Semi-Annual Assessment Monitoring and Statistical Analysis Report

Prepared for

Greene County Closed MSWLF and Active C&D Landfill
Walstonburg, North Carolina

March 2009

Permit Number: 40-02
MESCO Project Number: G09010.0

Completed on September 22, 2009

Municipal Services Garner, NC
Engineering Company, P.A. Boone, NC
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)
Greene County Closed Unlined MSWLF and Active C&D Landfill	105 Landfill Road Walstonburg, NC 27888	40-02	.1600	March 30, 2009

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.

Jonathan Pfohl — Facility Representative Name (Print)

Environmental Specialist — Title

(919)772-5393 — (Area Code) Telephone Number

Signature

9/22/09 — Date

Affix NC Licensed/ Professional Geologist Seal

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

OPERATION/CONSTRUCTION MANAGERS

Municipal Services

CIVIL/SANITARY ENGINEERS

Engineering Company, P.A.

September 22, 2009

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: Groundwater Sampling Report and Statistical Analysis
Greene County Closed unlined MSWLF and Active C&D Landfill
Permit No. 40-02
MESCO Project No. G09010.0

Dear Ms. Drummond:

Introduction

The Greene County Closed Unlined MSWLF and Active Construction and Demolition (C&D) Landfill located near Walstonburg NC, currently operating under permit #40-02 is required to submit semi-annual compliance reports as a condition of 15A NCAC 13B.1630. This event was completed on March 30, 2009 and performed according to the semi-annual monitoring schedule prescribed by the NC Solid Waste Section rules/regulations.

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 treated as a single unit for overall continuity in reporting and are monitored under the .1600 rules. The assessment monitoring program consists of six groundwater and two surface water sampling locations. This report includes a summary of field procedures, laboratory analysis, statistical analysis, tables and graphs of current/historical data, single-day potentiometric map with flow directions/rates, and the complete laboratory analytical report.

Sampling Procedure

Environment 1 Inc., (E1) of Greenville, NC performed this sampling event. This event consisted of collection of water samples from five downgradient groundwater monitoring wells (MW-4, MW-5, MW-6, MW-7, MW-8), one background well (MW-1R), and two surface water sampling points (Upstream, Downstream) with all locations shown upon the enclosed single-day potentiometric map or the separate surface water map.

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. The depth to water in each well was gaged prior to purging to quantify the static water level and utilized for construction of the attached single-day potentiometric map. The required field parameters (pH, specific conductance, and temperature) were also reported.

E1 field personnel reportedly collected all samples in laboratory prepared prepreserved containers and transported to E1's laboratory in Greenville NC under proper chain of custody (C-O-C) within the specified hold times for each analysis.

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PO Box 828, Morehead City, NC 28557 (252) 726-9481 PO Box 349, Boone, North Carolina 28607 (828) 262-1767

Field and Laboratory Results

All of the groundwater monitoring wells and surface water monitoring locations contained in the Sampling and Analysis Plan (SAP) adopted from the Transition Plan were sampled during this event. All of the water samples were analyzed for the complete Appendix I list of volatile organic compounds (VOCs) and total metals. Additional water samples were obtained from every monitoring well and analyzed for the C&D parameter list as outlined in 15A NCAC 13B.0544 (D) which includes (alkalinity, sulfate, TSS, iron, manganese, chloride, and mercury). The data for all of the C&D parameters are presented in this report but since this specific facility is operating under the .1600 rules and has been in operation prior to promulgation of 15A NCAC 13B .0547, they are exempt from these additional parameters outlined in 15A NCAC 13B .0544. This facility is required to monitor in accordance with .1634-.1637. Quality control measures were also implemented during this event which included submittal and subsequent quantification of a trip (TB) and equipment (EB) blanks.

The field parameters are included in the laboratory analysis report and the data appears to be generally consistent relative to each other and congruent with data historically reported. All water samples were analyzed utilizing the stringent Method Detection Limits (MDL) with reference to the Solid Waste Section detection limit (SWSL) values current as of the sampling event. All detected constituents were referenced to the Groundwater Protection Standards (GWP) and compared to the North Carolina Groundwater Standards (NCGW2L) or the North Carolina Surface Water Standards (NCSW2B) for regulatory exceedance. The results are shown in the enclosed tables titled "Detection Scan".

This is the first event since monitoring was initiated in 1994 that no quantifiable Appendix I Inorganic constituents (total metals) were detected from any downgradient monitoring location. However, barium was detected in a concentration bove the SWSL within the upgradient background well MW-1R during this event. Low levels of zinc in concentrations well below the applicable NCSW2B Standard was the only parameter detected in quantifiable concentrations from both the upstream and downstream points.

The following Table 1 summarize those VOC constituents that exceeded the NCGW2L Standard during this monitoring event.

Table 1. NCGW2L Exceedance Summary (VOCs)

Well	Benzene	1,4-DCB	VCM	Cumulative Total
NCGW2L	1	1.4	0.015	-
MW-4	*5.8*	*7.2*	*10.2*	23.2
MW-5			*2.3*	2.3
Total	5.8	7.2	12.5	25.5

Italicized indicates detected above own respective historical identified range. "j" <SWSL therefore estimated concentration
concentration shown in uq/L

VOC(s) were only detected in concentrations above the MDL within downgradient wells MW-4 and MW-5 during this event. Monitoring well MW-4 continues to contain a mixture of dissolved phase aromatic hydrocarbons and the chlorinated aliphatic hydrocarbon (CAHs). Benzene, 1,4-DCB, and vinyl chloride were detected in concentrations in exceedance of the NCGW2L Standard within MW-4. MW-5 yielded a water sample containing only a concentration of vinyl chloride which was detected above the NCGW2L Standard. All VOCs detected above the NCGW2L Standard within both MW-4 and MW-5 were found outside of their own respective historically identified range during this event. Generally all of the detected VOCs are not grossly elevated, typical of contaminants commonly found in groundwater at MSWLF facilities and the source is likely attributed to leachate/ landfill gas (LFG) that originated from the closed unlined MSWLF.

Statistical Analysis

MESCO also completed the statistical analysis as required by the Solid Waste Section (SWS). The statistical analysis was conducted upon all of the monitoring wells surrounding the entire lined landfill. The purpose of these analyses is to determine, in comparison to background levels, statistical significance of the closed MSWLF parameters (Appendix I) constituents detected during the March 2009 event. No Appendix I metals were detected in quantifiable concentrations within any of the downgradient wells therefore statistical analysis was only conducted upon VOC constituents.

Poisson Prediction Interval (VOCs)

All historical VOC detections in the background well MW-1R were pooled 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. 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 students 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. The value of Student's t -Statistic was derived from tabulated values included in Gibbons (1994).

Results

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 all of the analytes detected above the NCGW2L Standard. Time series plots were also visually evaluated for seasonality and "outliers" (defined as data that appears to be incongruent with respect to historical results). No apparent outliers or seasonality of the analytical data was observed in the latest data record.

The Poisson Tolerance Interval at a 95% confidence level was completed for all of the VOCs detected above the SWSL. Due to the lack of historical VOC detections within the background well any VOC detection is considered statistically significant via the Poisson Tolerance Interval. Downgradient MW-4 and MW-5 were the only monitoring location found to be impacted statistically by VOCs and the detections are summarized in the following table 2.

Table 2. Poisson Tolerance Interval Analyses Summary for VOCs

Well	1,4-DCB	Benzene	Toluene	EB	Cis-1,2DCE	DCM	EtCl	VCM	Cumulative	Maximum Historical Cumulative
MW-4	***7.2***	***5.8***	1.6	3.2	14	1.3	*18.3*	***10.2***	61.6	145.2
MW-5								***2.3***	2.3	
Total	7.2	5.8	1.6	3.2	14	1.3	18.3	12.5	63.9	145.2

Bold indicates detected >= NCGW2L Italicized *indicates detected above own respective historical identified range.*
concentration shown in uq/L

Sitewide cumulative quantifiable VOC concentrations were found at 63.9 ug/L or at the approximate 60th percentile which is a 56% reduction compared to the preceding September 2008 event. However, It is important to note that the detection of acetone at (103 ug/L) within MW-4 during the preceding event skewed the cumulative VOC total. Acetone was absent in quantifiable concentrations during this event. Results of temporal trend analysis at a 95% confidence level through Sen's Slope Estimator and Mann Kendall analysis indicate that the site-wide cumulative VOC concentrations have continued to increase since VOCs began to be detected within MW-4 in 2005.

The total cumulative concentrations of quantifiable VOC detections within MW-4 during this event was found at 61.6 uq/L or at the approximate 35th percentile for this respective location. All VOCs detected within MW-4 have previously been detected within this location with five of the eight quantifiable VOC detections found in concentrations above their respective historical range. Monitoring wells MW-7 and MW-8, installed to delineate the

the VOC migration observed in MW-4, continue to lack quantifiable concentrations of metals or VOCs indicating that the impact is isolated in the eastern direction.

Vinyl Chloride was detected from a water sample extracted from MW-5 during this event. This is the premier event that a water sample taken from downgradient MW-5 has contained a quantifiable VOC detection since it was installed in 1994.

Groundwater and Surface Water Characterization

MESCO completed and enclosed the required single day potentiometric map from ground water elevation data reported by E1 during this event. Groundwater flow rates and directions were also calculated based upon this data and are included in the attached table. The flow directions were calculated to be in a general southeast direction and calculated flow rates ranged from approximately 5ft./yr. (MW-4) to 77 ft./yr. (MW-8) averaging approximately 27 ft./yr.

Conclusion

The statistical analysis results conclude that the surficial aquifer in close proximity to MW-4 continues to be impacted by dissolved phase VOCs. The premier detection of vinyl chloride within a sample obtained from MW-5 is also considered statistically significant. There is evidence that the contamination remains within the relevant point of compliance and natural attenuation is ongoing. The closed MSWLF has a cohesive cap to reduce percolation/leachate generation, institutional controls are in place, and there are no known potential receptors within 2,000 feet of the property boundary.

The SWS has approved monitored natural attenuation (MNA) as the remedy for the groundwater contamination. During the next sampling event which is tentatively scheduled for September 2009 MNA performance monitoring is expected to commence. Please contact me 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.

Jonathan Pfohl
Environmental Specialist

Enclosures
cc: Mr. David Jones
Greene County

Detection Scan All Detections above either SWSL, GWP, NCGW2L or NCSW2B
Greene County Closed MSWLF and Active C&D Landfill

Well ID	Parameter Name [1]	Sample Date	Result	Unit	MDL [2]	SWSL [3]	2L [4]	2B [5]	GWP [6]	Exceedance	Preliminary Cause
MW-1R	Barium	3/30/09	327	ug/l	0.04	100	2000				
MW-1R	Chloride	3/30/09	210000	ug/l	5000	5000	250000				
MW-1R	**Iron**	**3/30/09**	**506**	**ug/l**	**14.0**	**300**	**300**			**206**	**Natural**
MW-1R	**Manganese**	**3/30/09**	**57**	**ug/l**	**0.50**	**50**	**50**			**7**	**Natural**
MW-1R	Total Dissolved Solids	3/30/09	488000	ug/l	1000	1000	500000				
MW-4	**1,4-Dichlorobenzene**	**3/30/09**	**7.2**	**ug/l**	**0.21**	**1**	**1.4**			**5.8**	**Leachate &/or LFG**
MW-4	**Benzene**	**3/30/09**	**5.8**	**ug/l**	**0.16**	**1**	**1**			**4.8**	**Leachate &/or LFG**
MW-4	Chloroethane	3/30/09	18.3	ug/l	0.29	10	2800				
MW-4	Cis-1,2-Dichloroethene	3/30/09	14	ug/l	0.14	5	70				
MW-4	Ethylbenzene	3/30/09	3.2	ug/l	0.16	1	550				
MW-4	**Iron**	**3/30/09**	**84650**	**ug/l**	**14.0**	**300**	**300**			**84350**	**Natural**
MW-4	**Manganese**	**3/30/09**	**167**	**ug/l**	**0.50**	**50**	**50**			**117**	**Natural**
MW-4	Methylene Chloride	3/30/09	1.3	ug/l	0.14	1	4.6				
MW-4	Toluene	3/30/09	1.6	ug/l	0.13	1	1000				
MW-4	Total Dissolved Solids	3/30/09	234000	ug/l	1000	1000	500000				
MW-4	**Vanadium**	**3/30/09**	**4.3[j]**	**ug/l**	**0.28**	25			**3.5**	**0.8**	
MW-4	**Vinyl Chloride**	**3/30/09**	**10.2**	**ug/l**	**0.34**	**1**	**0.015**			**10.185**	**Leachate &/or LFG**
MW-5	Chloride	3/30/09	15000	ug/l	5000	5000	250000				
MW-5	**Iron**	**3/30/09**	**28175**	**ug/l**	**14.0**	**300**	**300**			**27875**	**Natural**
MW-5	Total Dissolved Solids	3/30/09	84000	ug/l	1000	1000	500000				
MW-5	**Vinyl Chloride**	**3/30/09**	**2.3**	**ug/l**	**0.34**	**1**	**0.015**			**2.285**	**Leachate &/or LFG**
MW-6	Chloride	3/30/09	8000	ug/l	5000	5000	250000				
MW-6	**Iron**	**3/30/09**	**908**	**ug/l**	**14.0**	**300**	**300**			**608**	**Natural**
MW-6	Total Dissolved Solids	3/30/09	70000	ug/l	1000	1000	500000				
MW-7	Chloride	3/30/09	5000	ug/l	5000	5000	250000				
MW-7	Total Dissolved Solids	3/30/09	42000	ug/l	1000	1000	500000				
MW-8	Total Dissolved Solids	3/30/09	44000	ug/l	1000	1000	500000				
Upstream	Zinc	3/30/09	10	ug/l	0.14	10		50			
Downstream	Zinc	3/30/09	15	ug/l	0.14	10		50			

[1] Table only contains detected constituents detected above the SWSL, GWP, NCGW2L or NCSW2B Standards
[2] MDL = Method Detection Limit
[3] SWSL = Solid Waste Section Reporting Limit (Current as of Sampling Event)
[4] 2L = North Carolina Ground Water 2L Standard (Current as of Sampling Event)
[5] 2B = North Carolina Surface Water 2B Standard for Specific Stream Classification (Current as of Sampling Event)
LFG = Landfill Gas
NE = Not Established
BOLD = Concentration >GWP, NCGW2L, or NCSW2B Standard (Current as of Sampling Event)

Detection Scan All Detections Reported by Laboratory
Greene County Closed MSWLF and Active C&D Landfill

Well ID	Parameter Name [1]	Sample Date	Result	Unit	MDL [2]	SWSL [3]	2L [4]	2B [5]	GWP [6]	Exceedance	Preliminary Cause
MW-1R	Barium	3/30/09	327	ug/l	0.04	100.0	2000				
MW-1R	Beryllium	3/30/09	0.4	ug/l	0.06	1.0			4		
MW-1R	Cadmium	3/30/09	0.2	ug/l	0.04	1.0	1.75				
MW-1R	Chloride	3/30/09	210000	ug/l	5000	5000	250000				
MW-1R	Chromium	3/30/09	0.2	ug/l	0.10	10.0	50				
MW-1R	Cobalt	3/30/09	0.9	ug/l	0.02	10.0			70		
MW-1R	Copper	3/30/09	1.9	ug/l	0.04	10.0	1000				
MW-1R	**Iron**	**3/30/09**	**506**	**ug/l**	**14.0**	**300.0**	**300**			**206**	**Natural**
MW-1R	Lead	3/30/09	2.5	ug/l	0.04	10.0	15				
MW-1R	**Manganese**	**3/30/09**	**57**	**ug/l**	**0.50**	**50.0**	**50**			**7**	**Natural**
MW-1R	Nickel	3/30/09	2.4	ug/l	0.04	50.0	100				
MW-1R	Selenium	3/30/09	0.2	ug/l	0.12	10.0	50				
MW-1R	Silver	3/30/09	0.1	ug/l	0.04	10.0	18				
MW-1R	Thallium	3/30/09	0.2	ug/l	0.03	5.0			0.28		
MW-1R	Total Dissolved Solids	3/30/09	488000	ug/l	1000	1000	500000				
MW-1R	Vanadium	3/30/09	1.2	ug/l	0.28	25.0			3.5		
MW-1R	Zinc	3/30/09	9.6	ug/l	0.14	10.0	1050				
MW-4	1,1-Dichloroethane	3/30/09	1.1	ug/l	0.16	5.0	70				
MW-4	**1,4-Dichlorobenzene**	**3/30/09**	**7.2**	**ug/l**	**0.21**	**1.0**	**1.4**			**5.8**	**Leachate &/or LFG**
MW-4	2-Butanone	3/30/09	2.4	ug/l	0.85	100.0	4200				
MW-4	Acetone	3/30/09	15.6	ug/l	1.21	100.0	700				
MW-4	Antimony	3/30/09	0.1	ug/l	0.06	6.0			1.4		
MW-4	Arsenic	3/30/09	4.2	ug/l	0.17	10.0	50				
MW-4	Barium	3/30/09	56.1	ug/l	0.04	100.0	2000				
MW-4	**Benzene**	**3/30/09**	**5.8**	**ug/l**	**0.16**	**1.0**	**1**			**4.8**	**Leachate &/or LFG**
MW-4	Beryllium	3/30/09	0.1	ug/l	0.06	1.0			4		
MW-4	Cadmium	3/30/09	0.2	ug/l	0.04	1.0	1.75				
MW-4	Chlorobenzene	3/30/09	2.2	ug/l	0.13	3.0	50				
MW-4	Chloroethane	3/30/09	18.3	ug/l	0.29	10.0	2800				
MW-4	Chromium	3/30/09	0.4	ug/l	0.10	10.0	50				
MW-4	Cis-1,2-Dichloroethene	3/30/09	14	ug/l	0.14	5.0	70				
MW-4	Cobalt	3/30/09	2.4	ug/l	0.02	10.0			70		
MW-4	Copper	3/30/09	2.3	ug/l	0.04	10.0	1000				
MW-4	Ethylbenzene	3/30/09	3.2	ug/l	0.16	1.0	550				
MW-4	**Iron**	**3/30/09**	**84650**	**ug/l**	**14.0**	**300.0**	**300**			**84350**	**Natural**
MW-4	Lead	3/30/09	1.8	ug/l	0.04	10.0	15				
MW-4	**Manganese**	**3/30/09**	**167**	**ug/l**	**0.50**	**50.0**	**50**			**117**	**Natural**
MW-4	Mercury	3/30/09	0.05	ug/l	0.03	0.20	1.1				
MW-4	Methylene Chloride	3/30/09	1.3	ug/l	0.14	1.0	4.6				
MW-4	Nickel	3/30/09	2.3	ug/l	0.04	50.0	100				
MW-4	Selenium	3/30/09	1.3	ug/l	0.12	10.0	50				
MW-4	Silver	3/30/09	0.1	ug/l	0.04	10.0	18				
MW-4	Sulfate	3/30/09	10300	ug/l	5000	250000	250000				
MW-4	Thallium	3/30/09	0.1	ug/l	0.03	5.0			0.28		
MW-4	Toluene	3/30/09	1.6	ug/l	0.13	1.0	1000				
MW-4	Total Alkalinity	3/30/09	200000	ug/l	1000	1000	NE		NE		
MW-4	Total Dissolved Solids	3/30/09	234000	ug/l	1000	1000	500000				
MW-4	trans-1,2-Dichloroethene	3/30/09	0.2	ug/l	0.13	5.0	100				
MW-4	Trichloroethene	3/30/09	0.8	ug/l	0.13	1.0	2.8				
MW-4	**Vanadium**	**3/30/09**	**4.3[j]**	**ug/l**	**0.28**	**25.0**			**3.5**	**0.8**	
MW-4	**Vinyl Chloride**	**3/30/09**	**10.2**	**ug/l**	**0.34**	**1.0**	**0.015**			**10.185**	**Leachate &/or LFG**
MW-4	Xylenes	3/30/09	1.8	ug/l	0.48	5.0	530				
MW-4	Zinc	3/30/09	2.8	ug/l	0.14	10.0	1050				

Well ID	Parameter Name [1]	Sample Date	Result	Unit	MDL [2]	SWSL [3]	2L [4]	2B [5]	GWP [6]	Exceedance	Preliminary Cause
MW-5	1,1-Dichloroethane	3/30/09	0.9	ug/l	0.16	5.0	70				
MW-5	1,4-Dichlorobenzene	3/30/09	0.5	ug/l	0.21	1.0	1.4				
MW-5	Antimony	3/30/09	0.8	ug/l	0.06	6.0			1.4		
MW-5	Arsenic	3/30/09	1.3	ug/l	0.17	10.0	50				
MW-5	Barium	3/30/09	34	ug/l	0.04	100.0	2000				
MW-5	Benzene	3/30/09	0.6	ug/l	0.16	1.0	1				
MW-5	Beryllium	3/30/09	0.1	ug/l	0.06	1.0			4		
MW-5	Cadmium	3/30/09	0.1	ug/l	0.04	1.0	1.75				
MW-5	Chloride	3/30/09	15000	ug/l	5000	5000	250000				
MW-5	Chlorobenzene	3/30/09	0.3	ug/l	0.13	3.0	50				
MW-5	Chloroethane	3/30/09	4.4	ug/l	0.29	10.0	2800				
MW-5	Cis-1,2-Dichloroethene	3/30/09	2.3	ug/l	0.14	5.0	70				
MW-5	Cobalt	3/30/09	0.7	ug/l	0.02	10.0			70		
MW-5	Copper	3/30/09	0.4	ug/l	0.04	10.0	1000				
MW-5	**Iron**	**3/30/09**	**28175**	**ug/l**	**14.0**	**300.0**	**300**			**27875**	**Natural**
MW-5	Lead	3/30/09	0.4	ug/l	0.04	10.0	15				
MW-5	Manganese	3/30/09	19	ug/l	0.50	50.0	50				
MW-5	Mercury	3/30/09	0.12	ug/l	0.03	0.20	1.1				
MW-5	Nickel	3/30/09	0.9	ug/l	0.04	50.0	100				
MW-5	Selenium	3/30/09	1.1	ug/l	0.12	10.0	50				
MW-5	Silver	3/30/09	0.1	ug/l	0.04	10.0	18				
MW-5	Thallium	3/30/09	0.1	ug/l	0.03	5.0			0.28		
MW-5	Total Alkalinity	3/30/09	39000	ug/l	1000	1000	NE		NE		
MW-5	Total Dissolved Solids	3/30/09	84000	ug/l	1000	1000	500000				
MW-5	Vanadium	3/30/09	1	ug/l	0.28	25.0			3.5		
MW-5	**Vinyl Chloride**	**3/30/09**	**2.3**	**ug/l**	**0.34**	**1.0**	**0.015**			**2.285**	**Leachate &/or LFG**
MW-5	Zinc	3/30/09	4.8	ug/l	0.14	10.0	1050				
MW-6	Antimony	3/30/09	0.1	ug/l	0.06	6.0			1.4		
MW-6	Barium	3/30/09	15.1	ug/l	0.04	100.0	2000				
MW-6	Beryllium	3/30/09	0.1	ug/l	0.06	1.0			4		
MW-6	Chloride	3/30/09	8000	ug/l	5000	5000	250000				
MW-6	Chromium	3/30/09	0.2	ug/l	0.10	10.0	50				
MW-6	Cobalt	3/30/09	0.1	ug/l	0.02	10.0			70		
MW-6	Copper	3/30/09	0.3	ug/l	0.04	10.0	1000				
MW-6	**Iron**	**3/30/09**	**908**	**ug/l**	**14.0**	**300.0**	**300**			**608**	**Natural**
MW-6	Lead	3/30/09	0.5	ug/l	0.04	10.0	15				
MW-6	Manganese	3/30/09	10	ug/l	0.50	50.0	50				
MW-6	Mercury	3/30/09	0.1	ug/l	0.03	0.20	1.1				
MW-6	Nickel	3/30/09	0.2	ug/l	0.04	50.0	100				
MW-6	Total Alkalinity	3/30/09	4000	ug/l	1000	1000	NE		NE		
MW-6	Total Dissolved Solids	3/30/09	70000	ug/l	1000	1000	500000				
MW-6	Vanadium	3/30/09	1.6	ug/l	0.28	25.0			3.5		
MW-6	Zinc	3/30/09	2.4	ug/l	0.14	10.0	1050				
MW-7	Barium	3/30/09	39.5	ug/l	0.04	100.0	2000				
MW-7	Beryllium	3/30/09	0.1	ug/l	0.06	1.0			4		
MW-7	Chloride	3/30/09	5000	ug/l	5000	5000	250000				
MW-7	Cobalt	3/30/09	0.6	ug/l	0.02	10.0			70		
MW-7	Copper	3/30/09	0.5	ug/l	0.04	10.0	1000				
MW-7	Iron	3/30/09	80	ug/l	14.0	300.0	300				
MW-7	Lead	3/30/09	0.3	ug/l	0.04	10.0	15				
MW-7	Manganese	3/30/09	5	ug/l	0.50	50.0	50				
MW-7	Mercury	3/30/09	0.03	ug/l	0.03	0.20	1.1				
MW-7	Nickel	3/30/09	0.8	ug/l	0.04	50.0	100				
MW-7	Thallium	3/30/09	0.1	ug/l	0.03	5.0			0.28		
MW-7	Total Dissolved Solids	3/30/09	42000	ug/l	1000	1000	500000				
MW-7	Vanadium	3/30/09	1.1	ug/l	0.28	25.0			3.5		
MW-7	Zinc	3/30/09	4.2	ug/l	0.14	10.0	1050				

Well ID	Parameter Name [1]	Sample Date	Result	Unit	MDL [2]	SWSL [3]	2L [4]	2B [5]	GWP [6]	Exceedance	Preliminary Cause
MW-8	Barium	3/30/09	38.3	ug/l	0.04	100.0	2000				
MW-8	Beryllium	3/30/09	0.1	ug/l	0.06	1.0			4		
MW-8	Chloroform	3/30/09	0.3	ug/l	0.13	5.0	70				
MW-8	Cobalt	3/30/09	0.3	ug/l	0.02	10.0			70		
MW-8	Copper	3/30/09	0.3	ug/l	0.04	10.0	1000				
MW-8	Iron	3/30/09	66	ug/l	14.0	300.0	300				
MW-8	Lead	3/30/09	0.5	ug/l	0.04	10.0	15				
MW-8	Manganese	3/30/09	2	ug/l	0.50	50.0	50				
MW-8	Nickel	3/30/09	0.4	ug/l	0.04	50.0	100				
MW-8	Total Dissolved Solids	3/30/09	44000	ug/l	1000	1000	500000				
MW-8	Vanadium	3/30/09	0.7	ug/l	0.28	25.0			3.5		
MW-8	Zinc	3/30/09	2	ug/l	0.14	10.0	1050				
Upstream	Arsenic	3/30/09	0.4	ug/l	0.17	10.0		10			
Upstream	Barium	3/30/09	20.7	ug/l	0.04	100.0		200000			
Upstream	Cadmium	3/30/09	0.1	ug/l	0.04	1.0		2			
Upstream	Chromium	3/30/09	1	ug/l	0.10	10.0		50			
Upstream	Cobalt	3/30/09	0.2	ug/l	0.02	10.0		270			
Upstream	Copper	3/30/09	1.2	ug/l	0.04	10.0		7			
Upstream	Lead	3/30/09	0.8	ug/l	0.04	10.0		25			
Upstream	Nickel	3/30/09	0.6	ug/l	0.04	50.0		8			
Upstream	Vanadium	3/30/09	1.8	ug/l	0.28	25.0		NE			
Upstream	Zinc	3/30/09	10	ug/l	0.14	10.0		50			
Downstream	Antimony	3/30/09	0.2	ug/l	0.06	6.0		640			
Downstream	Arsenic	3/30/09	1.2	ug/l	0.17	10.0		10			
Downstream	Barium	3/30/09	32.1	ug/l	0.04	100.0		200000			
Downstream	Beryllium	3/30/09	0.1	ug/l	0.06	1.0		6.5			
Downstream	Cadmium	3/30/09	0.1	ug/l	0.04	1.0		2			
Downstream	Chromium	3/30/09	2.3	ug/l	0.10	10.0		50			
Downstream	Cobalt	3/30/09	0.4	ug/l	0.02	10.0		270			
Downstream	Copper	3/30/09	5.9	ug/l	0.04	10.0		7			
Downstream	Lead	3/30/09	2.5	ug/l	0.04	10.0		25			
Downstream	Nickel	3/30/09	1.9	ug/l	0.04	50.0		8			
Downstream	Selenium	3/30/09	0.4	ug/l	0.12	10.0		5			
Downstream	Silver	3/30/09	0.1	ug/l	0.04	10.0		0.06			
Downstream	Thallium	3/30/09	0.1	ug/l	0.03	5.0		0.47			
Downstream	Vanadium	3/30/09	5.1	ug/l	0.28	25.0		NE			
Downstream	Zinc	3/30/09	15	ug/l	0.14	10.0		50			
EB	Antimony	3/30/09	1	ug/l	0.06	6.0			1.4		
EB	Arsenic	3/30/09	0.2	ug/l	0.17	10.0	50				
EB	Barium	3/30/09	16	ug/l	0.04	100.0	2000				
EB	Chloromethane	3/30/09	0.2	ug/l	0.18	1.0	2.6				
EB	Cobalt	3/30/09	0.1	ug/l	0.02	10.0			70		
EB	Copper	3/30/09	0.4	ug/l	0.04	10.0	1000				
EB	Manganese	3/30/09	1	ug/l	0.50	50.0	50				
EB	Nickel	3/30/09	1.7	ug/l	0.04	50.0	100				
EB	Vanadium	3/30/09	1	ug/l	0.28	25.0			3.5		
EB	Zinc	3/30/09	1.8	ug/l	0.14	10.0	1050				

[1] Table contains all constituents detected above MDL

[2] MDL = Method Detection Limit

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

[4] 2L = North Carolina Ground Water 2L Standard (Current as of Sampling Event)

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

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

LFG = Landfill Gas

NE = Not Established

BOLD = Concentration >GWP, NCGW2L, or NCSW2B Standard (Current as of Sampling Event)

Hydrologic Properties at Monitoring Well Locations
Greene County Closed MSWLF and Active C&D Landfill

Monitoring Well	Hydraulic Conductivity (cm/sec)	Effective Porosity (%)	Hydraulic Gradient	Flow Rate (ft/yr)	Flow Direction	Water Table Depth (ft)	Water Table Elevation (ft)
MW-1R	1.20E-04	37%	0.016	5	N63E	3.33	118.45
MW-4	1.10E-04	40%	0.028	8	S66E	13.09	104.8
MW-5	1.40E-04	37%	0.028	11	S73E	15.11	100.65
MW-6	1.90E-04	43%	0.032	14	N13E	3.80	113.61
MW-7	1.98E-04	7%	0.026	77	S63E	10.56	99.92
MW-8	1.14E-03	7%	0.003	49	S66E	6.74	104.62

NOTE: Data for hydraulic conductivities for all but MW-7 & MW-8 obtained from
GAI Consultants' Water Quality Modifications (October, 1994)
Data for hydraulic conductivities for MW-7 & MW-8 obtained from slug tests performed by MESCO (June, 2007)
Hydrologic Gradient taken from the March 30, 2009 sampling event.
Flow rate (Q) is defined by the equation:

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

K= hydraulic conductivity
n_e = effective porosity
dh= head difference
dl= horizontal distance

Poisson Prediction Interval Based upon Pooled Background Appendix I VOCs
Greene County Closed MSWLF & Active C&D Landfill

All detected VOCs >SWSL (Background Well: MW-1R)

Constituent	MW-4	MW-5
1,4-Dichlorobenzene	**X**	
cis-1,2-Dichloroethene	X	
Benzene	**X**	
Vinyl Chloride	**X**	**X**
Ethylbenzene	X	
Methylene Chloride	X	
Chloroethane	X	
Toluene	X	
Detection(s) per Scan	8.00	1.00

x = Bold indicates detected levels exceed NCGW2L Standard

Total number of sampling events [n] =	32
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] =	2.45
Expected number of detections in a single future sample [y*] =	**0.1876**

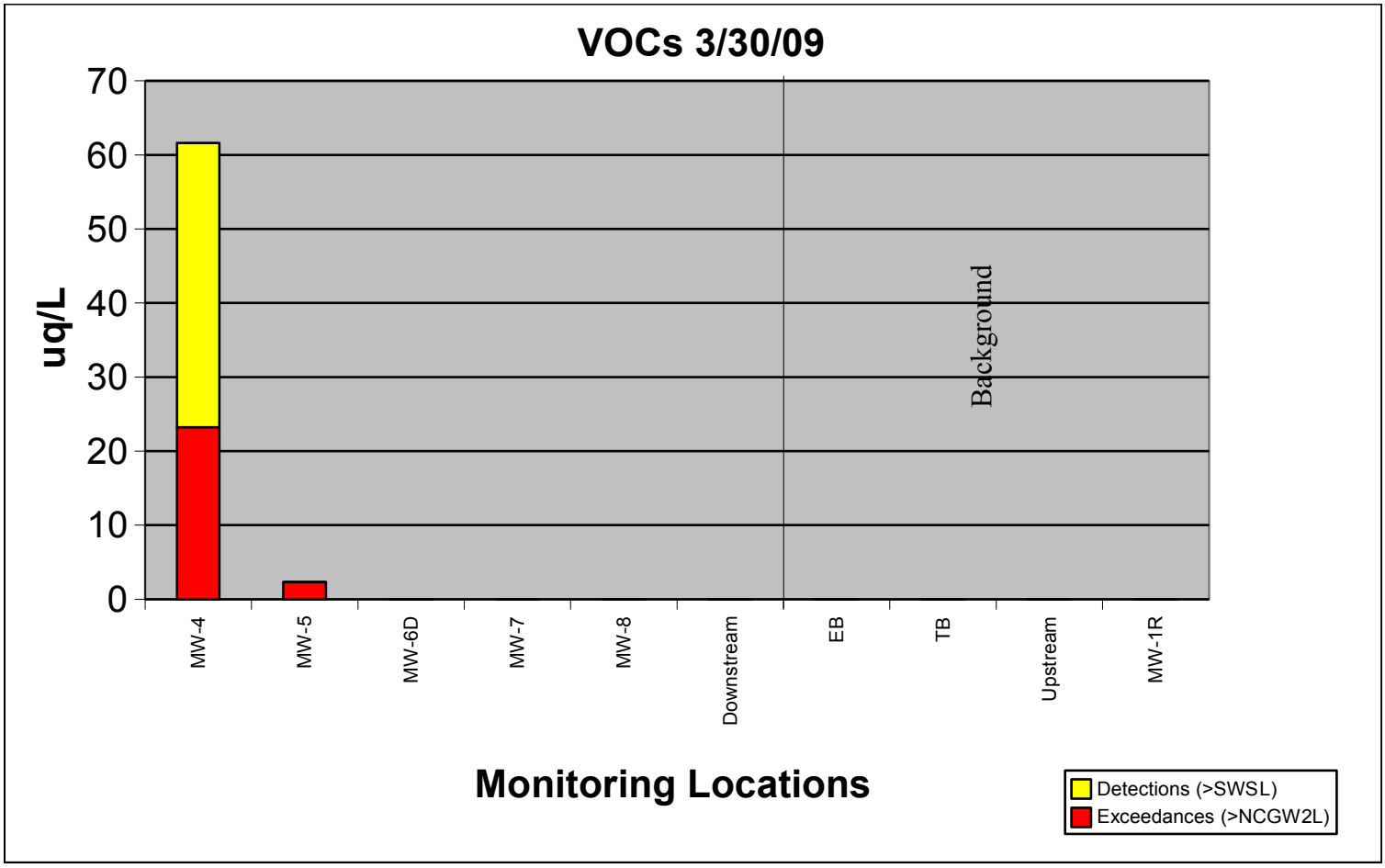
Statistically Significant VOC detections within MW-4 & MW-5 at a 95% confidence level

Summary of Pooled Appendix I VOCs in Background Well (MW-1R)
Greene County Closed MSWLF & Active C&D Landfill

Constituent	Samples	NDs	% NDs
1,1,1,2-Tetrachloroethane	32	32	100.00
1,1,1-Trichloroethane	32	32	100.00
1,1,2,2-Tetrachloroethane	32	32	100.00
1,1,2-Trichloroethane	32	32	100.00
1,1-Dichloroethane	32	32	100.00
1,1-Dichloroethene	32	32	100.00
1,2,3-Trichloropropane	32	32	100.00
1,2-Dibromo-3-chloropropane	32	32	100.00
1,2-Dibromoethane	32	32	100.00
1,2-Dichlorobenzene	32	32	100.00
1,2-Dichloroethane	32	32	100.00
1,2-Dichloropropane	32	32	100.00
1,4-Dichlorobenzene	32	32	100.00
2-Butanone	32	32	100.00
2-Hexanone	32	32	100.00
4-Methyl-2-Pentanone	32	32	100.00
Acetone	32	32	100.00
Acrylonitrile	32	32	100.00
Benzene	32	32	100.00
Bromochloromethane	32	32	100.00
Bromodichloromethane	32	32	100.00
Bromoform	32	32	100.00
Bromomethane	32	32	100.00
Carbon disulfide	32	32*	100.00
Carbon tetrachloride	32	32	100.00
Chlorobenzene	32	32	100.00
Chloroethane	32	32	100.00
Chloroform	32	32	100.00
Chloromethane	32	32	100.00
cis-1,2-Dichloroethene	32	32	100.00
cis-1,3-Dichloropropene	32	32	100.00
Chlorodibromomethane	32	32	100.00
Dibromomethane	32	32	100.00
Ethylbenzene	32	32	100.00
Iodomethane	32	32	100.00
Dichloromethane	32	32	100.00
Styrene	32	32	100.00
Tetrachloroethylene	32	32	100.00
Toluene	32	32	100.00
trans-1,2-Dichloroethene	32	32	100.00
trans-1,3-Dichloropropene	32	32	100.00
trans-1,4-Dichloro-2-butene	32	32	100.00
Trichloroethylene	32	32	100.00
Trichlorofluoromethane	32	32	100.00
Vinyl acetate	32	32	100.00
Vinyl chloride	32	32	100.00
Xylene	32	32	100.00
Total	**1504**	**1504**	**100.00**

* = parameter historically detected but <Historical PQL or Current SWSL so considered ND for statistical analysis purposes

VOC Histogram for All Detections above SWSL, GWP, and NCGW2L
Greene County Closed MSWLF & Active C&D Landfill



Sample ID	Detected >SWSL<NCGW2L		Detected >NCGW2L		Cumulative >SWSL & >NCGW2L		Exceeded NCGW2L Aromatic Parameter(s)	Exceeded NCGW2L CAH Parameter(s)	Exceeded Parameter(s) Detected >Historical Identified Range
	#	Concentration (uq/L)	#	Concentration (uq/L)	#	Concentration (uq/L)			
MW-4	5	38.4	3	23.2	8	61.6	1,4-DCB, Benzene	VCM	Benzene,1,4-DCB,VCM,
MW-5	0	-	1	2.3	1	2.3	-	VCM	VCM
Total	**5**	**38.40**	**4**	**25.50**	**9**	**63.90**	**2**	**2**	**4**

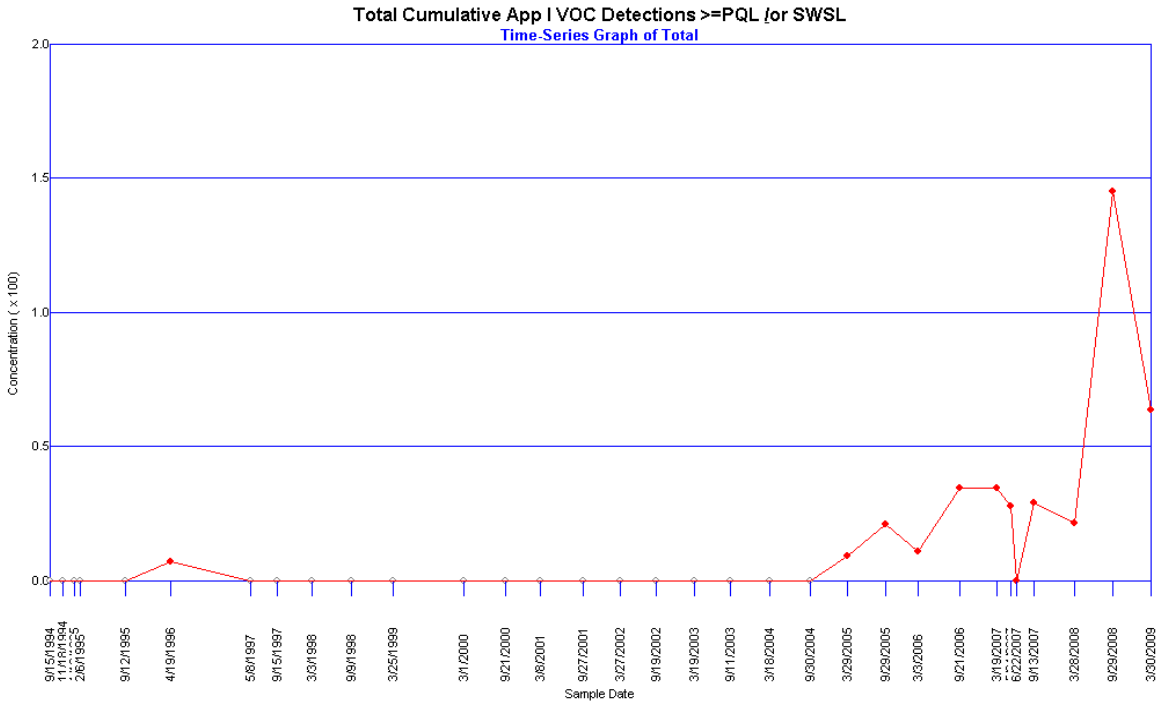
Table only contains VOC constituents detected above the SWSL, GWP, NCGW2L, or NCSW2B Standard

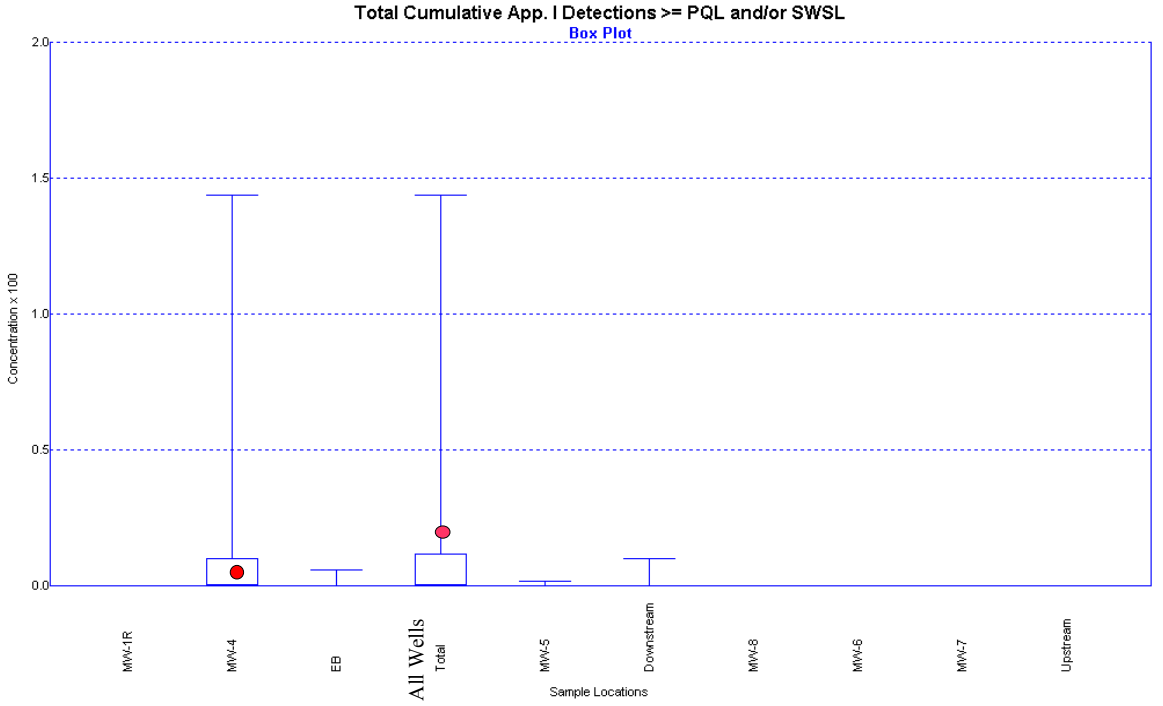
SWSL = Solid Waste Section Reporting Limit (Current as of Sampling Event)

NCGW2L = North Carolina Ground Water 2L Standard (Current as of Sampling Event)

[J] = Detected >NCGW2L BUT <SWSL ("J" Qualifier) Therefore, concentration non-quantifiable or an estimated value

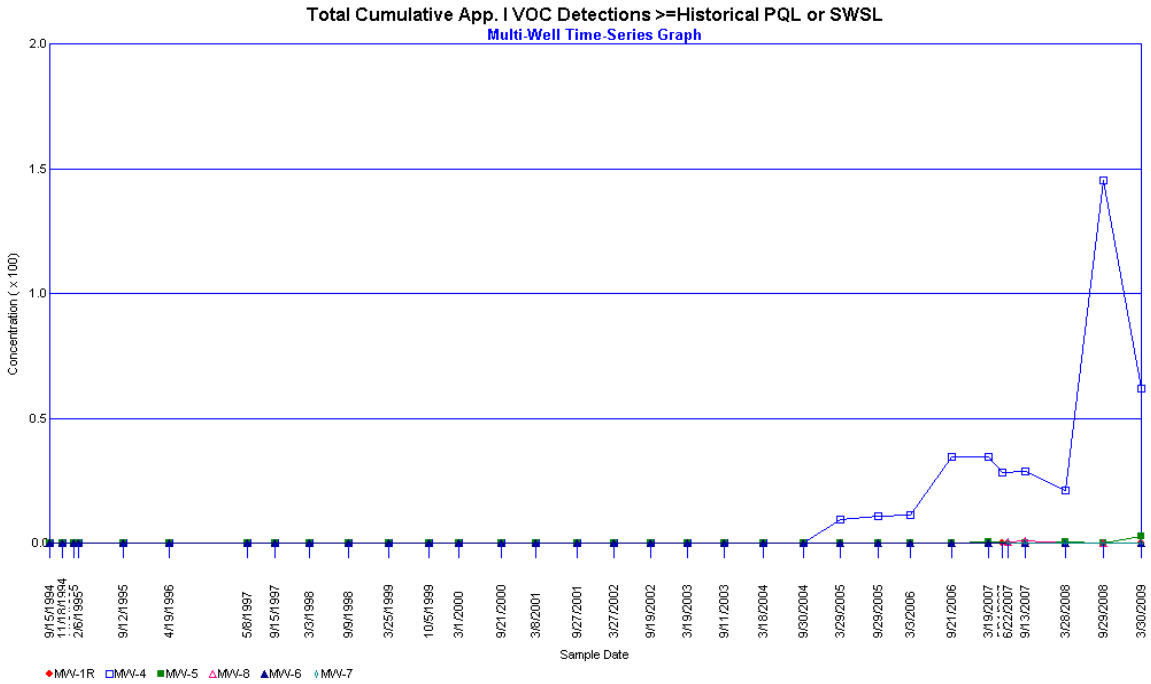
Histograms for Cumulative VOC Detections
Greene County Closed MSWLF & Active C&D Landfill



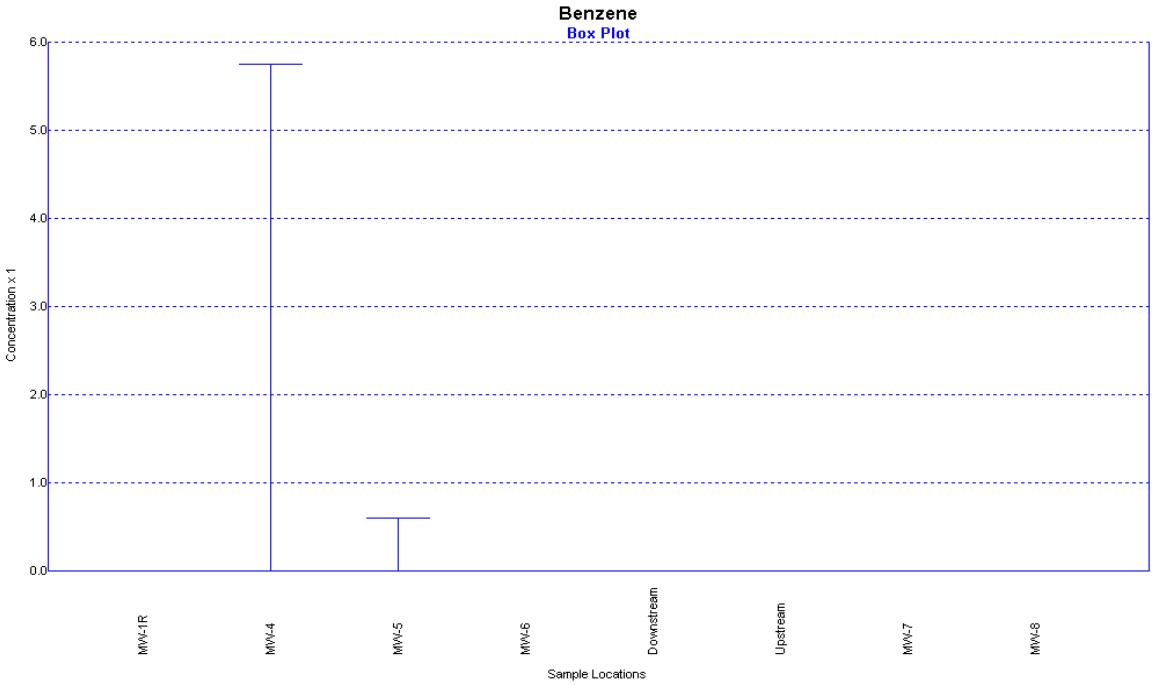


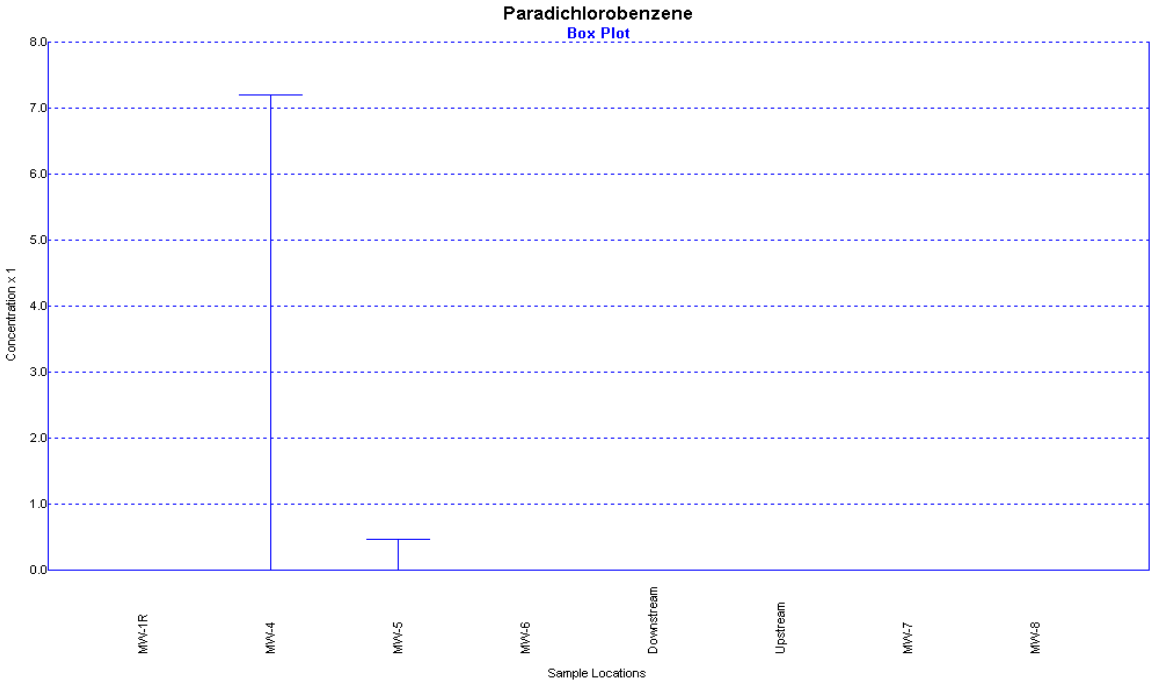
● Current Sampling Event

Histograms for Cumulative VOC Detections
Greene County Closed MSWLF & Active C&D Landfill

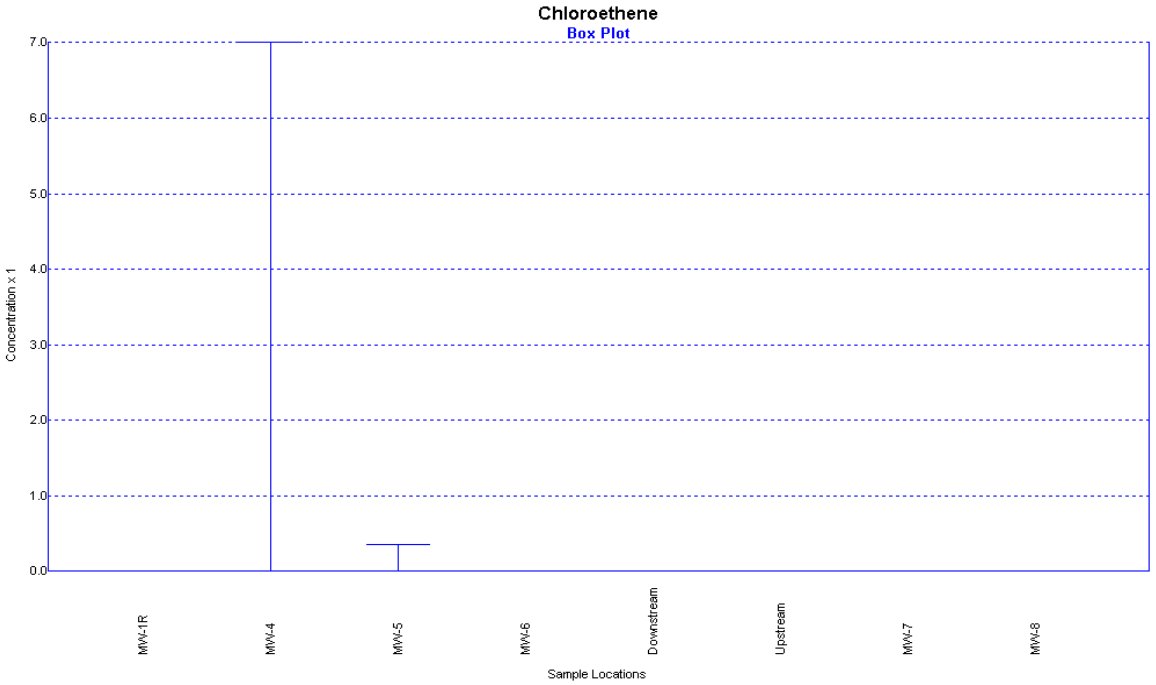


Box Plots for Select Constituents (VOCs)
Greene County Closed MSWLF & Active C&D Landfill

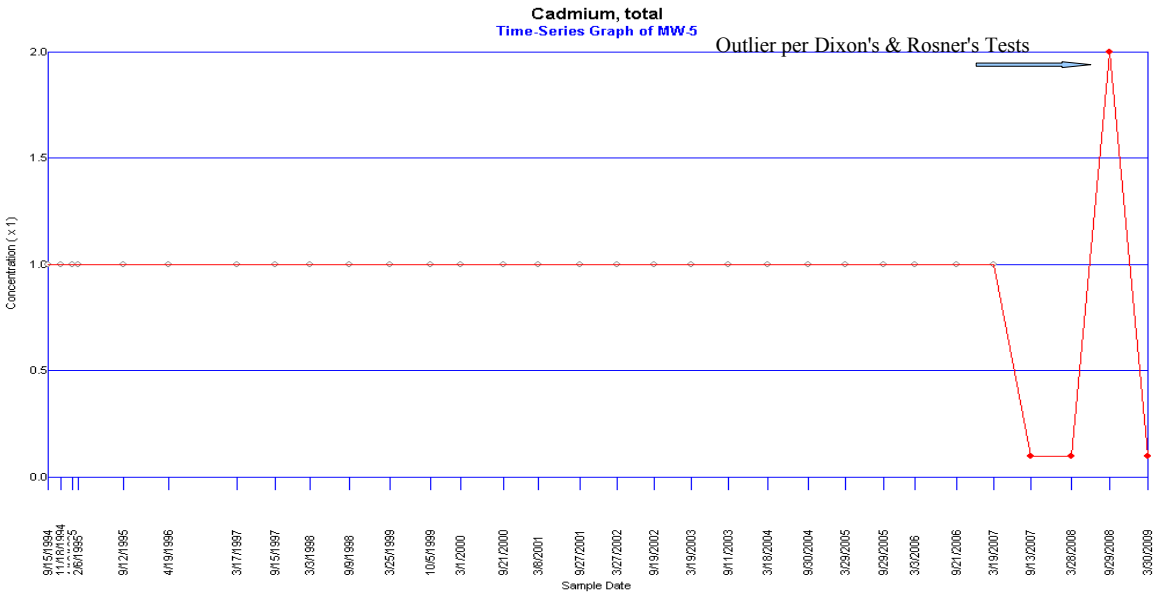




Box Plots for Select Constituents (VOCs)
Greene County Closed MSWLF & Active C&D Landfill



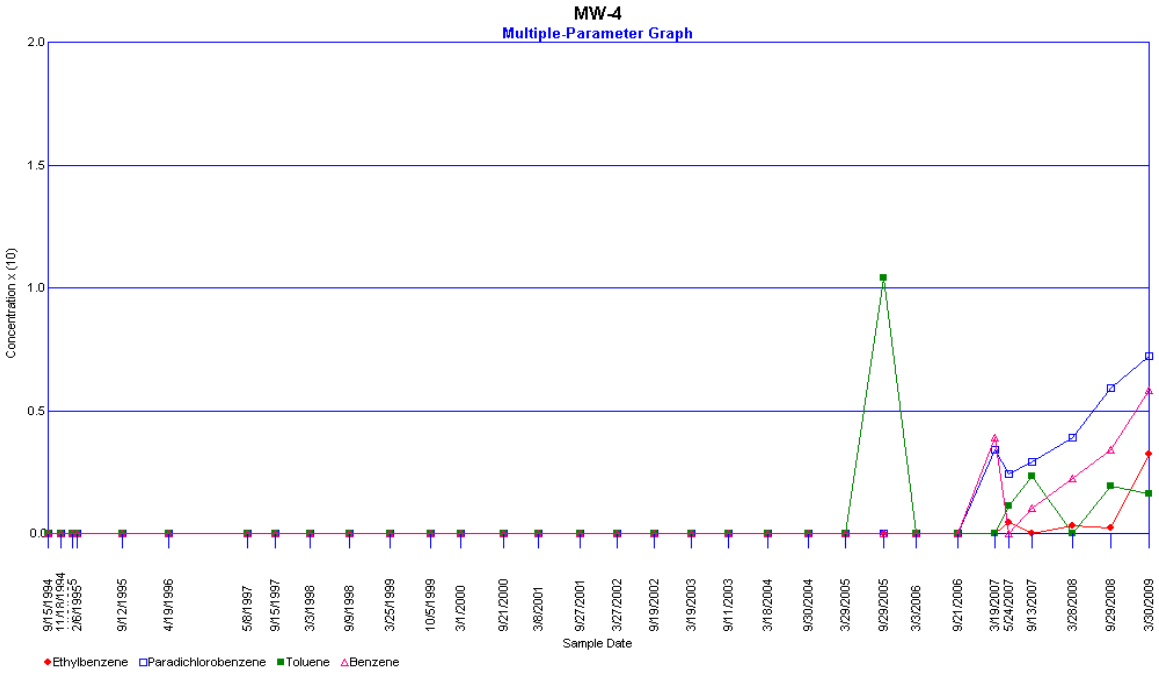
Time Series Plots for Select Constituents (Metals)
Greene County Closed MSWLF & Active C&D Landfill



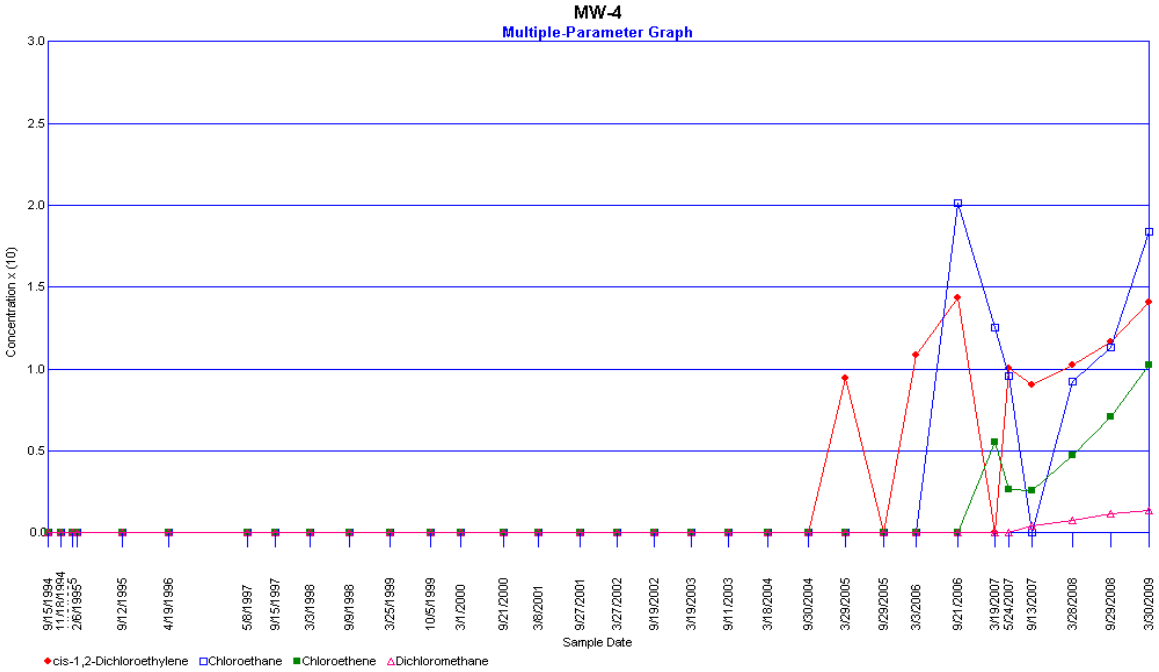
ND Substituted with Detection Limit

Time Series Plots for Select Constituents
Greene County Closed MSWLF & Active C&D Landfill

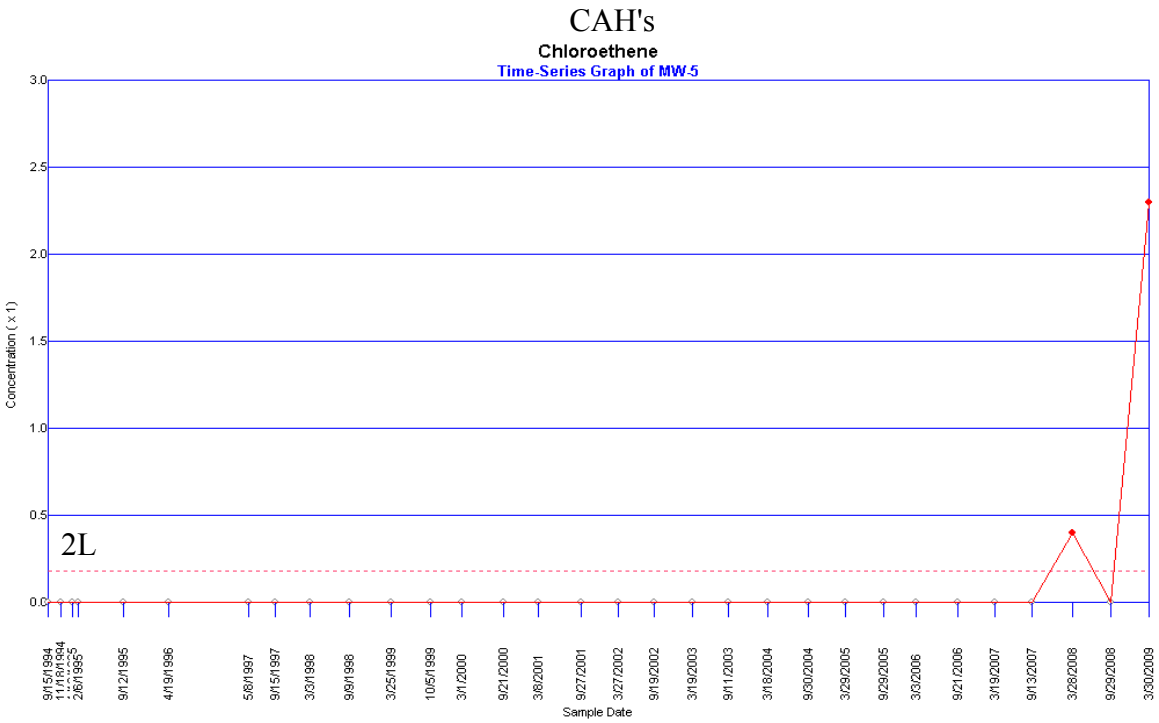
AROMATICS



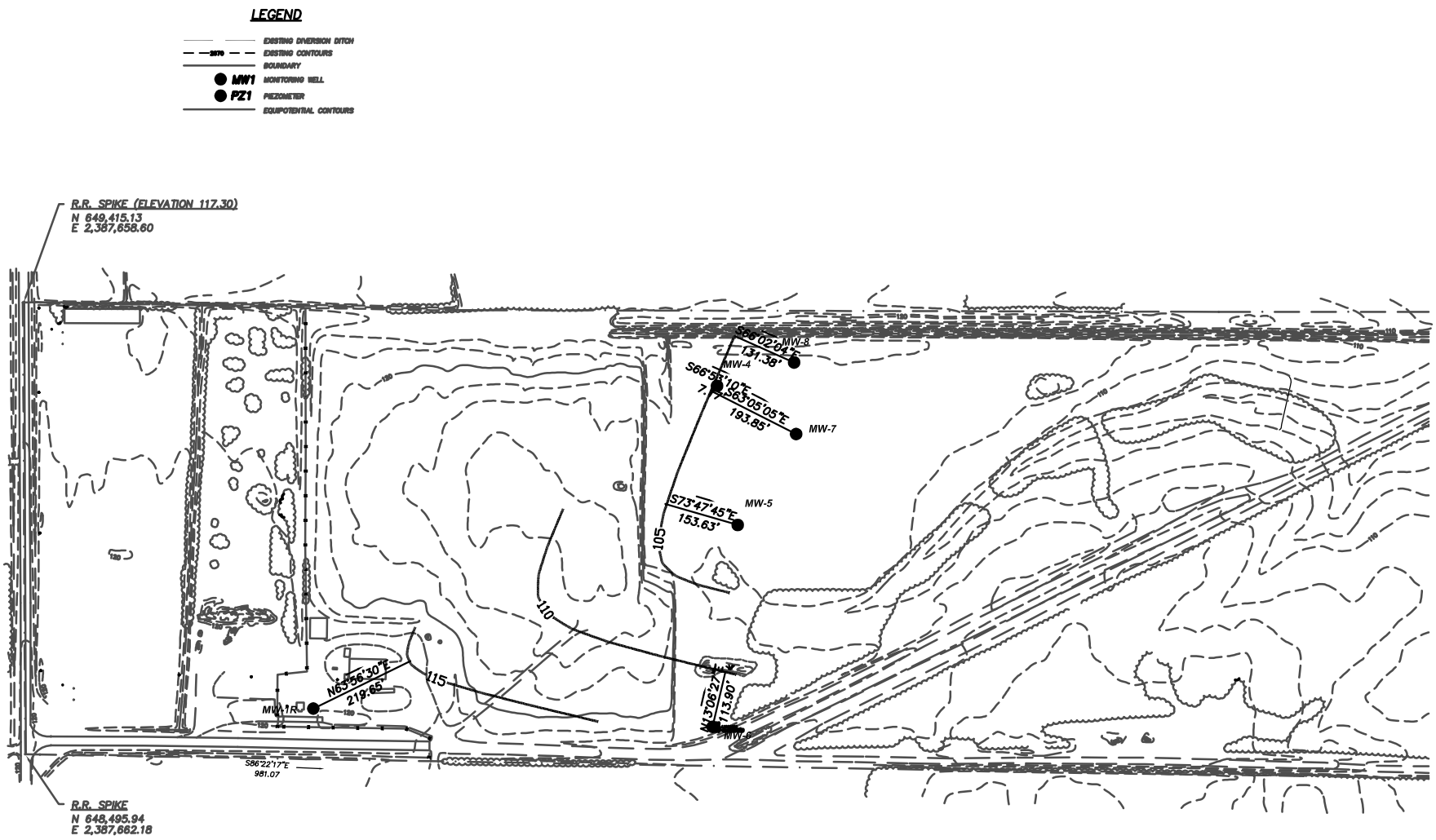
CAH's



Time Series Plots for Select Constituents
Greene County Closed MSWLF & Active C&D Landfill



Statistical Analysis Results Summary



Municipal Engineering Services Company, P.A.

GREENE COUNTY
CLOSED MSWLF
& ACTIVE C&D LANDFILL
NORTH CAROLINA

SINGLE DAY POTENTIOMETRIC MAP

DATE	BY	REV.	DESCRIPTION

SCALE: 1"=100'
DATE: 9/21/09
DRWN. BY: JAP per SMB
CHKD. BY:
PROJECT NUMBER
608010.0
DRAWING NO. SHEET NO.

Laboratory Results

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#: 6005

GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL ,NC 28580

DATE COLLECTED: 03/30/09
DATE REPORTED : 04/21/09

REVIEWED BY:

PARAMETERS	MDL	SWSL	Upstream	Downstream	Well #4	Well #5	Well #6	Analysis Date	Analyst	Method Code
PH (field measurement), Units			5.9	6.0	5.6	5.0	4.8	03/30/09	RJH	SM4500HB
Total Alkalinity, mg/l	1.0	1.0			200	39	4	03/30/09	TRB	SM2320B
Chloride, mg/l	5.0	5.0			--- U	15	8	04/03/09	MJN	SM4500-CLB
Total Dissolved Residue, mg/l	1.0	1.0			234	84	70	03/31/09	TRB	SM2540C
Sulfate, mg/l	5.0	250.0			10.3 J	--- U	--- U	04/07/09	TRB	SM4500-SO4
Antimony, ug/l	0.06	6.0	--- U					04/01/09	CMF	EPA200.8
Antimony, ug/l	0.06	6.0		0.2 J	0.1 J	0.8 J	0.1 J	04/03/09	LFJ	EPA200.8
Arsenic, ug/l	0.17	10.0	0.4 J					04/01/09	CMF	EPA200.8
Arsenic, ug/l	0.17	10.0		1.2 J	4.2 J	1.3 J	--- U	04/03/09	RJH	EPA200.8
Barium, ug/l	0.04	100.0	20.7 J					04/01/09	CMF	EPA200.8
Barium, ug/l	0.04	100.0		32.1 J	56.1 J	34 J	15.1 J	04/03/09	LFJ	EPA200.8
Beryllium, ug/l	0.06	1.0	--- U					04/01/09	CMF	EPA200.8
Beryllium, ug/l	0.06	1.0		0.1 J	0.1 J	0.1 J	0.1 J	04/03/09	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	0.1 J					04/01/09	CMF	EPA200.8
Cadmium, ug/l	0.04	1.0		0.1 J	0.2 J	0.1 J	--- U	04/03/09	LFJ	EPA200.8
Cobalt, ug/l	0.02	10.0	0.2 J					04/01/09	CMF	EPA200.8
Cobalt, ug/l	0.02	10.0		0.4 J	2.4 J	0.7 J	0.1 J	04/03/09	LFJ	EPA200.8
Copper, ug/l	0.04	10.0	1.2 J					04/01/09	CMF	EPA200.8
Copper, ug/l	0.04	10.0		5.9 J	2.3 J	0.4 J	0.3 J	04/03/09	LFJ	EPA200.8
Total Chromium, ug/l	0.10	10.0	1.0 J					04/01/09	CMF	EPA200.8
Total Chromium, ug/l	0.10	10.0		2.3 J	0.4 J	--- U	0.2 J	04/03/09	LFJ	EPA200.8
Iron, ug/l	14.0	300.0			84650	28175	908	04/06/09	ADD	SM3111B
Manganese, ug/l	0.50	50.0			167	19 J	10 J	04/03/09	LFJ	EPA200.7
Lead, ug/l	0.04	10.0	0.8 J					04/01/09	CMF	EPA200.8
Lead, ug/l	0.04	10.0		2.5 J	1.8 J	0.4 J	0.5 J	04/03/09	LFJ	EPA200.8
Mercury, ug/l	0.03	0.20			0.05 J	0.12 J	0.1 J	04/03/09	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	0.6 J					04/01/09	CMF	EPA200.8
Nickel, ug/l	0.04	50.0		1.9 J	2.3 J	0.9 J	0.2 J	04/03/09	LFJ	EPA200.8
Selenium, ug/l	0.12	10.0	--- U					04/01/09	CMF	EPA200.8
Selenium, ug/l	0.12	10.0		0.4 J	1.3 J	1.1 J	--- U	04/03/09	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U					04/01/09	CMF	EPA200.8
Silver, ug/l	0.04	10.0		0.1 J	0.1 J	0.1 J	--- U	04/03/09	LFJ	EPA200.8
Thallium, ug/l	0.03	5.0	--- U					04/01/09	CMF	EPA200.8
Thallium, ug/l	0.03	5.0		0.1 J	0.1 J	0.1 J	--- U	04/03/09	LFJ	EPA200.8
Vanadium, ug/l	0.28	25.0	1.8 J					04/01/09	CMF	EPA200.8
Vanadium, ug/l	0.28	25.0		5.1 J	4.3 J	1 J	1.6 J	04/03/09	LFJ	EPA200.8
Zinc, ug/l	0.14	10.0	10					04/01/09	CMF	EPA200.8
Zinc, ug/l	0.14	10.0		15	2.8 J	4.8 J	2.4 J	04/03/09	LFJ	EPA200.8
Conductivity (at 25c), uMhos	1.0	1.0	180	135	432	158	45	03/30/09	RJH	SM2510B
Temperature, °C			12	15	15	16	16	03/30/09	RJH	SM2550B
Static Water Level, feet					13.09	15.11	3.80	03/30/09	RJH	
Well Depth, feet					26.16	28.34	26.87	03/30/09	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#: 6005

GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL ,NC 28580

DATE COLLECTED: 03/30/09
DATE REPORTED : 04/21/09

REVIEWED BY:

PARAMETERS	MDL	SWSL	Well #7	Well #8	Well #1R	Piezometer #2	Trip Blank	Analysis Date	Analyst	Method Code
PH (field measurement), Units			4.5	4.5	4.2			03/30/09	RJH	SM4500HB
Total Alkalinity, mg/l	1.0	1.0	--- U	--- U	--- U			03/30/09	TRB	SM2320B
Chloride, mg/l	5.0	5.0	5	--- U	210			04/03/09	MJN	SM4500-CLB
Total Dissolved Residue, mg/l	1.0	1.0	42	44	488			03/31/09	TRB	SM2540C
Sulfate, mg/l	5.0	250.0	--- U	--- U	--- U			04/07/09	TRB	SM4500-SO4
Antimony, ug/l	0.06	6.0	--- U	--- U	--- U			04/03/09	LFJ	EPA200.8
Arsenic, ug/l	0.17	10.0	--- U	--- U	--- U			04/03/09	RJH	EPA200.8
Barium, ug/l	0.04	100.0	39.5 J	38.3 J	327			04/03/09	LFJ	EPA200.8
Beryllium, ug/l	0.06	1.0	0.1 J	0.1 J	0.4 J			04/03/09	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	--- U	--- U	0.2 J			04/03/09	LFJ	EPA200.8
Cobalt, ug/l	0.02	10.0	0.6 J	0.3 J	0.9 J			04/03/09	LFJ	EPA200.8
Copper, ug/l	0.04	10.0	0.5 J	0.3 J	1.9 J			04/03/09	LFJ	EPA200.8
Total Chromium, ug/l	0.10	10.0	--- U	--- U	0.2 J			04/03/09	LFJ	EPA200.8
Iron, ug/l	14.0	300.0	80 J	66 J	506			04/06/09	ADD	SM3111B
Manganese, ug/l	0.50	50.0	5 J					04/03/09	LFJ	EPA200.7
Manganese, ug/l	0.50	50.0		2 J	57			04/06/09	LFJ	EPA200.7
Lead, ug/l	0.04	10.0	0.3 J	0.5 J	2.5 J			04/03/09	LFJ	EPA200.8
Mercury, ug/l	0.03	0.20	0.03 J	--- U	--- U			04/03/09	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	0.8 J	0.4 J	2.4 J			04/03/09	LFJ	EPA200.8
Selenium, ug/l	0.12	10.0	--- U	--- U	0.2 J			04/03/09	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U	--- U	0.1 J			04/03/09	LFJ	EPA200.8
Thallium, ug/l	0.03	5.0	0.1 J	--- U	0.2 J			04/03/09	LFJ	EPA200.8
Vanadium, ug/l	0.28	25.0	1.1 J	0.7 J	1.2 J			04/03/09	LFJ	EPA200.8
Zinc, ug/l	0.14	10.0	4.2 J	2 J	9.6 J			04/03/09	LFJ	EPA200.8
Conductivity (at 25c), uMhos	1.0	1.0	48	37	770			03/30/09	RJH	SM2510B
Temperature, °C			20	26	32			03/30/09	RJH	SM2550B
Static Water Level, feet			10.56	6.74	3.33	10.20		03/30/09	RJH	
Well Depth, feet			21.38	20.24	19.51			03/30/09	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#: 6005

GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL ,NC 28580

DATE COLLECTED: 03/30/09
DATE REPORTED : 04/21/09

REVIEWED BY:

PARAMETERS	MDL	SWSL	Equipment Blank	Analysis Date	Analyst	Method Code
Antimony, ug/l	0.06	6.0	1 J	04/03/09	LFJ	EPA200.8
Arsenic, ug/l	0.17	10.0	0.2 J	04/03/09	RJH	EPA200.8
Barium, ug/l	0.04	100.0	16 J	04/03/09	LFJ	EPA200.8
Beryllium, ug/l	0.06	1.0	--- U	04/03/09	LFJ	EPA200.8
Cadmium, ug/l	0.04	1.0	--- U	04/03/09	LFJ	EPA200.8
Cobalt, ug/l	0.02	10.0	0.1 J	04/03/09	LFJ	EPA200.8
Copper, ug/l	0.04	10.0	0.4 J	04/03/09	LFJ	EPA200.8
Total Chromium, ug/l	0.10	10.0	--- U	04/03/09	LFJ	EPA200.8
Iron, ug/l	14.0	300.0	--- U	04/06/09	ADD	SM3111B
Manganese, ug/l	0.50	50.0	1 J	04/06/09	LFJ	EPA200.7
Lead, ug/l	0.04	10.0	--- U	04/03/09	LFJ	EPA200.8
Mercury, ug/l	0.03	0.20	--- U	04/03/09	LFJ	EPA200.8
Nickel, ug/l	0.04	50.0	1.7 J	04/03/09	LFJ	EPA200.8
Selenium, ug/l	0.12	10.0	--- U	04/03/09	LFJ	EPA200.8
Silver, ug/l	0.04	10.0	--- U	04/03/09	LFJ	EPA200.8
Thallium, ug/l	0.03	5.0	--- U	04/03/09	LFJ	EPA200.8
Vanadium, ug/l	0.28	25.0	1 J	04/03/09	LFJ	EPA200.8
Zinc, ug/l	0.14	10.0	1.8 J	04/03/09	LFJ	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

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CLIENT: GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL, NC 28580

CLIENT ID: 6005

ANALYST: MAO
DATE COLLECTED: 03/30/09
DATE ANALYZED: 04/06/09
DATE REPORTED: 04/21/09

REVIEWED BY:

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Upstream	Downstream	Well #4	Well #5	Well #6
1. Chloromethane	0.18	1.0	--- U	--- U	--- U	--- U	--- U
2. Vinyl Chloride	0.34	1.0	--- U	--- U	10.20	2.30	--- U
3. Bromomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.29	10.0	--- U	--- U	18.30	4.40 J	--- U
5. Trichlorofluoromethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.14	5.0	--- U	--- U	--- U	--- U	--- U
7. Acetone	1.21	100.0	--- U	--- U	15.60 J	--- U	--- U
8. Iodomethane	0.12	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.14	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.14	1.0	--- U	--- U	1.30	--- U	--- U
11. trans-1,2-Dichloroethene	0.13	5.0	--- U	--- U	0.20 J	--- U	--- U
12. 1,1-Dichloroethane	0.16	5.0	--- U	--- U	1.10 J	0.90 J	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.14	5.0	--- U	--- U	14.00	2.30 J	--- U
15. 2-Butanone	0.85	100.0	--- U	--- U	2.40 J	--- U	--- U
16. Bromochloromethane	0.11	3.0	--- U	--- U	--- U	--- U	--- U
17. Chloroform	0.13	5.0	--- U	--- U	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.11	1.0	--- U	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.13	1.0	--- U	--- U	--- U	--- U	--- U
20. Benzene	0.16	1.0	--- U	--- U	5.80	0.60 J	--- U
21. 1,2-Dichloroethane	0.12	1.0	--- U	--- U	--- U	--- U	--- U
22. Trichloroethene	0.13	1.0	--- U	--- U	0.80 J	--- U	--- U
23. 1,2-Dichloropropane	0.17	1.0	--- U	--- U	--- U	--- U	--- U
24. Bromodichloromethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.17	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	0.68	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.13	1.0	--- U	--- U	1.60	--- U	--- U
28. trans-1,3-Dichloropropene	0.14	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.20	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
31. 2-Hexanone	1.00	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.14	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.13	3.0	--- U	--- U	2.20 J	0.30 J	--- U
35. 1,1,1,2-Tetrachloroethane	0.14	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.16	1.0	--- U	--- U	3.20	--- U	--- U
37. Xylenes	0.48	5.0	--- U	--- U	1.80 J	--- U	--- U
38. Dibromomethane	0.17	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.11	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.16	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.06	1.0	--- U	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.21	1.0	--- U	--- U	7.20	0.50 J	--- U
44. 1,2-Dichlorobenzene	0.13	5.0	--- U	--- U	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.26	13.0	--- U	--- U	--- U	--- U	--- U
46. Acrylonitrile	1.49	200.0	--- U	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.14	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: GREENE CO. LANDFILL
DAVID JONES
P.O. BOX 543
SNOW HILL, NC 28580

CLIENT ID: 6005

ANALYST: MAO
DATE COLLECTED: 03/30/09
DATE ANALYZED: 04/06/09
DATE REPORTED: 04/21/09

REVIEWED BY: _____

VOLATILE ORGANICS
EPA METHOD 8260B

PARAMETERS, ug/l	MDL	SWSL	Well #7	Well #8	Well #1R	Trip Blank	Equipment Blank
1. Chloromethane	0.18	1.0	--- U	--- U	--- U	--- U	0.20 J
2. Vinyl Chloride	0.34	1.0	--- U	--- U	--- U	--- U	--- U
3. Bromomethane	0.26	10.0	--- U	--- U	--- U	--- U	--- U
4. Chloroethane	0.29	10.0	--- U	--- U	--- U	--- U	--- U
5. Trichlorofluoromethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
6. 1,1-Dichloroethene	0.14	5.0	--- U	--- U	--- U	--- U	--- U
7. Acetone	1.21	100.0	--- U	--- U	--- U	--- U	--- U
8. Iodomethane	0.12	10.0	--- U	--- U	--- U	--- U	--- U
9. Carbon Disulfide	0.14	100.0	--- U	--- U	--- U	--- U	--- U
10. Methylene Chloride	0.14	1.0	--- U	--- U	--- U	--- U	--- U
11. trans-1,2-Dichloroethene	0.13	5.0	--- U	--- U	--- U	--- U	--- U
12. 1,1-Dichloroethane	0.16	5.0	--- U	--- U	--- U	--- U	--- U
13. Vinyl Acetate	0.20	50.0	--- U	--- U	--- U	--- U	--- U
14. Cis-1,2-Dichloroethene	0.14	5.0	--- U	--- U	--- U	--- U	--- U
15. 2-Butanone	0.85	100.0	--- U	--- U	--- U	--- U	--- U
16. Bromochloromethane	0.11	3.0	--- U	--- U	--- U	--- U	--- U
17. Chloroform	0.13	5.0	--- U	0.30 J	--- U	--- U	--- U
18. 1,1,1-Trichloroethane	0.11	1.0	--- U	--- U	--- U	--- U	--- U
19. Carbon Tetrachloride	0.13	1.0	--- U	--- U	--- U	--- U	--- U
20. Benzene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
21. 1,2-Dichloroethane	0.12	1.0	--- U	--- U	--- U	--- U	--- U
22. Trichloroethene	0.13	1.0	--- U	--- U	--- U	--- U	--- U
23. 1,2-Dichloropropane	0.17	1.0	--- U	--- U	--- U	--- U	--- U
24. Bromodichloromethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
25. Cis-1,3-Dichloropropene	0.17	1.0	--- U	--- U	--- U	--- U	--- U
26. 4-Methyl-2-Pentanone	0.68	100.0	--- U	--- U	--- U	--- U	--- U
27. Toluene	0.13	1.0	--- U	--- U	--- U	--- U	--- U
28. trans-1,3-Dichloropropene	0.14	1.0	--- U	--- U	--- U	--- U	--- U
29. 1,1,2-Trichloroethane	0.20	1.0	--- U	--- U	--- U	--- U	--- U
30. Tetrachloroethene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
31. 2-Hexanone	1.00	50.0	--- U	--- U	--- U	--- U	--- U
32. Dibromochloromethane	0.14	3.0	--- U	--- U	--- U	--- U	--- U
33. 1,2-Dibromoethane	0.13	1.0	--- U	--- U	--- U	--- U	--- U
34. Chlorobenzene	0.13	3.0	--- U	--- U	--- U	--- U	--- U
35. 1,1,1,2-Tetrachloroethane	0.14	5.0	--- U	--- U	--- U	--- U	--- U
36. Ethylbenzene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
37. Xylenes	0.48	5.0	--- U	--- U	--- U	--- U	--- U
38. Dibromomethane	0.17	10.0	--- U	--- U	--- U	--- U	--- U
39. Styrene	0.16	1.0	--- U	--- U	--- U	--- U	--- U
40. Bromoform	0.11	3.0	--- U	--- U	--- U	--- U	--- U
41. 1,1,2,2-Tetrachloroethane	0.16	3.0	--- U	--- U	--- U	--- U	--- U
42. 1,2,3-Trichloropropane	0.06	1.0	--- U	--- U	--- U	--- U	--- U
43. 1,4-Dichlorobenzene	0.21	1.0	--- U	--- U	--- U	--- U	--- U
44. 1,2-Dichlorobenzene	0.13	5.0	--- U	--- U	--- U	--- U	--- U
45. 1,2-Dibromo-3-Chloropropane	0.26	13.0	--- U	--- U	--- U	--- U	--- U
46. Acrylonitrile	1.49	200.0	--- U	--- U	--- U	--- U	--- U
47. trans-1,4-Dichloro-2-Butene	0.14	100.0	--- U	--- U	--- U	--- U	--- U

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