## LIDAR Accuracy Assessment Report—Caswell County

## Caswell County, Cape Fear Basin

The preliminary checkpoint spreadsheets were received from NCGS on June 18, 2002. Two spreadsheets were included which compared the independent QA/QC survey checkpoints with the interpolated LIDAR "Z" value as provided by the contractors. The spreadsheet summaries included:

- 1. All the checkpoints with the RMSE calculation for combined land cover
- 2. 95% of the checkpoints with the RMSE calculation (5% of points having the largest error removed)

All data was reviewed and further analyzed to assess the quality of the data. The review process examined the statistics for the combined land cover and the trends for each specific land cover type. The following graphs and figures illustrate the data quality as per the RMSE criteria.

Table 1 summarizes the RMSE using:

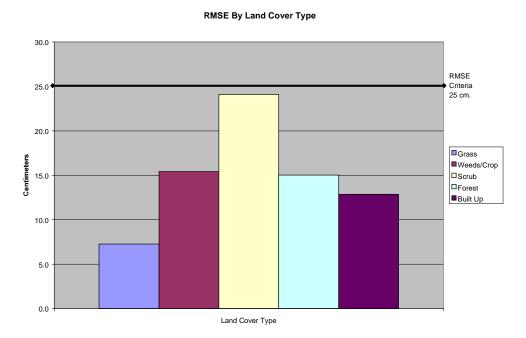
- 100% of the checkpoints
- 95% of the checkpoints
- Checkpoints categorized by land cover type

Table 1. RMSE by Land Class							
%	RMSE (cm)	# of Points	Land Class	RMSE Criteria (cm)			
100	17.9	24	All				
95	16.0	23	AII	25			
12	7.3	3	Grass				
17	15.4	4	Weeds/Crop				
17	24.1	4	Scrub				
33	15.0	8	Forest				
17	12.9	4	Built-up				

The LIDAR data for Caswell County, Cape Fear Basin <u>meets the specification</u> as per the RMSE criteria of 25 cm.

All figures represent the data with the 95% data set. Based on the limited amount of checkpoints, the data is of good quality.

Figure 1 illustrates the RMSE by specific land cover type.



## Figure 1 Illustrates the magnitude of the differences bet

Figure 2 illustrates the magnitude of the differences between the checkpoints and LIDAR data by specific land cover type and sorted from lowest to highest.

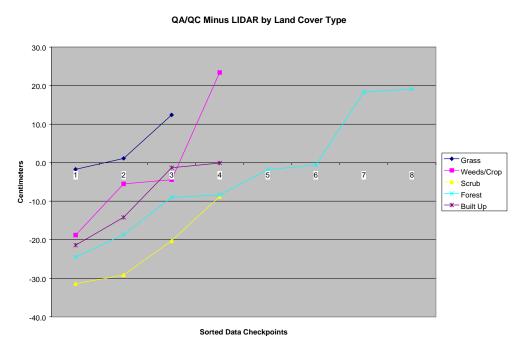


Figure 2

Table 2 illustrates the Delta between the QA/QC survey checkpoints and that of the interpolated LIDAR.

Table 2. Elevation Delta				
Delta (cm)	Land Cover			
-1.7	Grass			
1.1	Grass			
12.4	Grass			
-18.8	Weeds/crop			
-5.5	Weeds/crop			
-4.4	Weeds/crop			
23.4	Weeds/crop			

-31.4	Scrub		
-29.1	Scrub		
-20.3	Scrub Scrub		
-8.8	Scrub		
-24.5	Forest		
-18.7	Forest		
-9.0	Forest		
-8.4	Forest		
-1.8	Forest		

-0.6	Forest		
18.3	Forest		
19.1	Forest		
-21.4	Built-up		
-14.2	Built-up		
-1.3	Built-up		
-0.1	Built-up		

Table 3 illustrates the overall statistics for the checkpoint data.

Table 3. Overall Descriptive Statistics								
	RMSE (cm)	Mean (cm)	Median (cm)	Skew (cm)	Std Dev (cm)	# of Points	Min (cm)	Max (cm)
Total	16.0	-6.3	-5.5	0.3	15.0	23	-31.4	23.4
Grass	7.3	3.9	1.1	1.5	7.5	3	-1.7	12.4
Weeds/Crop	15.4	-1.3	-4.9	1.2	17.7	4	-18.8	23.4
Scrub	24.1	-19.4	-24.7	0.9	10.3	4	-31.4	-8.8
Forest	15.0	-3.2	-5.1	0.4	15.7	8	-24.5	19.1
Built Up	12.9	-9.3	-7.8	-0.4	10.3	4	-21.4	-0.1

Figure 3 illustrates a histogram of the associated delta errors between the data checkpoints and the interpolated TIN values.

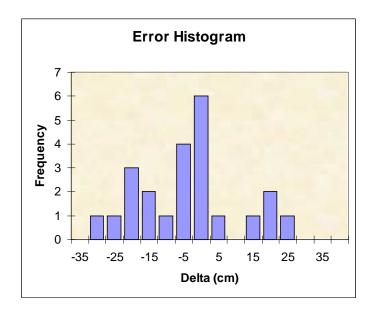


Figure 3