 5 years (2000 baseline data) All licencees are within the cut control variance set out by regulation. The volume harvested in 2000 was 2,996,147 m3 for the Kamloops TSA and 174,763 m^3 for TFL 18. The volume harvested in 2002 was 1,430,081 m^3 for the Merritt TSA and 330,083 $m^3$for the Lillooet TSA.

Forecast	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 forecasts that then rely on the Chief Forester to provide a determination. Public input is provided throughout the process. Kamloops TSA The latest timber supply review for the TSA was completed in 2008. The review indicated the new AAC for the Kamloops TSA is 4.0 million cubic metres. This effectively reduced the former AAC by 8.1 percent. The new AAC includes partitions specifying allowable annual harvest volumes attributable to the following: • for harvesting in stands predominated by Douglas-fir, spruce, or balsam, a maximum of 1 700 000 cubic metres ('non-pine' partition), • for harvesting of pine species, 1 994 000 cubic metres, with the possibility of an increase to the extent of any under-harvesting in the 'non-pine' partition, • for harvesting in cedar- or hemlock-leading stands, 200 000 cubic metres, • for harvesting in PA 16, 86 000 cubic metres, and • for harvesting in deciduous-leading stands outside PA 16, within the Headwaters District, 20 000 cubic metres. TFL 18 A timber supply review for TFL 18 was completed in 2006. The new AAC determination concluded that: Effective March 9, 2006, in response to the need to address the mountain pine beetle epidemic and other forest health concerns, and as a result of improved productivity estimates for TFL 18, the new AAC for TFL 18 will be 290 000 cubic metres. The AAC is intended to address salvage harvesting of lodgepole pine-leading stands that are, or are highly susceptible to being, attacked by the mountain pine beetle, and other stands affected by other forest health agents such as the spruce bark beetle. The AAC will remain in effect until a new AAC is determined, which must take place within five years of the present determination. Lillooet TSA The latest timber supply review for the TSA was completed in 2009. Effective May 1, 2009, the new AAC for the Lillooet TSA is 570 000 cubic metres, of which 400 000 cubic metres are specified as harvestable from species other than pine. The Chief Forester expects that the overall AAC will be managed wherever possible to address the priority problem of the mountain pine beetle infestation in the TSA. The AAC represents an overall reduction of approximately 10 percent and provides an essential step toward ensuring the ongoing sustainable use of the non-pine species currently preferred for harvesting in the TSA, and of the other forest values associated with these stands. The AAC excludes all volumes in issued woodlot licences and the Probationary Community Forest Agreement and will remain in effect until the next AAC is determined, which must take place within five years of the effective date of this determination. Merritt TSA The latest timber supply review for the TSA was completed in 2005. Effective July 1, 2005, in response to the need for an emergency forest management strategy for forest health, the new AAC for the Merritt TSA is 2 814 171 cubic metres. This includes a five-year uplift of 1 000 000 cubic metres to respond to the mountain pine beetle epidemic. A partition of 312 500 cubic metres will continue to be attributable to stands of small-diameter (smallwood) pine. This volume excludes all volumes allocated to woodlot licences. The AAC will remain in effect until a new AAC is determined, which must take place within five years of the present determination. The next Timber Supply Review is in progress and a new AAC determination is expected by the end of 2010. More information on timber supply review can be found at: http://www.for.gov.bc.ca/hts/tsas.htm
Target	**19.** Harvest the annual cut allocation for the year consistent with the Cut Control Regulation and Policy.
Basis for the Target	Legal requirements. Harvesting the allowable cut over the cut control period maintains short and long term harvest flows that reflect forest conditions, forest practices, and the socio-economic objectives of the Crown.
Legal Requirements	Forest Act, Cut Control Regulation
Monitoring & Measurement Periodic	The schedule for subsequent Timber Supply Reviews for the TSAs and TFL can be found at: http://www.for.gov.bc.ca/hts/schedule.htm.
Annual	Licencees will report the harvest level allocated for each licence and harvest level cut (cut control volume) for the past reporting year.
Variance	According to the Cut Control Regulation and Policy

Indicator	**2.2.3 Level of conformance to riparian management area and lakeshore commitments contained within plans[5] (non-core indicator)**
Element(s)	2.2 Forest Ecosystem Productivity, 3.2 Water Quality and Quantity
Strategy(s) Description	This indicator forms part of the overall strategy to manage forest ecosystems at the landscape and stand levels. Riparian management areas, as prescribed in legislation, provide connectivity of forested cover along waterways, which are generally areas with high value for wildlife habitat and movement. District lakeshore guidelines provide additional management direction, as required, to meet social and ecological objectives for specified lakes and waterways.
Means of achieving objective and target	Licencees will attempt to identify small and unclassified wetlands and will take measures to minimize impacts to these features. All commitments are included and highlighted in Licencee plans.
Forecast; Predicted Results or Outcome	No riparian infractions occurred as a result of forest operations (2000/2001 baseline data).
Forecast	Well functioning connected ecosystems that are managed for timber and non-timber forest values. Properly functioning riparian systems and conservation of fish habitat.
Target	**20.** 100 percent conformance to riparian and lakeshore commitments made within plans.
Basis for the Target	Recognition that riparian areas are "focus areas" for successfully meeting biodiversity and ecosystem objectives. Commitments may, and often do, exceed legal requirements.
Legal Requirements	Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	
Annual	Licencees will report the number of riparian and lakeshore related non conformances to plans occurring during the reporting year as compared to the number of cutblocks that were harvested that had riparian management areas within or adjacent to them.
Variance	5 %. Variance to accommodate non-conformance to plans that have little or no impact to the environment and/or to the social and ecological objectives of lakeshore areas or completed for safety purposes.

[5] Plans prepared by licencees are in accordance with legal and higher level plan requirements

Indicator	**3.1.1 Level of soil disturbance**
Element(s)	3.1 Soil Quality and Quantity
Strategy(s) Description	Reducing the area in permanent roads and landings is an effective way that licencees can influence the productive capacity of the forest land base. 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. Prevention of man caused landslides will help to avoid sediment delivery to streams, possible damage to fish and invertebrate habitat, loss of forest site productivity, unsightly scars and damage to roads, culverts and bridges. These targets seek to manage soil disturbance levels caused by permanent roads as well as disturbance levels caused by harvest operations. They also serve to report on landslides, when caused by operations.
Means of achieving objective and target	Loss of the land base to access structures can be minimized with careful access planning to minimize the length of permanent road required for harvesting and the number of landings and by using proper road construction, maintenance and deactivation techniques. Maximum planned levels of soil disturbance are assigned to all cutblocks based on related field data. Expeditious re-establishment of new stands can assist in preventing erosion and other forms of soil displacement. Licencee plans specify acceptable levels of disturbance. Licencees exercise due diligence in assessing sensitive terrain prior to road construction or harvesting, using specialists as required to provide recommendations, completing inspections of drainage ditches and culverts regularly, and taking preventative measures to minimize the potential for debris flow initiation and soil movement.
Forecast; Predicted Results or Outcome	The percentage area of harvested roads and landings within the total harvested area averaged 4.2% (2000 Kamloops baseline data), 4.7% (2001 Merritt baseline data) and 3.8% (2006 Lillooet baseline data). Licencees met soil disturbance objectives on over 7 500 hectares of cutblock area harvested (2000/2001 baseline data for Kamloops and Merritt). The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for this target pertaining to operationally caused landslides.
Forecast	Productive forest soils with minimized losses to forest development. Permanent access structures (percent non-productive unnatural) are utilized in Provincial Timber Supply Review. Minimizing soil disturbance will reduce the potential for soil movement and sedimentation thereby contributing to the maintenance of water quality. Decreased forest soil exposure from slides will reduce the potential for sedimentation thereby contributing to the maintenance of water quality and provide land base for facilitating timber production.
Target	**17.** Less than 6 percent (7% for the Lillooet TSA), on average, of harvested areas will be in permanent roads and landings. **21.** 100 percent conformance to soil conservation measures contained within operational plans. **22.** No operationally caused slides resulting from a failure to perform a terrain stability field assessment or from a failure to follow the recommendations within a completed assessment.
Basis for the Target	Meets or exceeds legal requirements. Reflective of current performance level. Continued success with results at less than original 7% target for Kamloops and Merritt resulted in a reduced maximum target to 6%. Minimizing the negative impacts of soil disturbance results in productive forest soils with minimized losses to forest development. It also reduces the potential for sedimentation thereby contributing to the maintenance of water quality.
Legal Requirements	Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	
Annual	**17.** Licencees will report the area (ha) of permanent roads and landings identified in operational plans over gross block area (ha) for cutblocks harvested during the reporting year, using information contained within Licencee plans. **21.** Licencees will report the area (hectares) where soil disturbance commitments were achieved as compared to the total net area of cutblocks that were harvested during the reporting year. **22.** Licencees will report the number of slides >0.1 hectare or those having a significant environmental impact if less than 0.1 hectare as a result of their forest management activities (where either a terrain stability assessment was not completed, or where a terrain stability assessment was completed but the recommendations were not followed). Reporting of these landslides will follow the Southern Interior Region landslide and erosion reporting document. *Also agreed to report the total number of operationally caused slides that occurred (or that were first discovered) in the reporting period – regardless of cause or due diligence.*
Variance	None

Indicator	**3.1.2 Level of downed woody debris**
Element(s)	3.1 Soil Quality and Quantity
Strategy(s) Description	This indicator and target addresses the need to maintain structural features of forest ecosystems at the stand level. Strategies include direction for basic levels of coarse woody debris (CWD), creation of stubs, and guidelines for enhanced levels of CWD in landscape units with high biodiversity emphasis options**.** The indicator is complimented by Indicator 1.1.4: Degree of within-stand structural retention or age class. Coarse woody debris (i.e., downed wood) plays an important role in forest ecosystems including provision of food and shelter for invertebrates and smaller wildlife, growing sites for trees, nutrients for soils, and structure in streams to maintain channel stability. Excessive removal of coarse woody debris (CWD) may affect habitat needs for some wildlife species (e.g., pine marten, fisher, grizzly bear, small mammals, snakes, some amphibians and numerous invertebrates). The main ecological principles guiding a CWD management strategy are: • CWD immediately after harvest is rarely a concern in the DFA (except in some uniform second-growth sites, or with intensive site preparation). The predicted shortfall in managed stands is low CWD levels 50-80 years after harvest, particularly larger pieces. • Leaving more downed wood at harvest does not help CWD levels later in the rotation. Retained snags and live trees, and mortality of regenerating trees are required. • Distribution of CWD across managed stands is important, particularly maintaining some CWD through time in the harvested areas (outside of retention patches). • Variability in CWD levels and types among stands is high and important ecologically. • Landscape context matters: cutblocks with low CWD levels are of less concern where most stands in the Non-THLB have natural CWD levels, and occurrence of Non-THLB is significant. Government has set an objective for soils – to conserve its productivity and hydrologic function, meaning that companies will have results and strategies in their Forest Stewardship Plan to meet those objectives. Additionally, there are forest practices requirements to retain wildlife trees and for coarse woody debris.
Means of achieving objective and target	Companies will achieve objectives through a combination of stand-level actions including salvage guidelines, dispersed and group retention, modifying piling practices and adhering to minimum post-harvest limits of coarse woody debris. CWD is managed on a rotation bases. Salvage of current wildlife trees, wildlife tree patches or future mortality within reserves is by exception. Live, dead and dying trees are left on site for CWD recruitment.
Forecast; Predicted Results or Outcome	The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for coarse woody debris.
Forecast	Healthy ecosystems with a diversity and abundance of native species and habitats. Retention of large organic debris on harvested sites and utilization as habitat for wildlife.
Target	**23.** 100 percent of cutblocks will manage coarse woody debris (CWD) consistent with commitments in operational plans.
Basis for the Target	Operational plan commitments and legal requirements. Retention of standing and downed woody debris provides habitat for many living organisms and soil organic matter as it decomposes.
Legal Requirements	Forest and Range Practices Act, Forest Planning and Practices Regulation, Wildfire Act and Regulation
Monitoring & Measurement Periodic	
Annual	Licencees will report operational plan conformance to the target (cutblocks harvested where planned targets met compared to all cutblocks harvested). Reporting may also utilize supplemental information collected as part of post harvest waste assessments including ocular estimates.
Variance	None

Indicator	**3.2.1 Proportion of watershed or water management areas with recent stand-replacing disturbance**
Element(s)	3.2 Water Quality and Quantity
Strategy(s) Description	Water quality and quantity can be affected by stand-replacing disturbances (human and natural-caused). 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. Roads and stream crossings can have a large impact on water quality and prompt revegetation of road fill and cut slopes help reduce the risk of sedimentation. Equivalent clearcut area (ECA) describes a second-growth block in terms of its hydrological equivalent as a clearcut. As second growth develops, the hydrological impact on a site is reduced. The rate of reduction is expressed in proportion to the height of the second growth. For example, a 20 ha block with 6 m tree heights is 50 per cent recovered so the ECA of the block is 10 ha (20 ha x 50 per cent). On average, a stand must be at least 9 m tall before it can be considered 90 per cent hydrologically recovered. This target has a focus in the planning and assessment in watersheds that have been identified as high risk and with a significant disturbance history, prior to implementing additional operations. Water quality, quantity and timing are influenced to varying degrees by road construction and harvesting. As the level of recent disturbance (measured as ECA) increases, the more likely there is to be a negative influence. Further hydrological assessments would include hazard assessments related to peak flow, surface erosion, riparian buffers, and mass wasting. Depending on those hazard ratings further work may be required such as a stream channel assessment.
Means of achieving objective and target	<u>Kamloops</u> Licencees carry out necessary hydrological assessments prior to implementing operations in the top 25 highest risk watershed (post MPB)[6] where there has been a significant history of forest harvesting and road construction (equivalent clearcut areas approaching or exceeding 35%). Any forest management recommendations developed as part of the hydrological assessment are referenced in Licencee plans. <u>Lillooet and Merritt</u> Licencees carry out necessary hydrological assessments prior to implementing operations where there has been a significant history of forest harvesting and road construction (equivalent clearcut areas approaching or exceeding 35%). Any forest management recommendations developed as part of the hydrological assessment are referenced in Licencee plans.
Forecast; Predicted Results or Outcome	Healthy watersheds that function in a well-balanced natural state. Merritt: Fifteen cutblocks were harvested during the reporting period with an ECA exceeding 35%. All of these cutblocks had further hydrological assessments and incorporated recommendations prior to harvesting. Kamloops and Lillooet: As this is a new target, 2011 Monitoring Report results will be used to establish the baseline data.
Forecast	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 streams is minimized.
Target	**24.** Equivalent clear cut area (ECA) not to exceed 35% (at the sub-basin level) without doing further hydrological assessments prior to harvesting. For Kamloops, the target applies only to the highest risk rated watersheds (post MPB) as identified in Appendix 8.
Basis for the Target	Expert opinion that adverse affects from harvesting/road construction typically become apparent around the 30-35% level. Ensures focused assessment of watershed conditions prior to additional operations in watersheds determined to be at risk and having an ECA at the "warning flag" level.
Legal Requirements	Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	Age class distribution of old forests are forecast as part of periodic Timber Supply Reviews to monitor impacts on the landscape.
Annual	Licencees will report the number of cutblocks harvested where the watershed ECA exceeded 35% and no further hydrological assessments were completed compared to the total number of cutblocks harvested where the watershed ECA exceeded 35%. Licencees will also report which high risk watershed(s) the cutblocks with ECA's exceeding 35% (and no further assessments completed) were within. For Kamloops, reporting is restricted to those watersheds that were identified as one of the 25 high risk watersheds (as indicated in Appendix 8.
Variance	5% of cutblocks harvested areas requiring further hydrological assessment had no further assessments completed.

[6] See Appendix 8

Indicator	**3.2.2 Managing water quality through road inspections (non-core indicator).**
Element(s)	3.2 Water Quality and Quantity
Strategy(s) Description	Water is recognized as a primary and fundamental resource in the Nicola Thompson Fraser SFM Plan area. Lakeshore ecosystems, rivers and riparian areas provide critical habitat for many plant, fish and wildlife species. Water is also an important resource for human consumption. As a finite resource it needs to be protected and managed in order to sustain human populations and natural ecosystems. Roads have often been identified as one of the greatest potential causes of unintended sediment delivery into watercourses. Active management of road systems helps to reduce this risk.
Means of achieving objective and target	Companies will schedule and complete inspections at a frequency based on road risk – often categorized as high, medium and low risk roads. Maintenance items identified during inspections will be attended to.
Forecast; Predicted Results or Outcome	Merritt: Road data systems indicated that 76 percent of permanent status roads had inspections and related maintenance completed as scheduled. Licencees noted issues with their data management systems which included roads planned and not yet built and roads which had been permanently deactivated or rehabilitated. There were a total of 807 maintenance action items requiring completion during the year. All the high and medium priority items were completed. Some of the lower priority items were deferred to coincide with other planned operations occurring in the same vicinity (2001 baseline data). Kamloops and Lillooet: The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for this target pertaining to road inspections and maintenance.
Forecast	Active road maintenance and deactivation programs, particularly during the spring snowmelt, will assist in the prevention of soil movement and sedimentation; thereby, contributing to the maintenance of water quality and soil productivity.
Target	**25.** All permanent status roads and associated structures will have inspections and related maintenance completed as scheduled.
Basis for the Target	Due diligence and legal requirements to maintain roads. Recognition that roads not inspected and maintained can present a very high risk to soil erosion and water quality.
Legal Requirements	Forest And Range Practices Act, Forest Planning And Practices Regulation
Monitoring & Measurement Periodic	
Annual	Licencees will determine inspection frequency based on the permanent road's risk. For the reporting period, list permanent road inspections scheduled vs. completed. Licencees will also report the number of maintenance action items related to water management and soil movement that required completion during the reporting year as compared to the total number of maintenance action items that were planned for completion.
Variance	None

Indicator	**4.1.1 Net Carbon Uptake**
Element(s)	4.1 Carbon Uptake and Storage
Strategy(s) Description	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). 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. In their 2009 summary of carbon management in BC's forests[7] 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 (Kranabetter and Macadam 2006), and undertaking carbon accounting projects. However, no published handbooks or policies exist to guide forest managers, practitioners, or the public." The level of carbon budget analysis in British Columbia relies largely on the forest inventory (species and growth rates) and underlying assumptions 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. 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 analyze and prioritize 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." Thus, the strategy within the SFM Plan will be to continue to report on the targets within this indicator (forest age class distribution, prompt reforestation and forest land conversion) as a means of demonstrating commitment to positively influence carbon balance within the DFA. Licencees 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 latest, licencees will rely upon forest carbon analysis conducted in conjunction with the next Timber Supply Review. If government elects not to conduct this analysis, licencee will select the appropriate forest carbon stock model and calculate carbon stock within the DFA.
Means of achieving objective and target	Contribute positively to carbon uptake and storage by: 1. Maintain current harvest priority: • Forest health management – harvesting attacked and susceptible stands (generally older stands) • Concentrate harvest on stands with the most years beyond culmination (maximum mean annual increment) 2. Promptly reforesting areas following harvest with tree species ecologically suited to the site. 3. Minimize loss of the land base to access structures by: 1. careful access planning to minimize the area of permanent access 2. proper road construction, maintenance and deactivation procedures

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

Forecast; Predicted Results or Outcome	**3.** All age classes except age class 1 have less than 8.5% area representation in each TSA. Age classes 2 to 4 will approach the 8.5% target over time (current TSR data). **16.** During September to December, a limited amount of regeneration activity occurred. Average regeneration delay was 22.1 months (2000 Kamloops baseline data). Ninety-nine percent (3,981 hectares of 4,020 hectares) of harvested areas met free growing requirements on or before the latest date (2001 Merritt baseline data). The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for both targets. **18.** The percentage area of harvested roads and landings within the total harvested area averaged 4.2% (2000 Kamloops baseline data), 4.7% (2001 Merritt baseline data) and 3.8% (2006 Lillooet baseline data).
Forecast	Continuation of current harvest priorities will lead to balanced age classes on the available productive forest land. Protected Area, Old Growth Management Area (OGMA), and Wildlife Tree Patch Strategies , together with inaccessible areas, ensure retention of sufficient old growth to sustain biodiversity and ecosystem objectives. Progress to age class target will be steady: In 50 years three age classes will meet 8.5% target. Retention of 195,995 ha of spatially located OGMA as referenced in the latest TSR documents. Productive forest soils with minimized losses to forest development will ensure the greatest land base available for carbon uptake and storage. Timely reforestation will ensure the land base supports actively growing trees.
Target	**3.** Progress towards a stable forest age class distribution on the timber harvesting land base where each age class to 80 years old [1 (1 to 20), 2 (21-40), 3 (41-60), and 4 (61 to 80)] occupies at least 8.5% of the timber harvesting land base in each of the 3 TSAs (Kamloops, Lillooet, Merritt). Three of the four age classes meet this target within 50 years for each TSA. Reporting to occur in conjunction with subsequent Timber Supply Reviews by TSA. **16.** 90% of area prescribed for planting is completed within the third growing season from start date of harvest. **18.** Less than 6 percent (7% for the Lillooet TSA), on average, of harvested areas will be in permanent roads and landings.
Basis for the Target	A more even distribution of age classes will provide a relatively even flow of value to industry and the community, and a more stable carbon balance. Early establishment of a viable crop of trees reduces the need for subsequent interventions (re-planting, brushing) and positively contributes to carbon uptake. Managing the area lost to permanent roads has a direct impact on retaining the productive capacity of the land base.
Legal Requirements	Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	**3.** Licencee report the current age class distribution as last reported by Timber Supply Review documents. Reporting to occur periodically – in the year following completion of subsequent TSR for each TSA.
Annual	**16**. Licencees will report the average time (weighted by area) for regeneration establishment on areas where regeneration delay was declared during the reporting period. **18.** Licencees will report the area (ha) of permanent roads and landings identified in operational plans over gross block area (ha) for cutblocks harvested during the reporting year, using information contained within Licencee plans.
Variance	**3.** Two age classes meet this target within 50 years (attaining age class sooner than 50 years seen as a benefit). **16.** +/- 10% **18.** None.

Indicator	**5.1.1 Quantity and quality of timber and non-timber benefits, products, and services produced in the DFA**
Element(s)	5.1 Timber and Non-Timber Benefits
Strategy(s) Description	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. 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. Timber benefits can be measured by looking at sustainable harvest levels in relation to the allocated supply levels determined by the Chief Forester. The harvest level for the TSAs, and TFL 18, is set only after considering social, economic and biological criteria. More information on this rigorous process to determine allowable annual cut (AAC) levels can be found at the website: http://www.for.gov.bc.ca/hts/pubs/tsr/tsrbkg.htm. Non-timber benefits can be assessed using a variety of measures including communication with local communities. Managing for the retention of visual quality and existing recreational trails helps to ensure the interests and/or values of other forest users and stakeholders are attained. Reporting on business initiatives and partnerships provides an indication of licencees contribution towards the diversification and sustainability of local economies.
Means of achieving objective and target	Licencees contribute to the sustainable harvest level by adhering to their apportioned harvest volume within the respective TSA. Cut control regulations dictate the short-term harvest flexibility. Communication to occur with First Nation communities and the broader public to discuss forest plans and operations. Also to respond to any written request as a result of those communications. Completion of visual quality assessments where operations are planned within scenic areas. Utilize existing recreational trail data in operational planning to maintain the network of recreational trails. Licencees seek and maintain active, mutually beneficial business relationships with other forest products businesses in the Plan area.
Forecast; Predicted Results or Outcome	**19.** Long run harvest level: Kamloops TSA - 2,393,180 m^3 can be maintained for 20 years (2000 baseline data) Lillooet TSA – 635,900 m^3 can be maintained for 30 years (2002 baseline data) Merritt TSA - 1,454,250 m^3 can be maintained for 60 years (2002 baseline data) TFL 18 - 177,650 m^3 can be maintained for 5 years (2000 baseline data) All licencees are within the cut control variance set out by regulation. The volume harvested in 2000 was 2,996,147 m^3 for the Kamloops TSA and 174,763 m^3 for TFL 18. The volume harvested in 2002 was 1,430,081 m^3 for the Merritt TSA and 330,083 m^3 for the Lillooet TSA. **27.** Open communication and follow-up with local First Nations (Kamloops 2004 baseline data*): a. All licencees communicated with First Nations (42 meetings/meaningful communications) b. Licencees responded to all written requests for communication. **28.** Effective public communication (Kamloops 2000 baseline data*): Licencee's interests were represented at strategic level meetings. 66% of local plan meetings were attended (this is below the target of 70% but within the variance of 60% of meetings attended); A total of 12 community meetings were attended. All written requests (3) for communication were responded to. **29.** Meeting visual quality objectives: Harvesting met visual quality objectives in 182/183 cutblocks (Kamloops 2000 baseline data*). **30.** All existing trails in or adjacent to harvest areas (5 in reporting period) were successfully managed (Lillooet 2003 baseline data*) **31.** Licencees were involved in 22 annual value-added business initiatives and partnerships (Merritt 2001 baseline data*). * The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for these targets.
Forecast	Short and long term harvest flows that reflect forest conditions, forest practices, and the socio-economic objectives of the Crown. (see indicator 2.2.2 for more detail on forecast). Forest operations that respect Aboriginal title and rights and reflect the timber and non-timber interests of local First Nations. Public participation in forest planning and operations that is open, inclusive and responsive to public concerns. Visual quality within scenic areas reflects social preferences; important recreational trails are managed as desired. Licencees will contribute to the diversification and sustainability of local economies.

Target	**19.** Harvest the annual cut allocation for the year consistent with the Cut Control Regulation and Policy. **27.** **5a.** Open communications (track meetings and other meaningful communication) with local First Nations will include an understanding of traditional territories and other aboriginal rights including cultural and spiritual values. **5b.** Participating Licencees respond to all written requests for communication/information from First Nations **28.** • Licencees will demonstrate efforts by participating in public multi-stakeholder meetings at both the strategic and at the local level. Licencees will report on the number of community meetings held or attended. Licencees will also report on the number of communications with concerned and engaged recreational users. • Participating licencees respond to all written requests from the public for communication within 30 days of their receipt. **29.** 100% conformance to strategies in plans designed to achieve preservation, retention and partial retention visual quality objectives. **30.** 100% of known pre-existing recreational trails retained for continued recreational use on areas harvested in the reporting period. **31.** Report business initiatives and partnerships.
Basis for the Target	Developed by licencees in conjunction with the public or First Nations. Essential that holders of varying land use tenures on the same land base communicate regularly. Business initiatives and partnerships, built on "win win" principles, are not only beneficial to the partners, but also to the economy and vitality of the DFA.
Legal Requirements	Forest Act, Cut Control Regulation, Heritage Conservation Act, Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	The schedule for subsequent Timber Supply Reviews for the TSAs and TFL can be found at: http://www.for.gov.bc.ca/hts/schedule.htm.
Annual	**19.** Licencees will report the harvest level allocated for each licence and harvest level cut (cut control volume) for the past reporting year. The existing scaling system in place (monitored by MOFR) tracks volume delivered. **27**. Licencees will report: a. Number of meetings and meaningful communications with First Nations that included management and protection of traditional knowledge, non-timber resources, and cultural and spiritual values. b. Number of written requests for communication/information from First Nations versus the number of responses made to First Nations. Reporting is on a one to one ratio (one response for each request). **28.** Licencees will report: a. A yes/no answer as to whether their interests were represented at strategic and local area meetings with other stakeholders and/or the broader public. The number of community meetings held or attended during the reporting period. The number of communications with concerned and engaged recreational users. b. Number of responses sent out by licencees compared to the number of written requests for communication. Report the average timeline for response. **29.** Licencees will report on the number of harvested blocks that achieve the visual intent as described in plans versus the number of blocks harvested within the past year that had preservation, retention or partial retention visual quality objectives. Also indicate the number of these areas that met the objectives by way of exemption for other management concerns. **30.** Licencees will report the number of known pre-existing recreational trails (from Land and Resource Data Warehouse) within or influenced by areas harvested in the reporting period and the number of those that were successfully managed and retained. **31.** Licencees will report and provide detail regarding local business initiatives and partnerships. Report separately for each TSA.
Variance	**19.** According to the Cut Control Regulation and Policy

Indicator	**5.2.1 Level of investment in initiatives that contribute to community stability.**
Element(s)	5.2 Communities and Sustainability
Strategy(s) Description	Investments that contribute to community stability are largely predicated by looking at the harvest level for an organization. As the majority of forest workers are hired locally, communities benefit by forest planning and operations. Additional investments that occur in manufacturing facilities are also dependant upon a secure and stable harvest level. The amount of local spending related to delivered log costs and Licence obligations is estimated by Licencees within the DFA to be 65-70% ignoring stumpage paid to government. With stumpage removed local spending is 85-90% of all delivered log costs. The average breakdown of expenditures by phase of log deliveries and local spending is approximated at: Logging – 33% of expenditure (all local – within the DFA) Hauling – 17% of expenditure (all local – within the DFA) Road construction and maintenance – 9% of expenditure (all local – within the DFA) Reforestation – 7% of expenditure (1/2 local – within the DFA) Indirect costs – 11% of expenditure (1/2local – within the DFA) Stumpage 23% of expenditure Using a conservative figure of $\$40.00/m^3$ expenditure for log deliveries and associated Licence obligations, spending by participating licencees within the DFA would be over 150 million dollars annually if their AAC allocation was harvested. Thus the forest sector's contribution to community stability can be measured by looking at sustainable harvest levels in relation to the allocated supply levels determined by the Chief Forester. Local manufacturing of the logs harvested further adds to community stability. Reporting on the volume of products produced and the operating levels of the timber manufacturing facilities provides insight into these community benefits. Reporting on business initiatives and partnerships provides an indication of licencees contribution towards the diversification and sustainability of local economies.
Means of achieving objective and target	Licencees contribute to the community stability and to sustainable harvesting by adhering to their apportioned harvest volume within the respective TSA. Cut control regulations dictate the short-term harvest flexibility. Licencees seek and maintain active, mutually beneficial business relationships with other forest products businesses in the Plan area. Participating licencees with manufacturing facilities record statistics related to products produced and facility operating levels.
Forecast; Predicted Results or Outcome	**19.** Long run harvest level: Kamloops TSA - 2,393,180 m^3 can be maintained for 20 years (2000 baseline data) Lillooet TSA – 635,900 m^3 can be maintained for 30 years (2002 baseline data) Merritt TSA - 1,454,250 m^3 can be maintained for 60 years (2002 baseline data) TFL 18 - 177,650 m^3 can be maintained for 5 years (2000 baseline data) All licencees are within the cut control variance set out by regulation. The volume harvested in 2000 was 2,996,147 m3 for the Kamloops TSA and 174,763 m^3 for TFL 18. The volume harvested in 2002 was 1,430,081 m3 for the Merritt TSA and 330,083 $m^3$for the Lillooet TSA. **31.** Licencees were involved in 22 annual value-added business initiatives and partnerships (Merritt 2001 baseline data*). **32.** The total lumber output from sawmills within the TSA was 272,031 million board feet (Merritt 2001 baseline data*). **33.** The timber processing facilities within the area were in operation a combined 487days during the reporting period (Merritt 2001 baseline data*). * The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for these targets.
Forecast	Short and long term harvest flows that reflect forest conditions, forest practices, and the socio-economic objectives of the Crown. (see indicator 2.2.2 for more detail on forecast). Licencees will contribute to the diversification and sustainability of local economies. Forest organizations who harvest in relation to their allocation of the allowable annual cut thereby providing for employment and taxation revenue in local communities. Local manufacturing of these logs helps the community sustain a prosperous forest-based economy.
Target	**19.** Harvest the annual cut allocation for the year consistent with the Cut Control Regulation and Policy. **31.** Report business initiatives and partnerships. **32.** Report the board feet and chip volume produced by sawmills. **33.** Report number of timber processing facility operating days, the total number of man hours worked and the number of mill employees on payroll.
Basis for the Target	Key economic statistics monitored. Business initiatives and partnerships, built on "win win" principles, are not only beneficial to the partners, but also to the economy and vitality of the respective TSA.
Legal Requirements	Forest Act, Cut Control Regulation

Monitoring & Measurement Periodic	The schedule for subsequent Timber Supply Reviews for the TSAs and TFL can be found at: http://www.for.gov.bc.ca/hts/schedule.htm.
Annual	**19.** Licencees will report the harvest level allocated for each licence and harvest level cut (cut control volume) for the past reporting year. **31.** Licencees will report and provide detail regarding local business initiatives and partnerships. Report separately for each TSA. **32.** Licencees with manufacturing facilities will report the board feet and chip volume produced by sawmills within the TSA. Report separately for each TSA. **33.** Licencees with manufacturing facilities will report number of days the manufacturing facility was operating, the total number of man hours worked and the number of mill employees on payroll for the reporting period. Report separately for each TSA.
Variance	**19.** According to the Cut Control Regulation and Policy

Indicator	**5.2.2 Level of investment in training and skills development.**
Element(s)	5.2 Communities and Sustainability
Strategy(s) Description	Sustainable forest management provides training and awareness opportunities for forest workers as organizations seek continual improvement in their practices. Investments in training and skill development generally pay dividends to forest organizations by way of a safer and more environmentally conscious work environment. Assessing whether forest contractors have received both safety and environmental training is a direct way of measuring this investment. Additionally, training plans should be in place for employees of the forest organizations who work in the forest. Measuring whether the training occurred in accordance with these plans will confirm an organizations commitment to training and skills development. Effective January 1, 2009, SAFE certification (WorkSafe BC) became a pre-requisite to bid on BCTS contracts. The Ministry's Forests For Tomorrow program also requires SAFE certification for its agreement holders.
Means of achieving objective and target	Licencees invest 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.
Forecast; Predicted Results or Outcome	Educated workforce that performs their duties safely and responsibly. As these are new targets, the 2011 Monitoring Report results will be used to establish the baseline data.
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.
Target	**34.** a. 100% of DFA forest contractors will have both environmental and safety training. b. 100% of woodlands employees are trained in accordance with training plans.
Basis for the Target	Trained workforce critical to safe and proper execution of plans. Target and variance allows for some discretion with respect to contractors or employees whose work is insulated from forest operations (for example administrative or clerical work).
Legal Requirements	Voluntary certification commitments, Workers Compensation Act.
Monitoring & Measurement Periodic	
Annual	a. Licencees will report the total number of forest contractors and identify the number that had received both environmental and safety training. For BCTS, report on the number of licences and contracts awarded that required SAFE certification or an equivalent safety certification/registration. b. Licencees will report the total number of forestland employees (staff) and identify the number that had received training in accordance with their training plan.
Variance	10%

Indicator	**5.2.3 Level of direct and indirect employment**
Element(s)	5.2 Communities and Sustainability
Strategy(s) Description	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. 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. In 2006 data acquired from the Natural Resources Canada website (http://canadaforests.nrcan.gc.ca/) the multiplier is approximately 4 direct and indirect jobs per 1000 m^3 of harvest. Licencees that harvest at sustainable harvest levels in relation to the allocated supply levels determined by the Chief Forester continue to provide direct and indirect employment opportunities. The harvest level for the TSAs and TFL 18, is set only after considering social, economic and biological criteria. More information on this rigorous process to determine allowable annual cut (AAC) levels can be found at the website: http://www.for.gov.bc.ca/hts/pubs/tsr/tsrbkg.htm Local manufacturing of the logs harvested further adds to community stability. Reporting on the volume of products produced and the operating levels of the timber manufacturing facilities provides insight into these community benefits.
Means of achieving objective and target	Licencees 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. Participating licencees with manufacturing facilities record statistics related to products produced and facility operating levels.
Forecast; Predicted Results or Outcome	**19.** Long run harvest level: Kamloops TSA - 2,393,180 m^3 can be maintained for 20 years (2000 baseline data) Lillooet TSA – 635,900 m^3 can be maintained for 30 years (2002 baseline data) Merritt TSA - 1,454,250 m^3 can be maintained for 60 years (2002 baseline data) TFL 18 - 177,650 m^3 can be maintained for 5 years (2000 baseline data) All licencees are within the cut control variance set out by regulation. The volume harvested in 2000 was 2,996,147 m^3 for the Kamloops TSA and 174,763 m^3 for TFL 18. The volume harvested in 2002 was 1,430,081 m^3 for the Merritt TSA and 330,083 m^3 for the Lillooet TSA. **32.** The total lumber output from sawmills within the TSA was 272,031 million board feet (Merritt 2001 baseline data*). **33.** The timber processing facilities within the area were in operation a combined 487 days during the reporting period (Merritt 2001 baseline data*). * The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for these targets.
Forecast	Short and long term harvest flows that reflect forest conditions, forest practices, and the socio-economic objectives of the Crown. (see indicator 2.2.2 for more detail on forecast). Forest organizations who harvest in relation to their allocation of the allowable annual cut thereby providing for employment and taxation revenue in local communities. Local manufacturing of these logs helps the community sustain a prosperous forest-based economy.
Target	**19.** Harvest the annual cut allocation for the year consistent with the Cut Control Regulation and Policy. **32.** Report the board feet and chip volume produced by sawmills. **33.** Report number of timber processing facility operating days, the total number of man hours worked and the number of mill employees on payroll.
Basis for the Target	Key economic statistics monitored.
Legal Requirements	Forest Act, Cut Control Regulation
Monitoring & Measurement Periodic	The schedule for subsequent Timber Supply Reviews for the TSAs and TFL can be found at: http://www.for.gov.bc.ca/hts/schedule.htm.
Annual	**19.** Licencees will report the harvest level allocated for each licence and harvest level cut (cut control volume) for the past reporting year. **32.** Licencees with manufacturing facilities will report the board feet and chip volume produced by sawmills. Report separately for each TSA. **33.** Licencees with manufacturing facilities will report number of days the manufacturing facility was operating, the total number of man hours worked and the number of mill employees on payroll for the reporting period. Report separately for each TSA.
Variance	**19.** According to the Cut Control Regulation and Policy

Indicator	**5.2.4 Level of Aboriginal participation in the forest economy**
Element(s)	5.2 Communities and Sustainability
Strategy(s) Description	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. This indicator and target looks specifically at First Nation participation in the forest economy, first to look at Licencees' efforts to build capacity within First Nations on matters related to the forest industry and secondly to look at the percentage of the allocated harvest level in each TSA that has been awarded to First Nations. The target recognizes that there are occasions when First Nations after being giving the opportunity, elect not to participate and is respectful of those decisions.
Means of achieving objective and target	Licencees engage in building mutually beneficial relationships with Aboriginal peoples and participate in government discussions on any redistribution of tenure within the respective TSA.
Forecast; Predicted Results or Outcome	There were 42 working relationships with First Nations in the TSA area using previous measurement standard (Kamloops 2003 baseline data). The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for this target.
Forecast	Operational activities and plans that recognize and manage for known aboriginal rights and duly established title. Licencees support First Nations in building organizational capacity. Economic opportunities and benefits to local First Nation communities resulting from a secure source of forest tenure.
Target	**35.** Maintain and/or increase the number of working relationships (partnerships, joint ventures, cooperative agreements, memorandum of understanding, or business contracts) with First Nations. Additionally, report annually the percent of the three TSAs AAC that has been allocated to first Nations ventures.
Basis for the Target	Developed by Licencees with First Nations Licencees engage in building mutually beneficial relationships with Aboriginal peoples. Access to forest tenure provides First Nations with direct control on how forests are sustainably managed and marketed.
Legal Requirements	Forest Act
Monitoring & Measurement Periodic	
Annual	Licencees will 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. Performance is based on a **three year rolling average.** 2014 performance target is achieved if the 12/13/14 average is $\geq$ to the 11/12/13 average. *Examples of a business contract include a work agreement or a direct timber sale with a First Nation Band or First Nation Contractor[8]. For consistency in reporting, count multiple work agreements with one band or contractor or direct sales with one band or contractor as a single business contract. For example, multiple work agreements or multiple direct sales would count as a single business contract if they occurred with the same band or contractor. Licencees will report this figure as a rolling three year average. For annual reporting, the information for the current year will be combined with the previous two years reporting, then averaged for the three years. Examples of working relationships will be provided to indicate possible trends in the types of these relationships.* Licencees will also report the total AAC of any tenure issued under Section 12 of the Forest Act (forms of agreement) where First Nations are the Licence holder. This volume will be looked at as a percentage of the total AAC.
Variance	None

[8] First Nation Contractor is a company where one or more of the principles are of First Nations decent.

Indicator	**6.1.1 Evidence of a good understanding of the nature of Aboriginal title and rights**
Element(s)	6.1 Aboriginal and Treaty Rights
Strategy(s) Description	Section 35 of the *Constitution Act* states "The existing aboriginal and treaty rights of Aboriginal Peoples of Canada are hereby recognized and affirmed". Some examples of the rights that Section 35 has been found to protect include hunting, fishing, trapping, gathering, sacred and spiritual practices, and title. SFM requirements are not in any way intended to define, limit, interpret, or prejudice ongoing or future discussions and negotiations regarding these legal rights and do not stipulate how to deal with Aboriginal title and rights, and treaty rights. The first step toward respecting Aboriginal title and rights, and treaty rights is compliance with the law. Section 7.3.3 of the CSA Z809 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 and therefore it is important to identify these legal requirements as a starting point. It is important for the organization to have an understanding of applicable Aboriginal title and rights, and treaty rights, as well as the Aboriginal interests that relate to the DFA. Both the desire of Licencees to comply with laws and open communication with local First Nations ensures that there is a good understanding of Aboriginal title and rights.
Means of achieving objective and target	Open communications with local First Nations. Written requests for communication are responded to.
Forecast; Predicted Results or Outcome	Open communication and follow-up with local First Nations (Kamloops 2004 baseline data): All licencees communicated with First Nations (42 meetings/meaningful communications) Licencees responded to all written requests for communication. The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for this target.
Forecast	Forest operations that respect Aboriginal title and rights and reflect the timber and non-timber interests of local First Nations.
Target	**27.** a) Open communications (track meetings and other meaningful communication) with local First Nations during Operational Plan reviews will include an understanding of traditional territories and other aboriginal rights including cultural and spiritual values. b) Participating licencees respond to all written requests for communication from First Nations.
Basis for the Target	Legal obligations, communication process developed by Licencees with First Nations
Legal Requirements	Constitution Act, Forest and Range Practices Act
Monitoring & Measurement Periodic	
Annual	Licencees will report: a) Number of meetings and meaningful communications with First Nations that included management and protection of traditional knowledge, non-timber resources, and cultural and spiritual values. b) Number of written requests for communication from First Nations versus the number of responses made to First Nations. Reporting is on a one to one ratio (one response for each request).
Variance	None

Indicator	**6.1.2 Evidence of best efforts to obtain acceptance of management plans based on Aboriginal communities having a clear understanding of the plans**
Element(s)	6.1 Aboriginal and Treaty Rights
Strategy(s) Description	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 and therefore it is important to identify these legal requirements as a starting point. It is important for the organization to have an understanding of applicable Aboriginal title and rights, and treaty rights, as well as the Aboriginal interests that relate to the DFA. Open communication with local First Nations includes not only the organization understanding the First Nations rights and interests but for First Nations 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 agreeable.
Means of achieving objective and target	Open communications with local First Nations. Written requests for communication are responded to.
Forecast; Predicted Results or Outcome	Open communication and follow-up with local First Nations (Kamloops 2004 baseline data): All licencees communicated with First Nations (42 meetings/meaningful communications) Licencees responded to all written requests for communication. The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for this target.
Forecast	Forest operations that respect Aboriginal title and rights and reflect the timber and non-timber interests of local First Nations.
Target	**27.** a. Open communications (track meetings and other meaningful communication) with local First Nations during Operational Plan reviews will include an understanding of traditional territories and other aboriginal rights including cultural and spiritual values. b. Participating licencees respond to all written requests for communication from First Nations.
Basis for the Target	Legal obligations, communication process developed by Licencees with First Nations
Legal Requirements	Constitution Act, Forest and Range Practices Act
Monitoring & Measurement Periodic	
Annual	Licencees will report: a. Number of meetings and meaningful communications with First Nations that included management and protection of traditional knowledge, non-timber resources, and cultural and spiritual values. b. Number of written requests for communication from First Nations versus the number of responses made to First Nations. Reporting is on a one to one ratio (one response for each request).
Variance	None

Indicator	**6.1.3 Level of management and/or protection of areas where culturally important practices and activities (hunting, fishing, gathering) occur**
Element(s)	6.1 Aboriginal and Treaty Rights
Strategy(s) Description	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 and therefore it is important to identify these legal requirements as a starting point. It is important for the organization to have an understanding of applicable Aboriginal title and rights, and treaty rights, as well as the Aboriginal interests that relate to the DFA. Open communication with local First Nations helps to ensure that areas of cultural importance are managed in a way that retains their traditions and values. First Nations, 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.
Means of achieving objective and target	Efforts have been made to understand which First Nation traditional territories fall within the Plan area and company Defined Forest Areas. Information sharing agreements are made with willing First Nation communities to promote the use and protection of sensitive information. Open communication with First Nations that includes a sharing of information that enables forest Licencees to understand and incorporate traditional knowledge into forest management options. Written requests for communication are responded to.
Forecast; Predicted Results or Outcome	Open communication and follow-up with local First Nations (Kamloops 2004 baseline data): All licencees communicated with First Nations (42 meetings/meaningful communications) Licencees responded to all written requests for communication. The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for the targets.
Forecast	Forest operations that respect Aboriginal title and rights and reflect the timber and non-timber interests of local First Nations. Open and meaningful relationships with local First Nations leading to a trust in sharing sensitive information. Forest plans contain information on how these sites will be managed or protected. Forest operations that properly execute the forest plans.
Target	**14.** 100 % protection of culturally important, sacred and spiritual sites that have been identified and mapped **and** 100% conformance to all plan commitments specifically designed to manage for culturally important, sacred and spiritual sites that have been identified and mapped. **27.** a) Open communications (track meetings and other meaningful communication) with local First Nations during Operational Plan reviews will include an understanding of traditional territories and other aboriginal rights including cultural and spiritual values. b) Participating licencees respond to all written requests for communication from First Nations.
Basis for the Target	Legal obligations, communication process developed by Licencees with First Nations
Legal Requirements	Heritage Conservation Act, Forest and Range Practices Act, Forest Planning and Practices Regulation, Constitution Act (and subsequent Supreme Court decisions).
Monitoring & Measurement Periodic	
Annual	**14.** Number of roads constructed or cutblocks harvested where culturally important, sacred or spiritual sites had been identified, mapped. Number of roads constructed or cutblocks harvested where the identified sites were managed or protected in accordance with forest plans. **27.** a) Report the number of meetings and meaningful communications with First Nations that included management and protection of traditional knowledge, non-timber resources, and cultural and spiritual values. b) Also report the number of written requests for communication from First Nations versus the number of responses made to First Nations. Reporting is on a one to one ratio (one response for each request).
Variance	None

Indicator	**6.2.1 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**
Element(s)	6.2 Respect for Aboriginal Forest Values, Knowledge, and Uses
Strategy(s) Description	Meaningful relationships that forest organizations have with willing Aboriginal Peoples contribute to an understanding of traditional knowledge and values. Proper use of this information in forest plans and operations leads to their being managed and protected to the satisfaction of those communities. Open communication with local First Nations helps to ensure that areas of cultural importance are managed in a way that retains their traditions and values. First Nations, 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
Means of achieving objective and target	Efforts have been made to understand which First Nation traditional territories fall within the Plan area and company Defined Forest Areas. Information sharing agreements are made with willing First Nation communities to promote the use and protection of sensitive information. Open communication with First Nations that includes a sharing of information that enables forest Licencees to understand and incorporate traditional knowledge into forest management options. Written requests for communication are responded to.
Forecast; Predicted Results or Outcome	Open communication and follow-up with local First Nations (Kamloops 2004 baseline data): All licencees communicated with First Nations (42 meetings/meaningful communications) Licencees responded to all written requests for communication. The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for the targets.
Forecast	Forest operations that respect Aboriginal title and rights and reflect the timber and non-timber interests of local First Nations. Open and meaningful relationships with local First Nations leading to a trust in sharing sensitive information. Forest plans contain information on how these sites will be managed or protected. Forest operations that properly execute the forest plans.
Target	**14.** 100 % protection of culturally important, sacred and spiritual sites that have been identified and mapped **and** 100% conformance to all plan commitments specifically designed to manage for culturally important, sacred and spiritual sites that have been identified and mapped. **27.** a) Open communications (track meetings and other meaningful communication) with local First Nations during Operational Plan reviews will include an understanding of traditional territories and other aboriginal rights including cultural and spiritual values. b) Participating licencees respond to all written requests for communication from First Nations.
Basis for the Target	Legal obligations, communication process developed by Licencees with First Nations
Legal Requirements	Heritage Conservation Act, Forest and Range Practices Act, Forest Planning and Practices Regulation, Constitution Act (and subsequent Supreme Court decisions).
Monitoring & Measurement Periodic	
Annual	**14.** Number of roads constructed or cutblocks harvested where culturally important, sacred or spiritual sites had been identified, mapped. Number of roads constructed or cutblocks harvested where the identified sites were managed or protected in accordance with forest plans. **27.** a) Report the number of meetings and meaningful communications with First Nations that included management and protection of traditional knowledge, non-timber resources, and cultural and spiritual values. **b)** Also report the number of written requests for communication from First Nations versus the number of responses made to First Nations. Reporting is on a one to one ratio (one response for each request).
Variance	None

Indicator	**6.3.1 Evidence that the organization has co-operated with other forest-dependent businesses, forest users, and the local community to strengthen and diversify the local economy**
Element(s)	6.3 Forest Community well-being and resilience
Strategy(s) Description	An economically and socially diverse community is often more sustainable in the long term. Support of efforts to increase diversity, the establishment of other enterprises and co-operation with other forest-dependent businesses and forest users is desirable. While there is limited information on the ecological services and non-timber benefits produced in the DFA, it is important to consider their contribution to community well being and resilience. Some of these goods and services include the ranching and trapping industries. Open communication with stakeholders and the public aid in ensuring all values and businesses are not adversely impacted. Support for local communities through business relationships provides employment diversification and increased local revenue.
Means of achieving objective and target	Communication to occur with ranchers and trappers to discuss forest plans and operations. Completion of visual quality assessments where operations are planned within scenic areas. Licencees seek and maintain active, mutually beneficial business relationships with other forest products businesses in the DFA and vicinity.
Forecast; Predicted Results or Outcome	**28.** Effective public communication (Kamloops 2000 baseline data*): • Licencee's interests were represented at strategic level meetings. • 66% of local plan meetings were attended (this is below the target of 70% but within the variance of 60% of meetings attended); • A total of 12 community meetings were attended. • All written requests (3) for communication were responded to. **29.** Meeting visual quality objectives: Harvesting met visual quality objectives in 182/183 cutblocks (Kamloops 2000 baseline data*). **31.** Licencees were involved in 22 annual value-added business initiatives and partnerships (Merritt 2001 baseline data*). **36.** Annual meetings with affected ranchers: Ninety-two percent of ranchers affected by planned operations were communicated with during the reporting period compared to a target of 90 percent (Kamloops 2001 baseline data*). * The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for these targets. **37.** Effective communication with trappers is a new target. The 2011 Monitoring Report results will be used to establish the baseline data.
Forecast	Public participation in forest planning and operations that is open, inclusive and responsive to public concerns. Visual quality within scenic areas reflects social preferences. Support for local communities through business relationships provides employment diversification and increased local revenue. Minimize the tree/grass/cattle conflicts through integrated and co-operative management practices. Minimize the impact of harvest operations on fur bearing animals.
Target	**28.** • Licencees will demonstrate efforts by participating in public multi-stakeholder meetings at both the strategic and at the local level. Licencees will report on the number of community meetings held or attended. Licencees will also report on the number of communications with concerned and engaged recreational users. • Participating licencees respond to all written requests from the public for communication within 30 days of their receipt. **29.** 100% conformance to strategies in plans designed to achieve preservation, retention and partial retention visual quality objectives. **31.** Licencees will report and provide detail regarding local business initiatives and partnerships. **36.** Where forest operations are planned within range units, the forest licencee will communicate with the rancher in advance of those operations to minimize impacts to affected ranchers. **37.** Communication of forest operations to occur with trappers 100% of the time in advance of operations (see annual reporting requirements on how this indicator is applied).
Basis for the Target	Essential that holders of varying land use tenures on the same land base communicate regularly. Legal requirements. Business initiatives and partnerships, built on sound business principles, are not only beneficial to the partners, but also to the economy and vitality of the TSA.
Legal Requirements	Forest and Range Practices Act, Forest Planning and Practices Regulation

Monitoring & Measurement Periodic	
Annual	**28.** Licencees will report: • A yes/no answer as to whether their interests were represented at strategic and local area meetings with other stakeholders and/or the broader public. The number of community meetings held or attended during the reporting period. The number of communications with concerned and engaged recreational users. • Number of responses sent out by licencees compared to the number of written requests for communication. Report the average timeline for response. **29.** Licencees will report on the number of harvested blocks that achieve the visual intent as described in plans versus the number of blocks harvested within the past year that had preservation, retention or partial retention visual quality objectives. Also indicate the number of these areas that met the objectives by way of exemption for other management concerns. **31.** Licencees will report and provide detail regarding local business initiatives and partnerships. Report separately for each TSA. **36.** Licencees will report percent of ranchers affected by planned operations that were communicated with during the reporting period. **37.** Where trappers holding a registered trap line advise forest Licencees of the areas that they will be active in a given year and seek to understand what forest operations might be occurring for that year, Licencees will report if they communicated with that trapper their planned forest operations. Should a forest Licencee's plans change during that year such that operations will be conducted in areas not originally discussed (excluding areas discussed in general and identified as not being of concern to the trapper regardless of any operations taking place), companies will report if they made a concerted effort to contact that trapper and inform him/her of those operations.
Variance	**36.** 10% **37.** 5%

Indicator	**6.3.2 Evidence of co-operation with DFA-related workers and their unions to improve and enhance safety standards, procedures, and outcomes in all DFA-related workplaces and affected communities**
Element(s)	6.3 Forest Community well-being and resilience
Strategy(s) Description	The BC Forest Safety Council was created in September 2004 after the release eight months earlier of a unanimous report from the provincial government's Forest Safety Task Force. The mandate of the task force had been to set out a comprehensive strategy to reduce high levels of injuries and fatalities in the forest sector. Its membership consisted of representatives of companies, unions, independent contractors, forestry associations and the Workers' Compensation Board of B.C. (since renamed WorkSafe BC). **SAFE Companies** is the flagship program of the BC Forest Safety Council, certifying B.C. forestry operations that show a commitment to safety and demonstrate, through audits, that their safety programs meet industry standards. This earns SAFE-certification status for companies of all sizes, from individual owner operators to the largest firms. More information is available at: http://www.bcforestsafe.org/index.html Effective January 1, 2009, certification became a pre-requisite to bid on BCTS contracts. The Ministry's Forests For Tomorrow program also requires SAFE certification for its agreement holders. Licencees that subscribe to the SAFE Company program demonstrate a commitment to forest workers that they go home safely to their families at the end of each work day.
Means of achieving objective and target	Licencees require those who conduct forest operations be SAFE Company or equivalent registered and/or certified.
Forecast; Predicted Results or Outcome	Forest workers who safely execute their work assignments. As this is a new target, 2011 Monitoring Report results will be used to establish the baseline data.
Forecast	From 1998 to 2005, WorkSafe BC accepted an average of nearly 22 harvesting fatality claims each year — the worst in 2005 with 34 claims. But the industry averaged fewer than 14 fatalities from 2006 to 2008. While this 35-per-cent reduction is a step in the right direction, no fatality is acceptable. Companies and contractors who are SAFE Company or equivalent certified demonstrate the efforts to make safety integral to each worker's life, and that unsafe is unacceptable.
Target	**38.** A minimum of 80% of contractors conducting on the ground work that are SAFE Company or equivalent registered and/or certified. And for BCTS, that a minimum of 80% of licences or contracts awarded were SAFE Company or equivalent registered and/or certified.
Basis for the Target	Continuously improve forest worker safety record.
Legal Requirements	Workers Compensation Act
Monitoring & Measurement Periodic	
Annual	Licencees will report number of on the ground contractors in total working in the DFA and the number of those that are SAFE Company registered and/or certified. For BCTS, report the number of licences and contracts awarded that required Safe Company or equivalent certification as well as the total licences/contracts awarded.
Variance	None

Indicator	**6.3.3 Evidence that a worker safety program has been implemented and is periodically reviewed and improved**
Element(s)	6.3 Forest Community well-being and resilience
Strategy(s) Description	The BC Forest Safety Council was created in September 2004 after the release eight months earlier of a unanimous report from the provincial government's Forest Safety Task Force. The mandate of the task force had been to set out a comprehensive strategy to reduce high levels of injuries and fatalities in the forest sector. Its membership consisted of representatives of companies, unions, independent contractors, forestry associations and the Workers' Compensation Board of B.C. (since renamed WorkSafe BC). **SAFE Companies** is the flagship program of the BC Forest Safety Council, certifying B.C. forestry operations that show a commitment to safety and demonstrate, through audits, that their safety programs meet industry standards. This earns SAFE-certification status for companies of all sizes, from individual owner operators to the largest firms. More information is available at: http://www.bcforestsafe.org/index.html Effective January 1, 2009, certification became a pre-requisite to bid on BCTS contracts. The Ministry's Forests For Tomorrow program also requires SAFE certification for its agreement holders. Licencees that subscribe to the SAFE Company program demonstrate a commitment to forest workers that they go home safely to their families at the end of each work day.
Means of achieving objective and target	Licencees subscribe to the SAFE Company program.
Forecast; Predicted Results or Outcome	Forest companies who demonstrate leadership and commitment to having a safe work environment. As this is a new target, 2011 Monitoring Report results will be used to establish the baseline data.
Forecast	From 1998 to 2005, WorkSafe BC accepted an average of nearly 22 harvesting fatality claims each year — the worst in 2005 with 34 claims. But the industry averaged fewer than 14 fatalities from 2006 to 2008. While this 35-per-cent reduction is a step in the right direction, no fatality is acceptable. Companies and contractors who are SAFE Company or equivalent certified demonstrate the efforts to make safety integral to each worker's life, and that unsafe is unacceptable.
Target	**39.** All forest companies/organizations subscribing to the SFM Plan are SAFE Company or equivalent registered and/or certified.
Basis for the Target	Continuously improve forest worker safety record.
Legal Requirements	Workers Compensation Act
Monitoring & Measurement Periodic	
Annual	Licencees will report a yes/no answer as to whether they are SAFE Company or equivalent registered and/or certified.
Variance	None

Indicator	**6.4.1 Level of participant satisfaction with the public participation process**
Element(s)	6.4 Fair and Effective Decision Making
Strategy(s) Description	The SFM Advisory Group was formed to assist the participating licencees in developing the SFM Plan by identifying local values, objectives, indicators and targets and evaluating the effectiveness of the Plan. The SFM Plan is an evolving document that will be reviewed and revised on an annual basis with the SFM Advisory Group to address changes in forest condition and local community values. Ensuring the continuing interest and participation of this important Group is a Licencee priority. The ability of people to share information, discuss and solve problems, and set and meet objectives is key to achieving and maintaining meaningful participation.
Means of achieving objective and target	Licencees provide all Advisory Group members, and interested public who have shown notable interest (written comments or SFM Plan meeting attendance) during the year, a feedback form (survey) to assess their satisfaction with the process. All survey questions will have a 1-5 scoring assessment(1 being poor or ineffective and 5 being excellent or highly effective).
Forecast; Predicted Results or Outcome	Satisfied advisory group (2004 baseline data) a) Survey response was an average of 3.9 out of five 5 for both Kamloops and Merritt. There were 26 respondents to the survey. b) Results of the feedback form were compiled and are reported as part of the annual monitoring program in the Monitoring Report.
Forecast	Active, engaged Public Advisory Group
Target	**40.** a) 80% of survey responses "3" or better b) All written comments are reviewed and considered, and all line responses averaging less than 3 become action items
Basis for the Target	Ensure issues are identified discussed and where possible, resolved. Advisory Group process is being continuously improved.
Legal Requirements	N/A
Monitoring & Measurement Periodic	
Annual	Survey to be sent out only to those public members that attended one of the meetings in the previous year. a) Survey responses coded 1 (poor), 2, 3 (satisfactory), 4, 5 (well done) b) Results of feedback form compiled and reported as part of annual monitoring program.
Variance	None

Indicator	**6.4.2 Evidence of efforts to promote capacity development and meaningful participation in general**
Element(s)	6.4 Fair and Effective Decision Making
Strategy(s) Description	The ability of people to share information, discuss and solve problems, and set and meet objectives is key to achieving and maintaining meaningful participation. Many types of initiatives (e.g., two-way information exchanges, educational opportunities) can be used to help promote meaningful participation. This indicator and target recognizes the importance of providing opportunities for members of the public, as well as First Nations, to provide input into forestry planning. Members of the public and First Nations provide local knowledge that contributes to socially and environmentally responsible forest management. Open lines of communication allow forest licencees to maintain an awareness of social values and concerns and to respond accordingly. The sharing of learnings and opinions contributes to balanced decisions and plans acceptable to the majority of public.
Means of achieving objective and target	Licencees are committed to work with members of the public on forest management issues and to improve the effectiveness of public processes. Licencees will provide opportunities/avenues for public participation in decision-making processes through participation in committees, meetings, and plan discussions. Licencees respond to all written requests from the public for communication. Licencees will be involved with educational support to ensure the importance of resource management is conveyed. In addition to direct actions by licencees and their employees, additional outside resources including the sharing of information on the website http://www.for.gov.bc.ca/dcs/sustainable_forestry/sustainable_forestry.htm may be used to achieve the target.
Forecast; Predicted Results or Outcome	**28.** Effective public communication (Kamloops 2000 baseline data*): • Licencee's interests were represented at strategic level meetings. • 66% of local plan meetings were attended (this is below the target of 70% but within the variance of 60% of meetings attended); • A total of 12 community meetings were attended. • All written requests (3) for communication were responded to. **41.** There were 35 classroom visits from the licencees in the reporting period (Kamloops 2000 baseline data*). * The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for these targets.
Forecast	Public participation in forest planning and operations that is open, inclusive and responsive to public concerns.
Target	**28.** Licencees will report: • A yes/no answer as to whether their interests were represented at strategic and local area meetings with other stakeholders and/or the broader public. The number of community meetings held or attended during the reporting period. The number of communications with concerned and engaged recreational users. • Number of responses sent out by licencees compared to the number of written requests for communication. Report the average timeline for response. **41.** Participating licencees will maintain educational support that leads to a balanced and broad-based understanding of forestry. One focus is forestry programs at the elementary, secondary, and post-secondary levels. Target 40 actions per year in each of the Merritt and Kamloops TSAs, and 10 actions per year in Lillooet TSA.
Basis for the Target	Developed by Licencees with the Public Advisory Group with a goal of an informed, educated public.
Legal Requirements	N/A
Monitoring & Measurement Periodic	
Annual	**28.** Licencees will report: • A yes/no answer as to whether their interests were represented at strategic and local area meetings with other stakeholders and/or the broader public. The number of community meetings held or attended during the reporting period. The number of communications with concerned and engaged recreational users. • Number of responses sent out by licencees compared to the number of written requests for communication. Report the average timeline for response. **41.** Licencees will report on the number of presentations or field trips to schools, public groups and individuals during the reporting year. *Separate reporting for First Nations, where visit or activity is targeting them specifically.*
Variance	None

Indicator	**6.4.3 Evidence of efforts to promote capacity development and meaningful participation for Aboriginal communities**
Element(s)	6.4 Fair and Effective Decision Making
Strategy(s) Description	The ability of people to share information, discuss and solve problems, and set and meet objectives is key to achieving and maintaining meaningful participation. Many types of initiatives (e.g., two-way information exchanges, educational opportunities) can be used to help promote meaningful participation. Open lines of communication allow forest licencees to maintain an awareness of social values and concerns and to respond accordingly. First Nations members can also provide local knowledge that contributes to socially and environmentally responsible forest management. This indicator and related targets look specifically at First Nation participation in the forest economy: to look at open communications, Licencees' efforts to build capacity within First Nations on matters related to the forest industry, educational efforts aimed directly at First Nations and to look at the percentage of the allocated harvest level in each TSA that has been awarded to First Nations.
Means of achieving objective and target	Licencees engage in building mutually beneficial relationships with Aboriginal peoples and participate in government discussions on any redistribution of tenure within each of the three TSAs. Licencees will be involved with educational support to ensure the importance of resource management is conveyed.
Forecast; Predicted Results or Outcome	**27.** Open communication and follow-up with local First Nations (Kamloops 2004 baseline data*): All licencees communicated with First Nations (42 meetings/meaningful communications) Licencees responded to all written requests for communication. **35.** There were 42 working relationships with First Nations in the TSA area using previous measurement standard (Kamloops 2003 baseline data*). **41.** There were 35 classroom visits from the licencees in the reporting period (Kamloops 2000 baseline data*) * The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for these targets.
Forecast	Economic opportunities and benefits to local First Nation communities resulting from a secure source of forest tenure, open communication and broad support in capacity building.
Target	**27.** a. Open communications (track meetings and other meaningful communication) with local First Nations during Operational Plan reviews will include an understanding of traditional territories and other aboriginal rights including cultural and spiritual values. b. Participating licencees respond to all written requests for communication from First Nations. **35.** Maintain and/or increase the number of working relationships (partnerships, joint ventures, cooperative agreements, memorandum of understanding, or business contracts) with First Nations. Additionally, report annually the percent of the three TSAs AAC that has been allocated to first Nations ventures. **41.** Participating licencees will maintain educational support that leads to a balanced and broad-based understanding of forestry. One focus is forestry programs at the elementary, secondary, and post-secondary levels. Target 40 actions per year in each of the Merritt and Kamloops TSAs, and 10 actions per year in Lillooet TSA.
Basis for the Target	Developed by Licencees with First Nations with a goal of informed, educated communities. Licencees engage in building mutually beneficial relationships with Aboriginal peoples. Access to forest tenure provides First Nations with direct control on how forests are sustainably managed and marketed.
Legal Requirements	Forest Act, Forest and Range Practices Act
Monitoring & Measurement Periodic	

Annual	**27.** a) Number of roads constructed or cutblocks harvested where culturally important, sacred or spiritual sites had been identified, mapped. b) Number of roads constructed or cutblocks harvested where the identified sites were managed or protected in accordance with forest plans. **35.** Licencees will 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. Performance is based on a **three year rolling average.** 2014 performance target is achieved if the 12/13/14 average is ≥ to the 11/12/13 average. *Examples of a business contract include a work agreement or a direct timber sale with a First Nation Band or First Nation Contractor*[9]*. For consistency in reporting, count multiple work agreements with one band or contractor or direct sales with one band or contractor as a single business contract. For example, multiple work agreements or multiple direct sales would count as a single business contract if they occurred with the same band or contractor. Licencees will report this figure as a rolling three year average. For annual reporting, the information for the current year will be combined with the previous two years reporting, then averaged for the three years. Examples of working relationships will be provided to indicate possible trends in the types of these relationships.* Licencees will also report the total AAC of any tenure issued under Section 12 of the Forest Act (forms of agreement) where First Nations are the Licence holder. This volume will be looked at as a percentage of the total AAC. **41.** Licencees will report on the number of presentations or field trips to schools, public groups and individuals during the reporting year. *Separate reporting for First Nations, where visit or activity is targeting them specifically.*
Variance	None

[9] First Nation Contractor is a company where one or more of the principles are of First Nations decent.

Indicator	**6.5.1 Number of people reached through educational outreach**
Element(s)	6.5 Information for Decision-Making
Strategy(s) Description	Organizations and the public provide and receive information through interactions with each other. The sharing of learnings and opinions contributes to balanced decisions and plans acceptable to the majority of public.
Means of achieving objective and target	Licencees will be involved with educational support to ensure the importance of resource management is conveyed. In addition to direct actions by licencees and their employees, additional outside resources including the sharing of information on the website http://www.for.gov.bc.ca/dcs/sustainable_forestry/sustainable_forestry.htm may be used to achieve the target.
Forecast; Predicted Results or Outcome	There were 35 classroom visits from the licencees in the reporting period (Kamloops 2000 baseline data). The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for this target.
Forecast	An educated and informed public with a broad understanding of forestry that can provide local input into forest planning and operations.
Target	**41.** Participating licencees will maintain educational support that leads to a balanced and broad-based understanding of forestry. One focus is forestry programs at the elementary, secondary, and post-secondary levels. Target 40 actions per year in each of the Merritt and Kamloops TSAs, and 10 actions per year in Lillooet TSA.
Basis for the Target	Adaptive forest management should be based on facts and data, and supported by ongoing monitoring and research. An educated and informed public with a broad based understanding of forestry can provide local input into forest planning and operations.
Legal Requirements	N/A
Monitoring & Measurement Periodic	
Annual	Licencees will report on the number of presentations or field trips to schools, public groups and individuals during the reporting year. *Separate reporting for First Nations, where visit or activity is targeting them specifically.*
Variance	None

Indicator	**6.5.2 Availability of summary information on issues of concern to the public**
Element(s)	6.5 Information for Decision-Making
Strategy(s) Description	This target recognizes the importance of keeping members of the public informed of forestry strategies being developed and planning occurring in their area. Open lines of communication facilitate public awareness and understanding of the SFMP and other current forestry topics, and provide an open opportunity for the public to respond. Members of the public can provide local knowledge that contributes to socially and environmentally responsible forest management.
Means of achieving objective and target	Licencees cooperatively manage a web site dedicated to providing the latest SFM Plan information, providing topical forestry information and links to other sources. Licencees develop and distribute the SFM Plan and performance results to the public annually, including a summary of research and extension initiatives.
Forecast; Predicted Results or Outcome	Public awareness (Kamloops 2004 baseline data). a) Licencees report that the web site is being maintained and the SFM Plan and other related information was made publicly available in the last year. b) Licencees received 9 written requests for communication. 9 responses were sent. The average timeline for responses was 11 days. The 2011 Monitoring Report results for the NTF Plan area will be used to establish the combined baseline data for this target.
Forecast	Public awareness and understanding of the SFM Plan. A continuously improving SFM Plan that has openly informed, included and responded to the public – one that is supported by ongoing monitoring and research.
Target	**42.** Licencees will keep members of the public informed of DFA strategies being developed, and planning occurring by: a) Maintaining a website b) Circulating SFM Plan and other information to the public at least annually (advertisements/news release/leaflet/open house/Local Resource Use Planning etc.)
Basis for the Target	Developed by Licencees in consultation with the Public Advisory Group. Provides topical information to local public as well as a world wide audience. Has instant feedback mechanism for those looking for additional information.
Legal Requirements	N/A
Monitoring & Measurement Periodic	
Annual	Licencees will report a yes/no answer as to whether web sites or other tools to disseminate information are being maintained. Licencees also report on the tools used to bring awareness to the SFMP and any other related information to the public in the last year.
Variance	None

6.0 Links to Other Planning Processes and Policies

Resource use planning in British Columbia occurs at a variety of levels ranging from strategic land use plans (LRMPs) to site specific plans for small areas (e.g., site plans for individual cutblocks). Strategic land use plans provide broad direction for the sustainable management of land and resources through the establishment of resource management zones (e.g., protected areas, special management areas and general resource management zones), management objectives and strategies to guide land and resource management activities.

Forest Stewardship Plans (FSP's) address resource management at various scales and are often regulated by government objectives. These objectives come from a variety of sources including the Forest and Planning Practices Regulation, orders made under the Land Act, the Land Use Objectives Regulation, the Government Actions Regulation, and strategic land use plans such as the Kamloops and Lillooet Land and Resource Management Plans (LRMP's). The Forest Stewardship Plans contain results and strategies to manage for these objectives set by government. There is little contradiction between these Plans and that of the SFMP for the Plan area. In fact, the indicators and targets found in the SFMP are often complimentary to those found in a Licencee's FSP.

Figure 1 on Page 89 illustrates the links between various levels of provincial resource use plans and related policies and procedures.

6.1 Strategies and Processes Guiding the SFM Plan

The Land and Resource Management Plans (LRMPs) developed in the Kamloops and Lillooet Timber Supply Areas reflect a balance of social, economic and environmental values. They incorporates the principles of sustainability and integrated resource management into a long term, strategic vision for Crown land and resource development for the plan area and will assist statutory decision-makers in making determinations about land and resource use. They also serve to assist in building cooperation and partnerships among government agencies, First Nations, Licenced tenure holders and other interested stakeholders in the plan area.

A strategic land use plan (Land and Resource Management Plan (LRMP)) has yet to be initiated in the Merritt TSA. Should a strategic land use plan be completed, provisions that pertain to forest resource uses and management practices may be implemented as legally enforceable provisions by being formally established as " higher level plans" under provincial forest legislation. Some of the land use objectives have been defined in the Merritt TSA without going through a formal LRMP process and here again these objectives are then managed with their incorporation into Forest Stewardship Plans. Licencees in the Merritt TSA are also guided by their Innovative Forest Practices Agreement (IFPA). The Vision Statement for the Nicola Similkameen Innovative Forestry Society, the organization that implements the IFPA is as follows:

Nicola Similkameen Innovative Forestry Society uses innovative forest management practices that incorporate Aboriginal knowledge and values and public involvement in order to increase the productivity of a healthy and resilient working forest. These local forests provide increased forest values, additional investment and enhanced employment opportunities while assuring environmental, economic and social sustainability for communities in the Nicola – Similkameen region.

More information on the Nicola Similkameen Innovative Forestry Society can be found at their website: http://www.nsifs.bc.ca/ .

In addition , a number of provincial and local policies also relate to the objectives, indicators, and targets in the SFM Plan. Collectively on the Nicola Thompson Fraser SFM Plan area the following influence Plan objectives:

Protected Areas

The Protected Areas Strategy was established by the provincial government in 1992 with the objective of protecting 12 percent of the province's land base by the year 2000. Protected areas are established based on their representation of natural diversity, wildlife, wilderness, recreation and cultural and heritage values.

Protected areas are located across the land base to provide representation of the cross-section of ecosystems. Logging, mining and hydroelectric development are 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.

Forest Ecosystem Management

The Nicola Thompson Fraser SFM Plan area contains a wide variety of forest ecosystems – grasslands, open grown ponderosa pine and Douglas-fir forests are predominant in the very dry lower elevation of the main valleys with lodgepole pine dominating in the mid-elevation and spruce/balsam at upper elevations. These forest ecosystems have historically been influenced by the presence or absence of fire as a dominant form of natural disturbance. Wetter ecosystems are characterized by the presence of western hemlock and western red cedar. Ecosystems are categorized into natural disturbance types (NDTs) based on fire return intervals and disturbance sizes and patterns. NDTs are used to provide guidance for maintaining biodiversity.

Biological diversity (biodiversity) is the diversity of plants, animals and other living organisms in all their forms and levels of organization. It includes the diversity of genes, species, and ecosystems and the functional and evolutionary processes that link them. The great diversity of physical features and prevailing climatic conditions in the Plan area has resulted in a great diversity of habitats and species. Biodiversity can be affected by the disruption of natural processes. Future maintenance of biodiversity is dependent upon:

- the protection and connectedness of representative ecosystems as ecological benchmarks at the provincial and regional level
- the maintenance and connectivity of representative habitats and seral stages at the landscape and watershed level
- management for important attributes at the stand (site) level
- protection of rare and endangered species and ecosystems.

The intent of forest ecosystem management is to maintain a representation of the biological and physical diversity native to the plan area, and maintain forested ecosystem functions and conditions. Ecosystem classification and mapping has been completed throughout the province and assists forest managers with decision making related to:

- ⇒ stand level biodiversity (retain wildlife tree patches and individual wildlife trees)
- ⇒ rare features and species at risk
- ⇒ representation of old growth forests throughout the plan area
- ⇒ functional connectivity (movement of plants and animals) at the regional, landscape and stand level
- ⇒ coarse woody debris retention requirements.

A. Stand level biodiversity

Strategies related to wildlife tree retention are consistent with the direction in the Landscape Unit Planning Guide with additional consideration for individual large diameter stems in NDT4. Direction from local government agencies through items such as *Douglas fir Management Guidelines* and *Wildlife Tree Patch Retention* policy provide guidance to implement biodiversity measures.

B. Rare Features and Species at Risk

Existing forest legislation outlines a process for identifying rare features and species at risk which require special management. The SFM Plan builds on these requirements with related targets. The species identified as at risk within the Nicola Thompson Fraser SFM Plan area are listed in Appendix 6.

Rare ecosystems are those of limited distribution or those that have been altered through historic land use practices. Many of the very dry desert-like ecosystems in the plan area are considered rare. Key strategies for managing known rare ecosystems include avoidance of new road construction where practicable, and inclusion of known rare ecosystems, as areas to be given priority for the establishment of old growth management areas. Rare ecosystems for Kamloops and Lillooet are listed in Appendix 7.

C. Maintain Representative Old Growth Forests

Strategies for biodiversity include direction to landscape unit planning, identifying areas where conservation is a priority through assignment of biodiversity emphasis options. The Kamloops and Lillooet LRMPs have assigned biodiversity emphasis options to each landscape unit in their respective TSAs. The Merritt TSA Old Growth Management Area (OGMA) Rational Report describes the process by which changes were made to the Landscape Unit Planning Guide replacing “old first” selection with the selection of areas with long term high biodiversity values. For all of the Plan area, OGMAs have been spatially located in a manner that is biologically relevant (i.e., considers connectivity, age and spatial distribution, etc.). Where the land base has few old forests, mature stands were recruited with higher biodiversity values.

D. Connectivity

Connectivity will be achieved at the Landscape Unit planning level through the placement of OGMAs or by planning for harvested and leave areas that maintain mature/older stands in a connected manner. Riparian management areas, as prescribed in provincial forest legislation, provide connectivity of forested cover along waterways, which are generally areas with high value for wildlife habitat and movement. Local government agencies have provided interim forest connectivity corridors for a few key areas to help Licencees manage forest development in areas where landscape level connectivity is at risk.

E. Coarse Woody Debris

Coarse woody debris (i.e., downed wood) plays an important role in forest ecosystems including provision of food and shelter for invertebrates and smaller wildlife, growing sites for trees, nutrients for soils, and structure in streams to maintain channel stability.

Excessive removal of coarse woody debris (CWD) may affect habitat needs for some wildlife species (e.g., pine marten, fisher, grizzly bear, many small mammals and snakes, some amphibians and numerous invertebrates).

The Southern Interior Forest Region has a number of specific strategies relating to CWD. These strategies include direction for basic levels of CWD, creation of stubs, and guidelines for enhanced levels of CWD in landscape units with high biodiversity emphasis options.

Range

Rangeland includes natural grasslands, forests, alpine communities, parklands and cutblocks. Two key issues related to range management include the loss of grassland communities from forest in-growth (due largely to fire suppression) and invasion by noxious weeds that out competes native vegetation and threaten the biodiversity and long-term viability of susceptible grassland ecosystems. The CSA standard recognizes both of these threats in the content of the standard and provides guidance to promote activities that fall within their range of natural variation.

Significant forest use by grazing tenure holders occurs within the Nicola Thompson Fraser SFM Plan area. Given the overlap between grazing tenures and forest Licences within the Plan area, recognizing resource values associated with range use of forest land is necessary in any forest management plan and decision. Government representatives assist in communication between forest and range stakeholders.

Wildlife

The Nicola Thompson Fraser SFM Plan area has a great diversity of wildlife including several species that are considered rare at the provincial level. A key management requirement for sustaining wildlife populations is the protection, maintenance and enhancement of wildlife habitat. To address the needs of wildlife habitat, resource managers take a coarse filter ecosystem approach that addresses the needs of many species at a landscape level. However, in following this approach, the habitat needs of certain key species may not be addressed and additional specific actions may be required to deal with these needs (e.g., *mountain caribou, northern spotted owl*).

The Identified Wildlife Management Strategy (IWMS) helps to provide a fine filter approach towards management of rare species. Indicators 1.2.1, 1.2.2 and 1.3.2 of this SFM Plan include performance measures related to Species at Risk habitats.

Water and Riparian Habitat

Water is a primary and fundamental resource of the Plan area. Numerous rivers, lakes and streams support many species of fish. Human population growth, urban development, land and resource development, and water use have all had a cumulative impact on fish populations and fish habitat. A combination of low summer flows, high water temperatures, fines in the gravel and shortage of pools has seriously diminished the quality of fish habitat in many watersheds. Impacts include changes in flow rates, loss of riparian vegetation, destabilization of stream channel, erosion and sedimentation. The Interior Watershed Assessment Procedure (IWAP) is a program for assessing the cumulative impacts of disturbance to a watershed. IWAPs identify impacts that affect fish habitat and water quality and quantity and include recommendations for mitigating impacts and preventing further impacts from occurring.

Strategies for aquatic and riparian ecosystems in the Plan area are complemented by provincial forest legislation or local area policies.

Forest Industry/Economy

The forest industry in the Nicola Thompson Fraser SFM Plan area plays an important role in the regional and provincial economies and accounts for approximately 6 percent of the provincial allowable annual cut (AAC). Within the Plan area approximately 67 percent of the 5.1 million hectare land base is considered productive Crown forest and 39 percent of the land base is deemed suitable for harvesting. The difference between the productive forest land base and the timber harvesting land base is largely attributable to unmerchantable forest types, roads and landings, and inoperable areas.

Key land and resource issues for the forest industry in the plan area include security of timber supply and increased costs associated with managing other resource values (e.g., forage for livestock, wildlife habitat, visual quality, etc.). Cost increases are a major concern to the forest industry as they may affect its international competitiveness.

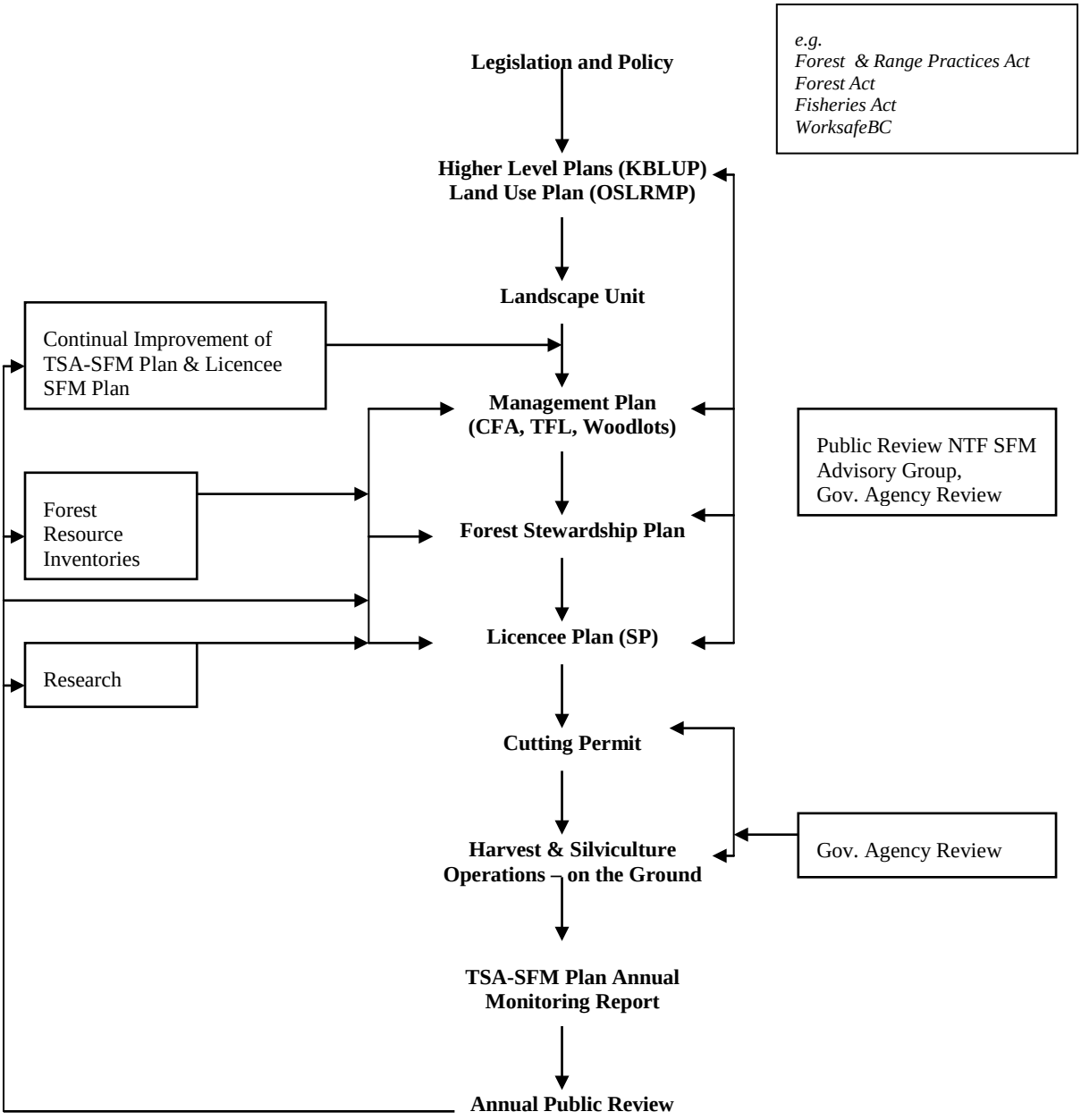
The forest sector supports numerous other jobs in the area through companies and employees purchasing goods and services from local businesses. Employment associated with the forest industry is estimated to be 1.41 jobs per year per 1000 cubic metres of timber harvested. The personal incomes average $75,350 per 1000 cubic metres harvested while government revenues are $36,250 per 1000 cubic metres harvested (source: Natural Resources Canada, 2006-2008 data). The potential contribution of the Plan area by participating licencees could be estimated using their 3.8 million cubic meter volume allocation.

6.2 Links to Operational Planning

The SFM Plan is a complementary plan that demands field level performance of commitments made within this plan. Figure 1 shoes how these commitments are incorporated into site level operational plans. These operational plans also include other regulated plan commitments to ensure compliance with the law – one of the CSA standards expectations. It also shows the feedback loops of research, monitoring and adaptive management that occur from operations to the SFM plan, higher-level plans and Licencee plans.

The intent is, over the long term, to rigorously apply the management direction provided through the hierarchy of planning shown in Figure 1, combined with regular monitoring and assessment. Through this process, the SFM plan will continue to be updated and improved to incorporate new information and best management practices based on the most current understanding of effective resource management practices.

Figure 1. Links Between Plans



6.3 Related Programs and Guidance

Existing legislation and policy contributes to sustainable forest management. For example, as previously referenced, current legislation requires the identification of old growth management areas and wildlife/leave tree retention areas. There are also numerous policies and guidelines in place at the regional and district levels that contribute to the principles of sustainable forest management. These include the following:

- **Public Involvement:** Provincial direction for forest management on publicly owned lands includes a requirement to maintain a mix of opportunities that reflect changing resources and social values over time. Public involvement in Forest Stewardship Plan (FSP) reviews is intended to facilitate the exchange of information between developers and people interested in, or affected by, forest operations.

  FSP (thus harvest) approval is contingent on a proponents ability to demonstrate that they solicited public review and comment and that any comments were earnestly responded to. This formal process ensures public concerns pertaining to items such as recreation features, access, identified trails or other items of significance are identified. Early identification of issues enables the forest licencee to adapt plans accordingly.

  Licencees within the Nicola Thompson Fraser SFM Plan area have a long-standing commitment to work with members of the public on forest management issues, and there is a well-established history of licencee participation in community meetings, including local planning processes and strategic plans. In addition, licencees are committed to providing topical education updates on forest management issues during meetings. This ensures the public and local First Nation tribal councils and bands have up-to-date information. Members of the public continue to support strategic and local planning processes and actively participate in meetings on forest management issues. Licencees are committed to improving the effectiveness of public processes within the Plan area.

- **Access Management:** Access plans are co-coordinated by government with input from the public and forest resource stakeholders. Forest licencees and proponents from other resource industries follow the advice and direction set by the government agencies through these planning processes. Presently, access management is discussed at localized meetings with affected stakeholders and Licencees implement them through commitments made in their Forest Stewardship Plan. Access plans consider the condition of roads, road maintenance and deactivation, and the need for access restrictions based on long term objectives for an area. Access planning includes identifying potential impacts on resources such as wildlife, tourism, recreation, or other values due to open public access. Public access controls are implemented where required.

- **Terrain stability:** The Plan area has significant climatic variations from wet conditions in the north to drier conditions in the south. Steep slopes and certain terrain conditions have the potential for landslides and surface soil erosion. Landslides are a natural and inevitable phenomenon that contributes to the evolution of the landscape. Although landslides occur in both logged and unlogged terrain, logging and road building can increase their frequency. Impacts of landslides include acceleration of sediment delivery to streams, possible damage to fish and invertebrate habitat and productivity, loss of forest site productivity, unsightly scars and damage to roads, culverts and bridges. The Forest and Range Practices Act (FRPA) stipulates that forest harvesting and road construction must not cause landslides (FPPR 37). The following are examples of the process undertaken to minimize landslides:
  - Assess all steep/sensitive terrain prior to road construction or harvesting to evaluate terrain stability and provide recommendations on:
    - whether or not development should proceed;
    - best road and cutting boundary locations or changes to proposed layout or road alignment;
    - riparian management areas;
    - possible mitigative actions and criteria; and
    - road construction and harvesting constraints or special techniques.
  - Inspections of drainage ditches and culverts regularly and take preventative measures to minimize the potential for debris flow initiation and soil erosion.
- **Road construction and maintenance procedures:** Certain soil types are sensitive to disturbance especially from road construction and harvesting activities involving mobile equipment such as excavators and skidders. These sensitive soils are identified in advance to help prevent/minimize soil compaction, poor drainage, puddling and soil displacement that result in loss of productive forest sites. With respect to forest roads, the soil and water information collected during the planning phase and future expected use of the road are used to determine the type of road constructed and level of maintenance, deactivation or rehabilitation to be prescribed. Deactivation and rehabilitation provides a distinction between the varying construction standards and duration of roads as follows:
  - Deactivation: The intent is to control water and maintain natural drainage patterns based on the risks associated. Activity includes: cross ditches, waterbars, backup drainage control or removing culverts, bridges, seeding and revegetation and pulling back of material (recontouring or returning material).
  - Rehabilitation: some of the same prescriptions above may be completed to control water and maintain natural drainage; however, the intent is to have the site capable of growing a productive crop of trees. Potential strategies may include pulling back of material (recontouring or returning material), seeding and revegetation and decompaction.

There are two administrative categories of road types: status and non-status.

- Status roads are ones held under road permit or road use permit by licencees. These permits give the licencees responsibility for maintaining the roads. There are two types of status roads:
  - *permanent roads* are long term roads that may be deactivated for control of water
  - *temporary roads* are short-term roads that will be rehabilitated – including water management – to return the area into a productive growing site.

  Commitments related to the amount of permanent access structures (i.e. roads, gravel pits) are included in site-specific plans. Temporary access structures included in plans are part of the net area that requires reforestation and must be suitably treated to enable tree survival and growth.
- Non-status roads have no assigned permit holder and responsibility is that of the Crown (usually old trails and roads)

Forest Stewardship Plans contain several results and strategies where road construction and deactivation are referenced, and these commitments must be attained. Communication and input by the public, other resource users and resource agencies are important to ensure access meets necessary requirements.

- **Invasive Plants:** Invasive plants are non-native plant species that can be difficult to control. They can have a significant impact on agriculture and timber production, reducing forage production for livestock and wildlife and threatening forest regeneration. They may also alter the structure of natural plant communities, threatening biodiversity.

  The most effective strategy for controlling invasive plants is to prevent their establishment. Once established, the cost and difficulty of controlling invasive plants increases significantly. The licencees have committed to promptly re-vegetate exposed soil on certain roads in order to reduce the spread of invasive plants..
- **Quality of seed for revegetation of rights-of-way:** Grass seeding is carried out for three reasons: 1) invasive plant control; 2) erosion prevention; and 3) to provide forage. The seed used for revegetation is graded by Agriculture Canada to protect against the presence of invasive plants and other unwanted species. Measures used to ensure seed quality in the production cycle include sowing seeds with clean equipment, crop inspection, crop certificate permitting seed from inspected crop to be sold as certified seed, seed crop harvested with clean equipment, seed inspected, graded and sealed to Canada Seeds Act requirements by Agriculture Canada.
- **Forest Health:** The licencees are required under their Crown Licences to address forest pest/health at the operational level. Managing for health must take into account the natural variability and cyclical variations that occur on the landscape. Management for forest health includes both preventive action and proactive response measures. Examples include participation in overview flights, focused reconnaissance action resulting from overview flights, strategies and coinciding action plans, communication, implementation and review. See also Section 2.4 of the SFM Plan for information related to the Mountain Pine Beetle.

- **Forest Industry-Caused Wildfires:** The forest industry has numerous legal requirements to minimize the potential for wildfires being started by forest operations. Licencee employees and contractors are trained and knowledgeable in preventing and actioning wildfires. During fire season, the licencees monitor fire weather indices, which help determine the level of risk in terms of forest operations. Fire prevention activities such as maintaining fire watch and moving to early shift help reduce the risk of fires starting and spreading as a result of industrial operations. Wildfires are a natural part of ecosystem rejuvenation. However, human safety and potential loss of resources plays a role in strategies to control loss.

- **Free to Grow Silviculture Practices:** A free growing stand is defined in the legislation as a healthy stand of trees of a commercially valuable species, the growth of which is not impeded by competition from plants, shrubs or other trees.

  Prior to 1987, the Ministry of Forests and Range funded all stand establishments to the free to grow stage on Crown lands. With a change to the Forest Act that year, stand establishment (basic silviculture) became the financial responsibility of the licencee.

  The regeneration date is the date by which at least the minimum number of healthy well-spaced trees of the preferred and acceptable species per hectare must be established and subsequently maintained until the stand is declared free growing. The free growing assessment period is the time within which a free growing stand must be established as required in the Licencee Plan. A survey must be conducted on or before the latest free growing date to determine whether the number of free growing trees per hectare meets the number set in the Licencee Plan. Periodic monitoring and/or assessments are completed between the harvest and free growing dates.

- **Genetic diversity:** The Ministry of Forests and Range Tree Improvement Branch (TIB) oversees the development and implementation of regulations, guidelines, policies and standards to ensure that tree seed used for Crown land reforestation is locally adapted and contains sufficient genetic diversity.

  To conserve the genetic diversity of the province's forests, tree breeders collect hundreds of samples of tree species. Collections range from places where the species are found in large quantities to isolated populations at the edge of where they grow naturally. Breeders ensure that enough trees are selected to provide a level of diversity that will buffer future forests from environmental extremes and insect and disease attacks. In addition to breeding protocols, the genetic diversity of British Columbia's trees is protected in parks, protected areas and in special reserves that are established by making "duplicates" of parent trees.

  All trees planted on Crown lands must have originated from seed registered by the BC Tree Seed Centre. The Centre has strict requirements for tree seed acceptability, selection and storage. More information on the Tree Improvement Branch and the Seed Centre can be found at the website: http://www.for.gov.bc.ca/HTI/.

- **Seed and Vegetative Material Transfer Guidelines:** Seed and vegetative material transfer guidelines are intended to minimize the risks of maladaptation or growth loss associated with regenerating trees (planted from seed or vegetative material) in a different location from their source. Transferring seeds or vegetative materials beyond the limits specified in the guidelines may decrease productivity or increase susceptibility to frost, insects or disease. With respect to genetic diversity, these guidelines geographically limit the amount of natural change and spread of seed or vegetative material over the landscape. The transfer guidelines must be adhered to when prescribing reforestation measures in Licencee plans. The government has implemented its Future Forest Strategy that recognizes the impact that climate change may have on future forests and how seed transfer guidelines may need to be modified.

- **Wildlife Tree Retention:** During forest development planning, licencees incorporate a number of strategies for maintaining diversity of structure and function within cutblocks. These include wildlife/leave tree retention, either in single trees or patches, as described in the Wildlife Tree Retention Guidance, May 2006 document.. During operational activities, tree species of merchantable size will be retained, where this is in keeping with safety standards of Worksafe BC. Included are green trees that will develop into wildlife trees. Characteristics that make broad leaf trees and conifers suitable as future wildlife/leave trees include large diameter and height, and structural features such as cavities, loose bark, dead tops, and signs of damage or rot. Also retained are trees of suitable quality and productivity that can act as seed trees to aid in the natural regeneration of harvested areas. Locating wildlife/leave trees in unique microsites, in known habitat areas, and along riparian areas can contribute to long-term forest function and biodiversity.

  The intent is to provide wildlife tree patches that are windfirm and that will provide standing live and dead trees for habitat within or on the edge of harvested areas for the course of the rotation. Where merchantable trees in adjacent areas are not threatened, natural processes will be allowed to take their course within wildlife tree patches. Trees that burn, are attacked by insects, or are blown down contribute to biodiversity objectives.

  Other strategies for managing a diversity of vertical structure within cutblocks include regenerating a diversity of tree species and maintaining understory vegetation.

  Other aspects of maintaining structural diversity within cutblocks include providing a diversity of tree species, maintaining understory vegetation, and retaining coarse woody debris on sites after logging.

- **Visual management:** Visually sensitive areas are viewsheds or viewscapes visible from communities, public use areas and travel corridors, or viewpoints identified through a variety of referral or planning processes where the maintenance of visual quality is important. The Plan area has identified and mapped the priority scenic areas for visual management. Planned harvesting within this priority area requires a visual impact assessment and operations must be conducted to maintain visual quality. Measures to maintain visual quality are included in Licencee plans. Exemptions to attaining the visual quality objectives may occur for such things as salvage harvesting.

- **Archaeology:** During plan development, cutblock and road proposals are provided to trained assessors to determine if there is potential significance through an archaeological overview assessment. If yes, then additional fieldwork is scheduled as an archaeological impact assessment and any necessary changes are incorporated into the appropriate Licencee plan.
- **Carbon Balance:** 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. T his 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).

  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.

  A retrospective analysis of the forest carbon budget for BC (1920-1989) revealed that forest ecosystem carbon storage has increased from 14.2 Pg C in 1920 to 18.1 Pg C 1990 (Pg stands for petagram =one billion metric tonnes or 1000 x one billion kg). The increase in ecosystem C storage is attributed to an increase in the average age of forests and to the associated accumulation of C in biomass and soil and detritus pools. The average annual increase in ecosystem C storage over the 70-year period was 55.2 Tg C yr^1 (Tg stands for teragram = one million metric tonnes or 1000 x one million kg. One teragram is also equivalent to one megatonne or Mt).

In Figure 2 following, the Interior Cordilleran (lower left) graph provides an indication of how this applies to the Nicola Thompson Fraser SFM Plan area.

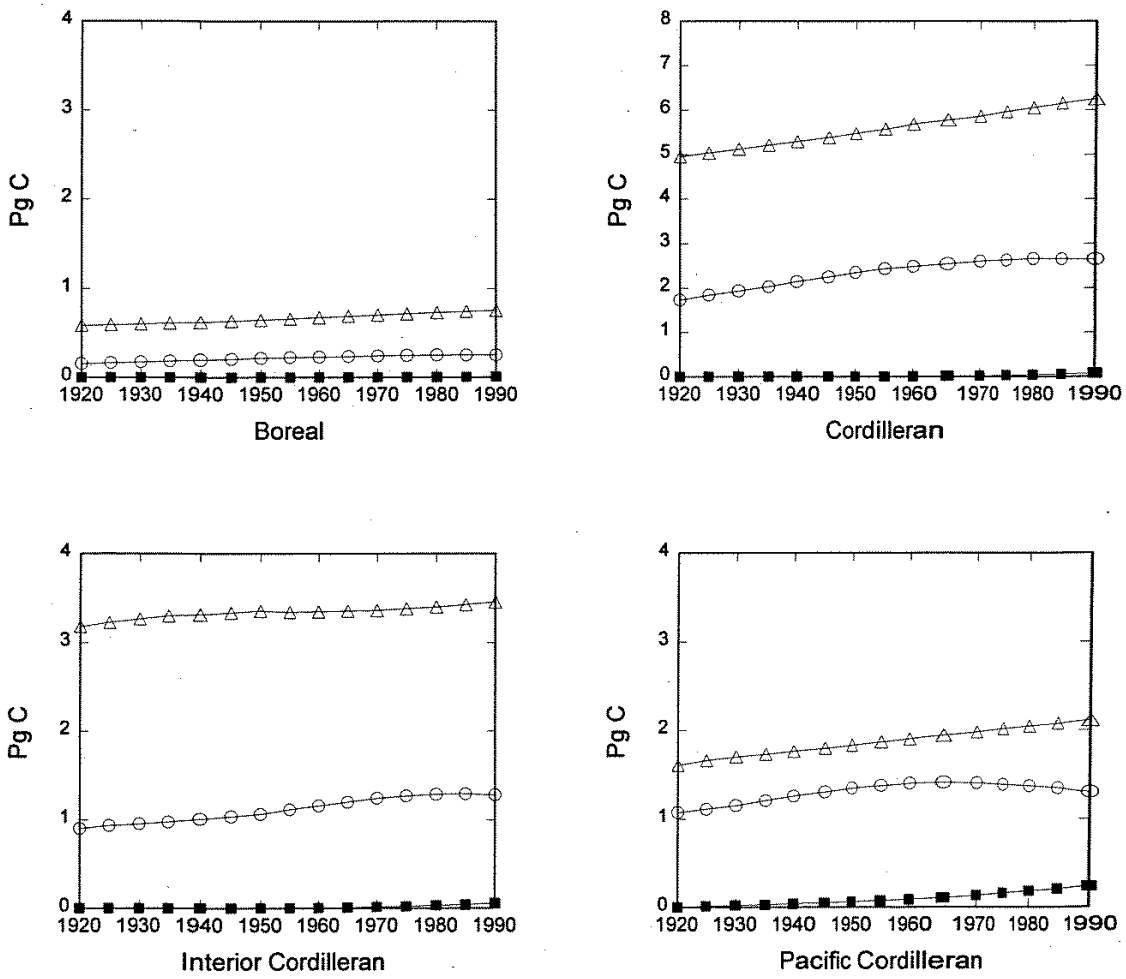


Figure 2. Changes to the total above ground and below ground biomass C (o), soil (Δ) and forest product sector (♦) by ecoclimatic provinces from 1920 to 1989.

The steady increase to carbon stored can be attributed to large scale natural disturbances of the previous century (where large amounts of carbon were released). Since these disturbances, forests have been in a rigorously growing phase sequestering large amounts of carbon. As time progresses, these forests will lose their ability to take up large amounts of carbon. They will also become more susceptible to large scale natural disturbances such as that occurring presently with Mountain Pine Beetle.

The following graph (fig. 3) provides an illustration of the overall carbon cycle within Canada:

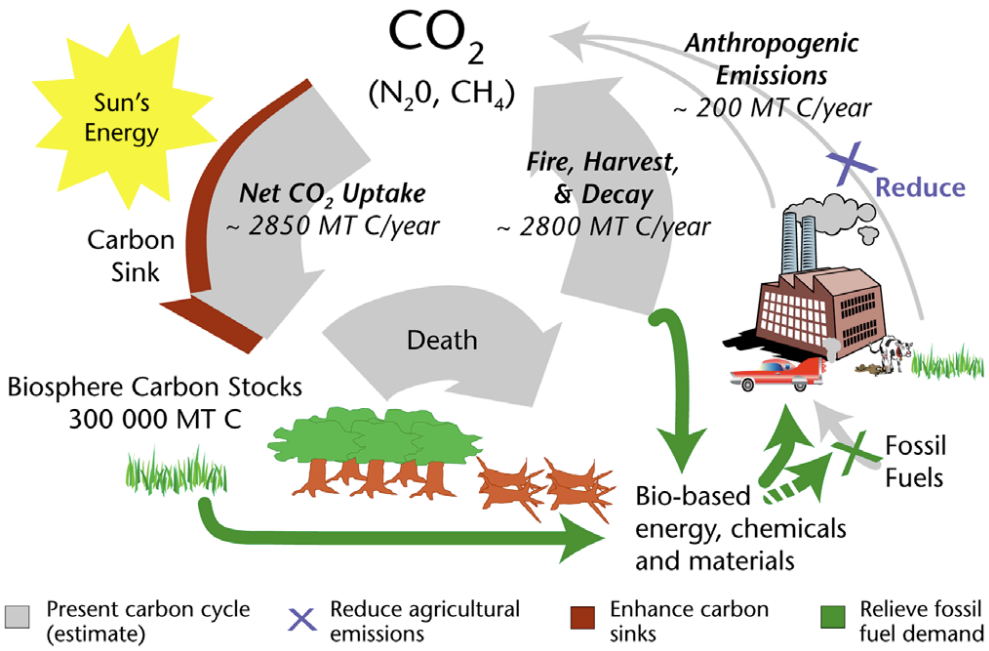


Figure 3. Carbon cycle within Canada.

In a 2009 Report - Carbon Management in British Columbia's Forests: Opportunities and Challenges, authors Mike Greig and Gary Bull consolidated forest carbon management information currently available for British Columbia in the policy, research, and operational communities. They summarized the forest carbon cycle as:

"Net changes in forest carbon stocks determine whether a forest ecosystem is a net source of atmospheric carbon or a net sink of atmospheric carbon. Overall, it is the forest's net carbon balance that must be accounted for by adding up the ever-changing contributions of all the stands. For example, when a tree is harvested, carbon is removed in the logs, but 40–60% of the tree biomass (branches, roots, leaves) remains in the forest where it decomposes slowly and gradually releases nutrients and CO2. The harvested areas also regenerate so that over time a substantial new pool of carbon is created. Harvested logs are sent to mills for conversion into forest products, such as lumber, panels, or paper. Depending on the use and disposal of these products, the carbon may be stored for a very long time, or it may be released into the atmosphere relatively quickly. About 45–50% of the carbon harvested and removed from the forest is stored in long-lasting structures such as houses. This carbon is not released back into the atmosphere until, for instance, a house is torn down many decades later and the wood is burnt or sent to landfills. About 25–30% of the carbon goes into less durable products such as wooden pallets, or quickly disposed of newspapers and other paper goods. Strategies prolonging the storage of carbon in wood products and landfills can help to reduce green house gas emissions. The remaining carbon (about 25%) is in the bark and leftover wood pieces, which are often used to fuel pulp and paper mills, thus providing a renewable energy substitute for fossil fuels (Natural Resources Canada 2007). In most Canadian forests, however, more carbon exists in soils and dead organic matter than in the living biomass".

The report notes 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 (Kranabetter and Macadam 2006), and undertaking carbon accounting projects. However, no published handbooks or policies exist to guide forest managers, practitioners, or the public".

The report includes example of carbon offsetting projects such as:

- Afforestation/Reforestation: Creating a forest where none has existed in recent history (e.g., planting trees on agricultural land, urban landscapes, riparian areas and parks, and on previously degraded forest sites such as old roads and landings).
- Avoided/reduced deforestation: Avoiding or reducing the permanent loss of forest (e.g., narrowing of cleared rights-of-way on utilities and roadways, reducing road density, and reducing site degrading processes).
- Forest Management: Managing activities or changing the level of an existing activity within forest areas to increase carbon sequestration and to reduce or avoid emissions (e.g., fire and pest management; intensive silviculture involving fertilization and the use of faster-growing tree species; prompt reforestation of sites that might not regenerate quickly; extension of harvest rotations; reclamation of slash piles; use of differing tree retention levels in harvest areas; and rehabilitation of skids trails and roads).

Finally the report concludes by recognizing the uncertainty that exists in managing forests for carbon.

"But who are the forest managers that will be compensated for managing forests for carbon stock? And who owns the carbon credits? A carbon credit is generated on the amount of carbon sequestered above the normal business practice for an area, or "in addition to" what would have occurred had no change in management strategy taken place. On private land, the landowner is generally considered to be the forest manager and owns carbon credits the land generates.

British Columbia, however, comprises almost 48 million ha productive Crown forest land. Who owns the carbon credits generated on Crown forest land? Companies that wish to establish carbon sequestration projects or simply alter forest management practices to increase carbon storage or uptake on Crown land will require some level of certainty to the ownership before investing in these projects. This remains one of the province's key challenges. Given the province's vast forested area, its advanced levels of forest management, and the presence of knowledgeable forest managers and communities in all parts of British Columbia, Crown land offers great opportunities for forest carbon stock management. Logically, the forest manager should reap the benefits, although implications exist for those who do not presently have Crown tenure.

This leads to the need for incentives that encourage innovative approaches or practices leading to carbon sequestration/storage or reduction of impacts on sequestration/storage."

In British Columbia, two models have generally been used to calculate carbon stock. The first, developed by the Canadian Forest Service (CFS), is a net volume-to-biomass conversion model that estimates the gross biomass quantity based on the net merchantable volume (an attribute readily available in our forest inventory) (Boudewyn et al. 2007). This carbon-stock calculator is used in conjunction with the CFS carbon accounting model, Carbon Budget Model of the Canadian Forest Sector 3 (cbm-cfs3). The second model (forecast), developed at the University of British Columbia, uses a different technique whereby biomass accumulation (live and dead) is modeled directly for the various components of forest ecosystems (a bottom-up approach). Volume is calculated as a function of stemwood biomass and tree height, if needed.

The level of carbon budget analysis in British Columbia relies largely on the forest inventory (species and growth rates) and underlying assumptions 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.

Licencees will continue to monitor the evolving field of carbon budgets and offsets and look for opportunities to positively contribute to the carbon cycle.

- **Allowable Annual Cut (AAC) determination:** The AAC is the allowable rate of timber harvesting in a management unit such as timber supply area (TSA) or a tree farm licence (TFL). The Chief Forester sets the AAC for each of the province's Timber SupplyAreas and Tree Farm Licences. The Regional Executive Director sets the AAC for Community Forest Licences and Woodlot Licences.

  Timber supply is the rate at which timber could be made available for harvesting. It is a measure of the potential flow of logs out of the forest. It is not the same as the inventory or amount of wood in the forest. The size and productivity of a given area of land available for timber harvesting (timber harvesting land base) are factors used to determine the amount of timber that can be produced over time. Economic, environmental and social factors affect the rate of timber harvesting and the methods used. Economic factors may include prices for wood products, location and quality of timber, and costs of production. Environmental considerations include wildlife habitat, riparian buffers and environmentally sensitive areas. Examples of social factors are visual appearance of the landscape and drinking water quality and supply.

  Timber supply analysis is a process that explores the effects on timber supply of existing or possible future forest management strategies and alternative timber harvesting levels. The analysis makes it possible to compare how alternative management strategies affect forest structure and timber production over time. The steps in timber supply analysis to support AAC determination include:

  i. *Categorize the land base* – define the timber harvesting land base by separating lands suitable for timber production from lands unavailable or inappropriate for timber production (e.g., protected areas or inaccessible terrain). Lands outside of the timber harvesting land base are still part of the provincial forest and contribute to and are managed for other values (e.g., wildlife habitat, old growth).

ii. *Project growth and yield* – growth and timber yield are projected for each stand based on current management. These projections show the characteristics of a stand (e.g., timber volume per hectare, average stem diameter) at different ages.

iii. *Identify management activities and requirements* – current management practices – including those that enhance timber production (e.g., planting) and those that maintain or enhance other values (e.g., wildlife habitat, visual quality) – are identified and the amount and timing of each activity is specified. It is often necessary to restrict some activities in some areas to achieve multiple objectives.

iv. *Model timber supply based on current management* – a computer model is used to simulate the way a stand grows and is harvested over time. Forecasting occurs out for the next 250 years.

v. *Run sensitivity analyses* – sources of uncertainty in the data and management assumptions are analyzed to determine which factors most affect analysis results (e.g., where small changes in a management objective can cause large changes in timber supply). This knowledge helps to establish priorities for collecting new information and indicates where caution is required in interpreting results.

In setting an AAC, the Chief Forester and Regional Executive Director consider information such as biodiversity, wildlife, and the social impacts of changes to timber supply including:

a. the rate of timber production that may be sustained from the area;
b. the short- and long-term implications to the province of alternative rates of timber harvesting from the area;
c. constraints on the amount of timber produced from the area due to use of the forest for purposes other than timber production;
d. the nature, production capabilities and timber requirements of established and proposed processing facilities;
e. the economic and social objectives of the Crown, for the area, the region and the province, as expressed by the Minister of Forests and Range; and,
f. abnormal insect or disease infestations and major salvage programs.

Ultimately the AAC determination is based on independent professional judgment.

Glossary of Terms

Abbreviations/Acronyms

Acronym	Meaning	Acronym	Meaning
AAC	Allowable Annual Cut	MOE	Ministry of Environment
AOA	Archaeological Overview Assessment	MOFR	Ministry of Forests and Range
BCTS	British Columbia Timber Sales	NAR	Net Area to Reforest
BEC	Biogeoclimatic Ecosystem Classification	NDT	Natural Disturbance Type
CCFM	Canadian Council of Forest Ministers		
CSA	Canadian Standards Association	NP	Non-Productive
CWD	Coarse Woody Debris	NTHLB	Non Timber Harvesting Land Base
DFA	Defined Forest Area	OGMA	Old Growth Management Area
DFO	Department of Fisheries and Oceans	RMZ	Resource Management Zone
EMS	Environmental Management System	SARA	Species at Risk Act
ESA	Environmentally Sensitive Area	SFM(P)	Sustainable Forest Management (Plan)
FERIC	Forest Engineering Research Institute of Canada	SP	Site Plan
FL	Forest Licence	SU	Standards Unit
FPC	Forest Practices Code of BC Act	TDG	Transportation of Dangerous Goods
FPPR	Forest Planning and Practices Regulation	TFL	Tree Farm Licence
FRPA	Forest and Range Practices Act	THLB	Timber Harvesting Land Base
FSP	Forest Stewardship Plan	TOR	Terms of Reference
FSSIM	Forest Service Simulation Model	TSA	Timber Supply Area
GAR	Government Actions Regulation	TSL	Timber Sale Licence
GWM	General Wildlife Measure	TSR	Timber Supply Review
HLP	Higher Level Plan	UWR	Ungulate Winter Range
IWMS	Identified Wildlife Management Strategy	VQO	Visual Quality Objective
LRMP	Land and Resource Management Plan	WHA	Wildlife Habitat Area
LU	Landscape Unit	WT	Wildlife Tree
LUP	Land Use Plan	WTP	Wildlife Tree Patch

Definitions

The following definitions were taken from various sources (generally with reference to source).

Aboriginal Rights: are recognized and affirmed by *Sec. 35(1) of the Constitution Act, 1982*. Aboriginal rights involve practices that were integral to the aboriginal society before contact. For example, Aboriginal rights may include (but are not limited to) fishing, hunting, gathering, trapping, and the use of land and resources for social, medicinal, spiritual and ceremonial purposes (*Sparrow Decision, Guerin Decision, Calder Decision, Jack Decision*). Generally the priority set in the Courts is conservation first, aboriginal rights to carry on an activity and/or practice next. (SFM Advisory Group)

Aboriginal Title: (*Delgamuukw Decision*): is an Aboriginal right recognized and affirmed in Section 35(1) of the *Constitution Act, 1982*. Aboriginal title is right to the land itself and encompasses the right to exclusive use and occupation of the land held pursuant to that title for a variety of purposes, which need not be aspects of those aboriginal practices, customs and traditions that are integral to distinctive aboriginal cultures (Para 177). Aboriginal title also encompasses within it a right to choose to what ends a piece of land can be put (Para 168). (SFM Advisory Group)

Adaptive management –a learning approach to management that recognizes substantial uncertainties in managing forests and incorporates into decisions experience gained from the results of previous actions. (CAN/CSA Z809)

Biodiversity (or biological diversity) – the diversity of plants, animals, and other living organisms in all their forms and levels of organization, including genes, species, ecosystems, and the evolutionary and functional processes that link them. (Glossary of Resource Planning Terms)

Blue listed species – includes any ecological community, and indigenous species and subspecies considered to be of special concern (formerly vulnerable) in British Columbia. Elements are of special concern because of characteristics that make them particularly sensitive to human activities or natural events. Blue-listed elements are at risk, but are not Extirpated, Endangered or Threatened.

Cultural heritage resource – means an object, a site or the location of a traditional societal practice that is of historical, cultural or archaeological significance to British Columbia, a community or an aboriginal people. (*Forest Act)*

Defined Forest Area (DFA) – a specified area of forest, including land and water (regardless of ownership or tenure) to which the requirements of this Standard apply. The DFA may or may not consist of one or more contiguous blocks or parcels. (CAN/CSA Z809)

Forest operations: includes timber harvesting, road construction, site preparation and road deactivation.

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. (*Forest and Range Practices Act)*

Indicator – a variable that measures or describes the state or condition of a value. (CAN/CSA Z809)

Information System – A system to manage harvesting, road activities and reforestation obligations and commitments. (The licencees)

Invasive Plant – means a plant listed in the *Invasive Plants Regulation* (B.C. Reg. 18/2004). (*Forest and Range Practices Act)*

Landslide – for the purpose of reporting on the target for operationally caused landslides, these will be those slides with a size limit of 0.1 ha or as one having a significant environmental impact (could be less than 0.1 ha in those cases). (SFM Advisory Group)

Licencee – includes Ardew Wood Products Ltd., Aspen Planers Ltd., B.C. Timber Sales (BCTS), Canadian Forest Products Ltd., Gilbert Smith Forest Products Ltd., Tolko Industries Ltd. and subsidiaries of these companies.

Licencee plans – detail the logistics for forest and range development in particular locations. Methods, schedules and responsibilities for accessing, harvesting, renewing, and protecting the resources are set out to enable site-specific operations to proceed. Licencee plans include Forest Stewardship Plans, harvest plans, range use plans, fuel management prescriptions, and site plans.

Natural Disturbance Type: A natural disturbance regime (categorized as 1-5) recognized in BC under which ecosystems have evolved. These disturbance regimes can be either stand initiating disturbances where the existing forest is terminated through agents such as fire, wind, insects or landslides or stand maintaining disturbances where the existing forest structure is adjusted (such as an understory fire in a fir-yellow pine forest). (SFM Advisory Group)

Objective – a broad statement describing a desired future state or condition of a value. (CAN/CSA Z809)

Old growth management area – means an area that is subject to old growth management objectives established under section 3 *[resource management zones and objectives]* or 4 *[landscape units and objectives]* of the Forest Practices Code of British Columbia Act. (*Forest Planning and Practices Regulation)*

Permanent access structure – means an access structure in a cutblock that a) at the time of its construction, is reasonably expected to provide access for timber harvesting and other activities that are not wholly contained in the cutblock, or b) is constructed on or through, or contains, materials unsuitable for the establishment of a commercial crop of trees and is not an excavated or bladed trail. *(Forest Planning and Practices Regulation)*

Pest – means an injurious, noxious or troublesome living organism but does not include a virus, bacteria, fungus or internal parasite that exists on humans or animals. *(Provincial Pesticide Control Act)*

Range development – means (a) *)* a structure, (b) an excavation, (c) a livestock trail indicated in a range use plan or a range stewardship plan as a range development, or (d) an improvement to forage quality or quantity on an area that results from (i) the application of seed, fertilizer or prescribed fire to the area, or (ii) the cultivation of the area *(Forest and Range Practices Act)*

Red listed species – Includes any ecological community, and indigenous species and subspecies that is extirpated, endangered, or threatened in British Columbia. Extirpated elements no longer exist in the wild in British Columbia, but do occur elsewhere. Endangered elements are facing imminent extirpation or extinction. Threatened elements are likely to become endangered if limiting factors are not reversed. Red-listed species and sub-species may be legally designated as, or may be considered candidates for legal designation as Extirpated, Endangered or Threatened under the *Wildlife Act* (see http://www.env.gov.bc.ca/wld/faq.htm#2). Not all Red-listed taxa will necessarily become formally designated. Placing taxa on these lists flags them as being at risk and requiring investigation.

Regeneration Delay – is the maximum period permitted to achieve the minimum stocking levels using the preferred and acceptable species of acceptable size, age and vigour. The regeneration delay period begins when harvesting begins. *(Guide to Site Identification and Interpretation for the Kamloops Forest Region)*

Recreation feature – means a biological, physical, cultural or historic feature that has recreational significance or value. *(Forest and Range Practices Act)*

Resource feature – includes all of the following: (a) a surface or subsurface element of a karst system; (b) a cultural heritage resource; (c) a recreation feature; and (d) a range development that is a structure, excavation or constructed livestock trail. (*Government Actions Regulation)*

Riparian reserve zones – means an area described under Division 3 *[Riparian areas]* of Part 4 *[Practice requirements]*, that (a) is a portion of a riparian management area, and (b) is established to protect fish, wildlife habitat, biodiversity and the water values of the riparian reserve zone (*Forest and Range Practices Act - Forest Planning and Practices Regulation)*

Seral stage distribution – 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 become altered over time. (Glossary of Resource Planning Terms)

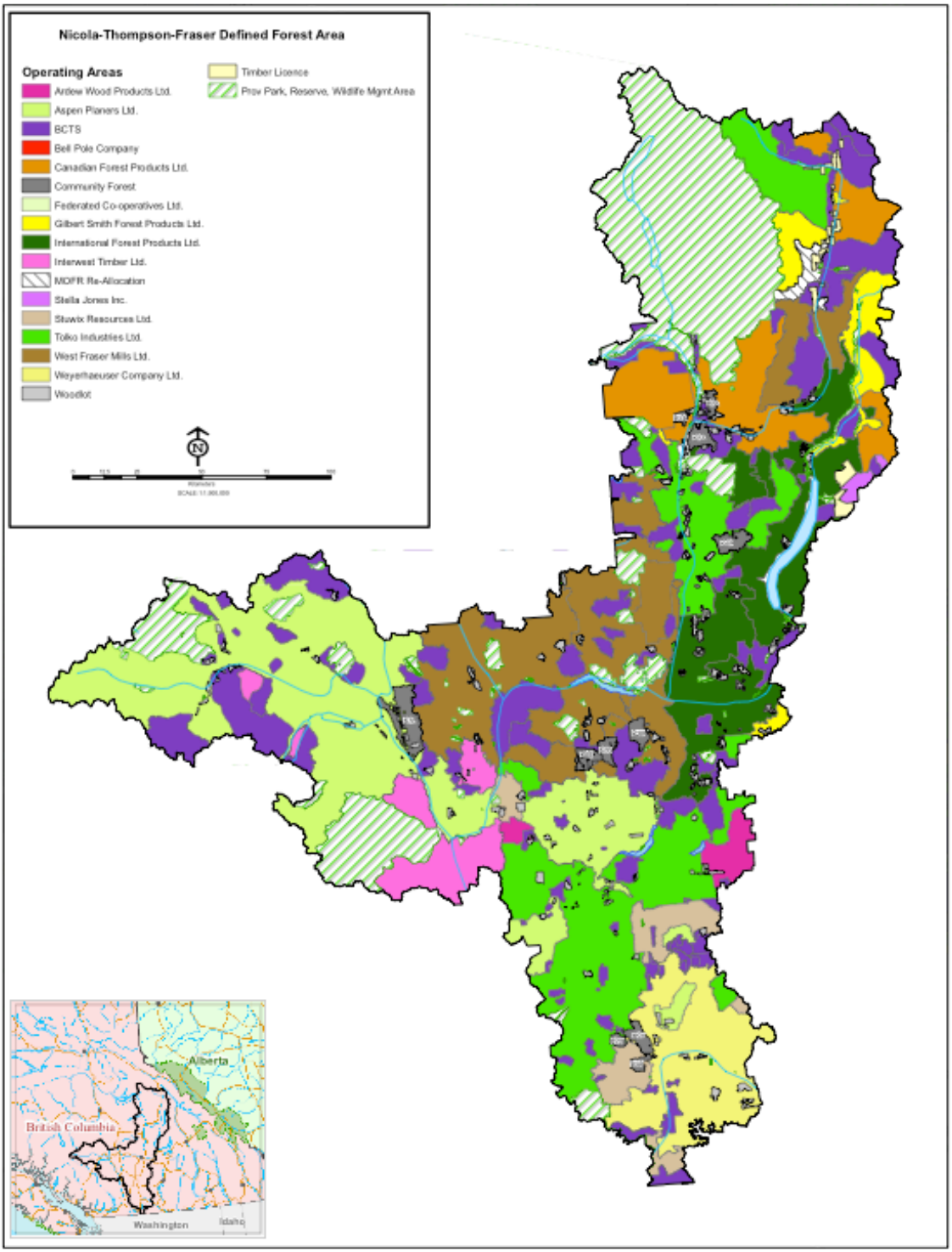
Stubs – Merchantable residual tree cut by a mechanical harvester and retained during harvest with an approximate height of 3-5 meters. (The licencees)

Sustainable forest management – 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. (CAN/CSA Z809)

Sustainable forest management system – the structure, responsibilities, practices, procedures, processes, and timeframes set by a registration applicant for implementing, maintaining, and improving sustainable forest management. (CAN/CSA Z809)

Target – a specific statement describing a desired future state or condition of an indicator. Targets should be clearly defined, time-limited, and quantified, if possible. (CAN/CSA Z809)

Appendix 1: Nicola Thompson Fraser DFA Map


Nicola-Thompson-Fraser Defined Forest Area
Operating Areas
Timber Licence
Prov Park, Reserve, Wildlife Mgmt Area
Ardew Wood Products Ltd.
Aspen Planers Ltd.
BCTS
Bell Pole Company
Canadian Forest Products Ltd.
Community Forest
Federated Co-operatives Ltd.
Gilbert Smith Forest Products Ltd.
International Forest Products Ltd.
Interwest Timber Ltd.
MOFR Re-Allocation
Stella Jones Inc.
Stuwix Resources Ltd.
Tolko Industries Ltd.
West Fraser Mills Ltd.
Weyerhaeuser Company Ltd.
Woodlot
Alberta
British Columbia
Washington
Idaho

Appendix 2: Advisory Group Terms of Reference

Nicola Thompson Fraser Sustainable Forest Management Plan SFM Advisory Group Terms of Reference and Procedures

May 19, 2010

Introduction

The purpose of the Terms of Reference and Procedures is to define the goals, tasks, roles and procedures that will guide the development of Nicola Thompson Fraser Sustainable Forest Management (SFM) Plan. The SFM Plan will be developed based on the Canadian Standards Association (CSA) Standard CAN/CSA-Z809, and will be complimentary to previous work, ongoing and future initiatives.

The Terms of Reference and Procedures include the following sections:

- Goals
- Operating guidelines
- Timelines
- Conflict of Interest
- Roles and responsibilities
- Resources
- Decision-making process
- Information
- Communication
- Changes to the process
- Evaluation of the public participation process

Goals

The goals of the process are to:

- Develop and maintain a SFM plan in accordance with the CSA guidelines
- Develop and maintain procedures for the Advisory Group to monitor the effectiveness of the SFM Plan.
- Provide ongoing public input into the implementation, monitoring and continual improvement of the SFM Plan.
- Maintain an active and open public participation process.

Operating Guidelines

The participating Nicola Thompson Fraser DFA Licencees, based on advice and recommendations provided by the SFM Advisory Group, will develop and maintain the SFM Plan. Efforts will be made to ensure that the SFM Advisory Group includes a cross-section of participants with varying interests and backgrounds. Participants in the process will:

- contribute to the development of the SFM Plan
- attend meetings on a regular basis (estimated at a minimum of 2 meetings and one field trip per year)
- consider the views of others in developing recommendations
- work with the facilitator and group members to achieve meeting objectives and conclusion of agenda items within agreed to time frames (active, succinct participation)
- while actively participating, allow other members sufficient time and opportunity to participate (share the floor).
- act in "good faith" in all aspects of the process
- aim to reach decisions on the basis of consensus
- support an open and transparent process in both the development and implementation of the SFM Plan.

Participation in the SFM Advisory Group is open to all interested members of the public. New members will be accepted provided the size of the group is not becoming too large and that they agree to:

- abide by the Terms of Reference and Procedures and
- become familiar with the past work completed by the SFM Advisory Group (to assist with this, Licencees agree to provide adequate orientation of the SFM Plan and Advisory Group process to new members).

The SFM Plan for the Nicola Thompson Fraser DFA will comply with all existing legislation and regulations and will be amended as required to be consistent with the strategic direction and intent of any future initiatives.

Sustainable ecosystem management will be characterized by resource management practices that are ecologically sound, scientifically based, socially and culturally responsible, and recognize and respect First Nations interests and values.

Conflict of Interest

Advisory group members will declare any possible or perceived conflict of interest pertaining to a specific discussion topic, should the situation arise. In such cases, the advisory group will decide on the members' level of involvement relative to the specific topic matter.

Timelines

The SFM Advisory Group will meet periodically each year to review annual progress on performance measures with a goal of continual improvement.

Roles and Responsibilities

Participation in the SFM Advisory Group is open to all interested members of the public. Licencees will seek to include a cross-section of participants with varying interests and background. First Nation participation in the advisory group is valued and will be encouraged. Government participation and support is valued, particularly in the capacity of technical advisor on how the SFM Plan aligns with legislation, policy and government direction. Public members agree to participate in the advisory group as an individual member of the public (bringing with them their background and experience) and not as a representative of any interest group. A record of attendance will be included as part of each meeting summary.

The roles and responsibilities of participants in the process are to assist the DFA licencees in developing and maintaining the SFM Plan by:

- expressing local values that relate to the Canadian Council of Forest Ministers (CCFM) SFM criteria and critical elements
- identifying objectives that describe a desired future state or condition for each value
- developing local indicators to be used to assess progress in meeting objectives
- setting targets related to each indicator that will provide a clear, specific statement of expected results, and updating as necessary
- monitoring the effectiveness of the SFM plan including annual meetings of the SFM Advisory Group to review results of performance measures and the outcomes of any CSA audits.

The long-standing rights and interests of First Nations will be considered in the development of the SFM Plan. Participation in the Public Advisory Group by First Nations is without prejudice to Aboriginal title and rights and treaty rights.

Nicola Thompson Fraser DFA Licencees will engage a facilitator who is knowledgeable about the CSA certification process to assist the SFM Advisory Group in its work. The role of the facilitator will be to:

- facilitate advisory group meetings
- prepare agendas and summaries for meetings
- prepare a work plan and time table for the process
- assist participants in developing recommendations for the SFM Plan
- develop the SFM Plan based on recommendations provided.

<u>Active Members of the Public Advisory Group (PAG)</u>

Active members of the PAG commit to regular attendance to, and participation in, Advisory Group meetings and field trips. Active members receive all PAG information and communication including the most recent SFM Plan and Monitoring Report, draft agendas, meeting summaries, information of interest, and invitations for additional participation (audits, special non PAG meetings and information sessions). A list of active members, including contact information, is maintained.

Interested Parties

Interested parties are those that are interested in the SFM Plan process but have decided they cannot fully commit the time and effort to be an active member of the Advisory Group. Interested parties receive notification when updates are made to the SFM Plan or Monitoring Report . Included with this correspondence is an invitation, and encouragement, to more fully participate as an active member of the Advisory Group. Any additional Advisory Group communication is available to interested parties on request. A list of interested parties, including contact information, is maintained.

Resources

Public participants who incur traveling expenses to attend meetings will be reimbursed at a rate equivalent to the provincial government Group I rate.

Expenses incurred in the development of this Plan will be the responsibility of participating Nicola Thompson Fraser DFA Licencees.

Decision-making Process

Participants in the process will aim to reach decisions on the basis of consensus. Consensus is defined as "substantial agreement not unanimity by participants on a recommendation related to the SFM Plan process or on the final SFM Plan".

In negotiating to reach consensus, participants agree to:

- negotiate in good faith
- state concerns openly and directly and as interests rather than positions
- listen carefully, ask questions and educate themselves regarding the interests of others
- share relevant information.

When consensus is reached, a written record of the agreement will be recorded in the meeting summary. If consensus is not achieved, the facilitator will assist the participants in resolving their differences through the application of interest-based negotiation procedures. If consensus is still not achieved, participants will agree to disagree and the options defined in the negotiation process will be recorded in the meeting summary. Nicola Thompson Fraser DFA Licencees will consider all options in development of the final SFM plan and will provide a written explanation for decisions taken where consensus was not achieved.

Nicola Thompson Fraser DFA Licencees will consider consensus recommendations of the SFM Advisory Group as advice to guide the development of the SFM Plan. In the event that Licencees decide not to accept a consensus recommendation of the SFM Advisory Group, a written explanation for this decision will be included in the SFM Plan process documents.

Consensus will not be required for housekeeping items such as scheduling meeting dates and locations.

Information

The SFM Plan process will be supported by relevant information including the CSA SFM guidelines and supporting reference documents, examples of other British Columbia-based SFM Plans, and other technical information as required. Where desired by the advisory group, Licencees will seek to provide internal or external experts to gain a better understanding of a particular issue.

Communication

Agendas and meeting summaries will be prepared for each meeting. These materials will be distributed to members of the SFM Advisory Group and as requested, to other interested members of the public. Revised SFM Plans and Annual Monitoring Reports will be shared with advisory group members and with a wider audience of individuals who have expressed some level of interest in the public process. The Plans and Reports will also be shared with First Nation communities in the DFA.

A website offering general information on the SFM process and information specific to the Nicola Thompson Fraser SFM Plan will be maintained.

Changes to the Process

The Terms of Reference and Procedures for the SFM Plan process may be changed at any time during the process in accordance with the decision-making process described above.

Evaluation of the Public Participation Process

Active public members satisfaction with the advisory group process will be measured through the completion of an annual survey. Survey results will be included in annual SFM performance reporting.

Appendix 3: SFM Plan Reporting Format

Appendix 3: SFM Plan Reporting Format

The following table is the reporting form that licencees will use when reporting the results of monitoring the SFM Plan. The Plan will be monitored annually and the information will contribute to an annual review to confirm that performance measures are being met. The SFM Advisory Group will review and comment on the annual report.

Nicola Thompson Fraser Sustainable Forest Management Plan Annual Report

Licencee Name and Reporting Year: _____

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
1	1.1.1	Target: Maintain the presence and representative area of Biogeoclimatic Zones to the subzone level within the Plan area. **Reporting:** Part of periodic Timber Supply Review (TSR) – often used to define Analysis Units for timber supply modeling. Licencees will report the area for all Biogeoclimatic subzones as updated for the most current TSR's. Reporting to occur periodically – in the year following completion of subsequent TSR's and determination of the allowable annual cut (or other known updates to BEC).	Periodic reporting following TSR or known updates by the MoFR.
2	1.1.2	Target: 70 percent of areas submitted as free growing will have three or more tree species, including conifer and deciduous comprising one percent or more in the inventory label (all biogeoclimatic Zones except ESSF). Also report on the percent of first, second and third leading species for each area, then averaged for all areas. 70 percent of areas submitted as free growing will have two or more tree species, including conifer and deciduous comprising one percent or more in the inventory label (ESSF only). Also report on the percent of first, second and third leading species (where 3rd species is present) for each area, then averaged for all areas. **Reporting:** On area (i.e. standard unit area or cutblock area) declared free growing in the reporting year, licencees will use the inventory label to determine areas having 3 or more species (non ESSF) or 2 or more species (ESSF). For those areas having 3 or more species (non ESSF), Licencees will also identify the percent of first, second and third leading species for each area, then average these for reporting on all areas.	Number of non ESSF area submitted as free growing: _____ Number of non ESSF area submitted with at least three species present: _____ % areas with three or more species: _____ Number of ESSF areas submitted as free growing: _____ Number of ESSF areas submitted with at least two species present: _____ % areas with two or more species: _____ For non ESSF areas with three or more tree species: % of trees that are 1st leading species: _____ % of trees that are 2nd leading species: _____ % of trees that are 3rd leading species: _____

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
3	1.1.3, 4.1.1	Target: Progress towards a stable forest age class distribution on the timber harvesting land base where each age class to 80 years old [1 (1 to 20), 2 (21-40), 3 (41-60), and 4 (61 to 80)] occupies at least 8.5% of the timber harvesting land base in each of the 3 TSAs (Kamloops, Lillooet, Merritt). Three of the four age classes meet this target within 50 years for each TSA. Reporting to occur in conjunction with subsequent Timber Supply Reviews by TSA. **Reporting:** Licencee report the current age class distribution as last reported in the Timber Supply Review (for the TSAs). Reporting to occur periodically – in the year following completion of subsequent TSR's and determination of the allowable annual cut.	Periodic reporting in the year following completion of subsequent TSR for each TSA Age class 1 (1 -20): THLB Area (ha) _____ Age class 2 (21-40): THLB Area (ha) _____ Age class 3 (41-60): THLB Area (ha) _____ Age class 4 (61 -80): THLB Area (ha) _____ Total THLB Area (ha) _____
4	1.1.3	Target: Licencee operations will maintain the existing old growth management area (no net loss). **Reporting:** Licencees report the total area of draft OGMA's within their operating area and the area of net OGMA reduction (or increase) as a result of their operations. Target has a no net loss concept, reporting provides for replacement OGMA's where operations planned within existing OGMA's.	Total draft OGMA area (ha) _____ Net change (+/-) in OGMA area for the reporting year (ha) _____

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
5	1.1.4	Target: **5a.** 80 percent of cutblocks greater than 10 hectares will have individual wildlife trees/stubs and/or wildlife tree patches within the block. **5b.** Of the blocks that have individual wildlife trees/stubs and/or wildlife tree patches; at least 50 percent of the time these blocks will have dispersed individual trees, stubs or small (<0.25 ha) patches retained. **Reporting:** **5a.** Licencees will report, for cutblocks greater than 10 hectares, the number of cutblocks with wildlife tree patches and/or individual trees/stubs within the cutblock versus the total number of cutblocks greater than 10 ha in size upon completion of harvest, during the reporting year. **5b.** On the blocks that do have individual wildlife trees/stubs and/or associated wildlife tree patches, licencees will also report the percentage of blocks that had dispersed individual trees, stubs or small (<0.25 ha) patches. Reporting against target "5b" is limited to blocks harvested during the reporting year that had the original SP signed after January 1st, 2011.	**5a.** Total number of cutblocks harvested > 10 ha _____ Number of cutblocks > 10 ha with WTP/WT/Stub _____ **5b.** Of blocks with WTP/WT/Stubs (listed above), number with dispersed individual trees, stubs or small (<0.25 ha) patches _____ Percent of blocks _____ *NB: performance is to be reviewed against the Targets, the variance will be noted if the Targets are not met*

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
6	1.2.1 1.4.1*(Merritt TSA only)*	Target: Proactive habitat protection targets established in accordance with non-legally binding guidelines and best practices: • On an annual basis, obtain from the Conservation Data Centre, the known locations/occurences of Red-listed and Blue-listed species within the Plan area • Where there is a documented mapped (GPS/UTM) and field verified occurrence of a critical habitat feature (e.g. den, lick, nest) for a Red-listed or Blue-listed species, operations will achieve 100% consistency with SP measures deemed necessary by the participating licencee to prevent adverse harm. • Based on the potential level of impact to any of the 3 TSAs, participate in the consultation process led by the Ministry of Environment and the Ministry of Forests and Range, in the identification of Ungulate Winter Range and Wildlife Habitat Areas and the development of General Wildlife Measures. **Reporting:** a. Licencees report yes/no as to whether annual list obtained. b. Licencees report the number of cutblocks where there is a documented, mapped (GPS/UTM) and field verified occurrence of a critical habitat feature (e.g. den, lick, nest) for a Red-listed or Blue-listed species and the number of these cutblocks where 100% consistency with SP measures, deemed necessary to prevent adverse harm, were achieved. Reporting against the target is limited to blocks harvested during the reporting year that had the original SP signed after January 1st, 2011. c. Licencees summarize applicable consultation processes they participated in.	a. (Y/N)_____ b. Number of cutblocks where there was a documented critical habitat feature for a Red-listed or Blue-listed species_____ Number of these cutblocks where 100% consistency with SP measures was achieved_____ Summarize applicable consultation processes _____ _____ _____ _____ _____ _____ _____
7	1.2.1, 1.2.2	Target: Affected licencees (Kamloops TSA only) adhere to the current management strategies for mountain caribou. **Reporting:** Affected licencees will report the area (ha) harvested that is consistent with Government Action Regulation orders and/or higher level plan orders against all of the area harvested within the designated Mountain Caribou recovery strategy during the reporting year.	**Reporting by Kamloops licencees only** Area harvested within Mountain Caribou strategy area_____ Number of hectares harvested meeting Mountain Caribou strategy_____

<table>
<tr><th>Tar #</th><th>Indicators (that target applies to)</th><th>Monitoring parameter</th><th>Monitoring results</th></tr>
<tr><td>8</td><td>1.2.1, 1.2.2</td><td>Target: Affected licencees (Lillooet TSA only) adhere to the current management strategies for northern spotted owl.

Reporting: Affected licencees will report the area (ha) harvested that is consistent with Government Action Regulation orders and/or the Spotted Owl Habitat Management Plan orders against all of the area harvested within designated Northern Spotted Owl habitat during the reporting year.</td><td>Reporting by Lillooet licencees only

Area harvested within designated Northern Spotted Owl habitat area _____

Number of hectares harvested meeting Spotted Owl strategy _____</td></tr>
<tr><td>9</td><td>1.2.2</td><td>Target: Conserve or manage within the Kamloops TSA and in the Cascades Forest District habitat for selected focal species (listed below) by retaining 100% of the amount of habitat (provided for in government's FPPR Section 7 notice) in a condition suitable for the survival of the species.

<u>Kamloops TSA:</u> Flammulated Owl – 3300 ha, Interior Western Screech Owl – 60 ha, Lewis's Woodpecker – 650 ha, Spotted Bat – 120 ha, Badger – 35 ha.

<u>Cascades Forest District:</u> Coastal Tailed Frog – 2793 ha, Great Basin Gopher Snake – 4000 ha, Flammulated Owl – 4050 ha, Interior Western Screech Owl – 44 ha, Spotted Owl – 5000 ha within Lillooet TSA, Spotted Bat – 16 ha, Grizzly Bear – 5211 ha (521ha impact to timber harvesting land base) in the Merritt TSA, unspecified large area having a THLB impact of 8000 ha in the Lillooet TSA.

Reporting: For areas harvested, Licencees will report on the number of locations where the presence of the species or an occurrence site for each of the focal species was identified and the number of locations where the habitat for that focal species was conserved or managed. At the Kamloops TSA and Cascades District level, hectares of Wildlife Habitat Areas by focal species will be provided.</td><td>Report number locations where the focal species was identified and number of locations where the species was conserved or managed:

Kamloops TSA species:
<table><tr><th>Species</th><th>Identified</th><th>Managed</th></tr><tr><td>Flam. Owl</td><td></td><td></td></tr><tr><td>Screech Owl</td><td></td><td></td></tr><tr><td>Lewis's Woodpecker</td><td></td><td></td></tr><tr><td>Spotted Bat</td><td></td><td></td></tr><tr><td>Badger</td><td></td><td></td></tr></table>
Cascades District species:
<table><tr><th>Species</th><th>Identified</th><th>Managed</th></tr><tr><td>Coastal Tailed Frog</td><td></td><td></td></tr><tr><td>Gopher Snake</td><td></td><td></td></tr><tr><td>Flam. Owl</td><td></td><td></td></tr><tr><td>Screech Owl</td><td></td><td></td></tr><tr><td>Spotted Bat</td><td></td><td></td></tr><tr><td>Grizzly Bear</td><td></td><td></td></tr></table></td></tr>
<tr><td>10</td><td>1.2.3</td><td>Target: 100% of trees planted will conform to plan commitments related to the species</td><td>Total area planted (ha) _____</td></tr>
</table>

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
		requirements within approved stocking standards (requires reforestation with commercially valuable and ecologically suitable tree species). **Reporting:** Licencees will report the number of hectares where trees were planted with species appropriate to the site as outlined in the stocking standards of their Forest Stewardship Plan. Also report the total number of hectares where planting occurred.	Area planted (ha) with species appropriate for the site _____ *(note: reporting on species requirements only)*
11	1.2.4	Target: All planned road cut and fill slope seeding application will be carried out using certified seed and within 12 months of completed road construction on disturbed sites suitable for germination. **Reporting:** Licencees will report the use of certified seed and the average time for road cut and fill slope seeding application on areas of new road construction during the reporting year.	Average time for seeding application (months) _____ Seed applied that was certified (percent) _____

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
12	1.4.1 (*Kamloops TSA only*)	Target: Prioritized Red-listed ecological communities will be protected with retained existing forest. a. Where the ecological community is "documented, mapped (GPS/UTM) and field verified" for the cutting permit or TSL area where operations are being planned and: a. the ecological community represents less than 10% of the cutting permit or TSL area, then the majority of the identified occurrence is protected. b. the ecological community is greater than 10% of the gross area of either tenure noted above, then WTP placement will be weighted towards those communities. b. Where the ecological community is not well documented (i.e. ecological mapping at the site series level is not available), the prioritized list of Red-listed ecological communities is used as a support tool to weight WTP placement, or other reserves, to the applicable site series in the block **Reporting:** a. Licencees report the number of cutblocks where occurrence of ecosystems identified as "prioritized Red-listed ecological communities" was "documented", and the number of these cutblocks where the Target was met. b. Licencees report the number of cutblocks where non-documented ecosystems identified as "prioritized Red-listed ecological communities" occurred, and the number of these cutblocks where the Target was met. A rationale is provided for each cutblock where the Target is not met. *Reporting is limited to blocks harvested with original SP signed after Jan. 1st, 2007.*	**Reporting by Kamloops licencees only** a. Number of cutblocks where documented Red-listed communities occurred _____ Number of cutblocks where the substantial part of the identified occurrence was included in WTP(s) _____ b. Number of cutblocks where non-documented ecosystems identified as "prioritized Red-listed ecological communities" occurred _____ Number of these cutblocks where WTP placement, or other reserves, were weighted to the applicable site series _____ Rationale if target not met _____ _____ _____ _____ _____ _____ _____

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
13	1.4.1 (*Lillooet TSA only*)	Target: Harvesting not to exceed greater than 50% of the total of each identified rare landscape unit / BEC zone variants. **Reporting:** Report by Rare Landscape Unit and Biogeoclimatic Zone (separately for THLB and non-THLB) for the six identified sites – all in Aspens operating area. Report annual area harvested and the cumulative area harvested within each of the rare sites (see table below). *Note: target and reporting applies to plan participants within the Lillooet TSA only.*	**Reporting by Lillooet licencees only** Report within table below (complete last two columns).

Licencee	Landscape Unit	BEC	THLB / non-THLB	Total Productive (ha)	Target (ha)	Area Harvested (current year in ha)	Cumulative Area Harvested (ha)
Aspen Planers Ltd	Duffey Lake	CWHms1	THLB	89	<=50%		
			Non- THLB	20	<=50%		
	Pavilion	IDFdk3	THLB	147	<=50%		
			Non- THLB	18	<=50%		
		MSxk3	THLB	764	<=50%		
			Non- THLB	195	<=50%		
	Watson Bar	IDFdk3	THLB	168	<=50%		
			Non- THLB	62	<=50%		
		IDFxw	THLB	177	<=50%		
			Non- THLB	77	<=50%		
		MSxk3	THLB	785	<=50%		
			Non- THLB	234	<=50%		
BCTS	n/a	n/a	n/a		N/A	N/A	N/A

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
14	1.4.2, 6.1.3, 6.2.1	Target: 100 % protection of culturally important, sacred and spiritual sites that have been identified and mapped **and** 100% conformance to all plan commitments specifically designed to manage for culturally important, sacred and spiritual sites that have been identified and mapped. **Reporting:** • Number of roads constructed or cutblocks harvested where culturally important, sacred or spiritual sites had been identified, mapped. • Number of roads constructed or cutblocks harvested where the identified sites were managed or protected in accordance with forest plans.	Number of roads constructed or cutblocks harvested where culturally important, sacred or spiritual sites had been identified, mapped. _____ Number of roads constructed or cutblocks harvested where the identified sites were managed or protected in accordance with forest plans. _____
15	1.4.3	Target: Report the special geological features that were identified and managed. Additionally, Licencees will report the management activities that they undertook for each special geological feature. **Reporting:** Licencees will report in situations where these features fell within a new road r/w or harvest area and were managed for or where the road or block were specifically relocated to manage for the feature. Report: 1. Number and type of special geological features (include karst formations/caves, inactive volcano cones and waterfalls) that were identified and managed. For waterfalls, only include S1, S2, S3, and S5 streams having a vertical drop greater than 5 metres. 2. Specific management activities that were taken for each special geological feature.	List specific features and management activities: _____ _____ _____ _____ _____ _____ _____ _____
16	2.1.1, 4.1.1	Target: 90% of area prescribed for planting is completed within the third growing season from start date of harvest. **Reporting:** Licencees will report the area planted prior or within the third growing season as compared to the total area planted during the reporting year.	Area planted prior to or within the third growing season _____ Total area planted _____

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
17	2.1.1, 3.1.1	Target: All cutblocks will reach free growing requirements on or before the latest date. Also report area on those cutblocks that outperformed late free growing requirements and average time by which requirements were exceeded. **Reporting:** Licencees will report on the cutblock area (hectares) that achieved free growing status on or before their late free growing date and the average time (years) that the cutblock outperformed it's late free growing date (weighted average).	Area (ha) where late free-growing date is due in the reporting period _____ Area (ha) of cutblocks that achieved free growing status _____ Average time (years) that cut blocks out performed late date _____
18	3.2.1, 4.1.1	Target: Less than 6 percent (7% for the Lillooet TSA), on average, of harvested areas will be in permanent roads and landings. **Reporting:** Licencees will report the area (ha) of permanent roads and landings identified in operational plans over gross block area (ha) for cutblocks harvested during the reporting year, using information contained within Licencee plans.	Gross cutblock area (ha) harvested _____ Area (ha) in permanent roads and landings _____
19	2.2.2, 5.1.1, 5.2.1, 5.2.3	Target: Harvest the annual cut allocation for the year consistent with the Cut Control Regulation and Policy. **Reporting:** Licencees will report the harvest level allocated for each licence and harvest level cut (cut control volume) for the past reporting year.	Licence _____ Annual harvest (m3) _____ Licence _____ Annual harvest (m3) _____ Licence _____ Annual harvest (m3) _____ Licence _____ Annual harvest (m3) _____
20	2.2.3	Target: 100 percent conformance to riparian and lakeshore commitments made within plans **Reporting:** Licencees will report the number of riparian and lakeshore related non conformances to plans occurring during the reporting year as compared to the gross area of cutblocks that were harvested that had riparian management areas within or adjacent to them.	Number of riparian and lakeshore non conformances to plans _____ Gross area of cutblocks harvested having RMAs within/adjacent _____ PAG request: Describe any non-conformances _____ _____ _____

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
21	3.1.1	Target: 100 percent conformance to soil conservation measures contained within plans. **Reporting:** Licencees will report the area (hectares) where soil disturbance commitments were achieved as compared to the total net area of cutblocks that were harvested during the reporting year	Number of hectares where soil disturbance commitments were achieved _____ Total net area of cutblocks harvested during the reporting year (ha) _____
22	3.1.1	Target: No operationally caused slides resulting from a failure to perform a terrain stability field assessment or from a failure to follow the recommendations within a completed assessment. **Reporting:** Licencees will report the number of slides >0.1 hectare or those having a significant environmental impact if less than 0.1 hectare as a result of their forest management activities (where either a terrain stability assessment was not completed, or where a terrain stability assessment was completed but the recommendations were not followed). Reporting of these landslides will follow the Southern Interior Region landslide and erosion reporting document. *Also agreed to report the total number of operationally caused slides that occurred (or that were first discovered) in the reporting period – regardless of cause or due diligence.*	Total slides resulting from operations _____ Slides where TSFA not done or recommendations not followed _____
23	3.1.2	Target: 100 percent of cutblocks will manage coarse woody debris (CWD) consistent with commitments in operational plans. **Reporting:** Licencees will report operational plan conformance to the target (cutblocks harvested where planned targets met compared to all cutblocks harvested). Reporting may also utilize supplemental information collected as part of post harvest waste assessments including ocular estimates.	Total cutblocks harvested _____ Cutblocks harvested where planned CWD commitments achieved _____

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
24	3.2.1	Target: Equivalent clear cut area (ECA) not to exceed 35% (at the sub-basin level) without doing further hydrological assessments prior to harvesting. For Kamloops, the target applies only to the highest risk rated watersheds (post MPB) as identified in Appendix 8. **Reporting:** Licencees will report the number of cutblocks harvested where the watershed ECA exceeded 35% and no further hydrological assessments were completed compared to the total number of cutblocks harvested where the watershed ECA exceeded 35%. Licencees will also report which high risk watershed(s) the cutblocks with ECA's exceeding 35% (and no further assessments completed) were within. *For Kamloops, reporting is restricted to those watersheds that were identified as one of the 25 high risk watersheds (as indicated in Appendix 8).*	Total number of cutblocks harvested where the watershed ECA exceeded 35%. _____ Number of cutblocks harvested where the watershed ECA exceeded 35% and no further hydrological assessments were completed _____ List any watersheds where ECA >35% and no further assessments completed _____ _____ _____
25	3.2.2	Target: All permanent status roads and associated structures will have inspections and related maintenance completed as scheduled. **Reporting:** Licencees will determine inspection frequency based on the permanent roads risk. For the reporting period, list kilometers of permanent roads scheduled for inspection vs. kilometers completed. Licencees will also report the number of maintenance action items related to water management and soil movement that required completion during the reporting year as compared to the total number of maintenance action items that were planned for completion.	Km perm roads requiring inspection _____ Km perm roads with inspections completed as required _____ Number of maintenance action items identified _____ Number of maintenance action items completed _____

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
27	5.1.1, 6.1.1, 6.1.2, 6.1.3, 6.2.1, 6.4.3	Target: First Nation communications a. Open communications (meetings and other meaningful communication) with local First Nations will include an understanding of traditional territories and other aboriginal rights including cultural and spiritual values. b. Participating licencees respond to all written requests for communication from First Nations. **Reporting:** Licencees will report a. Number of meetings and meaningful communications with First Nations that included management and protection of traditional knowledge, non-timber resources, and cultural and spiritual values. b. Number of written requests for communication from First Nations versus the number of responses made to First Nations. Reporting should be on a one to one ratio (one response for each request).	Number of meetings and other meaningful communications_____ Number of written requests for communication _____ Number of written requests responded to _____

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
28	5.1.1, 6.3.1, 6.4.2	Target: Public communications ▪ Licencees will demonstrate efforts by participating in public multi-stakeholder meetings at both the strategic and at the local level. Licencees will report on the number of community meetings held or attended. Licencees will also report on the number of communications with concerned and engaged recreational users. ▪ Participating licencees respond to all written requests from the public for communication within 30 days of their receipt. **Reporting:** Licencees will report: • A yes/no answer as to whether their interests were represented at strategic and local area meetings with other stakeholders and/or the broader public. The number of community meetings held or attended during the reporting period. The number of communications with concerned and engaged recreational users. • Number of responses sent out by licencees compared to the number of written requests for communication. Report the average timeline for response.	Interests represented at meetings? (Y/N) Number of community meetings attended ____ Number of communications with recreational users _____ Number of written requests from public _____ Number of responses from Licencee _____ Average response time (in days) _____ Examples of significant information communicated or significant issues/topics _____ _____ _____ _____ _____
29	5.1.1, 6.3.1	Target: 100% conformance to strategies in plans designed to achieve preservation, retention and partial retention visual quality objectives. **Reporting:** Licencees will report on the number of harvested blocks that achieve the visual intent as described in plans versus the number of blocks harvested within the past year that had preservation, retention or partial retention visual quality objectives. Also indicate the number of these areas that met the objectives by way of exemption for other management concerns.	Number of blocks harvested with preservation, retention or partial retention VQO's: _____ Number of blocks with preservation, retention or partial retention VQO that achieved visual intent _____ Number of blocks meeting visual intent (above) by way of exemption _____

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
30	5.1.1	Target: 100% of known pre-existing recreational trails retained for continued recreational use on areas harvested in the reporting period. **Reporting:** Licencees will report the number of known pre-existing recreational trails (from Land and Resource Data Warehouse) within or influenced by areas harvested in the reporting period and the number of those that were successfully managed and retained.	Number of recreation trails within or influenced by harvest area _____ Number of recreational trails successfully managed _____
31	5.1.1, 5.2.1, 6.3.1	Target: Report business initiatives and partnerships. **Reporting:** Licencees will report and provide detail regarding local business initiatives and partnerships. Report separately for each TSA.	List and provide detail regarding local business initiatives and partnerships _____ _____ _____ _____ _____ _____ _____ _____
32	5.2.1, 5.2.3	Target: Report the board feet and chip volume produced by sawmills. **Reporting:** Licencees with manufacturing facilities will report the board feet and chip volume produced by sawmills within the TSA. Report separately for each TSA.	Total lumber output _____ mbf Total chip output _____ bdt
33	5.2.1, 5.2.3	Target: Report number of timber processing facility operating days, the total number of man hours worked and the number of mill employees on payroll. **Reporting:** Licencees with manufacturing facilities will report for each manufacturing facility the number of days it was operating, the total number of man hours worked and the number of mill employees on payroll for the reporting period. Report separately for each TSA.	Report for each manufacturing facility and by TSA: Days in operation _____ Number of man hours worked _____ Number of manufacturing employees on payroll _____

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
34	5.2.2	Target: Safety training ▪ 100% of DFA forest contractors will have both environmental and safety training. For BCTS, report on the number of licences and contracts awarded that required SAFE certification or an equivalent safety certification/registration. ▪ 100% of woodlands employees are trained in accordance with training plans. **Reporting:** ▪ Licencees will report the total number of forest contractors and identify the number that had received both environmental and safety training. ▪ Licencees will report the total number of forestland employees (staff) and identify the number that had received training in accordance with their training plan.	Total contractors _____ Trained contractors _____ BCTS contracts and Licences awarded _____ BCTS number SAFE Company registered and/or certified_____ Total forestlands employees _____ Trained forestland employees _____

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
35	5.2.4, 6.4.3	Target: Maintain and/or increase the number of working relationships (partnerships, joint ventures, cooperative agreements, memorandum of understanding, or business contracts) with First Nations. Additionally, report annually the percent of the three TSAs AAC that has been allocated to first Nations ventures. **Reporting:** Licencees will 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. Performance is based on a **three year rolling average.** 2014 performance target is achieved if the 12/13/14 average is ≥ to the 11/12/13 average. *Examples of a business contract include a work agreement or a direct timber sale with a First Nation Band or First Nation Contractor[10]. For consistency in reporting, count multiple work agreements with one band or contractor or direct sales with one band or contractor as a single business contract. For example, multiple work agreements or multiple direct sales would count as a single business contract if they occurred with the same band or contractor. Licencees will report this figure as a rolling three year average. For annual reporting, the information for the current year will be combined with the previous two years reporting, then averaged for the three years. Examples of working relationships will be provided to indicate possible trends in the types of these relationships.* Licencees will also report the total AAC of any tenure issued under Section 12 of the Forest Act (forms of agreement) where First Nations are the Licence holder. This volume will be looked at as a percentage of the total AAC.	Number of working relationships _____ Examples of relationships: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ AAC allocated to First Nations _____
36	6.3.1	Target: Where forest operations are planned within range units, the forest licencee will communicate with the rancher in advance of those operations to minimize impacts to affected ranchers. **Reporting:** Licencees will report percent of ranchers affected by planned operations that were communicated with during the reporting period.	Number of ranchers possibly affected by operations _____ Number of affected ranchers communicated with during reporting period _____

[10] First Nation Contractor is a company where one or more of the principles are of First Nations decent.

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
37	6.3.1	Target: Communication of forest operations to occur with trappers 100% of the time in advance of operations (see annual reporting requirements on how this indicator is applied). **Reporting:** Where trappers holding a registered trap line advise forest Licencees of the areas that they will be active in a given year and seek to understand what forest operations might be occurring for that year, Licencees will report if they communicated with that trapper their planned forest operations. Should a forest Licencee's plans change during that year such that operations will be conducted in areas not originally discussed (excluding areas discussed in general and identified as not being of concern to the trapper regardless of any operations taking place), companies will report if they made a concerted effort to contact that trapper and inform him/her of those operations.	Number of trappers desiring communication _____ Number of trappers communicated with during reporting period _____ Number of instances where plans changed possibly impacting trapper(s). _____ Number of those instances where trappers where effort made to discuss changes with trapper(s). _____
38	6.3.2	Target: A minimum of 80% of contractors conducting on the ground work that are SAFE Company or equivalent registered and/or certified. And for BCTS, that a minimum of 80% of licences or contracts awarded were SAFE Company or equivalent registered and/or certified. **Reporting:** Number of on the ground contractors in total working in the DFA and the number of those that are SAFE Company registered and/or certified. For BCTS, report the total licences/contracts awarded and the number awarded that required Safe Company or equivalent certification.	Number of on the ground contractors _____ Number SAFE Company registered and/or certified_____ BCTS contracts and Licences awarded _____ BCTS number SAFE Company registered and/or certified_____
39	6.3.3	Target: All forest companies/organizations subscribing to the SFM Plan are SAFE Company or equivalent registered and/or certified. **Reporting:** A yes/no answer as to whether they are SAFE Company or equivalent registered and/or certified.	Licencee SAFE Company certified (Y/N)

Tar #	Indicators (that target applies to)	Monitoring parameter	Monitoring results
40	6.4.1	Target: Active, engaged public advisory group ▪ 80% of survey responses "3" or better ▪ All written comments are reviewed and considered, and all line responses averaging less than 3 become action items **Reporting:** Survey to be sent out only to those public members that attended one of the meetings in the previous year. a. Survey responses coded 1 (poor), 2, 3 (satisfactory), 4, 5 (well done) b. Results of survey compiled and reported as part of annual monitoring program.	See survey form and public member comments.
41	6.4.2, 6.4.3, 6.5.1	Target: Participating licencees will maintain educational support that leads to a balanced and broad-based understanding of forestry. One focus is forestry programs at the elementary, secondary, and post-secondary levels. Target 40 actions per year in each of the Merritt and Kamloops TSAs, and 10 actions per year in Lillooet TSA. **Reporting:** Licencees will report on the number of presentations or field trips to schools, public groups and individuals during the reporting year. *Separate reporting for First Nations, where visit or activity is targeting them specifically.*	Number of presentations or field visits provided _____ Number of presentations or field visits provided specifically to First Nations _____ Examples of presentations or field visits provided _____ _____ _____ _____
42	6.4.2, 6.5.2	Target: Licencees will keep members of the public informed of TSA strategies being developed, and planning occurring by: a. Maintaining a website b. Circulating SFM Plan and other information to the public at least annually (advertisements/news release/leaflet/open house/Local Resource Use Plan etc.) **Reporting:** Licencees will report a yes/no answer as to whether web sites or other tools to disseminate information are being maintained. Licencees also report on the tools used to bring awareness to the SFMP and any other related information to the public in the last year.	Web site is being maintained? Yes ___ No___ SFM Plan and other information was made publicly available in the last year? Yes ___ No ___ List other awareness tools used: _____ _____ _____ _____

Appendix 4: Summary of Publicly Developed Values, Objectives and Indicators and Targets

CCFM CRITERION: 1) Biological Diversity

ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET
1.1 Ecosystem Diversity Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that naturally occur in the DFA.	Healthy, functioning ecosystems that support natural processes.	Healthy, connected ecosystems with a representation of natural attributes.	1.1.1 Ecosystem area by type	**1.** Maintain the presence of Biogeoclimatic Zones to the subzone level within the Plan area.
			1.1.2 Forest area by type or species composition	**2.** 70 percent of areas submitted as free growing will have three or more tree species, including conifer and deciduous comprising one percent or more in the inventory label (all biogeoclimatic Zones except ESSF). Also report on the percent of first, second and third leading species for each area, then averaged for all areas. 70 percent of areas submitted as free growing will have two or more tree species, including conifer and deciduous comprising one percent or more in the inventory label (ESSF only). Also report on the percent of first, second and third leading species (where 3rd species is present) for each area, then averaged for all areas.
			1.1.3 Forest area by seral stage or age class	**3.** Progress towards a stable forest age class distribution on the timber harvesting land base where each age class to 80 years old [1 (1 to 20), 2 (21-40), 3 (41-60), and 4 (61 to 80)] occupies at least 8.5% of the timber harvesting land base in each of the 3 TSAs (Kamloops, Lillooet, Merritt). Three of the four age classes meet this target within 50 years for each TSA. . Reporting to occur in conjunction with subsequent Timber Supply Reviews by TSA. **4.** Maintain the existing old growth management area (no net loss).
			1.1.4 Degree of within-stand structural retention or age class	**5.** 80 percent of cutblocks greater than 10 hectares will have individual wildlife trees/stubs and/or wildlife tree patches within the block. Of the blocks that have individual wildlife trees/stubs and/or wildlife tree patches; at least 50 percent of the time these blocks will have dispersed individual trees, stubs or small (<0.25 ha) patches retained. Objectives for location of WTPs include: 1.Inclusion of as broad a representation of site types as possible 2.WTPs are anchored on any District listed wildlife habitat features where they occur. 3.WTPs are preferentially anchored on classified and unclassified riparian areas where they occur. Desirable characteristics for stub trees include: 1.Dead or defective trees (particularly if defects exist in the lower bole of the tree). 2. Larger diameter trees that are more suitable for nesting.

CCFM CRITERION: 1) Biological Diversity

ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET
1.2 Species Diversity Conserve species diversity by ensuring that habitats for the native species found in the DFA are maintained through time, including habitats for known occurrences of species at risk.	Abundance and distribution of habitat to conserve populations of native flora and fauna	Maintain a variety of habitats for naturally occurring species. Use practices to reduce the spread of invasive plant populations within forested ecosystems	1.2.1 Degree of habitat protection for selected focal species, including species at risk.	**6.** Proactive habitat protection targets established in accordance with non-legally binding guidelines and best practices: a. On an annual basis, obtain from the Conservation Data Centre, the location of known Red-listed or Blue-listed species within the Plan area b. Where there is a documented mapped (GPS/UTM) and field verified occurrence of a critical habitat feature (e.g. den, lick, nest) for a Red-listed or Blue-listed species operations achieve 100% consistency with SP measures deemed necessary by the participating licencee to prevent adverse harm. c. Based on the potential level of impact to any of the 3 TSAs, participate in the consultation process led by the Ministry of Environment and the Ministry of Forests and Range, in the identification of Ungulate Winter Range and Wildlife Habitat Areas and the development of General Wildlife Measures. **7.** Affected licencees adhere to the current management strategies for mountain caribou. **8.** Affected licencees adhere to the current management strategies for northern spotted owl.
			1.2.2 Degree of suitable habitat in the long term for selected focal species, including species at risk	**9.** Conserve or manage within the Kamloops TSA and in the Cascades Forest District habitat for selected focal species (listed within the text of the indicator) by retaining 100% of the amount of habitat (provided for in government's FPPR Section 7 notice) in a condition suitable for the survival of the species. **7.** Affected licencees adhere to the current management strategies for mountain caribou. **8.** Affected licencees adhere to the current management strategies for northern spotted owl.
			1.2.3 Proportion of regeneration comprised of native species	**10.** 100% of trees planted will conform to plan commitments related to the species requirements within approved stocking standard (requires reforestation with commercially valuable and ecologically suitable tree species).
			1.2.4 Timing of grass seed application (non-core indicator)	**11.** All planned road cut and fill slope seeding application carried out using certified seed and within 12 months of completed road construction on suitable sites.

CCFM CRITERION: 1) Biological Diversity

ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET
1.3 Genetic diversity Conserve genetic diversity by maintaining the variation of genes within species and ensuring that reforestation programs are free of genetically modified organisms.	Genetic diversity within all native tree species	Maintain genetic diversity of all tree species native to the DFA	1.1.2 Forest area by type or species composition	**2.** 70 percent of areas submitted as free growing will have three or more tree species, including conifer and deciduous comprising one percent or more in the inventory label (all biogeoclimatic Zones except ESSF). Also report on the percent of first, second and third leading species for each area, then averaged for all areas. 70 percent of areas submitted as free growing will have two or more tree species, including conifer and deciduous comprising one percent or more in the inventory label (ESSF only). Also report on the percent of first, second and third leading species (where 3rd species is present) for each area, then averaged for all areas.
			1.2.3 Proportion of regeneration comprised of native species	**10.** 100% of trees planted will conform to plan commitments related to the species requirements within approved stocking standard (requires reforestation with commercially valuable and ecologically suitable tree species).
			1.1.3 Forest area by seral stage or age class (No mandatory CSA indicators for this element)	**4.** Maintain the existing old growth management area (no net loss).

CCFM CRITERION: 1) Biological Diversity

ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET
1.4 Protected Areas and Sites of Special Biological and Cultural Significance Respect protected areas identified through government processes. Co-operate in broader landscape management related to protected areas and sites of special biological and cultural significance. Identify sites of special geological, biological, or cultural significance within the DFA, and implement management strategies appropriate to their long-term maintenance.	Appropriate management of protected areas and sites of special geological, biological, and/or cultural significance.	Protected areas and sites of special significance are identified and appropriately managed.	1.4.1 Proportion of identified sites with implemented management strategies	Kamloops **12.** Prioritized Red-listed ecological communities will be protected by retaining existing forest. Where the ecological community is "documented, mapped (GPS/UTM) and field verified" for the cutting permit or TSL area where operations are being planned and: ☐ the ecological community represents less than 10% of the cutting permit or TSL area, then the majority of the identified occurrence is protected. ☐ the ecological community is greater than 10% of the gross area of either tenure noted above, then WTP placement will be weighted towards those communities. Where the ecological community is not well documented (i.e. ecological mapping at the site series level is not available), the prioritized list of Red-listed ecological communities is used as a support tool to weight WTP placement, or other reserves, to the applicable site series in the block. Lillooet **13.** Harvesting not to exceed greater than 50% of the total of each identified rare landscape unit / BEC zone variants. Merritt **6.** Proactive habitat protection targets established in accordance with non-legally binding guidelines and best practices: ☐ On an annual basis, obtain from the Conservation Data Centre, the location of known Red-listed or Blue-listed species within the TSA. ☐ Where there is a documented mapped (GPS/UTM) and field verified occurrence of a critical habitat feature (e.g. den, lick, nest) for a Red-listed or Blue-listed species operations achieve 100% consistency with SP measures deemed necessary by a TSA licencee to prevent adverse harm. ☐ Based on the potential level of impact to the TSA, participate in the consultation process led by the Ministry of Environment and the Ministry of Forests and Range, in the identification of Ungulate Winter Range and Wildlife Habitat Areas and the development of General Wildlife Measures.

CCFM CRITERION: 1) Biological Diversity

ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET
1.4 Protected Areas and Sites of Special Biological and Cultural Significance Respect protected areas identified through government processes. Co-operate in broader landscape management related to protected areas and sites of special biological and cultural significance. Identify sites of special geological, biological, or cultural significance within the DFA, and implement management strategies appropriate to their long-term maintenance.	Appropriate management of protected areas and sites of special geological, biological, and/or cultural significance.	Protected areas and sites of special significance are identified and appropriately managed.	1.4.2 Protection of identified sacred and culturally important sites 1.4.3 Management and or protection of special geological features (non-core indicator).	**14.** 100% protection of culturally important, sacred and spiritual sites that have been identified and mapped and 100% conformance to all plan commitments specifically designed to manage for culturally important, sacred, and spiritual sites that have been identified and mapped. **15.** Report the special geological features that were identified and managed. Additionally, Licencees will report the management activities that they undertook for each special geological feature.

CCFM CRITERION: 2) Forest Ecosystem Condition and Productivity

ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET
2.1) Forest Ecosystem Resilience Conserve ecosystem resilience by maintaining both ecosystem processes and ecosystem conditions.	Sustainable forest ecosystems	Forest management does not compromise forest ecosystem resilience	2.1.1 Reforestation success	**16.** 90% of area prescribed for planting is completed within the third growing season from start date of harvest. **17.** All cutblocks will reach free growing requirements on or before the latest date. Report area of cutblocks that outperformed late free growing requirements and average time by which requirements were exceeded.
2.2) Forest Ecosystem 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.	Productive, well functioning forest ecosystems	Well functioning connected ecosystems that are managed for timber and non timber forest values	2.2.1 Additions and deletions to the forest area 2.2.2 Proportion of the calculated long-term sustainable harvest level that is actually harvested 2.2.3 Riparian conformance (non-core indicator)	**18.** Less than 6%, (7% within the Lillooet TSA), on average, of harvested areas will be in permanent roads and landings. **19.** Harvest the cut allocation for the year consistent with the cut control regulation and policy. **20.** 100% conformance to riparian and lakeshore commitments made within plans.

CCFM CRITERION: 3) Soil and Water

ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET
3.1) Soil Quality and Quantity Conserve soil resources by maintaining soil quality and quantity.	Conservation of soil quality and quantity	Maintain productive capacity of forest soils. Minimize compaction and detrimental disturbance	3.1.1 Level of soil disturbance	**18.** Less than 6%, (7% within the Lillooet TSA), on average, of harvested areas will be in permanent roads and landings. **21.** 100% conformance to soil conservation measures contained with operational plans. **22.** No operationally caused slides resulting from a failure to perform a terrain stability field assessment or from a failure to follow the recommendations within a completed assessment. Report the total number of operationally caused slides that occurred (or that were first discovered) in the reporting period.
			3.1.2 Level of downed woody debris	**23.** Percent of cutblocks where management of coarse woody debris (CWD) is consistent with operational plans.
3.2 Water Quality and Quantity Conserve water resources by maintaining water quality and quantity**.**	Conservation of water quality and quantity.	Water quality and quantity that maintains pre-existing conditions and supports communities (human and ecological) and aquatic life	3.2.1 Proportion of watershed or water management areas with recent stand-replacing disturbance	<u>Kamloops reporting only</u> **24.** Equivalent clear cut area (ECA) not to exceed 35% without doing further hydrological assessments prior to harvesting. Target applies to the highest risk rated watersheds (post MPB) as identified in SFM Plan Appendix. <u>Lillooet and Merritt reporting only</u> **24.** Equivalent clear cut area (ECA) not to exceed 35% (at the sub-basin level) without doing further hydrological assessments prior to harvesting.
			3.2.2 Managing water quality through road inspections (non-core indicator).	**25.** All permanent status roads and associated structures will have inspections and related maintenance completed as scheduled.
			1.2.4 Grass seeding application on newly constructed roads (non-core indicator).	**11.** All planned road cut and fill slope seeding application carried out using certified seed and within 12 months of completed road construction on suitable sites.
			2.2.3 Respect for riparian areas (non-core indicator).	**20.** 100% conformance to riparian and lakeshore commitments made within plans.

CCFM CRITERION: 4) Carbon Update and Storage

ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET
4.1 Carbon Uptake and Storage Maintain the processes that take carbon from the atmosphere and store it in forest ecosystems.	Healthy, functioning ecosystems that support natural processes	Conduct forest activities to maintain ecological processes that facilitate carbon uptake and storage a. actively growing, healthy forests b. maintain natural sources of nutrient cycling	4.1.1 Net carbon uptake 2.1.1 Reforestation success.	**3.** Progress towards a stable forest age class distribution on the timber harvesting land base where each age class to 80 years old [1 (1 to 20), 2 (21-40), 3 (41-60), and 4 (61 to 80)] occupies at least 8.5% of the timber harvesting land base in each of the 3 TSAs (Kamloops, Lillooet, Merritt). Three of the four age classes meet this target within 50 years for each TSA. . Reporting to occur in conjunction with subsequent Timber Supply Reviews by TSA. **18.** Less than 6%, (7% within the Lillooet TSA), on average, of harvested areas will be in permanent roads and landings. **16.** 90% of area prescribed for planting is completed within the third growing season from start date of harvest. **17.** All cutblocks will reach free growing requirements on or before the latest date. Report area of cutblocks that outperformed late free growing requirements and average time by which requirements were exceeded.
4.2 Forest Land Conversion Protect forestlands from deforestation or conversion to non-forests, where ecologically appropriate.	Maintenance of the forest land-base	Minimal loss of forest land within the DFA	2.2.1 Additions and deletions to the forest area.	**18.** Less than 6%, (7% within the Lillooet TSA), on average, of harvested areas will be in permanent roads and landings.

CCFM CRITERION: 5) Economic and Social Benefits

ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET
5.1 Timber and Non-Timber Benefits Manage the forest sustainably to produce an acceptable and feasible mix of timber and non-timber benefits. Evaluate timber and non-timber forest products and forest based services.	A sustainable flow of timber and non-timber benefits that contribute to quality of life	Conserve or enhance non-timber values while managing forests for timber values and prosperous forest-based industries	5.1.1 Quantity and quality of timber and non-timber benefits, products, and services produced in the DFA	**19.** Harvest the cut allocation for the year consistent with the cut control regulation and policy. **27.** Open communication with local First Nations will include an understanding of traditional territories and other aboriginal rights including cultural and spiritual values Participating Licencees respond to all written requests for communication/information from First Nations. **28.** Licencees will demonstrate efforts by participating in public multi-stakeholder meetings at both the strategic and at the local level. Licencees will report on the number of community meetings held or attended. Licencees will also report on the number of communications with concerned and engaged recreational users. Participating licencees respond to all written requests from the public for communication within 30 days of their receipt. **29.** 100% conformance to strategies in plans designed to achieve preservation and partial retention visual quality objectives. **30.** 100% of known pre-existing recreational trails retained for continued recreational use on areas harvested in the reporting period. **31.** Report business initiatives and partnerships.

CCFM CRITERION: 5) Economic and Social Benefits

ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET
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.	Sustained social and economic stability and vitality of all local communities	A productive forest resource that maintains a continual and balanced flow of benefits	5.2.1 Level of investment in initiatives that contribute to community sustainability	**19.** Harvest the cut allocation for the year consistent with the cut control regulation and policy. **32.** Report the board feet and chip volume produced by sawmills within the TSA. **33.** Report number of timber processing facility operating days, the total number of man hours worked and the number of mill employees on payroll. Report separately for each TSA. **31.**Report business initiatives and partnerships.
			5.2.2 Level of investment in training and skills development	**34.** 100% of DFA forest contractors will have both environmental and safety training (10% variance). 100% of woodlands employees are trained in accordance with training plans (10% variance)
			5.2.3 Level of direct and indirect employment	**19.** Harvest the cut allocation for the year consistent with the cut control regulation and policy. **32.** Report the board feet and chip volume produced by sawmills within the TSA. **33.** Report number of timber processing facility operating days, the total number of man hours worked and the number of mill employees on payroll. Report separately for each TSA.
			5.2.4 Level of Aboriginal participation in the forest economy	**35.** Maintain and/or increase the number of working relationships (partnerships, joint ventures, co-operative agreements, business contracts) with First Nations. Report annually the percent of the TSAs AAC that has been allocated to first Nations ventures.

CCFM CRITERION: 6) Society's Responsibilities

ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET
6.1 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 rights.	Aboriginal title and rights and treaty rights	Recognition of Aboriginal title and rights and treaty rights as related to forest management	6.1.1 Evidence of a good understanding of the nature of Aboriginal title and rights	**27.** Open communication with local First Nations will include an understanding of traditional territories and other aboriginal rights including cultural and spiritual values Participating Licencees respond to all written requests for communication/information from First Nations.
			6.1.2 Evidence of best efforts to obtain acceptance of management plans based on Aboriginal communities having a clear understanding of the plans	**27.** Open communication with local First Nations will include an understanding of traditional territories and other aboriginal rights including cultural and spiritual values Participating Licencees respond to all written requests for communication/information from First Nations.
			6.1.3 Level of management and/or protection of areas where culturally important practices and activities (hunting, fishing, gathering) occur	**27.** Open communication with local First Nations will include an understanding of traditional territories and other aboriginal rights including cultural and spiritual values Participating Licencees respond to all written requests for communication/information from First Nations. **14.** 100% protection of culturally important, sacred and spiritual sites that have been identified and mapped and 100% conformance to all plan commitments specifically designed to manage for culturally important, sacred, and spiritual sites that have been identified and mapped.

CCFM CRITERION: 6) Society's Responsibilities

ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET
6.2 Respect for Aboriginal Forest Values, Knowledge, and Uses Respect traditional Aboriginal forest values, knowledge and uses as identified through the Aboriginal input process.	Aboriginal title and rights, treaty rights and traditional knowledge are respected	Manage and/or protect important archaeological sites (as interpreted by First Nations) • Cultural, archaeological, and heritage sites and values, including spiritual. Use of traditional knowledge. • Meaningful and informed participation of First Nations	6.2.1 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	**27.** Open communication with local First Nations will include an understanding of traditional territories and other aboriginal rights including cultural and spiritual values Participating Licencees respond to all written requests for communication/information from First Nations. **14.** 100% protection of culturally important, sacred and spiritual sites that have been identified and mapped and 100% conformance to all plan commitments specifically designed to manage for culturally important, sacred, and spiritual sites that have been identified and mapped.

CCFM CRITERION: 6) Society's Responsibilities

ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET
6.3 Forest Community well-being and resilience	Economic benefits to society	A prosperous forest based economy with a sustainable supple of forest resources	6.3.1 Evidence that the organization has co-operated with other forest-dependent businesses, forest users, and the local community to strengthen and diversify the local economy	**36.** Where forest operations are planned within range units, the forest Licencee will communicate with the rancher in advance of those operations to minimize impact to affected ranchers. **37.** Communication of forest operations to occur with trappers 100% of the time in advance of operations. **29.** 100% conformance to strategies in plans designed to achieve preservation and partial retention visual quality objectives. **31.** Report business initiatives and partnerships. **28.** Licencees will demonstrate efforts by participating in public multi-stakeholder meetings at both the strategic and at the local level. Licencees will report on the number of community meetings held or attended. Licencees will also report on the number of communications with concerned and engaged recreational users.
			6.3.2 Evidence of co-operation with DFA-related workers and their unions to improve and enhance safety standards, procedures, and outcomes in all DFA-related workplaces and affected communities	**38.** A minimum of 80% of contractors conducting on-the-ground work are SAFE Company, or equivalent, registered and/or certified. And for BCTS, that a minimum of 80% of the Licences or contracts awarded were SAFE Company, or equivalent, registered and/or certified.
			6.3.3 Evidence that a worker safety program has been implemented and is periodically reviewed and improved	**39.** All forest companies/organizations subscribing to the SFM Plan are SAFE Company, or equivalent, certified.

CCFM CRITERION: 6) Society's Responsibilities

ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET
6.4 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.	Recognition of advisory group values, shared knowledge, and informed decisions	Engaged, dynamic public participation process	6.4.1 Level of participant satisfaction with the public participation process 6.4.2 Evidence of efforts to promote capacity development and meaningful participation in general 6.4.3 Evidence of efforts to promote capacity development and meaningful participation for Aboriginal communities	**40.** Completion of annual PAG survey: 80% of survey responses "3" or better. All written comments are reviewed and considered, and all line responses averaging less than 3 become action items. **41.** Participating licencees will maintain educational support that leads to a balanced and broad-based understanding of forestry. One focus is forestry programs at the elementary, secondary, and post-secondary levels. Target 40 action per year in each of the Merritt and Kamloops TSAs, and 10 actions per year in Lillooet TSA. *Note: separate reporting for First Nations, where visit or activity is targeting FN's specifically.* **41.** Participating licencees will maintain educational support that leads to a balanced and broad-based understanding of forestry. One focus is forestry programs at the elementary, secondary, and post-secondary levels. Target 40 action per year in each of the Merritt and Kamloops TSAs, and 10 actions per year in Lillooet TSA. **27.** Open communication with local First Nations will include an understanding of traditional territories and other aboriginal rights including cultural and spiritual values Participating Licencees respond to all written requests for communication/information from First Nations. **35.** Maintain and/or increase the number of working relationships with First Nations. Report annually, the percent of the TSAs AAC that has been allocate to First Nations ventures.

CCFM CRITERION: 6) Society's Responsibilities

ELEMENT	VALUE	OBJECTIVE	INDICATOR	TARGET
6.5 Information for Decision-Making Provide relevant information and educational opportunities to interested parties to support their involvement in the public participation process, and increase knowledge of ecosystem processes and human interactions with forest ecosystems.	Opportunities to increase knowledge and understanding	A wide range of public educational opportunities. Adaptive forest management is responsive to research, experience and public input	6.5.1 Number of people reached through educational outreach 6.5.2 Availability of summary information on issues of concern to the public	**41.** Participating licencees will maintain educational support that leads to a balanced and broad-based understanding of forestry. One focus is forestry programs at the elementary, secondary, and post-secondary levels. Target 40 action per year in each of the Merritt and Kamloops TSAs, and 10 actions per year in Lillooet TSA. **42.** Licencees will keep members of the public informed of TSA strategies being developed, and planning occurring by: Maintaining a website. Circulating the SFM plan and other information to the public at least annually (news release/leaflet/open house/Local Resource Use Plan, etc.).

Appendix 5: Parking Lot

Introduction

This Appendix, referred to as a Parking Lot, is included in the SFMP to retain improvement ideas. The Parking lot is used to retain and track ideas that time, resources or other constraints precluded immediate attention to. Parking lot items will be reviewed periodically for potential follow-up. Options might include doing nothing (and either retain in parking lot or remove) or setting out a course of action to address the item.

Parking Lot Content

The former Merritt TSA SFM Plan retained a parking lot but had no improvement ideas/ opportunities. The Lillooet TSA SFM Plan did not have a parking lot or other mechanism to retain improvement ideas. The Kamloops TSA SFM Plan had two items that will be carried forward into this combined Plan. A third item has been added as a result of our June 24, 2010 meeting.

1.	Suggested indicator 3.1.2 improvements for future consideration: • Consider a target related to Coarse Woody Debris size
2.	Review/update Information for Future Consideration (listed below)
3.	Aline to work with Simon on a possible additional road/soil erosion target specific to the Lillooet TSA. The earlier proposed target (number 26 in a draft version of the Plan) was felt to be similar to target #25.
4.	Frances to work with Aline (involve Jim Baker in review) to add more detail to the TSA descriptions found in Section 2.1 of the Plan. Will be updated in the 2011 Plan (changes to the digital version only – paper copies circulated to PAG members will not change). Work to be done by end of January, 2011.

Information for Future Consideration

Planning for and improving sustainable forest management requires flexibility and the ability to incorporate new information and methods as they become available. Licencees are committed to increasing their knowledge and understanding of forest ecosystems and sustainable forest management practices. They support various types of research and monitoring both directly and indirectly and are committed to using new information as it becomes available.

Licencees recognize that, in order to allow for improved management decisions, there is a need for better inventories of key forest resources. In general, the gathering of inventories on resource features on Crown Forest Land outside of Tree Farm Licences are the responsibility of provincial government agencies. The responsibilities associated with a forest licence are limited to operational reporting and are primarily related to monitoring and tracking of obligations associated with activities performed under the licence. Licencees support government-led initiatives to improve, or add to, existing forest resource inventories and research projects.

The following research and information needs were previously recommended by the Kamloops TSA SFM Advisory Group members:

Integrating sustainable forest management with First Nations values:

a. Traditional use and cultural heritage studies. This information is needed to protect and manage for cultural and socio-economic First Nations interests in operational and forest development planning and for the timber supply review process, including any and all referral processes.
b. Methodologies need to be developed to advance the integration of traditional knowledge into sustainable forest management.

Biodiversity/flora and fauna:

a. There is a need for developing and monitoring biological indicators of actual biodiversity values to verify the surrogate indicators, such as age class distribution or riparian reserves, identified in the SFM Plan (includes an assessment of monitoring tools and their effectiveness).
b. Identifying gaps in species population and critical habitat data, especially rare and endangered species and working towards filling those gaps. Identifying ways to implement the information.

Water Management:

a. The effectiveness of "green up" criterion for maintaining satisfactory hydrological recovery and to curtail runoff into streams.
b. Stream temperature and specific suitable range to maintain healthy aquatic ecosystems.
c. Monitoring of variables of water quality and quantity in selected streams, comparing developed and undeveloped watersheds of equivalent biogeoclimatic characteristics e.g., dry ecosystems and wetter ecosystems. Variables include: stream flow, climatic indices, snowpack, suspended sediment, turbidity, chemistry (could include nitrogen, pesticides, petroleum residues), aquatic invertebrates (as an indicator of water quality and the health of aquatic habitat) and channel stability (through periodic aerial surveys).
d. The adequacy of current methods and schedules to assess water quality, quantity, stream flow, and temperature regimes.

Forest Management:

a. Improve understanding of forest-grassland encroachment (historical harvesting, wildlife and livestock grazing, fires and fire suppression and climate change).
b. How to minimize disruption of soil horizons and maintain productive mycorrhizal populations.
c. Timber supply – further refine temporal and spatial analysis of timber supply information (including age class distribution).
d. Large aggregate cutblock management strategies for salvage harvest of large scale natural disturbances.

Appendix 6: Wildlife Species at Risk

English Name	BC List	Identified Wildlife	SARA
American Badger	Red	Y (May 2004)	Y
Bighorn Sheep	Blue	Y (Jun 2006)	
Brewer's Sparrow, *breweri* subspecies	Red	Y (Jun 2006)	
Bull Trout	Blue	Y (Jun 2006)	
Burrowing Owl	Red	Y (May 2004)	Y
Columbia Sculpin	Blue		Y
Dun Skipper	Blue		Y
Fisher	Blue	Y (Jun 2006)	
Flammulated Owl	Blue	Y (May 2004)	Y
Fringed Myotis	Blue	Y (May 2004)	Y
Gopher Snake, *deserticola* subspecies	Blue	Y (May 2004)	
Great Basin Spadefoot	Blue	Y (May 2004)	Y
Great Blue Heron, *herodias* subspecies	Blue	Y (Jun 2006)	
Grizzly Bear	Blue	Y (May 2004)	
Half-moon Hairstreak	Red	Y (Jun 2006)	Y
Lewis's Woodpecker	Red	Y (May 2004)	Y
Long-billed Curlew	Blue	Y (May 2004)	Y
Monarch	Blue		Y
Mountain Beaver, *rainieri* subspecies	Blue		Y
Olive-sided Flycatcher	Blue		Y
Pacific Tailed Frog	Blue	Y (May 2004)	Y
Peregrine Falcon, *anatum* subspecies	Red		Y
Prairie Falcon	Red	Y (Jun 2006)	
Racer	Blue	Y (Jun 2006)	Y
Rusty Blackbird	Blue		Y
Sage Thrasher	Red	Y (May 2004)	Y
Sharp-tailed Grouse, *columbianus* subspecies	Blue	Y (Jun 2006)	
Short-eared Owl	Blue	Y (May 2004)	Y
Sonora Skipper	Red	Y (Jun 2006)	Y
Speckled Dace	Red		Y
Spotted Bat	Blue	Y (May 2004)	Y
Spotted Owl	Red	Y (May 2004)	Y
Western Painted Turtle - Intermountain - Rocky Mountain Population	Blue		Y
Western Rattlesnake	Blue	Y (Jun 2006)	Y
Western Screech-Owl, *kennicottii* subspecies	Blue		Y
Western Screech-Owl, *macfarlanei* subspecies	Red	Y (May 2004)	Y
Western Skink	Blue		Y
White-headed Woodpecker	Red	Y (May 2004)	Y
Williamson's Sapsucker, *thyroideus* subspecies	Red	Y (Jun 2006)	Y
Wolverine, *luscus* subspecies	Blue	Y (May 2004)	
Yellow-breasted Chat	Red	Y (May 2004)	Y

Data from BC Ecosystems Explorer: http://a100.gov.bc.ca/pub/eswp/ Current as of September, 2010

Includes wildlife species with provincial conservation status of Red and Blue, plus provincially and federally listed species (indicated above with "Y"). Species within the Cascades and Kamloops Forest Districts.

The RED and BLUE list serve two purposes (see glossary for definitions):

1. To provide a list of species for consideration for more formal designation as Endangered or Threatened, either provincially under the British Columbia Wildlife Act, or nationally by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).
2. To help inform setting conservation priorities for species/ecological communities considered at risk in British Columbia.

Appendix 7: Red-listed Ecological Communities

Prioritized Red-listed Ecological Communities

BEC variants that have been prioritized[11] for rare ecosystem assessment are:

Kamloops TSA

Common Name	Biogeoclimatic classification
Douglas-fir / western snowberry / bluebunch wheatgrass	IDFxw/03
Douglas-fir - ponderosa pine / bluebunch wheatgrass	IDFxw/04
hybrid white spruce - water birch / northern gooseberry	IDFxw/06
hybrid white spruce / prickly rose / palmate coltsfoot	IDFxw/07
western hemlock / velvet-leaved blueberry - falsebox	ICHwk1/03
western red cedar - hybrid white spruce / black twinberry / soft-leaved sedge	IDFdk2/07
Douglas-fir - ponderosa pine / bluebunch wheatgrass	IDFxh2/02 & IDFxh2/03
lodgepole pine / falsebox / pinegrass	SBSmm/03 & SBSmm/04
Douglas-fir - Rocky Mountain juniper / kinnikinnick	IDFdk3/02
Douglas-fir / common snowberry - saskatoon	PPxh2/06
black cottonwood - water birch	PPxh2/07

Lillooet TSA

Landscape Unit	Biogeoclimatic classification	Total Productive (ha)
Duffey Lake	CWHms1	109
Pavilion	IDFdk3	165
	MSxk3	959
Watson Bar	IDFdk3	230
	IDFxw	254
	MSxk3	1011

[11] Refer to Indicator 1.4.1

Appendix 8: Risk-Based Watersheds
for the
Kamloops Timber Supply Area

Based on the May 22, 2007
Screening Procedure

Prepared For:

Kamloops TSA Licencees

and

BC Ministry of Environment

Prepared By:

Forsite Consulting Ltd.

Grainger and Associates Consulting Ltd.

M.J. Milne & Associates Ltd.

Key Forest Resources

List of Highest Risk-Based Watersheds

Top 25 watershed units based on social risk scores post MPB (Table 25).

Tolko retains the current digital file for this map.

Rank	Watershed	Risk Score
1	N. Thomp-Barriere Residual	89.3
2	Lower South Thompson Residual	84.6
3	N. Thomp-Birch Is. Residual	84.0
4	N. Thomp-Rayleigh Residual	80.4
5	Lolo Creek	77.8
6	Thompson-Cornwall Residual	72.8
7	Barriere River	72.1
8	Clearwater River Residual	70.8
9	N. Thomp-Tum Tum Residual	69.0
10	N. Thomp-Thuya Residual	68.1
11	Bonaparte River	68.1
12	Guichon Creek	67.2
13	Thompson River 17	66.9
14	Clearwater River	66.0
15	Thompson River 16	64.6
16	N. Thomp-Blackpool Residual	64.2
17	Newhykulston Creek	62.3
18	Bona-Cache Residual	62.0
19	N. Thomp-Peterson Residual	60.5
20	Paul Creek	60.4
21	Louis Creek	59.2
22	Lemieux Creek	57.9
23	Nelson	57.4
24	Peterson Creek 2	56.4
25	Lower Barriere Residual	56.2