

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)
Johnston Co. County Closed Phase 5 MSW Landfill	County Home Road Smithfield, NC	51-03	.1600	May 19th - 23rd

**Environmental Status: (Check all that apply)**

- Initial/Background Monitoring  Detection Monitoring  Assessment Monitoring  Corrective Action

**Type of data submitted: (Check all that apply)**

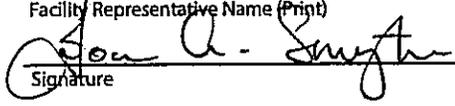
- Groundwater monitoring data from monitoring wells  
 Groundwater monitoring data from private water supply wells  
 Leachate monitoring data  
 Surface water monitoring data  
 Methane gas monitoring data  
 Corrective action data (specify) \_\_\_\_\_  
 Other(specify) \_\_\_\_\_

**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  
 9/30/11 Affix NC Licensed/ Professional Geologist Seal  
 Signature Date

14 N. Boylan Avenue Raleigh, NC 27603  
 Facility Representative Address  
 C-0828  
 NC PE Firm License Number (if applicable effective May 1, 2009)  
 Revised 6/2009



**Johnston County Landfill  
Phase 5  
Ground Water Monitoring Report**

**Spring 2011 Semi-annual  
Monitoring Event**

**Johnston County Landfill  
Smithfield, North Carolina  
NC Solid Waste Permit # 51-03**

Prepared for:  
**Johnston County Department of Public Utilities**  
309 East Market Street  
Smithfield, North Carolina 27577

**September 2011**



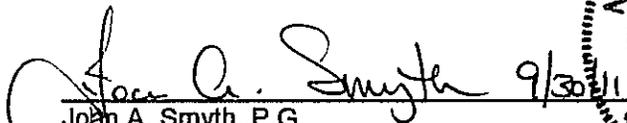
# Spring 2011 Ground Water Monitoring Report

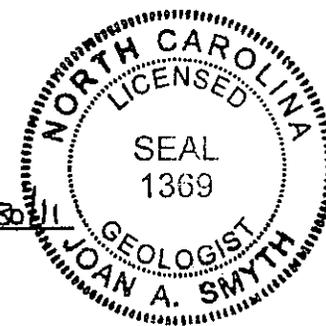
**Johnston County Landfill  
Phase 5  
Smithfield, North Carolina  
NC Solid Waste Permit # 51-03**

Prepared for:

**Johnston County Department of Public Utilities  
309 East Market Street  
Smithfield, North Carolina 27577**

RSG Project No. **Johnston - 4**

  
Joan A. Smyth, P.G.  
Senior Hydrogeologist



**September 2011**



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**Johnston County – Phase 5 Lined Landfill  
Semi-annual Ground Water Monitoring Report  
Spring 2011 Sampling Event**

1.0 INTRODUCTION .....	1
2.0 SITE GEOLOGY .....	1
3.0 SAMPLING PROCEDURES .....	1
4.0 FIELD AND LABORATORY RESULTS .....	2
4.1 Laboratory Analysis .....	2
4.2 Field and Laboratory Results .....	2
5.0 STATISTICAL ANALYSIS AND RESULTS .....	2
5.1 Statistical Analysis .....	2
5.2 2L/MCL Statistical Analysis .....	3
6.0 GROUND WATER CHARACTERIZATION .....	4
7.0 GROUND WATER ASSESSMENT .....	4
8.0 CONCLUSIONS .....	4

**FIGURES**

Figure 1 – Ground Water Potentiometric Map

**TABLES**

Table 1 – Ground Water Elevations & Velocities  
Table 2 – Field Parameters  
Table 3 – Detected Inorganic and Organic Constituents  
Table 4 – Statistical Analysis Summary

**APPENDICES**

Appendix A – Monitoring Well Information  
Appendix B – Laboratory Analytical Report  
Appendix C – Time vs. Concentration Graphs

## 1.0 Introduction

Johnston County formerly operated a Subtitle-D landfill under Solid Waste Permit # 51-03 (Phase 5). This report presents the results of the first semi-annual ground water monitoring event for 2011 for Phase 5, conducted on May 19<sup>th</sup> through May 23<sup>rd</sup> 2011. This event was performed to comply with the semi-annual monitoring schedule required by NC Solid Waste Regulations.

The ground water monitoring network for the Phase 5 landfill includes 10 ground water monitoring wells and four leachate lagoon monitoring wells. This report includes summaries of the field procedures, laboratory analyses, statistical analyses, and ground water characterization for the Phase 5 unit. Also included are graphs of the data, and laboratory analytical reports.

## 2.0 Site Geology

The site is underlain by sediments of the Middendorf Formation which were deposited largely in a deltaic system. According to Geology of the Carolinas (Horton/Zullo, 1991) the formation consists of unfossiliferous, interbedded, thin clay and sand. The stratigraphy tends to be very discontinuous, indicating that the sediment deposits are lenticular. Most of the sediments range from silty clay to a coarse clayey sand and gravel with thin lenses of dense clay. There are occasional concretions of iron oxide minerals which form very hard thin layers within the sand layers. In general, the unconsolidated sediments logged during drilling events at the site consisted of mainly medium to coarse sands with some silts and clays. The Middendorf Formation is underlain by highly weathered metamorphic rocks of the Carolina Slate Belt.

The thickness of the Middendorf Formation is controlled by topography with the bottom being relatively flat-lying at elevations of approximately 170 fmsl. The thickness of the unconsolidated sediment ranges from approximately 65 feet to less than 10 feet in the lower elevations surrounding the landfill.

## 3.0 Sampling Procedures

The sampling event, performed by trained personnel from Johnston County Landfill, consisted of collecting samples from 10 ground water monitoring wells (MW-5-1, MW-5-2, MW-5-3, MW-5-4, MW-5-5, MW-5-6, MW-5-7, MW-5-8, MW-5-9, and MW-5-10), shown in **Figure 1**. The sampling was conducted in accordance with the approved site Water Quality Monitoring Plan. Also included in the analysis was a trip blank for quality control. Surface water samples were collected from two locations (SW-5-1 and SW-5-2) up and downstream from the landfill unit on an unnamed tributary of Middle Creek.

Sampling methods followed the protocol outlined in the North Carolina Water Quality Monitoring Guidance Document for Solid Waste Facilities (NCDENR, DWM). 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. Water table elevations and field parameter results are included in **Tables 1 and 2**, respectively.

All samples were collected by Johnston County personnel in laboratory prepared containers for the specified analytical procedures. Samples were obtained through dedicated Micropurge low flow pumps. Ground water samples were properly preserved, placed on ice, and transported to the laboratory facility, Environment 1, Inc., within the specified holding times for each analysis.

## 4.0 Field and Laboratory Results

### 4.1 Laboratory Analysis

Ground water samples were collected from the monitoring network associated with the Phase 5 landfill unit using dedicated low-flow pumps. These samples were analyzed for Appendix I constituents.

Environment 1, Inc. has reported (**letter included in Appendix B**) that possible contamination occurred during the sampling process or during the field preservation of certain locations. This was evident in the EPA 8260 Volatile scan which included detections of organic compounds not previously detected at the site. These results are included in the lab reports from Environment 1. Data from the fall 2011 sampling event will be carefully evaluated in comparison to this data to determine whether sample contamination occurred.

### 4.2 Field and Laboratory Results

All samples were transported to the laboratory facility under proper chain of custody analyzed at the specified DWM Solid Waste Section Limits (SWSL)<sup>1</sup> for Appendix I constituents. Monitoring well boring logs are included in **Appendix A**. The laboratory analytical report is included as **Appendix B**.

Ground water and field measurements included in **Table 2**, remained similar to results gathered during previous monitoring events. The laboratory analysis detected three (3) inorganic constituents in all monitoring wells: barium, lead, and zinc. Of these, no inorganic constituents were found above the 2L standard in any monitoring wells.

The laboratory analysis detected one (1) organic constituent, 1,2-dichloropropane, in wells MW-5-2 and MW 5-8. This constituent was found above the 2L standard. The detections of chloromethane, acetone, 1,4 dichlorobenzene, 2-butanone, 1,1 dichloroethane, and cis-1,2 dichloroethane are considered to be suspected field contamination from the use of old hydrochloric acid as a preservative. Most of these detections were below the SWSL and are reported as “J-values”.

There are currently two surface water monitoring points associated with Phase 5 (SW-5-1, and SW-5-2). The laboratory analysis detected one (1) inorganic constituent in SW 5-1 (barium). This constituent was found above the 2L standard. This surface water point is located upgradient of the lined landfill.

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<sup>1</sup> New Guidelines for electronic submittal of environmental monitoring data memo, NCDENR DWM, Solid Waste Section, October 27, 2006.

## 5.0 Statistical Analysis & Results

### 5.1 Statistical Analysis

The inorganic laboratory analytical results were entered into our statistical database for the site. Data entry and analysis was performed using the Chempoint/Chemstat™ statistical software package developed specifically for RCRA Subtitle D sites (Starpoint Software, Cincinnati, OH). Chemstat follows EPA and DSWM protocols for approved statistical analysis methods for groundwater data.

The data from this monitoring event was added to our existing database for this site and was reviewed to evaluate the most appropriate analysis methods. Initial analysis consisted of a basic review of the data and of time-concentration graphs (**Appendix C**) to determine any major changes or trends in the data. Non-parametric testing methods were used on most wells due to the lack of normality, in the data. Statistical analysis was performed on detected inorganic constituents using MW-5-1 as background well and MW-5-2, MW-5-3, MW-5-4, MW-5-5, MW-5-6, MW-5-7, MW-5-8, MW-5-9 and MW-5-10 as the compliance wells. The statistical analysis reports are summarized in **Table 4**.

The following inorganic constituents were found to be statistically significant:

- barium (MW-5-4 & MW-5-8); and
- lead (MW-5-4).

These are highlighted on **Table 4**.

### 5.2 2L/MCL Statistical Analysis

For wells that showed statistically significant differences from background concentrations, additional analysis was performed. This analysis has recently been required as part of ongoing Assessment monitoring for landfills in North Carolina. To perform the analysis, the respective 2L standard or MCL was determined for each parameter with statistically significant results. Each compliance well with statistical significance was re-analyzed against the lower of the 2L or MCL standard as a Ground Water Protection Standard (GWPS).

This analysis was performed using tolerance interval analysis. Since a smaller subset of wells was analyzed during this step, the compliance well data were retested for normal distribution. If the data were normally distributed, parametric tolerance intervals were constructed for each well and compared to the GWPS for each parameter. For those wells not exhibiting normal distribution, Poisson tolerance intervals were constructed. If the distribution of the data was marginally normal, both tests were run to cross-check the results. All of these cross-checks yielded the same results from both test methods.

The statistical results for this additional analysis are presented in **Table 4**. An upper tolerance limit higher than the GWPS standard was considered to be a statistically significant result.

This analysis indicated statistically significant results for:

- barium (MW-5-4); and
- lead (MW-5-4).

It should be noted that the sample from MW-5-4 had a turbidity level of 60.4 NTU. This could account for the elevated metal constituents detected.

## 6.0 Ground Water Characterization

A potentiometric surface map was prepared from ground water elevation data collected during this sampling event. Ground water velocity was calculated for each monitoring well on-site using the equation  $V = (KI)/n$  where:

K = hydraulic conductivity

I = ground water gradient

n = porosity

Ground water velocities ranged from 0.004 feet/day (MW-5-10) to 0.577 feet/day (MW-5-2). These calculations are included in **Table 1**. The data indicates that ground water is flowing generally to the north toward Middle Creek. This is consistent with ground water flow patterns previously seen at this site. The potentiometric surface map (**Figure 1**) is also attached for your review.

## 7.0 Ground Water Assessment

During previous events concentrations of 1,2-dichloropropane were detected. 1,2-dichloropropane has several uses, one of which is as a soil fumigant. Due to the historic use of this property for farming, we believe that is the source of this constituent.

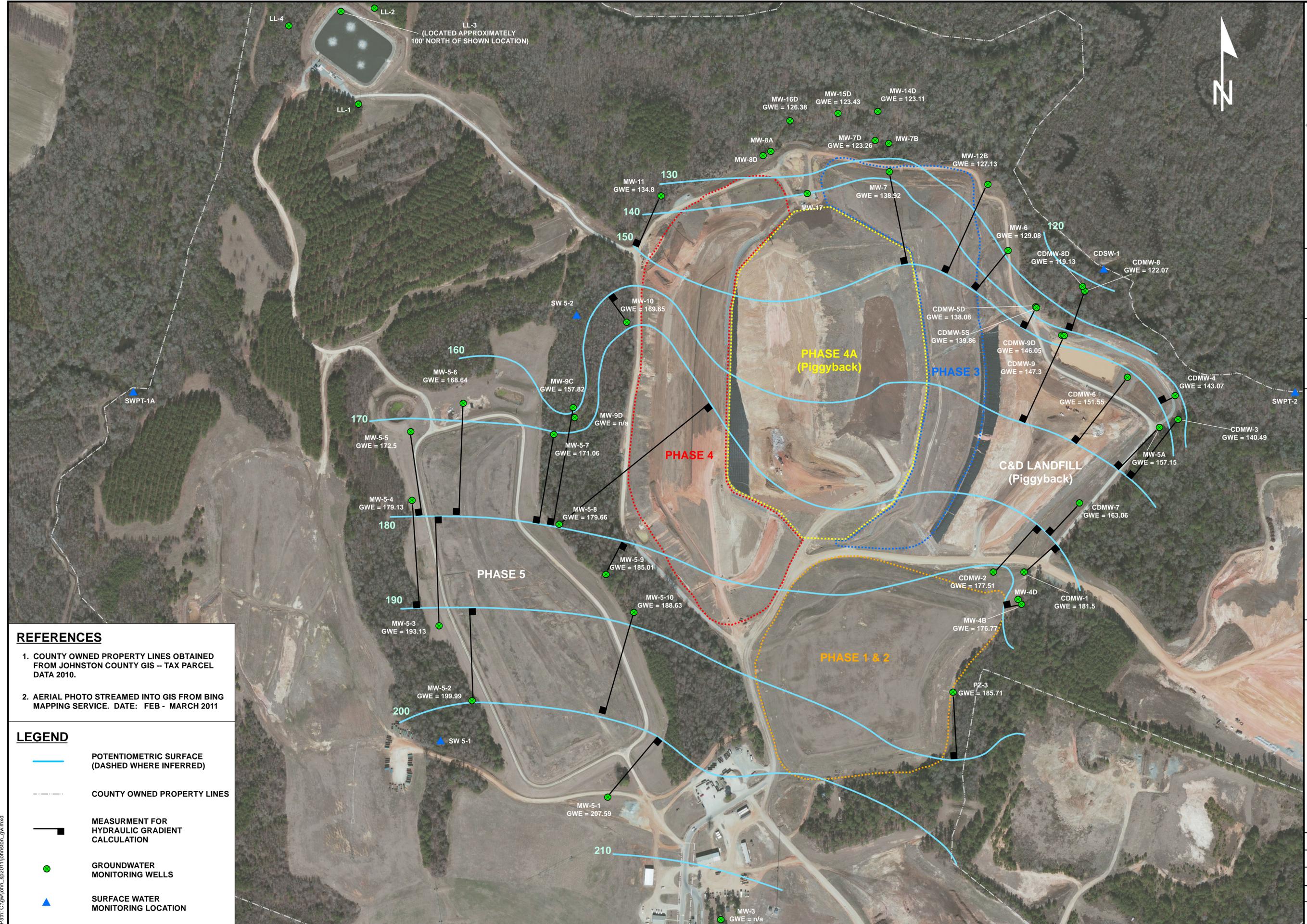
Leachate samples intermittently have had a “J-value” detection of this constituent that is below the Solid Waste Section (SWSL) and orders of magnitude below the detected level in the ground water. During several previous events this constituent has not been detected in leachate at all. Therefore, it is unlikely that the landfill is the source of this impact. Additionally, no other constituent that has been detected in the leachate was found to be present in the samples from these wells. This information further supports the source as historical farming practices.

We will continue to monitor the levels of this constituent during future semi-annual events.

## 8.0 Conclusions

The results of this monitoring event indicated detection of three constituents; arsenic, cobalt, lead & 1,2-dichloropropane. We believe it to be due to historic farming practices of the site. The next semi-annual sampling event will be performed in fall 2011. These results will be reported upon receipt of the laboratory data and completion of the statistical analyses.

Figures



SEAL

PROJECT TITLE:  
**JOHNSTON COUNTY LANDFILL  
 SMITHFIELD, NORTH CAROLINA**

DRAWING TITLE:  
**GROUNDWATER  
 POTENTIOMETRIC SURFACE MAP  
 SPRING 2010**

DESIGNED BY: DMM	DRAWN BY: DMM
CHECKED BY: JAS	PROJECT NO.: John-4
SCALE: AS SHOWN	DATE: 9/4/11
FILE NAME: johnston_gw	
SHEET NO.	DRAWING NO. <b>FIG. 1</b>

- REFERENCES**
- COUNTY OWNED PROPERTY LINES OBTAINED FROM JOHNSTON COUNTY GIS -- TAX PARCEL DATA 2010.
  - AERIAL PHOTO STREAMED INTO GIS FROM BING MAPPING SERVICE. DATE: FEB - MARCH 2011

- LEGEND**
- POTENTIOMETRIC SURFACE (DASHED WHERE INFERRED)
  - COUNTY OWNED PROPERTY LINES
  - MEASUREMENT FOR HYDRAULIC GRADIENT CALCULATION
  - GROUNDWATER MONITORING WELLS
  - SURFACE WATER MONITORING LOCATION

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Tables



**Table 1**  
**Johnston County Phase 5 Lined Landfill**  
**Ground Water Elevations & Velocities**  
**5/19 - 5/23 2011**

Well	Northing	Easting	TOC Elevation (feet)	Water Level (feet)	GW Elev (feet)	Hyd. Cond. (ft/day)	Porosity (%)	Gradient (ft/ft)	Velocity (ft/day)
MW-5-1	642015.58	2169415.4	232.17	24.58	207.59	2.275	0.2	0.023	0.262
MW-5-2	642487.14	2168749.63	206.77	6.78	199.99	5.247	0.2	0.022	0.577
MW-5-3	642851.56	2168588.27	203.8	10.67	193.13	0.995	0.2	0.025	0.124
MW-5-4	643464.18	2168455.67	186.58	7.45	179.13	0.465	0.2	0.021	0.049
MW-5-5	643800.44	2168449.11	185.42	12.92	172.5	0.261	0.2	0.018	0.023
MW-5-6	643938.92	2168706.91	199.11	30.47	168.64	0.366	0.2	0.021	0.038
MW-5-7	643786.2	2169150.69	182.73	11.67	171.06	0.422	0.2	0.020	0.042
MW-5-8	643347.86	2169177.25	189.31	9.65	179.66	0.312	0.2	0.010	0.016
MW-5-9	643102.64	2169406.82	198.31	13.3	185.01	0.309	0.2	0.034	0.053
MW-5-10	642917.77	2169543.59	202.88	14.25	188.63	0.037	0.2	0.021	0.004
LL-1	645398.84	2168192.54	na	17.86	na	na	na	na	na
LL-2	645867.44	2168271.33	na	17.48	na	na	na	na	na
LL-3	645957.48	2168106	na	19.9	na	na	na	na	na
LL-4	645781.3	2167851.39	na	9.04	na	na	na	na	na

Notes: Velocity Calculated from  $V=K*I/n$   
V = velocity  
K = Hydraulic Conductivity  
I = Gradient  
n = Porosity  
Hydraulic Conductivity data from slug testing  
Porosity values assumed from Groundwater & Wells (Driscoll)  
na = not available



**Table 2**  
**Johnston County Phase 5 Lined Landfill**  
**Field Parameters**  
**5/19 - 5/23 2011**

<b>Well Identification #</b>	<b>Static Water Level (ft) * (DTW)</b>	<b>Temperature (°Celsius)</b>	<b>Turbidity (NTU)</b>	<b>pH</b>	<b>Specific Conductivity (uS/cm)</b>
MW – 5-1	24.58	17.47	267	4.29	207
MW – 5-2	6.78	15.75	38.2	4.13	373
MW – 5-3	10.67	16.66	33.6	4.48	93
MW – 5-4	7.45	15.45	60.7	4.78	56
MW – 5-5	12.92	16.34	2.95	4.63	70
MW – 5-6	30.47	18.14	7.79	5.09	62
MW – 5-7	11.67	14.65	70.8	5.27	35
MW – 5-8	9.65	15.65	3.95	4.75	347
MW – 5-9	13.3	15.11	24.5	4.7	71
MW – 5-10	14.25	15.33	18.4	4.56	57
Phase 5 Direct Leachate	N/A	20.18	153	6.98	6720
Lagoon Lchte.#1	17.86	15.47	4.41	5.69	96
Lagoon Lchte. #2	17.48	16.1	2.09	5.78	147
Lagoon Lchte. #3	19.9	17.58	3.21	5.58	59
Lagoon Lchte. #4	9.04	14.23	16.2	5.72	104
SW5 – 1	N/A	15.86	8.93	6.16	309
SW5 – 2	N/A	15.53	12.6	6.57	134

N/A - Not Analyzed

Data collected by Kevin Shields of Johnston County

**Table 3**  
**Johnston County Phase 5 Lined Landfill**  
**Detected Inorganic and Organic Constituents**  
**5/19 - 5/23 2011**

**Inorganic Constituents**

Parameter	SWSL	2L	MW-5-1	MW-5-2	MW-5-3	MW-5-4	MW-5-5	MW-5-6	MW-5-7	MW-5-8	MW-5-9	MW-5-10	SW-5-1	SW-5-2
Antimony	6	1	0.22J	ND	ND	ND	ND	ND	0.14J	ND	ND	0.26J	ND	ND
Arsenic	10	10	2.1J	ND	0.22J	0.52J	ND	0.38J	0.72J	ND	0.31J	ND	ND	0.48J
Barium	100	700	<b>237</b>	<b>431</b>	97.3J	<b>531</b>	43.4J	91.6J	66.4J	<b>606</b>	97.8J	38J	<b>310</b>	38.1J
Beryllium	1	4	0.31J	0.94J	0.65J	0.55J	ND	0.08J	0.4J	0.35J	0.18J	0.1J	ND	ND
Cadmium	1	2	0.13J	0.2J	0.09J	0.14J	ND	ND	0.14J	0.22J	0.08J	0.13J	0.07J	ND
Cobalt	10	1	2.3J	5.4J	3.9J	8.5J	1.1J	6J	2.8J	7.1J	2.8J	1.5J	0.98J	2J
Copper	10	1000	1.5J	1.4J	4.7J	3.8J	0.63J	1.8J	3J	1.1J	1J	1.3J	0.7J	1.4J
Lead	10	15	4.8J	5.2J	3.7J	<b>13</b>	2.7J	2.3J	5.9J	3.6J	1.3J	2.6J	0.39J	0.76J
Nickel	50	100	3.5J	6.1J	3.7J	7.1J	1.7J	1.9J	3.9J	7.8J	2.5J	1.6J	2.3J	1.5J
Selenium	10	20	ND	0.38J	0.2J	0.2J	ND	0.25J	0.52J	0.53J	0.45J	0.45J	ND	0.23J
Total Chromium	10	10	4.5J	0.62J	1.1J	0.74J	1J	0.4J	1.4J	ND	0.91J	1J	0.38J	0.72J
Vanadium	25	0.3	10.1J	1.5J	1.4J	1J	ND	0.78J	3.1J	ND	1.8J	2.2J	0.62J	1.2J
Thallium	5.5	0.28	0.09J	0.12J	0.03J	0.18J	0.03J	0.11J	0.05J	0.18J	0.03J	ND	0.09J	ND
Zinc	10	1000	3.3J	5.5J	9.5J	<b>16</b>	2.8J	5J	<b>14</b>	5.9J	5.9J	2.6J	3.6J	5.9J

**Organic Constituents**

Parameter	SWSL	2L	MW-5-1	MW-5-2	MW-5-3	MW-5-4	MW-5-5	MW-5-6	MW-5-7	MW-5-8	MW-5-9	MW-5-10	SW-5-1	SW-5-2
1,1-Dichloroethane	5	6	ND	ND	ND	ND	ND	0.5J	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	1	0.6	ND	4.5	0.3J	ND	ND	ND	ND	<b>5.7</b>	ND	ND	ND	ND
2-Butanone	100	4000	10.6J	14.5J	13.8J	ND	3.3J	8.9J	ND	ND	ND	ND	ND	ND
Acetone	100	6000	19.2J	25.9J	24.8J	ND	11.8J	16.1J	ND	ND	ND	ND	9.4J	ND
Benzene	1	1	ND	ND	ND	ND	ND	0.8J	ND	ND	ND	ND	ND	ND
Cis-1,2-Dichloroethene	5	70	ND	ND	ND	ND	ND	0.8J	ND	ND	ND	ND	ND	ND

ND - Not detected at or above SWSL

Bold Letters - Constituent detected above SWSL

Shading - Levels above 2L standard or no 2L standard

J - Detected constituents below SWSL limit

All SWSLs, 2L Standards and Results are in ug/l.

\*\* Equipment Blank had 10.1J of 2-Butanone, 18.6J of Acetone, 0.3J of Bromodichloromethane, and 3.4J of Chloroform.

\*\* Environment 1, Inc. has reported (letter included in **Appendix B**) that possible contamination occurred during the sampling process or during the field preservation of certain locations.

**Table 4**  
**Johnston County Phase 5 Landfill**  
**Statistical Analysis Summary**  
**5/19 - 5/23 2011**

Location	Parameter	Result	Detection Limit	Test Units	%ND	%CL	Test	Statistically Significant?	2nd statistical Analysis	Test
MW 5-2	Barium	431	100	ug/l	56.7	96.8	NPPL	N	--	--
MW 5-4	Barium	531	100	ug/l	70	96.8	NPPL	Y	Y	MCL-PTI (1992)
MW 5-8	Barium	606	100	ug/l	66.7	96.8	NPPL	Y	N	--
MW 5-4	Lead	13	10	ug/l	73.3	96.8	NPPL	Y	Y	MCL-PTI (1992)
MW 5-4	Zinc	16	10	ug/l	70	93.8	NPPL	N	--	--
MW 5-7	Zinc	14	10	ug/l	70	93.8	NPPL	N	--	--

**Legend:**

%ND Method chosen due to percent non-detects  
NPPL Non-parametric Prediction Interval

Shading indicates statistical significance.

**Notes:**

MW-5-1 was used as the background well

\*\* Environment 1, Inc. has reported (letter included in **Appendix B**) that possible contamination occurred during the sampling process or during the field preservation of certain locations.

**Table 5**  
**Johnston County Phase 5 Lined Landfill**  
**Leachate and Leachate Pond Analyses**  
**5/19 - 5/23 2011**

Parameter	Unit	Leachate	Leachate Jun Box	Leachate Lagoon #1	Leachate Lagoon #2	Leachate Lagoon #3	Leachate Lagoon #4
1,1-Dichloroethane	ug/l	1.8J	1.1J	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5J	ND	ND	ND	ND	ND
1,2-Dichloropropane	ug/l	0.5J	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ug/l	0.4J	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/l	ND	ND	ND	ND	3.1	10.2
2-Butanone	ug/l	5.3J	6.3J	10.1J	13.2J	9.4J	10.1J
Acetone	ug/l	15.2J	20.8J	17.6J	23.2J	17.6J	18.6J
Ammonia Nitrogen as N	ug/l	246000	463000	NM	NM	NM	NM
Antimony	ug/l	0.36J	0.78J	ND	ND	ND	ND
Arsenic	ug/l	5J	0.23J	0.8J	ND	ND	10
Barium	ug/l	9.4J	9.8J	14.2J	1.5J	198	358
Benzene	ug/l	ND	ND	ND	ND	1.4	9.4
Beryllium	ug/l	0.07J	ND	ND	ND	ND	ND
BOD	ug/l	ND	24000	NM	NM	NM	NM
Cadmium	ug/l	0.22J	ND	ND	ND	ND	ND
Chlorobenzene	ug/l	1.3J	ND	ND	ND	ND	4.6
Chloroethane	ug/l	0.8J	0.8J	ND	ND	ND	ND
Cis-1,2-Dichloroethene	ug/l	0.7J	0.6J	ND	ND	ND	ND
Cobalt	ug/l	7.8J	0.13J	0.43J	2.2J	167	16
COD	ug/l	310000	606000	NM	NM	NM	NM
Copper	ug/l	2.8J	4.7J	0.49J	0.63J	0.45J	0.69J
Ethylbenzene	ug/l	0.6J	ND	ND	ND	ND	44
Lead	ug/l	0.12J	0.3J	0.24J	0.12J	0.13J	ND
Nickel	ug/l	36.4J	2.1J	3.1J	1.7J	0.65J	54
Nitrate Nitrogen as N	ug/l	100J	ND	NM	NM	NM	NM
Selenium	ug/l	3.3J	ND	ND	ND	ND	ND
Silver	ug/l	0.05J	0.11J	ND	ND	ND	ND
Styrene	ug/l	ND	ND	ND	ND	ND	1.1
Sulfate	ug/l	7500J	ND	NM	NM	NM	NM
Thallium	ug/l	0.03J	0.25J	0.09J	ND	ND	ND
Toluene	ug/l	0.4J	ND	ND	ND	ND	6.4
Total Chromium	ug/l	4.2J	7.3J	0.79J	0.85J	0.62J	0.8J
Total Phosphorus as P	ug/l	340	1200	NM	NM	NM	NM
Total Suspended Residue	ug/l	62000	63000	NM	NM	NM	NM
Vanadium	ug/l	2.9J	6.6J	0.78J	ND	ND	ND
Vinyl Chloride	ug/l	0.8J	ND	ND	ND	ND	1.5
Xylenes	ug/l	1.4J	ND	ND	ND	ND	57.4
Zinc	ug/l	3.3J	8.9J	3.1J	3J	2.7J	6.8J

NM = Not Measured

\*\* Equipment Blank had 10.1J of 2-Butanone, 18.6J of Acetone, 0.3J of Bromodichloromethane, and 3.4J of Chloroform.

## Appendix A

### Monitoring Well Information













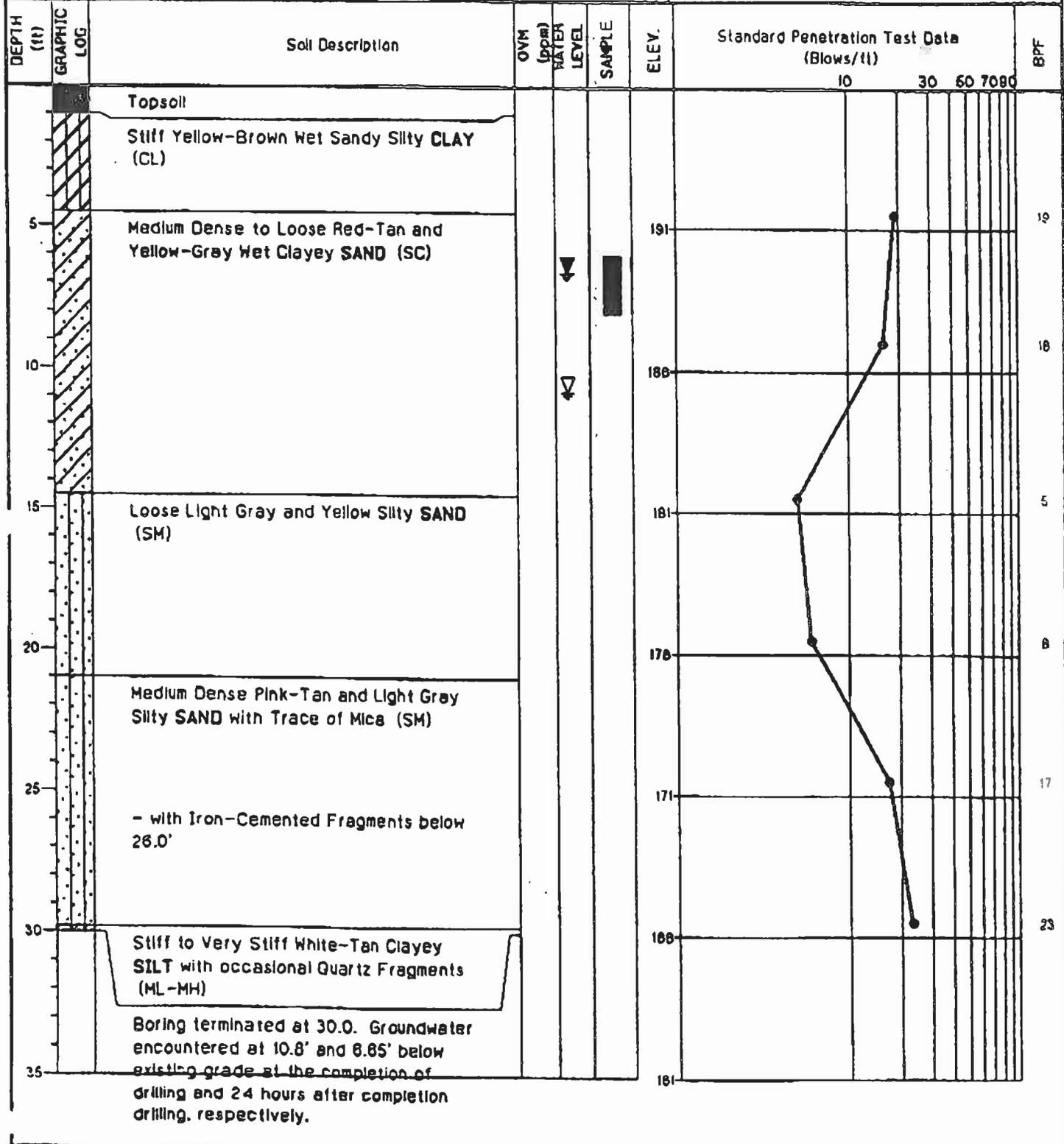




**PROJECT:** Johnston County Landfill  
Johnston County, NC

**TEST BORING RECORD DMW 5-9**

<b>PROJECT NO.:</b> 1054-95-288	<b>ELEVATION:</b> 195.53 FEET	<b>NOTES:</b> Monitor Well Installed
<b>LOGGED BY:</b> WJB	<b>BORING DEPTH:</b> 30.0 FEET	
<b>DATE DRILLED:</b> 3-18-95	<b>WATER LEVEL:</b> 10.8/6.65 FEET	
<b>DRILLING METHOD:</b> 3-1/4" I.D. HSA	<b>DRILL RIG:</b> Mobile B-57	













## Appendix B

### 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

July 5, 2011

Mr. Kevin Shields  
Johnston County Public Works  
P.O. Box 2263  
Smithfield, NC 27577

Dear Kevin,

Enclosed herewith is data for samples collected during May of this year. A duplicate copy of the data is also being sent to Joan Smyth with Richardson Smith Gardner. Detects for certain compounds in some of the 8260 scans show compounds that are not normally detected in your samples. It appears that these detects may be the result of contamination during the sampling process. Early this year Environment 1 also experienced contamination problems which were traced to contaminated hydrochloric acid used for preservation. In a telephone conversation today we discussed the usage of older hydrochloric acid containers from previous sampling events as being a potential source of contamination. I do not know if this is the problem with your samples, but I would suggest that you always use the fresh hydrochloric acid containers we supply with each set of sample containers and never use any older, left over hydrochloric acid from previous sampling events. Please review the data and if you would like to re-sample any suspect locations for 8260 compounds we would provide the analysis at no additional charge.

Best regards,



Steve Jones

cc: Joan Smyth

# 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#: 6033

JOHNSTON CO. LANDFILL (PHASE 5)  
MR. KEVIN SHIELDS  
P.O. BOX 2263  
SMITHFIELD ,NC 27577

DATE COLLECTED: 05/19/11  
DATE REPORTED : 06/08/11

REVIEWED BY: 

PARAMETERS	MDL	SWSL	MW5-1	MW5-2	MW5-3	MW5-4	MW5-6	Analysis	Method
								Date	Analyst
Antimony, ug/l	0.14	6.0	0.22 J	--- U	--- U	--- U	--- U	05/26/11 LFPJ	EPA200.8
Arsenic, ug/l	0.10	10.0	2.1 J	--- U	0.22 J	0.52 J	0.38 J	05/26/11 LFPJ	EPA200.8
Barium, ug/l	0.02	100.0	237	431	97.3 J	531	91.6 J	05/26/11 LFPJ	EPA200.8
Beryllium, ug/l	0.02	1.0	0.31 J	0.94 J	0.65 J	0.55 J	0.08 J	05/26/11 LFPJ	EPA200.8
Cadmium, ug/l	0.02	1.0	0.13 J	0.20 J	0.09 J	0.14 J	--- U	05/26/11 LFPJ	EPA200.8
Cobalt, ug/l	0.03	10.0	2.3 J	5.4 J	3.9 J	8.5 J	6.0 J	05/26/11 LFPJ	EPA200.8
Copper, ug/l	0.02	10.0	1.5 J	1.4 J	4.7 J	3.8 J	1.8 J	05/26/11 LFPJ	EPA200.8
Total Chromium, ug/l	0.04	10.0	4.5 J	0.62 J	1.1 J	0.74 J	0.40 J	05/26/11 LFPJ	EPA200.8
Lead, ug/l	0.02	10.0	4.8 J	5.2 J	3.7 J	13	2.3 J	05/26/11 LFPJ	EPA200.8
Nickel, ug/l	0.04	50.0	3.5 J	6.1 J	3.7 J	7.1 J	1.9 J	05/26/11 LFPJ	EPA200.8
Selenium, ug/l	0.20	10.0	--- U	0.38 J	0.20 J	0.20 J	0.25 J	05/26/11 LFPJ	EPA200.8
Silver, ug/l	0.02	10.0	--- U	05/26/11 LFPJ	EPA200.8				
Thallium, ug/l	0.02	5.5	0.09 J	0.12 J	0.03 J	0.18 J	0.11 J	05/26/11 LFPJ	EPA200.8
Vanadium, ug/l	0.14	25.0	10.1 J	1.5 J	1.4 J	1.0 J	0.78 J	05/26/11 LFPJ	EPA200.8
Zinc, ug/l	0.24	10.0	3.3 J	5.5 J	9.5 J	16	5.0 J	05/26/11 LFPJ	EPA200.8

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

# Environment 1, Incorporated

Drinking Water ID: 37/15  
Wastewater ID: 10

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

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

ID#: 6033

JOHNSTON CO. LANDFILL (PHASE 5)  
MR. KEVIN SHIELDS  
P.O. BOX 2263  
SMITHFIELD ,NC 27577

DATE COLLECTED: 05/19/11  
DATE REPORTED : 06/08/11

REVIEWED BY: 

PARAMETERS	MDL	SWSL	MW5-7	MW5-8	MW5-9	Surface	Surface	Analysis	Method
						Water #5-1	Water #5-2	Date	Analyst
Antimony, ug/l	0.14	6.0	0.14 J	--- U	--- U	--- U	--- U	05/26/11 LFG	EPA200.8
Arsenic, ug/l	0.10	10.0	0.72 J	--- U	0.31 J	--- U	0.48 J	05/26/11 LFG	EPA200.8
Barium, ug/l	0.02	100.0	66.4 J	606	97.8 J	310	38.1 J	05/26/11 LFG	EPA200.8
Beryllium, ug/l	0.02	1.0	0.40 J	0.35 J	0.18 J	--- U	--- U	05/26/11 LFG	EPA200.8
Cadmium, ug/l	0.02	1.0	0.14 J	0.22 J	0.08 J	0.07 J	--- U	05/26/11 LFG	EPA200.8
Cobalt, ug/l	0.03	10.0	2.8 J	7.1 J	2.8 J	0.98 J	2.0 J	05/26/11 LFG	EPA200.8
Copper, ug/l	0.02	10.0	3.0 J	1.1 J	1.0 J	0.70 J	1.4 J	05/26/11 LFG	EPA200.8
Total Chromium, ug/l	0.04	10.0	1.4 J	--- U	0.91 J	0.38 J	0.72 J	05/26/11 LFG	EPA200.8
Lead, ug/l	0.02	10.0	5.9 J	3.6 J	1.3 J	0.39 J	0.76 J	05/26/11 LFG	EPA200.8
Nickel, ug/l	0.04	50.0	3.9 J	7.8 J	2.5 J	2.3 J	1.5 J	05/26/11 LFG	EPA200.8
Selenium, ug/l	0.20	10.0	0.52 J	0.53 J	0.45 J	--- U	0.23 J	05/26/11 LFG	EPA200.8
Silver, ug/l	0.02	10.0	--- U	--- U	--- U	--- U	--- U	05/26/11 LFG	EPA200.8
Thallium, ug/l	0.02	5.5	0.05 J	0.18 J	0.03 J	0.09 J	--- U	05/26/11 LFG	EPA200.8
Vanadium, ug/l	0.14	25.0	3.1 J	--- U	1.8 J	0.62 J	1.2 J	05/26/11 LFG	EPA200.8
Zinc, ug/l	0.24	10.0	14	5.9 J	5.9 J	3.6 J	5.9 J	05/26/11 LFG	EPA200.8

# 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#: 6033

JOHNSTON CO. LANDFILL (PHASE 5)  
MR. KEVIN SHIELDS  
P.O. BOX 2263  
SMITHFIELD ,NC 27577

DATE COLLECTED: 05/19/11  
DATE REPORTED : 06/08/11

REVIEWED BY: 

PARAMETERS	MDL	MW-5 (5')		MW-5 (10')	Trip Blank	Analysis		Method Code
		SWSL				Date	Analyst	
Antimony, ug/l	0.14	6.0	--- U	0.26 J		05/26/11	LFJ	EPA200.8
Arsenic, ug/l	0.10	10.0	--- U	--- U		05/26/11	LFJ	EPA200.8
Barium, ug/l	0.02	100.0	43.4 J	38.0 J		05/26/11	LFJ	EPA200.8
Beryllium, ug/l	0.02	1.0	--- U	0.10 J		05/26/11	LFJ	EPA200.8
Cadmium, ug/l	0.02	1.0	--- U	0.13 J		05/26/11	LFJ	EPA200.8
Cobalt, ug/l	0.03	10.0	1.1 J	1.5 J		05/26/11	LFJ	EPA200.8
Copper, ug/l	0.02	10.0	0.63 J	1.3 J		05/26/11	LFJ	EPA200.8
Total Chromium, ug/l	0.04	10.0	1.0 J	1.0 J		05/26/11	LFJ	EPA200.8
Lead, ug/l	0.02	10.0	2.7 J	2.6 J		05/26/11	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	1.7 J	1.6 J		05/26/11	LFJ	EPA200.8
Selenium, ug/l	0.20	10.0	--- U	0.45 J		05/26/11	LFJ	EPA200.8
Silver, ug/l	0.02	10.0	--- U	--- U		05/26/11	LFJ	EPA200.8
Thallium, ug/l	0.02	5.5	0.03 J	--- U		05/26/11	LFJ	EPA200.8
Vanadium, ug/l	0.14	25.0	--- U	2.2 J		05/26/11	LFJ	EPA200.8
Zinc, ug/l	0.24	10.0	2.8 J	2.6 J		05/26/11	LFJ	EPA200.8

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

# Environment 1, Incorporated

Drinking Water ID: 37715

Wastewater ID: 10

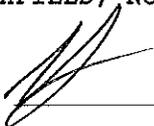
P.O. BOX 7085, 114 OAKMONT DRIVE  
GREENVILLE, N.C. 27835-7085

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

CLIENT: JOHNSTON CO. LANDFILL (PHASE 5)  
MR. KEVIN SHIELDS  
P.O. BOX 2263  
SMITHFIELD, NC 27577

CLIENT ID: 6033  
ANALYST: MAO  
DATE COLLECTED: 05/19/11  
DATE REPORTED: 06/08/11

Page: 2

REVIEWED BY: 

## VOLATILE ORGANICS EPA METHOD 8260B

PARAMETERS, ug/l	Date Analyzed:		05/27/11	05/27/11	05/31/11	05/31/11	05/31/11
	MDL	SWSL	MW5-7	MW5-8	MW5-9	Surface Water #5-1	Surface Water #5-2
1. Chloromethane	0.77	1.0	--- U	--- U	0.80 J	1.30	1.00
2. Vinyl Chloride	0.63	1.0	--- U	--- U	--- U	--- U	--- U
3. Bromomethane	0.67	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- U	--- U	--- U	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	--- U	--- U	--- U	--- U
7. Acetone	9.06	100.0	--- U	--- U	--- U	9.40 J	--- U
8. Iodomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	--- U	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	--- U	--- U	--- U	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U	--- U	--- U	--- U	--- U
15. 2-Butanone	2.21	100.0	--- U	--- U	--- U	--- U	--- U
16. Bromochloromethane	0.27	3.0	--- U	--- U	--- U	--- U	--- U
17. Chloroform	0.25	5.0	--- U	--- U	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U	--- U	--- U	--- U	--- U
20. Benzene	0.24	1.0	--- U	--- U	--- U	--- U	--- U
21. 1,2-Dichloroethane	0.27	1.0	--- U	--- U	--- U	--- U	--- U
22. Trichloroethene	0.23	1.0	--- U	--- U	--- U	--- U	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U	5.70	--- U	--- U	--- U
24. Bromodichloromethane	0.21	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.23	1.0	--- U	--- U	--- U	--- U	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.17	1.0	--- U	--- U	--- U	--- U	--- U
31. 2-Hexanone	1.57	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.30	3.0	--- U	--- U	--- U	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U	--- U	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- U	--- U	--- U	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	0.90 J	1.00	1.20	1.80	1.10
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- U	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U	--- U	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U	--- U	--- U	--- U

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

# Environment 1, Incorporated

Drinking Water ID: 37715  
Wastewater ID: 10

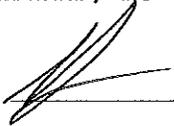
P.O. BOX 7085, 114 OAKMONT DRIVE  
GREENVILLE, N.C. 27835-7085

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

CLIENT: JOHNSTON CO. LANDFILL (PHASE 5)  
MR. KEVIN SHIELDS  
P.O. BOX 2263  
SMITHFIELD, NC 27577

CLIENT ID: 6033  
ANALYST: MAO  
DATE COLLECTED: 05/19/11  
DATE REPORTED: 06/08/11

Page: 3

REVIEWED BY: 

## VOLATILE ORGANICS EPA METHOD 8260B

PARAMETERS, ug/l	Date Analyzed:		05/27/11	05/31/11	05/27/11
	MDL	SWSL	MW-5 (5')	MW-5 (10')	Trip Blank
1. Chloromethane	0.77	1.0	--- U	0.80 J	--- U
2. Vinyl Chloride	0.63	1.0	--- U	--- U	--- U
3. Bromomethane	0.67	10.0	--- U	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- U	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	--- U	--- U
7. Acetone	9.06	100.0	11.80 J	--- U	--- U
8. Iodomethane	0.26	10.0	--- U	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	--- U	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U	--- U	--- U
15. 2-Butanone	2.21	100.0	3.30 J	--- U	--- U
16. Bromochloromethane	0.27	3.0	--- U	--- U	--- U
17. Chloroform	0.25	5.0	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U	--- U	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U	--- U	--- U
20. Benzene	0.24	1.0	--- U	--- U	--- U
21. 1,2-Dichloroethane	0.27	1.0	--- U	--- U	--- U
22. Trichloroethene	0.23	1.0	--- U	--- U	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U	--- U	--- U
24. Bromodichloromethane	0.21	1.0	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U	--- U
27. Toluene	0.23	1.0	--- U	--- U	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U	--- U	--- U
30. Tetrachloroethene	0.17	1.0	--- U	--- U	--- U
31. 2-Hexanone	1.57	50.0	--- U	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U	--- U
34. Chlorobenzene	0.30	3.0	--- U	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- U	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	--- U	1.10	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U	--- U

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

# Environment 1, Incorporated

Drinking Water ID: 37715  
Wastewater ID: 10

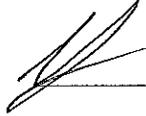
P.O. BOX 7085, 114 OAKMONT DRIVE  
GREENVILLE, N.C. 27835-7085

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

CLIENT: JOHNSTON CO. LANDFILL (PHASE 5)  
MR. KEVIN SHIELDS  
P.O. BOX 2263  
SMITHFIELD, NC 27577

CLIENT ID: 6033

ANALYST: MAO  
DATE COLLECTED: 05/19/11 Page: 1  
DATE REPORTED: 06/08/11

REVIEWED BY: 

## VOLATILE ORGANICS EPA METHOD 8260B

PARAMETERS, ug/l	Date Analyzed:		05/27/11	05/27/11	05/27/11	05/31/11	05/27/11	
	MDL	SWSL	MW5-1	MW5-2	MW5-3	MW5-4	MW5-6	
1. Chloromethane	0.77	1.0	---	U	---	U	---	U
2. Vinyl Chloride	0.63	1.0	---	U	---	U	---	U
3. Bromomethane	0.67	10.0	---	U	---	U	---	U
4. Chloroethane	0.48	10.0	---	U	---	U	---	U
5. Trichlorofluoromethane	0.24	1.0	---	U	---	U	---	U
6. 1,1-Dichloroethene	0.17	5.0	---	U	---	U	---	U
7. Acetone	9.06	100.0	19.20	J	25.90	J	24.80	J
8. Iodomethane	0.26	10.0	---	U	---	U	---	U
9. Carbon Disulfide	0.23	100.0	---	U	---	U	---	U
10. Methylene Chloride	0.64	1.0	---	U	---	U	---	U
11. trans-1,2-Dichloroethene	0.23	5.0	---	U	---	U	---	U
12. 1,1-Dichloroethane	0.20	5.0	---	U	---	U	---	U
13. Vinyl Acetate	0.20	50.0	---	U	---	U	---	U
14. Cis-1,2-Dichloroethene	0.25	5.0	---	U	---	U	---	U
15. 2-Butanone	2.21	100.0	10.60	J	14.50	J	13.80	J
16. Bromochloromethane	0.27	3.0	---	U	---	U	---	U
17. Chloroform	0.25	5.0	---	U	---	U	---	U
18. 1,1,1-Trichloroethane	0.19	1.0	---	U	---	U	---	U
19. Carbon Tetrachloride	0.22	1.0	---	U	---	U	---	U
20. Benzene	0.24	1.0	---	U	---	U	---	U
21. 1,2-Dichloroethane	0.27	1.0	---	U	---	U	---	U
22. Trichloroethene	0.23	1.0	---	U	---	U	---	U
23. 1,2-Dichloropropane	0.21	1.0	---	U	4.50	U	0.30	J
24. Bromodichloromethane	0.21	1.0	---	U	---	U	---	U
25. Cis-1,3-Dichloropropene	0.24	1.0	---	U	---	U	---	U
26. 4-Methyl-2-Pentanone	1.19	100.0	---	U	---	U	---	U
27. Toluene	0.23	1.0	---	U	---	U	---	U
28. trans-1,3-Dichloropropene	0.28	1.0	---	U	---	U	---	U
29. 1,1,2-Trichloroethane	0.25	1.0	---	U	---	U	---	U
30. Tetrachloroethene	0.17	1.0	---	U	---	U	---	U
31. 2-Hexanone	1.57	50.0	---	U	---	U	---	U
32. Dibromochloromethane	0.24	3.0	---	U	---	U	---	U
33. 1,2-Dibromoethane	0.26	1.0	---	U	---	U	---	U
34. Chlorobenzene	0.30	3.0	---	U	---	U	---	U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	---	U	---	U	---	U
36. Ethylbenzene	0.21	1.0	---	U	---	U	---	U
37. Xylenes	0.68	5.0	---	U	---	U	---	U
38. Dibromomethane	0.28	10.0	---	U	---	U	---	U
39. Styrene	0.19	1.0	---	U	---	U	---	U
40. Bromoform	0.20	3.0	---	U	---	U	---	U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	---	U	---	U	---	U
42. 1,2,3-Trichloropropane	0.43	1.0	---	U	---	U	---	U
43. 1,4-Dichlorobenzene	0.39	1.0	---	U	---	U	1.20	U
44. 1,2-Dichlorobenzene	0.32	5.0	---	U	---	U	---	U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	---	U	---	U	---	U
46. Acrylonitrile	2.72	200.0	---	U	---	U	---	U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	---	U	---	U	---	U

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

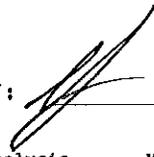
PHONE (252) 756-6208  
FAX (252) 756-0633

ID#: 6033

JOHNSTON CO. LANDFILL (PHASE 5)  
MR. KEVIN SHIELDS  
P.O. BOX 2263  
SMITHFIELD, NC 27577

DATE COLLECTED: 05/23/11

DATE REPORTED : 06/14/11

REVIEWED BY: 

PARAMETERS	MDL	Leachate				Analysis		Method Code
		SWSL Lag #1	Lag #2	Lag #3	Lag #4	Date	Analyst	
Antimony, ug/l	0.14	6.0	--- U	--- U	--- U	--- U	05/26/11 LFPJ	EPA200.8
Arsenic, ug/l	0.10	10.0	0.23 J	0.80 J	--- U	--- U	05/26/11 LFPJ	EPA200.8
Barium, ug/l	0.02	100.0	9.4 J	9.8 J	14.2 J	1.5 J	05/26/11 LFPJ	EPA200.8
Beryllium, ug/l	0.02	1.0	--- U	--- U	--- U	--- U	05/26/11 LFPJ	EPA200.8
Cadmium, ug/l	0.02	1.0	--- U	--- U	--- U	--- U	05/26/11 LFPJ	EPA200.8
Cobalt, ug/l	0.03	10.0	0.13 J	16	0.43 J	2.2 J	05/26/11 LFPJ	EPA200.8
Copper, ug/l	0.02	10.0	0.49 J	0.63 J	0.45 J	0.69 J	05/26/11 LFPJ	EPA200.8
Total Chromium, ug/l	0.04	10.0	0.79 J	0.85 J	0.62 J	0.80 J	05/26/11 LFPJ	EPA200.8
Lead, ug/l	0.02	10.0	0.24 J	--- U	0.12 J	0.13 J	05/26/11 LFPJ	EPA200.8
Nickel, ug/l	0.04	50.0	2.1 J	3.1 J	1.7 J	0.65 J	05/26/11 LFPJ	EPA200.8
Selenium, ug/l	0.20	10.0	3.3 J	--- U	--- U	--- U	05/26/11 LFPJ	EPA200.8
Silver, ug/l	0.02	10.0	--- U	--- U	--- U	--- U	05/26/11 LFPJ	EPA200.8
Thallium, ug/l	0.02	5.5	--- U	--- U	0.25 J	0.09 J	05/26/11 LFPJ	EPA200.8
Vanadium, ug/l	0.14	25.0	--- U	--- U	--- U	0.78 J	05/26/11 LFPJ	EPA200.8
Zinc, ug/l	0.24	10.0	3.1 J	3.0 J	2.7 J	6.8 J	05/26/11 LFPJ	EPA200.8

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

CLIENT: JOHNSTON CO. LANDFILL (PHASE 5)  
MR. KEVIN SHIELDS  
P.O. BOX 2263  
SMITHFIELD, NC 27577

CLIENT ID: 6033

ANALYST: MAO  
DATE COLLECTED: 05/23/11  
DATE ANALYZED: 06/02/11  
DATE REPORTED: 06/14/11

Page: 1

REVIEWED BY: 

## VOLATILE ORGANICS EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Leachate Lag #1	Leachate Lag #2	Leachate Lag #3	Leachate Lag #4	Equipment Blank
1. Chloromethane	0.77	1.0	--- U				
2. Vinyl Chloride	0.63	1.0	--- U				
3. Bromomethane	0.67	10.0	--- U				
4. Chloroethane	0.48	10.0	--- U				
5. Trichlorofluoromethane	0.24	1.0	--- U				
6. 1,1-Dichloroethene	0.17	5.0	--- U				
7. Acetone	9.06	100.0	17.60 J	23.20 J	17.60 J	18.60 J	18.60 J
8. Iodomethane	0.26	10.0	--- U				
9. Carbon Disulfide	0.23	100.0	--- U				
10. Methylene Chloride	0.64	1.0	--- U				
11. trans-1,2-Dichloroethene	0.23	5.0	--- U				
12. 1,1-Dichloroethane	0.20	5.0	--- U				
13. Vinyl Acetate	0.20	50.0	--- U				
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U				
15. 2-Butanone	2.21	100.0	10.10 J	13.20 J	9.40 J	10.10 J	10.10 J
16. Bromochloromethane	0.27	3.0	--- U				
17. Chloroform	0.25	5.0	--- U	--- U	--- U	--- U	3.40 J
18. 1,1,1-Trichloroethane	0.19	1.0	--- U				
19. Carbon Tetrachloride	0.22	1.0	--- U				
20. Benzene	0.24	1.0	--- U				
21. 1,2-Dichloroethane	0.27	1.0	--- U				
22. Trichloroethene	0.23	1.0	--- U				
23. 1,2-Dichloropropane	0.21	1.0	--- U				
24. Bromodichloromethane	0.21	1.0	--- U	--- U	--- U	--- U	0.30 J
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U				
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U				
27. Toluene	0.23	1.0	--- U				
28. trans-1,3-Dichloropropene	0.28	1.0	--- U				
29. 1,1,2-Trichloroethane	0.25	1.0	--- U				
30. Tetrachloroethene	0.17	1.0	--- U				
31. 2-Hexanone	1.57	50.0	--- U				
32. Dibromochloromethane	0.24	3.0	--- U				
33. 1,2-Dibromoethane	0.26	1.0	--- U				
34. Chlorobenzene	0.30	3.0	--- U				
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U				
36. Ethylbenzene	0.21	1.0	--- U				
37. Xylenes	0.68	5.0	--- U				
38. Dibromomethane	0.28	10.0	--- U				
39. Styrene	0.19	1.0	--- U				
40. Bromoform	0.20	3.0	--- U				
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U				
42. 1,2,3-Trichloropropane	0.43	1.0	--- U				
43. 1,4-Dichlorobenzene	0.39	1.0	--- U				
44. 1,2-Dichlorobenzene	0.32	5.0	--- U				
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U				
46. Acrylonitrile	2.72	200.0	--- U				
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U				

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

CLIENT: JOHNSTON CO. LANDFILL (PHASE 5)  
MR. KEVIN SHIELDS  
P.O. BOX 2263  
SMITHFIELD, NC 27577

CLIENT ID: 6033  
ANALYST: MAO  
DATE COLLECTED: 05/23/11  
DATE ANALYZED: 06/02/11  
DATE REPORTED: 06/14/11

Page: 2

REVIEWED BY: 

## VOLATILE ORGANICS EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Trip Blank
1. Chloromethane	0.77	1.0	--- U
2. Vinyl Chloride	0.63	1.0	--- U
3. Bromomethane	0.67	10.0	--- U
4. Chloroethane	0.48	10.0	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U
7. Acetone	9.06	100.0	--- U
8. Iodomethane	0.26	10.0	--- U
9. Carbon Disulfide	0.23	100.0	--- U
10. Methylene Chloride	0.64	1.0	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U
12. 1,1-Dichloroethane	0.20	5.0	--- U
13. Vinyl Acetate	0.20	50.0	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U
15. 2-Butanone	2.21	100.0	--- U
16. Bromochloromethane	0.27	3.0	--- U
17. Chloroform	0.25	5.0	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U
20. Benzene	0.24	1.0	--- U
21. 1,2-Dichloroethane	0.27	1.0	--- U
22. Trichloroethene	0.23	1.0	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U
24. Bromodichloromethane	0.21	1.0	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U
27. Toluene	0.23	1.0	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U
30. Tetrachloroethene	0.17	1.0	--- U
31. 2-Hexanone	1.57	50.0	--- U
32. Dibromochloromethane	0.24	3.0	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U
34. Chlorobenzene	0.30	3.0	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U
36. Ethylbenzene	0.21	1.0	--- U
37. Xylenes	0.68	5.0	--- U
38. Dibromomethane	0.28	10.0	--- U
39. Styrene	0.19	1.0	--- U
40. Bromoform	0.20	3.0	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U
46. Acrylonitrile	2.72	200.0	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U

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#: 6033

JOHNSTON CO. LANDFILL (PHASE 5)  
MR. KEVIN SHIELDS  
P.O. BOX 2263  
SMITHFIELD ,NC 27577

DATE COLLECTED: 05/26/11  
DATE REPORTED : 06/16/11

REVIEWED BY: 

PARAMETERS	MDL	Leachate		Analysis		Method Code
		SWSL	Jun Box	Date	Analyst	
BOD, mg/l	2.0	2.0	24	05/27/11	TRB	SM5210B
COD, mg/l	20.0	20.0	606	06/07/11	TRB	HACH8000
Total Suspended Residue, mg/l	1.0	1.0	63	05/27/11	HLB	SM2540D
Ammonia Nitrogen as N, mg/l	0.04	0.04	463	05/31/11	ANO	EPA350.1
Nitrate Nitrogen as N, mg/l	0.03	10.0	0.10 J	06/01/11	ANO	EPA353.2
Total Phosphorus as P, mg/l	0.04	0.04	1.20	06/02/11	MPH	EPA365.4
Sulfate, mg/l	5.0	250.0	7.5 J	06/01/11	TRB	SM426C
Antimony, ug/l	0.14	6.0	0.78 J	06/13/11	CMF	EPA200.8
Arsenic, ug/l	0.43	10.0	10	06/16/11	CMF	SM3113B
Barium, ug/l	0.02	100.0	358	06/13/11	CMF	EPA200.8
Beryllium, ug/l	0.02	1.0	0.07 J	06/13/11	CMF	EPA200.8
Cadmium, ug/l	0.02	1.0	0.22 J	06/13/11	CMF	EPA200.8
Cobalt, ug/l	0.03	10.0	7.8 J	06/13/11	CMF	EPA200.8
Copper, ug/l	0.02	10.0	4.7 J	06/13/11	CMF	EPA200.8
Total Chromium, ug/l	0.04	10.0	7.3 J	06/13/11	CMF	EPA200.8
Lead, ug/l	0.02	10.0	0.30 J	06/13/11	CMF	EPA200.8
Nickel, ug/l	0.04	50.0	54	06/13/11	CMF	EPA200.8
Selenium, ug/l	0.32	10.0	--- U	06/15/11	CMF	SM3113B
Silver, ug/l	0.02	10.0	0.11 J	06/13/11	CMF	EPA200.8
Thallium, ug/l	0.02	5.5	0.03 J	06/13/11	CMF	EPA200.8
Vanadium, ug/l	0.14	25.0	6.6 J	06/13/11	CMF	EPA200.8
Zinc, ug/l	0.24	10.0	8.9 J	06/13/11	CMF	EPA200.8

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

CLIENT: JOHNSTON CO. LANDFILL (PHASE 5)  
MR. KEVIN SHIELDS  
P.O. BOX 2263  
SMITHFIELD, NC 27577

CLIENT ID: 6033

ANALYST: MAO  
DATE COLLECTED: 05/26/11  
DATE ANALYZED: 06/08/11  
DATE REPORTED: 06/16/11

Page: 1

REVIEWED BY: 

## VOLATILE ORGANICS EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Leachate Jun Box
1. Chloromethane	0.77	1.0	--- U
2. Vinyl Chloride	0.63	1.0	1.50
3. Bromomethane	0.67	10.0	--- U
4. Chloroethane	0.48	10.0	0.80 J
5. Trichlorofluoromethane	0.24	1.0	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U
7. Acetone	9.06	100.0	20.80 J
8. Iodomethane	0.26	10.0	--- U
9. Carbon Disulfide	0.23	100.0	--- U
10. Methylene Chloride	0.64	1.0	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U
12. 1,1-Dichloroethane	0.20	5.0	1.10 J
13. Vinyl Acetate	0.20	50.0	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	0.60 J
15. 2-Butanone	2.21	100.0	6.30 J
16. Bromochloromethane	0.27	3.0	--- U
17. Chloroform	0.25	5.0	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U
20. Benzene	0.24	1.0	9.40
21. 1,2-Dichloroethane	0.27	1.0	0.50 J
22. Trichloroethene	0.23	1.0	--- U
23. 1,2-Dichloropropane	0.21	1.0	--- U
24. Bromodichloromethane	0.21	1.0	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U
27. Toluene	0.23	1.0	6.40
28. trans-1,3-Dichloropropene	0.28	1.0	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U
30. Tetrachloroethene	0.17	1.0	--- U
31. 2-Hexanone	1.57	50.0	--- U
32. Dibromochloromethane	0.24	3.0	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U
34. Chlorobenzene	0.30	3.0	1.30 J
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U
36. Ethylbenzene	0.21	1.0	44.00
37. Xylenes	0.68	5.0	57.40
38. Dibromomethane	0.28	10.0	--- U
39. Styrene	0.19	1.0	1.10
40. Bromoform	0.20	3.0	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	10.20
44. 1,2-Dichlorobenzene	0.32	5.0	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U
46. Acrylonitrile	2.72	200.0	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U

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#: 6033 A

JOHNSTON CO. LANDFILL (PHASE 5)  
MR. KEVIN SHIELDS  
P.O. BOX 2263  
SMITHFIELD ,NC 27577

DATE COLLECTED: 05/26/11  
DATE REPORTED : 06/16/11

REVIEWED BY: 

PARAMETERS	MDL	Leachate		Trip Blank	Analysis		Method Code
		SWSL			Date	Analyst	
BOD, mg/l	2.0	2.0	---	U	05/27/11	TRB	SM5210B
COD, mg/l	20.0	20.0	310		06/07/11	TRB	HACH8000
Total Suspended Residue, mg/l	1.0	1.0	62		05/27/11	HLB	SM2540D
Ammonia Nitrogen as N, mg/l	0.04	0.04	246		05/31/11	ANO	EPA350.1
Nitrate Nitrogen as N, mg/l	0.03	10.0	---	U	06/01/11	ANO	EPA353.2
Total Phosphorus as P, mg/l	0.04	0.04	0.34		06/02/11	MPH	EPA365.4
Sulfate, mg/l	5.0	250.0	---	U	06/01/11	TRB	SM426C
Antimony, ug/l	0.14	6.0	0.36	J	06/13/11	CMF	EPA200.8
Arsenic, ug/l	0.43	10.0	5.0	J	06/16/11	CMF	SM3113B
Barium, ug/l	0.02	100.0	198		06/13/11	CMF	EPA200.8
Beryllium, ug/l	0.02	1.0	---	U	06/13/11	CMF	EPA200.8
Cadmium, ug/l	0.02	1.0	---	U	06/13/11	CMF	EPA200.8
Cobalt, ug/l	0.03	10.0	167		06/13/11	CMF	EPA200.8
Copper, ug/l	0.02	10.0	2.8	J	06/13/11	CMF	EPA200.8
Total Chromium, ug/l	0.04	10.0	4.2	J	06/13/11	CMF	EPA200.8
Lead, ug/l	0.02	10.0	0.12	J	06/13/11	CMF	EPA200.8
Nickel, ug/l	0.04	50.0	36.4	J	06/13/11	CMF	EPA200.8
Selenium, ug/l	0.32	10.0	---	U	06/15/11	CMF	SM3113B
Silver, ug/l	0.02	10.0	0.05	J	06/13/11	CMF	EPA200.8
Thallium, ug/l	0.02	5.5	---	U	06/13/11	CMF	EPA200.8
Vanadium, ug/l	0.14	25.0	2.9	J	06/13/11	CMF	EPA200.8
Zinc, ug/l	0.24	10.0	3.3	J	06/13/11	CMF	EPA200.8

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

CLIENT: JOHNSTON CO. LANDFILL (PHASE 5)  
MR. KEVIN SHIELDS  
P.O. BOX 2263  
SMITHFIELD, NC 27577

CLIENT ID: 6033 A

ANALYST: MAO  
DATE COLLECTED: 05/26/11  
DATE ANALYZED: 06/08/11  
DATE REPORTED: 06/16/11

Page: 1

REVIEWED BY: 

## VOLATILE ORGANICS EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Leachate	Trip Blank
1. Chloromethane	0.77	1.0	--- U	--- U
2. Vinyl Chloride	0.63	1.0	0.80 J	--- U
3. Bromomethane	0.67	10.0	--- U	--- U
4. Chloroethane	0.48	10.0	0.80 J	--- U
5. Trichlorofluoromethane	0.24	1.0	--- U	--- U
6. 1,1-Dichloroethene	0.17	5.0	--- U	--- U
7. Acetone	9.06	100.0	15.20 J	--- U
8. Iodomethane	0.26	10.0	--- U	--- U
9. Carbon Disulfide	0.23	100.0	--- U	--- U
10. Methylene Chloride	0.64	1.0	--- U	--- U
11. trans-1,2-Dichloroethene	0.23	5.0	--- U	--- U
12. 1,1-Dichloroethane	0.20	5.0	1.80 J	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	0.70 J	--- U
15. 2-Butanone	2.21	100.0	5.30 J	--- U
16. Bromochloromethane	0.27	3.0	--- U	--- U
17. Chloroform	0.25	5.0	--- U	--- U
18. 1,1,1-Trichloroethane	0.19	1.0	--- U	--- U
19. Carbon Tetrachloride	0.22	1.0	--- U	--- U
20. Benzene	0.24	1.0	1.40	--- U
21. 1,2-Dichloroethane	0.27	1.0	--- U	--- U
22. Trichloroethene	0.23	1.0	--- U	--- U
23. 1,2-Dichloropropane	0.21	1.0	0.50 J	--- U
24. Bromodichloromethane	0.21	1.0	--- U	--- U
25. Cis-1,3-Dichloropropene	0.24	1.0	--- U	--- U
26. 4-Methyl-2-Pentanone	1.19	100.0	--- U	--- U
27. Toluene	0.23	1.0	0.40 J	--- U
28. trans-1,3-Dichloropropene	0.28	1.0	--- U	--- U
29. 1,1,2-Trichloroethane	0.25	1.0	--- U	--- U
30. Tetrachloroethene	0.17	1.0	--- U	--- U
31. 2-Hexanone	1.57	50.0	--- U	--- U
32. Dibromochloromethane	0.24	3.0	--- U	--- U
33. 1,2-Dibromoethane	0.26	1.0	--- U	--- U
34. Chlorobenzene	0.30	3.0	4.60	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U
36. Ethylbenzene	0.21	1.0	0.60 J	--- U
37. Xylenes	0.68	5.0	1.40 J	--- U
38. Dibromomethane	0.28	10.0	--- U	--- U
39. Styrene	0.19	1.0	--- U	--- U
40. Bromoform	0.20	3.0	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U	--- U
42. 1,2,3-Trichloropropane	0.43	1.0	--- U	--- U
43. 1,4-Dichlorobenzene	0.39	1.0	3.10	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	0.40 J	--- U
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U	--- U
46. Acrylonitrile	2.72	200.0	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U	--- U

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

Environment 1, Inc.  
 P.O. Box 7085, 174 Oakmont Dr.  
 Greenville, NC 27858

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

CLIENT: 6033 A & 6033 Week: 52

JOHNSTON CO. LANDFILL (PHASE 5)  
 MR. KEVIN SHIELDS  
 P.O. BOX 2263  
 SMITHFIELD NC 27577

(919) 938-4747

CHAIN OF CUSTODY RECORD

SAMPLE LOCATION	COLLECTION		TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	DISINFECTION		BOD	COD	TSR	Ammonia Nitro.	Nitrate	T. Phosphorus	Sulfate	Metals	EPA 8260B	8260 Dup. 1	CHLORINE NEUTRALIZED AT COLLECTION	pH CHECK (LAB)	CONTAINER TYPE, P/G	CHEMICAL PRESERVATION	
	DATE	TIME				CHLORINE	UV															
Leachate	5/26/11	10:50	N/A	19	10	<input type="checkbox"/>	<input type="checkbox"/>															
Trip Blank			N/A	20	2	<input type="checkbox"/>	<input type="checkbox"/>															
PHASE 5 LEACHATE Tumb. Box		09:25	N/A	20	10	<input type="checkbox"/>	<input type="checkbox"/>															
RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	COMMENTS:																
<i>[Signature]</i>	5/27/11 09:00	<i>[Signature]</i>	5/27/11 09:00	<i>[Signature]</i>	5/27/11 09:00	SAMPLER MUST BE MAINTAINED DURING SHIPMENT/DELIVERY																
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	SAMPLER MUST BE MAINTAINED DURING SHIPMENT/DELIVERY																
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	SAMPLER MUST BE MAINTAINED DURING SHIPMENT/DELIVERY																

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.



Enviroamer<sup>1</sup>, Inc.  
 P.O. Box 7085, 114 Oakmont Dr.  
 Greenville, NC 27858

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

CLIENT: 6033 Week: 16

JOHNSTON CO. LANDFILL (PHASE 5)  
 MR. KEVIN SHIELDS  
 P.O. BOX 2263  
 SMITHFIELD NC 27577

(919) 938-4747

CHAIN OF CUSTODY RECORD

SAMPLE LOCATION	COLLECTION		TOTAL CHLORINE, mg/l OR ug/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	BOD	COD	TSR	Ammonia Nitro.	Nitrate	T. Phosphorus	Sulfate	Metals	EPA 8260B	8260 Dup. 1	8260 Dup. 2	8260 Dup. 3	PARAMETERS	CLASSIFICATION:	CHLORINE NEUTRALIZED AT COLLECTION	pH CHECK (LAB)	CONTAINER TYPE, P/G	CHEMICAL PRESERVATION	
	DATE	TIME																						
Leachate Bag #4																								
Surface Water #5-1																								
Surface Water #5-2																								
Leachate John Box																								
MTW-5(S)	5/19/11	13:35	N/A	16	3																			
MTW-5(Q1)	5/19/11	12:15	N/A	15	3																			
Equipment Blank																								
Trip Blank	5/19/11				17																			
SW-5-1	5/19/11	08:46	N/A	16	3																			
SW-5-2	5/19/11	09:26	N/A	16	3																			
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	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)
	5/20/11 05:00		5/20/11 05:00		5/20/11 05:00		5/20/11 05:00		5/20/11 05:00		5/20/11 05:00		5/20/11 05:00		5/20/11 05:00		5/20/11 05:00		5/20/11 05:00		5/20/11 05:00		5/20/11 05:00	
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	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.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)

FORM #5

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.

No 220833

CHLORINE NEUTRALIZED AT COLLECTION

pH CHECK (LAB)

CONTAINER TYPE, P/G

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: Kevin T. Shields  
 (Please Print)

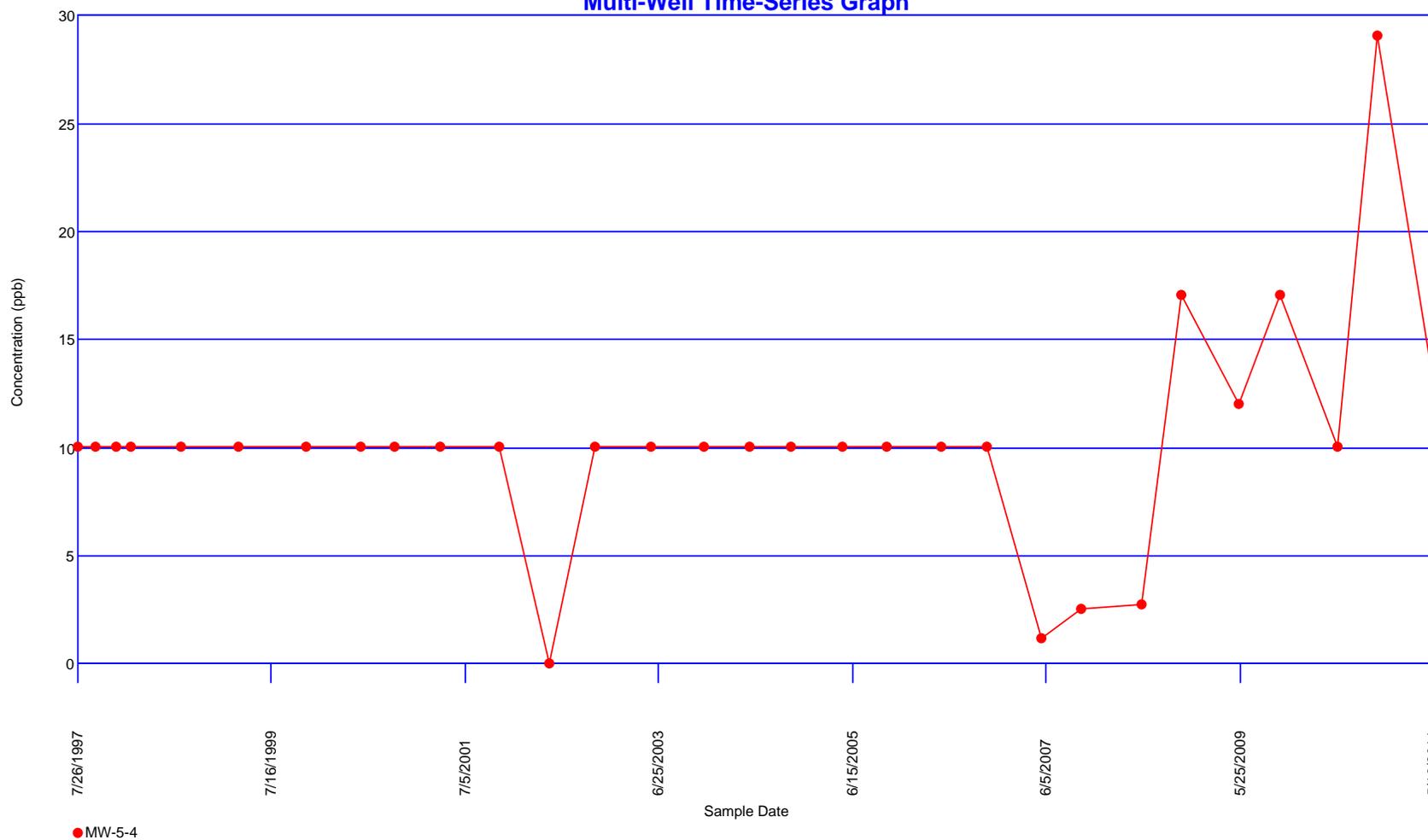
SAMPLES RECEIVED IN LAB AT 02 °C



## Appendix C

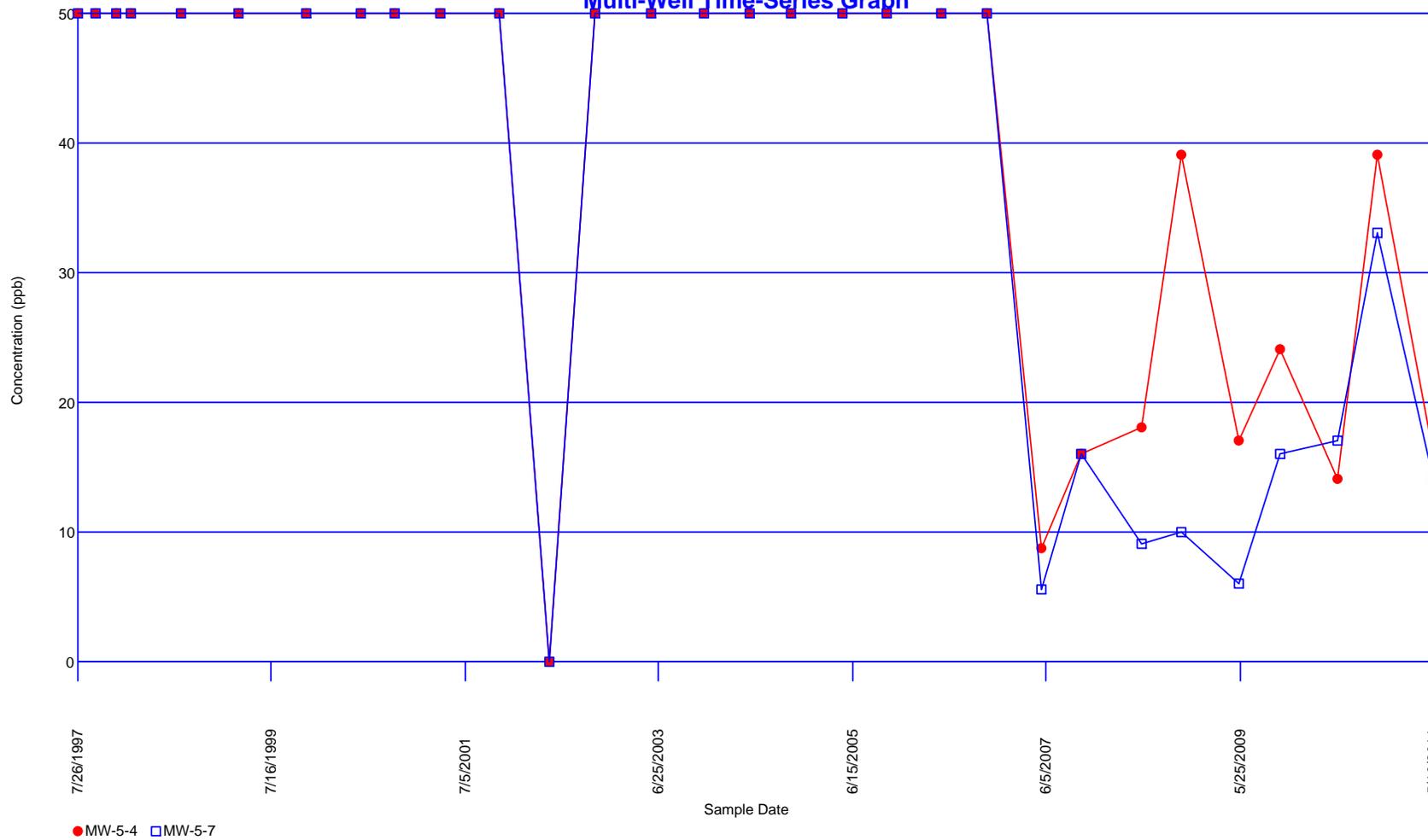
Time Vs. concentration Graphs

# Lead Multi-Well Time-Series Graph

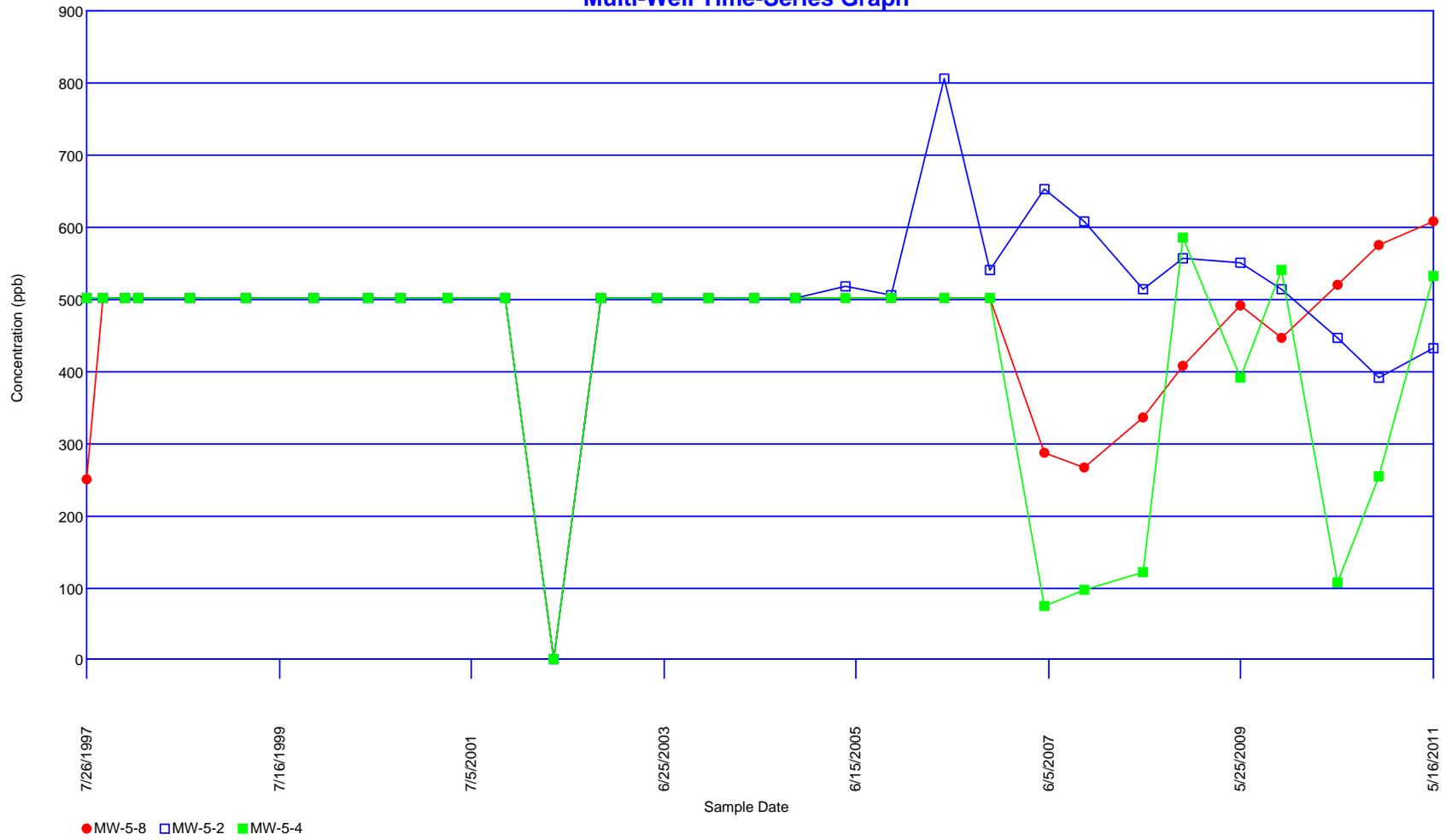


# Zinc

## Multi-Well Time-Series Graph



# Barium Multi-Well Time-Series Graph



# 1,2-Dichloropropane Multi-Well Time-Series Graph

