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# Cranberry TSA Silviculture Strategy (Type 1)

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**FOREST**  
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### Acknowledgements

This interim silviculture strategy was developed through a workshop conducted at the offices of the Kispiox Forest District, on March 14, 2001. The workshop and this report were prepared and presented by Jordan Tanz of Cortex Consultants Inc. and Laird Pittman of Pittman Consulting. Forest Renewal BC provided funding through a contract between Prince Rupert Forest Region and Cortex Consultants Inc.

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1	David Briggs	MoF, Kispiox Forest District
2	Neil Endacott	Prince Rupert Forest Region
3	Darren Fillier	MELP, FES, Kispiox Forest District
4	Leanne Kaupp	MoF, Kispiox Forest District
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6	Liz Williamson	MoF, Kispiox Forest District
7	Jordan Tanz	Cortex Consultants Inc.
8	Laird Pittman	Pittman Consulting



## Preface

The development of silviculture strategies for TSAs and TFLs is motivated by the desire to clarify the relationship between investments in silviculture and the critical forest-level issues specific to the management unit.

The Type 1 analysis is workshop-based. It draws on the expert knowledge of the participants to identify the critical issues, derive objectives with respect to those issues, specify regimes to meet those issues, and identify the regime activities that can be implemented in the next five years. After consideration of the benefits and costs of each of the activities on each of the forest-level objectives, the participants rank the silviculture activities by priority. The result is a prioritized list of silviculture activities that are explicitly linked to the critical issues of the management unit.

Type 2 analyses are model-based, but the analysis process is fundamentally identical to the Type 1 analysis. A forest-level model is used to evaluate the impacts of regimes on the forest-level objectives, to identify the silviculture activities constituting the “preferred management scenario”, and to rank those activities.

The Type 2 (model-based) analysis will result in a silviculture strategy that is considerably more appropriate and robust than the Type 1 approach, but it is more expensive and demanding of scarce modeling expertise. Hence the Type 1 (workshop-based) approach has been designed to produce an interim silviculture strategy that will serve until a Type 2 analysis can be completed.



## Executive Summary

### Issues Addressed by the Strategy

The main issues in the Cranberry TSA are backlog impeded stands, backlog NSR, old burns, increasing the supply of logs, and forest health issues (spruce leader weevil, pine needle casts and rusts, *Tomentosus*).

### Elements of the Strategy

- Issue 1a *Backlog Impeded*. A number of areas exist that are stocked but have not met free growing status due to impediment by brush or incorrect classification. Survey these sites to verify status. Reclassify those sites that are free growing and develop prescriptions for areas requiring treatment. Brush areas requiring treatment.
- Issue 1b *Backlog NSR*. A number of areas exist that are considered NSR due to lack of acceptable stocking or incorrect classification. Survey these sites to verify status. Reclassify those sites that are stocked and develop prescriptions for areas requiring treatment. Implement appropriate treatments to ensure areas become SR.
- Issue 2 *Old Burns*. Old wildfires have created a number of areas where the inventory and stocking status is unknown. These areas could be brought back into the timber harvesting land base if their status was known and they meet the requirements. Many of these sites may require density management. Survey the affected areas and determine their status. Reclassify the sites as required and develop prescriptions for treatment where necessary. Space these stands to a level so that they can be considered as contributing to the productivity of the timber harvesting land base.
- Issue 3 *Increase Supply*. Forest managers in the Cranberry TSA want to ensure that sites are fully occupied and that they are managed from both a quantity and quality perspective. This objective can be promoted by managing to target stocking levels. Increase number of free growing stems from minimum levels to target levels by implementing brushing treatments where required. Increase growth and quality by reducing stocking densities in stands that are overstocked to optimum levels to meet free growing status.
- Issue 4a *Spruce Leader Weevil*. Attack by spruce leader weevil has a negative impact on both growth and quality of established spruce plantations. In order to limit the expansion of the spruce leader weevil managers must be aware of, and take it into account when planning reforestation, spacing and brushing treatments in candidate stands. Monitoring the incidence and impacts of the weevil must continue. Consider incidence when establishing stocking levels.
- Issue 4b *Pine Needle Cast and Rusts and Tomentosus*. Pine needle casts, rusts and *Tomentosus* root disease (*Inonotus tomentosus*), although not present in epidemic levels in the Cranberry TSA must be considered as an issue to ensure that the incidence be kept in check. Managers must take into account the presence of needle cast and rusts along with *Tomentosus* when preparing prescriptions. Continue the current practice of monitoring incidence and impacts. Consider incidence when establishing stocking levels.



### Tactical Priorities

The tactical priorities set by the participants represent a balance between the participants' strategic objectives for the management unit and the silvicultural opportunities available on the TSA in the next 5 years.

Participants in the Cranberry TSA workshop felt that the issues with highest tactical priority were surveying and treating backlog impeded stands, surveying and spacing overstocked stands resulting from the old Cranberry and Kiteen burns, and eliminating backlog NSR. Remaining tactical priorities were stand density treatments that could increase timber supply.

Table S-1 lists activities identified by the participants and the rank (priority) assigned to each activity.

**Table S-1 Silviculture activities and areas selected by the workshop participants\***

Activities/Treatments	Opportunity Area (ha)	Workshop Rank
<b>BACKLOG IMPEDED AREAS</b>		
Survey, prepare prescription of backlog impeded areas	3000	1
Brushing	1800	1
Re-survey treated and untreated areas	750	1
<b>OLD BURNS (Cranberry, Kiteen)</b>		
Survey and reclassify	2600	2
Spacing	500	2
<b>BACKLOG NSR</b>		
Survey	150	3
Treat NSR (prescription, site preparation, plant, re-survey, brush)	75	3
<b>INCREASE TIMBER SUPPLY</b>		
brush to achieve target, rather than minimum stocking	150 ha/yr	4
juvenile spacing in very dense managed spruce, hemlock, pine stands	150 ha/yr	5

\* some of the estimates of opportunity area were refined after the workshop

### “To-Do List”

As various issues, objectives and strategies were discussed in the workshop, there were inevitably some that were clouded by lack of information. These items were added to a running “To Do List” throughout the workshop. At the end of the workshop participants ranked these items by urgency (Table S-2).



**Table S-2. "To-Do List" (Issues needing investigation), Cranberry TSA**

Rank	Issue
1	Develop decision key for deciding whether to accept deciduous stocking or treat backlog that is deciduous-impeded
2	Develop interim policy on deciduous management (remove/leave for habitat/keep for crop tree)
3	ISIS query to find FG stands that are too dense (need juvenile spacing, strategy 3b)
4	Set product objectives for the TSA
5	Re-examine District brushing strategy, including use of herbicides
6	Examine opportunities for partial cutting in areas with high visual values (Grease Trail, Derrick Lake, Hwy 37)
7	Refer to Kispiox TSA Type 1 strategy re botanical forest products (with particular reference to mushrooms)
8	Refer to berry supply strategy for pilot study in Kispiox (Symbios, Oikos, L&M)
9	Refer to Kispiox TSA Type 1 strategy re: effects of silviculture systems on habitat
10	Examine variant representation in OGMAs; discuss options for recruitment or acceleration of O.G. attribute development



## Table of Contents

<b>Acknowledgements</b> .....	<b>i</b>
<b>Preface</b> .....	<b>ii</b>
<b>Executive Summary</b> .....	<b>iii</b>
Issues Addressed by the Strategy .....	iii
Elements of the Strategy.....	iii
Tactical Priorities .....	iv
“To-Do List” .....	iv
<b>1. Introduction</b> .....	<b>1</b>
<b>2. Issues and Strategies</b> .....	<b>2</b>
Issue 1a Backlog Impeded .....	2
Issue 1b Backlog NSR.....	2
Issue 2 Old Burns .....	3
Issue 3 Increase Supply .....	3
Issue 4a Spruce Leader Weevil.....	3
Issue 4b Pine Needle Cast and Rusts and Tomentosus .....	3
<b>3. Silviculture Impacts and Priorities</b> .....	<b>5</b>
<b>4. Silviculture Program</b> .....	<b>7</b>
4.1 Tactical Priorities.....	7
4.2 Program Costs and Benefits .....	7
<b>5. Issues Requiring Investigation (“To Do List”)</b> .....	<b>9</b>
<b>Appendix A—Timber Supply Context</b> .....	<b>10</b>
<b>Appendix B—Executive Summary, Incremental Silviculture Strategy for BC</b> .....	<b>15</b>
<b>Appendix C—Summary of Workshop Evaluations</b> .....	<b>16</b>



## 1. Introduction

The Silviculture Strategy (Type 1) workshop draws on the expert knowledge of the participants to identify the key issues that should guide silvicultural planning on the TSA, derive objectives with respect to those issues, specify regimes to meet those issues, and identify the regime activities that can be implemented in the next five years. The key idea is that this line of logic from issues to silvicultural activities can be retraced when evaluating funding levels, ensuring that activities are funded that address critical TSA issues.

The first step in developing this line of logic is to identify the key issues that should guide silvicultural planning on the TSA. Next, the participants' objectives with respect to these issues are clearly stated. Strategies for meeting these objectives are identified, together with the silvicultural target (stand types) to which these strategies are to be applied. A plan of action, most often a silvicultural regime, is then developed to implement each strategy. This sequence constitutes the "strategic analysis" part of the workshop and the resulting compilation of issues, objectives, strategies and regimes is the silviculture strategy.

After developing the strategy, the workshop identifies opportunities to implement the regimes in the next five years and develops a program of silvicultural activities that is consistent with the strategy and is feasible with respect to the operational realities of the TSA. The impacts of these silvicultural activities on selected objectives are estimated by the workshop participants, and in a final step, the activities are ranked as to their importance with respect to the TSA issues. Development of the 5-year plan of silvicultural activity and estimating impacts and evaluating ranks of the activities constitutes the tactical analysis part of the workshop.

This report documents the results of a workshop to develop a strategy and a 5-year plan for Cranberry TSA. Following this introduction, section 2 summarizes the results of the strategic analysis and sections 3 and 4 present the plan. Issues that influence silviculture planning on the TSA were obtained in interviews with District staff and various documents identified by the District. Appendix A contains a detailed examination of the timber supply situation on the TSA, based on the most recent TSR timber supply analysis report, as some aspect of timber supply is often a guiding issue for silviculture planning. Appendix B includes the executive summary of the Interim Provincial Incremental Silviculture Strategy. Appendix C is the workshop evaluation summary.



## 2. Issues and Strategies

This section identifies the critical issues that guide silviculture planning on the TSA and strategies developed in the workshop for addressing those issues. These strategies were assessed by the workshop participants as to their appropriateness and efficacy. Some of these strategies were selected by the participants as feasible and desirable for the TSA and are listed in Table 1-1. This set of strategies constitutes the silviculture strategy for the Cranberry TSA, as determined by the workshop participants.

The main issues in the Cranberry TSA are backlog sites, old burns, increase supply of logs, and forest health issues including, spruce leader weevil, pine needle casts and rusts, tomentosus and raptors.

### Issue 1a Backlog Impeded

A number of areas exist that are stocked but have not met free growing status due to impediment by brush or incorrect classification.

Strategies:

- Survey these sites to verify status.
- Reclassify those sites that are free growing and develop prescription for areas requiring treatment.
- Brush areas requiring treatment.

To Do List:

- Develop decision key for deciding whether to accept deciduous stocking or treat backlog that is deciduous impeded.
- Develop interim policy in the form of a District standard operating procedure on deciduous management. A policy of this nature must address both habitat requirements and timber production goals.

### Issue 1b Backlog NSR

A number of areas exist that are considered NSR due to lack of acceptable stocking or incorrect classification.

Strategies:

- Survey these sites to verify status.
- Reclassify those sites that are stocked and develop prescriptions for areas requiring treatment.
- Implement appropriate treatments to ensure areas become SR.

To Do List:

- Re-examine District brushing strategy, including use of herbicides.



## **Issue 2 Old Burns**

Old wildfires have created a number of areas where the inventory and stocking status is unknown. These areas could be brought back into the timber harvesting land base if their status was known and they meet the requirements. Many of these sites may require density management.

Strategies:

- Survey the affected areas and determine their status.
- Reclassify the sites as required and develop prescriptions for treatment where necessary.
- Space these stands to a level so that they can be considered as contributing to the productivity of the timber harvesting land base.

## **Issue 3 Increase Supply**

Forest managers in the Cranberry TSA want to ensure that sites are fully occupied and that they are managed from both a quantity and quality perspective. This objective can be promoted by managing to target stocking levels.

Strategies:

- Increase number of free growing stems from minimum levels to target levels by implementing brushing treatments where required.
- Increase growth and quality by reducing density in overstocked stands.

To Do List:

- Develop product and quality objectives for the Cranberry TSA. This could be done in part by reviewing piece size objectives.
- Complete an ISIS query to find free growing stands that are too dense and in need of juvenile spacing.

## **Issue 4a Spruce Leader Weevil**

Attack by spruce leader weevil has a negative impact on both growth and quality of established spruce plantations.

Strategies:

- In order to limit the expansion of the spruce leader weevil managers must take it into account when planning reforestation, spacing and brushing treatments in candidate stands.
- Monitoring the incidence and impacts of the weevil must continue.
- Consider incidence when establishing stocking levels.

## **Issue 4b Pine Needle Cast and Rusts and Tomentosus**

Pine needle casts, rusts and Tomentosus, although not present in epidemic levels in the Cranberry TSA must be considered as an issue to ensure that the incidence be kept in check.



Strategies:

- Managers must take into account the presence of needle cast and rusts along with Tomentosus when preparing prescriptions.
- Continue the current practice of monitoring incidence and impacts.
- Consider incidence when establishing stocking levels.

### 3. Silviculture Impacts and Priorities

The following worksheet, which defines the elements of the strategy, was produced in the workshop in the Kispiox Forest District offices.

**Table 1 Showing the workshop issues, objectives, strategies, activities, targets, and impacts, Cranberry TSA.**

	Issues	Objectives	Strategies	Target	Activities	Area (ha)	Short	Mid	Long	Qual	Days/ha	\$/ha	Rank				
							0-20	21-130	131+								
1	<b>BACKLOG</b> 1a Backlog impeded	eliminate backlog	treat or re-classify, as appropriate	backlog impeded	survey, prescription  reclassify as FG treat (brush) where needed survey	1500 ha	← FG declarations currently submitted for approval: before RMP prepared this figure should be reconciled with ISIS				0.04	30/ha	1				
						750 ha 300 ha 750 ha					← leaving 450 left to re-survey	0.6 0.04		600/ha 20/ha			
1b	Backlog NSR	eliminate backlog	treat or re-classify, as needed	backlog NSR	survey reclassify treat (rehab) where needed: a) survey, prescription b) site prep c) plant d) regen survey e) brush f) FG survey	150 ha					0.04	20/ha	3				
						75 ha					←	+		+			
						75 ha									← large stock, 1600 tph	0.04	30
						75 ha									←	1.0	1000/ha
						75 ha									← average 1.5 brushing treatments required (some sites require 2 treatments)	0.5	2000/ha
						75 ha									← pre-stand tending survey	0.04	20/ha
2	<b>OLD BURNS</b> Condition unknown	Survey	Survey	Cranberry burn Kiteen burn	survey survey reclassify prescribe spacing (incl. layout)	2200 ha					0.04	20/ha	2				
						400 ha					← about 1/3 will be inoperable after classification	0.04		20/ha			
						800 ha										0	
						1800 ha					← 50 ha/yr for two years	0.07		35/ha			
						100 ha						+		+	+	3.0	900/ha
3	increase supply (quantity and quality)	ensure reforested sites are fully occupied (managing to target stocking levels)	increase FG stems from minimum to target	sites where there is the minimum number of FG conifer trees and additional potential crop trees that aren't FG	brush	150 ha/yr		+	+		2	500/ha	4				
			increase growth and quality by reducing stocking on FG stands to optimum density	FG very dense managed spruce, hemlock, pine stands	juvenile space		30 ha/yr		+	+	+	1.5	500/ha	5			



**Table 2. Summary of silvicultural activities, Cranberry TSA.**

Issue	Strategy	Activity	Target	Opportunity Area (ha)	Rank	
1	<b>BACKLOG</b>	eliminate backlog impeded area	survey, prescription	backlog impeded stands	3000	1
			brush, where needed; leave rest to re-survey	impeded stands not reclassified as FTG	1800	1
			survey	treated hectares and remaining hectares	750	1
	eliminate backlog NSR area	survey	backlog NSR	150	3	
		where treatment is needed:		75	3	
		a) survey, prescription		75	3	
		b) site preparation		75	3	
		c) plant		75	3	
		d) regeneration survey		75	3	
		e) brush		75	3	
2	<b>OLD BURNS</b>	determine condition of old burns	survey	Cranberry Burn	2200	2
				Kiteen Burn	400	2
			reclassify	about 1/3 will be reclassified as inoperable	2600	
			prescribe treatment	operable area	1800	
			space	operable area needing treatment	500	
3	<b>INCREASE TIMBER SUPPLY</b>	achieve target, rather than minimum stocking of FG stems	brush to reduce competition	sites where there is the minimum number of FG coniferous trees, and additional potential crop trees that are not FG	150 ha/yr	4
		reduce stocking to optimum density	juvenile spacing	FG very dense managed spruce, hemlock, pine	150 ha/yr	5

\* some estimates of opportunity area were refined after the workshop



## 4. Silviculture Program

### 4.1 Tactical Priorities

Tactical priorities for Cranberry TSA were defined in the workshop by having participants ranking strategies and activities for implementation in the next five years. Priorities were assigned through discussion and consensus among the participants, and produced a clear sense of the most important activities from the participants' perspectives. In Cranberry TSA, workshop participants felt that the most important tasks are to survey and treat backlog-impeded stands, survey overstocked areas of old burns (Cranberry, Kiteen) and treat as needed. The third priority is to eliminate backlog NSR.

### 4.2 Program Costs and Benefits

The costs and benefits of the program developed in the workshop are summarized in Tables 3 - 6, below. Table 3 shows the assumed unit costs and employment associated with each activity. Employment multipliers were estimated by the consultant and should be verified by the District. Table 4 shows the area treated by activity and program year. Table 5 shows expenditures in thousands of dollars by activity and program year. Table 6 shows the person-days of employment generated by undertaking the activities listed in the preceding tables.



**Table 3 Unit cost (\$/ha) and employment (person-days/ha) assumptions**

	survey, prescript.	survey	brush	site prep.	plant	space, including layout	juvenile space	prescript.	reclassify
\$/ha average	30	20	600	1000	2000	900	500	35	0
PDs/ha	0.04	0.04	2.00	1.00	1.00	3.00	1.50	0.07	0.00

**Table 4 Area (ha) treated by activity and year**

	survey, prescript.	survey	brush	site prep.	plant	space, layout	juvenile space	prescript.	reclassify	
1	3 075	2 750	510	75	75	100	150	360	325	7 420
2	0	75	510	0	0	100	150	360	325	1 520
3	0	750	585	0	0	100	150	360	325	2 270
4	0	75	510	0	0	100	150	360	325	1 520
5	0	0	510	0	0	100	150	360	325	1 445
<b>Subtotal Yr 1 - 5</b>	<b>3 075</b>	<b>3 650</b>	<b>2 625</b>	<b>75</b>	<b>75</b>	<b>500</b>	<b>750</b>	<b>1 800</b>	<b>1 625</b>	<b>14 175</b>
Subtotal Yr 6 - 10	0	0	750	0	0	0	750	0	0	1 500
<b>Total Yr 1 - 10</b>	<b>3 075</b>	<b>3 650</b>	<b>3 375</b>	<b>75</b>	<b>75</b>	<b>500</b>	<b>1 500</b>	<b>1 800</b>	<b>1 625</b>	<b>15 675</b>

**Table 5 Expenditure (\$ x 1000) by activity and year**

	survey, prescript.	survey	brush	site prep.	plant	space, layout	juvenile space	prescript.	reclassify	
1	92	55	306	75	150	90	75	13	0	856
2	0	2	306	0	0	90	75	13	0	485
3	0	15	351	0	0	90	75	13	0	544
4	0	2	306	0	0	90	75	13	0	485
5	0	0	306	0	0	90	75	13	0	484
<b>Subtotal Yr 1 - 5</b>	<b>92</b>	<b>73</b>	<b>1 575</b>	<b>75</b>	<b>150</b>	<b>450</b>	<b>375</b>	<b>63</b>	<b>0</b>	<b>2 853</b>
Subtotal Yr 6 - 10	0	0	450	0	0	0	375	0	0	825
<b>Total Yr 1 - 10</b>	<b>92</b>	<b>73</b>	<b>2 025</b>	<b>75</b>	<b>150</b>	<b>450</b>	<b>750</b>	<b>63</b>	<b>0</b>	<b>3 678</b>

**Table 6 Short-term employment benefits (person-years<sup>1</sup>) by activity and year**

	survey, prescript.	survey	brush	site prep.	plant	space, layout	juvenile space	prescript.	reclassify	
1	0.62	0.55	5.10	0.38	0.38	1.50	1.13	0.13	0.00	10
2	0.00	0.02	5.10	0.00	0.00	1.50	1.13	0.13	0.00	8
3	0.00	0.15	5.85	0.00	0.00	1.50	1.13	0.13	0.00	9
4	0.00	0.02	5.10	0.00	0.00	1.50	1.13	0.13	0.00	8
5	0.00	0.00	5.10	0.00	0.00	1.50	1.13	0.13	0.00	8
<b>Subtotal Yr 1 - 5</b>	<b>0.6</b>	<b>0.7</b>	<b>26.3</b>	<b>0.4</b>	<b>0.4</b>	<b>7.5</b>	<b>5.6</b>	<b>0.6</b>	<b>0.0</b>	<b>42.1</b>
Subtotal Yr 6 - 10	0.0	0.0	7.5	0.0	0.0	0.0	5.6	0.0	0.0	13.1
<b>Total Yr 1 - 10</b>	<b>0.6</b>	<b>0.7</b>	<b>33.8</b>	<b>0.4</b>	<b>0.4</b>	<b>7.5</b>	<b>11.3</b>	<b>0.6</b>	<b>0.0</b>	<b>55.2</b>

<sup>1</sup>one person-year of employment is equivalent to 200 person-days of employment



## 5. Issues Requiring Investigation (“To Do List”)

As various issues, objectives and strategies were discussed in the workshop, there were inevitably some that were clouded by lack of information. Either the lack of information itself was the issue (e.g., uncertainty about site index estimates for existing regenerated stands), or the issue could not be resolved until further investigation provided some clarification (e.g., the impact of silvicultural systems on wildlife habitat). These items were added to a running “To Do List” throughout the workshop. At the end of the workshop participants ranked these items by urgency (Table 7).

**Table 7. Issues needing investigation, Cranberry TSA**

Rank	To-Do Item
1.	As a number of areas exist that are currently classified as Backlog NSR due to the presence of deciduous species, there is a need to develop a decision key for deciding whether to accept deciduous stocking, or treat backlog that is deciduous impeded so as to ensure the sites reach free growing status.
2.	Develop an interim policy, which may be in the form of a District Standard Operating Procedure, on deciduous management. A policy of this nature must address both habitat requirements and timber production goals.
3.	Complete an ISIS query to find free growing stands that are too dense and in need of juvenile spacing. This review may help identify candidate stands that will help fulfill quality and product objectives for the TSA, if treated.
4.	Develop product and quality objectives for the Cranberry TSA. This could be done in part by reviewing piece size objectives. This process must consider reconciliation of product objectives with site capabilities and risk.
5.	Re-examine the 1990 District brushing strategy recommendations. Local controversy over herbicide use resulted in no applications for chemical brushing since the early 1990's. In certain sites herbicides may provide the best alternative for effective brushing treatment. All treatment options should be reviewed to better understand their effectiveness and implications on a variety of sites.
6.	Examine opportunities for partial cutting in areas with high visual values. The existence of many areas of high visual value have limited the opportunity for harvesting by conventional systems. Partial harvesting systems may allow opportunities considered lost in recent years.
7.	Mushroom picking is important in the Cranberry TSA from both an economic and sustenance perspective. This issue was addressed in the Kispiox TSA review of botanical forest products. A consistent decision making framework is needed to minimize impact of tree harvesting on high-value mushroom habitats.
8.	A consistent berry supply is important in the Cranberry TSA. A berry supply strategy in the form of a pilot study was carried out in the Kispiox TSA It is recommended that the Kispiox study be referred to and the results considered in the Cranberry TSA.
9.	The effect of silviculture systems on habitat is important in the Cranberry TSA. The Type 1 silviculture strategy in the Kispiox TSA recommended this same question be addressed. Therefore the results from the review in the Kispiox TSA are referred to for the Cranberry TSA.
10.	Further review is necessary to conclude if Old Growth Management Areas are under represented in certain variants within the Cranberry TSA. It is necessary that options for recruitment or acceleration of Old Growth attributes be developed if this is true.



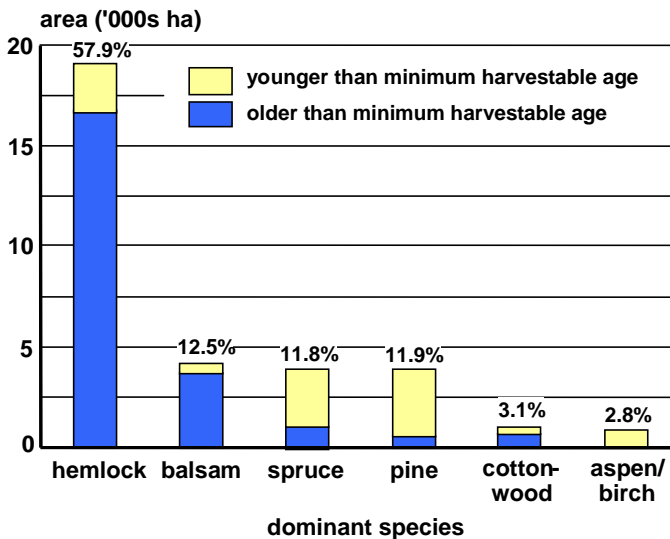
## Appendix A—Timber Supply Context

Timber supply is the rate at which timber is made available for harvesting, and it is “made available” through natural, administrative, and economic processes. The forest economy draws timber from the land base in response to consumer demand, and this flow of timber is limited by the rate at which the forest can physically grow trees, and by a variety of administrative constraints. The combined effect of these administrative constraints is incorporated in the Allowable Annual Cut (AAC).

The base case of the timber supply review (TSR) forecasts future timber supply subject to current administrative constraints and assuming present market conditions. The purpose of this section is to describe the timber supply dynamics of the management unit and to suggest how silviculture treatments might enhance timber supply.

The forests of Cranberry TSA are composed largely of mature, hemlock-dominated stands. Stands dominated by balsam, spruce, and pine are also significant (Figure A1). Much of the area of spruce- and pine-leading stands is comparatively young because of wildfire and because most areas harvested are replanted with pine and spruce.

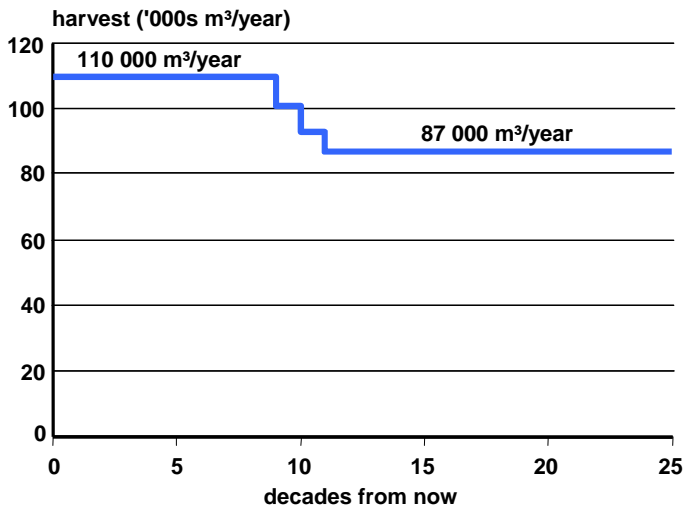
Figure A1 Area by dominant species and maturity, Cranberry TSA, 1997



The current allowable annual cut (AAC) of 110 000 m<sup>3</sup>/year can be maintained for 90 years, after which the harvest level must decline. The long-term harvest level (LTHL) of 87 000 m<sup>3</sup>/yr is reached by decade 12 (Figure A2), when much of the area harvested is second-growth stands.

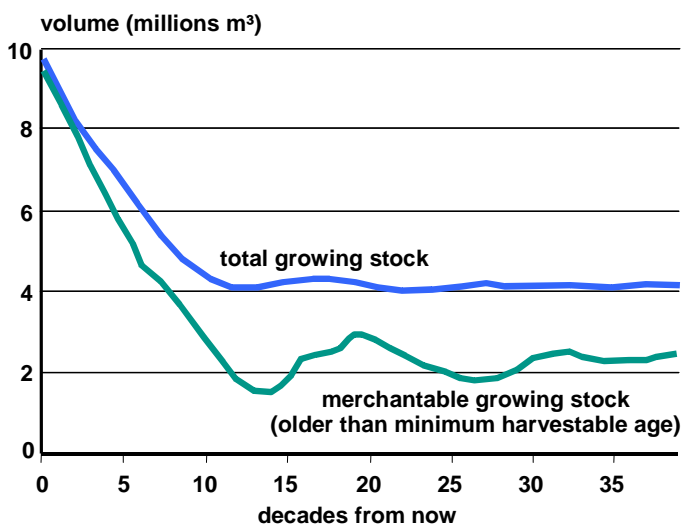


Figure A2 Base case harvest forecast, Cranberry TSA, 1997



Changes in the growing stock inventory over the planning horizon reflect the amount and composition of the harvest in the base case forecast (Figure A3). The rate of harvest is timed to ration the initial stock of mature timber until second-growth stands reach minimum harvestable age. The volume of inventory continues to be reduced by harvesting until decade 12, the time when the volume of mature timber reaches its lowest point.

Figure A3 Total, merchantable and available growing stock, Cranberry TSA, 1997



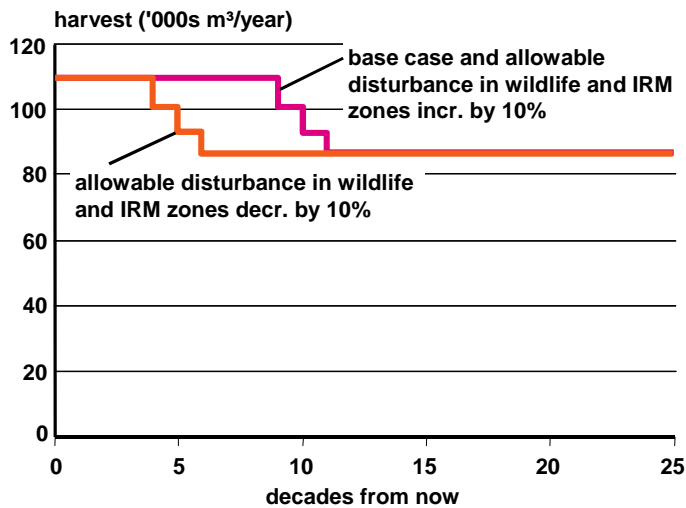
These observations provide insight into the possible effects silviculture activities on timber supply in Cranberry TSA. Since the volumes harvested in the first 12 decades comes entirely from the initial stock of mature timber, treatments that increase the growth of regenerating stands can have no direct effect on timber supply until the mid-term. Since the current AAC can be



maintained for more than a century, there's no opportunity for an allowable cut effect to indirectly increase harvest levels in the short term. Therefore silviculture is likely to increase timber supply only in the medium- and long-term parts of the planning horizon.

The results of sensitivity analyses provide further insight. Sensitivity analyses revealed medium- and long-term sensitivity to changes in data, management requirements, and the size of the timber harvesting land base, but no sensitivity in the short-term (Figures A4-A7).

**Figure A4** Uncertainty about harvesting in wildlife and IRM zones, Cranberry TSA 1997



**Figure A5** Old-growth requirements in wildlife zone, Cranberry TSA, 1997

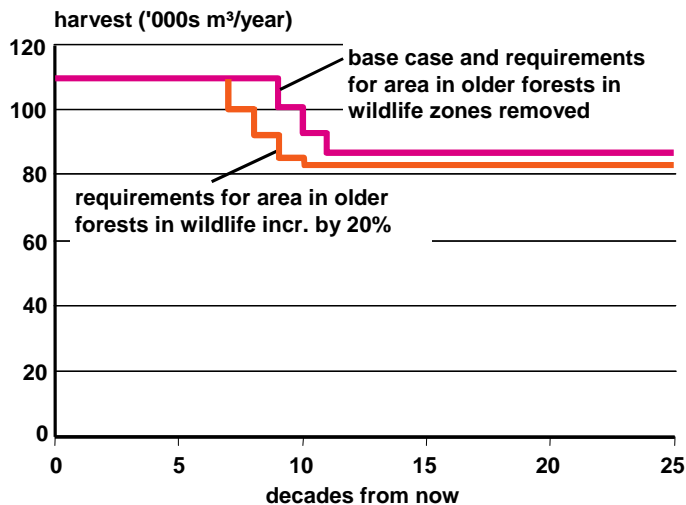




Figure A6 Green-up requirements in PR-VQO zone, Cranberry TSA, 1997

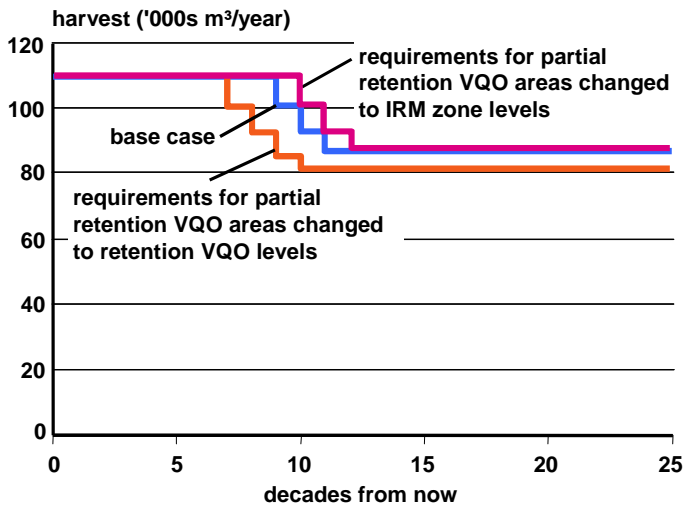


Figure A7 Excluding harvesting from mushroom-producing areas, Cranberry TSA, 1997

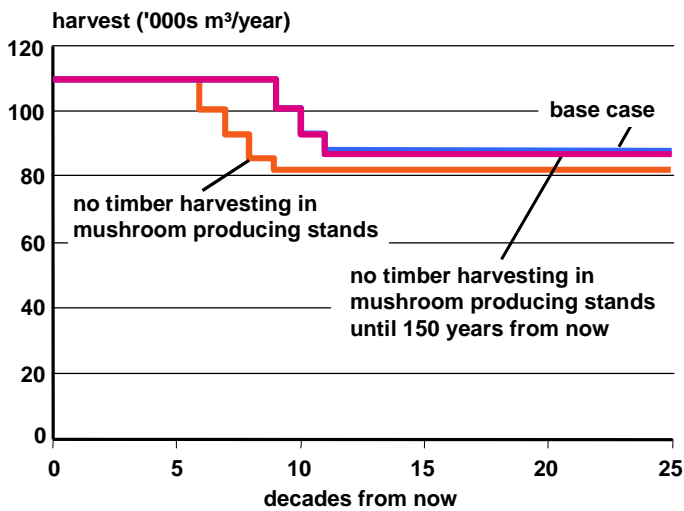
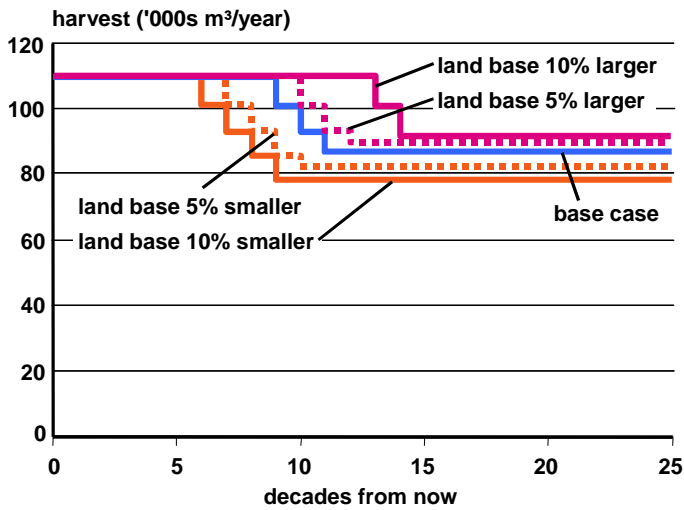




Figure A8 Sensitivity to changes in size of timber harvesting land base, Cranberry TSA, 1997





## **Appendix B—Executive Summary, Incremental Silviculture Strategy for BC**

### **Purpose**

This strategy provides guidance to the application of available funds for incremental silviculture activities. It is not tied to a specified funding level.

### **Government's Goals**

- Sustainable Use
- Community Stability
- A Strong Forest Sector

### **Key Principles**

- 1 Because the distant future cannot be foretold, the best and only course of action in managing the timber resource is that which minimizes risk and maintains options.
- 2 British Columbia's forests are import locally, provincially, nationally and globally and should be managed in this context.
- 3 Each generation of British Columbians becomes the steward of the province's forest resources and has a moral obligation to preserve this heritage for future generations.

### **Working Targets**

Within the context of the guiding principles:

- 1 Minimize the anticipated interim reduction in timber supply so that provincial annual harvests of at least 65 million m<sup>3</sup> can be achieved.
- 2 Create a long-term timber supply capable of supporting a steady long-term provincial harvest level of at least 75 million m<sup>3</sup>.
- 3 Over the long term, maintain the production of premium quality logs at or above 10% of total harvest.

### **Major Silvicultural Strategies**

- Increase the use of alternative silvicultural systems and commercial thinning.
- Achieve earlier green-up of harvested areas.
- Increase regenerated stand volumes 20%.
- Eliminate all pre-1982 good and medium site backlog NSR and all 1982 to 1987 backlog NSR.
- Initiate a long-rotation quality management program for stands where harvesting must be delayed.

Other silvicultural and non-silvicultural strategies must also be implemented to achieve the working targets.

### **Strategy Implementation**

Regional and management unit strategies must be developed, followed by programs and plans to implement them



## Appendix C—Summary of Workshop Evaluations

Total and average scores are shown in parentheses

<b>Please circle the number that best represents your view.</b>					
1 Length of session (Average: 3.0)	5 too long	4	3 just right (5)	2	1 too short
2 Level of detail of content (Average: 3.0)	5 too much	4	3 just right (5)	2	1 not enough
3 Instructional method (style, interaction, clarity) (Average: 4.2)	5 excellent (4)	4 (1)	3 adequate	2	1 poor
4 Relevance to your interests/needs (Average: 4.2)	5 extremely (2)	4 (2)	3 average (1)	2	1 not at all
5 Extent to which your needs were met (Average: 4.4)	5 entirely (3)	4 (1)	3 average (1)	2	1 not at all
6 Usefulness of the handout graphics and texts (Average: 4.6)	5 very (3)	4 (2)	3 adequate	2	1 useless

### What were the strengths of this workshop?

- A fair amount of work was accomplished in a relatively short time.
- Was very smoothly run, facilitated. Very good discussion. I appreciate MOE input greatly!
- Small group, good interaction.
- Interactive format, Excel update as working through.
- The two facilitators provided a good balance of analysis and operational knowledge & guidance.

### What were the weaknesses of this workshop?

- Was very similar to the Kispiox, but I'm sure the results may be slightly different!
- None - good as is.
- Some stakeholders not in room. Licensee, First Nations?

### How could this workshop be improved?

- None - good as is.
- Mandatory attendance stakeholders.



**Other comments?**

- Putting information directly into a spreadsheet (and displayed on the screen) was good (productive).
- Well done guys.
- With so many unknowns it may be more relevant in another couple of years. By the time we do a Type II many factors may have changed. However, I think this concern has been addressed in the to do list & much good discussion was enabled by this forum.