



North Carolina Department of Environment and Natural Resources  
Division of Waste Management

Beverly Eaves Perdue  
Governor

Dexter R. Matthews  
Director

Dee Freeman  
Secretary

November 16, 2010

Joan A. Smyth, P.G.  
Richardson Smith Gardner & Associates  
14 North Boylan Avenue  
Raleigh, NC 27612

RE: Permit Amendment Application  
Davidson County C&D Landfill - Phase 3 and 4 Expansion  
Davidson County  
Additional Information Request  
Permit No. 29-06  
Document No. 12209

Dear Ms. Smyth:

The above referenced Permit Amendment Application (April 2009) for the proposed vertical expansion of Phase 3 and the proposed lateral expansion of Phase 4 is being reviewed in-part by me concerning certain portions of the application, including the Design Hydrogeologic Report (for Phase 4), the Water Quality Monitoring Plan, and the Landfill Gas Monitoring Plan. I commenced reviewing this application on November 3, 2010. As discussed at the site visitation on November 8, 2010, there are several items in the application that require clarification and/or revision before the review of this portion of the application can be completed. Please respond to the following questions and comments:

*Attachment A – Facility and Engineering Plan  
Section 6.1 – Landfill Subgrade and Perimeter Berms*

Solid Waste Section's Response: Pertaining to the landfill subgrade for proposed Phase 4; modify the narrative by stating that in-situ or modified soils making up the upper two feet of vertical separation must consist of the following: SC, SM, ML, MH, or CH soils per Unified Soil Classification System or as specified in the approved construction plan. [Rule 15A NCAC 13 B .0540(2)(b)].

*Attachment A – Facility and Engineering Plan*  
*Section 6.4 – Landfill Gas Control*  
*Drawing S5*

Solid Waste Section’s Response: Drawing S5 could not be located or overlooked.

*Attachment D – Operations Manual*  
*Section 3.6 – Landfill (LFG) Management*

Solid Waste Section’s Response: Landfill gas sampling is mentioned in this section, but does not state which gas monitoring wells and facility structures to sample and frequency of sampling events. This Section of the application needs revising or referencing a revised landfill gas monitoring plan. A revised landfill gas monitoring plan needs to include this landfill expansion and the existing C&D landfill. The plan also needs to include a site map, depicting location of existing gas monitoring wells and proposed gas monitoring wells. The Solid Waste Section has completed a guidance for landfill gas monitoring (November 2010). Please use this guidance in compiling the landfill gas monitoring plan. Also, a copy of the guidance document should be added to the landfill gas monitoring plan. To obtain the “Landfill Gas Monitoring Guidance Document”, go to the Solid Waste Section’s web page by clicking on <http://portal.ncdenr.org/web/wm/sw/envmonitoring> Once this web page appears, click on “Landfill Gas Monitoring Guidance Document”, under Current Guidance/Landfill Gas category.

*Attachment E – Closure And Post-Closure Plan*  
*3.3 – Estimated Closure Costs*

Solid Waste Section’s Response: Table 3.2B and Table 3.2C state in-part, under the “Item” column; “Methane Monitoring & Reporting (Semi-Annual After Year 1)”. This sampling frequency needs to be revised to quarterly monitoring/reporting per the Solid Waste Section Rules. Also, more than two (2) gas monitoring wells and facility structure sampling points is likely at the C&D landfill. Also, revise this portion of cost estimate accordingly.

*Attachment G – Permit Amendment Drawings*  
*Sheet 5-Drawing S4 – Phase 4-Subgrade Grading and Drainage Plan*

Solid Waste Section’s Response: Revise the drawing by depicting boring/piezometer locations, indicate top of rock elevations, and also extend the top of rock contours for the entire footprint area of proposed Phase 4. Also, include in this drawing or in a separate drawing, seasonal high and long-term seasonal high groundwater elevations contours,

piezometers/boring locations and the proposed base grades in accordance to Rule 15A NCAC 13 B .0539(e)(6)(B).

*Attachment G – Permit Amendment Drawings  
Sheet 11-Drawing XI – Engineering Cross Sections*

Solid Waste Section's Response: The cross-sections need to be revised to depict seasonal high groundwater and long-term seasonal groundwater level in accordance to Rule 15A NCAC 13 B .0539(e)(6)(A).

*Attachment H – Design Hydrogeologic Report – April 2009  
Table 1 – Test Boring Data and Short Term Groundwater Level Observations  
Table 2 – Geological Laboratory Test Data  
Table 3 – Long Term Water Levels Observations  
Table 3A – Long Term Water Table Elevations  
Table 4 – Horizontal Gradient and Velocity Calculations  
Figure 1 – Existing Site Conditions  
Figure 3 – Test Boring and Piezometer Location Map  
Figure 5 – Hydrogeologic Cross-Sections  
Figure 6 – Bedrock Surface  
Figure 7 – Composite High Potentiometric Surface  
Figure 8 – Potentiometric Map - June 12, 2000  
Appendix B – Soil Boring/Piezometer Logs  
Appendix C – Geotechnical Laboratory Analysis  
Appendix D – Aquifer Slug Test Data  
Appendix E – Water Quality Monitoring Plan*

Solid Waste Section's Response: Based on review of the Design Hydrogeologic Report included in the permit application and the site visitation with you on November 8, 2010, additional borings/piezometers/wells and additional lithologic and hydrogeologic data are required in the footprint and compliance area of proposed Phase 4 to adequately characterize this portion of the landfill expansion, according to Rule 15A NCAC 13 B .0538(b)(1). Please revise the narrative portion of the Design Hydrogeologic Report, the Tables, Figures, and Appendices mentioned above, accordingly from additional data obtained from new additional borings/piezometers, monitoring wells located within the footprint and compliance area of proposed Phase 4.

In addition add/revise the following:

*Attachment H – Design Hydrogeologic Report  
Section 5.1.3 – Groundwater Recharge and Discharge .0538(b)(2)(H)*

Solid Waste Section's Response: Please provide vertical gradient calculations according to Rule 15A NCAC 13 B .0538(b)(2)(H).

*Attachment H – Design Hydrogeologic Report  
Figure 5 - Hydrogeologic Cross-Sections*

Solid Waste Section's Response: Add seasonal and long-term seasonal high groundwater elevations.

*Attachment H – Design Hydrogeologic Report  
Figure 6 - Bedrock Surface*

Solid Waste Section's Response: Revise by further delineating the top of rock contours for the southeastern portion of proposed Phase 4.

*Attachment H – Design Hydrogeologic Report  
Figure 7 - Composite High Potentiometric Surface  
Figure 8 - Potentiometric Map – June 12, 2010*

Solid Waste Section's Response: Revise by further delineating groundwater contours within proposed Phase 4.

*Attachment H – Design Hydrogeologic Report – April 2009  
Appendix E – Water Quality Monitoring Plan – April 2009*

Solid Waste Section's Response: Based on the site visitation (November 8, 2010), two (2) additional detection groundwater monitoring wells, MW-7 and MW-6 will be installed by mid November. Revise the Water Quality Plan (i.e. narrative, tables, well construction records, drawings, etc.) to reflect these changes to the Plan. Also, revise Table 2 by adding surface sampling point, SW-5 and deleting SW-3, since SW-3 has been reported dry. Also, revise the Water Quality Monitoring Plan by updating the constituent list. The groundwater monitoring wells and surface sampling points must be sampled for the Appendix I constituent list, including Mercury, Chloride, Manganese, Sulfate, Iron, specific conductance, pH, temperature, Alkalinity, and Total Dissolved Solids, and Tetrahydrofuran, semi-annually.

Ms. Joan Smyth, P.G.  
Davidson County C&D Landfill - Phase 3 & 4 Expansion  
Amendment & Permit to Construct Application  
Additional Information Request  
Permit No. 29-06  
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If you have any questions or wish to schedule a meeting to discuss the items referenced in this letter, please call me at 919-508-8524.

Sincerely,



Brian Wootton  
Hydrogeologist  
Solid Waste Section

cc: Charles Brushwood  
Pieter K. Scheer, P.E.  
Ed Mussler  
Allen Gaither

Davidson Co. Solid Waste Director  
Richardson Smith Gardner  
Solid Waste Section  
Solid Waste Section