David Garrett & Associates
Engineering and Geology

October 31, 2009

Ms. Christine Ritter, Hydrogeologist
NC DENR Division of Waste Management
Solid Waste Section
401 Oberlin Road
Raleigh, North Carolina, 27611

RE: **Geologist's Subgrade Inspection Report**
WCA of High Point CDLF – Phase 2A
Permit #41-16 (Guilford County)

Dear Christine:

On behalf of WCA Waste Corporation (WCA), I am pleased to present this interim report pertaining to a subgrade inspection for the referenced landfill construction. This letter documents conditions I observed at the site during multiple visits made on or about September 22, September 28, October 21, October 26 and October 30, 2009. On these dates, I performed site inspections pursuant to the Construction Quality Assurance (CQA) program approved for the facility. The following documents activities conducted at the site during this time and special conditions noted during the construction, which we discussed by phone on October 26. Present during all of my site visits has been Mr. John Walker of WCA (General Manager of the Facility), and Mr. Chad Woods of C.A. Woods Grading. During the meeting of October 21 we were met by Mr. Brian Sullivan of the City of High Point, who has jurisdiction over the sediment and erosion control plan – most of the issues addressed during the early site visits pertain to S&EC.

Please refer to the attached drawings, **C1 and C2**. Phase 2 was approved for construction by the NC DENR Division of Waste Management based on site investigations and plan submittals prepared by others. My involvement with this phase began in mid-late 2009, during the early stages of construction, at which time WCA expressed a desire to build only the northern half of the approved phase, i.e., Phase 2A shown on **Drawing C1**. Phase 2B is undisturbed relative to the time of permitting, but partial clearing activities had occurred in association with construction of Phase 1, and a large soil stockpile has been placed in the Phase 2B footprint with appropriate S&EC measures. Phase 2A had been cleared of surface vegetation, and S&EC measures were under construction by early October 2009. S&EC measures required by the City of High Point at a location below the maintenance building and container storage area, and below a new soil stockpile placed further east of the maintenance building, were constructed in mid-October 2009. At present, all measures have been installed and the grading work is underway. Two relict piezometers in Phase 2B are scheduled to be abandoned in the coming few days.

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During the preparation for constructing the northwest perimeter embankment, shown on **Drawing C2**, soft and wet soils were encountered at the surface within an area that coincides with a natural drainage feature. The area had been undercut by the contractor to a depth of approximately 5 feet below existing ground prior to my initial observation of the area. I concur that the undercut was necessary to support the embankment, whereas I observed water to be "ponding" in the fine-grained soils in adjacent areas. The entire 4-acre construction site, which drains to this spot, had been cleared and grubbed, which exposed a relatively large area of soils with high field capacity – i.e., a tendency to hold water – to several inches of rainfall received during September and October. The soils are fine grained and are known to drain slowly based on past experience with this site and the adjacent MSWLF site. Free water was pooling in the bottom of the undercut excavation, but relatively dry soils were observed just a few feet away, outside the drainage feature.

The potentiometric surface used for permitting (see **Drawing C2**) shows that the undercut excavations are just above the design potentiometric contours. Please note that no unstable areas were detected prior to clearing the vegetation – the site was heavily wooded – and it appears that the recent rain, coupled with the lack of plant uptake due to clearing and relatively poor drainage (flat grades) within this portion of the drainage feature, resulted in the wet conditions. By my estimates, the pooled water exists at a depth of approximately 9 feet below the finished subgrade. I concluded that the water exposed in the excavation is "perched" and likely does not represent the uppermost aquifer. The undercut excavation is approximately 165 feet in length and varies from 12 to 40 feet wide (26 feet average) and up to 8 feet deep (6 feet average). No rock was exposed during the clearing and grubbing.

Nonetheless, in order to make a stable foundation for the embankment, which varies in height from 14 feet to 18 feet above original ground based on the grade stakes, I recommended a stabilization layer constructed of coarse reclaimed concrete aggregate ("beneficial fill"), which is to be placed in two interlocking lifts of 18 inches each. There should be no wood, metal, paper or plastic in the beneficial fill. The stabilization layer is to be underlain by a non-woven separator geotextile (material type subject to my approval), and the stabilization layer is to be "choked off" with a finer layer of processed concrete aggregate (equivalent to No. 57 stone). The base of the stabilization layer is to be sloped downhill at a minimum 2% slope, following the existing topography. No pipes will be installed, as this is not an underdrain, *per se*, but the granular nature of the stabilization layer will prevent the future buildup of pore pressure to promote the stability of the embankment.

The stabilization pad will measure approximately 160 feet in length by an average width of 15 feet by an average thickness of 4 feet (see **Drawing C2**). The stabilization pad shall tie into the stable soils adjacent to the undercut. Density testing of the stabilization pad is impractical and will not be performed, but the engineer shall evaluate the granular backfill for excess pumping under the weight of operating equipment, and photographic documentation shall be performed. Density testing shall be performed on the soil embankment placed above the stabilization layer at a frequency of one field density test per lift per 500 feet of embankment, i.e., one test per lift, using a nuclear gauge. A soils technician visited the site on October 30, 2009 to acquire a bulk soil sample for standard Proctor and soil classification testing. The technician is scheduled to visit the site daily to monitor progress of the embankment and fill section construction.

The permitted grading plan (see **Drawing C2**) shows approximately 4 feet of fill required to reach design grades over a one-half acre area. Density testing shall be performed during the construction of the area fill, which, along with observation by the engineer, shall constitute the documentation of the CQA for these areas of Phase 2A. The remainder of Phase 2A will be in cut, based on the approved grading plan. Based on my inspection of the soils in the cut sections, which constitute the borrow for fill construction, the soil types will meet the Solid Waste Section requirements for soil classification within the upper 24 inches of subgrade – the soils visually classify as SM, SC, ML and CL with CH – to be confirmed by laboratory testing.

One engineering issue to note that will pertain to future operation of Phase 2A: extending the waste fill northward from Phase 1 as originally planned will cut off an existing drainage path, now served by the ditches on either side of the current north access road, which would result in water impounding at the toe of the waste in both Phase 1 and 2. Consideration has been given to operating Phase 2A as a standalone cell until such time that WCA chooses to build Phase 2B, anticipated in two to three years henceforth. At that future time, planned S&EC measures will be installed at the south end of Phase 2B – which will require additional ground disturbance, unnecessary at this time – and the drainage will be rerouted. All drainage is – and will be – directed toward approved storm water measures, as discussed with the City of High Point. This activity in no way affects the ability to monitor the facility and, in fact, changing the fill sequence allows the Operator flexibility in staging waste placement activities during inclement weather and promotes an overall more efficient waste placement sequence in Phase 2A.

Based on my observations, I conclude that the subgrade conditions are consistent with those anticipated by the permitting studies, and no further modification of the Phase subgrade or monitoring plan is warranted. Future CQA activities will include ensuring the completion of all required monitoring wells and the initial round of baseline sampling, if needed, and monitoring of the embankment and area fill placement. Future documentation of the construction will be presented in the form of a CQA report, which will include the piezometer abandonment records, construction narrative, as-built plans and geotechnical (field and laboratory) testing, and relevant photographs. For the record, pre-construction meetings were held on September 22, 2008 and September 28, 2009, the latter of which was attended by John Murray and Hugh Jurnigan of the NC DENR Solid Waste Section.

Please contact me if you have questions or if I can provide any additional information.

Sincerely,

G. David Garrett, P.G., P.E.
Consulting Geologist and Engineer

cc: Mr. Nick Marotta – Regional Engineer, WCA
Mr. John Murray, P.E. – SWS Regional Engineer

PERIMETER EMBANKMENT LENGTH = 400 FT WITH 18 FT MAX. SOIL FILL ABOVE ORIGINAL GROUND

EMBANKMENT STABILIZATION PAD - 160' x 15' AVG x 4' DEEP - CONSISTS OF GRANULAR BACKFILL W/ 2% BOTTOM SLOPE, OUTLET TO SEDIMENT TRAP

SEDIMENT TRAP ST-1

1
8

GROUND WATER CONTOURS USED FOR PERMITTING (BY OTHERS)

APPROXIMATE AREA OF UNDERCUT

PHASE 2A

24" CMP CULVERT (TEMPORARY)

FILL SECTION 0.5 ACRES, MAX DEPTH = 4 FT

SOIL STOCKPILE APPROX. LIMITS

PHASE 1

760 770 780 790 800 810

764 766 768 769 766 767

REFERENCE NOTES:

1. DRAWING BASED ON SITE PLAN PREPARED BY JOYCE ENGINEERING, INC. DATED JULY 7, 2004.

2. BASE DIGITAL MAPPING WITHIN THE BOUNDARY SHOWN BY SPATIAL DATA CONSULTANTS INC. DATE OF AERIAL FLYOVER 3/27/01.

3. DIGITAL MAPPING OUTSIDE BOUNDARY PROVIDED BY THE CITY OF HIGH POINT DEPARTMENT OF PLANNING AND DEVELOPMENT. DATE OF AERIAL FLYOVER 1998.

4. EXISTING CONDITIONS SHOW PHASE 1 FILLED TO PERMITTED GRADES.

5. ALL DESIGN WORK WAS PREPARED BY GOLDER ASSOCIATES CA. DEC. 2006 (BASE GRADES AND S&EC) AND AUG. 2008 (S&EC PLAN UPDATE)

6. CONTROL AND CERTIFICATION SURVEYS PERFORMED BY CLINT OSBORNE, RLS ALLIED ASSOCIATES, P.A., 4720 KESTER MILL ROAD, WINSTON-SALEM, NC 27103

LEGEND

790	APPROVED CELL BOTTOM GRADES
MW-40	MONITORING WELL (PROPOSED AS NOTED)
MMW-12	METHANE MONITORING WELL (PROPOSED AS NOTED)
SW-4A	SURFACE WATER SAMPLING LOCATION
P-61	TEST BORING W/ OR W/OUT PIEZOMETER
TP-16	TEST PIT EXCAVATED W/ BACKHOE

0 25' 50' 75'
1" = 25'

NO.	DATE	REVISION
2	10-31-09	DELINEATE UNDERCUT AND FILL SECTIONS
1	10-2-09	ORIGINAL ISSUE WITH SURVEY CONTROLS

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SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 019 DAVID GARRETT 10-31-09

SEAL: NORTH CAROLINA PROFESSIONAL GEOLOGIST SEAL 1 DAVID GARRETT 10-31-09

SEALED FOR CQA ONLY - NOT DESIGN (BY OTHERS)

PROJECT TITLE: WCA OF HIGH POINT MATERIAL RECOVERY FACILITY AND CDLF - PERMIT #41-16 GUILFORD COUNTY, NORTH CAROLINA

DRAWING TITLE: PHASE 2 CQA - APPROVED BASE GRADES FOR PARTIAL CONSTRUCTION (PHASE 2A)

DESIGNED BY: G.D.G.	DRAWN BY: G.D.G.
CHECKED BY: G.D.G.	PROJECT NO.: WCA-HP-2
SCALE: AS SHOWN	DATE: OCTOBER 2009
FILE NAME: WCA-HPOINT-CQA	
SHEET NO. 2	DRAWING NO. C2

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