

**Ground Water Monitoring Report**

**October 2006 Monitoring Event**

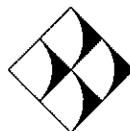
**Davidson County**

**Construction & Demolition Debris Landfill  
Lexington, North Carolina**

Prepared for:

**Davidson County Integrated Solid Waste**  
1242 Old Highway 29  
Thomasville, NC 27360-0024

**December 2006**



**G.N. Richardson & Associates, Inc.**  
Engineering and Geological Services  
14 North Boylan Avenue  
Raleigh, North Carolina 27603

**Davidson County C&D Landfill**  
**Ground Water Monitoring Report**  
**October 2006 Monitoring Event**

1.0 INTRODUCTION.....1

2.0 DAVIDSON COUNTY C&D LANDFILL .....1

    2.1    Sampling Procedures .....1

    2.2    Field and Laboratory Results .....1

3.0 SITE GROUND WATER CHARACTERIZATION.....1

4.0 CONCLUSIONS.....2

**FIGURES**

Figure 1 – Davidson County Landfill Site Potentiometric Map

**TABLES**

Table 1 – C&D Landfill Ground Water Elevations

Table 2 – C&D Landfill Field Parameters

**APPENDICES**

Appendix A – Laboratory Analytical Reports

## **1.0 Introduction**

On October 19<sup>th</sup>, 2006, Environment 1, Inc. personnel performed the required semi-annual ground water monitoring event at the Davidson County C&D Landfill. This sampling event satisfies the requirements of the monitoring programs for this site. The following report summarizes the monitoring event, sampling procedures, field and laboratory results and ground water characterization as required by NC Solid Waste Regulations. Also included are summary tables of ground water measurements, field parameters, detected constituents and the laboratory analytical report.

### **Davidson County C&D Landfill**

#### **2.1 Sampling Procedures**

Ground water sampling was performed at the four (4) ground water monitoring well locations associated with the C&D landfill. It should be noted that due to construction of Phase-2, CDMW-4 was abandoned and replaced with CDMW-4A. The surface water sampling location (SW-3) associated with this site was sampled and inadvertently reported with the Holly Grove Landfill laboratory data. Sampling procedures followed the protocols set forth in the site's Sampling and Analysis Plan and the North Carolina Water Quality Monitoring Guidance Document for Solid Waste Facilities. Each well was gauged to determine ground water depth and then purged of three well volumes or until dry. The wells were purged and allowed to stabilize prior to sample collection. Ground water purging and sample collection was performed using a factory sealed Teflon™ bailer.

Field measurements of temperature, pH, and conductivity were taken at each well. Samples were collected in laboratory containers provided by Environment 1, Inc. (NC Laboratory Certification # 10). Upon collection, the samples were sealed, placed on ice, and transported via overnight delivery to the laboratory. Field blanks were also collected for quality control purposes.

During the sampling process, each well was inspected for signs of damage or unusual conditions. All wells were found to be in good condition and free of obstructions.

#### **2.2 Field and Laboratory Results**

Ground water samples were collected from the four monitoring wells (CDMW-2, CDMW-3, CDMW-4 and CDMW-5) located down gradient of the C&D Landfill. Analysis of these samples indicated no detectable levels of any constituent analyzed. The laboratory report is included in **Appendix A**.

## **3.0 Site Ground Water Characterization**

A potentiometric surface map was prepared for the entire site from ground water elevation data collected during this sampling event.

Ground water at the C&D landfill is migrating both to the north, west and south with a ground water divide located at the site. The ground water divide was made evident during site permitting when more piezometers were located in the area. The site topography also indicates a likely ground water divide across this site. The ground water to the north of the divide is likely influenced by the presence of the sedimentation basin adjacent to Phase 1. The potentiometric surface for the C&D landfill is shown on **Figure 1**.

#### **4.0 Conclusions**

The results presented above from the C&D landfill indicate no detectable levels of any of the constituents analyzed. This indicates that the C&D landfill has not impacted ground water quality.

**Figures**

**Tables**

**Table 1**  
**Ground Water Elevations**  
**Davidson County C&D Landfill**  
**10/19/2006**

Well - C	TOC Elevation (feet)	Water Level (feet)	GW Elev. (feet)
CDMW-2	704.80	41.50	663.30
CDMW-3	685.00	15.56	669.44
CDMW-4A	718.36	49.94	668.42
CDMW-5	699.80	32.61	667.19

Notes Velocity Calculated from  $V=K^*I/n$  where:

- V = velocity
- K = Hydraulic Conductivity
- I = Gradient
- n = Porosity

Hydraulic Conductivity data from slug tests performed in 1994  
 Porosity values assumed from Groundwater & Wells (Driscoll)

Davidson County LF

**Table 2**  
**Field Parameters**  
**Davidson County C&D Landfill**  
**10/19/2006**

Well	Scale	Conductivity (µmhos/cm)	Temperature (°C)
CDMW-2	5.9	184	16
CDMW-3	6.0	445	18
CDMW-4A	6.6	551	17
CDMW-5	6.6	336	17

**Appendix A**

**Laboratory Analytical Report**

# -Environment 1, Incorporated

P.O. BOX 7085, 114 OAKMONT DRIVE  
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208  
FAX (252) 756-0633

Drinking Water ID: 37715  
Wastewater ID: 10

ID#: 6050

DAVIDSON COUNTY LANDFILL (C&D)  
MS. JOAN SMYTH  
G.N. RICHARDSON & ASSOCIATES  
14 N. BOYLAN AVENUE  
RALEIGH, NC 27603

DATE COLLECTED: 10/19/06  
DATE REPORTED: 11/14/06

REVIEWED BY: 

PARAMETERS	CDMW-2	CDMW-3	CDMW-4A	CDMW-5	Trip Blank	Analysis Date	Analyst	Method Code
PH (field measurement), Units	5.9	6.0	6.6	6.6		10/19/06	RJH	EPA150.1
Arsenic, mg/l	<0.010	<0.010	<0.010	<0.010		10/31/06	LFJ	EPA200.8
Barium, mg/l	<0.500	<0.500	<0.500	<0.500		10/31/06	LFJ	EPA200.8
Cadmium, mg/l	<0.001	<0.001	<0.001	<0.001		10/31/06	LFJ	EPA200.8
Total Chromium, mg/l	<0.010	<0.010	<0.010	<0.010		10/31/06	LFJ	EPA200.8
Lead, mg/l	<0.010	<0.010	<0.010	<0.010		10/31/06	LFJ	EPA200.8
Mercury, mg/l	<0.001	<0.001	<0.001	<0.001		10/31/06	LFJ	EPA200.8
Selenium, mg/l	<0.020	<0.020	<0.020	<0.020		10/31/06	LFJ	EPA200.8
Silver, mg/l	<0.010	<0.010	<0.010	<0.010		10/31/06	LFJ	EPA200.8
Conductivity (at 25c), uMhos	184	445	551	336		10/19/06	RJH	SM2510B
Temperature, °C	16	18	17	17		10/19/06	RJH	SM2550B
Static Water Level, feet	41.50	15.56	49.94	32.61		10/19/06	RJH	
Well Depth, feet	54.11	30.21	65.68	55.45		10/19/06	RJH	

# -Environment 1, Incorporated

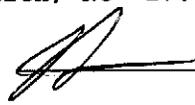
P.O. BOX 7085, 114 OAKMONT DRIVE  
GREENVILLE, N.C. 27835-7085

PHONE (252) 756-6208  
FAX (252) 756-0633

CLIENT: DAVIDSON COUNTY LANDFILL (C&D)  
MS. JOAN SMYTH  
G.N. RICHARDSON & ASSOCIATES  
14 N. BOYLAN AVENUE  
RALEIGH, NC 27603

CLIENT ID: 6050  
ANALYST: MAO  
DATE COLLECTED: 10/19/06  
DATE ANALYZED: 11/01/06  
DATE REPORTED: 11/14/06

Page: 1

REVIEWED BY: 

## VOLATILE ORGANICS EPA METHOD 8260B

PARAMETERS, ug/l	CDMW-2	CDMW-3	CDMW-4A	CDMW-5	Trip Blank
1. Chloromethane	<10.00	<10.00	<10.00	<10.00	<10.00
2. Vinyl Chloride	<10.00	<10.00	<10.00	<10.00	<10.00
3. Bromomethane	<10.00	<10.00	<10.00	<10.00	<10.00
4. Chloroethane	<10.00	<10.00	<10.00	<10.00	<10.00
5. Trichlorofluoromethane	<5.00	<5.00	<5.00	<5.00	<5.00
6. 1,1-Dichloroethene	<5.00	<5.00	<5.00	<5.00	<5.00
7. Acetone	<100.00	<100.00	<100.00	<100.00	<100.00
8. Iodomethane	<10.00	<10.00	<10.00	<10.00	<10.00
9. Carbon Disulfide	<100.00	<100.00	<100.00	<100.00	<100.00
10. Methylene Chloride	<10.00	<10.00	<10.00	<10.00	<10.00
11. trans-1,2-Dichloroethene	<5.00	<5.00	<5.00	<5.00	<5.00
12. 1,1-Dichloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
13. Vinyl Acetate	<50.00	<50.00	<50.00	<50.00	<50.00
14. Cis-1,2-Dichloroethene	<5.00	<5.00	<5.00	<5.00	<5.00
15. 2-Butanone	<100.00	<100.00	<100.00	<100.00	<100.00
16. Bromochloromethane	<5.00	<5.00	<5.00	<5.00	<5.00
17. Chloroform	<5.00	<5.00	<5.00	<5.00	<5.00
18. 1,1,1-Trichloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
19. Carbon Tetrachloride	<10.00	<10.00	<10.00	<10.00	<10.00
20. Benzene	<5.00	<5.00	<5.00	<5.00	<5.00
21. 1,2-Dichloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
22. Trichloroethene	<5.00	<5.00	<5.00	<5.00	<5.00
23. 1,2-Dichloropropane	<5.00	<5.00	<5.00	<5.00	<5.00
24. Bromodichloromethane	<5.00	<5.00	<5.00	<5.00	<5.00
25. Cis-1,3-Dichloropropene	<10.00	<10.00	<10.00	<10.00	<10.00
26. 4-Methyl-2-Pentanone	<100.00	<100.00	<100.00	<100.00	<100.00
27. Toluene	<5.00	<5.00	<5.00	<5.00	<5.00
28. trans-1,3-Dichloropropene	<10.00	<10.00	<10.00	<10.00	<10.00
29. 1,1,2-Trichloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
30. Tetrachloroethene	<5.00	<5.00	<5.00	<5.00	<5.00
31. 2-Hexanone	<50.00	<50.00	<50.00	<50.00	<50.00
32. Dibromochloromethane	<5.00	<5.00	<5.00	<5.00	<5.00
33. 1,2-Dibromoethane	<5.00	<5.00	<5.00	<5.00	<5.00
34. Chlorobenzene	<5.00	<5.00	<5.00	<5.00	<5.00
35. 1,1,1,2-Tetrachloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
36. Ethylbenzene	<5.00	<5.00	<5.00	<5.00	<5.00
37. Xylenes	<5.00	<5.00	<5.00	<5.00	<5.00
38. Dibromomethane	<10.00	<10.00	<10.00	<10.00	<10.00
39. Styrene	<10.00	<10.00	<10.00	<10.00	<10.00
40. Bromoform	<5.00	<5.00	<5.00	<5.00	<5.00
41. 1,1,2,2-Tetrachloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
42. 1,2,3-Trichloropropane	<15.00	<15.00	<15.00	<15.00	<15.00
43. 1,4-Dichlorobenzene	<5.00	<5.00	<5.00	<5.00	<5.00
44. 1,2-Dichlorobenzene	<5.00	<5.00	<5.00	<5.00	<5.00
45. 1,2-Dibromo-3-Chloropropane	<25.00	<25.00	<25.00	<25.00	<25.00
46. Acrylonitrile	<200.00	<200.00	<200.00	<200.00	<200.00
47. trans-1,4-Dichloro-2-Butene	<100.00	<100.00	<100.00	<100.00	<100.00

Environment 1, Inc.  
 P.O. Box #7085, #14 Oakmont Dr.  
 Greenville, NC 27858

Phone (252) 756-6208 • Fax (252) 756-0633

CLIENT: 6050 Week: 40

DAVIDSON COUNTY LANDFILL (C&D)  
 MS. JOAN SMYTH  
 G.N. RICHARDSON & ASSOCIATES  
 14 N. BOYLAN AVENUE  
 RALEIGH NC 27603

(919) 828-0577

CHAIN OF CUSTODY RECORD

SAMPLE LOCATION	COLLECTION		TOTAL CHLORINE, mg/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	DISINFECTION			Field pH	Metals	Conductivity	Temperature	Field Parameter	EPA 8260B	8260 Dup. 1	8260 Dup. 2	PARAMETERS	
	DATE	TIME				CHLORINE	UV	NONE										A
CDMW-2	10	1906 0945	16	16	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	C	C	C	C	C	C	C	C	A - NONE D - NaOH B - HNO <sub>3</sub> E - HCL C - H <sub>2</sub> SO <sub>4</sub> F - ZINC ACETATE G - NATHIOSULFATE	
CDMW-3	10	1906 0940	18	18	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	C	C	C	C	C	C	C	C		
CDMW-4A	10	1906 1000	17	17	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	C	C	C	C	C	C	C	C		
CDMW-5	10	1906 1000	17	17	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	C	C	C	C	C	C	C	C		
Trip Blank					2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)
BOB HOOPER	10/19/06 4:00	ATKINS	10/19/06 4:00	ATKINS	10/19/06 4:00	ATKINS	10/19/06 4:00	ATKINS	10/19/06 4:00	ATKINS	10/19/06 4:00	ATKINS	10/19/06 4:00	ATKINS	10/19/06 4:00	ATKINS	10/19/06 4:00	ATKINS
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)

Instructions for completing this form are on the reverse side.

Sampler must place a "C" for composite sample or a "G" for grab sample above each parameter listed.

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY  
 SOLID WASTE SECTION  
 WASTEWATER (NPDES)  
 DRINKING WATER  
 DMWG/W  
 SAMPLES COLLECTED BY: HOOPER  
 (Please Print)  
 SAMPLES RECEIVED IN LAB AT 2.0 °C