

NC DENR **Environmental Monitoring Reporting Form**  
 Division of Waste Management - Solid Waste

Notice: This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

- Instructions:**
- Prepare one form for each individually monitored unit.
  - Please type or print legibly.
  - Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
  - Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
  - Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i)).
  - Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

**Solid Waste Monitoring Data Submittal Information**

Name of entity submitting data (laboratory, consultant, facility owner):  
 Richardson Smith Gardner and Associates, Inc.

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:  
 Name: Joan A. Smyth, P.G. Phone: 919-828-0577 x 221  
 E-mail: joan@rsgengineers.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Halifax County Coal Ash Landfill	921 Liles Rd Aurelian Springs, NC	42-04	.0500	August 23-25, 2010

**Environmental Status: (Check all that apply)**  
 Initial/Background Monitoring  Detection Monitoring  Assessment Monitoring  Corrective Action

**Type of data submitted: (Check all that apply)**  
 Groundwater monitoring data from monitoring wells  Methane gas monitoring data  
 Groundwater monitoring data from private water supply wells  Corrective action data (specify) \_\_\_\_\_  
 Leachate monitoring data  Other(specify) \_\_\_\_\_  
 Surface water monitoring data

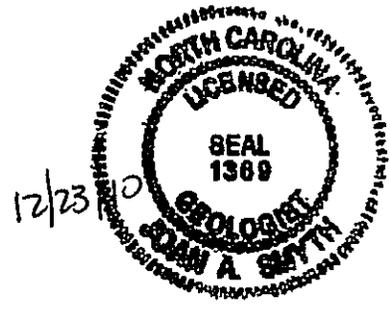
**Notification attached?**  
 No. No groundwater or surface water standards were exceeded.  
 Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.  
 Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

**Certification**

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

Joan A. Smyth, P.G. Senior Hydrogeologist 919-828-0577 x 221  
 Facility Representative Name (Print) Title (Area Code) Telephone Number  
*Joan A. Smyth* 12/23/10 Affix NC Licensed/ Professional Geologist Seal  
 Signature Date

14 N. Boylan Avenue Raleigh, NC 27603  
 Facility Representative Address  
 C0828  
 NC PE Firm License Number (if applicable effective May 1, 2009)



**Halifax County Coal Ash Landfill**

**Ground Water Monitoring Report**

**Fall 2010 Semi-annual  
Monitoring Event**

**Halifax County Landfill  
Halifax County, North Carolina  
NC Solid Waste Permit # 42-04**

Prepared for:  
**Halifax County Solid Waste Department**  
P. O. Box 70  
Halifax, North Carolina 27839

**December 2010**



**Ground Water Monitoring Report  
Halifax County Coal Ash Landfill  
Fall 2010 Semi - Annual Report**

Prepared for:

**Halifax County Solid Waste Department  
P.O. Box 70  
Halifax, North Carolina 27839**

RSG Project No. **Halifax - 8**



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Joan A. Smyth, P.G.  
Senior Hydrogeologist

**December 2010**



PRINTED ON 100% RECYCLED PAPER

**Halifax County Coal Ash Landfill**

**Semi-annual Ground Water Monitoring Report  
Fall 2010 Monitoring Event**

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## 1.0 Introduction

The Halifax County Coal Ash Landfill, operating under Solid Waste Permit #42-04, is required to submit semi-annual ground water monitoring reports for ground water monitoring. This report presents the results of the second semi-annual monitoring event for 2010, conducted on August 24, 2010. This event was performed to comply with the semi-annual monitoring schedule required by NC Solid Waste Regulations.

The Halifax County Coal Ash Landfill is a monofill landfill that only accepts coal ash from power generation. The ground water monitoring network consists of six (6) wells located around the perimeter of the landfill (**Figure 1**). Also included in the monitoring network are one surface water sampling point, a sedimentation basin discharge location, and two sediment sampling locations in the stream immediately upgradient and downgradient of the sedimentation basin discharge (**Figure 1**).

This report includes summaries of the field procedures, laboratory analyses, and ground water characterization. Also included are summary tables of the results, and laboratory analytical reports.

## 2.0 Sampling Procedures

The sampling event, performed by Environment 1, Inc., consisted of collecting samples from six ground water wells (MW-8, MW-9, MW-10, MW-11, MW-12, and MW-17), shown in **Figure 1**. A surface water sample was collected from one location (SW-1). Sediment samples were collected upstream and downstream of the sedimentation basin discharge point.

Sampling methods followed the protocol outlined in the Solid Waste Section Guidelines for Groundwater, Soil and Surface Water Sampling<sup>1</sup>. The depth to water in each well was gauged prior to purging and sampling. Field measurements of pH, specific conductivity, turbidity and temperature were obtained from each well. Field parameter results are included in **Table 1**.

All samples were collected by Environment 1, Inc. in laboratory prepared containers for the specified analytical procedures. Sampling equipment (bailers) were cleaned in the laboratory and transported to the site in aluminum foil. Ground water samples were properly preserved, placed on ice, and transported to the laboratory facility within the specified holding times for each analysis.

## 3.0 Site Hydrogeology

A review of the 1985 North Carolina Geological Map as well as *Ground Water in the Halifax Area, North Carolina* (Dept. of Conservation and Development Bulletin #51, 1946) indicates that the landfill site is situated on the eastern edge of the Eastern Piedmont Physiographic Province. The site is just west of the Coastal Plain overlap. Western Halifax County is underlain by an assemblage of felsic to intermediate crystalline igneous and metamorphic rocks of early to late Paleozoic age. The rocks of the eastern piedmont exhibit a northeast strike and locally dip gently eastward as a result of regional metamorphism and folding which produced a

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<sup>1</sup> Solid Waste Section Guidelines for Groundwater, Soil and surface Water Sampling, NCDENR, DWM, April 2008.

broad plunging anticline. The area was simultaneously intruded by a number of felsic (granite) plutons. The rock formation underlying the subject site is a granitic pluton identified as the Butterwood Creek intrusive.

Depths to ground water generally range from near surface in lowland areas along Brewer's Creek and its tributary to up to 45 ft. below grade in the area of MW-12. Ground water at the site is flowing generally to the south.

## **4.0 Sample Analysis and Results**

### **4.1 Laboratory Analysis**

The samples were placed in a cooler with ice and were transported to Environment 1, Inc., a North Carolina certified laboratory (NC Wastewater ID #10). Laboratory analysis consisted of the full suite of RCRA metals as well as indicator parameters total organic carbon, sulfate and chloride. Parameters were reported at NC Solid Waste Section Practical Quantitation Limits (SWSLs). The laboratory analytical report is included as **Appendix A**.

### **4.2 Field and Laboratory Results**

The field parameter results (**Table 1**) have remained consistent with previous sampling events. Analyzed constituents that were detected are presented in **Table 2**.

Two (2) inorganic constituents; zinc (MW-8, MW-9, MW-11 & MW-12), and lead (MW-8) shown in **Table 2**, were detected above the Solid Waste Section Reporting Limits (SWSLs). Constituents detected below the SWSL are also included in **Table 2** and are denoted as "J" values. One (1) inorganic constituent; lead (MW-8) was detected above the 2L groundwater standards.

No constituents were detected above the SWSLs in the two sediment samples. Surface water sampling location SW-1 and the sedimentation basin outfall were both dry and were therefore not sampled.

## **5.0 Ground Water Characterization**

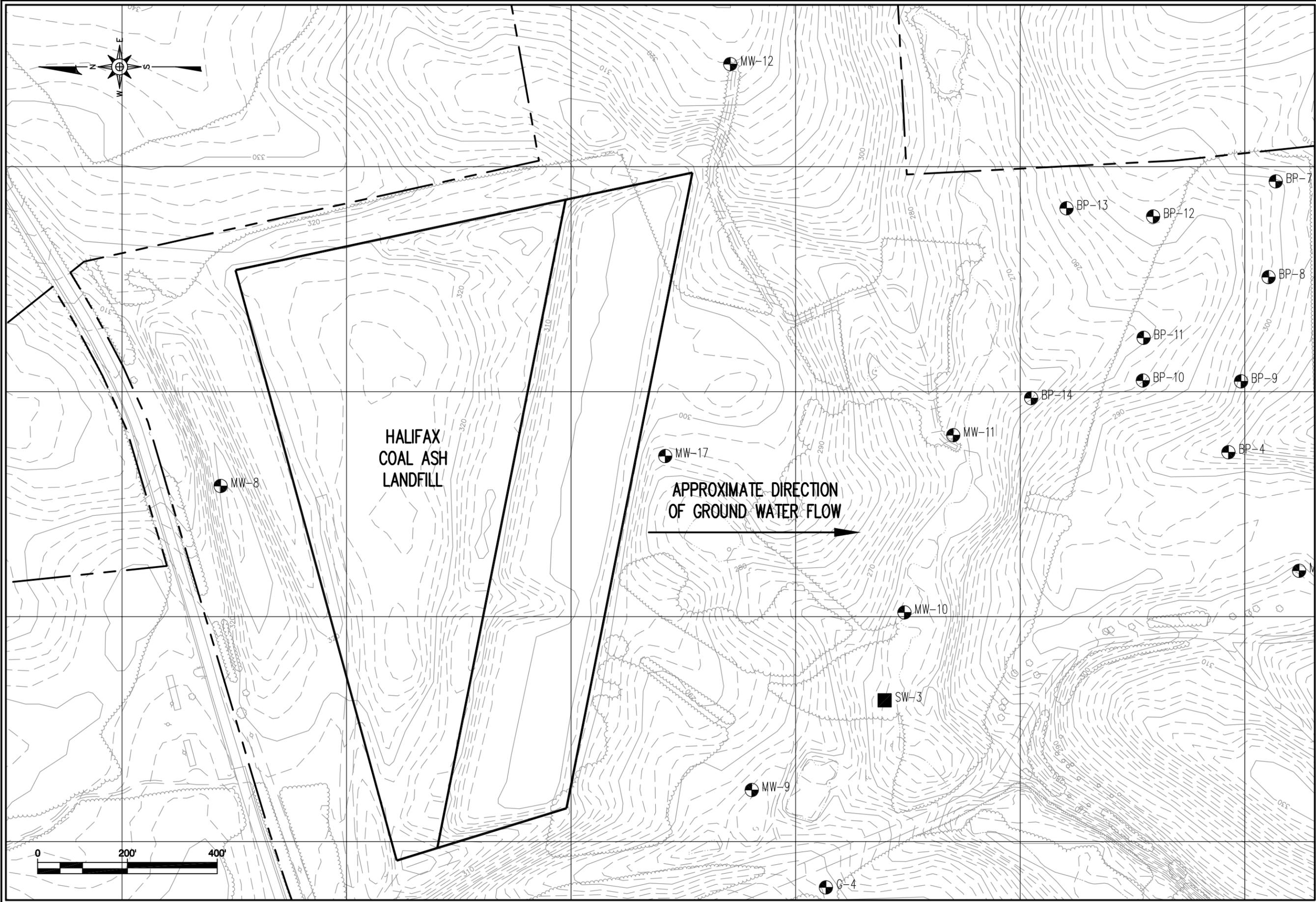
The depth to water data indicates that ground water is flowing generally to the east towards the unnamed tributary to Brewer's Creek. This is consistent with ground water flow patterns previously detected for the site. The ground water flow map is attached as **Figure 1**.

## **6.0 Conclusions**

A review of constituent data indicates no ground water impact at the site. One (1) inorganic constituent: lead (MW-8) was detected above the 2L groundwater standards. Lead was not detected in this well during the spring 2010 monitoring event. This detection above the 2L groundwater standard is likely due to the elevated turbidity (2800 NTU) that was in the sample. The next semi-annual event is scheduled for April 2011. A report will be submitted upon receipt of the results of that sampling event.

Figures

G:\CAD\Halifax\Halifax-8\sheets\HALI-B0103.dwg - 2/19/2008 5:46 PM



  
**RICHARDSON SMITH GARDNER  
& ASSOCIATES**  
 14 N. Boylan Ave.  
 Raleigh, N.C. 27603  
 www.rsgengineers.com  
 ph: 919-826-0577  
 fax: 919-826-3899

FIGURE NO.	1	FILE NAME	HALI-B0103
SCALE:	AS SHOWN	PROJECT NO.	HALIFAX-8
CHECKED BY:	J.A.S.	DATE:	Feb. 2008
DRAWN BY:	C.T.J.		

TITLE:  
**DIRECTION OF  
 GROUND WATER FLOW  
 HALIFAX COAL ASH LANDFILL  
 AURELIAN SPRINGS, NC**

Tables

**Table 1**  
**Halifax County Coal Ash Landfill**  
**Field Parameters**  
**8/24/2010**

Monitoring Location	pH (std units)	Static Water Level (feet)	Specific Conductivity (umhos/cm)	Temperature (degrees C)	Turbidity (NTU)
MW-8	4.8	21.3	83	16	2800
MW-9	5.3	13.3	32	18	170
MW-10	4.5	4.31	40	19	26
MW-11	6.4	5.68	113	18	12
MW-12	5.2	44.47	31	16	2.1
MW-17	5.2	20.18	35	17	650
SW-1	7.1	NM	129	19	5.3
Sed Basin 1	NM	NM	NM	23	NM

nm - Not Measured



By: LAQ  
Date: 12/23/2010

**Table 2**  
**Halifax County Coal Ash Landfill**  
**Detected Inorganic Constituents**  
**8/24/2010**

Monitoring Location	SWSL*	2L GW Standard	MW-8	MW-9	MW-10	MW-11	MW-12	MW-17	Sed Basin 1
Arsenic	10	10	1.3 J	0.3 J	ND	ND	0.3 J	ND	NM
Barium	100	700	80.9 J	63.8 J	20.9 J	9.2 J	38 J	53 J	NM
Cadmium	1	2	1	0.2 J	ND	0.1 J	0.2 J	0.2 J	NM
Chromium, total	10	10	4 J	0.6 J	ND	ND	0.6 J	1.7 J	NM
Copper	10	1000	9.7 J	2.6 J	0.5 J	0.9 J	2 J	6.2 J	NM
Lead	10	15	<b>29</b>	2.5 J	0.1 J	0.1 J	1.2 J	0.9 J	NM
Selenium	10	20	0.6 J	0.4 J	ND	ND	ND	ND	NM
Sulfate	250000	--	13100 J	ND	ND	ND	ND	ND	NM
Zinc	10	1000	<b>21</b>	<b>21</b>	1.4 J	2 J	<b>12</b>	<b>12</b>	NM

Monitoring Location	SWSL*	Surface Water Standard	SW-1	Sediment #1 Upstream	Sediment #2 Downstream
Arsenic	10	10	0.4 J	ND	ND
Barium	100	700	10.9 J	ND	ND
Cadmium	1	2	0.4 J	ND	ND
Chromium, total	10	10	ND	ND	ND
Copper	10	1000	0.3 J	ND	ND
Lead	10	15	0.1 J	ND	ND
Selenium	10	20	ND	ND	ND
Sulfate	250000	--	116600 J	ND	ND
Zinc	10	1000	1 J	ND	ND

- ND - Not detected at or above PQL
- Shading - Levels above 2L standard
- Bold Letters - Levels below 2L standard
- NA - Constituent Not Analyzed
- J - Detected constituents below PQL limit
- NM - Not Measured

All SWSL's and 2L Standards and Results are in ug/l.  
MW-8 and Basin#1 were found to be dry during this event.

Appendix A

Laboratory Analytical Report

# Environment 1, Incorporated

REC'D SEP 14 2010

Drinking Water ID: 37715  
Wastewater ID: 10

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

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

ID#: 6042

HALIFAX CO. (COAL ASH LANDFILL)  
MS. GWEN MATTHEWS  
P.O. BOX 70  
HALIFAX ,NC 27839

DATE COLLECTED: 08/24/10  
DATE REPORTED : 09/09/10

REVIEWED BY: 

PARAMETERS	MDL	Well					Analysis		Method Code						
		SWSL	#8	#9	#10	#11	#12	Date		Analyst					
PH (field measurement), Units			4.8	5.3	4.5	6.4	5.2	08/24/10	RJH	SM4500HB					
Total Organic Carbon, mg/l	0.15	1.0	5.77	1.11	---	U	---	U	08/30/10	SEJ	SM5310C				
Chloride, mg/l	5.0	5.0	---	U	---	U	---	U	08/26/10	MEL	SM4500-CLB				
Sulfate, mg/l	5.0	250.0	13.1	J	---	U	---	U	08/30/10	TRB	SM426C				
Arsenic, ug/l	0.04	10.0	1.3	J	0.3	J	---	U	0.3	J	09/03/10	LFJ	EPA200.8		
Barium, ug/l	0.03	100.0	80.9	J	63.8	J	20.9	J	9.2	J	38	J	09/03/10	LFJ	EPA200.8
Cadmium, ug/l	0.02	1.0	1		0.2	J	---	U	0.1	J	0.2	J	09/03/10	LFJ	EPA200.8
Copper, ug/l	0.03	10.0	9.7	J	2.6	J	0.5	J	0.9	J	2	J	09/03/10	LFJ	EPA200.8
Total Chromium, ug/l	0.03	10.0	4	J	0.6	J	---	U	---	U	0.6	J	09/03/10	LFJ	EPA200.8
Lead, ug/l	0.01	10.0	29		2.5	J	0.1	J	0.1	J	1.2	J	09/03/10	LFJ	EPA200.8
Mercury, ug/l	0.08	0.20	---	U	---	U	---	U	---	U	---	U	09/03/10	LFJ	EPA200.8
Selenium, ug/l	0.32	10.0	0.6	J	0.4	J	---	U	---	U	---	U	09/03/10	LFJ	EPA200.8
Silver, ug/l	0.03	10.0	---	U	---	U	---	U	---	U	---	U	09/03/10	LFJ	EPA200.8
Zinc, ug/l	0.08	10.0	21		21		1.4	J	2	J	12		09/03/10	LFJ	EPA200.8
Turbidity, NTU	1.0	1.0	2800		170		26		12		2.1		08/24/10	MJN	SM2130B
Conductivity (at 25c), uMhos	1.0	1.0	83		32		40		113		31		08/24/10	RJH	SM2510B
Temperature, °C			16		18		19		18		16		08/24/10	RJH	SM2550B
Static Water Level, feet			21.30		13.30		4.31		5.68		44.47		08/24/10	RJH	
Well Depth, feet			23.29		24.97		16.22		21.71		51.02		08/24/10	RJH	

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

# Environment 1, Incorporated

Drinking Water ID: 37715  
Wastewater ID: 10

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

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

ID#: 6042

HALIFAX CO. (COAL ASH LANDFILL)  
MS. GWEN MATTHEWS  
P.O. BOX 70  
HALIFAX ,NC 27839

DATE COLLECTED: 08/24/10  
DATE REPORTED : 09/09/10

REVIEWED BY: 

PARAMETERS	MDL	Well		Analysis		Method
		SWSL	#17	Date	Analyst	Code
PH (field measurement), Units			5.2	08/30/10	RJH	SM4500HB
Total Organic Carbon, mg/l	0.15	1.0	---	U	08/30/10	SEJ SM5310C
Chloride, mg/l	5.0	5.0	---	U	08/30/10	MEL SM4500-CLB
Sulfate, mg/l	5.0	250.0	---	U	08/24/10	TRB SM426C
Arsenic, ug/l	0.04	10.0	---	U	09/03/10	LFJ EPA200.8
Barium, ug/l	0.03	100.0	53	J	09/03/10	LFJ EPA200.8
Cadmium, ug/l	0.02	1.0	0.2	J	09/03/10	LFJ EPA200.8
Copper, ug/l	0.03	10.0	6.2	J	09/03/10	LFJ EPA200.8
Total Chromium, ug/l	0.03	10.0	1.7	J	09/03/10	LFJ EPA200.8
Lead, ug/l	0.01	10.0	0.9	J	09/03/10	LFJ EPA200.8
Mercury, ug/l	0.08	0.20	---	U	09/03/10	LFJ EPA200.8
Selenium, ug/l	0.32	10.0	---	U	09/03/10	LFJ EPA200.8
Silver, ug/l	0.03	10.0	---	U	09/03/10	LFJ EPA200.8
Zinc, ug/l	0.08	10.0	12		09/03/10	LFJ EPA200.8
Turbidity, NTU	1.0	1.0	650		08/24/10	MJN SM2130B
Conductivity (at 25c), uMhos	1.0	1.0	35		08/24/10	RJH SM2510B
Temperature, °C			17		08/24/10	RJH SM2550B
Static Water Level, feet			20.18		08/24/10	RJH
Well Depth, feet			26.81		08/24/10	RJH

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

# Environment 1, Incorporated

Drinking Water ID: 37715  
Wastewater ID: 10

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

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

ID#: 6042 A

HALIFAX CO. (COAL ASH LANDFILL)  
MS. GWEN MATTHEWS  
P.O. BOX 70  
HALIFAX ,NC 27839

DATE COLLECTED: 08/23/10  
DATE REPORTED : 09/09/10

REVIEWED BY: 

PARAMETERS	MDL	SWSL	SW-1	Basin #1	Analysis				
					Date	Analyst	Method	Code	
PH (field measurement), Units				7.1	Missing	08/30/10	RJH	SM4500HB	
Total Organic Carbon, mg/l	0.15	1.0		2.09	Missing	08/30/10	SEJ	SM5310C	
Chloride, mg/l	5.0	5.0	---	U	Missing	08/26/10	MEL	SM4500-CLB	
Sulfate, mg/l	5.0	250.0	116.6	J	Missing	08/30/10	TRB	SM426C	
Arsenic, ug/l	0.04	10.0		0.4	J	Missing	09/03/10	LPJ	EPA200.8
Barium, ug/l	0.03	100.0		10.9	J	Missing	09/03/10	LPJ	EPA200.8
Cadmium, ug/l	0.02	1.0		0.4	J	Missing	09/03/10	LPJ	EPA200.8
Copper, ug/l	0.03	10.0		0.3	J	Missing	09/03/10	LPJ	EPA200.8
Total Chromium, ug/l	0.03	10.0	---	U	Missing	09/03/10	LPJ	EPA200.8	
Lead, ug/l	0.01	10.0		0.1	J	Missing	09/03/10	LPJ	EPA200.8
Mercury, ug/l	0.08	0.20	---	U	Missing	09/03/10	LPJ	EPA200.8	
Selenium, ug/l	0.32	10.0	---	U	Missing	09/03/10	LPJ	EPA200.8	
Silver, ug/l	0.03	10.0	---	U	Missing	09/03/10	LPJ	EPA200.8	
Zinc, ug/l	0.08	10.0		1	J	Missing	09/03/10	LPJ	EPA200.8
Turbidity, NTU	1.0	1.0		5.3	Missing	08/23/10	MJN	SM2130B	
Conductivity (at 25c), uMhos	1.0	1.0		129	Missing	08/23/10	RJH	SM2510B	
Temperature, °C				23	Missing	08/23/10	RJH	SM2550B	

J = Between MDL and SWSL, U = Below ALL Quantitation Limits.

Environment 1, Inc.  
 P.O. Box 7085, 114 Oakmont Dr.  
 Greenville, NC 27858

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

CLIENT: 6042 A Week: 33

HALIFAX CO. (COAL ASH LANDFILL)  
 MS. GWEN MATTHEWS  
 P.O. BOX 70  
 HALIFAX NC 27839

(252) 583-1807

CHAIN OF CUSTODY RECORD

SAMPLE LOCATION	COLLECTION		TOTAL CHLORINE, mg/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	DISINFECTION		Field pH	TOC	Chloride	Sulfate	Metals	Turbidity	Conductivity	Temperature	TCLP Metals	PARAMETERS	
	DATE	TIME				CHLORINE	UV											
SW-1	08/23/10	1150	23	6	6	<input type="checkbox"/>	<input type="checkbox"/>	A	P	P	P	P	P	P	P	A		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
Basin #1					6	<input type="checkbox"/>	<input type="checkbox"/>											CLASSIFICATION: <input type="checkbox"/> WASTEWATER (NPDES) <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> DWO/GW <input checked="" type="checkbox"/> SOLID WASTE SECTION
Sediment Sample #1	08/23/10	1105	22	1	1													SAMPLES COLLECTED BY: (Please Print) Nogel / Spot
Sediment Sample #2	08/23/10	1130	22	1	1													SAMPLES RECEIVED IN LAB AT 2:29 °C
REINQUISHED 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.)
REINQUISHED 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.)
COMMENTS: Basin #1 Still																		

PLEASE READ Instructions for completing this form on the reverse side.

Enviro ment 1, Inc.  
 P.O. Box 7085, 114-Oakmont Dr.  
 Greenville, NC 27858

**CHAIN OF CUSTODY RECORD**

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

CLIENT: 6042 Week: 33

HALIFAX CO. (COAL ASH LANDFILL)  
 MS. GWEN MATTHEWS  
 P.O. BOX 70  
 HALIFAX NC 27839

(252) 583-1807

SAMPLE LOCATION	COLLECTION		TOTAL CHLORINE, mg/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	DISINFECTION		Field pH	TOC	Chloride	Sulfate	Metals	Turbidity	Conductivity	Temperature	Field Parameter	PARAMETERS	CLASSIFICATION:	
	DATE	TIME				<input type="checkbox"/> CHLORINE	<input type="checkbox"/> UV												<input type="checkbox"/> NONE
Well #8	08	2410 1005		12	6	<input type="checkbox"/>	<input type="checkbox"/>	A	C	A	A	A	A	A	A				
Well #9	08	2410 0905		18	6	<input type="checkbox"/>	<input type="checkbox"/>	P	P	P	P	P	P	P	P				
Well #10	08	2410 1005		19	6	<input type="checkbox"/>	<input type="checkbox"/>	A	C	A	A	A	A	A	A				
Well #11	08	2410 1010		19	6	<input type="checkbox"/>	<input type="checkbox"/>	A	C	A	A	A	A	A	A				
Well #12	08	2410 1020		16	6	<input type="checkbox"/>	<input type="checkbox"/>	A	C	A	A	A	A	A	A				
Well #17	08	2410 0755		17	6	<input type="checkbox"/>	<input type="checkbox"/>	A	C	A	A	A	A	A	A				
REINQUISHED 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.)	DATE/TIME
<i>Bob N. Gaele</i>	08 24 10 11:30 AM	<i>[Signature]</i>	08 24 10 11:30 AM	<i>[Signature]</i>	08 24 10 11:30 AM	<i>[Signature]</i>	08 24 10 11:30 AM	<i>[Signature]</i>	08 24 10 11:30 AM	<i>[Signature]</i>	08 24 10 11:30 AM	<i>[Signature]</i>	08 24 10 11:30 AM	<i>[Signature]</i>	08 24 10 11:30 AM	<i>[Signature]</i>	08 24 10 11:30 AM	<i>[Signature]</i>	08 24 10 11:30 AM
COMMENTS: CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY SAMPLES COLLECTED BY: <i>[Signature]</i> (Please Print) <i>Bob N. Gaele</i> SAMPLES RECEIVED IN LAB AT <i>0.2</i> °C																			

CHLORINE NEUTRALIZED AT COLLECTION

pH CHECK (LAB)

CONTAINER TYPE, PIG

CHEMICAL PRESERVATION

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

CLASSIFICATION:

WASTEWATER (NPDES)

DRINKING WATER

DWQ/GW

SOLID WASTE SECTION

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY

SAMPLES COLLECTED BY: *[Signature]*

(Please Print) *Bob N. Gaele*

SAMPLES RECEIVED IN LAB AT *0.2* °C

PLEASE READ Instructions for completing this form on the reverse side.

Sampler must place a "C" for composite sample or a "G" for Grab sample in the blocks above for each parameter requested.

SGS North America, Inc.  
List of Reporting Abbreviations  
And Data Qualifiers

- B = Compound also detected in batch blank
- BQL = Below Quantification Limit (RL or MDL)
- DF = Dilution Factor
- Dup = Duplicate
- D = Detected, but RPD is > 40% between results in dual column method.
- E = Estimated concentration, exceeds calibration range.
- J = Estimated concentration, below calibration range and above MDL
- LCS(D) = Laboratory Control Spike (Duplicate)
- MDL = Method Detection Limit
- MS(D) = Matrix Spike (Duplicate)
- PQL = Practical Quantitation Limit
- RL/CL = Reporting Limit / Control Limit
- RPD = Relative Percent Difference
- UJ = Target analytes with recoveries that are  $10\% < \%R < LCL$ ; # of MEs are allowable and compounds are not detected in the sample.
- mg/kg = milligram per kilogram, ppm, parts per million
- ug/kg = micrograms per kilogram, ppb, parts per billion
- mg/L = milligram per liter, ppm, parts per million
- ug/L = micrograms per liter, ppb, parts per billion
- % Rec = Percent Recovery
- % solids = Percent Solids

Special Notes:

- 1) Metals and mercury samples are digested with a hot block; see the standard operating procedure document for details.
- 2) Uncertainty for all reported data is less than or equal to 30 percent.

SGS North America, Inc.

Results for Metals

Client Sample ID: Sediment Sample #1  
 Client Project ID: 6042 A Halifax CO. (Coal Ash Landfill)  
 Lab Sample ID: G239-1074-3  
 Lab Project ID: G239-1074  
 ICP InitWt/Vol: 5 mL      Final Vol: 50 mL  
 Hg InitWt/Vol: 20 mL      Final Vol: 57 mL  
 Prep Batch: 17304 17309

Analyzed By: PSW  
 Date Collected: 8/23/2010 11:05  
 Date Received: 8/27/2010  
 Matrix: Leachate

Metals TCLP	Result	RL	DF	Units	Method	Date Analyzed
Arsenic	BQL	0.200	1	MG/L	6010C	9/3/2010
Barium	BQL	5.00	1	MG/L	6010C	9/3/2010
Cadmium	BQL	0.100	1	MG/L	6010C	9/3/2010
Chromium	BQL	0.100	1	MG/L	6010C	9/3/2010
Lead	BQL	0.100	1	MG/L	6010C	9/3/2010
Mercury	BQL	0.000570	1	MG/L	7470	9/1/2010
Selenium	BQL	0.200	1	MG/L	6010C	9/3/2010
Silver	BQL	0.100	1	MG/L	6010C	9/3/2010

Comments

BQL = Below Quantitation Limits  
 DF = Dilution Factor  
 J = Between MDL and RL  
 B= Amount in Prep Blank > MDL

Reviewed By:   
 METALS.XLS

Results for Metals

Client Sample ID: Sediment Sample #2  
 Client Project ID: 6042 A Halifax CO. (Coal Ash Landfill)  
 Lab Sample ID: G239-1074-4  
 Lab Project ID: G239-1074  
 ICP InitWt/Vol: 5 mL      Final Vol: 50 mL  
 Hg InitWt/Vol: 20 mL      Final Vol: 57 mL  
 Prep Batch: 17304 17309

Analyzed By: PSW  
 Date Collected: 8/23/2010 11:30  
 Date Received: 8/27/2010  
 Matrix: Leachate

Metals	Result	RL	DF	Units	Method	Date Analyzed
TCLP						
Arsenic	BQL	0.200	1	MG/L	6010C	9/3/2010
Barium	BQL	5.00	1	MG/L	6010C	9/3/2010
Cadmium	BQL	0.100	1	MG/L	6010C	9/3/2010
Chromium	BQL	0.100	1	MG/L	6010C	9/3/2010
Lead	BQL	0.100	1	MG/L	6010C	9/3/2010
Mercury	BQL	0.000570	1	MG/L	7470	9/1/2010
Selenium	BQL	0.200	1	MG/L	6010C	9/3/2010
Silver	BQL	0.100	1	MG/L	6010C	9/3/2010

Comments

BQL = Below Quantitation Limits  
 DF = Dilution Factor  
 J = Between MDL and RL  
 B= Amount in Prep Blank > MDL

Reviewed By:   
 METALS.XLS



# Environment 1, Incorporated

REC'D OCT 26 2010

Drinking Water ID: 37715  
Wastewater ID: 10

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

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

ID#: 299

HALIFAX LANDFILL (COAL & ASH)  
C/O G.N. RICHARDSON & ASSOC.  
ATTN: JOAN SMYTH  
14 N. BOYLAN AVENUE  
RALEIGH ,NC 27603

DATE COLLECTED: 10/13/10  
DATE REPORTED : 10/22/10

REVIEWED BY: 

PARAMETERS	Basin #1	Analysis		Method
		Date	Analyst	Code
COD, mg/l	150	10/19/10	TRB	HACH8000
Fecal Coliform (MF), /100 Mls	<1	10/13/10	HLB	SM9222D
Total Suspended Residue, mg/l	3.9	10/13/10	HLB	SM2540D

