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).

Fac/Perm/Co ID #	Date	Doc ID#
6004	8/26/11	DIN 14968

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):

S&ME, Inc. (Consultant)

RECEIVED OCT - 8 2010 SOLID WASTE SECTION

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

Name: John Whitehead Phone: 864.574.2360

E-mail: jwhitehead@smeinc.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Duke Energy McGuire Nuclear Station Landfill #1	13339 Hagers Ferry Road Huntersville, NC 28078	60-04	.0500	July 20, 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.

Stanford Lummus, P.E. — Senior Engineer — 864.574.2360

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

Sept. 28, 2010 — Affix NC Licensed/ Professional Geologist Seal

Signature — Date

NORTH CAROLINA PROFESSIONAL SEAL 19425 ENGINEER STANFORD JAMES LUMMUS

301 Zima Park Drive Spartanburg, South Carolina 29301

Facility Representative Address

F-0176

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

Revised 6/2009

SEMI-ANNUAL
GROUNDWATER MONITORING REPORT
JULY 2010 SAMPLING EVENT
DUKE ENERGY MCGUIRE NUCLEAR STATION
LANDFILL #1 (PERMIT #60-04)
HUNTERSVILLE, NORTH CAROLINA

S&ME Project No. 1411-09-047

Prepared For:

Duke Energy®

Prepared By:

S&ME

S&ME, Inc.
301 Zima Park Drive
Spartanburg, South Carolina 29301

September 28, 2010

September 28, 2010

Ms. Jackie Drummond
North Carolina Department of Environment and Natural Resources
Division of Waste Management
Solid Waste Section
1646 Mail Service Center
Raleigh, North Carolina 27699-1646

Reference: **Semi-Annual Groundwater Monitoring Report**
July 2010 Sampling Event
Duke Energy Carolinas – McGuire Nuclear Station
Landfill #1 (Permit # 60-04)
Huntersville, North Carolina
S&ME Project 1411-09-047

Dear Ms. Drummond:

This report presents the semi-annual groundwater monitoring for the McGuire Nuclear Station Landfill #1 (Permit #60-04). The landfill is closed and is located at Duke Energy's McGuire Nuclear Station near Huntersville, North Carolina, in Mecklenburg County. Groundwater sampling for the landfill was performed on July 20, 2010. S&ME is submitting this report on the behalf of Duke Energy.

The Groundwater Monitoring Report for the sampling event includes a summary of the groundwater monitoring activities, the analytical results, a figure showing groundwater contours at the site, and preliminary evaluation of values in excess of the NCAC 2L groundwater standards. Also attached is the Environmental Monitoring Reporting Form. An EXCEL file containing the laboratory results in the Electronic Data Deliverable format will be sent to you by e-mail.

If you have questions or require additional information, please contact me at 828-687-9080.

Sincerely,

S&ME, Inc.

John Whitehead
Senior Geologist

Stanford Lummus, P.E.
Senior Engineer

NORTH CAROLINA PROFESSIONAL SEAL 19425 ENGINEER STANFORD JAMES LUMMUS

North Carolina Professional Engineering Firm License No. F-0176

S:\ENVIRON\2009\1411 Projects\1411-09-047 Duke Landfill GW Reports\MNS LF #1\July 2010 Sampling Event\MNS LF #1 -July 2010 Report.doc

cc: Mr. Andy Tinsley, Duke Energy
Mr. Joe Hack, Mecklenburg County Solid Waste Department
Mr. Dale Dusenberry, NCDENR Radiation Protection Section

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Chain of Custody Form

1.0 BACKGROUND

The McGuire Nuclear Station Landfill #1 (Permit #60-04) is located at the Duke Energy (Duke) McGuire Nuclear Station, near Huntersville, North Carolina, in Mecklenburg County. The landfill is closed and no longer accepts waste. The landfill and nearby area is portrayed on Figure 1. The approximate limit of waste is also shown on Figure 1.

The landfill is located south of N.C. Highway 73, east of the Catawba River, and to the west of Cashion Road. Cashion Road runs along a topographic divide, with topography, sloping away from Cashion Road to the northwest and to the southeast. Thus, surface water to the northwest of Cashion Road drains towards the Catawba River. There are surface water drainage features to the northeast and southwest of the landfill that eventually merge to the northwest, toward a perennial, unnamed stream.

The monitoring system at the landfill consists of twelve (12) groundwater monitoring wells and one surface water sample location, as listed below.

Monitoring Wells:	MW-1
	MW-1D
	MW-2A
	MW-2D
	MW-3
	MW-3D
	MW-4
	MW-4D
	MW-11
	MW-11D
	MW-12
	MW-12D
Surface Water Sample Location	SW-1

The monitoring wells and the surface water sample location are shown on Figure 1. The wells are installed as well pairs with one shallow well and one deeper well adjacent to each other. The well with the "D" designation is the deepest of the pair of wells.

2.0 SCOPE OF WORK

To complete the scope of work, S&ME completed the following tasks:

- Received information provided by Duke on field sampling and measurement of groundwater elevations (performed by Duke) for monitoring wells MW-1, MW-1D, MW-2A, MW-2D, MW-3, MW-3D, MW-4, MW-4D, MW-11, MW-11D, MW-12, and MW-12D. The samples were collected on July 20, 2010.
- Received information provided by Duke of field sampling performed at surface water sample location SW-1. The sample was collected on July 20, 2010.
- Reviewed the laboratory analytical results for the samples described above. These laboratory analyses were performed by Pace Analytical. The results were provided in both in paper format and in an EXCEL file. The EXCEL file was adapted to conform to the format requirements of the NCDENR Electronic Data Deliverable template.
- Developed a groundwater flow contour map using map data and groundwater elevation data supplied by Duke.
- Provided a review to determine if analytical results meet or exceed NC 2L groundwater standards.
- Provided a review to determine if analytical results meet or exceed the Solid Waste Section Limits (SWSLs)
- Prepared and submitted this Groundwater Monitoring Report to Duke and the NCDENR.

3.0 RESULTS

3.1 Site Groundwater Flow

Groundwater flow contours for the site are shown on Figure 2. These contours were developed using the groundwater elevations measured on July 20, 2010.

Groundwater flow beneath the landfill is generally from the south-east end of the landfill towards the surface water drainage features previously described. In more detail, the groundwater flow at the landfill would be described as follows:

- Groundwater flow along the northeast side of the landfill, in the region of wells MW-2/MW-2D, is to the northeast toward the surface water drainage feature located along the northeast side of the landfill.
- Groundwater flow from the northwest end of the landfill in the region of wells MW-3/MW-3D and MW-4/MW-4D, appears to be to the northwest, toward lower topography and the surface water feature located northwest of the landfill.
- Groundwater flow from the west side of the landfill, in the region between wells MW-4/MW-4D and MW-11/MW-11D, appears to be to the west towards the surface water drainage feature located along the west of the landfill.

- Groundwater flow from the southwest side of the landfill, in the region of wells MW-12/MW-12D, is to the southwest toward the lower topography and surface water drainage feature located southwest of the landfill.

3.2 Analytical Results

As noted, Duke collected and chemically analyzed water samples from the twelve (12) groundwater monitoring wells and one (1) surface water sample location comprising the landfill monitoring network. A summary of the field data is presented in Table 1.

Samples were analyzed for the compounds listed on the Chain of Custody form (attached). The results of the laboratory analyses are summarized in Table 2.
The following groundwater monitoring well samples and/or surface water sample attained or exceeded the corresponding NCAC 2L groundwater quality standards:

- pH – pH values equal to or below 6.5 were measured in groundwater samples from wells MW-1, MW-1D, MW-3, MW-3D,MW-4, MW-4D, MW-11, MW-11D, MW-12, and MW-12D. The measured pH values less than or equal to 6.5 ranged from 4.9 (Standard Units) in MW-11 to 6.5 in MW-3D.

  The pH values measured in these wells are consistent with historical measurements at the site.

- Tetrachloroethene – Tetrachloroethene was measured is in excess of the NCAC 2L groundwater standard of 0.7 µg/L in the groundwater sample at well MW-4. The concentration in this well was measured at 1.3µg/L. The values for this compound are shown in the following table.

Sample Date	Tetrachloroethene Concentration (ug/L)
Jan 2007	1.5
July 2007	1.1
Jan 2008	0.89
July 2008	0.88
Jan 2009	1.5
July 2009	1.6
January 2010	1.3
August 2010	1.3

This well is located approximately 15 feet from the waste boundary and approximately 110 feet inside of the NCAC 2L Review Boundary. In 2005 and 2006, wells MW-4D and MW-3 had detections of tetrachloroethene, however the concentrations at these wells dropped in 2007 to levels below the NCAC 2L standard. Duke plans to continue to monitor the results for this compound at this location.

The analytical results show concentrations that meet or exceed the SWSL's as follows:

Barium	MW-1
Trichloroethene	MW-4, MW-4D

Table 3 presents the results of analysis for radiological constituents. These results were provided by Duke Energy. A copy of this report along with the report of the radiological laboratory analysis is submitted to the NCDENR Radiation Protection Section.

TABLES

TABLE 1 - FIELD DATA
DUKE ENERGY McGUIRE NUCLEAR STATION
SOLID WASTE LANDFILL #1 - PERMIT NO. 60-04
GROUNDWATER MONITORING REPORT
S&ME PROJECT 1411-09-047

September 28, 2010

DATE	WELL NO.	WELL DEPTH (feet)	DEPTH TO WATER (feet)	WATER ELEV. (feet)	DEPTH TO PRODUCT (feet)	ODOR	Purge Method	AVG * PMP RATE (ml/min)	WELL VOL (gal)	EVAC VOL (gal)	EVAC (yes/no)	TEMP (deg C)	SPECIFIC CONDUCTANCE (umho/cm)	pH (units)	TURBIDITY (NTU)	ORP (mV-NHE)	DO (mg/l)
7/20/2010	MW-1	69.00	25.09	705.20	NA	NA	CP	NA	7.16	21.75	NO	18.3	95	6.2	3.5	NA	NA
7/20/2010	MW-1D	88.60	25.92	704.75	NA	NA	CP	NA	10.22	30.75	NO	17.6	80	6.3	1.5	NA	NA
7/20/2010	MW-2A	78.00	49.73	690.52	NA	NA	CP	NA	4.61	14.25	NO	17.9	58	6.6	1.5	NA	NA
7/20/2010	MW-2D	110.10	51.30	689.49	NA	NA	CP	NA	9.59	28.50	NO	18.0	61	6.8	1.9	NA	NA
7/20/2010	MW-3	71.00	55.97	673.07	NA	NA	CP	NA	2.45	7.50	NO	16.2	73	6.2	2.0	NA	NA
7/20/2010	MW-3D	88.88	55.35	673.08	NA	NA	CP	NA	5.47	16.50	NO	16.9	100	6.5	0.7	NA	NA
7/20/2010	MW-4	73.95	61.99	679.25	NA	NA	CP	NA	1.95	3.00	YES	17.6	139	5.6	1.2	NA	NA
7/20/2010	MW-4D	101.48	63.12	677.57	NA	NA	CP	NA	6.26	19.50	NO	16.8	116	6.2	0.9	NA	NA
7/20/2010	MW-11	38.54	27.19	695.43	NA	NA	CP	NA	1.85	5.00	YES	16.7	12	4.9	52.4	NA	NA
7/20/2010	MW-11D	101.80	27.91	695.25	NA	NA	CP	NA	12.05	21.50	NO	16.3	25	5.6	10.5	NA	NA
7/20/2010	MW-12	29.59	21.66	703.17	NA	NA	CP	NA	1.29	6.00	NO	14.9	21	5.2	19.9	NA	NA
7/20/2010	MW-12D	68.56	22.89	701.91	NA	NA	CP	NA	7.45	22.50	NO	16.1	95	6.4	8.4	NA	NA
7/20/2010	SW-1	NA	N/A	N/A	NA	NA	NP	NA	N/A	NA	N/A	24.4	127	6.7	59.9	NA	NA

Purge Methods
LF = Low Flow
CP = Coventional Purge (3 to 5 well vol)
BP = No Purge (HydraSleeve)
NA = Not applicable

Field Sampling Performed by Duke Energy

TABLE 2 - FIELD AND GEOCHEMISTRY DATA
DUKE ENERGY McGUIRE NUCLEAR STATION
SOLID WASTE LANDFILL #1 - PERMIT NO. 60-04
GROUNDWATER MONITORING REPORT
S&ME PROJECT 1411-09-047

Facility: McGuire Nuclear Station, Solid Waste Landfill No.1 - Permit # 60-04

Sample Date: July 20, 2010 (Field and Geochemistry Data)

Field Sampling Performed by Duke Energy

Laboratory Certificate Codes:
Duke Power Field #5193
Pace Lab #12
Pace Lab #40

Parameter	SW ID	Units	Certificate Codes	Sample Location Identification							SWSL	15A NCAC 2L*
				6004-MW-1	6004-MW-1D	6004-MW-2A	6004-MW-2D	6004-MW-3	6004-MW-3D	6004-MW-4		
Field pH	320	Std. Units	5193	**6.2**	**6.3**	6.6	6.8	**6.2**	**6.5**	**5.6**		**6.5-8.5**
Field Spec. Conductance	323	umho/cm	5193	95	80	58	61	73	100	139		
Temperature	325	C	5193	18.3	17.6	17.9	18.0	16.2	16.9	17.6		
Top Casing	328	feet		730.29	730.67	740.25	740.79	729.04	728.43	741.24		
Depth to Water	318	feet		25.09	25.92	49.73	51.30	55.97	55.35	61.99		
Water Elevation	319	feet		705.20	704.75	690.52	689.49	673.07	673.08	679.25		
Well Depth	411	feet		69.00	88.60	78.00	110.10	71.00	88.88	73.95		
Arsenic	14	ug/L	40	3.5 J	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	**10**	**10**
Barium	15	ug/L	40	176	66.8 J	14.4 J	13.7 J	38.5 J	21.2 J	61.9 J	**100**	**700**
Cadmium	34	ug/L	40	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**1.0**	**2**
Chloride	301	ug/L	40	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	**NE**	**250000**
Chromium	51	ug/L	40	0.4 U	0.4 U	1.2 J	1 J	0.84 J	0.63 J	0.64 J	**10**	**10**
Lead	131	ug/L	40	4 U	4 U	4 U	4 U	4 U	4 U	4 U	**10**	**15**
Mercury	132	ug/L	40	0.095 J	0.07 U	0.07 U	0.07 U	0.07 U	0.15 J	0.07 U	**0.2**	**1**
Selenium	183	ug/L	40	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	**10**	**20**
Silver	184	ug/L	40	0.32 J	0.66 J	0.14 J	0.10 U	0.17 J	0.17 J	0.10 U	**10**	**20**
Sulfate	315	ug/L	40	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	**250000**	**250000**
VOC's **												
Acetone	3	ug/L	12	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	**100**	**6000**
Dichlorodiflouromethane	74	ug/L	12	0.21 U	0.21 U	0.21 U	0.21 U	0.26 J	0.79 J	0.21 U	**5**	**1000**
cis-1,2-Dichloroethene	78	ug/L	12	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	2.6 J	**5**	**70**
Tetrachloroethene	192	ug/L	12	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	**1.3**	**1**	**0.7**
Toluene	196	ug/L	12	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	**1**	**600**
Trichloroethene	201	ug/L	12	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	1.1	**1**	**3**
Trichlorofluoromethane	203	ug/L	12	0.2 U	0.2 U	0.2 U	0.2 U	0.28 J	0.2 U	0.2 U	**1**	**2000**

Notes:

15A NCAC 2L = 15A NCAC 2L .0200, Groundwater Quality Standards for Class GA groundwater (effective 1/1/10)

BOLD VALUES indicate a values that attain or exceed the 15A NCAC 2L MCL

Values in gray cells indicate values that equal or exceed the SWSL

J = Parameters are values greater than Method Detection Limit (MDL) but less than the SWSL

U = Not detected above the method detection limit, for reporting purposes concentrations have been set equal to the method detection limit

*** Maximum Contaminant Level (MCL)**

**** All EPA method 8260 compounds not specifically listed were less than laboratory reporting limits**

Analytical results provided by Duke Energy and are found in

Pace Lab Report 9273913, dated August 3, 2010.

NC SWSL = North Carolina Solid Waste Section Limit

NE = Not established

TABLE 2 - FIELD AND GEOCHEMISTRY DATA
DUKE ENERGY McGUIRE NUCLEAR STATION
SOLID WASTE LANDFILL #1 - PERMIT NO. 60-04
GROUNDWATER MONITORING REPORT
S&ME PROJECT 1411-09-047

Facility: McGuire Nuclear Station, Solid Waste Landfill No.1 - Permit # 60-04

Sample Date: July 20, 2010 (Field and Geochemistry Data)

Field Sampling Performed by Duke Energy

Laboratory Certificate Codes:
Duke Power Field #5193
Pace Lab #12
Pace Lab #40

Parameter	SW ID	Units	Certificate Codes	Sample Location Identification								SWSL	15A NCAC 2L*
				6004-MW-4D	6004-MW-11	6004-MW-11D	6004-MW-12	6004-MW-12D	6004-SW-1	FIELD BLANK	TRIP BLANK		
Field pH	320	Std. Units	5193	**6.2**	**4.9**	**5.6**	**5.2**	**6.4**	6.7				**6.5-8.5**
Field Spec. Conductance	323	umho/cm	5193	116	12	25	21	95	127				
Temperature	325	C	5193	16.8	16.7	16.3	14.9	16.1	24.4				
Top Casing	328	feet		740.69	722.62	723.16	724.83	724.80					
Depth to Water	318	feet		63.12	27.19	27.91	21.66	22.89					
Water Elevation	319	feet		677.57	695.43	695.25	703.17	701.91					
Well Depth	411	feet		101.48	38.54	101.80	29.59	68.56					
Arsenic	14	ug/L	40	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	3 J	2.7 U		**10**	**10**
Barium	15	ug/L	40	18.8 J	10.5 J	13.3 J	12.7 J	11.4 J	51 J	1 J		**100**	**700**
Cadmium	34	ug/L	40	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U		**1.0**	**2**
Chloride	301	ug/L	40	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U		**NE**	**250000**
Chromium	51	ug/L	40	0.4 U	0.62 J	0.62 J	1.2 J	0.4 U	0.4 U	0.47 J		**10**	**10**
Lead	131	ug/L	40	4 U	4 U	4 U	4 U	4 U	4 U	4 U		**10**	**15**
Mercury	132	ug/L	40	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U		**0.2**	**1**
Selenium	183	ug/L	40	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U		**10**	**20**
Silver	184	ug/L	40	0.77 J	0.14 J	0.10 U	0.19 J	0.16 J	0.24 J	0.17 J		**10**	**20**
Sulfate	315	ug/L	40	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U		**250000**	**250000**
VOC's **													
Acetone	3	ug/L	12	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	3.3 J	20.5 J	2.2 U	**100**	**6000**
Dichlorodiflouromethane	74	ug/L	12	0.81 J	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	**5**	**1000**
cis-1,2-Dichloroethene	78	ug/L	12	1.9 J	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	**5**	**70**
Tetrachloroethene	192	ug/L	12	0.59 J	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	**1**	**0.7**
Toluene	196	ug/L	12	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	**1**	**600**
Trichloroethene	201	ug/L	12	1.4	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	**1**	**3**
Trichlorofluoromethane	203	ug/L	12	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	**1**	**2000**

Notes:

15A NCAC 2L = 15A NCAC 2L .0200, Groundwater Quality Standards for Class GA groundwater (effective 1/1/10)

NC SWSL = North Carolina Solid Waste Section Limit

BOLD VALUES indicate a values that attain or exceed the 15A NCAC 2L MCL

NE = Not established

Values in gray cells indicate values that equal or exceed the SWSL

J = Parameters are values greater than Method Detection Limit (MDL) but less than the SWSL

U = Not detected above the method detection limit, for reporting purposes concentrations have been set equal to the method detection limit

*** Maximum Contaminant Level (MCL)**

**** All EPA method 8260 compounds not specifically listed were less than laboratory reporting limits**

Analytical results provided by Duke Energy and are found in
Pace Lab Report 9273913, dated August 3, 2010.

TABLE 3 - RADIOLOGICAL ANALYTICAL RESULTS
DUKE ENERGY McGUIRE NUCLEAR STATION
LANDFILL #1 - PERMIT #60-04
GROUNDWATER MONITORING REPORT
S&ME PROJECT 1411-09-047

September 28, 2010

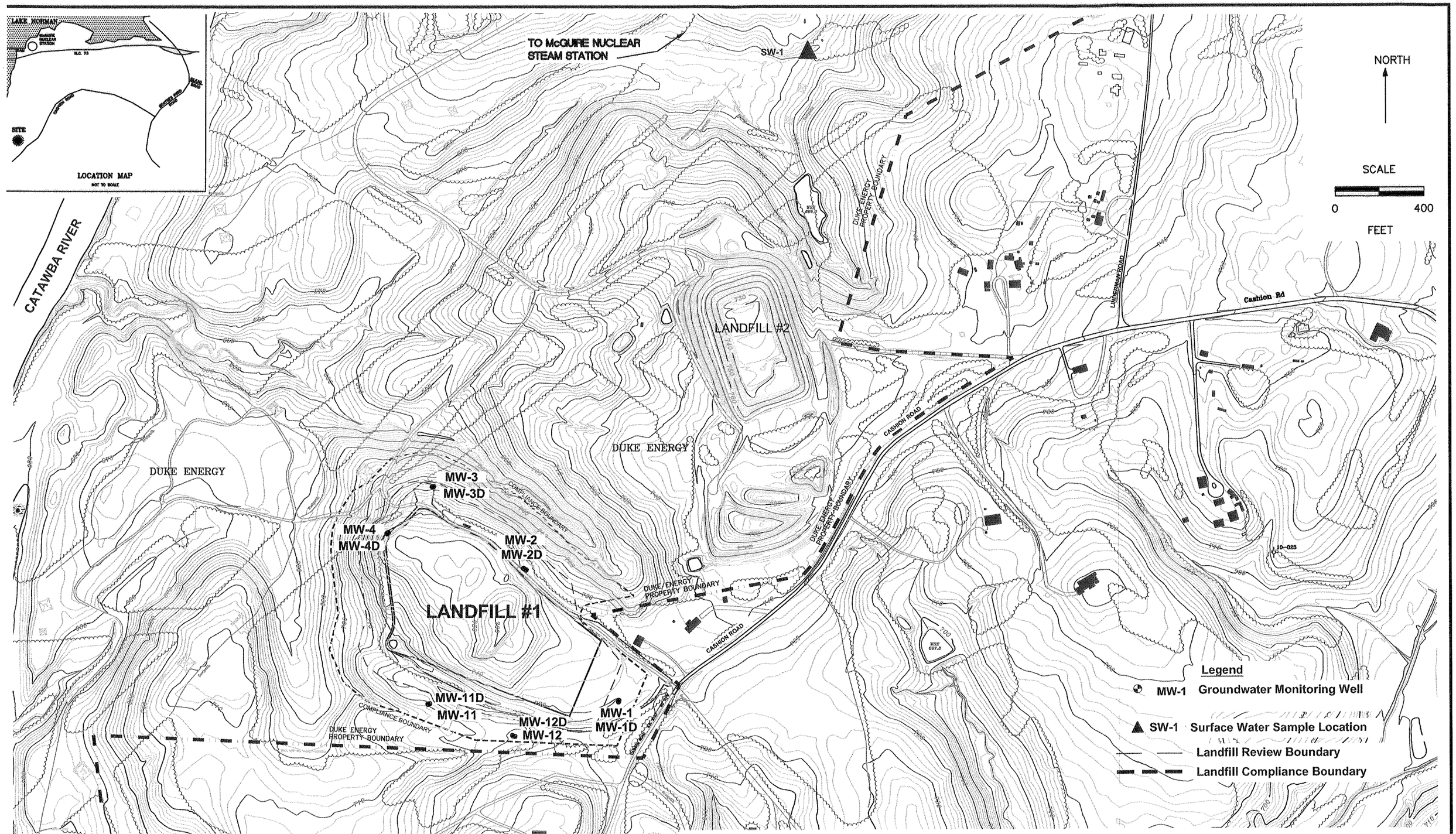
Facility: McGuire Nuclear Station - Synthetically Lined Solid Waste Landfill No.1 - Permit #60-04

Sample Date: July 20, 2010 (Radiological Data)

Field sampling performed by Duke Energy

Parameter	Units	Certificate Code	Sample Location Identification												
			6004-MW-1	6004-MW-1D	6004-MW-2A	6004-MW-2D	6004-MW-3	6004-MW-3D	6004-MW-4	6004-MW-4D	6004-MW-11	6004-MW-11D	6004-MW-12	6004-MW-12D	6004- SW-1
ALPHA	pCi/l	248	< -0.200	< -0.300	< -0.430	< -0.150	< -0.380	< -0.210	< -0.220	< -0.210	< 0.0390	< -0.380	<-0.0410	< 0.0500	< 0.380
BALA140	pCi/l	248	< 4.610	< 7.033	< 3.665	< 5.285	< 5.961	< 6.347	< 6.943	< 4.949	< 6.942	< 10.69	< 8.298	< 3.491	< 5.019
BE7	pCi/l	248	< 34.04	< 35.15	< 23.90	< 29.47	< 37.07	< 38.20	< 39.72	< 26.83	< 43.63	< 53.97	< 44.59	< 28.07	< 34.56
BETA	pCi/l	248	0.606	< 0.260	< -0.320	< 0.320	0.642	< 0.120	< 0.0430	< 0.480	< 0.160	< -0.370	<-0.0670	< 0.180	2.01
CO58	pCi/l	248	< 4.705	< 4.416	< 2.799	< 3.374	< 3.778	< 4.542	< 5.070	< 3.560	< 3.574	< 6.468	< 4.776	< 3.738	< 4.172
CO60	pCi/l	248	< 5.057	< 4.475	< 2.495	< 3.894	< 3.845	< 6.664	< 5.143	< 4.540	< 5.183	< 5.270	< 4.579	< 4.540	< 4.731
CS134	pCi/l	248	< 4.242	< 4.155	< 2.976	< 4.129	< 3.160	< 4.474	< 4.837	< 2.745	< 4.570	< 5.264	< 5.108	< 3.895	< 3.804
CS137	pCi/l	248	< 4.386	< 4.253	< 3.269	< 4.084	< 4.230	< 4.470	< 5.451	< 4.210	< 4.691	< 5.616	< 5.255	< 3.770	< 3.341
FE59	pCi/l	248	< 8.265	< 8.302	< 5.120	< 7.445	< 7.826	< 11.26	< 11.04	< 6.608	< 6.862	< 10.48	< 11.37	< 6.399	< 8.849
H3	pCi/l	248	< -57.6	< -73.1	< -60.0	< -92.5	< -90.0	< -94.6	< -49.9	< -4.30	< 25.4	< 36.9	< 66.9	< 71.0	< 41.6
I131	pCi/l	248	< 4.724	< 4.817	< 3.417	< 4.937	< 4.839	< 5.856	< 6.313	< 4.477	< 6.184	< 7.507	< 8.318	< 4.820	< 5.789
K40	pCi/l	248	< 65.88	76.49	63.83	89.6	50.19	< 83.01	104.8	60.58	215.6	< 103.7	243.3	101.7	< 83.59
MN54	pCi/l	248	< 4.726	< 3.905	< 3.321	< 3.727	< 3.825	< 5.305	< 5.190	< 2.590	< 4.402	< 4.075	< 4.853	< 4.091	< 4.617
NB95	pCi/l	248	< 4.937	< 4.834	< 3.256	< 3.675	< 4.114	< 5.567	< 5.325	< 4.685	< 4.706	< 5.635	< 4.499	< 4.070	< 4.642
ZN65	pCi/l	248	< 9.045	< 9.909	< 7.300	< 7.708	< 8.815	< 10.11	< 8.728	< 8.797	< 9.932	< 9.440	< 9.938	< 8.782	< 9.999
ZR95	pCi/l	248	< 7.856	< 7.563	< 4.225	< 7.150	< 7.891	< 6.649	< 9.932	< 6.660	< 7.790	< 13.22	< 10.24	< 6.444	< 8.244

Notes:
Analytical results provided by Duke Energy and are found in
Duke Energy Lab Report 10-JUN-0042, dated August 3, 2010.



NOTE:
1. PROPERTY LINES, TOPOGRAPHY, AND OTHER PLANEMETRIC DATA OBTAINED FROM MECKELNBURG COUNTY GIS AND ARE APPROXIMATE.
2. LOCATIONS FOR MONITORING WELLS AND SURFACE WATER LOCATIONS WERE PROVIDED BY DUKE ENERGY.

SCALE:	AS SHOWN
CHECKED BY:	s. lummus
DRAWN BY:	j. whitehead
DATE:	Sept. 28, 2010

S&ME

301 Zina Park Drive
Spartanburg, SC
Phone 864.574.2360
Fax 864.576.8730

McGUIRE LANDFILL #1 - Permit #60-04
SITE LOCATION
DUKE ENERGY MCGUIRE NUCLEAR STATION
HUNTERSVILLE, NC

JOB NO: 1411-09-047

FIGURE NO: 1

TO McGUIRE NUCLEAR STEAM STATION

NORTH

SCALE 0 200 FEET

DUKE ENERGY

DUKE ENERGY

MW-3 (673.07')

MW-3D (673.08')

COMPLIANCE BOUNDARY

MW-4 (679.25')

MW-4D (677.57')

MW-2D (689.49')

MW-2A (690.52')

DUKE ENERGY PROPERTY BOUNDARY

LANDFILL #1

CASHION ROAD

WASTE BOUNDARY (APPROXIMATE)

MW-11D (695.25')

MW-11 (695.43')

MW-1D (704.75')

MW-1 (705.20')

COMPLIANCE BOUNDARY

DUKE ENERGY PROPERTY BOUNDARY

MW-12 (703.17')

MW-12D (701.91')

Legend

MW-12D (701.91') Groundwater Monitoring Well (Groundwater Elevation)

800 Groundwater Surface Contour - July 20, 2010

Landfill Review Boundary

Landfill Compliance Boundary

NOTE:
1. PROPERTY LINES, TOPOGRAPHY, AND OTHER PLANEMETRIC DATA OBTAINED FROM MECKELNBURG COUNTY GIS AND ARE APPROXIMATE.
2. LOCATIONS FOR MONITORING WELLS AND SURFACE WATER LOCATIONS WERE PROVIDED BY DUKE ENERGY.

SCALE:	AS SHOWN
CHECKED BY:	s. lummus
DRAWN BY:	j. whitehead
DATE:	Sept. 28, 2010

S&ME

301 Zima Park Drive
Spartanburg, SC
Phone 864.574.2360
Fax 864.576.8730

GROUNDWATER SURFACE CONTOURS
JULY 2010
McGUIRE LANDFILL #1 - Permit #60-04
DUKE ENERGY MCGUIRE NUCLEAR STATION

JOB NO: 1411-09-047

FIGURE NO: 2

APPENDIX

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Rec'd 7-20-10 [illegible]

Duke Energy

For Detailed Instructions, see: http://dewww/essenv/coc/

Duke Energy Analytical Lab Services
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-5038

Analytical Laboratory Use Only

LIMS # 10-JUN-0320 | Sample Class GWATER | Samples Originating From NC √ SC ___

Logged By ABM | Date & Time 6/18/10 7:54

SAMPLE PROGRAM: Groundwater √ NPDES ___ Drinking Water ___ UST ___ RCRA Waste ___

VENDOR PACE (ALL SAMPLES) | Cooler Temp (C) 1.3°

PO # ISW01.1942

MR #

[15]Preserv.: 1=HCl 2=H_2SO_4 3=HNO_3 4=Ice 5=None

[19]Page 1 of 1

DISTRIBUTION ORIGINAL to LAB, COPY to CLIENT

Customer must Complete

1)Project Name MNS LANDFILL 1		2)Phone No: 875-5257
3)Client C. Campbell / T. Hunsucker		4)Fax No:875-4349
5)Business Unit: 20036	6)Process: BLDFLGN	7)Resp. To: MC00
8)Project ID:	9)Activity ID:	10)Mail Code: MGO3A3

Customer to complete all appropriate NON-SHADED areas.

9273913

LAB USE ONLY [11]Lab ID	[12]Chem Desktop No.	[13]Sample Description or ID		[14]Collection Information Date	Time	Signature	[17]Comp.	[18]Grab	VOC - 8260B (1, 4)	ALK, SO4, Cl (4)			Hg (3)	METAL - (Ag, As, Ba, Ca, Cd, Cr, K, Mg, Na, Pb, Se) (3)			Chlorine (ppm)	[20]Total # of Containers
300010015		TRIP BLANK	001	7/20/10	0445	VDC		X	3								n/a	3
300010016		MW-1	002	7/20/10	1130	VDC		X	3	1			1	1				6
300010017		MW-1D	003	7/20/10	1145	VDC		X	3	1			1	1				6
300010018		MW-2A	004	7/20/10	1020	RW		X	3	1			1	1			~~0~~	6
300010019		MW-2D	005	7/20/10	1035	RW		X	3	1			1	1			~~0~~	6
300010020		MW-3	006	7/20/10	0820	RW		X	3	1			1	1			~~0~~	6
300010021		MW-3D	007	7/20/10	0845	RW		X	3	1			1	1			~~0~~	6
300010022		MW-4	008	7/20/10	0715	RW		X	3	1			1	1			~~0~~	6
300010023		MW-4D	009	7/20/10	0725	RW		X	3	1			1	1			~~0~~	6
300010024		MW-11	010	7/20/10	0655	VDC		X	3	1			1	1				6
300010025		MW-11D	011	7/20/10	0740	VDC		X	3	1			1	1				6
300010026		MW-12	012	7/20/10	0845	VDC		X	3	1			1	1				6
300010027		MW-12D	013	7/20/10	0930	VDC		X	3	1			1	1				6
300010028		SW-1	014	7/20/10	1210	VDC		X	3	1			1	1				6
300010029		FIELD BLANK	015	7/20/10	1215	RW		X	3	1			1	1			n/a	6

Customer to complete appropriate columns to right

Customer to sign & date below

21)Relinquished By [signature]	Date/Time 7-20-10 1300	Accepted By [signature]	Date/Time 7/20/10 13:00
Relinquished By Troy Whisenant	Date/Time 7/21/10 240	Accepted By [signature] Pace	Date/Time 7/21/10 1440
Relinquished By	Date/Time	Accepted By	Date/Time
23)Seal/Locked By	Date/Time	Sealed/Lock Opened By [signature] PACE	Date/Time 07/21/10 1520

[22]Requested Turnaround

8/2/10

24)Comments

Regulatory Agency : NCDENR/DWM -SW Section - State EDD Format Required

Sample Condition Upon Receipt

Pace Analytical

Client Name: Duke Project # 9273913

Where Received: ☒ Huntersville ☐ Asheville ☐ Eden

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace Other_____

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Optional
Proj. Due Date:
Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other_____

Thermometer Used: IR Gun T904 Type of Ice: Wet Blue None ☒ Samples on ice, cooling process has begun

Temp Correction Factor: Add / Subtract _____ 0 C

Corrected Cooler Temp.: 3.1 C Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: EAG 7/21/10

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☒Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes	☒No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A	7.
Sufficient Volume:	☒Yes	☐No	☐N/A	8.
Correct Containers Used:	☒Yes	☐No	☐N/A	9.
-Pace Containers Used:	~~☒Yes~~	☒No	☐N/A	
Containers Intact:	☒Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A	11.
Sample Labels match COC:	☒Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT				
All containers needing preservation have been checked.	☒Yes	☐No	☐N/A	13.
containers needing preservation are found to be in compliance with EPA recommendation.	☒Yes	☐No	☐N/A	
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes	☐No		Initial when completed
Samples checked for dechlorination:	☐Yes	☐No	☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☒No	☐N/A	15.
Trip Blank Present:	☐Yes	☐No	☒N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased): _____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: BKM **Date:** 7/21/10

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)