

## LIDAR Accuracy Assessment Report—Pamlico County

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### Pamlico County, Neuse Basin

The preliminary checkpoint spreadsheets were received from NCGS on December 10, 2001. 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:

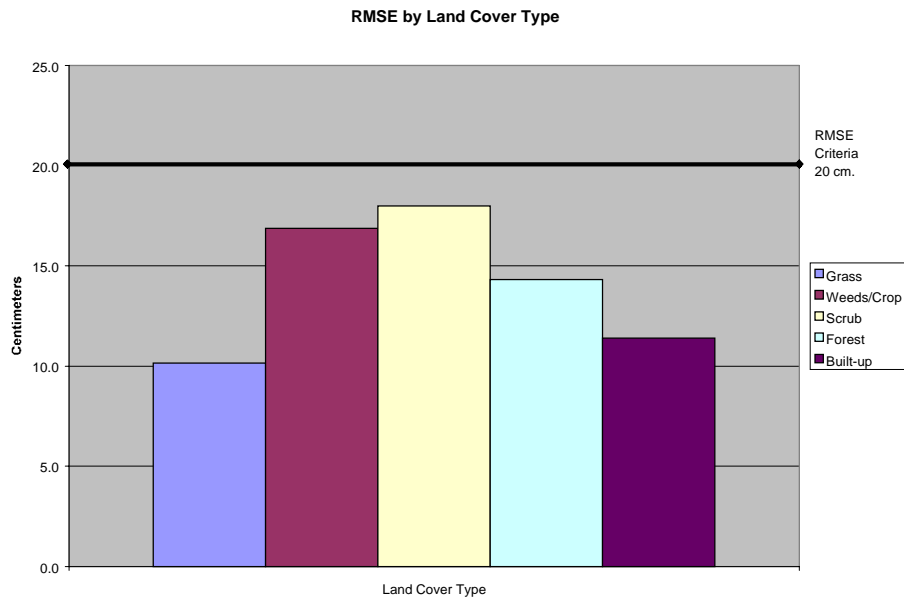
- 100% of the checkpoints
- 95% of the checkpoints
- Checkpoints categorized by land cover type

Table 1. RMSE by Land Class				
%	RMSE (cm)	# of Points	Land Class	RMSE Criteria (cm)
100	23.0	120	All	
<b>95</b>	<b>13.7</b>	<b>114</b>	<b>All</b>	<b>20</b>
22	10.2	26	Grass	
11	16.9	13	Weeds/Crop	
12	18.0	14	Scrub	
28	14.3	34	Forest	
23	11.4	27	Built-up	

The LIDAR data for Pamlico County, Neuse Basin meets the specification as per the RMSE criteria of 20 cm.

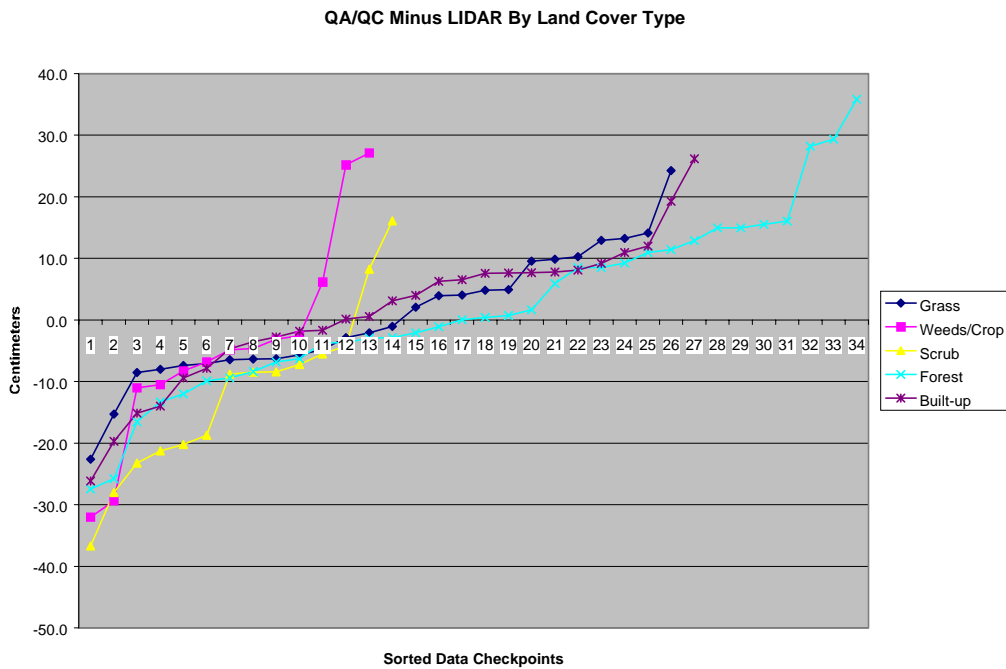
All figures represent the data with the 95% data set. The data is of good quality

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 cover type and sorted from lowest to highest.



**Figure 2**

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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				
-22.6	Grass	27.1	Weeds/Crop	11.4	Forest
-15.3	Grass	-36.7	Scrub	12.9	Forest
-8.6	Grass	-28.0	Scrub	14.9	Forest
-8.0	Grass	-23.2	Scrub	14.9	Forest
-7.4	Grass	-21.3	Scrub	15.5	Forest
-7.1	Grass	-20.2	Scrub	16.0	Forest
-6.5	Grass	-18.7	Scrub	28.1	Forest
-6.4	Grass	-8.8	Scrub	29.3	Forest
-6.3	Grass	-8.5	Scrub	35.8	Forest
-5.7	Grass	-8.4	Scrub	-26.2	Built-up
-4.8	Grass	-7.2	Scrub	-19.7	Built-up
-2.9	Grass	-5.5	Scrub	-15.2	Built-up
-2.1	Grass	-4.2	Scrub	-14.0	Built-up
-1.0	Grass	8.3	Scrub	-9.4	Built-up
2.1	Grass	16.1	Scrub	-7.9	Built-up
3.9	Grass	-27.5	Forest	-4.7	Built-up
4.0	Grass	-25.8	Forest	-3.6	Built-up
4.8	Grass	-16.5	Forest	-2.8	Built-up
4.9	Grass	-13.3	Forest	-1.8	Built-up
9.6	Grass	-12.0	Forest	-1.7	Built-up
9.8	Grass	-9.9	Forest	0.1	Built-up
10.3	Grass	-9.4	Forest	0.6	Built-up
12.9	Grass	-8.4	Forest	3.1	Built-up
13.2	Grass	-6.8	Forest	4.0	Built-up
14.1	Grass	-6.3	Forest	6.3	Built-up
24.2	Grass	-3.7	Forest	6.5	Built-up
-32.0	Weeds/Crop	-3.7	Forest	7.5	Built-up
-29.4	Weeds/Crop	-2.9	Forest	7.6	Built-up
-11.0	Weeds/Crop	-2.9	Forest	7.7	Built-up
-10.5	Weeds/Crop	-2.1	Forest	7.7	Built-up
-8.3	Weeds/Crop	-1.1	Forest	8.1	Built-up
-6.9	Weeds/Crop	0.0	Forest	9.2	Built-up
-4.9	Weeds/Crop	0.4	Forest	10.9	Built-up
-4.6	Weeds/Crop	0.7	Forest	12.0	Built-up
-3.1	Weeds/Crop	1.7	Forest	19.3	Built-up
-2.6	Weeds/Crop	5.9	Forest	26.1	Built-up
6.1	Weeds/Crop	8.5	Forest		
25.2	Weeds/Crop	8.5	Forest		
		9.2	Forest		
		11.0	Forest		

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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)
<b>Total</b>	<b>13.7</b>	-1.0	-2.3	0.0	13.7	114	-36.7	35.8
<b>Grass</b>	<b>10.2</b>	0.4	-1.6	0.1	10.4	26	-22.6	24.2
<b>Weeds/Crop</b>	<b>16.9</b>	-4.2	-4.9	0.4	17.0	13	-32.0	27.1
<b>Scrub</b>	<b>18.0</b>	-11.9	-8.7	0.3	14.0	14	-36.7	16.1
<b>Forest</b>	<b>14.3</b>	2.1	0.2	0.2	14.4	34	-27.5	35.8
<b>Built-up</b>	<b>11.4</b>	1.1	3.1	-0.4	11.6	27	-26.2	26.1

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

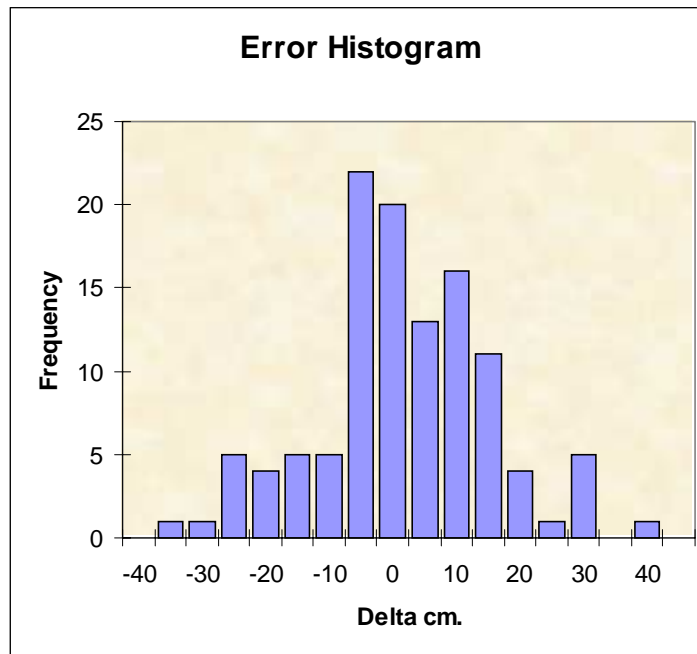


Figure 3