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)
Wayne County Subtitle D Lined MSWLF, Phases 1 & 2	460-B South Landfill Road Dudley, NC 28333	96-06	.1600	August 10-11, 2010

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.

Mark Brown, LG, PG — Senior Professional Geologist — (919) 772-5393

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

Signature — 11/17/10 Date

Affix NC Licensed/ Professional Geologist Seal

NORTH CAROLINA LICENSED SEAL 1711 GEOLOGIST STEPHEN MARK BROWN 11/17/10

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

Semi-Annual Water Quality Monitoring and Statistical Analysis Report

Prepared for

Wayne County Subtitle D Lined MSWLF
Dudley, North Carolina

August 2010

Permit Number: 96-06
MESCO Project Number: G10016.0

Submittal Date: November 17, 2010

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

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OPERATION/CONSTRUCTION MANAGERS
Municipal Services
CIVIL/SANITARY ENGINEERS
Engineering Company, P.A.

November 17, 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 Report and Statistical Analysis, Ph 1 & 2
Wayne County Subtitle D Lined MSWLF
Permit No. 96-06
MESCO Project No. G10016.0

Dear Ms. Drummond:

Introduction

The Wayne County Subtitle D Lined Municipal Solid Waste Landfill (MSWLF) located near Dudley NC, currently operating under permit #96-06 (Phases 1 & 2) is required to submit semi-annual compliance and statistical analysis reports as a condition of the water quality monitoring program. The lined MSWLF encompasses contiguous Phases 1 and 2; which are combined and treated as a single unit for continuity in reporting. Municipal Engineering Services Company, P.A. (MESCO) of Garner NC performed this monitoring event on August 10-11, 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. The site location topographic map is depicted in **Plate 1**.

As specified in 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. Also included are a "Detections Compared to Standards" table, laboratory and field data results, a single-day potentiometric map, groundwater flow directions and flow rates table, monitoring network field observations table, quality assurance/quality control data, statistical analysis, and laboratory analytical data results with chains of custody (C-O-C).

Sampling Procedure

Samples were collected from monitoring locations prescribed in the approved Sampling & Analysis Plan (SAP). The site specific SAP includes water sample collection and analysis from 12 downgradient groundwater monitoring wells (MW-2 through MW-13), one background well (MW-1), four surface water locations (SW-2, SW-3, SW-4, SW-5) and leachate samples from five separate sumps/pump stations (LE-1, LE-2, LS4, LS5, and LS6). Quality control measures, which included submittal and analysis of equipment blank samples (EB), field blank samples (FB), and trip blank samples (TB) were also implemented during this event. Monitoring locations are depicted on the single-day potentiometric map, **Plate 2**.

Sampling was performed in accordance with the SAP, utilizing portable monitoring methodology outlined in the NCDENR SWS guidance document S*olid Waste Section Guidelines for Groundwater, Soil, and Surface Water Sampling* revised April 2008. Monitoring location function and integrity was visually evaluated, preventive maintenance performed, and documentation provided in **Table 4**. The depth to water in each well was electronically gaged prior to purging to quantify the static water level elevation. Low flow pumping methodology or baling was utilized to adequately purge the wells to a minimum of three times the volume of standing water in the well or until dry. During purging, field parameters (dissolved oxygen, oxidation-reduction potential, total dissolved solids, and

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visual turbidity) were recorded in addition to required parameters (pH, specific conductance, temperature). Samples were placed into laboratory-prepared, pre-preserved containers via a new disposable polyethylene bailer. Samples were properly collected/separated based on potential cross-contamination, kept on ice, and transported to a NC-certified laboratory under proper chain-of-custody (C-O-C) protocol within the specified hold times for each analysis.

Field and Laboratory Results

Pace Analytical Laboratories (PACE) of Huntersville and Asheville, NC performed the laboratory analysis. Groundwater, surface water, and quality control samples were analyzed for the Appendix I list of volatile organic compounds (VOCs) (EPA 8260) and total unfiltered metals (EPA 6010). Leachate samples were extracted from the leachate lagoon (LE-1), the forcemain from the Phase 2 landfill sump (LE-2), north sump of Phase 1 (LS4), south sump of Phase 1 (LS5), and the south sump of Phase 2 (LS6). Leachate samples were analyzed for the required leachate specific list that includes Appendix I parameters, nitrate, phosphorus, chemical oxygen demand, biological oxygen demand, sulfate, and pH. The laboratory analytical reports and C-O-Cs are presented in **Appendix B**.

Water samples were analyzed to the laboratory-established Method Detection Limits (MDL). **Table 1** summarizes constituents detected in the water samples above the current Solid Waste Section detection limit (SWSL), Groundwater Protection Standards (GWP), North Carolina Groundwater Standards (2L) or the applicable North Carolina Surface Water Standards (2B) for the applicable Class C water body. **Table 2** tabulates constituents detected in the leachate samples in concentrations above the SWSL, GWP, 2L, or 2B.

Field Parameter Data

The field parameter data appear to be consistent relative to each other and congruent with historically reported data. A field parameter summary is presented in **Table 5** and the field sampling data sheet(s) are enclosed in **Appendix B**.

Groundwater Samples

Cadmium in MW-8 and chromium in MW-13 were detected above the 2L Standard. Arsenic, chromium, and lead were detected above their respective 2L Standards in the upgradient background well, MW-1. No VOCs, were detected in quantifiable concentrations in groundwater samples.

Surfacewater Samples

Silver was detected in a low, non-quantifiable concentration exceeding the 2B Standard in SW-2, located on the unnamed tributary of Edward's Branch between the active lined and unlined MSWLF. Silver was not detected in surface point SW-3, located downstream of SW-2. VOCs, were not detected in quantifiable concentrations in surfacewater samples.

Leachate Samples

Leachate samples contained quantifiable concentrations of nine different VOCs and six metals. The numbers and concentrations of detections are not grossly elevated, typical for leachate from a MSWLF, and generally consistent with historical results. Results are shown in **Table 2**.

Statistical Analysis

Statistical analysis was performed on constituents detected in quantifiable concentrations (above SWSL) from the monitoring wells. The statistical comparison between baseline and current groundwater analytical data is consistent with US EPA guidance documents and meets or exceeds the performance criteria specified in 15A NCAC 13B.1362. An overview of the statistical analysis methodologies, summary tables, graphs, and worksheets are presented in **Appendix A**.

Metal detections continue to be consistent with historical results. Based on statistical evaluation cadmium in MW-8 and cobalt in MW-7 were detected at elevated concentrations compared with background well levels established via interwell analysis. Both cadmium and cobalt were detected in their respective locations during the pre-operation baseline sampling events. Subsequent intrawell analysis indicates these detections have not exhibited a statistically significant increase (SSI) in concentration compared to historically identified levels. Since cobalt has never historically been detected in MW-2 the current concentration was found to be a statistical outlier via Rosner's test of outliers at a 95% confidence level. The detection of cobalt in MW-2 is likely not attributed to a leachate release as cobalt has never been detected in higher levels from samples taken from the closest leachate sump LS5.

Groundwater and Surface Water Characterization

MESCO constructed a single-day potentiometric map of the uppermost aquifer from groundwater elevation data recorded during this monitoring event (**Plate 2**). Groundwater flow rates and directions were calculated based on this data and are included in the attached hydrologic properties table (**Table 3**). Flow directions were calculated to be generally southwest towards Edward's Branch with rates ranging from approximately 2.9 feet/year (MW-6) to 102.8 feet/year (MW-13), and averaging approximately 28.5 feet/year. Streams located within the facility boundaries were visually observed at moderate volume and flow. The flow directions and gradients are consistent with historical observations, showing no changes that would result in a different interpretation of the groundwater system or hinder the effectiveness of the current monitoring network.

Findings

The laboratory results and subsequent statistical analysis indicate that the groundwater has not been impacted by landfill activities. The extremely low, non quantifiable silver concentration detected in SW-2 is not attributed to a leachate release but rather naturally inherent in the local geochemistry. The facility will continue monitoring; the next semi-annual event is tentatively scheduled for February 2011 and the report will be submitted upon completion. If you have any questions or comments regarding this report, please contact us by phone at (919) 772-5393 or by email at jpfohl@mesco.com or mbrown@mesco.com.

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

Madeline German *for* Jonathan Pfohl
Environmental Specialist

Mark Brown, LG, PG
Senior Professional Geologist

NORTH CAROLINA LICENSED SEAL 1711 11/17/10 STATE GEOLOGIST MARK BROWN

Enclosures

cc: Mr. Tim Rogers
Wayne County

Plates

PLATE 1

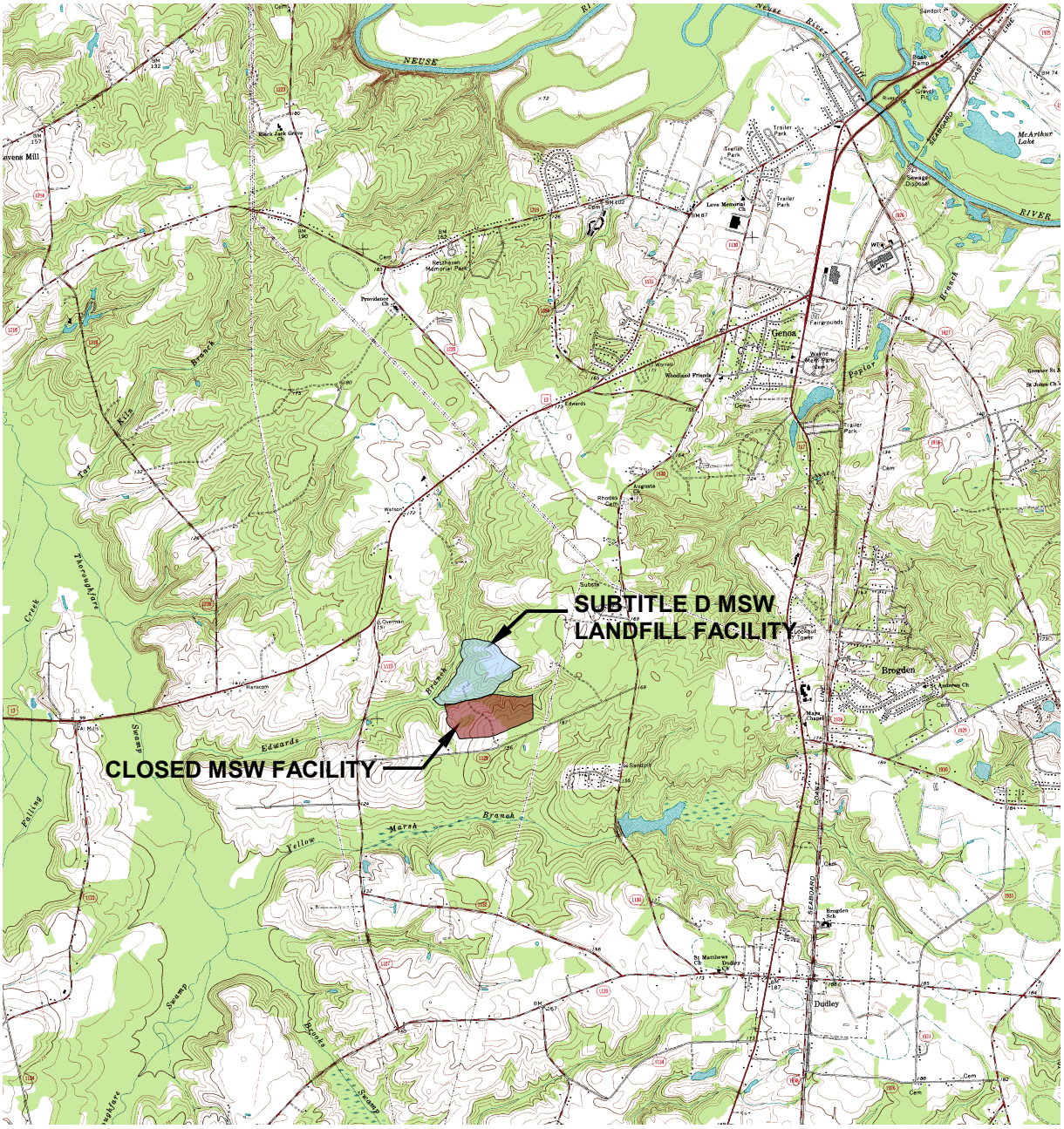
Topographic Map with Site Location

Semi- Annual Sampling

Wayne County Dudley

Date Completed	05/04/2010
Created By	M. Clement
Project Name	Semi – Annual Sampling
Site Name	Wayne County Dudley
Project Number	G10016.0

Municipal Engineering Services Company, PA



ROAD CLASSIFICATION

Primary highway, hard surface

Light-duty road, hard or improved surface

Secondary highway, hard surface

Unimproved road

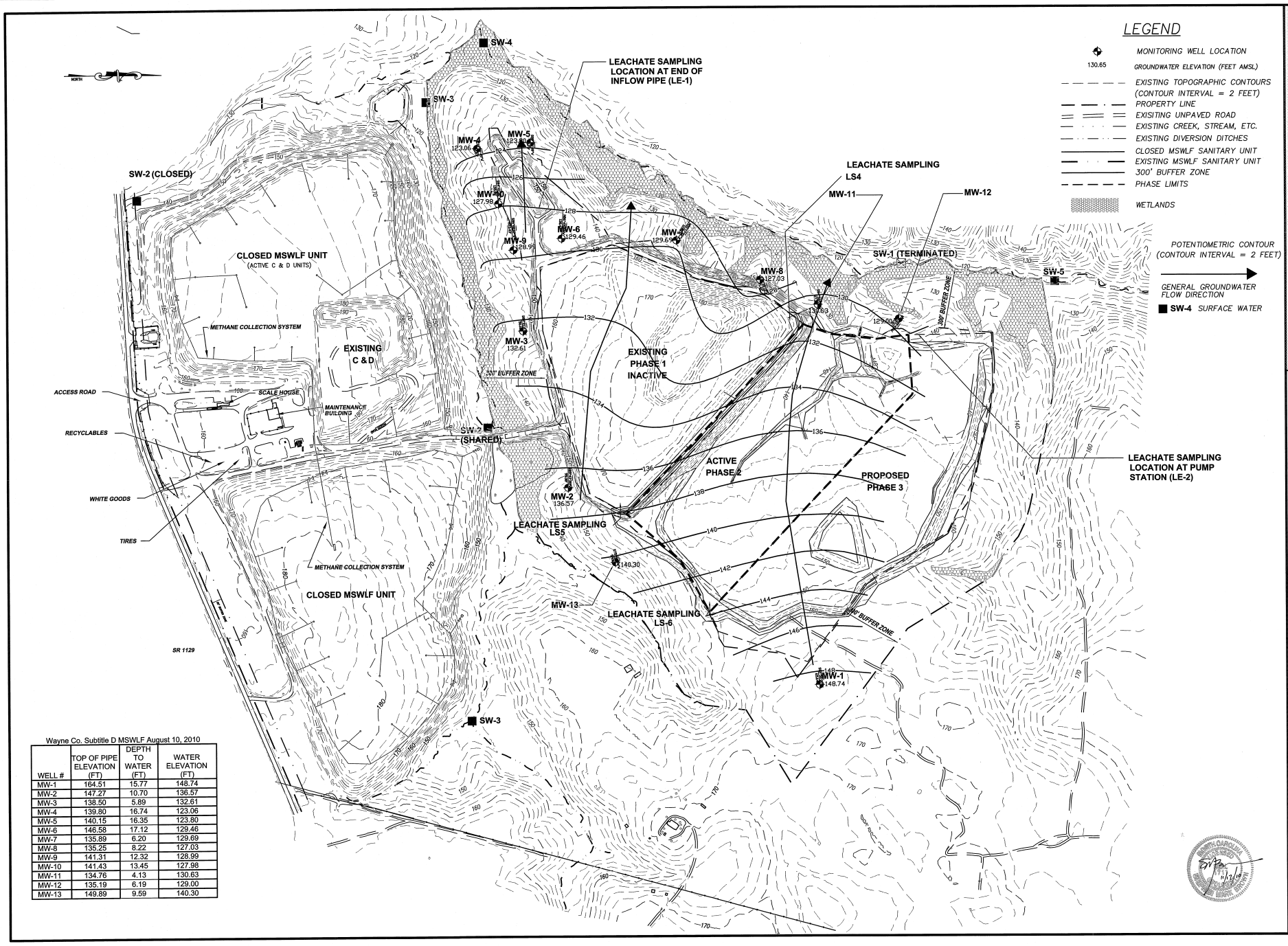
Interstate Route

U. S. Route

State Route

QUADRANGLE LEGEND

1 0 1 MILE



Wayne Co. Subtitle D MSWLF August 10, 2010

WELL #	TOP OF PIPE ELEVATION (FT)	DEPTH TO WATER (FT)	WATER ELEVATION (FT)
MW-1	164.51	15.77	148.74
MW-2	147.27	10.70	136.57
MW-3	138.50	5.89	132.61
MW-4	139.80	16.74	123.06
MW-5	140.15	16.35	123.80
MW-6	146.58	17.12	129.46
MW-7	135.89	6.20	129.69
MW-8	135.25	8.22	127.03
MW-9	141.31	12.32	128.99
MW-10	141.43	13.45	127.98
MW-11	134.76	4.13	130.63
MW-12	135.19	6.19	129.00
MW-13	149.89	9.59	140.30

Municipal Services Engineering Company, P.A.
LICENSE NUMBER: C-0598
P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767

SUBTITLE D LINED MSWLF FACILITY
WAYNE COUNTY
NORTH CAROLINA

DATE	BY	REV.	DESCRIPTION
1-26-98	DRS/JH	1	BASEMAP CREATED

SINGLE DAY POTENTIOMETRIC MAP
UPPERMOST AQUIFER FEB. 15, 2010

SCALE: 1" = 200'
DATE: 4/25/10
DRWN. BY: M. GERMAN
CHKD. BY: M. BROWN
PROJECT NUMBER G10016
DRAWING NO. PLATE 2
SHEET NO. 1 OF 1

Tables

Table 1
Detection Scan Detections above SWSL, GWP, 2L, or 2B
Wayne County Subtitle D Lined MSWLF

Well ID	Parameter Name [1]	Sample Date	Result	Unit	MDL [2]	SWSL [3]	2L [4]	2B [5]	GWP [6]	Exceedance	Preliminary Cause
MW-1	**Arsenic**	**8/10/10**	**29.2**	**ug/L**	**2.7**	10	**10**			**19.2**	**B, N**
MW-1	Beryllium	8/10/10	1.6	ug/L	0.1	1			1.4	0.2	
MW-1	**Chromium**	**8/10/10**	**103**	**ug/L**	**0.4**	10	**10**			**93**	**B, N**
MW-1	Copper	8/10/10	18	ug/L	0.3	10	1000				
MW-1	**Lead**	**8/10/10**	**35.5**	**ug/L**	**4**	10	**15**				**B, N**
MW-1	Vanadium	8/10/10	249	ug/L	0.2	25			3.5	245.5	
MW-1	Zinc	8/10/10	21.1	ug/L	0.4	10	1050				
MW-2	Cadmium	8/10/10	1.4	ug/L	0.5	1	1.75				
MW-2	Cobalt	8/10/10	100	ug/L	0.6	10			70	30	
MW-2	Vanadium	8/10/10	11.7j	ug/L	0.2	25			3.5	8.2	
MW-2	Zinc	8/10/10	13.1	ug/L	0.4	10	1050				
MW-4	Vanadium	8/10/10	5.6j	ug/L	0.2	25			3.5	2.1	
MW-5	Barium	8/10/10	350	ug/L	0.2	100	700				
MW-5	Lead	8/10/10	10.5	ug/L	4	10	15				
MW-5	Vanadium	8/10/10	8j	ug/L	0.2	25			3.5	4.5	
MW-5	Zinc	8/10/10	10.2	ug/L	0.4	10	1050				
MW-7	Cobalt	8/10/10	57	ug/L	0.6	10					
MW-8	**Cadmium**	**8/10/10**	**1.8**	**ug/L**	**0.5**	**1**	**1.75**			**0.05**	**N**
MW-8	Vanadium	8/10/10	3.8j	ug/L	0.2	25			3.5	0.3	
MW-8	Zinc	8/10/10	11.8	ug/L	0.4	10	1050				
MW-9	Vanadium	8/10/10	3.7j	ug/L	0.2	25			3.5	0.2	
MW-13	**Chromium**	**8/10/10**	**10.9**	**ug/L**	**0.4**	**10**	**10**			**0.9**	**N**
MW-13	Vanadium	8/10/10	16.2	ug/L	0.2	25			3.5	12.7	
SW-2	**Silver**	**8/12/10**	**0.2j**	**ug/L**	**0.1**	10		**0.06**		**0.14**	**N**
SW-5	Barium	8/12/10	115	ug/L	0.2	100		200000			
SW-5	Thallium	8/12/10	9.3	ug/L	3	5.5			0.28	9.02	

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

[2] MDL = Method Detection Limit

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

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

[6] 2B = North Carolina 15 NCAC 2B Surface Water Quality Standard for this Specific Stream Classification (Current as of Sampling Event)

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

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

N = Natural from erosion of natural deposits

B = Background

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

Table 2
Detections in Leachate Samples above SWSL
Wayne Co. Subtitle D Lined MSWLF

SAMPLE	Parameter Name [1]	Sample Date	Result	Unit	MDL [2]	SWSL [3]
LE-1	1,4-Dichlorobenzene	08/12/2010	8.1	ug/L	0.33	1
LE-1	Barium	08/12/2010	163	ug/L	0.2	100
LE-1	Benzene	08/12/2010	3.4	ug/L	0.25	1
LE-1	BOD, 5 day	08/12/2010	10800	ug/L	2000	NE
LE-1	Chromium	08/12/2010	12.6	ug/L	0.4	10
LE-1	Cobalt	08/12/2010	56	ug/L	0.6	10
LE-1	COD	08/12/2010	343000	ug/L	25000	NE
LE-1	Copper	08/12/2010	334	ug/L	0.3	10
LE-1	Ethylbenzene	08/12/2010	33.8	ug/L	0.3	1
LE-1	Phosphorus	08/12/2010	418	ug/L	100	NE
LE-1	Toluene	08/12/2010	9	ug/L	0.26	1
LE-1	Vinyl chloride	08/12/2010	1.7	ug/L	0.66	1
LE-1	Xylene (Total)	08/12/2010	95.1	ug/L	0.66	5
LE-1	Zinc	08/12/2010	90.4	ug/L	0.4	10
LE-2	1,4-Dichlorobenzene	08/11/2010	1	ug/L	0.33	1
LE-2	Arsenic	08/11/2010	20.3	ug/L	2.7	10
LE-2	Barium	08/11/2010	325	ug/L	0.2	100
LE-2	Benzene	08/11/2010	3.8	ug/L	0.25	1
LE-2	BOD, 5 day	08/11/2010	29100	ug/L	2000	NE
LE-2	Chromium	08/11/2010	22.4	ug/L	0.4	10
LE-2	Cobalt	08/11/2010	27.8	ug/L	0.6	10
LE-2	COD	08/11/2010	710000	ug/L	50000	NE
LE-2	Copper	08/11/2010	325	ug/L	0.3	10
LE-2	Ethylbenzene	08/11/2010	3.7	ug/L	0.3	1
LE-2	Nickel	08/11/2010	71.5	ug/L	1.7	50
LE-2	Phosphorus	08/11/2010	949	ug/L	100	NE
LE-2	Xylene (Total)	08/11/2010	9.8	ug/L	0.66	5
LE-2	Zinc	08/11/2010	47.9	ug/L	0.4	10
LS-4	Acetone	08/11/2010	183	ug/L	2.2	100
LS-4	BOD, 5 day	08/11/2010	55700	ug/L	2000	NE
LS-4	Chromium	08/11/2010	10.5	ug/L	0.4	10
LS-4	Cobalt	08/11/2010	18.9	ug/L	0.6	10
LS-4	COD	08/11/2010	584000	ug/L	100000	NE
LS-4	Copper	08/11/2010	234	ug/L	0.3	10
LS-4	Ethylbenzene	08/11/2010	1.2	ug/L	0.3	1
LS-4	Phosphorus	08/11/2010	1900	ug/L	100	NE
LS-4	Zinc	08/11/2010	64.5	ug/L	0.4	10

SAMPLE	Parameter Name [1]	Sample Date	Result	Unit	MDL [2]	SWSL [3]
LS-5	1,4-Dichlorobenzene	08/11/2010	4.4	ug/L	0.33	1
LS-5	Antimony	08/11/2010	13.9	ug/L	2.6	6
LS-5	Arsenic	08/11/2010	17.1	ug/L	2.7	10
LS-5	Barium	08/11/2010	172	ug/L	0.2	100
LS-5	BOD, 5 day	08/11/2010	144000	ug/L	2000	NE
LS-5	Chromium	08/11/2010	35	ug/L	0.4	10
LS-5	Cobalt	08/11/2010	34	ug/L	0.6	10
LS-5	COD	08/11/2010	828000	ug/L	50000	NE
LS-5	Copper	08/11/2010	395	ug/L	0.3	10
LS-5	Ethylbenzene	08/11/2010	3	ug/L	0.3	1
LS-5	Nickel	08/11/2010	90.8	ug/L	1.7	50
LS-5	Phosphorus	08/11/2010	1350	ug/L	100	NE
LS-5	Toluene	08/11/2010	2.2	ug/L	0.26	1
LS-5	Xylene (Total)	08/11/2010	8.7	ug/L	0.66	5
LS-5	Zinc	08/11/2010	76.8	ug/L	0.4	10
LS-6	1,2-Dichloroethane	08/11/2010	1.4	ug/L	0.12	1
LS-6	1,2-Dichloropropane	08/11/2010	1.4	ug/L	0.27	1
LS-6	1,4-Dichlorobenzene	08/11/2010	2.8	ug/L	0.33	1
LS-6	Arsenic	08/11/2010	15.1	ug/L	2.7	10
LS-6	Barium	08/11/2010	334	ug/L	0.2	100
LS-6	Benzene	08/11/2010	14.4	ug/L	0.25	1
LS-6	BOD, 5 day	08/11/2010	31600	ug/L	2000	NE
LS-6	Chromium	08/11/2010	16	ug/L	0.4	10
LS-6	Cobalt	08/11/2010	32	ug/L	0.6	10
LS-6	COD	08/11/2010	440000	ug/L	50000	NE
LS-6	Copper	08/11/2010	279	ug/L	0.3	10
LS-6	Ethylbenzene	08/11/2010	13.8	ug/L	0.3	1
LS-6	Lead	08/11/2010	12.5	ug/L	4	10
LS-6	Phosphorus	08/11/2010	527	ug/L	100	NE
LS-6	Toluene	08/11/2010	3.8	ug/L	0.26	1
LS-6	Xylene (Total)	08/11/2010	35.3	ug/L	0.66	5
LS-6	Zinc	08/11/2010	98.3	ug/L	0.4	10

[1] Table contains only constituents detected above SWSL

[2] MDL = Method Detection Limit

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

NE = Not Established

Table 3
Hydrologic Properties at Monitoring Well Locations
Wayne County Subtitle D Lined 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)
MW-1	3.21E-04	31%	0.011	12.1	S82W	15.77	148.74
MW-2	1.37E-03	31%	0.006	26.2	N89W	10.70	136.57
MW-3	9.72E-04	31%	0.011	35.2	S83W	5.89	132.61
MW-4	2.33E-04	9%	0.031	83.1	S74W	16.74	123.06
MW-5	1.45E-04	9%	0.008	14.0	N89W	16.35	123.8
MW-6	8.38E-05	31%	0.011	2.9	N86W	17.12	129.46
MW-7	6.84E-05	9%	0.014	11.1	N55W	6.20	129.69
MW-8	1.68E-04	9%	0.014	26.2	N70W	8.22	127.03
MW-9	6.37E-04	31%	0.004	9.4	S86W	12.32	128.99
MW-10	4.74E-04	31%	0.015	23.0	S84W	13.45	127.98
MW-11	1.46E-04	22%	0.013	9.1	S84W	4.13	130.63
MW-12	1.63E-04	22%	0.019	14.7	S53W	6.19	129
MW-13	2.14E-03	22%	0.010	102.8	S75W	9.59	140.3

NOTE: Data for effective porosity obtained from Design Hydrogeologic Study for Wayne County.
Hydraulic Conductivity values were obtained from slug tests performed on each monitoring well.
Hydrologic Gradient taken from the August 10, 2010 sampling event.
Average 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

Min v_x: 2.9
Mean v_x: 28.5
Median v_x: 14.7
Max v_x: 102.8

Table 4
Field Observations of Monitoring Locations
Wayne County Subtitle D Lined MSWLF-Dudley
August 10-12, 2010 Sampling Event

Sample Location	Viable Monitoring Location	Lack of Any Evidence of Tampering	Locked	Hinge/Hasp Operational	Tagged or Labeled	Concrete Surface Pad Effective	Degree of Visual Turbidity of Collected Sample	Comments
MW-1	Yes	Yes	Yes	Yes	Yes	Yes	Slight	
MW-2	Yes	Yes	Yes	Yes	Yes	Yes	Slight	
MW-3	Yes	Yes	Yes	Yes	Yes	Yes	Clear	
MW-4	Yes	Yes	Yes	Yes	Yes	Yes	Clear	
MW-5	Yes	Yes	Yes	Yes	Yes	Yes	Clear	
MW-6	Yes	Yes	Yes	Yes	Yes	Yes	Clear	
MW-7	Yes	Yes	Yes	Yes	Yes	Yes	Slight	Purge water red algae
MW-8	Yes	Yes	Yes	Yes	Yes	Yes	Clear	
MW-9	Yes	Yes	Yes	Yes	Yes	Yes	Clear	
MW-10	Yes	Yes	Yes	Yes	Yes	Yes	Clear	Tag Replaced
MW-11	Yes	Yes	Yes	Yes	Yes	Yes	Slight	
MW-12	Yes	Yes	Yes	Yes	Yes	Yes	Clear	
MW-13	Yes	Yes	Yes	Yes	Yes	Yes	Clear	
SW-1	No	-	-	-	-	-	Clear	Shared but Dry
SW-2	Yes	-	-	-	-	-	Clear	Shared nearest lined MW-2
SW-3	Yes	-	-	-	-	-	Clear	Shared downstream of SW-2
SW-4	Yes	-	-	-	-	-	Clear	
SW-5	Yes	-	-	-	-	-	Clear	

Any unusual field conditions, observations, or events:

None to note.

Table 5
Summary of Field Parameter Data
Wayne County Subtitle D Lined MSWLF-Dudley
August 10-12, 2010 Sampling Event

Parameter	WLR (BTOC)*	Water Elevation	TOC Elevation	Temp.	ORP	DO	pH	Specific Conductance	TDS	Turbidity
Units	ft	ft (amsl)	ft (amsl)	C	mV	mg/L	SU	umhos/cm	mg/L	Visual
MW-1	15.77	148.74	164.51	16.5	219	6.5	4.81	21	10	Slight
MW-2	10.70	136.57	147.27	19.5	-14	1.9	5.90	415	207	Slight
MW-3	5.89	132.61	138.50	19.9	28	1.4	4.86	27	13	Clear
MW-4	16.74	123.06	139.80	16.5	210	2.2	4.68	25	12	Clear
MW-5	16.35	123.80	140.15	20.3	211	2.0	4.93	33	15	Clear
MW-6	17.12	129.46	146.58	18.1	119	0.5	4.52	31	16	Clear
MW-7	6.20	129.69	135.89	20.1	10	1.4	5.51	154	77	Slight
MW-8	8.22	127.03	135.25	19.8	181	2.4	6.00	226	114	Clear
MW-9	12.32	128.99	141.31	19.9	321	1.3	4.35	25	13	Clear
MW-10	13.45	127.98	141.43	18.8	237	1.4	4.51	29	14	Clear
MW-11	4.13	130.63	134.76	19.0	136	1.7	6.03	69	31	Slight
MW-12	6.19	129.00	135.19	18.0	191	2.4	5.07	56	27	Clear
MW-13	9.59	140.30	149.89	18.1	240	2.5	4.71	77	37	Clear
Minimum	4.13	123.06	134.76	16.5	-14	0.5	4.35	21	10	Clear
Maximum	17.12	148.74	164.51	20.3	321	6.5	6.03	415	207	Slight
Average	10.97	131.37	142.35	18.81	160.69	2.12	5.07	91.38	45.08	Clear
SW-2	-	-	-	23.6	101	6.3	6.89	371	159	Clear
SW-3	-	-	-	23.7	95	6.2	6.92	420	206	Clear
SW-4	-	-	-	23.6	97	6.2	6.71	188	79	Clear
SW-5	-	-	-	24.1	103	6.2	6.86	201	98	Clear
Minimum	-	-	-	23.6	95	6.2	6.71	188	79	Clear
Maximum	-	-	-	24.1	103	6.3	6.92	420	206	Clear
Average	-	-	-	23.75	99	6.23	6.85	295	135.5	Clear

NR = No Reading Attempted

* = All Water Level Readings Taken on 8/10/10

Appendix A
Statistical Analysis

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 1997 through 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.

Table 1. Statistical Analysis Methods for Various %ND Ranges

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

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

Intra-well Analysis

Intra-well analysis was conducted only 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.

Basic Statistics

Parameter: Barium, total

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

Total Measurements	57
Total Non-Detects	56 (98.2456%)
Pooled Mean	199.123
Pooled Std Dev	90.8743
Compliance Meas.	29
Compliance Mean	205.172
Compliance Std Dev	90.9718
Background Meas.	28
Background Mean	192.857
Background Std Dev	92.0087

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	28	28	100	5400

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	192.857	92.0087	0	798	28.5

Compliance Locations

There is 1 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-5	29	28	96.5517	5950

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-5	205.172	90.9718	12.3153	24.238	855	29.4828

Analysis of Variance Statistics

SS Wells	2160.57
SS Total	462456

Kruskal-Wallis Statistics

Non-Detect Rank	28.5
Background Rank Sum	798
Background Rank Mean	28.5
H Statistic	0.0499405
H Adjusted for Ties	0.965517

Basic Statistics

Parameter: Cadmium, total

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

Total Measurements	84
Total Non-Detects	78 (92.8571%)
Pooled Mean	0.611905
Pooled Std Dev	0.465018
Compliance Meas.	56
Compliance Mean	0.667857
Compliance Std Dev	0.56282
Background Meas.	28
Background Mean	0.5
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	28	28	100	14

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.5	0	0	1106	39.5

Compliance Locations

There are 2 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-2	28	26	92.8571	15.9
MW-8	28	24	85.7143	21.5

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-2	0.567857	0.249523	0.0678571	0.121941	1186	42.3571
MW-8	0.767857	0.749841	0.267857	0.121941	1278	45.6429

Analysis of Variance Statistics

SS Wells	1.08595
SS Total	17.9481

Kruskal-Wallis Statistics

Non-Detect Rank	39.5
Background Rank Sum	1106
Background Rank Mean	39.5
H Statistic	0.889316
H Adjusted for Ties	4.46081

Basic Statistics

Parameter: Cobalt, total

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

Total Measurements	87
Total Non-Detects	82 (94.2529%)
Pooled Mean	6.93333
Pooled Std Dev	11.5983
Compliance Meas.	59
Compliance Mean	7.85085
Compliance Std Dev	14.0286
Background Meas.	28
Background Mean	5
Background Std Dev	0

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	28	28	100	140

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	5	0	0	1162	41.5

Compliance Locations

There are 2 compliance location

Location	Obs.	Non-Detects	% ND	Total
MW-2	28	27	96.4286	235
MW-7	31	27	87.0968	228.2

Location	Mean	Std Dev	Dif From Bkg	Std Err	Rank Sum	Rank Mean
MW-2	8.39286	17.9533	3.39286	3.11335	1207.5	43.125
MW-7	7.36129	9.48014	2.36129	3.03709	1458.5	47.0484

Analysis of Variance Statistics

SS Wells	169.981
SS Total	11568.9

Kruskal-Wallis Statistics

Non-Detect Rank	41.5
Background Rank Sum	1162
Background Rank Mean	41.5
H Statistic	0.75942
H Adjusted for Ties	4.66736

Poisson Tolerance Limit

Parameter: Barium, total

Natural Logarithm Transformation
Non-Detects Replaced with Detection Limit

Poisson Count of 28 background measurements = 161.134
Degrees of Freedom = 324

95% Confidence Values

Chi-Squared Value (95% Confidence) = 366.977
Lambda (from Zack's formula) = 6.55316
Smallest Degrees of Freedom = 24
Upper Tolerance Limit (95%) = 11

99% Confidence Values

Chi-Squared Value (99% Confidence) = 386.142
Lambda (from Zack's formula) = 6.8954
Smallest Degrees of Freedom = 29
Upper Tolerance Limit (99%) = 13.5

	Date	Conc.	Significant 95%	Significant 99%
MW-5	12/30/1997	ND<6.21461	FALSE	FALSE
	2/25/1998	ND<6.21461	FALSE	FALSE
	4/27/1998	ND<6.21461	FALSE	FALSE
	6/8/1998	ND<6.21461	FALSE	FALSE
	2/23/1999	ND<6.21461	FALSE	FALSE
	8/24/1999	ND<6.21461	FALSE	FALSE
	2/10/2000	ND<6.21461	FALSE	FALSE
	8/3/2000	ND<6.21461	FALSE	FALSE
	2/8/2001	ND<6.21461	FALSE	FALSE
	8/8/2001	ND<6.21461	FALSE	FALSE
	2/14/2002	ND<6.21461	FALSE	FALSE
	8/22/2002	ND<6.21461	FALSE	FALSE
	2/6/2003	ND<6.21461	FALSE	FALSE
	8/13/2003	ND<6.21461	FALSE	FALSE
	2/18/2004	ND<6.21461	FALSE	FALSE
	8/26/2004	ND<6.21461	FALSE	FALSE
	2/22/2005	ND<6.21461	FALSE	FALSE
	8/9/2005	ND<6.21461	FALSE	FALSE
	8/9/2005	ND<6.21461	FALSE	FALSE
	2/22/2006	ND<6.21461	FALSE	FALSE
	8/29/2006	ND<6.21461	FALSE	FALSE
	2/7/2007	ND<4.60517	FALSE	FALSE
	8/14/2007	ND<4.60517	FALSE	FALSE
	2/12/2008	ND<4.60517	FALSE	FALSE
	8/26/2008	ND<4.60517	FALSE	FALSE
	3/5/2009	ND<4.60517	FALSE	FALSE
	8/6/2009	ND<4.60517	FALSE	FALSE
	2/15/2010	ND<4.60517	FALSE	FALSE
	8/10/2010	5.85793	FALSE	FALSE

Poisson Tolerance Limit

Parameter: Cadmium, total

Natural Logarithm Transformation
Non-Detects Replaced with Detection Limit

Poisson Count of 28 background measurements = 0
Degrees of Freedom = 2

95% Confidence Values

Chi-Squared Value (95% Confidence) = 5.99148
Lambda (from Zack's formula) = 0.106991
Smallest Degrees of Freedom = 3
Upper Tolerance Limit (95%) = 0.5

99% Confidence Values

Chi-Squared Value (99% Confidence) = 9.21035
Lambda (from Zack's formula) = 0.164471
Smallest Degrees of Freedom = 5
Upper Tolerance Limit (99%) = 1.5

	Date	Conc.	Significant 95%	Significant 99%
MW-8	12/30/1997	0.587787	TRUE	FALSE
	2/25/1998	0.693147	TRUE	FALSE
	4/27/1998	ND<0	FALSE	FALSE
	6/8/1998	ND<0	FALSE	FALSE
	2/23/1999	ND<0	FALSE	FALSE
	8/24/1999	ND<0	FALSE	FALSE
	2/10/2000	ND<0	FALSE	FALSE
	8/3/2000	ND<0	FALSE	FALSE
	2/8/2001	ND<0	FALSE	FALSE
	8/8/2001	ND<0	FALSE	FALSE
	2/14/2002	ND<0	FALSE	FALSE
	8/22/2002	ND<0	FALSE	FALSE
	2/6/2003	ND<0	FALSE	FALSE
	8/13/2003	ND<0	FALSE	FALSE
	2/18/2004	ND<0	FALSE	FALSE
	8/26/2004	ND<0	FALSE	FALSE
	2/22/2005	ND<0	FALSE	FALSE
	8/9/2005	ND<0	FALSE	FALSE
	2/22/2006	ND<0	FALSE	FALSE
	8/29/2006	ND<0	FALSE	FALSE
	2/7/2007	ND<0	FALSE	FALSE
	8/14/2007	ND<0	FALSE	FALSE
	2/12/2008	ND<0	FALSE	FALSE
	8/28/2008	ND<0	FALSE	FALSE
	3/5/2009	ND<0	FALSE	FALSE
	8/5/2009	1.36098	TRUE	FALSE
	2/15/2010	ND<0	FALSE	FALSE
	8/10/2010	0.587787	TRUE	FALSE
MW-2	12/30/1997	ND<0	FALSE	FALSE
	2/25/1998	ND<0	FALSE	FALSE
	4/27/1998	ND<0	FALSE	FALSE
	6/8/1998	ND<0	FALSE	FALSE
	2/23/1999	ND<0	FALSE	FALSE
	8/24/1999	ND<0	FALSE	FALSE
	2/10/2000	ND<0	FALSE	FALSE
	8/3/2000	ND<0	FALSE	FALSE
	2/8/2001	ND<0	FALSE	FALSE
	8/8/2001	ND<0	FALSE	FALSE
	2/14/2002	ND<0	FALSE	FALSE
	8/22/2002	ND<0	FALSE	FALSE
	2/6/2003	ND<0	FALSE	FALSE
	8/13/2003	ND<0	FALSE	FALSE
	2/18/2004	ND<0	FALSE	FALSE
	8/26/2004	ND<0	FALSE	FALSE
	2/22/2005	ND<0	FALSE	FALSE
	8/9/2005	ND<0	FALSE	FALSE
	2/22/2006	ND<0	FALSE	FALSE
	8/29/2006	ND<0	FALSE	FALSE
	2/7/2007	ND<0	FALSE	FALSE
	8/14/2007	ND<0	FALSE	FALSE
	2/12/2008	ND<0	FALSE	FALSE
	8/28/2008	ND<0	FALSE	FALSE
	3/5/2009	ND<0	FALSE	FALSE

8/6/2009	ND<0	FALSE	FALSE
2/16/2010	0.405465	FALSE	FALSE
8/10/2010	0.336472	FALSE	FALSE

Poisson Tolerance Limit

Parameter: Cobalt, total

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Poisson Count of 28 background measurements = 280
Degrees of Freedom = 562

95% Confidence Values

Chi-Squared Value (95% Confidence) = 618.259
Lambda (from Zack's formula) = 11.0403
Smallest Degrees of Freedom = 35
Upper Tolerance Limit (95%) = 16.5

99% Confidence Values

Chi-Squared Value (99% Confidence) = 642.921
Lambda (from Zack's formula) = 11.4807
Smallest Degrees of Freedom = 42
Upper Tolerance Limit (99%) = 20

	Date	Conc.	Significant 95%	Significant 99%
MW-2	12/30/1997	ND<10	FALSE	FALSE
	2/25/1998	ND<10	FALSE	FALSE
	4/27/1998	ND<10	FALSE	FALSE
	6/8/1998	ND<10	FALSE	FALSE
	2/23/1999	ND<10	FALSE	FALSE
	8/24/1999	ND<10	FALSE	FALSE
	2/10/2000	ND<10	FALSE	FALSE
	8/3/2000	ND<10	FALSE	FALSE
	2/8/2001	ND<10	FALSE	FALSE
	8/8/2001	ND<10	FALSE	FALSE
	2/14/2002	ND<10	FALSE	FALSE
	8/22/2002	ND<10	FALSE	FALSE
	2/6/2003	ND<10	FALSE	FALSE
	8/13/2003	ND<10	FALSE	FALSE
	2/18/2004	ND<10	FALSE	FALSE
	8/26/2004	ND<10	FALSE	FALSE
	2/22/2005	ND<10	FALSE	FALSE
	8/9/2005	ND<10	FALSE	FALSE
	2/22/2006	ND<10	FALSE	FALSE
	8/29/2006	ND<10	FALSE	FALSE
	2/7/2007	ND<10	FALSE	FALSE
	8/14/2007	ND<10	FALSE	FALSE
	2/12/2008	ND<10	FALSE	FALSE
	8/28/2008	ND<10	FALSE	FALSE
	3/5/2009	ND<10	FALSE	FALSE
	8/6/2009	ND<10	FALSE	FALSE
	2/16/2010	ND<10	FALSE	FALSE
	8/10/2010	100	TRUE	TRUE
MW-7	12/30/1997	10	FALSE	FALSE
	2/25/1998	ND<10	FALSE	FALSE
	4/27/1998	ND<10	FALSE	FALSE
	6/8/1998	ND<10	FALSE	FALSE
	2/23/1999	ND<10	FALSE	FALSE
	8/24/1999	ND<10	FALSE	FALSE
	2/10/2000	ND<10	FALSE	FALSE
	8/3/2000	ND<10	FALSE	FALSE
	2/8/2001	ND<10	FALSE	FALSE
	8/8/2001	ND<10	FALSE	FALSE
	8/8/2001	ND<10	FALSE	FALSE
	2/14/2002	ND<10	FALSE	FALSE
	8/22/2002	ND<10	FALSE	FALSE
	8/22/2002	ND<10	FALSE	FALSE
	2/6/2003	ND<10	FALSE	FALSE
	8/13/2003	ND<10	FALSE	FALSE
	8/13/2003	ND<10	FALSE	FALSE
	2/18/2004	ND<10	FALSE	FALSE
	8/26/2004	ND<10	FALSE	FALSE
	2/22/2005	11	FALSE	FALSE
	8/9/2005	ND<10	FALSE	FALSE
	2/22/2006	ND<10	FALSE	FALSE
	8/29/2006	ND<10	FALSE	FALSE
	2/7/2007	ND<10	FALSE	FALSE
	8/14/2007	ND<10	FALSE	FALSE

2/12/2008	ND<10	FALSE	FALSE
8/25/2008	15.2	FALSE	FALSE
3/5/2009	ND<10	FALSE	FALSE
8/6/2009	ND<10	FALSE	FALSE
2/15/2010	ND<10	FALSE	FALSE
8/10/2010	57	**TRUE**	**TRUE**

Inter-Well Analysis Summary
Wayne County Subtitle D Lined MSWLF
Background Well: MW-1

Barium, total

%ND	Normality	Method	ND Adj.	Upper Limit (a = 95%)	Unit
100	-	Poisson Tolerance Limit	ND	11	Log [ug/l]

Well	Result	Significance
MW-5	5.86	No

Cadmium, total

%ND	Normality	Method	ND Adj.	Upper Limit (a = 95%)	Unit
100	-	Poisson Tolerance Limit	ND	0.5	Log [ug/l]

Well	Result	Significance
MW-2	0.34	No
MW-8	0.59	Yes

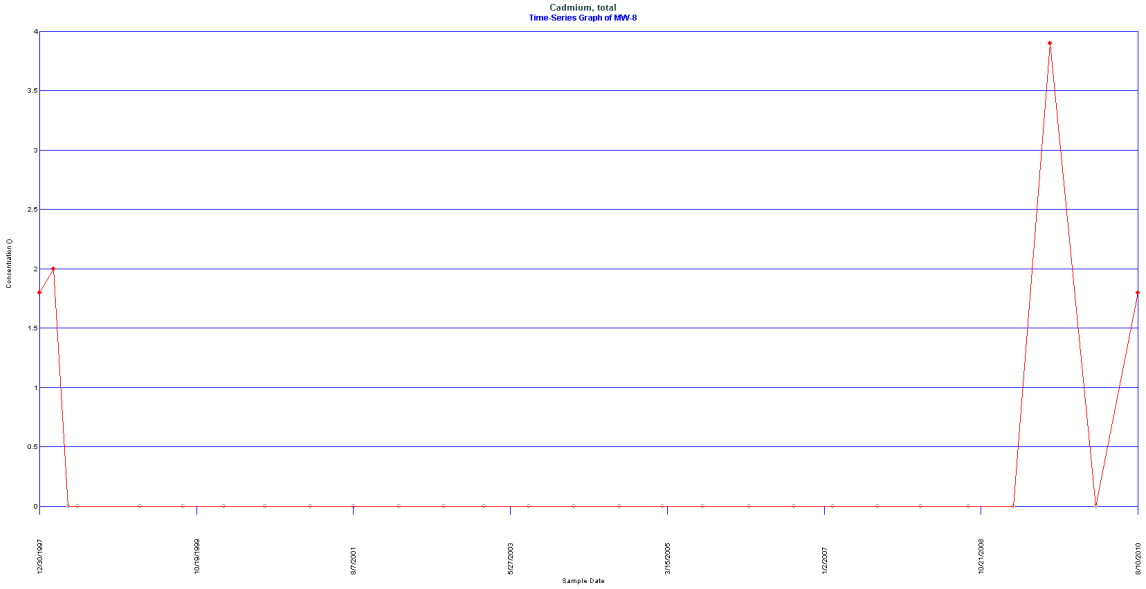
Cobalt

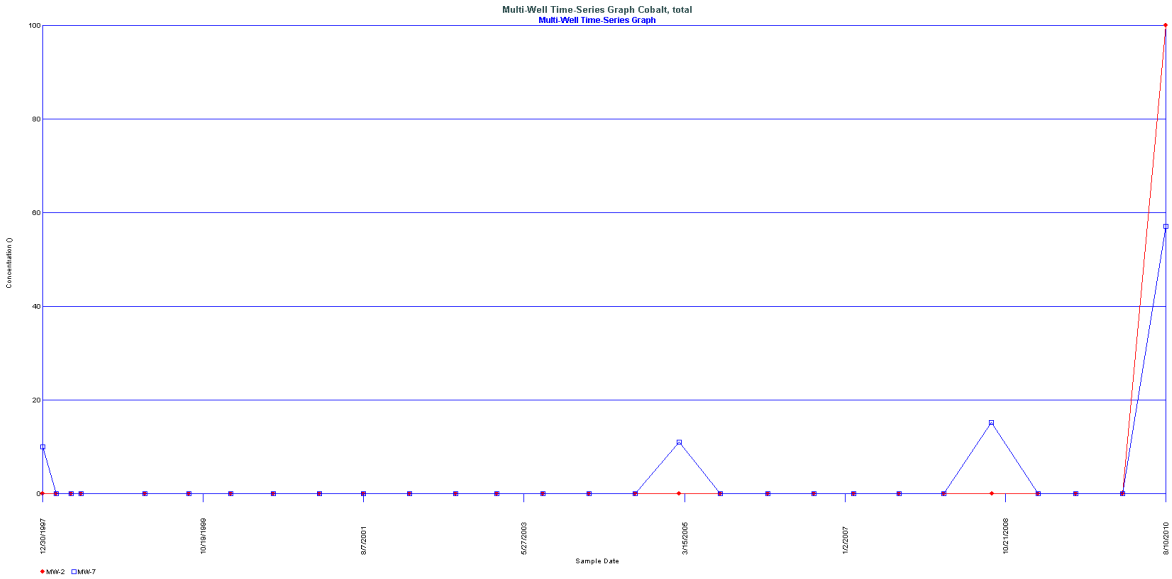
%ND	Normality	Method	ND Adj.	Upper Limit (a = 95%)	Unit
100	-	Poisson Tolerance Limit	ND	16.5	ug/l

Well	Result	Significance
MW-2	100	Yes
MW-7	57	Yes

NOTE: **Bold**-faced monitoring points indicate detected levels exceeded 2L Standard.

Time Series Graphs for Select Constituents
Wayne County Subtitle D Lined MSWLF





Non-Detects (ND) represented as Zero