



## **ANNUAL PERFORMANCE MONITORING REPORT**

**Grande Prairie Operations  
Alberta Region  
December 2001**



*A young pine seedling*



## **Grande Prairie Operations Landbase Information**

***Total Landbase: 649,159 ha***

***Productive Landbase (aspen and conifer): 474,193 ha***

***Approved Annual Allowable Cut (AAC): 730,000 m<sup>3</sup> (1989 –2001)***

***Tentative New Coniferous AAC: 640,000 m<sup>3</sup> (not yet approved – submitted July 30<sup>th</sup>, 2001)***

***Tentative New Deciduous AAC: 473,000 m<sup>3</sup> (not yet approved - submitted July 30<sup>th</sup>, 2001)***

### **New Management Plan**

The primary regulatory environment under which Canfor, Grande Prairie Operations conducts its forest operations is Forest Management Agreement 9900037 (FMA Agreement), signed with the Minister on May 5, 1999 and expiring on May 4, 2019.

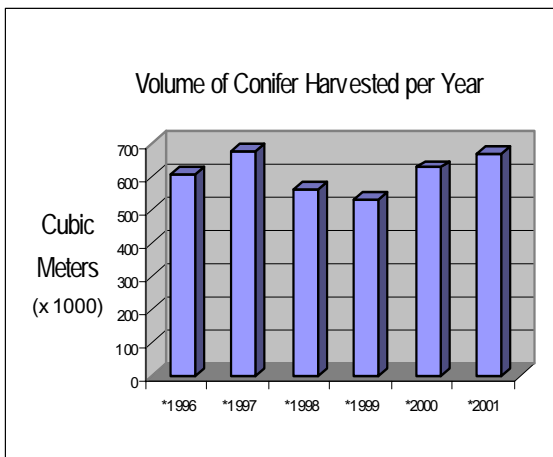
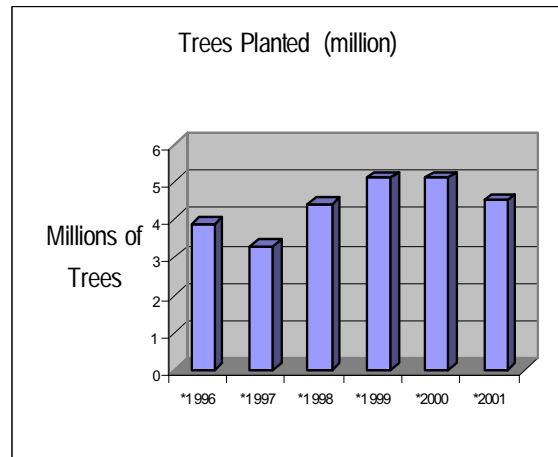
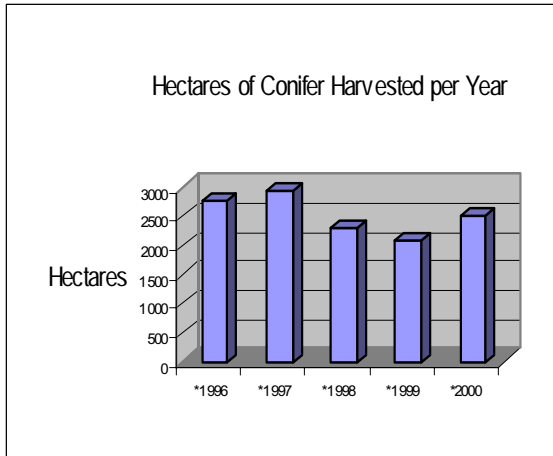
As per subparagraph 10(3) of the FMA agreement, a Detailed Forest Management Plan (DFMP) must be submitted to the Minister not more than 2 years following the commencement date of the FMA agreement. The DFMP defines activities in a specific geographic area and time period, and provides detailed justification and environmental planning to support the annual allowable cut (AAC) for both coniferous and deciduous species from the FMA area.

Canfor has adopted a sustainable ecosystem management approach for current and future plans. The Company will continue to improve its understanding of the ecological processes that have produced natural forests and will incorporate this knowledge into its daily operations. Social, environmental and economic values will be addressed within a framework of ecological processes and science to deliver desirable future forest conditions. Measurable ecological targets will be included to help gauge performance and independent audits will be used to verify progress.

The DFMP was submitted July 31, 2001 and approval is expected early in the new year.

## Historical Information - Coniferous

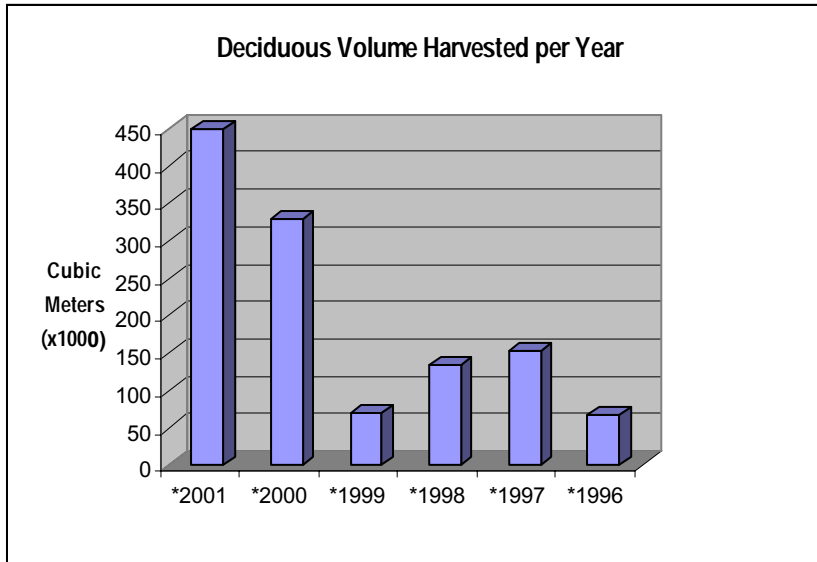
The following graphs show some historic data on coniferous volume harvested, hectares harvested and trees planted.



*Note: Data for 2001 is projected. All other data is actual*

## Historical Information - Deciduous

It is only recently that the deciduous trees within the FMA area have been utilized. Mostly aspen but some birch trees are harvested and delivered to Tolko in High Prairie for processing into OSB (oriented strand board). Historic information for this species is provided graphically below:



Deciduous trees are very successful in propagating naturally and consequently no planting of this species is required

In 1996, Tolko received a Deciduous Timber Allocation (DTA) of 54,512 m<sup>3</sup> from the Alberta Government for deciduous timber rights in Canfor's G5C Forest Management Unit in the FMA. (reference map on back of report) In 1997, a second DTA of 60,500 m<sup>3</sup> for G2C was issued. Actual Harvesting of the Aspen did not occur until 1998.

In 1998, Canfor began harvesting Aspen along with the Conifer in mixwood cutunits. This volume of aspen is referred to as incidental. It includes the aspen sold to deciduous companies as well as "sterilized aspen" [aspen left standing in the cutunits that could not be sold but is part of the Annual Allowable Cut.].

Tolko has also harvested aspen from Pure Aspen Stands within the FMA. This usually occurs when sufficient incidental volume is not available to meet Tolko mill requirements.

# CERTIFICATION

---

## Environmental Management Systems and Sustainable Forest Management Plan

### Quick Facts

#### Canfor's Certification Chronology

- 1997 - ForestCare Certified
- 1999 - (Nov.) Environmental Management System (EMS) Certified to ISO 14001 standard
- 2000 - (June) Sustainable Forest Management Plan certified to National CSA

Certification of sustainable forestry practices is becoming key to maintaining market share and meeting public demands. To that end, Canfor has sought and achieved certification under a variety of respected standards (see Quick Facts box).

The purpose of the Canadian Standards Association (CSA) standard is to describe the components and performance objectives of a sustainable forest management system. In 1996, 6 criteria were developed by the Canadian Council of Forest Ministers (CCFM). The CSA process developed a set of critical elements for each criteria,

numbering 22 in total. Through a process of public participation, the CSA performance framework attains a local relevance to the critical elements in the form of locally determined values, goals, indicators and objectives.

In partial fulfillment of achieving (CSA) registration, the existing public advisory group — The Forest Management Advisory Committee (FMAC) — was utilized to help Canfor identify quantifiable local-level values, goals, indicators and objectives of sustainable forest management. The 71 Objectives identified by the FMAC are detailed with associated forest management practices in the Sustainable Forest Management Plan (SFMP) for the Grande Prairie Forest Management Agreement (FMA) area (Canfor SFMP, July 2000). The table below summarizes Grande Prairie's progress with the SFMP objectives.

### Summary of Progress of SFMP Objectives

Objectives Completed	Objectives In Progress	2002 Completion Date	Long Term Objective Generally Meets	Long Term Objective in Progress	Long Term Objective Currently Meets	Long Term Objective	Total Objectives
5	8	3	5	17	29	4	71

## **Purpose of the Annual Performance Monitoring Report**

The purpose of this Report is to summarize the objectives as committed in the CSA SFMP. Detailed information can be found in the complete SFMP document available at local libraries and the Canfor office.

The objectives from the SFMP have been incorporated into the DFMP. This gives our CSA SFMP more strength as the CSA certification is voluntary and the DFMP is a legal document.

Following are the 6 CSA criteria together with their 22 applicable critical elements illustrating the status of the associated goals. For example, Criteria 1 - Biological Diversity, has 3 critical elements labelled as 1A, 1B, and 1C. The status of each of the 71 objectives mentioned previously, are summarized in the text portion under the associated goals.

# CRITERIA 1 – BIOLOGICAL DIVERSITY

## 1A - ECOSYSTEM DIVERSITY

***Goal: To provide support to areas of rare physical environments***

*Status: 100% of identified rare physical environments (see Table below) are excluded from the company's annual allowable cut (AAC) calculation. As a result these areas will never be harvested. The Dunvegan West Wildland (shown below) has been designated a Special Place for the dry mixwood region and the parabolic sand dunes are a company chosen deletion.*

*The table below shows the area in hectares of rare physical environments within Canfor's FMA that have been protected for all time from harvesting. The Dunvegan West Wildland and the Parabolic Sand Dunes (southeast of Grande Prairie) are included in this designation.*

Area	Area (ha)
<b>Alberta Special Places (Dunvegan West Wildland within FMA area)</b>	
Cactus Hills (84-9-W6M)	214.8
Peace Parkland (81-7-W6M)	1,172.3
Peace River Dunvegan (81 to 83, 7&8-W6M)	3,084.0
<b>Subtotal</b>	<b>4,471.1</b>
Parabolic Sand Dunes (within the FMA area - southeast of GP)	6,114.2
<b>FMA Total</b>	<b>10,585.3</b>
<b>Dunvegan West Wildland Outside the FMA Area</b>	<b>17,884.0</b>

These photographs illustrate the rare physical environments protected in the FMA.

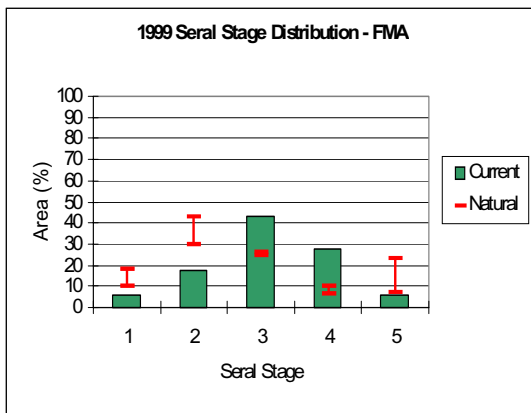




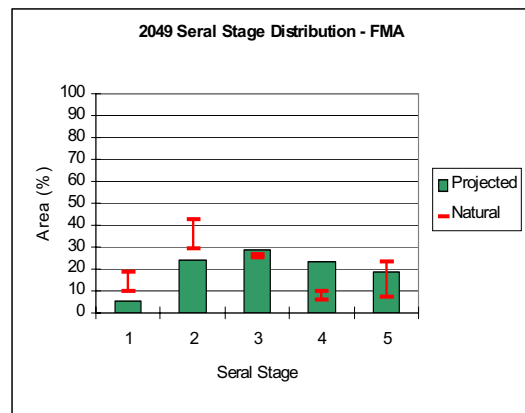
**Goal: Maintain range of seral stages (as per fire return intervals- natural disturbance regimes)**

**Status:** When the current and projected distributions are compared, the 'Old' seral stage target has been met. The other seral stages are generally within their natural disturbance regimes.

The natural disturbance regime is based on historic fire return interval data and is represented by the red 'I' line on the following graphs. The green bars indicate the current or expected amount of area in each seral stage (stages 1-5).



**Current - (1999)**



**Projected to 2049**

**Seral stage legend: 1 = pioneer, 2 = Young, 3 = mature, 4 = overmature, 5 = old**

## 1B - SPECIES DIVERSITY

### *Goal: Minimize impacts on wildlife species population abundance*

---

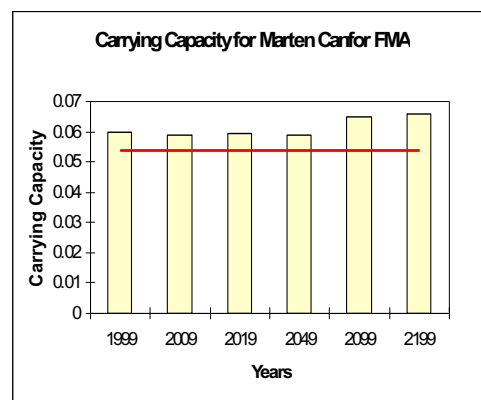
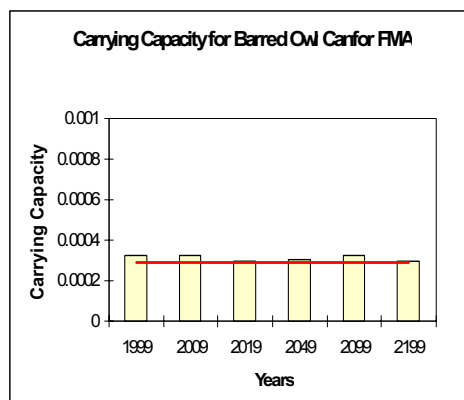
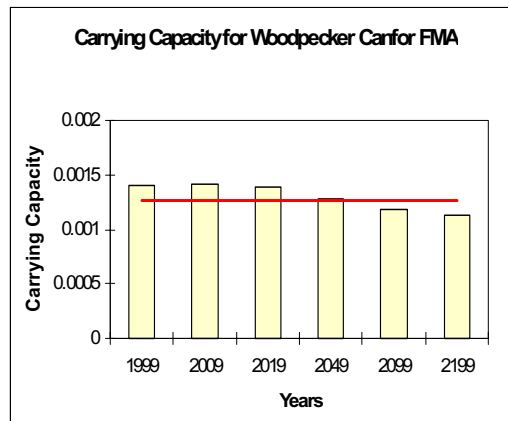
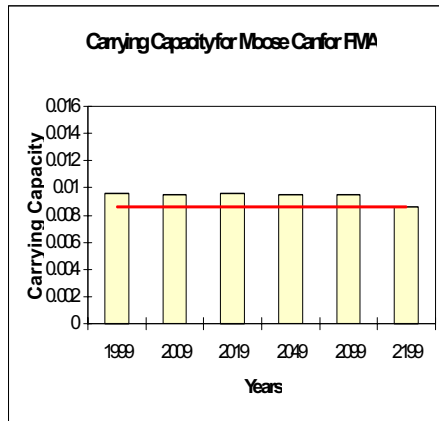
*Status: The status of the goal to minimize impacts on wildlife species population abundance is illustrated in the following five ways:*

---

1. Roads constructed by Canfor into the Caribou area have gates to manage the access impacting Caribou habitat.
2. In consultation with members from the Forest Ecosystem Management Task Force, Canfor and the Forest Management Advisory Committee (FMAC) made the following selection of seven (7) species that require special management concerns: moose, pine marten, pileated woodpecker, barred owl, woodland caribou, bull trout, and trumpeter swan. The first four were selected for HSI modeling (see the four charts below) and the last three are to be managed by means of habitat constraint modeling.
  - These seven species were selected because they represent a broad and variable range of habitat characteristics. Thus, if the habitat is maintained and available for these species, it is assumed that the FMA area will contain a wide range of habitat conditions suitable for all other species in the planning area.
  - The carrying capacity for all species modelled under HSI remain above the acceptable variance (red line) except for pileated woodpecker projected to 2049 and beyond. It is proposed that this is due to snag tree availability and Canfor is currently collecting additional data to verify the model results.

The species managed under habitat constraint modelling – Bull trout, Caribou and Trumpeter Swan are all meeting their defined targets as stated in the SFMP.

- **Bull trout habitat** is managed by reducing the amount harvested (up to 35% harvested versus a past practice of 50%) in watersheds above which 60% of the area falls within, thereby reducing the impact on hydrology.
- **Caribou habitat** is managed by targeting a maximum of 20% of the area to be in younger age classes while having at least 20% of the area in old seral stage. Canfor also continues to participate on the West Central Alberta Caribou Standing Committee, which is co-ordinating all resource users and involved in many Caribou research programs (see also critical element 6F on page 38).
- **Trumpeter Swan habitat** is managed by identifying lakes supporting trumpeter swans and maintaining a 200 meters harvest buffer to protect nesting sites.



3. In addition to the species listed above, an amphibian species is being considered; additional information must first be reviewed.
4. Wildlife licks receive a 100 meter no harvest buffer. There are currently 159 wildlife licks protected representing 480 ha (0.07% of the FMA area).
5. A program which enables staff to predict occurrences of Rare Plants within the FMA has been completed. Canfor will be training staff and utilizing a Heritage Canada identification manual to aid in the identification of these rare plant types.

## 1C - GENETIC DIVERSITY

### *Goal: To conserve genetic diversity of tree species*

---

*Status: Canfor is in the early stages of utilizing a tree improvement orchard to grow seedlings from genetically superior trees found within the FMA area. Approximately 5% of our planting program comes from orchard seed and 95% from bulk seed; our future goal is to increase the use of orchard seed to 70%. This goal should be achieved within 3 to 5 years as orchard trees start to produce more cones.*

---

In order to maintain 300-600 different white spruce parents in the orchard breeding program, cones from about 40 white spruce trees were required to augment the orchard supply. These cones were collected during the summer of 2001.

The bulk seed collection consists of seed from the FMA area, not those grown in the orchard. In order to have a consistent supply of bulk seed, additional black spruce seed is needed. Plans are in place to collect this seed in the fall of 2001.



Collection of cones in this photograph is being done using a helicopter and a cone rake. The cone rake is placed over the upper branches of the trees and rakes cones into a basket.

**Goal: To Maintain conditions that do not negatively impact the genetic diversity of wildlife species**

*Status:* At the landscape level, there are a number of important factors (indices) relating to the conservation of genetic diversity of wildlife species. Canfor has chosen 5 indices to monitor landscape structure and is generally meeting the established targets as discussed below.

Landscape composition and spatial configuration define landscape structure. Composition is generally described by seral stage distribution (habitat type) and patch size distribution (habitat size), while configuration is represented by fragmentation, connectivity and patch shape. Each of these 5 indices has an acceptable variance by which progress is measured.

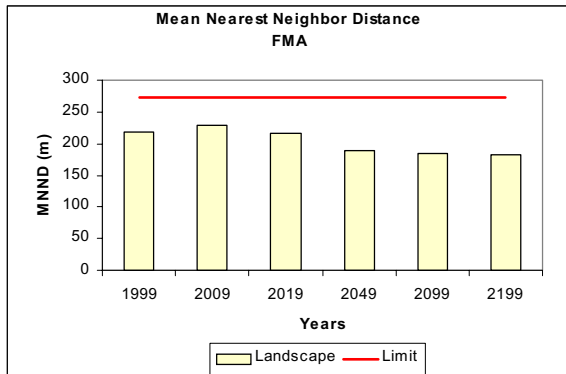
The targets and acceptable variance for landscape structure indices are illustrated in the following table:

Indices	Spatial Property	Target	Acceptable Variance	Met Target Over Planning Period
Seral stage distribution	Seral stage distribution	Distribution that approximates expected distribution created by natural disturbances	To be within natural range of variation as represented by variant bar on the graph (see Criteria 1a - Ecosystem Diversity on page 9)	Generally
Patch Size	Aggregated Patch Size	Distribution that approximates expected distribution created by natural disturbances	To be within natural range of variation as represented by variant bar on the graph	Generally
Fragmentation	Mean Patch Size (MPS)	1999 MPS	MPS will not fall below 25% of current (1999) MPS for FMA area	Yes
Connectivity	Mean Nearest Neighbor Distance (MNND)	1999 MNND	MNND will not exceed 25% of current (1999) MNND for the FMA area	Yes
Patch Shape	Average Weighted Mean Shape Index (AWMSI)	1999 AWMSI	Will not fall below 2 times current (1999) AWMSI for the FMA area	Yes

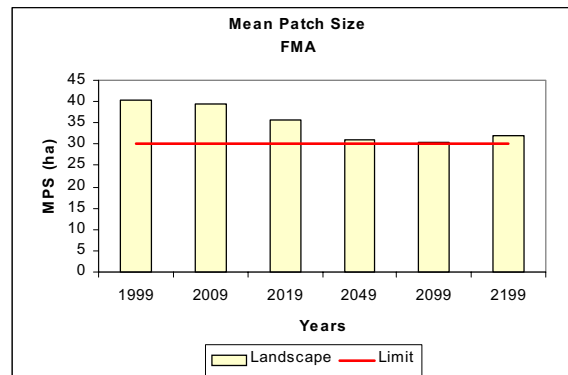
Canfor's performance in meeting the landscape targets is illustrated by the following figures (see also seral stages in Criteria 1A on page 9). Canfor is generally meeting the targets for the planning horizon. The indices will continue to be monitored and operational plans will be adjusted to achieve the desired levels of landscape structure.

# Current and Projected Landscape Structure Progress

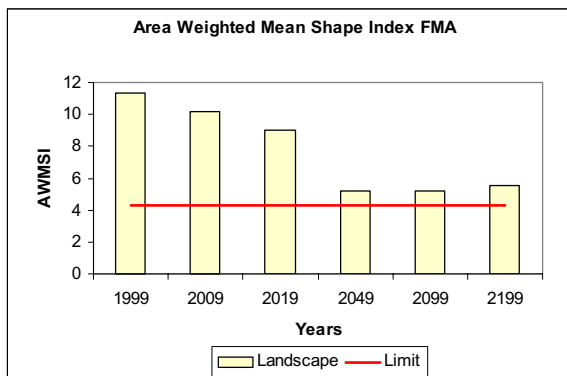
The following graphs demonstrate the anticipated progress in meeting landscape targets:



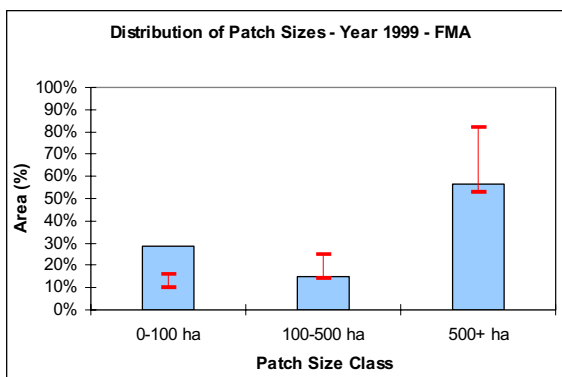
**Connectivity**



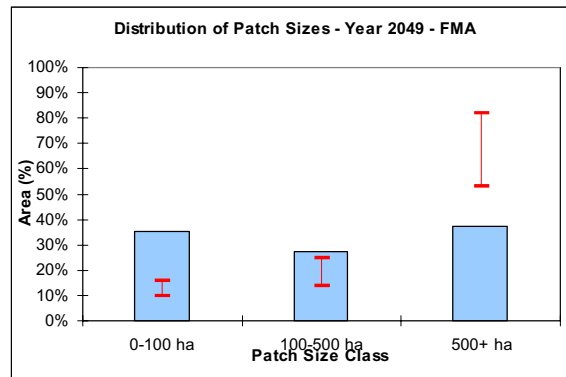
**Fragmentation**



**Patch Shape**



**Patch Size Distribution - 1999**



**Patch Size Distribution - 2049**

## CRITERIA 2 - FOREST ECOSYSTEM CONDITION AND PRODUCTIVITY

---

### 2A - ECOSYSTEM HEALTH

***Goal: To conserve Forest Health***

---

***Status:*** *There have been no significant fire, windfall, or insect & disease events in the past year.*

---

Canfor works with Alberta Sustainable Resource Development (ASRD) during periods of high fire hazard by providing equipment and people on standby alert. As well, all areas burnt during November to April are infrared scanned for hotspots in April or May.

Canfor is currently working on a proactive procedure to address windfall and mitigate its effect during operational practices.

Canfor keeps abreast of insect and disease populations in Alberta through the Annual Report of Forest Health and by attending provincial meetings as well as participating in an industry funded insect monitoring pilot project.

### 2B - ECOSYSTEM RESILIENCE

***Goal: To sustain the capability of ecosystems to recover from both natural and human-caused disturbances***

---

***Status:*** *Canfor regenerates 100% of harvested areas within 18 months of the timber year (ends April 30) according to a predefined strategy detailed in the Detailed Forest Management Plan (DFMP).*

---

Regulations state that regeneration must occur within 24 months; our commitment to 18 months has been met and improved upon since 1996. Canfor, Grande Prairie Operations, plants approximately 4 million trees each year. (see historical statistics graph on page 3).

## 2C - ECOSYSTEM PRODUCTIVITY

### *Goal: To maintain ecosystem productivity*

---

*Status: Two significant considerations important for maintaining ecosystem productivity have been undertaken:*

---

1. Maintaining wildlife habitat, (described in Criteria 1B on page 10),
2. A common measure of the overall productivity of forested ecosystems (determined through tree growth) is site index. This index is commonly referred to as the predicted height for a specific tree species at a given breast height age (1.3 m). The measurement of tree growth is directly related to the productivity of the site and therefore, tree growth is a general indication of overall site productivity. Measurement and tracking of tree growth over time is referred to as “Growth and Yield” and is an important aspect of Canfor’s Forest Management Planning. It ensures long term maintenance of both coniferous and deciduous profiles in the mixwood and pure landbases. Establishment of Permanent Sample Plots (PSPs) is the means by which the same trees are consistently measured over time to track growth rates. The table on Permanent Sample Plots shown below illustrates the number of plots maintained within the FMA area:

<b>Permanent Sample Plots Within the FMA Area</b>	
<i>Type of Permanent Sample Plot</i>	<i>Number Established Y-T-D</i>
Timber Inventory	839
Foothills Growth and Yield Association	6
NIVMA <sup>1</sup>	20
WESBOGY <sup>2</sup>	2
<b>Total</b>	<b>867</b>
<i>1. Northern Interior Vegetation Management Association</i>	
<i>2. Western Boreal Growth and Yield Cooperative</i>	



## CRITERIA 3 - SOIL AND WATER RESOURCES

### 3A - PHYSICAL ENVIRONMENTS

**Goal: To minimize loss of landbase**

**Status:** One of the ways to minimize loss of landbase is to limit the amount of road that is constructed within the FMA area: – this includes roads Canfor builds and roads built by oil and gas companies.

Canfor will not exceed \*2% withdrawal of the productive forest landbase in their own roads (as of 1999). See the table to the right for annual results).

Year	Km of Road Built (area ha)	Km Planned
1999	0	0
2000	*12.0 km (24 ha)	9.5
2001	0	0

\* 2% withdrawal of productive forest landbase would equal 5,000 km of roads - between 1999 - 2001 only 12.0 km of roads were constructed

Canfor actively works with the energy sector in sharing access through road use agreements and utilizing existing seismic lines as much as possible for new road construction.

In addition, land withdrawals for oil and gas affect the landbase available for timber harvesting and other uses. The amount of area that is withdrawn on an annual basis from the FMA area is monitored and illustrated in the table below.

Period Ending Dec. 31	Number of Dispositions	Area Withdrawn (no seismic) (ha)	Area of Seismic (number of programs) (ha)	Total Area (ha)
1994	178	689	223 (15)	912
1995	173	501	676 (34)	1,177
1996	230	588	212 (55)	800
1997	246	649	227 (32)	876
1998	205	689	242 (26)	931
1999	151	337	170 (21)	507
2000	221	619	96 (25)	715

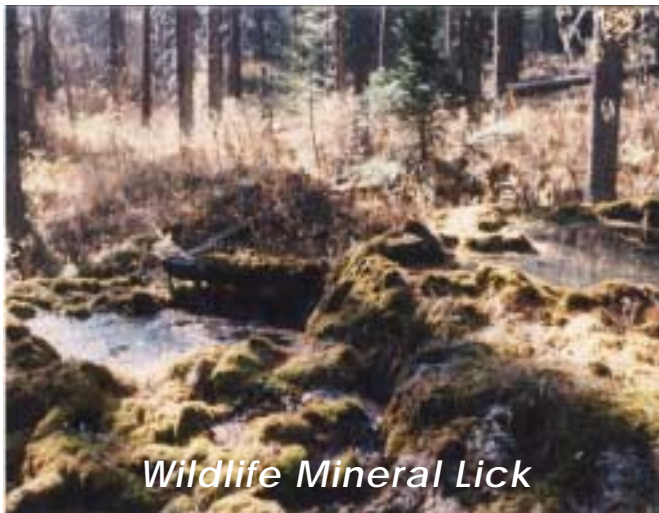
***Goal: To protect the natural states and processes of rare physical environments***

---

***Status:*** *Currently this goal is being met. Three objectives were developed to monitor our progress in protecting rare physical environments.*

---

1. Rare physical environments are protected as stated in Criteria 1A, and will always remain in the landbase in conjunction with managed areas.
2. Wildlife mineral licks are protected as stated in Criteria 1B.
3. Natural grasslands are identified and no afforestation efforts (conversion of grasslands to treed area) will be conducted. A recent query of the database has shown that 0.285 ha of grasslands was included into the harvested landbase of 3,038. ha (approximately 0.001%). This is insignificant.



*Wildlife Mineral Lick*



*Natural Grasslands*

### 3B - SOIL RESOURCES

***Goal: To minimize impact on soil productivity***

---

*Status: Operations are conducted to minimize impacts on soil productivity. Three objectives were developed to demonstrate progress towards improving soil productivity.*

---

1. To aid in the development of site specific forest management, a model to predict site quality (a direct measure of soil productivity) has been developed and requires evaluation and testing to determine its operational use (to be completed by 2005).
2. A Coarse Woody Debris (CWD) survey has been conducted during the summer of 2001 for the first time to determine the amount of CWD remaining after harvest. Some pre-harvesting data has also been collected. CWD is an important contributor of nutrients to the soil, and contributes positively to soil productivity. Over the next few years the results of pre and post harvesting levels of CWD will be compared to determine if post-harvest levels are sufficient. Below is a brief summary of the post harvest surveys conducted during the summer of 2001. (see also Criteria 4A on page 23)

Area	Types of CWD	Volume
Pure conifer (90% +) sites	Standing dead, undersized stems, rotten logs	60 m <sup>3</sup> /ha of CWD left on site.
Mixwood sites – aspen harvested	Branches, older rotten logs, live and dead standing.	45 m <sup>3</sup> /ha of CWD left on site.
Mixwood sites – aspen not harvested	Old rotten logs, undersized pieces, branches.	105 m <sup>3</sup> /ha of CWD left on site.

3. Harvested sites are monitored so as not to exceed Forest Soil Conservation Guidelines of 2% of the block area in Ruts and 5% in Roads. Ruts are monitored during on site visits and operations are shut down during non-frost periods if rutting occurs. Inspections from 2000 have shown that operations are being conducted to minimize rutting. Road length allowances are indicated on all block maps and measured to ensure that it is not exceeded. In all cases, the 5% road allowance criteria has been maintained with the exception of a few small blocks.

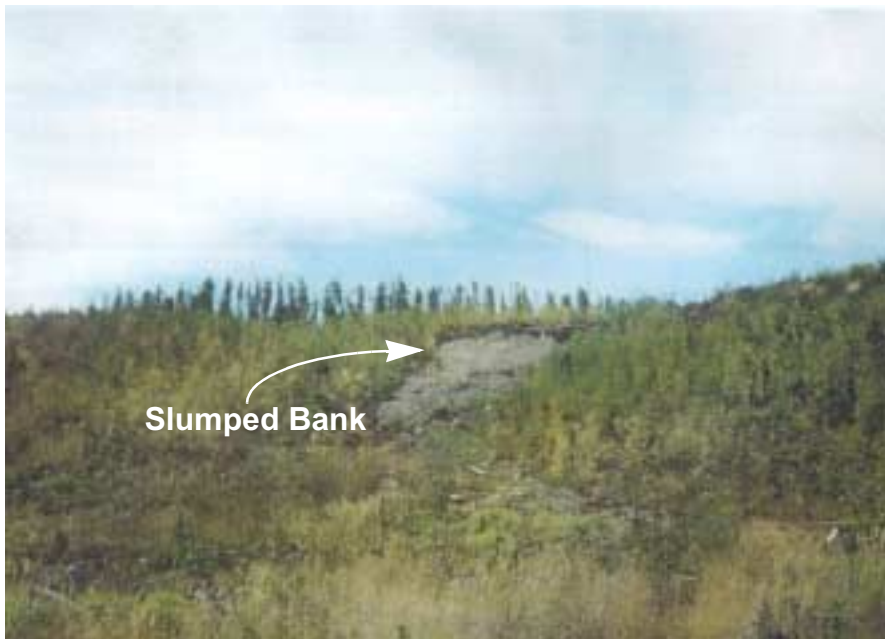
## ***Goal: To minimize Soil Erosion***

---

***Status:*** Two objectives relating to achieving zero slumping events on road and harvested areas were developed. Results from 2001 inspections indicate that roads and harvested areas are not causing significant erosion problems, as only 1 minor slump in a harvested area has occurred (pictured below).

---

1. Annual detailed road inspections are conducted and then tracked in a database that schedules any repairs required. A slump on the Wapiti haul road along the banks of the Wapiti River is presently stable and is being monitored.
2. All harvested areas are inspected aerially for clearance about 3 years after harvesting. One area with a slump was found that did not appear to be triggered by water (See the photograph below). A qualified professional has been consulted, has visited the site and mitigative plans are being developed.



Bank slumps occur due to various factors

## 3C - WATER RESOURCES

### *Goal: To conserve water quality and quantity*

---

*Status: Objectives have been developed to address stream siltation, watercourse buffers and protecting watercourses from herbicide excursions.*

---

To assess whether road construction has an effect on stream siltation, a sampling program is being developed for 2002; results will be reported next year. Any siltation events found during annual road maintenance inspections are tracked and mitigative efforts are scheduled.

All permanent streams receive a 30 or 60 meter no-harvest buffer depending on stream size. These areas are removed from the Annual Allowable Cut calculation as permanent deletions. Smaller, intermittent streams also receive buffers depending on the characteristics of the watercourse. The buffer ranges from a 5 meter machine free zone to a 30 meter buffer of vegetation and trees. Topography, stream type and stream side vegetation play a role in this decision.



The left-center area of this photograph illustrates a 30 meter buffer running parallel to the stream.

- The common practice is to harvest along buffers and sensitive sites during daylight hours to minimize excursions

No buffer excursions resulting in the loss of timber within the buffer occurred this past logging season. One instance of a machine entering the buffer zone and walking across a stream occurred, but no environmental damage or tree harvesting took place (see the "Summary" on page 39 for additional information).

During our herbicide aerial spray program, all creeks with a buffer are ribboned with "bags" to alert the pilots of the stream and avoid spraying in these areas. There have been no excursions of herbicides into watercourses since our aerial spray program began in 1999.

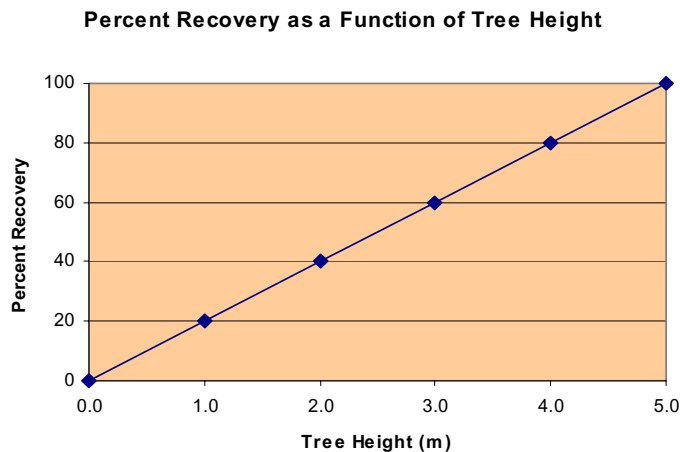
**Goal: To minimize the effect of forest cover removal on the water cycle (water yield).**

---

**Status:** Current harvesting plans meet the model objectives regarding ECA (see below). Further research of ECS and hydrological recovery is ongoing.

---

Water yield is affected by vegetation growth removal. Water yield generally increases after timber harvest through a reduction in transpiration and precipitation interception losses.



Water yield increases can be directly modeled, but Equivalent Clear cut Area (ECA) is often used as a surrogate. ECA is a primary factor to be considered when evaluating the potential effect of historic and proposed forest harvesting on water yield. ECA is usually expressed as a percent of watershed area. The index (hydrological recovery) takes into account the initial percentage of crown removal and the recovery through regrowth of vegetation since the initial disturbance. The graph illustrates

Hydrological Recovery which refers to the return of the hydrology of an area to pre-disturbance conditions by the regenerating stand growth.

Watersheds are considered important areas to manage due to their function of regulating runoff rate and volume. Watershed areas above the 'H60' (the elevation above which 60% of the watershed lies) are considered as the source area for major snowmelt peak flows. Removal of the forest canopy also affects snow accumulation and melt processes, often resulting in an increase in snowpack accumulation and melt rates, thereby increasing runoff rate and volume.

- Canfor's management is to harvest between 20-40% of the watershed area above the H60 to minimize the impact of harvesting in the source area. Previous practices allowed up to 50% removal of a watershed by area and volume.

Current harvesting plans are compared to the developed model to ensure that objectives are met. Of the 297 watersheds, only two harvested in the 1980s exceeded the ECA target.

## CRITERIA 4 - GLOBAL ECOLOGICAL CYCLES

---

### 4A - WATER CARBON AND NITROGEN CYCLES

***Goal: To minimize disturbances that negatively impact carbon cycles.***

---

***Status:*** It is widely understood that forests and forest soils represent large reservoirs of carbon that have accumulated over thousands of years. Altering the amount of land that is forested has a notable impact on the global carbon cycle. It is important to have the forests continually growing (evergreen). The following initiatives have been undertaken:

---

- Our commitment to reforest the harvested areas within 18 months means that the trees are in the ground sooner and contributing positively to the carbon cycle and keeping the forest evergreen. (see Criteria 2B on page 15)



This photograph illustrates a healthy forest stand of young pine trees which has been recently stand-tended (thinned to provide optimum growing space)

- By managing the losses caused by fire, insects, and blowdown, (see Criteria 2A on page 15) we are better protecting our forests.
- Not only do the trees affect the carbon cycle, but the equipment and technology that is utilized increases the amount of carbon emitted into the atmosphere. It is estimated that the emissions are increasing globally by 0.4% annually.
- Canfor has produced a report that addresses alternate equipment and technology to help reduce carbon emissions. This information is currently being shared with all of our contractors to help encourage them to utilize low CO<sub>2</sub> emission technology.

***Goal: Minimize disturbances that negatively impact the water cycle***

---

*Status: This goal is being managed under critical element 3C - Minimizing the effect of forest cover removal on the water cycle.*

---

Managing the amount of forest cover removed in defined watersheds helps to mitigate negative effects on the water cycle.

***Goal: Minimize negative impacts to the nitrogen cycle***

---

*Status: A study to determine the relationship between site nitrogen and types and abundance of plant species is now completed. The development of forest management activities based on plant species indicator value for site nitrogen levels will be developed by December 31, 2002. The presence of Coarse Woody Debris (CWD) is recognized as important to the nitrogen cycle of soil productivity. A survey of CWD left on harvested sites was conducted this summer.*

---

Coarse and fine woody debris consists of stems, branches, tops, and leaves. The finer the material, the faster it decomposes and provides nutrients to the soil. Coarser material uses up nitrogen near the beginning of the decomposition process; whereas, it adds nitrogen to the soil when more advanced stages of decomposition are reached. The amount of available nitrogen in the soil is a key factor in soil productivity.



This background of this photograph illustrates a variety of snag trees left standing in a cutblock.

The foreground shows Coarse Woody Debris (CWD) that is intentionally left on a cutblock.

Certain plant species play an important role as nitrogen fixers. Many forest floor and understory plant species can provide relatively accurate information on many growth-related site quality factors. Because direct measures of site quality are time consuming and expensive, plant species that convey information about nitrogen offer a cost-effective alternative to intensive site evaluations. Information on site nitrogen will help minimize impacts to nitrogen cycles and allow forest managers to more effectively select practices that maintain productivity.



## 4B - FOREST UTILIZATION AND REJUVENATION

***Goal: Maintain harvest level related to the AAC as defined in the Detailed Forest Management Plan.***

---

***Status:*** Operational harvest plans are checked to determine their level of compliance to the objectives developed within the CSA Sustainable Forest Management Plan (SFMP). These SFMP objectives have been incorporated into the Detailed Forest Management Plan to facilitate the management of all objectives.

---

Targets developed for seral stage, habitat constraints, and others discussed earlier in this report are checked against the operational harvest plans to ensure that the targets are being achieved.

***Goal: To reforest every hectare harvested.***

---

***Status:*** As earlier discussed in Criteria 2B, Canfor is committed to prompt reforestation of every hectare harvested in an 18 month timeframe. This timeframe is currently being met with a 98% restocking success rate (as per surveys conducted 4 years later).

---

Reforestation of harvested areas ensures the renewal of the forest. Results from the 2000 regeneration surveys show that the reforestation success rate is roughly 98% (see the Regeneration Survey Results table below).

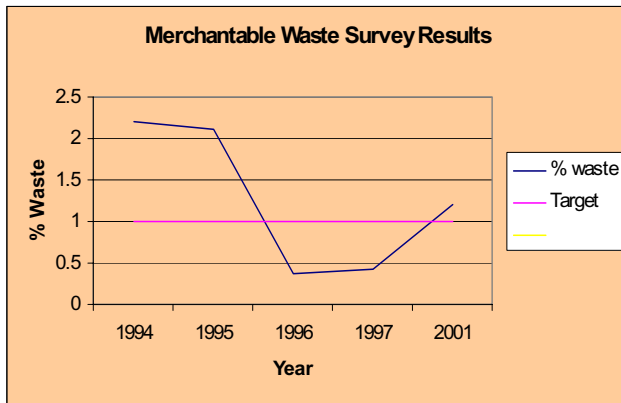
2000 Reforestation Results - Regeneration Surveys				
Number of Cutblocks Surveyed	Area Surveyed (ha)	Number of Cutblocks Satisfactorily Restocked (SR) (establishment standards)	Area of SR (ha)	Percent Successful
334	5,648	316	5,514	97.6%

***Regeneration surveys are completed four years after planting.***

**Goal: Maximize utilization of merchantable wood**

*Status: During harvesting, our target is to have less than 1% merchantable waste left on site. This summer we were slightly over our target at 1.2%. Salvage wood (wood available from the harvesting of pipelines and wellsites from the energy sector activity) continues to be utilized.*

The goal of maximum utilization implies to minimize the loss of waste. Waste minimization is an important objective because more of the tree is used and, consequently, less standing timber needs to be harvested.



2001 survey results were above the target of 1%, therefore waste levels will be monitored and surveys conducted next summer (in contrast to the regular plan of surveying every two years).

Salvage wood on the FMA area is important to be utilized as it assists Canfor to offset the loss of timber created by the withdrawal of landbase utilized by the energy sector. The table below illustrates salvage wood utilization over the past 6 years.

Year (May 1-April 30)	2000/ 2001	1999/ 2000*	1998/ 1999	1997/ 1998	1996/ 1997	1995/ 1996
Amount of wood (m <sup>3</sup> )	14,480	25,166	10,277	11,494	8,044	14,397
*Volume indicated is higher than average due to the removal of forest cover for the Alliance pipeline project in the FMA area.						

## 4C - MAINTENANCE OF FOREST LANDBASE

### *Goal: Maintain forests on the landbase*

---

*Status: Three objectives have been developed to aid in maintaining forests on the landbase.*

---

Some of the ways in which forests are maintained on the landbase are the same ways under Criteria 3A in which the goal was to minimize loss of landbase (i.e. minimize road construction, and promotion of shared access).

1. Canfor helps to minimize the loss of forests on the landbase by managing the amount of permanent roads they construct. Canfor can not control the amount of landbase lost to other industrial activities, however, we can work with other industries to promote shared access.
2. Maintenance of Seral Stages (age groups) as discussed under Criteria 1A (see page 8) also contributes to maintaining forests on the landbase.
3. All low productive yield groups (typically wet black spruce sites) are excluded from the Annual Allowable Cut calculation. During harvest planning, such sites within a cutunit are designated as no-harvest zones, thus leaving forests on the landbase.

**Goal: Productive lands are restored to productive status (excludes cutunits)**

---

**Status:** Two objectives have been developed to aid in the return of previously productive land to productive status.

---

1. Canfor has been working with the Alberta Sustainable Resource Development to identify those areas withdrawn for oil and gas activity that are no longer required. These are reclaimed and added back into the FMA area compatible with regulations. The concern with most of these areas is that they are currently reclaimed with grass or other vegetative cover, which conflicts with seedling establishment. From a forestry perspective, it would be more efficient to bring those lands back into productive status, providing the site is reclaimed to allow for seedling establishment. The table below illustrates the number of wellsites reforested during the period of 1999 to 2001.

Previously Productive Area Reforested	
Year	Number of Wellsites Planted
1999	5
2000	0
2001	7



This oil rig lease is located within a forested area. Timber from this area was harvested when the lease was created and it will be reforested when the lease site is no longer needed for oil and/or gas production

2. Burnt areas within the FMA area are also reforested to ensure they return to productive status. A report of burned area is received and tracked in the Fire Control Plan. There have been a total of 178 fires during the last 15 years (1986-2000) impacting 187.4 hectares. A total of 79 hectares of the burned area has been reforested. 59 hectares were within existing harvested areas and required reforestation to meet legal requirements. 20 hectares resulting from a pipeline fire has been reforested and is being tracked separately from those areas that were burned within our harvested areas.

## CRITERIA 5 - BENEFITS TO SOCIETY

---

### 5A - SUSTAINABLE HARVEST LEVELS

***Goal: Maintain sustainable harvest levels on the FMA area.***

---

***Status: The Annual Allowable Cut (AAC) has been undercut for the past three cut control periods as the table below indicates:***

---

***Five-Year 'Cut Control Period' Table***

Cut Control Period	Harvested (m <sup>3</sup> )	AAC (m <sup>3</sup> )	Variance (m <sup>3</sup> )	Variance (%)
1988 - 1992	3,080,603	3,354,500	273,897	-8
1993 - 1997	3,142,717	3,650,000	507,283	-14
1998 - 2002	3,283,847	3,650,000	366,153	-10
<b>Total</b>	<b>9,507,167</b>	<b>10,654,500</b>	<b>1,147,333</b>	

The proposed AAC (effective 2001) for the FMA area is 640,000 m<sup>3</sup>/year for coniferous timber and 473,000 m<sup>3</sup>/year for deciduous timber. The table above is based on an AAC of 730,000 m<sup>3</sup>/year (with the exception of years 2001 and 2002).

The Detailed Forest Management Plan calculates an AAC that meets the long run sustained yield average (the amount of timber that can grow in a given year on the allocated landbase). The harvest rate can not exceed that volume over a 5 year cut control period. Companies can be undercut as indicated by a negative variance, however cannot exceed a 5% overcut (positive variance).

## 5B - COMMUNITY SHARED BENEFITS

***Goal: Local Communities and contractors have the opportunity to share in benefits such as jobs, contracts and services***

---

***Status:*** *The contribution made to the local community will be maintained in relation to the prevailing economic climate. Canfor hires predominately local contractors, as long as they are competitive and competent in providing the required product.*

---

Canfor contributes to the local economy in the form of wages and benefits, property taxes, purchases of goods and services and community support (see the table below).

The large difference in community contributions between 1999 and 2000 is attributable to the amount paid out to the provincial government in stumpage fees (timber dues). Stumpage fees are market dependent; when the price of lumber is high, stumpage fees increase, subsequently when lumber prices are low, so are the stumpage fees.

Key Contributions to the Local Community			
Contribution	Amount (\$Millions) 2000	Amount (\$Millions) 1999	Amount (\$Millions) 1998
Property Taxes	0.7	0.6	0.6
Salary, Wages & Benefits	11.6	11.6	10.6
Contract Services Local <sup>1</sup>	24.8	26.8	32.3 (combined <sup>2</sup> )
Contract Services Non-local <sup>1</sup>	6.9	2.3	
Supplies	5.0	4.6	4.6
Energy	2.3	2.2	1.9
Stumpage (provincial government)	2.3	10.9	6.8
Community Donations	0.1	0.1	0.1
<b>Total</b>	<b>53.8</b>	<b>59.1</b>	<b>56.9</b>
<i>Notes:</i>			
1. Canfor's accounting ledger currently does not distinguish between local and non-local contractors. However, an estimate of the local versus the non-local has been determined, based on preliminary data stratification.			
2. Local plus non-local contract services.			

Contract services are divided into local and non-local categories in order to assess the amount of contracted work being awarded to local contractors.

As well, our signed Forest Management Agreement (FMA) with the Province dated May 1999, indicates a commitment that the company must upgrade the sawmill and submit a forestry project in accordance with Section 33 of the agreement. The progress of this commitment is detailed below:

- In the fall of 1998, \$3.2 million was spent on a high speed edger to improve log throughput in the sawmill. In spring 2000, \$22 million was spent on mill modernization. We have also established a partnership with Canadian Gas and Electric to build a Co-Generation energy plant on our site to utilize wood residue (bark, waste wood, etc.) that is currently burnt in our incinerator. Construction has begun and completion is expected by November 30, 2002. The Co-Generation plant will eliminate the need for the Olivine Incinerator currently in use to burn wood residue from the Grande Prairie mill and from the teepee burner in Hines Creek. These projects have been submitted to the Minister as fulfillment of Section 33.



Grande Prairie mill site showing the current Olivine Incinerator soon to be eliminated with the construction of the new Co-generation plant

## 5C - FOREST BENEFITS TO PUBLIC

***Goal: Maintain the opportunity for others to use the forest for market and non-market goods.***

---

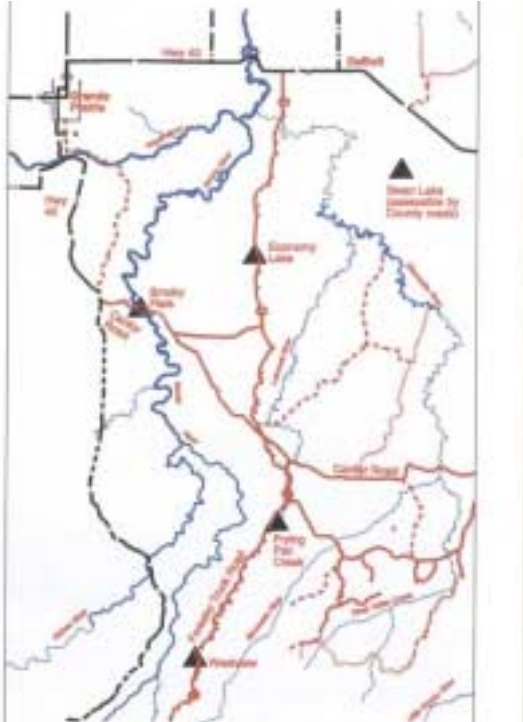
***Status: The forest is currently managed for other users beside Canfor and the energy sector.***

---

The following are examples of ways the forest is managed for other users:

- As part of our Forest Management Agreement, 0.5% of the AAC is made available for local use through the Local Timber Permit (LTP) program . In addition, up to 10,000 m<sup>3</sup> of wood is made available through the Community Timber Use (CTU) program. Both these programs are administered through the Alberta Government and is subject to government regulations (for more information, contact the local Lands and Forest Division).
- Current demand for community timber and local use is met by the Lands and Forest Division with timber available outside of the FMA. During the past few years, an average of two Permits per year were issued for local timber within the FMA totaling 150 m<sup>3</sup>/year (equivalent to 0.04% of the current AAC of 640,000 m<sup>3</sup>/year).
- There is a need to fully understand the current and future recreational use of the FMA area. Within 5 years of the approval of the DFMP, a recreational assessment will be completed.
- Canfor currently manages 4 campgrounds within the FMA area and 1 campground outside the FMA area (Swan Lake – near Valleyview off Hwy 43)(See the map on page 33 for campground locations). A caretaker is hired annually to patrol the sites, keep them clean and ensure a reasonable supply of firewood is available. These campsites are currently provided free of charge. A brochure highlighting our campsites has been produced and is distributed locally to the Tourism center, Rotary Club city tours (during summer months), Muskoseepi Park and at the Canfor Administration office.
- Trappers and outfitters operating in the FMA area are affected by our harvesting operations. We communicate our plans to both groups either through direct communication (trappers) or by sending out our 5 year general development plan maps (outfitters). Both groups get personal invitations to our Forestry open house in which our harvesting plans are available for input and discussion.





The map to the left shows the name and locations of the 5 campgrounds Canfor manages for public use



Canfor sponsored picnic at McLeod Flats (previously Smoky Flats) campground

---

***Goal: To improve the value of the raw timber material from the FMA.***

---

***Status:*** Through the sawmill upgrades discussed in criteria 5B (see page 30), lumber recovery has been increased by 14%.

---

The increase in lumber recovery achieved by the recent sawmill upgrades means the same volume of logs going through the mill produces 14% more product. This is a significant improvement in the value of the raw logs.

## CRITERIA 6 - SOCIETY'S RESPONSIBILITY FOR SUSTAINABLE DEVELOPMENT

---

### 6A - FOREST AND SOCIAL VALUES

***Goal: To be responsive to the social values identified by the FMAC and other publics.***

---

***Status:*** The Forest Management Advisory Committee (FMAC) has been active since 1995 and instrumental in the development of the goals and objectives for the Sustainable Forest Management Plan for CSA certification. These objectives were incorporated into the Detailed Forest Management Plan.

---

- All concerns raised at the meetings are tracked in an “Issues List” which is reviewed annually to ensure we are meeting our commitments. This issue list was included into our Detailed Forest Management Plan.
- All public concerns received at the office via written letters or phone calls are tracked in our incident tracking database to ensure that actions are completed and followed up on.
- Over the past year (May 01/00 to April 30/01) approximately 20 comments have been received from the public either through phone calls or letters. Action items are documented to ensure that follow up is completed on each comment as discussed under this criteria. Comments range from compliments of the campgrounds to complaints on the log haul. Below is a description of some of the comments received to date:
  - Six comments related to the log haul (dust, speed, jake brake noise),
  - Three comments from trappers regarding compensation, and
  - Four comments relating to herbicide use.

### 6B - ABORIGINAL AND TREATY RIGHTS

***Goal: Avoid infringement of treaty and aboriginal rights***

---

***Status:*** Canfor is providing opportunities for and responding to Aboriginal input.

---

The Sturgeon Lake Cree Nation and the Metis Nation Zone 6 are both active members of our public advisory committee. This provides an avenue for input into our management and operational plans. In addition meetings with both groups have been held to help develop a working relationship.

## 6C - UNIQUE ABORIGINAL NEEDS

### ***Goal: Effective consultation with Aboriginals***

---

***Status:*** In addition to the FMAC process, we communicate our 5 year harvesting plan to all trappers to obtain their input regarding trapping areas. This is an area that we are continually working on.

---

We also continue to have separate meetings with Aboriginal groups to discuss specific topics of working together.

### ***Goal: To be open to the development of partnerships and working arrangements with Aboriginals that are based on good, sound business practices and are mutually beneficial.***

---

***Status:*** A 5 year business plan with Sturgeon Lake Cree Nation is being developed through a co-operative process. In addition, Sturgeon Lake has been employed by Canfor over the past few years performing mechanical stand tending operations as well as being involved with backpack herbicide application program. The Sturgeon Lake Resources crew are also trained as a fire response crew and are on standby when working in the FMA area.

---

This partnership process was initiated with the Sturgeon Lake Cree Nation. Separate discussions have also been initiated with Metis Nation Zone 6.

### ***Goal: Respect special cultural and historic sites***

---

***Status:*** Canfor has entered into an agreement with Western Heritage Resource Ltd. (WHR) to develop a heritage resources model to predict the sites in the FMA area with high potential for archeological finds (to be in place May 2002).

---

An archaeologist conducts annual field inspections of high potential sites and assists Canfor in preparing written reports in compliance with the Historical Resource Act. A letter has been forwarded to the ACD (Alberta Community Development) outlining the model development process to be used. ACD has confirmed they are in agreement with our approach and feel the intent of the Historical Resource Act is being met. Once sites are identified, harvesting practices may have to be modified, and Canfor will follow the recommendations of the archeologist.

## 6D - LOCAL STAKEHOLDER INPUT

***Goal: To proactively involve directly affected and local interested parties in the development of the decision making process***

---

***Status: The public advisory group (FMAC) that has been active since 1995 and is our way of involving local stakeholders in the decision making process.***

---

This group has a terms of reference document that defines how the group will operate. These terms of reference are reviewed annually by the FMAC to ensure they remain current.

## 6E - INFORMATION FLOW TO THE PUBLIC

***Goal: To provide information regarding forest management practices to the public.***

---

***Status: Canfor has committed to a number of initiatives to keep the public informed of our management practices. Some of these are listed below:***

---

- The development of an Annual Public Report is a commitment made to meet the goal of communicating Canfor's practices to the public. The Annual Public Report will be a 4-6 page summary of operations and will function as an information handout for the general public.
- We provide copies of the Annual Operating Plan and the Sustainable Forest Management Plan to the local public libraries in Grande Prairie, DeBolt, Valleyview, Spirit River and Grande Cache.
- We participate in a number of educational opportunities:
  1. Attend trade shows (forestry show, ag-show)
  2. Work with Grande Prairie Regional College to mentor students in the forestry and administrative assistant programs.
  3. Co-ordinate and participate in the National Forestry Week "Walk through the Forest" event with kids from grades 4-6. This is an outdoor venue of 6 stations where students learn about tree identification, wildlife, insect infestations & tree diseases, tree measurements, planting of trees, logging and forest products. This event has been running since 1990 and is very popular with schools.

4. Field trips for the FMAC to look at management practices in the field.
5. Support of the Grande Prairie and Area Forest Educator. The Forest Educator has a teacher background and has attended FEESA (Friends of Environmental Education Society Association) workshops to learn about Forestry. As well she has familiarized herself with local mills and forest practices. She uses bias-balanced material from FEESA and does presentations to classrooms (about 140 classrooms a year) as well as takes students on hikes to experience the forest with hands-on learning. The Forest Educator also runs a hands-on Envirothon event for high school kids to learn about forestry, soils, water, oil & gas and wildlife.
6. Assisting the Forest Educator by having foresters attend classroom visits and field trips to share our knowledge.



***Supporting Envirothon - a hands on learning competition for high school students***

***A field trip with our public advisory group and forest educator to look at stream crossings and bull trout***



***One of Canfor's staff with a school group teaching them about tree measurements and identification***

***Goal: To obtain public input on forest management practices using an open, transparent and accountable process.***

---

*Status: The company maintains a number of public input opportunities:*

---

- An active FMAC advisory group
- Annual Forestry Open House in Grande Prairie, Valleyview and Grande Cache in the spring to discuss the harvesting plans with the public and listen to any comments/concerns regarding the plans.
- Annual trapper and outfitter notifications of our harvesting plans.
- Every written letter and telephone call received is responded to and tracked in an incident tracking system database. These are reviewed annually to ensure follow-up and to identify any trends that may require further attention (see “6a - Forest and Social Values” on page 34).

## **6F - ADAPTIVE MANAGEMENT**

***Goal: To use adaptive management to improve the knowledge regarding ecological processes and the natural historic and current disturbance patterns for each ecosystem, and to apply this knowledge to management of the resources within the FMA area.***

---

*Status: In order to determine the degree to which our field performance aligns with our management plan objectives, Canfor is involved in a number of research programs.*

---

On-going research is important as it validates (or not) any assumptions we may have regarding how a forest ecosystem responds to different treatments. Approximately \$2 million dollars is spent annually on various research initiatives within the FMA area.

Some significant research projects undertaken during the 2000/2001 season include the following:

- Caribou research initiatives through the West Central Caribou Standing Committee. These initiatives include:
  - Wolf predation studies,
  - Range monitoring (collaring of caribou),
  - Population dynamics,
  - Cumulative effects of resource development, and
  - Linear recovery (accelerating the reforestation of seismic lines in caribou areas).

- Grizzly bear research - including:
  - Determining the response of landscape changes on grizzly bears, and
  - Determining ranges of grizzly bears.
- The following reports were developed based on analysis of 1,400 inventory plots and through other available information:
  - Forest Productivity Evaluation (site quality),
  - Plant Resource Evaluation (plant occurrence on an ecosite level as well as rare plant modeling),
  - Ecosite and Ecosite Evaluation (ecological classification of stands on an FMA basis), and
  - Soil Productivity Evaluation (analysis of soil characteristics).

## Summary

Canfor's performance in a variety of aspects is constantly being assessed through an audit process. Over the past year, we have undergone the following audits:

- A government (Lands and Forest Division) audit in August 2000,
- An independent third party audit on our certification systems (both ISO 14001 and CSA) in January 2001, and
- An internal audit in June 2001.

A number of minor non-conformances to our systems were identified. These included:

- The government audit reported on five minor contraventions,
- The third party audit reported on five minor non conformances and two opportunities for improvement noted, and
- The internal audit reported on 16 minor non conformances and 12 opportunities for improvement noted.

The audit results presented above clearly demonstrate how internal audits can identify minor issues needing attention. This process helps us better prepare for the external audits which report on more significant items.

During the course of field operations (within the timber year - May 1/00 -April 30/01), Canfor received one penalty and 4 written warnings from the Lands and Forest Division:

- A penalty of \$500 for a trespass by a feller-buncher into a creek buffer. No trees were harvested and no environmental damage occur,
- A written warning for a feller-buncher operator who began to harvest some trees in a second cut as a result of old ribbon markings,
- A written warning for a feller-buncher operator who entered a separate cut unit (scheduled to be harvested the following year) and harvested about 1 hectare,
- A written warning for installing a creek crossing in an unapproved location, and
- A written warning for installing an unapproved creek crossing type.

## Additional Information

More detailed information is contained in the Detailed Forest Management Plan available at the Canfor office or in the CSA SFMP plan available in local libraries and the Canfor office. Please contact Chris Kreibom Quinn at 780-538-7738 or Dwight Weeks at 780-538-7749 should you have any questions.

