Kamloops TSA

Sustainable Forest Management Plan

January 2008

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Vision Statement

The Sustainable Forest Management Plan will foster forest management practices - based on a balance of science, professional judgment and local and First Nations input - that sustain the long-term health and productivity of forest ecosystems while contributing to a strong economy and thriving communities throughout the Kamloops Timber Supply Area.

Executive Summary

Between February and June 2000 the forest tenure holders ("licencees") operating in the Kamloops Timber Supply Area (TSA) worked with a group of public and First Nation representatives (the SFM Advisory Group) to develop a Sustainable Forest Management (SFM) Plan.

Members of the SFM Advisory Group represented a cross-section of local interests including recreation, tourism, ranching, forestry, conservation, water, community, and First Nations.

The SFM Plan includes a set of values, objectives, indicators and targets that address environmental, economic and social aspects of forest management in the Kamloops TSA. 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.

Following completion of the SFM Plan and the development of an environmental management system, a licencee may apply for registration of its operating area under the CSA standard. Participants being registered to the CSA standard are audited by an eligible independent third party auditor.

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 active 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 Kamloops TSA SFM certification website contains the latest information on the process, including the SFM Plan, and can be viewed at:

www.kamloopssustainableforestry.ca

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 timber has been produced using environmentally and socially responsible forest practices.

The Canadian Standards Association (CSA) Sustainable Forest Management; Requirements and Guidance is one of a number of certification systems currently being used in British Columbia. A Sustainable Forest Management (SFM) Plan developed according to the CSA standard, sets performance objectives and targets over a defined forest area to reflect local and regional interests. This standard requires that SFM Plan development, maintenance and improvement include significant public involvement. Public Advisory Groups (PAG's) composed of a cross-section of local interests, including recreation, tourism, ranching, forestry, conservation, water, community, and First Nations, fulfill this role.

Active forest licencees[1] in the Kamloops Timber Supply Area (TSA), working with the PAG, developed, and are maintaining and continuously improving, the Kamloops TSA SFM Plan based on the CSA standard. The Plan provides management direction to all licenced forest lands within the TSA and Tree Farm Licences (TFL's) 18 and 35.

Forest licencees in the Kamloops TSA have been working 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. Licencees prepare Forest Stewardship Plans that consider the direction provided. Licencee standards, and operating plans, are continuously updated as new information comes forward. The SFM Plan is an example of the commitment of licencees to adapt their management practices in response to changes in society's values.

The SFM Plan serves as a "roadmap" to current and long-term management in the TSA, setting performance targets and management strategies that are reflective of the ecological and social values of the TSA. The Plan is consistent with the Kamloops Land and Resource Management Plan (KLRMP). The KLRMP was developed from 1992 - 1995 by a cross-section of local stakeholders, interests groups and members of the public.

[1] Referred to as 'active licencees' or 'licencees' throughout this report -- refer to Sec 4.2.1.1 for a more complete description

The values, objectives, indicators, targets, and guiding principles described in this Plan are, and will be, adhered to by all active forest licencees in the TSA. Adherence supports achievement of sustainable forest management for the TSA. The SFM Plan is continuously evolving. It is reviewed and revised on an annual basis, with the SFM Advisory Group, to reflect changes in forest condition and local community values.

More information about the Kamloops TSA certification process, Sustainable Forest Management Planning, meeting summaries, annual reporting and maps can be obtained at the Kamloops TSA Certification Website

www.kamloopssustainableforestry.ca

2.0 Guiding Principles

During the development of the SFM Plan the SFM Advisory Group identified a number of principles to guide the implementation of the Plan. These guiding principles form some of the core principles of management and will be adhered to by all active licencees.

- Recognizing that First Nations are not just another stakeholder, best efforts will be made to respect and accommodate the unique needs and values of Aboriginal Peoples in forest management decisions, plans and practices. This includes recognition and respect for Aboriginal title, rights and cultural values and the wider incorporation of Traditional Knowledge.

- All suggestions and concerns from the public related to non-timber resources will be included in the Forest Stewardship Plan document and used to guide licencees in the development of their plans.

- Licencees will strive to create a situation of mutual respect with other Crown licence holders (i.e., grazing, trappers, mining) with a commitment to communicate in order to maintain the viability of resources for all parties.

- Research and information needs and priorities related to the achievement of sustainable forestry (e.g., research and inventory) will be re-evaluated yearly and licencees will forward these priorities to appropriate funding agencies.

3.0 The Defined Forest Area

3.1 Area Description[2]

Overview

The Kamloops TSA SFM Plan Defined Forest Area (DFA) is approximately 2.8 million hectares made up of the Kamloops TSA (2,666,375 hectares), and TFLs 18 (74,620 hectares) and 35 (36,564 hectares). The Kamloops TSA is just under ninety-six percent of the plan area. The plan area follows the boundary of the Kamloops and Headwaters (Kamloops TSA portion) Forest Districts in the southern interior of British Columbia and includes Wells Gray Park. The DFA extends from the Logan Lake area south of Kamloops north to Wells Gray Park, and is bounded by the Columbia Mountains to the east and the Cariboo/Chilcotin area to the west.

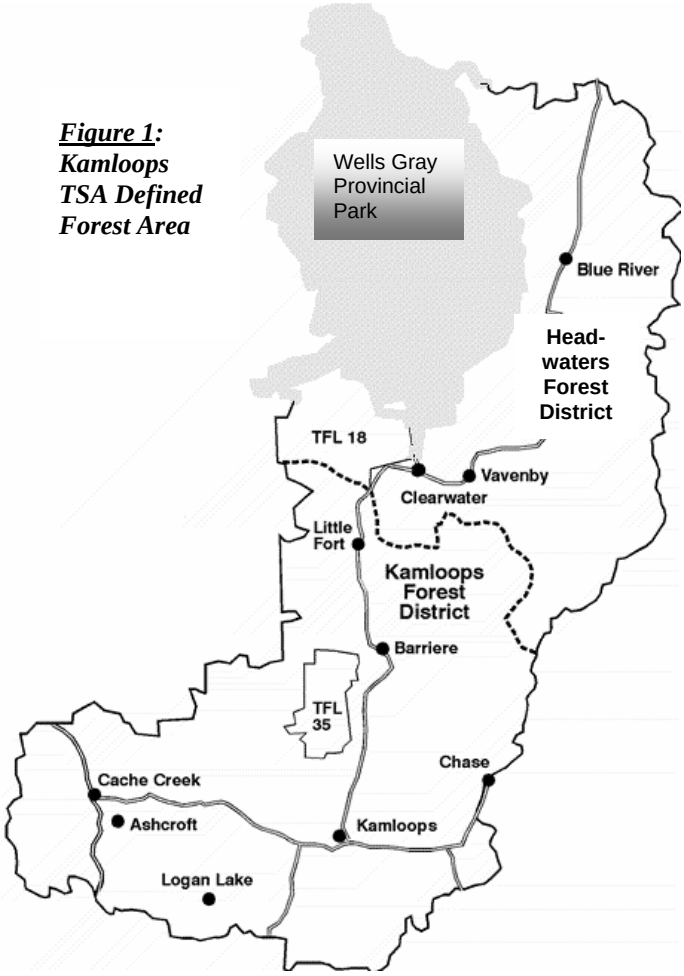


Figure 1*: *Kamloops TSA Defined Forest Area

Communities

Almost 80% of the TSA'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. According to the 1996 census, the population of the Kamloops TSA was 101,730, a 14% increase from 1991.

The Secwepemc Nation, the Nlaka'pamux Nation, the St'at'imc Nation, the Okanagan Nation and the South Carrier Nation have traditional territories within the Kamloops TSA. Currently there are ten First Nation communities within the TSA with a population of about 4,500 people. These communities are Adams Lake, Bonaparte, Kamloops, North Thompson, Neskonlith, Skeetchestn, Whispering Pines, Little Shuswap, Ashcroft and Oregon Jack. Additional First Nations communities are located outside of the Kamloops TSA

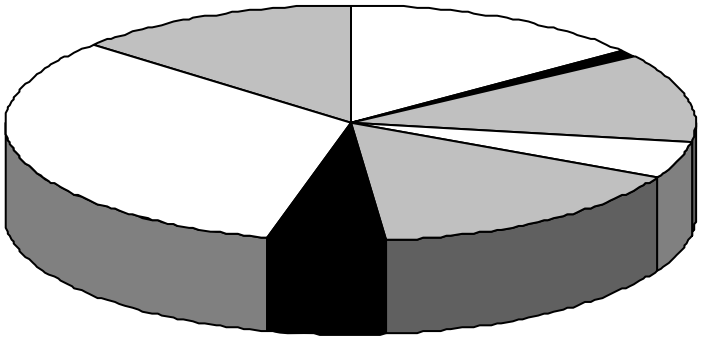
[2] Description is primarily excerpts from "Timber Supply Review, Kamloops Timber Supply Area Analysis Report, July 2001"

but maintain traditional interests inside the TSA. These include the High Bar, Spallumcheen, Lower Nicola, Upper Nicola, Xaxl'ip (Fountain), Ts'kw'aylaxw (Pavillion), Cooks Ferry, Lheidli T'enneh Nation and Canim Lake.

Employment

In 2000, direct forestry-related employment at all TSA mills amounted to approximately 2,100 positions. Harvesting and silviculture activities contribute over 500 additional positions. Non-

Figure 2: Employment by industry sector — Kamloops TSA, 1996.



TSA sources of timber also generate employment in the area (e.g., Tree Farm Licence 18, held by Canadian Forest Products Ltd., and Tree Farm Licence 35, held by Weyerhaeuser Company Ltd.). Woodlot licences, private lands and Indian Reserves contribute additional non-TSA timber. Figure 2 illustrates the shares of total employment by industry sector for the Kamloops TSA.

Environment

The topography of the Kamloops TSA is one of sharp contrasts, from dry, hot grasslands in the south, to wet areas and rugged mountains in the north. The Thompson River and its tributaries wind through the heart of the area, traveling southward and westward toward the confluence with the Fraser River. In the northern portion of the TSA, the North Thompson River is bounded by the high peaks of the Monashee and Cariboo Mountains. Wet to very wet conditions, with high snowfalls, are the norm. In the central portion, the mountains give way to high plateaus dissected by steep valleys and dotted with lakes and rivers. Moist conditions support mixed forests. Further south, the landscape continues to become drier and gentler, with rolling uplands and numerous lakes. The dense forests of the north and central areas give way to mixed pine and pine-fir forests with grasslands in the southern valleys.

The varied ecological features and unique nature of the area contribute to the high biodiversity values found in this TSA. From the driest, hottest (summer), lowest elevation in the South, to the wettest, coldest, highest elevation in the North, the Kamloops TSA SFM Plan DFA includes the Bunchgrass (BG), Ponderosa Pine (PP), Interior Douglas-fir (IDF), Interior Cedar-Hemlock (ICH), Montane Spruce (MS), Sub-Boreal Spruce (SBS), Sub-Boreal Pine Spruce (SBPS), Engelmann Spruce-Subalpine Fir (ESSF) and Alpine Tundra (AT) Biogeoclimatic Zones. Figure 3 on the following page shows the relative occurrence of the Biogeoclimatic Zones[3].

The diverse forests of the Kamloops TSA host a wide variety of wildlife species including grizzly bear, black bear, moose, mule deer, goat, California bighorn sheep and marten.

The Kamloops TSA overlaps the range of a provincially important and viable herd of Mountain Caribou. Due to winter conditions, these Mountain Caribou require sufficient canopy cover, provided by mature forests, to move between feeding areas. Movement corridors require attention during planning of forest development activities. The Kamloops TSA provides a migration corridor for the Mountain Caribou that inhabit Wells Gray Park. In late 2007 the Province of B.C. announced a recovery plan for Mountain Caribou populations in the North Thompson area. This is a 5 part plan involving the following components:

- Habitat Management
- Recreation - Public Snowmobiling
- Recreation – Commercial Tenures
- Predator/Prey Control
- Population Augmentation

More information on the Mountain Caribou management Plan can be found on the Species at Risk Coordination Office (SARCO) website: ilmbwww.gov.**bc**.ca/**sarco**/mc/

The TSA contains more than 1,800 lakes and 40 salmon-producing steams, as well as many additional fish-supporting steams. These water bodies support some of the finest inland fisheries in B.C. Species of high recreational or economic value include rainbow trout, steelhead, kokanee, brook trout, white fish and Dolly Varden. The Thompson, North Thompson, South Thompson and Adams rivers and their tributaries support a significant population of anadromous

[3]Biogeoclimatic Ecosystem Classification (BEC) overview, brochures describing the zones, and mapping can be found at:

- **Program overview:**: http://www.for.gov.bc.ca/hre/becweb/system/how/concepts.html
- **Brochures:** http://www.for.gov.bc.ca/hre/becweb/resources/classificationreports/provincial/index.html
- **Mapping:** http://www.for.gov.bc.ca/hre/becweb/resources/maps/map_download.html

fish — steelhead and sockeye, coho, chinook and pink salmon. The North Thompson River also contains most of the wild stocks of rainbow trout within the TSA.

Under the Kamloops LRMP, a process exists for identifying species at risk and developing specific management practices for them. The *Forest Practices Code* and the *Forest and Range Practices Act* provide for the designation of wildlife habitat areas. Appendix 1 outlines species at risk that require management in the TSA. Indicators 3 and 8 of this SFM Plan relate to species at risk.

Forest Use

The forests of the Kamloops TSA provide a wide range of forest land resources, including forest products (timber and non-timber, such as botanical forest products), recreation and tourism amenities, and significant wildlife habitat. 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 national and provincial parks, such as Wells Gray Provincial Park and Jasper and Banff National Parks.

***Figure 3**: Occurrence and distribution of biogeo-climatic zones in the Kamloops SFM Plan DFA*

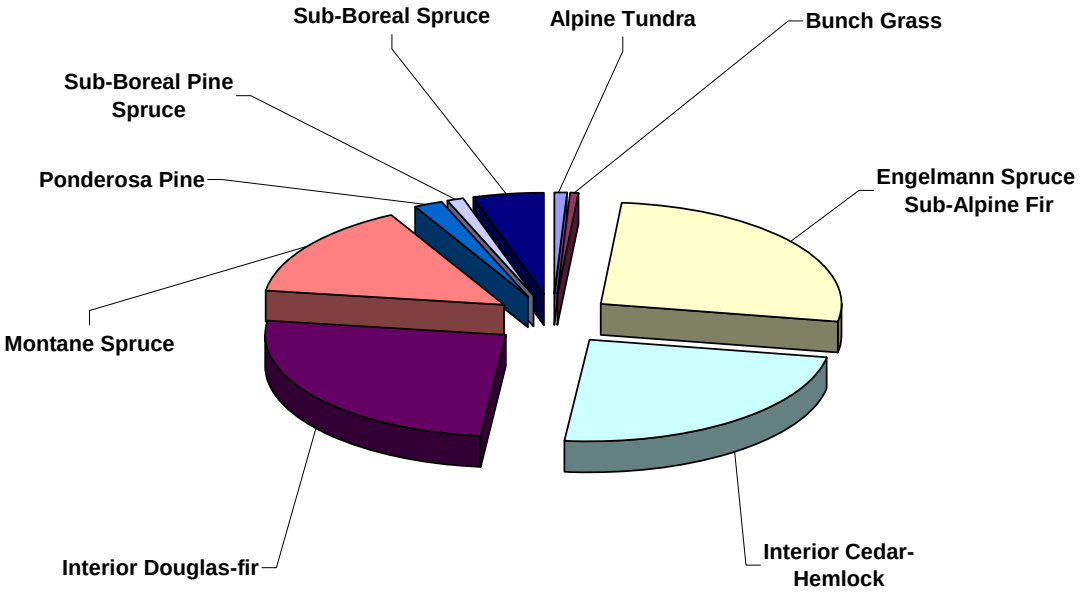
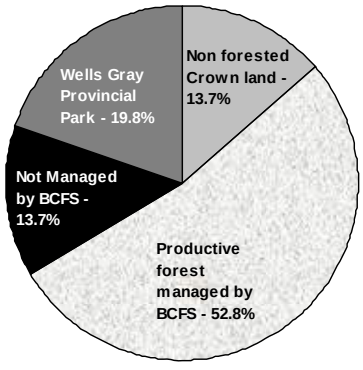
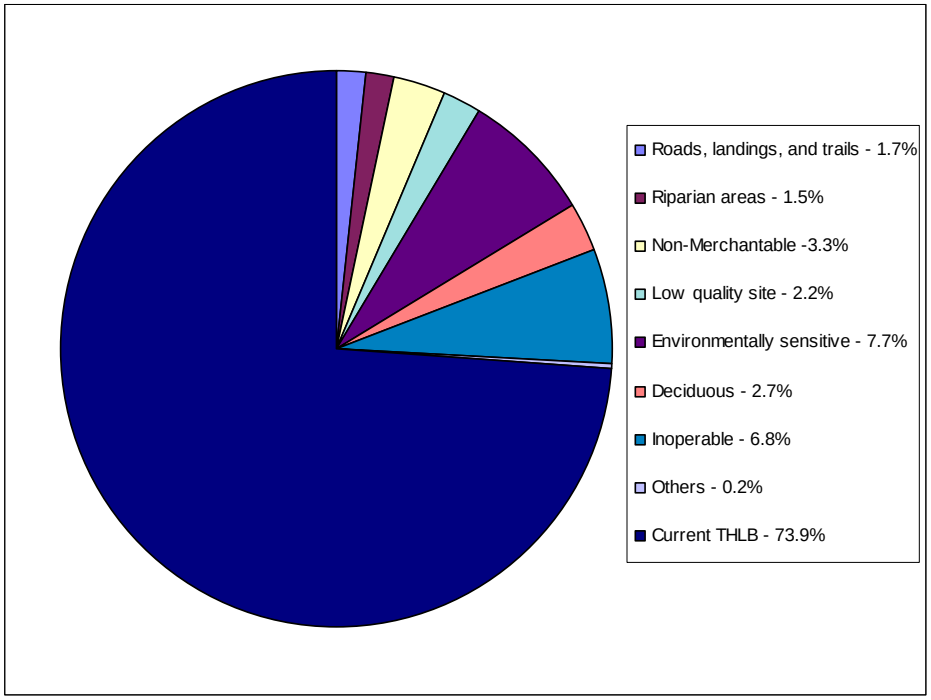


***Figure 4**: Composition of the total land base — Kamloops TSA, 2001.*



The chart shows that almost 20% of the area is covered by Wells Gray Provincial Park. About 13.7% of the total land base is classified as not managed by the B.C. Forest Service, and the same percentage is non-forest or non-productive forest (i.e., having very few trees) managed by the Forest Service.

***Figure 5*: Composition of the productive forest land base — Kamloops TSA, 2001.**



The productive forest chart details the categories of forest land and shows that about 73.9% of the forest land in the Kamloops TSA is considered to be available for timber harvesting (including NSR)over time.

***Figure 6* : Species distribution in the Kamloops SFM Plan DFA (hectares)**
Source- 2007 TSR Public Discussion Paper

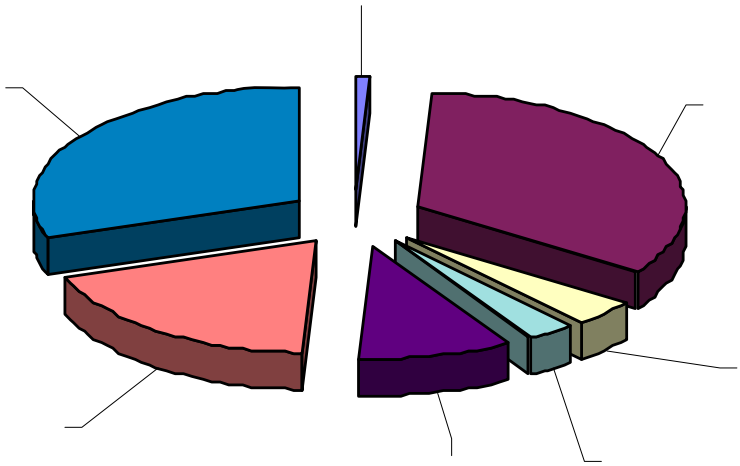
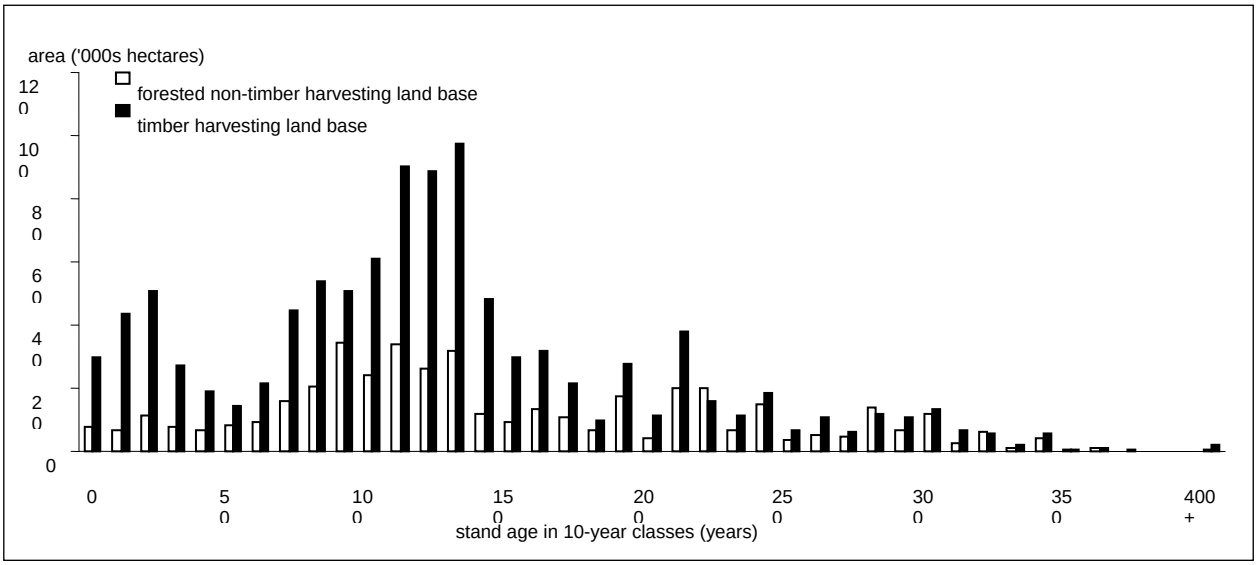


***Figure 7*:Current age class composition — Kamloops TSA productive forest land base, 2001.**



Forest Landbase

The forests of the Kamloops TSA are fairly diverse, reflecting the variety of topography and climate. Within the land base currently considered available for timber harvesting, Douglas-fir and lodgepole pine are the dominant species. Spruce, subalpine fir, cedar, hemlock and hardwoods are also present.

Figure 4 shows that about 53% of the TSA land base, excluding Wells Gray Park, is considered productive forest land managed by the B.C. Forest Service (approximately 1.409 million hectares). Currently about 74% of this forested land base (Figure 5) is considered available for harvesting. This represents 39% of the total TSA land base. The significant portion of forest outside of the timber harvesting land base contributes to forest management objectives.

Figure 6 shows the current composition of the timber harvesting land base by dominant tree species. Lodgepole pine dominates stands on 30% of the timber harvesting land base, with Douglas-fir dominating 33% of stands. Stands prevalent in spruce and balsam cover 27% of the area, while the area of timber harvesting land base with cedar and hemlock stands is 5.0%. Deciduous stands make up 4% of the timber harvesting land base.

3.2 Mountain Pine Beetle

Overview

Mountain pine beetle is severely impacting mature lodgepole pine stands in the southern part of the Kamloops TSA. A summary of the current situation is described based on excerpts from the following publications:

- Timber Supply And The Mountain Pine Beetle Infestation In British Columbia, Ministry Of Forests and Range Forest Analysis Branch October, 2003

- Oct. 30, 2003 Ministry Of Forests and Range Backgrounder; Timber Supply Analysis Mountain Pine Beetle Infestation

- Kamloops Timber Supply Area Rationale For Allowable Annual Cut (AAC) Determination Effective January 1, 2004

- Mountain Pine Beetle Strategy - Kamloops TSA March 2006
  http://www.for.gov.bc.ca/dka/Forest_Health/Doc/KamloopsTSAMPBStrategy2006.pdf

The mountain pine beetle (MPB), *Dendroctonus ponderosae* Hopkins (Coleoptera: Scolytidae), is the most damaging insect attacking lodgepole pine forests in BC. Mountain pine beetles exist naturally in mature lodgepole pine forests, at various population levels, depending on pine availability and weather conditions. They play an important role in the natural succession of these forests by attacking older or weakened trees, which are then replaced by younger, healthy forests. The beetle population levels in British Columbia's interior have been increasing steadily since 1994 with an exponential increase seen in 2004 as a result of the 2003 beetle flight.

Area Affected

Thirty-one percent of the area in the TSA, eighteen percent of TFL 18 and thirty-six percent of TFL 35 has lodgepole pine (Pl) as the leading species. Beetle susceptibility models suggest that the majority of the Pl stands in the TSA will have MPB populations within them in the next seven years. The 2004 aerial overview surveys for the Kamloops TSA resulted in classifying about 124,401 hectares as red attacked. This represented a 4.4 fold increase in area affected in the Kamloops TSA from 2003 to 2004. In 2005, 336,705 hectares have been classified as red attack, 2.7 times the area covered in 2004. In 2006 red attacked area increased to 394,075 hectares. Red-attacked trees are those that were attacked and killed in the previous year.

The current year conditions can be summarized as follows:

- There is almost 60,000,000 m^3 in Pl leading stands susceptible to MPB attack.
- More than fifty-five percent of Pl leading stands older than 60 years already have some level of attack that was visible to mappers conducting the 2005 aerial survey.
- The 2005 MPB flight may have expanded to an even greater extent than the 2004 flight.
- Regional estimates based on Provincial history to date are eighty percent of the susceptible Pl stands in the TSA will be attacked to some significant level.
- High beetle population levels can be found in some stands in all parts of the KFD and the south-west part of the Headwaters Forest District (HFD)[3].
- MPB attack intensity in the KFD will likely peak in 2008 (2007 MPB flight).

Strategy and Response

Given the economic importance of lodgepole pine and the potential impact of the current beetle infestation on forest-dependent communities in BC's interior, the forest industry and government jointly created the Mountain Pine Beetle Emergency Task Force in 1999 to manage and reduce the impact of the infestation. The Task Force has helped to ensure that management strategies are well-planned and as effective as possible. These strategies have been aggressive and have been successful in making a difference in reducing the spread of the infestation and limiting the amount of killed timber in some areas. However, in some areas that have extremely high beetle populations, even with aggressive control measures and harvesting strategies, stands of beetle-killed timber are being left behind.

In the Fall of 2003 the Chief Forester of BC allocated a three million cubic meter uplift to the Kamloops TSA to help address the building problem. In the spring of 2004 the Chief Forester allocated a portion of a two hundred thousand cubic meter uplift to address the mountain pine beetle on TFL 35. 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 was set at 290 000 cubic meters.

The current MPB epidemic is having a significant impact on communities and forest values. The Kamloops TSA MPB Strategy has been developed to provide guidance for harvesting of lodgepole pine (Pl) stands susceptible to MPB attack. The strategy addresses the Timber Harvesting Land Base (THLB). The strategy is intended to focus resources in response to the epidemic levels of attack by identifying the significant issues created by the MPB infestation and providing information and guidance to address them. The Kamloops TSA MPB Strategy has the following six objectives:

1. Assessing the Extent of the Current Infestation and Forecasts Future MPB Impacts

- The 2005 aerial survey results show more than fifty-five percent of Pl leading stands older than 60 years have some level of attack.
- Red attacked stands mapped in 2005 represent a 250% increase over 2004.
- Estimates are eighty percent of the susceptible Pl stands in the TSA will be attacked to some significant level.

2. Providing Guidance for Salvage Harvesting.

- Focus is managing for forest values, meeting public expectations and expediting salvage planning and operations.
- Watershed/landscape level strategic and operational planning is emphasized.
- Biodiversity and ecosystem functioning, and "hydrology – water – riparian" are the primary areas where guidance is provided.

3. Developing Salvage Priorities

- Priorities for the THLB have been developed considering stand level characteristics, other resource values, Beetle Management Unit (BMU) strategies in place, and current attack severity.
- Projected attack, harvest, and un-recovered volumes by year and severity have been developed to 2010.
- 13,000,000 m³ in Low Salvage Priority stands are not initially included in salvage harvesting strategies. These stands will be reassessed for opportunities in future years.

4. Assessing Capacity and Allocates Resources

- There is a shortfall of AAC capacity to salvage all of the highest priority for Salvage (HPS) volume. At the current AAC, and after net down using a 50%salvage factor, 4,657,0000 m³ of available volume from HPS stands will not be salvaged by 2010.
- There is potential to capture available volume and value by:

  - Extending the current 1,000,000 m³ uplift to 2010 from its current expiry at the end of 2006.
  - Establishing an additional uplift to increase the volume harvested prior to significant deterioration of stand value.

- Licencees and BCTS worked collaboratively with Forest District staff to map which priority areas for harvest they will address and which are available for NRFL's or other uplift tenures.

5. Addressing Administrative Challenges.

- Shifting of traditional operating areas between major licencees (ML) and/or BCTS, even temporarily, is very disruptive to the planning and operating practices of ML and BCTS. Operating principles have been developed to minimize issues.
- Strategies have been developed to address two primary areas of concern regarding overlapping and multiple tenures are:

  - Watershed level assessments and planning -- coordinating planning with multiple licencees.
  - Operational challenges with overlapping tenures.

6. Identifying Next Steps.

The Kamloops TSA strategy aligns with Objectives 3 to 7 of British Columbia's Mountain Pine Beetle Action Plan – 2005 – 2010 (9.2). The Kamloops strategy incorporates many of the activities identified for each of these objectives.

The large number of MPB Beetle related research projects being undertaken provides an extensive amount of information. The Kamloops TSA MPB strategy attempts to address the most common themes. It is a living strategy that will require regular reviews and updating to reflect:

- Actual progress of the MPB

- Addressing MPB impacted stands initially by-passed as lower priority for salvage
- New or improved information as it is developed
- Changing social and economic circumstances and forestry priorities

The Extent of Current and Future Infestations

To determine the extent of current and future infestations, the TSR II data has been updated, susceptible stands have been identified, current MPB attack has been mapped and forecasts of future attack levels and intensities have been developed.

The extent of the susceptible stands and the severity of the attack have significant implications, particularly for natural resource values, short and long term forest industry operations and investment risks, and physical and administrative capacity to address the situation. MOFR, Kamloops Forest District (KFD) website www.for.gov.bc.ca/dka/MPBStrategyKamloopsTSA.

Factors Influencing the Severity of Attack

Two key factors contributing to the recent expansion of the mountain pine beetle infestation are the large amounts of older lodgepole pine on the land base and the relatively warm weather conditions experienced in recent years in the interior of the province. Both fire and insects have historically played an important role in the natural disturbance and replacement of lodgepole pine forests in much of the province's interior. Forest management policies, i.e. patch size and fire control have contributed to an accumulation of old pine forest above historical levels. Once lodgepole pine trees are mature (generally older than 80 years), they are highly susceptible to attack by the pine beetle, particularly during times of prolonged favourable weather conditions. Experts concur that moderated climate conditions coupled with the increasing amount of susceptible, mature lodgepole forests has led to the current, unprecedented mountain pine beetle outbreak.

Environmental Impacts of the Beetle Infestation

Before extensive fire suppression, BC's central interior forests naturally underwent large-scale stand replacing events brought on by wildfire and insect outbreaks.

Fires and insect outbreaks have been a part of normal ecosystem dynamics in BC, most likely for many thousands of years. However, much more of the province is now occupied by older pine forests than historically has been the case. With the epidemic population of mountain pine beetles and the abundance of susceptible mature pine, the rate of conversion from older to younger forested habitats will be increased, by insect attack followed by eventual blowdown, or by harvesting to control the rate of spread and salvage the attacked timber. Even with harvesting, both live and dead stands unaltered by harvesting will remain on the landscape. Nonetheless, both the epidemic beetle population and timber harvesting, either for insect control or for salvage, will result in complex consequences for pine forests and associated wildlife habitats in BC's interior.

Outlook

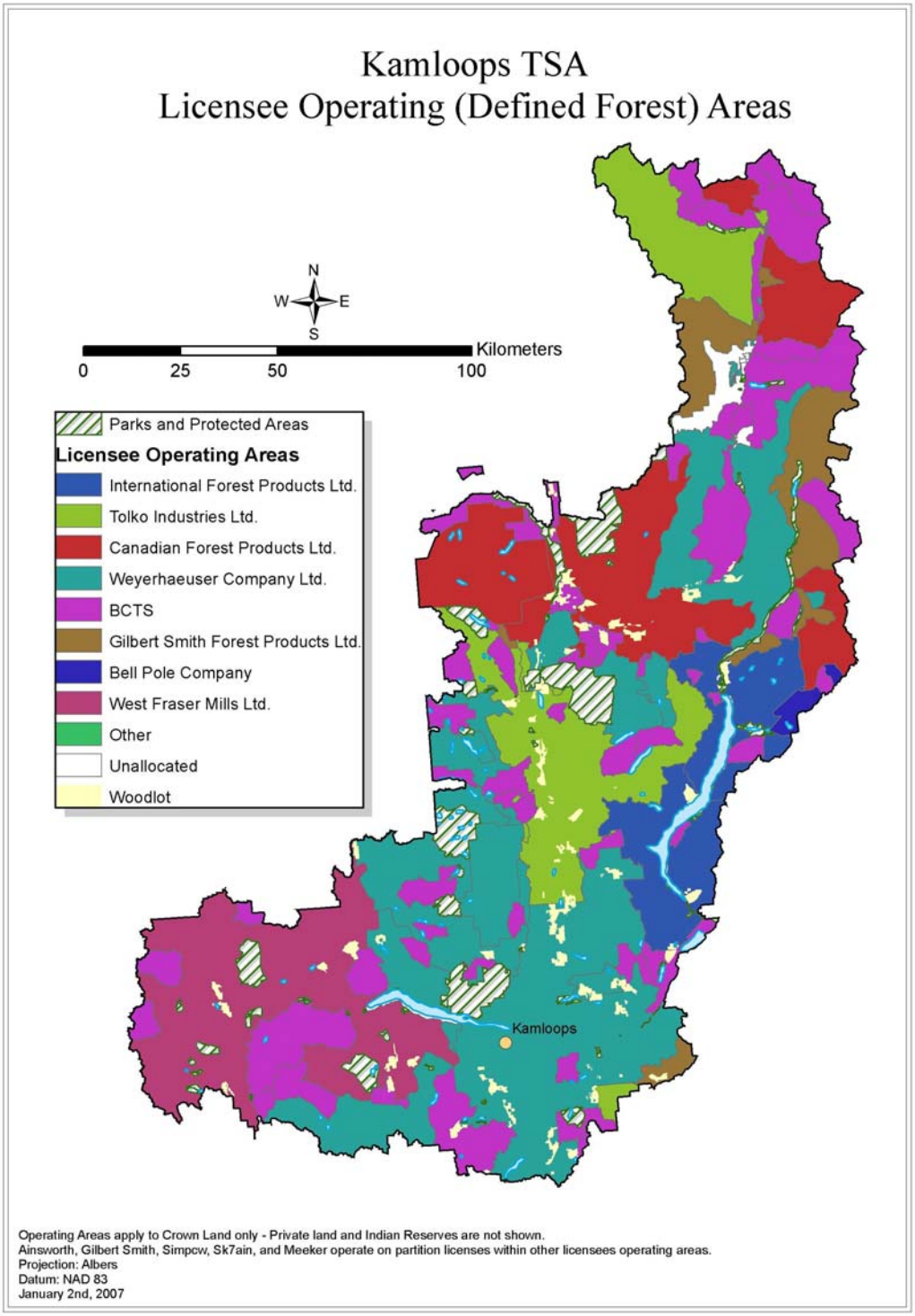
Short of running out of suitable host trees, there is no indication the spread of the infestation will slow significantly without sufficiently cold weather to kill the developing beetle brood. Temperatures need to reach -30°C in the early Fall or late Spring when the beetles are not fully in their "over-wintering 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 impact to the SFM plan from the MPB are better understood, further refinements to this plan may be required.

3.3 Licencee Operating Areas

Operating areas have been allocated to the active forest licencees operating within the TSA. An overview map of the TSA, depicting licencee operating areas, is attached. The Forestry Revitalization Act, Bill 28, take back areas are in transition. Refer to licencee Regional Plans for mapping of individual DFAs. Bill 28 takeback areas will be shown on the DFA map in the annual TSA SFM Plan as they are finalized.

Currently negotiations are underway to re-allocate some areas amongst licencees to ensure a fair allocation of forest resources.


Kamloops TSA
Licensee Operating (Defined Forest) Areas
N
W
E
S
0
25
50
100
Kilometers
Parks and Protected Areas
Licensee Operating Areas
International Forest Products Ltd.
Tolko Industries Ltd.
Canadian Forest Products Ltd.
Weyerhaeuser Company Ltd.
BCTS
Gilbert Smith Forest Products Ltd.
Bell Pole Company
West Fraser Mills Ltd.
Other
Unallocated
Woodlot
Kamloops
Operating Areas apply to Crown Land only - Private land and Indian Reserves are not shown.
Ainsworth, Gilbert Smith, Simpcw, Sk7ain, and Meeker operate on partition licenses within other licensees operating areas.
Projection: Albers
Datum: NAD 83
January 2nd, 2007

4.0 The Planning Process

4.1 The CSA Certification Process

The Sustainable Forest Management standards were developed by the Canadian Standards Association (CSA) as a voluntary tool to assist responsible forest organizations in moving towards the goal of sustainable forest management. Consistent with most certifications, the CSA standards expect compliance with existing forest policies, laws and regulations.[4]

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 4.1.1 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 4.1.2 following).

For a licencee seeking certification to the CSA Z809-02 standard, a licencee specific plan is developed that is complimentary to the TSA SFM Plan. The licencee specific plans contain additional information such as their defined forest area and internal means to monitor and measure the TSA SFM Plan components.

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

4.1.1 Public/First Nations involvement: performance requirements and measures

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

- Conservation of biological diversity;
- Maintenance and enhancement of forest ecosystem condition and productivity;
- Conservation of soil and water resources;
- Forest ecosystem contributions to global ecological cycles;
- Multiple benefits to society; and
- Accepting society's responsibility for sustainable development.

[4] In the case of the SFM Plan for the Kamloops TSA, this includes compliance with the strategic direction provided in the Kamloops Land and Resource Management Plan.

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

For each set of criteria and elements, forest managers, First Nations, and the public identify local values and objectives. Indicators and targets are assigned to the values and objectives to measure performance.

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

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

Indicators are measures to assess progress toward an objective. Indicators are intended to provide a practical, cost-effective, scientifically sound basis for monitoring and assessing implementation of the SFM Plan. There must be at least one indicator for each element and associated value.

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 "Minimize loss to the timber harvesting landbase", one 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. In the SFM Plan for the Kamloops TSA, these performance measures were developed to be applied to the entire plan area as well as to individual licencee operating areas.

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.

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 target.

Public Review of Annual Reports and Third Party Audits

Each year, forest licencees compile a report that summarizes results for each of the SFM Plan's 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 achievements against performance measures, and comparing the actual results to forecasts, enables the SFM Plan to be continually improved. Continuous improvement is mandated by the CSA standard. Licencees seeking CSA certification produce a separate annual report specific to their DFA.

For a licencee registered to the CSA standard, the achievement of performance measures (indicators and targets) is assessed annually through surveillance audits carried out by a registered third party auditor. The audit confirms that the registrant has successfully implemented the SFM Plan and continues to meet the CSA Standard. Audit summaries are available to the public.

4.1.2 Internal Infrastructure: Systems Components

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

- **Commitment:** A demonstrated commitment to developing and implementing the SFM Plan.

- **Public and First Nations participation:** The CSA standard requires informed, inclusive, and fair consultation with First Nations and members of the public during the development and implementation of the SFM Plan.

- **CSA-aligned management system:** The management system is an integral part of implementation of the SFM Plan and is designed to meet CSA standards. The management system has four basic elements: Planning, Implementing, Checking and Monitoring, and Review and Improvement. Each licencee has their own management system, the base components include:

    1. Identify environmental risks.
    2. Identify standard operating procedures or develop performance measures to address significant risks.
    3. Develop emergency procedures in the event of an incident causing environmental impacts.
    4. Review all laws and regulations
    5. Establish procedures for training. 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.
    6. If an incident does occur, conduct an investigation or incident review and develop an action plan to take corrective action, based on the preparation undertaken in steps 1to5.

- **Continual improvement:** As part of a licencee's management system, the effectiveness of the SFM Plan is continually improved by monitoring and reviewing the system and its components. This includes a review of ongoing planning, public process and First Nations liaison to ensure that the management system is being implemented as effectively as possible.

4.1.3 CSA Registration

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

- an SFM Plan, that meets the CSA Standard, has been developed and implemented. This includes confirmation that quantified targets for meeting sustainable forest management criteria have been established through a public participation process.
- an SFM Environmental Management System has been developed and it is being used to manage and direct achievement of the SFM Plan performance measures.
- progress toward achieving the targets is being monitored, and learnings from monitoring results are being used for continual improvement of the SFM Plan and Environmental Management System.

A typical registration audit may include:

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

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

4.2 The Kamloops TSA SFM Planning Process

The SFM Plan was developed by the Kamloops TSA Licencees based on advice and recommendations provided by the SFM Public Advisory Group. The Plan was developed to be in compliance with all existing legislation and policy and consistent with the strategic direction and intent of the Kamloops LRMP (KLRMP). The Plan is continually updated and improved to incorporate new information, changing values, recommendations from monitoring activities, and new circumstances.

4.2.1 Licencee Participation

4.2.1.1 SFM Plan Development

Active forest licencees[5] operating within the Kamloops TSA, together with the Woodlot Association, worked with the SFM Advisory Group to develop performance measures (values, objectives, indicators, and targets) for the SFM Plan. Having all active licencees represented during the development of a single SFM Plan (as opposed to many individual plans) helped to address the complexities of overlapping licences and volume-based harvesting tenures within the TSA. The involvement of all licencees also strengthened the content of the plan and helps ensure consistency of implementation across the entire plan area. More importantly, all licencees are committed to the achievement of the Plan and will annually report on their performance.

The following active licencees were involved in the development of the Kamloops TSA Sustainable Forest Management Plan:

- Ainsworth Lumber Co. Ltd.
- Bell Pole Canada Inc.
- Clearwater (now Headwaters) and Kamloops Small Business Forest Enterprise Program (now BC Timber Sales)
- Clearwater and Kamloops District Woodlot Associations
- Gilbert Smith Forest Products Ltd.
- Interfor Adams Lake Lumber
- Meeker Log and Timber Kamloops Ltd.
- Simpcw Development Corporation Ltd.
- Riverside Forest Products Ltd (now Tolko Industries Ltd)
- Tolko Industries Ltd.
- Slocan Forest Products Ltd (now Canadian Forest Products Ltd.)
- Weyerhaeuser Co. Ltd.

The Ministry of Forests (now Ministry of Forests and Range) participated in the SFM planning process in a number of roles including:

- as a forest tenure holder: Small Business Forest Enterprise Program (now BC Timber Sales)
- to ensure reforestation of areas with non-replaceable licences
- to provide technical support to the planning process (see section 4.2.3).

[5]Referred to as 'active licencees' or ‘licencees’ throughout this report

4.2.1.2 SFM Plan Maintenance and Improvement

Over time, there have been changes to licencee participation. Changes, other than mergers or acquisitions noted above, include:

1. New actively participating licencees:
   - Chasm Sawmills – A Division of West Fraser Mills Ltd
   - Sk7ain Ventures Ltd
   - The Ministry of Forests and Range participation in the SFM planning process has expanded to also include facilitating the monitoring and reporting of indicators related to the Small Scale Salvage Program
2. Changes in Level of Participation by Original Licencees
   - Interfor Adams Lake Lumber is no longer actively participating in plan maintenance and improvement. Interfor remains committed to, and annual reporting against, the SFM Plan's performance measures.
3. Additional Commitment to, and Annual Reporting Against, SFM Plan Performance Measures for Non-active Licencees
   - Non-Replaceable Forest Licences (NRFLs)

     Licencees holding NRFL's 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 the Targets for Indicators as follows:
     - Licencees holding 2003 fire salvage NRFLs – Indicators 2, 4 to 6, 10, 11, 13 to 15, 19, 23, 25 and 30.
     - Licencees holding mountain pine beetle NRFLs – Indicators 2, 4 to 8, 10 to 15, 19, 23, 25 and 30.
   - 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 Mountain Pine Beetle mortality. 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 report against the following Targets and Indicators: 1, 2, 4, 5, 6, 7, 8, 11, 12, 13, 16, 19, 25 and 30.

4.2.3 SFM Advisory Group

4.2.3.1 SFM Plan Development

The SFM Advisory Group was formed to assist the TSA Licencees in developing the SFM Plan by identifying local values, objectives, indicators and targets and evaluating the effectiveness of the Plan.

Members of the SFM Advisory Group represented a cross-section of local interests including environmental organizations, First Nations, resource-based interests and research specialists. An open and inclusive process was used to formulate the public advisory group. Local First Nations and KLRMP table members were formally invited to participate. The Ministry of Forests, Ministry of Sustainable Resource Management and Ministry of Water, Land and Air Protection[6] provided technical support to the SFM planning process, providing information and advice to the planning process on resources and policy issues. The group developed, and was guided by, the Terms of Reference and Procedures (TOR). The TOR were consistent with the CSA standard, and also specified that the process for developing the SFM Plan would be open and transparent.

4.2.3.2 SFM Plan Maintenance and Improvement

The SFM Advisory Group reviews the annual report prepared by licencees to assess achievement of performance measures. This monitoring process provides the licencees, public and First Nations with an opportunity to bring forward new information and to provide input concerning new or changing public values that can be incorporated into future updates of the SFM Plan.

[6] Now the Ministries of Forest and Range, Agriculture and Lands, and Environment

5.0 Strategy Guiding the SFM Plan

5.1 Kamloops Land & Resource Management Plan[7]

The Kamloops Land and Resource Management Plan (KLRMP) was developed in the early 1990s to provide strategic direction to the management of land and resources on all Crown lands in the Kamloops TSA. The KLRMP was developed with extensive public input and public participation. Public input into forest operations continues to be a key feature of forest management planning in the Kamloops TSA.

During the planning process, the Kamloops LRMP Planning Table agreed to objectives, strategies and indicators for the following values and resources by consensus. [8]

1) General Resource Management Zone

- Soil conservation
- Water Conservation
- Riparian/Streamside

2) Designated Resource Zones

- Community Watersheds
- Grasslands
- Critical Deer Winter Range
- Critical Moose Winter Range

At this stage 4 scenarios and a multiple accounts analysis were developed.[9] The four scenarios are a parallel to Z809 – 02 alternative strategies. For each of the four scenarios (strategies), the responses of some key indicators in five major areas were forecast.

1) Economic Development:

   Forestry, Agriculture, Mining, Recreation & Tourism, Commercial Fisheries

2) Environmental resources: Provision for environmental values given varying use levels

   Biodiversity, Wildlife habitat, Resident and Anadromous Fisheries, Water

   Protected Areas Strategy

3) Communities

   Local Government Revenue, Population, Employment, Local Economy, Quality of Life, Recreation

4) Aboriginal concerns

5) Government revenues

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[7] Refer to Sec 8.1 for information on how the Kamloops LRMP guides this SFM Plan

[8] "Land Use Planning, Kamloops LRMP, Open House Report" – July 94

[9] "Land Use Planning, Kamloops LRMP, Multiple Account Analysis Discussion Paper" Sept 94

Forecasts of indicator response were compared to the base case (current status and practices). These scenarios and predicted outcomes were taken to the broader public for input and direction through a series of open houses.

"Kamloops LRMP, Recommendation Summary" – Feb/95 provided information on the planning process and the resulting KLRMP Table recommendations to Government. Base case and forecast of key indicators for the recommended KLRMP management strategy can be found in "Assessment of the Kamloops LRMP Recommendation" – Feb/95.

The recommended KLRMP strategy was approved by Government in July/95. The strategy identifies six resource management zones:

General Resource Management

Settlement

Protection

Special Resource Management – Community Watersheds

Special Resource Management – Habitat/Wildlife Management Areas

Special Resource Management –Recreation and Tourism

The Kamloops Land & Resource Management Plan web site is http://srmwww.gov.bc.ca/sir/lrmp/kam/.

5.2 Sustainable Forest Management (SFM) Plan Strategy for the Kamloops TSA

The Kamloops SFM Plan has adopted and incorporated the KLRMP strategic direction. The KLRMP guides and forecasts sustainability. SFM Plan strategy recognizes the KLRMP Goals, Objectives and Strategies support achievement of sustainable forest management in the Kamloops TSA. The SFM Plan strategy is to choose appropriate indicators to confirm forest management practices are aligned with the KLRMP Goals and Objectives, and that there is appropriate communication with and consideration for First Nations, Public and Integrated Resource Management interests. The SFM Plan, guided by the KLRMP, utilizes indicators and targets:

- which reflect key goals, objectives and direction of the KLRMP
- that are guided by the Canadian Council of Forests Ministers Criteria and Elements
- that are within the ability of the forest industry to influence and manage

A set of strategies has been developed to achieve the SFM Plan objectives and targets. These strategies document the relevance of the Indicator to the SFM Plan and sustainability, and summarize actions required to meet the target. Applicable strategies are documented by indicator in Section 7 of the SFM Plan.

5.3 Additional Guidance

Forest licencees are also guided by the regulations, laws and policies established by the federal, provincial, and municipal governments.

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

6.0 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.

Indicators and targets have been developed to meet these local values and objectives. SFM Plan indicators and targets are described in Section 7. A summary table showing all criteria and elements and associated local values, objectives, and indicators is provided in Appendix 4.

Criterion 1: Conservation of 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 landscape level by maintaining the variety of communities and ecosystems that naturally occur in the DFA.

Description of Local Values	Description of Objectives	Indicators & Targets
Well-balanced ecosystems that support natural processes.	Healthy, connected forest ecosystems with a representation of natural attributes. Retain representation of natural forests. Conserve Aboriginal cultural and spiritual resources	1, 2, 4, 12, 18, 22

Element 1.2: Species Diversity

Conserve species diversity by ensuring that habitats for the native species found in the DFA are maintained through time.

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. Conserve Aboriginal cultural and spiritual resources	1, 2, 3, 8, 9, 12, 14, 22, 30

Element 1.3: Genetic Diversity

Conserve genetic diversity by maintaining the variation of genes within species.

Description of Local Values	Description of Objectives	Indicators & Targets
Sustainable populations of native species.	Maintain or enhance genetic diversity. ▪ Species population	1, 3, 7, 8, 9, 30

Element 1.4 Protected Areas and Sites of Special Biological Significance

Respect protected areas identified through government processes. Identify sites of special biological significance within the DFA and implement management strategies appropriate to their long-term maintenance.

Description of Local Values	Description of Objectives	Indicators & Targets
Continuing viability of naturally functioning ecosystems in Protected Areas and sites of special biological significance. Protected areas provide recreational opportunities and managed access.	Protect viable, ecologically important examples of British Columbia's natural diversity. Endeavor to identify and maintain new areas of biological significance. Maintain boundary integrity.	1, 3, 7, 8, 12, 18, 28

Criterion 2: Maintenance and Enhancement of 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. Conserve, use and manage sustainably	Resilient forest ecosystems with a range of natural attributes. ▪ Age class distribution ▪ Scale (landscape unit) ▪ Natural systems (way in which attributes interact) ▪ All forest types including broad leaf species	1, 2, 4, 7, 9

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.

Description of Local Values	Description of Objectives	Indicators & Targets
Conserve forest ecosystem condition and productivity.	Well functioning connected ecosystems that are managed for timber and non-timber forest values.	1, 2, 4, 9, 10, 13, 21, 22

Criterion 3: Conservation of Soil and Water Resources

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 resources	Maintain productive capacity of forest soils. ▪ Minimize compaction and detrimental disturbance	5, 10, 13

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
Healthy watersheds that function in a well-balanced natural state.	Acceptable levels of water quality and quantity ▪ Water quality (clean water). ▪ Water quantity (maintain stream-flow regimes within natural variation) ▪ Water temperature	2, 6, 10, 14, 15

Criterion 4: Forest Ecosystem Contributions to 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
Respect natural watershed processes and the intrinsic value of nature. ▪ Actively growing, healthy forests ▪ Maintain all natural sources of nutrient cycling	Resilient forest ecosystems with a representation of natural attributes. ▪ Age class distribution ▪ Scale (landscape unit) ▪ Natural systems (way in which attributes interact)	1, 5, 6, 21, 22

Element 4.2 Forest Land Conversion

Protect forestlands from deforestation or conversion to non-forests.

Description of Local Values	Description of Objectives	Indicators & Targets
Protection and security of the land and resources for future generations.	Prosperous forest-based industries with a sustainable supply of timber.	6, 10, 11

Criterion 5: Multiple Benefits to Society

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.

Description of Local Values	Description of Objectives	Indicators & Targets
Diverse use of the forest. ▪ Cultural and heritage ▪ Wildlife ▪ Environmental ▪ Recreational ▪ Tourism Traditional public use trail systems	Conserve or enhance non-timber values while managing forests for timber values and prosperous forest-based industries	12, 19, 20, 25, 28

Element 5.2 Communities and Sustainability

Contribute to the sustainability of communities by providing diverse opportunities to derive benefits from forests and to participate in their use and management.

Description of Local Values	Description of Objectives	Indicators & Targets
Social and economic stability and vitality of local communities including First Nations Local perspective valued in managing forest resources.	Employment opportunities Economic diversity Local decision making Local education opportunities	12, 19, 23, 27, 28

Element 5.3 Fair Distribution of Benefits and Costs

Promote the fair distribution of timber and non-timber benefits and costs.

Description of Local Values	Description of Objectives	Indicators & Targets
Stable and profitable local forest industries.	Prosperous forest-based industries with access to desired markets.	11, 16, 17, 19, 23, 28

Criterion 6: Accepting society's responsibility for sustainable development

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 and treaty rights.

Description of Local Values	Description of Objectives	Indicators & Targets
Aboriginal rights and title	Recognition of aboriginal rights and title as related to forest management	12, 23

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

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

Description of Local Values	Description of Objectives	Indicators & Targets
Aboriginal rights, title and traditional knowledge are respected.	Protection of important archaeological sites (as interpreted by First Nations) ▪ Cultural and heritage sites and values, including spiritual. Use of traditional knowledge Meaningful and informed participation of First Nations.	12, 25

Element 6.3 Public Participation

Demonstrate that the SFM public participation process is designed and functioning to the satisfaction of the participants.

Description of Local Values	Description of Objectives	Indicators & Targets
Public and First Nations values are recognized.	Public and First Nations are invited to participate. Those participating in the process are satisfied with outcomes.	26, 27

Element 6.4 Information for Decision-Making

Provide relevant information 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
Adaptive forest ecosystem management. ▪ Experience and research ▪ Understanding of policies and procedures	Continual increase in knowledge of ecosystem needs and impacts of management techniques. ▪ Extension Encourage the development of capacity for First Nations and the public to provide informed and meaningful input into the decision making process.	12, 16, 24, 26, 27, 28, 29

7.0 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 Kamloops TSA. Full compliance is required for many targets i.e., there is no variance. Where full compliance 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.

Objectives, Indicators and Targets

The Kamloops TSA SFM plan process has served to further refine the information and concerns of the local public. Incorporating these concerns and ideas into individual licencee operations through the established performance measures and ongoing monitoring ensures 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.

Some of the targets in the SFM that refer to full compliance with existing regulations also make reference to exceeding regulations (e.g. indicator 2). In these cases, compliance is the performance baseline and exceeding the requirement is a goal for licencees to strive for as conditions permit.

Section 8.3 describes the plans, policies and management strategies that support the achievement of the targets in the SFM Plan.

Base Line for Indicators

The primary source of base line information for indicators is the first monitoring report subsequent to adoption of the indicator. In some instances reporting on a full year is required to generate a meaningful result.

Current Status of Indicators

Current status of each indicator is as reported and updated in annual SFM Plan performance reporting. To obtain current information please refer to the most recent monitoring report on the Kamloops TSA SFM Plan web site www.kamloopssustainableforestry.ca.

Forecasting

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 target. KLRMP forecasting completed to support preparation of the multiple accounts analysis, KLRMP

monitoring, and Timber Supply Review reporting, together, support data collection, review and forecasting for targets and indicators.

Forecasting of many of the SFM Plan Indicators and Targets has occurred either indirectly or directly at the provincial or regional level. SFM Plan development has built in this information, often within the indicator and target itself. A strong example of this is the connection between desired outcomes of the KLRMP and SFM Plan forecasts of indicators.

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

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 Kamloops LRMP received approval in principle in May, 1995 and was declared as a higher level plan in January, 1996. Prior to approval in principle of the plan, a multiple accounts analysis was completed which assessed the social, economic and environmental impacts of four different Scenarios depicting differing combinations of management alternatives. The analysis assisted KLRMP table members in negotiating the approval in principle.

Where the predictions made in the KLRMP multiple accounts analysis are related directly or indirectly to the indicators of the SFM Plan, they are noted in the forecast section of the related indicator matrix.

The Kamloops Timber Supply Area Rationale for AAC Determination, July 1st, 1996, included sensitivity analysis around IRM objectives including those of the KLRMP. The analysis was conducted using FSSIM and incorporated information about the timber harvesting landbase, 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 TSR discussion paper (May 1995). Further information pertaining to assumptions and analysis can be found within the determination or the TSR for the Kamloops TSA (May 1995).

Legal Requirements

Awareness of legal requirements is essential when considering suitable Objectives for an Element, and determining appropriate Indicators and Targets. In the following Indicator tables applicable Acts and Regulations are noted in the "Legal Requirements" section. Specific sections/ subsections of these Acts and Regulations have not been identified to avoid having to manage the ongoing changes to forest legislation. Forest licencees ensure that specific legislation related to Objectives, Indicators and Targets is known and complied with by staying current with legal requirements. Subscribing to commercial services such as "Forest Views" or "Quickscribe" are examples of how licencees remain current.

Indicator	**(1) Achievement of the TSA's old forest strategy.**
Element(s)	1.1 Ecosystem Diversity, 1.2 Species Diversity, 1.3 Genetic Diversity, 1.4 Protected Areas and Sites of Special Biological Significance, 2.1 Forest Ecosystem Resilience, 2.2 Forest Ecosystem Productivity, 4.1 Carbon Uptake and Storage
Strategy(s) Description	Indicator (1) forms part of the overall strategy to manage for biodiversity at the landscape and stand level. Based on direction in the Kamloops LRMP, high, intermediate and low biodiversity emphasis options and corresponding targets for Old Growth Management Areas (OGMAs) have been assigned to each of the 33 landscape units in the KLRMP area. These OGMAs are specified according to natural disturbance type and biogeoclimatic ecosystem classification. A draft strategy is in place to ensure that these targets are implemented. It is important to understand that operations are not precluded within these OGMAs and their boundaries can be adjusted. Also contributing to Indicator (1) is the KLRMP Protected Areas Strategy (Indicator 18). This strategy is designed to protect viable, representative examples of British Columbia's natural diversity and recreational opportunities and to protect special natural, cultural heritage and recreational features. Wildlife tree patch and wildlife tree retention is determined preharvest at the stand level. Indicator 4 reports on the success of achieving this strategy.
Means of achieving objective and target	A draft strategy is in place to ensure that these targets are implemented. Protected areas are identified on Licencee maps Draft OGMAs are identified on Licencee maps based on KLRMP biodiversity emphasis options
Forecast; Predicted Results or Outcome	Base line for priority indicator (2000) All licencees have met the intent of the Kamloops LRMP for old forest retention.
Forecast	Healthy ecosystems with a diversity and abundance of native species and habitats The KLRMP caps timber supply impacts for biodiversity at 4%. Provincial Timber supply impacts are capped at 1 percent for IWMS. Biodiversity will be improved. Critical ecosystems including grasslands, old growth Douglas Fir and Ponderosa pine forest fall within proposed protected areas. Protection for biodiversity will increase over base case due to management strategies for water, soil and ecosystem protection. [10]
Target	Operations will respect the KLRMP's objectives for retaining old forest as a component of seral stage distribution by landscape unit.
Basis for the Target	Legal and sustainability requirements. Follows Kamloops LRMP direction. Agreed to by PAG • Meets legal requirements • Expectations for indicator met 100% • Measurable
Legal Requirements	Forest Practices Code of British Columbia Act , Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation, Strategic Planning Regulation; Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	Part of periodic Timber Supply Review: ▪ Protected Areas and Old Growth Management Areas area calculations ▪ Age class distribution of old forests are forecast to monitor impacts on the landscape
Annual	Licencees will report a yes/no answer if they have respected and are living up to the intent of the direction set forth in the KLRMP relating to old forest retention.
Variance	None.

[10] KLRMP document "Assessment of the Kamloops LRMP Recommendation"; Feb 1995

Indicator	**(2) Level of conformance to riparian management area and lakeshore commitments contained within plans[11].**
Element(s)	1.1 Ecosystem Diversity, 1.2 Species Diversity, 2.1 Forest Ecosystem Resilience, 2.2 Forest Ecosystem Productivity, 3.2 Water Quality and Quantity
Strategy(s) Description	Indicator (2) forms part of the overall strategy to manage for biodiversity at the landscape and stand levels. Riparian management areas, as prescribed in the Forest Practices Code, and described in the Practice Requirements of the FPPR, provide connectivity of forested cover along waterways, which are generally areas with high value for wildlife habitat and movement. Kamloops and Headwaters Districts have policies for riparian management that build on the Forest Practices Code and that are required to be adhered to within those Forest Districts. 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	Base line for priority indicator (2000) No riparian infractions occurred during the harvest of 3905 hectares of cutblocks and right of way areas.
Forecast	Healthy ecosystems with a diversity and abundance of native species and habitats. Properly functioning riparian systems. The KLRMP caps timber supply impacts for biodiversity at 4%. Provincial Timber supply impacts are capped at 1 percent for IWMS. Water Quality will be maintained Wilderness lakes will generally receive higher degree of protection. In most cases the Forest Practice Code will protect fish habitat. [12]
Target	100 percent conformance to riparian and lakeshore commitments made within plans.
Basis for the Target	Kamloops and Headwaters Districts have policies for riparian management 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 Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation, Forest Road Regulation, Water Act, 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 Review to monitor impacts on the landscape.
Annual	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.
Variance	Minus 5 percent. Variance to accommodate nonconformance to plans that have little or no impact to the environment and/or to the social and ecological objectives of lakeshore areas.7

[11] Plans prepared by licencees are in accordance with legal and KLRMP requirements

[12] KLRMP document "Assessment of the Kamloops LRMP Recommendation"; Feb 1995

Indicator	**(3) Level of FPC compliance with Mountain Caribou strategies.**
Element(s)	1.2 Species Diversity, 1.3 Genetic Diversity, 1.4 Protected Areas and Sites of Special Biological Significance
Strategy(s) Description	Indicator (3) forms part of the overall strategy to manage for biodiversity at the landscape and stand levels. Mountain Caribou is a provincially Red-listed species as well as an Identified Wildlife species under Identified Wildlife Management Strategy (IWMS 2004). Mountain Caribou are federally listed as a Schedule 1 Species at Risk under the Species At Risk Act. Strategic direction for management of Mountain Caribou habitat is provided in the Kamloops LRMP, and directed by the Kamloops LRMP monitoring committee. Retention and management of Mountain Caribou corridors and habitat will be according to the most recent strategy identified and/or approved by the KLRMP monitoring committee and will provide for connectivity of unique features within the KLRMP North Thompson Habitat Resource Management Zones. It is important to understand that operations are not precluded within designated Mountain Caribou corridors and their boundaries can be adjusted.
Means of achieving objective and target	KLRMP strategy is incorporated into Licencee plans Licencees monitor for any changes in the KLRMP Mountain Caribou strategy area. The source of changes should come from official sign off by the KLRMP monitoring committee.
Forecast; Predicted Results or Outcome	Base line for priority indicator (2000) All 5 licencees who operated within the KLRMP Mountain Caribou strategy area adhered to the management strategies. A total of 415 hectares were harvested within the Mountain Caribou strategy area.
Forecast	Healthy ecosystems with a diversity and abundance of native species and habitats. Provincial Timber supply impacts are capped at 1 percent for IWMS (2004). Wildlife Habitat Features [WHF] are beyond the 1% and are to be incorporated into WTPs and/or any other types of reserves. The KLRMP caps timber supply impacts for biodiversity at 4%. Through proposed protected areas and management guidelines for low intensity zones rare habitats will receive a higher level of preservation. Mountain Caribou, moose and deer will benefit[13]. Most recent line work for winter ranges provided by the Ministry of Agriculture and Lands (Integrated Land Management Bureau) should be followed; Mountain Caribou should follow the Notice under section 7(2) of Forest Planning and Practices Regulation for amount, distribution and attributes of habitat in the TSA.
Target	Full compliance with FPC & KLRMP Mountain Caribou strategy.
Basis for the Target	Legal and KLRMP requirements. Reflects current performance level and is public expectation.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Forest and Range Practices Act, Wildlife 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 area (ha) harvested meeting KLRMP Mountain Caribou strategies against the area harvested within the KLRMP Mountain Caribou strategy area during the reporting year. Reporting is consistent with the most recent area approved by the KLRMP monitoring committee.
Variance	As provided for within the legal framework. The statutory decision maker may approve variances from standard requirements provided adequate rationale is provided and long-term objectives continue to be met.

[13] LRMP document "Assessment of the Kamloops LRMP Recommendation"; Feb 1995

Indicator	**(4) Stand level retention -- individual wildlife trees/stubs and/or wildlife tree patches**
Element(s)	1.1 Ecosystem Diversity, 2.1 Forest Ecosystem Resilience, 2.2 Forest Ecosystem Productivity
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	Base line for priority indicator Indicator and target significantly changed. 2007 Monitoring Report results will be used to establish the baseline.
Forecast	Healthy ecosystems with a diversity and abundance of native species and habitats. The KLRMP caps timber supply impacts for biodiversity at 4%.
Target	a. 80 percent of cutblocks greater than 10 hectares will have individual wildlife trees/stubs and/or wildlife tree patches within the block. b. 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: • Inclusion of as broad a representation of site types as possible. • WTPs are anchored on any District listed wildlife habitat features where they occur • WTPs are preferentially anchored on classified and unclassified riparian areas where they occur
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), Kamloops TSA MPB Strategy (March 2006)
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation, Strategic Planning Regulation, Workers Compensation Act, Forest and Range Practices Act, Operational Planning and Practices Regulation

Monitoring & Measurement Periodic	Distribution of age classes as a result of wildlife tree retention is forecast as part of the Timber Supply Review.
Annual	a. 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. b. 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 "b" is limited to blocks harvested during the reporting year that had the original SP signed after January 1st, 2007.
Variance	For Targets a and b: 10%

Indicator	**(5) Stand level retention -- coarse woody debris**
Element(s)	3.1 Soil Quality and Quantity, 4.1 Carbon Uptake and Storage
Strategy(s) Description	Indicator (5) 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 main ecological principles guiding the CWD management strategy are: • CWD immediately after harvest is rarely a concern in the Kamloops TSA (except in some uniform second-growth sites, or with intensive site preparation). The main problem 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. • Piles of logs at roadside are of little use for any ecological functions (except carbon storage, if they are not burnt). • 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.
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. Operations emphasize maintenance of larger woody debris (>30 cm (small diameter) and >2 meters length) present on the net area to reforest before harvesting. 50% of blocks have dispersed individual trees or small (<0.25 ha) patches. Coarse woody debris (>7.5 cm and >2 meters length) is incorporated in cull piles during site preparation only where excessive amounts are present (potential fire hazard and/or impedes regeneration). 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	Base line for priority indicator Indicator and target significantly changed. 2007 Monitoring Report results will be used to establish the baseline.
Forecast	Healthy ecosystems with a diversity and abundance of native species and habitats. The KLRMP caps timber supply impacts for biodiversity at 4%.
Target	Coarse woody debris shall be left on each block: • a minimum of 5 m3/ha dispersed on blocks with very dry BEC variants, denoted with an "x" descriptor for moisture • a minimum of 20 m3/ha dispersed on all other blocks
Basis for the Target	Targets consider the Forest Practices Branch Coarse Woody Debris Best Management Guidelines for the Interior BC (Lloyd, 2005) and the Tembec Canal Flats SFM Plan 2004. Coarse woody debris management is in its infancy within the province. Additional research and information gathering will help improve the ability to predict desired levels and impact.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation; Forest and Range Practices Act, Operational Planning and Practices Regulation, Wildfire Act and Regulation
Monitoring & Measurement Periodic	Timber Supply review to ensure no timber supply impact.
Annual	Licencees will report compliance to the target (Y/N). Reporting will use supplemental information collected as part of post harvest waste assessments and may include ocular estimates. Reporting against the target is limited to blocks harvested during the reporting year that had the original SP signed after January 1st, 2007.
Variance	20%

Indicator	**(6) Average regeneration period from time of harvest.**
Element(s)	3.2 Water Quality and Quantity, 4.1 Carbon Uptake and Storage, 4.2 Forest Land Conversion
Strategy(s) Description	Indicator (6) focuses on long-term species composition across the landbase and prompt reforestation. Prompt reforestation ensures that the productive capacity of forest landbase 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 in any particular site. This not only helps to maintain the natural forest composition in an area, but it also lends itself to forest health and productivity in the long-term
Means of achieving objective and target	Licencees will follow guidelines specifying tree species that are most suited ecologically to maintain natural forest composition in an area. Silviculture regime and forward plans schedule activities consistent with established key dates contained within plans.
Forecast; Predicted Results or Outcome	Base line for priority indicator (2000) During September to December, a limited amount of regeneration activity occurred. Average regeneration delay was 22.1 months (1.85 years).
Forecast	Prompt reforestation ensures that the productive capacity of forest landbase to grow trees is maintained. Promptness also aids in providing young trees a head start against competing vegetation, helping to reduce the need for manual or chemical brushing treatments. Silviculture regime and forward plans schedule activities consistent with established key dates contained within plans.
Target	Regeneration established within three years or less on average from time of harvest.
Basis for the Target	Exceeds legal requirements. Sustainability (vigor, site productivity) enhanced. Reflects current performance level.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation, Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	Regeneration delay information (eventually effects age class distribution) is utilized in Provincial Timber Supply Review. Ministry of Forests and Range is responsible for forecasting of key dates such as regeneration delay and free growing based on specific biogeoclimatic information for each site.
Annual	Licencees will report the average time (weighted by area) for regeneration establishment on areas where regeneration delay was declared during the reporting period.
Variance	12 months beyond the 3-year target

Indicator	**(7) Management strategies for rare ecosystems**[14]
Element(s)	1.3 Genetic Diversity, 1.4 Protected Areas and Sites of Special Biological Significance, 2.1 Forest Ecosystem Resilience
Strategy(s) Description	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: 1. to help assess the status of an ecosystem throughout a planning area; 2. to focus attention and tracking on ecosystems that merit conservation concern; and 3. to help rank allocation of resources to conservation efforts, such as parks, Wildlife Habitat Areas, OGMAs or WTPs. (Bunnell et al 2004). 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 in the SP process and through the application of retention (see Indicator 4).
Means of achieving objective and target	Protected areas are identified on Licencee maps BEC variants have been prioritized for rare ecosystem assessment based on the following; • number of CDC listed rare ecosystems (Red-listed ecological communities) within the variant, • the proportion of the provincial extent of the BEC variant in the TSA and • 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[15] 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.
Forecast; Predicted Results or Outcome	Base line for priority indicator (2007) Indicator and target significantly changed. 2007 Monitoring Report results will be used to establish the baseline.
Forecast	A diversity of ecosystems while maintaining "rare" attributes, as well as a diversity and abundance of naturally occurring wildlife and their habitats. The KLRMP caps timber supply impacts for biodiversity at 4%. Full Compliance with management strategies for all known rare ecosystems. Through proposed protected areas and management guidelines for low intensity zones rare habitats will receive a higher level of preservation.[16]

[14] Refer to Appendix 6 for a list and description of prioritized red listed ecological communities

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

[16] KLRMP document "Assessment of the Kamloops LRMP Recommendation"; Feb 1995

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, the majority of the identified occurrence is either already protected or included in WTP(s). b. the ecological community is greater than 10% of the gross area of either tenure noted above, 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
Basis for the Target	Proactive measure to identify and conserve Red-listed ecological communities
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation, Forest Road Regulation, Wildlife Act, Species at Risk Act, Forest and Range Practices Act, Operational Planning and Practices Regulation
Monitoring & Measurement Periodic	
Annual	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 the targets is limited to blocks harvested during the reporting year that had the original SP signed after January 1st, 2007.
Variance	a. None b. Target to be met on at least 90% of cutblocks where ecosystems identified as "prioritized Red-listed ecological communities" occurred.

Indicator	**(8) Identification and protection of wildlife (mammals, birds, reptiles, fish and amphibians) at risk**[17]
Element(s)	1.2 Species Diversity, 1.3 Genetic Diversity, 1.4 Protected Areas and Sites of Special Biological Significance
Strategy(s) Description	The intent of this indicator is to ensure that not only all measures required by law are addressed, but also, reasonable voluntary actions that are deemed necessary by licencees, are implemented during forest planning and practices for the protection of biodiversity and species at risk.
Means of achieving objective and target	Licencees will achieve the strategy by fully supporting and implementing: 1. 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 (Kamloops LRMP Higher Level Plan (HLP)), 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: • Section 7 (FPPR) notice requirements until such time that all required Wildlife Habitat Areas have been approved by government. • Legally established Objectives and/or General Wildlife Measures for approved Ungulate Winter Range and Wildlife Habitat Areas. • 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. • TSA licencee obligations established under the KLRMP HLP. • The Integrated Pest Management Act and Regulations as well as commitments made in a Pest Management Plan. 2. Additional voluntary actions that TSA licencees deem to be necessary for the protection of biodiversity, species at risk and the integrity of parks and protected areas, where such actions are not required under #1 above. In addition to targets below, actions 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 TSA. • Conformance to strategies in licencee plans to protect a Wildlife Habitat Feature. • Achieve 100% conformance with interim agreements, as endorsed by the Province and TSA 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	Baseline: Indicator and target significantly changed. 2007 Monitoring Report results will be used to establish the baseline.
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.

[17] Refer to Appendix 2

Target	Proactive 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 species within the TSA. 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 species operations achieve 100% consistency with SP measures deemed necessary by a TSA licencee to prevent adverse harm. c. 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.
Basis for the Target	Legal obligations, use of best available information and application of resource stewardship principles. The protection of biodiversity and species at risk has been a requirement under the Forest Practices Code of BC Act via a HLP Order (KLRMP) and by Regulation. Under FRPA, the Province and licencees are in a transitional phase with respect to implementing components of regulations related to the protection of species at risk and ungulate winter range. Also, the KLRMP is somewhat outdated and updated measures may be required (e.g. revision of ungulate winter range boundaries). Licences have received notices of the required amount and distribution of habitat for specified species at risk and these areas have been provisionally established.
Legal Requirements	Forest and Range Practices Act; Forest Planning and Practices Regulation; Government Actions Regulation; Wildlife Act and Amendments; Integrated Pest Management Act; Integrated Pest Management Regulation; Land Act (HLP objectives), Park Act, Foresters Act.
Monitoring & Measurement Periodic	
Annual	a. Licencees report yes/no as to whether target achieved. 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 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, 2007. c. Licencees summarize applicable consultation processes they participated in.
Variance	None

Indicator	**(9) Percent of land base for broad leaf species.**
Element(s)	1.2 Species Diversity, 1.3 Genetic Diversity, 2.1 Forest Ecosystem Resilience, 2.2 Forest Ecosystem Productivity
Strategy(s) Description	Forest trees, while only one component of a forest environment that includes a variety of life processes, are very important in providing structure and habitat for other organisms. Tree species composition, stand age, and stand structure are important variables that affect the biological diversity of a forest ecosystem.
Means of achieving objective and target	Maintain broad leaf species through individual tree and patch retention and through natural regeneration in harvested areas.
Forecast; Predicted Results or Outcome	Base line for priority indicator (2003) Timber Supply Review (TSR II) reports 37,878 hectares of broad leaf species (Table 2) on the land base managed by the Ministry of Forests and Range.
Forecast	Ecosystem diversity maintained through a diversity of broad leaf and coniferous tree species
Target	No net loss for broad leaf species.
Basis for the Target	Need to maintain the biological diversity of these ecosystems in managed second-growth and third-growth forests
Legal Requirements	NA
Monitoring & Measurement Periodic	
Annual	Information on percent of the land base for broad leaf species will be derived from the Timber Supply Review for the entire TSA[18]. This data is assembled periodically in conjunction with the TSR, however results will be reported annually and trends will emerge as the number of years of reporting data accumulates.
Variance	5% reduction in broad leaf species (uncontrolled events associated with licencee operations: forest pests etc)

[18] The DFA includes the Kamloops TSA and TFLs 18 and 35. The Kamloops TSA is approximately (95%) the DFA. Targets and reporting are based on Kamloops TSA current status and future forecast.

Indicator	**(10) Annual percent of harvested areas in permanent access structures (e.g. roads and landings).**
Element(s)	2.2 Forest Ecosystem Productivity, 3.1 Soil Quality and Quantity, 3.2 Water Quality and Quantity, 4.2 Forest Land Conversion
Strategy(s) Description	A significant amount of land can be permanently lost within cutblocks 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 landbase to access structures can be minimized with • careful access planning to minimize the length of road required for harvesting and the number of landings • and use of proper road construction and maintenance procedures
Forecast; Predicted Results or Outcome	Base line for priority indicator (2000) The percentage area of harvested roads and landings within the total harvested area averaged 4.2%.
Forecast	Productive forest soils with minimized losses to forest development.
Target	Less than 6 percent, on average, of harvested areas will be in permanent roads and landings.
Basis for the Target	Exceeds legal limits. Reflects current performance level. Original target at maximum legal limit. Continued success with results at less than target maximum resulted in a reduced maximum target at 6% The percent target refers specifically to loss to the timber harvesting landbase due to access structures within harvested areas. It does not include land area lost to roads connecting harvested areas.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation, Forest Road Regulation, 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 plans[19] over gross block area (ha) for cutblocks harvested during the reporting year, using information contained within Licencee plans.
Variance	None

[19] Using best information available (plan estimate or field measure)

Indicator	**(11) Annual harvest level relative to annual allocation.**
Element(s)	4.2 Forest Land Conversion, 5.3 Fair Distribution of Benefits and Costs
Strategy(s) Description	The sustainable harvest level for the TSA, and TFLs 18 (Canfor) and 35 (Weyerhaeuser), is determined by the Chief Forester after considering social, economic and biological criteria.
Means of achieving objective and target	Licencees contribute to the sustainable harvest level by adhering to their apportioned harvest volume within the TSA. Cut control regulations dictate the short-term harvest flexibility.
Forecast; Predicted Results or Outcome	Base line for priority indicator (2000) Existing harvest level for: • the TSA (2,393,180 m3) can be maintained for 20 years • TFL 18 (177,650 m3) can be maintained for 5 years • TFL 35 (125,600 m3) can be maintained indefinitely All licencees are within the cut control variance set out by regulation. The net TSA volume harvested in 2000 was 2,996,147 cubic meters. For TFL 18 it was 174,763 and for TFL 35 it was 79,642 cubic meters.
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 which then rely on the Chief Forester to provide a determination. Public input is provided throughout the process. <u>Kamloops TSA</u> A timber supply review for the TSA was completed in 1996. The review indicated the existing harvest level for the TSA (2,393,180 m3) can be maintained for 20 years followed by a decline at a rate of 9 percent per decade for the following four decades reaching the long term harvest level of 1,958,000 m3. A subsequent timber supply analysis and Chief Forester review was completed in 2001. The analysis forecasted that existing harvest commitments could be maintained for the next 70 years. The determination by the Chief Forester was made in 2003. His rationale for maintaining the current level of harvest can be found at http://www.for.gov.bc.ca/hts/tsa/tsa11/docs.htm In response to two catastrophic events (Firestorm 2003 and the mountain pine beetle infestation) a request for a temporary increase in the AAC was made. In December 2003 the Chief Forester made the determination that the harvest level for the next three years (2004 to 2006) would be increased by 1,670,000 m³ to 4,352,770 m³ per year to address these issues. His rationale for temporarily increasing the current level of harvest can be found at http://www.for.gov.bc.ca/hts/tsa/tsa11/tsr3/rationale.pdf. <u>TFL 18: Canadian Forest Products Ltd</u> A timber supply review for TFL 18 was completed in 2000. The review indicated the existing harvest level for TFL 18 (185,263 m3) should be reduced by 5% for 5 years followed by a decline at a rate of 10% percent per decade reaching a medium term harvest level of 147,000 m3; then increasing beginning in 85 years and achieving a long term harvest level of 188,000 m3 in 150 years.. The Chief Forester's rationale for the current level of harvest can be found at http://www.for.gov.bc.ca/hts/tfl/tfl18/tsr2/rationale.pdf. A subsequent timber supply analysis and Chief Forester review was completed in 2005 and his determination is pending. In conjunction with this timber supply analysis Canfor has requested an uplift of 100,000 m3 to address mountain pine beetle. <u>TFL 35: Weyerhaeuser Company Ltd</u> A timber supply review for TFL 35 was completed in March 2001, prior to that it was December 1995. The review indicated the existing harvest level for the TFL (125, 600 m3) can be maintained for at least 225 years. A subsequent timber supply analysis and Chief Forester review was completed in March 2004 to facilitate increased harvesting in order to minimize timber losses due to the 2003 McClure Fire and the current MPB outbreak (Rationale for AAC Determination for TFL 35 Effective March 1, 2004). An uplift of 200,000 m³, resulting in an AAC of 325,600 m³, has been awarded until Feb, 2009 or until such time that it is no longer required to facilitate the salvage of mountain pine beetle killed timber. The March 2004 Determination used the 2001 Timber Supply Analysis as the assumptions were still valid. The Chief Forester's rationale for the current level of harvest can be found at http://www.for.gov.bc.ca/hts/tfl/tfl35/tsr3/rationale.pdf.

Target	Harvest the annual cut allocation for the year consistent with the Cut Control Regulation and Policy.
Basis for the Target	Legal requirements.
Legal Requirements	Forest Act, Cut Control Regulation
Monitoring & Measurement Periodic	The next determination by the Chief Forester is anticipated in 2008 for the TSA and in December 2005 and March 2009 respectively for TFLs 18 and 35. Periodic Timber Supply Review (TSR)
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	**(12) Incorporation of traditional knowledge, non-timber resources, and cultural and spiritual values in forest planning, where available.**
Element(s)	1.1 Ecosystem Diversity, 1.2 Species Diversity, 1.4 Protected Areas and Sites of Special Biological Significance, 5.1 Timber and Non-Timber Benefits, 5.2 Communities and Sustainability, 6.1 Aboriginal and Treaty Rights, 6.2 Respect for Aboriginal Forest Values, Knowledge, and Uses, 6.4 Information for Decision-Making
Strategy(s) Description	Indicator (12) recognizes the importance of managing and protecting non-timber resources, including cultural/heritage resources and values, during forestry operations. First Nations may provide useful information concerning non-timber resources, including cultural and heritage resources, traditional use sites and knowledge of local wildlife and fisheries. Non-timber resources may also include, but not be limited to, water, wildlife, fisheries, recreation, tourism, botanical forest products, and forage
Means of achieving objective and target	Open communications with local First Nations during Plan reviews. Written requests for communication are responded to. Traditional knowledge, non-timber resources, and cultural and heritage values are appropriately managed for and protected in licencee plans.
Forecast; Predicted Results or Outcome	Base line for priority indicator (2000) Licencees responded to all First Nation's requests for communication. Other two reportables new for 2003, base line will be set in 2003 Monitoring Report
Forecast	Forest operations that reflect the timber and non-timber interests of local First Nations.
Target	a. Open communications with local First Nations during Operational Plan reviews will include consideration of and will manage for, where appropriate traditional knowledge, non-timber resources, and cultural and spiritual values. b. TSA Licencees respond to all written requests for communication from First Nations c. Incorporation of traditional knowledge, non-timber resources, and cultural and spiritual values in forest planning, where available.
Basis for the Target	Developed by Licencees with First Nations
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Heritage Conservation Act, Forest and Range Practices Act, Forest Planning and Practices Regulation
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; and, b. Licencees will report on 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) c. Number of cutblocks where specific actions were requested and were taken, using traditional knowledge where available, to manage for and/or protect non-timber resources, and cultural and spiritual values.
Variance	None

Indicator	**(13) Level of conformance to soil conservation commitments contained within plans.**
Element(s)	2.2 Forest Ecosystem Productivity, 3.1 Soil Quality and Quantity
Strategy(s) Description	Indicator (13) addresses the impacts of forestry operations on soil productivity. Soil compaction, displacement and erosion are components of soil disturbance.
Means of achieving objective and target	Maximum planned levels of soil disturbance are assigned to all cutblocks based on related field data. Site preparation is generally beneficial to soil productivity, creating suitable growing conditions and beneficial microsites for crop establishment, mixing and aerating the soil, and minimizing opportunities for growth of competing vegetation. Expeditious re-establishment of new stands can assist in preventing erosion and other forms of soil displacement.
Forecast; Predicted Results or Outcome	Base line for priority indicator (2000) Timber supply impacts of this FPC requirement were analyzed in the FPC Analysis Report – 1996. Licencees met soil disturbance objectives on all 3499 hectares of cutblock area harvested.
Forecast	Productive forest soils with minimized losses to forest development. • This target reflects the Forest Practices Code – Soil Conservation Guidebook standards. Timber supply impacts of this FPC requirement were analyzed in the FPC Analysis Report – 1996.
Target	100 percent conformance to soil conservation measures contained within plans.
Basis for the Target	Legal requirements. Maintenance of site productivity is a core prerequisite for achieving sustainability. Reason for change (2003): • move from reliance on government to identify soil conservation issues to internal monitoring of operations for soil conservation
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation, Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	
Annual	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.
Variance	None

Indicator	**(14) Number of months for road cut and fill slope seeding application.**
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. Prompt revegetation of harvested areas will also contribute to noxious weed control.
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	Base line for priority indicator (2000) Road cuts and fill slopes were seeded or planted on average within 3.4 months of disturbance, compared to a target of 12 months.
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.
Target	All planned road cut and fill slope seeding application carried out within 12 months of completed road construction on suitable sites
Basis for the Target	Legal Requirements. Reduce soil erosion and sedimentation of streams, and reduce noxious weed establishment.
Legal Requirements	Forest Practices Code of British Columbia Act, Forest Road Regulation, Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	
Annual	Licencees will report 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	**(15) Percent of permanent status roads that have maintenance completed as per programs.**
Element(s)	3.2 Water Quality and Quantity
Strategy(s) Description	Indicator (15) recognizes the potential impact of roaded access on forests and waterways. Licencees have an obligation to maintain forestry roads developed as part of their operations. Certain soil types are sensitive to disturbance from road construction. 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. Licencees are responsible for inspection of roads based on a risk frequency.
Means of achieving objective and target	Roads are inspected according to risk. Actual or potential problems identified are scheduled for maintenance based on priority.
Forecast; Predicted Results or Outcome	Base line for priority indicator (2006) Baseline to be established with 2006 monitoring report results.
Forecast	Active road maintenance and deactivation programs, particularly during the spring snow melt, will assist in the prevention of soil movement and sedimentation thereby contributing to the maintenance of water quality and soil productivity.
Target	All permanent status roads and associated structures will have maintenance completed as scheduled.
Basis for the Target	Legal requirements. Recognition that roads have the largest potential environmental aspect of all forestry operations. Also recognizes risk management.
Legal Requirements	Forest Practices Code of British Columbia Act, Forest Road Regulation, Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	
Annual	Road inspection frequency is based on risk (i.e. community watershed, fish stream presence and level of deactivation, previous history). Licencees will report the number of maintenance action items related to water management and soil movement that were completed as compared to the total number of maintenance action items that required completion during the reporting year.
Variance	None

Indicator	**(16) Level of participation in the annual reporting of results and the number of advisory group meetings held annually.**
Element(s)	5.3 Fair Distribution of Benefits and Costs, 6.4 Information for Decision-Making
Strategy(s) Description	Indicator (16) indicates a commitment of Licencees to develop a Sustainable Forest Management Plan, and report on results, irrespective of whether or not they intend to pursue formal certification. This will ensure consistency of sustainable forest management across the TSA.
Means of achieving objective and target	All Licencees: Schedule meeting and attend
Forecast; Predicted Results or Outcome	Base line for priority indicator (2001) All licencees participated in the development of the 2000 Monitoring Report. Advisory group met three times during 2001.
Forecast	Demonstration by TSA licencee's of their commitment to sustainable forestry. • Annual meetings of the SFM Advisory Group
Target	100 percent participation in the SFM Plan monitoring process and hold at least one meeting per year with the SFM Public Advisory Group to review results.
Basis for the Target	This monitoring process will provide the licencees, public and First Nations with an opportunity to bring forward new information and to provide input concerning new or changing public values that can be incorporated into future updates of the SFM Plan. Reason for change (2003): Make wording clearer and focus more on licencee performance
Legal Requirements	NA
Monitoring & Measurement Periodic	
Annual	Licencees will report a yes/no answer whether or not they contributed to the annual report and a yes/no answer if they participated in a meeting with the SFM Public Advisory Group.
Variance	None

Indicator	**(17) Number of registrations to a recognized third party certification.**
Element(s)	5.3 Fair Distribution of Benefits and Costs
Strategy(s) Description	Indicator (17) recognizes the importance of certification to provide assurance to consumers that forest products originate from sustainably managed forests. Third party certification includes, among others, registration to the CSA, ISO 14001 and the Forest Stewardship Council. Additional registrations mutually recognized by any of these organizations would also apply.
Means of achieving objective and target	Licencees maintain a TSA SFM Plan that facilitates individual licencees interested in registering to their own Plan. Licencees support those seeking registration.
Forecast; Predicted Results or Outcome	Base line for priority indicator (2000) 2 licencees are registered to a recognized third party certification.
Forecast	Public and customer confidence that sustainable forestry takes place within the TSA by having third party endorsement of practices. • Maintain registration and provide customers/shareholders commitment to sustainable forestry.
Target	Maintain and/or increase the number of registrations to a recognized third party certification.
Basis for the Target	Promote movement to TSA wide registration.
Legal Requirements	NA
Monitoring & Measurement Periodic	
Annual	Licencees will report the number of registrations to a recognized third party certification that apply over the TSA area for the reporting period.
Variance	None

Indicator	**(18) Protected Ecosystems**
Element(s)	1.1 Ecosystem Diversity, 1.4 Protected Areas and Sites of Special Biological Significance
Strategy(s) Description	Indicator (18) forms part of the overall strategy to manage for biodiversity at the landscape level. The Kamloops LRMP Protected Areas strategy is designed to protect viable, representative examples of British Columbia's natural diversity and recreational opportunities and to protect special natural, cultural heritage and recreational features. Other processes have identified other areas requiring special management (mule deer winter range, etc).
Means of achieving objective and target	The forest licencees participated in the Kamloops LRMP which delineated a series of protected areas and special natural, cultural heritage and recreational features and special management zones within the TSA. This achieved the geographic and ecological goals of the provincial Protected Areas Strategy. Protected areas, including Wells Gray Park, are shown on the overview map. Cultural and spiritual areas of importance will be protected or managed for in the future through implementation of the Archaeological Overview Assessment (AOA) process (refer to Indicator 25). Identification of rare ecosystems (Indicator 7) will lead to protection or management.
Forecast; Predicted Results or Outcome	Base line for priority indicator (2003) 22.8%
Forecast	Protected area within the Kamloops TSA will meet or exceed the 12% Provincial target, and will contribute to Provincial representation by biogeoclimatic zones. Increase of 7 ecosystems are protected; 6 more are represented but do not fully meet the provincial goals. Two are not represented. If Taweel area is protected I more ecosystem would be represented and meet the Provincial goals. [20]
Target	12% protected areas
Basis for the Target	Protected Areas Strategy was established by the provincial government in 1992
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Ecological Reserve Act, Park Act, Protected Areas of BC Act, Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	Current status is provided as part of periodic Timber Supply Review. Reported on a TSA basis.
Annual	Licencee report the current Protected Area status as last reported by a Timber Supply Review
Variance	None

[20] KLRMP document "Assessment of the Kamloops LRMP Recommendation"; Feb 1995

Indicator	**(19) Percent of affected ranchers with whom forest planning is discussed.**
Element(s)	5.1 Timber and Non-Timber Benefits, 5.2 Communities and Sustainability, 5.3 Fair Distribution of Benefits and Costs
Strategy(s) Description	Ranchers are one of the key stakeholder groups in the Kamloops TSA. Forestry operations often overlap range tenures and the outcome of operational activities can potentially have a significant effect on range use.
Means of achieving objective and target	Where a rancher may be affected by a planned forestry operation, forest licencees commit to meeting range tenure holders every year to discuss any issues and concerns that the ranchers may have and considering those concerns in forest development planning.
Forecast; Predicted Results or Outcome	Base line for priority indicator (2001) Ninety-two percent of ranchers affected by planned operations were communicated with during the reporting period compared to a target of 90 percent.
Forecast	Minimize the tree/grass/cattle conflicts through integrated and co-operative management practices. • Mutual respect with other Crown licence holders with a commitment to communicate in order to maintain the viability of resources for all parties.
Target	Where forest operations are planned within range units, the forest licencee will meet annually with the rancher to help ensure forest operations will not adversely affect existing animal unit months (AUMs).
Basis for the Target	Essential that holders of varying land use tenures on the same land base communicate regularly.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	
Annual	Licencees will report percent of ranchers affected by planned operations that were communicated with during the reporting period.
Variance	Minus10 percent of 90 percent target

Indicator	**(20) Level of conformance to strategies in plans designed to achieve preservation, retention and partial retention of visual quality objectives.**
Element(s)	5.1 Timber and Non-Timber Benefits
Strategy(s) Description	Visual quality objectives define the amount of visual alteration acceptable from a given viewpoint. Visual landscape inventories are technical processes that assign visual quality objectives based on a standard methodology; the amount of prescribed preservation, retention or partial retention will vary depending on the landscape. The choice of scenic areas and significant viewpoints is based on social preferences. Management for visual quality can contribute to the achievement of other objectives for sustainable forest management such as biodiversity, retention of wildlife habitat, and retention of old growth forest.
Means of achieving objective and target	Visual impact assessments are completed by licencees for operations proposed in scenic areas with established VQOs at the planning stage. They are used to estimate the potential visual impact of proposed operations on scenic resources and to assess whether the VQOs would be achieved. If visual quality objectives are not met, remedial action can often be undertaken to minimize visual impact.
Forecast; Predicted Results or Outcome	Base line for priority indicator (2000) Harvesting in 182 of 183 cutblocks met visual quality objectives.
Forecast	Management for visual quality within scenic areas is based on social preferences. Visually sensitive areas were identified in the Kamloops LRMP and corresponding visual quality objectives were assigned. These preferences generally constrain timber supply, and as such have been provided for in the TSA Timber Supply Review. Management for visual quality can often additionally contribute to other non-timber objectives.
Target	100 percent conformance to strategies contained in plans.
Basis for the Target	KLRMP. Visual Impact Assessment Guidebook. Legal requirements. Change in visual appearance is often the primary harvesting or road building impact noticed by the general public.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation, Forest and Range Practices Act, Forest Planning and Practices Regulation
Monitoring & Measurement Periodic	One or more of the following processes can be followed to determine if a harvested area meets visual quality objectives: a. internal evaluation of compliance with visual quality objectives by licencees; b. inspections by the Ministry of Forests and Range
Annual	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.
Variance	Minus 5 percent.

Indicator	**(21) Mean Annual Increment** (MAI)
Element(s)	2.2 Forest Ecosystem Productivity, 4.1 Carbon Uptake and Storage
Strategy(s) Description	Mean Annual Increment is an indicator of the sustainability of management practices and the productivity of ecosystems. Conserve ecosystem productivity and resilience by maintaining a diversity of habitats.
Means of achieving objective and target	Mean Annual Increment can be influenced by: ▪ Climate, elevation soil conditions, forest age and forest practices. ▪ Using effective silviculture practices to increase growth rates (prompt regeneration, superior seed, effective site preparation etc.)
Forecast; Predicted Results or Outcome	Base line for priority indicator (2003) Current Lodgepole pine mai is 1.86 cubic meters per hectare per year.
Forecast	Maintained or increasing Mean Annual Increment. Maintained or increased carbon storage and flow of forest values over time.
Target	Maintain the long term productivity of the forest as measured by the mean annual increment (m3/ha/yr) for Lodgepole pine.
Basis for the Target	Introduction of improved seed, effective forest management practices and a balanced age class distribution support increasing Mean Annual Increment over time.
Legal Requirements	NA
Monitoring & Measurement Periodic	Information required for reporting is provided as part of Timber Supply Review[21] completed periodically. Beginning and end of simulation data is to be plotted over successive periods to confirm achievement of target.
Annual	Licencee report the current MAI as last reported by a Timber Supply Review. For all pine leading stands: ▪ develop a report of hectares by age class for each pine leading analysis unit at time 0 and time 100 years out ▪ determine mai for each age class for each analysis unit at time 0 and time 100 ▪ calculate an area weighted average mai for each analysis unit ▪ calculate an area weighted average mai for the total area of pine leading stands (combine the analysis units)
Variance	None

[21] The DFA includes the Kamloops TSA and TFLs 18 and 35. The Kamloops TSA is approximately (95%) the DFA. Targets and reporting are based on Kamloops TSA current status and future forecast.

Indicator	(22) Forest age class distribution
Element(s)	1.1 Ecosystem Diversity, 1.2 Species Diversity, 2.2 Forest Ecosystem Productivity, 4.1 Carbon Uptake and Storage
Strategy(s) Description	A balanced age class distribution allows for an 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.
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) Immediate implementation.
Forecast; Predicted Results or Outcome	Base line for priority indicator (2003) All age classes except age class 1 have less than 8.5% area representation. Age classes 1 to 5 average only 6.3% reflecting the disproportionate area in over mature age classes.
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 target will be steady: ▪ In 50 years age classes 1 to 5 average 7.4% and three age classes meet target. ▪ Target will be achieved within 100 years
Target	Progress towards a stable forest age class distribution on the timber harvesting land base where each age class to 100 years old [1 (1 to 20), 2 (21-40), 3 (41-60), 4 (61 to 80) and 5 (81 to 100)] occupies at least 8.5% of the timber harvesting land base. Three age classes meet this target within 50 years.
Basis for the Target	Relatively even flow of value to industry and the community
Legal Requirements	NA
Monitoring & Measurement Periodic	Current status and future forecast of age class distribution is provided as part of Timber Supply Review completed periodically.
Annual	Licencee report the current age class distribution as last reported by a Timber Supply Review[22]
Variance	Attaining age class balance earlier a benefit. Later – 20 years.

[22] The DFA includes the Kamloops TSA and TFLs 18 and 35. The Kamloops TSA is approximately (95%) the DFA. Targets and reporting are based on Kamloops TSA current status and future forecast.

Indicator	**(23) The number of working relationships with applicable First Nations.**
Element(s)	5.2 Communities and Sustainability, 5.3 Fair Distribution of Benefits and Costs, 6.1 Aboriginal and Treaty Rights
Strategy(s) Description	Indicator (23) recognizes the licencee's efforts to build capacity within First Nations on matters related to the forest industry.
Means of achieving objective and target	Licencees engage in building mutually beneficial relationships with Aboriginal peoples.
Forecast; Predicted Results or Outcome	Base line for priority indicator (2003) There were 42 working relationships with First Nations in the TSA area using previous measurement standard.
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. • As responsible stewards of public forest land, licencees engage in building mutually beneficial relationships with Aboriginal peoples.
Target	Maintain and/or increase the number of working relationships (partnerships, joint ventures, cooperative agreements, memorandum of understanding, or business contracts) with First Nations.
Basis for the Target	Developed by Licencees with First Nations Licencees engage in building mutually beneficial relationships with Aboriginal peoples.
Legal Requirements	NA
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. Examples of a business contract include a work agreement or a direct timber sale with a First Nation Band or First Nation Contractor[23]. 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.
Variance	None

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

Indicator	**(24) Number of presentations or field trips to schools, public groups and individuals.**
Element(s)	6.4 Information for Decision-Making
Strategy(s) Description	Indicator (24) recognizes the importance of an informed, educated public with respect to forest management.
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 may be used to achieve the target.
Forecast; Predicted Results or Outcome	Base line for priority indicator (2000) There were 35 classroom visits from the licencees in the reporting period (previous Indicator 30).
Forecast	An educated and informed public with a broad understanding of forestry that can provide local input into forest planning and operations.
Target	The TSA 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 (visits, field trips, information provision, etc).
Basis for the Target	An informed, educated public.
Legal Requirements	NA
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.
Variance	None

Indicator	**(25) Participation with First Nations to implement and improve upon the revised Archaeological Overview Assessment model and process.**
Element(s)	5.1 Timber and Non-Timber Benefits, 6.2 Respect for Aboriginal Forest Values, Knowledge, and Uses
Strategy(s) Description	Indicator (25) Archeological Overview Assessments (AOAs) and inventories assess the potential for occurrence of cultural heritage resources and direct more detailed assessments in areas of moderate or high potential where forestry operations are planned. A revised model is incorporating improved information provided by First Nations and detailed assessments completed based on the previous model.
Means of achieving objective and target	Licencees participation with First Nations to develop and improve upon the revised Archaeological Overview Assessment model and process.
Forecast; Predicted Results or Outcome	Base line for priority indicator (2003) All licencees participated with First Nations in the development of the revised Archaeological Overview Assessment Model and Process.
Forecast	Operational activities and plans that recognize and manage for known aboriginal rights and duly established title. • As responsible stewards of public forest land, licencees will work proactively to build mutually beneficial relationships with Aboriginal peoples.
Target	TSA Licencees will participate with First Nations to implement and improve upon the revised Archaeological Overview Assessment model and process.
Basis for the Target	Developed by Licencees with First Nations An effective model will facilitate planning while effectively conserving and protecting First Nations values.
Legal Requirements	NA
Monitoring & Measurement Periodic	
Annual	Licencees will report on the number of cutblocks where an AOA was conducted. Licencees will report on the number of cutblocks where the AOA included a field visit.
Variance	None

Indicator	**(26) Participant satisfaction survey**
Element(s)	6.3 Public Participation, 6.4 Information for Decision Making
Strategy(s) Description	The SFM Advisory Group was formed to assist the TSA 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. Interest and participation will be enhanced by provision of relevant information including ecosystem processes and human interaction with forest ecosystems.
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 at the first meeting called to review the previous years monitoring report. At least one question in the survey will address the effectiveness of information delivery (Indicator (27)).
Forecast; Predicted Results or Outcome	Base line for priority indicator (2004) a. Survey response was an average of 3.9 out of five 5. There were 14 respondents to the survey. b. Results of the feedback form were compiled and are reported as part of the annual monitoring program in Appendix II of the Monitoring Report.
Forecast	Continuing dedicated, motivated Advisory Group
Target	a. 80% of 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 resolved, and Advisory Group process continuously improved.
Legal Requirements	NA
Monitoring & Measurement Periodic	
Annual	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	**(27) Public awareness of the SFM Plan**
Element(s)	5.2 Communities and Sustainability, 6.3 Public Participation, 6.4 Information for Decision Making
Strategy(s) Description	Indicator (27) 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 SFM Plan 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. The site also provides topical forestry information either by maintaining the information on the web site or providing links to applicable sites. Licencees develop and distribute SFM Plan and other information to the public at least annually
Forecast; Predicted Results or Outcome	Base line for priority indicator (2004): 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.
Forecast	Public awareness and understanding of the SFM Plan. An SFM Plan that has openly informed, included and responded to the public.
Target	a. Licencees will keep members of the public informed of TSA strategies being developed, and planning occurring by: • Maintaining a website • Circulating SFM Plan and other information to the public at least annually (news release/leaflet/open house/Local Resource Use Plan etc.) b. TSA Licencees respond to all written requests from the public for communication within 30 days of their receipt.
Basis for the Target	Developed by Licencees in consultation with the Advisory Group
Legal Requirements	NA
Monitoring & Measurement Periodic	
Annual	a. Licencees will report a yes/no answer as to whether the web site is being maintained, and whether SFM Plan and other information was made publicly available in the last year. Similar to Indicator 28 b. Licencees will report on the number of responses sent out by licencees compared to the number of written requests for communication. Report the average timeline for response. Indicator 28
Variance	a. None b. None

Indicator	**(28) Number of opportunities/ avenues for public participation in decision-making processes.**
Element(s)	1.4 Protected Areas and Sites of Special Biological Significance, 5.1 Timber and Non-Timber Benefits, 5.2 Communities and Sustainability, 5.3 Fair Distribution of Benefits and Costs, 6.4 Information for Decision-Making
Strategy(s) Description	Indicator (28) recognizes the importance of providing opportunities for members of the public, as well as First Nations, to provide input into forestry planning. Open lines of communication allow forest licencees to maintain an awareness of social values and concerns and to respond accordingly. Members of the public and First Nations can also provide local knowledge that contributes to socially and environmentally responsible forest management.
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.
Forecast; Predicted Results or Outcome	Base line for priority indicator (2000) a. • Licencee's interests were represented at KLRMP meetings. • 66% of LRUP meetings were attended (this is below the target of 70% but within the variance of 60% of meetings attended); • A total of 12 FDP review meetings were attended; and, • A total of 12 community meetings were attended. b. All written requests (3) for communication were responded to.
Forecast	Public participation in forest planning and operations that is open, inclusive and responsive to public concerns.
Target	a. TSA Licencees will provide opportunities/avenues for public participation in decision-making processes through participation in: • KLRMP committees (strategic level); • 70 percent of Local Resource Use Plan meetings (local level); • Forest Stewardship Plans (FSP's) (operational level) (number of meetings); and, • Community meetings (number of meetings). b. TSA Licencees respond to all written requests from the public for communication within 30 days of their receipt.
Basis for the Target	Legal requirements. Developed by Licencees with Advisory Group
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation. Forest and Range Practices Act, Forest Planning and Practices Regulation

Monitoring & Measurement Periodic	
Annual	a. Licencees will report a yes/no answer as to whether their interests were represented at KLRMP meetings, the number of LRUP meeting attended against the number held within their operating area, the number of FSP review meetings attended and the number of community meetings held or attended for the reporting period. b. Licencees will report on the number of responses sent out by licencees compared to the number of written requests for communication. Report the average timeline for response.
Variance	a. • No variance in meeting targets for KLRMP involvement; • Minus 10 percent or plus 30 percent variance of the 70 percent target for attending LRUP meetings; • No variance for Forest Stewardship Plans[24]; and • No variance for community meetings[25]. b. None

[24] Forest Stewardship Plans (FSP) meetings are held by licencees to present information to the public or may be held at the request of the public to address a specific resource management issue related to the FSP.

[25] All integrated resource management (IRM) meetings proposed by licencees or where licencees are requested to attend IRM meetings by local community interests.

Indicator	**(29) Report on number of research and extension initiatives licencees have participated in.**
Element(s)	6.4 Information for Decision-Making
Strategy(s) Description	Target 29(a): Meeting the standard of continual improvement requires ongoing monitoring and research related to the SFM Plan to assess and adaptively manage forestry operations. Monitoring the achievement of indicators and targets assesses the long-term effectiveness of the Plan. Related research projects provide updated information on best management practices. A flexible management system that is adaptive to new information and feedback from monitoring processes is an important aspect of effective sustainable forest management over the long term. New information should be shared through extension programs to allow all parties, including First Nations to benefit from the progress that is being made. Target 29(b) demonstrates a commitment by forest licencees to reinvest in the forest landbase and proved a stable and profitable forest industry in the long term. This includes funding on-the-ground activities to improve productivity on the landbase and other activities to improve understanding of forest ecosystems and the long-term effects of forest management activities such as inventory gathering, research and extensions projects.
Means of achieving objective and target	Research and extension initiatives summarized, compiled and distributed as part of annual SFM Plan performance reporting. Licencees will meet annually to review and prioritize proposed research and extension initiatives.
Forecast; Predicted Results or Outcome	Base line for priority indicator (29a - 2004, 29b – 2002) a. Licencees were directly or indirectly represented on the Forest Research Extension Partnership (FORREX). b. Licencees were directly or indirectly represented in TSA Committee's annual approval of research investment programs and strategies.
Forecast	Adaptive forest management, based on facts and data, that is supported by ongoing monitoring and research. • Responsive research programs are contributing to better quality decisions for Sustainable Forest Management.
Target	a. TSA licencees will participate in research and extension activities. b. Identify priorities for reinvestment in the forest sector through the TSA committee annual review and support of research programs and strategies.
Basis for the Target	Reinforces that a flexible management system that is adaptive to new information and feedback from monitoring processes is an important aspect of effective sustainable forest management over the long term. Demonstrates a commitment by forest licencees to reinvest in the forest landbase and proved a stable and profitable forest industry in the long term
Legal Requirements	NA
Monitoring & Measurement Periodic	
Annual	Licencees will report a yes/no answer with respect to their direct or indirect representation on the Forest Research Extension Partnership. Licencees will report a yes/no answer as to whether their TSA wide research results were shared with members of the public advisory group. Licencees will provide an indication of the type of research that is being undertaken and the value and applicability of this research to sustainable forest management.
Variance	None

Indicator	**(30) Percent of harvested cutblocks having three or more tree species identified in the free growing inventory.**
Element(s)	1.2 Species Diversity; 1.3 Genetic Diversity
Strategy(s) Description	An objective of the Kamloops LRMP, with respect to ecosystem management is to maintain viable populations of all species across the landscape within their existing geographic range. Ensuring a diversity of tree species is maintained improves ecosystem resilience and productivity and positively influences forest health.
Means of achieving objective and target	Licencee plans will incorporate strategies that promote multi species regeneration.
Forecast; Predicted Results or Outcome	Status at time of Indicator implementation Baseline to be established with 2006 monitoring report results.
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	70 percent of cutblocks harvested will have three or more tree species (includes conifer and deciduous comprising one percent or more of total trees) in the free growing survey.
Basis for the Target	Kamloops LRMP guidance. Addresses diversity and abundance of naturally occurring tree species on the landscape.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Forest And Range Practices Act, Forest Planning And Practices Regulation
Monitoring & Measurement Periodic	
Annual	To enable reporting, the following steps will occur: 1. An information system will be used to generate a list of cutblocks that were declared free growing during the reporting period. 2. An information system will be used to track information on free growing survey (inventory label) and a summary will be generated of field survey information, showing tree species present at free growing. 3. The average (in percent) of the leading tree species for those cutblocks having three or more species, will be identified in the report.
Variance	None

8.0 Links to Other Planning Processes

8.1 Kamloops Land and Resource Management Plan

The Kamloops Land and Resource Management Plan (KLRMP) was developed in the early 1990s to provide strategic direction to the management of land and resources on all Crown lands in the Kamloops TSA. The plan was developed by a wide cross-section of stakeholders, interest groups and members of the general public in the Kamloops and Clearwater areas. The KLRMP was approved by Cabinet in 1995 and all objectives and strategies providing direction to forestry activities were established as higher level plans under the *Forest Practices Code of British Columbia Act*. Higher level plans continue to have a legal basis under the Land Act and the Forest and Range Practices Act. The KLRMP gives direction to resource tenure holders in the planning of future operations. Objectives and strategies for non-forestry related activities (e.g., mining, recreation, tourism, agriculture) are government policy and provide strong direction to management decision-making in the plan area.

The KLRMP outlines a number of basic objectives and strategies for a range of resource values in the General Resource Management Zone. These objectives and strategies apply to all areas of Crown land outside of Protected Areas. In addition, there are a number of other Resource Management Zones (e.g., Community Watershed, Habitat, Recreation and Tourism, Settlement) where the basic set of objectives and strategies are complemented by additional objectives and strategies specific to the resource value in question.

In the hierarchy of planning for forest management, LRMPs provide direction to landscape unit plans, which provide direction to Licencee plans. Local plans and other public input processes, including the SFM Advisory Group, feed into this process (see Figure 8). The KLRMP is monitored periodically to assess implementation progress and the effectiveness of the plan in meeting its stated goals and objectives.

A number of KLRMP objectives and strategies have been directly or indirectly used as indicators and targets in the SFM Plan to address the criteria and elements in the CSA standards. These include:

- **Biodiversity:** The KLRMP addresses biodiversity on a number of scales. The overall KLRMP package was developed to emphasize long-term conservation of the geographic distribution of naturally-occurring flora and fauna.

  ⇒ Protected areas are located across the landbase 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. Proposed development activities adjacent to park boundaries are generally referred to B.C. Parks to maintain the viability of forest resources and values within the park.

⇒ Strategies for biodiversity within the General Resource Management Zone include direction to landscape unit planning, identifying areas where conservation is a priority through assignment of biodiversity emphasis options, and supporting the establishment of old growth management areas and wildlife/leave tree retention as per direction under the Forest Practices Code and objectives set by government in the Forest and Range Practices Act. In addition to wildlife/leave tree retention, strategies to maintain biodiversity at the stand level include retention of coarse woody debris, riparian protection, and mixed species planting to address habitat needs.

The General Resource Management Zone contains other direction that will contribute to the maintenance of biodiversity, such as objectives and strategies for flora and fauna described as follows:

- **Protected Areas:** The forest licencees participated in the Kamloops LRMP which delineated a series of protected areas with the TSA. This achieved the geographic and ecological goals of the provincial Protected Areas Strategy. Protected areas, including Wells Gray Park, are shown on the overview map.

- **Retention of old growth forest:** The KLRMP has assigned preliminary biodiversity emphasis options to each landscape unit in the TSA. Old growth management areas must be established for each landscape unit, based on the relevant biodiversity emphasis option and according to the targets outlined in the *Biodiversity Guide Book* and the *Landscape Unit Planning Guide*. The KLRMP also has targets for old growth retention within Mountain Caribou Habitat Resource Management Zones.

- **Management of aquatic and riparian ecosystems:** The KLRMP contains a range of objectives and strategies to maintain water quality and quantity. These include a section on water management in the General Resource Management Zone that identifies priorities for watershed assessment and contains strategies to maintain water quality and quantity. The General Resource Management Zone also contains objectives and strategies for riparian management areas and inland and anadromous fisheries, where the maintenance of productive fish habitat is emphasized.

  In addition to objectives and strategies for the General Resource Management Zone, the KLRMP contains specific objectives and strategies to manage values within Community Watershed Resource Management Zones. This includes maintaining acceptable levels of water quality, quantity and stream flow as well as conducting the appropriate levels of watershed assessment for each community watershed on a priority basis. Presently there are 12 designated community watersheds in the Kamloops TSA. Several Community and other watersheds have been included in long-term water quality monitoring programs.[26]

  Strategies for aquatic and riparian ecosystems in the Kamloops LRMP are complemented by regulations and guidelines in the Forest Practices Code and objectives set by government in

[26] Tranquille River, Peterson Creek, Paul Creek, Russell Creek, Hascheak Creek, McDougall Creek, and Chase Creek

the Forest and Range Practices Act,. For example, management within riparian areas is outlined in the Code and in the *Riparian Management Area Guidebook.* The Kamloops and Headwaters Forest Districts also have district policies for riparian and lakeshore management. This works well for most sites, however in some of the drier zones in the TSA, there are numerous wetlands that are too small to classify or that are only wet during certain seasons. These small wetlands provide unique microsites contributing to wildlife habitat and biodiversity values. Licencees attempt to identify small and unclassified wetlands during planning and take measures to minimize impacts to these features.

Best management practices which may be considered by licencees while managing operations around unclassified wetlands include:

⇒ identify unclassified wetlands on Licencee plan maps

⇒ retain a five meter "no machine zone" on unclassified wetlands for skidding and disc trenching equipment

⇒ retain non-merchantable conifers, broad leaf, shrubs and herbaceous cover within five meters of the "no machine zone"

⇒ consider unclassified wetlands as areas for creating wildlife tree stubs

⇒ practice "fall away" and "yard away" harvesting methods.

- **Flora and fauna:** The KLRMP contains a number of objectives and strategies for coarse filter management to maintain wildlife habitat features across the landbase for the range of wildlife and ecosystems. The plan also provides direction for fine filter management of habitat requirements for specific wildlife species, such as deer, moose and Mountain Caribou. This includes objectives and strategies to:

  ⇒ restore species endangered or threatened by human activities

  ⇒ provide adequate forage and forest cover requirements in critical ungulate winter range

  ⇒ manage forests for a diversity of age classes and forest stand structures

  ⇒ maintain other critical habitat requirements and the connectivity of habitat features across the landscape.

- **Mountain Caribou habitat:** Late winter and transitional habitat: Guidelines for forestry activities in the KLRMP Mountain Caribou Habitat Resource Management Zones are stratified by elevation into late winter and transitional habitat. For each habitat type, the KLRMP provides targets for retention of old growth attributes as well as direction for use of silviculture systems (e.g., preferred silviculture systems and maximum cutblock size).

  Movement corridors: A number of key movement corridors have been identified within the Mountain Caribou Habitat Resource Management Zones to the north of the plan area. The KLRMP prescribes forest management objectives within these corridors, including retention of important structural and functional features, and the amount of area in non-greened up condition at any one time.

Management within identified Mountain Caribou habitat is complemented by other forestry activities at the stand and landscape scales to maintain biodiversity, such as old growth retention, and activities to maintain stand level attributes within cutblocks (e.g., retention of wildlife/leave trees and coarse woody debris).

8.2 Landscape Unit Plans

The Landscape Unit Planning Guide – released March 1999 – provides a foundation for achieving landscape level biodiversity through the achievement of priority objectives for the retention of old growth and wildlife trees. The guide provides clear rules on the development of appropriate objectives for biodiversity conservation based on requirements and direction provided in the Forest Practices Code. Objectives set by government in the Forest and Range Practices Act pertain to landscape level biodiversity, and incorporate accomplishments achieved under the Forest Practices Code.

Landscape units are administrative areas of land and water used for long term planning of resource management activities. Objectives and strategies for biodiversity and other forest resources are developed through landscape unit planning.

Landscape unit planning falls into two categories:
- biodiversity planning
- forest resources planning.

Biodiversity planning involves setting objectives for six elements including
- retention of old growth forest
- stand structure through wildlife tree retention
- seral stage distribution
- landscape productivity
- species composition
- temporal and spatial distribution of cutblocks (patch size).

Forest resources planning may include objectives for any of the following resources:
- timber
- recreation
- tourism
- water
- botanical forest products
- wildlife
- forage
- fisheries.

An initial priority has been planning for biodiversity conservation. The establishment and maintenance of old growth management areas (OGMAs) is a key requirement of the Forest Practices Code, and the Forest and Range Practices Act, for managing the conservation of biodiversity. The Landscape Unit Planning Guide provided direction for determining the area of old growth for each of the three types of biodiversity emphasis areas (high, medium, low) and size and spatial location of OGMAs.

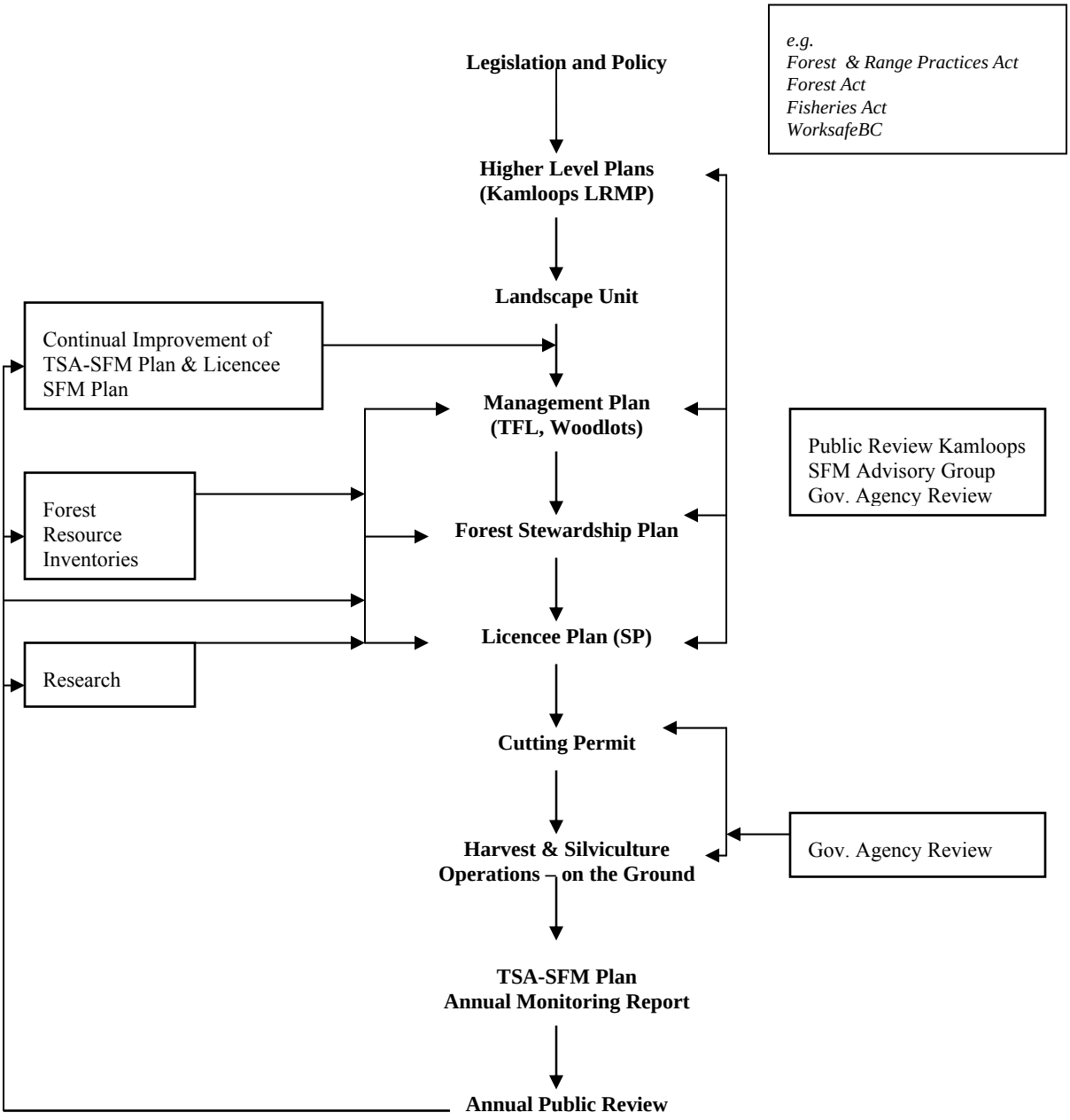
Wildlife trees provide habitat for a variety of species at the stand level. Although wildlife tree retention is managed at the stand level it contributes to landscape level forest structure.

The first phase of landscape unit planning has focused on the achievement of priority biodiversity objectives for the retention of old growth and wildlife trees. Objectives for non-priority elements may be developed if they do not create an impact on timber supply that exceeds government policy.

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

The SFM Plan is a complementary plan that demonstrates field level performance of commitments made within this plan, higher level plans such as the Kamloops LRMP, and Licencee plans. Figure 8 shows the flow of input and direction to Licencee plans. It also shows the feedback loops of research, information gathering and adaptive management that occur from monitoring of operations and review and improvement of the SFM plan, higher level plans and Licencee plans.

Figure 7. Links Between Plans



Existing legislation and policy contributes to sustainable forest management. The Forest Practices Code for example, requires management along riparian corridors. Current policy 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:

- **Forest Stewardship Plans:** Resource management objectives are set by Government, the Forest and Range Practices Act, or by regulation. Forest Stewardship Plans (FSPs) describe the intended results a licencee commits to achieving, or the strategies that the licencee will use, in relation to these established resource management objectives. Resource management objectives to be addressed in an FSP include those for soils, timber, wildlife, water, fish, biodiversity, visual quality and cultural heritage resources. Also included are applicable objectives from the KLRMP, a higher level plan. Resource stakeholders and the general public must be given an opportunity to provide comments on new FSP proposals.

- **Risk Management, Compliance, Enforcement and Audit Procedures:** Licencee planning includes making on-the-ground forest management decisions that minimize risk to environmental, social and economic values.

  Risk is the potential for loss or damage to environmental, social and economic values resulting from an action or decision in a Licencee plan. The underlying goal is to assess and manage risk. Risk assessment is the process of determining the likelihood of loss or damage occurring and the magnitude of the consequences if a loss or damage were to occur. Risk management involves weighing the assessed risks against the benefits to make the "best" forest management decision. Licencees and their foresters have the responsibility for developing their plans based on acceptable practices and the limits of acceptable risk defined in legislation. Forest Stewardship Plans require approval by a District Manager. Other plans are subject to review by request, and or field auditing. Plans are reviewed in terms of meeting legal and policy requirements and in terms of managing for risks.

  Compliance activities under the Forest Practices Code and the Forest and Range Practices Act are aimed at averting non-compliance before it occurs and detecting and addressing non-compliance when it does occur. To ensure compliance, the Forest Service undertakes a risk assessment that looks at several factors including the licencee's performance capabilities, timing constraints, site specific issues, unusual climatic events and market conditions. Based on the risk assessment, the Forest Service will establish priorities for site inspections. Site inspections are a tool to assess whether legal requirements and prescriptions in Licencee plans are being met. Licencees are also encouraged to undertake inspections based on the above risk factors. A licencee's own inspections will provide a feedback loop enabling the licencee to continuously reassess risk while operations are underway. If the compliance process is working as it should, enforcement should not be needed.

  Enforcement provides a means to remedy any failure to meet a Forest Practices Code or Forest and Range Practices Act requirement. Enforcement includes both administrative remedies and legal remedies. Administrative remedies are available to Forest Service and

other government officials to address contraventions through stop work orders, remediation orders, administrative penalties, suspension and cancellation of licences, denial of cutting permits, etc. Legal remedies involve prosecutions for offences where the Courts have the power to impose fines, or even prison terms, when a licencee is at fault.

Periodic independent ***audits*** may be carried out by the Forest Practices Board to assess compliance with the Forest Practices Code, the Forest and Range Practices Act, and the degree to which results, strategies, measures and stocking standards contained in licencee Forest Stewardship Plans were achieved. Compliance audits examine current forest planning and practices to determine whether or not they meet legal requirements. Compliance audits may be either "limited scope" or "full scope". Limited scope audits examine individual forest practices such as timber harvesting, road construction or silviculture and the related Licencee planning activities. Full scope audits examine all forest planning and practices including Licencee planning, road construction, maintenance and deactivation, timber harvesting, silviculture and fire protection. Auditees are randomly selected by the Board. Upon completion of an audit, the Board prepares a public report documenting any significant non-compliance with legal requirements, and any other information that is of value to the public.

- **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.

  To ensure that public input can be considered in FSP development, comments must be submitted to the licencee in writing. The licencee's response should document actions taken to accommodate public concern. This formal process ensures public concerns pertaining to items such as recreation features, visual quality, identified trails or other features of significance are identified. Early identification of issues enables the forest licencee to adapt plans accordingly.

  The Forest Practices Code requires that licencees consider "known information" on resources during planning. "Known information" is formally made available to licencees through a higher level plan, such as the KLRMP, or by the District Manager. Input provided by the public and First Nations can contribute to the "known information" considered by licencees during planning.

  Licencees in the Kamloops TSA 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 such as the KLRMP. In addition, licencees are committed to providing topical education updates on forest management issues during meetings. This ensures the public and local First Nations 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 in the TSA.

- **Access Management:** Access Plans are developed by government with input from the public and other stakeholders. Presently access management is coordinated through Forest Stewardship Plans and discussed at Local Resource Use Plan meetings. Forest licencees and proponents from other resource industries must coordinate and follow the advice and direction set by the government agencies through these planning processes. 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.

- **Risk Rating Roads:** Forest road inspection and maintenance should include a process for assigning road inspection priorities/frequencies based on risk analysis, carrying out road inspections and performing maintenance as conditions dictate.

  While licencees may vary in how risk is assessed, the basis for all risk analysis would give consideration to both hazard (likelihood of a particular condition) as well as the consequence (risk to public safety, environment). Hazard events may include accelerated or uncontrolled soil erosion or sediment transport, slumping or sliding, or deterioration of structural elements within the road prism.

  Road inspections would focus on the structural integrity of the road prism, drainage systems, road surface, and sediment control.

- **Vertical Structure:** During forest development planning, licencees use a number of strategies for maintaining diversity of structure and function within cutblocks. This includes wildlife/leave tree retention, either in single trees or patches, as described in the *Biodiversity Guidebook*. During operational activities, tree species of merchantable size that are not required for utilization or necessary for the achievement of the Licencee plan will be retained, where this is in keeping with the safety standards of WorkSafeBC. 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.

Any activities to maintain structural diversity within cutblocks must be carried out in keeping with the safety standards outlined by WorkSafeBC.

- **Landscape Connectivity:** Connectivity is provided when late succession ecosystems are linked to one another to form an interconnected network. The degree of interconnectedness and the characteristics of the linkages vary in the natural landscape based on the topography and type of natural disturbance regime. Maintaining connectivity supports the continued dispersal and movement of forest and range dwelling organisms across the landscape.

  Ideally, forests should be managed to mimic fragmentation resulting from natural disturbance. In the Kamloops TSA, there are a number of forest practices that will help maintain connectivity including old growth management areas (see section 8.2 Landscape Unit Plans) and riparian management areas. As well, partial cutting, combined with occasional smaller dispersed cutblocks will approximate the pattern of the natural landscape. At the stand level, structural attributes (e.g. live and dead trees), consistent with the natural disturbance type, should be retained in cutblocks and associated areas.

- **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 Kamloops 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. These strategies are implemented by the setting of related objectives within Licencee plans. Once included in approved plans, these objectives must be adhered to.

- **Forest Health:** Forest health is managed at two levels. The Ministry of Forests and Range prepares a forest health plan for the district. In addition, each licencee is required as part of the Crown licence obligation to address forest health at both the strategic and operational levels. Hazard and risk assessments for stands are used to define objectives and strategies that guide forest managers in controlling and managing forest health concerns. Managing for health must take into account the natural variability and cyclical variations that occur on the landscape.

- **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 spread of seed or vegetative material over the landscape. The transfer guidelines must be adhered to when prescribing reforestation measures in Licencee plans.

- **Noxious and Invasive Weeds:** Noxious weeds are non-native plant species. They can be difficult to control. Noxious weeds 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 noxious weeds is to prevent their establishment. Once established, the cost and difficulty of controlling noxious weeds increases significantly. TSA Licencees are represented on the Thompson-Nicola Noxious Weed Management Committee to help limit the spread of noxious weeds and to support other government agencies in their efforts. The commitment of licencees to promptly re-vegetate road cuts and fills will assist in reducing the spread of noxious weeds.

- **Species Diversity:** Species diversity refers to the native species within a forest area and can be explored at various levels (e.g. within a patch of forest or across an entire landscape). Species composition also changes over time as an ecosystem progress through the various seral stages of its recovery from a disturbance.[27]

  The Landscape Unit Planning Guide (1999) states that the intent in managing for species composition is to maintain a diversity of tree species, both commercial and non-commercial. According to the Forest Practices Code Biodiversity Guidebook (Appendix 5, Stand Attributes), an ecologically appropriate variety of tree species, including broad leaf, should be retained in a stand . Tree species composition can be managed by choice of silvicultural system, harvesting, site preparation, planting, regeneration, and stand tending activities.

  The *Establishment to Free Growing Guidebook: Kamloops Forest Region* indicates that British Columbia's forests contain a wide variety of ecosystems and species and that land managers should be aware of the need to maintain the biological diversity of these ecosystems in managed second-growth and third-growth forests. Forest trees, while only one component of a forest environment that includes a variety of life processes, are very important in providing structure and habitat for other organisms. Tree species composition and stand structure are important variables that affect the biological diversity of a forest ecosystem.

  Species diversity is achieved by planting two or more species and/or through natural 'seeding-in' on-site. Work by the Ministry of Forests and Range in 1992 demonstrated that the amount of mixed forest versus monoculture forest is approximately the same on a regenerated forest 5 to 10 years after harvesting as it is in a forest before harvesting. A twenty year average was used in this study.

  Maximizing diversity on every site may result in stands that are difficult to manage. Therefore, planning for biological diversity is often best done at the landscape level. The

[27] Kimmins, H. *Balancing Act: Environmental Issues in Forestry*, 1999, p. 156.

desired tree species and stand structure for a specific site should reflect these landscape level objectives.

- **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 which 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.

- **Forest Industry-Caused Wildfires:** The forest industry has numerous legal requirements to minimize the potential for wildfires being started by forest operations. Licencees prepare fire pre-organization plans. They also ensure employees and contractors are trained and knowledgeable in preventing and actioning wildfires. As well, licencees monitor fire weather indices, which help determine the level of risk in terms of forest 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.

- **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 AAC is set for each of the province's 37 timber supply TSAs and TFLs by the Chief Forester.

  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.

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 considers information such as biodiversity, wildlife, and the social impacts of changes to timber supply including:

⇒ the rate of timber production that may be sustained from the area;
⇒ the short- and long-term implications to the province of alternative rates of timber harvesting from the area;
⇒ constraints on the amount of timber produced from the area due to use of the forest for purposes other than timber production;
⇒ the nature, production capabilities and timber requirements of established and proposed processing facilities;
⇒ 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,
⇒ abnormal insect or disease infestations and major salvage programs planned for the area.

Ultimately the Chief Forester's AAC determination is based on independent professional judgment.

8.4 The Forest and Range Practices Act

The *Forest and Range Practices Act* was given third reading on November 21, 2002. The *Act* provides legislative direction for a "results-based" approach to forest management, specifically with respect to the administration of Forest Stewardship Plans, Site Plans and Woodlot Licence Plans. The regulations to the *Forest and Range Practices Act* provide specific direction, including standards and guidelines for fulfilling the legislative requirements under the *Act*.

The *Forest and Range Practices Act* represents a departure from the *Forest Practices Code Act* in terms of shifting forest management from a prescriptive approach to a results based approach. This change in approach is reflected in part by the requirement for forest licencees to prepare a **Forest Stewardship Plan** (FSP) in place of the former Forest Development Plan.(FDP) Resource management objectives are set by Government, the Forest and Range Practices Act or by regulation. Forest stewardship plans describe the intended results a licencee commits to achieving, or the strategies that the licencee will use, in relation to these established resource management objectives.. Licencees are not required to indicate where cutblocks will be located and how harvesting and reforestation will be carried out in FSPs. Licencees are required to prepare a **site plan** for planned cutblocks and roads prior to harvesting. A site plan must identify the approximate location of cutblocks and roads, be consistent with the forest Stewardship Plan and identify how the intended results or strategies described in the forest stewardship plan apply to the site.

Licencees were not required to have approved forest stewardship plans until December 2006. Prior to this, approved Forest Development Plans continued to guide forest practices.

Before the holder of a woodlot licence harvests timber or builds a road on land to which the licence applies, the holder must prepare and obtain a woodlot licence plan. A woodlot licence plan must specify intended results and strategies and be consistent with objectives set by government for a defined set of resource values.

The *Forest Statutes Amendment Act (No2) 2002* was passed on November 26, 2002 to assist with the transition from the requirements under the *Forest Practices Code Act* to the *Forest and Range Practices Act*. For example, a new section 162.1 (1) specifies that an agreement holder (licencee) is deemed to have met obligations under this Act, the regulations or standards, or under a Licencee plan, a permit or another authorization, if the holder submits a written declaration to the district manager specifying the obligations that have been met. This section shifts the onus from a compliance based approach where a licencee must demonstrate, prior to approval, how requirements have been met, to a conformance based approach, where a licencee is required to make a declaration regarding conformance with standards or obligations.

Glossary

Glossary

List of Acronyms

Acronym	Meaning	Acronym	Meaning
AAC	Allowable Annual Cut	ha	Hectares
AAC	Annual Allowable Cut	HLP	Higher Level Plan (i.e. KLRMP)
AOA	Archaeological Overview Assessment	ISO	International Standards Organization
AUM	Animal Unit Month	KLRMP	Kamloops Land and Resource Management Plan
BEC	Biogeoclimatic Ecosystem Classification	LU	Landscape Unit
CCFM	Canadian Council of Forest Ministers	MOFR	Ministry of Forests and Range
CSA	Canadian Standards Association	OGMA	Old Growth Management Area
CSA	Canadian Standards Association	SARA	Species at Risk Act
CWD	Coarse Woody Debris	SFM	Sustainable Forest Management
DFA	Defined Forest Area	SP	Site Plan
DFO	Department of Fisheries and Oceans	TFL	Tree Farm Licence
EMS	Environmental Management System	THLB	Timber Harvesting Land Base
FDP	Forest Development Plan	TOR	Terms of Reference
FL	Forest Licence	TSA	Timber Supply Area
FPC	Forest Practices Code	TSA	Timber Supply Area
FPCBCA	Forest Practices Code of BC Act	TSR	Timber Supply Review
FPPR	Forest Planning and Practices Regulation	UN	United Nations
FRPA	Forest and Range Practices Act	WT	Wildlife Tree
FSP	Forest Stewardship Plan	WTP	Wildlife Tree Patch
GPS	Global Positioning System		

Glossary of Terms

The following definitions were taken from the CAN/CSA-Z809 02, the *Forest Practices Code of British Columbia Act,* the Ministry of Forests and Range Glossary of Resource Planning Terms (April, 1996) and from discussions with the SFM Advisory Group.

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 which 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-Z809-02)

Biological Diversity: means the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (UN Convention on Biological Diversity).

Cultural and spiritual resources and values: To assist readers and users of the plan in understanding the nature of resources and values, the following examples are provided. It should be understood that there are many more cultural and spiritual resources than these few examples. (SFM Advisory Group)

	Resource	Value
Cultural	▪ Thompson River salmon ▪ Deer ▪ Berries	▪ Fishing ▪ Hunting ▪ Gathering
Spiritual	▪ Sacred medicinal plants ▪ Spiritual site	▪ Spiritual medicines (herbs/weeds) ▪ Vision quest

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-Z809-02)

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

Indicator: a variable that measures or describes the state or condition of a value (see Figure 5 of Standard). (CAN/CSA-Z809-02)

Licencee SFM Plan: An SFM plan specific to the DFA for a licencee seeking or having acquired CSA Z09 certification.

Known information: a feature, objective or other thing that is contained in a higher level plan or is otherwise made available by a district manager or designated environment official at least four months before the Licencee plan is submitted for approval. (*Forest Practices Code of British Columbia Act)*

Objective: a broad statement describing a desired future state or condition of a value (see Figure 5 of Standard). (CAN/CSA-Z809-02)

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)

Plans: There are a variety of plans that apply to forest management including the following.

Regional and subregional plans − apply to large areas of the Crown land base (i.e. 500,000 to 5 million hectares). These plans establish direction for land use in the form of general resource management objectives that are applied consistently across the plan area and area specific resource management zones that provide objectives for a defined portion of the plan area.

Sustainable resource management plans − translate broad 'strategic' land use plans (i.e., regional and sub-regional plans) into more specific and tangible resource management direction that is needed for operational planning and day-to-day resource management decisions at a landscape or watershed level. Sustainable resource management plans define resource objectives in precise terms that are measurable, geographically specific, and clearly communicate the intended resource integration or trade-offs.

Forest stewardship plans − Forest stewardship plans describe the intended results a licencee commits to achieving, or the strategies that the licencee will use, in relation to the resource management objectives set by Government, the Forest and Range Practices Act or regulation.

Site plans − are required for any cutblocks or roads prior to harvesting on the cutblock or harvesting in relation to the road construction. A site plan must identify the approximate

location of cutblocks and roads, be consistent with the forest Stewardship Plan and identify how the intended results or strategies described in the forest stewardship plan apply to the site.

Woodlot licence plan − must specify intended results and strategies and be consistent with objectives set by government for a defined set of resource values

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, Range Use Plans, Silviculture Prescriptions and Site Plans. (*Forest Practices Code of British Columbia Act)*

Permanent access structures: are roads, landings, borrow pits, gravel pits, and quarries that are required to be used or provide access for timber harvesting or other forest management activities and whose continuous or periodic use will continue for a long enough time to prevent the re-establishment of forested vegetation. Permanent access structures are not part of the productive landbase. (*Forest Practices Code of British Columbia Act)*

Rare ecosystem: is an ecosystem (site series or surrogate) that makes up less than 2 percent of a landscape unit and is not common in adjacent landscape units. (*Forest Practices Code of British Columbia Act,* Biodiversity Guidebook*)*

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)

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-Z809-02)

Sustainable forest management system: the structure, responsibilities, practices, procedures, processes, and time frames set by a registrar for implementing, maintaining, and improving SFM (see Figure 2 of Standard). (CAN/CSA-Z809-02)

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 (see Figure 5 of Standard). (CAN/CSA-Z809-02)

Appendix 1
Research and Information Needs

Appendix 1: Research and Information Needs

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 recommended by the SFM Advisory Group. At a future meeting of the Advisory Group, participants will prioritize the items in this list, in order to provide licencees with an indication of the five most important research needs. This ranking will allow licencees to take forward those deemed to be most important.

Integrating sustainable forest management with First Nations values:

- 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.
- Case studies are needed that examine how to best incorporate social, cultural and economic considerations into the conservation and sustainable use of forest biological diversity.
- Methodologies need to be developed to advance the integration of traditional knowledge into sustainable forest management.
- Studies needed to be done on methodologies to help ensure forest plans and practices reflect cultural values of forests as well as other First Nations interests.
- Holistic and inter-sectoral ecosystem approaches that integrate the conservation and sustainable use of biological diversity need to be developed that take into account cultural considerations.

Biodiversity/flora and fauna:

- There is a need for developing and monitoring biological indicators of actual biodiversity values to verify the surrogate indicators, such as seral stage distribution, identified in the SFM Plan (includes an assessment of monitoring tools and their effectiveness).
- The effectiveness of the size of current riparian leave strips or setbacks in protecting streams from sedimentation and ensuring suitable water temperatures for fish.

- Identifying gaps in species population data, especially rare and endangered species and working towards filling those gaps. Identifying ways to implement the information.

Water Management:

- The effectiveness of the current 3 m "green up" criterion for maintaining satisfactory hydrological recovery and to curtail runoff into streams.

- Stream temperature and specific suitable range to maintain healthy aquatic ecosystems.

- Monitoring of the following nine 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:
  - ⇒ Stream flow[28]
  - ⇒ Climatic indices
  - ⇒ Snow Survey
  - ⇒ Suspended sediment
  - ⇒ Turbidity
  - ⇒ Chemistry (could include nitrogen, pesticides, petroleum residues)
  - ⇒ Aquatic invertebrates (as an indicator of water quality and the health of aquatic habitat)
  - ⇒ Channel stability (through periodic aerial survey)
- The adequacy of current methods and schedules to assess water quality, quantity, stream flow, and temperature regimes.

Forest Management:

- Improve understanding of forest-grassland encroachment (historical harvesting, wildlife and livestock grazing, fires and fire suppression and climate change)

- How to minimize disruption of soil horizons and maintain productive mycorrhizal populations

- Timber supply – further refine temporal and spatial analysis of timber supply information (including age class distribution)

[28] Can be used to determine the effects of different silviculture systems on peak/low flows

Appendix 2
Identified Wildlife Management Species

Appendix 2: Identified Wildlife Management Species

Identified Wildlife Management Species (2004) for the Kamloops Timber Supply Area are shown in the following table (Schedule 1 Order – Category of Species at Risk May 6, 2004; Great Basin Spadefoot April 22, 2005).

Species	Forest District	BC Status
Great Basin Spadefoot	Kamloops	Blue
Great Basin Gopher Snake	Kamloops	Blue
Burrowing Owl	Kamloops	Red
Flammulated Owl	Kamloops	Blue
Great Blue Heron (herodias)	Kamloops, Headwaters	Blue
Interior Western Screech-Owl	Kamloops	Red
Lewis's Woodpecker	Kamloops, Headwaters	Blue
Long-billed Curlew	Kamloops, Headwaters	Blue
Sage Thrasher	Kamloops	Red
Short-eared Owl	Kamloops	Blue
Yellow-breasted Chat	Kamloops	Red
Badger	Kamloops, Headwaters	Red
Fringed Myotis	Kamloops	Blue
Grizzly Bear	Kamloops, Headwaters	Blue
Spotted Bat	Kamloops	Blue
Wolverine	Kamloops, Headwaters	Blue
Mountain Caribou	Headwaters	Red

Appendix 3
SFM Plan Reporting Format

Appendix 3: SFM Plan reporting format

Following is the format that licencees will use when reporting the results of monitoring the SFM Plan. Licencees provide the information required in the form annually. Information from individual licencees is compiled into a TSA Annual Monitoring Report. The Monitoring Report contributes to an annual review to confirm that the CSA performance measures are being met. The SFM Advisory Group reviews and comments on the Monitoring Report.

Kamloops TSA Sustainable Forest Management Plan Annual Report

Name of licencee: _____

Reporting year: _____

Tar #	Monitoring parameter	Monitoring results
1	Have Licencees respected and are they living up to the intent of the direction set forth in the KLRMP relating to old forest retention?	Yes _____ No _____
2	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. Variance: To accommodate non conformance to plans that have little or no impact to the environment and/or to the social and ecological objectives or lakeshore areas.	Number of riparian and lakeshore non conformances to plans _____ Gross area of cutblocks harvested having RMAs within/adjacent: _____ PAG request: Describe any non-conformances _____ _____ If there is an unusual aspect to an incident/non-conformance provide information to help other licencees.
3	Area (ha) harvested meeting KLRMP Mountain Caribou strategies against the area harvested within the KLRMP Mountain Caribou strategy area during the reporting year. Variance: As provided for within the legal framework. The statutory decision maker may approve variances from standard requirements provided adequate rationale is provided and long-term objectives continue to be met.	Number of hectares meeting Mountain Caribou strategies _____ Area harvested within Mountain Caribou resource management zones _____

Tar #	Monitoring parameter	Monitoring results
4	a. For cutblocks greater than 10 hectares report 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. b. On the blocks that do have individual wildlife trees/stubs and/or associated wildlife tree patches, report the percentage of blocks that had dispersed individual trees, stubs or small (<0.25 ha) patches. *Reporting against target "b" is limited to blocks harvested during the reporting year that had the original SP signed after January 1st, 2007.*	a. i) Total number of cutblocks harvested > 10 ha _____ ii) Number of cutblocks > 10 ha with WTP/WT/Stub _____ b. Of blocks in ii above, number of blocks with dispersed individual trees, stubs or small (<0.25 ha) patches _____ Percent (ii÷b×100) _____ NB: performance is to be reviewed against the Targets, the variance will be noted if the Targets are not met
5	Report whether the CWD target (5m3 in very dry BEC, all others 20m3) is met. *Reporting will use supplemental information collected as part of post harvest waste assessments and may include ocular estimates.* *Reporting against the target is limited to blocks harvested during the reporting year that had the original SP signed after January 1st, 2007.*	Number of cutblocks where CWD target met _____ Number of cutblocks harvested _____
6	The average time (weighted by area) for regeneration establishment on areas where regeneration delay was declared during the reporting period. Variance: 12 months beyond the 3-year target	Average time for regeneration establishment[29] (months) _____

[29] For natural regeneration, average age of trees from the first survey and for artificial regeneration, date of initial planting.

Tar #	Monitoring parameter	Monitoring results
7	a. Report the number of cutblocks where occurrence of ecosystems identified as "prioritized Red-listed ecological communities" were documented, mapped (GPS/UTM) and field verified, and the number of these cutblocks where the substantial part of the identified occurrence was included in WTP(s). b. Report the number of cutblocks where non-documented ecosystems identified as "prioritized Red-listed ecological communities" occurred, and the number of these cutblocks where WTP placement, or other reserves, were weighted to the applicable site series in the block. A rationale is provided for each cutblock where the Target is not met. *Reporting against the targets is limited to blocks harvested during the reporting year that had the original SP signed after January 1st, 2007.*	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 _____
8	a. Report whether the location of known Red-listed wildlife was obtained from CDC in the current year. b. 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 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, 2007.* 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 species _____ Number of these cutblocks where 100% consistency with SP measures was achieved _____ c. Summarize applicable consultation processes _____ _____ _____

Tar #	Monitoring parameter	Monitoring results
9	Age class distribution for coniferous species. Percent of the land base for broad leaf species.	See Indicator 22 information Land base ha. and broadleaf ha. (data to come from current TSR).
10	Area (ha) of permanent roads and landings identified in Licencee plans over gross block area (ha) for cutblocks harvested during the reporting year, using information contained within Licencee plans.[30]	Number of hectares of roads and landings within harvested areas _____ Gross block area (ha) _____
11	Harvest level allocated for each licence and harvest level cut (cut control volume) for the past reporting year. Variance: According to Cut Control Regulation and Policy.	Allocated harvest level _____ Cut control volume _____ Actual harvest all grades _____
12	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; and, b) Licencees will report on 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) c) Number of cutblocks where specific actions were requested and were taken, using traditional knowledge where available, to manage for and/or protect non-timber resources, and cultural and spiritual values.	Number of meetings and meaningful communications _____ Number of written requests for communication _____ Number of responses made _____ Number of cutblocks where specific actions were requested ___ taken ____ PAG request: What are the issues, common ground, etc with First Nations communication? _____ _____

[30] If Ministry of Forests and Range inspection reports the plan number has been exceeded, the actual number will be used in the report.

<table>
<tr><th>Tar #</th><th>Monitoring parameter</th><th>Monitoring results</th></tr>
<tr><td>13</td><td>Licencees will report the net area (hectares) where soil disturbance commitments were achieved as compared to the total net area of cutblocks that were harvested during the reporting year.

Licencee performance will be guided by internal and MOFR inspections. Reports will use DM determinations or violation tickets, to confirm whether soil disturbance levels were met.</td><td>Number of hectares where soil disturbance commitments were achieved: _____

Total net area of cutblocks harvested during the reporting year (ha): _____</td></tr>
<tr><td>14</td><td>Average time for road cut and fill slope seeding application on areas of new road construction during the reporting year.</td><td>Average time for application (months) _____</td></tr>
<tr><td>15</td><td>Report the number of maintenance action items related to water management and soil movement that were completed as compared to the total number of maintenance action items that required completion during the reporting year.

Summarize as to whether they involved fish stream, community watersheds or other.

Include examples</td><td>
<table>
<tr><th>Maintenance involved</th><th>Maintenance items required</th><th>Maintenance items completed as scheduled</th></tr>
<tr><td>Fish streams</td><td></td><td></td></tr>
<tr><td>Community watersheds</td><td></td><td></td></tr>
<tr><td>“Other”</td><td></td><td></td></tr>
<tr><td>Total</td><td></td><td></td></tr>
</table>
Examples of highest priority items addressed
_____
_____
_____
_____
_____
_____
_____
</td></tr>
</table>

Tar #	Monitoring parameter	Monitoring results
16	Did you contribute to the annual plan? Did you participate in a meeting with the SFM Advisory Group?	Yes _____ No _____ Yes _____ No _____
17	Number of registrations to a recognized third party certification that apply over the TSA area for the reporting period.	Number of registrations to a third party certification _____
18	Licencee report the current Protected Area status as last reported by a Timber Supply Review	Number of hectares maintained as Protected Areas (data to come from current TSR).
19	Percent of ranchers affected by planned operations that were communicated with during the reporting period. Variance: Minus 10 percent of the 90 percent target	Number of affected ranchers _____ Number of affected ranchers communicated with during reporting period _____ PAG request: What are the issues, common ground, etc with rancher communication? _____ _____
20	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.	Number of blocks with preservation, retention or partial retention achieving visual intent _____ Number of blocks harvested with VQOs : _____

Tar #	Monitoring parameter	Monitoring results
21	Licencee report the current mai as last reported by a Timber Supply Review. For all pine leading stands: ▪ develop a report of hectares by age class for each pine leading analysis unit at time 0 and time 100 years out ▪ determine mai for each age class for each analysis unit at time 0 and time100 ▪ calculate an area weighted average mai for each analysis unit ▪ calculate an area weighted average mai for the total area of pine leading stands (combine the analysis units)	Current mai in m3/ha/yr (data to come from current TSR). _____ Forecast (100 yr) mai in m3/ha/yr (data to come from current TSR). _____
22	Licencee report the current age class distribution as last reported by a Timber Supply Review	Age class as percent of timber harvesting land base (data to come from current TSR).
23	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.** 2006 performance target is achieved if the 04/05/06 average is ≥ to the 03/04/05 average. **Examples of a business contract include a work agreement or a direct timber sale with a First Nation Band or First Nation Contractor. 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.*	Number of working relationships _____ Examples of relationships: _____ _____ _____ _____ _____ _____ _____

Tar #	Monitoring parameter	Monitoring results
24	Number of presentations or field trips to schools, public groups and individuals during the reporting year. Include examples	Number of presentations or field visits in current year _____ Examples of significant information communicated or significant issues/topics: _____ _____ Examples of groups involved: _____ _____
25	Licencees will report on the number of cutblocks where an AOA was conducted. Licencees will report on the number of cutblocks where the AOA included a field visit.	Number of cutblocks where an AOA was conducted. _____ Number of cutblocks where the AOA included a field visit. _____
26	Survey responses coded 1 (poor), 2, 3 (satisfactory), 4, 5 (well done) Results of feedback form reviewed and considered as part of annual monitoring program.	Response average _____ Results of feedback form reviewed and considered ____ yes____ no
27	a. Licencees will report a yes/no answer as to whether the web site is being maintained, and whether SFM Plan and other information was made publicly available in the last year. Similar to Indicator 28 b. Licencees will report on the number of responses sent out by licencees compared to the number of written requests for communication. Report the average timeline for response. Indicator 28	Web site is being maintained ___ Yes, ___ No SFM Plan and other information was made publicly available in the last year ___ Yes, ___ No Number of written requests for communication _____ Number of responses _____ Average timeline for response (days) _____

Tar #	Monitoring parameter	Monitoring results
28	a. • Were licencee interests represented at KLRMP meetings? • Number of LRUP meeting attended against the number held within their operating area. Variance: Minus 10 percent to plus 30 percent of the 70 percent target • Number of FDP review meetings attended • Number of community meetings held or attended for the reporting period. b. Number of responses sent out by licencees compared to the number of written requests from the public for communication. Include average time for response. Include examples	Yes _____ No _____ Number of LRUP meetings attended _____ Number of LRUP meetings held _____ Number of FDP review meetings attended _____ Number of community meetings attended _____ Number of responses from Licencee _____ Number of written requests from public _____ Average response time (in days) _____ Examples of significant information communicated or significant issues/topics _____ _____ _____

Tar #	Monitoring parameter	Monitoring results
29	a. Are licencees directly or indirectly represented on the Forest Research Extension Partnership? b. Are TSA wide research results shared with members of the Public Advisory Group on an annual basis? Describe the type of research undertaken and its value and applicability to sustainable forest management (emphasize projects where operational use of research has been\will be initiated).	Yes _____ No _____ Yes _____ No _____ Research: _____ Type of research and value and applicability to SFM: _____ _____ _____ _____ _____
30	Percent of cutblocks with three or more tree species identified at free growing. • Report results during the reporting period where entire block has achieved free growing. • Species data is based on inventory layer • Average % primary species is based on number of cutblocks with three or more species (sum of leading tree species % for all cutblocks with three or more species divided by the number of cutblocks)	Cutblocks with three or more species: _____ Cutblocks achieving free growing status _____ Percent of cutblocks with three or more species: _____ Percent primary species (average) for cutblocks with three or more tree species : _____

Appendix 4
Summary of Publicly Developed Values, Objectives and Indicators

CCFM CRITERION: 1) Conservation of Biological Diversity

ELEMENT	VALUE	OBJECTIVE	INDICATOR
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.	Well balanced ecosystems that support natural processes.	Healthy, connected forest ecosystems with a representation of natural attributes. Retain representation of natural forests. Conserve Aboriginal cultural and spiritual resources	(1) Achievement of the TSA's old forest strategy. (2) Level of conformance to riparian management area and lakeshore commitments contained within plans. (4) Stand level retention – individual wildlife trees/stubs and/or wildlife tree patches (12) Incorporation of traditional knowledge, non-timber resources, and cultural and spiritual values in forest planning, where available. (18) Protected Ecosystems (22) Forest age class distribution
1.2) Species Diversity Conserve species diversity by ensuring that habitats for the native species found in the DFA are maintained through time.	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. Conserve Aboriginal cultural and spiritual resources	(1) Achievement of the TSA's old forest strategy. (2) Level of conformance to riparian management area and lakeshore commitments contained within plans. (3) Level of FPC compliance with Mountain Caribou strategies. (8) Identification and protection of wildlife (mammals, birds, reptiles, fish and amphibians) at risk (9) Percent of land base for broad leaf species. (12) Incorporation of traditional knowledge, non-timber resources, and cultural and spiritual values in forest planning, where available. (14) Number of months for road cut and fill slope seeding application. (22) Forest age class distribution (30) Percent of harvested cutblocks having three or more tree species identified in the free growing inventory.
1.3) Genetic diversity Conserve genetic diversity by maintaining the variation of genes within species.	Sustainable populations of native species.	Maintain or enhance genetic diversity. ▪ Species population	(1) Achievement of the TSA's old forest strategy. (3) Level of FPC compliance with Mountain Caribou strategies. (7) Management strategies for rare ecosystems (8) Identification and protection of wildlife (mammals, birds, reptiles, fish and amphibians) at risk (9) Percent of land base for broad leaf species. (30) Percent of harvested cutblocks having three or more tree species identified in the free growing inventory.

CCFM CRITERION: 1) Conservation of Biological Diversity

ELEMENT	VALUE	OBJECTIVE	INDICATOR
1.4 Protected Areas and Sites of Special Biological Significance Respect protected areas identified through government processes. Identify sites of special biological significance within the DFA and implement management strategies appropriate to their long-term maintenance.	Continuing viability of naturally functioning ecosystems in Protected Areas and sites of special biological significance. Protected areas provide recreational opportunities and managed access.	Protect viable, ecologically important examples of British Columbia's natural diversity. Endeavor to identify and maintain new areas of biological significance. Maintain boundary integrity.	(1) Achievement of the TSA's old forest strategy. (3) Level of FPC compliance with Mountain Caribou strategies. (7) Management strategies for rare ecosystems (8) Identification and protection of wildlife (mammals, birds, reptiles, fish and amphibians) at risk. (12) Incorporation of traditional knowledge, non-timber resources, and cultural and spiritual values in forest planning, where available. (18) Protected Ecosystems (28) Number of opportunities/avenues for public participation in decision-making processes.

CCFM CRITERION: 2) Maintenance and Enhancement of Forest Ecosystem Condition and Productivity

ELEMENT	VALUE	OBJECTIVE	INDICATOR
2.1) Forest Ecosystem Resilience Conserve ecosystem resilience by maintaining both ecosystem processes and ecosystem conditions.	Sustainable forest ecosystems. Conserve, use and manage sustainably	Resilient forest ecosystems with a representation of natural attributes. ▪ Age class distribution ▪ Scale (landscape unit) ▪ Natural systems (way in which attributes interact) ▪ All forest types including broad leaf species	(1) Achievement of the TSA's old forest strategy. (2) Level of conformance to riparian management area and lakeshore commitments contained within plans. (4) Stand level retention – individual wildlife trees/stubs and/or wildlife tree patches (7) Management strategies for rare ecosystems (9) Percent of land base for broad leaf species.
2.2) Forest Ecosystem Productivity Conserve forest ecosystem productivity and productive capacity by maintaining ecosystem conditions that are capable of supporting naturally occurring species.	Conserve forest ecosystem condition and productivity.	Well functioning connected ecosystems that are managed for timber and non-timber forest values.	(1) Achievement of the TSA's old forest strategy. (2) Level of conformance to riparian management area and lakeshore commitments contained within plans. (4) Stand level retention – individual wildlife trees/stubs and/or wildlife tree patches (9) Percent of land base for broad leaf species. (10) Annual percent of harvested areas in permanent access structures (e.g. roads and landings). (13) Level of conformance to soil conservation commitments contained within plans. (21) Mean Annual Increment (22) Forest age class distribution

CCFM CRITERION: 3) Conservation of Soil and Water Resources

ELEMENT	VALUE	OBJECTIVE	INDICATOR
3.1) Soil Quality and Quantity Conserve soil resources by maintaining soil quality and quantity.	Conservation of soil resources.	Maintain productive capacity of forest soils. ▪ Minimize compaction and detrimental disturbance	(5) Stand level retention – coarse woody debris (10) Annual percent of harvested areas in permanent access structures (e.g. roads and landings). (13) Level of conformance to soil conservation commitments contained within plans.
3.2 Water Quality and Quantity Conserve water resources by maintaining water quality and quantity.	Healthy watersheds that function in a well-balanced natural state.	Acceptable levels of water quality and quantity ▪ Water quality (clean water). ▪ Water quantity (maintain stream-flow regimes within natural variation) ▪ Water temperature	(2) Level of conformance to riparian management area and lakeshore commitments contained within plans. (6) Average regeneration period from time of harvest. (10) Annual percent of harvested areas in permanent access structures (e.g. roads and landings). (14) Number of months for road cut and fill slope seeding application. (15) Percent of permanent status roads that have maintenance completed as per programs.

CCFM CRITERION: 4) Forest Ecosystem Contributions to Global Ecological Cycles

ELEMENT	VALUE	OBJECTIVE	INDICATOR
4.1 Carbon Uptake and Storage Maintain the processes that take carbon from the atmosphere and store it in forest ecosystems.	Respect natural watershed processes and the intrinsic value of nature. ▪ Actively growing, healthy forests ▪ Maintain all natural sources of nutrient cycling	Resilient forest ecosystems with a representation of natural attributes. ▪ Age class distribution ▪ Scale (landscape unit) ▪ Natural systems (way in which attributes interact)	(1) Achievement of the TSA's old forest strategy. (5) Stand level retention – coarse woody debris (6) Average regeneration period from time of harvest. (21) Mean Annual Increment (22) Forest age class distribution
4.2 Forest Land Conversion Protect forestlands from deforestation or conversion to non-forests.	Protection and security of the land and resources for future generations.	Prosperous forest-based industries with a sustainable supply of timber.	(6) Average regeneration period from time of harvest. (10) Annual percent of harvested areas in permanent access structures (e.g. roads and landings). (11) Annual harvest level relative to annual allocation.

CCFM CRITERION: 5) Multiple Benefits to Society

ELEMENT	VALUE	OBJECTIVE	INDICATOR
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.	Diverse use of the forest. ▪ Cultural and spiritual ▪ Wildlife ▪ Environmental ▪ Recreational ▪ Tourism Traditional public use trail systems	Conserve or enhance non-timber values while managing forests for timber values and prosperous forest-based industries	(12) Incorporation of traditional knowledge, non-timber resources, and cultural and spiritual values in forest planning, where available. (19) Percent of affected ranchers with whom forest planning is discussed. (20) Level of conformance to strategies in plans designed to achieve preservation, retention or partial retention visual quality objectives. (25) Participation with First Nations to implement and improve upon the revised Archaeological Overview Assessment model and process. (28) Number of opportunities/avenues for public participation in decision-making processes.
5.2 Communities and Sustainability Contribute to the sustainability of communities by providing diverse opportunities to derive benefits from forests and to participate in their use and management.	Social and economic stability and vitality of local communities including First Nations Local perspective valued in managing forest resources.	Employment opportunities Economic diversity Local decision making Local education opportunities	(12) Incorporation of traditional knowledge, non-timber resources, and cultural and spiritual values in forest planning, where available. (19) Percent of affected ranchers with whom forest planning is discussed. (23) The number of working relationships with applicable First Nations. (27) Public awareness of the SFM Plan (28) Number of opportunities/avenues for public participation in decision-making processes.
5.3 Fair Distribution of Benefits and Costs Promote the fair distribution of timber and non-timber benefits and costs.	Stable and profitable local forest industries.	Prosperous forest-based industries with access to desired markets.	(11) Annual harvest level relative to annual allocation. (16) Level of participation in the annual reporting of results and the number of advisory group meetings held annually. (17) Number of registrations to a recognized third party certification. (19) Percent of affected ranchers with whom forest planning is discussed. (23) The number of working relationships with applicable First Nations. (28) Number of opportunities/avenues for public participation in decision-making processes.

CCFM CRITERION: 6) Accepting Society's Responsibility for Sustainable Development

ELEMENT	VALUE	OBJECTIVE	INDICATOR
6.1 Aboriginal and Treaty Rights Recognize and respect Aboriginal and treaty rights.	Aboriginal rights and title	Recognition of aboriginal rights and title as related to forest management	(12) Incorporation of traditional knowledge, non-timber resources, and cultural and spiritual values in forest planning, where available. (23) The number of working relationships with applicable First Nations.
6.2 Respect for Aboriginal Forest Values, Knowledge, and Uses Respect traditional Aboriginal forest values and uses identified through the Aboriginal input process.	Aboriginal rights, title and traditional knowledge are respected.	Protection of important archaeological sites (as interpreted by First Nations) ▪ Cultural and heritage sites and values, including spiritual. Use of traditional knowledge Meaningful and informed participation of First Nations.	(12) Incorporation of traditional knowledge, non-timber resources, and cultural and spiritual values in forest planning, where available. (25) Participation with First Nations to implement and improve upon the revised Archaeological Overview Assessment model and process.
6.3 Public Participation Demonstrate that the SFM public participation process is designed and functioning to the satisfaction of the participants.	Public and First Nations values are recognized.	Public and First Nations are invited to participate. Those participating in the process are satisfied with outcomes.	(26) Participant satisfaction survey (27) Public awareness of the SFM Plan

CCFM CRITERION: 6) Accepting Society's Responsibility for Sustainable Development

ELEMENT	VALUE	OBJECTIVE	INDICATOR
6.4 Information for Decision-Making Provide relevant information to interested parties to support their involvement in the public participation process, and increase knowledge of ecosystem processes and human interactions with forest ecosystems.	Adaptive forest ecosystem management. ▪ Experience and research ▪ Understand-ing of policies and procedures	Continual increase in knowledge of ecosystem needs and impacts of management techniques. ▪ Extension Encourage the development of capacity for First Nations and the public to provide informed and meaningful input into the decision making process.	(12) Incorporation of traditional knowledge, non-timber resources, and cultural and spiritual values in forest planning, where available. (16) Level of participation in the annual reporting of results and the number of advisory group meetings held annually. (24) Number of presentations or field trips to schools, public groups and individuals. (26) Participant satisfaction survey (27) Public awareness of the SFM Plan (28) Number of opportunities/ avenues for public participation in decision-making processes. (29) Report on number of research and extension initiatives licencees have participated in.

Appendix 5

Parking Lot

Introduction

This Appendix, referred to as a Parking Lot, is included in the SFM Plan to retain improvement ideas. The Parking lot is used to retain and track ideas that time or other constraints precluded immediate attention to. Parking lot items are addressed as part of regular SFM Plan review with the objective of determining appropriate action (i.e. retain in parking lot, no longer applicable, addressed, develop action plan, action, etc).

Parking Lot

Current Parking Lot improvement ideas/opportunities are:

1. Element 2.2 Indicators: Forest Ecosystem Productivity

   Indicators are tree oriented. Explore/consider other additional indicators
2. Support for the meaningful participation of First Nations in forest development and planning is inferred but not stated for Indicator 25
3. Discuss the need to have an Indicator in the SFM Plan regarding "…the number of First Nations person days…"
4. Better understand mean annual increment (mai); Indicator 21
5. Tree stubbing – for Indicator 4 reporting, wildlife trees and stubs are equal. What is the relative value of stubs, particularly small ones?
6. Suggested indicator 5 improvements for future consideration:
   - Include a Target related to Coarse Woody Debris size
   - Consider relief (a variance or specific Target) for operations on licences that restrict harvesting to small stem sizes or deciduous stands.
   - Develop a "piled" versus "dispersed" volume ratio.
   - Develop a Target for piles.

Appendix 6

Prioritized Red-listed Ecological Communities

Appendix 6: Prioritized Red-listed Ecological Communities

BEC variants that have been prioritized[31] for rare ecosystem assessment are:

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 redcedar - 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

[31] Refer to Indicator 7