

Annex: 2012 Forest Management Plan Growth and Yield

Introduction

The *2012 Forest Management Plan Growth and Yield* report was submitted to Alberta Environment and Sustainable Resource Development (AESRD) in April 2012 and Canfor received a letter of agreement in principle from AESRD on October 1, 2012. At the time that the *2012 Forest Management Plan Growth and Yield* report was submitted, the effective date of the Forest Management Plan (FMP) was May 1, 2010 and was due for submission September 2012. Since this time, the submission date of the FMP has been delayed primarily due to the announcement of the development of AESRD’s Little Smoky and A La Peche Caribou Range Plan. AESRD recommended that Canfor extend the submission of the FMP¹ until the Little Smoky and A La Peche Range Plan was completed so that all strategies from the range plan could be fully incorporated into the FMP. As a result, Canfor’s FMP submission date has been extended to May 1, 2015. In order to keep the FMP relevant and up to date in accordance with a submission date of May 1, 2015, Canfor has updated the net landbase and amended the landbase assignment document. The *2015 Forest Management Plan Landbase Assignment*² document was submitted on July 31, 2014 with an FMP effective date of May 1, 2014. Canfor received a letter of agreement in principle of the revised net landbase and FMP effective date on September 11, 2014.

In discussion with AESRD, it was determined that the *2012 Forest Management Plan Growth and Yield* report will not be re-opened and amended despite the revised net landbase and FMP effective date as it was determined that there are not any significant changes. Almost all updates to the document are in regards to the managed stand strata transitions and deployment of genetic stock, which pose little to no risk to the actual approved yield curves. This annex will provide a summary of changes or updates that have been made to Canfor’s growth and yield approach since the *2012 Forest Management Plan Growth and Yield* report was submitted in April 2012.

Managed Stand Yield Curves

The *2012 Forest Management Plan Growth and Yield* report describes four types of curves for the regenerating forested landbase in *Figure 1. Overview of the Managed Stand Yield Curves*. Figure 1 has been updated to reflect the revised deployment strategies.

REGENERATING LANDBASE			
EXISTING		FUTURE	
R1	R2	R3	
PRE-1991	POST-1991	BASIC	GENETIC
Harvested prior to March 1, 1991	Harvested between March 1, 1991 and May 1, 2010	Harvested after May 1, 2010 outside genetic deployment zones and as outlined in Table 18.	Harvested after May 1, 2010 in genetic deployment zones and as outlined in Table 18.
Stratification as per natural stand yield groups (1-17)	Stratification based on 7 regenerating strata (RSA-based)	Stratification based on 7 regenerating strata (RSA-based)	Stratification based on 7 regenerating strata (RSA-based)

Figure 1 Overview of the Managed Stand Yield Curves

¹ Due to the extended submission date of the FMP, it is now titled *Canfor’s 2015 Forest Management Plan*

² The *2012 Forest Management Plan Growth and Yield Document* references *Canfor’s 2012 FMP Landbase Assignment Report* throughout. This landbase document has been revised and is now called the *2015 Forest Management Plan Landbase Assignment* document.

3.3 Regeneration Stratum Definitions

The “Transitions Toward Climax” column has been removed from Table. 17 Regeneration Strata as it is no longer relevant in this section and transitions are explained in more detail in Table 18.

Table 17 Regeneration Strata

Broad Cover Group	Regenerated Yield Trajectory (leading + secondary species)	Species Proportions	Code
D	Deciduous	>80% deciduous species	D-Hw
DC	Hardwood/Spruce	>50% deciduous species and >30% spruce leading coniferous species	DC-HwSx
CD	White Spruce/Hardwood	>50% white spruce leading coniferous species and >30% deciduous species	CD-SwHw
CD	Pine/Hardwood	>50% pine leading coniferous species and >30% deciduous species	CD-PIHw
C	White Spruce pure or leading	>80% white spruce leading coniferous species	C-Sw
C	Pine pure or leading	>80% pine leading coniferous species	C-PI
C	Black Spruce pure or leading	>80% black spruce leading coniferous species	C-Sb

3.3.1 Regeneration Transitions

In the development of Canfor’s Silviculture Strategy and work on the Little Smoky and A La Peche Caribou Range Plan, several modifications were made to Table 18. Silviculture Matrix to bring it up to date with what is modelled in the Timber Supply Analysis and committed to in Canfor’s Caribou Strategies and Silviculture Strategy (Note: in the Silviculture Strategy we refer to this table as the Yield Group Transition Table).

Table 18 Silviculture Matrix

Natural Yield Group		Regenerated Stratum		Caribou Management Area	
Code	Description	Base	Genetic	Base	Genetic
1	AW+(S)-AB	D-Hw1-B		D-Hw1-B	
2	AW+(S)-CD	D-Hw2-B		D-Hw2-B	
3	AW/SW/PBSW/BWSW	DC-HwSx-B	DC-HwSx-G	C-Sw-B	C-Sw-G
4	BW/BWAW+(S)	D-Hw4-B		D-Hw4-B	
5	FB+OTH	C-Sw-B	C-Sw-G	C-Sw-B	C-Sw-G
6	H+(S)/S	CD-SwHw-B/ DC-HwSx-B	CD-SwHw-G/ DC-HwSx-G	C-Sw-B	C-Sw-G
7	PB+(S)	D-Hw7-B		D-Hw7-B	
8	PL/PLFB+(H)	C-PI-B	C-PI-G	C-PI-B	C-PI-G
9	PLAW/AWPL	CD-PIHw-B		C-PI-B	C-PI-G
10	PLSB+OTH	C-PI-B	C-PI-G	C-PI-B	C-PI-G
11	PLSW/SWPL+(H)	C-PI-B	C-PI-G/ C-Sw-G	C-PI-B	C-PI-G/ C-Sw-G
12	SBLT(G)	C-Sb-B		C-Sb-B	
13	<i>SBLT/LTSB(M/F/U)</i>		<i>removed from landbase</i>		
14	SBPL/SBSW/SBFB	C-Sb-B	C-PI-G/ C-Sw-G	C-Sb-B	C-PI-G/ C-Sw-G
15	SW/SWFB+(H)-AB	C-Sw-B	C-Sw-G	C-Sw-B	C-Sw-G
16	SW/SWFB+(H)-CD	C-Sw-B	C-Sw-G	C-Sw-B	C-Sw-G
17	SWAW/SWAWPL	CD-SwHw-B	CD-SwHw-G	C-Sw-B	C-Sw-G

3.4.3 Future Managed Stands Crop Planned Based Yield Curves (R3-B) and 3.4.4 Future Managed Stands Genetic Yield Curves (R3-G)

The definition of this group of stands has been slightly modified to accommodate the revised FMP effective date of May 1, 2014. All stands harvested after May 1, 2010, all currently planned harvest blocks, and all future harvesting in the timber supply model follow the R3 curves.

In the development of Canfor's Silviculture Strategy, seed availability has been re-assessed. It was determined that there may not be enough B1 improved pine seed to apply to all future harvested stands that are located in the B1 breeding region. Canfor is planning on placing priority on planting B1 improved seed on pure C-PI regenerated strata first. Genetic gain will not be applied to yield group 9 in the timber supply model and will be placed on the CD-PIHw-B curve. If additional B1 improved seed is obtained, then it will be used in the yield group 9 stands and the genetic gain will be applied at the time of the next forest management plan.

5.1 Area Summaries for the Regenerating Landbase

As a result of the timber harvesting landbase revision, the area summaries of the regenerating landbase also changed slightly; the tables below have been updated accordingly.

Table 29. R1: Pre-1991 Cutblock Areas

Natural Strata	Natural Strata2	Gross(ha)	Net(ha)	Net(%)
r1_01	NAT-1	48	46	0
r1_02	NAT-2	135	131	0
r1_03	NAT-3	8,078	7,844	22
r1_04	NAT-4	50	49	0
r1_05	NAT-5	999	968	3
r1_06	NAT-6	5,706	5,575	16
r1_07	NAT-7	61	57	0
r1_08	NAT-8	3,086	2,964	8
r1_09	NAT-9	4,663	4,475	13
r1_10	NAT-10	1,258	1,198	3
r1_11	NAT-11	2,646	2,488	7
r1_12	NAT-12	10	9	0
r1_14	NAT-14	101	98	0
r1_15	NAT-15	1,461	1,410	4
r1_16	NAT-16	1,646	1,576	4
r1_17	NAT-17	6,551	6,318	18
Total		36,499	35,208	100

Table 30. R2: Post-1991 Cutblock Areas

Regeneration strata	Regeneration strata2	Gross(ha)	Net(ha)	Net(%)
r2_c_pl_g	C-PI	18,718	18,558	36
r2_c_sb	C-Sb	1,420	1,414	3
r2_c_sw	C-Sw	17,965	17,817	34
r2_cd_plhw	CD-PIHw	1,244	1,202	2
r2_cd_swhw	CD-SwHw	7,323	7,286	14
r2_dc_hwsx	DC-HwSx	1,532	1,521	3
r2_d_hw	D-Hw	4,152	4,135	8
NSR	NSR			
	Total	52,354	51,932	100
	Number of Blocks			2,590

5.2.3 Future Managed Stands Crop Plan Based Yield Curves (R3-B)

It should be noted that since the submission and approval of the 2012 *Forest Management Plan Growth and Yield* report, Canfor has finished developing the *Reforestation Strategy* for the 2015 FMP. The planting densities used in the crop planning of the R3 basic yield curves were expected averages based on operational practices of that time, whereas the densities stated in the *Reforestation Strategy* are minimum planting densities that Canfor has committed to to ensure that practices do not fall too far below the averages that were used to develop the R3 managed stand basic yield curves. This should pose little to no risk to the FMP as Canfor's current on the ground practices should in theory meet or

exceed the GYPSY crop plan targets. Any additional growth that may be yielded due to increased planting and silviculture practices may be measured and applied at the time of the next FMP.

Appendix D: Natural Stand Yield Curves

Due to the THLB update, the THLB areas and percent area represented by the yield curves in Appendix D have changed slightly. The areas and percent of THLB represented by each yield curve have been updated in the following table:

Stratum	Gross (ha)	THLB (ha)	% THLB Area
NAT-1	9,777	6,108	1
NAT-2	29,878	27614	7
NAT-3	78,934	73,501	18
NAT-4	5,734	3418	1
NAT-5	8,614	7,918	2
NAT-6	100,703	95007	23
NAT-7	24,327	13,754	3
NAT-8	28,023	24285	6
NAT-9	17,624	16,110	4
NAT-10	16,074	13541	3
NAT-11	20,573	17,460	4
NAT-12	12,756	11564	3
NAT-13	60,577	0	0
NAT-14	21,904	18928	5
NAT-15	28,264	21,470	5
NAT-16	21,664	19042	5
NAT-17	49,749	44,668	11
	577,530	414,386	

Appendix E: Managed Stand Yield Curves

Due to the THLB update, the THLB areas and percent represented by the R1 managed yield curves in Appendix E have changed slightly. The areas and percent of THLB represented by the R1 managed curves that differ from natural yield curves are updated in the following table:

R1 Stratum	Gross Ha	THLB (ha)	% THLB Area
r1_08-PL/PLFB+(H)	3,086	2,964	8
r1_09-PLAW/AWPL	4,663	4475	13
r1_10-PLSB+OTH	1,258	1,198	3
r1_11-PLSW/SWPL+(H)	2,646	2488	7
r1_14-SBPL/SBW/SBFB	101	98	0
r1_15-SW/SWFB+(H)-AB	1,461	1410	4
r1_16-SW/SWFB+(H)-CD	1,646	1,576	4
r1_17-SWAW/SWAWPL	6,551	6318	18

The areas and percent of THLB represented by the R2 managed curves did not change from what was stated in the *2012 Forest Management Plan Growth and Yield* report.