BCO 955

G.N. RICHARDSON & ASSOCIATES
Engineering and Geological Services

December 14, 2006

Ms. Jaclynne Drummond
Compliance Hydrogeologist
NCDENR – Division of Waste Management
Solid Waste Section
1646 Mail Service Center
Raleigh, NC 27699-1646

Received
DEC 20
Solid Waste Section

RE: Ground Water Assessment
Johnston County MSW Landfill – Phase 5
Smithfield, North Carolina

Dear Ms. Drummond:

This letter is sent to summarize recent ground water assessment activities at the Johnston County Phase 5 landfill. Phase 5 is a lined landfill system that has been operational since 1998. In general, ground water quality in the monitoring wells surrounding the site has been good, with no indication of impact from the landfill. However, ground water from one monitoring well (MW-5-8) has consistently shown detectable levels of 1,2 dichloropropane since 2003. The location of this well is shown on the potentiometric surface map included as **Figure 1**.

The chemical 1,2 dichloropropane is used in soil fumigants, nematodicides and insecticides. This constituent is also used in making other organic chemicals, lead-free gasoline, and paper coating. It is also a solvent in plastics and resins and has been used as a metal degreasing agent.

An evaluation of the leachate generated by the Phase 5 landfill indicates no detectable levels of 1,2 dichloropropane have ever been reported in laboratory analyses since Phase 5 began operation. These analyses are summarized in **Table 1**. This lack of 1,2 dichloropropane in the leachate makes the landfill an unlikely source of the contamination detected in MW-5-8, as the collected leachate is the first place contaminants from the waste are detected.

Given the use of this chemical as a soil fumigant and insecticide, and the historical use of this property as farmland, there is question as to whether this historical use is the source of the detected 1,2 dichloropropane. Additionally, this chemical is used in plastics. Although the pumping system used for ground water sampling are made of stainless steel and Teflon®, the actual pump itself was considered another possible source for the impact.

In order to further evaluate sources other than the landfill, GNRA instructed the County personnel to remove the pump from this well. Additionally, we requested

the County personnel bail water from the well on a daily basis for a week, two weeks before the sampling was to be completed (which included a purging of three well volumes prior to sample collection). This was done to remove any impact the pump may have had, if indeed the pump was the source of the impact. When the pump was removed and during the first day of bailing, a bacterial slime was noted on the pump and in the purged water. During the remaining days of bailing, no bacterial slime was noted.

Additionally, GNRA assisted the County personnel in the collection of two soil samples adjacent to the well to evaluate whether a source (such as a buried pesticide drum) was present in the soil near the well. These samples were collected by hand auger from depth of about 5 feet below grade. The depth to water in this well is approximately 7 feet below grade.

Laboratory results indicate the soil samples had non-detectable levels of 1,2 dichloropropane. Further research at the U.S. EPA website indicates that this constituent is rarely found in soils, as it evaporates quickly in soils, however, it is found in ground water across the country. Analysis of the ground water from this well during the Fall 2006 event also indicates non-detectable levels of this constituent in this well. The laboratory results are included in **Attachment A**.

Based upon these analyses we believe the pump may have been the source of impact detected in this well. Therefore, during the Spring 2007 event this well will again be sampled using a factory sealed Teflon® bailer. Upon receipt of results from the Spring 2007 event, we will evaluate the need for further action and the possibility of thoroughly cleaning and returning the pump to service in this well.

At this time, we request to continue detection monitoring for this well. Future sampling will indicate if additional assessment measures are necessary, however, we believe the source of the impact has been mitigated by the removal of the pump.

If you have any questions, or require additional information, please contact me at your convenience.

Sincerely.
G. N. Richardson and Associates, Inc.

Joan A. Smyth

Joan A. Smyth, P.G.
Senior Hydrogeologist

CC: Tim Broome – Johnston County
Rick Proctor – Johnston County

Table 1
Johnston County Phase 5
Historical Leachate Data

Parameters	5/15/2002	11/4/2002	5/20/2003	10/30/2003	10/27/2004	5/10/2005	10/26/2005	5/16/2006
BOD, mg/l	50	146	ND	330	210	64	430	337
COD, mg/l	385	883	1735	5938	1154	294	2827	716
Nitrate Nitrogen, mg/l	0.04	5.41	ND	0.05	0.08	ND	0.2	ND
Total Phosphorus, mg/l	0.56	0.84	0.41	14.72	2.19	0.42	4.13	0.92
Sulfate, mg/l	14	13.6	15.4	ND	ND	33.4		5.3
Total Suspended Residue, mg/l	ND	ND	ND	ND	695	514	229	189
Ammonia Ntirogen, mg/l	ND	ND	ND	192.5	276	11.3	328	152
Arsenic, mg/l	ND	0.016	ND	0.148	ND	ND	0.312	ND
Barium	ND	ND	ND	3.719	1.119	ND	8.855	ND
Cadmium	ND	ND	ND	0.002	ND	ND	0.003	ND
Total Chromium, mg/l	ND	0.012	0.027	0.029	0.01	ND	0.016	ND
Cobalt, mg/l	ND	ND	0.028	0.089	ND	ND	0.095	ND
Nickel	ND	ND	ND	0.244	ND	ND	0.603	ND
Selenium	ND	ND	ND	ND	ND	ND	0.048	ND
Zinc, mg/l	0.262	4.024	4.555	24.35	0.105	ND	34.85	0.841
Acetone	ND	ND	1120	159	ND	ND	ND	935
2-Butatone	ND	ND	2200	ND	ND	ND	ND	1210
Benzene	ND	ND	ND	15.2	ND	ND	ND	ND
1,4 Dichlorobenzene	ND	ND	ND	12	ND	ND	ND	9.9
1,1 Dichloroethane	ND	ND	ND	5.2	ND	ND	ND	ND
Ethylbebzene	ND	ND	ND	96	79.4	ND	ND	31
Iodomethane	ND	ND	ND	ND	ND	ND	50	ND
Methylene Chloride	ND	ND	15.3	ND	ND	ND	ND	ND
Toluene	ND	ND	28.7	56.6	41.5	ND	ND	48.7
Xylenes	ND	ND	6.5	121	74.3	ND	ND	60.5

Notes:

ND = Not Detected

All results in ug/l unless otherwise noted.

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	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

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GREENVILLE, N.C. 27835-7085

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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	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

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

Page: 1

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

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: 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

Drinking Water ID: 37715
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ANALYST: MAO
DATE COLLECTED: 10/30/06
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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

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 **Week:** 42

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	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

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
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

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]	11/3/06 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

...756-0633
Week: 42
...LANDFILL (PHASE 5)
...HIELDS
...
...FIELD 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
Leachate Lagoon #4					8											
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~~					~~8~~											
MW-5(5')	10/30/06	13:40	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											
Trip Blank	10/30/06	N/A	N/A	N/A	1											

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
- [x] SOLID WASTE SECTION

CHAIN OF CUSTODY MAINTAINED DURING SHIPMENT/DELIVERY: Y (circled) 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 04:30	[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

METHOD 8260 GC/MS

VOLATILE ORGANIC COMPOUNDS IN SOILS

(Prep Method: 5030)

Johnston Co. Landfill (Phase 5)		**Client ID#:**	**6033**
Mr. Kevin Shields		**Analyst:**	**MAO**
P.O. Box 2263		**Date Collected:**	**11/02/06**
Smithfield, NC 27577		**Date Reported:**	**12/04/06**

Reviewed by:

Location	**Soil Sample SA1 (5-8)**	**Soil Sample SA2 (5-8)**
Dilution Factor *	1	1
(All Results in mg/kg)		
1,2-Dichloropropane	<0.005	<0.005

* Dilution Factor = 1 for Low Level analysis DF = 50 or higher for high level analysis