Memo

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Date:	January 23, 2006
Project:	WCG-011
File:	WCG-011_alternate_utilization_memo_2006Jan23.doc
Re:	Adjustment factor for conifer 15/10 utilization

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 height and 11 cm minimum top diameter (15/11 utilization). Weyerhaeuser requires a simple conversion factor for operators who want to use a 10 cm minimum top diameter (15/10 utilization). This memo describes the procedures used to determine the factor for converting conifer 15/11 yield tables to 15/10 yield tables.

The basic steps to calculate the conversion factor were:

1. Recompile the tree- and plot-level data with a conifer 15/10 utilization standard.
   We used the same compilation routine as used in the 15/11 analysis and simply changed the conifer minimum top diameter to 10 cm in the tree-level volume calculation. The compilation routine then compiles the plot-level volumes using the alternate utilization standard.

2. Refit the volume-age yield tables using the 15/10 utilization volume compilation.
   We used the same yield table modeling routine as used in the 15/11 analysis (no changes necessary). The volume age curves were fit to the higher 15/10 utilization plot-level volumes (Figure 1).

3. Compare the resulting 15/10 yield tables to the original 15/11 tables curves.
   We did a logical comparison of the 15/10 utilization yield tables to 15/11 utilization yield tables (i.e. the 15/10 yield tables do not cross below the 15/11 yield tables) (Figure 1).

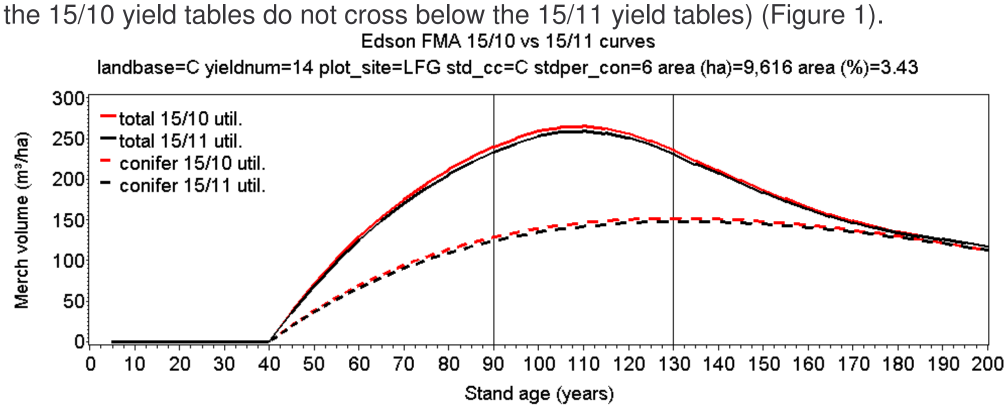

Figure 1. Alternate utilizations for yield table number 14.

4. Compute the average percent difference between 15/10 and 15/11 utilization at timber harvest ages for each yield table.
   Weyerhaeuser determined that the average timber harvesting age over the next 20 years for coniferous stands is approximately 110 years age. We calculated the percent difference between 15/10 and 15/11 utilization yield tables for each base yield table (161 in total) between the ages of 90 to 130 years (Figure 2).

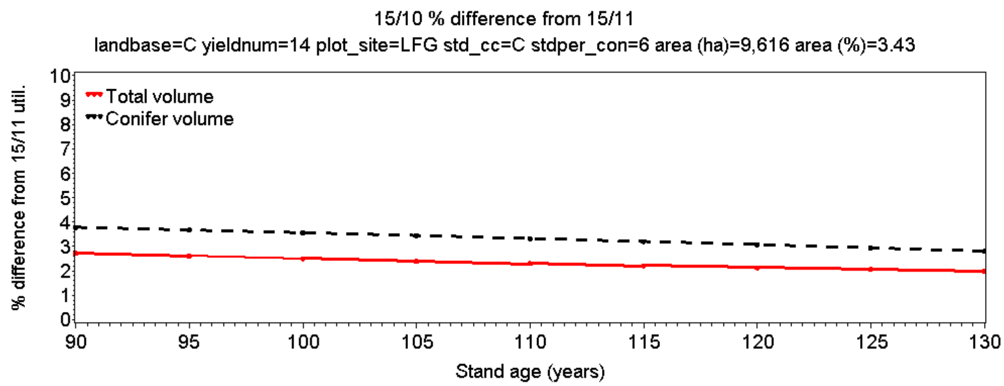

Figure 2. 15/10 percent difference from 15/11 volume.

5. Compute the area-weighted average percent difference between 15/10 and 15/11 yield tables.
   We attached the net landbase area to each analysis unit and calculated the area-weighted average of the volume ratio between the 15/10 and 15/11. The 15/10 conifer yield tables were, on average, 2.99% higher than the 15/11 conifer yield tables (Table 1, Table 2).

Table 1. Yield table 15/11 to 15/10 conversion factors.

landbase	area (ha)	area (%)	total volume		conifer volume	
			15/10 % diff. from 15/11	conversion factor	15/10 % diff. from 15/11	conversion factor
C	157,875	56.4	2.68	1.0268	3.52	1.0352
D	122,232	43.6	0.60	1.0060	2.32	1.0232
All	*280,107*	*100.0*	*1.77*	*1.0177*	*2.99*	*1.0299*

Table 2. Conversion factors for largest analysis units in the lanbase (up to 80% of area of landbase).

landbase	yield number	area (ha)	area (%)	total volume		conifer volume	
				15/10 % diff. from 15/11	conversion factor	15/10 % diff. from 15/11	conversion factor
D	13	21,316	7.6%	0.56	1.0056	2.78	1.0278
D	14	19,835	7.1%	0.57	1.0057	2.27	1.0227
C	42	16,938	6.0%	2.78	1.0278	3.46	1.0346
D	15	16,522	5.9%	0.58	1.0058	2.04	1.0204
C	41	9,984	3.6%	2.77	1.0277	3.51	1.0351
C	14	9,616	3.4%	2.33	1.0233	3.32	1.0332
C	109	9,607	3.4%	1.75	1.0175	3.53	1.0353
D	16	9,053	3.2%	0.58	1.0058	1.92	1.0192
C	17	8,786	3.1%	2.34	1.0234	3.07	1.0307
D	19	7,095	2.5%	0.49	1.0049	2.71	1.0271
D	17	6,513	2.3%	0.59	1.0059	1.84	1.0184
C	13	6,497	2.3%	2.33	1.0233	3.47	1.0347
C	54	6,250	2.2%	5.13	1.0513	5.84	1.0584
D	7	6,233	2.2%	0.58	1.0058	2.80	1.0280
C	48	6,121	2.2%	4.33	1.0433	5.03	1.0503
C	15	5,676	2.0%	2.33	1.0233	3.21	1.0321
C	16	5,141	1.8%	2.33	1.0233	3.13	1.0313
D	8	4,709	1.7%	0.59	1.0059	2.29	1.0229
D	20	4,362	1.6%	0.50	1.0050	2.20	1.0220
C	36	4,338	1.5%	2.23	1.0223	2.92	1.0292
C	2	3,793	1.4%	1.78	1.0178	2.76	1.0276
C	6	3,321	1.2%	1.78	1.0178	2.47	1.0247
C	53	3,301	1.2%	5.13	1.0513	5.89	1.0589
C	71	3,156	1.1%	2.30	1.0230	2.74	1.0274
C	72	3,153	1.1%	2.29	1.0229	2.64	1.0264
D	10	2,903	1.0%	0.60	1.0060	1.94	1.0194
D	9	2,696	1.0%	0.60	1.0060	2.06	1.0206
C	23	2,462	0.9%	3.76	1.0376	4.50	1.0450
C	5	2,422	0.9%	1.78	1.0178	2.52	1.0252
C	35	2,323	0.8%	2.23	1.0223	2.97	1.0297
C	11	2,244	0.8%	1.81	1.0181	2.54	1.0254
C	47	2,181	0.8%	4.33	1.0433	5.08	1.0508
C	40	2,164	0.8%	2.77	1.0277	3.58	1.0358
C	30	2,162	0.8%	2.34	1.0234	3.02	1.0302
D	4	2,150	0.8%	0.53	1.0053	1.86	1.0186