BUNNELL-LAMMONS ENGINEERING, INC.
GEOTECHNICAL, ENVIRONMENTAL AND CONSTRUCTION MATERIALS CONSULTANTS

May 12, 2011

North Carolina Department of Environment and Natural Resources
Division of Waste Management – Solid Waste Section
1646 Mail Service Center
Raleigh, NC 27699-1646

Attention: Ms. Elizabeth S. Werner
Hydrogeologist

Subject: **Groundwater Assessment Data Submittal -- February 2011**
Closed Francis Farm Landfill
Haywood County, North Carolina
BLE Project Number J10-1957-14
Permit Number 44-03

Dear Ms. Werner:

Bunnell-Lammons Engineering, Inc. (BLE) is pleased to provide this groundwater assessment data submittal to the NCDWM. This information is submitted on behalf of Haywood County to meet NCDWM notification requirements in NCAC Title 15A 13B .1634 (g). A final report of the assessment findings is in progress and will be submitted as specified in the approved milestone schedule.

The information in this submittal includes a table of water levels and well construction data, and summary tables of laboratory analyses results from the February 2011 assessment. A groundwater elevation contour map and a laboratory data results map are also included. The data were collected as part of the assessment tasks outlined in our letter titled ***Comments on the Proposed 2004 Groundwater Assessment Monitoring Plan Closed Francis Farm Landfill*** dated November 9, 2009 [submitted by McGill Associates (McGill)] and a follow-up submittal by BLE titled ***Proposed Well Locations and Depths for the Groundwater Assessment Monitoring Plan*** dated December 30, 2009. These documents were subsequently approved by the NCDWM.

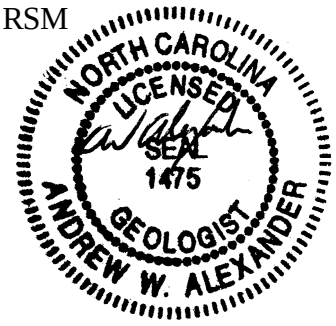
6004 PONDERS COURT
GREENVILLE, SOUTH CAROLINA 29615
PHONE (864) 288-1265
FAX (864) 288-4430

In summary, the results indicate that additional assessment will be required to characterize the nature and extent of the release. Based on these data, Haywood County, McGill Associates, and BLE have begun planning to meet the requirements of NCAC Title 15A 13B .1634 (g)(1) & (2). We anticipate that our recommendations and plans for these tasks will be included as part of the forthcoming assessment report and/or as a contemporaneous submittal.

We appreciate the opportunity to work with Haywood County, McGill, and the NCDWM on this project. If the NCDWM has any questions or comments in the interim, please contact us at (864) 288-1265.

Sincerely,
BUNNELL-LAMMONS ENGINEERING, INC.

Andrew W. Alexander, P.G., RSM
Senior Hydrogeologist
Registered, NC No. 1475



Trevor J. Benton, P.G.
Project Hydrogeologist
Registered, NC No. 2025

cc: Mr. Stephen King – Haywood County
Mr. Jeff Bishop, P.E. – McGill Associates
Ms. Andrea Keller – NCDENR Asheville

Attachments: Tables 1 through 4
Figures 1 & 2

c:\awa\active projects\mcgill\haywood county lf\1957-14 francis farm well installation\1957-14 groundwater assessment data submittal\fflf data submittal 1957-14 ble draft.doc

TABLES

Table 1
Groundwater Monitoring Well Construction and Groundwater Elevation Data
Closed Francis Farm Landfill
Haywood County, North Carolina
Permit Number 44-03
BLE Project No. J10-1957-14

February 21, 2011																
Well	Well Location	Northing (feet)	Easting (feet)	Meas. Pt. Elevation	Gnd. Surface Elevation	*Depth to Water (bgs)	Depth to Water (bmp)	Water Elevation	Total Borehole Depth (bgs)	Screen Depth (bgs)	Screen Elevation	Well Type	Well Monitors	Top of Rock Depth (bgs)	Top of Rock Elev.
MW-1	On-Site	662,529.13	822,317.14	2,666.59	2,663.72	>33.13	>36	<2630.59	UK	UK - UK	UK - UK	UK	UK	UK	UK
MW-1A	On-Site	662,590.73	822,083.15	2,690.88	2,687.97	45.41	48.32	2,642.56	UK	UK - UK	UK - UK	UK	UK	UK	UK
MW-2A	On-Site	662,347.08	822,814.69	2,643.78	2,640.98	23.16	25.96	2,617.82	27.0	12.0 - 27.0	2,629.0 - 2,614.0	II	PWR/BR	18.0	2,623.0
MW-3A	On-Site	661,921.62	823,026.22	2,674.29	2,671.59	38.40	41.10	2,633.19	UK	UK - UK	UK - UK	UK	UK	UK	UK
MW-4	On-Site	661,420.29	822,245.39	2,789.47	2,786.88	68.80	71.39	2,718.08	UK	UK - UK	UK - UK	UK	UK	UK	UK
MW-5	On-Site	661,286.31	822,167.91	2,797.08	2,797.37	75.33	75.04	2,722.04	94.0	73.1 - 88.1	2,724.3 - 2,709.3	II	PWR	89.0	2,708.4
Groundwater Monitoring Wells MW-6 through MW-15 Installed by BLE															
MW-6	Off-Site	662,941.12	822,167.78	2,612.63	2,613.03	6.82	6.42	2,606.21	12.5	2.3 - 12.3	2,610.7 - 2,600.7	II	Res/Collv	12.5	2,600.5
MW-7	Off-Site	662,800.72	822,584.39	2,621.33	2,621.48	8.52	8.37	2,612.96	24.0	4.0 - 19.0	2,617.5 - 2,602.5	II	Collv/Allv	NE	NE
MW-8	Off-Site	662,619.60	822,989.68	2,620.05	2,620.25	5.93	5.73	2,614.32	19.0	3.0 - 13.0	2,617.3 - 2,607.3	II	Alluvial	NE	NE
MW-9	Off-Site	662,309.84	823,295.25	2,618.67	2,619.19	2.86	2.34	2,616.33	19.0	2.0 - 12.0	2,617.2 - 2,607.2	II	Alluvial	NE	NE
MW-10	Off-Site	661,947.33	823,365.59	2,623.60	2,623.96	2.88	2.52	2,621.08	15.0	2.0 - 12.0	2,622.0 - 2,612.0	II	Alluvial	NE	NE
MW-11	On-Site	661,509.39	822,572.73	2,756.22	2,756.46	79.60	79.36	2,676.86	100.0	70.8 - 85.8	2,685.7 - 2,670.7	II	BR	71.0	2,685.5
MW-12	Off-Site	661,078.94	822,142.39	2,803.11	2,800.28	70.63	73.46	2,729.65	90.0	64.8 - 79.8	2,735.5 - 2,720.5	II	BR	64.0	2,736.3
MW-13	On-Site	661,377.43	821,791.88	2,799.14	2,799.51	84.53	84.16	2,714.98	127.0	74.0 - 89.0	2,725.5 - 2,710.5	II	PWR/BR	81.0	2,718.5
MW-14	On-Site	661,894.81	821,755.37	2,770.34	2,770.64	85.98	85.68	2,684.66	120.0	93.8 - 108.8	2,676.8 - 2,661.8	II	BR	33.0	2,737.6
MW-15	On-Site	662,338.59	821,896.86	2,719.57	2,716.89	80.96	83.64	2,635.93	163.0	75.8 - 90.8	2,641.1 - 2,626.1	II	BR	19.0	2,697.9

Notes:

All survey data provided by McGill Associates, all units in feet.
*DTW from bgs values have been calculated from survey data provided by McGill Associates.
All values shown to the nearest 0.1-ft have been rounded.
Water levels measured on 2/21/11 by Pace
MW-1, -1A, -2A, -3A, -4, -5 installed by others. MW-6 through MW-15 installed by BLE.

Measuring Point Elevation is top of casing
II = Type II well
NE = Not encountered
UK = Unknown, information is not available

BR & PWR = Bedrock & Partially Weathered Rock
Res = Residuum
Collv = Colluvium
Allv = Alluvium

Prepared by: AWA
Checked by: RAD

Table 2
Volatile Organic Compounds (VOC) Data
Closed Francis Farm Landfill
Haywood County, North Carolina
Permit Number 44-03
BLE Project No. J10-1957-14

Sampled by Pace on February 22, 2011																			
COMPOUND	**UNITS**	**MDL**	**RL**	**MCL**	**MW-1A**	**MW-2A**	**MW-3A**	**MW-4**	**MW-5**	**MW-6**	**MW-7**	**MW-8**	**MW-9**	**MW-10**	**MW-11**	**MW-12**	**MW-13**	**MW-14**	**MW-15**
Acetone	µg/l	2.2	25	6000	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	**2.3**	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Acrylonitrile	µg/l	1.9	10	NE	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
Benzene	µg/l	0.25	1	1	<0.25	<0.25	<0.25	**15.5**	**5.1**	<0.25	**0.72**	<0.25	<0.25	<0.25	<0.25	<0.25	**5.3**	**1.3**	**0.42**
Bromochloromethane	µg/l	0.17	1	NE	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Bromodichloromethane	µg/l	0.18	1	0.6	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Bromoform	µg/l	0.26	1	4	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26
Carbon Disulfide	µg/l	1.2	2	700	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	**1.2**
Bromomethane (Methylbromide)	µg/l	0.29	2	NE	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29
Carbon tetrachloride	µg/l	0.25	1	0.3	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Chlorobenzene (mono)	µg/l	0.23	1	50	**1.8**	<0.23	<0.23	<0.23	<0.23	<0.23	**0.93**	<0.23	<0.23	<0.23	<0.23	<0.23	**0.61**	**1.6**	<0.23
Chloroethane	µg/l	0.54	1	3000	**1.5**	<0.54	**7.3**	**3.1**	**4**	<0.54	**1.3**	<0.54	<0.54	<0.54	<0.54	<0.54	**1.3**	**1.3**	<0.54
Chloroform	µg/l	0.14	1	70	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Chloromethane (Methylchloride)	µg/l	0.11	1	3	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	**0.26**
Dibromochloromethane	µg/l	0.21	1	0.4	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21
1,2-Dibromo-3-chloropropane; DBCP	µg/l	2.5	5	0.04	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
1,2-Dibromoethane; Ethylene dibromide	µg/l	0.27	1	0.02	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
Dibromomethane	µg/l	0.21	1	NE	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21
1,2-Dichlorobenzene	µg/l	0.3	1	20	<0.3	<0.3	**1.1**	<0.3	<0.3	<0.3	**1.4**	<0.3	<0.3	**0.33**	**4.2**	<0.3	<0.3	**104**	**3.3**
1,4-Dichlorobenzene	µg/l	0.33	1	6	<0.33	**7**	**1.2**	**4.7**	**1.3**	<0.33	**1.7**	<0.33	<0.33	<0.33	**1.4**	<0.33	**5.9**	**21.4**	**0.8**
trans-1,4-Dichloro-2-butene	µg/l	1	1	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	µg/l	0.32	1	6	**1.2**	**1.4**	**17.5**	**31.9**	**12.9**	<0.32	**4.4**	<0.32	**0.34**	**3.1**	**7.5**	<0.32	**4.8**	**1.5**	**1**
1,2-Dichloroethane	µg/l	0.12	1	0.4	<0.12	<0.12	**2.8**	**2**	<0.12	<0.12	**3**	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
1,1-Dichloroethene (-ethylene)	µg/l	0.56	1	7	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
cis-1,2-Dichloroethene (-ethylene)	µg/l	0.19	1	70	**1**	**5.6**	**1.6**	**34.6**	**14.4**	<0.19	**2.7**	<0.19	**0.55**	**2.3**	**10.9**	<0.19	**17.3**	**32.5**	**8.9**
trans-1,2-Dichloroethene (-ylene)	µg/l	0.49	1	100	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49
1,2-Dichloropropane	µg/l	0.27	1	0.6	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	**0.58**	<0.27	<0.27	<0.27	**0.46**	<0.27	<0.27	<0.27	<0.27
cis-1,3-Dichloropropene (-propylene)	µg/l	0.13	1	0.4	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13
trans-1,3-Dichloropropene (-propylene)	µg/l	0.26	1	0.4	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26
Diisopropyl ether	µg/l	0.12	1	NE	NT	NT	NT	NT	NT	<0.12	**0.31**	<0.12	<0.12	<0.12	**0.31**	<0.12	**0.67**	**0.34**	**0.24**
Ethylbenzene	µg/l	0.3	1	600	<0.3	<0.3	<0.3	**1.7**	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
2-Hexanone	µg/l	0.46	5	NE	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46
Iodomethane	µg/l	0.32	5	NE	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32
Dichloromethane (Methylene chloride)	µg/l	0.97	1	5	<0.97	<0.97	<0.97	**46.6**	<0.97	<0.97	<0.97	<0.97	<0.97	<0.97	<0.97	<0.97	<0.97	<0.97	<0.97
2-Butanone (Methyl ethyl ketone)	µg/l	0.96	5	4000	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96
4-Methyl-2-Pentanone	µg/l	0.33	5	NE	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
Styrene	µg/l	0.26	1	70	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26
1,1,1,2-Tetrachloroethane	µg/l	0.33	1	NE	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
1,1,2,2-Tetrachloroethane	µg/l	0.4	1	0.2	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Tetrachloroethene (-ethylene)	µg/l	0.46	1	0.7	<0.46	<0.46	<0.46	**6.7**	**5.6**	<0.46	<0.46	<0.46	<0.46	**0.85**	**0.53**	<0.46	**2.2**	<0.46	<0.46
Toluene	µg/l	0.26	1	600	<0.26	<0.26	<0.26	**11.4**	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26
1,1,1-Trichloroethane	µg/l	0.48	1	200	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
1,1,2-Trichloroethane	µg/l	0.29	1	200000	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29	<0.29
Trichloroethene (-ethylene)	µg/l	0.47	1	3	<0.47	<0.47	<0.47	**7**	**4.8**	<0.47	<0.47	<0.47	<0.47	**0.55**	**0.53**	<0.47	**1.7**	<0.47	<0.47
Trichlorofluoromethane	µg/l	0.2	1	2000	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1,2,3-Trichloropropane	µg/l	0.41	1	0.005	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41
Vinyl acetate	µg/l	0.35	2	NE	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35
Vinyl chloride	µg/l	0.62	1	0.03	<0.62	<0.62	<0.62	<0.62	<0.62	<0.62	<0.62	<0.62	<0.62	<0.62	<0.62	<0.62	**0.79**	<0.62	<0.62
M&P Xylene	µg/l	0.66	2	500	<0.66	<0.66	<0.66	**8.4**	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66
O Xylene	µg/l	0.23	1	500	<0.23	<0.23	<0.23	**4.2**	**2.3**	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	**8.8**	<0.23	<0.23
Dichlorodifluormethane	µg/l	0.21	1	1000	NT	NT	NT	NT	NT	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21
Total VOCs	µg/l	NE	NE	NE	**5.5**	**14.0**	**31.5**	**177.8**	**50.4**	**ND**	**19.3**	**ND**	**0.9**	**7.1**	**25.8**	**ND**	**49.4**	**163.9**	**16.1**

Notes:
MDL = Laboratory Method Detection Limit
RL = Laboratory Report Limit
MCL = Maximum Contaminant Level, as established in the NCDENR, Classifications of Water Quality Standards Applicable to Groundwaters of North Carolina, Section 15A NCAC 2L.202.
NT = Not Tested
NE = Not Established; North Carolina has not established a MCL
Shaded cells indicated exceedances of MCLs.
Samples collected by Pace on February 22, 2011
Refer to the laboratory data sheets for detected concentrations which are J values (estimated values above MDL but below RL).
Analysis by EPA Method 8260

Prepared by: AWA
Checked by: MLT

Table 3
Semi Volatile Organic Compounds (SVOC), Pesticides, Herbicides, PCBs, Sulfide, & Cyanide
Closed Francis Farm Landfill
Haywood County, North Carolina
Permit Number 44-03
BLE Project No. J10-1957-14

Sampled by Pace on February 22, 2011																			
CLASS -- COMPOUND	**Method**	**UNITS**	**MDL**	**RL**	**MCL**	**MW-1A**	**MW-2A**	**MW-3A**	**MW-4**	**MW-5**	**MW-6**	**MW-7**	**MW-8**	**MW-9**	**MW-10**	**MW-11**	**MW-12**	**MW-13**	**MW-14**	**MW-15**
Pesticides -- Heptachlor	EPA 8081	µg/l	0.0015	0.01	0.008	NT	NT	NT	NT	NT	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	**0.079**	<0.0015	<0.0015	<0.0015	<0.0015
Pesticides -- Lindane	EPA 8081	µg/l	0.0002	0.01	0.03	NT	NT	NT	NT	NT	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.027**	<0.0002
Pesticides -- All Other	EPA 8081	µg/l	NA	NA	NA	NT	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCBs	EPA 8082	µg/l	0.59	0.59	NA	NT	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Herbicides -- Silvex	EPA 8151	µg/l	0.049	2	50	NT	NT	NT	NT	NT	<0.049	**0.078**	<0.049	<0.049	<0.049	<0.049	<0.049	<0.049	<0.049	<0.049
Herbicides -- All Other	EPA 8151	µg/l	NA	NA	NA	NT	NT	NT	NT	NT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SVOCs -- 1,2-Dichlorobenzene	EPA 8270	µg/l	0.88	10	20	NT	NT	NT	NT	NT	<0.88	<0.88	<0.88	<0.88	<0.88	**1.8**	<0.88	<0.88	**42.2**	**1.2**
SVOCs -- 1,4-Dichlorobenzene	EPA 8270	µg/l	0.95	10	6	NT	NT	NT	NT	NT	<0.95	<0.95	<0.95	<0.95	<0.95	<0.95	<0.95	**2.4**	**9.6**	<0.95
SVOCs -- All Other	EPA 8270	µg/l	NA	NA	NA	NT	NT	NT	NT	NT	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Sulfide	SM 4500-S2D	mg/l	0.1	0.1	NE	NT	NT	NT	NT	NT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cyanide	SM 4500-CN-E	mg/l	0.005	0.005	0.07	NT	NT	NT	NT	NT	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	**0.0067**	**0.0086**

Notes:
MDL = Laboratory Method Detection Limit
RL = Laboratory Report Limit
MCL = Maximum Contaminant Level, as established in the NCDENR, Classifications of Water Quality Standards Applicable to Groundwaters of North Carolina, Section 15A NCAC 2L.202.
NA = Not Applicable
NT = Not Tested
NE = Not Established; North Carolina has not established a MCL
ND = Not Detected
Shaded cells indicated exceedances of MCLs.
Refer to the laboratory data sheets for detected concentrations which are J values (estimated values above MDL but below RL).
Samples collected by Pace on February 22, 2011

Prepared by: AWA
Checked by: MLT

Table 4
Total Metals Data
Closed Francis Farm Landfill
Haywood County, North Carolina
Permit Number 44-03
BLE Project No. J10-1957-14

Sampled by Pace on February 22, 2011																		
TEST	**UNITS**	**MDL**	**RL**	**MCL**	**MW-1A**	**MW-2A**	**MW-3A**	**MW-4**	**MW-5**	**MW-6**	**MW-7**	**MW-8**	**MW-9**	**MW-10**	**MW-11**	**MW-12**	**MW-13**	**MW-14**	**MW-15**
Total Antimony (Sb)	µg/l	2.6	5	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.1**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total Arsenic (As)	µg/l	2.7	5	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**5.8**	<5.0	**5.3**	<5.0	<5.0	<5.0	**3.9**
Total Barium (Ba)	µg/l	0.2	5	700	**171**	**191**	**241**	**163**	**237**	**54**	**213**	**72.8**	**1190**	**193**	**138**	**197**	**977**	**309**	**68.7**
Total Beryllium (Be)	µg/l	0.1	1	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**0.19**	<1.0	**3.6**	**0.51**	<1.0	<1.0	<1.0	<1.0	<1.0
Total Cadmium (Cd)	µg/l	0.5	1	2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Chromium (Cr)	µg/l	0.4	5	10	<5.0	<5.0	<5.0	<5.0	<5.0	**2.5**	**3.7**	**6.3**	**161**	**17.6**	**1.7**	**8.1**	**1.8**	**3.7**	**2.4**
Total Cobalt (Co)	µg/l	0.6	5	NE	**10.5**	**55.5**	**110**	**13.5**	**16.8**	**1.3**	**5.4**	<5.0	**40.5**	**5.2**	**9.4**	**9.8**	**3.2**	**6.1**	**2.6**
Total Copper (Cu)	µg/l	0.3	5	1,000	<5.0	<5.0	**5.1**	<5.0	**155**	**1.1**	**2.4**	**2.3**	**64.3**	**10.7**	<5.0	**3.2**	<5.0	<5.0	<5.0
Total Lead (Pb)	µg/l	4	5	15	<5.0	<5.0	<5.0	<5.0	**7.2**	<5.0	<5.0	<5.0	**16.2**	**6.3**	<5.0	<5.0	<5.0	<5.0	<5.0
Total Mercury (Hg)	µg/l	0.1	0.2	1	NT	NT	NT	NT	NT	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Total Nickel (Ni)	µg/l	1.7	5	100	<5.0	<5.0	**39**	**5**	**5.4**	**8**	<5.0	**4.2**	**97.3**	**8.4**	<5.0	**7.6**	**15.9**	**7.5**	<5.0
Total Selenium (Se)	µg/l	3.8	10	20	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Total Silver (Ag)	µg/l	0.1	5	20	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**0.11**	<5.0	<5.0	<5.0	**0.34**	<5.0	**0.37**	**0.12**	**0.45**
Total Thallium (Tl)	µg/l	3	5.4	NE	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	**4.3**	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4
Total Vanadium (V)	µg/l	0.2	5	NE	<5.0	<5.0	<5.0	**6.1**	<5.0	**2.6**	**4.3**	**5.6**	**205**	**22.8**	<5.0	**7.8**	<5.0	**0.38**	**0.73**
Total Zinc (Zn)	µg/l	0.4	10	1,000	<10.0	<10.0	<10.0	**30.7**	**90.4**	**5.1**	**19.8**	**7.7**	**162**	**36.7**	**10.3**	**26.5**	**0.71**	**16**	**5.6**

Notes:
MDL = Laboratory Method Detection Limit
RL = Laboratory Report Limit
MCL = Maximum Contaminant Level, as established in the NCDENR, Classifications of Water Quality Standards Applicable to Groundwaters of North Carolina, Section 15A NCAC 2L.202.
NT = Not Tested
NE = Not Established; North Carolina has not established a MCL
Shaded cells indicated exceedances of MCLs.
Refer to the laboratory data sheets for detected concentrations which are J values (estimated values above MDL but below RL).
Samples collected by Pace on February 22, 2011
Analysis by EPA Methods 6010 & 7470

Prepared by: AWA
Checked by: MLT

FIGURES

SURVEY CONTROL NOTES:
1. SURVEY BASED ON NAD83 (NSRS 2007).
2. ELEVATIONS BASED ON NAVD88.
3. AS-BUILT SURVEYS CONDUCTED SEPTEMBER, OCTOBER, AND NOVEMBER 2010.

NOTES:
1. PROPERTY LINES SHOWN ARE FROM HAYWOOD COUNTY G.I.S. DEPARTMENT, AND ARE APPROXIMATE ONLY.
2. CONTOURS ON FRANCIS FARM LANDFILL PROPERTY SOUTH AND WEST OF PAVED ACCESS ROAD ARE FROM GROUND SURVEY PERFORMED BY McGILL ASSOCIATES, OCTOBER 15, 2009. REMAINING CONTOURS ARE LIDAR CONTOURS PROVIDED BY HAYWOOD COUNTY.
3. SURVEY CONTROL INFORMATION BASED ON NAVD 88 AND NAD83 (NSRS 2007).
4. WASTE LIMITS SHOWN ARE A COMPILATION OF EXISTING DOCUMENTATION AND FIELD INVESTIGATION NOVEMBER 2010, AND ARE APPROXIMATE ONLY.
5. UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE ONLY!
6. GROUNDWATER LEVELS MEASURED BY PACE ON FEBRUARY 21, 2011.

100 50 0 100 200
APPROXIMATE SCALE IN FEET

LEGEND

- MW-13 — GROUND WATER MONITORING WELL
- MM-5 — LANDFILL GAS MONITORING WELL
- SM-1a — LANDFILL GAS MONITORING LOCATION IN STRUCTURE
- EW-1 — PASSIVE LANDFILL GAS EXTRACTION WELL
- GAS VENT — SHALLOW GAS VENT
- APPROXIMATE WASTE LIMITS
- 2606.21 — GROUNDWATER ELEVATION (IN FEET)
- 2610 — GROUNDWATER ELEVATION CONTOUR, CONTOUR INTERVAL = 10 FEET

REFERENCE:
DRAWING PROVIDED BY McGILL ASSOCIATES VIA EMAIL ON 3-17-2011.

REVISIONS		
No.	DESCRIPTION	BY

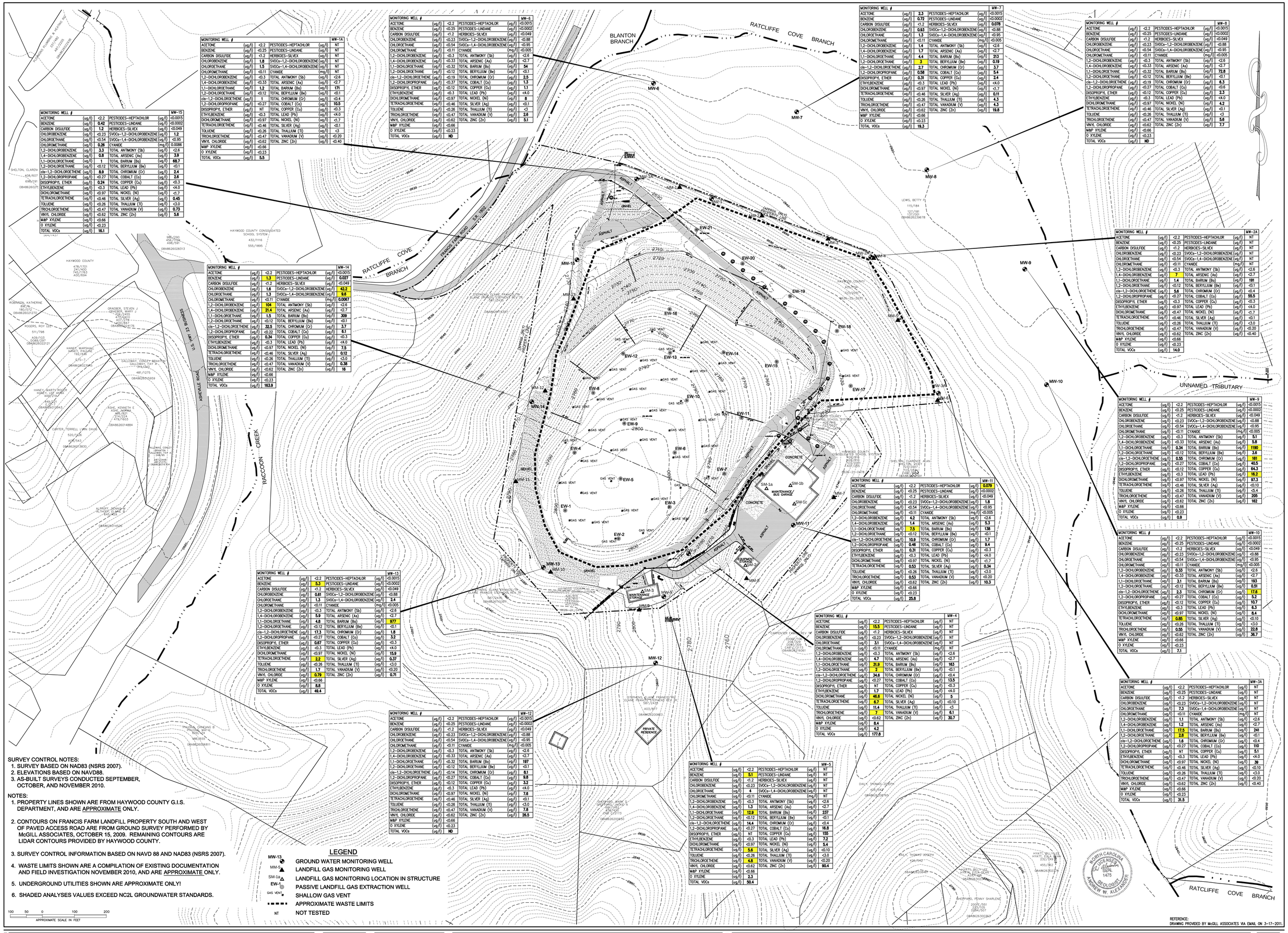
DRAWN:	ACE
CHECKED:	AWA
APPROVED:	

DATE:	05-02-11
CAD FILE:	HCFFLF-14WTM022111DS
JOB NO:	J10-1957-14

BLE INC.
BUNNELL-LAMMONS ENGINEERING, INC.
6004 PONDERS COURT
GREENVILLE, SOUTH CAROLINA 29615
PHONE: (864)288-1265 FAX: (864)288-4430

GROUNDWATER ELEVATION CONTOUR MAP – FEBRUARY 21, 2011
CLOSED FRANCIS FARM LANDFILL
HAYWOOD COUNTY, NORTH CAROLINA

FIGURE NO. 1



MONITORING WELL #		MW-15
ACETONE	(ug/l)	<2.2
BENZENE	(ug/l)	**0.42**
CARBON DISULFIDE	(ug/l)	**1.2**
CHLOROBENZENE	(ug/l)	<0.23
CHLOROETHANE	(ug/l)	<0.54
CHLOROMETHANE	(ug/l)	**0.26**
1,2-DICHLOROBENZENE	(ug/l)	**3.3**
1,4-DICHLOROBENZENE	(ug/l)	**0.8**
1,1-DICHLOROETHANE	(ug/l)	**1**
1,2-DICHLOROETHANE	(ug/l)	<0.12
cis-1,2-DICHLOROETHENE	(ug/l)	**8.9**
1,2-DICHLOROPROPANE	(ug/l)	<0.27
DISOPROPYL ETHER	(ug/l)	**0.24**
ETHYLBENZENE	(ug/l)	<0.3
DICHLOROMETHANE	(ug/l)	<0.97
TETRACHLOROETHENE	(ug/l)	**0.45**
TOLUENE	(ug/l)	<0.26
TRICHLOROETHENE	(ug/l)	**0.73**
VINYL CHLORIDE	(ug/l)	<0.62
M&P XYLENE	(ug/l)	**5.8**
O XYLENE	(ug/l)	<0.23
TOTAL VOCs	(ug/l)	**16.1**

MONITORING WELL #		MW-1A
ACETONE	(ug/l)	<2.2
BENZENE	(ug/l)	<0.25
CARBON DISULFIDE	(ug/l)	<1.2
CHLOROBENZENE	(ug/l)	**1.8**
CHLOROETHANE	(ug/l)	**1.5**
CHLOROMETHANE	(ug/l)	<0.11
1,2-DICHLOROBENZENE	(ug/l)	<0.3
1,4-DICHLOROBENZENE	(ug/l)	<0.33
1,1-DICHLOROETHANE	(ug/l)	**1.2**
1,2-DICHLOROETHANE	(ug/l)	<0.12
cis-1,2-DICHLOROETHENE	(ug/l)	**1**
1,2-DICHLOROPROPANE	(ug/l)	<0.27
DISOPROPYL ETHER	(ug/l)	NT
ETHYLBENZENE	(ug/l)	<0.3
DICHLOROMETHANE	(ug/l)	<0.97
TETRACHLOROETHENE	(ug/l)	<0.46
TOLUENE	(ug/l)	<0.26
TRICHLOROETHENE	(ug/l)	<0.47
VINYL CHLORIDE	(ug/l)	<0.62
M&P XYLENE	(ug/l)	<0.66
O XYLENE	(ug/l)	<0.23
TOTAL VOCs	(ug/l)	**5.5**

MONITORING WELL #		MW-14
ACETONE	(ug/l)	<2.2
BENZENE	(ug/l)	**1.3**
CARBON DISULFIDE	(ug/l)	<1.2
CHLOROBENZENE	(ug/l)	**1.6**
CHLOROETHANE	(ug/l)	**1.3**
CHLOROMETHANE	(ug/l)	<0.11
1,2-DICHLOROBENZENE	(ug/l)	**104**
1,4-DICHLOROBENZENE	(ug/l)	**21.4**
1,1-DICHLOROETHANE	(ug/l)	**1.5**
1,2-DICHLOROETHANE	(ug/l)	<0.12
cis-1,2-DICHLOROETHENE	(ug/l)	**32.5**
1,2-DICHLOROPROPANE	(ug/l)	<0.22
DISOPROPYL ETHER	(ug/l)	**0.34**
ETHYLBENZENE	(ug/l)	<0.3
DICHLOROMETHANE	(ug/l)	<0.97
TETRACHLOROETHENE	(ug/l)	<0.46
TOLUENE	(ug/l)	<0.26
TRICHLOROETHENE	(ug/l)	<0.47
VINYL CHLORIDE	(ug/l)	<0.62
M&P XYLENE	(ug/l)	<0.66
O XYLENE	(ug/l)	<0.23
TOTAL VOCs	(ug/l)	**163.9**

MONITORING WELL #		MW-6
ACETONE	(ug/l)	<2.2
BENZENE	(ug/l)	<0.25
CARBON DISULFIDE	(ug/l)	<1.2
CHLOROBENZENE	(ug/l)	<0.23
CHLOROETHANE	(ug/l)	<0.54
CHLOROMETHANE	(ug/l)	<0.11
1,2-DICHLOROBENZENE	(ug/l)	<0.3
1,4-DICHLOROBENZENE	(ug/l)	<0.33
1,1-DICHLOROETHANE	(ug/l)	<0.32
1,2-DICHLOROETHANE	(ug/l)	<0.12
cis-1,2-DICHLOROETHENE	(ug/l)	<0.19
1,2-DICHLOROPROPANE	(ug/l)	<0.37
DISOPROPYL ETHER	(ug/l)	<0.12
ETHYLBENZENE	(ug/l)	<0.3
DICHLOROMETHANE	(ug/l)	<0.97
TETRACHLOROETHENE	(ug/l)	<0.46
TOLUENE	(ug/l)	<0.26
TRICHLOROETHENE	(ug/l)	<0.47
VINYL CHLORIDE	(ug/l)	<0.62
M&P XYLENE	(ug/l)	<0.66
O XYLENE	(ug/l)	<0.23
TOTAL VOCs	(ug/l)	**ND**

MONITORING WELL #		MW-13
ACETONE	(ug/l)	<2.2
BENZENE	(ug/l)	**5.3**
CARBON DISULFIDE	(ug/l)	<1.2
CHLOROBENZENE	(ug/l)	**0.61**
CHLOROETHANE	(ug/l)	**1.3**
CHLOROMETHANE	(ug/l)	<0.11
1,2-DICHLOROBENZENE	(ug/l)	<0.3
1,4-DICHLOROBENZENE	(ug/l)	**5.9**
1,1-DICHLOROETHANE	(ug/l)	**4.8**
1,2-DICHLOROETHANE	(ug/l)	<0.12
cis-1,2-DICHLOROETHENE	(ug/l)	**17.3**
1,2-DICHLOROPROPANE	(ug/l)	<0.27
DISOPROPYL ETHER	(ug/l)	**0.67**
ETHYLBENZENE	(ug/l)	<0.3
DICHLOROMETHANE	(ug/l)	<0.97
TETRACHLOROETHENE	(ug/l)	**2.2**
TOLUENE	(ug/l)	<0.26
TRICHLOROETHENE	(ug/l)	**1.7**
VINYL CHLORIDE	(ug/l)	**0.79**
M&P XYLENE	(ug/l)	<0.66
O XYLENE	(ug/l)	**8.8**
TOTAL VOCs	(ug/l)	**49.4**

MONITORING WELL #		MW-12
ACETONE	(ug/l)	<2.2
BENZENE	(ug/l)	<0.25
CARBON DISULFIDE	(ug/l)	<1.2
CHLOROBENZENE	(ug/l)	<0.23
CHLOROETHANE	(ug/l)	<0.54
CHLOROMETHANE	(ug/l)	<0.11
1,2-DICHLOROBENZENE	(ug/l)	<0.3
1,4-DICHLOROBENZENE	(ug/l)	<0.33
1,1-DICHLOROETHANE	(ug/l)	<0.32
1,2-DICHLOROETHANE	(ug/l)	<0.12
cis-1,2-DICHLOROETHENE	(ug/l)	<0.14
1,2-DICHLOROPROPANE	(ug/l)	<0.27
DISOPROPYL ETHER	(ug/l)	<0.12
ETHYLBENZENE	(ug/l)	<0.3
DICHLOROMETHANE	(ug/l)	<0.97
TETRACHLOROETHENE	(ug/l)	<0.46
TOLUENE	(ug/l)	<0.26
TRICHLOROETHENE	(ug/l)	<0.47
VINYL CHLORIDE	(ug/l)	<0.62
M&P XYLENE	(ug/l)	<0.66
O XYLENE	(ug/l)	<0.23
TOTAL VOCs	(ug/l)	**ND**

MONITORING WELL #		MW-7
ACETONE	(ug/l)	**2.3**
BENZENE	(ug/l)	**0.72**
CARBON DISULFIDE	(ug/l)	<1.2
CHLOROBENZENE	(ug/l)	**0.93**
CHLOROETHANE	(ug/l)	**1.3**
CHLOROMETHANE	(ug/l)	<0.11
1,2-DICHLOROBENZENE	(ug/l)	**1.4**
1,4-DICHLOROBENZENE	(ug/l)	**1.7**
1,1-DICHLOROETHANE	(ug/l)	**4.4**
1,2-DICHLOROETHANE	(ug/l)	**3**
cis-1,2-DICHLOROETHENE	(ug/l)	**2.7**
1,2-DICHLOROPROPANE	(ug/l)	**0.58**
DISOPROPYL ETHER	(ug/l)	**0.31**
ETHYLBENZENE	(ug/l)	<0.3
DICHLOROMETHANE	(ug/l)	<0.97
TETRACHLOROETHENE	(ug/l)	<0.46
TOLUENE	(ug/l)	<0.26
TRICHLOROETHENE	(ug/l)	<0.47
VINYL CHLORIDE	(ug/l)	<0.62
M&P XYLENE	(ug/l)	<0.66
O XYLENE	(ug/l)	<0.23
TOTAL VOCs	(ug/l)	**19.3**

MONITORING WELL #		MW-8
ACETONE	(ug/l)	<2.2
BENZENE	(ug/l)	<0.25
CARBON DISULFIDE	(ug/l)	<1.2
CHLOROBENZENE	(ug/l)	<0.23
CHLOROETHANE	(ug/l)	<0.54
CHLOROMETHANE	(ug/l)	<0.11
1,2-DICHLOROBENZENE	(ug/l)	<0.3
1,4-DICHLOROBENZENE	(ug/l)	<0.33
1,1-DICHLOROETHANE	(ug/l)	<0.32
1,2-DICHLOROETHANE	(ug/l)	<0.12
cis-1,2-DICHLOROETHENE	(ug/l)	<0.19
1,2-DICHLOROPROPANE	(ug/l)	<0.27
DISOPROPYL ETHER	(ug/l)	<0.12
ETHYLBENZENE	(ug/l)	<0.3
DICHLOROMETHANE	(ug/l)	<0.97
TETRACHLOROETHENE	(ug/l)	<0.46
TOLUENE	(ug/l)	<0.26
TRICHLOROETHENE	(ug/l)	<0.47
VINYL CHLORIDE	(ug/l)	<0.62
M&P XYLENE	(ug/l)	<0.66
O XYLENE	(ug/l)	<0.23
TOTAL VOCs	(ug/l)	**ND**

MONITORING WELL #		MW-2A
ACETONE	(ug/l)	<2.2
BENZENE	(ug/l)	<0.25
CARBON DISULFIDE	(ug/l)	<1.2
CHLOROBENZENE	(ug/l)	<0.23
CHLOROETHANE	(ug/l)	<0.54
CHLOROMETHANE	(ug/l)	<0.11
1,2-DICHLOROBENZENE	(ug/l)	<0.3
1,4-DICHLOROBENZENE	(ug/l)	**7**
1,1-DICHLOROETHANE	(ug/l)	**1.4**
1,2-DICHLOROETHANE	(ug/l)	<0.12
cis-1,2-DICHLOROETHENE	(ug/l)	**5.6**
1,2-DICHLOROPROPANE	(ug/l)	<0.27
DISOPROPYL ETHER	(ug/l)	<0.3
ETHYLBENZENE	(ug/l)	<0.97
DICHLOROMETHANE	(ug/l)	<0.47
TETRACHLOROETHENE	(ug/l)	<0.46
TOLUENE	(ug/l)	<0.26
TRICHLOROETHENE	(ug/l)	<0.47
VINYL CHLORIDE	(ug/l)	<0.62
M&P XYLENE	(ug/l)	<0.66
O XYLENE	(ug/l)	<0.23
TOTAL VOCs	(ug/l)	**14.0**

MONITORING WELL #		MW-9
ACETONE	(ug/l)	<2.2
BENZENE	(ug/l)	<0.25
CARBON DISULFIDE	(ug/l)	<1.2
CHLOROBENZENE	(ug/l)	<0.23
CHLOROETHANE	(ug/l)	<0.54
CHLOROMETHANE	(ug/l)	<0.11
1,2-DICHLOROBENZENE	(ug/l)	<0.3
1,4-DICHLOROBENZENE	(ug/l)	<0.33
1,1-DICHLOROETHANE	(ug/l)	**5.34**
1,2-DICHLOROETHANE	(ug/l)	<0.12
cis-1,2-DICHLOROETHENE	(ug/l)	**0.55**
1,2-DICHLOROPROPANE	(ug/l)	<0.27
DISOPROPYL ETHER	(ug/l)	<0.12
ETHYLBENZENE	(ug/l)	<0.3
DICHLOROMETHANE	(ug/l)	<0.97
TETRACHLOROETHENE	(ug/l)	**0.53**
TOLUENE	(ug/l)	<0.26
TRICHLOROETHENE	(ug/l)	**0.53**
VINYL CHLORIDE	(ug/l)	<0.62
M&P XYLENE	(ug/l)	<0.66
O XYLENE	(ug/l)	<0.23
TOTAL VOCs	(ug/l)	**25.8**

MONITORING WELL #		MW-11
ACETONE	(ug/l)	<2.2
BENZENE	(ug/l)	<0.25
CARBON DISULFIDE	(ug/l)	<1.2
CHLOROBENZENE	(ug/l)	<0.23
CHLOROETHANE	(ug/l)	<0.54
CHLOROMETHANE	(ug/l)	<0.11
1,2-DICHLOROBENZENE	(ug/l)	**4.2**
1,4-DICHLOROBENZENE	(ug/l)	**1.4**
1,1-DICHLOROETHANE	(ug/l)	**7.5**
1,2-DICHLOROETHANE	(ug/l)	<0.12
cis-1,2-DICHLOROETHENE	(ug/l)	**10.9**
1,2-DICHLOROPROPANE	(ug/l)	**1.4**
DISOPROPYL ETHER	(ug/l)	**0.31**
ETHYLBENZENE	(ug/l)	<0.3
DICHLOROMETHANE	(ug/l)	<0.97
TETRACHLOROETHENE	(ug/l)	**0.53**
TOLUENE	(ug/l)	<0.26
TRICHLOROETHENE	(ug/l)	**0.53**
VINYL CHLORIDE	(ug/l)	<0.62
M&P XYLENE	(ug/l)	<0.66
O XYLENE	(ug/l)	<0.23
TOTAL VOCs	(ug/l)	**25.8**

MONITORING WELL #		MW-4
ACETONE	(ug/l)	<2.2
BENZENE	(ug/l)	**15.5**
CARBON DISULFIDE	(ug/l)	<1.2
CHLOROBENZENE	(ug/l)	<0.23
CHLOROETHANE	(ug/l)	**3.1**
CHLOROMETHANE	(ug/l)	<0.11
1,2-DICHLOROBENZENE	(ug/l)	<0.3
1,4-DICHLOROBENZENE	(ug/l)	**4.7**
1,1-DICHLOROETHANE	(ug/l)	**31.9**
1,2-DICHLOROETHANE	(ug/l)	**2**
cis-1,2-DICHLOROETHENE	(ug/l)	**34.6**
1,2-DICHLOROPROPANE	(ug/l)	<0.27
DISOPROPYL ETHER	(ug/l)	NT
ETHYLBENZENE	(ug/l)	**1.7**
DICHLOROMETHANE	(ug/l)	**46.6**
TETRACHLOROETHENE	(ug/l)	**6.7**
TOLUENE	(ug/l)	**11.4**
TRICHLOROETHENE	(ug/l)	**7**
VINYL CHLORIDE	(ug/l)	<0.62
M&P XYLENE	(ug/l)	**8.4**
O XYLENE	(ug/l)	**4.2**
TOTAL VOCs	(ug/l)	**177.8**

MONITORING WELL #		MW-5
ACETONE	(ug/l)	<2.2
BENZENE	(ug/l)	**5.1**
CARBON DISULFIDE	(ug/l)	<1.2
CHLOROBENZENE	(ug/l)	<0.23
CHLOROETHANE	(ug/l)	**4**
CHLOROMETHANE	(ug/l)	<0.11
1,2-DICHLOROBENZENE	(ug/l)	<0.3
1,4-DICHLOROBENZENE	(ug/l)	**1.3**
1,1-DICHLOROETHANE	(ug/l)	**12.9**
1,2-DICHLOROETHANE	(ug/l)	<0.12
cis-1,2-DICHLOROETHENE	(ug/l)	**14.4**
1,2-DICHLOROPROPANE	(ug/l)	<0.27
DISOPROPYL ETHER	(ug/l)	NT
ETHYLBENZENE	(ug/l)	<0.3
DICHLOROMETHANE	(ug/l)	<0.97
TETRACHLOROETHENE	(ug/l)	**5.6**
TOLUENE	(ug/l)	<0.26
TRICHLOROETHENE	(ug/l)	**4.8**
VINYL CHLORIDE	(ug/l)	<0.62
M&P XYLENE	(ug/l)	<0.66
O XYLENE	(ug/l)	**2.3**
TOTAL VOCs	(ug/l)	**50.4**

MONITORING WELL #		MW-10
ACETONE	(ug/l)	<2.2
BENZENE	(ug/l)	<0.25
CARBON DISULFIDE	(ug/l)	<1.2
CHLOROBENZENE	(ug/l)	<0.23
CHLOROETHANE	(ug/l)	<0.54
CHLOROMETHANE	(ug/l)	<0.11
1,2-DICHLOROBENZENE	(ug/l)	**0.33**
1,4-DICHLOROBENZENE	(ug/l)	<0.33
1,1-DICHLOROETHANE	(ug/l)	**3.1**
1,2-DICHLOROETHANE	(ug/l)	<0.12
cis-1,2-DICHLOROETHENE	(ug/l)	**2.3**
1,2-DICHLOROPROPANE	(ug/l)	<0.27
DISOPROPYL ETHER	(ug/l)	<0.12
ETHYLBENZENE	(ug/l)	<0.3
DICHLOROMETHANE	(ug/l)	<0.97
TETRACHLOROETHENE	(ug/l)	**0.85**
TOLUENE	(ug/l)	<0.26
TRICHLOROETHENE	(ug/l)	**0.55**
VINYL CHLORIDE	(ug/l)	<0.62
M&P XYLENE	(ug/l)	<0.66
O XYLENE	(ug/l)	<0.23
TOTAL VOCs	(ug/l)	**7.1**

MONITORING WELL #		MW-3A
ACETONE	(ug/l)	<2.2
BENZENE	(ug/l)	<0.25
CARBON DISULFIDE	(ug/l)	<1.2
CHLOROBENZENE	(ug/l)	<0.23
CHLOROETHANE	(ug/l)	**7.3**
CHLOROMETHANE	(ug/l)	<0.11
1,2-DICHLOROBENZENE	(ug/l)	**1.1**
1,4-DICHLOROBENZENE	(ug/l)	**1.2**
1,1-DICHLOROETHANE	(ug/l)	**17.5**
1,2-DICHLOROETHANE	(ug/l)	**2.8**
cis-1,2-DICHLOROETHENE	(ug/l)	**1.8**
1,2-DICHLOROPROPANE	(ug/l)	<0.27
DISOPROPYL ETHER	(ug/l)	NT
ETHYLBENZENE	(ug/l)	<0.3
DICHLOROMETHANE	(ug/l)	<0.97
TETRACHLOROETHENE	(ug/l)	<0.46
TOLUENE	(ug/l)	<0.26
TRICHLOROETHENE	(ug/l)	<0.47
VINYL CHLORIDE	(ug/l)	<0.62
M&P XYLENE	(ug/l)	<0.66
O XYLENE	(ug/l)	<0.23
TOTAL VOCs	(ug/l)	**31.5**

MONITORING WELL #		MW-3
ACETONE	(ug/l)	<2.2
BENZENE	(ug/l)	<0.25
CARBON DISULFIDE	(ug/l)	<1.2
CHLOROBENZENE	(ug/l)	<0.23
CHLOROETHANE	(ug/l)	<0.54
CHLOROMETHANE	(ug/l)	<0.11
1,2-DICHLOROBENZENE	(ug/l)	**0.34**
1,4-DICHLOROBENZENE	(ug/l)	**5.8**
1,1-DICHLOROETHANE	(ug/l)	**1190**
1,2-DICHLOROETHANE	(ug/l)	**3.6**
cis-1,2-DICHLOROETHENE	(ug/l)	**181**
1,2-DICHLOROPROPANE	(ug/l)	**40.5**
DISOPROPYL ETHER	(ug/l)	**64.3**
ETHYLBENZENE	(ug/l)	**16.2**
DICHLOROMETHANE	(ug/l)	**97.3**
TETRACHLOROETHENE	(ug/l)	**5.4**
TOLUENE	(ug/l)	**0.34**
TRICHLOROETHENE	(ug/l)	**205**
VINYL CHLORIDE	(ug/l)	**162**
M&P XYLENE	(ug/l)	<0.66
O XYLENE	(ug/l)	<0.23
TOTAL VOCs	(ug/l)	**0.9**

SURVEY CONTROL NOTES:
1. SURVEY BASED ON NAD83 (NSRS 2007).
2. ELEVATIONS BASED ON NAVD88.
3. AS-BUILT SURVEYS CONDUCTED SEPTEMBER, OCTOBER, AND NOVEMBER 2010.

NOTES:
1. PROPERTY LINES SHOWN ARE FROM HAYWOOD COUNTY G.I.S. DEPARTMENT, AND ARE APPROXIMATE ONLY.
2. CONTOURS ON FRANCIS FARM LANDFILL PROPERTY SOUTH AND WEST OF PAVED ACCESS ROAD ARE FROM GROUND SURVEY PERFORMED BY McGILL ASSOCIATES, OCTOBER 15, 2009. REMAINING CONTOURS ARE LIDAR CONTOURS PROVIDED BY HAYWOOD COUNTY.
3. SURVEY CONTROL INFORMATION BASED ON NAVD 88 AND NAD83 (NSRS 2007).
4. WASTE LIMITS SHOWN ARE A COMPILATION OF EXISTING DOCUMENTATION AND FIELD INVESTIGATION NOVEMBER 2010, AND ARE APPROXIMATE ONLY.
5. UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE ONLY!
6. SHADED ANALYSES VALUES EXCEED NC2L GROUNDWATER STANDARDS.

100 50 0 100 200
APPROXIMATE SCALE IN FEET

LEGEND

MW-13	GROUND WATER MONITORING WELL
MM-5	LANDFILL GAS MONITORING WELL
SM-1a	LANDFILL GAS MONITORING LOCATION IN STRUCTURE
EW-5	PASSIVE LANDFILL GAS EXTRACTION WELL
GAS VENT	SHALLOW GAS VENT
	APPROXIMATE WASTE LIMITS
NT	NOT TESTED

REFERENCE:
DRAWING PROVIDED BY McGILL ASSOCIATES VIA EMAIL ON 3-17-2011.

REVISIONS		
No.	DESCRIPTION	BY

DRAWN: ACE
CHECKED: AWA
APPROVED:

DATE: 04-22-11
CAD FILE: HCFFLF-14DVOCDS
JOB NO: J10-1957-14

BLE INC.
BUNNELL-LAMMONS ENGINEERING, INC.
1004 POINSETT COURT
GREENVILLE, SOUTH CAROLINA 29615
PHONE: (864)288-1265 FAX: (864)288-5490

DETECTED COMPOUNDS – FEBRUARY 22, 2011
CLOSED FRANCIS FARM LANDFILL
HAYWOOD COUNTY, NORTH CAROLINA

FIGURE NO. 2