Department of Forest Resources & Agrifoods

Five - Year Operating Plan

Forest Management District 8
- Exploits Bay -
Crown & Exchange

April 1, 2003 - March 31, 2008

Developed through consultation with
District 8 Stakeholder Planning Team

FOREST MANAGEMENT DISTRICT 8

FIVE YEAR OPERATING PLAN
April 1, 2003 - MARCH 31, 2008

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For: Department of Forest Resources and Agrifoods

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1.0 INTRODUCTION

This is the first five year forest ecosystem management plan to be developed for Forest Management District 8 (Exploits Bay Forest Management District) through direct consultation with a multi stakeholder group. It has been developed over the course of two years through an elaborate consensus building process with all interested stakeholders participating. These stakeholders are listed in Appendix 1a.

This Five Year Operating Plan will present in detail the proposed forest ecosystem management activities that will take place on Crown limits in Management District 8 during the period April 1, 2003 to March 31, 2008. Also presented are the ecosystem management activities that will take place on Corner Brook Pulp and Paper Ltd. (CBPP) tenure and Abitibi Consolidated Company of Canada Ltd. (ACCC) tenure exchanged to Crown in Management District 8. As only five Crown harvesting operations are proposed for company limits within the management district during the next five years, a tenure-specific plan will not be submitted from the Crown's perspective. A 1:250,000 overview map of the district and tenures concerned is detailed in Appendix 1b. A comprehensive area description of the district can be found in the Forest Ecosystem Strategy Document for District 8.

Forest Management District 8, also referred to as the Exploits Bay Management District, is located on the northeast coast of the Island of Newfoundland. It encompasses the geographical area which can generally be defined as that located north of the former Canadian National Railway line (49° latitude) between the Gander River in the east (54° 30' longitude) and Seal Bay in the west (55° 35' longitude). The northern boundary extends into Notre Dame Bay to include Twillingate, New World Island, Change Islands and Exploits Island, along with many other smaller islands (approx. 49° 45' latitude). The boundaries for District 08 were proclaimed on May 18, 1979, under Newfoundland Regulation 72/79, Forest Management Areas Proclamation 1979, Crown Lands Act, Chapter 71. The major communities within the district are primarily located along the coast with population centers around Gander Bay, Twillingate - New World Island, Birchy Bay, Lewisporte, Norris Arm, Botwood and Point Leamington. Total population of the district was estimated to be around 25,000 in 1991.

The forests of the Exploits Bay area are classified as a part of the boreal forest ecozone. Such forests are characterized by closed, even-aged stands of conifers including black and white

spruce, balsam fir and tamarack. Natural disturbance patterns include a high incidence of wild fire, combined with periodic outbreaks of insects and disease and windthrow. Human disturbance has largely been due to man-caused fire over the past century and extensive commercial harvesting since the 1960's. The forests of the Exploits Bay Management District form part of two of the province's ecoregions, which include the Central Newfoundland Forest Ecoregion and the North Shore Forest Ecoregion (see Figure 3, pg 26). The Central Newfoundland Forest Ecoregion has four subregions, but only one is found in District 08 (i.e. North Central Subregion).

This plan describes the proposed management activities designed to provide for the holistic management of the forest ecosystems in District 8. To accomplish this, the District 8 Forest Ecosystem Management Planning Team defined a list of values associated with the forest ecosystems of the district, developed strategies to sustain these values, and adopted measurable indicators to gauge the relative success of the strategies. This approach is described in detail in the District 8 Strategy Document. This plan provides a schedule for harvesting, silviculture treatment and access road programs, and discusses the relationships of these activities on the landscape to all other forest ecosystem values considered by the Planning Team. Further, the plan describes the potential impacts of forest management activities on other values, along with actions designed to mitigate potential impacts, as well as the indicators proposed to be tracked to measure the relative success of proposed management activities in sustaining the values described. Overviews of proposed commercial harvesting areas, silviculture treatment areas and new access road construction are provided in Appendices 2(a)and 3(a)at the back of the report.

The allocation of wood supply follows the guidelines stipulated in the Newfoundland Manual of Forest Management Plan Requirements. The priority of allocation on all tenures is to harvest merchantable damaged stands first, merchantable over mature stands second and merchantable mature stands third. Harvest levels will be maintained within the limits of the Annual Allowable Cuts (AAC's) over the five year period.

All disturbed forest sites will be surveyed to determine the regeneration status, and cut overs will be surveyed to confirm if utilization standards are met.

Domestic cutting blocks are distributed throughout the districts and are quite extensive in size. Some changes are

proposed for fuelwood blocks, to protect the more valuable forest stands for present or future commercial potential.

An extensive silviculture program, averaging 1400 ha per year on Crown tenure, 270 ha per year on CBPP tenure and 50 ha per on ACCC tenure, is proposed for the period 2003 -2008. A minimum of 1425 ha each of site preparation and planting and 275 ha of precommercial thinning is scheduled for Crown tenure, 550 ha each of each of site preparation and planting is scheduled for CBPP tenure, and 50 ha each of each of site preparation and planting is scheduled for ACCC tenure for implementation during the period. In addition, further treatments of site preparation, planting, precommercial thinning, site reclamation, plantation maintenance, red and white pine management, and hardwood silviculture are anticipated on an incremental funding basis. The highest priority is to implement a large site preparation and planting program, intended to increase the productivity of the existing land base. The second silviculture priority will be pre-commercial thinning in young stands to help alleviate imminent wood supply shortages, assist in balancing the forest age class distribution and maximize the annual allowable cut.

The proposed access road program will be maintained into traditional commercial harvesting areas. Also, new networks will be established to access over mature and/or diseased forests of Class III timber. As in the past, the Department will encourage commercial operators to extend on existing road networks, and construct required extraction roads. This approach will be encouraged through timber royalty reductions to the operators concerned. In total 142 kilometers of road construction requiring 23 bridges is planned for the period.

Protection of the forest from fire, insect and disease will remain a priority within the district. Environmental protection will receive increased attention throughout the planning period. The Guidelines for Ecologically Based Forest Management will be followed and strictly adhered to. Compliance efforts will be stepped up to allow for implementation of management actions. District staff will continue to seek input from interest groups including the general public and other resource-use agencies, and attempt to mitigate possible land-use conflicts on an ongoing basis.

Education efforts to promote ecosystem management principles and objectives will be approached from a holistic point of view, and will include district staff, commercial operators, and the general public. This will facilitate management objectives designed to promote sustainability of resources.

Monitoring of proposed activities and actions will occur through a monitoring committee composed of interested stakeholder representatives on the planning team. The committee's role will be to evaluate whether planned goals are being met, identify gaps in the knowledge base, and establish priorities for any corrective actions.

2.0 SUMMARY OF PAST ACTIVITIES: 1998 - 2002

In this section, the major management programs carried out by the Crown, in District 8 from 1998 to 2002, will be summarized and discussed. This will lead into an elaboration of the ecosystem management initiatives proposed to maintain the health of the forest ecosystems concerned, for the period 2003 to 2008.

2.1 Harvesting

The harvesting attributable to the annual allowable cuts for Crown limits, and CBPP and ACCC limits exchanged to Crown in District 8, during the period 1998-2002, is shown Appendix 5a. Although the commercial volume harvested has remained fairly consistent, an emerging trend is evident. The commercial sawlog production during the past five years (1998 -2002) has increased in the district by approximately 40% over the previous five year period (1992-1996). This has occurred as a result of greater utilization of softwood species through the redirection of raw material to the sawlog industry that previously went to the pulp and paper industry. Sawlog production in District 8, and the province as a whole, has risen during the previous period due to increased market demand spurred on by higher pricing, resulting from (1) the exemption of Newfoundland produced lumber from counter veiling duties by NAFTA, (2) greater acceptance of Newfoundland spruce as construction lumber in the United States, and (3) the lower exchange rates of the Canadian dollar compared to its US counterpart. The total harvest, which includes the domestic drain, has fluctuated slightly but has for the most part remained within the allowable cut of 76,800 m^3 (solid) per year. The majority of domestic harvesting was from a combination of Class III softwood, hardwood, and salvage timber sources, and averaged 40,700 m^3 (solid) per year over the period. Annual change in the domestic harvest level was closely tied to the price of alternate energy sources.

2.2 Silviculture

The silviculture program in District 8 during the past five years is presented in Appendix 5b. The amount of area treated each year through Crown silviculture treatments has ranged from a high of 1,394 ha to a low of 602 ha and has averaged 785 ha per year. Regarding specific treatments, there have been approximately 1,550 ha and 1,480 ha respectively of site preparation and planting, 1,332 ha of pre-commercial thinning in immature balsam fir and black spruce and 167 ha of plantation maintenance. Additionally, on exchanged company limits, 128 ha and 7 ha were scarified and planted on CBPP and ACCC tenure

respectively, and 170 ha were also precommercially thinned on CBPP tenure.

Paramount to the provincial planting program is an adequate supply of viable seed. During the fall of 2000, 380 liters of white pine cones were harvested as a part of ongoing silviculture projects administered through District 8. The summer of 2001 produced a bumper crop of white spruce cones in District 8. Cone picking projects were organized to capitalize on this crop, and replenish the provincial seed bank at Wooddale Tree Nursery. As a result, District 8 contributed 978 litres of white spruce cones to the provincial seed supply. Also, in 2001, planned cone picking to replenish the provincial seed bank's supply of native red pine seed resulted in the production of 876 liters of red pine seed.

Other treatments designed to maintain the biodiversity of forest ecosystems in central Newfoundland, including white pine pruning and red pine cone production enhancement, were carried out during the past five years. These are discussed in detail in Section 2.5.

2.3 Road Construction

The location of forest access road construction during the previous five years is shown in Appendix 5a. A total of 97 kilometers of new road were constructed, and a total of 5.2 km of old road were reconstructed through Crown operations in the district from 1998 to 2002. Crown tendered road construction accounted for 26 kilometers of construction and 5.2 kilometers of reconstruction, while Crown operators constructed an additional 70 km of new road in the district on Crown tenure and ACCC exchanged tenure combined. With the exception of 1.6 kilometers, all roads built by the Crown, being main trunks, were either constructed to a class B or C-2 standard. Operator-built roads, being mainly spur roads, were constructed to either class C or D or standards. Approximately 22 % of the contractor built roads were also classified as temporary, being designed for short term use only. Five wooden bridges were constructed during this time frame on Crown tenure: Bottom Brook on Notre Dame Junction Access Road (6.1 meter span), Penny's Pond Brook on Salmon Pond Access Road (3.7 meter span reconstruction), Kline Lake Brook on Southern Lake Access Road (6.1 meter span), Four Mile Pond Brook in the Big Lake Watershed (4.0 meter span), and an unnamed brook near South Pond (2.5 meter span). During the same period, Crown contractors constructed two bridges on CBPP tenure exchanged to the Crown; one at Brinks Pond Brook (wooden, 5 meter span), and one at Lacy's Pond Brook (steel panel, 6 meter span).

Maintenance funds available were barely satisfactory during the previous five years. If this funding does not increase in the immediate future, many road networks will become problematic during the course of this plan. The main concerns are the regrowth of roadside alders creating dangerous conditions by impairing visibility, the degradation of the road surfacing material, and the lack of regular grading. The amount of road maintained by the departmental grader has doubled since 2000. These conditions initiate many complaints from commercial operators and the general public alike.

2.4 Education

District staff participated regularly in the Department's public information program. Presentations were given to various groups and agencies including commercial operators, schools, municipalities and local service districts, church groups, provincial parks and other special interest groups. Additionally staff has been involved with youth groups such as cubs, guides and scouts, leadership at dig day outings, organization of public meetings and information sessions, and participation in open house events such as craft and trade shows. Topics included careers in forestry and wildlife, wildlife management, species identification, site classification, forest management, law enforcement, environmental concerns regarding forestry, and general forest ecosystem management talks/discussions covering district and departmental policies, plans and activities. The staff also provided training sessions on fire safety, regulations and control, silviculture, and harvesting to other agencies such as development associations and fire departments.

2.5 Surveys and Research

There were a number of ecosystem research activities and various studies carried out by District 8 staff form 1998 to 2002. These activities were varied in nature covering many aspects of the management of the districts's ecosystem resources.

Big Game

The Eastern Region Conservation Officer position, which serves as the liaison between the Dept. of Forest Resources and Agrifoods and the Wildlife Division of the Dept. of Tourism, Culture and Recreation, currently resides in District 8. The responsibilities of this position over the past 5 years included, designing sampling procedures for Big Game Management Areas, co-ordinating the big game aerial census for both moose and caribou, and general liason with the Wildlife Division for all wildlife management issues in Central and Eastern Newfoundland. During the

winter of 2000, district staff conducted an aerial census of Moose Management Area 22. Also during 2000, district staff assisted the wildlife Division in the sampling of trout stocks in Central Newfoundland ponds in Forest management Districts 6 and 10. During the spring of 2001, District staff were involved the aerial census of Moose Management Area 27. Similarly, during the fall of 2001 and 2002 district staff assisted the Wildlife division by classifying the sex ratio and calving productivity of the Caribou heard in the central Newfoundland Caribou Management areas.

Bald Eagle

During the period 2000 to 2002 surveys have been conducted by district staff in Notre Dame Bay to census the nesting sites, and reproductive capacity of bald eagles. To date, there have been 23 nesting sites identified and mapped.

Harvesting Utilization

The Forest Products Division educated district staff in new utilization survey methods aimed at re-aligning estimates of AAC's for the wood supplies in the district. This was done in order to ensure the accuracy the AAC's by accounting for losses to the standing inventory or Gross Merchantable Volume (GMV)from different forest harvesting systems. By applying a utilization deduction to the GMV figures, the AAC's for the district are converted to Net Merchantable Volume or the actual harvest volumes (i.e. Net AAC's). The utilization deduction accounts for logging losses to the inventory which include high stumps, big tops, unharvested standing merchantable volume, harvested merchantable volume left on the cutover, etc. From these surveys it was determined that logging losses to utilization during the past five years was approximately 11 % on Crown tenure, and approximately 7 % on company tenures. These figures are weighted averages based on sampling of different harvesting systems used in the district as well as variations in the season of harvest.

Regeneration, Growth and Yield

Intensive forest surveys were also carried out within the district to determine the stocking of natural regeneration on current cutover areas and to remeasure Forest Inventory Permanent Sample Plots (PSP'S) to determine the five year interval of growth and yield of the various stand types in the district. DFRA staff from Forest Management Division conducted remeasurement of 58 PSP's in thinnings, plantations, and natural stands of all ages in the district, continuing the long term effort to gain growth and yield information for both natural and managed stands. District Staff conducted regeneration surveys on current cutovers

(i.e. < 5 years)to determine the necessity to plant these previously harvested areas. This information was used to refine yield curve estimates used in the 2000 Wood Supply Analysis.

Tree Improvement

The Silviculture Division's plus tree selection program was continued in District 8 during the past five years, as district staff collected both scions and seed from some plus tree candidates. In total, 7 black spruce, and 23 white pine families selected from District 8 were added to the seed and clonal orchards at Wooddale Provincial Tree Nursery. During the summer of 2001, the first genetically improved white spruce seedling stock was operationally planted at Clark's Head.

Road Construction

The Forest Engineering Division, together with district staff, conducted assessments of contractor built roads with a view of developing common standards/guidelines for future proposed access routes. This resulted in the implementation of standardized road contracts for operator built roads on Crown managed tenure in central Newfoundland in Districts 4, 5, 6, and 8. The main focus of these contracts is proper water control techniques to reduce the potential impacts of road construction on the environment. It is anticipated that this initiative will improve the quality of contractor built roads, resulting in the reduction of erosion and siltation impacts that can be associated with road building.

White Pine

In conjunction with representatives of the Canadian Forestry Service, two operational research trials designed to maintain white pine at the landscape level in District 8 have been carried by district staff during the past five years. The white pine population on the Island has been continually decreasing since the introduction of European Blister Rust; a fungus that infects the needles of white pine and eventually kills the tree. The spores of the rust cycle from their alternate host shrub, currant species, to white pine. The seedling to sapling stage of white pine development is the most critical period, as these stages aid in the spread rate of the blister rust by providing spore infection points that are close to the ground on lower branch whorls.

The two research initiatives utilized in trials by district staff to potentially reduce the spread of EBL and maintain pine populations in District 8 were pruning of sapling pine and planting of pine seedlings originating from native stock that appeared to display a resistance to EBL. The locations of these

operational trials (3 of each) are indicted in Appendix 5b. Approximately 4 ha were planted and 5 ha were pruned within District 8. Additionally, district staff managed a white pine pruning treatment on approximately 25 ha in District 6.

Red Pine

During 2000, it was evident that the supply of native red pine seed at provincial seed bank at Woodale Tree Nursery was running low. Surveys by District 8 staff that year determined that a potentially good red pine cone crop could result form the red pine (native seed origin) plantation at Northern Arm in 2001. In conjunction with staff at Wooddale Tree Nursery, an operational research trial designed to increase the cone production of this plantation was conducted during the 2001 growing season. The treatments utilized in the trial were the pruning of the lower branch whorls to aid in cone picking, and the nitrogen fertilization of trees with urea to maximize the number and size of red pine cones. This trial resulted in the picking of 876 liters of cones, which were later processed for their seed at Wooddale Tree Nursery.

Backlog Silviculture

The efficacy of alternate scarification treatments to aid in the regeneration of two Non-Sufficiently Regenerated (NSR) site types were examined during the previous five year period, through their use in operational field trials. Both of theses sites had existed on the landscape for more than five years (i.e. backlog), and typify the most difficult sites in the district to regenerate. The first site type was a medium to a poor, upland black spruce site that had reverted to NSR due to an invasion by kalmia after harvest. Typically it is extremely difficult to establish free -to -grow seedlings on these sites due to the lack of available soil nutrients. The second site type was a high capability, wet, white birch/black spruce site located on a seepage slope that had reverted to NSR after harvesting, due to an invasion by alders.

The scarification treatment utilized in the rehabilitation of the kalmia site involved two passes of the traditional TTS disc trencher. This treatment significantly increased the amount of disturbance to the kalmia root mat cover over the traditional single pass treatment. It is anticipated that this will result in an increase of the amount of nutrient release to planted seedlings that would otherwise remain locked up in the kalmia root mat, thereby increasing the likelihood of seedling establishment. The goal of this treatment is to produce a black spruce stand in an acceptable rotation time through the reclamation of NAR. Approximately five ha were treated with this

technique.

The scarification treatment utilized in the rehabilitation of the alder site involved the creation of mounds with an excavator to remove some of the alder competition, and produce 1000 to 1200 elevated microliths per hectare, suitable for the establishment of planted of white spruce seedlings. It is anticipated that the mounded microsites will also provide enough mineral soil exposure to result in the regrowth of naturally seeded white birch seedlings. The goal is to produce a high value, mixed white spruce/white birch stand, thereby utilizing some of the most important sites in the district, as well as providing for the regeneration of white birch for the maintenance of an AAC for this species. Approximately 15 ha were treated with this technique.

Precommercial Thinning and Plantation Maintenance

During the mid 1990's district staff observed an increase in Balsam Wooly Adelgid (BWA) infection of balsam fir regeneration in a number of incidences throughout the district. Infection of balsam fir by BWA results in decreased leader growth, staining of the wood fiber and renders the wood fiber brittle. This latest infection of BWA prompted an operational research trial in District 8 during the 2000 operating season, aimed at determining the best course of action to follow in the future management of regenerating stands containing balsam fir. The trial involved three treatments of thinning/cleaning (i.e. plantation maintenance) of a spruce plantation with fir ingrowth that had become infected with BWA. The three treatments were: (1) remove all balsam fir ingrowth, (2) thin to usual spacing utilizing the balsam fir ingrowth, and (3) no thinning or control. The plan is to observer and report on the development of the resultant stands after five to ten years of growth.

2.6 Forest Ecosystem Protection

The fire suppression effort within the district has been very successful during the past five years. A total of 48 fire starts were actioned by firefighting personnel from Lewisporte and/or Gander in District 8 over the period 1998 to 2002. Approximately 30 hectares of productive forest on all tenures combined were burnt within the district from 1998 to 2002. This is exceptional when one considers the high fire hazzard conditions experienced during 1998. The success of the fire protection program can be attributed to many reasons, including: training of firefighting personnel; improved equipment and techniques such as CL-215 water bomber and the standby helitack

team; aerial surveillance from Gander using a spotter plane; a Departmental public relations program aimed at increasing public awareness of fire safety and the extreme hazards of forest fire; a duty officer standby system that permits more than one fire to be actioned at very short notice and without break in communications; and, finally, the dedication and diligence of the firefighting group within the district.

During the past five years, District 8 Staff has also been involved in an environmental cleanup program designed to remove waste associated with past forestry operations, including old logging and sawmilling equipment, from the landscape. Existing sawmill operations that contained garbage were refused new annual operating permits until all material identified by conservation officers was removed from the affected sites and deposited in an approved waste disposal site. Any identified waste that could not be associated with existing operators was removed form the landscape and deposited in an approved waste disposal site at the expense of the Department of Forest Resources and Agrifoods. In total 24 sites were targeted for clean up from Leading Tickles to Gander Bay. These are noted in Appendix 5b. To date 20 of these sites has been cleaned up, with 23 vehicle wrecks plus miscellaneous garbage (stoves, pallets, culverts, fridges, etc.) being removed. Annual checks are now carried out on all current forest operations to ensure proper disposal of all garbage.

3.0 FOREST ECOSYSTEM MANAGEMENT - INITIATIVES FOR 2003 -2008

The scope of this five year plan for District 8 focuses on the health of our forest ecosystems and, as such, involves complex systems and processes that we may never fully understand. Although no widely accepted definition exists, the concept that good forest health is conditional on a forest ecosystem that sustains complexity or diversity while still providing for human needs, is inherently accepted (Burnside, et., at 1995).

Notwithstanding these facts, these ecosystems which have evolved since the last ice age, provide our society with a wide range of values that we all desire and want to maintain. Among the more important valued by the District 8 Forest Ecosystem Management Planning Team are commercial and domestic timber, employment, biodiversity, clean water and fish habitat, wildlife habitat, tourism and recreation, personal use products, and intrinsic values. Because we are manipulating these ecosystems through a series of disturbance regimes, we are obligated to

develop a plan of human interventions that will not adversely affect the functionality and long term stability of the forest ecosystems.

This plan attempts to define forest ecosystem health in District 8 in terms of the sustainability of the framework of values developed in the Strategy Document for the District. It is assumed that sustaining forest values by measuring indicators which are correlated with these values and making adaptive corrections where necessary, will ultimately maintain the health of our forest ecosystems, thereby sustaining them. By the end of this plan, it is proposed to report on progress made by referencing such data bases as the Newfoundland Forest Service Inventory, National Forest Inventory and Statistics Canada.

Our forest ecosystems provide many benefits and the goal of sustaining healthy forest ecosystems will also support these values. Additionally, recognizing trends in the sustainability of these values will indicate where we are in terms of achieving ecosystem sustainability. In order to assess trends in these values, benchmarks or historical levels of measurable indicators must be established. The following subsections are an attempt to relate proposed on-the-ground forest ecosystem management activities to the values described in the District 8 Strategy Document. Selected, measurable indicators for each value are presented that will allow for the establishment of benchmarks as well as future evaluation of the proposed ecosystem management activities in sustaining the values.

3.1 MAINTENANCE AND ENHANCEMENT OF FOREST ECOSYSTEM CONDITION AND PRODUCTIVITY

Maintaining the productive capacity of our forest ecosystems is fundamental to their health. One of the best indicators of a forest ecosystem's productive capacity is its mean annual increment (MAI). Mean annual increment refers to the average annual growth of forest stands. By tracking MAI in regenerating stands, as compared to known natural stand data, we can develop a picture of the relative health of our ecosystems. Since tree growth is influenced by the genetic capabilities of a species interacting with its environment (ie., site quality), tracking tree growth or MAI can show how the site quality, or ultimately site health, is being affected. Maintenance of MAI’s in productive regenerating forests could indicate whether site quality is or isn’t being negatively affected by forest harvesting. It is felt that maintenance of site quality in regenerating forests will indicate whether natural process such

as nutrient cycling, water translocation and those processes which develop soil structure (eg., microbial and invertebrate activity, percolation, etc.) are occurring at normal levels.

From past growth and yield work done by the Department's Forest Inventory Section, the MAI's of the major forest working groups in the districts are known (Appendix 9a). Additionally, the Silviculture Branch has remeasurement data to indicate how our regenerating forests are growing (Appendix 9b). Where local data exists, DFRA staff will compare regenerating forest growth to known accepted rates and report these findings on an ongoing basis at five year intervals.

Similarly to trees, the growth and yield of forest under story species (eg. shrubs, herbaceous plants, and mosses)can imply the relative condition of a forest ecosystem. The Agrifoods Division of DFRA maintains a record of the annual wild berry production. As an indicator of the under story condition of forest ecosystems, district staff in conjunction with the Agrifoods Division will track the annual wild berry production in the district.

Equally important to forest health is the maintenance of a forest's reproductive capacity or resilience (Werner, 1996). The province has been tracking the regenerative status of harvested land and has reported to the National Forestry Database Program (REGEN) since 1991. The trend shows that on a provincial basis, the amount of not-sufficiently restocked land (NSR) produced through forestry activity is being held at historical levels. This indicates that the productive land base is remaining stable after forestry interventions (Kelly, 2000).

In order to maintain reproductive capacity of forest ecosystems as well as habitat for wild species, permanent landscape changes must be known and quantified. Furthermore, allowances must be made to counter balance any negative effect of these changes. As a first step in this planning period, Figure 1 shows the known location of roads, waste disposal sites, gravel pits, and residential areas which have resulted in removal of habitat from the land base in District 8. To keep abreast of a shrinking forested land base/habitat from permanent changes, District 8 staff will undertake to regenerate NSR backlog at a rate equal to that of forested land base/habitat loss due to permanent disturbances resulting from forestry activities. The intent is to maintain habitat stability at the landscape level. Permanent habitat loss to disturbances will be updated during the planning period and compared to the NSR areas regenerated.

Figure 1

Conversely, natural habitat is created through regeneration after such disturbances as fire, windthrow and insect infestations. These disturbances do not remove forested land, but over time, the resulting regeneration patterns constantly change, thereby creating habitat for many fauna through succession. The locations of such recent disturbances are shown in Figure 1. Invariably, there will be some naturally disturbed areas resulting from insect and disease outbreaks, windthrow and wild fire, as well as harvested areas, that will not regenerate to follow predominant successional paths. This results in the formation of not-sufficiently regenerated (NSR) areas. While not physically removed from the land base, these areas if not regenerated, reduce the future available growing stock, and are of diminished habitat quality for many wildlife species. The department will endeavour to update these disturbances on an annual basis through remote sensing.

To ensure natural processes are maintained in concert with successional trends across the landscape, silvicultural intervention will be employed where required to preserve regeneration, future growing stock, species composition, habitat and landscape connectivity. All recent (<5 years) non permanent landscape disturbances will be surveyed, as per the provincial stocking standards for the level of regeneration on the productive land base. Those productive areas requiring silvicultural intervention to evoke successional patterns, will be planted with local seed sources where possible. At present, data collected on a provincial basis indicates that up to 35% of the black spruce sites harvested in Central Newfoundland require silvicultural intervention to promote adequate regeneration. The results of restocking surveys in the district will help to refine this number over the next five years. Overall, planting will be maintained to at least the minimum level prescribed in the 2000 Wood Supply Analysis.

3.2 BIODIVERSITY

Managing for biodiversity is central to the concept of holistic management. All life forms have some value whether we as a society realize them or not. Managing for biodiversity will result in management of all life forms (Hunter, 1990). This in turn will result in greater ecosystem stability, as stability is increased with diversity (Elton, 1958). In order to determine if management activities are achieving biodiversity goals in our forest ecosystems, we must gauge our results in terms of known and measurable indicators. Biodiversity is generally viewed as having two components, Species Diversity and Habitat Diversity.

3.2.1 Species Diversity-Maintenance of Native and Valued Species

Provincially, the range of white pine in the province is shrinking, due to past harvesting practices and infection from blister rust, and red pine is extremely rare. Since both of these species occur in District 8, local protection is required. Other valued species in the province include spruce, fir, birch, big game animals, small game animals, furbearers, waterfowl, other avian species, and salmonoids. While the majority of these species are not in any present danger, Newfoundlanders in general, highly value these components of our ecosystems. All these species require management and protection to ensure their sustained use. During this planning period, documentation of management activities will be maintained as an account of the District's work with this species.

Pine

The location of known larger natural red and white pine stands within the district is shown in Figure 2. On a provincial scale, red and white pine are being protected on three fronts. Firstly, gene preservation gardens for these species and a clonal orchard for white pine have been developed at Wooddale Tree Nursery. At some point, the goal is to produce seed from these gardens/orchards to grow pine seedlings of native origin. Secondly, some native red pine is protected under reserve status. Thirdly, the Department has adopted a policy of no cutting of pine by non traditional users and a phase out of cutting by traditional commercial users. Currently, no commercial operators harvest pine in District 8. Protection of these species in District 8, will be strengthened by public education, no-cut conditions on permits (both domestic and commercial) and subsequent enforcement, and implementation of silviculture treatments designed to merge pine back into the landscape. This will involve the mixture planting of 2-5% of pine in plantations at the landscape level(when local gene stock is available), as well the development of site-specific pine stands.

During this period district staff will continue to update the known range of red and white pine and continue to enhance the local gene pool of planted pine. This will involve collecting seed from red pine stands of native origin, and the collection of white pine scions for the clonal orchard at Woodale when needed. Also, staff will implement stand level silviculture prescriptions such as pruning of immature white pine to reduce the infection rate of blister rust, and cone production enhancement on red pine to ensure an adequate supply of native red pine seed.

Figure 2

Spruce & Fir

Black and white spruce and balsam fir are the main sawlog and pulpwood species in the province. Additionally, spruce and fir-dominated stands comprise more than 84% of the available forested habitat in the district. These species will be managed for maximum sustainable harvest levels though the harvesting and silviculture strategies referred to in the Forest Ecosystem Strategy Document for District 8 (covered later in Section 5). Protection and long term sustainability of these species will be achieved through strict adherence to AAC's and refinements to current AAC's as the land base changes. The location of the districts' spruce and fir resources is displayed in Figure 2.

White Birch

Traditionally, white birch has been a valued species for domestic fuelwood. Today, however, it is emerging as an important value-added species in the sawmilling and manufacturing industries of the province. Additionally, hardwoods benefit the cycling of nutrients, the structure of forest soils, and can help in the reduction of insect infestations and in the decrease in spread rates of forest fires (Perry, 1994). There is now a shift to manage this species on a maximum sustainable basis as with spruce and fir. White birch-dominated stands comprise only 15% of the forested land base in the district. The location of the district's birch resources is shown in Figure 2.

With respect to hardwood management, the Department is currently working toward developing sustainable harvest levels for white birch. Paramount in sustainability, is the regenerative ability of a species. To ensure sustainability of birch in District 8, silvicultural prescriptions designed to favour hardwood regeneration on harvested sites that were previously dominated by white birch will be investigated. Where possible, a hardwood component will be left in all thinned areas as part of the strategy. This will ensure a birch component is maintained on the landscape, increase the diversity of both flora and fauna in thinned stands, and maintain natural processes within thinned stands.

Over this planning period district staff, in conjunction with the Forest Management Division, will support the development of an AAC for this species, as well as strategies for the maintenance of this species on the landscape in historical proportions. This will require the development of silviculture strategies to favour birch regeneration and reallocation of the district's birch resources during the planning period. DFRA staff

will also census domestic users of this resource to determine the total drain on this species.

Big Game

Big game animal populations on the Island are managed by controlling their annual harvest through the hunter licence quota system. Each year, the Department determines the population density of these animals on a big game management unit basis, and sets licence quotas to meet management objectives of optimum sustainable harvests. Periodically, to check estimates of these populations, an aerial census is conducted.

Moose Management Areas 23 (which borders District 8), and 15 (which is partly contained within District 8) have not had a complete census since 1991 and 1996 respectively. DFRA staff in conjunction with the Wildlife Division will endeavour to census these areas within this planning period. Population trends as defined by the Wildlife Division for all big game management units within the district, will be utilized as relative indicators of species diversity and ultimately ecosystem health within the district. As mentioned earlier, protection of big game animals will be maintained through the protection of their habitat (see Appendix 6a for detailed habitat description), and regular patrols by Conservation Officers to ensure illegal hunting activities are curbed.

Song Birds

The distribution of songbird species in a forest ecosystem is widely considered to be a relative indicator of ecosystem health. Many songbird species are distinct to specific habitats (Whitaker et al., 1997), therefore the presence, absence, or health of a specific songbird population, can indicate the health of its corresponding habitat (see Appendix 6a for detailed habitat description). Songbirds are also the natural predators of our native Lepidoptera pests (ie. looper and budworm) and help to keep these populations in check. Consequently, their value cannot be underestimated. The relative abundance of songbirds in our forest ecosystems, at different times during the year, and the maintenance of a tracking record for songbirds will help to indicate the overall quantity and quality of habitat in the districts.

In this planning period, DFRA staff will attempt to establish benchmarks for the relative abundance of selected songbirds in the district. Local information already exists, for example Xmas bird counts, a songbird census by DFRA through the

forest inventory section, a songbird census by the Exploits Valley Development Association for hiking trails of the region, and other local research information such as Dr. William Montevecchi's checklist of birds of insular Newfoundland. These are shown in Appendix 6b, 6c, 6e and 6d respectively. Established benchmarks for the relative abundance of songbirds can then be used as historical levels to again indicate species diversity as well as the sustainability of our forest ecosystems and their processes. As with the moose, protection of these species will mainly involve protection of their habitat through the various methods indicated earlier.

Other Avian Species

Other valued avian species include ptarmigan, grouse, migratory birds and raptors. The former includes important game species, while the latter (ie. raptors) occupy higher trophic levels in the food chain. Higher level trophic feeders are considered important indicators of ecosystem health as they are sensitive to environmental stress.

Currently, there is limited local information available with regard to the status of populations of these species on a district basis. Population trends, however, for these species as defined by the Wildlife Division and Canadian Wildlife Service are available on a regional basis. During this planning period, DFRA staff in conjunction with these agencies and local interest groups will therefore attempt to establish relative abundance benchmarks for small game birds, migratory birds and raptors in the district. This will involve development of a hunter information survey for harvested game birds within the district. It is proposed that district staff will census domestic wood harvesters as the basis of the survey. Also, sightings of raptors by DFRA staff and the public will be documented, and if possible, their associated critical habitat (eg. nesting sites) will be mapped. These initiatives will be supplemented with existing information such as data available from the Canadian Wildlife Service on migratory bird populations (Appendix 6f), and the Wildlife Division Small Game Return to indicate local population trends. Over time, population trends of these species can then serve to indicate both the maintenance of species diversity in the district, as well as the habitat quality and availability associated with these species.

Protection for these species involves protection of habitat and a maintained enforcement effort, through the small game regulations and the Migratory Birds Convention Act. During this planning period, DFRA staff will work in conjunction with the

Canadian Wildlife Service to increase water course buffers beyond accepted regulated minimums in documented sensitive waterfowl breeding habitat. Additionally, when requested, officers for the district will assist groups such as Ducks Unlimited, and associated communities with a historical attachment to waterfowl habitat. For example, the Jumper's Brook and Otter Pond areas are well known for their importance as migratory bird breeding area. These areas are shown in Figure 5 (see pg 37).

Protection for raptors is legislated under the Wildlife Act and Regulations, and further through the Guidelines for Ecologically-based Forest Management. Under these guidelines, no forestry operations are to occur within 800 metres of a bald eagle or osprey nest during the nesting period, and not within 200 metres in the off nesting season. These guidelines are attached as terms and conditions to all commercial operator permits. The locations of all known bald eagle and osprey nests will be identified on all cutting maps, and harvesters will be informed of their locations by DFRA staff. Regular operator checks and routine patrols of domestic cutting areas by DFRA staff will ensure compliance of these guidelines.

Furbearers

Recognizing the fact that the native furbearing predator populations (eg. lynx, fox , mink, otter) fluctuate widely due to prey availability, and that the harvests of these and other furbearers (eg. beaver, muskrat) in general fluctuate with market demand, it is still beneficial to maintain trapping records of these species. The Wildlife Division currently tracks the annual harvest of furbearers from trapper returns. This information can be utilized at the district level as a relative abundance indicator. Due to their varied habitat requirements (see appendix 6a), the relative abundance of these furbearers can indicate species diversity as well as overall ecosystem diversity. Protection for these species is again provided through habitat protection and a maintained enforcement effort with respect to the Wildlife Act and Wildlife and Trapping Regulations.

Salmonids

The population of salmon and trout in our rivers and ponds can serve as an excellent indicator of water quality. Where available from DFO and the Wildlife Division, data on salmon populations in rivers and on trout populations in ponds within the districts, will be utilized by DFRA staff to maintain a historical record of these species, and by inference water

quality.

Protection of these species currently exists under the Federal Fisheries Act and the Newfoundland Fisheries Regulations which describe the licences required, bag limits, and seasons. Furthermore, this protection is strengthened locally through partnerships with community-based watershed management groups such as the Gander River Management Association (GRMA). A one kilometre-wide management zone is currently regulated along the Gander River for protection of salmon habitat. Designated protected public water supply areas (PPSWA's)also provide protection for these species through existing environmental regulations that apply to these areas (ie. increased buffers, usually 150 meters on intake ponds, 75 meters on main river stems, 50 meters on major tributaries and minimum 30 meter buffer regulated in the rest of the district). The scheduled rivers where increased buffers are currently in place within PPWSA's include Campbellton River, Dog Bay Rivers, Peter's River, and Charles Brook. Strict enforcement of these buffers will be continued during this planning period. District conservation officers will also provide an enforcement patrol effort in conjunction with federal fisheries officers to promote conservation of the salmonid stocks.

During the past five year period a partnership between the Federal Department of Fisheries and Oceans, the Western Newfoundland Model Forest Working Group, and Department of Forest Resources and Agrifoods resulted in the completion of a digital stream inventory crossing classification in District 8. This data will be examined by DFRA staff with the intent of determining impacts to salmonid habitat from the existing forest access road network. Appendix 7 is an example of the types of data that was collected. Based on an impact assessment of the results, DFRA staff will consider corrective action to rehabilitate impacted-fish habitat from forest access road crossings on Crown tenure, and facilitate this process on other tenures.

COSEWIC Species

It is important to document changes in the number of known forest-dependant species that have a COSEWIC designation (ie. Committee on the Status of Endangered Wildlife in Canada) as an indicator of ecosystem health. These species have been classified as either rare, vulnerable, threatened, or endangered. Because of their tenuous existence, changes in the relative abundance of these species can indicate the overall health of our forest ecosystems.

A host of 35 rare vascular plants has been documented to exist within District 8. In conjunction with the Wildlife Division, the status of these plants will be updated at the end of this planning period to document any change from the beginning of the planning period. This will provide a basis for future forest ecosystem management plan activities.

One of the more significant COESWIC, forest-dependant wildlife species in the province, the pine marten is currently listed as endangered. While this species in all likelihood has been extirpated from the district from around the early part of the 20th century, a marten recovery effort is underway in eastern Newfoundland with the epicentre of reintroduction at Terra Nova National Park. Similarly, one of the more significant forest dependant lichen species, the Boreal Felt Lichen, is currently listed as endangered. This species is typically associated with old growth balsam fir forests in the Avalon Forest and Maritime Barrens Ecoregions on the southern coast in the eastern part of the province. To date it has not been documented to exist in District 8.

During this planning period, the Department in conjunction with the Wildlife Division will work to determine whether important pine martin habitat exists within the district. Due to the varied habitat requirements of the pine marten it has been considered as an indicator species. It is anticipated that defining habitat for this species will ensure habitat for other species. Similarly, DFRA staff will also conduct surveys of balsam fir forest types in the district for the existence of the Boreal Felt Lichen.

3.2.2 Habitat Diversity

3.2.2.1 Natural Areas

Natural areas are store houses of natural diversity that exists in a wild, pristine state. They serve as ecological bench marks indicating the natural succession of forest ecosystems. They also preserve in perpetuity, provincially significant representative and special natural features and outstanding recreational environments.

The Province of Newfoundland's Natural Areas Systems Plan recommends that a minimum of 12% of the province’s entire land base be protected. Currently, only 4.2% of the islands' ecosystems have protected status. More specifically, on an ecoregion basis only 1.4% of the Central Newfoundland Forest

Ecoregion and 2.3% of the North Shore Ecoregion are protected. Furthermore, part of the protected land base was recently lost with the recent rescinding of some of our Provincial Parks (ie. Dog Bay Pond and Winter Tickle). Local protection now comes from the Provincial Parks system (ie. Notre Dame, Dildo Run, and Jonathan's Pond Provincial Parks), Terra Nova National Park, Gander River Management Area and the Bay Du Nord Wilderness Area. Given that a large portion of the North Shore Forest Ecoregion lies within Districts 8, the planning team members felt that more protection should be offered in the form of an ecological reserve. Figure 3 illustrates the location of existing and proposed protected areas in relation to the districts and ecoregions.

The area in the vicinity of Swan Island was proposed as an acceptable representative of the North Shore Forest Ecoregion for reserve status in the Natural Areas System Plan for the province. No forestry activity has been proposed in this area during this planning period. Furthermore, the district and the planning team will support the development of protected area status for this area over the next five years. During the planning process however, an area bounded by Indian Arm Pond in the west, Island Pond in the east, the fourth Pond on Campbellton River in the north and the Trans Canada Highway in the south, was suggested as a representative of the Central Newfoundland forest by a planning team member. No consensus was reached by the planning team to support this area. With the exception of minimal portions of the proposed harvesting blocks CE08BH-21 and 24, DFRA has not planned significant commercial operations within the boundary of this particular area.

3.2.2.2 Wildlife Habitat

In order to conserve and protect wildlife habitat it's parameters must be understood, and it's locations must be known. Many of the habitat requirements for our wildlife species are known to some degree, and therefore some of the critical habitat has been located and mapped. Figure 4 illustrates the forest cover divided into successional (ie. age classes) stages. The staff of District 8 is committed to updating species/habitat information as it becomes available, as well as identifying critical habitat in conjunction with the Wildlife Division of this Department. This will provide the basis to develop the successional stages important to wildlife species. Knowing the critical habitat and ranges of specific fauna, as well as their successful preferences, will facilitate the development of future

Figure 3

Figure 4

harvest plans designed to minimize negative impacts. Appendix 6a indicates some of the known habitat requirements of some indigenous species.

In addition to the specific areas previously described, it is assumed that a diversity of unique features can be protected by maintaining a balance of all forest age classes on the landscape. Managing forest landscapes for diversity involves managing successional patterns, as different stages of succession contain different species, and some stages contain more species than others (Hunter, 1990).

At present, in District 8, the age class structure consisting of five distinct age classes (Figure 7, pg 59), is unbalanced with less than 3% being of Age Class 3 (ie. 40 -60 years). By ensuring that no Age Class 3 wood is harvested in the upcoming five year period, its current percentage will be maintained. Furthermore, adherence to the provincial harvest strategy of "Oldest First," coupled with a silviculture strategy to thin immature stands (ie. 20-30 years), will reduce future pressure on Age Class 3 wood by targeting over mature and mature timber for current harvests and prioritizing thinned stands for future harvests. This will lead to a balancing of the age class structure in the long term.

From a wildlife habitat perspective, Old Growth stands are inherently important. This stage of forest development can contribute greatly to biodiversity as it supports a different mix of flora and fauna then associated younger stages. Moreover, Old Growth contains many structural and functional features such as water reservoirs, course woody debris and a steady state of nutrient flow and volume conditions, that are also absent in younger stages. Many wildlife species therefore require old growth as an integral part of their overall habitat. During this planning period a minimum of 20% of the productive forested landbase in the district will be maintained in the Old Growth stage.

In order to maintain the functionality of forest ecosystems at the landscape level, there must exist a bridging within disturbed areas to allow for flow between disturbed and non disturbed areas. This bridging can be developed from a variety of sources, and therefore maintain ecosystem connectivity at the landscape level. Such sources include riparian areas, scrub and bog forest, regenerating forest, hardwood forest, cabin development areas and planned travel corridors and leave areas of

mature/over mature forest.

Landscape connectivity throughout the district is enhanced by the existence of special management areas where harvesting in and around will occur on a modified basis. In conjunction with other resource users, the DFRA has cooperated during the development of several such riparian management areas including the Gander River Management Area, the large public protected water supply areas, and the Ten Mile Lake view scape buffer. Harvesting, although still taking place in the watersheds associated with these areas, will be done in a modified manner which will be designed to leave more of the current forest structure in place than would occur under normal harvesting scenarios. These special large scale management areas therefore contain a mosaic of forest cover types and successional stages that will serve as habitat for forest fauna. Riparian areas also protect rich vegetation adjacent to water bodies that are important to numerous species. They act as natural filters and thermoregulators for water habitats for all aquatic life (Allen, 1991, and Scruton et al. 1998). They also provide important winter habitat for such species as moose and black bear. The geographic location of these areas will serve as connective fingers on the landscape. Strict adherence to required riparian buffer widths by all operators will be enforced by DFRA staff. The locations of these areas in District 8 are shown in Figure 5 (see pg 37).

No harvesting will occur within the Gander River Management Area regulated buffers, and planned harvesting within the area will be done under existing regulations and in conjunction with other agencies and user groups. Operations within protected water supply areas will be covered in Section 3.4 Soil and Water.

District 8 staff will plan for connectivity at the landscape level on an annual basis when planning harvesting activities over the next five years. In some areas connectivity of wildlife habitat may be augmented through the application of partial harvests of stands. Maintaining a portion of the stand results in the retention of vertical structure and the reduction of open areas within a clearcut. To investigate the effectiveness of this treatment in maintaining connectivity, district staff will establish a green tree retention trial within a commercial harvesting area during this period.

As indicated earlier, the district in conjunction with the Wildlife Division will track the population levels of selected

vertebrate species. Fauna being an intricate part of ecosystems, can indicate the relative health and functionality of forest ecosystems by their occurrence at historical levels.

3.3 Timber

3.3.1 Commercial Timber

To sustain the value of commercial timber, DFRA staff will implement the "Oldest First" strategy during this planning period. DFRA staff will also implement a silviculture program consisting of a minimum of 285 ha/yr of planting and 50 ha/yr of precommercial thinning in District 8, and plant 65 ha/yr on ACCC-Crown exchanges. These silviculture levels for District 8, which were determined in the 2000 Wood Supply Analysis, are required to maintain the Class 1 Maximum Sustainable Harvest (MSH) level of 62,500 m^3. Similarity, the level for ACCC/Crown exchanges will maintain the portion of the Class 1 MSH in this district to account for cutting by Crown operators. On all tenures in District 8 under the management jurisdiction of the DFRA Lewisporte office, DFRA staff will assess regeneration success in current harvest blocks and work with the companies to ensure stocking levels are adequate to maintain Class 1 MSH levels.

An updated analysis of Provincial wood supplies is scheduled for completion by the end of 2004. New levels of silvicultural treatments will have to be examined and applied at the conclusion of that analysis. Accordingly, DFRA staff will ensure that MSH's are not exceeded in this 5 year period, and conduct utilization surveys and a system of operator checks to reduce volumes left on sites after harvesting below the current factor of 11%. If the value of commercial timber is to be sustained, more efficient harvesting methods and better end use of species will have to be employed by industry. To increase revenues and best end use of hardwood species, DFRA staff will work with harvesters and processors to direct hardwood logs to appropriate facilities as was done in the past for softwood species.

3.3.2 Domestic Timber

The ability to harvest forest products for personal use (ie. firewood, logs, construction timber) is considered to be a right of heritage by most Newfoundlanders. In order for this highly valued resource to be sustained, limitations have to be placed on its use to discourage indiscriminate cutting and over-exploitation. At present there are 38 domestic harvesting areas available for public use within the management jurisdiction of the DFRA's Lewisporte Office. These areas, indicated on a

1:250,000 scale overview map in Appendix 4a, and on individual detailed maps in Appendix 4b, have mainly been developed in close proximity to existing communities.

Protection of domestic timber supplies will involve checks of harvesters by conservation officers to ensure adherence to regulations and permit terms and conditions, as well as the determination of the drain on the supply of this resource. Regulation requires that only one permit per household maybe issued per cutting year, and that domestic timber may not be sold, traded or bartered. In all domestic areas permits are issued for a maximum of 23 m^3. Domestic cutters may utilize any two of the 38 areas to harvest the specified volume. These areas will be discussed in detail in Section 5.0 - Five Year Operations.

During the five year planning period, DFRA staff will survey domestic harvesters to determine the volume of softwood and hardwood harvested from each of the domestic areas. The results of this survey will be used to indicate the drain on these species groups and individual areas, which can then be assessed against available supplies. Where possible, domestic harvesters will be directed to utilize salvage timber (eg. fire and insect-killed timber) for fuelwood, to reduce the domestic demand on green timber. It is anticipated that domestic areas containing viable commercial stands will be changed during this period. Therefore, DFRA staff will work to secure additional domestic supplies from company tenures and commercial areas where timber management objectives are met. This will help to offset any losses to the domestic land base. This will be expanded upon in Section 5.3,Domestic Operations.

3.3.3 Timber and Employment

The importance of forest ecosystems as employment generators for the region cannot be understated. As an integral component of ecosystems, communities and hence jobs need to be sustained. This is the underlying principle of sustainable development. Maintaining historical levels of employment from our forest ecosystems can be viewed as an indicator of their stability. Where statistics are available, DFRA staff will document and track the employment in all sectors dependent on forest ecosystems in the region from Statistics Canada data. Additionally, the revenue generated from forest ecosystems, as determined by Statistics Canada, will be tracked as it relates to the province's gross domestic product (GDP).

3.4 Soil and Water

The soil and water attributes of ecosystems are essential to maintaining life and therefore must be safeguarded. These attributes are highly dependent on each other, as eroded soil will impair water quality. Suspended solids or turbidity, decreases water clarity and can inhibit photosynthesis by aquatic plant life, thereby decreasing food production. Excessive suspended solids which eventually settle can fill and thus smother fish spawning and rearing habitat (Clark et al., 1998).

The largest potential impact to create soil erosion and impair water quality is forest road construction. To a lesser extent, forest harvesting and silviculture operations can have a potential for impacts if these activities are carried out without due care. Several mitigative measures have been developed by this Department in conjunction with the Department of Environment and Labour to minimize the effects of forestry activities on the landscape. Firstly, the Guidelines for Ecologically-Based Forest Management outline environmentally sound procedures for harvesting, road construction and silviculture. These guidelines (Appendix 8a) are currently attached as terms and conditions to commercial operating permits. Regular checks by DFRA staff will ensure strict adherence to these guidelines. Secondly, this Department has developed operational guidelines for road building. Currently it is district policy for operators who build their own roads, to sign a contract agreeing to adhere to these operational guidelines. An example of the general contract conditions for road construction are shown in Appendix 8C. The main focus of these road building guidelines is water/erosion/siltation control. Mitigative measures including legislation and higher stumpage fees are now in place to deal with cases of noncompliance with these contracts and the Forestry Act. Thirdly, this Department is required to apply to the Department of Environment and Labour for a Certificate of Approval to conduct silviculture and road building activities, and allow Crown commercial operators and domestic cutters to harvest within protected public water supply areas. The terms and conditions of the Certificate of Approval are automatically applied to the appropriate operating permits for the watershed concerned. Appendix 8b shows an example of a Certificate of Approval to allow Crown operators to harvest in the Dog Bay Pond Public Protected Water Supply. These protection measures will be maintained in this planning period, and compliance ensured through routine patrols by Conservation Officers.

There are nine protected public water supply areas and/or

their associated watersheds in which commercial harvesting and/or road construction operations are proposed for implementation in this plan. These operations are indicated in Table 1. Additionally, these operations are shown on a 1:250,000 scale map in Appendix 2a, and detailed in a table and on 1:50,000 scale maps in Appendix 2b. Similarly, there are seven public protected water supply areas in which silviculture operations are proposed for implementation in this plan. These operations are indicated in Table 1. Additionally, these operations are shown on a 1:250,000 scale map in Appendix 3a, and detailed in a table and on 1:50,000 scale maps in Appendix 3b. Approval to operate in these areas over the next five years will be requested annually from the Water Resources Division of the Department of Environment and Labour and the appropriate municipalities. The terms and conditions of approval will be applied to all Crown permits and contracts and strictly enforced by district staff.

In addition to commercial operations, certificates of approval are required for domestic cutters to harvest within protected public water supply areas. There are 20 protected public water supply areas in which domestic cutting areas are proposed for this planning period (see Table 1). Appendix 4a outlines the domestic harvest area boundaries with respect to the protected public water supply boundaries on 1:250,000 scale maps, while 4b shows detailed 1:50,000 scale topographic map locations of domestic cutting areas which include a protected public water supply area (s). Approval to operate in these areas will be requested every five years from the Water Resources Division of the Department of Environment and Labour and the appropriate municipalities. The corresponding conditions for cutting within each respective protected public water supply area, are printed on the back of the map attached to each domestic permit.

In wet areas with a greater potential for site degradation and erosion, commercial operators in the districts will be directed, where possible, to employ winter harvesting and road building. This will be less intrusive to the sites concerned and minimize impacts. DFRA staff will work with commercial operators who build roads, ensuring that only the minimum amount required to facilitate harvesting is built. This will reduce the future road density in the districts, and ultimately, the impacts of road building. Appendix 5a shows the forest road network up to the end of 2002. These maps will be updated over the five year period to maintain a visual record of the forest road network.

Table 1. Proposed Crown operations within protected public water supply areas and/or associated watersheds of District 8.

Protected Water Supply/ Watershed	Proposed Commercial Harvest Area	Proposed Road Construction Area	Proposed Silviculture Area	Proposed Domestic Harvest Area
Rocky Pond	n/a	n/a	n/a	3
Bridger's	n/a	n/a	n/a	3
Beaver Pond	n/a	n/a	n/a	3
Saltine's	n/a	n/a	n/a [v]	3
Trout Pond	n/a	n/a	n/a	3
Frog Martin	n/a	n/a	n/a	3
Rushy cove	n/a	n/a	n/a	3
Beaverton	n/a	n/a	n/a	5
Indian Pond	C08PH-39	n/a	n/a	7
Dog Bay Pond	C08BH-9	C08BH-9	C08PCT-5	7
	C08BH-11	C08BH-11	C08PCT-7	8
	C08BH-12	C08BH-12	C08PCT-9	11
	C08BH-14	C08BH-14	C08PCT-11	14
	C08BH-14-1	C08BH-14-1	C08PCT-13	23
	C08BH-16	C08BH-16	C08PCT-19	24
	C08BH-18	n/a	C08PCT-20	n/a
	C08PH-26	n/a	C08PCT-28	n/a
	C08PH-28	n/a	C08P-26	n/a
	C08PH-30	n/a	C08P-30	n/a
	C08PH-31	C08PH-31	C08P-32	n/a

Protected Water Supply/ Watershed	Proposed Commercial Harvest Area	Proposed Road Construction Area	Proposed Silviculture Area	Proposed Domestic Harvest Area
Dog Bay Pond	C08PH-33	n/a	C08P-36	n/a
	C08PH-34	n/a	C08PM-44	n/a
	C08PH-39	n/a	C08PM-45	n/a
	C08PH-40	n/a	C08PM-46	n/a
	n/a	n/a	C08HM-50	n/a
	n/a	n/a	C08HM-51	n/a
Jumpers Pond	C08PH-26	n/a	C08PCT-13	14
	C08PH-30	n/a	C08PCT-24	11
	C08PH-31	n/a	n/a	n/a
Southeast Pond	C08PH-27	n/a	C08PCT-15	14
	C08PH-31	n/a	C08PCT-16	15
	C08PH-32	n/a	C08PCT-24	23
	C08PH-33	n/a	C08PCT-28	n/a
Indian Arm Brook	C08BH-7	n/a	C08PCT-12	19
	CE08BH-21	CE08BH-21	C08PCT-22	20
	CE08BH-24	CE08BH-24	CE08P-29	22
	C08PH-29	n/a	CE08WPM-47	n/a
	n/a	n/a	CE08WPM-3	n/a
Indian Cove Pond	C08BH-20	n/a	C08PCT-17	37
	C08PH-35	n/a	C08PCT-25	38
	C08PH-36	n/a	n/a	39
	n/a	n/a	n/a	44

Protected Water Supply/ Watershed	Proposed Commercial Harvest Area	Proposed Road Construction Area	Proposed Silviculture Area	Proposed Domestic Harvest Area
Dogberry Brook	C08PH-35	n/a	n/a	38
Muddy Hole Pond	n/a	n/a	n/a	37
Little Arm Pond	C08BH-3	n/a	C08P-39	45
Big Lake	C08BH-2	C08BH-2	C08PCT-21	47
	C08PH-37	n/a	C08P-27	n/a
	n/a	n/a	C08PM-43	n/a
Cottrell's Pond	n/a	n/a	n/a	43
Cook's Pond	n/a	n/a	n/a	48

As an important step in protecting the district's sensitive water resources, their locations must be mapped. Figure 5 shows the Districts' protected public water supply areas, salmon rivers, special habitat management areas, waterfowl habitat, and cottage development areas. All these have increased buffer zones to protect both soil and water. These maps will be updated on a five-year basis unless significant changes occur. Additionally, DFRA staff will undertake to track any hydro metric data available from other resource agencies (eg. Department of Environment and Labour, Department of Fisheries and Oceans and Environment Canada) for sites within the districts, to maintain a record of water quality. These records will aid in determining if our water resources are being adequately protected.

Finally, DFRA currently supports relationships with community-based watershed management groups such as GRMA, and community watershed monitoring committees. Departmental staff has met with these groups during the development of this plan to document and

figure 5

accommodate their views with respect to management of buffers, harvesting within protected water supplies and maintenance of habitat for salmonoids. These relationships will be maintained in an effort to continue to narrow the knowledge gaps that exist with forest harvesting in and around watersheds. Further, in documented highly sensitive salmonid habitat, (eg. spawning beds) DFRA staff will work in conjunction with DFO to increase buffer widths beyond the regulated acceptable minimums. An example of this already exists in the district with DFRA regulating a 100 meter No Cut buffer below Second Pond, Indian Arm Brook

3.5 Recreation and Tourism

During the development of the District 8 Strategy Document a consensus was reached by the planning team that recreation and tourism values required particular attention due to the varied nature of these values on the landscape, an increase activity associated with these values in recent years, and the potential impacts that forest harvesting could have on these values. This resulted in the formation of a Tourism and Recreation Subcommittee consisting of ten members of the Planning Team. The role of the subcommittee was to document, and where possible, map all the tourism\recreation assets within the district to provide an information data base for future integrated development of the District's forest ecosystem resources. The results of this work, noted in the supplemental document to the District 8 Strategy Document (i.e. Tourism and Recreational Values Information Base - FMD 8) were used in the development of the forest ecosystem management activities for this Five Year Plan. This information base identifies 170 values which can be categorized as: 14 adventure tourism sites, 5 archeological sites, 8 cabin development areas, 61 marine cruise route, anchorages and stopovers, 5 heritage sites, 4 key river/stream corridors, 21 geo-stops (sites of geological interest), 10 outfitting lodges (big game and fish), 2 major scenic tour routes, 9 parks/natural areas, 31 hiking trails, and 4 snowmobile routes. As a first step in this planning period, a map of the all proposed commercial harvesting areas for the period 2003 -2008 in relation to the tourism and recreation values noted in the supplemental document referred to is shown in Figures 6a and 6b. The varied tourism assets are coded on these maps, and for explanation of these codes refer to Appendix 2c.

The historical level of activities associated with these values will give insight into the health and sustainability of our forest ecosystems. Where information is available, DFRA staff will undertake to document and track historical levels of these activities associated with these values, and potentially

Figure 6a

Figure 6b

the revenues generated from them as it relates to GDP and the region.

During the planning period any new tourism and recreation values will be documented and mapped. Where possible, DFRA staff will also support groups involved in the development of tourism/recreation opportunities to encourage the development of a greater diversity of revenue sources from our forest ecosystems. There are a number of tourism\recreation activities which can indicate stability in our ecosystems, as their levels are directly linked.

3.5.1 Hunting

Moose and caribou are highly regarded as the most important game species in the province by both the hunting public and the outfitting industry. Black bear hunting, as well, has gained in popularity in recent years. The combined revenue to the province from the hunting of these species is approximately $ 28 million annually. This includes both resident licence sales and those allotted to the outfitting industry. The geographical location of the 8 big game outfitting lodges in relation to proposed commercial harvesting areas and associated access road construction is shown in Figure 6a. All the hunting outfitter lodges in the District are located within the Gander River Management Zone. There are only 2 commercial harvesting operations that are planned near the Gander River during this planning period. These harvest blocks, C08BH-13 and C08PH-34, are in the vicinity of 4 hunting outfitter lodges denoted as OL4, OL5, OL6 and OL7 in Figure 6A. As the location of the target Partition AAC fiber in C08PH-34 is approximately 1 kilometer from the river in the closest stands, the visual impact of this harvest will be negligible on the outfitter lodges indicated. With regard to the harvest of stands in C08BH-13, forest operations should not greatly impact this value. All harvesting within this block will be done in accordance with the Gander River Management Plan. Forest operators in this area will be required to obtain a development permit from the Department of Government Services and Lands prior to receiving a harvesting permit for operations within the Gander River Management Zone. The buffer requirements of the development permit will be added to the harvesting permit as terms and conditions. Strict adherence to the buffers for forestry activities, will be required of operators within the Gander River Management Zone.

As a relative indicator of the sustainability of hunting as a tourism/recreation value, DFRA staff in conjunction with the Wildlife Division will track the historical levels of the number

of hunting licences sold annually by type for the big game management areas in the district. Other planned big game related activities were discussed earlier in Section 3.2.

3.5.2 Recreational Fishing

Recreational fishing for salmon and trout is an activity that is widely revered by many Newfoundlanders. The local participation and economic value of salmon and trout angling in the province were documented by the Department of Fisheries and oceans in 2000. It was determined that 101,945 residents participated in this activity, spending as much as $ 99 million on fishing trips and major purchases attributable to fishing activity (eg. boats, fishing equipment, food, lodging etc.). Salmon and trout angling are also important tourism draws for the province which bring in approximately $8.8 million annually through the outfitting industry (DFO, 2000). The geographical location of these outfitting lodges in relation to planned forest ecosystem management activities is shown in Figure 6a. Similarly, as with big game outfitters, all the outfitter fishing camps in the district are all located in the Gander River Management Planning Zone. With regard to potential impacts from planned forestry operations, the same harvest blocks and lodges noted above are involved. The mitigative measures stated for operations within the Gander River Management Zone, are therefore also applicable in the reduction of potential impact to this value. Additionally, to further reduce impacts in this area, forest harvesting operations will be scheduled to coincide with non angling periods (i.e. fall and winter) when and where possible.

As a relative indicator of the sustainability of fishing as a tourism/recreation value, DFRA staff in conjunction with DFO will track the historical levels of the number of rod days per year for the district's salmon rivers. Other planned salmonid related activities were discussed earlier in Sections 3.2 and 3.4.

3.5.3 Cabin/cottage Development

Cabin/cottage development within District 8 is widespread, playing a significant role in the recreational enjoyment of the outdoors for many residents. There are 8 cottage development areas (CDA) controlled by the Lands Division of the Department of Government Services and Lands that exist within the district (see Figure 6a). Combined with individual cabins outside these approved CDA's in other locations, there are upwards of 3000 cabins within the district. There are only two cabin development

areas (denoted as CD3 and CD7 in Figure 6A) around which forest harvesting operations in blocks C08PH-31 and C08PH-33 are planned in close proximity during this period. To protect this value, DFRA staff will maintain a 100 metre No Cut buffer on all cabin development areas and a 30 meter buffer on all legal cabins in other areas. As an indicator of the maintenance of the suatainability of this value, DFRA staff will liaise with Crown Lands Division to document and track historical levels of the number of cabin leases maintained within the district.

The majority of the cabin/cottage developments within the district have been closely tied to forest access road developments of the past. This has cause for concern from the following perspectives; erosion of the productive forest land base available for future sustainability of AAC's (especially the concern for the protection of silviculture treatments), and degradation of the quality of sensitive areas for other values including wildlife habitat and pristine natural environment for tourism (i.e. areas where road decommissioning may be required). To ensure that cabin development does not impact forest resources or other values temporarily impacted by access road development associated with the harvesting of forest resources, district staff will liaison with Crown Lands Division on future cabin developments, to ensure goals are being met with respect to other values. This will be discussed further in Section 5.5.

3.5.4 Sea Scape Recreation

Containing most of the coastline and offshore islands of Notre Dame Bay, District 8 is home to an ever increasing sea dependant recreation base. Such recreational activities include, 61 marine cruise anchorages, 6 boat tours featuring whales, icebergs and sea birds, 1 boat tour featuring Beothuk sites, 1 boat tours featuring and mussels, 3 adventure tourism (sea kayak and scuba diving), and continually increasing cruise ship activity (see Figures 6a and 6b). The largest impact to these values from forestry activity is the potential to lower the quality of the experience through degradation of the aesthetic marine vistas associated with these values. The only proposed commercial harvest blocks that could potentially fall into this category are C08BH-13 and C08BH-19. The recreational values associated with these areas are two offshore cruising anchorages and an adventure tourism route(denoted as CA3 and CA28 and AT12 respectively in Figure 6A). To protect the aesthetic quality of the vistas associated with these values, district staff will not plan any commercial harvesting on the associated uninhabited offshore islands. Furthermore, where domestic cutting is

permitted to provide a supply of fullword for recreational cabin owners on the islands and some of the surrounding communities, district staff will review and, where necessary, make changes to the domestic cutting policy on offshore islands for maintenance of view scape integrity. This will involve the maintenance of a minimum 30 meter shoreline buffer, and investigation of the development of viewscape buffers around sensitive offshore island anchorages and headlands. As an indicator of the sustainability of seascape recreation, district staff in conjunction with the Tourism Division, will track the economic input from these industries in Notre Dame Bay to the province.

3.5.5 Parks, Natural Areas and Trails

Special places include habitats that are essential to the well being of significant populations of one or more species (Peterson et al., 1995). Additionally, they include areas that protect intrinsic values such as heritage and pristine environments. There are a number of special places within District 8 which add to their uniqueness and importance to the ecoregions concerned.

3.5.5.1 Parks and Natural Areas

Currently, there are one provincial park and 6 municipal parks within the district, as well as 1 provincial park that borders the district. Other natural areas existing in the district range from the very large multiple value areas, such as the Gander River Management Area, to the small dedicated purpose areas, such as the Comfort Cove Bird Sanctuary. These are noted in Figure 6A.

Dildo Run Provincial Park - Dildo Run was designated as a provincial park in 1967, and is now designated as a natural environment park within the provincial parks system. This 3.5 square kilometer park (approx.)is the only provincial park that lies within the North Shore Forest Ecoregion. Situated on New World Island, the park typifies the rocky boulder-studded coastline, undulating hills and valleys, and mix of white spruce, balsam fir and black spruce forest of this ecoregion. Its importance as a protected area can therefore not be understated. The park, as well, is uniquely situated to take advantage of our coastal heritage and outdoor recreational activities with both hiking and ski trails and marine tours of "iceberg alley" adjacent.

Notre Dame Provincial Park - Notre Dame was designated as a provincial park in 1958 after the land area of the park was

donated to the province by the Anglo-Newfoundland Development Company. The 113 ha park lies on the border of District 8 approximately 1 km east of the Notre Junction Highway. This park is classified as an outdoor recreation park that provides both summer and winter recreational opportunities. The park is a part of the Central Newfoundland Forest Ecoregion and is characterised by dense growing, young coniferous forests interrupted by peatland, shrub and heathlands which provide a range of habitat for many wildlife species. More than 100 species of birds have been recorded in the park.

T'Railway Park - The Newfoundland T'Railway Provincial Park, consists of the former Canadian National Railway main line, stretching approximately 900 km from Port Aux Basques to St. John's, is Newfoundland and Labrador's contribution to the Trans Canada Trail network. It was designated as a provincial park in 1997, and is being developed as a multi-use recreational system for hiking, cycling, cross-country skiing, horse back riding, snowmobiling, and ATV use. This linear park provides expanded recreational opportunities for Newfoundlanders and tourists alike. It is a great way to see the varied wildlife in the region. A 50 km section of the T'Railway which runs through District 8, forms part of the Cobb's Corridor, beginning at the Exploits River near Jumpers Brook, running through the community of Norris Arm, and ending at the Gander River in the community of Glenwood.

Gander River Protected Area - The Gander River Protected Area is a 2 kilometer wide planning area (1 km either side of the Gander River) running approximately 50 kilometers from the northern limit of the municipal planning area of Glenwood to the head of Gander Bay. This area was protected under the Urban and Rural Planning Act in 1996, for the conservation of resources and planning for orderly development along the Gander River. The western shore of the protected area lies entirely within District 8.

The greatest impact to both parks and natural areas from forestry operations is the visual impact to their surrounding aesthetics. Additionally, pristine natural areas can be degraded with long term access road development. No Crown commercial operations are planned during this five year period in the vicinity of either Dildo Run or Notre Dame Provincial Parks. During this planning period, district staff will work with the Parks Division to determine an acceptable No Cut buffer around Dildo Run Park. With regard to Notre Dame Provincial Park, which

borders the district, staff will liaison with CBPP to maintain the existing 500 meter buffer around this park, and to maintain the 200 meter buffer around its adjoining ski trail. Similarly, for municipal parks, DFRA staff will liaison with the municipalities, agencies and outfitters concerned to determine if adequate protection from forestry impacts is currently in place.

One commercial harvesting operation, CE08BH-23, is proposed adjacent to the T'railway Provincial Park. The visual impact to the T'railway Park from this operation will be negligible as DFRA staff will regulate a No-Cut buffer along the park boundaries up to 100 meters from its centerline for both domestic and commercial harvesting throughout the district. Furthermore, access to the block across the T'railway Park is existing. Should a harvesting amendment area be required in the vicinity of the T'railway Park during the planning period, commercial operators will be directed by DFRA staff to Parks Division for permits prior to use of T'railway.

Some outfitters specializing in hiking, canoeing and nature viewing utilize the Gander River Management Area, as well as more remote parts of the district such as the upper Campbellton River system. The locations of these outfitters are indicated in Figure 6a. As with hunting and fishing outfitting, the only proposed forestry operations that are in the vicinity of adventure tourism routes are those in the Gander River Management Zone previously noted under hunting and fishing values. Again, the mitigative measures stated in the previous sections for operations within the Gander River Management Zone, are applicable in the reduction of potential impacts to this value.

Strict adherence to the Gander River Management Zone buffers for forestry activities will maintain effective viewscape protection for this natural area. Currently, a 300 meter No Cut buffer is regulated in this area. This area is also sensitive to the seasonal timing of operations, as the noise level from machinery may impact the quality of the wilderness experience. Where and when possible, harvesting operations within the Gander River Management Zone will be scheduled to occur outside the salmon angling season. Additionally, should other sensitive natural areas be identified during the course of this planning period, DFRA will investigate the application of temporary access for timber extraction to maintain pristine environments. This will be discussed further in Section 5.5.

As indicated in Section 3.2, currently no representative area(s)of the North Shore Forest Ecoregion is protected under the Ecological and Wilderness Reserve Act. In order to ensure natural

areas representative of all ecoregions in the province exist, an area in the vicinity of Swan Island has been selected as a candidate by the WERACT committee to represent the North Shore Forest Ecoregion. District staff, in conjunction with the members of the District 8 Planning Team, will support the development of the Swan Island Proposed Natural Area.

As an indicator of the maintenance of these values DFRA staff, in conjunction with the Parks Division, will track the occupancy rate at local parks. Secondly, designation of the Swan Island area as an ecological reserve will ensure that natural areas receive further protection, thereby maintaining this value for future generations.

3.5.5.2 Trails

In addition to the T'Railway Park just described, there are at least another 34 recreational trails that protect heritage and provide for expanded recreational opportunities within District 8. These are shown in Figure 6b. Among the more important historic trails are the trails of Twillingate New World and Cottle's Islands. These trails are traditional walking links between the communities, lead to vantage points to scenic ocean vistas, whale and iceberg watching. These trails at one time provided vital links between smaller outport communities and larger centers for the movement of provisions and trade, medical attention, hunting etc., when sea routes were not useable. Today, they provide recreational opportunities for hiking, skiing, viewing of exceptional landscapes, and nature walks, as well as preserving our heritage of isolated fishing and logging communities.

Some of the more important hiking trails that provide excellent opportunities to view nature and wildlife species include the Bayview Nature Trail near Glovers Harbour(bird watching and boreal wildlife), East Tickle Trail near Leading Tickles (song and sea birds, flowering plants and exposed shorelines) Fairy Hill Trail near Fortune Harbour (song and sea birds), Otter Pond Trail in Point Leamington (song birds, otters, freshwater habitat) Rowsell's Hill Nature Trail (song birds) Pendragon Trail near Northern Arm (premier bird watching, waterfowl, song & sea birds, diverse habitat), Norris Arm walking Trail(bird watching).

Several winter-season recreational trails add to the Varity of outdoor activities available in the district, that make it an important year round tourism environment. A recreational snowmobile trail beginning at Glenwood and following the Salmon

Pond forest access road system to the community of Loon Bay also exists in District 8. This trail has historically provided a direct access to domestic cutting, hunting, fishing, and cabin development areas. The rail bed of the old CNR branch lines at Lewisporte Junction and Botwood, today provides scenic snowmobile/ATV routes which connect the communities of Lewisporte and Botwood to the Newfoundland T'Railway Park. A cross country ski trail exists in the district on New World Island. Additionally, residents of the district utilize some of the various hiking trails described above as ski trails, and frequently utilize the ski trail associated with Notre Dame Provincial Park.

As with parks and natural areas, the greatest impact to scenic recreational trails from forestry operations is the visual impact to their surrounding aesthetics. District 8 staff has cooperated with community groups in the development and protection of some of these trails. "No-Cut" buffers of varying widths and specific "NO Cut" areas (eg. scenic hillside view scapes)have been added to domestic and commercial permits in the vicinity of some trails and motor touring routes to protect and maintain their existence and aesthetics. This approach will be continued in this planning period.

Only two trails (designated as SM2 and TR4 on Figure 6B) are associated with commercial operations. SM2 is a snowmobile trail that stretches from the Trans Canada Highway to Loon Bay utilizing the main trunk forest access road, intersecting several harvest blocks. It is not anticipated that this trail will be visually impacted by the proposed harvests, as this area has been previously harvested since 1975, and much of the area along this route has been reforested. Furthermore, the remaining timber in the proposed harvest blocks are small stands of partition fiber. TR4 is a hiking trail partially contained within the proposed harvest block C08BH-02 near the community of Point Leamington. The area of overlap is contained within the Big Lake protected water supply area, and can potentially be protected with existing environmental water course buffers in combination with No cut trail buffers along specific sections.

During this planning period, district staff will regulate 30 meter No Cut buffers along the CNR rail beds that connect Lewisporte and Botwood to the T'railway Provincial Park. District staff will also liaison with the municipalities, community groups and development associations concerned with the development of other trails, to determine if adequate protection from forestry

impacts is currently in place. As indicators of the maintenance of these values, district staff in conjunction with the associated municipalities, local service districts, development associations and Parks Division, will undertake to maintain a record of the number of kilometers of available recreational trails contained within the district.

3.5.6 Intrinsic values

3.5.6.1 Heritage

Not all values derived from the forest ecosystems are employment and/or revenue generating - nor should they be. The concise Oxford Dictionary defines heritage as "what is or may be inherited". For present generations of Newfoundlanders and Labradorians, that which currently exists in our forests is what we have inherited. If, as a people, we are not proud of that inheritance we have two choices. We can continue, as we have for decades, along a path of singular resource management, or we can take serious steps to holistic management of ecosystems. By choosing the latter, we who now reside here will, over time, reap the benefits of sustained biodiversity in our forest ecosystems. Furthermore, the heritage that we leave to future generations will, because of our commitment, be greatly improved.

Maintaining a sense of heritage is important in the preservation of the Newfoundland psyche. In order to maintain this value, forest ecosystems must continue to provide for traditional uses and experiences. Some of these, including hunting, fishing, camping, and wood cutting were once the mainstays of life as our forefathers lived off the land and the sea. For all of these, "boiling up" has been a standard traditional activity carried out during any trip in the woods, and it continues to give peace of mind to those involved in the outdoors.

Of significant importance to our heritage is the existence of forests in their historical species components and distribution. For example, inherent to our heritage background were pine-clad hills, immortalized in "The Ode to Newfoundland". Intrinsic values such as these will be protected, and where possible efforts will be made to restore them. The management strategies and activities designed to protect these values were described in preceding subsections of Section 3.

3.5.6.2 Archeological Sites

Sites of archeological significance, such as Boyd's Cove, Wigwam Point, Gander River and Black Harbour also add to the

maintenance of our heritage. These sites hold the key to our understanding of the native peoples, indigenous to this part of the island in the past. While some of these sites have been developed (AS1-Boyd's Cove and AS2-Wigwam Point, Figure 6B), others have not had archeological work completed and their locations cannot be disclosed.

As an example of a developed site, the Boyd's Cove Archeological Site, is located at the bottom of a small bay in eastern Notre Dame Bay, that is protected from wind and waves by a maze of small islands that extend north to Dildo Run. This site was utilized by native peoples for at least 4000 years. While the area was visited by both Maritime Archaic and the Paleoeskimo, the area was first settled by the Beothuk Indians for which it holds the greatest archeological significance. At the Boyd's Cove Beothuk Interpretation Center the history of Beothuk resource use and settlement patterns in this area have been documented. This site has answered a number of important questions concerning the Beothuk lifestyle in Newfoundland.

The Boyds's Cove Site - AS1 is the only archaeological site depicted in Figure 6B to be in close proximity to a proposed commercial operation - C08PH-39. No impact is anticipated to this site as the target Partition stands are all outside the archeological area of interest. Furthermore, this area has added protection from the regulated buffers required for the Indian Pond protected water supply area. The only other proposed commercial operations that could potentially be in close proximity to known archaeological sites are those along the Gander River. However, the 300 meter regulated buffer for the Gander River Management Zone should protect these sites. As noted above, the locations cannot be publically divulged.

During this planning period, district staff will ensure existing buffers designed to protect heritage sites are adhered to, report any evidence of sites of archeological significance as they are discovered, and will account for such sites in the planning of management activities to further conserve our heritage. Additionally, district staff will liaison with the Provincial Archeology Office (PAO) to determine if adequate protection exists for these and other sites contained within the district. One measure that will be undertaken is a review of the domestic cutting policy on the islands in Notre Dame Bay. In conjunction with the PAO, district staff will determine if changes are required to existing domestic cutting boundaries to protect archeological sites that may be associated with the

existing Boyd's Cove and Black Harbour sites.

3.5.6.3 Geological Interest Points

Located throughout the district, 18 sites of geological significance (designated GS on Figure 6 A) have been documented by the District 8 Tourism and Recreation sub committee of the Planning Team. These sites illustrate geological features, such as rock types and rock formations that indicate the processes and geologic ancestry of the parent material from which the soils of the district's ecoregions were derived. Some sites are also known to contain fossils. These Geo-stops can therefore be considered as important educational sites, as well points of interest for tourists.

Three proposed commercial operating areas (C08PH-30, C08PH-31, C08PH-32) encompass 4 of these Geo-stops (GS5, GS6, GS7 and GS8)that are located along the Road-To-the-Isles Route 340. It is not anticipated that commercial operations in these areas will impact the Geo-stops indicated. The target Partition stands are not in close proximity to these sites and road construction to these stands is not anticipated. Furthermore, these sites are mostly located within the 100 meter NO Cut highway buffer. However, should amendments to the proposed operating areas be required during this five year period, district staff will evaluate all operations associated with the Geo-stops indicated to accommodate the maintenance of these sites.

3.6 Other Resources

There are at least three other resource-based values that can be either impacted by forestry development or conversely, their development can impact sustainable forest development. The former includes agriculture, while the latter include mining, and energy developments.

3.6.1 Agriculture

The location of the existing agricultural areas in District 8 is shown in Figure 1 (see pg 15). Farming in the district principally involve hogs, sheep, cattle, poultry, vegetables, fruits and field crops, as well as products found in the wild, ie., blueberries, partridge berries, bakeapples, and forest products related to the Christmas tree industry. The proposed commercial operations do not impact existing agricultural developments. In order to maintain this value within District 08, DFRA staff will support the expansion of existing farms in areas

where soil resources are favorable. This will involve prior consultation and subsequent approval of all proposed expansions by the Agriculture Division.

In recent years agricultural development enquiries through the Crown Lands Division referral process have mainly focussed on managed blueberry and Christmas Tree production. The district will also support Christmas tree and blueberry developments on favourable soils, in areas not currently silviculturally treated or proposed for silvicutural treatment during this period. This will involve prior consultation and subsequent approval of all newly proposed developments by the Agriculture Division. Agricultural development, however, has the potential to remove productive hectares from the land base delineated for sustainable forest development. To offset timber losses from removal of productive land where agricultural expansion is approved, district staff will ensure that any merchantable timber associated with new agricultural developments is allocated to the existing commercial operators of the district.

3.6.2 Mineral and Energy Development

As with agriculture, both mineral and energy developments have the potential to reduce the productive forest land base. The location of the existing aggregate quarries in the district is shown in Figure 1 (see pg 15). Currently, mines or energy developments do not exist within District 8. Should such developments occur during this planning period, district staff will ensure that any merchantable timber associated with these developments is allocated to the existing commercial operators of the district. Furthermore, district staff will monitor ongoing mineral development activity within the district through the Dept. of Mines & Energy website. This will provide an adaptive base for the planning of future forest ecosystem management activities within the district.

Energy development, however, could be beneficial to sustainable forest ecosystem management through the utilization of waste wood byproducts (ie. bark and sawdust from sawmill production). These sawmill waste byproducts piled in large quantity can be a fire hazzard, and as well detract from the aesthetics of the surrounding landscape from a tourism point of view. Should technologies be developed that utilize these waste products, it could virtually eliminate residue piles that exist throughout the district. The district staff will therefore support the development of energy or other products from waste wood byproducts during this planning period.

4.0 FOREST ECOSYSTEM PROTECTION

In the Ecosystem Management Initiatives Section, many of the protection functions with respect to maintenance of ecosystem health were discussed. This section will concentrate on the protection of forests for the economical and social benefits derived from them. From this perspective, protection of the forest ecosystems has four basic areas of importance. These include protection of forest ecosystems from wildfire and major insect attacks, compliance by resource users with the acts and regulations designed to protect and conserve the resources of forest ecosystems, and public education. Considering the current precarious wood supply situation in the district and Province, the industry cannot afford another major loss to the productive land base. Every reasonable effort must be made by resource users to prevent the occurrence of activities that will negatively impact forest ecosystems. Where unregulated resource use occurs, a strong compliance program will be required to mitigate such activity to ensure for sustained use of forest ecosystem resources.

4.1 Fire

The forest fire suppression effort in District 8 was very successful during the past five years. Approximately 30 ha of productive forest land in District 8 were destroyed by wildfire between 1998 and 2002. None of the fires that occurred during this period were serious, and their combined effect on the forest land base was minimal. It is the intent of the district manager to maintain this positive record by improving firefighting capabilities and decreasing response times. The current firefighting capability includes a three-man fire crew at the Lewisporte depot and nine conservation officers. The district enjoys the continued close support provided by the Regional Fire Protection Center at Gander Airport. Two CL-215 water-bombers, six seasonal fire-fighters (including a rotating two-man heliac team), a Cessna spotter plane, the provincial fire equipment bank, and the Central Region fire equipment bank are located at this facility. The near proximity of the water-bombers and the helitack team provides the Lewisporte District with very favourable air response times.

The mobile communications system consists of a transmitter tower located on Mount Peyton, a base radio station at the Lewisporte District office, mobile radios in all vehicles, and portable radios and cellular phones for all conservation officers and fire crews.

The Department’s public relations program developed in concert with the Newfoundland and Labrador Forest Protection

Association, is effective in creating a positive attitude in the general public and private woods contractors toward forest fire safety. Some PR activities which will continue through this planning period include posting signs along high volume recreation areas/routes, maintaining a fire hazard sign in a high traffic location, visiting schools and other youth groups to promote fire safety, support of local municipal fire departments in forest fire training, promote safety messages on radio or through other mass-media, and continued patrols on commercial operations, domestic harvesting and in high-use outdoor recreation areas. The district will also promote increased firefighting training for all field staff to improve the proficiency of firefighting personnel.

4.2 Insect and Disease

It is not within the mandate of the Regional Services Division to carry out actual field programs to combat insect and disease infestations. However, during field patrols, DFRA staff will pay regular attention to the forest condition, and attempt to detect, as early as possible, any sign of new pest or disease problems. Also, annual assessments will be conducted in silviculture areas. Any problems detected will be passed along to the Forest Protection Division in Corner Brook and suitable courses of action will be discussed. Likewise, this information will be exchanged with the Department of Natural Resources-Canada to assist in targeting areas for their annual insect and disease survey. This survey will also be used to identify areas where reconnaissance efforts should be concentrated.

Large-scale pesticide spray programs were not conducted in District 8 during the past five years. The major Newfoundland forest pests, spruce budworm and eastern hemlock looper, were not present in any significant numbers. It is not anticipated that a large-scale spray program will be required in this district during this planning period.

The pest that is now of the greatest concern in District 8 is the balsam woolly adelgid. This insect is evident in pre-commercial thinnings throughout the district. This situation will be closely monitored by using sample plots to determine the impacts on tree growth, and to design management decisions that may be required to treat this concern.

4.3 Compliance

The district intends to increase enforcement of the Forestry and Wildlife Acts and associated regulations on both Crown and company limits(where applicable), thereby gaining more control over cutting, hunting, forest fire, and environmental concerns. Particular attention will be paid to the issues of overcutting,

poor utilization, and poaching with regard to wood resources. The plan is to strictly enforce the allowable cuts, ensure compliance with designated cutting areas, and protect the more valuable forest sites and young stands for future commercial use. District Staff will also liaison with representatives of both paper companies in regard to poaching of valuable wood resources on their limits. Incidences of illegal fire activity and noncompliance of the Forest Fire Regulations by operations on forested land will not be tolerated. Important wildlife compliance concerns, which will be focussed on during this five year period, are poaching of big game, small game and migratory birds. The environmental compliance concerns that are ranked of highest priority for enforcement efforts are: (1)operations within protected public water supply areas, (2)adherence to provincial road construction standards and water body buffers guidelines, (3)operations within sensitive areas, and (4)the indiscriminate disposal of waste associated with forestry operations.

During the previous five year period, the district instituted an environmental cleanup operation targeted at the removal of abandoned machinery associated with historical forestry operations. This program will be continued in this five year period with emphasis on compliance with environmental conditions of permits and licences by existing operators.

4.4 Public Education, Involvement and Commitment

Society in general has to be committed to the idea of maintaining ecosystem health for the greater good of all; not the least of which includes future generations. Central to the Province's Forestry Act is the idea that our forest ecosystem management activities should not impair the ability of future generations to sustain themselves. Everyone has to understand that their actions affect ecosystems, and therefore they are responsible for ensuring that our natural resources are used in the most efficient, sustainable manner. Western societies such as ourselves have to curb "throw away mentalities," reduce waste production and carbon dioxide emissions, maintain clean ecosystems and become world leaders by demonstrating sustainable use and environmental concern. To illustrate where we are today, 25% of the world's population uses 80% of the world's resources. It has been stated, that the impact of every Canadian on the Environment in 1993, was equivalent to 40-50 3rd world residents (Reid, 1993).

The American philosopher, John Dewey, has reportedly been quoted "Education leads to no final end; it is something continuous, a reconstruction of accumulated experience which must be directed toward social efficiency. Education is life

and not merely preparation for life". Education can therefore be viewed as the continued transmission of the values and accumulated knowledge of society. To the extent that ecosystem management is "holistic" in nature, any educational efforts must also be broad in scope in order to promote the most responsible utilization of forest ecosystems. The goal is to ensure sustainability of all values, thereby making the most of what we as a society have inherited. In order to meet this goal, it is proposed to promote education of forest ecosystem management on three fronts (ie. staff, forest operators and the general public).

Staff - Departmental staff is of utmost importance in fostering new ideas and delivering education to the general public. Being conservation officers with bilateral training, they are an integral part of bringing management initiatives to the ecosystems. Because the Department's mandate is defined in the context of "adaptive management," it has to continually change, as new knowledge is developed. It is recognized, that continued staff development and training is pivotal to the management of forest ecosystems. An informed, knowledgeable staff will effectively deliver new technologies to target stakeholder groups. During this planning period, efforts will be made to educate staff in new ecosystem management initiatives, and ensure that they are kept at the leading edge of technological developments. As a first step, a workshop entitled "Logging for Wildlife" will be delivered to DFRA staff. This workshop will emphasize Departmentally-endorsed principles on the topic referred to, and the teaching skills required to transfer this technology to forest harvesters.

Forest Operators - Forest operators, being the main group to affect large scale on-the-ground change in forest ecosystems, require continual education to increase their knowledge of ecosystem management initiatives and approved environmental and general operating procedures. This group includes commercial harvesters, road builders and silviculture contractors. During this planning period, DFRA staff will deliver the workshop "Logging for Wildlife" to commercial harvesters. Likewise, it is proposed to deliver a workshop on forest access road construction to commercial harvesters who build their own roads. The purpose of these workshops will be to relay Departmentally-endorsed procedures for forest harvesting and access road construction, aimed at reducing the potential impacts of these activities on the landscape. It is also proposed to develop a mechanism to deliver any new Departmental initiatives with respect to maintaining biodiversity in both harvesting and silvicultural operations to Crown operators and silviculture contractors.

General Public - Recognizing that the general public is a part of, and can have a marked effect on the province's forest

ecosystems, it is essential that they be informed and educated, so they can participate in fair decision making with respect the sustained use of these ecosystems. Public participation in the management of forest ecosystems is necessary to ensure that the public's concerns and values are made known and considered in the decision making process (WNMF, 1996).

Improved public understanding of the Department's forest ecosystem management goals, policies, procedures and regulations can only be accomplished through continued interaction and education of the general public. Through such a process, the general public will acquire the understanding of ecosystem values, and new stakeholder groups can be incorporated in future planning.

During this planning period, DFRA staff will continue to further public education through:

1. the delivery of presentations to schools.

2. participation in meetings through liaisons with town councils and development associations, resource management groups and other government departments.

3. participation in National Wildlife, Forestry, and Environment Weeks events.

4. participation in outdoor-based youth groups and events such as the annual Boy Scouts Dig Day.

5. maintenance of district signage appropriate to the lawful use of ecosystem resources.

6. ad hoc discussions with resource users such as domestic wood cutters, recreational enthusiasts, hunters, fishers, etc.

An extensive framework of educational procedures and materials has already been developed by groups such as the Western Newfoundland Model Forest and the Thomas Howe Demonstration Forest to promote public understanding of the dynamics of forest ecosystems and environmentally sustainable forest practices. It is anticipated that this information can be utilized as a base to further the education initiative in District 8.

5.0 FIVE YEAR OPERATIONS 2003-2008

This section will outline all the operational activities that are proposed to occur on Crown land and on company to Crown exchanges in District 8, for the period April 1, 2003 to March 31, 2008.

5.1 Allocation of Wood Supply

In order to achieve a regulated forest, it is fundamental that measures are taken to promote a balanced forest age class structure. The present age class structure on Crown limits in District 8 is skewed as follows: 0/20 years - 37.3 %; 21/40 years -14.5%; 41/60 years -2.5%; 61/80 years -13.4 % and 81+ years - 32.3%(Figure 7). The major problem in this structure is the disproportionately low percentage of the forest in the 41/60 year age class. The implication, for the medium term timber supply, of this shortfall is a significant reduction in the amount of merchantable size timber available, once stands in the older age classes are either harvested or cycled through natural disturbance. It has been projected through the Woodstock Forest Model that this will occur within the next 20 years.

The magnitude of the Class I timber supply shortage can be partially offset by maintaining the harvest strategy of adhering to the priority harvest of damaged and oldest-stands first in combination with advocating the harvest of alienation Class III timber stands where feasible in the district. This however, will have to be done in line with an AAC for this timber designation. This strategy will minimize the impact of future reductions in Class I timber allocations.

Generally, in the allocation of the wood supply to the major commercial operators, the first priority is given to damaged and diseased stands where feasible. This precedence has limited potential because only a small portion of the production forest currently shows evidence of insect or disease damage and it is interspersed throughout the district. The second priority is to harvest merchantable, over mature stands. Most scheduled operating areas will consist of stands in this 80+ year old age class. The priority of harvest planning in this age timber will be placed on the harvesting of 7000 m^3/year of Alienation Class III during this five year period. The third priority is to harvest merchantable mature stands.

In keeping with Departmental policy, harvesters with integrated sawmills will receive priority for any additional allocation of commercial timber (eg. company to Crown exchange) that becomes available. Adherence to this policy will help to improve fiber utilization in harvesting and primary manufacturing.

Figure 7.

5.2 Commercial Harvesting Areas

The current Class I Crown tenure AAC level is 72,200 solid cubic meters per year, as determined through the 2000 Wood Supply Analysis. This volume is further characterized as having two components; a Base AAC (62,100 m^3/yr) and a Partition AAC (10,100 m^3/yr). The rational for the two-part AAC, was to evaluate the spatial arrangement of Class I timber stands from a block size perspective that would reflect the economic feasibility of harvesting on the defined landbase. For clarification, the partition AAC consists of blocks of Class I timber stands that are less than 20 ha and are more than 200 meters in distance from other blocks. In effect it is smaller harvesting blocks that can be more challenging from an operations perspective. The Base AAC then, consists of blocks of Class 1 timber greater than 20 ha. During this planning period, the harvesting of Class 1 timber will comply with these components of the AAC.

Harvesting by commercial operators during this planning period will mainly occur via the clear-cut method utilizing shortwood systems. Under this strategy, even-aged stands of mature to over mature wood will be harvested in a single cutting, in order to regenerate these sites under full exposure to sunlight through either the use of seedlings already on site, or seeds dissipated from adjacent stands and harvested trees, or by artificial regeneration (ie. planting and direct seeding). The clear-cut method mimics the natural regeneration of even aged boreal stands that result from such disturbances as wildfire or insect attacks, while capturing volume that would otherwise be lost through mortality. The use of shortwood harvesting systems in clear-cut operations will ensure nutrients remain on the sites through the decay of branches, tops and foliage, thereby guarding against site degradation.

The District 8 Crown commercial operating areas are shown on a 1:250,000 scale overview map in Appendix 2a, and detailed in a table and on individual 1:50,000 scale topographic maps (or 1:75,000 when the size of the area dictates)in Appendix 2b. The summary table provided indicates the potential merchantable volume available for harvest in each proposed operating area, broken down into four distinct categories; Class I Base AAC, Class I Partition AAC, Class III (operational) and Hardwood. The volumes harvested will be tracked by category during this planning period.

From the table in Appendix 2b, it can be seen that the total proposed Class I AAC harvest volume contained with the five year harvest blocks for Crown tenure is approximately 60 percent greater than the allowable cut. The actual total harvest of Class I AAC volume, however, for the next five years will not exceed the allowable cut. The additional volumes are included so as to provide for operational flexibility over the planning period. This is

within the acceptable variance for planned harvesting since the 2000 Wood Supply Analysis was designed to ensure that operable growing stock would be maintained at a minimum of two times the AAC throughout the 160 year planning horizon. That is to say, there will always be at least twice as much merchantable timber available on the landbase than will be cut in any single period. In fact it was this requirement to maintain a 2X growing stock buffer, which resulted in a constraint on the AAC of 9 percent compared to the previous AAC for the period 1996 to 2000.

Similarly, on the company tenures exchanged to Crown, the intent of District management is to balance the Class I harvest by all harvesters of the resource (i.e. company +Crown) over the five year planning period. Currently, exchange agreements between ACCC and the Crown in District 8 permit the harvest of 50,000 m^3 of Class 1 timber on CBPP tenure for the period from 2000 to 2005, and 15,000 m of Class I timber on ACCC tenure from 2000 to 2005. It is anticipated that once expired, these agreements will be renewed based on the current AAC's for these tenures determined from the 2000 Wood Supply Analysis.

Included in the list of commercial operating areas are eleven domestic areas in which it is proposed to harvest limited scale commercial allocations. These operating areas have been proposed specifically to target Partition AAC. The stands have mainly resulted from previous commercial harvesting or essentially clean-up areas, and because of their small size (ie. ranging from 2 ha to 20 ha), proposed commercial operations will more closely approximate domestic harvesting. These areas are required to meet Partition AAC allocations, which currently equates to 10% of all the AAC timber available for commercial allocation. Due to the varied economic feasibility of harvesting individual stands, not all stands portrayed are able to be harvested (i.e. Partition AAC will be maintained). However, all Age Class 4 and 5 stands of Partition AAC within the domestic areas referred to have been included, as it is difficult at this point to determine the actual stands to be harvested. District Staff will work with commercial operators during this planning period to evaluate the applicability of these stands for harvest.

Some of the proposed operating areas contain merchantable timber that is currently designated as Class III (ie. operationally constrained). Stands in this category are typically difficult to access and/or harvest from both physical and economic aspects. As a result, they have been removed from the landbase used to calculate the sustainable Class I AAC. The designation of these stands has been set for the period 2001 to 2005, after which time the landbase will be reviewed in preparation for the next wood supply analysis. It is the intent of the department that this designation of timber will also be harvested in a sustainable manner. The Class III volumes noted in Appendix 2b represent

approximately 31 percent of the sustainable harvest for this timber designation. Class III timber allocations currently account for approximately 15 percent of commercial allocations, and are thus essential in sustaining industry in the district.

Several operating areas contain merchantable birch volumes from a combination of birch stands and mixed softwood/hardwood stands. The priority of harvest for commercial birch allocations will be met first with remnant birch in mixed softwood/hardwood stands as a part of integrated harvesting operations. Utilizing this strategy, it is anticipated that approximately one half of the birch volumes proposed for harvest will result from mixed stands primarily targeted for softwood harvest. Currently, 10 Crown operators harvest entirely firewood (mainly birch), and several other operators have firewood allocations as integrated components of their operations. This species of timber is therefore essential in sustaining commercial operations within the district. As with other designations of timber, it is the Department's position that birch is to be harvested in a sustainable manner.

5.3 Domestic Operations

District 8 has thirty-six domestic areas, the majority of which were created along the coastline encompassing the scattered communities. These areas were designed to provide a supply of fuelwood close to the communities. Originally, they consisted of both commercial and non commercial stands, but as timber demand increased and AAC’s were developed, many of the commercial stands have been removed from the domestic fuelwood areas.

Currently, it is difficult to quantify the supply of domestic fuelwood available in District 8. Accurate inventory data are not available for domestic cutting blocks because most of these areas now contain areas of commercially harvested forest that contain stand remnants, partially harvested stands (i.e. birch, aspen, maple, and larch remaining) or commercially uneconomical stands. Also many domestic areas have either received very small patch cutting or high-grading of stands that have not been updated on the Department's inventory system. However, generalities can be made about the supply of domestic wood in different zones of the district, and some important implications are apparent. The distribution of fuelwood cutting blocks is shown in Appendix 4a.

The majority of domestic areas contain significant mature softwood stands which have sustained centuries of domestic harvesting resulting in many patch cuts and highgraded stands. However, the domestic fuelwood supply is becoming a concern in four areas near the communities of Stoneville, Baytona, Comfort Cove, and Embree. Years of domestic harvesting have left stands depleted, forcing residents to move farther from their communities to obtain

fuelwood, or purchase their fuelwood from commercial operators. These areas contain many regenerating stands and there are some problems with illegal harvesting of these immature stands.

Generally, the traditional domestic areas near communities have been expanded into harvested commercial areas to provide residents access to additional fuelwood supplies. Over time, these expansions into commercial areas will have to be closed to prevent the illegal harvest of immature stands. This has already taken place in the Birchy Bay area, where much of area 14 has been closed to domestic harvesting in the past two years. Similarly, a large part of the traditional domestic area around Embree and Little Burnt Bay has also been closed to most domestic harvesting to prevent harvesting of immature stands. Given the present fuelwood demand, and growth rates of regenerating forest, it is anticipated that these problems will persist and expand to other domestic areas in the medium term. However, it is also anticipated that continuing the expansion process of domestic areas into recent commercially harvested areas will alleviate much of the supply concern.

Although most domestic areas are similar, with mature softwood stands that have been harvested for fuelwood, there are a few unique areas. The area near Norris Arm North contains mostly regenerating hardwoods with some dead fir. Domestic areas along Salmon Pond access road were created after commercial harvesting was completed to allow access to non commercial timber including hardwoods and softwood on operationally constrained areas. Domestic areas encompassing some of the islands in Notre Dame Bay provide a source of fuelwood for both cabin owners on the islands as well as some surrounding communities. In the past residents used long liners to transport fuelwood from the islands to their residence. Today most of the fuelwood harvested off the islands is transported over ice by snow machine. The last area of distinction is the one that is the most unique, geographically - that is Area 1- Change Islands. The residents of Change Islands have a small demand for fuelwood, only 30 - 40 permits issued per year. Change Islands has a good supply of regenerating softwood forest to meet the fuelwood demand. This timber is alienated from the Class 1 landbase and is therefore not part of the sustainable supply for the district.

Although the community of Glenwood is not in District 8, and is surrounded by company limits, there is an ample supply of hardwood fuelwood available in close proximity to the community in the Salomon Pond area as well as in the adjacent management Districts 5 and 6. Company limits in District 8 also provide a hardwood (mainly birch) fuelwood supply in areas in close proximity to the communities of Norris Arm, Lewisporte, and Gander Bay. In areas where timber has been exchanged from company to Crown, which

include Michael's Harbour, Otter Pond, and Twin Ponds, additional fuelwood opportunities have been delineated after commercial harvesting operations were completed.

There are a number of important issues which need to be addressed with regard to the domestic cutting sector. The most prominent and timely of these is the concern with utilization of commercial sawlogs and pulpwood as firewood. A second issue which has also surfaced, and will continue to gain dominance during the next decade, is the harvesting of young sub-merchantable regenerative growth (mainly spruce) on past cutover areas. This leads to a third problem area of increased demand brought on by a reduction in supply. All of these problems point to the need for increased control over domestic cutting. The goal of protecting the provincial short-term commercial wood supply is of a primary concern with respect to maintaining the existing forest industry in Newfoundland during the next decade or two.

One of the measures that will be taken to maximize the portion of the allowable cut available to commercial operators will be to direct the domestic harvest away from commercial stands and into noncommercial, fuelwood type stands. Restricting domestics from cutting in both mature commercial quality stands as well as young sub-merchantable stands will maintain the minimal domestic impact to the Class 1 AAC at or below its current level of approximately 4%. This will involve a complete review of all domestic blocks for their commercial value, and where appropriate the allocation of valuable, operable stands to commercial operators. Although there are good alternate domestic supplies in all of these areas, it is still anticipated that there will be public dissatisfaction if changes are made to existing domestic areas, as they are within close proximity to communities and were used as traditional domestic cutting areas.

To help offset any losses to the domestic land base that may occur as a result of allocation of stands to commercial status, extensions/additions to domestic areas will be investigated in current commercial areas, as timber management objectives are met, to provide alternative sources for domestic timber consumers. This will also facilitate silvicultural operations through the cleanup of commercially submarginal stands. Additionally, the concept of removing fullword and any merchantable pulpwood, produced as byproducts from proposed diameter limit thinning treatments, for both public and industrial use will be investigated during this five-year period.

To sustain a middle and long term wood supply, growing stock that will be developed from older regenerative stands (i.e. age class 2) and precommercially thinned areas must be protected. Many domestic blocks contain areas that have been silviculturally treated in the past, and still contain potential areas for future

treatment. These areas will be evaluated during this planning period and amendments will be made to the respective domestic cutting blocks to reserve appropriate areas for silvicultural treatment for enhancement of the future growing stock. The specific treatment areas will be identified on domestic cutting maps and marked in the field. These areas will be closely monitored and strictly enforced for no-cutting or trespassing. Also commercial fuelwood operators will be encouraged to expand in other parts of the district, so that a greater supply will be available to the consumer.

5.4 Silviculture

In order to minimize impacts on the long-term timber supplies and ecosystem processes, a steady reforestation program will be conducted with the objective to plant all medium, or higher classed sites that are not regenerating to a satisfactory stocking level. Reforestation of current cutovers through scarification and planting will therefore be the first priority of slivicultural area treatment during this planning period. Additionally, there is a considerable area of NSR occupying productive sites in the district, that resulted from past wildfire disturbance and in some cases cutting practices in the past. These sites need to be converted to a more vigorous, useful state by re-establishing forest cover. Reclamation of backlog, not sufficiently restocked sites (NSR) through planting will: (1)result in an increase in the production forest land base, thereby assisting the goal of maintaining 20% Old Growth on the future landscape; (2) account for future losses to the landbase from permanent disturbances; and(3)result in the production of successional habitat that will aid in the maintenance of landscape connectivity for wildlife.

From a silviculture perspective, the only potential treatment to lessen the projected medium term Class I timber supply shortage is precommercial thinning (PCT) in the 21/40 year age group, and a variation of PCT in larger diameter stands of the same age group, diameter limit thinning (DLT). Thinning, over a number of years, will advance the development of those treated stands, so as to essentially bump the age/development up a class, and can help to fill the shortfall in supply. However, due to the limited time frame available to the immanent shortfall in supply, this treatment effect will be minimal in alleviating the Class 1 softwood shortfall. It is therefore second in the silviculture treatment priority for this period.

Thinning treatments (PCT/DLT) in natural fir/spruce stands and plantations (PM - plantation maintenance)in the district, however, also have merit from the perspective of promoting the development of high quality fiber stands. These thinning treatments will allow natural and planted spruce to rebound, through the removal of competing, low quality, aphid-infected fir ingrowth(often an off

site colonizer). These treatments will insure that such stands remain tracking along projected yield curves, resulting in protection of the future growing stock, and a cost benefit to future harvesting through gains in piece size compared to untreated areas.

Silviculture treatments designed to promote management of the District's hardwood component at both the landscape and stand levels will be conducted during this period to achieve the ecosystem management initiatives described earlier in Section 2.5. Treatments will involve two stages of stand development; immature stand density management and stand regeneration management. In the former case a hardwood component will be left where possible in all pct's, dlt's and pm's. Currently, no density management treatments are proposed for hardwood dominated immature stands, as survey work by district staff has indicated that suitable stands for the treatment are limited. In the latter case, stand regeneration initiatives will be investigated from both site preparation and seeding perspectives. This will involve the evaluation of scarification treatments for the production of adequate seedbeds, as well as evaluation of seeding treatments such as direct seeding and seed tree harvests.

Similarly to hardwood management, silviculture treatments designed to promote management of the District's red and white pine components at both the landscape and stand levels will be conducted during this period to achieve the ecosystem management initiatives described earlier in Section 2.5. White pine pruning is proposed for two immature stands to abate the advancement of white pine blister rust within the district. All proposed planting areas will incorporate a minimum of 2-5% pine seedlings. District staff will evaluate the existing planted red pine stand at Northern Arm for its cone-bearing capacity and carry out cone picking operations to increase the supply of native seed when crops are available. This may involve fertilization treatment of selected areas of the stands to maximize cone crops. Additionally, district staff will conduct inventory cruises in native red pine stands to document the silvic's of these stands for future management considerations.

The silviculture treatments proposed for the period 2003 -2008 in District 8 on Crown and exchanged company limits are outlined on a 1:250,000 scale overview map in Appendix 3a, and detailed in a table and on individual 1:50,000 scale topographic maps in Appendix 3b. The silviculture treatment having the highest priority is site preparation and planting. A minimum of 1425 ha of planting is scheduled for Crown tenure in Districts 8 during this planning period. Additionally, 275 ha and 50 ha of planting is scheduled for ACCC and CBPP exchanged limits respectively. All cut overs and some backlog areas that have regeneration problems are proposed for reforestation. It is anticipated that approximately 90 percent of all scheduled planting will require site preparation in the form of

row scarification. Next in priority is pre-commercial thinning. It is scheduled to treat a minimum of 250 hectares on Crown tenure during this period in primarily black spruce/balsam fir stands that regenerated from the previous harvesting activity. No Crown directed precommercial thinning is planned for company limits. Finally, 410 ha of pine management and 275 ha of hardwood management are planned for District 8. The scheduled figures for each treatment noted are the minimum areas needed to comply with the requirements of the 2000 Wood Supply Analysis. The additional treatment proposals noted in the table, equating to 2,875 ha each of site preparation and planting, 2,375 ha of precommercial and diameter limit thinning and 650 ha of plantation maintenance in District 8, are areas which will be completed on an incremental funding basis.

5.5 Resource Access Road Program

Proposed access road construction for the next five years in Districts 8 and exchanged company limits is outlined on 1:250,000 scale overview map in Appendix 2a, and detailed in a summary table, and on individual 1:50,000 scale topographic maps in Appendix 2b. A total of 143.1 km of road is planned for construction during this period. It is proposed that approximately one half of these roads will be constructed by the Department. It is anticipated that the remainder will be built by Crown operators. This breakdown, however, is dependant on funding and is therefore subject to change. Departmental roads, being main trunks, will either be constructed to Class B or C-2 standards and are designated as primary road systems. Proposed road construction by Crown operators will mainly consist of spur roads constructed to Class C or D and are designated as operational roads.

Associated with the proposed road construction, twenty-eight bridges are proposed for installation. The length and hence design features of each bridge will be determined through field work prior to construction of the associated road system, and is subject to all provincial and federal legislation and guidelines. The location of this bridge work is detailed in a table and on 1:50,000 scale topographic maps in Appendix 2b.

The majority of the road construction will be into over mature and mature wood, for the primary purpose of accommodating commercial cutting operations. A secondary forestry use will be to provide access for silviculture operations. Other uses include domestic cutting, and recreation (ie. hunting, fishing and berry picking). At this time, no road is planned solely for domestic use.

Consideration of the host of tourism/recreation values that exist with the boundaries of District 8 by the Planning Team, has resulted in the consensus that road-specific decommissioning is to

be considered on an area specific basis, should a conflict of values exist. Furthermore, as alluded to in Section 3.2, consideration of activities to rehabilitate selected, obstructed salmonid habitat in the vicinity of historical stream crossings, may result in the decommissioning of specific roads or sections thereof. It was therefore agreed that the decommissioning of specific roads to protect other ecosystem values could take the form of removing bridges and culverts, in addition to replacing excavated material from adjacent embankments back into the roadway to restore the areas as close as possible to their natural state. Additionally, it was agreed that the scheduling of road decommissioning must be done in concert with the completion of harvesting and silviculture activities in the areas of concern. At that time, the Department of Forest Resources and Agrifoods will convene a meeting of all interested stakeholders to determine the timing and details of decommissioning activities.

While the Department of Forest Resources and Agrifoods can adopt this approach as a goal of the plan, the implementation of this strategy will be entirely dependant upon our ability to prevent the establishment of permanent structures such as cabins along the proposed road routes. While DFRA can commit to refusing approval of cabin sites in areas to be decommissioned, the actual authority rests with the Crown Lands Division of the Department of Government Services and Lands. During this planning period, district staff will liaison with Crown Lands Division in identifying operational roads that will require decommissioning.

6.0 MONITORING

To evaluate the results of the management activities proposed in this plan, the stakeholders committee has reached consensus agreement that a monitoring committee will be established, consisting of interested stakeholders from the Ecosystem Management Planning Team for District 8. The focus of the monitoring committee will be the evaluation of the overall progress toward the long-term goals as identified in the Ecosystem Strategy Plan. In addition, the committee will evaluate the effectiveness of activities and actions outlined in this five-year operating plan focussing on compliance with regulations and accepted guidelines and protocols, maintenance of forest ecosystem health, and socioeconomic consequences.

The report of past annual activities will be prepared by DFRA staff for each year outlined in the five-year operating plan. The monitoring committee will review the report, collect any additional information required, and provide feedback to DFRA management detailing where anticipated goals are, or are not being met, in addition to detailing any recommended changes required in the plan. The DFRA response to those recommendations will be included in the subsequent annual work schedule plan.

7.0 AMENDMENTS

Should minor operational amendments to the implementation of activities outlined this plan be required, it will be at the discretion of the Director of Forest Ecosystem Management to approve such amendments within the allowable variance under current environmental regulations. However, in the event that a variance to the plan is required which is larger than those specified under current environmental regulations, the district manager will convene a meeting of the District 8 Forest Ecosystem Management Planning Team to review the amendment. Consensus of the planning team members will be sought prior to the Department of Forest Resources and Agrifoods submitting the amendment to the environmental review process, administered by the Department of Environment and Labour.

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REGISTRATION FORM
PURSUANT TO PART 10 - SECTION 49 OF
THE ENVIRONMENTAL PROTECTION ACT

Name of Undertaking: 5-Year Operating Plan
Forest Management District 8

Proponent:

(i) Newfoundland Forest Service

(ii) P. O. Box 8700
St. John's, NF
AlB 4J6

(iii) Chief Executive Officer

Mr. Allan Masters
Deputy Minister
(709) 637-2627

(iv) Principal Contact Person

Mr. Brian Carter
District Ecosystem Manager
(709) 256-1455

The Undertaking:

(i) Nature of Undertaking

5-Year Operating Plan for District 8 (Crown & Exchange) timber harvesting, road construction silviculture and ecosystem management activities.

(ii) Purpose/Rationale/Need for Undertaking

This undertaking is necessary to allow harvesting of mature softwood and hardwood stands, construction of primary access roads and carry out various silviculture and ecosystem management activities to sustain other resource values by the proponent in Forest Management District 8 (Exploits Bay Management District). Existing Crown, Commercial operators and domestic users will, by authority of the proponent under the Forestry Act and regulations, be permitted to carry out all relevant forest management activities. All harvesting will be maintained within sustainable harvest levels, and adhere to environmental protection

(iii) Operation

These are integrated sawlog/pulpwood harvesting operations. Felling will occur either via moto-manual or mechanical methods, with follow-up conventional forwarding. Road construction will follow accepted standards as per the Department of Forest Resources & Agrifood's Environmental Protection Plan for Timber Harvesting. Operations are anticipated to begin in early-April 2003 and continue, on a yearly-basis to 2008. The harvesting and associated sawmilling operations will create approximately 40,000 person-weeks of employment.

(iv) Occupants

There will be approximately 800 seasonal and permanent persons employed in this area.

(v) Project-Related Documents

Forest Management District 8, Five-Year Operating Plan (Crown); April 1, 2001 - March 31, 2005.

Approval of the Undertaking: Commercial operating permits and Sawmill Licences from the District 8 (Lewisporte) Forest Management Office. Permits from DFO and Provincial Environment (Water Resources).

Schedule: Anticipated startup is early-April 2003 to allow for construction of road during the summer field season. The Newfoundland Forest Service requests a decision within 45 days after the Minister of Environment receives the completed registration form.

Funding: Capital funding of the resource roads will be provided by the Department of Forest Resources & Agrifoods resource roads budget. Total cost will be in the range of $200 - $300,000 per year.

guidelines administered by the proponent. The Plan covers the period April 1, 2003 to March 31, 2008.

Description of Undertaking:

(i) Geographic Location

Forest Management District 8, also referred to as the Exploits Bay Management District, is located on the northeast coast of the Island of Newfoundland. It encompasses the geographical area which can generally be defined as that located north of the former Canadian National Railway line (49º latitude) between the Gander River in the east (54º 30' longitude) and Seal Bay in the west (55º 35' longitude). The northern boundary extends into Notre Dame Bay to include Twillingate, New World Island, Change Islands and Exploits Island, along with many other smaller islands (approx. 49º 45' latitude).

(ii) Physical Features

Forest Management District 08 covers an area of approximately 282,800 hectares. Of this area, 75% is forest, but only 57% is productive for timber (ie. capable of producing commercial timber volumes). Scrub, barren, bog and residential areas account for 18%, with the remaining 7% being water. The major communities within the district are primarily located along the coast with population centers around Gander Bay, Twillingate - New World Island, Birchy Bay, Lewisporte, Norris Arm, Botwood and Point Leamington. Total population of the district was estimated to be around 25,000 in 1991. The forests of the Exploits Bay management area are classified as a part of the boreal forest ecosystem. Such forests are characterized by closed, evenaged stands of conifers including black and white spruce, balsam fir and tamarack. Natural disturbance patterns include a high incidence of wild fire, combined with periodic outbreaks of insects and disease and windthrow. Human disturbance has largely been due to man-caused fire over the past century and extensive commercial harvesting since the 1960's. A harvest of approx. 62,100 m^3 (Base AAC) and 10,100 m^3 (Partition AAC) of merchantable softwood has been determined, by Provincial Wood Supply Analysis, to be sustainable. This timber consists of mature (60-80+ years old) black spruce and spruce-fir stands on gentle-to-moderate (5-15º) slopes.