David Garrett & Associates
Engineering and Geology

April 13, 2007

Ms. Toni Wyche Jones, Environmental Engineer II
NC DENR Division of Waste Management
Solid Waste Section
401 Oberlin Road
Raleigh, North Carolina, 27611

RE: **Construction Quality Assurance Report**
WCA Brownfield Road C&D Landfill Cell C
Raleigh (Wake County), North Carolina
Solid Waste Permit No. 92-31

Dear Ms. Jones:

On behalf of WCA, I am pleased to present this construction quality assurance (CQA) report pertaining to the referenced landfill construction. Cell C is located in Phase 1, within a previously approved footprint (see attached figure). This report is based in part on first-hand inspection of subgrade conditions, my knowledge of site conditions described in the original permit documents, and construction "as-built" drawings prepared based on a field survey by Anthony DiBona, RLS. The construction is now substantially complete per the approved plans. Field conditions appear consistent with the mapping within the cell (see attached field survey map). Abandonment of test borings used for permitting was documented with the Cell B report.

The subgrade inspection was made per North Carolina Solid Waste regulations, 15A NCAC 13B .0500 and/or subsequent regulatory protocols. The inspection requires that the owner's geologist or engineer examine the cell excavation and note any pertinent geologic features exposed during the construction process. The Owner shall notify the NC DENR Solid Waste Section Hydrogeologist of these findings prior to placement of any waste material. In recent experience, a certification has been required stating that the subgrade soils and other conditions are consistent with the approved plans, or noting any differences. This letter completes the required notification and certification.

Subgrade soils consist of clayey and silty fine to medium sand, in general accordance with the findings of earlier test boring investigations performed by others for the permit application. There were scattered pockets of soil containing small rock fragments (angular, gravel-size quartz fragments); these were considered minor and not deleterious. The subgrade surface was generally dry with no cracking observed, although on the date of my inspection, some minor ponding of surface water was noted at the lowest elevations, caused by the accumulation of rain

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water in the cell (there is no outlet at these elevations). I have advised WCA that this water must be removed prior to waste placement, in accordance with NC DENR Solid Waste regulations.

During construction, two bodies of rock were encountered extending from the southeast wall of Cell C northwest into the central portion of the cell. The presence of the rock, first detected during the construction of the adjacent Cell B in mid-2006, was brought to the immediate attention of NC DENR Solid Waste officials. The rock consisted of variably weathered granite, which could not be ripped by a D-9 pulling a single-tooth ripper. The rock was unanticipated based on earlier permit documents prepared by others. With the approval of NC DENR Solid Waste officials, WCA decided to leave the rock in place based on economic considerations of the cost of removal versus the value of the resulting air space. Consequently, adjustments were made to the permitted subgrade elevations to accommodate the rock body, and the grade was brought to the adjusted subgrade elevations with compacted on-site soil. The compacted soil was placed at a minimum thickness of four feet over the area of the body of rock per NC DENR Division of Solid Waste requirements. Vertical separation to the rock was documented with surveys of the top of rock (as exposed by attempts to rip the material) and of the finished grades.

Overall, the conditions exposed in the subgrade were within expectations based on the earlier investigations and observations made during the Cell B construction. The presence of the rock at higher elevations than originally anticipated makes for an irregular cell bottom geometry, which decreases the anticipated airspace, but otherwise this should have no deleterious effects on the operation of the cell or the monitoring of the facility. Based on these findings, I recommend no modifications to the Ground Water Monitoring Plan or Operations Plan, except that periodic erosion control in Cell C is warranted to maintain the 4 feet of separation observed at the end of construction. Based on my inspection and the mapping, I conclude that Cell C has been constructed in accordance with the approved plans, as modified during construction to accommodate the rock. WCA staff was involved with the decisions regarding the grade adjustments. No further subgrade evaluations are warranted, and I recommend that Cell C be approved for operations.

I look forward to meeting with representatives of the NC DENR Solid Waste Section, if needed, to review the work. Please contact me if I can provide any additional data.

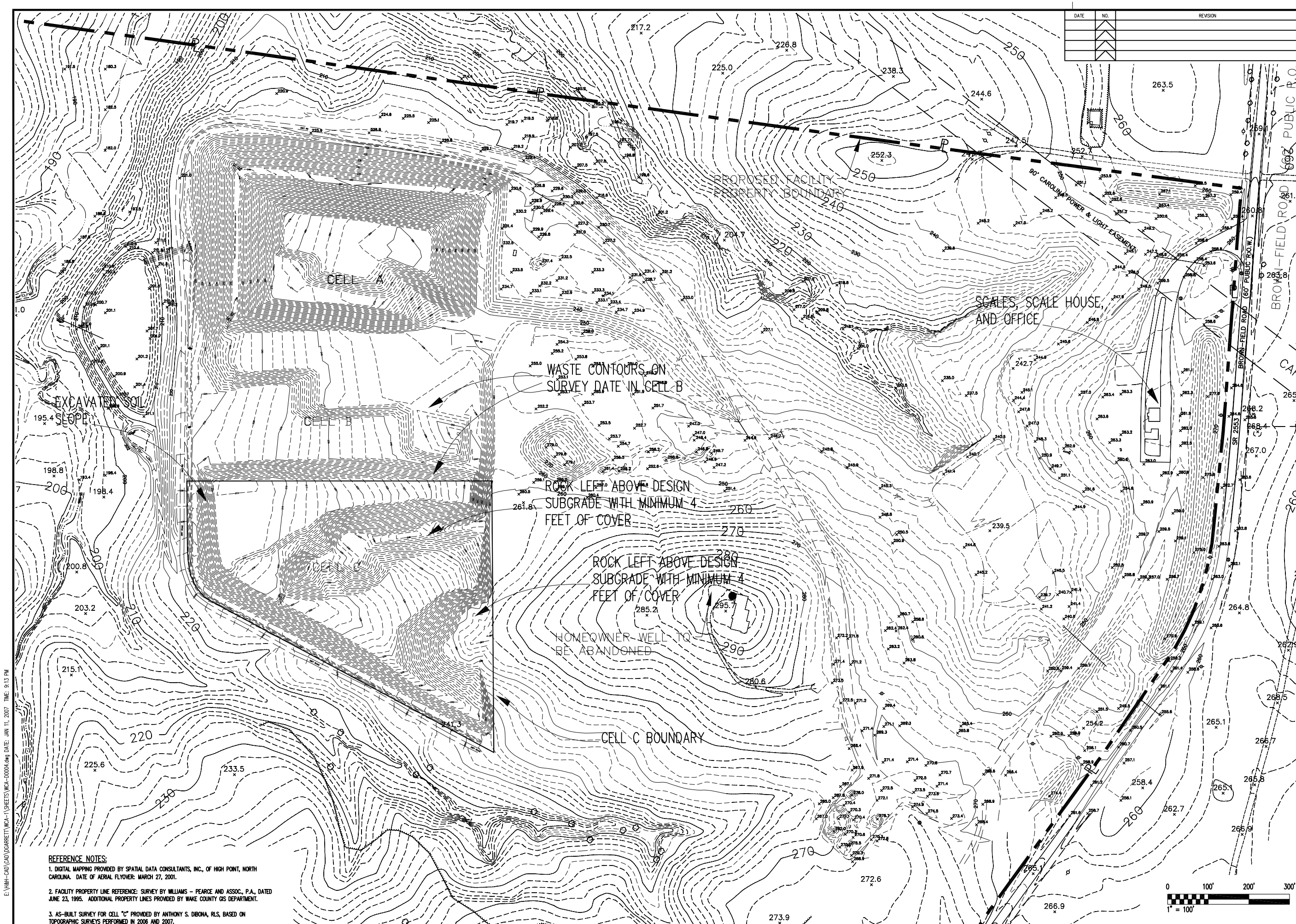
Sincerely,

NORTH CAROLINA LICENSED SEAL 1266 GEOLOGIST BRIAN S. BOUTIN

Brian S. Boutin, P.G.
Consulting Geologist

cc: Mr. Wilbert Carter – WCA Facility Manager
G. David Garrett, P.G., P.E.
ec: Ms. Danielle Forget Shield, P.E. – WCA Director of Engineering
Mr. Vernon Smith – WCA Regional Manager

Attachment: Field Surveys, by Anthony DiBona, RLS



DATE	NO.	REVISION

REFERENCE NOTES:

1. DIGITAL MAPPING PROVIDED BY SPATIAL DATA CONSULTANTS, INC., OF HIGH POINT, NORTH CAROLINA. DATE OF AERIAL FLYOVER: MARCH 27, 2001.

2. FACILITY PROPERTY LINE REFERENCE: SURVEY BY WILLIAMS – PEARCE AND ASSOC., P.A., DATED JUNE 23, 1995. ADDITIONAL PROPERTY LINES PROVIDED BY WAKE COUNTY GIS DEPARTMENT.

3. AS-BUILT SURVEY FOR CELL "C" PROVIDED BY ANTHONY S. DIBONA, RLS, BASED ON TOPOGRAPHIC SURVEYS PERFORMED IN 2006 AND 2007.

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SEAL: NORTH CAROLINA PROFESSIONAL SEAL 25462 ENGINEER DAVID G. GARRETT

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PROJECT TITLE:
WCA BROWNFIELD ROAD
C&D LANDFILL
WAKE CO., NORTH CAROLINA

DRAWING TITLE:
CELL "C" BASE GRADES
AND AS-BUILT SITE PLAN

DESIGNED BY: D.G.D.	DRAWN BY: A.W.H.
CHECKED BY: D.G.D.	PROJECT NO.: WCA-1
SCALE: 1"= 100'	DATE: JANUARY 2006
FILE NAME: WCA-D0004	
SHEET NO. 1	DRAWING NO. S1

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