



September 21, 2011

0839-650611.400

Ms. Jackie Drummond
Department of Environment and Natural Resources
Division of Waste Management
Solid Waste Section
401 Oberlin Road, Suite 150
Raleigh, North Carolina 27605
919-733-4996

**RE: ASSESSMENT MONITORING WORK PLAN
CLOSED HENDERSON COUNTY CONSTRUCTION AND DEMOLITION LANDFILL,
PERMIT NO. 45-01
HENDERSON COUNTY, NORTH CAROLINA**

Dear Jackie:

On behalf of Henderson County, Golder Associates NC, Inc. (Golder) is submitting the following Assessment Monitoring Work Plan (Plan) to the North Carolina Department of Environment and Natural Resources (NC DENR). This Plan outlines the County's intention to initiate Assessment Monitoring at its Closed Construction and Demolition (C&D) Landfill, Permit No. 45-01. Pursuant to 15A NCAC 13B .0545, Assessment Monitoring is required when one or more constituents, as listed in Part(b)(1)(D) of Rule .0544, are detected above the current groundwater protection standards during any sampling event. Detections of volatile organic constituents (VOCs) at concentrations above applicable groundwater standards have been documented in samples from groundwater monitoring wells at this facility since 2003. In September 2010, Golder submitted an Alternate Source Demonstration (ASD) documenting landfill gas as the primary source of VOCs in samples from site groundwater monitoring wells. Although NC DENR agreed with the conclusions documented in the ASD, the County's request to remain in the Detection Monitoring Program was not approved, per correspondence dated May 12, 2011. As a result, Henderson County will initiate an Assessment Monitoring Program at the closed C&D landfill, beginning with the September 2011 semi-annual groundwater sampling event and is submitting this Plan. It is Henderson County's intent to fully comply with the requirements of 15A NCAC 13B. 0545.(a) and (b).

15A NCAC 13B .0545(a)(1) and (b)(1): INSTALLATION OF ADDITIONAL METHANE GAS MONITORING WELL:

As noted in the September 2010 ASD, landfill gas has been identified as the contributing factor related to the exceedance of VOCs in groundwater samples collected from the upper-most aquifer. To determine the lateral extent of the VOC contamination, the County will install one methane gas monitoring well near the compliance boundary in the southwestern portion of the C&D Landfill. The exact location of the additional methane gas monitoring well(s) will be illustrated/detailed in the revised explosive gas monitoring plan the County must prepare as required by 15A NCAC 13B .0544(d)(2). The landfill gas monitoring well will be positioned in an area at the compliance boundary in the direction of contaminant migration that is most likely to show impact based on the known geology and hydrogeology of the site.

NCAC 13B. 0545(a)(2): NOTIFICATION TO ALL PERSONS WHO OWN LAND OR RESIDE ON LAND WITHIN THE CONTAMINATE PLUME:

There is one tract of land that is privately owned located southwest of the closed C&D landfill. The location of this property is shown on the included Site Map (*Attachment 1*). Henderson County is

currently in negotiations with the property owner to purchase this tract of land and the owner received a notification from the NC DENR Inactive Hazardous Sites Branch on August 29, 2011 regarding the potential for waste and/or waste-related contamination on their property. Also, based on discussions with NC DENR representatives, the County is not required to make any additional notifications at this time. If the purchase of the property does not occur, the County will at that time make any additional notifications as required by NC DENR.

**15A NCAC 13B .0545(a)(3):
SUBMISSION OF ASSESSMENT MONITORING WORK PLAN:**

The county is submitting this Assessment Monitoring Work Plan as required by Rule. Once approved by the Division of Waste Management, the approved Plan will be placed in the facility's operating record, and all appropriate government officials will be notified.

In order to comply with 15A NCAC 13B .0545 (b), the County will also complete the following activities:

**15A NCAC 13B. 0545(b)(2):
ANALYSIS OF ADDITIONAL PARAMETERS IN GROUNDWATER:**

As part of the Assessment Monitoring Work Plan, analysis of additional groundwater quality parameters will be performed in the upgradient and downgradient monitoring wells at the C&D landfill in accordance to NCAC 13B. 0545(b)(2). The additional parameters will include all of the constituents listed in the Appendix II of 40CFR 258 and the required indicator parameters for C&D landfills (chloride, manganese, sulfate, iron, specific conductance, pH, temperature, alkalinity, total dissolved solids, and tetrahydrofuran). The September 2011 semi-annual groundwater monitoring event will be the first sampling event for these additional parameters.

As required by Rule, a minimum of four independent samples from each well will be collected and analyzed to establish background for the new constituents. The sampling schedule and list of parameters for the Closed Construction and Demolition Landfill will proceed as follows:

Second Semi-Annual Groundwater Sampling Event 2011	First Semi-Annual Groundwater Sampling Event 2012
<i>NC Appendix II list C&D Indicator list</i>	<i>NC Appendix I list plus detected NC Appendix II constituents C&D Indicator list</i>
Second Semi-Annual Groundwater Sampling Event 2012	First Semi-Annual Groundwater Sampling Event 2013
<i>NC Appendix I list plus detected NC Appendix II constituents C&D Indicator list</i>	<i>NC Appendix I list plus detected NC Appendix II constituents C&D Indicator list</i>

Upon completion of each of the background sampling events, semi-annual reports will be submitted to the Division. Upon completion of the final background sampling event, a report will be submitted to NC DENR in accordance with 15A NCAC .0545(b)(7) to be sealed by a licensed geologist. The concentrations of NC Appendix II constituents for each background monitoring event will be compared to established 15A NCAC 02L. 0202 groundwater quality standards (2L Standards) and Solid Waste Section Groundwater Protection Standards (SWS GPSs). In the case of metals, comparisons will also be made to background concentrations. Pending the results of background sampling results the County may petition the Division to return to a Detection Monitoring Program [15A NCAC 13B .0545(b)(9)], request selective Assessment Monitoring for a subset of wells impacted by VOCs and/or a subset of Appendix II constituents for analysis [15A NCAC .0545(b)(6)], and/or will begin the process to implement Assessment of Corrective Measures for landfill gas to groundwater impacts [15A NCAC 13B .0545(c)].

In summary, the County will initiate an Assessment Monitoring Program at the closed Henderson County C&D landfill beginning with the next semi-annual groundwater sampling event in September 2011 as described in this Plan. The additional assessment activities described in this plan will be initiated upon final approval of this Plan by the NC DENR. If you have any questions regarding the implementation of the Assessment Monitoring Work Plan, please contact the undersigned at 336-852-4903.

GOLDER ASSOCIATES NC, INC.



David "Dusty" Y. Reedy II, P.G.
Senior Project Hydrogeologist

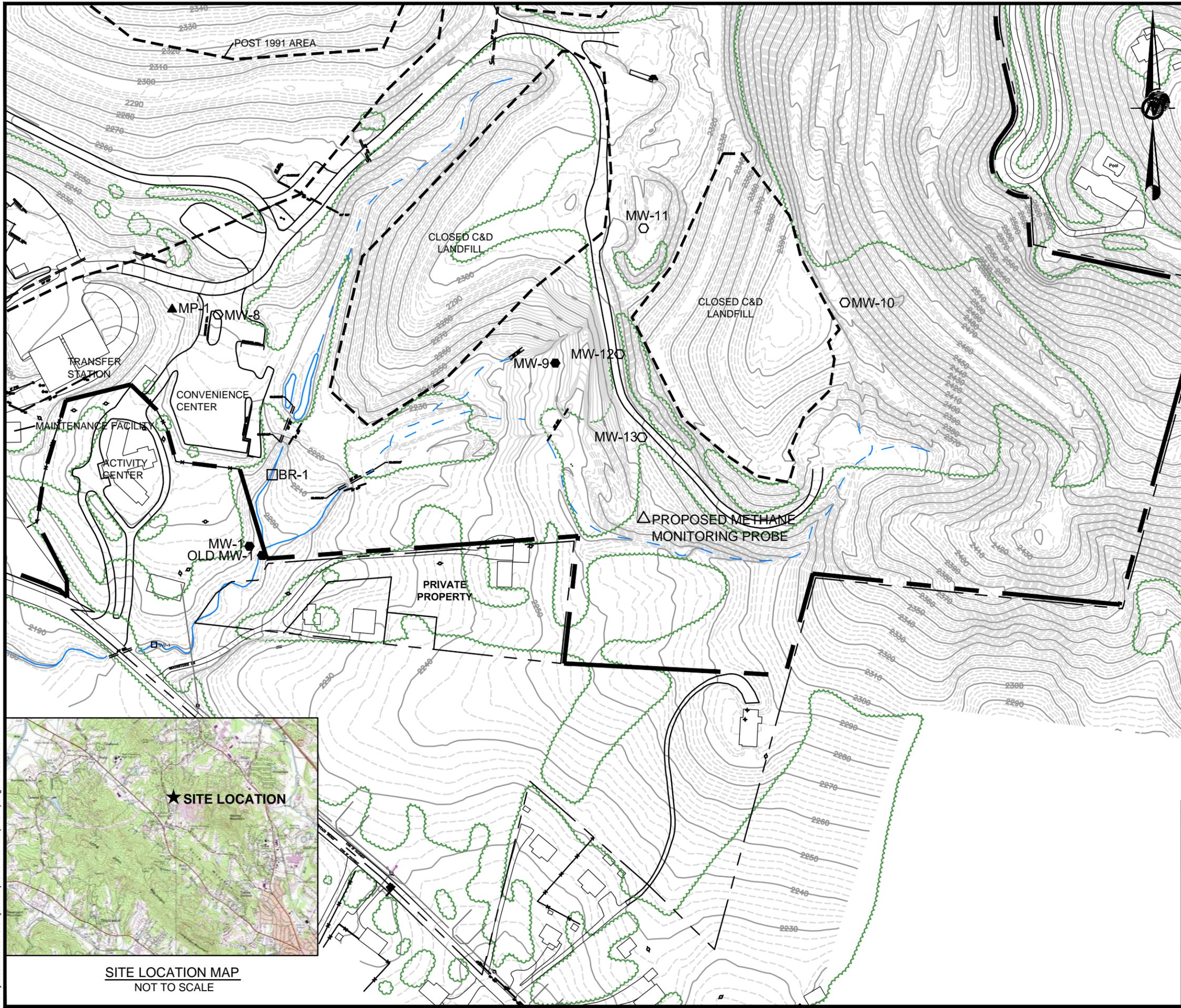


Rachel P. Kirkman, P.G.
Associate and Senior Geologist

C: Marcus Jones, P.E., Director of Engineering, Henderson County, 100 North King Street, Hendersonville, NC 28792. 828-694-6560. majones@hendersoncountync.org (electronic copy)
Natalie Berry, P.E., Assistant County Engineer, Henderson County, 802 Stoney Mountain Road, Hendersonville, NC 28791. 828-697-4505. nberry@hendersoncountync.org
File

Attachment: Site Map

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LEGEND

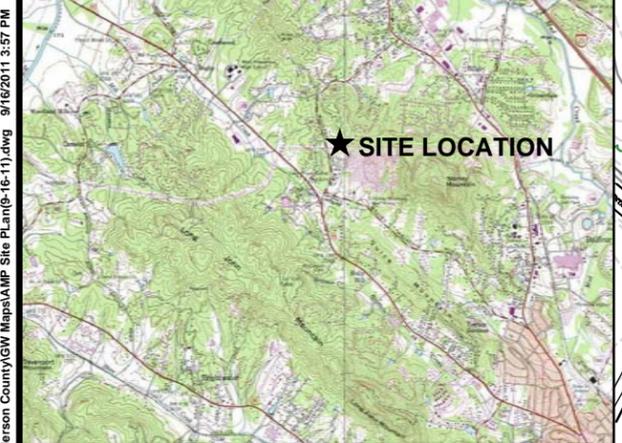
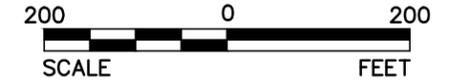
- EXISTING 10 FT. CONTOUR
- EXISTING 2 FT. CONTOUR
- - - PROPERTY LINE
- - - LIMITS OF WASTE
- STREAM
- ☁ TREELINE
- EXISTING ROAD
- TOPOGRAPHIC DIVIDING LINE (SEE NOTE 9)
- MW-8 MONITORING WELL AND IDENTIFICATION
- MW-1 NON COMPLIANCE MONITORING WELL AND IDENTIFICATION
- ▲ MP-6 METHANE MONITORING PROBE AND IDENTIFICATION
- BR-1 SURFACE WATER MONITORING POINT AND IDENTIFICATION
- △ PROPOSED METHANE MONITORING PROBE

NOTES

1. TOPOGRAPHIC CONTOUR INTERVAL = 2 FEET
2. APPROVED WATER QUALITY MONITORING WELL NETWORK FOR THE C&D LANDFILL INCLUDES: MW-10, MW-11, MW-12, AND MW-13.
3. COORDINATE SYSTEM IS N.C. STATE PLANE GRID.

REFERENCES

1. BASE MAP PROVIDED BY CAMP DRESSER & MCKEE FROM PREVIOUS WATER QUALITY MONITORING REPORTS.



SITE LOCATION MAP
NOT TO SCALE

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RV

PROJECT
HENDERSON COUNTY CLOSED MSW AND C&D LANDFILL PERMIT # 45-01

TITLE
SITE PLAN

<p>Golder Associates GREENSBORO, NC</p>	PROJECT No.	083-9650610	FILE No.	AMP Site Plan(9-16-11)	
	DESIGN	DYR	5/10/10	SCALE	1"=200' REV.
	CADD	LKB	5/10/10		
	CHECK	DYR	5/10/10		
	REVIEW	RPK	5/10/10		
				ATTACHMENT	

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