Halifax County, Tar-Pamlico Portion

The preliminary checkpoint spreadsheets were received from NCGS on August 3, 2001. Two spreadsheets were included for each county, which compared the independent QAQC 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	16.7	75	All	
95	**14.7**	**71**	**All**	**25**
17	8.1	13	Grass	
16	15.3	12	Weeds/Crop	
15	13.9	11	Scrub	
28	14.0	21	Forest	
19	19.8	14	Built-up	

The LIDAR data for Halifax County meets the specification as per the RMSE criteria of 25 cm.

All figures represent the data with the 95% data set. The data is of good quality with the smaller data limited to the Tar-Pamlico basin only. The land class type of "built-up" is slightly high but is well within specifications.

Figure 1 illustrates the RMSE by specific land cover type.

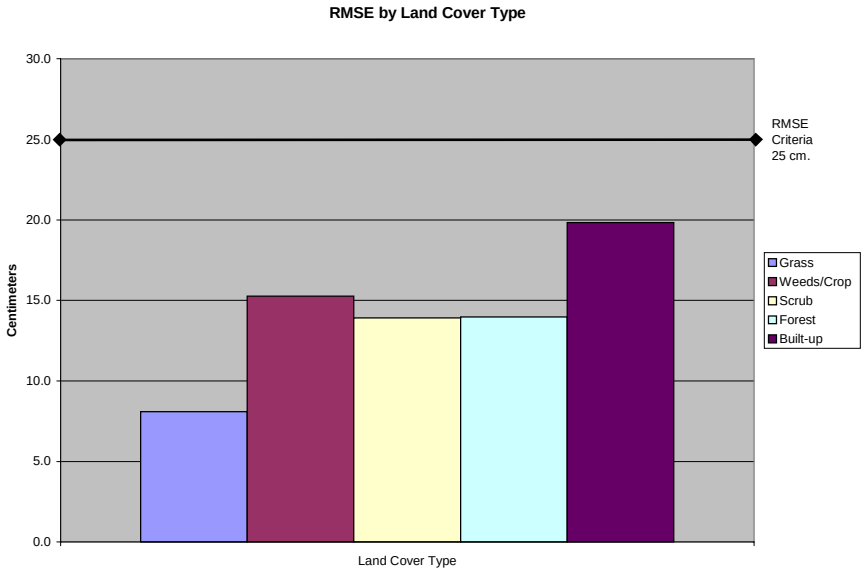

Figure 1

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

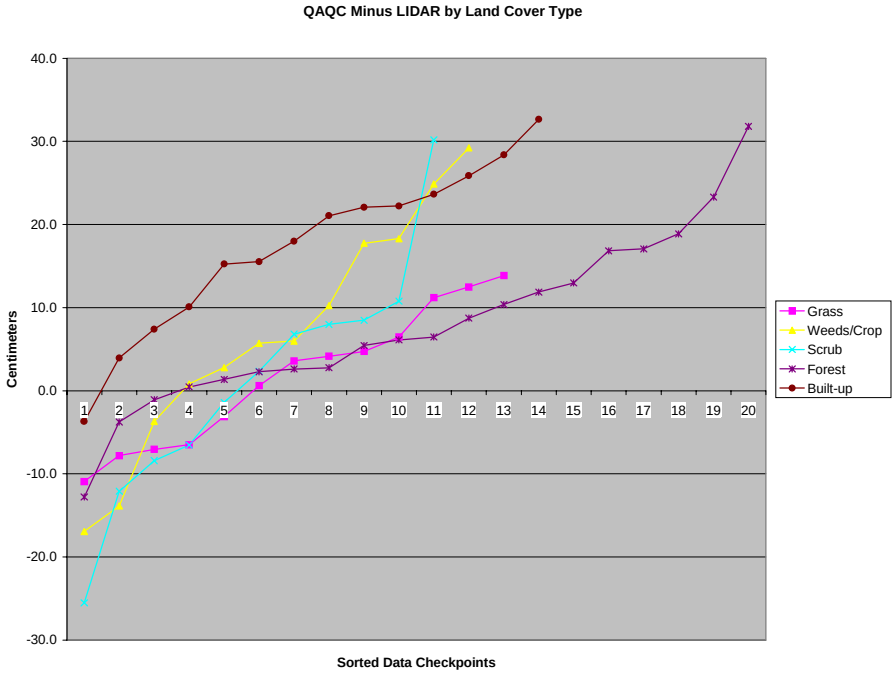

Figure 2

Table 2 illustrates the Delta between the QAQC survey checkpoints and that of the interpolated LIDAR.

Table 2. Elevation Delta	
Delta (cm)	**Land Cover**
-10.9	Grass
-7.8	Grass
-7.0	Grass
-6.5	Grass
-3.1	Grass
0.6	Grass
3.6	Grass
4.2	Grass
4.7	Grass
6.5	Grass
11.2	Grass
12.5	Grass
13.8	Grass
-16.9	Weeds/Crop
-13.9	Weeds/Crop
-3.7	Weeds/Crop
0.8	Weeds/Crop
2.8	Weeds/Crop
5.7	Weeds/Crop
6.0	Weeds/Crop
10.2	Weeds/Crop
17.7	Weeds/Crop
18.3	Weeds/Crop
24.9	Weeds/Crop
29.2	Weeds/Crop
-25.5	Scrub
-12.1	Scrub
-8.4	Scrub
-6.5	Scrub
-1.4	Scrub
2.3	Scrub
6.8	Scrub
8.0	Scrub
8.5	Scrub
10.8	Scrub
30.2	Scrub
-28.3	Forest
-12.8	Forest
-3.8	Forest
-1.1	Forest
0.4	Forest
1.4	Forest
2.3	Forest
2.6	Forest
2.8	Forest
5.4	Forest
6.1	Forest
6.5	Forest
8.7	Forest
10.4	Forest
11.9	Forest
13.0	Forest
16.8	Forest
17.1	Forest
18.9	Forest
23.3	Forest
31.8	Forest
-3.7	Built-up
4.0	Built-up
7.4	Built-up
10.1	Built-up
15.2	Built-up
15.5	Built-up
18.0	Built-up
21.0	Built-up
22.1	Built-up
22.2	Built-up
23.6	Built-up
25.9	Built-up
28.4	Built-up
32.6	Built-up

Table 3 illustrates the overall statistics for the checkpoint data.

Table 3. Overall Descriptive Statistics								
	RMSE (cm)	**Mean (cm)**	**Median (cm)**	**Skew**	**Std Dev (cm)**	**# of Points**	**Min (cm)**	**Max (cm)**
Total	**14.7**	6.9	6.5	-0.2	13.1	71	-28.3	32.6
Grass	**8.1**	1.7	3.6	0.0	8.2	13	-10.9	13.8
Weeds/Crop	**15.3**	6.8	5.8	-0.1	14.3	12	-16.9	29.2
Scrub	**13.9**	1.1	2.3	0.1	14.5	11	-25.5	30.2
Forest	**14.0**	6.3	6.1	-0.7	12.7	21	-28.3	31.8
Built-up	**19.8**	17.3	19.5	-0.6	10.0	14	-3.7	32.6