Franklin County – Tar Pamlico Basin

The preliminary checkpoint spreadsheets were received from NCGS on August 10, 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	19.8	120	All	
95	**16.5**	**114**	**All**	**25**
17	11.6	20	Grass	
17	14.5	20	Weeds/Crop	
13	26.0	16	Scrub	
32	16.1	38	Forest	
17	13.5	20	Built-up	

The LIDAR data for Franklin 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 only land class type "scrub" being higher than anticipated based on the values for the other land class types.

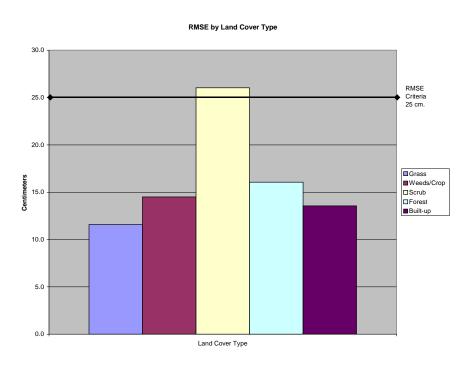Figure 1 illustrates the RMSE by specific land cover type.

RMSE by 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.
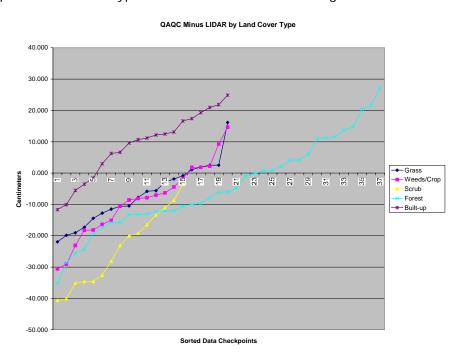
QAQC Minus LIDAR by Land Cover Type

Figure 2

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

Table2. Elevation Delta		Delta (cm)	Land Cover	Delta (cm)	Land Cover
Delta (cm)	**Land Cover**	2.2	Weeds/Crop	-6.0	Forest
-21.9	Grass	9.3	Weeds/Crop	-4.8	Forest
-19.8	Grass	14.7	Weeds/Crop	-0.9	Forest
-19.1	Grass	-40.6	Scrub	-0.1	Forest
-17.3	Grass	-40.1	Scrub	0.8	Forest
-14.4	Grass	-35.1	Scrub	0.9	Forest
-12.8	Grass	-34.7	Scrub	2.2	Forest
-11.5	Grass	-34.6	Scrub	4.1	Forest
-10.6	Grass	-32.6	Scrub	4.2	Forest
-10.5	Grass	-28.1	Scrub	5.9	Forest
-7.8	Grass	-23.1	Scrub	10.9	Forest
-5.8	Grass	-20.0	Scrub	11.2	Forest
-5.6	Grass	-19.2	Scrub	11.6	Forest
-2.9	Grass	-16.4	Scrub	13.7	Forest
-1.9	Grass	-13.3	Scrub	14.8	Forest
-0.8	Grass	-11.0	Scrub	20.4	Forest
1.1	Grass	-8.7	Scrub	21.6	Forest
1.9	Grass	-3.6	Scrub	27.2	Forest
2.5	Grass	11.5	Scrub	-11.7	Built-up
2.5	Grass	-37.7	Forest	-10.1	Built-up
16.2	Grass	-35.2	Forest	-5.5	Built-up
-30.6	Weeds/Crop	-28.5	Forest	-3.5	Built-up
-29.0	Weeds/Crop	-25.6	Forest	-1.6	Built-up
-23.1	Weeds/Crop	-24.3	Forest	3.0	Built-up
-18.2	Weeds/Crop	-19.2	Forest	6.3	Built-up
-18.2	Weeds/Crop	-17.3	Forest	6.6	Built-up
-16.4	Weeds/Crop	-15.8	Forest	9.6	Built-up
-15.1	Weeds/Crop	-15.8	Forest	10.7	Built-up
-10.5	Weeds/Crop	-13.3	Forest	11.2	Built-up
-8.6	Weeds/Crop	-13.2	Forest	12.2	Built-up
-8.1	Weeds/Crop	-13.0	Forest	12.5	Built-up
-7.9	Weeds/Crop	-12.3	Forest	13.1	Built-up
-7.0	Weeds/Crop	-12.1	Forest	16.7	Built-up
-6.3	Weeds/Crop	-12.0	Forest	17.4	Built-up
-4.4	Weeds/Crop	-10.6	Forest	19.3	Built-up
-1.8	Weeds/Crop	-9.9	Forest	20.9	Built-up
1.8	Weeds/Crop	-9.7	Forest	21.8	Built-up
1.9	Weeds/Crop	-7.9	Forest	24.9	Built-up
		-6.1	Forest		

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	**16.5**	-6.1	-6.7	-0.1	15.5	114	-40.6	27.2
Grass	**11.6**	-6.9	-6.8	0.4	9.5	20	-21.9	16.2
Weeds/Crop	**14.5**	-8.8	-8.0	0.0	11.8	20	-30.6	14.7
Scrub	**26.0**	-21.9	-21.6	0.7	14.6	16	-40.6	11.5
Forest	**16.1**	-5.3	-7.0	0.0	15.4	38	-37.7	27.2
Built-up	**13.5**	8.7	10.9	-0.5	10.7	20	-11.7	24.9