**Report on Analysis of Forest Floor Bulk Density and Depth
at the Savannah River Site**

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Executive Summary

The forest floor data from the Savannah River Site consists of two layers, the litter layer and the duff layer. The purpose for the study was to determine bulk density conversion factors to convert litter and duff depth values in inches to forest floor fuel values in tons per acre. The primary objective was to collect litter and duff samples to adequately characterize forest floor depth and bulk density for combinations of 4 common forest types (loblolly/slash pine, longleaf pine, pine and hardwood mix, upland hardwood), 3 age classes (5-20, 20-40, 40+ years old) and 3 categories of burning history (0-3, 3-10, 10+ years since last burn). Due to its high utility in forestry and ease of measurement, stand basal area delineated into 3 categories (0-82.5, 82.5-111.5, 111.5+ ft²/ac) was an additional analysis variable. The Levene test for homogeneity of variance indicated different variances across forest type. Consequently, the four forest types were analyzed separately. Factorial analysis-of-variance was used to determine significant factor effects (age, basal area, burn history) on litter and duff bulk density and depth. In summary, loblolly and slash pine stands forest floor bulk density was correlated with basal area, longleaf pine stands forest floor bulk density was correlated with age, while mixed pine-hardwood stands forest floor bulk density was affected by burning history. Loblolly and slash pine stands duff bulk density could also be separated out by age class. There were no significant factor effects on hardwood stands forest floor bulk density. The following table gives the appropriate bulk density conversion factors for Atlantic Coastal Plain forests.

Results Table 1. Mean bulk density in tons/acre/inch, standard deviation (Std Dev), and standard error of the mean (Std Error) by forest type and significant stand variable for forest floor layers.

Forest Type	Variable	Category	Litter Layer			Duff Layer		
			Mean	Std Dev	Std Error	Mean	Std Dev	Std Error
loblolly/slash	basal area	≤ 82.5 ft ² /ac	1.6456	0.9707	0.2170	4.5827	2.2082	0.5902
		> 82.5 ft ² /ac	2.2202	0.7367	0.0722	6.5632	3.2969	0.3495
	age	5-40 years	--	--	--	5.4592	1.9461	0.2414
		> 40 years	--	--	--	7.7218	3.5877	0.5820
longleaf	age	5-20 years	1.7082	0.3954	0.0659	4.2659	1.6949	0.3995
		> 20 years	2.4723	1.4165	0.1510	7.5310	3.4158	0.4410
pine/hardwood	burn history	0 - 3 years	2.4792	1.0891	0.2723	7.5972	2.2890	0.7238
		3-10 years	1.8431	0.5715	0.0904	6.4044	2.0800	0.6272
		> 10 years	1.8431	0.5715	0.0904	4.7010	2.1572	0.5085
hardwood	none	--	2.0369	1.1224	0.1225	6.0257	4.3927	0.6212

It is preferable to measure the litter and duff depths, however, for large acreages one can use the following averages for Atlantic Coastal Plain forests.

Results Table 2. Litter and duff depth averages, their standard deviations (Std Dev), and standard errors of the mean (Std Error).

Forest Type	Variable	Category	Litter Layer			Duff Layer		
			Mean	Std Dev	Std Error	Mean	Std Dev	Std Error
loblolly/slash	burn history	0-3 years	1.1913	0.4418	0.0835	0.7485	0.5134	0.0506
		> 3 years	1.3204	0.4446	0.0454	0.7485	0.5134	0.0506
longleaf	none	--	1.4282	0.6808	0.0611	0.7397	0.5475	0.0620
pine/hardwood	age	5 - 20 years	1.2003	0.5131	0.0686	0.4076	0.1092	0.0546
		20-40 years	1.2003	0.5131	0.0686	0.6698	0.2765	0.0739
		> 40 years	1.2003	0.5131	0.0686	0.9180	0.3883	0.0847
hardwood	none	--	1.1746	0.5735	0.0626	0.5872	0.2748	0.0389

1. Data

The forest floor data from the Savannah River Site (SRS) consists of two layers, the litter layer and the duff layer. As part of calculating bulk density (BD) values, depth was determined for the litter and duff layers. The primary objective was to collect litter and duff samples to adequately characterize forest floor depth and bulk density for combinations of 4 common forest types (loblolly/slash pine, longleaf pine, pine and hardwood mix, upland hardwood), 3 age classes (5-20, 20-40, 40+ years old) and 3 categories of burning history (0-3, 3-10, 10+ years since last burn). Samples were collected across 97 plots and in general there were 4 subsamples per plot. A total of 388 litter samples (97 plots $\times$ 4 subsamples = 388) and 270 duff samples were used for analysis. Duff samples with an average depth of less than 0.2 inches (5 mm) were often contaminated with mineral soil and so were removed from the analysis. A total of 118 duff samples were thus removed and as a consequence only 85 plots had duff values. Appendix C lists the data. Table 1 gives the number of replications (plots) for the cross-tabulation of forest type, age class, and burn history.

Table 1. Number of plots (experimental units) sampled for litter and duff depth and bulk density values for forest types by age class (years) and burn history (years since last burn).

Age Class	Burn History	Forest Type							
		Loblolly & Slash Pine		Longleaf pine		Pine & Hardwood Mix		Upland hardwood	
		Litter	Duff	Litter	Duff	Litter	Duff	Litter	Duff
5-20	0-3	--	--	3	1	--	--	--	--
	3-10	3	3	3	3	--	--	--	--
	10+	5	4	3	3	2	1	1	1
21-40	0-3	3	2	3	2	2	2	--	--
	3-10	4	4	4	4	1	1	3	2
	10+	4	4	3	2	1	1	4	4
40+	0-3	4	3	4	4	2	1	7	7
	3-10	4	4	4	4	2	2	3	2
	10+	4	4	4	4	4	3	3	3
Total Reps		31	28	31	27	14	11	21	19

2. Analysis

We are interested in testing factors that might explain variation in bulk density and depth. The variables of interest are forest type, age class and burn history, as shown in Table 1. Additional variables examined were site index in feet (base age 50 years) and plot basal area in ft²/ac. Table 2 gives basic statistics on site index and plot basal area.

Table 2. Descriptive statistics on plot site index and plot basal area.

Variable	Mean	Std Dev	25th Pctl	50th Pctl	75th Pctl	Minimum	Maximum
Site Index	78.9	11.1	70	80	90	40	100
Plot Basal Area	92.4	42.5	62.9	92.1	118.5	0.98	209.6

Site index (SI) values were separated into the following three classes: if $SI \leq 70$ ft then SI class = 1, if $70 < SI \leq 80$ then SI class = 2, if $SI > 80$ then SI class = 3. For basal area (BA), the following classes were defined: if $BA \leq 82.5$ ft²/ac then BA class = 1, if $82.5 < BA \leq 111.5$ then BA class = 2, if $BA > 111.5$ then BA class = 3. The basic approach was to analyze effects through completely randomized factorial analysis-of-variance (ANOVA). Before proceeding with the ANOVAs, it is necessary to check on certain assumptions.

2.1 Homogeneity of Variance and Experimental Error versus Sampling Error

It is important to understand that a plot is the experimental unit in this study. As such, each of the four (litter and duff) samples collected on a plot are not true replications but pseudoreplications. The average of the four samples (in a few cases < 4 samples for duff on a plot) becomes the plot or experimental unit value. Variance calculated on the subsample values is referred to as sampling error. Variance computed on weighted (by frequency) plot values constitutes experimental error. One of the assumptions of ANOVA is that the variances are homogeneous across groups. The main category of data is forest type, and intuitively it seems reasonable that variances might differ by forest type. Variances by forest type are listed in Table 3. To test the null hypothesis that variances (from plot level values) across forest types are equal, I used the Brown and Forsythe modification (absolute deviations from group medians) of Levene's test for homogeneity of variance (HOV). In testing homogeneity of variances, one wishes to be able to pool the variances. This is atypical of normal hypothesis testing, where one normally hopes to reject the null. As HOV tests usually have low power, and the cost of a Type II error is high relative to Type I error for the case of HOV testing, a more appropriate alpha error level is 0.1 instead of the usual 0.05. By raising the alpha level you reduce beta or Type II error and automatically get a more powerful test. Table 4 gives the results. As can be seen in Table 4, three of four Levene's tests indicate different variances across forest type. Consequently, it seems appropriate to analyze the four forest types separately.

As mentioned, a plot is the experimental unit in this study. Normally, sampling error is much smaller than experimental error, because variation within a plot or unit is typically less than variation among plots or units. However, if sampling error and experimental error are the same, one could use the sampling error for testing purposes and have much greater power due to the greater degrees-of-freedom (df). In ANOVA, it is possible to separate out experimental error from sampling error and test to see if they are equal.

Table 3. Variance values across forest types for litter and duff bulk density and depth.

Forest Type	Litter		Duff	
	Bulk Density	Depth	Bulk Density	Depth
loblolly/slash	0.7626	0.2026	11.5584	0.2636
longleaf	1.9434	0.4636	14.8669	0.2998
pine/hardwood mix	0.8556	0.2633	9.5204	0.2108
upland hardwood	1.2598	0.3290	19.2955	0.0755

Table 4. Levene's test for homogeneity of variance across forest types for litter and duff bulk density and depth.

Variable	Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
----- Sample Type - litter -----						
Bulk Density	Forest Type	3	0.8724	0.2908	2.19	0.0940*
	Error	93	12.3297	0.1326		
Depth	Forest Type	3	0.1972	0.0657	2.54	0.0615*
	Error	93	2.4104	0.0259		
----- Sample Type - duff -----						
Bulk Density	Forest Type	3	17.7685	5.9228	3.25	0.0261*
	Error	81	147.7000	1.8240		
Depth	Forest Type	3	0.1393	0.0464	1.32	0.2733 ^{NS}
	Error	81	2.8480	0.0352		

* significant at $\alpha = 0.1$, ^{NS} means not significant.

2.2 ANOVA

Because the results indicate heterogeneous variances by forest types, there will be separate analyses by forest type. Due to the nature of the data, that is, unbalanced and missing cells, it is not possible to run ANOVAs across forest type with all four factors (age class, burn history, SI class, BA class) or even three factors at a time and obtain meaningful results. I initially screened the analyses by running all possible 2-factor ANOVAs. From this initial screening, I determined that SI had little or no effect on BD or depth values. So SI was dropped from further consideration. For a randomized 2-factor analysis of variance with r replications, factors A and B, and s subsamples per unit, the general ANOVA table with expected values of mean squares looks like:

Source	df	Expected Mean Squares
A	$a-1$	$\sigma_{\epsilon}^2 + Q(A)$
B	$b-1$	$\sigma_{\epsilon}^2 + Q(B)$
AB	$(a-1)(b-1)$	$\sigma_{\epsilon}^2 + Q(AB)$
Experimental error	$(r-1)ab$	σ_{ϵ}^2
Sampling error	$(s-1)rab$	σ_{θ}^2

The factors and interaction contain σ_{ϵ}^2 plus a quadratic term. To test for significance the denominator of the F ratio has to be σ_{ϵ}^2 with $(r-1)ab$ degrees-of-freedom. However, if $\sigma_{\theta}^2 = \sigma_{\epsilon}^2$, then one can use the sampling error term with the much higher $(s-1)rab$ degrees-of-freedom. This results in greater power. In the ANOVA tables, the first check should be on the equality of

experimental error and sampling error at the $\alpha = 0.1$ level. If they are significantly different ($P < 0.1$) then experimental error must be used for tests of hypothesis on the factors. If the error terms are not significantly different ($P \geq 0.1$) then sampling error is used for tests of hypothesis on the factors.

In refining the analyses, I considered that burn history was of great interest. Also, because stand age and stand basal area are positively correlated, it is generally not a good idea to have them in the same ANOVA because of colinearity. As age class is one of the class variables used in designing the study, the ANOVAs with burn history and age class are of primary interest. However, because stand age is not always known, and stand basal area is relatively easy and quick to obtain with a prism, ANOVAs with burn history and BA class are also of interest. Appendix A gives the ANOVAs based on the factors burn history and age class. As an adjunct to the primary ANOVAs, significant ANOVAs with BA class are listed in Appendix B. As an aside, the data are unbalanced and have missing cells (cross-tabulations with no values, e.g., age class 5-20 years and burn history 0-3 years in Table 1 has no value under loblolly/slash, pine/hardwood, and upland hardwood) and this is reflected in the df in the ANOVA tables in Appendices A and B.

3. Results

The Levene tests in Table 3 and The ANOVAs in Appendix A and B reveal some very interesting trends. Of course, we see there can be great differences in variances. For example, on litter bulk density, the variance for loblolly and slash pine is 0.7626 and for longleaf pine the variance is 1.9434. Hence we see the variance for longleaf is 2.5 times greater ($1.9435/0.7626=2.548$). Of the 16 ANOVAs in Appendix A, the experimental error was larger than sampling error in 10 cases, and this is in keeping with expectations.

There were no interactions of consequence. Of the 18 ANOVAs total (16 from Appendix A and 2 from Appendix B), only two had *F*-tests indicating significant interactions. In the first case, loblolly-slash pine stands litter depth, Tukey's test did not separate out any of the means. In the second case, pine-hardwood mixed stands litter bulk density, the interaction was compromised by having two missing cells. Tukey's test basically separated out 1 mean from the 7 means. Because of the missing values, it was difficult to establish a meaningful trend, hence I made the judgment to discount the interaction. The overall conclusion is that for all practical purposes, there were no interaction effects.

The significant main effects from the ANOVAs are summarized in Table 5. It is readily apparent from this table that bulk density and depth values are correlated with different factors, depending on forest type, except upland hardwoods. The upland hardwood forest type had no significant main effects. That is to say, variability was such that there were no detectable differences in litter and duff bulk density and depth across basal area, age and burn history for upland hardwoods. Single average values will suffice for conversion factors.

For loblolly and slash pine stands, litter and duff bulk density increased with higher basal area. Likewise, duff BD increased with age. Litter depth was affected by burning history, with recently burned stands having smaller average depth. For longleaf pine stands, bulk density values

increased with higher age class. For pine and hardwood mixed stands, burn history made a difference on bulk density, with higher bulk density on recently burned stands. Duff depth was affected by age class, with deeper depth at higher ages. In summary, loblolly and slash pine stands forest floor bulk density was correlated with basal area, longleaf pine stands forest floor bulk density was correlated with age, while mixed pine-hardwood stands forest floor bulk density was affected by burning history.

Table 5. Summary of significant main effects results from the ANOVAs on forest types for litter and duff bulk density and depth. BAC is basal area class, AC is age class, and BH is burn history.

Variable:	Bulk Density		Depth	
Sample Type:	Litter	Duff	Litter	Duff
Forest Type				
loblolly/slash	BAC	BAC or AC	BH	None
longleaf	AC	AC	None	None
pine/hardwood	BH	BH	None	AC
upland hardwood	None	None	None	None

4. Conversion Factors

The idea behind the study was to come up with appropriate conversion factors to compute forest floor fuel values. In general, one needs to measure forest floor depth values for the litter and duff layers, and these values are converted to amount of fuel (tons/ac) by multiplying by a BD conversion factor. Table 6 lists the appropriate BD conversion factors, along with standard deviations and standard errors, based on the results of this study.

Table 6. Atlantic Coastal Plain forests bulk density conversion factors in tons/acre/inch, standard deviations (Std Dev) and standard errors of the mean (Std Error) to apply to litter and duff depth values (in inches) to compute forest floor fuel amount in tons/acre.

Forest Type	Variable	Category	Litter Layer			Duff Layer		
			Mean	Std Dev	Std Error	Mean	Std Dev	Std Error
loblolly/slash	basal area	≤ 82.5 ft ² /ac	1.6456	0.9707	0.2170	4.5827	2.2082	0.5902
		> 82.5 ft ² /ac	2.2202	0.7367	0.0722	6.5632	3.2969	0.3495
	age	5-40 years	--	--	--	5.4592	1.9461	0.2414
		> 40 years	--	--	--	7.7218	3.5877	0.5820
longleaf	age	5-20 years	1.7082	0.3954	0.0659	4.2659	1.6949	0.3995
		> 20 years	2.4723	1.4165	0.1510	7.5310	3.4158	0.4410
pine/hardwood	burn history	0 - 3 years	2.4792	1.0891	0.2723	7.5972	2.2890	0.7238
		3-10 years	1.8431	0.5715	0.0904	6.4044	2.0800	0.6272
		> 10 years	1.8431	0.5715	0.0904	4.7010	2.1572	0.5085
hardwood	none	--	2.0369	1.1224	0.1225	6.0257	4.3927	0.6212

There may be instances where litter and duff depth values are not available. It is preferable to measure the litter and duff depths, however, for large acreages one can use the following averages for Atlantic Coastal Plain forests as given in Table 7.

Table 7. Atlantic Coastal Plain forests litter and duff depth averages, their standard deviations (Std Dev), and standard errors of the mean (Std Error).

Forest Type	Variable	Category	Litter Layer			Duff Layer		
			Mean	Std Dev	Std Error	Mean	Std Dev	Std Error
loblolly/slash	burn history	0-3 years	1.1913	0.4418	0.0835	0.7485	0.5134	0.0506
		> 3 years	1.3204	0.4446	0.0454	0.7485	0.5134	0.0506
longleaf	None	--	1.4282	0.6808	0.0611	0.7397	0.5475	0.0620
pine/hardwood	Age	5 - 20 years	1.2003	0.5131	0.0686	0.4076	0.1092	0.0546
		20-40 years	1.2003	0.5131	0.0686	0.6698	0.2765	0.0739
		> 40 years	1.2003	0.5131	0.0686	0.9180	0.3883	0.0847
hardwood	None	--	1.1746	0.5735	0.0626	0.5872	0.2748	0.0389

5. Examples of Use

For a small acreage a rough interval for forest floor fuel can be obtained using ± 1 standard deviation. For example, say a 40 acre slash pine stand has an average litter depth of 1.1 inches and duff depth of 0.5 inches. Say the stand density is approximately 100 ft²/ac of basal area, from Table 6 we look up the BD conversion factors of 2.2202 ± 0.7367 [1.4835, 2.9569] for litter and 6.5632 ± 3.2969 [3.2663, 9.8601] for duff. Multiplying by depth for litter we obtain the range [1.63 tons/ac, 3.25 tons/ac] and for duff we obtain [1.63315 tons/ac, 4.93005 tons/ac]. To expand to the stand multiply by number of acres (40) to get [65.2 tons, 130 tons] for litter and [65.3 tons, 197.2 tons] for duff, or for total forest floor fuel the interval is 130.5 tons to 327.2 tons with an expected (mean) yield of 229 tons. For larger areas the law of averages comes into play and it would be appropriate to use the standard error of the mean to construct confidence intervals. Let's say one wishes to estimate forest floor fuel loading for 1,000 acres of mixed pine hardwood stands that have not been burned. A survey indicates the litter layer is 0.9 inches deep and the duff layer is 0.7 inches in depth. For litter the BD conversion is $1.8431 \text{ tons/ac/in} \pm 0.0904$ std error and for duff the value is 4.7010 ± 0.5085 . Approximate 95% confidence intervals ($t = 2$) are

$$\begin{aligned}
 \text{Litter} \quad & 1.8431 \pm 2 \times 0.0904 = [1.6623 \text{ tons/ac/in}, 2.0239 \text{ tons/ac/in}] \\
 & 0.9 \text{ in} \times [1.6623, 2.0239] = [1.49607 \text{ tons/ac}, 1.82151 \text{ tons/ac}] \\
 & 1000 \text{ ac} \times [1.49607, 1.82151] = [1,496.1 \text{ tons}, 1,821.5 \text{ tons}]
 \end{aligned}$$

$$\begin{aligned}
 \text{Duff} \quad & 4.7010 \pm 2 \times 0.5085 = [3.684 \text{ tons/ac/in}, 5.718 \text{ tons/ac/in}] \\
 & 0.7 \text{ in} \times [3.684, 5.718] = [2.5788 \text{ tons/ac}, 4.0026 \text{ tons/ac}] \\
 & 1000 \text{ ac} \times [2.5788, 4.0026] = [2,578.8 \text{ tons}, 4,002.6 \text{ tons}]
 \end{aligned}$$

$$\text{Total} \quad [1496 + 2579, 1821 + 4003] = [4,075 \text{ tons}, 5,824 \text{ tons}]$$

Appendix A – Primary ANOVAs

Listing of 2-factor ANOVAs by forest type and forest floor layer. There are two dependent variables, bulk density in tons per acre per inch (BD_t_ac_in) and layer depth in inches (Depth_in). The analysis factors are burn history (BH) and age class (AC). The test of experimental error against sampling error is highlighted in red on the ANOVA table, followed by * for significant at $\alpha = 0.1$ or NS for not significant. If experimental error is significantly larger than sampling error, then tests of BH, AC and BH×AC are conducted with experimental error, and this section is highlighted in blue. If sampling error is of the same magnitude as experimental error, then tests are conducted with sampling error, and this section of the ANOVA is highlighted in blue. Significant factor effects at $\alpha = 0.05$ are followed by *.

----- Forest Type - **loblolly/slash** Sample Type - **litter** -----

Dependent Variable: **BD_t_ac_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	30	22.87696839	0.76256561	2.53	0.0004
Sampling Error	93	28.05589739	0.30167632		
Corrected Total	123	50.93286579			

R-Square	Coeff Var	Root MSE	BD_t_ac_in Mean
0.449159	25.81606	0.549251	2.127554

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	1.17158724	0.58579362	1.94	0.1492
AC	2	1.31029246	0.65514623	2.17	0.1197
BH*AC	3	3.95926687	1.31975562	4.37	0.0063
Experimental Error	23	16.36860863	0.71167864	2.36	0.0021 *

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	1.17158724	0.58579362	0.82	0.4516
AC	2	1.31029246	0.65514623	0.92	0.4125
BH*AC	3	3.95926687	1.31975562	1.85	0.1655

Dependent Variable: **Depth_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	30	6.07844436	0.20261481	2.64	0.0002
Sampling Error	93	7.13880160	0.07676131		
Corrected Total	123	13.21724596			

R-Square	Coeff Var	Root MSE	Depth_in Mean
0.459887	21.45644	0.277058	1.291259

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	1.15461234	0.57730617	7.52	0.0009
AC	2	0.14976369	0.07488184	0.98	0.3808
BH*AC	3	1.64287507	0.54762502	7.13	0.0002
Experimental Error	23	3.11894479	0.13560630	1.77	0.0300 *

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	1.15461234	0.57730617	4.26	0.0267 *
AC	2	0.14976369	0.07488184	0.55	0.5831
BH*AC	3	1.64287507	0.54762502	4.04	0.0191 *

----- Forest Type - **loblolly/slash** Sample Type - **litter** -----

Tukey's Studentized Range (HSD) Test for **Depth_in**

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.135606
Critical Value of Studentized Range	3.54167
Minimum Significant Difference	0.2099
Harmonic Mean of Cell Sizes	38.62379

NOTE: Cell sizes are not equal.

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	BH
A	1.41850	44	2
A			
B A	1.23743	52	3
B			
B	1.19128	28	1

Tukey's Studentized Range (HSD) Test for **Depth_in**

Alpha	0.05
Error Degrees of Freedom	23
Error Mean Square	0.135606
Critical Value of Studentized Range	4.70185
Minimum Significant Difference	0.4453
Harmonic Mean of Cell Sizes	15.11811

NOTE: Cell sizes are not equal.

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	BH	AC
A	1.5081	16	2	2
A				
A	1.4718	16	3	3
A				
A	1.3812	12	2	1
A				
A	1.3568	16	2	3
A				
A	1.3090	12	1	2
A				
A	1.1663	20	3	1
A				
A	1.1030	16	1	3
A				
A	1.0919	16	3	2

Note: There is a missing cell in the interaction: BH=1, AC=1. The *F*-test in the ANOVA table was significant, however, Tukey's test failed to separate out any of the means. For all practical purposes, there is no interaction effect.

----- Forest Type - **loblolly/slash** Sample Type - **duff** -----

Dependent Variable: **BD_t_ac_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	27	312.0778453	11.5584387	1.58	0.0617
Sampling Error	75	547.0580282	7.2941070		
Corrected Total	102	859.1358735			

R-Square	Coeff Var	Root MSE	BD_t_ac_in Mean
0.363246	42.91030	2.700760	6.293968

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	27.4933016	13.7466508	1.88	0.1590
AC	2	158.8740034	79.4370017	10.89	<.0001 *
BH*AC	3	23.5595709	7.8531903	1.08	0.3642
Experimental Error	20	106.8516667	5.3425833	0.73	0.7805 NS

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	27.4933016	13.7466508	2.57	0.1013
AC	2	158.8740034	79.4370017	14.87	0.0001
BH*AC	3	23.5595709	7.8531903	1.47	0.2529

Tukey's Studentized Range (HSD) Test for **BD_t_ac_in**

Alpha	0.05
Error Degrees of Freedom	75
Error Mean Square	7.294107
Critical Value of Studentized Range	3.38156
Minimum Significant Difference	1.5789
Harmonic Mean of Cell Sizes	33.45652

NOTE: Cell sizes are not equal.

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	AC
A	7.7218	38	3
B	6.0541	38	2
B			
B	4.6221	27	1

----- Forest Type - **loblolly/slash** Sample Type - **duff** -----

Dependent Variable: **Depth_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	27	7.11700626	0.26359282	2.52	0.0009
Sampling Error	75	7.85946465	0.10479286		
Corrected Total	102	14.97647091			

R-Square	Coeff Var	Root MSE	Depth_in Mean
0.475213	43.24695	0.323717	0.748532

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	0.72332173	0.36166087	3.45	0.0368
AC	2	0.61708298	0.30854149	2.94	0.0588
BH*AC	3	0.75597145	0.25199048	2.40	0.0741
Experimental Error	20	5.15495791	0.25774790	2.46	0.0027 *

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	0.72332173	0.36166087	1.40	0.2690
AC	2	0.61708298	0.30854149	1.20	0.3228
BH*AC	3	0.75597145	0.25199048	0.98	0.4230

----- Forest Type - **longleaf** Sample Type - **litter** -----

Dependent Variable: **BD_t_ac_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	30	58.3030633	1.9434354	3.25	<.0001
Sampling Error	93	55.5635510	0.5974575		
Corrected Total	123	113.8666143			

R-Square	Coeff Var	Root MSE	BD_t_ac_in Mean
0.512029	34.34578	0.772954	2.250506

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	0.65785077	0.32892539	0.55	0.5785
AC	2	19.05274954	9.52637477	15.94	<.0001
BH*AC	4	1.79224860	0.44806215	0.75	0.5605
Experimental Error	22	36.22411331	1.64655060	2.76	0.0004 *

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	0.65785077	0.32892539	0.20	0.8204
AC	2	19.05274954	9.52637477	5.79	0.0096 *
BH*AC	4	1.79224860	0.44806215	0.27	0.8928

----- Forest Type - **longleaf** Sample Type - **litter** -----

Tukey's Studentized Range (HSD) Test for **BD_t_ac_in**

Alpha	0.05
Error Degrees of Freedom	22
Error Mean Square	1.646551
Critical Value of Studentized Range	3.55259
Minimum Significant Difference	0.7141
Harmonic Mean of Cell Sizes	40.75472

NOTE: Cell sizes are not equal.

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	AC
A	2.7237	40	2
A			
B A	2.2629	48	3
B			
B	1.7082	36	1

Dependent Variable: **Depth_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	30	13.90659481	0.46355316	2.35	0.0010
Sampling Error	93	18.35596043	0.19737592		
Corrected Total	123	32.26255523			

R-Square	Coeff Var	Root MSE	Depth_in Mean
0.431044	31.10801	0.444270	1.428153

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	2.65475318	1.32737659	6.73	0.0019
AC	2	0.19426073	0.09713037	0.49	0.6129
BH*AC	4	2.06366424	0.51591606	2.61	0.0402
Experimental Error	22	9.27700668	0.42168212	2.14	0.0064 *

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	2.65475318	1.32737659	3.15	0.0628
AC	2	0.19426073	0.09713037	0.23	0.7962
BH*AC	4	2.06366424	0.51591606	1.22	0.3295

----- Forest Type - **longleaf** Sample Type - **duff** -----

Dependent Variable: **BD_t_ac_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	26	386.5383221	14.8668585	1.68	0.0565
Sampling Error	51	451.2150209	8.8473534		
Corrected Total	77	837.7533430			

R-Square	Coeff Var	Root MSE	BD_t_ac_in Mean
0.461399	43.88723	2.974450	6.777484

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	19.4104677	9.7052338	1.10	0.3416
AC	2	174.6995503	87.3497752	9.87	0.0002 *
BH*AC	4	15.9517412	3.9879353	0.45	0.7714
Experimental Error	18	196.0362056	10.8909003	1.23	0.2735 NS

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	19.4104677	9.7052338	0.89	0.4275
AC	2	174.6995503	87.3497752	8.02	0.0032
BH*AC	4	15.9517412	3.9879353	0.37	0.8295

Tukey's Studentized Range (HSD) Test for **BD_t_ac_in**

Alpha	0.05
Error Degrees of Freedom	51
Error Mean Square	8.847353
Critical Value of Studentized Range	3.41389
Minimum Significant Difference	2.0815
Harmonic Mean of Cell Sizes	23.79803

NOTE: Cell sizes are not equal.

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	AC
A	7.7882	37	3
A			
A	7.1172	23	2
B	4.2659	18	1

----- Forest Type - **longleaf** Sample Type - **duff** -----

Dependent Variable: **Depth_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	26	7.79428375	0.29978014	2.12	0.0107
Sampling Error	51	7.19841638	0.14114542		
Corrected Total	77	14.99270013			

R-Square	Coeff Var	Root MSE	Depth_in Mean
0.519872	50.79061	0.375693	0.739690

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	1.34535911	0.67267955	4.77	0.0127
AC	2	0.80592609	0.40296305	2.85	0.0668
BH*AC	4	0.98960993	0.24740248	1.75	0.1529
Experimental Error	18	4.83156134	0.26842007	1.90	0.0374 *

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	1.34535911	0.67267955	2.51	0.1096
AC	2	0.80592609	0.40296305	1.50	0.2495
BH*AC	4	0.98960993	0.24740248	0.92	0.4730

----- Forest Type - **pine/hardwood** Sample Type - **litter** -----

Dependent Variable: **BD_t_ac_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	13	11.12250365	0.85557720	2.21	0.0261
Sampling Error	42	16.22928586	0.38641157		
Corrected Total	55	27.35178951			

R-Square	Coeff Var	Root MSE	BD_t_ac_in Mean
0.406646	30.70010	0.621620	2.024815

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	3.61061010	1.80530505	4.67	0.0147 *
AC	2	0.56467745	0.28233873	0.73	0.4876
BH*AC	2	2.62230445	1.31115223	3.39	0.0431 *
Experimental Error	7	2.89839344	0.41405621	1.07	0.3984 NS

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	3.61061010	1.80530505	4.36	0.0589
AC	2	0.56467745	0.28233873	0.68	0.5363
BH*AC	2	2.62230445	1.31115223	3.17	0.1049

----- Forest Type - **pine/hardwood** Sample Type - **litter** -----

Tukey's Studentized Range (HSD) Test for **BD_t_ac_in**

Alpha	0.05
Error Degrees of Freedom	42
Error Mean Square	0.386412
Critical Value of Studentized Range	3.43582
Minimum Significant Difference	0.5254
Harmonic Mean of Cell Sizes	16.52459

NOTE: Cell sizes are not equal.

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	BH
A	2.4792	16	1
B	1.9432	12	2
B			
B	1.8001	28	3

Tukey's Studentized Range (HSD) Test for **BD_t_ac_in**

Alpha	0.05
Error Degrees of Freedom	42
Error Mean Square	0.386412
Critical Value of Studentized Range	4.37777
Minimum Significant Difference	1.0602
Harmonic Mean of Cell Sizes	6.588235

NOTE: Cell sizes are not equal.

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	BH	AC
A	2.8110	8	1	2
A				
B	2.1474	8	1	3
B				
B	2.1075	8	2	3
B				
B	1.9601	16	3	3
B				
B	1.6888	4	3	2
B				
B	1.6146	4	2	2
B				
B	1.5358	8	3	1

Note: There are two missing cells in the interaction: BH=1, AC=1; and BH=2, AC=1. The *F*-test in the ANOVA table was significant and Tukey's test basically separated out 1 mean from the rest (BH=1, AC=2). Without the values for age class 1 at burn history 1 and 2, it is difficult to judge the trend shown by age class 2 in the graph. For this reason I discount the interaction and make the conclusion that for all practical purposes, there is no interaction effect.

----- Forest Type - **pine/hardwood** Sample Type - **litter** -----

Dependent Variable: **Depth_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	13	3.42305400	0.26331185	1.70	0.0966
Sampling Error	42	6.50353644	0.15484611		
Corrected Total	55	9.92659044			

R-Square	Coeff Var	Root MSE	Depth_in Mean
0.344837	32.78377	0.393505	1.200304

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	0.26951587	0.13475793	0.87	0.4263
AC	2	0.49606215	0.24803107	1.60	0.2136
BH*AC	2	0.29941332	0.14970666	0.97	0.3886
Experimental Error	7	2.11168928	0.30166990	1.95	0.0857 *

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	0.26951587	0.13475793	0.45	0.6568
AC	2	0.49606215	0.24803107	0.82	0.4778
BH*AC	2	0.29941332	0.14970666	0.50	0.6287

----- Forest Type - **pine/hardwood** Sample Type - **duff** -----

Dependent Variable: **BD_t_ac_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	10	95.2041423	9.5204142	1.51	0.1870
Sampling Error	28	176.2904222	6.2960865		
Corrected Total	38	271.4945645			

R-Square	Coeff Var	Root MSE	BD_t_ac_in Mean
0.350667	42.35620	2.509200	5.924045

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	57.58629867	28.79314933	4.57	0.0191 *
AC	2	20.52826430	10.26413215	1.63	0.2139
BH*AC	2	1.43168091	0.71584045	0.11	0.8929
Experimental Error	4	12.52718392	3.13179598	0.50	0.7377 NS

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	57.58629867	28.79314933	9.19	0.0319
AC	2	20.52826430	10.26413215	3.28	0.1436
BH*AC	2	1.43168091	0.71584045	0.23	0.8054

----- Forest Type - **pine/hardwood** Sample Type - **duff** -----

Tukey's Studentized Range (HSD) Test for **BD_t_ac_in**

Alpha	0.05
Error Degrees of Freedom	28
Error Mean Square	6.296087
Critical Value of Studentized Range	3.49918
Minimum Significant Difference	2.5166
Harmonic Mean of Cell Sizes	12.17213

NOTE: Cell sizes are not equal.

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	BH
A	7.597	10	1
A			
B A	6.404	11	2
B			
B	4.701	18	3

Dependent Variable: **Depth_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	10	2.10768896	0.21076890	1.49	0.1967
Sampling Error	28	3.97222586	0.14186521		
Corrected Total	38	6.07991483			

R-Square	Coeff Var	Root MSE	Depth_in Mean
0.346664	48.50361	0.376650	0.776540

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	0.45778601	0.22889300	1.61	0.2172
AC	2	1.16721072	0.58360536	4.11	0.0271 *
BH*AC	2	0.00571857	0.00285929	0.02	0.9801
Experimental Error	4	0.52092323	0.13023081	0.92	0.4673 NS

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	0.45778601	0.22889300	1.76	0.2833
AC	2	1.16721072	0.58360536	4.48	0.0952
BH*AC	2	0.00571857	0.00285929	0.02	0.9784

----- Forest Type - **pine/hardwood** Sample Type - **duff** -----

Tukey's Studentized Range (HSD) Test for **Depth_in**

Alpha	0.05
Error Degrees of Freedom	28
Error Mean Square	0.141865
Critical Value of Studentized Range	3.49918
Minimum Significant Difference	0.4623
Harmonic Mean of Cell Sizes	8.129032

NOTE: Cell sizes are not equal.

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	AC
A	0.9180	21	3
A			
B A	0.6698	14	2
B			
B	0.4076	4	1

----- Forest Type - **hardwood upland** Sample Type - **litter** -----

Dependent Variable: **BD_t_ac_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	20	25.19526154	1.25976308	3.30	0.0002
Sampling Error	63	24.02495561	0.38134850		
Corrected Total	83	49.22021715			

R-Square	Coeff Var	Root MSE	BD_t_ac_in Mean
0.511888	30.31665	0.617534	2.036948

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	0.85471279	0.42735640	1.12	0.3325
AC	2	0.18803024	0.09401512	0.25	0.7823
BH*AC	1	0.05065953	0.05065953	0.13	0.7167
Experimental Error	15	23.92776937	1.59518462	4.18	<.0001 *

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	0.85471279	0.42735640	0.27	0.7686
AC	2	0.18803024	0.09401512	0.06	0.9430
BH*AC	1	0.05065953	0.05065953	0.03	0.8609

Dependent Variable: **Depth_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	20	6.57904980	0.32895249	2.89	0.0007
Sampling Error	63	7.16602203	0.11374638		
Corrected Total	83	13.74507183			

R-Square	Coeff Var	Root MSE	Depth_in Mean
0.478648	28.71336	0.337263	1.174586

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	0.76333453	0.38166726	3.36	0.0412
AC	2	0.30824094	0.15412047	1.35	0.2654
BH*AC	1	0.46617193	0.46617193	4.10	0.0472
Experimental Error	15	5.34281537	0.35618769	3.13	0.0008 *

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	0.76333453	0.38166726	1.07	0.3673
AC	2	0.30824094	0.15412047	0.43	0.6566
BH*AC	1	0.46617193	0.46617193	1.31	0.2705

----- Forest Type - **hardwood upland** Sample Type - **duff** -----

Dependent Variable: **BD_t_ac_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	18	347.3197638	19.2955424	4.75	<.0001
Sampling Error	31	125.9466139	4.0627940		
Corrected Total	49	473.2663777			

R-Square	Coeff Var	Root MSE	BD_t_ac_in Mean
0.733878	33.45085	2.015637	6.025669

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	3.8668238	1.9334119	0.48	0.6258
AC	2	24.6525876	12.3262938	3.03	0.0626
BH*AC	1	3.6884982	3.6884982	0.91	0.3481
Experimental Error	13	297.2115299	22.8624254	5.63	<.0001 *

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	3.86682382	1.93341191	0.08	0.9194
AC	2	24.65258755	12.32629378	0.54	0.5957
BH*AC	1	3.68849819	3.68849819	0.16	0.6945

Dependent Variable: **Depth_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	18	1.35935622	0.07551979	0.67	0.8125
Sampling Error	31	3.49101273	0.11261331		
Corrected Total	49	4.85036895			

R-Square	Coeff Var	Root MSE	Depth_in Mean
0.280258	57.14926	0.335579	0.587198

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	0.21732655	0.10866327	0.96	0.3922
AC	2	0.15614916	0.07807458	0.69	0.5075
BH*AC	1	0.07298798	0.07298798	0.65	0.4269
Experimental Error	13	1.19490671	0.09191590	0.82	0.6402 NS

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	0.21732655	0.10866327	1.18	0.3375
AC	2	0.15614916	0.07807458	0.85	0.4501
BH*AC	1	0.07298798	0.07298798	0.79	0.3891

Appendix B – Supplemental ANOVAs

Listing of significant 2-factor ANOVAs by forest type and forest floor layer. There is one dependent variable, bulk density in tons per acre per inch (BD_t_ac_in). The analysis factors are burn history (BH) and basal area class (BAC). The test of experimental error against sampling error is highlighted in red on the ANOVA table, followed by * for significant at $\alpha = 0.1$ or NS for not significant. If experimental error is significantly larger than sampling error, then tests of BH, BAC and BH×BAC are conducted with experimental error, and this section is highlighted in blue. If sampling error is of the same magnitude as experimental error, then tests are conducted with sampling error, and this section of the ANOVA is highlighted in blue. Significant factor effects at $\alpha = 0.05$ are followed by *.

----- Forest Type - **loblolly/slash** Sample Type - **litter** -----

Dependent Variable: **BD_t_ac_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	30	22.87696839	0.76256561	2.53	0.0004
Sampling Error	93	28.05589739	0.30167632		
Corrected Total	123	50.93286579			

R-Square	Coeff Var	Root MSE	BD_t_ac_in Mean
0.449159	25.81606	0.549251	2.127554

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	0.42215894	0.21107947	0.70	0.4993
BAC	2	6.16254988	3.08127494	10.21	<.0001
BH*BAC	4	3.63478177	0.90869544	3.01	0.0220
Experimental Error	22	12.67319917	0.57605451	1.91	0.0174 *

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	0.42215894	0.21107947	0.37	0.6974
BAC	2	6.16254988	3.08127494	5.35	0.0128 *
BH*BAC	4	3.63478177	0.90869544	1.58	0.2155

Tukey's Studentized Range (HSD) Test for **BD_t_ac_in**

Alpha	0.05
Error Degrees of Freedom	22
Error Mean Square	0.576055
Critical Value of Studentized Range	3.55259
Minimum Significant Difference	0.4636
Harmonic Mean of Cell Sizes	33.8255

NOTE: Cell sizes are not equal.

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	BAC
A	2.2889	48	3
A			
A	2.1613	56	2
B	1.6456	20	1

----- Forest Type - **loblolly/slash** Sample Type - **duff** -----

Dependent Variable: **BD_t_ac_in**

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	27	312.0778453	11.5584387	1.58	0.0617
Sampling Error	75	547.0580282	7.2941070		
Corrected Total	102	859.1358735			

R-Square	Coeff Var	Root MSE	BD_t_ac_in Mean
0.363246	42.91030	2.700760	6.293968

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	1.0735225	0.5367613	0.07	0.9291
BAC	2	51.9247666	25.9623833	3.56	0.0334 *
BH*BAC	4	40.7250067	10.1812517	1.40	0.2436
Experimental Error	19	210.4830294	11.0780542	1.52	0.1035 NS

Tests of Hypotheses Using Experimental Error

Source	DF	Type III SS	Mean Square	F Value	Pr > F
BH	2	1.07352251	0.53676125	0.05	0.9528
BAC	2	51.92476657	25.96238329	2.34	0.1231
BH*BAC	4	40.72500668	10.18125167	0.92	0.4733

Tukey's Studentized Range (HSD) Test for **BD_t_ac_in**

Alpha	0.052
Error Degrees of Freedom	75
Error Mean Square	7.294107
Critical Value of Studentized Range	3.35825
Minimum Significant Difference	1.7864
Harmonic Mean of Cell Sizes	25.77805

NOTE: Cell sizes are not equal.

Means with the same letter are not significantly different.

Tukey Grouping	Mean	N	BAC
A	6.7595	44	3
A			
A	6.3712	45	2
B	4.5827	14	1

Appendix C

Forest Floor Data and Analysis Variables from the Savannah River Site

Plot #	Sub Sample	Sample Type	Burn History	Age Class	Forest Type	Bulk Density tons/ac/inch	Depth inches	Site Index feet at 50 yrs	Basal Area sq. ft/ac
1003	E	litter	0-3yrs	21-40yrs old	longleaf	0.54	1.51	60	86.16
1003	N	litter	0-3yrs	21-40yrs old	longleaf	5.20	0.52	60	86.16
1003	S	litter	0-3yrs	21-40yrs old	longleaf	3.53	0.23	60	86.16
1003	W	litter	0-3yrs	21-40yrs old	longleaf	1.87	0.54	60	86.16
1012	E	litter	10+yrs	21-40yrs old	longleaf	2.81	1.59	70	60.33
1012	N	litter	10+yrs	21-40yrs old	longleaf	2.98	2.29	70	60.33
1012	S	litter	10+yrs	21-40yrs old	longleaf	1.98	1.20	70	60.33
1012	W	litter	10+yrs	21-40yrs old	longleaf	2.28	1.76	70	60.33
1017	E	duff	3-10yrs	40+yrs old	longleaf	10.29	0.52	80	209.62
1017	N	duff	3-10yrs	40+yrs old	longleaf	4.65	1.25	80	209.62
1017	S	duff	3-10yrs	40+yrs old	longleaf	13.20	1.88	80	209.62
1017	E	litter	3-10yrs	40+yrs old	longleaf	2.71	1.41	80	209.62
1017	N	litter	3-10yrs	40+yrs old	longleaf	2.65	2.08	80	209.62
1017	S	litter	3-10yrs	40+yrs old	longleaf	3.18	1.37	80	209.62
1017	W	litter	3-10yrs	40+yrs old	longleaf	2.48	1.29	80	209.62
1022	E	duff	3-10yrs	40+yrs old	longleaf	5.19	0.65	70	137.19
1022	N	duff	3-10yrs	40+yrs old	longleaf	4.77	0.45	70	137.19
1022	S	duff	3-10yrs	40+yrs old	longleaf	7.27	0.49	70	137.19
1022	W	duff	3-10yrs	40+yrs old	longleaf	4.37	0.45	70	137.19
1022	E	litter	3-10yrs	40+yrs old	longleaf	3.18	1.98	70	137.19
1022	N	litter	3-10yrs	40+yrs old	longleaf	1.82	1.77	70	137.19
1022	S	litter	3-10yrs	40+yrs old	longleaf	2.98	1.54	70	137.19
1022	W	litter	3-10yrs	40+yrs old	longleaf	2.21	1.27	70	137.19
1023	N	duff	3-10yrs	21-40yrs old	longleaf	5.51	0.72	80	95.77
1023	E	duff	3-10yrs	21-40yrs old	longleaf	7.15	1.31	80	95.77
1023	W	duff	3-10yrs	21-40yrs old	longleaf	5.19	1.10	80	95.77
1023	N	litter	3-10yrs	21-40yrs old	longleaf	3.05	1.78	80	95.77
1023	E	litter	3-10yrs	21-40yrs old	longleaf	3.38	2.33	80	95.77
1023	S	litter	3-10yrs	21-40yrs old	longleaf	3.69	1.60	80	95.77
1023	W	litter	3-10yrs	21-40yrs old	longleaf	3.03	1.92	80	95.77
1026	E	duff	10+yrs	21-40yrs old	longleaf	12.13	0.20	60	32.83
1026	N	duff	10+yrs	21-40yrs old	longleaf	4.11	0.54	60	32.83
1026	E	litter	10+yrs	21-40yrs old	longleaf	3.26	0.94	60	32.83
1026	N	litter	10+yrs	21-40yrs old	longleaf	1.70	2.10	60	32.83
1026	S	litter	10+yrs	21-40yrs old	longleaf	1.48	1.31	60	32.83
1026	W	litter	10+yrs	21-40yrs old	longleaf	2.71	1.51	60	32.83
1029	W	duff	10+yrs	40+yrs old	longleaf	10.49	1.01	70	66.55
1029	E	litter	10+yrs	40+yrs old	longleaf	1.63	1.09	70	66.55
1029	N	litter	10+yrs	40+yrs old	longleaf	2.14	0.99	70	66.55
1029	S	litter	10+yrs	40+yrs old	longleaf	2.22	1.80	70	66.55
1029	W	litter	10+yrs	40+yrs old	longleaf	2.67	1.90	70	66.55
1031	E	duff	3-10yrs	21-40yrs old	longleaf	6.22	1.04	80	111.46
1031	N	duff	3-10yrs	21-40yrs old	longleaf	4.31	0.97	80	111.46
1031	W	duff	3-10yrs	21-40yrs old	longleaf	10.41	1.34	80	111.46
1031	E	litter	3-10yrs	21-40yrs old	longleaf	1.94	1.40	80	111.46
1031	N	litter	3-10yrs	21-40yrs old	longleaf	3.08	0.98	80	111.46

1031	S	litter	3-10yrs	21-40yrs old	longleaf	2.24	1.23	80	111.46
1031	W	litter	3-10yrs	21-40yrs old	longleaf	3.35	1.18	80	111.46
1032	E	duff	0-3yrs	21-40yrs old	pine/hardwood	3.14	0.26	75	32.80
1032	S1	duff	0-3yrs	21-40yrs old	pine/hardwood	8.29	0.52	75	32.80
1032	W	duff	0-3yrs	21-40yrs old	pine/hardwood	8.34	1.03	75	32.80
1032	E	litter	0-3yrs	21-40yrs old	pine/hardwood	2.98	1.33	75	32.80
1032	S1	litter	0-3yrs	21-40yrs old	pine/hardwood	3.29	0.72	75	32.80
1032	S2	litter	0-3yrs	21-40yrs old	pine/hardwood	2.89	1.23	75	32.80
1032	W	litter	0-3yrs	21-40yrs old	pine/hardwood	3.13	1.91	75	32.80
1033	E	duff	3-10yrs	21-40yrs old	loblolly/slash	5.71	0.62	90	129.43
1033	N	duff	3-10yrs	21-40yrs old	loblolly/slash	5.57	0.98	90	129.43
1033	S	duff	3-10yrs	21-40yrs old	loblolly/slash	8.69	0.43	90	129.43
1033	W	duff	3-10yrs	21-40yrs old	loblolly/slash	5.06	0.82	90	129.43
1033	E	litter	3-10yrs	21-40yrs old	loblolly/slash	2.84	1.29	90	129.43
1033	N	litter	3-10yrs	21-40yrs old	loblolly/slash	2.13	1.53	90	129.43
1033	S	litter	3-10yrs	21-40yrs old	loblolly/slash	2.02	1.10	90	129.43
1033	W	litter	3-10yrs	21-40yrs old	loblolly/slash	1.84	1.26	90	129.43
1036	N	duff	10+yrs	40+yrs old	pine/hardwood	4.56	0.43	60	105.06
1036	S	duff	10+yrs	40+yrs old	pine/hardwood	2.82	1.62	60	105.06
1036	E	litter	10+yrs	40+yrs old	pine/hardwood	3.28	1.19	60	105.06
1036	N	litter	10+yrs	40+yrs old	pine/hardwood	2.69	1.50	60	105.06
1036	S	litter	10+yrs	40+yrs old	pine/hardwood	1.07	0.87	60	105.06
1036	W	litter	10+yrs	40+yrs old	pine/hardwood	1.91	0.69	60	105.06
1045	S1	duff	3-10yrs	21-40yrs old	loblolly/slash	8.82	0.38	80	142.50
1045	S2	duff	3-10yrs	21-40yrs old	loblolly/slash	4.76	0.40	80	142.50
1045	W1	duff	3-10yrs	21-40yrs old	loblolly/slash	5.12	0.27	80	142.50
1045	S1	litter	3-10yrs	21-40yrs old	loblolly/slash	2.88	2.00	80	142.50
1045	S2	litter	3-10yrs	21-40yrs old	loblolly/slash	2.68	1.78	80	142.50
1045	W1	litter	3-10yrs	21-40yrs old	loblolly/slash	2.76	1.71	80	142.50
1045	W2	litter	3-10yrs	21-40yrs old	loblolly/slash	2.99	1.24	80	142.50
1046	E	duff	0-3yrs	21-40yrs old	loblolly/slash	9.69	0.82	80	105.00
1046	N	duff	0-3yrs	21-40yrs old	loblolly/slash	5.56	0.98	80	105.00
1046	S	duff	0-3yrs	21-40yrs old	loblolly/slash	5.01	0.98	80	105.00
1046	W	duff	0-3yrs	21-40yrs old	loblolly/slash	3.61	0.69	80	105.00
1046	E	litter	0-3yrs	21-40yrs old	loblolly/slash	1.95	1.41	80	105.00
1046	N	litter	0-3yrs	21-40yrs old	loblolly/slash	2.94	1.60	80	105.00
1046	S	litter	0-3yrs	21-40yrs old	loblolly/slash	1.93	1.50	80	105.00
1046	W	litter	0-3yrs	21-40yrs old	loblolly/slash	2.03	1.47	80	105.00
1048	E	duff	10+yrs	40+yrs old	longleaf	3.91	1.14	80	90.00
1048	N	duff	10+yrs	40+yrs old	longleaf	6.96	0.46	80	90.00
1048	S	duff	10+yrs	40+yrs old	longleaf	5.62	0.59	80	90.00
1048	W	duff	10+yrs	40+yrs old	longleaf	9.80	0.62	80	90.00
1048	E	litter	10+yrs	40+yrs old	longleaf	1.10	3.47	80	90.00
1048	N	litter	10+yrs	40+yrs old	longleaf	1.88	1.37	80	90.00
1048	S	litter	10+yrs	40+yrs old	longleaf	1.00	2.09	80	90.00
1048	W	litter	10+yrs	40+yrs old	longleaf	2.59	0.66	80	90.00
1052	E1	duff	10+yrs	40+yrs old	hardwood upland	7.68	1.09	80	124.13
1052	E2	duff	10+yrs	40+yrs old	hardwood upland	4.31	0.68	80	124.13
1052	N2	duff	10+yrs	40+yrs old	hardwood upland	8.80	0.89	80	124.13

1052	N3	duff	10+yrs	40+yrs old	hardwood upland	7.40	0.54	80	124.13
1052	E1	litter	10+yrs	40+yrs old	hardwood upland	1.46	1.08	80	124.13
1052	E2	litter	10+yrs	40+yrs old	hardwood upland	2.22	0.77	80	124.13
1052	N2	litter	10+yrs	40+yrs old	hardwood upland	2.54	1.07	80	124.13
1052	N3	litter	10+yrs	40+yrs old	hardwood upland	1.83	1.05	80	124.13
1061	E	litter	0-3yrs	40+yrs old	pine/hardwood	2.63	1.11	70	112.65
1061	N	litter	0-3yrs	40+yrs old	pine/hardwood	2.67	1.73	70	112.65
1061	W	litter	0-3yrs	40+yrs old	pine/hardwood	2.26	1.25	70	112.65
1061	S	litter	0-3yrs	40+yrs old	pine/hardwood	2.61	1.17	70	112.65
1064	N	litter	10+yrs	5-20yrs old	pine/hardwood	0.99	1.26	60	13.16
1064	S	litter	10+yrs	5-20yrs old	pine/hardwood	2.04	0.80	60	13.16
1064	W1	litter	10+yrs	5-20yrs old	pine/hardwood	1.70	0.77	60	13.16
1064	W2	litter	10+yrs	5-20yrs old	pine/hardwood	1.80	0.74	60	13.16
1069	E	duff	0-3yrs	40+yrs old	pine/hardwood	3.74	0.28	40	110.33
1069	N	duff	0-3yrs	40+yrs old	pine/hardwood	6.90	1.30	40	110.33
1069	S	duff	0-3yrs	40+yrs old	pine/hardwood	10.62	0.67	40	110.33
1069	W	duff	0-3yrs	40+yrs old	pine/hardwood	14.09	0.70	40	110.33
1069	E	litter	0-3yrs	40+yrs old	pine/hardwood	2.34	0.57	40	110.33
1069	N	litter	0-3yrs	40+yrs old	pine/hardwood	1.63	1.36	40	110.33
1069	S	litter	0-3yrs	40+yrs old	pine/hardwood	1.43	1.25	40	110.33
1069	W	litter	0-3yrs	40+yrs old	pine/hardwood	1.60	1.31	40	110.33
1074	E	duff	3-10yrs	21-40yrs old	longleaf	4.46	0.85	70	118.51
1074	N	duff	3-10yrs	21-40yrs old	longleaf	8.16	2.43	70	118.51
1074	S	duff	3-10yrs	21-40yrs old	longleaf	9.36	1.25	70	118.51
1074	W	duff	3-10yrs	21-40yrs old	longleaf	6.86	1.14	70	118.51
1074	E	litter	3-10yrs	21-40yrs old	longleaf	1.93	1.28	70	118.51
1074	N	litter	3-10yrs	21-40yrs old	longleaf	3.00	1.81	70	118.51
1074	S	litter	3-10yrs	21-40yrs old	longleaf	2.12	1.41	70	118.51
1074	W	litter	3-10yrs	21-40yrs old	longleaf	3.29	1.78	70	118.51
1079	E	duff	0-3yrs	40+yrs old	hardwood upland	8.15	0.34	80	101.99
1079	N	duff	0-3yrs	40+yrs old	hardwood upland	6.15	1.06	80	101.99
1079	E	litter	0-3yrs	40+yrs old	hardwood upland	2.16	1.18	80	101.99
1079	N	litter	0-3yrs	40+yrs old	hardwood upland	1.90	1.77	80	101.99
1079	S	litter	0-3yrs	40+yrs old	hardwood upland	1.28	1.65	80	101.99
1079	W2	litter	0-3yrs	40+yrs old	hardwood upland	2.01	1.36	80	101.99
1086	E	duff	3-10yrs	40+yrs old	loblolly/slash	16.98	0.23	90	118.57
1086	N	duff	3-10yrs	40+yrs old	loblolly/slash	4.97	0.68	90	118.57
1086	S	duff	3-10yrs	40+yrs old	loblolly/slash	16.34	0.73	90	118.57
1086	W	duff	3-10yrs	40+yrs old	loblolly/slash	4.48	0.68	90	118.57
1086	E	litter	3-10yrs	40+yrs old	loblolly/slash	2.16	1.69	90	118.57
1086	N	litter	3-10yrs	40+yrs old	loblolly/slash	2.38	1.40	90	118.57
1086	S	litter	3-10yrs	40+yrs old	loblolly/slash	3.41	1.92	90	118.57
1086	W	litter	3-10yrs	40+yrs old	loblolly/slash	4.68	1.22	90	118.57
1090	E	duff	10+yrs	40+yrs old	pine/hardwood	3.27	0.70	90	76.13
1090	N	duff	10+yrs	40+yrs old	pine/hardwood	9.75	1.59	90	76.13
1090	S	duff	10+yrs	40+yrs old	pine/hardwood	3.61	0.33	90	76.13
1090	W	duff	10+yrs	40+yrs old	pine/hardwood	8.99	1.10	90	76.13
1090	N	litter	10+yrs	40+yrs old	pine/hardwood	2.07	0.76	90	76.13
1090	E	litter	10+yrs	40+yrs old	pine/hardwood	2.51	1.49	90	76.13

1090	S	litter	10+yrs	40+yrs old	pine/hardwood	1.81	0.67	90	76.13
1090	W	litter	10+yrs	40+yrs old	pine/hardwood	0.95	1.66	90	76.13
1091	E	duff	10+yrs	5-20yrs old	loblolly/slash	6.63	1.01	90	137.28
1091	S1	duff	10+yrs	5-20yrs old	loblolly/slash	4.62	0.85	90	137.28
1091	S2	duff	10+yrs	5-20yrs old	loblolly/slash	3.77	0.34	90	137.28
1091	S3	duff	10+yrs	5-20yrs old	loblolly/slash	4.87	0.82	90	137.28
1091	E	litter	10+yrs	5-20yrs old	loblolly/slash	2.02	1.36	90	137.28
1091	S1	litter	10+yrs	5-20yrs old	loblolly/slash	2.00	1.60	90	137.28
1091	S2	litter	10+yrs	5-20yrs old	loblolly/slash	1.98	0.90	90	137.28
1091	S3	litter	10+yrs	5-20yrs old	loblolly/slash	1.67	1.04	90	137.28
1132	E	duff	3-10yrs	21-40yrs old	loblolly/slash	5.45	0.71	90	94.74
1132	N	duff	3-10yrs	21-40yrs old	loblolly/slash	9.59	0.38	90	94.74
1132	S	duff	3-10yrs	21-40yrs old	loblolly/slash	6.30	0.90	90	94.74
1132	W	duff	3-10yrs	21-40yrs old	loblolly/slash	6.37	1.11	90	94.74
1132	E	litter	3-10yrs	21-40yrs old	loblolly/slash	2.12	1.31	90	94.74
1132	N	litter	3-10yrs	21-40yrs old	loblolly/slash	1.75	1.25	90	94.74
1132	S	litter	3-10yrs	21-40yrs old	loblolly/slash	3.27	1.50	90	94.74
1132	W	litter	3-10yrs	21-40yrs old	loblolly/slash	2.28	1.41	90	94.74
1136	E	duff	10+yrs	40+yrs old	hardwood upland	10.70	0.42	70	126.04
1136	N	duff	10+yrs	40+yrs old	hardwood upland	9.51	0.31	70	126.04
1136	W	duff	10+yrs	40+yrs old	hardwood upland	10.98	0.86	70	126.04
1136	E	litter	10+yrs	40+yrs old	hardwood upland	1.47	1.29	70	126.04
1136	N	litter	10+yrs	40+yrs old	hardwood upland	1.74	1.03	70	126.04
1136	S	litter	10+yrs	40+yrs old	hardwood upland	1.63	0.90	70	126.04
1136	W	litter	10+yrs	40+yrs old	hardwood upland	1.52	0.95	70	126.04
1149	E	duff	3-10yrs	40+yrs old	hardwood upland	4.20	1.10	90	192.70
1149	E	litter	3-10yrs	40+yrs old	hardwood upland	1.12	1.53	90	192.70
1149	N	litter	3-10yrs	40+yrs old	hardwood upland	1.32	1.34	90	192.70
1149	S	litter	3-10yrs	40+yrs old	hardwood upland	2.31	0.62	90	192.70
1149	W	litter	3-10yrs	40+yrs old	hardwood upland	1.73	2.19	90	192.70
1160	N	duff	10+yrs	5-20yrs old	longleaf	2.35	0.37	90	9.31
1160	N3	duff	10+yrs	5-20yrs old	longleaf	6.53	0.70	90	9.31
1160	N	litter	10+yrs	5-20yrs old	longleaf	1.53	1.28	90	9.31
1160	N2	litter	10+yrs	5-20yrs old	longleaf	1.05	1.57	90	9.31
1160	N3	litter	10+yrs	5-20yrs old	longleaf	3.02	1.38	90	9.31
1160	N4	litter	10+yrs	5-20yrs old	longleaf	0.75	1.78	90	9.31
1173	S	duff	10+yrs	5-20yrs old	hardwood upland	3.36	0.30	90	42.67
1173	W	duff	10+yrs	5-20yrs old	hardwood upland	1.78	0.47	90	42.67
1173	E	litter	10+yrs	5-20yrs old	hardwood upland	1.84	1.05	90	42.67
1173	N	litter	10+yrs	5-20yrs old	hardwood upland	2.03	1.16	90	42.67
1173	S	litter	10+yrs	5-20yrs old	hardwood upland	1.47	1.32	90	42.67
1173	W	litter	10+yrs	5-20yrs old	hardwood upland	1.86	1.59	90	42.67
1180	E	duff	3-10yrs	40+yrs old	loblolly/slash	8.27	1.27	90	88.72
1180	N	duff	3-10yrs	40+yrs old	loblolly/slash	14.83	0.98	90	88.72
1180	S	duff	3-10yrs	40+yrs old	loblolly/slash	12.87	0.87	90	88.72
1180	W	duff	3-10yrs	40+yrs old	loblolly/slash	5.56	0.76	90	88.72
1180	E	litter	3-10yrs	40+yrs old	loblolly/slash	2.07	1.34	90	88.72
1180	N	litter	3-10yrs	40+yrs old	loblolly/slash	1.52	1.15	90	88.72
1180	S	litter	3-10yrs	40+yrs old	loblolly/slash	1.79	1.46	90	88.72

1180	W	litter	3-10yrs	40+yrs old	loblolly/slash	1.93	1.25	90	88.72
1186	E	duff	3-10yrs	5-20yrs old	loblolly/slash	6.70	1.21	90	111.04
1186	N	duff	3-10yrs	5-20yrs old	loblolly/slash	5.39	0.79	90	111.04
1186	S	duff	3-10yrs	5-20yrs old	loblolly/slash	4.76	1.16	90	111.04
1186	W	duff	3-10yrs	5-20yrs old	loblolly/slash	5.58	1.48	90	111.04
1186	E	litter	3-10yrs	5-20yrs old	loblolly/slash	2.00	1.15	90	111.04
1186	N	litter	3-10yrs	5-20yrs old	loblolly/slash	1.46	1.69	90	111.04
1186	S	litter	3-10yrs	5-20yrs old	loblolly/slash	2.46	1.81	90	111.04
1186	W	litter	3-10yrs	5-20yrs old	loblolly/slash	2.74	1.59	90	111.04
1195	E	duff	10+yrs	21-40yrs old	pine/hardwood	2.65	0.88	100	143.24
1195	E2	duff	10+yrs	21-40yrs old	pine/hardwood	2.83	0.59	100	143.24
1195	N	duff	10+yrs	21-40yrs old	pine/hardwood	6.89	1.41	100	143.24
1195	S	duff	10+yrs	21-40yrs old	pine/hardwood	3.71	0.45	100	143.24
1195	E	litter	10+yrs	21-40yrs old	pine/hardwood	1.50	1.18	100	143.24
1195	E2	litter	10+yrs	21-40yrs old	pine/hardwood	1.39	1.34	100	143.24
1195	N	litter	10+yrs	21-40yrs old	pine/hardwood	2.22	1.49	100	143.24
1195	S	litter	10+yrs	21-40yrs old	pine/hardwood	1.65	0.69	100	143.24
1197	E2	duff	10+yrs	21-40yrs old	loblolly/slash	6.28	0.99	80	111.46
1197	N	duff	10+yrs	21-40yrs old	loblolly/slash	3.14	0.30	80	111.46
1197	W	duff	10+yrs	21-40yrs old	loblolly/slash	5.93	1.28	80	111.46
1197	E2	litter	10+yrs	21-40yrs old	loblolly/slash	2.49	0.80	80	111.46
1197	N	litter	10+yrs	21-40yrs old	loblolly/slash	1.52	0.73	80	111.46
1197	S	litter	10+yrs	21-40yrs old	loblolly/slash	1.45	0.65	80	111.46
1197	W	litter	10+yrs	21-40yrs old	loblolly/slash	1.56	1.39	80	111.46
1218	N	duff	0-3yrs	40+yrs old	hardwood upland	5.68	0.48	80	104.55
1218	E	litter	0-3yrs	40+yrs old	hardwood upland	2.11	0.72	80	104.55
1218	N	litter	0-3yrs	40+yrs old	hardwood upland	1.63	1.13	80	104.55
1218	S	litter	0-3yrs	40+yrs old	hardwood upland	2.66	0.55	80	104.55
1218	W	litter	0-3yrs	40+yrs old	hardwood upland	2.30	0.74	80	104.55
1242	S1	duff	0-3yrs	40+yrs old	loblolly/slash	4.23	0.54	90	62.95
1242	S3	duff	0-3yrs	40+yrs old	loblolly/slash	4.16	0.61	90	62.95
1242	S1	litter	0-3yrs	40+yrs old	loblolly/slash	1.18	0.95	90	62.95
1242	S2	litter	0-3yrs	40+yrs old	loblolly/slash	0.85	1.33	90	62.95
1242	S3	litter	0-3yrs	40+yrs old	loblolly/slash	1.61	1.33	90	62.95
1242	W	litter	0-3yrs	40+yrs old	loblolly/slash	1.22	1.02	90	62.95
1256	E	duff	10+yrs	5-20yrs old	loblolly/slash	5.92	0.58		181.62
1256	S	duff	10+yrs	5-20yrs old	loblolly/slash	4.59	0.79		181.62
1256	W	duff	10+yrs	5-20yrs old	loblolly/slash	5.05	0.39		181.62
1256	E	litter	10+yrs	5-20yrs old	loblolly/slash	2.18	1.37		181.62
1256	S	litter	10+yrs	5-20yrs old	loblolly/slash	2.44	1.62		181.62
1256	N	litter	10+yrs	5-20yrs old	loblolly/slash	0.87	1.49		181.62
1256	W	litter	10+yrs	5-20yrs old	loblolly/slash	2.12	1.37		181.62
1295	E	duff	0-3yrs	21-40yrs old	longleaf	14.16	0.66	70	117.76
1295	N	duff	0-3yrs	21-40yrs old	longleaf	6.03	0.25	70	117.76
1295	W	duff	0-3yrs	21-40yrs old	longleaf	6.49	0.57	70	117.76
1295	E	litter	0-3yrs	21-40yrs old	longleaf	2.14	0.82	70	117.76
1295	N	litter	0-3yrs	21-40yrs old	longleaf	1.57	0.97	70	117.76
1295	S	litter	0-3yrs	21-40yrs old	longleaf	2.50	0.80	70	117.76
1295	W	litter	0-3yrs	21-40yrs old	longleaf	1.26	0.80	70	117.76

4001	N	duff	0-3yrs	40+yrs old	longleaf	5.36	0.37	70	53.34
4001	W	duff	0-3yrs	40+yrs old	longleaf	19.24	0.67	70	53.34
4001	E	litter	0-3yrs	40+yrs old	longleaf	2.20	0.97	70	53.34
4001	N	litter	0-3yrs	40+yrs old	longleaf	2.20	1.13	70	53.34
4001	S	litter	0-3yrs	40+yrs old	longleaf	0.46	1.40	70	53.34
4001	W	litter	0-3yrs	40+yrs old	longleaf	3.60	1.20	70	53.34
4005	S	duff	0-3yrs	40+yrs old	hardwood upland	12.98	1.00	50	48.17
4005	W	duff	0-3yrs	40+yrs old	hardwood upland	8.38	0.40	50	48.17
4005	E	litter	0-3yrs	40+yrs old	hardwood upland	2.02	1.61	50	48.17
4005	N	litter	0-3yrs	40+yrs old	hardwood upland	2.50	1.42	50	48.17
4005	S	litter	0-3yrs	40+yrs old	hardwood upland	3.74	1.73	50	48.17
4005	W	litter	0-3yrs	40+yrs old	hardwood upland	3.47	1.48	50	48.17
4008	N	duff	3-10yrs	21-40yrs old	hardwood upland	4.21	0.22	60	51.39
4008	S	duff	3-10yrs	21-40yrs old	hardwood upland	9.02	0.32	60	51.39
4008	W	duff	3-10yrs	21-40yrs old	hardwood upland	6.07	0.72	60	51.39
4008	E	litter	3-10yrs	21-40yrs old	hardwood upland	1.81	0.50	60	51.39
4008	N	litter	3-10yrs	21-40yrs old	hardwood upland	1.77	1.27	60	51.39
4008	S	litter	3-10yrs	21-40yrs old	hardwood upland	3.26	1.58	60	51.39
4008	W	litter	3-10yrs	21-40yrs old	hardwood upland	2.49	1.33	60	51.39
4010	E	duff	0-3yrs	40+yrs old	loblolly/slash	5.86	0.54	80	119.28
4010	S	duff	0-3yrs	40+yrs old	loblolly/slash	5.74	0.51	80	119.28
4010	S2	duff	0-3yrs	40+yrs old	loblolly/slash	8.42	0.20	80	119.28
4010	W2	duff	0-3yrs	40+yrs old	loblolly/slash	7.86	0.76	80	119.28
4010	E	litter	0-3yrs	40+yrs old	loblolly/slash	2.89	1.56	80	119.28
4010	S	litter	0-3yrs	40+yrs old	loblolly/slash	1.37	1.41	80	119.28
4010	S2	litter	0-3yrs	40+yrs old	loblolly/slash	1.17	1.44	80	119.28
4010	W2	litter	0-3yrs	40+yrs old	loblolly/slash	2.75	1.18	80	119.28
4011	S2	duff	0-3yrs	40+yrs old	hardwood upland	8.18	0.27	60	93.75
4011	S	litter	0-3yrs	40+yrs old	hardwood upland	2.28	1.13	60	93.75
4011	S2	litter	0-3yrs	40+yrs old	hardwood upland	1.61	1.18	60	93.75
4011	W	litter	0-3yrs	40+yrs old	hardwood upland	2.35	1.11	60	93.75
4011	W2	litter	0-3yrs	40+yrs old	hardwood upland	2.41	1.04	60	93.75
4015	E	duff	10+yrs	21-40yrs old	longleaf	8.90	1.31	80	55.85
4015	W	duff	10+yrs	21-40yrs old	longleaf	9.34	1.47	80	55.85
4015	E	litter	10+yrs	21-40yrs old	longleaf	5.23	1.84	80	55.85
4015	N	litter	10+yrs	21-40yrs old	longleaf	1.92	0.96	80	55.85
4015	S	litter	10+yrs	21-40yrs old	longleaf	2.77	2.18	80	55.85
4015	W	litter	10+yrs	21-40yrs old	longleaf	2.87	1.89	80	55.85
4027	E	duff	0-3yrs	21-40yrs old	pine/hardwood	7.01	0.43	90	99.28
4027	N	duff	0-3yrs	21-40yrs old	pine/hardwood	7.37	0.55	90	99.28
4027	S	duff	0-3yrs	21-40yrs old	pine/hardwood	6.47	0.46	90	99.28
4027	E	litter	0-3yrs	21-40yrs old	pine/hardwood	4.33	1.35	90	99.28
4027	N	litter	0-3yrs	21-40yrs old	pine/hardwood	1.90	1.90	90	99.28
4027	S	litter	0-3yrs	21-40yrs old	pine/hardwood	2.09	1.24	90	99.28
4027	W	litter	0-3yrs	21-40yrs old	pine/hardwood	1.88	1.43	90	99.28
4031	E	duff	10+yrs	40+yrs old	loblolly/slash	15.74	1.67	90	91.06
4031	S	duff	10+yrs	40+yrs old	loblolly/slash	5.06	0.88	90	91.06
4031	E	litter	10+yrs	40+yrs old	loblolly/slash	2.78	2.19	90	91.06
4031	N	litter	10+yrs	40+yrs old	loblolly/slash	1.05	1.65	90	91.06

4031	S	litter	10+yrs	40+yrs old	loblolly/slash	1.84	1.64	90	91.06
4031	W	litter	10+yrs	40+yrs old	loblolly/slash	2.29	1.32	90	91.06
4035	S	duff	10+yrs	40+yrs old	pine/hardwood	3.03	0.72	80	124.81
4035	W	duff	10+yrs	40+yrs old	pine/hardwood	4.43	1.22	80	124.81
4035	N	duff	10+yrs	40+yrs old	pine/hardwood	6.26	1.47	80	124.81
4035	E	duff	10+yrs	40+yrs old	pine/hardwood	6.33	1.04	80	124.81
4035	S	litter	10+yrs	40+yrs old	pine/hardwood	1.67	1.50	80	124.81
4035	W	litter	10+yrs	40+yrs old	pine/hardwood	2.63	1.38	80	124.81
4035	N	litter	10+yrs	40+yrs old	pine/hardwood	1.54	2.12	80	124.81
4035	E	litter	10+yrs	40+yrs old	pine/hardwood	2.32	2.22	80	124.81
4038	E	litter	3-10yrs	40+yrs old	hardwood upland	2.95	1.18	60	43.32
4038	N1	litter	3-10yrs	40+yrs old	hardwood upland	3.27	0.90	60	43.32
4038	N2	litter	3-10yrs	40+yrs old	hardwood upland	2.66	0.78	60	43.32
4038	W	litter	3-10yrs	40+yrs old	hardwood upland	2.43	1.20	60	43.32
4043	E1	duff	10+yrs	40+yrs old	loblolly/slash	8.43	0.23	80	91.78
4043	E2	duff	10+yrs	40+yrs old	loblolly/slash	6.99	0.80	80	91.78
4043	S	duff	10+yrs	40+yrs old	loblolly/slash	7.65	0.49	80	91.78
4043	S2	duff	10+yrs	40+yrs old	loblolly/slash	6.36	0.34	80	91.78
4043	E1	litter	10+yrs	40+yrs old	loblolly/slash	3.10	1.17	80	91.78
4043	E2	litter	10+yrs	40+yrs old	loblolly/slash	2.83	1.26	80	91.78
4043	S	litter	10+yrs	40+yrs old	loblolly/slash	1.62	1.72	80	91.78
4043	S2	litter	10+yrs	40+yrs old	loblolly/slash	2.02	1.62	80	91.78
4045	E	duff	10+yrs	40+yrs old	longleaf	9.63	1.06	80	126.34
4045	N	duff	10+yrs	40+yrs old	longleaf	11.33	0.40	80	126.34
4045	S	duff	10+yrs	40+yrs old	longleaf	10.56	1.60	80	126.34
4045	W	duff	10+yrs	40+yrs old	longleaf	10.35	0.89	80	126.34
4045	E	litter	10+yrs	40+yrs old	longleaf	4.80	2.11	80	126.34
4045	N	litter	10+yrs	40+yrs old	longleaf	3.78	1.62	80	126.34
4045	S	litter	10+yrs	40+yrs old	longleaf	3.05	1.75	80	126.34
4045	W	litter	10+yrs	40+yrs old	longleaf	5.59	2.07	80	126.34
4046	E	duff	3-10yrs	40+yrs old	pine/hardwood	3.73	0.58	80	73.85
4046	N	duff	3-10yrs	40+yrs old	pine/hardwood	10.32	0.92	80	73.85
4046	S	duff	3-10yrs	40+yrs old	pine/hardwood	5.11	0.26	80	73.85
4046	E	litter	3-10yrs	40+yrs old	pine/hardwood	3.19	0.80	80	73.85
4046	N	litter	3-10yrs	40+yrs old	pine/hardwood	1.11	1.12	80	73.85
4046	S	litter	3-10yrs	40+yrs old	pine/hardwood	3.09	0.37	80	73.85
4046	W	litter	3-10yrs	40+yrs old	pine/hardwood	1.96	0.57	80	73.85
4055	E	duff	0-3yrs	21-40yrs old	longleaf	6.88	0.24	90	69.79
4055	S	duff	0-3yrs	21-40yrs old	longleaf	7.32	0.46	90	69.79
4055	E	litter	0-3yrs	21-40yrs old	longleaf	3.42	2.01	90	69.79
4055	N	litter	0-3yrs	21-40yrs old	longleaf	3.13	1.44	90	69.79
4055	S	litter	0-3yrs	21-40yrs old	longleaf	3.07	1.90	90	69.79
4055	W	litter	0-3yrs	21-40yrs old	longleaf	3.06	1.60	90	69.79
4064	E	duff	3-10yrs	40+yrs old	longleaf	4.87	0.96	90	113.42
4064	N	duff	3-10yrs	40+yrs old	longleaf	15.50	0.27	90	113.42
4064	N2	duff	3-10yrs	40+yrs old	longleaf	4.84	0.72	90	113.42
4064	E	litter	3-10yrs	40+yrs old	longleaf	2.78	1.42	90	113.42
4064	N	litter	3-10yrs	40+yrs old	longleaf	2.15	0.92	90	113.42
4064	N2	litter	3-10yrs	40+yrs old	longleaf	1.40	1.61	90	113.42

4064	W	litter	3-10yrs	40+yrs old	longleaf	1.88	0.52	90	113.42
4066	E	duff	3-10yrs	5-20yrs old	loblolly/slash	2.51	0.90	80	90.52
4066	N	duff	3-10yrs	5-20yrs old	loblolly/slash	8.43	0.80	80	90.52
4066	S	duff	3-10yrs	5-20yrs old	loblolly/slash	3.13	0.46	80	90.52
4066	W	duff	3-10yrs	5-20yrs old	loblolly/slash	3.66	1.01	80	90.52
4066	E	litter	3-10yrs	5-20yrs old	loblolly/slash	1.82	1.14	80	90.52
4066	N	litter	3-10yrs	5-20yrs old	loblolly/slash	2.23	0.99	80	90.52
4066	S	litter	3-10yrs	5-20yrs old	loblolly/slash	2.42	1.16	80	90.52
4066	W	litter	3-10yrs	5-20yrs old	loblolly/slash	2.86	1.49	80	90.52
4078	E	duff	3-10yrs	21-40yrs old	longleaf	5.56	0.33	80	148.25
4078	W	duff	3-10yrs	21-40yrs old	longleaf	8.23	0.24	80	148.25
4078	S	duff	3-10yrs	21-40yrs old	longleaf	2.16	0.73	80	148.25
4078	N	duff	3-10yrs	21-40yrs old	longleaf	4.76	0.68	80	148.25
4078	E	litter	3-10yrs	21-40yrs old	longleaf	2.03	1.71	80	148.25
4078	W	litter	3-10yrs	21-40yrs old	longleaf	2.54	1.51	80	148.25
4078	S	litter	3-10yrs	21-40yrs old	longleaf	3.12	1.62	80	148.25
4078	N	litter	3-10yrs	21-40yrs old	longleaf	3.89	1.39	80	148.25
4083	E	litter	0-3yrs	5-20yrs old	longleaf	2.32	0.73	80	36.92
4083	N	litter	0-3yrs	5-20yrs old	longleaf	2.07	0.91	80	36.92
4083	S	litter	0-3yrs	5-20yrs old	longleaf	1.66	1.56	80	36.92
4083	W	litter	0-3yrs	5-20yrs old	longleaf	0.41	1.79	80	36.92
4084	E	litter	0-3yrs	5-20yrs old	longleaf	2.81	1.74	60	56.13
4084	N	litter	0-3yrs	5-20yrs old	longleaf	1.37	0.97	60	56.13
4084	S	litter	0-3yrs	5-20yrs old	longleaf	2.03	0.87	60	56.13
4084	W	litter	0-3yrs	5-20yrs old	longleaf	1.75	0.60	60	56.13
4088	N	duff	0-3yrs	40+yrs old	loblolly/slash	6.69	0.62	90	147.99
4088	S	duff	0-3yrs	40+yrs old	loblolly/slash	7.98	0.32	90	147.99
4088	W	duff	0-3yrs	40+yrs old	loblolly/slash	3.44	0.33	90	147.99
4088	W2	duff	0-3yrs	40+yrs old	loblolly/slash	9.71	1.56	90	147.99
4088	N	litter	0-3yrs	40+yrs old	loblolly/slash	2.44	0.83	90	147.99
4088	S	litter	0-3yrs	40+yrs old	loblolly/slash	1.72	0.83	90	147.99
4088	W	litter	0-3yrs	40+yrs old	loblolly/slash	2.04	1.07	90	147.99
4088	W2	litter	0-3yrs	40+yrs old	loblolly/slash	1.95	1.14	90	147.99
4093	E	duff	3-10yrs	5-20yrs old	longleaf	4.08	0.61	80	14.60
4093	N	duff	3-10yrs	5-20yrs old	longleaf	8.12	0.44	80	14.60
4093	S	duff	3-10yrs	5-20yrs old	longleaf	3.45	0.27	80	14.60
4093	W	duff	3-10yrs	5-20yrs old	longleaf	2.86	1.10	80	14.60
4093	E	litter	3-10yrs	5-20yrs old	longleaf	0.65	1.77	80	14.60
4093	N	litter	3-10yrs	5-20yrs old	longleaf	2.09	0.95	80	14.60
4093	S	litter	3-10yrs	5-20yrs old	longleaf	1.84	0.91	80	14.60
4093	W	litter	3-10yrs	5-20yrs old	longleaf	1.71	2.02	80	14.60
4098	E	duff	0-3yrs	40+yrs old	hardwood upland	3.98	0.65	60	90.19
4098	N	duff	0-3yrs	40+yrs old	hardwood upland	1.74	1.38	60	90.19
4098	S	duff	0-3yrs	40+yrs old	hardwood upland	4.27	0.24	60	90.19
4098	W	duff	0-3yrs	40+yrs old	hardwood upland	3.48	0.32	60	90.19
4098	E	litter	0-3yrs	40+yrs old	hardwood upland	0.86	1.75	60	90.19
4098	N	litter	0-3yrs	40+yrs old	hardwood upland	1.04	1.04	60	90.19
4098	S	litter	0-3yrs	40+yrs old	hardwood upland	1.36	0.94	60	90.19
4098	W	litter	0-3yrs	40+yrs old	hardwood upland	2.00	1.79	60	90.19

4100	E	duff	3-10yrs	40+yrs old	longleaf	6.59	0.30	70	94.73
4100	S2	duff	3-10yrs	40+yrs old	longleaf	3.26	0.57	70	94.73
4100	W	duff	3-10yrs	40+yrs old	longleaf	6.60	0.75	70	94.73
4100	E	litter	3-10yrs	40+yrs old	longleaf	0.03	1.55	70	94.73
4100	S	litter	3-10yrs	40+yrs old	longleaf	1.33	1.26	70	94.73
4100	S2	litter	3-10yrs	40+yrs old	longleaf	1.55	1.04	70	94.73
4100	W	litter	3-10yrs	40+yrs old	longleaf	0.70	1.36	70	94.73
4101	E	litter	10+yrs	5-20yrs old	loblolly/slash	1.76	1.42	90	0.98
4101	N	litter	10+yrs	5-20yrs old	loblolly/slash	1.95	0.51	90	0.98
4101	S	litter	10+yrs	5-20yrs old	loblolly/slash	1.67	0.86	90	0.98
4101	W	litter	10+yrs	5-20yrs old	loblolly/slash	1.38	1.24	90	0.98
4103	E	duff	10+yrs	21-40yrs old	hardwood upland	3.58	0.29	80	87.31
4103	N	duff	10+yrs	21-40yrs old	hardwood upland	1.56	0.27	80	87.31
4103	S	duff	10+yrs	21-40yrs old	hardwood upland	6.01	1.25	80	87.31
4103	W	duff	10+yrs	21-40yrs old	hardwood upland	3.42	0.48	80	87.31
4103	E	litter	10+yrs	21-40yrs old	hardwood upland	1.16	1.31	80	87.31
4103	N	litter	10+yrs	21-40yrs old	hardwood upland	2.02	1.37	80	87.31
4103	S	litter	10+yrs	21-40yrs old	hardwood upland	1.69	1.93	80	87.31
4103	W	litter	10+yrs	21-40yrs old	hardwood upland	2.16	1.09	80	87.31
4104	E	duff	10+yrs	21-40yrs old	hardwood upland	1.14	0.39	100	96.84
4104	E	litter	10+yrs	21-40yrs old	hardwood upland	1.11	1.58	100	96.84
4104	N	litter	10+yrs	21-40yrs old	hardwood upland	1.39	0.79	100	96.84
4104	S	litter	10+yrs	21-40yrs old	hardwood upland	1.87	1.45	100	96.84
4104	W	litter	10+yrs	21-40yrs old	hardwood upland	1.55	1.36	100	96.84
4105	E	litter	3-10yrs	21-40yrs old	hardwood upland	3.31	0.67	90	154.94
4105	N	litter	3-10yrs	21-40yrs old	hardwood upland	1.65	1.15	90	154.94
4105	S	litter	3-10yrs	21-40yrs old	hardwood upland	1.91	0.86	90	154.94
4105	W	litter	3-10yrs	21-40yrs old	hardwood upland	1.27	1.38	90	154.94
4107	N1	duff	3-10yrs	21-40yrs old	loblolly/slash	3.61	0.87	90	85.47
4107	N2	duff	3-10yrs	21-40yrs old	loblolly/slash	6.48	0.29	90	85.47
4107	N3	duff	3-10yrs	21-40yrs old	loblolly/slash	10.29	0.22	90	85.47
4107	N4	duff	3-10yrs	21-40yrs old	loblolly/slash	3.75	0.93	90	85.47
4107	N1	litter	3-10yrs	21-40yrs old	loblolly/slash	1.94	2.11	90	85.47
4107	N2	litter	3-10yrs	21-40yrs old	loblolly/slash	2.41	1.22	90	85.47
4107	N3	litter	3-10yrs	21-40yrs old	loblolly/slash	2.39	1.37	90	85.47
4107	N4	litter	3-10yrs	21-40yrs old	loblolly/slash	1.58	2.05	90	85.47
4110	E	duff	3-10yrs	5-20yrs old	loblolly/slash	2.32	1.35	70	25.77
4110	N	duff	3-10yrs	5-20yrs old	loblolly/slash	2.99	0.40	70	25.77
4110	S	duff	3-10yrs	5-20yrs old	loblolly/slash	5.32	0.74	70	25.77
4110	W	duff	3-10yrs	5-20yrs old	loblolly/slash	1.87	0.25	70	25.77
4110	E	litter	3-10yrs	5-20yrs old	loblolly/slash	0.73	1.50	70	25.77
4110	N	litter	3-10yrs	5-20yrs old	loblolly/slash	1.75	1.27	70	25.77
4110	S	litter	3-10yrs	5-20yrs old	loblolly/slash	1.79	1.47	70	25.77
4110	W	litter	3-10yrs	5-20yrs old	loblolly/slash	1.76	1.31	70	25.77
4116	N	duff	10+yrs	40+yrs old	longleaf	5.75	0.49	80	102.74
4116	N2	duff	10+yrs	40+yrs old	longleaf	4.75	0.58	80	102.74
4116	N3	duff	10+yrs	40+yrs old	longleaf	7.71	1.30	80	102.74
4116	W1	duff	10+yrs	40+yrs old	longleaf	9.82	1.22	80	102.74
4116	N	litter	10+yrs	40+yrs old	longleaf	1.86	1.13	80	102.74

4116	N2	litter	10+yrs	40+yrs old	longleaf	2.60	1.02	80	102.74
4116	N3	litter	10+yrs	40+yrs old	longleaf	1.68	1.12	80	102.74
4116	W1	litter	10+yrs	40+yrs old	longleaf	1.51	1.08	80	102.74
4119	E	duff	3-10yrs	21-40yrs old	pine/hardwood	7.10	0.56	80	74.60
4119	N	duff	3-10yrs	21-40yrs old	pine/hardwood	5.46	1.08	80	74.60
4119	S	duff	3-10yrs	21-40yrs old	pine/hardwood	4.33	0.52	80	74.60
4119	W	duff	3-10yrs	21-40yrs old	pine/hardwood	4.60	0.65	80	74.60
4119	E	litter	3-10yrs	21-40yrs old	pine/hardwood	0.95	1.46	80	74.60
4119	N	litter	3-10yrs	21-40yrs old	pine/hardwood	1.74	1.05	80	74.60
4119	S	litter	3-10yrs	21-40yrs old	pine/hardwood	1.80	1.35	80	74.60
4119	W	litter	3-10yrs	21-40yrs old	pine/hardwood	1.98	1.23	80	74.60
4139	N	duff	3-10yrs	40+yrs old	loblolly/slash	7.46	1.15	90	112.18
4139	N2	duff	3-10yrs	40+yrs old	loblolly/slash	10.56	1.04	90	112.18
4139	S	duff	3-10yrs	40+yrs old	loblolly/slash	7.07	1.59	90	112.18
4139	S2	duff	3-10yrs	40+yrs old	loblolly/slash	3.12	0.69	90	112.18
4139	N	litter	3-10yrs	40+yrs old	loblolly/slash	2.47	1.07	90	112.18
4139	N2	litter	3-10yrs	40+yrs old	loblolly/slash	2.20	1.12	90	112.18
4139	S	litter	3-10yrs	40+yrs old	loblolly/slash	2.39	1.03	90	112.18
4139	S2	litter	3-10yrs	40+yrs old	loblolly/slash	1.48	1.57	90	112.18
4140	S	duff	10+yrs	5-20yrs old	longleaf	2.17	0.49	70	30.21
4140	E	litter	10+yrs	5-20yrs old	longleaf	1.41	2.04	70	30.21
4140	N	litter	10+yrs	5-20yrs old	longleaf	2.21	1.19	70	30.21
4140	S	litter	10+yrs	5-20yrs old	longleaf	2.13	0.97	70	30.21
4140	W	litter	10+yrs	5-20yrs old	longleaf	2.32	0.92	70	30.21
4143	E	duff	10+yrs	5-20yrs old	longleaf	4.74	0.28	80	35.73
4143	S	duff	10+yrs	5-20yrs old	longleaf	4.58	0.42	80	35.73
4143	W	duff	10+yrs	5-20yrs old	longleaf	4.00	0.29	80	35.73
4143	E	litter	10+yrs	5-20yrs old	longleaf	1.92	1.76	80	35.73
4143	N	litter	10+yrs	5-20yrs old	longleaf	1.45	0.79	80	35.73
4143	S	litter	10+yrs	5-20yrs old	longleaf	1.86	1.21	80	35.73
4143	W	litter	10+yrs	5-20yrs old	longleaf	2.08	0.65	80	35.73
4153	E	duff	10+yrs	21-40yrs old	loblolly/slash	7.80	0.74	80	149.01
4153	S	duff	10+yrs	21-40yrs old	loblolly/slash	3.58	0.43	80	149.01
4153	S2	duff	10+yrs	21-40yrs old	loblolly/slash	4.90	0.80	80	149.01
4153	W	duff	10+yrs	21-40yrs old	loblolly/slash	11.49	1.01	80	149.01
4153	E	litter	10+yrs	21-40yrs old	loblolly/slash	1.75	1.14	80	149.01
4153	S	litter	10+yrs	21-40yrs old	loblolly/slash	2.58	1.17	80	149.01
4153	S2	litter	10+yrs	21-40yrs old	loblolly/slash	2.66	1.33	80	149.01
4153	W	litter	10+yrs	21-40yrs old	loblolly/slash	2.00	1.28	80	149.01
4169	E	duff	10+yrs	5-20yrs old	loblolly/slash	3.68	0.37	80	92.11
4169	N	duff	10+yrs	5-20yrs old	loblolly/slash	6.71	0.50	80	92.11
4169	S	duff	10+yrs	5-20yrs old	loblolly/slash	3.77	0.96	80	92.11
4169	W	duff	10+yrs	5-20yrs old	loblolly/slash	2.79	0.44	80	92.11
4169	E	litter	10+yrs	5-20yrs old	loblolly/slash	2.12	0.97	80	92.11
4169	N	litter	10+yrs	5-20yrs old	loblolly/slash	1.92	1.14	80	92.11
4169	S	litter	10+yrs	5-20yrs old	loblolly/slash	1.47	1.17	80	92.11
4169	W	litter	10+yrs	5-20yrs old	loblolly/slash	2.18	1.01	80	92.11
4174	E	duff	3-10yrs	40+yrs old	loblolly/slash	7.73	0.97	70	140.76
4174	N	duff	3-10yrs	40+yrs old	loblolly/slash	8.56	1.19	70	140.76

4174	S	duff	3-10yrs	40+yrs old	loblolly/slash	6.76	2.36	70	140.76
4174	E	litter	3-10yrs	40+yrs old	loblolly/slash	1.93	1.64	70	140.76
4174	N	litter	3-10yrs	40+yrs old	loblolly/slash	2.48	0.89	70	140.76
4174	S	litter	3-10yrs	40+yrs old	loblolly/slash	1.93	2.17	70	140.76
4174	W	litter	3-10yrs	40+yrs old	loblolly/slash	2.84	0.78	70	140.76
4177	E	duff	10+yrs	40+yrs old	loblolly/slash	7.53	1.35	70	75.48
4177	S	duff	10+yrs	40+yrs old	loblolly/slash	6.55	1.21	70	75.48
4177	S2	duff	10+yrs	40+yrs old	loblolly/slash	3.89	0.56	70	75.48
4177	W	duff	10+yrs	40+yrs old	loblolly/slash	4.54	1.30	70	75.48
4177	E	litter	10+yrs	40+yrs old	loblolly/slash	2.39	1.55	70	75.48
4177	S	litter	10+yrs	40+yrs old	loblolly/slash	2.45	1.18	70	75.48
4177	S2	litter	10+yrs	40+yrs old	loblolly/slash	2.87	1.15	70	75.48
4177	W	litter	10+yrs	40+yrs old	loblolly/slash	2.12	1.30	70	75.48
4206	E	duff	10+yrs	5-20yrs old	loblolly/slash	4.23	0.77	70	152.22
4206	S	duff	10+yrs	5-20yrs old	loblolly/slash	4.58	0.97	70	152.22
4206	S2	duff	10+yrs	5-20yrs old	loblolly/slash	5.66	0.71	70	152.22
4206	W	duff	10+yrs	5-20yrs old	loblolly/slash	5.26	1.06	70	152.22
4206	E	litter	10+yrs	5-20yrs old	loblolly/slash	2.23	1.02	70	152.22
4206	S	litter	10+yrs	5-20yrs old	loblolly/slash	2.26	0.95	70	152.22
4206	S2	litter	10+yrs	5-20yrs old	loblolly/slash	2.78	1.19	70	152.22
4206	W	litter	10+yrs	5-20yrs old	loblolly/slash	1.66	1.10	70	152.22
4227	E	duff	0-3yrs	40+yrs old	hardwood upland	5.98	0.43	70	89.30
4227	S1	duff	0-3yrs	40+yrs old	hardwood upland	7.69	0.52	70	89.30
4227	S2	duff	0-3yrs	40+yrs old	hardwood upland	14.58	0.43	70	89.30
4227	E	litter	0-3yrs	40+yrs old	hardwood upland	3.31	0.62	70	89.30
4227	S1	litter	0-3yrs	40+yrs old	hardwood upland	3.11	0.73	70	89.30
4227	S2	litter	0-3yrs	40+yrs old	hardwood upland	3.23	0.70	70	89.30
4227	W	litter	0-3yrs	40+yrs old	hardwood upland	3.31	0.44	70	89.30
4236	E	litter	10+yrs	40+yrs old	pine/hardwood	1.88	0.97	80	112.90
4236	N	litter	10+yrs	40+yrs old	pine/hardwood	1.58	1.21	80	112.90
4236	S	litter	10+yrs	40+yrs old	pine/hardwood	1.42	1.78	80	112.90
4236	W	litter	10+yrs	40+yrs old	pine/hardwood	2.03	0.96	80	112.90
4243	W	duff	0-3yrs	40+yrs old	hardwood upland	5.25	0.27	90	198.86
4243	N	duff	0-3yrs	40+yrs old	hardwood upland	3.13	0.34	90	198.86
4243	S	litter	0-3yrs	40+yrs old	hardwood upland	1.27	1.75	90	198.86
4243	W	litter	0-3yrs	40+yrs old	hardwood upland	1.06	1.24	90	198.86
4243	N	litter	0-3yrs	40+yrs old	hardwood upland	2.38	1.04	90	198.86
4243	E	litter	0-3yrs	40+yrs old	hardwood upland	1.86	2.24	90	198.86
4244	E	litter	0-3yrs	21-40yrs old	loblolly/slash	3.71	1.54	90	83.71
4244	N	litter	0-3yrs	21-40yrs old	loblolly/slash	2.80	0.83	90	83.71
4244	S	litter	0-3yrs	21-40yrs old	loblolly/slash	2.46	1.11	90	83.71
4244	W	litter	0-3yrs	21-40yrs old	loblolly/slash	3.87	1.03	90	83.71
4283	E	duff	10+yrs	40+yrs old	loblolly/slash	8.72	0.39	90	128.02
4283	N	duff	10+yrs	40+yrs old	loblolly/slash	7.49	0.63	90	128.02
4283	S	duff	10+yrs	40+yrs old	loblolly/slash	4.84	0.27	90	128.02
4283	E	litter	10+yrs	40+yrs old	loblolly/slash	2.12	1.51	90	128.02
4283	N	litter	10+yrs	40+yrs old	loblolly/slash	2.39	1.67	90	128.02
4283	S	litter	10+yrs	40+yrs old	loblolly/slash	2.11	1.42	90	128.02
4283	W	litter	10+yrs	40+yrs old	loblolly/slash	3.28	1.20	90	128.02

4286	S3	duff	10+yrs	40+yrs old	hardwood upland	2.44	0.37	60	90.78
4286	S4	duff	10+yrs	40+yrs old	hardwood upland	2.38	0.48	60	90.78
4286	S1	litter	10+yrs	40+yrs old	hardwood upland	1.71	0.44	60	90.78
4286	S2	litter	10+yrs	40+yrs old	hardwood upland	4.12	0.40	60	90.78
4286	S3	litter	10+yrs	40+yrs old	hardwood upland	2.12	0.89	60	90.78
4286	S4	litter	10+yrs	40+yrs old	hardwood upland	1.23	0.85	60	90.78
4288	E1	duff	10+yrs	21-40yrs old	loblolly/slash	6.80	0.68	90	87.56
4288	E2	duff	10+yrs	21-40yrs old	loblolly/slash	8.05	0.46	90	87.56
4288	E3	duff	10+yrs	21-40yrs old	loblolly/slash	7.01	0.58	90	87.56
4288	E4	duff	10+yrs	21-40yrs old	loblolly/slash	2.35	1.16	90	87.56
4288	E1	litter	10+yrs	21-40yrs old	loblolly/slash	1.93	1.09	90	87.56
4288	E2	litter	10+yrs	21-40yrs old	loblolly/slash	2.43	0.90	90	87.56
4288	E3	litter	10+yrs	21-40yrs old	loblolly/slash	0.75	1.35	90	87.56
4288	E4	litter	10+yrs	21-40yrs old	loblolly/slash	2.91	0.85	90	87.56
4294	S	duff	0-3yrs	40+yrs old	longleaf	9.11	0.53	80	82.50
4294	W1	duff	0-3yrs	40+yrs old	longleaf	10.65	0.77	80	82.50
4294	W2	duff	0-3yrs	40+yrs old	longleaf	4.77	0.50	80	82.50
4294	S	litter	0-3yrs	40+yrs old	longleaf	1.47	0.91	80	82.50
4294	S2	litter	0-3yrs	40+yrs old	longleaf	2.06	0.92	80	82.50
4294	W1	litter	0-3yrs	40+yrs old	longleaf	1.76	0.98	80	82.50
4294	W2	litter	0-3yrs	40+yrs old	longleaf	1.44	1.24	80	82.50
4296	E	litter	0-3yrs	40+yrs old	loblolly/slash	1.66	0.76	90	93.34
4296	N	litter	0-3yrs	40+yrs old	loblolly/slash	2.63	1.23	90	93.34
4296	S	litter	0-3yrs	40+yrs old	loblolly/slash	2.18	0.98	90	93.34
4296	W	litter	0-3yrs	40+yrs old	loblolly/slash	2.43	0.60	90	93.34
4299	E	duff	3-10yrs	5-20yrs old	longleaf	1.85	1.44	80	20.63
4299	N	duff	3-10yrs	5-20yrs old	longleaf	3.02	0.85	80	20.63
4299	E	litter	3-10yrs	5-20yrs old	longleaf	1.13	2.88	80	20.63
4299	N	litter	3-10yrs	5-20yrs old	longleaf	0.95	2.39	80	20.63
4299	S	litter	3-10yrs	5-20yrs old	longleaf	2.47	1.65	80	20.63
4299	W	litter	3-10yrs	5-20yrs old	longleaf	2.14	1.18	80	20.63
4301	S	duff	0-3yrs	40+yrs old	longleaf	9.68	0.33	80	52.50
4301	W	duff	0-3yrs	40+yrs old	longleaf	11.09	1.56	80	52.50
4301	E	litter	0-3yrs	40+yrs old	longleaf	2.32	1.31	80	52.50
4301	N	litter	0-3yrs	40+yrs old	longleaf	2.59	1.32	80	52.50
4301	S	litter	0-3yrs	40+yrs old	longleaf	3.71	1.80	80	52.50
4301	W	litter	0-3yrs	40+yrs old	longleaf	2.77	1.79	80	52.50
4315	W1	duff	10+yrs	21-40yrs old	loblolly/slash	9.55	0.56	70	52.89
4315	W2	duff	10+yrs	21-40yrs old	loblolly/slash	3.41	0.52	70	52.89
4315	W3	duff	10+yrs	21-40yrs old	loblolly/slash	4.19	0.20	70	52.89
4315	W4	duff	10+yrs	21-40yrs old	loblolly/slash	3.60	0.80	70	52.89
4315	W1	litter	10+yrs	21-40yrs old	loblolly/slash	1.37	0.98	70	52.89
4315	W2	litter	10+yrs	21-40yrs old	loblolly/slash	1.99	1.22	70	52.89
4315	W3	litter	10+yrs	21-40yrs old	loblolly/slash	1.53	0.83	70	52.89
4315	W4	litter	10+yrs	21-40yrs old	loblolly/slash	0.54	1.78	70	52.89
4330	S	duff	10+yrs	5-20yrs old	pine/hardwood	3.12	0.56	80	20.48
4330	S2	duff	10+yrs	5-20yrs old	pine/hardwood	2.88	0.33	80	20.48
4330	W	duff	10+yrs	5-20yrs old	pine/hardwood	3.62	0.40	80	20.48
4330	W2	duff	10+yrs	5-20yrs old	pine/hardwood	5.88	0.33	80	20.48

4330	S	litter	10+yrs	5-20yrs old	pine/hardwood	1.29	1.49	80	20.48
4330	S2	litter	10+yrs	5-20yrs old	pine/hardwood	1.72	0.71	80	20.48
4330	W	litter	10+yrs	5-20yrs old	pine/hardwood	1.16	0.85	80	20.48
4330	W2	litter	10+yrs	5-20yrs old	pine/hardwood	1.59	1.17	80	20.48
4375	E1	duff	0-3yrs	40+yrs old	longleaf	5.08	0.53	80	84.90
4375	E2	duff	0-3yrs	40+yrs old	longleaf	3.25	0.36	80	84.90
4375	E3	duff	0-3yrs	40+yrs old	longleaf	5.17	0.64	80	84.90
4375	E4	duff	0-3yrs	40+yrs old	longleaf	6.67	1.05	80	84.90
4375	E1	litter	0-3yrs	40+yrs old	longleaf	2.65	1.52	80	84.90
4375	E2	litter	0-3yrs	40+yrs old	longleaf	1.60	1.83	80	84.90
4375	E3	litter	0-3yrs	40+yrs old	longleaf	1.92	2.08	80	84.90
4375	E4	litter	0-3yrs	40+yrs old	longleaf	2.73	2.17	80	84.90
4376	E	duff	0-3yrs	21-40yrs old	loblolly/slash	6.53	0.28	80	83.86
4376	N	duff	0-3yrs	21-40yrs old	loblolly/slash	6.62	0.39	80	83.86
4376	S	duff	0-3yrs	21-40yrs old	loblolly/slash	5.92	0.41	80	83.86
4376	W	duff	0-3yrs	21-40yrs old	loblolly/slash	3.48	0.31	80	83.86
4376	E	litter	0-3yrs	21-40yrs old	loblolly/slash	2.15	1.19	80	83.86
4376	N	litter	0-3yrs	21-40yrs old	loblolly/slash	1.64	1.28	80	83.86
4376	S	litter	0-3yrs	21-40yrs old	loblolly/slash	1.28	1.75	80	83.86
4376	W	litter	0-3yrs	21-40yrs old	loblolly/slash	2.05	1.00	80	83.86
4400	S1	duff	0-3yrs	5-20yrs old	longleaf	4.48	0.20	80	38.83
4400	S2	duff	0-3yrs	5-20yrs old	longleaf	3.04	0.30	80	38.83
4400	S1	litter	0-3yrs	5-20yrs old	longleaf	1.03	0.81	80	38.83
4400	S2	litter	0-3yrs	5-20yrs old	longleaf	1.59	1.55	80	38.83
4400	S3	litter	0-3yrs	5-20yrs old	longleaf	2.02	1.38	80	38.83
4400	S4	litter	0-3yrs	5-20yrs old	longleaf	2.03	0.53	80	38.83
4401	E	duff	3-10yrs	5-20yrs old	longleaf	6.86	0.54	80	39.05
4401	N	duff	3-10yrs	5-20yrs old	longleaf	7.26	0.24	80	39.05
4401	S	duff	3-10yrs	5-20yrs old	longleaf	2.77	0.26	80	39.05
4401	W	duff	3-10yrs	5-20yrs old	longleaf	4.63	1.15	80	39.05
4401	E	litter	3-10yrs	5-20yrs old	longleaf	1.35	1.59	80	39.05
4401	N	litter	3-10yrs	5-20yrs old	longleaf	1.67	2.13	80	39.05
4401	S	litter	3-10yrs	5-20yrs old	longleaf	0.98	1.12	80	39.05
4401	W	litter	3-10yrs	5-20yrs old	longleaf	1.70	1.64	80	39.05
4412	E	duff	3-10yrs	40+yrs old	hardwood upland	8.49	0.79	90	118.90
4412	N	duff	3-10yrs	40+yrs old	hardwood upland	5.00	0.33	90	118.90
4412	S	duff	3-10yrs	40+yrs old	hardwood upland	6.98	0.51	90	118.90
4412	E	litter	3-10yrs	40+yrs old	hardwood upland	0.87	1.73	90	118.90
4412	N	litter	3-10yrs	40+yrs old	hardwood upland	1.37	1.26	90	118.90
4412	S	litter	3-10yrs	40+yrs old	hardwood upland	1.65	1.61	90	118.90
4412	W	litter	3-10yrs	40+yrs old	hardwood upland	1.50	1.24	90	118.90
4433	E	duff	10+yrs	21-40yrs old	hardwood upland	9.25	1.11	80	100.44
4433	N	duff	10+yrs	21-40yrs old	hardwood upland	7.56	0.63	80	100.44
4433	S	duff	10+yrs	21-40yrs old	hardwood upland	8.67	0.31	80	100.44
4433	W2	duff	10+yrs	21-40yrs old	hardwood upland	11.59	1.09	80	100.44
4433	E	litter	10+yrs	21-40yrs old	hardwood upland	1.65	0.93	80	100.44
4433	N	litter	10+yrs	21-40yrs old	hardwood upland	2.05	0.84	80	100.44
4433	S	litter	10+yrs	21-40yrs old	hardwood upland	3.78	0.55	80	100.44
4433	W2	litter	10+yrs	21-40yrs old	hardwood upland	4.10	1.44	80	100.44

4438	E1	duff	3-10yrs	21-40yrs old	hardwood upland	4.19	0.50	90	85.09
4438	E2	duff	3-10yrs	21-40yrs old	hardwood upland	4.91	1.15	90	85.09
4438	E3	duff	3-10yrs	21-40yrs old	hardwood upland	4.59	0.78	90	85.09
4438	N1	duff	3-10yrs	21-40yrs old	hardwood upland	2.46	0.50	90	85.09
4438	E1	litter	3-10yrs	21-40yrs old	hardwood upland	2.03	0.94	90	85.09
4438	E2	litter	3-10yrs	21-40yrs old	hardwood upland	1.13	2.06	90	85.09
4438	E3	litter	3-10yrs	21-40yrs old	hardwood upland	1.33	1.54	90	85.09
4438	N1	litter	3-10yrs	21-40yrs old	hardwood upland	0.91	1.10	90	85.09
4451	E	duff	3-10yrs	40+yrs old	pine/hardwood	8.40	1.24	90	127.50
4451	N	duff	3-10yrs	40+yrs old	pine/hardwood	9.04	0.80	90	127.50
4451	S	duff	3-10yrs	40+yrs old	pine/hardwood	6.18	0.91	90	127.50
4451	W	duff	3-10yrs	40+yrs old	pine/hardwood	6.19	1.40	90	127.50
4451	E	litter	3-10yrs	40+yrs old	pine/hardwood	2.83	0.84	90	127.50
4451	N	litter	3-10yrs	40+yrs old	pine/hardwood	1.61	0.99	90	127.50
4451	S	litter	3-10yrs	40+yrs old	pine/hardwood	1.84	0.85	90	127.50
4451	W	litter	3-10yrs	40+yrs old	pine/hardwood	1.23	2.28	90	127.50
4477	E	duff	10+yrs	21-40yrs old	hardwood upland	6.63	0.76	90	111.86
4477	N	duff	10+yrs	21-40yrs old	hardwood upland	5.77	0.77	90	111.86
4477	S	duff	10+yrs	21-40yrs old	hardwood upland	5.01	0.26	90	111.86
4477	W	duff	10+yrs	21-40yrs old	hardwood upland	2.01	0.28	90	111.86
4477	E	litter	10+yrs	21-40yrs old	hardwood upland	2.49	1.14	90	111.86
4477	N	litter	10+yrs	21-40yrs old	hardwood upland	2.69	1.29	90	111.86
4477	S	litter	10+yrs	21-40yrs old	hardwood upland	2.25	0.69	90	111.86
4477	W	litter	10+yrs	21-40yrs old	hardwood upland	1.09	1.05	90	111.86