

## **7.0 Strategy To Achieve Sustainable Forest Management**

### **7.1 Harvesting Strategy**

#### **7.1.1 Background**

Typical to rural Newfoundland, there has been a historical dependence by local communities on the forest resource of District 2. The forest industry has been a major contributor to the local economy and has attracted many families to depend on it for their livelihoods. A survey completed during 2005 indicated that 400 people received full-time employment in the forest industry during that year. Although the value added sector of the industry is growing slowly, the primary focus of the industry is still to harvest logs and to saw structural lumber.

The residents of District 2 also have a strong reliance on timber from the forest for a variety of home use needs, including firewood and home or fishing related building materials. It was anticipated that domestic demand would increase during the last five years in tandem with the trend toward higher alternate energy costs. The actual number of domestic permits issued in the District increased from a five year average of 2203 per year during the period 1996/97 to 2000/01 to a four year average of 2550 per year during the period 2001/02 to 2004/05. This translates into an increase in domestic demand of 16% and again demonstrates the pattern of fluctuating domestic fuelwood consumption with oil prices. The level of demand during the current planning period is similar to the level of demand experienced during the early 1990's. It is anticipated that demand will continue to be strong as long as the price of oil stays high.

Increased domestic demand for firewood also creates opportunity for commercial fuelwood producers. It may be a fortunate coincidence that these increases in fuelwood demand are occurring at a time when the harvesting focus on over-mature forest will increase the availability of cull wood to the commercial harvesting sector. Cull wood is suitable for fuelwood and is available as incremental volume to commercial operators.

Timber is one of the most important economic values which exist in our forest ecosystem. The forestry sector is still a major contributor to the local economy, generating \$26 million worth of goods and more than 200 person years of employment during 2005 on the Bonavista Peninsula. In the interest of sustainable availability of fibre resource for this industry, it is vital that a harvesting strategy be developed which will optimize the sustainable supply of timber.

In the past, logging methods in this District have been very wasteful. This District has historically harvested sawlogs as a primary forest product and had poor utilization of small diameter trees and tops. This situation has improved in recent years as a result of increased efficiencies in the industry's sawmills, an improved pulpwood market and a strengthened regulatory effort. In the future, it is imperative that this District continue to gain improvement in the utilization of small diameter timber if the industry is to maintain the stature of past decades.

That is not to say that the harvest of small diameter intermediate aged trees should be encouraged or even tolerated. If we are to mitigate wood-supply shortfalls in the future, it is imperative that young growth continue to grow. Young stands of timber contribute directly,

through annual growth increment, to the operable growing stock in the District and are critical in securing a sustainable supply of merchantable timber resource two to four decades in our future. It is also important to reserve, during this planning period, mature timber that still has potentially decades of healthy shelf-life. In the interest of sustainability, the harvest priority must be the oldest and the diseased trees in the District. Good forest management dictates that we focus our current harvesting effort towards trees and stands which have little growth potential remaining and are the most susceptible to fibre degradation/losses in the coming five to ten years.

There are two major challenges which must be addressed by the harvesting strategy during the next five years. The first is to redirect the major thrust of the commercial harvest into the oldest wood in the District. This will require the development of an access road infrastructure to open up the old and diseased forest stands in the District. It will also mean that commercial operators and the sawmill industry will have to accept a portion of their allocations in lower quality resource than has been available in the past. However, this is short term pain for long term gain – most of the older blocks can be salvaged during the next ten years. If we fail to take this approach, it will result in a 15% reduction in the long term wood supply for the District. The other challenge is to utilize timber left in areas that have been exposed to repeated selective cutting entries and to bring these forests back to a more normal level of productivity. These areas comprise a significant portion of the production forest (approximately 30%) in District 02 and contribute significantly to the sustainable harvest level. Failure to harvest a proportional share of the annual harvest from these stands could mean up to a 16% reduction in the annual allocated harvest. A portion of the harvesting effort by both the commercial and domestic sectors must be directed towards these areas.. The strategy to deal with these two issues is discussed later in this section.

In the past, harvesting practices were carried out in this District which were not silviculturally sound. For example, in some instances clear-cut harvesting has been practised in uneven-aged stands and destroyed young growing stock. In other instances, selective harvesting (or high-grading) has been practised in old even-aged stands , which, usually results in a tremendous amount of blow-down leading to substantial fibre losses and drain on the District's wood supply. In still other instances, another form of high-grading - high-grade clear-cut harvesting - has been carried out in even-aged stands. In this practice, an operator harvests the highest volume portion of a stand and leaves the lower volume portions standing, which, inevitably also leads to large losses of merchantable timber. Selective harvesting has also been conducted in uneven-aged stands, leading to indiscriminate cutting of future growing stock.

Figure 7.23 shows the distribution of the various crown closures for Management District 2. Given normal succession patterns resulting from fire, wind, or insects, boreal forest generally regenerate to even-aged stand structures from age 0 through to over-maturity, when the pattern than repeats itself as a result of another natural calamity and a new even aged forest is born. Approximately 60% of the District's production forest has an even aged stand structure (See Figure 7.24). Generally speaking, these stands have a high number of stems per hectare and a medium to close canopy structure which would be classified as crown density class I or II (crown closure ranging from 50-100%). The appropriate silvicultural prescription for these stand conditions to efficiently utilize the current timber and facilitate new stand development is clear-cut harvesting followed by natural regeneration or, if necessary, reforestation.

Many areas of forest in District 2 have an uneven-aged stand structure (see figure 7.25).

This pattern has developed as a result of numerous selective harvesting entries over the past 4 - 5 decades, starting from the time the stands were an intermediate age. Repeated partial stand clearings created small openings which led to the development of pockets of younger stands and eventually the multi-aged multi-layered stands that currently occupy these sites. These stands contain some trees which are very young to intermediate in age and are still healthy and productive and others which are mature to over-mature or diseased and not adding any volume or productivity in terms of commercial fibre. Typically, these stands have a crown closure class of III, meaning it has a canopy which occupies between 25-50% of the over-story. The appropriate silvicultural prescription for uneven-aged stands is selection harvest and, where necessary, gap planting. In selection harvest, diseased, damaged and mature to over-mature trees should be priority for removal. Young and intermediate aged trees should be maintained as future crop trees. These stands can be managed as uneven-aged stands for the long term. The District will encourage and support selection cutting where stand conditions warrant. Selection harvesting is a technically demanding silvicultural prescription. Many still confuse selective logging (or high-grading) with selection logging. The key differences in the two methods are the choice of trees which are harvested and the condition of the stand following the harvest pass. With selective cutting (high-grading), the best trees are selected for harvest during the current logging pass,

# Crown Closure

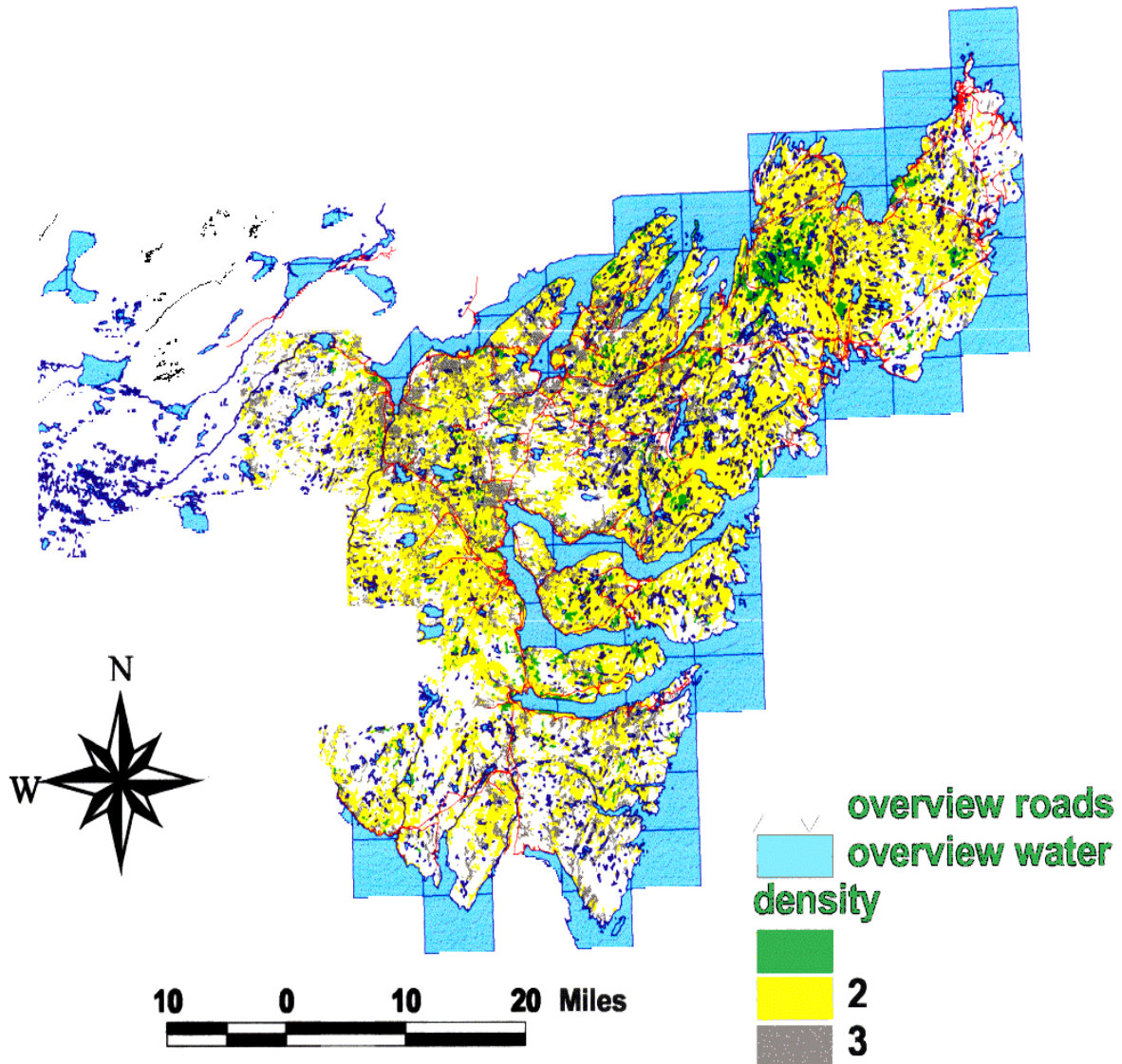


Figure 7.23 Disturbance of crown closure in management district 2





**Figure 7.24** Even-aged forest structure-natural succession



**Uneven-aged stand structure due to previous harvest at an intermediate stand age**

**Figure 7.25**

regardless of their age, health, or productivity and little thought is given to the health, productivity or condition of the remnant stand. With selection logging, careful thought is given to the future stand that will develop following the current harvest entry. Only old, diseased, and poorly producing trees are removed during the current logging pass. Young, healthy, highly productive trees are left standing to improve the productivity of the stand for the future. Strategic trees may also be left for wildlife or other considerations.

However, not all density class III stands are uneven-aged. Some are even-aged stands which developed to maturity and then had cutting, wind or insect disturbance create significant openings in the canopy (**See figure 7.26**). In these situations, wind-throw of the stand remnants usually causes a loss of valuable fibre. These stand remnants will be targeted for cutting during this planning period. Clear-cut harvesting in these stands is the appropriate treatment to ensure productive future stand development.



**Figure 7.26** Mature open even-aged stand

Other stands develop naturally to an open grown condition. These are usually sites with severe growth limitations and often do not provide economic logging opportunities.

Although significant progress has been achieved in reducing the amount of selective logging in the District, it is still practised widely throughout the District. Selective logging is the practice of removing the best logs from a stand and not giving any regard for remnant crop trees. Essentially it is harvesting for today with little or no regard for tomorrow's forest. Selective harvesting is practised in both even-aged as well as uneven-aged stands, but has a negative silvicultural effect in both. In uneven-aged stands, this technique often removes intermediate

aged trees which should remain for future crop trees. In even-aged stands, this technique creates openings in the forest which leads to losses due to subsequent wind-fall and impedes future stand development. The District will continue its efforts to eliminate selective logging during the 2006-10 planning period.

#### Objectives of strategy:

- to efficiently utilize timber resource
- to prevent or at least minimize loss of wood fibre to stand decadence.
- to prevent further productivity losses in the forest and to achieve improved productivity in the future.
- to sustain the economic and employment importance of the industry.
- to maintain social values.

#### Commercial Strategy

##### Harvest priorities:

- better quality timber stands will be available for commercial purposes.
- diseased and damaged first harvest rule
- next harvest priority: oldest first
- third harvest priority: previously selectively cut areas.
- practise harvesting methods which are silviculturally suited to stand conditions. In general, selection harvest should be conducted in uneven-aged stands and clear-cut harvest in even-aged stands. Selective cutting (or high-grading) should be eliminated.

##### Harvest constraints:

- access may inhibit harvesting oldest and damaged stands on a timely and priority basis.
- social/logistical considerations may inhibit placing operators in priority harvest areas.

##### Utilization standards:

- Maximum of 6m<sup>3</sup> solid per hectare can be left on cut-overs.
- In clear-cut operations, all stems with a diameter of 9.0cm at a point 1.3 meters above ground will be utilized at the time of the harvest.
- All harvested trees must be utilized to a top diameter of 8 cm

#### Domestic strategy:

#### Harvest priorities:

- Traditional harvesting areas will continue to be available for domestic cutting.
- Lesser quality stands will be available for domestic cutting.
- Domestic blocks will be established in close proximity to communities.
- Logging losses in commercial logging areas will be available to domestic wood-cutters post harvest.
- A portion of the domestic harvest will target the older stands in the District. This will be accomplished by providing seasonal access during periods when alternate harvesting areas are not available. This period would be generally April through to September. Discretion would be exercised in opening these blocks during the fire season.

#### Utilization standards:

- All trees which have a diameter of 9 centimeters or greater at breast height must be utilized during the time of harvest.
- All trees which are harvested must be utilized to a top diameter of 5 cm
- All solid portions of trees with a diameter greater than 12cm must be utilized as a sawlog.

#### Harvesting constraints:

- lack of access to older high harvest priority stands
- logistics and politics of moving domestic wood-cutters into non-traditional areas

### **7.1.2 Wood Supply Analysis**

Wood supply analyses are completed for each Forest Management District in the Province on approximately a five year cycle. The last series of analyses were completed during 2001. A new wood supply analysis is being completed concurrent with this planning process. Conducting a wood supply analysis is an elaborate and lengthy process that requires considerable resources of time and people - both at the District and Provincial level. Much of the work involved is of a highly technical nature. However, local expertise is also valuable in determining some aspects of wood supply. For example, the involvement of local commercial operators is very useful in determining the operability of an area, which is an important aspect in determining the appropriate alienation class of a stand (ie. whether or not a stand should be considered as part of the current wood supply). Following are the steps involved in determining a sustainable harvest level for a District:

1. Aerial photos: An aerial view of the forest and the basis for all planning and operational activities - taken for each district on approximately a ten year cycle.



2. Interpretation of aerial photos: The forest is stratified into various stand types on the basis of the dominant tree species. This information is transferred to maps at a stand scale – which is usually less than 100 hectares.

3. Field checking: Permanent and temporary sample plots are conducted to determine volumes in various stand conditions and to collect data to create growth and yield curves. Also information pertaining to other values, such as wildlife habitat and song-bird distribution, is now being collected during field surveys.

4. Inventory maps: Created from interpretation of photos and from field analysis. These maps show the location of all forested and non-forested landscape in the District and provide stand cover information, including average timber volumes. Inventory maps are available in digital format (Geographical Information System or G.I.S) for most Districts, including District 2.

5. Satellite image updates: These are used to update inventory maps on an annual or bi-annual basis. Satellite images show harvesting or other type disturbances that have occurred in the forest. The Department is evaluating the feasibility of acquiring digital aerial photography to provide annual updates of harvesting disturbances.

6. Alienation classes/buffers/corridors assigned for the District: All stands within the District are given a designation which determines which will be available for harvest during the current rotation and be included during the calculation of the sustainable harvest level. A digital stand list is then compiled including all stands in the District which are part of the current wood supply. These designations are not fixed in stone - rather, they are reviewed and revised to reflect current considerations during each wood supply analysis.

7. Growth and yield curves: These curves depict the growth of timber volume over time as a stand develops. Each individual stand within the District is assigned to the pertinent curve. Growth and yield curves are developed by Departmental mensurationist based on 25 years of Federal and Provincial field work.

8. Management assumptions: A number of assumptions have to be determined to guide the wood supply analysis. Assumptions are determined for the level of natural regeneration which occurs within the District. Projections are developed for the anticipated area of forest landscape which will receive pre-commercial thinning or planting treatment each year. Each stand receiving treatment is assigned to the appropriate growth and yield curve. The growth rate of merchantable timber is greater in stands that have received silviculture treatments than in naturally developing stands. Assumptions are determined for the age-volume condition at which stands will be available for harvest.

9. Computer simulation: The digital stand inventory information and growth and yield information is fed into a computer simulation program. It calculates and tracks through time the amount of growing stock in the District. A number of harvest levels are tested until a sustainable level is ascertained, given current forest conditions and management assumptions, the production

forest available to the forest industry and the growth rate of the various forest types.

10. Deductions: The harvest level determined by the computer modelling exercise is the total or gross volume which can be removed from the forest. Factors have to be incorporated to account for other losses (or drain) from the forest. These factors include losses due to poor utilization (portions of a tree as well as stand remnants), cull, fire and insects. In addition, a factor is included to adjust the drain for unreported harvest. At present, the following deductions are used to compile the sustainable harvest level:

FIBRE LOSSES:	Cull & Logging Losses	-	4%
	Remnant stands	-	12%
	Fire, wind, insects	-	4%
	<b>Sub-Total</b>	-	<b>20%</b>
UNREPORTED HARVEST:			5%
<b>Total Deductions</b>		-	<b>25%</b>

The fiber losses were determined from surveys conducted by the District and Forest Management and Industry Services Divisions of the Department. The unreported harvest was estimated using the Districts wood-tracking program and supported by an evaluation of harvesting disturbances during the period 1999-2004.

The following series of figures show the current status of District 02's forest. Figures 7.27 and 7.28 show the current age class structure of the forest by alienation class. The alienation class revision was completed during the summer of 2005. The age class and working group summaries are based on forest interpretation completed from 1988 aerial photography and a satellite update completed in October of 2004. This forest structure will be used in the compilation of the new harvest level for the District. Figure 7.29 shows the age class structure at Alienation Class I land by working group.

The summary of the 2006 AAC results, compared to the 2001 results, is shown below:

2001 Aspatial gross - 113,000 m<sup>3</sup>

2006 Scheduled gross – 102,906 m<sup>3</sup>

2001 Net AAC – 75,000 m<sup>3</sup>

2006 Net AAC – 79,690 m<sup>3</sup>

A more realistic approach was used during the 2005 wood supply analysis than was used during previous analyses. In particular, a 25 year harvest schedule was mapped and its impact evaluated with respect to the long term sustainable wood supply. This approach gives better spatial consideration to the wood supply analysis. During previous analyses, an aspatial approach was used. The former approach considered all stands within the Class I land-base to be

available for harvest during the rotation age of the forest. The current approach is sensitive to natural fibre losses that will occur in stands that may never be harvested due to their position on the landscape relative to access or surrounding productive forest.

Another factor which affected the gross AAC included a decrease in forest land base due to new crown land developments and an improved Crown land inventory of alienated land. Countering this negative impact were gains in AAC due to an expanded silvicultural program.

The most significant factor which directly affected the net AAC was the inventory adjustment factor. It was reduced from over 30% to 20% because of improved utilization in the District.

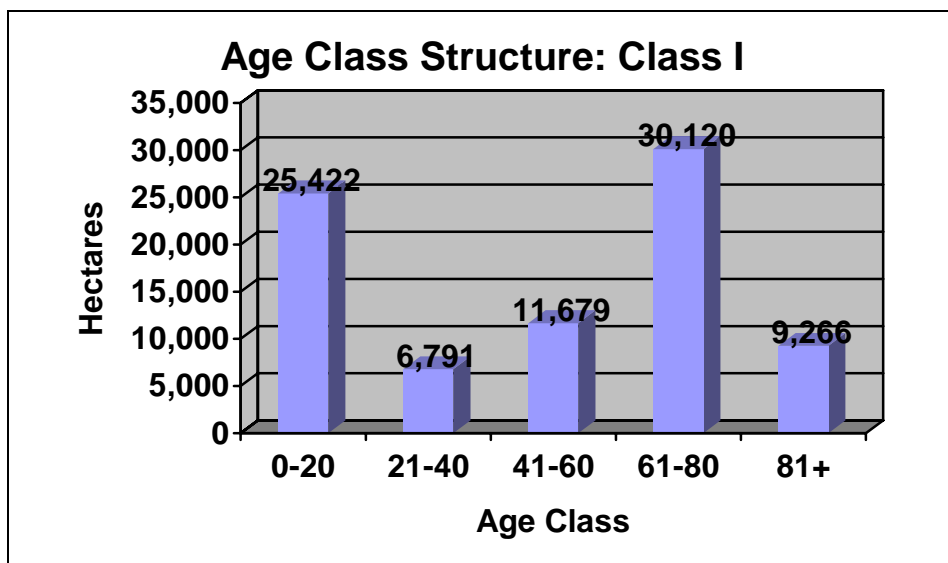


Figure 7.27 Age Class Structure: Class I

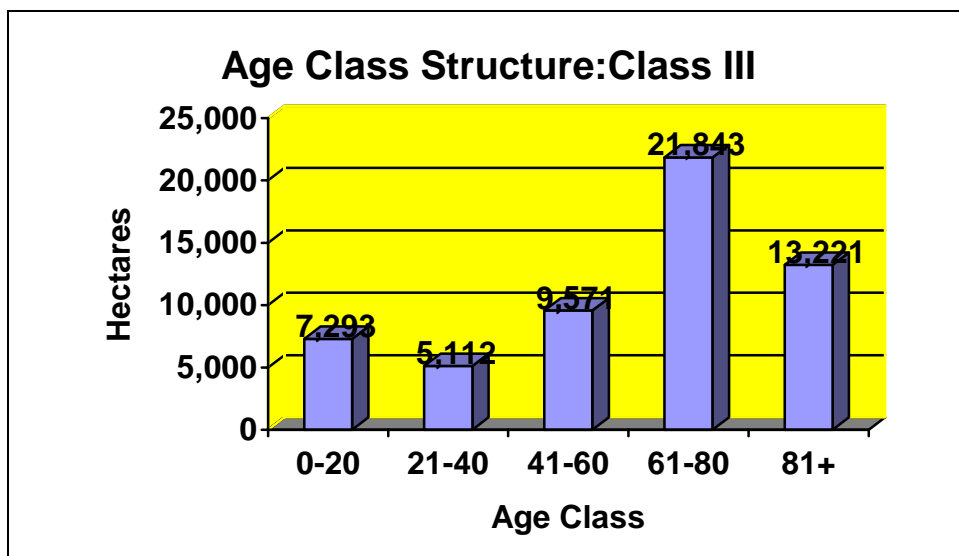


Figure 7.28 Age Class Structure: Alienation Class III

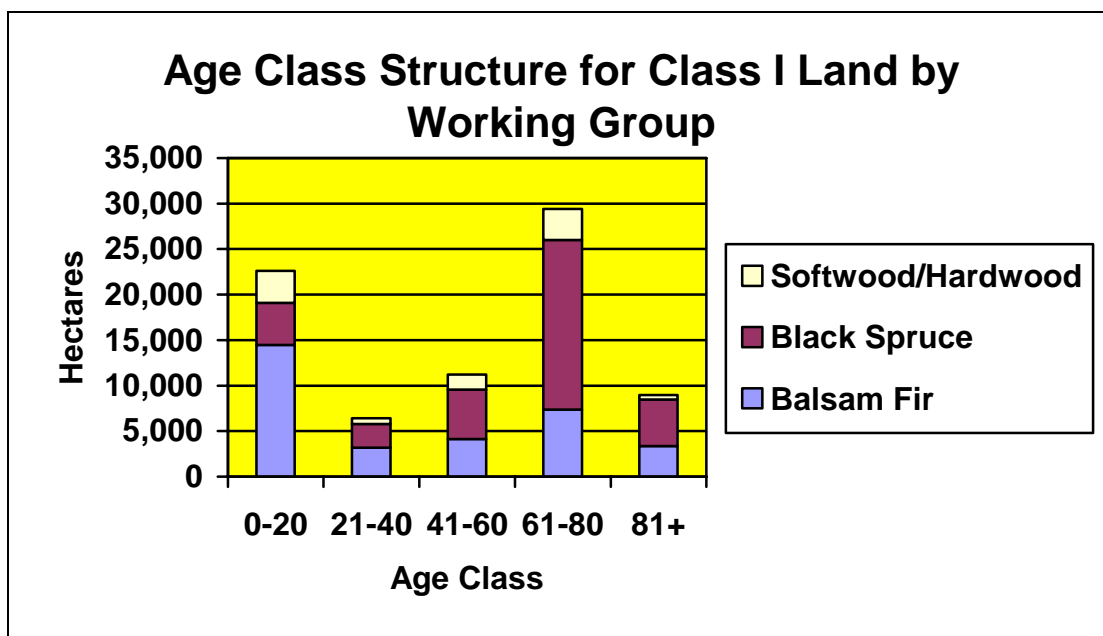


Figure 7.29 Age Class Structure for Class I Lands by Working Group

### **7.1.3 Allocation of Wood Supply**

Allocation of Sustainable Harvest Level:

The allocation of timber will be guided by the following principles:

1. Fairness to all operators.
2. Practical to administer.
3. Recognize sustainable long term wood supplies/development.
4. In keeping with government priorities and policies.
5. Recognize other values ( social, economic, ecological).

The allocation of schedule harvest blocks will be aided by weighting the following factors:

- Age/condition of timber.
- Cost of building infrastructure (ie. Accessibility of resource)
- Market base of individual operators.
- Cost of extraction (topographical conditions vis-à-vis operability constraints.)
- Impact on sustainable wood supply.
- Owner versus Crown constructed access.
- Species mix/historical access to resource.

Table 7.1 provides a summary of the harvest allocations during the period 2006/10 compared to 2001/06. Table 7.2 shows a summary of the annual softwood allocation on Class I, Class III and for hardwoods (on Class I) for the period 2007/11.

Table 7.1 Allocation of Harvest: 2001-06 Compared to 2006-11



	2001/06	2006/10
Annual Commercial Allocation		
Regular Quota	43,086	32,500
Priority Overmature Quota		12,500
Silviculture Quota		5,000
Utilization Credit	4,254	
Clear-cutting Incentive		513
Total Commercial Allocations	47,340	50,513
Annual Domestic Harvest/Allocation	30,000	28,000
Total District or Allocation Credit	77,340	78,513

Table 7.2 Allocation of Harvest Reported to AAC

	2007	2008	2009	2010	2011
Class I AAC	79,690	79,690	79,690	79,6790	79,690
Scheduled Commercial Harvest	50,513	50,513	50,513	50,513	50,513
Scheduled Domestic Harvest	28,000	28,000	28,000	28,000	28,000
Total Scheduled Harvest	78,513	78,513	78,513	78,513	78,513
Over (Under) Cut	(1163)	(1167)	(1167)	(1167)	(1167)
Class III AAC	12,900	12,900	12,900	12,900	12,900
Scheduled Commercial Harvest	5,000	5,000	5,000	5,000	5,000
Scheduled domestic Harvest	6,000	6,000	6,000	6,000	6,000
Total Scheduled harvest	11,000	11,000	11,000	11,000	11,000
Over (Under) Cut	(1,900)	(1,900)	(1,900)	(1,900)	(1,900)
Hardwood AAC					
AAC	1,170	1,170	1,170	1,170	1,170
Residual	1,950	1,950	1,950	1,950	1,950
Scheduled Harvest	3,000	3,000	3,000	3,000	3,000
Over (Under) Cut	(120)	(120)	(120)	(120)	(120)

With respect to principle number 3 above, the allocation of the resource will be in line

with the sensitivity to factors which directly impact long term sustainability. These include:  
Density Class III stands – contribute 16% to the sustainable harvest level.

Old stands (ie. Overmature category) – contribute 15% to the sustainable harvest level. There are 200,000 solid cubic meters of wood in poor condition in this district. If we are to harvest this portion of the production forest during the next ten years, than we must schedule approximately 20,000 cubic meters per year.

The level of silviculture in the District supports an additional 9% of the sustainable harvest level. Since there is a level of long term risk associated with achieving the gains from the silviculture program, the net volume gained through the silviculture program will be allocated in areas that provide the greatest long-term silvicultural benefit. This would normally include areas that have low productivity due to previous disturbances (man and natural), and include insect disturbed, previously high-graded and decadent stands.

#### **7.1.4 Commercial Harvesting Issues**

The major challenge in the current planning period is to ensure that forests are harvested in the proper age/condition sequence. The wood supply analysis is predicated on the assumption that the oldest most vulnerable forest stands in the District's production forest must be harvested on a priority basis. There is a significant supply of over-mature (100 year+) fir and spruce, as well as vulnerable mature (75-85 year old) fir stands that has to be harvested during the next 5-10 year period to avoid further significant volume losses due to stand break-up. In the absence of catastrophic natural events (wildfire, insect, wind/ice storms, mature black spruce still has a healthy shelf life which could last. Avoiding harvesting the oldest timber in the production forest on a priority basis will cost in the order of 15% on the long term wood supply for the District. The industry must be able to adapt to a mix of a poorer grade of timber for a decade in order to optimize longer term sustainable harvest levels. It will also be necessary to develop a new access road infrastructure during the next five year period which will target the more vulnerable forest in the District.

Also, the District will continue with measures which will assist in the future management of the commercial harvest. For example, individual harvesting blocks will be much smaller than they were in the past. Harvest blocks will be laid out on the ground prior to harvesting. This will encourage commercial operators to increase the efficiency with which they harvest and to improve the utilization of the resource. The District will also continue with the policy to shorten the commercial cutting season for commercial permit holders with small quotas (ie. less than 365m<sup>3</sup> solid). These policies will improve the District's ability to monitor and regulate harvesting activity.

The district has developed a number of programs in previous consultations with stakeholders which help improve the viability of the industry as well as produce forest management benefits. These programs are generally built on the philosophy of providing incentives to achieve acceptance of forest management strategies. These programs are discussed in the following sections. However, commercial permit holders must meet criteria established by DNR to be eligible to participate in these programs.

### *Merit Program for Utilization:*

Information gathered during field surveys in support of the 2001 wood supply analysis indicated that District 02 had a poor utilization record. Consequently, a deduction factor of 18% was used to account for logging waste that occurred in the District. The logging waste factor was higher than that used during the previous wood supply analysis (This doesn't indicate that utilization deteriorated between analyses - rather, it was due to the availability of more accurate information in the more recent analysis. The previous analysis had information gathered on a regional basis – which didn't adequately represent the local conditions in District 02. The 2001 analysis had District specific information). The end result of the 2001 wood supply analysis was a reduction in the sustainable harvest level of 9%. The major contributing factor to the reduction was the increase in the utilization deduction factor.

The District introduced a merit program during the spring of 2001 in an attempt to (1) Improve the utilization of the local forest resource and at the same time (2) Improve the viability of both the logging and sawmilling sector (which had been faced with the second reduction in quota in three years.) All commercial operators in the District were eligible to receive a credit in the form of a volume equal to 9% of their regular quota volume, based upon performance. Utilization surveys were conducted on a demand basis on commercial cut-overs. Permit holders who met a minimum standard were eligible to receive the credit. This program was very successful in achieving both of the set objectives. The average amount of logging waste left by integrated operators during the previous five years has been less than five percent. A total of approximately 12,000 m<sup>3</sup> of additional volume was made available to the industry. This was achieved within the sustainable harvest level for the District. - fibre which would have been left on the cut-over as waste and accounted for in an AAC deduction factor was removed as viable forest products and contributed to an accountants bottom line for the industry.

The utilization merit program has had a positive impact on forest management in the District. Not only does it reduce wasteful logging practices and increase fiber availability, but it also helps prepare clear-cut areas for follow-up reforestation work. Due to the positive impact of this program, it will be continued through the 2006-2010 planning period.

***Oldest wood first policy:*** The Provincial wood supply analysis runs under the principle of optimization. One of the fundamental assumptions used in the model to support this principle is that the oldest wood in the District will be harvested on a priority basis. In the past, this practice was not always followed in Forest management District 02, primarily due to access road constraints and the lack of appetite for this inferior quality (from a wood products perspective) portion of the forest resource. Not following this rule will have a negative consequence on the long term sustainable wood supply for the District.

Figures 7.30 and 7.31 illustrate typical growth and yield curves on medium site conditions for Black spruce and Balsam fir in the District. Both species mature at around eighty years old, at which age stands comprised of each species typically carry the maximum volume. After maturity, both species will loose volume and fiber quality will deteriorate on a gradual basis for a period of 10 to 30 years. After this point, the rate of stand break-up will accelerate and inevitably the volume will crash and forest succession will occur. If harvesting occurs primarily

in stands at maturity age when older (ie. 100 years plus) stands are on the landscape, then there will be a downward pressure on the sustainable wood supply. Essentially, in addition to timber being removed by the industry, huge supplemental volumes are removed, concurrently, through natural losses. Harvesting in younger (intermediate aged) stands will even further exasperate the problem. Essentially, this practice is analogous to spending the principal from a long term savings account.

The spruce component of this forest is generally of a much better quality for the sawmill/pulpwood industries than are the fir stands. Failing to implement the oldest first rule will decrease the sustainable wood supply in the District by as much as 15%. The District priority will be to redirect a portion of the harvest to the oldest and unhealthiest stands during the next five year period. A mixture of over-mature and mature harvest blocks will be scheduled during the 2006-10 planning period. Commercial operators will be expected to accept a portion of their harvest in the poorer quality forests. Taking the approach of harvesting the bad with the good, it will take approximately ten years to harvest the oldest stands in the District.

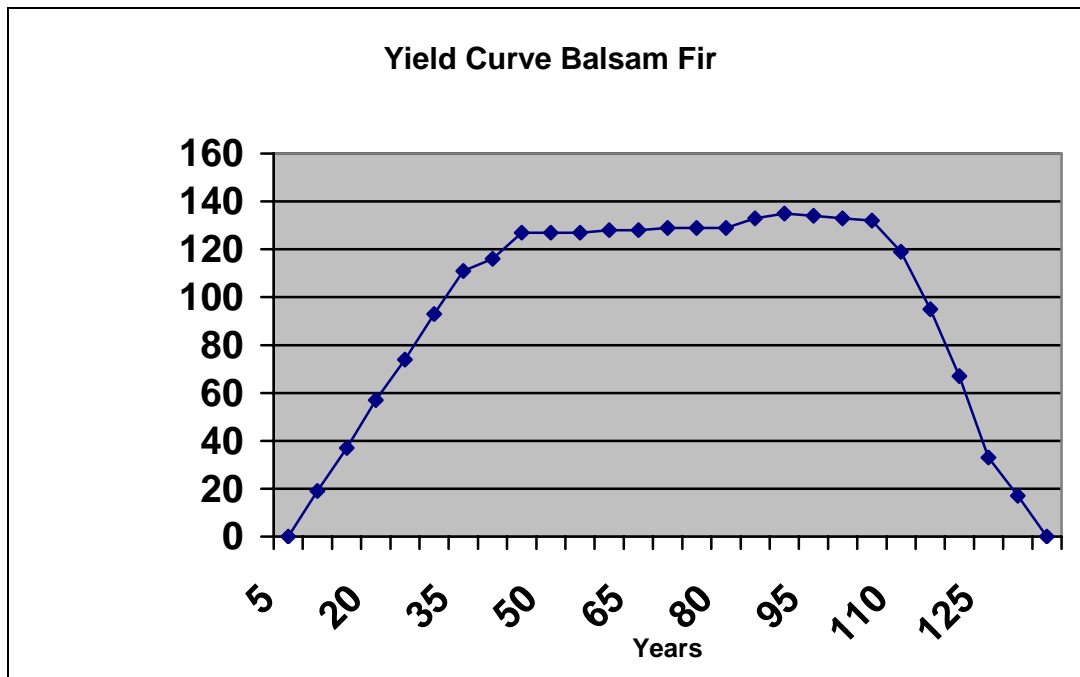


Figure 7.30 Growth and Yield Curve; balsam fir on medium sites.

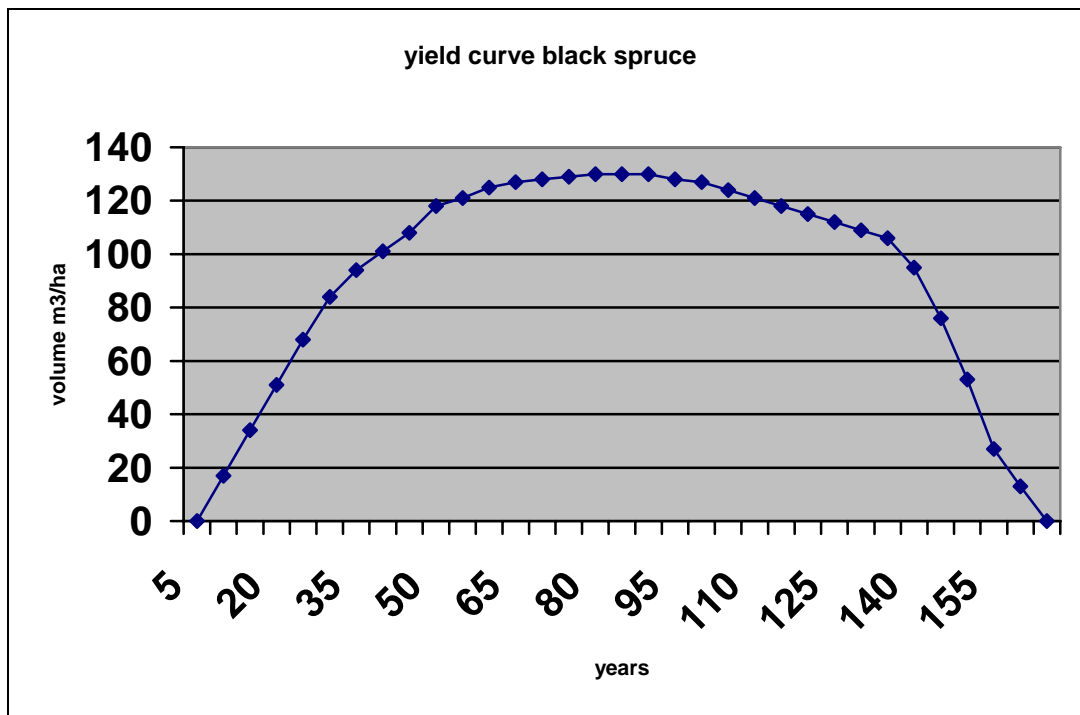


Figure 7.31 Growth and Yield Curve; Black Spruce on medium sites

**Non-integrated operators/operating areas-** In 5.5 Benefits to Society: Value 5.1: Objective 12 of the Ecosystem Strategy Document: 2001 -2010 a commitment was made to eliminate selective cutting during the 2001-2006 planning period. As indicated in that section in the current five year plan, considerable headway was made in achieving this goal. The District will continue with its best efforts to achieve this objective during the forthcoming implementation period.

Traditionally, non-integrated operators practiced selective cutting for larger diameter sawlogs. During the past five years these loggers were required to harvest all trees within their cutting block which had a breast-height diameter of 12cm or greater. Harvest inspections have indicated that in many of the non-integrated blocks there is still an unacceptable level of waste. Selective cutting is compromising the economic integrity and lowering timber growth productivity of many stands in these blocks.

Small commercial permit holders are licensed to conduct commercial trade within our forest. They have a combined timber allocation which is approximately 15% of the total commercial harvest level. This segment of the harvesting sector is the most difficult to monitor and regulate –small scale and conducts harvesting activity on an irregular basis. The potential for abuse of quotas is significant within this group. Also, utilization is very poor compared to the clear-cut harvesting operations. It is important that the District designate resources and develop strategies/programs to encourage an integrated approach to harvesting within the non-integrated group.

The improvement in demand for small diameter wood will help this portion of the



harvesting sector to convert their way of logging. As mentioned earlier, the commercial fuelwood market has strengthened in recent years, supported again recently by the surge in alternate energy sources. The pulpwood market has become well established in eastern Newfoundland. Finally, the spec for sawlog size, which has been established by the integrated sawmills, is at an historical low in this District. A sawlog specification of 10 cm (4 inches) with a tolerance to 9 cm (3.5 inches) has been accepted by the integrated mills. Meanwhile, sawlog prices in the District are at an historical high – small diameter sawlogs are reportedly selling for \$50-\$60 per solid cubic meter (\$120-\$140 per cord).

Beginning in 2006, non-integrated operators will be required to clear-cut the areas in which they harvest. In addition to the positive market conditions, an incentive will be built in to encourage this change in harvest practice. An exception to this rule may be made if stand conditions warrant. An exception will only be considered with the recommendation of a District Conservation Officer and approval by the District Ecosystem Manager.

Another strategy which will be explored is to encourage the redirection of harvesting effort from current areas to older decadent stands using easier access and allocations as incentives. Given that this will shift harvesting effort, generally, from younger, healthier stands/trees to older decadent forest, the net positive benefit to the SHL will more than justify the allocation of a small portion of the AAC to develop an incentive program for this group. Additional incremental volumes may be acquired in these stands through the cull incentive program.

The amalgamation of permit quotas has left many previous non-integrated blocks vacant. The practice of selective cutting has created a mosaic of stand conditions in these areas, characterized by some high-volume stands/stand remnants interspersed with stands which barely meet economic viability. Overall productivity is much lower than the capability of the sites. Without a stand-level silvicultural intervention (clear-cut followed by reforestation) this state of low productivity will be perpetuated through time. The District will target a portion of the commercial harvest in these areas during the next five years. Integrated operators who have assumed quotas from non-integrated operators will be expected to accept a portion of their allocation from within these vacated blocks. Incentive programs, in the form of incremental volume, will be developed to encourage the required rejuvenation of these areas. A portion of the AAC will be allocated to provide for this incentive. All regular commercial permit holders in the District who meet the required criteria will be eligible for this program.

***Silviculture Permits:*** In the past, silviculture permits were issued to forest operators to remove stands with severe degrees of wind, insect and harvesting disturbance. These stands have annual fibre increments far less than the potential capability of the sites in normal conditions. Subsequent silviculture treatments (site preparation and reforestation) were carried out on these sites to enhance the rate of tree growth to a level which the sites can support. The intent of this program was sound and still is. This program will proceed through the next five years. A portion of the sustainable harvest level will be available as an incentive to encourage the harvesting of these areas. The following measures will be followed (1) Operators will not be permitted to operate a regular commercial permit concurrent with a silviculture permit. (2) All wood harvested under the authority of a silviculture permit must be scaled by a Departmental scalar prior to being shipped and sold. (3) Only operators who have demonstrated silviculturally sound

logging practises will be eligible for these permits.

All commercial permit holders will be allocated a portion of their quotas within priority silviculture treatment areas.

Also, the District has used employment creation programs delivered normally through development associations to carry out stand reclamation projects on very heavily disturbed sites. In the future, commercial operators will be offered an opportunity to harvest all such sites before they are included for an employment creation project.

***Amalgamation of quotas:*** As a result of a consultative approach between the Department and industry, District 2 implemented an amalgamation program during the previous planning period. The intent was to rationalize the demand in the District with the available supply and improve the viability of commercial operators who maintained their presence in the industry. Established commercial harvesting operators are permitted to amalgamate allocations with other commercial operators who choose voluntarily to resign from the logging industry.

Operators interested in participating in this program are required to demonstrate silviculturally sound logging practises for at least one cutting season prior to being eligible to acquire additional volume allocations. This criterion will help improve logging practises throughout the District. Prior to the amalgamation program, previous administrations reduced the numbers of commercial permit holders through attrition. The accumulative impact of these efforts have resulted in the reduction of commercial permit holders in the District from 292 permit holders in 1989 to less than 90 in 2005.

This program presents a win-win situation for all parties concerned. The fact that commercial operators are prepared to pay a premium for additional volume quotas makes a strong statement about the acceptance of this program by the local forest industry and suggests that it is valued by that sector. Their willingness to pay for extra access to the resource presents the continued opportunity to build a retirement package into the forest industry for individuals who have had a long term attachment to the resource. Of course, those who make the investment for additional access to the resource are subject to the risk of longer term fluctuations that may occur in timber supply. Success in planning and implementing a sustainable resource management program will reduce this risk. . Despite the risk, amalgamation of quotas improves the long term viability for remaining forestry operators as well as creates greater stability within the local forest industry. Finally, the forest resource is a winner. This program has been the most effective means of carrying out the transition from selective cutting to clear-cutting – and it has been achieved with very positive acceptance.

***Incentive to harvest Alienation Class III land:*** Another measure that was adopted in 1999 to mitigate the impact of the reduction of the sustainable harvest level on Class I lands was to provide access to alienation class III land ( ie wood which is not considered to be part of the District's normal sustainable wood supply due to operational/economic constraints). Commercial permit holders were allowed volumes on class III land up to the 15% reduction that they received on class I land. Additional incentives such as royalty reductions and additional volume (up to 10%) were offered to operators to assist in off-setting the additional cost of logging these areas. Commercial operators must be able to demonstrate the practice of a silviculturally sound logging practice for a period of one cutting season to be eligible for this program. Requests for access to

Class III land were considered on a first come first serve basis. This practise will continue through the 2006-10 planning period within the SHL for Class III land.

Notwithstanding this incentive, it is still certain that many portions of alienation class III land will remain unviable to harvest, even with additional financial and volume incentive. This is important since these areas are vital in maintaining a portion of the landscape in an old growth state which will follow more natural successional patterns. In addition to these areas where natural processes will be “protected” by operational default, Parks Division of the Department of Tourism, Culture and Recreation is involved in an initiative that will eventually preserve representative portions of ecoregions as ecological reserves. This will provide regulatory protection from forestry development, as well as other forms of development such as hydro, mineral exploration and mining.

***Cull wood incentive program:*** An incentive to harvest cull wood became part of another program that resulted from the consultative process with the industry to deal with quota reductions during 1999. Cull wood has defects (rot) which prevents it from being suitable for sawlog or pulpwood. However, it is suitable as fuelwood. Commercial operators are not required to harvest cull wood under the Cutting of Timber Regulations. Through this program, cull wood is made available to loggers as supplemental volume (ie to regular permit allocations) and is exempt of royalty. (In order to get a credit for cull wood, it must be scaled by a departmental scalar prior to being removed from the operators landing.) In addition to providing extra wood to commercial timber harvesting operators, this policy will offset some demand for green timber by the domestic cutting sector. The Department ran this program during the 2001-2006 planning period on a trial basis. This program will be continued through the forthcoming planning period, subject to regular review.

***Criteria for Eligibility: District 02 Incentive Programs*** – A number of incentive programs designed to support the viability of the local forest industry and improve forest management practices in the District have been discussed in this section. The following is a summary of these programs:

1. Disturbed stand volume removal/recovery blocks (DSVR). These will include both of the following:
  - Silviculture blocks – incremental volume available to commercial operators to clean up low volume/low productivity stands.
  - Non-integrated harvesting blocks – Blocks with a mixture of merchantable volumes mixed with low volume/low productivity stands. Again, incremental volume will be available.
2. Utilization – 10% credit available on a merit basis for good utilization, as described above.
3. Cull – Credit for acceptable cull wood salvaged by a commercial operator.
4. Class III land permits
5. Amalgamate permit volumes.

In order to be eligible for some of these programs (1, 4 and 5 above), a commercial operator must remain in good standing. All aspects of the logging operation will be evaluated to determine if an operator is in good standing. The criteria which will be considered are outlined below:

- compliance with load slip legislation : failure to use load-slip(category 1); other regulations pertaining to load-slip (category 2)
- compliance with all terms and conditions of commercial cutting permit, in particular including:
  - in adherence with volume (by species) as shown on the face of the permit. (category 1)
  - in adherence with harvesting block boundaries, as shown on map attached to commercial permit. (category 1)
  - in adherence with all environmental guidelines as shown in attachment to permit. (category 2)
  - in adherence with all utilization standards as set out in the Cutting of Timber Regulations. (category 1)
  - in adherence with all reporting requirements. (category 2)
  - there are not any out-standing royalty or fines. (category 1)
  - in adherence with all aspects of the fire regulations. (category 2)

•must adopt silviculturally sound harvesting practices: clear-cutting or selection cutting. Selection cutting is a much more technically demanding silvicultural technique than is clear-cutting. If the permit-holder wishes to practice selection cutting, he must provide plans to DNR outlining his approach and must demonstrate the same in the field. (category 1)

•compliance with all other aspects of Forestry Act and Legislation. (category 2)

A commercial operator who is in default of any of the above listed category 1 criterion will loose eligibility to participate in any of the incentive programs for a one year period. If the operator is in default a second time in a five year period, he will loose eligibility for an additional two year period. A third offence and the operator will loose his eligibility for an additional three year period.

A commercial operator who is in default of any two of the above listed category 2 criterion within a two year period or commits the same default twice in the stated period, will loose eligibility to participate in any of the incentive programs for a one year period. An operator who commits additional defaults within a five year period will loose his status of good standing for an additional year for each default.

Implementation of the merit program will in no way abrogate other measures which may be taken by the Department as prescribed in the Forestry Act and Regulations.

### **7.1.5 Allocation Options For Commercial Permits**

The Forestry Act has provision to issue commercial permits to Crown operators by two mechanisms, including an annual cutting permit or a five year timber sale agreement. Annual permit volumes for commercial operators will remain constant throughout the planning period, unless regular 5 year wood supply analysis or interim reviews provide basis for allocation revisions in the interest of sustaining the resource for the long term. The volume included in a timber sale agreement will be 5 times the annual volume allocation level for the operator. Again, the agreement will make provision to adjust the volume available through a current TSA should a wood supply review predicate that need. If there are general reduced allocations given to annual permit holders, then there will also be a reduction in allocation available to holders of timber sale

agreements.

There are four distinct differences between an annual crown commercial permit and a timber sale agreement. (1.) As the titles suggest, one of the major differences in the two methods of allocating crown wood is the duration of the authority to harvest wood. A commercial cutting permit allows the holder to harvest crown wood for a specified period within only one administrative year of the Department (ie. between April 1<sup>st</sup> of year one and March 31<sup>st</sup> of the following year). A timber sale agreement allows an operator to harvest crown wood for the five year period prescribed within the agreement and makes provision for some volume to be harvested in the 6<sup>th</sup> year under specified conditions. (2.) The second major difference in the two allocation methods is the means by which the prescribed forest stand and volume is delineated for harvest. With an annual crown commercial cutting permit the volume authorized for harvest is included as a condition of the permit. The boundaries of a cutting block are delineated on the ground. The holder of the permit can harvest up to his prescribed volume within the confines of his cutting block. Under a timber sale agreement, the timber must also be delineated on the ground, but in addition, it must be cruised prior to the completion of the agreement to ascertain as accurately as possible the volume and operating conditions within the TSA area. (Due to the additional demand on District resources, the cost of conducting the cruise will be recovered from the parties who receive the benefits of receiving a TSA.) The holder of the TSA can harvest all the timber included within the delineated area. (3.) Under an annual cutting permit, royalty is paid on the basis of the volume of wood which is harvested under the authority of the permit - subsequent to the wood being harvested and reported to the crown. With a timber sale agreement, the amount of royalty owing is determined and agreed upon between the crown and the operator prior to harvest. It is calculated by multiplying the net merchantable volume of wood within the block (as determined by cruise data) by the prescribed royalty rate per cubic meter. Royalty payments are made at a predetermined schedule throughout the life of the agreement. (4.) Utilization of timber is regulated by the Forestry Act and Regulations and is monitored/enforced by District staff. However, due to the different royalty regime, there is an additional incentive under a TSA to practise better utilization standards. Deductions for operability constraints, logging losses and cull are made to gross volume to derive net merchantable volume. Since an operator is permitted to harvest ALL the timber, other than regulatory buffers, within the TSA area and the royalty for all the timber within the TSA is pre-determined, then there is an incentive for the operator to practise better utilization.

#### **7.1.6 Harvesting Methods**

The silvicultural suitability of the common harvesting methods used in District 2 is discussed in Section 7.1.1. Although there are exceptions, boreal forests normally develop into even-aged stand structures. The appropriate silvicultural harvesting prescription that will allow good utilization of existing timber and promote efficient and timely regeneration in mature even-aged boreal forest conditions is clear-cutting. However, many stands in District 2 have an uneven-aged structure due to repeated harvesting entries during the past several decades - essentially beginning at the time the stands entered an intermediate stage. In this scenario, selection cutting is the appropriate silvicultural prescription to favour future stand development. In District 2, commercial cutting blocks will be allocated to match the harvesting practices of the commercial



permit holders (Refer to Appendix 10). Operators who practice selective or selection cutting will be allocated stands that have an uneven-aged stand structure. Operators who practise clear-cutting will be allocated mature/over-mature stands that have an even-aged structure. Practising selective or selection cutting in older even-aged stands generally causes significant wind disturbance in the post-cut partially opened stand. Practising clear-cutting in an uneven-aged stand leads to the premature harvest or destruction of the younger aged trees within the forest.

#### **7.1.7 Domestic Cutting Issues**

The domestic cutting sector has its own set of management issues. The number of domestic permits issued in District 2 has fluctuated from a high of more than 3800 in 1992-93 to a low of just over 1800 in 1999-2000 and back up over 2500 in recent years. (Refer to Figure 7.32) These major swings in domestic demand occurred in tandem with movement in the price of alternate heating sources. It is anticipated that the recent (summer of 2005) run-up in oil prices will probably cause another spike in domestic fuelwood demand. Apart from this influence of energy prices, there appears to be an underlying trend away from domestic fuelwood harvesting as the population ages in rural Newfoundland and the young continue to out-migrate. (The population of the District has fallen by 12% or 3454 people during the period 1996 to 2004). In addition the younger generations do not have the same gathering instinct as their predecessors, which may lead to less pressure from the domestic cutting sector in the long term.

Utilization continues to be an issue from three perspectives within the domestic cutting sector. Large tops and selective cutting continue to be issues with domestic wood-cutters, but this is a problem more specifically related to individuals who are harvesting sawlogs and not as serious a problem with fuelwood cutters. The utilization problem most prominent with fuelwood cutters is the junking of sawlog sized logs for firewood. The District's compliance program will continue to target these problems as priority issues during the coming years. Poor utilization practises begets wasted resource - wasted resource jeopardizes the long term wood supply.

The most serious problem in the domestic cutting sector is the abuse of domestic cutting permits to harvest wood for sale - either for sale as firewood or sale as sawlogs to local sawmills. In many instances, the sale of sawlogs through this mechanism is reported to the crown by the industry as private land sales. This problem is not unique only to the domestic cutting sector. Many small-medium volume commercial permit holders use the same method to access additional crown wood beyond their authorized permit volume. Support has not been forth-coming from the industry to help curb this practice. Legislative changes are needed to give the Department the teeth to deal with the problem. The bottom line is that the practice, whether it be used by domestic or commercial permit holders, contributes to over-harvesting of the local forest resource and is an additional factor which will compromise the sustainability of the long term timber supply on the Bonavista Peninsula.

During the last planning period, the District explored ways to alleviate potential increased demand from the domestic cutting sector. One measure that was implemented was the designation of domestic gathering areas in post-harvest commercial harvesting blocks. Domestic fuelwood users were issued gathering permits to collect dead and fallen trees or under-utilized species such as white birch, trembling aspen or eastern larch from post-harvest commercial operating areas.

This program encouraged better utilization of the District's forest resource and reduced the demand for green wood in traditional domestic cutting blocks. This program will continue through the 2006-10 period. Participation in this program will be encouraged by extending the season in these areas beyond what is normal for the regular domestic cutting blocks.

The District will continue to explore new ways to improve domestic harvesting practises. It will also attempt to redirect domestic harvesting pressure in an effort to improve forest management. During the forthcoming planning period, the District will build domestic harvesting roads into forest stands which have a high priority for harvest. These will include over-mature fir and spruce stands as well as stands that have been previously high-graded. The District will use incentives in an effort to encourage use of these areas. These incentives will include providing an alternate cutting season (between April and Sept) and making supplemental volumes available.

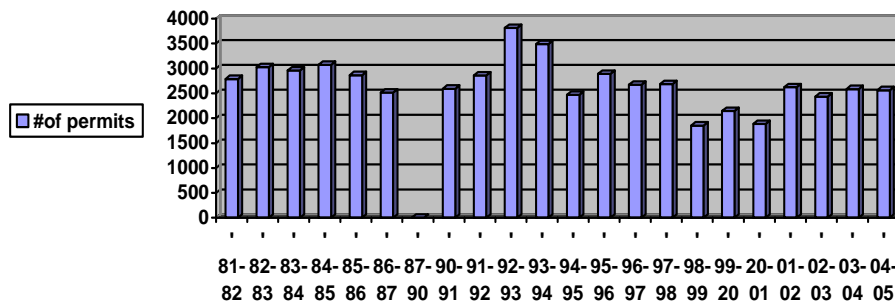


Figure 7.32 Domestic Permits issued in District 02: 1981/82 to 2004/05

### 7.1.8 Domestic/commercial allocation of wood supply

The sustainable harvest level for the District will be apportioned between the commercial and the domestic sectors. Demand is not a constant: commercial demand generally tends to increase as the industry pushes to expand and/or become more efficient; domestic demand tends to fluctuate depending on a number of factors (discussed below). The overall long-term trend of domestic demand has been decreasing with intermittent fluctuations tied to the shorter term changes in fuel-oil prices. An allocation rule was developed during the last planning process which still holds merit today. The need to develop these guidelines is predicated by the consensus that both economic and social values are of importance within the planning framework.

The proportionate share of historical use (10 year time-frame) of the local timber resource by the commercial/domestic sectors was used to develop an allocation rule for future sharing of the resource. During the five year period 1996-2000, the commercial sector harvested approximately 66% of the total harvest compared to 34% by the domestic sector. The resource was used in a similar proportional share during the 2001-05 period. The District will continue to allocate the resource to the commercial/domestic user groups through the 2006-10 period using the 66:34 rule.

It is important that there be accurate information on which to make timber allocation forecast and decisions. The last local survey to collect information pertaining to domestic fuelwood use within District 02 was conducted in 1998. A provincial survey was conducted during 2002. The District will implement another door to door survey during this planning period to again measure the demand of domestic fuelwood users. This survey will be designed to identify firewood and sawlog use – both self-procurement as well as the level of dependence on commercial fuelwood suppliers. Similar to the 1998 survey, Conservation Officers will be asked to visit homes, interview fuelwood users in person, and actually measure wood-piles. This should ensure a high degree of accuracy.

#### **7.1.9 Management of the Hardwood Allocation**

Hardwoods occupy only a small percentage of the production forest in the District. White birch is the predominate hardwood species in the District and has economic significance as a commercial species. It is the favoured species for commercial fuelwood harvesters. There is also a local hardwood milling enterprise in the District which provides a market for birch sawlogs. White birch occurs in one of three working groups - either as a pure white birch stand; as a hardwood/softwood mixed stand (ie. predominately hardwood); or as a softwood/hardwood mixed stand (ie. predominately softwood). There are only approximately 300 ha of pure birch (less than a quarter of one percent of the production forest) and less than 2000 hectares of mixed hardwood/softwood ( ~ 1.5% of the production forest) scattered throughout the District (predominately within the Central Newfoundland Forest Ecoregion). In addition, there are nearly 9000 hectares of forest with a mixed softwood/hardwood cover. This forest cover generally has a low volume of hardwood scattered through the predominately softwood forest.

Trembling aspen is also present in the District. This species is scattered in small stands throughout the District. It is not present in quantities that have justified the dedication of resources to complete a detailed inventory and determine a sustainable harvest level. However, the species has found some economic importance both locally and provincially. Locally, Trembling aspen is being manufactured into a value added kiln-dried paneling product. On a provincial scale, the pulpmill industry has begun to augment its pulpwood supply with aspen.

A sustainable harvest level for birch was developed during previous five years and will be implemented during the forthcoming planning period. There is a need to develop some guidelines which will regulate the allocation of the scarce hardwood resource in the District. In the past, there have been a number of commercial operators who have obtained commercial cutting permits on an annual basis specifically for authority to harvest birch. These operators have established markets for their hardwood products and have developed business infrastructure on the strength of receiving these regular hardwood allocations. Other commercial operators harvest a small quantity of hardwood on an irregular basis concurrent to harvesting their regular softwood allocation in mixed softwood/hardwood forest and have not become dependent on the hardwood portion to sustain their enterprise. In the past, some commercial operators harvested areas with substantial hardwood volumes but did not harvest any birch.

It has already been discussed in this document that it is a fair premise to consider historical resource use when making decisions about future resource allocation. The same premise was used for establishing guidelines for the allocation of hardwoods in the future. Consequently, the

following criteria will be used during the allocation of the hardwood allocation in the District during this planning period:

1. Commercial operators who have traditionally received hardwood allocations will receive priority for hardwood allocations in the future. This will guide the allocation of pure birch and mixed hardwood/softwood stands within the District.
2. Commercial harvesting blocks that contain a substantial portion of hardwood or mixed hardwood/softwood stands will be allocated on a priority basis to operators who have traditionally received regular hardwood allocations.
3. Commercial operators who do not receive regular hardwood allocations but who access some hardwood volume as a result of building access into a predominately softwood stand will get the first option to harvest the hardwood in that operating area. Normally this would be the hardwood component of a mixed softwood/hardwood stand. However, hardwood in these blocks will be allocated in the future in accordance with Criteria 4.
4. Significant hardwood volumes that are on existing access roads but have not been utilized on a commercial basis by operators in the area during the previous two year period or are accessed in the future but not used on a commercial basis by the commercial operator for a two year period, will be allocated on a priority basis to commercial operators who have traditionally received commercial hardwood allocations.
5. Operators who have received regular hardwood allocations in the past will be permitted to amalgamate their hardwood and softwood volumes on one permit to assist with the efficiency of conducting their logging operations. However, hardwoods and softwoods are being managed as separate supplies within the District and one cannot be substituted for the other. If inconsistencies occur in reporting, the District will reserve the discretion to manage hardwoods and softwoods as separate quotas.

It is also necessary to have some discussion on the post-harvest treatment of hardwood sites. Since hardwood is such a small proportion of the forest land-base in District 2, it is important from a bio-diversity perspective that these sites be managed in the future for hardwood or mixed hardwood/softwood stands. Regeneration of hardwoods on these sites is stymied by heavy moose browsing in many areas of the District. As a result, in the past these sites would normally have been replanted with white spruce or a mix of white and black spruce. Naturally occurring hardwoods that in-filled would be left to develop in the stand, ultimately creating a mixed forest composition, although with a much lower density of hardwood than existed in the original stand. In the future, these sites will be silviculturally treated to promote a higher density of white birch regeneration post harvest. Seed trees or small clumps of trees will be left scattered throughout the cut-over. Scarification will be conducted to improve the germination rate of birch seed. This technique should greatly enhance the regeneration of white birch and allow sufficient birch sapling survival (from moose browsing) to maintain a hardwood composition on the site similar to the pre-harvest level.

## **7.2 Value Added Forest Products Strategy**

### **7.2.1 Overview of Current Industry**

Newfoundland has had a tradition of earning very poor value from the export of its natural resources. Many of its resources, such as its fish and minerals, have historically been exported without processing or with only primary processing. Other resources, such as hydro electric power, have been exported at a tremendous discount to its current market value. With this export has been the export of a huge measure of the province's wealth and economic/employment growth opportunities.

Newsprint and lumber have been the mainstay commercial forestry products since the turn of the century. Other than an improvement in paper quality, which was essential to maintain market competitiveness, there has been very little value added within the newsprint sector in Newfoundland. However, improved efficiencies and value added forest products, including secondary manufacturing, has been increasing in the sawmilling industry - but primarily in the large mills. As late as the early nineties, slabs, sawdust and shavings were waste products in the Newfoundland sawmilling industry. Today, all of the larger mills are integrated and produce pulpchips from slabs and some sell sawdust/shavings as hog-fuel or use these waste to fire their own kilns.

During the past decade, the Newfoundland sawmilling industry has experienced a major expansion and seen a significant improvement in the value of both its softwood and hardwood products. The greater availability of sawlogs, improved efficiencies in the mills and an improved product has allowed the local industry to move from local markets into higher valued export markets. Transfer of timber and sawlog exchange agreements with Abitibi-Consolidated and Corner Brook Pulp and Paper Limited continue to provide a significant supply of softwood and hardwood sawlogs to the sawmill industry. Mill modernization programs have provided the capacity to saw small diameter (less than 10 cm) and short (some to 1.2m or 4 feet) logs which has effectively increased the supply to the industry and added value to the forest resource. Most large mills now have kiln-drying capacity. These additional sawlog supplies and improved utilization efficiencies have allowed provincial production to jump from an average of approximately 50 million foot board measure (fbm) per year during the early 1990s to an average of nearly 130 million fbm per year during the past five years.

High quality Newfoundland kiln-dried lumber has carved a niche in Canadian and American markets. Kiln dried softwood lumber is worth a 20-30% premium over green lumber. Select grade lumber is worth an additional 20-30%. Custom re-manufacturing for furniture frame-stock and pallet stock is providing greater efficiencies in length utilization and adding value to logs as short as 1.2 m. Pre-fabricated home packages have been sold in South America. High-grade, very high valued, pre-finished birch flooring is now being manufactured in Newfoundland and sold locally as well as in off-shore markets. This growth and move towards higher valued forest products has provided a very significant and needed boost to the rural Newfoundland economy. This industry is now worth \$50,000,000 and has created significant new employment during the past ten years.

District 2 has also benefited from this expansion. Sawmill production in this District has grown from less than 10 million fbm in the early 1990's to approximately 25 million fbm in 1998/99 and to almost 44 million fbm in 2004/05. This lumber production is generated primarily by the two integrated mills that are located in the District. The most substantive measure of value added by this sector, compared to the last generation of sawmills, is kiln-drying and lumber grading. Additional value has been added in the primary production by selling stress-tested joist to



the engineered lumber sector; by sorting premium grade lumber for market; and by selling shorts for pallet stock or other custom purposes. Some diversification of product lines is occurring with the manufacture of products such as traditional clapboard and softwood panelling. However, most of the primary production is # 1 and #2 grade kiln dried dimensional lumber.

Growth in the value added forest products industry has not been limited to just the larger sawmill producers in the province. Indeed, smaller scale companies have been successful, both locally and provincially, in moving their average production much higher in the value added forest products chain than their larger counter-parts. Consequently, this segment of the value added sector is generating more economic and employment benefits per unit of resource than the larger integrated mills. Such products as spruce, birch and larch flooring; aspen and softwood panelling; log siding; mouldings; softwood furniture; and cabinet stock are now finding their way to the Newfoundland market through local manufacturers.

The combined sales of the local forest industry in District 02 during 2004-05 were approximately \$25.9 million (Departmental Survey, 2005). Approximately 20% (\$4.97 million) of the total value of the forest products industry was attributed to value adding, including the products listed in Table 7.8. In addition, \$3.2 million worth of pulpchips were generated from slabs and small diameter wood. A further \$495 thousand of products (primarily hogfuel) were produced from what would normally have been waste. Eighty-six percent of the sawmill production in the District is kiln dried. Direct employment attributed to the local forest industry (including forest management) is shown in Table 5.3. A total of 373 jobs and 10,042 man-weeks of direct employment were created in the forestry sector during 2005. A significant proportion of the employment (67 jobs and 2515 man-weeks) was a result of adding value to the Districts forest products. Employment created as a result of the production of pulp-chips and kiln-dried lumber was included in this category.

Table 7.8. Value Added Forest Products Produced in District 02: 2004-05.

	Christmas trees	Laths
	Panelling	Felt moulding
Construction timber	Cabinet stock	Pallet kits
Premium graded/stress tested lumber	Flooring	Survey pegs
Clapboard	Log siding	Storage stickers
	Pallets	Bagged firewood
Fencing	Bedframing	

New product made from traditional waste products: hogfuel, animal bedding, mulch, landscape chips, pallet notches, trimmed ends, heat treated pallet stock (shorts), bagged birch bark.

Growth opportunities that are dependent on new fibre supplies have been very limited. On a provincial basis, the demand for softwood resource has out-paced supply during the past planning period. Round timber has been brought in from off-shore to support the local demand. The closure of the Stephenville mill will help balance the supply and demand on the island. The impact on the local (District 02) markets is yet undetermined.

There is still tremendous potential to add value to our forest products through secondary or tertiary manufacturing. This potential presents an opportunity to further expand the forest products industry and achieve greater social economic benefits without adding additional demand on the forest resource.

### 7.2.2 How Much Value Can Be Added?

The value of a forest product depends on the uniqueness of the product or the level of manufacturing required to make that product. A softwood or hardwood log can be traced through different stages of manufacturing and the increased value measured at each stage. Below in Table 7.9 and Table 7.10 are two scenarios illustrating the value of various hardwood and softwood products as fibre is moved through the value added chain. Each scenario presents the value of a specified volume (solid cubic meter and cord) of round softwood and hardwood; compared to the value of sawn lumber that can be produced from that volume of round wood; compared to the value of specialty products and products receiving secondary, tertiary or greater degrees of manufacturing that can be produced from that volume of roundwood. In the softwood scenario it is assumed that 494 fbm of lumber can be manufactured from one cord of round wood (136 fbm per m<sup>3</sup>s). In the hardwood scenario, it is assumed that 400fbm of lumber can be sawn from each cord of logs ( or 110fbm per m<sup>3</sup>s). All prices presented are approximated current retail value for most roundwood products and wholesale (or manufacturer's ) price for sawn or value-added products. The primary purpose of presenting these prices here is for comparison purposes only. Most forest products are vulnerable to large and sometimes swift price fluctuations.

**Table 7.9**      Hardwood Value Added Forest Product Chain

PRODUCT	VALUE (1 M <sup>3</sup> Solid)	VALUE (CORDS)
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<b>Firewood:</b>		
-round, 2.4 metre length (retail)	35	\$80
-junked & split (retail)	44	100
-junked, split, air dried & packaged (retail)		380
<b>Lumber:</b>		
-pallet stock	88	\$200
-kiln dried, #1 grade, random lengths	442	1000
<b>Secondary Processing:</b>		
-flooring (non finished)	318	720
-kiln dried, laminated panels	353-883	800-2000
<b>Tertiary Processing:</b>		
-finished cutting board	883-2030	2000-4600
-cabinet doors	2252	5100
<b>Quaternary Processing:</b>		
-hardwood furniture	1325-4415	3000-10000
-kitchen cabinets		
<b>Specialty Products:</b>		
-rustic furniture		

Table 7.10 Softwood Value Added Forest Product Chain

PRODUCT	VALUE 1m <sup>3</sup> solid	VALUE (CORDS)
<b>Round-wood:</b>		
-Firewood (2.4m, retail)	26	\$60
-pulpwood (millyard)	40	90
-sawlogs (millyard)	59	135
<b>Lumber:</b>		
-pallet stock	55	125
-rough sawn lumber	55-77	125-175
-dressed lumber	77-88	175-200
-kiln dried lumber	99-110	225-250
-premium grade	116-121	262-275
-kiln dried lumber + pulpchip (millyard)	121-132	275-300
<b>Secondary Processing:</b>		
-furniture frame-stock (short logs)	88	200
-log siding	188	425
-flooring	208	470
<b>Tertiary Processing:</b>		
-2x4 furniture		
<b>Specialty Products:</b>		
-rustic furniture		

### **7.2.3 Financing Programs/Agencies**

There are a number of federal, provincial and non-profit organizations/agencies that have mandates to encourage economic development in rural Newfoundland. Assistance to develop business plans and with start-up operating costs is available to new businesses as well as existing enterprises who wish to expand. Business ideas which are innovative, which add value to existing product lines, which replace current imports or create new exports are all high priority ventures for current funding assistance programs. Businesses which plan to manufacture value added forest products meet two or more of those criteria. Assistance in developing ideas, preparing business plans and accessing information (product information as well as financial programs/opportunities) is available from the local Department of Development and Rural Renewal. However, given the current capacity in District 2 to harvest timber and saw dimension lumber and the difficulty with supply, public financing should not be used to exacerbate the supply/demand deficit. Financing should be targeted primarily to undertakings which improve the utilization of timber and/or improve the value of forest products.

### **7.2.4 Strategy to Expand Value Added Forest Product Manufacturing in District 2**

Value Added forest products can be divided into three categories, each category being higher up the value added chain. These categories are: (1) Added value to traditional dimensional timber products; (2) Development of new higher valued wooden products (ie. Panelling, flooring, etc); (3) Secondary and tertiary manufacturing. The local forest products industry has diversified considerably during the past five years, as discussed in the previous section. However, from a volume perspective, the greatest advancement has been adding value to dimensional lumber products through kiln-drying (86% of total production), grading, sorting premium grades and stress tested lumber (the latter two combined equals 3.5 million fbm or 11% of total production). There was also significant development, at the local level, of higher valued wooden products. A total of 1.9 million fbm (or 4.7%) of the sawmill production was manufactured into the following product: clapboard, log siding, flooring, panelling, T&G board, bed framing, cabinet stock and some other miscellaneous products. There has been minimal expansion of the secondary or tertiary wood manufacturing sector in the District during the past five years.

The key to continued expansion in the value added sector is to move a greater proportion of the sawmill output up the value added chain. This will require determination and vision by industry participants. The industry needs to identify new products which will have market acceptance. It also needs to focus more on marketing to improve sales of products which have been demonstrated to have consumer demand. Two areas of secondary manufacturing which warrant serious investigation within the local industry is the manufacture of engineered structural lumber (wood-I joist) and some product )extruded fire-wood or pressboard for example) that would use sawmill waste. It is the authors belief that tertiary manufacturing (cabinet making, furniture making, 2x4 furniture kits, other “do-it-yourself” kits, other finished wooden products) has the greatest opportunity to lead to economic and employment growth in the forest products industry. Off-shore lumber can be used as well as local lumber for tertiary manufacturing. Generally, more advanced skill sets are required for wood-working; marketing is more complex; and manufacturers often have to compete against cheap imports. These realities underlie the challenge ahead to expand tertiary

wood manufacturing in the local industry.

The District will continue to support the expansion of the value added sector by committing to undertake the following measures:

- Act as a liaison between industry players and the Department's Forest Products division.
- Provide support to proponents with legitimate proposals to develop or expand value added operations.
- Disseminate information that will encourage expansion of local enterprises into value added forest products manufacturing, including available information on new product ideas; market opportunities; government financing and business development programs;
- Organize a seminar which will put focus on expanding the value added forest products sector.
- Develop a display of locally manufactured value added products in the Clarendville office.
- Participate in trade shows with the objective to profile and promote value added forest products.
- Liaison with other government agencies or NGO (Discovery Zone Board, Atlantic Canada Opportunity Agency, Innovation, Trade and Rural Development, Community Business Development Corporation) to encourage expansion of the value added forest product sector.