Memo

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To: Greg Behuniak
From: Craig Mistal
cc: Gyula Gulyas
Date: January 15, 2007
Project: WCG-011
File: WCG-011_Edson_alternate_utilization_memo_2007Jan15.doc
Re: Adjustment factor for conifer 15/13 utilization in Edson FMA

Yield tables were developed for Weyerhaeuser's Edson FMA and submitted to ASRD February 2005. These yield tables were developed based on the coniferous utilization standard of 15 cm minimum stump diameter and 11 cm minimum top diameter (15/11 utilization). Coniferous tree volume was calculated based on the whole tree system with a 15 cm stump height.[1] Weyerhaeuser requires a simple conversion factor for operators who want to use a 13 cm minimum top diameter (15/13 utilization) for coniferous species. This memo describes the procedures used to determine the factor for converting from yield tables with 15/11 coniferous utilization to yield tables with 15/13 coniferous utilization.

The basic steps to calculate the conversion factor were:

1. Recompile the tree- and plot-level data with a 15/13 utilization standard.
    We used the same compilation routines as used in the 15/11 analysis and simply changed the conifer minimum top diameter to 13 cm in the tree-level volume calculation. The compilation routine then compiles the plot-level volumes using the alternate utilization standard.

2. Error check plot-level volumes
    As a logical check, we compared the plot-level volumes to ensure the 15/13 utilization standard compilation volume was not higher than the 15/11 utilization standard compilation volumes. Plot-level volumes compiled at the 15/13 utilization standard were always lower than the plot-level volumes compiled at the 15/11 utilization standards (Figure 1; all data points are below the one-to one line), and the corresponding plot level volume ratios (volume$_{15/13}$ / volume$_{15/11}$) were always less than 1 (Figure 2). Figure 2 also shows that the mean-of ratios method should not be used to determine an overall volume ratio conversion factor as small relative differences in volume in low-volume plots result in large volume ratio reductions.

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[1] Weyerhaeuser Company Limited. 2005. Determining the AAC for the Weyerhaeuser Edson FMA. Component#1: Yield Projections. Forest Management Agreement Area FMA #9700035. Draft Report. Submitted to ASRD.
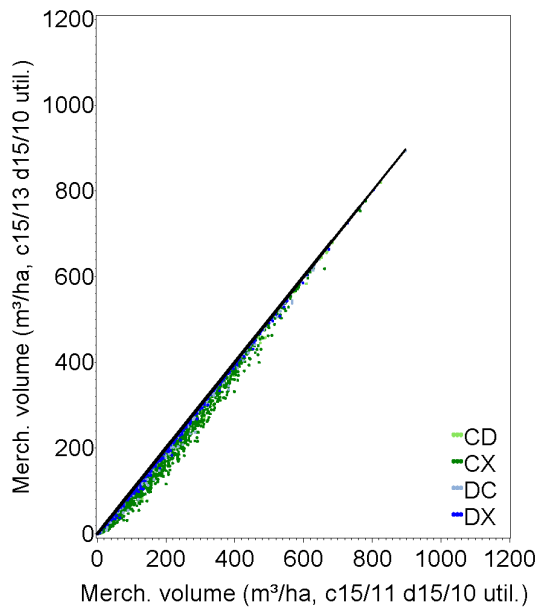
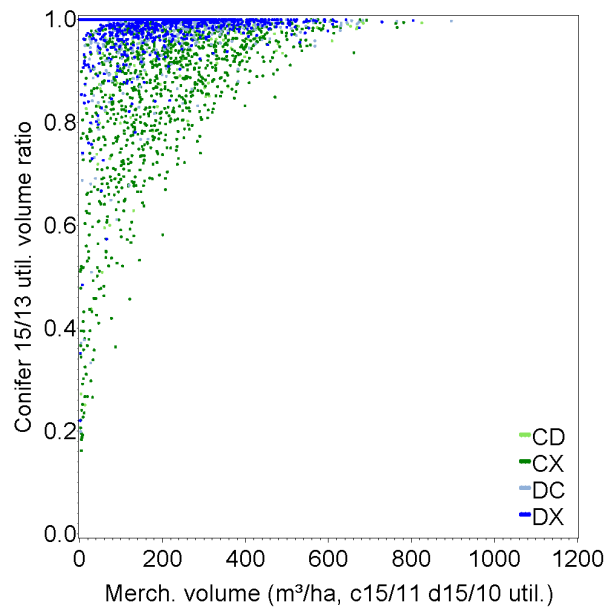Figure 1. Comparison of plot-level volumes at each utilization standard.

Figure 2. Comparison of plot-level volumes at each utilization standard.

3. Calculate the average volume by broad cover group.

Each plot was spatially assigned to a broad cover group according to the AVI label. We calculated the average plot volume by broad cover group for each utilization standard (Table 1). The overall area-weighted ratio-of-means adjustment to convert plot-level volumes to the coniferous 15/13 utilization standard is 95%.

Table 1. Ratio-of-means adjustment for 15/13 utilization standard.

Broad cover group	Conifer 15/13 merch. volume (m^3/ha)	Conifer 15/11 merch. volume (m^3/ha)	# plots	Ratio-of-means	Area (ha)
CD	229	238	251	0.96	52,237
CX	181	200	1,084	0.91	105,638
DC	215	221	375	0.97	31,403
DX	187	189	1,031	0.99	90,829
ALL	196	206	2,741[1]	0.95	280,107

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[1] A total of 2,885 plots were in the Edson FMA net landbase. 27 'age=0 years' plots, 27 switch stand plots, and 90 horizontal stand plots where not included in the ratio-of-means calculation. 'Age=0' years plots do not have a broad cover group assignment, and the switch stand and horizontal stand plots were not included in the yield model development.