
Semi-Annual Water Quality Monitoring and Statistical Analysis Report

Prepared for

Lenoir County Closed MSWLF and Active C&D Landfill
LaGrange, North Carolina

January 2010

Permit Number: 54-03

MESCO Project Number: G10015.0

Completed on April 2, 2010



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):

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

Name: _____ Phone: _____

E-mail: _____

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Environmental Status: (Check all that apply)

- Initial/Background Monitoring Detection Monitoring Assessment Monitoring Corrective Action

Type of data submitted: (Check all that apply)

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

Notification attached?

- No. No groundwater or surface water standards were exceeded.
 Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.
 Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

Facility Representative Name (Print) _____ Title _____ (Area Code) Telephone Number _____
 Affix NC Licensed/ Professional Geologist Seal

Signature _____ Date _____

Facility Representative Address _____

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

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**Municipal
Services**



**Engineering
Company, P.A.**

April 2, 2010

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
Lenoir County Active C&D over Closed MSWLF
Permit No. 54-03
MESCO Project No. G10015.0

Dear Ms. Drummond:

Introduction

The Lenoir County Active C&D over Closed MSWLF located near LaGrange NC, currently operating under permit #54-03 is required to submit semi-annual compliance reports as a condition of 15A NCAC 13B.1630. The closed MSWLF ceased operation prior to 1998 and the C&D landfill continues operation upon the closed MSWLF. Since they are in essence one contiguous landfill they are combined and treated as a single unit for overall continuity in reporting. The water quality monitoring program outlined in the approved Sampling and Analysis Plans (SAP) contained in the approved *Corrective Action Plan* (CAP) dated February 13, 2009 includes a total of nine monitoring locations. Monitored natural attenuation (MNA) is the current approved corrective action for this facility. However, this report pertains to only the routine Appendix I monitoring; an MNA analysis report will be submitted separately. Environment 1 (E1) of Greenville, NC performed this monitoring event on January 11, 2010 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. Municipal Engineering Services (MESCO) of Garner, NC performed a confirmation re-sampling event of MW-12 on February 18, 2010 due to a possible anomalous benzene detection. The site location topographic map is depicted on the attached 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 list of detections compared to the respective Standards, field data results, a single-day potentiometric map, groundwater flow directions and flow rates table, statistical analysis, quality assurance/quality control data, and full laboratory analytical data results with chains-of-custody (C-O-C) are enclosed.

Sampling Procedure

E1 reportedly collected and performed laboratory analysis on water samples from all six downgradient groundwater monitoring wells (MW-3, MW-4, MW-6, MW-9, MW-11, MW-12), the background well (MW-1), and two surface water points (SW-1, SW-3). Prior to this event it was confirmed that E1 had consistently been collecting surface water sample SW-2 from a location which was different than that referenced in all previous SAP's. Therefore, beginning with this event the upstream surface water point previously designated as SW-2 in all previous SAP's, located upon Fredrick's Branch just east of Hodges Farm Road, is now designated SW-3 in order to differentiate future data from the historically compiled data. Quality control measures were also implemented during this event which included submittal and subsequent quantification of a travel blank (TB) and equipment blank (EB). Pace Laboratories (PACE) of Huntersville NC performed the analysis of the MW-12 confirmation re-sampling event. All monitoring locations are shown upon the enclosed single-day potentiometric map Plate 2.

All sampling was reported to be conducted utilizing methodology outlined in the NCDENR *Solid Waste Section Guidelines for Groundwater, Soil, and Surface Water Sampling* revised April 2008. Static water levels in each well were measured electronically prior to purging. Additional static water level readings were also recorded from two additional monitoring wells (MW-8, MW-10) in an effort to improve coverage for potentiometric map formulation. All of the collected samples were transported under proper C-O-C protocol and analyzed within the specified hold times for each method. The required field parameters (pH, specific conductance, and temperature) were reported by E1.

Field and Laboratory Results

All of the monitoring locations were reportedly sampled and analyzed for the 40 CFR Part 258, Appendix I list of volatile organic compounds (VOCs) and total metals per EPA Test Method 8260B and EPA Test Method 200.8, respectively. VOC analysis via EPA Test Method 8260B was performed for MW-12 during the confirmation re-sampling event. The full laboratory data reports and C-O-Cs are attached in Appendix B.

All water samples were analyzed down to the laboratory-established Method Detection Limits (MDL) with reference to the values current as of the sampling event. Enclosed Table 1 summarizes all detected constituents detected within groundwater and surface water samples above the current Solid Waste Section detection limit (SWSL), Groundwater Protection Standards (GWP) or the North Carolina Groundwater Standards (2L).

The field parameter data is presented in the laboratory report and it appears to be generally consistent relative to each other and congruent with data historically reported.

Groundwater Samples

Of the very few metal constituents detected none were found in concentrations above their respective 2L or GWP Standard. Benzene and a non-quantifiable (<SWSL) concentration of vinyl chloride were detected in exceedance of the 2L Standard in MW-12 during the semi-annual event. However, neither benzene nor vinyl chloride were detected in exceedance of their respective 2L Standard during the confirmation re-sampling event.

Surfacewater Samples

The sample taken from surface water point SW-1 contained an extremely low concentration of silver above the applicable 2B Standard. However, the concentration of silver as detected within SW-1 was below the SWSL therefore a "j" qualifier or considered an estimated value.

Statistical Analysis

The numbers and types of metal detections continue to be consistent with historical results. The interwell analysis results indicate that none of the detected metals have exhibited a statistically significant increase (SSI) in concentration over background levels established by the background well MW-1. After supplementation of the confirmation re-sample results no monitoring wells exhibited a SSI of VOC parameters. The full statistical analysis is presented in Appendix A

Groundwater Characterization

MESCO prepared the enclosed single-day potentiometric map from groundwater elevation data taken from the uppermost aquifer during this event. Groundwater flow rates and directions were also calculated based upon this data and is included in the attached Table 2. The flow directions were calculated to be in a general northeasterly direction towards Falling Creek. The calculated groundwater flow rates ranged from approximately 6 feet/year (MW-3) to 46 feet/year (MW-11) averaging approximately 21 feet/year.

Findings

The laboratory data and the subsequent statistical analysis results for the semi-annual and confirmation event indicate that none of the constituents were detected in exceedance of either their respective 2L or GWP Standard or exhibited a SSI. The non-quantifiable concentration of silver as detected in downstream sample SW-1 is very likely naturally inherent and not attributed to landfill activities.

Closing

Semi-annual corrective action monitoring will continue at the facility and is tentatively scheduled to be sampled again in July 2010. Please contact us either by phone at (919) 772-5393, or by email at jpfohl@mesco.com should you have any questions or concerns regarding this report.

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

A handwritten signature in blue ink that reads "Jonathan Pfohl". The signature is cursive and includes a stylized flourish at the end.

Jonathan Pfohl
Environmental Specialist

Enclosures

cc: Mr. Tom Miller
Lenoir County

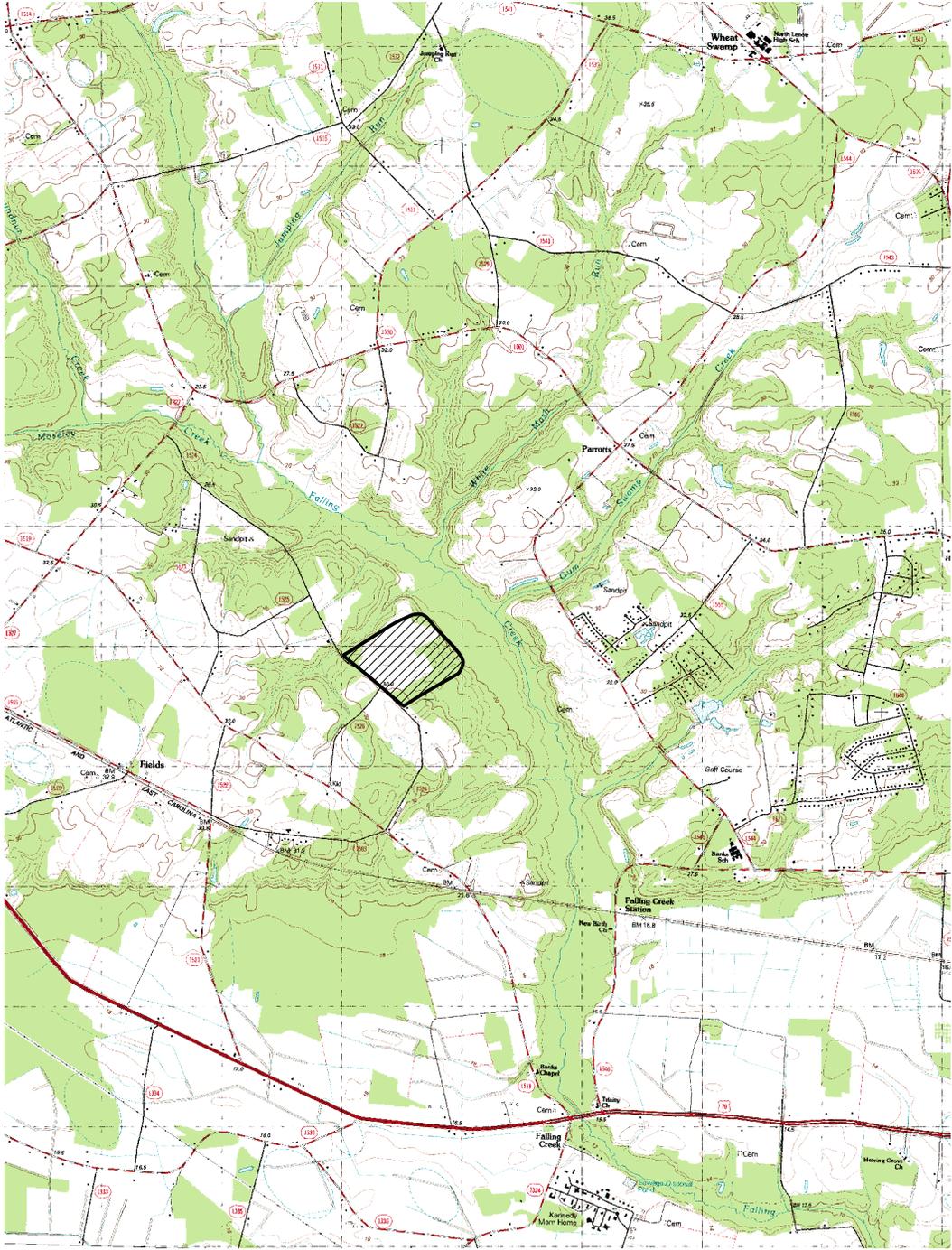
Plates

Topographic Map with Site Location

Semi-Annual Water Quality Monitoring

PLATE 1

Lenoir County MSWLF Facility



QUADRANGLE LEGEND

Date Completed	5/31/2007
Created By	M. Clement
Project Name	Semi-Annual Water Quality Monitoring
Site Name	Lenoir County MSWLF
Project Number	G10029.0

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

Tables

Table 1
Detection Scan All Detections above SWSL, GWP, 2L, or 2B
Lenoir County Active C&D over Closed MSWLF

Sample ID	Parameter Name ¹	Sample Date	Result	Unit	MDL ²	SWSL ³	2L ⁴	2B ⁵	GWP ⁶	Exceedance	Preliminary Cause
MW-3	Zinc	1/12/10	25	ug/l	0.14	10	1050				
MW-9	Cobalt	1/12/10	11	ug/l	0.02	10			70		
MW-9	Zinc	1/12/10	11	ug/l	0.14	10	1050				
MW-12	Vinyl Chloride	1/12/10	0.8^h	ug/l	0.63	1	0.03			0.77	A
MW-12	Vinyl Chloride	2/18/10	ND	ug/l	0.62	1	0.03				
MW-12	Benzene	1/12/10	2.5^g	ug/l	0.24	1	1			1.5	L &/or LFG
MW-12	Benzene	2/18/10	0.93 ^j	ug/l	0.25	1	1				
MW-12	Barium	1/12/10	215	ug/l	0.04	100	600				
SW-1	Zinc	1/12/10	14	ug/l	0.14	10		50			
SW-1	Silver	1/12/10	0.1ⁱ	ug/l	0.04^j	10		0.06		0.04	N

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 Quality Standard (Current as of Sampling Event)

^j =The reported value is estimated & between the laboratory MDL & the SWSL, adjusted for actual sample preparation data and moisture content

* = Absent or reduction in confirmation sample

A = Artifact origin field or laboratory

B = Background

N = Naturally Inherent

L = Leachate

LFG = Landfill Gas

NE = Not Established

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

Table 2
Hydrologic Properties at Monitoring Well Locations
Lenoir County Active C&D over Closed MSWLF

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-1	4.30E-04	20%	0.01	19	N12E	18.00	80.34	Silty Sand
MW-3	1.30E-04	20%	0.01	6	N26E	4.99	58.88	Silty Sand
MW-4	5.40E-04	20%	0.01	30	N28E	4.99	63.04	Silty Sand
MW-6	-	-	0.01	-	N08E	10.04	75.52	Silty Sand
MW-9	3.80E-04	20%	0.01	15	N46E	5.18	57.22	Sandy Clay
MW-11	6.59E-04	20%	0.01	46	N23E	12.67	65.59	Sand
MW-12	2.10E-04	20%	0.008	9	N25E	15.11	62.35	Sand

NOTE: 1. Hydraulic conductivity (K), values for MW-1 through MW-10 were obtained from GAI Consultants (June 1999). K values for MW-11 and MW-12 were based on slug test results conducted by MESCO in July 1999.
 2. Water levels were measured prior to sampling by Environment 1, Inc. on January 12, 2010.

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 : 6
 Mean v_x : 21
 Median v_x : 17
 Maximum v_x : 46

Appendix A

Statistical Analysis

Statistical Analysis Methodology

Statistical Analysis Methodologies

A statistical analysis was performed on metal and VOC detections utilizing Chemstat software, which was developed specifically for RCRA Subtitle D sites and conforms to both 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 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. All 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 1994 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 upon the percentage of non-detects. If necessary and applicable further intra-well analysis was conducted to compare current data from a single well is compared to it's own respective 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 upon 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 (enclosed charts). In order to evaluate variability in concentrations with respect to time and season, time series plots were generated for select constituents (enclosed charts). Time series plots were also visually evaluated for seasonality and “outliers”. Suspected outliers were than further evaluated through Dixon's Test for Outliers or Rosner's Test for Outliers depending upon the number of samples and the data distribution. Outliers are generally not censored from the current nor 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 upon total metals detected during this sampling event. Monitoring well MW-1 was defined as the background well, and 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 four different %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 upon those constituents that were found to be statistically significant by inter-well analysis and there is sufficient historical samples known to not be impacted. With intra-well comparisons, data from a single well is compared to historical data from the same well. 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.

Poisson Prediction Interval (VOCs)

All historical VOC detections in the background well MW-1 were pooled in order to determine the total number of detections, from which the expected number of detections in a single downgradient monitoring point (y^*) was derived by utilizing the Poisson prediction interval (Table A2) The parameter y^* is defined by the following equation:

$$y^* = cy + \frac{t^2 c}{2} + tc \sqrt{y \left(1 + \frac{1}{c}\right) + \frac{t^2}{4}}$$

where

$c = 1/n$ (n =number of background samples)

t = one-sided value of student's t -Statistic at 95% confidence ^a

y = number of events observed in n previous samples

y^* = expected number of events in a single future sample

^a Gibbons, R.D., 1994, Statistical methods for groundwater monitoring: John Wiley & Sons, Inc., p.12.

For each monitoring location showing any VOC detections, the number of detected VOCs was counted with each detection being considered a “hit”. The number was then compared with the expected number of detections derived from the background VOC data (Table A3). The value of Student’s t -Statistic was derived from tabulated values included in Gibbons (1994).

Determine Data Trend Over Time

The parameters that indicated statistical significance a further qualitative evaluation is employed to determine trends in concentration over time. Implementation of Mann-Kendall Trend Analysis or Sen's Slope Analysis is generally used to determine if the concentration trend is increasing, decreasing, or remaining constant.

Statistical Analysis Summary Tables & Graphs

**Inter-Well Analysis Summary
Lenoir County Active C&D over Closed MSWLF**

Background Well: MW-1

Barium, total

%ND	Normality	Method	ND Adj.	Upper Limit (a = 95%)	Unit
100	-	Poisson tolerance limit	ND	9.0	log[ug/l]

Well	Result	Significance
MW-12	5.371	no

Cobalt, total

%ND	Normality	Method	ND Adj.	Upper Limit (a = 95%)	Unit
97.06	-	Poisson tolerance limit	ND	14.0	ug/L

Well	Result	Significance
MW-9	11	no

Zinc, total

%ND	Normality	Method	ND Adj.	Upper Limit (a = 95%)	Unit
90.323	-	Poisson tolerance limit	ND	7.0	log[ug/l]

Well	Result	Significance
MW-3	3.2189	no
MW-9	2.3979	no

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

**Summary of Pooled VOCs in Background Well (MW-1)
Lenoir County Active C&D over Closed MSWLF**

Constituent	Samples	NDs	% NDs
1,1,1,2-Tetrachloroethane	34	34	100.00
1,1,1-Trichloroethane	34	34	100.00
1,1,2,2-Tetrachloroethane	34	34	100.00
1,1,2-Trichloroethane	34	34	100.00
1,1-Dichloroethane	34	34	100.00
1,1-Dichloroethene	34	34	100.00
1,2,3-Trichloropropane	34	34	100.00
1,2-Dibromo-3-chloropropane	34	34	100.00
1,2-Dibromoethane	34	34	100.00
1,2-Dichlorobenzene	34	34	100.00
1,2-Dichloroethane	34	34	100.00
1,2-Dichloropropane	34	34	100.00
1,4-Dichlorobenzene	34	34	100.00
2-Butanone	34	34	100.00
2-Hexanone	34	34	100.00
4-Methyl-2-Pentanone	34	34	100.00
Acetone	34	34	100.00
Acrylonitrile	34	34	100.00
Benzene	34	34	100.00
Bromochloromethane	34	34	100.00
Bromodichloromethane	34	34	100.00
Bromoform	34	34	100.00
Bromomethane	34	34	100.00
Carbon disulfide	34	34	100.00
Carbon tetrachloride	34	34	100.00
Chlorobenzene	34	34	100.00
Chloroethane	34	34	100.00
Chloroform	34	34	100.00
Chloromethane	34	34	100.00
cis-1,2-Dichloroethene	34	34	100.00
cis-1,3-Dichloropropene	34	34	100.00
Chlorodibromomethane	34	34	100.00
Dibromomethane	34	34	100.00
Ethylbenzene	34	34	100.00
Iodomethane	34	34	100.00
Dichloromethane	34	34	100.00
Styrene	34	34	100.00
Tetrachloroethylene	34	34	100.00
Toluene	34	34	100.00
trans-1,2-Dichloroethene	34	34	100.00
trans-1,3-Dichloropropene	34	34	100.00
trans-1,4-Dichloro-2-butene	34	34	100.00
Trichloroethylene	34	34	100.00
Trichlorofluoromethane	34	34	100.00
Vinyl acetate	34	34	100.00
Vinyl chloride	34	34	100.00
Xylene	34	34	100.00
Total	1598	1598	100.00

**Poisson Prediction Interval Based upon Pooled Background VOCs
Lenoir County Active C&D over Closed MSWLF**

All detected VOCs (Background Well: MW-1)

Constituent	MW-12
Benzene	2.5 (1/12/10) & 0.93^j (2/18/10)
Detection(s) per Scan	0

^j qualifiers omitted for statistical analysis purposes

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

Total number of sampling events [n] = 34

Total number of detections in background wells [y] = 0

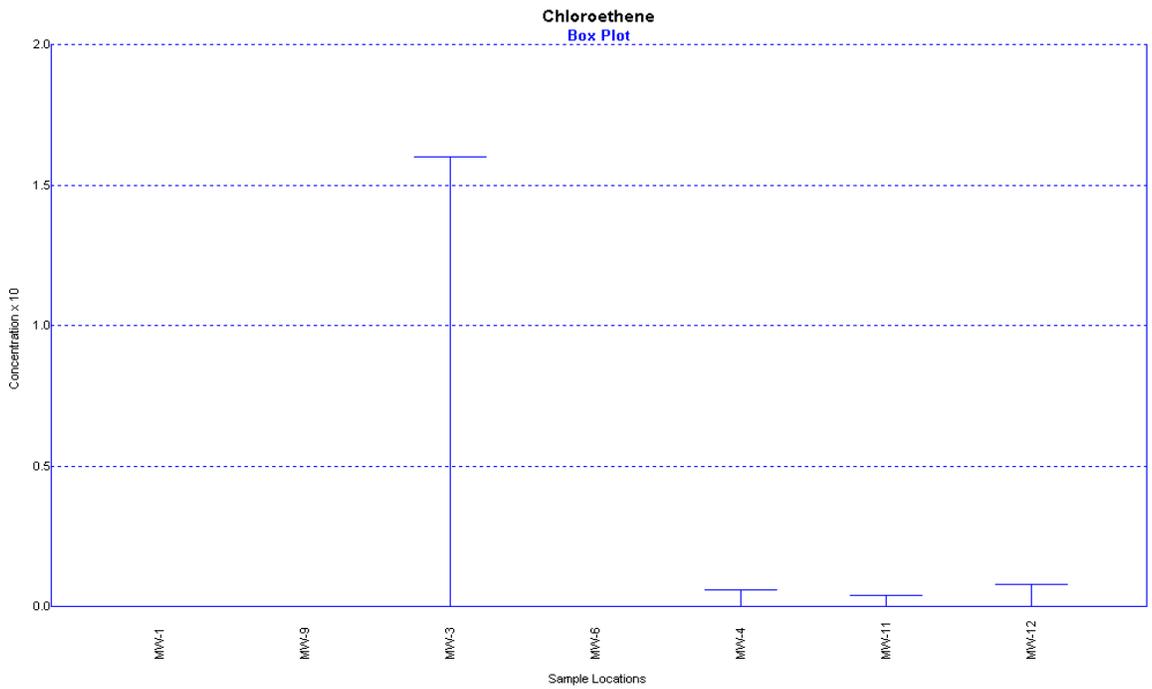
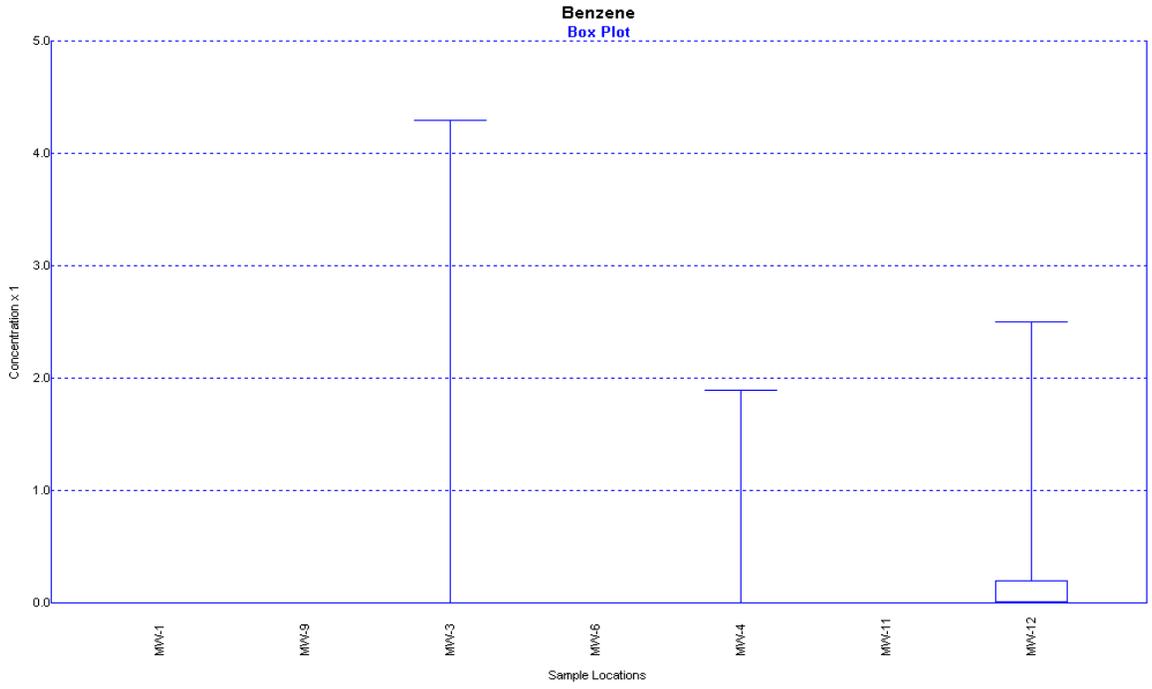
Number of comparisons (downgradient wells) [k] = 6

One-sided value of Student's t-statistic (95% confidence) [t] = 2.5

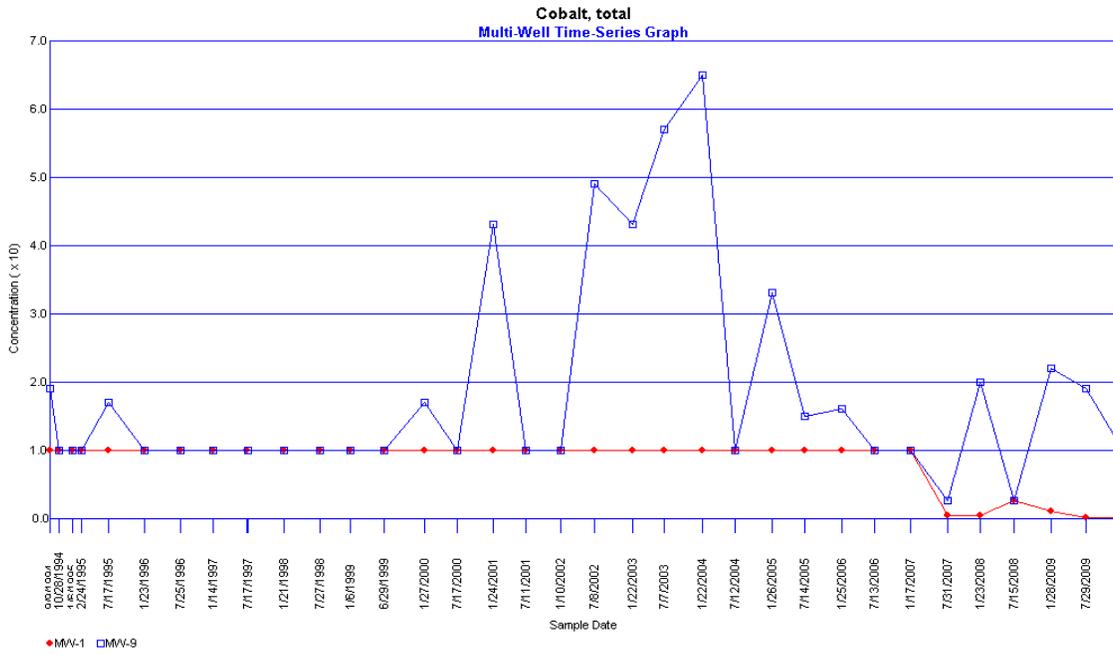
Expected number of detections in a single future sample [y*] = **0.1841**

**NO Statistically Significant VOC Detections
at a 95% Confidence Level**

Box Plots for Select Constituents (VOCs)
Lenoir County Active C&D over Closed MSWLF

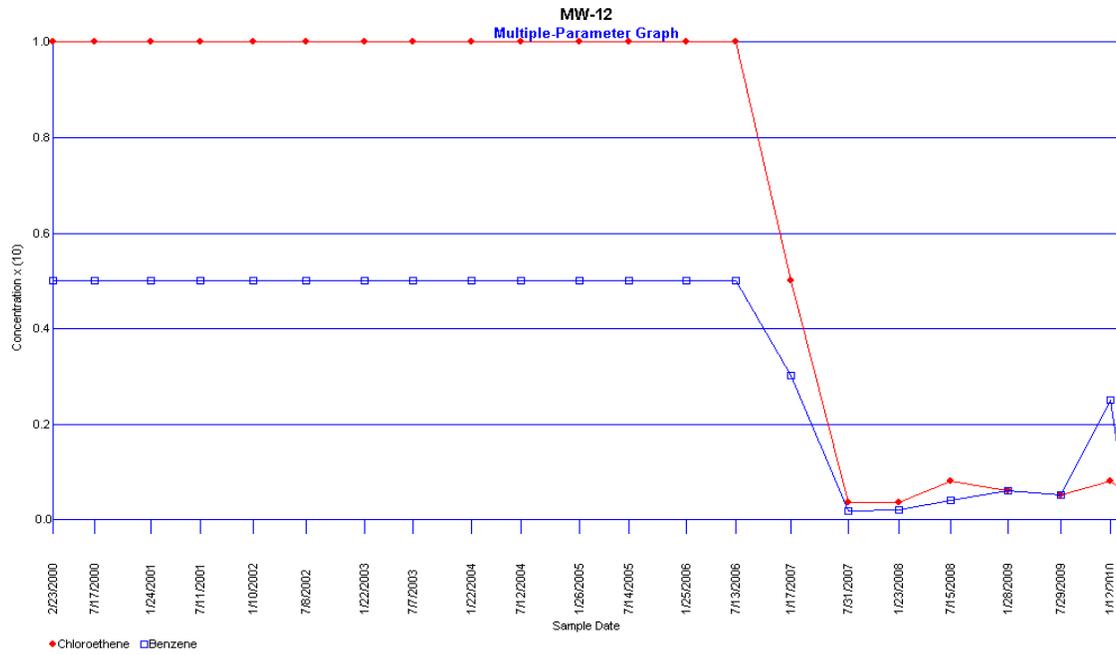


Time Series Plots for Select Constituents (Metals)
Lenoir County Active C&D over Closed MSWLF



Non-Detects Represented at Detection Limit

**Time Series Plots for Select Constituents (VOCs)
Lenoir County Active C&D over Closed MSWLF**



Non-Detects Represented at Detection Limit

Statistical Analysis

Basic Statistics

Poisson Tolerance Limit**Parameter: Barium, total**

Natural Logarithm Transformation

Non-Detects Replaced with Detection Limit

Poisson Count of 34 background Samples = 161.647

Degrees of Freedom = 325

95% Confidence Values

Chi-Squared Value (95% Confidence) = 368.042

Lambda (from Zack's formula) = 5.41238

Smallest Degrees of Freedom = 20

Upper Tolerance Limit (95%) = 9

99% Confidence Values

Chi-Squared Value (99% Confidence) = 387.234

Lambda (from Zack's formula) = 5.69462

Smallest Degrees of Freedom = 25

Upper Tolerance Limit (99%) = 11.5

	Date	Result	Impacted 95%	Impacted 99%
MW-12	2/23/2000	ND<6.21461	FALSE	FALSE
	2/23/2000	ND<6.21461	FALSE	FALSE
	7/17/2000	ND<6.21461	FALSE	FALSE
	1/24/2001	ND<6.21461	FALSE	FALSE
	7/11/2001	ND<6.21461	FALSE	FALSE
	1/10/2002	ND<6.21461	FALSE	FALSE
	7/8/2002	ND<6.21461	FALSE	FALSE
	1/22/2003	ND<6.21461	FALSE	FALSE
	7/7/2003	ND<6.21461	FALSE	FALSE
	1/22/2004	ND<6.21461	FALSE	FALSE
	7/12/2004	ND<6.21461	FALSE	FALSE
	1/26/2005	ND<6.21461	FALSE	FALSE
	7/14/2005	ND<6.21461	FALSE	FALSE
	1/25/2006	ND<6.21461	FALSE	FALSE
	7/13/2006	ND<6.21461	FALSE	FALSE
	1/17/2007	ND<4.60517	FALSE	FALSE
	7/31/2007	ND<-3.21888	FALSE	FALSE
	1/23/2008	ND<-1.07881	FALSE	FALSE
	7/15/2008	5.20401	FALSE	FALSE
	1/28/2009	4.94164	FALSE	FALSE
7/29/2009	5.52146	FALSE	FALSE	
1/12/2010	5.37064	FALSE	FALSE	

Poisson Tolerance Limit**Parameter: Cobalt, total**

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Poisson Count of 34 background Samples = 284.39

Degrees of Freedom = 570

95% Confidence Values

Chi-Squared Value (95% Confidence) = 626.65

Lambda (from Zack's formula) = 9.21544

Smallest Degrees of Freedom = 30

Upper Tolerance Limit (95%) = 14

99% Confidence Values

Chi-Squared Value (99% Confidence) = 651.474

Lambda (from Zack's formula) = 9.5805

Smallest Degrees of Freedom = 36

Upper Tolerance Limit (99%) = 17

	Date	Result	Impacted 95%	Impacted 99%
MW-9	9/9/1994	19	TRUE	TRUE
	10/28/1994	ND<10	FALSE	FALSE
	1/6/1995	ND<10	FALSE	FALSE
	2/24/1995	ND<10	FALSE	FALSE
	7/17/1995	17	TRUE	FALSE
	1/23/1996	ND<10	FALSE	FALSE
	7/25/1996	ND<10	FALSE	FALSE
	1/14/1997	ND<10	FALSE	FALSE
	7/17/1997	ND<10	FALSE	FALSE
	1/21/1998	ND<10	FALSE	FALSE
	7/27/1998	ND<10	FALSE	FALSE
	1/6/1999	ND<10	FALSE	FALSE
	6/29/1999	ND<10	FALSE	FALSE
	1/27/2000	17	TRUE	FALSE
	7/17/2000	ND<10	FALSE	FALSE
	1/24/2001	43	TRUE	TRUE
	7/11/2001	ND<10	FALSE	FALSE
	1/10/2002	ND<10	FALSE	FALSE
	7/8/2002	49	TRUE	TRUE
	1/22/2003	43	TRUE	TRUE
	7/7/2003	57	TRUE	TRUE
	1/22/2004	65	TRUE	TRUE
	7/12/2004	ND<10	FALSE	FALSE
	1/26/2005	33	TRUE	TRUE
	7/14/2005	15	TRUE	FALSE
	1/25/2006	16	TRUE	FALSE
	7/13/2006	ND<10	FALSE	FALSE
	1/17/2007	ND<10	FALSE	FALSE
	7/31/2007	ND<2.53	FALSE	FALSE
	1/23/2008	20	TRUE	TRUE
	7/15/2008	ND<2.53	FALSE	FALSE
1/28/2009	22	TRUE	TRUE	
7/29/2009	19	TRUE	TRUE	
1/12/2010	11	FALSE	FALSE	

Poisson Tolerance Limit

Parameter: Zinc, total

Natural Logarithm Transformation

Non-Detects Replaced with Detection Limit

Poisson Count of 31 background Samples = 113.031

Degrees of Freedom = 228

95% Confidence Values

Chi-Squared Value (95% Confidence) = 264.224

Lambda (from Zack's formula) = 4.26168

Smallest Degrees of Freedom = 17

Upper Tolerance Limit (95%) = 7.5

99% Confidence Values

Chi-Squared Value (99% Confidence) = 280.597

Lambda (from Zack's formula) = 4.52576

Smallest Degrees of Freedom = 22

Upper Tolerance Limit (99%) = 10

	Date	Result	Impacted 95%	Impacted 99%
MW-9	9/9/1994	4.09434	FALSE	FALSE
	10/28/1994	ND<3.91202	FALSE	FALSE
	1/6/1995	ND<3.91202	FALSE	FALSE
	2/24/1995	ND<3.91202	FALSE	FALSE
	7/17/1995	4.23411	FALSE	FALSE
	1/23/1996	ND<3.91202	FALSE	FALSE
	7/25/1996	ND<3.91202	FALSE	FALSE
	1/14/1997	3.97029	FALSE	FALSE
	7/17/1997	ND<3.91202	FALSE	FALSE
	1/21/1998	ND<3.91202	FALSE	FALSE
	7/27/1998	ND<3.91202	FALSE	FALSE
	1/6/1999	ND<3.91202	FALSE	FALSE
	6/29/1999	ND<3.91202	FALSE	FALSE
	1/27/2000	ND<3.91202	FALSE	FALSE
	7/17/2000	4.26268	FALSE	FALSE
	1/24/2001	ND<3.91202	FALSE	FALSE
	7/11/2001	4.47734	FALSE	FALSE
	1/10/2002	ND<3.91202	FALSE	FALSE
	7/8/2002	ND<3.91202	FALSE	FALSE
	1/22/2003	ND<3.91202	FALSE	FALSE
	7/7/2003	ND<3.91202	FALSE	FALSE
	1/22/2004	ND<3.91202	FALSE	FALSE
	7/12/2004	ND<3.91202	FALSE	FALSE
	1/26/2005	ND<3.91202	FALSE	FALSE
	7/14/2005	ND<3.91202	FALSE	FALSE
	1/25/2006	ND<3.91202	FALSE	FALSE
	7/13/2006	ND<3.91202	FALSE	FALSE
	1/17/2007	ND<2.30259	FALSE	FALSE
7/31/2007	2.0149	FALSE	FALSE	
1/23/2008	2.11626	FALSE	FALSE	
7/15/2008	2.00148	FALSE	FALSE	
MW-3	9/9/1994	ND<3.91202	FALSE	FALSE
	10/28/1994	ND<3.91202	FALSE	FALSE
	1/6/1995	ND<3.91202	FALSE	FALSE
	2/24/1995	ND<3.91202	FALSE	FALSE
	7/17/1995	ND<3.91202	FALSE	FALSE
	1/23/1996	ND<3.91202	FALSE	FALSE
	7/25/1996	ND<3.91202	FALSE	FALSE
	1/14/1997	ND<3.91202	FALSE	FALSE
	7/11/1997	ND<3.91202	FALSE	FALSE
	1/21/1998	ND<3.91202	FALSE	FALSE
	7/27/1998	5.18739	FALSE	FALSE

Lenoir County Closed MSWLF and C&D Landfill

Zinc, total

1/6/1999	5.84932	FALSE	FALSE
6/29/1999	6.49527	FALSE	FALSE
1/27/2000	6.62007	FALSE	FALSE
7/17/2000	ND<3.91202	FALSE	FALSE
1/24/2001	5.78074	FALSE	FALSE
7/11/2001	6.34914	FALSE	FALSE
1/10/2002	5.4161	FALSE	FALSE
7/8/2002	6.06611	FALSE	FALSE
1/22/2003	5.63479	FALSE	FALSE
7/7/2003	7.00397	FALSE	FALSE
1/22/2004	5.33754	FALSE	FALSE
7/12/2004	4.83628	FALSE	FALSE
1/26/2005	4.46591	FALSE	FALSE
7/14/2005	5.0689	FALSE	FALSE
1/25/2006	4.04305	FALSE	FALSE
7/13/2006	ND<3.91202	FALSE	FALSE
1/17/2007	4.48864	FALSE	FALSE
7/31/2007	4.07754	FALSE	FALSE
1/23/2008	3.29584	FALSE	FALSE
7/15/2008	3.13549	FALSE	FALSE

Statistical Analysis Inter-well Analysis

Basic Statistics

Parameter: Barium, total

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

	Total Observations
204	
Total Non-Detects	200
Pooled Mean	195.544
Pooled Std Dev	100.883
Background Mean	200.021
Background Std Dev	99.9564

Background Wells

There is 1 background well

Well	Samples	Non-Detects	% ND	Total		
MW-1	34	34	100	6800.72		

Well	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	200.021	99.9564	0	3417	100.5

Compliance Wells

There are 6 compliance wells

Well	Samples	Non-Detects	% ND	Total		
MW-9	34	34	100	6800.72		
MW-3	34	34	100	6800.57		
MW-6	24	24	100	4300.57		
MW-4	34	34	100	6800.72		
MW-11	22	22	100	3800.49		
MW-12	22	18	81.8182	4587.19		

Well	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-9	200.021	99.9564	0	24.6912	3417	100.5
MW-3	200.017	99.9655	-0.00441176	24.6912	3417	100.5
MW-6	179.19	113.133	-20.8308	27.1416	2412	100.5
MW-4	200.021	99.9564	0	24.6912	3417	100.5
MW-11	172.75	116.183	-27.2716	27.8554	2211	100.5
MW-12	208.509	83.0893	8.48746	27.8554	2619	119.045

Analysis of Variance Statistics

SS Wells	24272.1
SS Total	2.06601e+006

Kruskal-Wallis Statistics

Non-Detect Rank	100.5
Background Rank Sum	3417
Background Rank Mean	100.5
H Statistic	1.93703
H Adjusted for Ties	33.5832

Basic Statistics

Parameter: Cobalt, total

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

	Total Observations
204	
Total Non-Detects	183
Pooled Mean	5.97588
Pooled Std Dev	8.29196
Background Mean	4.19691
Background Std Dev	1.7736

Background Wells

There is 1 background well

Well	Samples	Non-Detects	% ND	Total		
MW-1	34	33	97.0588	142.695		

Well	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	4.19691	1.7736	0	3223	94.7941

Compliance Wells

There are 6 compliance wells

Well	Samples	Non-Detects	% ND	Total		
MW-9	34	19	55.8824	533.53		
MW-3	34	33	97.0588	141.895		
MW-6	24	23	95.8333	92.695		
MW-4	34	33	97.0588	143.455		
MW-11	22	21	95.4545	81.805		
MW-12	22	21	95.4545	83.005		

Well	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-9	15.6921	16.9706	11.4951	1.73651	4703	138.324
MW-3	4.17338	1.82194	-0.0235294	1.73651	3220	94.7059
MW-6	3.86229	2.02881	-0.33462	1.90884	2304	96
MW-4	4.21926	1.7273	0.0223529	1.73651	3222	94.7647
MW-11	3.71841	2.15526	-0.478503	1.95904	2117	96.2273
MW-12	3.77295	2.07844	-0.423957	1.95904	2121	96.4091

Analysis of Variance Statistics

SS Wells	3858.81
SS Total	13957.6

Kruskal-Wallis Statistics

Non-Detect Rank	92
Background Rank Sum	3223
Background Rank Mean	94.7941
H Statistic	15.0495
H Adjusted for Ties	54.1101

Basic Statistics

Parameter: Zinc, total

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

	Total Observations
204	
Total Non-Detects	142
Pooled Mean	58.2303
Pooled Std Dev	144.097
Background Mean	20.9638
Background Std Dev	8.16435

Background Wells

There is 1 background well

Well	Samples	Non-Detects	% ND	Total		
MW-1	34	30	88.2353	712.77		

Well	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	20.9638	8.16435	0	2764	81.2941

Compliance Wells

There are 6 compliance wells

Well	Samples	Non-Detects	% ND	Total		
MW-9	34	24	70.5882	942.13		
MW-3	34	12	35.2941	6132		
MW-6	24	16	66.6667	1118.77		
MW-4	34	23	67.6471	2154.13		
MW-11	22	18	81.8182	425.19		
MW-12	22	19	86.3636	393.99		

Well	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-9	27.7097	19.1063	6.74588	32.585	3409	100.265
MW-3	180.353	253.927	159.389	32.585	4977	146.382
MW-6	46.6154	99.7142	25.6516	35.8188	2511	104.625
MW-4	63.3568	189.035	42.3929	32.585	3547.5	104.338
MW-11	19.3268	12.9829	-1.63701	36.7608	1906	86.6364
MW-12	17.9086	10.6812	-3.05519	36.7608	1795.5	81.6136

Analysis of Variance Statistics

SS Wells	659160
SS Total	4.21506e+006

Kruskal-Wallis Statistics

Non-Detect Rank	71.5
Background Rank Sum	2764
Background Rank Mean	81.2941
H Statistic	27.6295
H Adjusted for Ties	41.6897

Basic Statistics

Parameter: Benzene

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

	Total Observations
205	
Total Non-Detects	193
Pooled Mean	2.02805
Pooled Std Dev	0.932002
Background Mean	2.04471
Background Std Dev	0.935794

Background Wells

There is 1 background well

Well	Samples	Non-Detects	% ND	Total		
MW-1	34	34	100	69.52		

Well	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	2.04471	0.935794	0	3298	97

Compliance Wells

There are 6 compliance wells

Well	Samples	Non-Detects	% ND	Total		
MW-9	34	34	100	69.52		
MW-3	34	32	94.1176	75.76		
MW-6	24	24	100	44.52		
MW-4	34	30	88.2353	72.7		
MW-11	22	22	100	39.52		
MW-12	23	17	73.913	44.21		

Well	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-9	2.04471	0.935794	0	0.22687	3298	97
MW-3	2.22824	0.872518	0.183529	0.22687	3512	103.294
MW-6	1.855	1.06244	-0.189706	0.249385	2328	97
MW-4	2.13824	0.785495	0.0935294	0.22687	3704	108.941
MW-11	1.79636	1.09227	-0.248342	0.255944	2134	97
MW-12	1.92217	0.928146	-0.122532	0.252543	2841	123.522

Analysis of Variance Statistics

SS Wells	3.95164
SS Total	177.2

Kruskal-Wallis Statistics

Non-Detect Rank	97
Background Rank Sum	3298
Background Rank Mean	97
H Statistic	4.26047
H Adjusted for Ties	25.7379

Basic Statistics

Parameter: Chloroethene

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

	Total Observations
205	
Total Non-Detects	197
Pooled Mean	4.05151
Pooled Std Dev	2.15176
Background Mean	4.07838
Background Std Dev	1.87459

Background Wells

There is 1 background well

Well	Samples	Non-Detects	% ND	Total		
MW-1	34	34	100	138.665		

Well	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	4.07838	1.87459	0	3366	99

Compliance Wells

There are 6 compliance wells

Well	Samples	Non-Detects	% ND	Total		
MW-9	34	34	100	138.665		
MW-3	34	32	94.1176	165.725		
MW-6	24	24	100	88.665		
MW-4	34	33	97.0588	139.095		
MW-11	22	21	95.4545	78.895		
MW-12	23	19	82.6087	80.85		

Well	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-9	4.07838	1.87459	0	0.519088	3366	99
MW-3	4.87426	2.80988	0.795882	0.519088	3577	105.206
MW-6	3.69438	2.12574	-0.384007	0.570604	2376	99
MW-4	4.09103	1.84869	0.0126471	0.519088	3467	101.971
MW-11	3.58614	2.16791	-0.492246	0.585611	2277	103.5
MW-12	3.51522	2.12227	-0.563165	0.57783	2686	116.783

Analysis of Variance Statistics

SS Wells	37.5584
SS Total	944.537

Kruskal-Wallis Statistics

Non-Detect Rank	99
Background Rank Sum	3366
Background Rank Mean	99
H Statistic	1.71861
H Adjusted for Ties	15.2676

Appendix B
Laboratory Analysis Report
Chains of Custody Field
Sampling Parameter Data Sheet(s)

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#: 6009

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

DATE COLLECTED: 01/12/10
DATE REPORTED : 02/05/10

REVIEWED BY: 

PARAMETERS	MDL	SWSL	Well #1	Well #3	Well #4	Well #6	Well #8	Analysis Date	Analyst	Method Code
PH (field measurement), Units			4.17	4.79	5.14	4.34		01/12/10	RJH	SM4500HB
Antimony, ug/l	0.06	6.0	0.1 J	---	0.1 J	0.1 J		01/14/10	LFJ	EPA200.8
Arsenic, ug/l	0.17	10.0	0.2 J	0.5 J	2.1 J	---		01/14/10	LFJ	EPA200.8
Barium, ug/l	0.04	100.0	45.8 J	31.5 J	21.7 J	51.5 J		01/14/10	LFJ	EPA200.8
Beryllium, ug/l	0.06	1.0	0.1 J	---	---	0.1 J		01/14/10	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.1 J	---	---	0.1 J		01/14/10	LFJ	EPA200.8
Cobalt, ug/l	0.02	10.0	1.5 J	0.1 J	0.5 J	0.6 J		01/14/10	LFJ	EPA200.8
Copper, ug/l	0.04	10.0	1.2 J	0.4 J	0.5 J	0.2 J		01/14/10	LFJ	EPA200.8
Total Chromium, ug/l	0.10	10.0	---	0.8 J	0.6 J	---		01/14/10	LFJ	EPA200.8
Lead, ug/l	0.04	10.0	0.8 J	0.4 J	---	0.6 J		01/14/10	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	1.6 J	0.4 J	0.6 J	0.8 J		01/14/10	LFJ	EPA200.8
Selenium, ug/l	0.12	10.0	---	---	---	---		01/14/10	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	0.7 J	0.1 J	0.1 J	0.1 J		01/14/10	LFJ	EPA200.8
Thallium, ug/l	0.03	5.0	0.1 J	---	---	---		01/14/10	LFJ	EPA200.8
Vanadium, ug/l	0.28	25.0	0.4 J	1.8 J	3.1 J	---		01/14/10	LFJ	EPA200.8
Zinc, ug/l	0.14	10.0	5.1 J	25	5.3 J	4.6 J		01/14/10	LFJ	EPA200.8
Turbidity, NTU	1.0	1.0	53.70	25.20	21.60	10.60		01/12/10	RJH	SM2130B
Conductivity (at 25c), uMhos	1.0	1.0	105	36	82	133		01/12/10	RJH	SM2510B
Temperature, °C			17.38	10.01	13.44	16.24		01/12/10	RJH	SM2550B
Static Water Level, feet			18.00	4.99	4.99	10.04	21.14	01/12/10	RJH	
Well Depth, feet			38.94	15.82	15.84	16.96		01/12/10	RJH	

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

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

DATE COLLECTED: 01/12/10
DATE REPORTED : 02/05/10

REVIEWED BY: 

PARAMETERS	MDL	SWSL	Well #9	Well #10	Well #11	Well #12	SW-1	Analysis Date	Analyst	Method Code		
PH (field measurement), Units			4.95		4.38	4.32	5.82	01/12/10	RJH	SM4500HB		
Antimony, ug/l	0.06	6.0	---	U	---	U	0.1 J	01/14/10	LFJ	EPA200.8		
Arsenic, ug/l	0.17	10.0	2.3 J		---	U	0.3 J	01/14/10	LFJ	EPA200.8		
Barium, ug/l	0.04	100.0	72.8 J		25.8 J		215	01/14/10	LFJ	EPA200.8		
Beryllium, ug/l	0.06	1.0	0.1 J		0.1 J		0.1 J	01/14/10	LFJ	EPA200.8		
Cadmium, ug/l	0.04	1.0	0.1 J		---	U	0.2 J	01/14/10	LFJ	EPA200.8		
Cobalt, ug/l	0.02	10.0	11		0.2 J		2.1 J	01/14/10	LFJ	EPA200.8		
Copper, ug/l	0.04	10.0	0.3 J		0.2 J		0.7 J	01/14/10	LFJ	EPA200.8		
Total Chromium, ug/l	0.10	10.0	---	U	---	U	0.4 J	01/14/10	LFJ	EPA200.8		
Lead, ug/l	0.04	10.0	0.1 J		---	U	---	U	0.2 J	01/14/10	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	3.2 J		0.4 J		3 J	01/14/10	LFJ	EPA200.8		
Selenium, ug/l	0.12	10.0	---	U	---	U	1.3 J	01/14/10	LFJ	EPA200.8		
Silver, ug/l	0.04	10.0	0.1 J		0.2 J		0.2 J	01/14/10	LFJ	EPA200.8		
Thallium, ug/l	0.03	5.0	0.1 J		---	U	---	U	0.1 J	01/14/10	LFJ	EPA200.8
Vanadium, ug/l	0.28	25.0	0.6 J		---	U	0.5 J	01/14/10	LFJ	EPA200.8		
Zinc, ug/l	0.14	10.0	11		2.3 J		1.8 J	01/14/10	LFJ	EPA200.8		
Turbidity, NTU	1.0	1.0	16.70		8.04		2.57	01/12/10	RJH	SM2130B		
Conductivity (at 25c), uMhos	1.0	1.0	170		47		224	01/12/10	RJH	SM2510B		
Temperature, °C			18.95		18.22		20.28	01/12/10	RJH	SM2550B		
Static Water Level, feet			5.18	22.26	12.67		15.11	01/12/10	RJH			
Well Depth, feet			21.82		35.61		38.39	01/12/10	RJH			

Environment 1, Incorporated

Drinking Water ID: 3715
Wastewater ID: 10

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

PHONE (252) 756-6208
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ID#: 6009

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

DATE COLLECTED: 01/12/10
DATE REPORTED : 02/05/10

REVIEWED BY: 

PARAMETERS	MDL	SWSL	* SW-3	Trip	Equipment	Analysis		Method
				Blank	Blank	Date	Analyst	Code
PH (field measurement), Units			5.8			01/11/10	RJH	SM4500HB
Antimony, ug/l	0.06	6.0	0.1 J	---	U	01/14/10	LFJ	EPA200.8
Arsenic, ug/l	0.17	10.0	0.2 J	---	U	01/14/10	LFJ	EPA200.8
Barium, ug/l	0.04	100.0	50.6 J	0.1 J	U	01/14/10	LFJ	EPA200.8
Beryllium, ug/l	0.06	1.0	---	U	U	01/14/10	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	---	U	U	01/14/10	LFJ	EPA200.8
Cobalt, ug/l	0.02	10.0	0.1 J	---	U	01/14/10	LFJ	EPA200.8
Copper, ug/l	0.04	10.0	0.6 J	---	U	01/14/10	LFJ	EPA200.8
Total Chromium, ug/l	0.10	10.0	0.2 J	---	U	01/14/10	LFJ	EPA200.8
Lead, ug/l	0.04	10.0	0.1 J	---	U	01/14/10	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	0.4 J	---	U	01/14/10	LFJ	EPA200.8
Selenium, ug/l	0.12	10.0	---	U	U	01/14/10	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	---	U	0.1 J	01/14/10	LFJ	EPA200.8
Thallium, ug/l	0.03	5.0	---	U	---	01/14/10	LFJ	EPA200.8
Vanadium, ug/l	0.28	25.0	0.5 J	0.3 J	U	01/14/10	LFJ	EPA200.8
Zinc, ug/l	0.14	10.0	6.4 J	---	U	01/14/10	LFJ	EPA200.8
Turbidity, NTU	0.14	10.0						
Conductivity (at 25c), uMhos	0.14	10.0	129			01/11/10	RJH	SM2510B
Temperature, °C	0.14	10.0	5			01/11/10	RJH	SM2550B

* COLLECTED ON 01/11/10

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

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

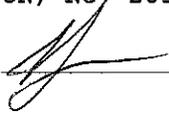
PHONE (252) 756-6208
FAX (252) 756-0633

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

CLIENT ID: 6009

ANALYST: MAO
DATE COLLECTED: 01/12/10
DATE ANALYZED: 01/18/10
DATE REPORTED: 02/05/10

Page: 1

REVIEWED BY: 

VOLATILE ORGANICS EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Well #1	Well #3	Well #4	Well #6	Well #9
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	--- U	--- U	0.20 J	--- U
31. 2-Hexanone	1.57	50.0	--- U				
32. Dibromochloromethane	0.24	3.0	--- U				
33. 1,2-Dibromoethane	0.26	1.0	--- U				
34. Chlorobenzene	0.30	3.0	--- U				
35. 1,1,1,2-Tetrachloroethane	0.22	5.0	--- U				
36. Ethylbenzene	0.21	1.0	--- U				
37. Xylenes	0.68	5.0	--- U				
38. Dibromomethane	0.28	10.0	--- U				
39. Styrene	0.19	1.0	--- U				
40. Bromoform	0.20	3.0	--- U				
41. 1,1,2,2-Tetrachloroethane	0.26	3.0	--- U				
42. 1,2,3-Trichloropropane	0.43	1.0	--- U				
43. 1,4-Dichlorobenzene	0.39	1.0	--- U				
44. 1,2-Dichlorobenzene	0.32	5.0	--- U				
45. 1,2-Dibromo-3-Chloropropane	0.34	13.0	--- U				
46. Acrylonitrile	2.72	200.0	--- U				
47. trans-1,4-Dichloro-2-Butene	0.42	100.0	--- U				

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

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

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

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

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

CLIENT ID: 6009
ANALYST: MAO
DATE COLLECTED: 01/12/10 Page: 2
DATE ANALYZED: 01/18/10
DATE REPORTED: 02/05/10

REVIEWED BY: 

VOLATILE ORGANICS EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Well #11	Well #12	SW-1	Trip Blank	Equipment Blank
1. Chloromethane	0.77	1.0	--- U	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.63	1.0	--- U	0.80 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	2.50	--- 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	0.40 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 Quantitation Limits.

Environment 1, Incorporated

Drinking Water ID: 37715
Wastewater ID: 10

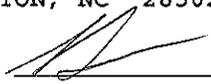
P.O. BOX 7085, 114 OAKMONT DRIVE
GREENVILLE, N.C. 27835-7085

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

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

CLIENT ID: 6009 B

ANALYST: MAO
DATE COLLECTED: 01/11/10 Page: 1
DATE ANALYZED: 01/13/10
DATE REPORTED: 02/15/10

REVIEWED BY: 

VOLATILE ORGANICS EPA METHOD 8260B

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

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

February 26, 2010

Mr. Jonathan Pfohl
Municipal Engineering Services
PO Box 97
Garner, NC 27529

RE: Project: Lenoir MSWLF-Closed
Pace Project No.: 9263686

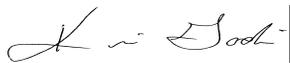
Dear Mr. Pfohl:

Enclosed are the analytical results for sample(s) received by the laboratory on February 19, 2010. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Inorganic Wet Chemistry and Metals analyses were performed at our Pace Asheville laboratory and Organic testing was performed at our Pace Huntersville laboratory unless otherwise footnoted. All Microbiological analyses were performed at the laboratory where the samples were received.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Godwin

kevin.godwin@pacelabs.com
Project Manager

Enclosures

cc: Ms. Maggie German, Municipal Engineering Services

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Lenoir MSWLF-Closed

Pace Project No.: 9263686

Charlotte Certification IDs

9800 Kinsey Ave. - Ste 100 Huntersville, NC 28078

Connecticut Certification #: PH-0104

Virginia Certification #: 00213

Tennessee Certification #: 04010

South Carolina Drinking Water Cert. #: 990060003

South Carolina Certification #: 990060001

Pennsylvania Certification #: 68-00784

North Carolina Wastewater Certification #: 12

North Carolina Field Services Certification #: 5342

North Carolina Drinking Water Certification #: 37706

New Jersey Certification #: NC012

Louisiana/LELAP Certification #: 04034

Kentucky UST Certification #: 84

Florida/NELAP Certification #: E87627

West Virginia Certification #: 357

REPORT OF LABORATORY ANALYSIS

Page 2 of 10

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SAMPLE SUMMARY

Project: Lenoir MSWLF-Closed
Pace Project No.: 9263686

Lab ID	Sample ID	Matrix	Date Collected	Date Received
9263686001	MW-12	Water	02/18/10 15:30	02/19/10 15:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Lenoir MSWLF-Closed
Pace Project No.: 9263686

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
9263686001	MW-12	EPA 8260	MCK	52	PASI-C

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Lenoir MSWLF-Closed

Pace Project No.: 9263686

Sample: MW-12 **Lab ID: 9263686001** Collected: 02/18/10 15:30 Received: 02/19/10 15:30 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
8260 MSV Low Level		Analytical Method: EPA 8260							
Acetone	ND ug/L		100	2.2	1		02/23/10 01:31	67-64-1	
Acrylonitrile	ND ug/L		200	1.9	1		02/23/10 01:31	107-13-1	
Benzene	0.93J ug/L		1.0	0.25	1		02/23/10 01:31	71-43-2	
Bromochloromethane	ND ug/L		3.0	0.17	1		02/23/10 01:31	74-97-5	
Bromodichloromethane	ND ug/L		1.0	0.18	1		02/23/10 01:31	75-27-4	
Bromoform	ND ug/L		3.0	0.26	1		02/23/10 01:31	75-25-2	
Bromomethane	ND ug/L		10.0	0.29	1		02/23/10 01:31	74-83-9	
2-Butanone (MEK)	ND ug/L		100	0.96	1		02/23/10 01:31	78-93-3	
Carbon disulfide	ND ug/L		100	1.2	1		02/23/10 01:31	75-15-0	
Carbon tetrachloride	ND ug/L		1.0	0.25	1		02/23/10 01:31	56-23-5	
Chlorobenzene	ND ug/L		3.0	0.23	1		02/23/10 01:31	108-90-7	
Chloroethane	ND ug/L		10.0	0.54	1		02/23/10 01:31	75-00-3	
Chloroform	ND ug/L		5.0	0.14	1		02/23/10 01:31	67-66-3	
Chloromethane	ND ug/L		1.0	0.11	1		02/23/10 01:31	74-87-3	
1,2-Dibromo-3-chloropropane	ND ug/L		13.0	2.5	1		02/23/10 01:31	96-12-8	
Dibromochloromethane	ND ug/L		3.0	0.21	1		02/23/10 01:31	124-48-1	
1,2-Dibromoethane (EDB)	ND ug/L		1.0	0.27	1		02/23/10 01:31	106-93-4	
Dibromomethane	ND ug/L		10.0	0.21	1		02/23/10 01:31	74-95-3	
1,2-Dichlorobenzene	ND ug/L		5.0	0.30	1		02/23/10 01:31	95-50-1	
1,4-Dichlorobenzene	ND ug/L		1.0	0.33	1		02/23/10 01:31	106-46-7	
trans-1,4-Dichloro-2-butene	ND ug/L		100	1.0	1		02/23/10 01:31	110-57-6	
1,1-Dichloroethane	ND ug/L		5.0	0.32	1		02/23/10 01:31	75-34-3	
1,2-Dichloroethane	ND ug/L		1.0	0.12	1		02/23/10 01:31	107-06-2	
1,1-Dichloroethene	ND ug/L		5.0	0.56	1		02/23/10 01:31	75-35-4	
cis-1,2-Dichloroethene	ND ug/L		5.0	0.19	1		02/23/10 01:31	156-59-2	
trans-1,2-Dichloroethene	ND ug/L		5.0	0.49	1		02/23/10 01:31	156-60-5	
1,2-Dichloropropane	ND ug/L		1.0	0.27	1		02/23/10 01:31	78-87-5	
1,3-Dichloropropane	ND ug/L		1.0	0.28	1		02/23/10 01:31	142-28-9	
cis-1,3-Dichloropropene	ND ug/L		1.0	0.13	1		02/23/10 01:31	10061-01-5	
trans-1,3-Dichloropropene	ND ug/L		1.0	0.26	1		02/23/10 01:31	10061-02-6	
Ethylbenzene	ND ug/L		1.0	0.30	1		02/23/10 01:31	100-41-4	
2-Hexanone	ND ug/L		50.0	0.46	1		02/23/10 01:31	591-78-6	
Iodomethane	ND ug/L		10.0	0.32	1		02/23/10 01:31	74-88-4	
Methylene Chloride	ND ug/L		2.0	0.97	1		02/23/10 01:31	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND ug/L		100	0.33	1		02/23/10 01:31	108-10-1	
Styrene	ND ug/L		1.0	0.26	1		02/23/10 01:31	100-42-5	
1,1,1,2-Tetrachloroethane	ND ug/L		5.0	0.33	1		02/23/10 01:31	630-20-6	
1,1,2,2-Tetrachloroethane	ND ug/L		3.0	0.40	1		02/23/10 01:31	79-34-5	
Tetrachloroethene	ND ug/L		1.0	0.46	1		02/23/10 01:31	127-18-4	
Toluene	ND ug/L		1.0	0.26	1		02/23/10 01:31	108-88-3	
1,1,1-Trichloroethane	ND ug/L		1.0	0.48	1		02/23/10 01:31	71-55-6	
1,1,2-Trichloroethane	ND ug/L		1.0	0.29	1		02/23/10 01:31	79-00-5	
Trichloroethene	ND ug/L		1.0	0.47	1		02/23/10 01:31	79-01-6	
Trichlorofluoromethane	ND ug/L		1.0	0.20	1		02/23/10 01:31	75-69-4	
1,2,3-Trichloropropane	ND ug/L		1.0	0.41	1		02/23/10 01:31	96-18-4	
Vinyl acetate	ND ug/L		50.0	0.35	1		02/23/10 01:31	108-05-4	

Date: 02/26/2010 06:42 PM

REPORT OF LABORATORY ANALYSIS

Page 5 of 10

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ANALYTICAL RESULTS

Project: Lenoir MSWLF-Closed

Pace Project No.: 9263686

Sample: MW-12		Lab ID: 9263686001		Collected: 02/18/10 15:30		Received: 02/19/10 15:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260							
Vinyl chloride	ND	ug/L	1.0	0.62	1		02/23/10 01:31	75-01-4	
Xylene (Total)	ND	ug/L	2.0	0.66	1		02/23/10 01:31	1330-20-7	
4-Bromofluorobenzene (S)	99 %		87-109		1		02/23/10 01:31	460-00-4	
Dibromofluoromethane (S)	105 %		85-115		1		02/23/10 01:31	1868-53-7	
1,2-Dichloroethane-d4 (S)	122 %		79-120		1		02/23/10 01:31	17060-07-0	S3
Toluene-d8 (S)	99 %		70-120		1		02/23/10 01:31	2037-26-5	

QUALITY CONTROL DATA

Project: Lenoir MSWLF-Closed
Pace Project No.: 9263686

QC Batch: MSV/10042 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 9263686001

METHOD BLANK: 405667 Matrix: Water
Associated Lab Samples: 9263686001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	5.0	02/22/10 23:31	
1,1,1-Trichloroethane	ug/L	ND	1.0	02/22/10 23:31	
1,1,2,2-Tetrachloroethane	ug/L	ND	3.0	02/22/10 23:31	
1,1,2-Trichloroethane	ug/L	ND	1.0	02/22/10 23:31	
1,1-Dichloroethane	ug/L	ND	5.0	02/22/10 23:31	
1,1-Dichloroethene	ug/L	ND	5.0	02/22/10 23:31	
1,2,3-Trichloropropane	ug/L	ND	1.0	02/22/10 23:31	
1,2-Dibromo-3-chloropropane	ug/L	ND	13.0	02/22/10 23:31	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	02/22/10 23:31	
1,2-Dichlorobenzene	ug/L	ND	5.0	02/22/10 23:31	
1,2-Dichloroethane	ug/L	ND	1.0	02/22/10 23:31	
1,2-Dichloropropane	ug/L	ND	1.0	02/22/10 23:31	
1,3-Dichloropropane	ug/L	ND	1.0	02/22/10 23:31	
1,4-Dichlorobenzene	ug/L	ND	1.0	02/22/10 23:31	
2-Butanone (MEK)	ug/L	ND	100	02/22/10 23:31	
2-Hexanone	ug/L	ND	50.0	02/22/10 23:31	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	100	02/22/10 23:31	
Acetone	ug/L	ND	100	02/22/10 23:31	
Acrylonitrile	ug/L	ND	200	02/22/10 23:31	
Benzene	ug/L	ND	1.0	02/22/10 23:31	
Bromochloromethane	ug/L	ND	3.0	02/22/10 23:31	
Bromodichloromethane	ug/L	ND	1.0	02/22/10 23:31	
Bromoform	ug/L	ND	3.0	02/22/10 23:31	
Bromomethane	ug/L	ND	10.0	02/22/10 23:31	
Carbon disulfide	ug/L	ND	100	02/22/10 23:31	
Carbon tetrachloride	ug/L	ND	1.0	02/22/10 23:31	
Chlorobenzene	ug/L	ND	3.0	02/22/10 23:31	
Chloroethane	ug/L	ND	10.0	02/22/10 23:31	
Chloroform	ug/L	ND	5.0	02/22/10 23:31	
Chloromethane	ug/L	ND	1.0	02/22/10 23:31	
cis-1,2-Dichloroethene	ug/L	ND	5.0	02/22/10 23:31	
cis-1,3-Dichloropropene	ug/L	ND	1.0	02/22/10 23:31	
Dibromochloromethane	ug/L	ND	3.0	02/22/10 23:31	
Dibromomethane	ug/L	ND	10.0	02/22/10 23:31	
Ethylbenzene	ug/L	ND	1.0	02/22/10 23:31	
Iodomethane	ug/L	ND	10.0	02/22/10 23:31	
Methylene Chloride	ug/L	ND	2.0	02/22/10 23:31	
Styrene	ug/L	ND	1.0	02/22/10 23:31	
Tetrachloroethene	ug/L	ND	1.0	02/22/10 23:31	
Toluene	ug/L	ND	1.0	02/22/10 23:31	
trans-1,2-Dichloroethene	ug/L	ND	5.0	02/22/10 23:31	
trans-1,3-Dichloropropene	ug/L	ND	1.0	02/22/10 23:31	
trans-1,4-Dichloro-2-butene	ug/L	ND	100	02/22/10 23:31	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Lenoir MSWLF-Closed

Pace Project No.: 9263686

METHOD BLANK: 405667

Matrix: Water

Associated Lab Samples: 9263686001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Trichloroethene	ug/L	ND	1.0	02/22/10 23:31	
Trichlorofluoromethane	ug/L	ND	1.0	02/22/10 23:31	
Vinyl acetate	ug/L	ND	50.0	02/22/10 23:31	
Vinyl chloride	ug/L	ND	1.0	02/22/10 23:31	
Xylene (Total)	ug/L	ND	2.0	02/22/10 23:31	
1,2-Dichloroethane-d4 (S)	%	118	79-120	02/22/10 23:31	
4-Bromofluorobenzene (S)	%	98	87-109	02/22/10 23:31	
Dibromofluoromethane (S)	%	105	85-115	02/22/10 23:31	
Toluene-d8 (S)	%	99	70-120	02/22/10 23:31	

LABORATORY CONTROL SAMPLE: 405668

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	57.1	114	83-125	
1,1,1-Trichloroethane	ug/L	50	59.1	118	80-129	
1,1,2,2-Tetrachloroethane	ug/L	50	52.9	106	73-127	
1,1,2-Trichloroethane	ug/L	50	54.9	110	77-123	
1,1-Dichloroethane	ug/L	50	57.4	115	76-129	
1,1-Dichloroethene	ug/L	50	58.1	116	78-146	
1,2,3-Trichloropropane	ug/L	50	54.4	109	72-125	
1,2-Dibromo-3-chloropropane	ug/L	50	59.7	119	65-128	
1,2-Dibromoethane (EDB)	ug/L	50	55.8	112	81-125	
1,2-Dichlorobenzene	ug/L	50	57.9	116	82-126	
1,2-Dichloroethane	ug/L	50	58.8	118	72-126	
1,2-Dichloropropane	ug/L	50	55.2	110	80-127	
1,3-Dichloropropane	ug/L	50	55.9	112	79-124	
1,4-Dichlorobenzene	ug/L	50	56.9	114	79-125	
2-Butanone (MEK)	ug/L	100	125	125	50-134	
2-Hexanone	ug/L	100	126	126	58-138	
4-Methyl-2-pentanone (MIBK)	ug/L	100	125	125	70-131	
Acetone	ug/L	100	128	128	50-146	
Acrylonitrile	ug/L	250	332	133	66-124 L3	
Benzene	ug/L	50	53.9	108	78-128	
Bromochloromethane	ug/L	50	49.3	99	73-124	
Bromodichloromethane	ug/L	50	53.8	108	81-125	
Bromoform	ug/L	50	56.6	113	71-125	
Bromomethane	ug/L	50	47.8	96	50-150	
Carbon disulfide	ug/L	50	54.9J	110	54-150	
Carbon tetrachloride	ug/L	50	61.4	123	81-137	
Chlorobenzene	ug/L	50	56.3	113	82-126	
Chloroethane	ug/L	50	46.4	93	69-140	
Chloroform	ug/L	50	52.7	105	77-129	
Chloromethane	ug/L	50	60.9	122	54-139	
cis-1,2-Dichloroethene	ug/L	50	51.2	102	76-133	
cis-1,3-Dichloropropene	ug/L	50	55.0	110	76-127	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Lenoir MSWLF-Closed

Pace Project No.: 9263686

LABORATORY CONTROL SAMPLE: 405668

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Dibromochloromethane	ug/L	50	55.6	111	77-125	
Dibromomethane	ug/L	50	54.0	108	77-125	
Ethylbenzene	ug/L	50	57.9	116	80-127	
Iodomethane	ug/L	100	103	103	65-172	
Methylene Chloride	ug/L	50	58.1	116	67-133	
Styrene	ug/L	50	58.4	117	80-130	
Tetrachloroethene	ug/L	50	54.9	110	78-128	
Toluene	ug/L	50	53.9	108	76-126	
trans-1,2-Dichloroethene	ug/L	50	55.3	111	78-134	
trans-1,3-Dichloropropene	ug/L	50	56.7	113	75-125	
trans-1,4-Dichloro-2-butene	ug/L	50	67.1J	134	51-140	
Trichloroethene	ug/L	50	54.9	110	79-127	
Trichlorofluoromethane	ug/L	50	56.5	113	76-148	
Vinyl acetate	ug/L	100	129	129	50-150	
Vinyl chloride	ug/L	50	52.7	105	67-143	
Xylene (Total)	ug/L	150	181	121	83-125	
1,2-Dichloroethane-d4 (S)	%			111	79-120	
4-Bromofluorobenzene (S)	%			100	87-109	
Dibromofluoromethane (S)	%			100	85-115	
Toluene-d8 (S)	%			98	70-120	

QUALIFIERS

Project: Lenoir MSWLF-Closed

Pace Project No.: 9263686

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

U - Indicates the compound was analyzed for, but not detected.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

L3 Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.

S3 Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.

