RCO 943

Johnston County Landfill
Phase 5

Ground Water Monitoring Report

October 2006 Semi-annual Monitoring Event

Johnston County Landfill
Smithfield, North Carolina
NC Solid Waste Permit # 51-01 and 51-02

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

December 2006

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Solid Waste Section

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Johnston County – Phase 5 Lined Landfill
Semi-annual Ground Water Monitoring Report
October 2006 Sampling Event

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1.0 Introduction

The Johnston County Landfill, currently operating under operating under Solid Waste Permits #51-02 (Phase 5) and previously under #51-01 (Phases 1 through 4), is required to submit semiannual ground water monitoring reports for assessment monitoring at the four unlined landfills (Phases 1 through 4) on the site. This report presents the results of the second semi-annual monitoring event for 2006. This event was performed to comply with the semi-annual monitoring schedule required by NC Solid Waste Regulations.

The ground water monitoring for the Phase 5 landfill included 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 entire site. Also included are summary tables of the results, summary of the statistical analysis, graphs of the data, and laboratory analytical reports.

2.0 Sampling Procedures

The sampling event, performed by trained personnel from Johnston County Landfill, consisted of collecting samples from 10 ground water 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**. This sampling was conducted in accordance with the approved site Sampling and Analysis Plan. Also included in the analysis was a trip blank for quality control. Surface water samples were collected from two locations (SWPT-5-1 and SWPT-5-2) up and downstream from the landfill on 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 5 and 6** 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.

3.0 Field and Laboratory Results

3.1 Laboratory Analysis

Ground water samples were collected from the monitoring network associated with Phase 5 using dedicated low-flow pumps in the same manner as ground water samples from wells associated with Phases 1 through 4. These samples were analyzed for Appendix I constituents.

3.2 Field and Laboratory Results

All samples were transported to the laboratory facility under proper chain of custody analyzed at the specified DWM Practical Quantitation Limits for Appendix I constituents. The laboratory report is attached for your review as **Appendix A**.

Ground water and field measurements included in **Table 2**, remained similar to previous results. The laboratory analysis detected two constituents: barium in MW-5-2 and cobalt in MW-5-10. No constituents were detected in the surface water analyses. **Table 3** summarizes the list of constituents detected.

There are currently two surface water monitoring points associated with Phase 5 (SW-5-1, and SW-5-2). There were no Appendix I constituents detected in either of these samples.

4.0 Statistical Analysis & Results

The 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.

Barium is the only constituent found to be statistically significant (see **Table 4**). 2L/MCL Statistical Analysis also indicated statistically significant results above 2L standards for Barium.

5.0 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 0.590 feet/day (MW-5-2). These calculations are included in **Table 5**. The data indicates that ground water is flowing generally to the north towards the tributaries of 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.

6.0 Ground Water Assessment

During the fall ground water monitoring event, an assessment of previously detected contaminants was conducted on monitoring well MW-5-8. This well has historically had

detectable levels of 1,2 dichloropropane in ground water samples. This contaminant has never been detected in the Phase 5 leachate, therefore another source was suspected. This assessment indicated that the permanent pump installed in this well may have been the source of the impact. This pump was removed from the well, and two weeks prior to sampling the well was bailed daily for a week to remove any residual contaminant. The results of the Fall monitoring event indicate no detectable levels of 1,2 dichloropropane. A more detailed Assessment Report was submitted to NCDENR on December 14th, 2006.

7.0 Conclusions

The results of this monitoring event indicate three constituents detectable in groundwater collected from wells associated with Phase 5. The level barium detected was above 2L standards. We are currently evaluating this impact for possible sources. The next semi-annual sampling event will be performed in spring 2007. These results will be reported upon receipt of the laboratory data and completion of the statistical analyses.

Figures

Tables

Table 1
Johnston County Phase 5 Lined Landfill
Ground Water Elevations & Velocities
10/30/2006

Well	TOC Elevation (feet)	Water Level (feet)	GW Elev (feet)	Hyd. Cond. (ft/day)	Porosity (%)	Gradient (ft/ft)	Velocity (ft/day)
MW-5-1	232.17	24.42	207.75	2.275	0.2	0.019	0.220
MW-5-2	206.77	5.52	201.25	5.247	0.2	0.023	0.590
MW-5-3	203.8	10.37	193.43	0.995	0.2	0.025	0.122
MW-5-4	186.58	6.82	179.76	0.465	0.2	0.021	0.049
MW-5-5	185.42	11.89	173.53	0.261	0.2	0.027	0.035
MW-5-6	199.11	30.64	168.47	0.366	0.2	0.022	0.040
MW-5-7	182.73	11.53	171.2	0.422	0.2	0.020	0.041
MW-5-8	189.31	10.5	178.81	0.312	0.2	0.009	0.015
MW-5-9	198.31	13.06	185.25	0.309	0.2	0.035	0.054
MW-5-10	202.88	14.63	188.25	0.037	0.2	0.024	0.004
LL-1	na	na	na	na	na	na	na
LL-2	na	na	na	na	na	na	na
LL-3	na	na	na	na	na	na	na
LL-4	na	na	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
10/30/2006

Well Identification #	Static Water Level (ft) (BTW)	Temperature (°Celsius)	Turbidity (NTU)	pH	Specific Conductivity (uS/cm)
MW – 5-1	24.42	19.15	170	4.11	210
MW – 5-2	5.52	17.63	62.7	3.98	379
MW – 5-3	10.37	19.11	145	4.32	65
MW – 5-4	6.82	17.65	30.6	4.76	46
MW – 5-5	11.89	20.1	3.21	4.5	39
MW – 5-6	30.64	19.25	9.32	4.51	64
MW – 5-7	11.53	16.79	26	4.94	58
MW – 5-8	10.5	18.31	1.69	5.27	69
MW – 5-9	13.06	18.1	26	4.79	44
MW – 5-10	14.63	18.26	128	5.45	51
Phase 5 Direct Leachate	N/A	20.64	109	6.71	6130
Lagoon Lchte.#1	17.98	19.35	17.9	5.49	74
Lagoon Lchte. #2	17.27	17.69	4.02	5.61	82
Lagoon Lchte. #3	19.74	17.88	5.63	5.63	59
Lagoon Lchte. #4	8.75	17.35	3.47	5.72	93
SW5 – 1	N/A	11.14	13.3	5.79	327
SW5 – 2	N/A	11.89	15.4	7.11	163

Table 3
Johnston County Phase 5 Lined Landfill
Detected Inorganic and Organic Constituents
10/30/2006

Parameter	PQL	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
Barium	500	2000	ND	**539**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cobalt	10	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	39	ND	ND

Notes

ND = Not detected
Bold indicates level above PQL
Shading indicates level above 2L standard, or no standard is established.

All results are in ug/l.

Table 4
Johnston County Phase 5 Landfill
Statistical Analysis Summary
10/30/2006

LOCATION	PARAMETER	RESULT (ug/l)	%ND	Test	Statistically Significant?	2L/MCL statistical analysis	2L/MCL Test
MW-5-10	Cobalt	39	50	Wilcoxan-Rank	N	---	---
MW-5-2	Barium	539	88.09	NPPL	Y	Y	PTI-MCL

Legend:

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

Shading indicates statistical significance.

Notes:
MW-5-1 was used as the background well

Appendix A

Laboratory Analytical Report

-Environment 1, Incorporated

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

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

RECD NOV 27 2006

Drinking Water ID: 37715
Wastewater ID: 10

ID#: 6033

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

DATE COLLECTED: 10/30/06
DATE REPORTED : 11/21/06

REVIEWED BY:

PARAMETERS	MW5-1	MW5-2	MW5-3	MW5-4	MW5-6	Analysis Date	Analyst	Method Code
Antimony, mg/l	<0.030	<0.030	<0.030	<0.030	<0.030	11/03/06	CMF	EPA200.8
Arsenic, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	11/03/06	CMF	EPA200.8
Barium, mg/l	<0.500	0.539	<0.500	<0.500	<0.500	11/03/06	CMF	EPA200.8
Beryllium, mg/l	<0.002	<0.002	<0.002	<0.002	<0.002	11/03/06	CMF	EPA200.8
Cadmium, mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	11/03/06	CMF	EPA200.8
Cobalt, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	11/03/06	CMF	EPA200.8
Copper, mg/l	<0.200	<0.200	<0.200	<0.200	<0.200	11/03/06	CMF	EPA200.8
Total Chromium, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	11/03/06	CMF	EPA200.8
Lead, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	11/03/06	CMF	EPA200.8
Nickel, mg/l	<0.050	<0.050	<0.050	<0.050	<0.050	11/03/06	CMF	EPA200.8
Selenium, mg/l	<0.020	<0.020	<0.020	<0.020	<0.020	11/03/06	CMF	EPA200.8
Silver, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	11/03/06	CMF	EPA200.8
Thallium, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	11/03/06	CMF	EPA200.8
Vanadium, mg/l	<0.040	<0.040	<0.040	<0.040	<0.040	11/03/06	CMF	EPA200.8
Zinc, mg/l	<0.050	<0.050	<0.050	<0.050	<0.050	11/03/06	CMF	EPA200.8

Environment 1, Incorporated

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Drinking Water ID: 37715
Wastewater ID: 10

ID#: 6033

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

DATE COLLECTED: 10/30/06
DATE REPORTED : 11/21/06

REVIEWED BY:

PARAMETERS	MW5-7	MW5-8	MW5-9	Surface Water #5-1	Surface Water #5-2	Analysis Date	Analyst	Method Code
Antimony, mg/l	<0.030	<0.030	<0.030	<0.030	<0.030	11/03/06	CMF	EPA200.8
Arsenic, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	11/03/06	CMF	EPA200.8
Barium, mg/l	<0.500	<0.500	<0.500	<0.500	<0.500	11/03/06	CMF	EPA200.8
Beryllium, mg/l	<0.002	<0.002	<0.002	<0.002	<0.002	11/03/06	CMF	EPA200.8
Cadmium, mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	11/03/06	CMF	EPA200.8
Cobalt, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	11/03/06	CMF	EPA200.8
Copper, mg/l	<0.200	<0.200	<0.200	<0.200	<0.200	11/03/06	CMF	EPA200.8
Total Chromium, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	11/03/06	CMF	EPA200.8
Lead, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	11/03/06	CMF	EPA200.8
Nickel, mg/l	<0.050	<0.050	<0.050	<0.050	<0.050	11/03/06	CMF	EPA200.8
Selenium, mg/l	<0.020	<0.020	<0.020	<0.020	<0.020	11/03/06	CMF	EPA200.8
Silver, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	11/03/06	CMF	EPA200.8
Thallium, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	11/03/06	CMF	EPA200.8
Vanadium, mg/l	<0.040	<0.040	<0.040	<0.040	<0.040	11/03/06	CMF	EPA200.8
Zinc, mg/l	<0.050	<0.050	<0.050	<0.050	<0.050	11/03/06	CMF	EPA200.8

Environment 1, Incorporated

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

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

Drinking Water ID: 37715
Wastewater ID: 10

ID#: 6033

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

DATE COLLECTED: 10/30/06
DATE REPORTED : 11/21/06

REVIEWED BY:

PARAMETERS	MW-5(5')	MW-5(10')	Analysis Date	Analyst	Method Code
Antimony, mg/l	<0.030	<0.030	11/03/06	CMF	EPA200.8
Arsenic, mg/l	<0.010	<0.010	11/03/06	CMF	EPA200.8
Barium, mg/l	<0.500	<0.500	11/03/06	CMF	EPA200.8
Beryllium, mg/l	<0.002	<0.002	11/03/06	CMF	EPA200.8
Cadmium, mg/l	<0.001	<0.001	11/03/06	CMF	EPA200.8
Cobalt, mg/l	<0.010	0.039	11/03/06	CMF	EPA200.8
Copper, mg/l	<0.200	<0.200	11/03/06	CMF	EPA200.8
Total Chromium, mg/l	<0.010	<0.010	11/03/06	CMF	EPA200.8
Lead, mg/l	<0.010	<0.010	11/03/06	CMF	EPA200.8
Nickel, mg/l	<0.050	<0.050	11/03/06	CMF	EPA200.8
Selenium, mg/l	<0.020	<0.020	11/03/06	CMF	EPA200.8
Silver, mg/l	<0.010	<0.010	11/03/06	CMF	EPA200.8
Thallium, mg/l	<0.010	<0.010	11/03/06	CMF	EPA200.8
Vanadium, mg/l	<0.040	<0.040	11/03/06	CMF	EPA200.8
Zinc, mg/l	<0.050	<0.050	11/03/06	CMF	EPA200.8

Environment 1, Incorporated

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: 10/30/06
DATE ANALYZED: 11/07/06
DATE REPORTED: 11/21/06

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MW5-1	MW5-2	MW5-3	MW5-4	MW5-6
1. Chloromethane	<10.00	<10.00	<10.00	<10.00	<10.00
2. Vinyl Chloride	<10.00	<10.00	<10.00	<10.00	<10.00
3. Bromomethane	<10.00	<10.00	<10.00	<10.00	<10.00
4. Chloroethane	<10.00	<10.00	<10.00	<10.00	<10.00
5. Trichlorofluoromethane	<5.00	<5.00	<5.00	<5.00	<5.00
6. 1,1-Dichloroethene	<5.00	<5.00	<5.00	<5.00	<5.00
7. Acetone	<100.00	<100.00	<100.00	<100.00	<100.00
8. Iodomethane	<10.00	<10.00	<10.00	<10.00	<10.00
9. Carbon Disulfide	<100.00	<100.00	<100.00	<100.00	<100.00
10. Methylene Chloride	<10.00	<10.00	<10.00	<10.00	<10.00
11. trans-1,2-Dichloroethene	<5.00	<5.00	<5.00	<5.00	<5.00
12. 1,1-Dichloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
13. Vinyl Acetate	<50.00	<50.00	<50.00	<50.00	<50.00
14. Cis-1,2-Dichloroethene	<5.00	<5.00	<5.00	<5.00	<5.00
15. 2-Butanone	<100.00	<100.00	<100.00	<100.00	<100.00
16. Bromochloromethane	<5.00	<5.00	<5.00	<5.00	<5.00
17. Chloroform	<5.00	<5.00	<5.00	<5.00	<5.00
18. 1,1,1-Trichloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
19. Carbon Tetrachloride	<10.00	<10.00	<10.00	<10.00	<10.00
20. Benzene	<5.00	<5.00	<5.00	<5.00	<5.00
21. 1,2-Dichloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
22. Trichloroethene	<5.00	<5.00	<5.00	<5.00	<5.00
23. 1,2-Dichloropropane	<5.00	<5.00	<5.00	<5.00	<5.00
24. Bromodichloromethane	<5.00	<5.00	<5.00	<5.00	<5.00
25. Cis-1,3-Dichloropropene	<10.00	<10.00	<10.00	<10.00	<10.00
26. 4-Methyl-2-Pentanone	<100.00	<100.00	<100.00	<100.00	<100.00
27. Toluene	<5.00	<5.00	<5.00	<5.00	<5.00
28. trans-1,3-Dichloropropene	<10.00	<10.00	<10.00	<10.00	<10.00
29. 1,1,2-Trichloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
30. Tetrachloroethene	<5.00	<5.00	<5.00	<5.00	<5.00
31. 2-Hexanone	<50.00	<50.00	<50.00	<50.00	<50.00
32. Dibromochloromethane	<5.00	<5.00	<5.00	<5.00	<5.00
33. 1,2-Dibromoethane	<5.00	<5.00	<5.00	<5.00	<5.00
34. Chlorobenzene	<5.00	<5.00	<5.00	<5.00	<5.00
35. 1,1,1,2-Tetrachloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
36. Ethylbenzene	<5.00	<5.00	<5.00	<5.00	<5.00
37. Xylenes	<5.00	<5.00	<5.00	<5.00	<5.00
38. Dibromomethane	<10.00	<10.00	<10.00	<10.00	<10.00
39. Styrene	<10.00	<10.00	<10.00	<10.00	<10.00
40. Bromoform	<5.00	<5.00	<5.00	<5.00	<5.00
41. 1,1,2,2-Tetrachloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
42. 1,2,3-Trichloropropane	<15.00	<15.00	<15.00	<15.00	<15.00
43. 1,4-Dichlorobenzene	<5.00	<5.00	<5.00	<5.00	<5.00
44. 1,2-Dichlorobenzene	<5.00	<5.00	<5.00	<5.00	<5.00
45. 1,2-Dibromo-3-Chloropropane	<25.00	<25.00	<25.00	<25.00	<25.00
46. Acrylonitrile	<200.00	<200.00	<200.00	<200.00	<200.00
47. trans-1,4-Dichloro-2-Butene	<100.00	<100.00	<100.00	<100.00	<100.00

Environment 1, Incorporated

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: 10/30/06
DATE ANALYZED: 11/07/06
DATE REPORTED: 11/21/06

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MW5-7	MW5-8	MW5-9	Surface Water #5-1	Surface Water #5-2
1. Chloromethane	<10.00	<10.00	<10.00	<10.00	<10.00
2. Vinyl Chloride	<10.00	<10.00	<10.00	<10.00	<10.00
3. Bromomethane	<10.00	<10.00	<10.00	<10.00	<10.00
4. Chloroethane	<10.00	<10.00	<10.00	<10.00	<10.00
5. Trichlorofluoromethane	<5.00	<5.00	<5.00	<5.00	<5.00
6. 1,1-Dichloroethene	<5.00	<5.00	<5.00	<5.00	<5.00
7. Acetone	<100.00	<100.00	<100.00	<100.00	<100.00
8. Iodomethane	<10.00	<10.00	<10.00	<10.00	<10.00
9. Carbon Disulfide	<100.00	<100.00	<100.00	<100.00	<100.00
10. Methylene Chloride	<10.00	<10.00	<10.00	<10.00	<10.00
11. trans-1,2-Dichloroethene	<5.00	<5.00	<5.00	<5.00	<5.00
12. 1,1-Dichloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
13. Vinyl Acetate	<50.00	<50.00	<50.00	<50.00	<50.00
14. Cis-1,2-Dichloroethene	<5.00	<5.00	<5.00	<5.00	<5.00
15. 2-Butanone	<100.00	<100.00	<100.00	<100.00	<100.00
16. Bromochloromethane	<5.00	<5.00	<5.00	<5.00	<5.00
17. Chloroform	<5.00	<5.00	<5.00	<5.00	<5.00
18. 1,1,1-Trichloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
19. Carbon Tetrachloride	<10.00	<10.00	<10.00	<10.00	<10.00
20. Benzene	<5.00	<5.00	<5.00	<5.00	<5.00
21. 1,2-Dichloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
22. Trichloroethene	<5.00	<5.00	<5.00	<5.00	<5.00
23. 1,2-Dichloropropane	<5.00	<5.00	<5.00	<5.00	<5.00
24. Bromodichloromethane	<5.00	<5.00	<5.00	<5.00	<5.00
25. Cis-1,3-Dichloropropene	<10.00	<10.00	<10.00	<10.00	<10.00
26. 4-Methyl-2-Pentanone	<100.00	<100.00	<100.00	<100.00	<100.00
27. Toluene	<5.00	<5.00	<5.00	<5.00	<5.00
28. trans-1,3-Dichloropropene	<10.00	<10.00	<10.00	<10.00	<10.00
29. 1,1,2-Trichloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
30. Tetrachloroethene	<5.00	<5.00	<5.00	<5.00	<5.00
31. 2-Hexanone	<50.00	<50.00	<50.00	<50.00	<50.00
32. Dibromochloromethane	<5.00	<5.00	<5.00	<5.00	<5.00
33. 1,2-Dibromoethane	<5.00	<5.00	<5.00	<5.00	<5.00
34. Chlorobenzene	<5.00	<5.00	<5.00	<5.00	<5.00
35. 1,1,1,2-Tetrachloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
36. Ethylbenzene	<5.00	<5.00	<5.00	<5.00	<5.00
37. Xylenes	<5.00	<5.00	<5.00	<5.00	<5.00
38. Dibromomethane	<10.00	<10.00	<10.00	<10.00	<10.00
39. Styrene	<10.00	<10.00	<10.00	<10.00	<10.00
40. Bromoform	<5.00	<5.00	<5.00	<5.00	<5.00
41. 1,1,2,2-Tetrachloroethane	<5.00	<5.00	<5.00	<5.00	<5.00
42. 1,2,3-Trichloropropane	<15.00	<15.00	<15.00	<15.00	<15.00
43. 1,4-Dichlorobenzene	<5.00	<5.00	<5.00	<5.00	<5.00
44. 1,2-Dichlorobenzene	<5.00	<5.00	<5.00	<5.00	<5.00
45. 1,2-Dibromo-3-Chloropropane	<25.00	<25.00	<25.00	<25.00	<25.00
46. Acrylonitrile	<200.00	<200.00	<200.00	<200.00	<200.00
47. trans-1,4-Dichloro-2-Butene	<100.00	<100.00	<100.00	<100.00	<100.00

Environment 1, Incorporated

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: 10/30/06
DATE ANALYZED: 11/07/06
DATE REPORTED: 11/21/06

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B

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

[illegible], Inc
P.O. Box 7085, 114 Oakmont Dr.
Greenville, NC 27858

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

CHAIN OF CUSTODY RECORD

CLIENT: 6033 **Week:** 42

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

(919) 938-4750

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	BOD	COD	TSR	Ammonia Nitro.	Nitrate	PO4	Metals	EPA 8260B	8260 Dup. 1	8260 Dup. 2	8260 Dup. 3
CHLORINE NEUTRALIZED AT COLLECTION																
pH CHECK (LAB)												L2	L2	L2	L2	L2
CONTAINER TYPE, P/G						P	P	P	P	P	P	P	G	G	G	G
CHEMICAL PRESERVATION						A	C	A	C	A	C	B	E	E	E	E
MW5-1	10/30/06	16:24	N/A	19	4											
MW5-2		14:41	N/A	18	3											
MW5-3		15:13	N/A	19	3											
MW5-4		13:17	N/A	18	3											
MW5-6		15:45	N/A	19	3											
MW5-7		10:03	N/A	17	3											
MW5-8		10:51	N/A	18	3											
MW5-9		11:35	N/A	18	3											
Leachate Lagoon #1					3											
Leachate Lagoon #2					3											
Leachate Lagoon #3					3											

PARAMETERS

A - NONE
B - HNO_3
C - H_2SO_4
D - NAOH
E - HCL
F - ZINC ACETATE
G - NA THIOSULFATE

CLASSIFICATION:
- ☐ WASTEWATER (NPDES)
- ☐ DRINKING WATER
- ☐ DWQ/GW
- ☒ SOLID WASTE SECTION

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY: Y N

SAMPLES COLLECTED BY: (Please Print) KEVIN J. SHIELDS

SAMPLES RECEIVED IN LAB AT 0.6 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
[signature]	10/31/06 09:30	[signature]	10/31/06 3:33
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:

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.

FORM #5

CHAIN OF CUSTODY RECORD

...56-0633
Week: 42
...LANDFILL (PHASE 5)
...HIELDS
...LD NC 27577
...919) 938-4750

DISINFECTION
- [ ] CHLORINE
- [ ] UV
- [ ] NONE
- [ ] _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	BOD	COD	TSR	Ammonia Nitro.	Nitrate	PO4	Metals	EPA 8260B	8260 Dup. 1	8260 Dup. 2	8260 Dup. 3	PARAMETERS
												L2	L2	L2	L2	L2	
						P	P	P	P	P	P	P	G	G	G	G	
						A	C	A	C	A	C	B	E	E	E	E	
Leachate Lagoon #4					5												
Surface Water #5-1	10/30/06	08:55	N/A	11	3												
Surface Water #5-2	10/30/06	09:25	N/A	12	3												
~~Leachate Junct. Box~~					0												
MW-5(5')	10/30/06	13:46	N/A	20	3												
MW-5(10')	10/30/06	12:23	N/A	18	3												
Equipment Blank	10/30/06	16:48	N/A	N/A	1 ~~2~~												
Trip Blank	10/30/06	N/A	N/A	N/A	1 ~~2~~												

CHLORINE NEUTRALIZED AT COLLECTION

pH CHECK (LAB)

CONTAINER TYPE, P/G

CHEMICAL PRESERVATION

A - NONE
B - HNO_3
C - H_2SO_4
D - NAOH
E - HCL
F - ZINC ACETATE
G - NA THIOSULFATE

CLASSIFICATION:
- [ ] WASTEWATER (NPDES)
- [ ] DRINKING WATER
- [ ] DWQ/GW
- [X] SOLID WASTE SECTION

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY
Y N

SAMPLES COLLECTED BY: (Please Print)
KEVIN J. SHIELDS

SAMPLES RECEIVED IN LAB AT 0.6 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
[signature]	10/31/06 09:30	[signature]	10/31/06 3:33
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:

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.

FORM #5

Environment 1, Incorporated

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

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

Drinking Water ID: 37715
Wastewater ID: 10

ID#: 6033

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

DATE COLLECTED: 10/31/06
DATE REPORTED : 11/21/06

REVIEWED BY:

PARAMETERS	Leachate Lagoon #1	Leachate Lagoon #2	Leachate Lagoon #3	Leachate Lagoon #4	Analysis Date	Analyst	Method Code
Antimony, mg/l	<0.030	<0.030	<0.030	<0.030	11/08/06	CMF	EPA200.8
Arsenic, mg/l	<0.010	<0.010	<0.010	<0.010	11/08/06	CMF	EPA200.8
Barium, mg/l	<0.500	<0.500	<0.500	<0.500	11/08/06	CMF	EPA200.8
Beryllium, mg/l	<0.002	<0.002	<0.002	<0.002	11/08/06	CMF	EPA200.8
Cadmium, mg/l	<0.001	<0.001	<0.001	<0.001	11/08/06	CMF	EPA200.8
Cobalt, mg/l	<0.010	<0.010	<0.010	<0.010	11/08/06	CMF	EPA200.8
Copper, mg/l	<0.200	<0.200	<0.200	<0.200	11/08/06	CMF	EPA200.8
Total Chromium, mg/l	<0.010	<0.010	<0.010	<0.010	11/08/06	CMF	EPA200.8
Lead, mg/l	<0.010	<0.010	<0.010	<0.010	11/08/06	CMF	EPA200.8
Nickel, mg/l	<0.050	<0.050	<0.050	<0.050	11/08/06	CMF	EPA200.8
Selenium, mg/l	<0.020	<0.020	<0.020	<0.020	11/08/06	CMF	EPA200.8
Silver, mg/l	<0.010	<0.010	<0.010	<0.010	11/08/06	CMF	EPA200.8
Thallium, mg/l	<0.010	<0.010	<0.010	<0.010	11/08/06	CMF	EPA200.8
Vanadium, mg/l	<0.040	<0.040	<0.040	<0.040	11/08/06	CMF	EPA200.8
Zinc, mg/l	<0.050	<0.050	<0.050	<0.050	11/08/06	CMF	EPA200.8

Environment 1, Incorporated

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: 10/31/06
DATE REPORTED: 11/21/06

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B

Date Analyzed: / PARAMETERS, ug/l	11/07/06 Leachate Lagoon #1	11/07/06 Leachate Lagoon #2	11/07/06 Leachate Lagoon #3	11/10/06 Leachate Lagoon #4
1. Chloromethane	<10.00	<10.00	<10.00	<10.00
2. Vinyl Chloride	<10.00	<10.00	<10.00	<10.00
3. Bromomethane	<10.00	<10.00	<10.00	<10.00
4. Chloroethane	<10.00	<10.00	<10.00	<10.00
5. Trichlorofluoromethane	<5.00	<5.00	<5.00	<5.00
6. 1,1-Dichloroethene	<5.00	<5.00	<5.00	<5.00
7. Acetone	<100.00	<100.00	<100.00	<100.00
8. Iodomethane	<10.00	<10.00	<10.00	<10.00
9. Carbon Disulfide	<100.00	<100.00	<100.00	<100.00
10. Methylene Chloride	<10.00	<10.00	<10.00	<10.00
11. trans-1,2-Dichloroethene	<5.00	<5.00	<5.00	<5.00
12. 1,1-Dichloroethane	<5.00	<5.00	<5.00	<5.00
13. Vinyl Acetate	<50.00	<50.00	<50.00	<50.00
14. Cis-1,2-Dichloroethene	<5.00	<5.00	<5.00	<5.00
15. 2-Butanone	<100.00	<100.00	<100.00	<100.00
16. Bromochloromethane	<5.00	<5.00	<5.00	<5.00
17. Chloroform	<5.00	<5.00	<5.00	<5.00
18. 1,1,1-Trichloroethane	<5.00	<5.00	<5.00	<5.00
19. Carbon Tetrachloride	<10.00	<10.00	<10.00	<10.00
20. Benzene	<5.00	<5.00	<5.00	<5.00
21. 1,2-Dichloroethane	<5.00	<5.00	<5.00	<5.00
22. Trichloroethene	<5.00	<5.00	<5.00	<5.00
23. 1,2-Dichloropropane	<5.00	<5.00	<5.00	<5.00
24. Bromodichloromethane	<5.00	<5.00	<5.00	<5.00
25. Cis-1,3-Dichloropropene	<10.00	<10.00	<10.00	<10.00
26. 4-Methyl-2-Pentanone	<100.00	<100.00	<100.00	<100.00
27. Toluene	<5.00	<5.00	<5.00	<5.00
28. trans-1,3-Dichloropropene	<10.00	<10.00	<10.00	<10.00
29. 1,1,2-Trichloroethane	<5.00	<5.00	<5.00	<5.00
30. Tetrachloroethene	<5.00	<5.00	<5.00	<5.00
31. 2-Hexanone	<50.00	<50.00	<50.00	<50.00
32. Dibromochloromethane	<5.00	<5.00	<5.00	<5.00
33. 1,2-Dibromoethane	<5.00	<5.00	<5.00	<5.00
34. Chlorobenzene	<5.00	<5.00	<5.00	<5.00
35. 1,1,1,2-Tetrachloroethane	<5.00	<5.00	<5.00	<5.00
36. Ethylbenzene	<5.00	<5.00	<5.00	<5.00
37. Xylenes	<5.00	<5.00	<5.00	<5.00
38. Dibromomethane	<10.00	<10.00	<10.00	<10.00
39. Styrene	<10.00	<10.00	<10.00	<10.00
40. Bromoform	<5.00	<5.00	<5.00	<5.00
41. 1,1,2,2-Tetrachloroethane	<5.00	<5.00	<5.00	<5.00
42. 1,2,3-Trichloropropane	<15.00	<15.00	<15.00	<15.00
43. 1,4-Dichlorobenzene	<5.00	<5.00	<5.00	<5.00
44. 1,2-Dichlorobenzene	<5.00	<5.00	<5.00	<5.00
45. 1,2-Dibromo-3-Chloropropane	<25.00	<25.00	<25.00	<25.00
46. Acrylonitrile	<200.00	<200.00	<200.00	<200.00
47. trans-1,4-Dichloro-2-Butene	<100.00	<100.00	<100.00	<100.00

1 Handled

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

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

CHAIN OF CUSTODY RECORD

CLIENT: 6033

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

DISINFECTION
- ☐ CHLORINE
- ☐ UV
- ☐ NONE
- ☐ _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	METALS	EPA 8260B	8260 Dup. 1	8260 Dup. 2	8260 Dup. 3
						L2	L2	L2	L2	L2
						P	G	G	G	G
						B	E	E	E	E
LAGOON LEACHATE #1	* 10/31/06	10:28	N/A	20		X	X	X		
LAGOON LEACHATE #2	↓	11:04	↓	18		X	X	X		
LAGOON LEACHATE #3	↓	11:39	↓	18		X	X	X		
LAGOON LEACHATE #4	↓	12:20	↓	17		X	X	X	X	X

PARAMETERS

CHLORINE NEUTRALIZED AT COLLECTION

pH CHECK (LAB)

CONTAINER TYPE, P/G

CHEMICAL PRESERVATION

A - NONE
B - HNO_3
C - H_2SO_4
D - NAOH
E - HCL
F - ZINC ACETATE
G - NA THIOSULFATE

CLASSIFICATION:
- ☐ WASTEWATER (NPDES)
- ☐ DRINKING WATER
- ☐ DWQ/GW
- ☒ SOLID WASTE SECTION

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY
Y N

SAMPLES COLLECTED BY: (Please Print)
KEVIN J. SHIELDS

SAMPLES RECEIVED IN LAB AT 1.2 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
[signature]	11/1/06 09:30	[signature]	11/1/06 3:15
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:
* SAMPLING PERFORMED 10/31/06

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.

№ 103189

FORM #5

Environment 1, Incorporated

RECD NOV 27 2006

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

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

Drinking Water ID: 37715
Wastewater ID: 10

ID#: 6033 A

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

DATE COLLECTED: 10/26/06
DATE REPORTED : 11/21/06

REVIEWED BY:

PARAMETERS	Leachate	Trip Blank	Analysis Date	Analyst	Method Code
BOD, mg/l	66		10/27/06	SMA	SM5210B
COD, mg/l	641		11/03/06	TRB	HACH8000
Total Suspended Residue, mg/l	144		03/01/06	MDM	SM2540D
Ammonia Nitrogen, mg/l	315		03/12/06	TWA	EPA350.1
Nitrate Nitrogen, mg/l	0.08		11/01/06	JKD	EPA353.2
Total Phosphorus, mg/l	1.08		11/01/06	TWA	EPA365.4
Antimony, mg/l	<0.030		11/02/06	CMF	EPA200.8
Arsenic, mg/l	0.012		11/02/06	CMF	EPA200.8
Barium, mg/l	<0.500		11/02/06	CMF	EPA200.8
Beryllium, mg/l	<0.002		11/02/06	CMF	EPA200.8
Cadmium, mg/l	<0.001		11/02/06	CMF	EPA200.8
Cobalt, mg/l	<0.010		11/02/06	CMF	EPA200.8
Copper, mg/l	<0.200		11/02/06	CMF	EPA200.8
Total Chromium, mg/l	0.012		11/02/06	CMF	EPA200.8
Lead, mg/l	<0.010		11/02/06	CMF	EPA200.8
Nickel, mg/l	0.055		11/02/06	CMF	EPA200.8
Selenium, mg/l	<0.020		11/02/06	CMF	EPA200.8
Silver, mg/l	<0.010		11/02/06	CMF	EPA200.8
Thallium, mg/l	<0.010		11/02/06	CMF	EPA200.8
Vanadium, mg/l	<0.040		11/02/06	CMF	EPA200.8
Zinc, mg/l	0.402		11/02/06	CMF	EPA200.8
Sulfate, mg/l	15.1		11/02/06	TRB	EPA375.4

Environment 1, Incorporated

Wastewater ID: I0

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: 10/26/06
DATE REPORTED: 11/21/06

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l — Date Analyzed:	11/07/06 Leachate	11/06/06 Trip Blank
1. Chloromethane	<10.00	<10.00
2. Vinyl Chloride	<10.00	<10.00
3. Bromomethane	<10.00	<10.00
4. Chloroethane	<10.00	<10.00
5. Trichlorofluoromethane	<5.00	<5.00
6. 1,1-Dichloroethene	<5.00	<5.00
7. Acetone	<100.00	<100.00
8. Iodomethane	<10.00	<10.00
9. Carbon Disulfide	<100.00	<100.00
10. Methylene Chloride	<10.00	<10.00
11. trans-1,2-Dichloroethene	<5.00	<5.00
12. 1,1-Dichloroethane	<5.00	<5.00
13. Vinyl Acetate	<50.00	<50.00
14. Cis-1,2-Dichloroethene	<5.00	<5.00
15. 2-Butanone	150.00	<100.00
16. Bromochloromethane	<5.00	<5.00
17. Chloroform	<5.00	<5.00
18. 1,1,1-Trichloroethane	<5.00	<5.00
19. Carbon Tetrachloride	<10.00	<10.00
20. Benzene	8.70	<5.00
21. 1,2-Dichloroethane	<5.00	<5.00
22. Trichloroethene	<5.00	<5.00
23. 1,2-Dichloropropane	<5.00	<5.00
24. Bromodichloromethane	<5.00	<5.00
25. Cis-1,3-Dichloropropene	<10.00	<10.00
26. 4-Methyl-2-Pentanone	<100.00	<100.00
27. Toluene	16.90	<5.00
28. trans-1,3-Dichloropropene	<10.00	<10.00
29. 1,1,2-Trichloroethane	<5.00	<5.00
30. Tetrachloroethene	<5.00	<5.00
31. 2-Hexanone	<50.00	<50.00
32. Dibromochloromethane	<5.00	<5.00
33. 1,2-Dibromoethane	<5.00	<5.00
34. Chlorobenzene	<5.00	<5.00
35. 1,1,1,2-Tetrachloroethane	<5.00	<5.00
36. Ethylbenzene	22.80	<5.00
37. Xylenes	39.10	<5.00
38. Dibromomethane	<10.00	<10.00
39. Styrene	<10.00	<10.00
40. Bromoform	<5.00	<5.00
41. 1,1,2,2-Tetrachloroethane	<5.00	<5.00
42. 1,2,3-Trichloropropane	<15.00	<15.00
43. 1,4-Dichlorobenzene	9.70	<5.00
44. 1,2-Dichlorobenzene	<5.00	<5.00
45. 1,2-Dibromo-3-Chloropropane	<25.00	<25.00
46. Acrylonitrile	<200.00	<200.00
47. trans-1,4-Dichloro-2-Butene	<100.00	<100.00

Environment 1, Incorporated

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

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

Drinking Water ID: 37715
Wastewater ID: 10

ID#: 6033

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

DATE COLLECTED: 10/26/06
DATE REPORTED : 11/20/06

REVIEWED BY:

PARAMETERS	Leachate Junct. Box	Analysis Date	Analyst	Method Code
BOD, mg/l	102	10/27/06	SMA	SM5210B
COD, mg/l	1030	11/03/06	TRB	HACH8000
Total Suspended Residue, mg/l	255	03/01/06	MDM	SM2540D
Ammonia Nitrogen, mg/l	321	03/12/06	TWA	EPA350.1
Nitrate Nitrogen, mg/l	<0.04	11/01/06	JKD	EPA353.2
Total Phosphorus, mg/l	1.96	11/01/06	TWA	EPA365.4
Antimony, mg/l	<0.030	11/02/06	CMF	EPA200.8
Arsenic, mg/l	0.262	11/02/06	CMF	EPA200.8
Barium, mg/l	2.571	11/02/06	CMF	EPA200.8
Beryllium, mg/l	<0.002	11/02/06	CMF	EPA200.8
Cadmium, mg/l	0.002	11/02/06	CMF	EPA200.8
Cobalt, mg/l	0.053	11/02/06	CMF	EPA200.8
Copper, mg/l	<0.200	11/02/06	CMF	EPA200.8
Total Chromium, mg/l	0.013	11/02/06	CMF	EPA200.8
Lead, mg/l	<0.010	11/02/06	CMF	EPA200.8
Nickel, mg/l	0.316	11/02/06	CMF	EPA200.8
Selenium, mg/l	0.035	11/02/06	CMF	EPA200.8
Silver, mg/l	<0.010	11/02/06	CMF	EPA200.8
Thallium, mg/l	<0.010	11/02/06	CMF	EPA200.8
Vanadium, mg/l	<0.040	11/02/06	CMF	EPA200.8
Zinc, mg/l	12.170	11/02/06	CMF	EPA200.8

Environment 1, Incorporated

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: 10/26/06
DATE ANALYZED: 11/06/06
DATE REPORTED: 11/20/06

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	Leachate Junct. Box
1. Chloromethane	15.90
2. Vinyl Chloride	<10.00
3. Bromomethane	<10.00
4. Chloroethane	<10.00
5. Trichlorofluoromethane	<5.00
6. 1,1-Dichloroethene	<5.00
7. Acetone	<100.00
8. Iodomethane	<10.00
9. Carbon Disulfide	<100.00
10. Methylene Chloride	<10.00
11. trans-1,2-Dichloroethene	<5.00
12. 1,1-Dichloroethane	<5.00
13. Vinyl Acetate	<50.00
14. Cis-1,2-Dichloroethene	<5.00
15. 2-Butanone	<100.00
16. Bromochloromethane	<5.00
17. Chloroform	<5.00
18. 1,1,1-Trichloroethane	<5.00
19. Carbon Tetrachloride	<10.00
20. Benzene	13.20
21. 1,2-Dichloroethane	<5.00
22. Trichloroethene	<5.00
23. 1,2-Dichloropropane	<5.00
24. Bromodichloromethane	<5.00
25. Cis-1,3-Dichloropropene	<10.00
26. 4-Methyl-2-Pentanone	<100.00
27. Toluene	20.20
28. trans-1,3-Dichloropropene	<10.00
29. 1,1,2-Trichloroethane	<5.00
30. Tetrachloroethene	<5.00
31. 2-Hexanone	<50.00
32. Dibromochloromethane	<5.00
33. 1,2-Dibromoethane	<5.00
34. Chlorobenzene	<5.00
35. 1,1,1,2-Tetrachloroethane	<5.00
36. Ethylbenzene	87.20
37. Xylenes	89.90
38. Dibromomethane	<10.00
39. Styrene	<10.00
40. Bromoform	<5.00
41. 1,1,2,2-Tetrachloroethane	<5.00
42. 1,2,3-Trichloropropane	<15.00
43. 1,4-Dichlorobenzene	12.40
44. 1,2-Dichlorobenzene	<5.00
45. 1,2-Dibromo-3-Chloropropane	<25.00
46. Acrylonitrile	<200.00
47. trans-1,4-Dichloro-2-Butene	<100.00

[illegible]ronm[illegible], Inc.
P.O. Box 1085, 114 Oakmont Dr.
Greenville, NC 27858

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

CHAIN OF CUSTODY RECORD

– 3 COOLERS –

CLIENT: 6033 A **Week:** 39

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

(919) 938-4750

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

PARAMETERS	BOD	COD	TSR	Ammonia Nitro.	Nitrate	PO4	Metals	Sulfate	EPA 8260B	8260 Dup. 1
CHLORINE NEUTRALIZED AT COLLECTION										
pH CHECK (LAB)		<2		<2		<2	<2		<2	<2
CONTAINER TYPE, P/G	P	P	P	P	P	P	P	P	G	G
CHEMICAL PRESERVATION	A	C	A	C	A	C	B	A	E	E

A - NONE, B - HNO_3, C - H_2SO_4, D - NAOH, E - HCL, F - ZINC ACETATE, G - NA THIOSULFATE

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	BOD	COD	TSR	Ammonia Nitro.	Nitrate	PO4	Metals	Sulfate	EPA 8260B	8260 Dup. 1
Leachate	10/26/06	14:49	N/A	17	10										
Trip Blank	10/26/06	N/A	N/A	N/A	12										
LEACHATE Jun. Box (6033) *	10/26/06	15:41	N/A	21	9	X	X	X	X	X	X	X		X	X

CLASSIFICATION:
- ☐ WASTEWATER (NPDES)
- ☐ DRINKING WATER
- ☐ DWQ/GW
- ☒ SOLID WASTE SECTION

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY: (Y) N

SAMPLES COLLECTED BY: (Please Print) KEVIN J. SHIELDS

SAMPLES RECEIVED IN LAB AT 12 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
[signature]	10/27/06 09:30	[signature]	10/27/06 3:45PM
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS: * 6033

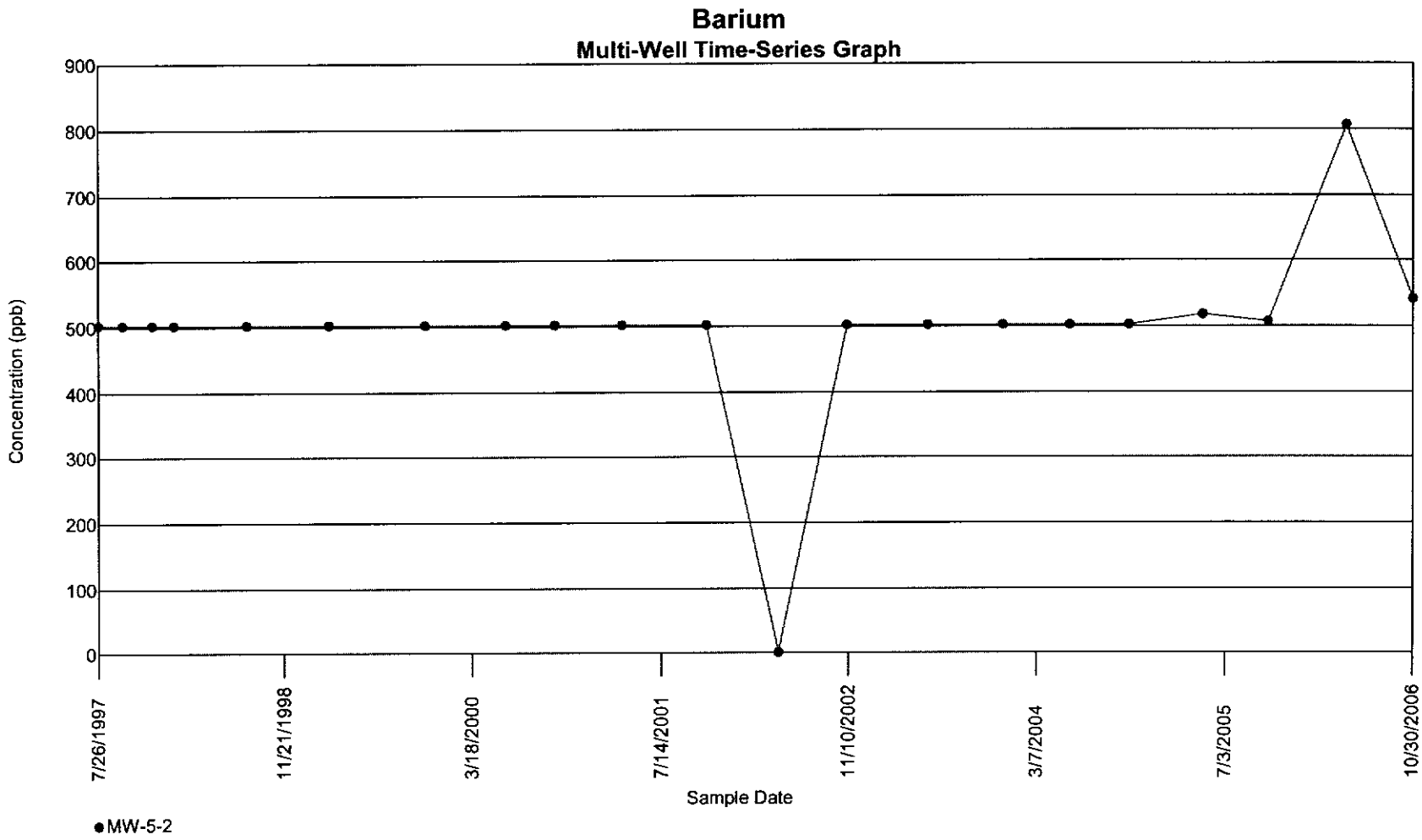
Instructions for completing this form are on the reverse side.

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

FORM #5

Appendix B

Time vs. Concentration Graphs


Barium
Multi-Well Time-Series Graph
Concentration (ppb)
900
800
700
600
500
400
300
200
100
0
7/26/1997
11/21/1998
3/18/2000
7/14/2001
11/10/2002
3/7/2004
7/3/2005
10/30/2006
Sample Date
MW-5-2