

Paper Report  Electronic Data - Email CD (data loaded: Yes / No) Doc/Event #:

NC DENR  
Division of Waste Management - Solid Waste

**Environmental Monitoring Reporting Form**

**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:**

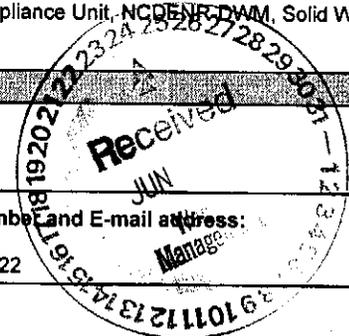
- Prepare one form for each individually monitored unit.
- Please type or print legibly.
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of 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)).
- In accordance with NC General Statutes Chapter 89C and 89E and NC Solid Waste Management Rules 15A NCAC 13B, be sure to affix a seal to the bottom of this page, when applicable.
- Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NC DENR 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):

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Joan Smyth, P.G. Phone: 919-828-0577 x 122  
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)
Closed Washington County MSW Landfill	Washington County Landfill 943 Washington Square Mall Plymouth, NC 27962	94-01	.0500	March 6, 2008

**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 Smyth, P.G. Senior Hydrogeologist 919-828-0577 x122

Facility Representative Name (Print) Title (Area Code) Telephone Number

Signature: Joan A. Smyth Date: 6/17/08

Affix NC Licensed/ Professional Geologist/Engineer Seal here:



# **Washington County Closed MSW Landfill**

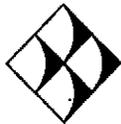
## **Ground Water Monitoring Report**

### **March 2008 Semi-annual Monitoring Event**

**Washington County Closed MSW Landfill  
Plymouth, North Carolina  
NC Solid Waste Permit # 94-01-MSWLF-1980**

Prepared for:  
**Washington County**  
P.O. Box 1007  
Plymouth, North Carolina 27962

**June 2008**



**Richardson Smith Gardner & Associates, Inc.**

Engineering and Geological Services

14 North Boylan Avenue  
Raleigh, North Carolina 27603

# Spring 2008 Ground Water Monitoring Report

## Washington County Closed MSW Landfill Washington, North Carolina NC Solid Waste Permit # 94-01 MSWLF-1980

Prepared for:

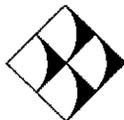
**Washington County Solid Waste  
943 Washington Square Mall  
Plymouth, North Carolina 27962**

RSG Project No. **Wash 07-2**

  
Joan A. Smyth, P.G.  
Senior Hydrogeologist



**June 2008**



**RICHARDSON SMITH GARDNER & ASSOCIATES**  
Engineering and Geological Services  
14 N. Boylan Avenue  
Raleigh, North Carolina 27603

**Washington County Closed MSW Landfill**  
**Semi-annual Ground Water Monitoring Report**  
**March 2008 Event**

1.0 INTRODUCTION.....1

2.0 SAMPLING PROCEDURES .....1

3.0 FIELD AND LABORATORY RESULTS .....1

    3.1 Laboratory Analysis .....1

    3.2 Field and Laboratory Results .....2

4.0 GROUND WATER CHARACTERIZATION.....3

5.0 CONCLUSIONS.....3

**TABLES**

- Table 1 – Field Parameter Results
- Table 2 – Detected Inorganic Constituents
- Table 3 – Detected Organic Constituents

**APPENDICES**

- Appendix A – Laboratory Analytical Reports

## 1.0 Introduction

The Washington County Closed MSW Landfill, operating under Solid Waste Permit #94-01-MSWLF-1980 is required to submit semiannual ground water monitoring reports for ground water monitoring. This report presents the results of the first semiannual monitoring event for 2008, conducted on March 6<sup>th</sup>, 2008.

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

## 2.0 Sampling Procedures

The sampling event, performed by Environment 1, Inc. on March 6<sup>th</sup>, 2008, consisted of collecting samples from four (4) ground water wells (MW-1 through MW-4) in accordance with the approved site Sampling and Analysis Plan. Also included in the analysis were trip and field blanks for quality control.

Sampling methods followed the protocol outlined in the North Carolina Water Quality Monitoring Guidance Document for Solid Waste Facilities (North Carolina Department of Environment and Natural Resources, Division of Waste Management). The depth to water in each well was gauged prior to purging and sampling. Field measurements of pH, specific conductivity, and temperature were obtained from each well.

All samples were collected in laboratory prepared containers for the specified analytical procedures. Sampling equipment (Teflon 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 Field & Laboratory Results

### 3.1 Laboratory Analysis

The ground and surface water samples were transported to Environment 1, Inc., a North Carolina certified laboratory (NC Wastewater ID #10). Laboratory analysis consisted of the full suite of RCRA Subtitle D Appendix I constituents plus previously detected Appendix II constituents, and chloride. Parameters were reported at NC DWM Solid Waste Section Limits (SWSLs). The laboratory analytical report is included as **Appendix A**. No surface water samples are required for monitoring this site.

### 3.2 Field and Laboratory Results

The field parameter results are shown in **Table 1** while detected constituents are presented in **Tables 2** and **3**. One (1) inorganic constituent, shown in **Table 2**, was detected above the SWSL in one well (MW-2). This constituent was detected below the 2L ground water standards.

Two (2) organic constituents were detected above the SWSLs in two (2) monitoring wells:

Chlorobenzene and  
1,4 dichlorobenzene.

One constituent (1,4 dichlorobenzene) was detected at concentrations above the 2L standards. Constituents detected below the SWSL are denoted as "J" values and are also included in **Tables 2 & 3**.

#### **4.0 Ground Water Characterization**

Currently, we are unable to locate survey data for the ground water monitoring wells. Prior to the next ground water monitoring event we expect that these wells will be surveyed and an evaluation of the potentiometric surface and ground water flow direction will be presented.

#### **5.0 Conclusions**

The data and analyses show relatively stable ground water quality at the Washington County Closed MSW Landfill. The next ground water monitoring event is scheduled for October 2008. Results will be reported upon completion of laboratory analysis.

Figures

**Tables**

**Table 1**  
**Field Parameter Results**  
**Washington County MSW Landfill**  
**3/6/2008**

Monitoring Well	pH	Temperature (°C)	Specific Conductance (µmhos/cm)	Depth (m)
MW-1	5.4	577	15	15
MW-2	6.4	1147	17	17
MW-3	6.1	264	16	16
MW-4	5.8	120	13	13

**Table 2**  
**Detected Inorganic Constituents**  
**Washington County Closed MSW Landfill**  
**3/6/2008**

Constituent	SWSL	MSW	MSW2	MSW3	MSW4
Arsenic	10	50	3.6J	5.2J	1.0J
Barium	100	2000	70.9J	545	36.8J
Cadmium	1	1.75	0.3J	0.2J	0.1J
Total Chromium	10	50	1.2J	1.5J	1.5J
Lead	10	15	0.4J	0.5J	1.1J
Selenium	10	50	2.5J	1.2J	0.2J

Note: All results in ug/l (ppb)  
 J= Value above method detection limit but below Solid Waste Section  
 Quantitation Limit (SWSL)

**Table 3**  
**Detected Organic Constituents**  
**Washington County Closed MSW Landfill**  
**3/6/2008**

Constituent	100.0	700	3.70J	7.40J	6.30J	6.70J
Acetone	100.0	700	3.70J	7.40J	6.30J	6.70J
Benzene	1.0	1	ND	0.70J	ND	ND
Chlorobenzene	3.0	50	ND	3.60	7.20	ND
1,4-Dichlorobenzene	1.0	1.4	ND		1.30	ND

Note: All results in ug/l (ppb)  
 J = Value above method detection limit but below  
 Solid Waste Section Quantitation Limit (SWSL)

**Appendix A**

**Laboratory Analytical Report**

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

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

ID#: 6018

WASHINGTON CO. LANDFILL  
MR. CARL CRITCHER  
P.O. BOX 1007  
PLYMOUTH ,NC 27962

DATE COLLECTED: 03/06/08  
DATE REPORTED : 04/09/08

REVIEWED BY: 

PARAMETERS	MDL	SWSL	Well	Well	Well	Well	Analysis		Method
			#1	#2	#3	#4	Date	Analyst	Code
PH (field measurement), Units			5.4	6.4	6.1	5.8	03/06/08	RJH	SM4500HB
Arsenic, ug/l	0.07	10.0	3.6 J	5.2 J	5.2 J	1.0 J	03/10/08	LFJ	EPA200.8
Barium, ug/l	0.11	100.0	70.9 J	545	63.7 J	36.8 J	03/10/08	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.3 J	0.2 J	0.1 J	0.1 J	03/11/08	LFJ	EPA200.8
Total Chromium, ug/l	0.11	10.0	1.2 J	1.5 J	0.6 J	1.5 J	03/10/08	LFJ	EPA200.8
Lead, ug/l	0.04	10.0	0.4 J	0.5 J	0.2 J	1.1 J	03/10/08	LFJ	EPA200.8
Mercury, ug/l	0.01	0.20	--- U	--- U	--- U	--- U	03/10/08	LFJ	EPA200.8
Selenium, ug/l	0.14	10.0	2.5 J	1.2 J	0.7 J	0.2 J	03/10/08	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U	--- U	--- U	--- U	03/10/08	LFJ	EPA200.8
Conductivity (at 25c), uMhos	1.0	1.0	577	1147	264	120	03/06/08	RJH	SM2510B
Temperature, °C			15	17	16	13	03/06/08	RJH	SM2550B
Static Water Level, feet			6.98	7.77	9.16	5.35	03/06/08	RJH	
Well Depth, feet			23.09	19.30	19.97	22.90	03/06/08	RJH	

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

# Environment 1, Incorporated

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

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

CLIENT: WASHINGTON CO. LANDFILL  
MR. CARL CRITCHER  
P.O. BOX 1007  
PLYMOUTH, NC 27962

CLIENT ID: 6018  
ANALYST: MAO  
DATE COLLECTED: 03/06/08  
DATE REPORTED: 04/09/08

Page: 1

REVIEWED BY: 

## VOLATILE ORGANICS EPA METHOD 8260B

PARAMETERS, ug/l	Date Analyzed:		03/13/08	03/20/08	03/20/08	03/20/08		
	MDL	SWSL	Well #1	Well #2	Well #3	Well #4		
1. Chloromethane	0.18	1.0	---	U	---	U		
2. Vinyl Chloride	0.34	1.0	---	U	---	U		
3. Bromomethane	0.26	10.0	---	U	---	U		
4. Chloroethane	0.29	10.0	---	U	---	U		
5. Trichlorofluoromethane	0.13	1.0	---	U	---	U		
6. 1,1-Dichloroethene	0.14	5.0	---	U	---	U		
7. Acetone	1.21	100.0	3.70 J	7.40 J	6.30 J	6.70 J		
8. Iodomethane	0.12	10.0	---	U	---	U		
9. Carbon Disulfide	0.14	100.0	---	U	---	U		
10. Methylene Chloride	0.14	1.0	---	U	---	U		
11. trans-1,2-Dichloroethene	0.13	5.0	---	U	---	U		
12. 1,1-Dichloroethane	0.16	5.0	---	U	---	U		
13. Vinyl Acetate	0.20	50.0	---	U	---	U		
14. Cis-1,2-Dichloroethene	0.14	5.0	---	U	---	U		
15. 2-Butanone	0.85	100.0	---	U	---	U		
16. Bromochloromethane	0.11	3.0	---	U	---	U		
17. Chloroform	0.13	5.0	---	U	---	U		
18. 1,1,1-Trichloroethane	0.11	1.0	---	U	---	U		
19. Carbon Tetrachloride	0.13	1.0	---	U	---	U		
20. Benzene	0.16	1.0	---	U	0.70 J	---	U	
21. 1,2-Dichloroethane	0.12	1.0	---	U	---	U		
22. Trichloroethene	0.13	1.0	---	U	---	U		
23. 1,2-Dichloropropane	0.17	1.0	---	U	---	U		
24. Bromodichloromethane	0.13	1.0	---	U	---	U		
25. Cis-1,3-Dichloropropene	0.17	1.0	---	U	---	U		
26. 4-Methyl-2-Pentanone	0.68	100.0	---	U	---	U		
27. Toluene	0.13	1.0	---	U	---	U		
28. trans-1,3-Dichloropropene	0.14	1.0	---	U	---	U		
29. 1,1,2-Trichloroethane	0.20	1.0	---	U	---	U		
30. Tetrachloroethene	0.16	1.0	---	U	---	U		
31. 2-Hexanone	1.00	50.0	---	U	---	U		
32. Dibromochloromethane	0.14	3.0	---	U	---	U		
33. 1,2-Dibromoethane	0.13	1.0	---	U	---	U		
34. Chlorobenzene	0.13	3.0	---	U	3.60	7.20	---	U
35. 1,1,1,2-Tetrachloroethane	0.14	5.0	---	U	---	---	U	
36. Ethylbenzene	0.16	1.0	---	U	---	---	U	
37. Xylenes	0.48	5.0	---	U	---	---	U	
38. Dibromomethane	0.17	10.0	---	U	---	---	U	
39. Styrene	0.16	1.0	---	U	---	---	U	
40. Bromoform	0.11	3.0	---	U	---	---	U	
41. 1,1,2,2-Tetrachloroethane	0.16	3.0	---	U	---	---	U	
42. 1,2,3-Trichloropropane	0.06	1.0	---	U	---	---	U	
43. 1,4-Dichlorobenzene	0.21	1.0	---	U	1.90	1.30	---	U
44. 1,2-Dichlorobenzene	0.13	5.0	---	U	---	---	U	
45. 1,2-Dibromo-3-Chloropropane	0.26	13.0	---	U	---	---	U	
46. Acrylonitrile	1.49	200.0	---	U	---	---	U	
47. trans-1,4-Dichloro-2-Butene	0.14	100.0	---	U	---	---	U	

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

Environment 1, Inc.  
 P.O. Box 7005-114 Oakmont Dr.  
 Greenville, NC 27858

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

CLIENT: 6018

Week: 13

WASHINGTON CO. LANDFILL  
 MR. CARL CRITCHER  
 P.O. BOX 1007  
 PLYMOUTH NC 27962

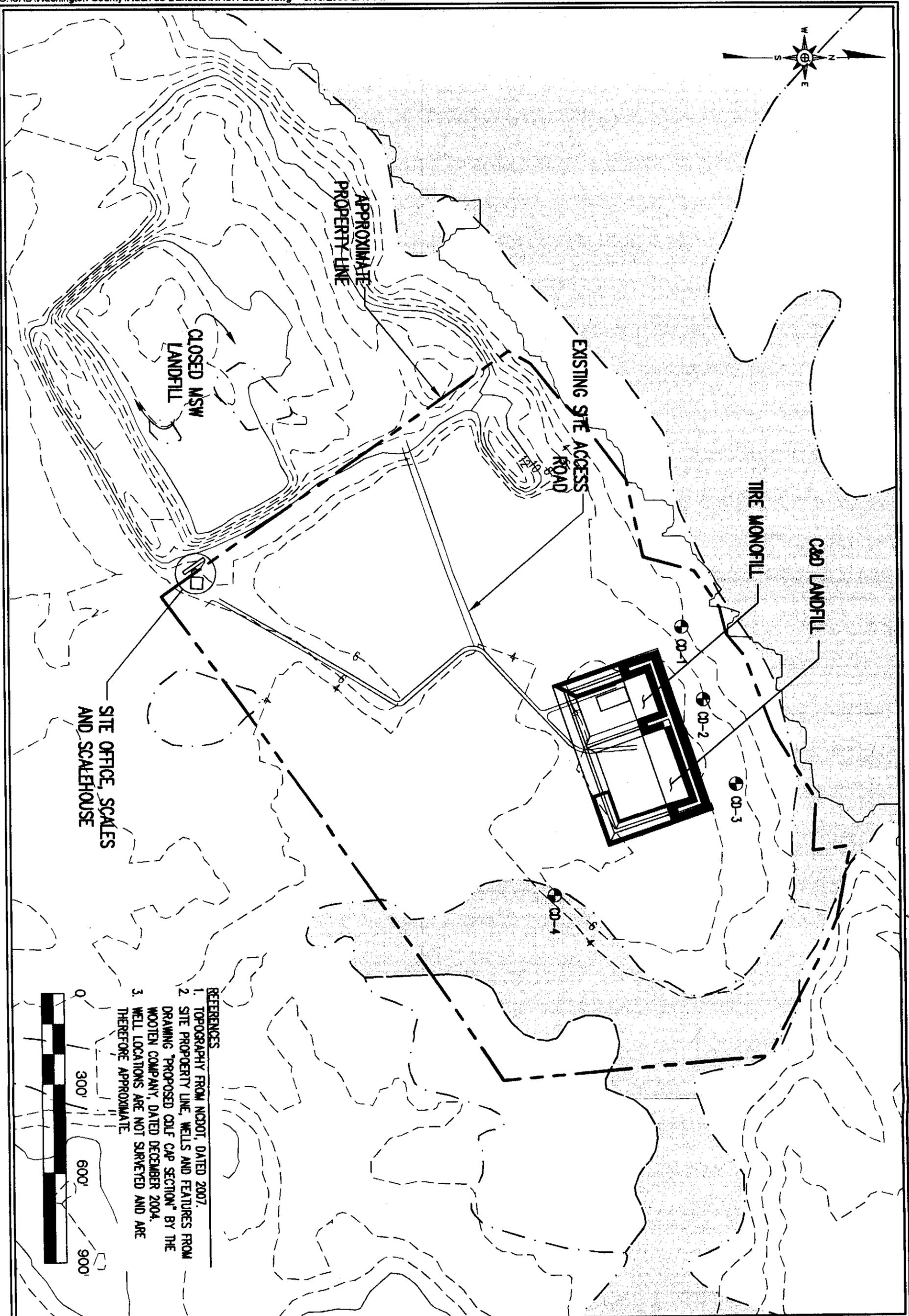
(252) 793-5615

CHAIN OF CUSTODY RECORD

SAMPLE LOCATION	COLLECTION		TOTAL CHLORINE, mg/l	TEMPERATURE, °C	# OF CONTAINERS	Field pH	Metals	Conductivity	Temperature	Field Parameter	EPA 8260B	8260 Dup. 1	8260 Dup. 2	PARAMETERS	CHEMICAL PRESERVATION	CONTAINER TYPE, P/G	pH CHECK (LAB)	CHLORINE NEUTRALIZED AT COLLECTION
	DATE	TIME																
Well #1	03	06 08 1055		15	5	9	9	9	9	9	9	9	9					
Well #2	03	06 08 0950		17	4	9	9	9	9	9	9	9	9					
Well #3	03	06 08 0935		16	4	9	9	9	9	9	9	9	9					
Well #4	03	06 08 0935		13	4	9	9	9	9	9	9	9	9					
DISINFECTION: <input type="checkbox"/> CHLORINE <input type="checkbox"/> UV <input type="checkbox"/> NONE																		
CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY: <input type="radio"/> Y <input checked="" type="radio"/> N																		
SAMPLES COLLECTED BY: <i>Hooper 7 of</i>																		
SAMPLES RECEIVED IN LAB AT: <i>0.20</i>																		
COMMENTS:																		
RECEIVED BY (SIG.): <i>Amber Ladd</i> DATE/TIME: <i>3/6/08 2:47</i>																		
RELINQUISHED BY (SIG.): <i>Bob Hooper</i> DATE/TIME: <i>03 06 08</i>																		
RECEIVED BY (SIG.): DATE/TIME:																		
RELINQUISHED BY (SIG.): DATE/TIME:																		

Instructions for completing this form are 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.



SITE OFFICE, SCALES  
AND SCALEHOUSE

CLOSED MSW  
LANDFILL

APPROXIMATE  
PROPERTY LINE

EXISTING SITE ACCESS  
ROAD

TIRE MONOFILL

C&D LANDFILL

00-1

00-2

00-3

00-4

- REFERENCES**
1. TOPOGRAPHY FROM NCSDOT, DATED 2007.
  2. SITE PROPERTY LINE, WELLS AND FEATURES FROM DRAWING "PROPOSED GOLF CAP SECTION" BY THE WOOTEN COMPANY, DATED DECEMBER 2004.
  3. WELL LOCATIONS ARE NOT SURVEYED AND ARE THEREFORE APPROXIMATE.



TITLE:  <b>WASHINGTON COUNTY LANDFILL SITE MAP</b>	DRAWN BY: J.A.L.	CHECKED BY:	SCALE: AS SHOWN	FIGURE NO. 1	 <b>RICHARDSON SMITH GARDNER &amp; ASSOCIATES</b> 14 N. Boylan Ave. Raleigh, N.C. 27603 www.rsgengineers.com ph: 919-828-8577 fax: 919-828-3888
	DATE: Jun. 2008	PROJECT NO. WASH 08-2	FILE NAME WASH-B0001		