Semi-Annual Water Quality Monitoring and Statistical Analysis Report

Prepared for

Lenoir County Subtitle D Lined MSWLF
LaGrange, North Carolina

January 2011

Permit Number: 54-09
MESCO Project Number: G10029.0

Submitted on April 18, 2011

Municipal Engineering Services Company, P.A.
Garner, Boone and Morehead City, North Carolina

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

NC DENR
Division of Waste Management - Solid Waste

Environmental Monitoring Reporting Form

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

Instructions:

- **Prepare one form for each individually monitored unit.**
- **Please type or print legibly.**
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i).
- 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):

Municipal Engineering Services Co., PA

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

Name: Jonathan Pfohl Phone: (919)772-5393

E-mail: jpfohl@mesco.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Lenoir County Subtitle D Lined MSWLF, Phase 1	2949 Hodges Farm Road LaGrange, NC 28501	54-09	.1600	January 27, 2011

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.

Madeline German, PG — Professional Geologist — (919) 772-5393

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

Signature — 4-18-2011 Date

Affix NC Licensed/ Professional Geologist Seal

NORTH CAROLINA LICENSED SEAL 2275 4/18/2011 GEOLOGIST MADELINE GERMAN

P.O. BOX 97, Garner, NC 27529

Facility Representative Address

C-0281

NC PE Firm License Number (if applicable effective May 1, 2009)

Revised 6/2009

TABLE OF CONTENTS

SECTION	PAGE
Introduction	1
Sampling Procedures	1
Field Parameter Data	2
Laboratory Results	2
Quality Control Samples	2
Groundwater Samples	2
Surfacewater Samples	2
Leachate Samples	2
Statistical Analysis	2
Groundwater and Surfacewater Characterization	2
Findings	2
Closing	3

PLATES

Plate 1 ..... Topographic Map with Site Location

Plate 2 ..... Single Day Potentiometric Map of Uppermost Aquifer

TABLES

Table 1 ..... Detections in Groundwater Samples above SWSL, GWP, 2L, or 2B

Table 2 ..... Detections in Leachate Lagoon Samples above SWSL, GWP, 2L, or 2B

Table 3 ..... Hydrologic Properties at Monitoring Well Locations

APPENDICIES

Appendix A ..... Statistical Analysis

Appendix B ..... Laboratory Analysis Report & Chains of Custody

OPERATION/CONSTRUCTION MANAGERS

Municipal Services

CIVIL/SANITARY ENGINEERS

Engineering Company, P.A.

April 18, 2011

Ms. Jaclynne Drummond
Solid Waste Section
Division of Waste Management
North Carolina Department of Environment and Natural Resources
401 Oberlin Road, Suite 150
Raleigh, NC 27605

Re: Semi-Annual Water Quality Monitoring and Statistical Analysis Report
Lenoir County Subtitle D Lined Landfill, Phase 1
Permit No. 54-09
MESCO Project No. G10029.0

Dear Ms. Drummond:

Introduction

The Lenoir County Subtitle D lined MSWLF located near LaGrange NC is not currently accepting waste; but is required to submit semi-annual water quality compliance reports as a condition of the detection monitoring program under permit #54-09. Environment 1 (E1) of Greenville, NC performed this sampling event on January 27, 2011 in accordance with the semi-annual monitoring schedule prescribed by the NC Solid Waste Section (SWS) rules/regulations as promulgated in 15A NCAC 13B.1600. A topographic map showing the facility location is included as **Plate 1**.

As specified within 15A NCAC 13B.1632(j) and the SWS Environmental Monitoring Report Form, this report contains sampling procedures, field and laboratory results, statistical analysis, groundwater and surface water characterization, and findings. A "Detections Compared to Standards" table, single-day potentiometric map, groundwater flow directions and flow rates table, statistical analysis, and field/laboratory analytical results with chains of custody (C-O-C) are enclosed.

Sampling Procedure

E1 reportedly performed this sampling event utilizing portable monitoring methodology in accordance with the approved Sampling & Analysis Plan (SAP) contained in the Lenoir County Landfill, Phase 1 *Design Hydrogeologic Study* dated August 19, 2002. E1 reportedly collected and performed laboratory analysis on water samples from four downgradient groundwater monitoring wells (MW-14 through MW-17), two background wells (MW-13 and MW-18), and the the leachate lagoon (LAGOON) on January 27, 2011. Quality control measures were also implemented during this event which included submittal and subsequent quantification of a trip blank (TB). The lone designated surface water point SW-3 was reported to be dry. Monitoring locations are shown on the single-day potentiometric map (**Plate 2**).

Static water levels in each well were measured electronically prior to purging. Additional static water level readings were recorded from six supplementary piezometers (P-3A, P1-4, P1-14, P-14, P-17, and P-22) to improve potentiometric map coverage. The required field parameters (pH, specific conductance, and temperature) were also reported by E1. Collected samples were transported under proper C-O-C protocol and analyzed within the specified hold times for each method.

PO Box 97, Garner, North Carolina 27529 (919) 772-5393
PO Box 828, Morehead City, NC 28557 (252) 726-9481 PO Box 349, Boone, North Carolina 28607 (828) 262-1767

Field Parameter Data

Field parameter data, as recorded by E1, is presented in the laboratory results report (**Appendix B**).

Laboratory Results

Groundwater monitoring wells contained in the SAP were reportedly sampled and analyzed for the Appendix I list of volatile organic compounds (VOCs) and total unfiltered metals as listed in CFR Part 258. The TB was analyzed for the Appendix I list of VOCs. The lined leachate lagoon (LAGOON) was sampled and analyzed for the SWS required leachate specific parameters (Appendix I VOCs, Appendix I metals, nitrate, phosphorus, chemical oxygen demand, biological oxygen demand, pH, and sulfate).

Water samples were analyzed to the laboratory-established Method Detection Limits (MDL), which are at or below the current Solid Waste Section Limit (SWSL). Constituents detected in groundwater samples above the current SWSL, Groundwater Protection Standards (GWP), North Carolina Groundwater Standards (2L) or the applicable Class C North Carolina Surface Water Standards (2B) are summarized in **Table 1.** The leachate lagoon detections are found on **Table 2**.. Laboratory results and C-O-Cs are presented in A**ppendix B.**

Quality Control Samples

No constituents were reported to be detected in the TB. Therefore, it appears that the Appendix I data set's validity is likely not effected by false positives or high bias attributed to field and/or laboratory artifact contamination.

Groundwater Samples

Barium in a samples collected from MW-17 and background well MW-13 was detected in quantifiable concentrations during this event. However, current and historic barium concentrations have not been reported at levels above the 2L Standard. VOCs continue to be absent from groundwater samples.

Surfacewater Samples

Surface water monitoring point SW-3 was reported to be dry, therefore, no surface water data was reported for this event.

Leachate Samples

The leachate sample (LAGOON) continues to lack contaminants. As presented in attached **Table 2,** the leachate samples contained a quantifiable concentration of zinc and no VOCs.

Statistical Analysis

The number and type of metal detections continue to be fairly consistent with historical results. Interwell analysis results indicate the downgradient detection of barium in MW-17, did not exhibit a statistically significant increase (SSI) in concentration over background levels established by samples collected from the background wells MW-13 and MW-18. Statistical analysis methodologies are presented in **Appendix A**.

Groundwater and Surface Water Characterization

A single-day potentiometric map of the uppermost aquifer created from groundwater elevation data collected during this event is presented as **Plate 2**. Groundwater flow rates and directions were calculated based on this data and are included in **Table 3.** The flow directions were in a general northeasterly direction towards the designated wetlands. Groundwater flow rates ranged from approximately 1 feet/year (MW-13) to 285 feet/year (MW-14) averaging approximately 87 feet/year. Surface water SW-3 has reportedly been dry during each event since July 2007. The flow directions and gradients are generally consistent with historical observations.

Findings

The results of the laboratory data and subsequent statistical analysis performed for this monitoring event indicate that the groundwater quality beneath the MSWLF and leachate lagoon remain unimpacted.

Closing

Detection monitoring will continue and the next semi-annual sampling event is tentatively scheduled for July 2011. Please contact us by phone at (919) 772-5393 or by email at jpfohl@mesco.com or mgerman@mesco.com if you have any questions or comments.

Sincerely,
MUNICIPAL ENGINEERING SERVICES CO., P.A.

Jonathan Pfohl
Environmental Specialist

Madeline, German, PG
Professional Geologist

NORTH CAROLINA LICENSED GEOLOGIST MADELINE GERMAN 4/18/2011

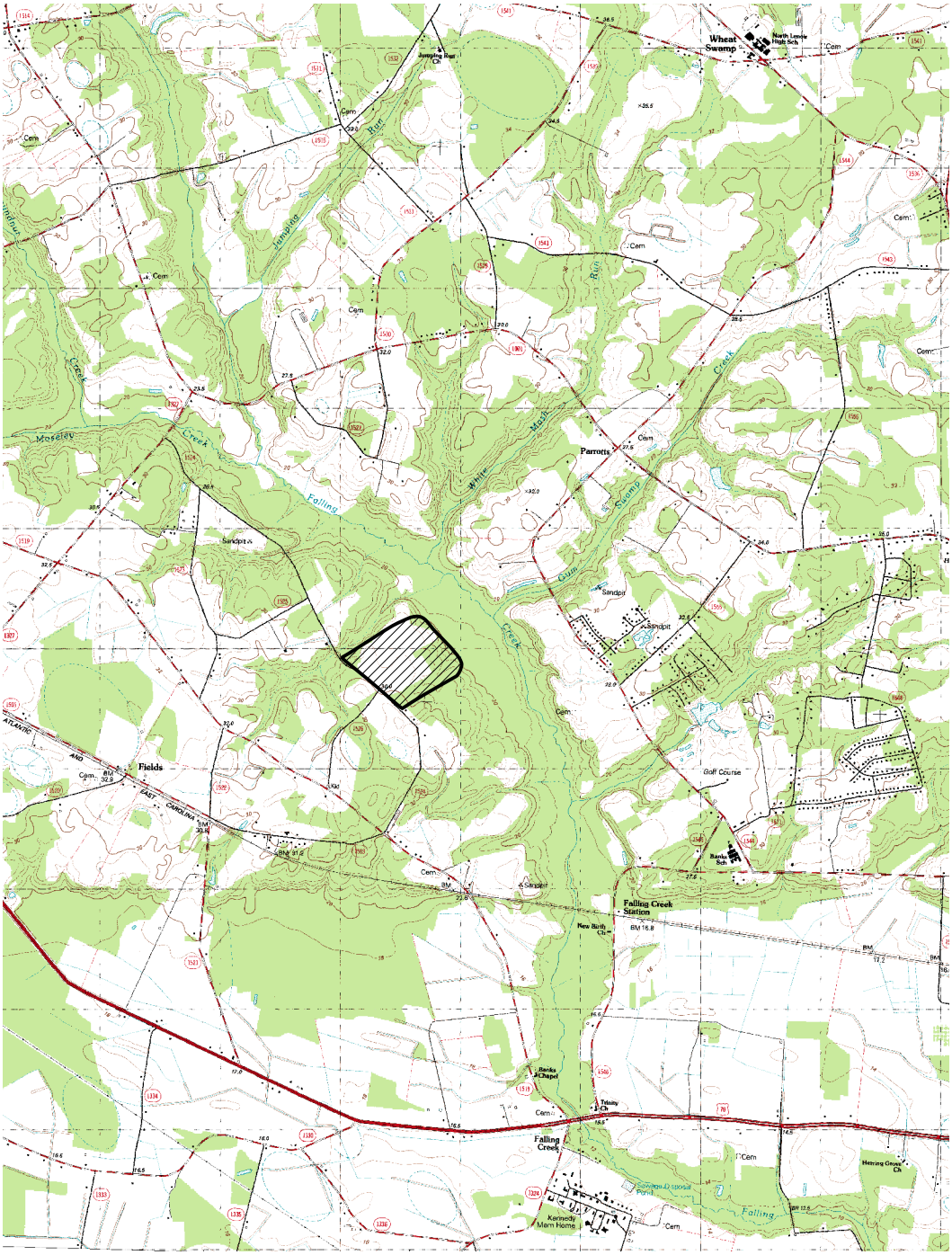
Enclosures
cc: Mr. Tom Miller
Lenoir County

Plates

Topographic Map with Site Location

Semi-Annual Water Quality Monitoring

PLATE 1 Lenoir County MSWLF Facility



QUADRANGLE LEGEND N

ROAD CLASSIFICATION

Primary highway, hard surface

Light-duty road, hard or improved surface

Secondary highway, hard surface

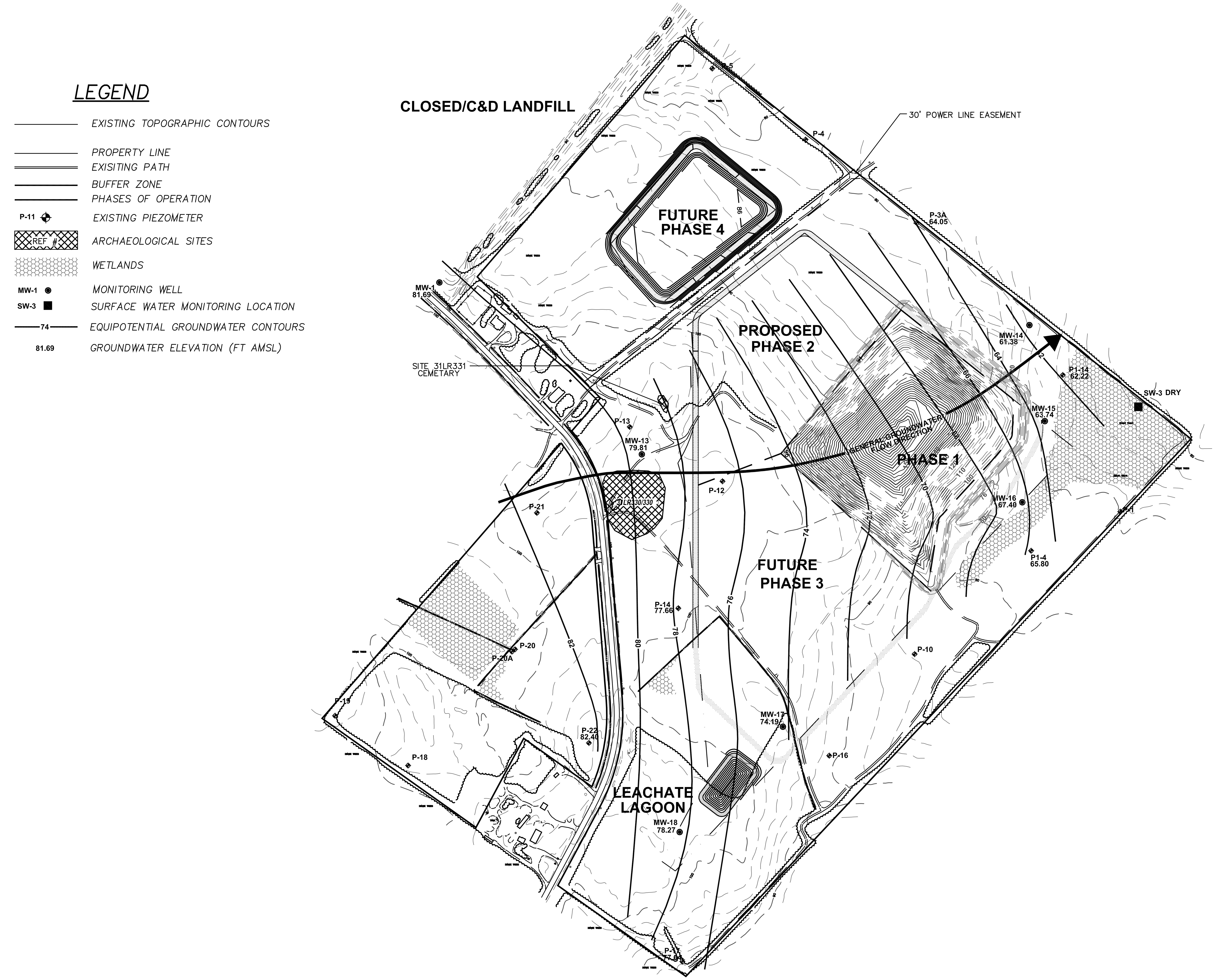
Unimproved road

Interstate Route U. S. Route State Route

Municipal Services Engineering Company

Garner, NC Boone, NC

Municipal Engineering Services Company, PA



NOTES

1. ARCHAEOLOGICAL SITE 31LR331 (CEMETERY) WILL NOT BE DISTURBED.
2. ARCHAEOLOGICAL SITE 31LR330 WILL BE DISTURBED.

Lenoir County Subtitle D Lined Landfill
January 27, 2011

WELL #	TOP OF PIPE ELEVATION (FT)	DEPTH TO WATER (FT)	WATER ELEVATION (FT)
MW-13	107.81	28.00	79.81
MW-14	74.81	13.43	61.38
MW-15	71.64	7.90	63.74
MW-16	76.36	8.96	67.40
MW-17	101.06	26.87	74.19
MW-18	106.74	28.47	78.27
MW-1	98.34	16.65	81.69
P-3A	82.19	18.14	64.05
P1-4	78.80	13.00	65.80
P1-14	69.22	7.00	62.22
P-14	104.07	26.41	77.66
P-17	90.57	12.93	77.64
P-22	110.40	28.00	82.40

LICENSE NUMBER: C-0281

Municipal Services — P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393

Engineering Company, P.A. — P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767

SUBTITLE D LINED MSW LANDFILL FACILITY
LENOIR COUNTY
NORTH CAROLINA

DATE	BY	REV.	DESCRIPTION

SINGLE DAY POTENTIOMETRIC MAP
UPPERMOST AQUIFER JANUARY 27, 2011

SCALE: 1"=200'
DATE: 3/8/2011
DRWN. BY: R. MOSS
CHKD. BY: M. GERMAN
PROJECT NUMBER: G10029.0
DRAWING NO.: PLATE 2
SHEET NO.: 1 OF 1

Tables

Table 1
Detections in Groundwater Samples above SWSL, GWP, 2L, or 2B
January 27, 2011

Well ID	Parameter Name [1]	Sample Date	Result	Unit	MDL [2]	SWSL [3]	2L [4]	2B [5]	GWP [6]	Exceedance	Preliminary Cause
MW-13	Vanadium	1/27/11	11.6 j	ug/l	0.03	25			3.5	8.1	
MW-13	Barium, Total	1/27/11	110	ug/l	0.03	100	700				
MW-14	Thallium, Total	1/27/11	0.3 j	ug/l	0.05	1			0.28	0.02	
MW-17	Barium, Total	1/27/11	158	ug/l	0.03	100	700				

[1] Table contains Appendix I constituents detected above SWSL, GWP, 2L, or 2B

[2] MDL = Method Detection Limit

[3] SWSL = Solid Waste Section Reporting Limit (Current as of Sampling Event)

[4] 2L = North Carolina 15A NCAC 2L Groundwater Quality Standard (Current as of Sampling Event)

[5] 2B = North Carolina 15 NCAC 2B Surface Water Quality Standard for this Specific Stream Classification (Current as of Sampling Event)

[6] GWP = Groundwater Protection Standard (Current as of Sampling Event)

j =The reported value is between the laboratory method detection limit (MDL) and the laboratory method reporting limit (MRL), adjusted for actual sample preparation data and moisture content, where applicable.

BOLD = Concentration > 2L, or 2B Standard (Current as of Sampling Event)

Table 2
Detections in Leachate Lagoon Samples above SWSL, GWP, 2L, or 2B
January 27, 2011

SAMPLE	Parameter Name [1]	Sample Date	Result	Unit	MDL [2]	SWSL [3]	2L [4]	2B [5]	GWP [6]	Exceedance	Preliminary Cause
LAGOON	COD	1/27/2011	68000	ug/l	10000	10000					
LAGOON	PH (field)	1/27/2011	6.75	Units							
LAGOON	Total Phosphorus as P	1/27/2011	50	ug/l	40	40					
LAGOON	Zinc	1/27/2011	11	ug/l	0.08	10	1050				

[1] Table contains only constituents detected above SWSL, GWP, 2L, or 2B

[2] MDL = Method Detection Limit

[3] SWSL = Solid Waste Section Reporting Limit (Current as of Sampling Event)

[4] 2L = North Carolina 15A NCAC 2L Groundwater Qualtity Standard (Current as of Sampling Event)

[5] 2B = North Carolina 15 NCAC 2B Surface Water Quality Standard for this Specific Stream Classification (Current as of Sampling Event)

[6] GWP = Groundwater Protection Standard (Current as of Sampling Event)

j =The reported value is between the laboratory method detection limit (MDL) and the laboratory method reporting limit (MRL), adjusted for actual sample preparation data and moisture content, where applicable.

BOLD = Concentration > 2L, or 2B Standard (Current as of Sampling Event)

Table 3
Hydrologic Properties at Monitoring Well Locations
January 27, 2011

Monitoring Well	Hydraulic Conductivity (cm/sec)	Effective Porosity (%)	Hydraulic Gradient	Groundwater Velocity Rate (ft/yr)	Flow Direction	Water Table Depth (ft)	Water Table Elevation (ft)	Screened Interval Lithology
MW-13	7.69E-05	23%	0.003	1	N79E	28.00	79.81	Silty Sand
MW-14	3.38E-03	23%	0.019	285	N57E	13.43	61.38	Silty Sand
MW-15	2.89E-03	22%	0.007	97	N67E	7.90	63.74	Silty Sand
MW-16	9.72E-04	23%	0.021	91	N81E	8.96	67.40	Silty Sand
MW-17	1.13E-03	23%	0.009	44	N89E	26.87	74.19	Silty Sand
MW-18	1.25E-04	23%	0.009	5	S79E	28.47	78.27	Silty Clayey Sand

NOTE: 1.Hydraulic conductivity (K) values based on slug test results, coducted by MESCO in December 2005.

2. Effective Porosity (ne) values obtained from the MESCO design hydrogeologic report completed in August 2002.

3.Water levels were measured prior to sampling by Environment 1, Inc. on January 27, 2011.

Linear velocity rate (Q) is defined by the equation:

where $$Q = -\frac{K}{n_e} \cdot \frac{dh}{dl}$$

K = hydraulic conductivity

ne = effective porosity

dh = head difference

dl = horizontal distance

Minimum v_x: 1

Mean v_x: 87

Median v_x: 68

Maximum v_x: 285

Appendix A
Statistical Analysis

Statistical Analysis Methodology

Statistical Analysis Methodologies

A statistical analysis was performed on metal and VOC detections utilizing Chemstat software, developed specifically for RCRA Subtitle D sites, conforming to current EPA and SWS protocols. A step-wise approach was utilized to evaluate trends in groundwater quality to identify a potential release from the landfill. Analytical data underwent preliminary data evaluation to reduce the data set and to determine if any "outliers" (defined in this report as data that appears to be incongruent with respect to historical results) or seasonality exists that may potentially effect the results of the subsequent statistical analysis. Statistical tests were evaluated at the 0.05 level of significance, 95% confidence level, and were conducted as one-tailed tests. Statistical background values were calculated using un-manipulated data from historical semi-annual sampling events for this facility from 2004 to the current event. Historical data compiled for monitoring well(s) were used as the baseline. Groundwater data from the downgradient well(s) were compared to the pooled background groundwater data (inter-well) using methods which varied depending on the percentage of non-detects. If necessary and applicable further intra-well analysis was conducted to compare current data from a single well to it's own historical data. Finally, parameters that indicated statistical significance after previous tests are evaluated to estimate the change in concentration over time to determine if there is an upward trend.

Preliminary Data Evaluation

A preliminary data screening was conducted on reported detections. Parameters detected with concentrations found below quantifiable levels (SWSL) and below those detected within the background well were eliminated and a statistical analysis was not conducted for that particular constituent/well.

Data distributions were reviewed using box and whiskers plots. In order to evaluate variability in concentrations with respect to time and season, time series plots were generated for select constituents. Time series plots were also visually evaluated for seasonality and "outliers". Suspected outliers were further evaluated through Dixon's Test for Outliers or Rosner's Test for Outliers depending on the number of samples and the data distribution. Outliers are generally not censored from the current or historical data set prior to statistical analysis but are further evaluated and/or qualified as necessary.

Inter-well Analyses

Inter-well statistical analysis was conducted on total metals reportedly detected during this sampling event. Monitoring well MW-1 was defined as the background well. An upper tolerance limit (UTL) with 95% coverage was computed for each detected constituent from the background data at a 95% level of confidence. For each tested constituent, an appropriate statistical analysis method was selected based on the percentages of non-detects (%ND) in the historical background data. The following Table 1 summarizes the methods used for different %ND ranges.

Table 1. Statistical Analysis Methods for Various %ND Ranges

%ND	Analysis Method	ND Substitution
%ND<15%	Parametric tolerance limit	1/2 ND
15%<%ND<50%	Parametric tolerance limit	Cohen or 1/2 ND
50%<%ND<90%	Non-parametric tolerance limit	1/2 ND
90%<%ND	Poisson tolerance limit	-

NOTE: For parametric tolerance interval, normality of the background data was checked by the Shapiro-Wilks normality test, as the method requires that the data be normally distributed.

Intra-well Analysis

Intra-well analysis was conducted only on constituents found to be statistically significant by inter-well analysis and have sufficient historically known non-impacted samples. With intra-well comparisons, data from a single well is compared to historical data from the same well. Due to the minimum sampling event requirements for intra-well analyis the historical data for MW-19S was combined with the recent data for it's directly adjacent replacement well MW-19SR. In general, intra-well analysis is typically used to differentiate true contamination from spatial variability. Intra-well analysis is generally conducted through interpretation of Shewhart-CUSUM and/or Exponentially Weighted Moving Average (EWMA) control charts, where applicable.

Statistical Analysis Summary
Tables & Graphs

Inter-Well Analysis Summary
January 27, 2011

Background Wells: MW-13 & MW-18

Barium, total

%ND	Normality	Method	ND Adj.	Upper Limit (a = 95%)	Unit
81.25	-	Non-Parametric Tolerance Interval	½ ND	267	ug/L

Well	Result	Significance
MW-17	158	no

NOTE: Bold-faced monitoring points indicate detected levels exceed North Carolina Groundwater 2L Standard.

NO Constituent Concentration Exhibited a SSI

Summary of Pooled VOCs in Background Well (MW-13 & MW-18)
January 27, 2011

Constituent	Samples	NDs	% NDs
1,1,1,2-Tetrachloroethane	30	30	100.00
1,1,1-Trichloroethane	30	30	100.00
1,1,2,2-Tetrachloroethane	30	30	100.00
1,1,2-Trichloroethane	30	30	100.00
1,1-Dichloroethane	30	30	100.00
1,1-Dichloroethene	30	30	100.00
1,2,3-Trichloropropane	30	30	100.00
1,2-Dibromo-3-chloropropane	30	30	100.00
1,2-Dibromoethane	30	30	100.00
1,2-Dichlorobenzene	30	30	100.00
1,2-Dichloroethane	30	30	100.00
1,2-Dichloropropane	30	30	100.00
1,4-Dichlorobenzene	30	30	100.00
2-Butanone	30	30	100.00
2-Hexanone	30	30	100.00
4-Methyl-2-Pentanone	30	30	100.00
Acetone	30	30	100.00
Acrylonitrile	30	30	100.00
Benzene	30	30	100.00
Bromochloromethane	30	30	100.00
Bromodichloromethane	30	30	100.00
Bromoform	30	30	100.00
Bromomethane	30	30	100.00
Carbon disulfide	30	30	100.00
Carbon tetrachloride	30	30	100.00
Chlorobenzene	30	30	100.00
Chloroethane	30	30	100.00
Chloroform	30	30	100.00
Chloromethane	30	30	100.00
cis-1,2-Dichloroethene	30	30	100.00
cis-1,3-Dichloropropene	30	30	100.00
Chlorodibromomethane	30	30	100.00
Dibromomethane	30	30	100.00
Ethylbenzene	30	30	100.00
Iodomethane	30	30	100.00
Dichloromethane	30	30	100.00
Styrene	30	30	100.00
Tetrachloroethylene	30	30	100.00
Toluene	30	30	100.00
trans-1,2-Dichloroethene	30	30	100.00
trans-1,3-Dichloropropene	30	30	100.00
trans-1,4-Dichloro-2-butene	30	30	100.00
Trichloroethylene	30	30	100.00
Trichlorofluoromethane	30	30	100.00
Vinyl acetate	30	30	100.00
Vinyl chloride	30	30	100.00
Xylene	30	30	100.00
Total	**1410**	**1410**	**100.00**

"j" qualifiers omitted for statistical analysis purposes

Poisson Prediction Interval Based upon Pooled Background VOCs
January 27, 2011

All detected VOCs (Background Wells: MW-13 & MW-18)

Constituent	None
None	-
Detection(s) per Scan	0.00

"j" Qualifiers treated as ND

Total number of sampling events [n] = 30
Total number of detections in background wells [y] = 0
Number of comparisons (downgradient wells) [k] = 5
One-sided value of Student's t-statistic (95% confidence) [t] = 1.98
Expected number of detections in a single future sample [y*] = **0.1302**

NO SS VOC Detections at a 95% Confidence Level.

Statistical Analysis
Basic Statistics

Basic Statistics

Parameter: Barium, total

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

Total Measurements	48
Total Non-Detects	35 (72.9167%)
Pooled Mean	161.563
Pooled Std Dev	88.2718
Compliance Meas.	16
Compliance Mean	174.875
Compliance Std Dev	74.3782
Background Meas.	32
Background Mean	154.906
Background Std Dev	94.8657

Background Locations

There are 2 background location

Location	Meas.	Non-Detects	% ND	Total
MW-13	16	10	62.5	2757
MW-18	16	16	100	2200

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-13	172.313	86.3286	0	425	26.5625
MW-18	137.5	102.47	31.2815	288	18

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-17	16	9	56.25	2798

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-17	174.875	74.3782	19.9688	27.0906	463	28.9375

Analysis of Variance Statistics

SS Wells	13948.6
SS Total	366220

Kruskal-Wallis Statistics

Non-Detect Rank	18
Background Rank Sum	713
Background Rank Mean	22.2813
H Statistic	2.41119
H Adjusted for Ties	3.93689

Statistical Analysis
Inter-well Analysis

Non-Parametric Tolerance Interval

Parameter: Barium, total

Original Data (Not Transformed)
Non-Detects Replaced with 1/2 DL

Total Percent Non-Detects = 72.9167%
Background measurements (n) = 32
Maximum Background Concentration = 267
Minimum Coverage = 91.1%
Average Coverage = 96.9697%

Location	Date	Value	Significant
MW-17	5/12/2004	ND<250	FALSE
MW-17	7/12/2004	ND<250	FALSE
MW-17	9/16/2004	ND<250	FALSE
MW-17	1/26/2005	ND<250	FALSE
MW-17	7/14/2005	ND<250	FALSE
MW-17	1/25/2006	ND<250	FALSE
MW-17	7/13/2006	ND<250	FALSE
MW-17	1/17/2007	ND<50	FALSE
MW-17	7/31/2007	ND<50	FALSE
MW-17	1/23/2008	123	FALSE
MW-17	7/15/2008	122	FALSE
MW-17	1/28/2009	146	FALSE
MW-17	7/30/2009	148	FALSE
MW-17	1/11/2010	119	FALSE
MW-17	7/20/2010	132	FALSE
MW-17	1/27/2011	158	FALSE

Appendix B
Laboratory Analysis Reports
Chains of Custody
Field Data Reports

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#: 6053

LENOIR CO. LANDFILL (NEW)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON ,NC 28502

DATE COLLECTED: 01/27/11
DATE REPORTED : 02/09/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-13	MW-14	MW-15	MW-16	MW-17	Analysis Date	Analyst	Method Code
PH (field measurement), Units			4.32	4.59	4.97	4.48	4.13	01/27/11	RJH	SM4500HB
Antimony, ug/l	0.22	6.0	--- U	--- U	--- U	--- U	--- U	02/02/11	CMF	EPA200.8
Arsenic, ug/l	0.04	10.0	1.5 J	--- U	0.3 J	--- U	0.3 J	02/02/11	CMF	EPA200.8
Barium, ug/l	0.03	100.0	110	32.8 J	56.1 J	20.8 J	158	02/02/11	CMF	EPA200.8
Beryllium, ug/l	0.02	1.0	0.4 J	0.1 J	0.1 J	0.1 J	0.4 J	02/02/11	CMF	EPA200.8
Cadmium, ug/l	0.02	1.0	0.1 J	--- U	0.2 J	0.1 J	0.1 J	02/02/11	CMF	EPA200.8
Cobalt, ug/l	0.10	10.0	1.6 J	0.7 J	1.2 J	0.4 J	1.8 J	02/02/11	CMF	EPA200.8
Copper, ug/l	0.03	10.0	5.5 J	--- U	0.5 J	0.4 J	0.3 J	02/02/11	CMF	EPA200.8
Total Chromium, ug/l	0.03	10.0	5.1 J	--- U	--- U	--- U	0.2 J	02/02/11	CMF	EPA200.8
Lead, ug/l	0.01	10.0	3.8 J	0.1 J	0.2 J	0.1 J	3.9 J	02/02/11	CMF	EPA200.8
Nickel, ug/l	0.05	50.0	1.2 J	--- U	0.6 J	0.4 J	1.1 J	02/02/11	CMF	EPA200.8
Selenium, ug/l	0.32	10.0	1.0 J	--- U	0.4 J	--- U	--- U	02/02/11	CMF	EPA200.8
Silver, ug/l	0.03	10.0	0.1 J	0.1 J	--- U	--- U	--- U	02/02/11	CMF	EPA200.8
Thallium, ug/l	0.05	5.5	0.1 J	0.3 J	--- U	--- U	--- U	02/02/11	CMF	EPA200.8
Vanadium, ug/l	0.03	25.0	11.6 J	0.4 J	0.8 J	0.7 J	0.8 J	02/02/11	CMF	EPA200.8
Zinc, ug/l	0.08	10.0	5.1 J	--- U	1.5 J	0.4 J	2.5 J	02/02/11	CMF	EPA200.8
Conductivity (at 25c), uMhos	1.0	1.0	92	71	176	36	192	01/27/11	RJH	SM2510B
Temperature, °C			17.72	15.87	11.28	12.80	17.66	01/27/11	RJH	SM2550B
Static Water Level, feet			28.00	13.43	7.90	8.96	26.87	01/27/11	RJH	
Well Depth, feet			31.59	23.56	18.26	24.11	30.91	01/27/11	RJH	

J = Between MDL and SWSL, U = Below ALL Quanititation 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#: 6053

LENOIR CO. LANDFILL (NEW)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON ,NC 28502

DATE COLLECTED: 01/27/11
DATE REPORTED : 02/09/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	MW-18	SW-3	P-22	P1-4	P1-14	Analysis Date	Analyst	Method Code
PH (field measurement), Units			4.41	Missing				01/27/11	RJH	SM4500HB
Antimony, ug/l	0.22	6.0	--- U	Missing				02/02/11	CMF	EPA200.8
Arsenic, ug/l	0.04	10.0	--- U	Missing				02/02/11	CMF	EPA200.8
Barium, ug/l	0.03	100.0	22.4 J	Missing				02/02/11	CMF	EPA200.8
Beryllium, ug/l	0.02	1.0	0.1 J	Missing				02/02/11	CMF	EPA200.8
Cadmium, ug/l	0.02	1.0	0.2 J	Missing				02/02/11	CMF	EPA200.8
Cobalt, ug/l	0.10	10.0	0.4 J	Missing				02/02/11	CMF	EPA200.8
Copper, ug/l	0.03	10.0	0.1 J	Missing				02/02/11	CMF	EPA200.8
Total Chromium, ug/l	0.03	10.0	0.4 J	Missing				02/02/11	CMF	EPA200.8
Lead, ug/l	0.01	10.0	0.6 J	Missing				02/02/11	CMF	EPA200.8
Nickel, ug/l	0.05	50.0	--- U	Missing				02/02/11	CMF	EPA200.8
Selenium, ug/l	0.32	10.0	--- U	Missing				02/02/11	CMF	EPA200.8
Silver, ug/l	0.03	10.0	--- U	Missing				02/02/11	CMF	EPA200.8
Thallium, ug/l	0.05	5.5	--- U	Missing				02/02/11	CMF	EPA200.8
Vanadium, ug/l	0.03	25.0	0.9 J	Missing				02/02/11	CMF	EPA200.8
Zinc, ug/l	0.08	10.0	1.4 J	Missing				02/02/11	CMF	EPA200.8
Conductivity (at 25c), uMhos	1.0	1.0	33	Missing				01/27/11	RJH	SM2510B
Temperature, °C			16.80	Missing				01/27/11	RJH	SM2550B
Static Water Level, feet			28.47		28.00	13.00	7.00	01/27/11	RJH	
Well Depth, feet			33.99					01/27/11	RJH	

J = Between MDL and SWSL, U = Below ALL Quanititation 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#: 6053

LENOIR CO. LANDFILL (NEW)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON ,NC 28502

DATE COLLECTED: 01/27/11
DATE REPORTED : 02/09/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	P-14	P-3A	P-17	Trip Blank	Analysis Date	Analyst	Method Code
Static Water Level, feet			26.41	18.14	12.93		01/27/11	RJH	

J = Between MDL and SWSL, U = Below ALL Quanititation 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: LENOIR CO. LANDFILL (NEW)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON, NC 28502

CLIENT ID: 6053

ANALYST: MAO
DATE COLLECTED: 01/27/11
DATE ANALYZED: 02/02/11
DATE REPORTED: 02/09/11

REVIEWED BY: _____

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	MW-13	MW-14	MW-15	MW-16	MW-17
1. Chloromethane	0.77	1.0	--- U	--- U	--- U	--- U	--- U
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	--- U	--- 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	--- U	--- 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	--- U	--- U	--- U	--- U	--- U
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 Quanititation 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: LENOIR CO. LANDFILL (NEW)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON, NC 28502

CLIENT ID: 6053

ANALYST: MAO
DATE COLLECTED: 01/27/11
DATE ANALYZED: 02/02/11
DATE REPORTED: 02/09/11

REVIEWED BY: _____

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	MW-18	Trip Blank
1. Chloromethane	0.77	1.0	--- U	--- U
2. Vinyl Chloride	0.63	1.0	--- U	--- U
3. Bromomethane	0.67	10.0	--- U	--- U
4. Chloroethane	0.48	10.0	--- U	--- 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	--- U	--- 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	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U
14. Cis-1,2-Dichloroethene	0.25	5.0	--- U	--- U
15. 2-Butanone	2.21	100.0	--- U	--- 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	--- U	--- 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	--- U	--- 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	--- U	--- 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	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U	--- U
36. Ethylbenzene	0.21	1.0	--- U	--- U
37. Xylenes	0.68	5.0	--- U	--- 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	--- U	--- U
44. 1,2-Dichlorobenzene	0.32	5.0	--- U	--- 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 Quanititation Limits.

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: 6053 **Week:** 8

LENOIR CO. LANDFILL (NEW)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON NC 28502

(252) 566-4194

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Field pH	Metals	Conductivity	Temperature	Field Parameter	EPA 8260B	8260 Dup. 1	8260 Dup. 2
CHLORINE NEUTRALIZED AT COLLECTION													
pH CHECK (LAB)							<2				<2	<2	<2
CONTAINER TYPE, P/G						P	P	P	P		G	G	G
CHEMICAL PRESERVATION						A	A	A	A		E	E	E
MW-13	01/27/11	0930		17.72	5	G	G	G	G	G	G	G	G
MW-14	01/27/11	1025		15.87	4	G	G	G	G	G	G	G	
MW-15	01/27/11	1000		11.28	4	G	G	G	G	G	G	G	
MW-16	01/27/11	0940		12.80	4	G	G	G	G	G	G	G	
MW-17	01/27/11	0945		17.46	4	G	G	G	G	G	G	G	
MW-18	01/27/11	0950		16.80	4	G	G	G	G	G	G	G	
~~SW-3~~					4	G	G	G	G		G	G	
P-22	01/27/11				1					G			
P1-4	01/27/11				1					G			
P1-14	01/27/11				1					G			
P-14	01/27/11				1					G			

PARAMETERS

A - NONE D - NAOH
B - HNO_3 E - HCL
C - H_2SO_4 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) Brad Hoge / Fox

SAMPLES RECEIVED IN LAB AT 02 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
Brad Hoge	01/27/11	B [illegible]	1/27 400
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:
P-22 APPEARS TO BE BROKEN
SW-3 DRY

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.

FORM #5

№ 212017

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: 6053 **Week:** 8

LENOIR CO. LANDFILL (NEW)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON NC 28502

(252) 566-4194

DISINFECTION: ☐ CHLORINE ☐ UV ☐ NONE ☐ _____

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Field pH	Metals	Conductivity	Temperature	Field Parameter	EPA 8260B	8260 Dup. 1	8260 Dup. 2
CHLORINE NEUTRALIZED AT COLLECTION													
pH CHECK (LAB)											<2	<2	
CONTAINER TYPE, P/G						P	P	P	P		G	G	G
CHEMICAL PRESERVATION						A	A	A	A		E	E	E
P-3A	01/27/11				1								
P-17	01/27/11				1								
Trip Blank					2								

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) H Lane / Fat

SAMPLES RECEIVED IN LAB AT 02 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
Bob H Lane	01/27/11	[signature]	1/27 1420
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:

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.

FORM #5

№ 212016

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#: 6053 A

LENOIR CO. LANDFILL (NEW)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON ,NC 28502

DATE COLLECTED: 01/27/11
DATE REPORTED : 02/09/11

REVIEWED BY:

PARAMETERS	MDL	SWSL	Leachate	Analysis Date	Analyst	Method Code
PH (field measurement), Units			6.75	01/27/11	RJH	SM4500HB
BOD, mg/l	2.0	2.0	--- U	01/28/11	MPB	SM5210B
COD, mg/l	10.0	10.0	68	01/31/11	SEJ	HACH8000
Nitrate Nitrogen as N, mg/l	0.03	10.0	--- U	01/28/11	MPH	EPA353.2
Total Phosphorus as P, mg/l	0.04	0.04	0.05	01/31/11	TWA	EPA365.4
Sulfate, mg/l	5.0	250.0	--- U	02/02/11	SEJ	SM426C
Antimony, ug/l	0.22	6.0	--- U	02/02/11	CMF	EPA200.8
Arsenic, ug/l	0.04	10.0	1.5 J	02/02/11	CMF	EPA200.8
Barium, ug/l	0.03	100.0	54.7 J	02/02/11	CMF	EPA200.8
Beryllium, ug/l	0.02	1.0	--- U	02/02/11	CMF	EPA200.8
Cadmium, ug/l	0.02	1.0	--- U	02/02/11	CMF	EPA200.8
Cobalt, ug/l	0.10	10.0	0.2 J	02/02/11	CMF	EPA200.8
Copper, ug/l	0.03	10.0	4.2 J	02/02/11	CMF	EPA200.8
Total Chromium, ug/l	0.03	10.0	0.1 J	02/02/11	CMF	EPA200.8
Lead, ug/l	0.01	10.0	0.1 J	02/02/11	CMF	EPA200.8
Nickel, ug/l	0.05	50.0	6.6 J	02/02/11	CMF	EPA200.8
Selenium, ug/l	0.32	10.0	1.5 J	02/02/11	CMF	EPA200.8
Silver, ug/l	0.03	10.0	--- U	02/02/11	CMF	EPA200.8
Thallium, ug/l	0.05	5.5	--- U	02/02/11	CMF	EPA200.8
Vanadium, ug/l	0.03	25.0	0.3 J	02/02/11	CMF	EPA200.8
Zinc, ug/l	0.08	10.0	11	02/02/11	CMF	EPA200.8

J = Between MDL and SWSL, U = Below ALL Quanititation 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: LENOIR CO. LANDFILL (NEW)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON, NC 28502

CLIENT ID: 6053 A

ANALYST: MAO
DATE COLLECTED: 01/27/11
DATE ANALYZED: 02/02/11
DATE REPORTED: 02/09/11

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Leachate
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 Quanititation Limits.

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: 6053 A **Week:** 8

LENOIR CO. LANDFILL (NEW)
COUNTY OF LENOIR
MR. TOM MILLER
P.O. BOX 756
KINSTON NC 28502

(252) 566-4194

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

SAMPLE LOCATION	COLLECTION DATE	COLLECTION TIME	TOTAL CHLORINE, mg/l AT COLLECTION	TEMPERATURE, °C AT COLLECTION	# OF CONTAINERS	Field pH	BOD	COD	Nitrate	T. Phosphorus	Sulfate	Metals	EPA 8260B	8260 Dup. 1	8260 Dup. 2
CHLORINE NEUTRALIZED AT COLLECTION															
pH CHECK (LAB)								<2		<2		<2	<2	<2	<2
CONTAINER TYPE, P/G						P	P	P	P	P	P	P	G	G	G
CHEMICAL PRESERVATION						A	A	C	A	C	A	A	E	E	E
Leachate	01/27/1	1200		2.28	10	G	G	G	G	G	G	G	G	G	G

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)
Bob Hogue / Fox

SAMPLES RECEIVED IN LAB AT 02 °C

RELINQUISHED BY (SIG.) (SAMPLER)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
Bob Hogue	01/27/1	[signature]	1/27 1420
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME
RELINQUISHED BY (SIG.)	DATE/TIME	RECEIVED BY (SIG.)	DATE/TIME

COMMENTS:

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.

FORM #5

№ 212607