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5.0 FOREST MANAGEMENT PLANNING

Corner Brook Pulp and Paper Woodlands is committed to achieving and maintaining a sustained timber yield from the productive forest land under its jurisdiction. Using **sustainable forest management** guidelines, and information on available wood supply, annual and ***Five-Year Operating Plans*** are developed to identify forest management activities on Company limits.

5.1 Planning Framework

5.1.1 Sustainable Forest Management Planning

The **Newfoundland Forest Service** produces a ***20-Year Forestry Development Plan***, which outlines sustainable and **adaptive ecosystem management** strategies for the whole province. This plan will be revised at least every 5 years.

5.1.2 Five-Year Operating Plan

The ***Five-Year Operating Plan*** is a required planning document submitted to the Newfoundland Forest Service and the Department of Environment for each **Forest Management District**. This plan has a detailed format that identifies where, when, and how forest management activities will occur within a particular District.

Five-Year Operating Plans are prepared by each licensee in each Forest Management District and are developed following a public consultation process (Figure 5-1) that invites input from all stakeholders, including the general public.

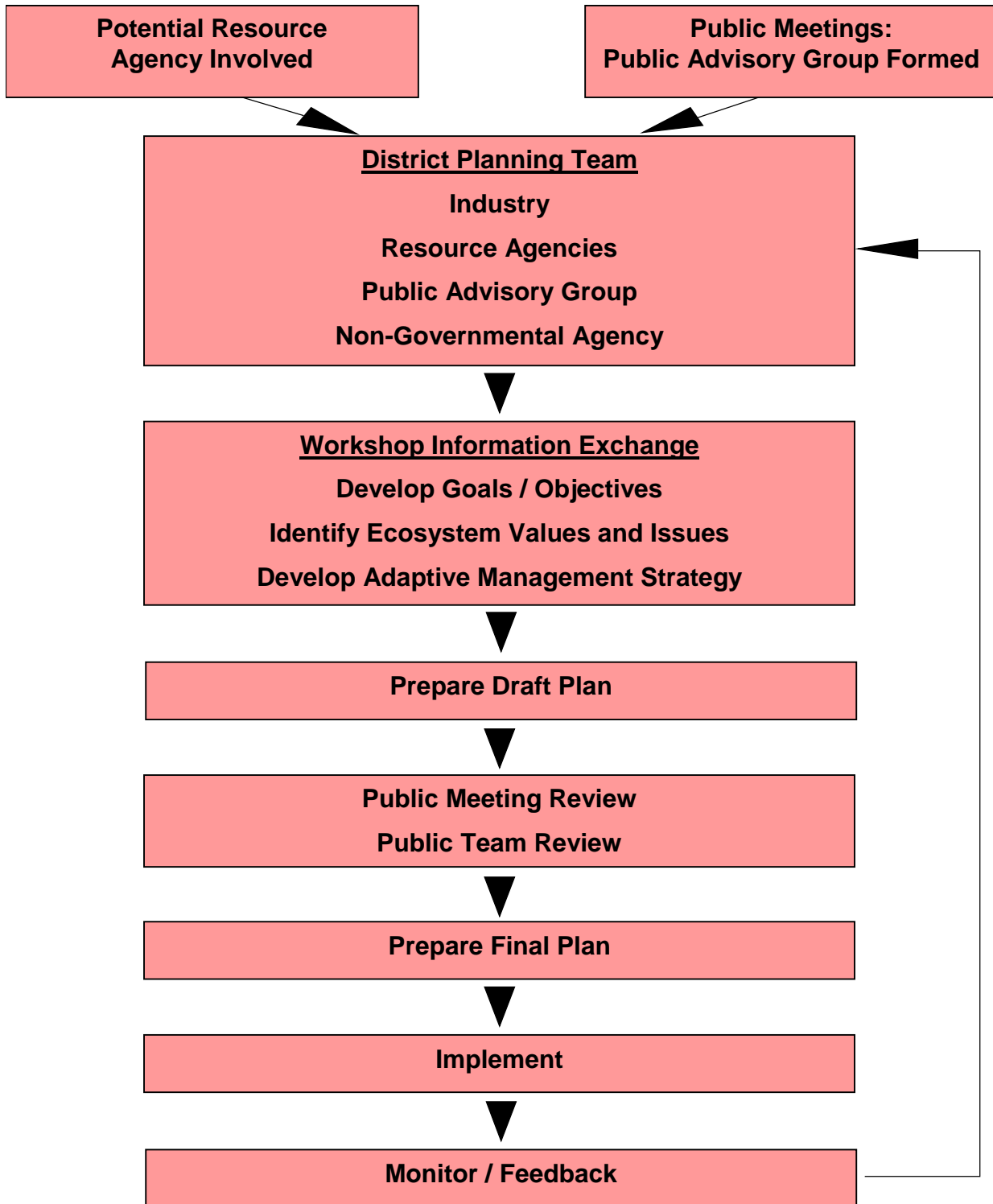


Figure 5-1. Framework for public involvement in the Five-Year Operating Plan.

5.1.3 Annual Operating Plans

The **Forestry Act** (1990) requires submission of **Annual Operating Plans** to the Newfoundland Forest Service and the Department of Environment, prior to Oct 15th, in advance of harvesting planned for the coming year. Significant detail is included with respect to wood supply, access road development, planned harvesting, environmental concerns and forest renewal activities. The **Annual Operating Plan** also addresses comments and recommendations from the various government resource agencies and non-governmental agencies, generated during the development of the **Five-Year Operating Plan**.

Copies of **Annual Operating Plans** are sent for review to the following individuals:

- Minister of Natural Resources
- Minister of Environment
- Director of Forest Management
- Eastern and Western Regional Directors of Forestry
- Director of Wildlife
- District Ecosystem Managers

After the **Annual Operating Plans** are approved, the Minister of Natural Resources recommends the issuance of a *Certificate of Managed Land*.

5.1.4 Report of Past Annual Operations

The **Report of Past Annual Operations** is a tabular document which includes digital copies of aerial photographs outlining all past years' forest management activities on Corner Brook Pulp and Paper Woodlands' licensed limits. This report is used internally as well as by the Newfoundland Forest Service to monitor activities and to insure compliance with the **annual allowable cut**.

5.1.5 Approvals and Permits

The Certificate of Managed Land, issued by the Newfoundland Forest Service, is the authorization that allows Corner Brook Pulp and Paper Woodlands to carry out forest management activities on its licensed limits. This authorization does not, however, override the required permits from other government agencies. Examples of permits required in addition to the Certificate of Managed Land can be found in the *EMS Manuals Folder (Legal and Other Requirements)* on the *Woodlands Computer Network*. Permits for forest operations are acquired as per the **Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Level Operations), Nov. 1998**. This document can be seen in Appendix 3.

5.2 Wood Supply Planning

5.2.1 Geographic Information System (GIS)

Forest management responsibilities require accurate tracking of vast amounts of information related to Corner Brook Pulp and Paper Woodlands' timber limits. The base information used for forest management planning is the *Newfoundland Forest Inventory*, made available to the Company in digital format and stored on the Company's **Geographic Information System (GIS)**. The GIS is a computer-based mapping and information system used to link individual geographic features (e.g. forest **stands**, lakes, roads) to specific descriptive tabular data (e.g. tree species, age, volume).

5.2.2 Annual Allowable Cut

The **Annual Allowable Cut (AAC)** is the maximum volume of wood that can be harvested annually from an area on a sustained-yield basis. The AAC is essentially equal to one-half the volume of wood that grows from the productive forest base in one year, with allowances for natural losses (e.g. fire, insects) and deductions due to management constraints. The annual allowable cut is calculated on a five-year basis for each Forest Management District and averaged over the five-year period.

Each of the six Forest Management Districts in which the Company operates has its own AAC level as determined by the Newfoundland Forest Service. These volume levels are used as the basis for developing harvesting plans within each area. The Company monitors the delivered volumes from the various **operating areas** to ensure that harvesting levels do not exceed the AAC.

The Newfoundland Forest Service in conjunction with Corner Brook Pulp and Paper Woodlands, uses computer simulation models to analyze the future wood supply for the mill, and assigns an AAC for each license holder. These computer models project forest conditions 160 years in the future based on the current state of the forest **stand development curves** derived from measurements taken in the forest, and inputs of future harvest and **silviculture** treatments. This projection is reviewed every 5 years and a revised sustainable harvesting level is determined.

5.3 Harvest Planning

5.3.1 Operating Areas

Within Company timber limits, operating areas are established to organize access development, harvesting and silvicultural activities. Criteria for the establishment of operating areas include:

1. Concentrations of mature forest stands where harvesting is projected to occur.
2. Logical boundaries based on natural and man-made geographical features such as water bodies, major water drainages, and occasionally roads and hydro corridors.

3. Road networks, comprised of all-weather or main seasonal roads, to access the timber resource.

The operating area size is variable depending on a variety of factors such as the number and size of individual operations, available timber volumes and variability of the forest landscape.

5.3.2 Harvest Area Shape and Size

Groupings and patterns of existing vegetation can influence the shape and size of harvest areas (Figure 5-2), reflecting concepts of **ecosystem-based management**, where harvest blocks mimic natural landscape patterns and disturbances. The harvest **cutblock** shape and size will vary, therefore, based on forest type, stand size and shape, natural features, aesthetics, wildlife habitat considerations and other forest users. Other factors influencing shape and size of harvest areas include season of harvest, volume of available wood, access constraints, and insect and disease damage.



Figure 5-2. Changes in vegetation types influence shape and size of harvest areas.

5.3.3 Harvest Season

The season of harvest is largely determined by two factors: the need for a continuous supply of wood for the mill; and accessibility of harvesting locations. Some locations are readily or economically accessed only in winter due to terrain and conditions. Other areas can be accessed year-round and are generally harvested in the frost-free period. This ability to alternate locations facilitates a continuous supply of timber to the mill and helps to distribute the harvest across the landscape.

5.3.4 Operational Timber Cruise

In planning future harvesting operations, Corner Brook Pulp and Paper Woodlands requires detailed information of existing forest conditions. This detailed information is

obtained through operational timber cruising. Each year specific locations are identified for a timber cruise and Planning and Development staff collects the required information, which can include the following:

- Stem Count
- Tree Species Composition
- Age
- Diameter
- Height
- Soil Texture and Erodability
- Slope
- Ground Conditions
- Insect Damage
- Dead / Blowdown

This information is used to update and supplement detailed forest inventory information, such as timber volumes, and is subsequently used to develop harvesting plans.

5.3.5 Intensive Pre-Harvest Planning

Areas on sensitive sites, steep slopes, or where specific non-timber values are a concern require additional planning, prior to the start of harvesting operations. When such areas are identified, Planning and Development staff conduct a ground survey of the site and prepare a detailed ***Pre-Harvest Plan***. This plan prescribes measures to address the specific concerns of the site. Such measures may include leave areas for wildlife, detailed location of extraction routes, recommended equipment to be used or avoided on the site, and other measures as required.

Before starting harvesting operations on these sites, contractors are required to meet with Planning and Operations staff to complete a ***Harvest Pre-Work Form***. During this meeting, contractors are provided with operational tools such as buffer maps, operational maps, and air photos, while significant environmental aspects and special considerations are reviewed. To ensure adherence to prescribed operating measures, activities are monitored by the District Operations Superintendent.

When requested by the Newfoundland Forest Service, Corner Brook Pulp and Paper Woodlands will submit the ***Pre-Harvest Plan***. Legislation regarding the need for preplanning can be found in the ***Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Level Operations), Nov. 1998***. This document can be viewed in Appendix 3.

5.3.6 Environmental Guidelines

Planned harvesting activities must adhere to legislated environmental guidelines found in the ***Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Level Operations), Nov. 1998***, which can be viewed in Appendix 3.

5.4 Integration of Non-Timber Resources

5.4.1 Commitment

Corner Brook Pulp and Paper Woodlands is committed to integrating non-timber resource values into forest management planning and field activities on Company timber limits. This commitment is reflected in Corner Brook Pulp and Paper Woodlands' **Forest and Environment Policy** (Section 2.2 of this Manual) and is further reflected in the process for public participation in the development of the **Five-Year Operating Plan**, and the CSA-Z809-02 Standard for Sustainable Forest Management.

Corner Brook Pulp and Paper Woodlands is a partner in Wildlife Habitat Canada's Forest Biodiversity Program. This program is designed to assist forest companies in developing innovative strategies to conserve **biodiversity** in the forests they manage. Conservation of biological diversity is recognized as the key component in sustaining a full range of both timber and non-timber values in forest ecosystems. Corner Brook Pulp and Paper Woodlands also provides the Model Forest of Newfoundland and Labrador with direct financial and indirect support for research into non-timber resources. Finally, the Company is a member of the Provincial Inventory Working Group, whose mandate includes the addition of non-timber resource values in the Provincial Forest Inventory. All these initiatives strengthen Corner Brook Pulp and Paper Woodlands' ability to manage for non-timber resources.

5.4.2 Water Resources - Riparian Zones

Riparian zones, which occur adjacent to watercourses, contribute significantly to the biodiversity of the boreal forest and hold a variety of important values (Figure 5-3). For the purpose of this document, watercourses or waterbodies include rivers, streams, lakes, and ponds.

The protection and management of riparian zones is an important component of forest management planning. Four key resource values that require special consideration in the development and implementation of forest management plans are:

- Water quality
- Fish Habitat
- Wildlife habitat
- Aesthetics



Figure 5-3. Riparian zone.

A primary management tool employed by Corner Brook Pulp and Paper Woodlands to protect these values is the maintenance of treed buffers adjacent to watercourses. A treed buffer encompasses all woody vegetation, from the high water mark of the watercourse. Treed buffers serve a variety of functions including:

- Filtration of sediment and organic matter originating from adjacent disturbed land
- Maintenance of water temperature in rivers and streams
- Maintenance of wildlife habitat and wildlife travel corridors
- Maintenance of aesthetic quality

When developing forest management plans, a balance must be struck to maintain important identified features while permitting the extraction of the timber resource. Since the value of a specific riparian zone varies between sites, a single guideline for buffer retention to address all values and situations is not possible or desirable. A minimum 20-meter buffer must be retained on all waterbodies, however site-specific factors such as season of harvest, slope, soils, timber health (insect and disease damage), and stand age must also be considered. Therefore, each watercourse must be evaluated on its own merit when establishing a buffer prescription.

The retention of protective buffers adjacent to watercourses is normal practice. However, harvesting within these zones may be prescribed under site-specific conditions. When harvesting is prescribed within a protective buffer zone, specific harvesting criteria are developed in conjunction with the Newfoundland Forest Service, to ensure that water quality, fish, wildlife, and aesthetic values are maintained.

5.4.3 Water Resources - Protected Water Supply Areas

Corner Brook Pulp and Paper Woodlands recognizes that protected water supply areas (PWSA) provide the public with an adequate quantity of good quality water on a permanent basis. Forestry operations within PWSA are strictly regulated and monitored to ensure that the integrity of water supply and quality is not threatened or compromised in the fulfillment of current or future demands of the forests.

Any forestry activity within protected **watershed** areas is subject to the government environmental guidelines pertaining to that particular activity, whether it be harvesting, silviculture, access road construction, etc. Similar permits and approvals also apply and must be obtained before the commencement of forestry operations within the protected watershed area. Environmental guidelines specific to PWSA as they relate to planning, road construction, stream crossings, harvesting and **silviculture** can be found in the *Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Level Operations), Nov. 1998*, which can be viewed in Appendix 3. The following table shows the appropriate buffer zone widths to use in a PWSA.

Table 5-1. Width of buffer zones in Protected Water Supply Areas.

WATERBODY	MINIMUM WIDTH OF BUFFER ZONE
Intake pond, lake, or reservoir	150 meters
River intake	150 meters for 1 km upstream, 100 meters downstream
Main river channel	75 meters
Major tributaries, lakes, or ponds	50 meters
Other waterbodies	30 meters

Forestry operations within PWSA are periodically checked by the Water Resources Management Division of the Department of Environment, to ensure environmental protection guideline compliance. If issues relating to water-quality impairment arise, the Company may be required to carry out water-quality monitoring and to implement appropriate mitigative measures.

When forestry operations cease in a PWSA an abandonment plan may be necessary to help mitigate potential post-harvest **environmental impacts**. Legislation pertaining to these scenarios can be found in the *Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Level Operations), Nov 1998*, which can be viewed in Appendix 3.

5.4.4 Wildlife Habitat

Wildlife resources are a fundamental part of our Newfoundland and Labrador lifestyle and environment. To sustain the variety of wildlife species in the forest, a mosaic of forest types, age classes, sizes and shapes should be available through time. Corner Brook Pulp and Paper Woodlands is committed to maintaining the diversity of wildlife habitats capable

of supporting resident and migratory wildlife species. At least twenty-two species of mammals, more than sixty species of birds, four species of amphibians, and two species of fish make their home in the forests and rivers within Company limits.

Timber harvesting and associated forest management activities influence wildlife in a variety of ways. Species requiring older age classes do not benefit from timber harvesting, whereas species preferring forest openings, edges, and younger forests do. For example, moose, snowshoe hare, and grouse thrive in the early successional stages of a forest after a harvesting operation, while boreal owls require more mature forests. Yet other species are adapted to the interior of the forest and favour large contiguous forest stands.

Corner Brook Pulp and Paper Woodlands cooperates with the Newfoundland Wildlife Division and other wildlife management agencies to ensure that forest operations are carried out in a manner that maintains adequate habitat for all wildlife. Specific Company and government environmental guidelines dealing with moose, caribou, birds of prey, snowshoe hare, fish habitat and more can be found in the ***Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Level Operations)***, Nov. 1998, which can be viewed in Appendix 3.

5.4.5 Aesthetics

Protecting areas to preserve their natural integrity and ecological processes is a significant aspect of forest management planning. The following guidelines assist in maintaining aesthetic quality wherever forest management activities are planned:

1. Treed buffers will be maintained adjacent to watercourses as per the Watercourse Classification and Protected Water Supply Area guidelines described in Table 5-1.
2. In visually sensitive areas, modifications to harvest cutblock design and harvesting practices will be developed. This may include irregularly shaped harvest cutblocks, the retention of residual vegetation and visual buffers along roadways.
3. Roadside buffers will normally be retained along numbered highways. Should it be deemed appropriate to harvest timber immediately adjacent to numbered highways (e.g. due to timber health or blowdown), site specific prescriptions will be developed in conjunction with the Newfoundland Forest Service.



Figure 5-4. Bull moose with velvet on antlers.
(Photo credit: Doug Cook).

5.4.6 Historic Resources

Corner Brook Pulp and Paper Woodlands conducts forest management activities in a manner that respects heritage resource values in compliance with pertinent government legislation. Working with the Historic Resources Division of the Department of Tourism, Culture and Recreation, Corner Brook Pulp and Paper Woodlands protects known historical resources, and complies with mitigative measures identified on site-specific **work permits**. Mitigative measures are specific to the requirements of the particular site and may include selection of harvest blocks, equipment specifications for the various forest management activities, and restriction of harvest to certain time periods.

Specific legislated guidelines can be found in Section 1 of the ***Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Level Operations)***, Nov. 1998, which can be viewed in Appendix 3.

5.4.7 Other Commercial and Multiple Uses

Corner Brook Pulp and Paper Woodlands recognizes that a number of commercial uses of resources occur within its timber lands. These include mineral exploration, mining, eco-tourism, commercial fishing, trapping, and outfitting and guiding. Most of these commercial operations benefit from the roads developed by the Company that are available for use by the public and commercial operations. On occasion, it may be required to control access for the protection of these commercial uses. Where such circumstances occur, the Company will work with the Newfoundland Forest Service to develop an appropriate means of access control.

Mineral Exploration Policy

Corner Brook Pulp and Paper Woodlands recognizes the importance of mineral exploration and will work, to the best interest of all parties involved, with mineral exploration companies planning to operate on Corner Brook Pulp and Paper Woodlands limits. To this end a ***Mineral Exploration Policy*** has been developed, outlining how Corner Brook Pulp and Paper Woodlands handles requests for mineral exploration.

Crown Land Referral Policy

Corner Brook Pulp and Paper Woodlands recognizes that infrastructure for economic development and for recreation will be required as society grows and develops and this may require land from Company timber limits. Corner Brook Pulp and Paper has developed a ***Crown Land Referral Policy*** for answering referrals of **Crown Land Applications** for development on Company timber limits.

Outfitting

Corner Brook Pulp and Paper Woodlands recognizes the importance of outfitting to the economy of Newfoundland and Labrador and the significant employment it creates. Consequently, Corner Brook Pulp and Paper Woodlands has entered into a ***Memorandum of Understanding*** (MOU) with the Newfoundland and Labrador Outfitters Association, to

develop reasonable and mutually acceptable measures to reduce conflicts between wood harvesting and existing outfitting operations. A copy of the MOU can be found on file with the Newfoundland and Labrador Outfitters Association and Corner Brook Pulp and Paper Woodlands.