9.0 PREFERRED FOREST MANAGEMENT STRATEGY

9.1 Introduction

The Preferred Forest Management Strategy (PFMS) is the strategy that best achieves the set of goals, objectives and strategies that the Planning Team has selected to guide forest management activities within the Vanderwell FMA. Section 9.2 provides a description of the PFMS, whereas Section 9.3 provides a description of how particular strategies are impacted by the PFMS.

This PFMS was designed by the planning team while striving to achieve the goal of the Alberta Forest Conservation Strategy, which the Planning Team adopted as a vision statement:

> 'To maintain and enhance, for the long term, the extent and health of forest ecosystems in Alberta for the sake of all living things locally, provincially, nationally and globally, while providing environmental, economic, recreational, social and cultural benefits for present and future generations.'

The following is a list of goals the Planning Team created in order to achieve this Vision:

1. Maintain the Relative Proportions of existing broad cover groups.
2. Reduce the level of fragmentation in the FMA.
3. Maintain habitat features that may otherwise become limited through the implementation of forest management strategies detailed in this plan.
4. Ensure special management considerations are in place for known threatened, endangered, rare or vulnerable species.
5. Reduce the impacts of noxious and restricted weeds on naturally occurring species populations.
6. Maintain vegetative structure within the FMA in varying spatial patterns.
7. Maintain the functionality of protected areas.
8. Protect areas of special biological significance.
9. Maintain the regenerative capacity and a balanced distribution of forest types within the FMA.
10. Maintain a healthy forest.
11. Mitigate the impacts of forest management activities on the quality and quantity of soil and water.
12. Enhance the area classified as 'treed' within the FMA.
13. Ensure the ability of the forest landbase to provide a flow of benefits to society.
14. Maintain an environment that allows the forest industry to remain competitive in provincial, national and international markets.

15. Create an environment where those interested in contributing to forest management decision making have the ability to contribute.
16. To have an informed public that can provide input in the forest management decision making process.

The Planning Team feels that once implemented, the PFMS and the associated objectives and strategies will achieve these goals, and in turn the Vision Statement.

9.2 Preferred Forest Management Plan Description

This section includes a description of the Preferred Forest Management Strategy. Many of the core outputs from the PFMS are shown in both table and graphical format.

TABLE 9.1: PFMS ANNUAL VOLUME FLOW SUMMARY

Period	Coniferous Volume[1]	Deciduous Volume[1]
5	6756	1711
10	6715	7464
15	6862	1672
20	6805	5299
25	6703	5285
30	6749	1808
35	6741	1947
40	6733	1648
45	6745	6421
50	6746	8734
55	6788	4583
60	6735	5478
65	6778	10360
70	6760	4218
75	6782	2218
80	6879	4923
85	6799	2497
90	6722	4587
95	6710	1922
100	6721	2670
105	6701	4480
110	6722	3806
115	6774	1952
120	6806	2158
125	6706	4569
130	6711	6116
135	6796	4461
140	6725	5765
145	6777	10961
150	6751	3830
155	6806	2082
160	6721	4870
20-Year Average	**6785**	**4037**
160-Year Average	**6757**	**4391**

[1] – 3% reduction to be applied to account for stand structure requirements.

FIGURE 9.1: PFMS ANNUAL VOLUME FLOW SUMMARY

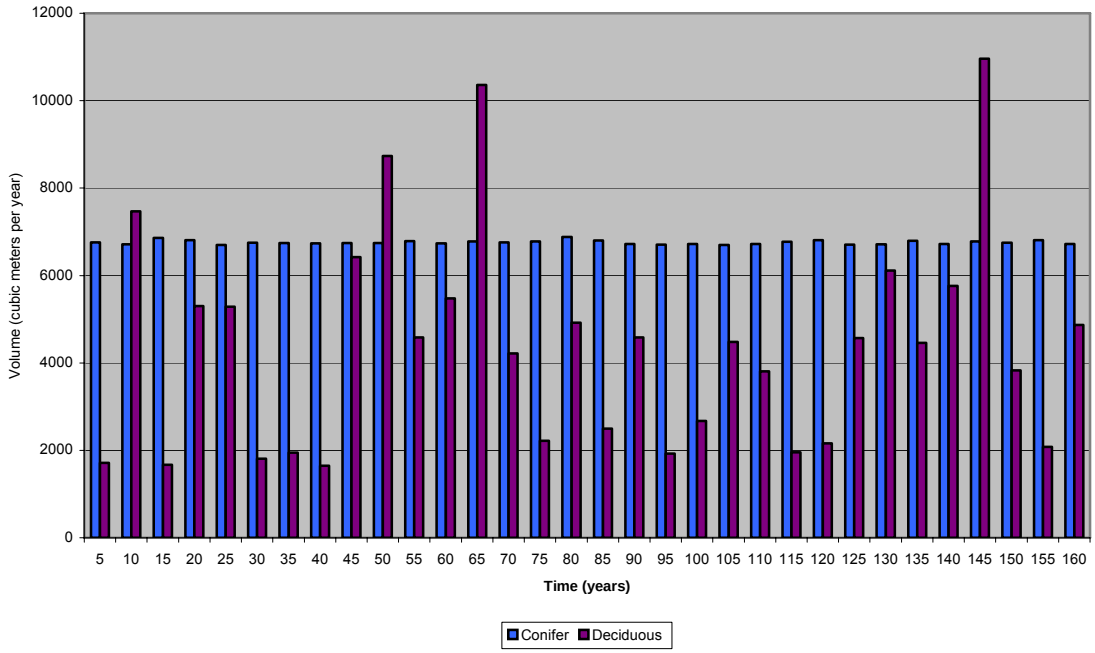


TABLE 9.2: AVERAGE HARVEST AGE SUMMARY

Period	Average Harvest Age
5	112
10	87
15	120
20	95
25	147
30	139
35	128
40	128
45	133
50	131
55	128
60	128
65	133
70	128
75	85
80	78
85	79
90	82
95	82
100	83
105	84
110	85
115	84
120	84
125	83
130	84
135	85
140	84
145	83
150	82
155	82
160	83

FIGURE 9.2: AVERAGE HARVEST AGE SUMMARY

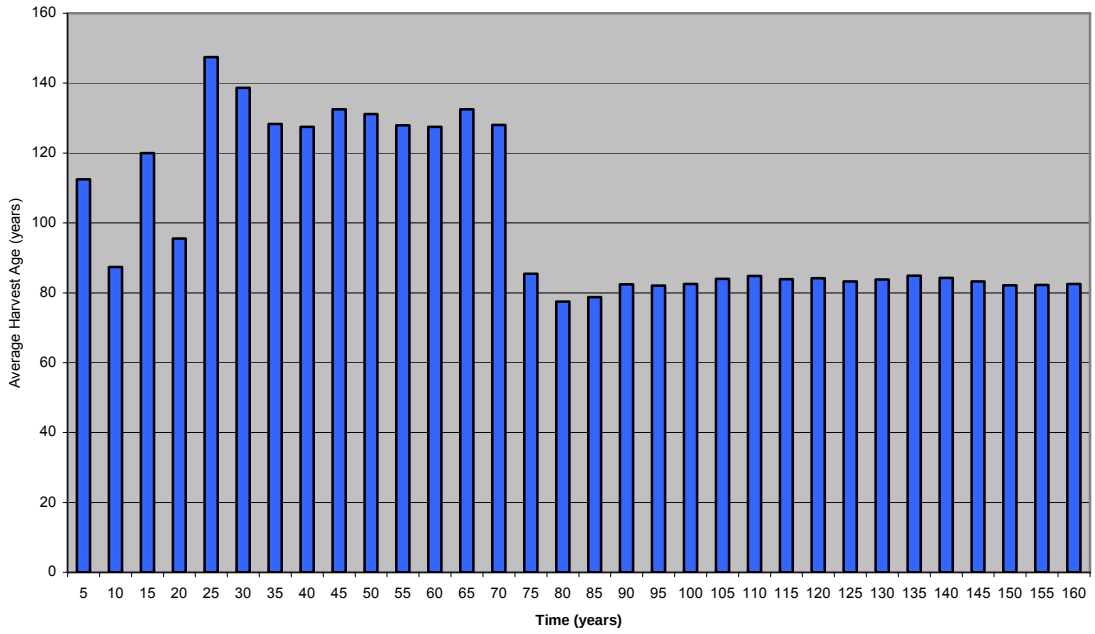
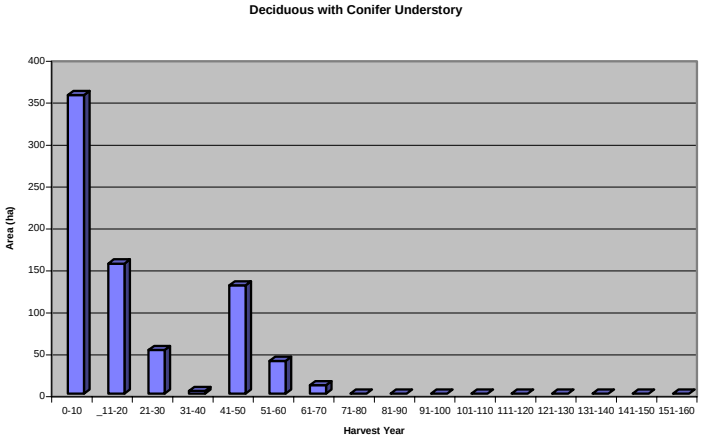
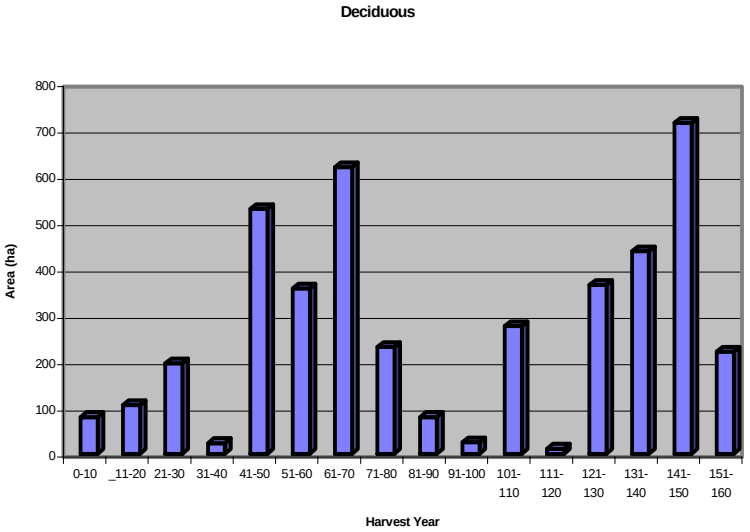


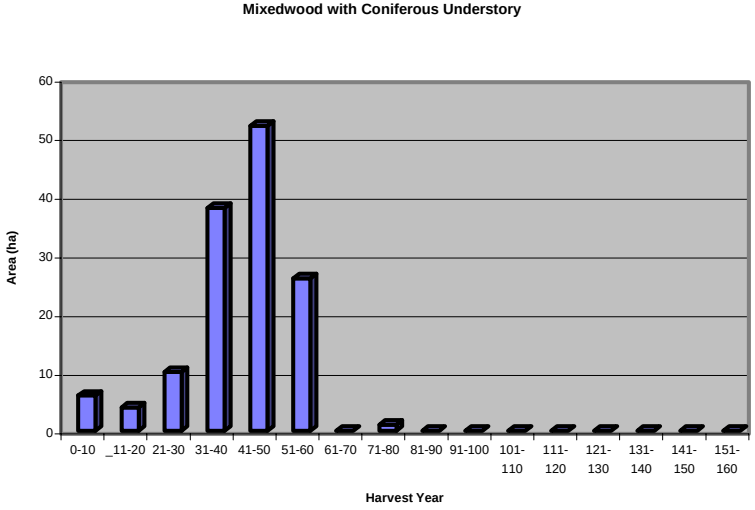
TABLE 9.3: AREA HARVESTED BY STRATA SUMMARY

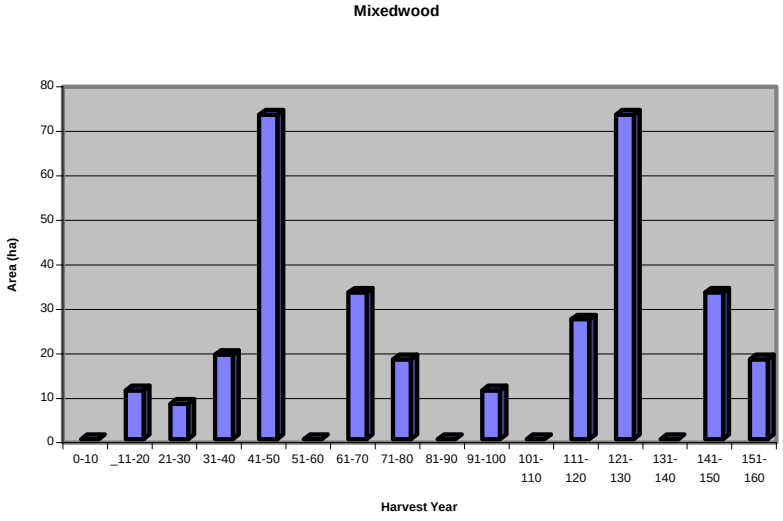
Harvest Period	Yield Strata							
	Deciduous Conifer understory	Deciduous	Mixedwood Conifer Understory	Mixedwood	Mixedwood Conifer Transition	Conifer Pine Leading	Conifer Spruce Leading	Total
1-10	356	79	6	0	0	47	206	694
11-20	155	105	4	11	0	126	186	587
21-30	52	195	10	8	0	0	286	551
31-40	3	23	38	19	0	107	247	437
41-50	129	528	52	73	0	62	21	865
51-60	39	357	26	0	0	263	12	697
61-70	10	618	0	33	0	101	37	799
71-80	0	230	1	18	0	47	289	585
81-90	0	79	0	0	362	47	95	583
91-100	0	25	0	11	148	126	180	490
101-110	0	275	0	0	49	0	260	584
111-120	0	11	0	27	65	66	273	442
121-130	0	364	0	73	181	103	21	742
131-140	0	437	0	0	65	263	12	777
141-150	0	714	0	33	10	101	59	917
151-160	0	220	0	18	1	47	268	554
Total	744	4260	137	324	881	1506	2452	10304

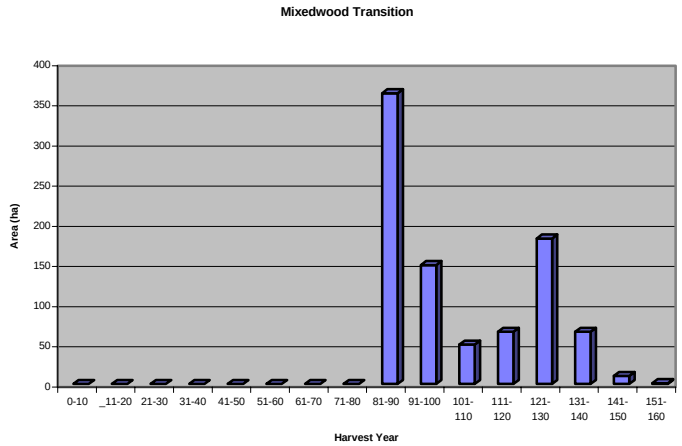
FIGURE 9.3: AREA HARVESTED BY STRATA SUMMARY

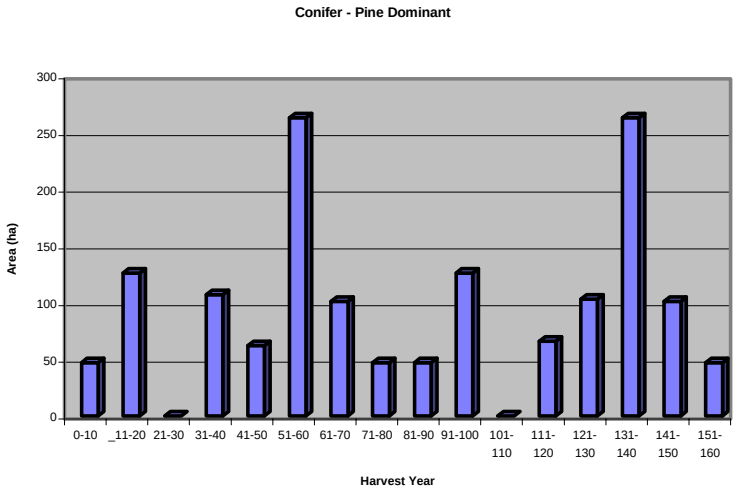









Mixedwood Transition
Area (ha)
0
50
100
150
200
250
300
350
400
0-10
_11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
151-160
Harvest Year


Conifer - Pine Dominant
Area (ha)
0
50
100
150
200
250
300
0-10
_11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
151-160
Harvest Year

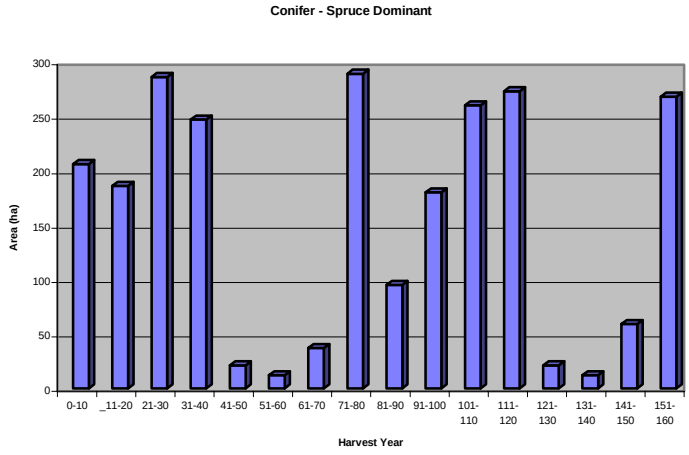

Conifer - Spruce Dominant
Area (ha)
0
50
100
150
200
250
300
0-10
_11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
121-130
131-140
141-150
151-160
Harvest Year

TABLE 9.4: GROWTH CAPACITY SUMMARY

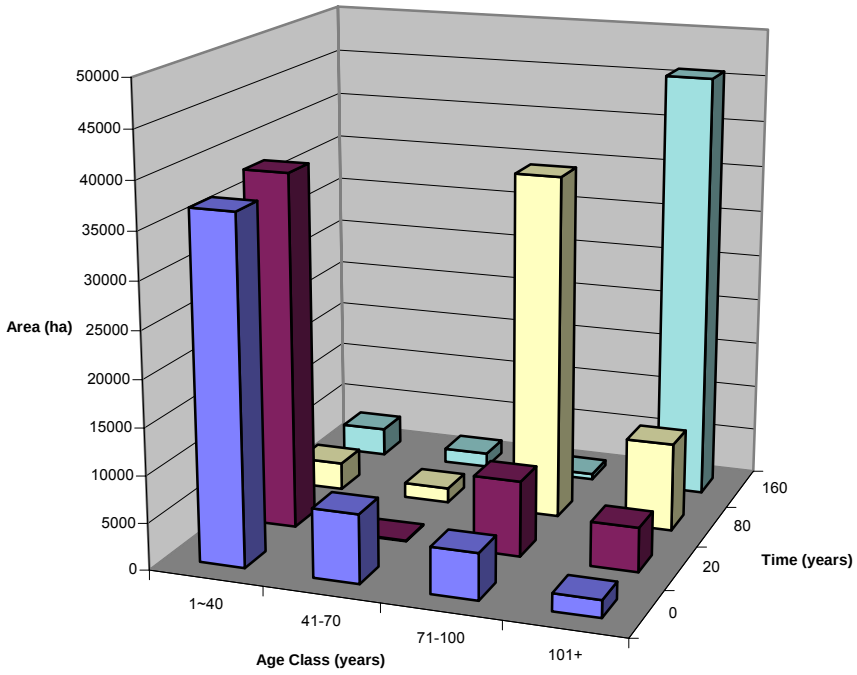
Age	Area (ha)	Growth Capacity Total	Annual Growth Capacity
5	332.8	33607.1	6721.42
10	220.5	34114.8	6822.96
15	326.8	33932.8	6786.56
20	590.3	33676.3	6735.26
25	413.4	33207.9	6641.58
30	363.5	33449	6689.8
35	384.6	33259.7	6651.94
40	358.7	33325.6	6665.12
45	237.8	34125.6	6825.12
50	204.1	33811.9	6762.38
55	274.4	33233.7	6646.74
60	308.7	33307.7	6661.54
65	283.6	33605.7	6721.14
70	207.5	33677.3	6735.46
75	329.3	33663.9	6732.78
80	262.9	34806.6	6961.32
Total	**5098.9**	**538805.6**	**107761.12**

FIGURE 9.4: GROWTH CAPACITY SUMMARY

TABLE 9.5: AGE CLASS SUMMARY

Age Class	Current	20	80	160
1~40	36800	38082	2947	2991
41-70	7347	93	1577	1516
71-100	4954	8053	36968	592
101+	1851	4725	9461	45853
Non Forested	7583	7583	7583	7583
Total	**58535**	**58536**	**58536**	**58535**

FIGURE 9.5: AGE CLASS SUMMARY



20 YEAR HARVEST SEQUENCE

Within the Vanderwell FMA

Vanderwell Contractors (1971) Ltd.

N

Rge 3 | Rge 2 | Rge 1

Twp 72 | Twp 71 | Twp 70 | Twp 69 | Twp 68 | Twp 67

Lesser Slave River

Highway 2

Athabasca River

STANDS SCHEDULED FOR HARVEST

Preferred Forest Management Strategy

CONSTRAINTS

1. Even Flow of Conifer
2. Maintaining Deciduous Commitments
3. Planned Blocks Included
4. Conifer Understorey Strategy

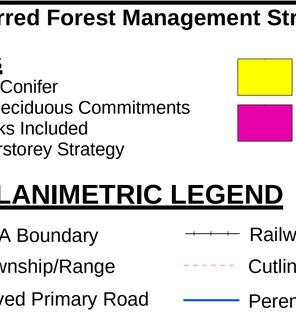
- Years 1-10
- Years 11-20

PLANIMETRIC LEGEND

- FMA Boundary
- Township/Range
- Paved Primary Road
- Gravel Primary Road
- Gravel Secondary Road
- Improved Road
- Truck Trail
- Railway
- Cutline
- Perennial Stream
- Indefinite Stream
- Waterbody

- Net Landbase Deletions
- Net Landbase Not Selected for Harvest
- Cutblocks

PROVINCIAL INDEX



Vanderwell Contractors FMA

0 5 10

KILOMETRES

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Map Version 2.0
Map Date: June 15, 2004
Original Map Scale 1:50000
Map Production: Silvacom Ltd.
Silvacom Reference: E-023
Map File: ./e-023/netland/maps/pdfmaps/cut_pfms.pdf

9.3 Description of PFMS Impacts

This section includes a description of the Preferred Forest Management Strategy and where appropriate, how it achieves the goals, objectives and strategies developed by the Planning Team. Many of the goals, objectives and strategies are operational in nature, and can not be linked to the core outputs of the PFMS (Annual Allowable Cut and the Spatial Harvest Sequence). The level of achievement of all goals, objectives and strategies will be monitored and reported on as detailed in the Performance Monitoring, Analysis and Reporting Plan.

In the development of the PFMS, many different timber supply runs are completed in order to validate and test the sensitivity of the Annual Allowable Cut (AAC). A summary of all the runs completed have been included in Appendix 18 and reference to different runs will be made in this section.

Prior to conducting any Timber Supply Analysis (TSA) runs the Planning Team developed goals, objectives and strategies for the management of the FMA. Some of the strategies developed have implications on the TSA that must be considered at the time the runs are being completed. In some cases the achievement of one strategy has the potential to be detrimental to another. In such situations, the results of both strategies have been summarized and reported on.

The following is a list of the strategies that have implications on the TSA.

1. Balancing of Broad Cover Groups.
2. Protection of Caribou and Caribou Habitat
3. Development of a spatially explicit timber supply analysis.
4. Implementation of a single pass harvesting strategy.
5. Maintain the current amount of over mature forest.
6. Maintain 3% of the net productive area as structure within cutblocks.
7. Location of Recreational Sites.
8. Mitigation of impacts on Scenic Values.
9. Mitigation of impacts on Registered Trappers.

The following sections describe how the sensitivities surrounding the above strategies were tested, the results of this sensitivity analysis, and the impacts of the PFMS.

Balancing of Broad Cover Groups.

In order to maintain ecosystem diversity across the FMA area it was felt that the current proportion of broad cover groups should be maintained over time. There are two exceptions to this strategy. The first exception is designed to provide silvicultural flexibility at the operational stage to ensure each hectare is reforested to the most appropriate species group (5% variance from current proportions is allowed on a five-year period). This operational flexibility was not modeled in the TSA runs. In the TSA all stands are assumed to regenerate to the pre-harvest cover group except as described below.

The second exception is necessary in order to meet other goals of management within the FMA. The Planning Team felt it essential to ensure that stands with coniferous understories are protected during operations. In order to integrate with the TSA a transition strategy was developed for stands with coniferous understories. This transition allows these stands to change from their pre-harvest cover

group category to the mixedwood cover group post-harvest (Appendix 2). The following table summarizes the stand area by cover group available to transition as per the conifer understory transition strategy. Map 5-7 on page 26 shows the spatial distribution of stands with coniferous understories within the FMA.

TABLE 9.7: STANDS WITH CONIFER UNDERSTORY SUMMARY.

Pre-Harvest Overstory Cover Group	Total Net Landbase Area (ha)	Area with Identified Coniferous Understory (ha)	% of Area with Identified Coniferous Understory
D	2879	764	26.5
MX	300	137	45.6
Total	**3179**	**901**	**28.3**

The impact of this transition strategy on the AAC was investigated and is summarized in the table below.

TABLE 9.8: SUMMARY OF RUN 5 AND PFMS OBJECTIVES, CONSTRAINTS AND RESULTS.

Forest Management Strategy #	Landbase Strategy	Yield Curve Transition	Primary Species	Flow Constraint	Planning Horizon	Target Harvest Age	Minimum Harvest Age	Planned Blocks Sequenced	Adjacency	Adjacency Horizon	Green Up Period	Accum. Block Area (ha)	Conifer AAC	Deciduous AAC
5	Single	Status Quo	Conifer	Even Flow	160	80	70-Conifer 50-Deciduous	Applied	Off	N/A	N/A	N/A	6,398 (20yr Ave.)	4,378 (20yr Ave.)
PFMS	Single	Status Quo with Conifer Understory Strategy	Conifer	Even Flow	160	80	70-Conifer 50-Deciduous	Applied	Off	N/A	N/A	N/A	6,785 (20yr Ave.)	4037 (20yr Ave.)

The implementation of this transition strategy has a negative impact (341 m^3/year or 8%) on the deciduous AAC and a positive impact (387 m^3/year or 6%) on the conifer AAC.

Knowing the importance of this transition strategy to the PFMS and that the sustainability of the AAC is dependent on this transition strategy, a commitment has been made to target the growth and yield program into stands with coniferous understories.

Protection of Caribou and Caribou Habitat

Strategy 4.1 commits to developing management strategies that strive to protect the Woodland Caribou and its habitat. The Planning Team has developed strategies to accomplish this at both the DFMP stage of planning and also during the implementation of operations.

The operational strategies do not have impacts at the DFMP level of planning and therefore will not be described or discussed in this section of the document. The following is a list of the strategies that are applicable at the DFMP level of planning:

Strategy 4.1.6: Evaluate the FMA to determine the amount of effective habitat available for caribou.
Strategy 4.1.7: Target harvest activities in stands that are North of the 2001 Chisholm Fire.
Strategy 4.1.8: Utilize a single pass harvest strategy.
Strategy 4.1.9: Concentrate harvest activities in stands of lower habitat quality to the Woodland Caribou.
Strategy 4.1.10: Target harvest into stands that can have lower impact harvest strategies implemented on them.
Strategy 4.1.11: Strive to have new access follow existing linear disturbances in development of the Road Corridor Development Plan and Access Management Plan.
Strategy 4.1.12: Evaluate the FMA to predict the amount of effective habitat available for caribou in 20 years.

Strategy 4.1.6

An evaluation of the FMA was complete to determine the current amount of effective caribou habitat within the Vanderwell FMA. Effective caribou habitat was defined as stands or portions of stands that are greater than 50-years old and further than 250-meters from a disturbance site (road, cutline, cutblock, pipeline, etc.) Due to the size and location of the 2001 Chisholm Fire, the Planning Team felt the FMA could be split into two zones (TWP 70 and North, TWP 69 and South) in which the caribou populations would essentially be independent of one another. The Planning Team decided it would be worthwhile to determine the amount of effective caribou habitat in each zone.

These zones approximate the split between the unburned area within the FMA that is North and South of the 2001 Chisholm Fire. The following table summarizes the current amount of effective caribou habitat in each zone. Map 5-11 on page 33 shows the current spatial distribution of effective caribou habitat on the FMA.

TABLE 9.9: EFFECTIVE CARIBOU HABITAT SUMMARY.

	TWP 70 and North			TWP 69 and South		
Landbase Category	**Effective Caribou Habitat**	**Not Effective Caribou Habitat**	**Total**	**Effective Caribou Habitat**	**Not Effective Caribou Habitat**	**Total**
Net Landbase	1344	2797	4141	135	823	958
Landbase Deletion	2044	23217	25261	849	27326	28175
Total	**3388**	**26015**	**29403**	**984**	**28149**	**29133**

In the North Zone there is currently 11.5% of the area that meets the definition of effective caribou habitat, while in the South Zone there is currently 3.4%. Through the use of this information, and through experiences gained from monitoring the caribou population, the Planning Team decided that the South Zone was more critical to the maintenance of the caribou herd in the FMA. Considering this information the planning team developed additional strategies to protect the Woodland Caribou and its habitat.