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 14965

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

RECEIVED FEB 22 2010 WASTE SECTION

Name of entity submitting data (laboratory, consultant, facility owner):

S&ME, Inc. (Consultant)

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

Name: William M. Miller, P.E. Phone: 828-687-9080

E-mail: wmiller@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 #2	13339 Hagers Ferry Road Huntersville, NC 28078	60-04	.0500	December 7, 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.

William M. Miller, P.E. — Facility Representative Name (Print)

Senior Project Engineer — Title

828-687-9080 — (Area Code) Telephone Number

William M. Miller — Signature

February 18, 2010 — Date

Affix NC Licensed/ Professional Geologist Seal

NORTH CAROLINA PROFESSIONAL SEAL 17661 ENGINEER WILLIAM M. MILLER

44 Buck Shoals Rd, Suite C-3, Arden, NC 28704

Facility Representative Address

F-0176

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

SOLID WASTE SECTION
RECEIVED
FEB 22 2010

SEMI-ANNUAL GROUNDWATER MONITORING REPORT DECEMBER 2009 SAMPLING EVENT DUKE ENERGY MCGUIRE NUCLEAR STATION LANDFILL #2 PERMIT #60-04

S&ME Project No. 1411-09-047

Prepared For:

Duke Energy®

Prepared By:

S&ME

S&ME, Inc.
44 Buck Shoals Road Suite C-3
Arden, North Carolina 28704

February 18, 2010

S&ME

February 18, 2010

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

Reference: **Semi-Annual Groundwater Monitoring Report**
December 2009 Sampling Event
Duke Energy McGuire Nuclear Station
Landfill #2 (Permit # 60-04)
S&ME Project No. 1411-09-047

Dear Ms. Drummond:

This report presents the semi-annual groundwater monitoring for the McGuire Nuclear Station Landfill #2 (Permit #60-04). The landfill is located at Duke Energy's McGuire Nuclear Station near Huntersville, NC, in Mecklenburg County. Groundwater sampling for the landfill was performed on December 7, 2009. S&ME is submitting this report on the behalf of Duke Energy.

This report includes a brief discussion of the landfill and groundwater monitoring activities, a figure showing groundwater contours at the site, a summary of the analytical results, 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 us at 828-687-9080.

Sincerely,

S&ME, Inc.

Scott Spinner DSM
Scott Spinner
Staff Professional

William M. Miller, P.E.
Senior Project Engineer

NORTH CAROLINA PROFESSIONAL SEAL 17661 ENGINEER WILLIAM M. MILLER

Senior Review by: Larry Armstrong, P.E.

North Carolina Professional Engineering Firm License No. F-0176

S:\2009 PROJECTS\1411\ENVIRONMENTAL PROJECTS\11 09 047 Duke Energy Landfills - GW Reports\MNS LF #2\February 2010 Report (Dec 2009 Data)\DRAFT Report\MNS LF #2 -Report Final (Dec. 2009 Data).doc

cc:

Duke Energy
PO Box 1006
Charlotte, NC 28201-1006
Attn: Mr. Andy Tinsley - Mail Code EC13K

Duke Energy
McGuire Nuclear Station
13339 Hagers Ferry Rd.
Huntersville, NC, 28078
Attn: Mr. Robert Sapp

Mr. Dale Dusenbury
NCDENR Radiation Protection Section
1645 Mail Service Center
Raleigh, NC 27699-1645

Joseph S. Hack, QEP
Solid Waste Management
Mecklenburg County
700 N. Tryon Street
Charlotte, NC 28202

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Chain of Custody Form

1.0 BACKGROUND

The McGuire Nuclear Station Landfill #2 is located at the Duke Energy McGuire Nuclear Station, in Mecklenburg County, NC. The landfill is permitted to accept specified waste from McGuire Nuclear Station and non-hazardous waste from petroleum spills. The landfill was constructed with an HDPE synthetic liner and with a leachate collection and removal system. Leachate and contact stormwater are collected in a lined leachate collection basin and pumped to the McGuire Nuclear Station wastewater treatment system. The landfill is permitted under NCDENR Solid Waste Permit #60-04.

The landfill and nearby area is portrayed on **Figure 1.** The landfill is located south of highway NC 73, north of Cashion Road, and to the west of Linderman Road. Cashion Road runs along a surface water divide, with surface flow draining to the northwest and to the southeast. A surface water drainage feature is located to the northeast of the landfill. This feature drains to the northwest, to a perennial, unnamed stream. Surface water sample location SW-1 is located in this unnamed stream, north of the landfill. The unnamed stream drains to the west, to the Catawba River. Surface water sample location SW-2 is located in this unnamed stream, west of the landfill. A second surface water drainage feature is located the southwest of the landfill, draining to the northwest into the unnamed stream.

The monitoring system at the landfill consists of eleven groundwater monitoring wells and two surface water sample locations, as listed below.

Monitoring Wells:	MW-5
	MW-5A
	MW-6
	MW-6A
	MW-7
	MW-7A
	MW-8
	MW-8A
	MW-9
	MW-9A
	MW-10A
Surface Water	SW-1
Sample Locations	SW-2

The locations of the wells and the surface water sample locations are shown on Figure 1.

With the exception of well MW-10A, the wells are installed as well pairs with one shallow well and one deeper well adjacent to each other. The well with the "A" designation is the deepest of the pair of wells. Well pair MW-9 and MW-9A are installed adjacent to and downgradient from the Leachate Collection Basin. The remaining wells are installed adjacent to the landfill.

2.0 SCOPE OF WORK

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

- Received field sampling information provided by Duke (performed by Duke) for monitoring wells MW-5, MW-5A, MW-6, MW-6A, MW-7, MW-7A, MW-8, MW-8A, MW-9, MW-9A, and MW-10A. Surface water sample locations SW-1, and SW-2 were also sampled. A leachate sample was collected at the outfall of the pipe conveying leachate from the landfill to the Leachate Collection Basin. All samples were collected on December 7, 2009.
- Reviewed the laboratory analytical results for samples. These results were provided in both a paper format and in an EXCEL file. The EXCEL file was manipulated 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 preliminary evaluation of the cause and significance of values exceeding the NC 2L groundwater standards.
- Prepared and submitted this Semi-Annual Groundwater Monitoring Report to Duke and to 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 December 7, 2009.

Cashion Road is located along a surface water divide at elevations ranging from approximately 748 feet to 740 feet. The unnamed stream where surface water sample locations SW-1 and SW-2 are located ranges in elevation from approximately 691 feet near SW-1 to approximately 650 feet near SW-2.

Groundwater flow beneath the landfill is generally from the south end of the landfill towards the surface water drainage features described above. Groundwater flow on the east side of the landfill is towards the surface water drainage feature located to the northeast of MW-6, MW-6A, and MW-10A.

3.2 Analytical Results

Water samples were collected from the following locations:

Monitoring Wells:	MW-5A, MW-6, MW-6A MW-7A, MW-8, MW-8A MW-9, MW-9A MW-10A
Surface Water Sample Locations	SW-1, SW-2
Leachate	Outlet end of pipe conveying leachate from the landfill into the Leachate Collection Basin

Groundwater samples could not be collected from monitoring wells MW-5 and MW-7 due to an insufficient volume of water in these wells.

Samples were analyzed for the compounds listed in the *McGuire Nuclear Station Landfill #2 Permit Number 60-04 Groundwater Monitoring Program Sampling and Analysis Plan, February 24, 2009*. A summary of the field data is presented in **Table 1.** The results of the laboratory analyses for non-radiological samples are summarized in **Table 2.**

Results from the monitoring wells met the corresponding NCAC 2L groundwater quality standards[1] with the exceptions noted below:

- pH – pH values equal to or below 6.5 were measured wells MW-5A, MW-6, MW-6A, MW-7, MW-9, MW-9A, MW-10A and at SW-1. The measured pH values below 6.5 ranged from 5.6 (Standard Units) in MW-6A to 6.5 in MW-9A.

  The pH values measured at these locations are consistent with historic readings at the site.

TPH-DRO compounds were detected in monitoring well MW-10A at a concentration of 0.17 µg/L. No 2L standards are established for TPH-DRO compounds.

Chloromethane was detected in monitoring well MW-8 at a concentration equal to the SWSL of 1.0 µg/L. No additional compounds were measured at concentrations that meet or exceed the SWSL's.

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

[1] Groundwater sampling at this site occurred prior to the 15 A NCAC 02L .0202 Groundwater Quality Standards revision date of January 1, 2010. Therefore the analytical results were compared to the Groundwater Standards in effect at the time of sampling.

TABLE 1 - FIELD DATA PARAMETERS
DUKE ENERGY McGUIRE NUCLEAR STATION
LANDFILL #2 - PERMIT #60-04
GROUNDWATER MONITORING REPORT
S&ME PROJECT 1411-09-047

Febuary 18, 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)
12/7/2009	MW-5	63.90	61.84	706.47	N/A	NA	CP	N/A	0.34	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12/7/2009	MW-5A	96.00	62.73	705.69	N/A	NA	CP	N/A	5.43	16.50	NO	15.0	58	6.2	2.7	N/A	N/A
12/7/2009	MW-6	37.20	29.71	698.74	N/A	NA	CP	N/A	1.22	6.25	NO	15.3	128	6.0	1.4	N/A	N/A
12/7/2009	MW-6A	47.90	28.92	700.06	N/A	NA	CP	N/A	3.10	9.75	NO	15.0	52	5.6	2.1	N/A	N/A
12/7/2009	MW-7	37.30	***	***	N/A	NA	CP	N/A	***	***	***	***	***	***	***	N/A	N/A
12/7/2009	MW-7A	59.40	32.74	691.92	N/A	NA	CP	N/A	4.35	13.50	NO	15.1	108	6.7	2.9	N/A	N/A
12/7/2009	MW-8	71.50	63.06	696.54	N/A	NA	CP	N/A	1.38	1.50	YES	14.1	126	6.7	13.8	N/A	N/A
12/7/2009	MW-8A	84.40	63.05	696.63	N/A	NA	CP	N/A	3.48	10.50	NO	15.1	88	6.9	2.4	N/A	N/A
12/7/2009	MW-9	30.80	24.80	687.07	N/A	NA	CP	N/A	0.98	4.00	NO	17.1	58	5.7	1.5	N/A	N/A
12/7/2009	MW-9A	47.80	25.23	686.90	N/A	NA	CP	N/A	3.68	11.25	NO	17.0	97	6.5	1.1	N/A	N/A
12/7/2009	MW-10A	59.23	50.89	704.89	N/A	NA	CP	N/A	1.36	1.50	YES	14.1	38	5.8	11.7	N/A	N/A
12/7/2009	SW-1	N/A	N/A	NA	N/A	NA	NP	NA	NA	NA	NA	6.7	102	6.5	31.7	NA	NA
12/7/2009	SW-2	N/A	N/A	NA	N/A	NA	NP	NA	NA	NA	NA	9.8	74	6.8	13.1	NA	NA
12/7/2009	LEACHATE POND	N/A	N/A	NA	N/A	NA	NP	NA	NA	NA	NA	14.2	789	7.4	9.1	NA	NA

Sampling Performed by Duke Energy

Purge Methods
LF = Low Flow
CP = Coventional Purge (3 to 5 well vol)
BP = No Purge (HydraSleeve)
*** = Not measured / water level below pump

TABLE 2 - FIELD AND ANALYTICAL RESULTS
DUKE ENERGY McGUIRE NUCLEAR STATION
LANDFILL #2 - PERMIT #60-04
GROUNDWATER MONITORING REPORT
S&ME PROJECT 1411-09-047

February 18, 2010

Facility: McGuire Nuclear Station - Synthetically Lined Solid Waste Landfill No.2 - Permit #60-04

Sample Date: December 7, 2009 (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 Code	Monitoring Well Identification							SWSL	15A NCAC 2L*
				6004-MW-5	6004-MW-5A	6004-MW-6	6004-MW-6A	6004-MW-7	6004-MW-7A	6004-MW-8		
Field pH	320	Std. Units	5193	NS	**6.2**	**6.0**	**5.6**	NS	6.7	6.7		**6.5-8.5**
Field Spec. Cond.	323	umho/cm	5193	NS	58	128	52	NS	108	126		
Temperature	325	C	5193	NS	15.0	15.3	15.0	NS	15.1	14.1		
Top Casing	328	msl-feet		768.31	768.42	728.45	728.98	725.86	724.66	759.60		
Depth to Water	318	feet		61.84	62.73	29.71	28.92	***	32.74	63.06		
Water Elevation	319	msl-feet		706.47	705.69	698.74	700.06	***	691.92	696.54		
Well Depth	41	feet		63.90	96.00	37.20	47.90	37.30	59.40	71.50		
Arsenic	14	ug/L	40	NS	2.7 U	2.7 U	2.7 U	NS	2.7 U	2.7 U	**10**	**50**
Barium	15	ug/L	40	NS	25.6 J	49.6 J	51.7 J	NS	4.1 J	27.6 J	**100**	**2000**
Cadmium	34	ug/L	40	NS	0.50 U	0.50 U	0.50 U	NS	0.50 U	0.50 U	**1.0**	**1.75**
Chloride	301	ug/L	40	NS	5000 U	12500	5690	NS	5000 U	5000 U	**NE**	**250000**
Chromium	51	ug/L	40	NS	0.42 J	1.5 J	0.78 J	NS	0.40 U	1.1 J	**10**	**50**
Lead	131	ug/L	40	NS	4.0 U	4.0 U	4.0 U	NS	4.0 U	4.0 U	**10**	**15**
Mercury	132	ug/L	40	NS	0.070 U	0.070 U	0.070 U	NS	0.070 U	0.070 U	**0.20**	**1.05**
Selenium	183	ug/L	40	NS	3.8 U	3.8 U	3.8 U	NS	3.8 U	3.8 U	**10**	**50**
Silver	184	ug/L	40	NS	0.19 J	0.10 U	0.10 U	NS	0.10 U	0.10 J	**10**	**17.5**
Sulfate	315	ug/L	40	NS	5000 U	5000 U	5000 U	NS	5000 U	5000 U	**250000**	**250000**
TPH(DRO)		ug/L	12	NS	0.062 U	0.062 U	0.062 U	NS	0.062 U	0.062 U	**NE**	**NE**
VOCs **												
Acetone	3	ug/L	12	NS	2.2 U	2.2 U	2.2 U	NS	2.2 U	2.2 U	**100**	**700**
2-Butanone (MEK)	141	ug/L	12	NS	0.96 U	0.96 U	0.96 U	NS	0.96 U	0.96 U	**100**	**4200**
Chloromethane	137	ug/L	12	NS	0.11 U	0.11 U	0.11 U	NS	0.11 U	1.0	**1.0**	**2.6**
Toluene	196	ug/L	12	NS	0.26 U	0.26 U	0.26 U	NS	0.26 U	0.26 U	**1.0**	**1000**

Notes:

15A NCAC 2L = 15A NCAC 2L .0200, Groundwater Quality Standards for Class GA groundwater
BOLD VALUES indicate 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 MDL, for reporting purposes concnetrations have been set equal to the MDL.
NS = No Sample - Insufficient volume in well to collect samples (MW-5 and MW-7).
TPH(DRO) = Diesel Range Organics
MEK = Methyl ethyl ketone
*** Maximum Contaminant Level (MCL)**
**** All EPA method 8260 compounds not specifically listed were less than laboratory method detection limits for all samples.**
***** Groundwater level not measured, water level was below pump.**
Analytical results provided by Duke Energy and are found in
Pace Lab Report 9259006, dated December 29, 2009.

NC SWSL = North Carolina Solid Waste Section Limit
NE = Not established

Groundwater sampling at this site occurred prior to the 15 A NCAC 02L .0202 Groundwater Quality Standards revision date of January 1, 2010.
Therefore the analytical results were compared to the Groundwater Standards in effect at the time of sampling.

TABLE 2 - FIELD AND ANALYTICAL RESULTS
DUKE ENERGY McGUIRE NUCLEAR STATION
LANDFILL #2 - PERMIT #60-04
GROUNDWATER MONITORING REPORT
S&ME PROJECT 1411-09-047

Facility: McGuire Nuclear Station - Synthetically Lined Solid Waste Landfill No.2 - Permit #60-04

Sample Date: December 7, 2009 (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 Code	Monitoring Well Identification							TRIP BLANK	FIELD BLANK	SWSL	15A NCAC 2L*
				6004-MW-8A	6004-MW-9	6004-MW-9A	6004-MW-10A	6004-Leachate	6004-SW-1	6004-SW-2				
Field pH	320	Std. Units	5193	6.9	**5.7**	**6.5**	**5.8**	7.4	**6.5**	6.8				**6.5-8.5**
Field Spec. Cond.	323	umho/cm	5193	88	58	97	38	789	102	74				
Temperature	325	C	5193	15.1	17.1	17.0	14.1	14.2	6.7	9.8				
Top Casing	328	msl-feet		759.68	711.87	712.13	755.78							
Depth to Water	318	feet		63.05	24.80	25.23	50.89							
Water Elevation	319	msl-feet		696.63	687.07	686.90	704.89							
Well Depth	41	feet		84.40	30.80	47.80	59.23							
Arsenic	14	ug/l	40	2.7 U	2.7 U	2.7 U	2.7 U	9.7 J	2.7 U	2.7 U		2.7 U	**10**	**50**
Barium	15	ug/l	40	22.8 J	21.4 J	8.7 J	33.3 J	51.7 J	32.5 J	19.6 J		0.20 U	**100**	**2000**
Cadmium	34	ug/l	40	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U		0.50 U	**1.0**	**1.75**
Chloride	301	ug/l	40	5000 U	5000 U	5000 U	5000 U	18600	5000 U	5350		5000 U	**NE**	**250000**
Chromium	51	ug/l	40	0.40 U	0.64 J	1.4 J	0.58 J	0.40 U	0.40 U	0.40 U		0.81 J	**10**	**50**
Lead	131	ug/l	40	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U		4.0 U	**10**	**15**
Mercury	132	ug/l	40	0.070 U	0.070 U	0.070 U	0.070 U	0.070 U	0.070 U	0.070 U		0.070 U	**0.20**	**1.05**
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		3.8 U	**10**	**50**
Silver	184	ug/l	40	0.10 U	0.10 U	0.10 U	0.10 U	0.24 J	0.10 U	0.10 U		0.10 U	**10**	**17.5**
Sulfate	315	ug/l	40	5000 U	5220 J	5000 U	5000 U	128000	5000 U	5000 U		5000 U	**250000**	**250000**
TPH(DRO)		ug/l	12	0.062 U	0.062 U	0.062 U	0.17	0.64	0.062 U	0.062 U		0.062 U	**NE**	**NE**
VOCs **														
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	2.2 U	10.6 J	**100**	**700**
2-Butanone (MEK)	141	ug/L	12	0.96 U	0.96 U	0.96 U	0.96 U	0.96 U	0.96 U	0.96 U	0.96 U	7.1 J	**100**	**4200**
Chloromethane	137	ug/L	12	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	**1.0**	**2.6**
Toluene	196	ug/L	12	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.32 J	0.26 U	0.26 U	0.26 U	**1.0**	**1000**

Notes:

15A NCAC 2L = 15A NCAC 2L .0200, Groundwater Quality Standards for Class GA groundwater
BOLD VALUES indicate 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 MDL, for reporting purposes concnetrations have been set equal to the MDL.
NS = No Sample - Insufficient volume in well to collect samples (MW-5 and MW-7).
TPH(DRO) = Diesel Range Organics
MEK = Methyl ethyl ketone
*** Maximum Contaminant Level (MCL)**
**** All EPA method 8260 compounds not specifically listed were less than laboratory method detection limits for all samples.**
***** Groundwater level not measured, water level was below pump.**
Analytical results provided by Duke Energy and are found in
Pace Lab Report 9259006, dated December 29, 2009.

NC SWSL = North Carolina Solid Waste Section Limit
NE = Not established

Groundwater sampling at this site occurred prior to the 15 A NCAC 02L .0202 Groundwater Quality Standards revision date of January 1, 2010.
Therefore the analytical results were compared to the Groundwater Standards in effect at the time of sampling.

TABLE 3 - RADIOLOGICAL ANALYTICAL RESULTS
DUKE ENERGY McGUIRE NUCLEAR STATION
LANDFILL #2 - PERMIT #60-04
GROUNDWATER MONITORING REPORT
S&ME PROJECT 1411-09-047

February 18, 2010

Facility: McGuire Nuclear Station - Synthetically Lined Solid Waste Landfill No.2 - Permit #60-04

Laboratory Certificate Codes:
Duke Power Field #248

Sample Date: December 7, 2009 (Radiological Data)

Field sampling performed by Duke Energy

Parameter	Units	Certificate Code	Monitoring Well Identification											Leachate Pond	Surface Water 1	Surface Water 2
			MW-5	MW-5A	MW-6	MW-6A	MW-7	MW-7A	MW-8	MW-8A	MW-9	MW-9A	MW-10A			
ALPHA	pCi/l	248	NS	< -0.049	0.631	< 0.087	NS	< -0.160	< -0.170	< -0.200	< -0.045	< -0.260	< 0.170	1.470	< 0.230	< 0.036
BALA140	pCi/l	248	NS	< 4.150	< 4.565	< 5.174	NS	< 5.519	< 5.631	< 6.202	< 3.905	< 4.686	< 5.417	< 5.806	< 4.741	< 6.128
BE7	pCi/l	248	NS	< 30.60	< 36.84	< 34.45	NS	< 37.38	< 36.73	< 39.16	< 36.28	< 34.96	< 42.79	< 36.81	< 30.84	< 41.07
BETA	pCi/l	248	NS	0.964	< 0.460	< 0.150	NS	< -0.0016	1.000	1.300	< -0.160	< 0.260	0.799	11.60	1.430	1.950
CO58	pCi/l	248	NS	< 3.389	< 4.018	< 3.638	NS	< 4.427	< 5.793	< 5.377	< 4.000	< 4.172	< 4.316	< 3.344	< 3.277	< 5.018
CO60	pCi/l	248	NS	< 4.877	< 4.822	< 4.769	NS	< 5.055	< 4.598	< 5.067	< 5.826	< 3.867	< 7.804	< 2.840	< 3.565	< 5.085
CS134	pCi/l	248	NS	< 3.254	< 4.483	< 3.751	NS	< 3.384	< 4.886	< 4.635	< 4.432	< 3.120	< 5.262	<3.952	< 3.551	< 4.947
CS137	pCi/l	248	NS	< 3.789	< 4.176	< 4.221	NS	< 4.273	< 4.984	< 5.499	< 4.884	< 4.504	< 3.543	<4.401	< 3.272	< 3.504
FE59	pCi/l	248	NS	< 8.017	< 10.56	< 7.041	NS	< 9.371	< 10.02	< 9.077	< 9.583	< 7.258	< 8.916	< 7.042	< 8.360	< 9.639
H3	pCi/l	248	NS	< -12.3	< 8.17	< 4.09	NS	< 55.4	< -16.3	< -34.9	< 65.6	< -12.3	< -12.4	551.0	< -115	286.0
I131	pCi/l	248	NS	< 3.970	< 4.361	< 3.996	NS	< 4.485	< 5.621	< 5.336	< 5.159	< 4.064	< 5.460	< 4.620	< 4.429	< 4.712
K40	pCi/l	248	NS	86.29	88.80	86.30	NS	107.4	68.37	134.5	97.52	114.4	< 97.81	97.28	< 59.11	63.60
MN54	pCi/l	248	NS	< 3.603	< 4.165	< 3.567	NS	< 3.648	< 2.934	< 5.235	< 4.142	< 3.692	< 5.050	< 4.338	< 3.207	< 5.858
NB95	pCi/l	248	NS	< 3.689	< 5.056	< 4.336	NS	< 4.607	< 5.484	< 5.174	< 4.871	< 4.274	< 6.425	< 4.244	< 4.296	< 5.564
ZN65	pCi/l	248	NS	< 8.579	< 9.825	< 9.390	NS	< 9.834	< 7.883	< 9.727	< 8.606	< 8.615	< 9.436	< 9.887	< 7.882	< 9.838
ZR95	pCi/l	248	NS	< 6.075	< 8.447	< 6.624	NS	< 7.307	< 8.046	< 8.657	< 9.142	< 7.593	< 7.541	< 5.285	< 6.960	< 6.702

Notes:

NS = No Sample - Insufficient volume in well to collect samples (MW-5 and MW-7).

Analytical results provided by Duke Energy and are found in

Duke Energy Lab Report 09-NOV-0014, 10-Jan-0003, dated January 26, 2010.

TO McGUIRE NUCLEAR STEAM STATION

SW-1

SW-2

NORTH

SCALE

0 300

FEET

DUKE PROPERTY LINE

MW-8

MW-8A

MW-6A

MW-6

MW-7

MW-7A

MW-9

MW-9A

McGuire Landfill #2 Permit# 60-04

MW-10A

LEACHATE COLLECTION BASIN

LIMIT OF WASTE (approx.)

MW-5

MW-5A

CASHION ROAD

LINDERMAN ROAD

Cashion Rd

DUKE PROPERTY LINE

10-026

CASHION ROAD

Legend

MW-5A Groundwater Monitoring Well

SW-1 Surface Water Sample Location

Landfill Review Boundary

Landfill Compliance Boundary

NOTE:

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

SCALE:	AS SHOWN
CHECKED BY:	L. Armsytrong
DRAWN BY:	W. Miller
DATE:	Feb 18, 2010

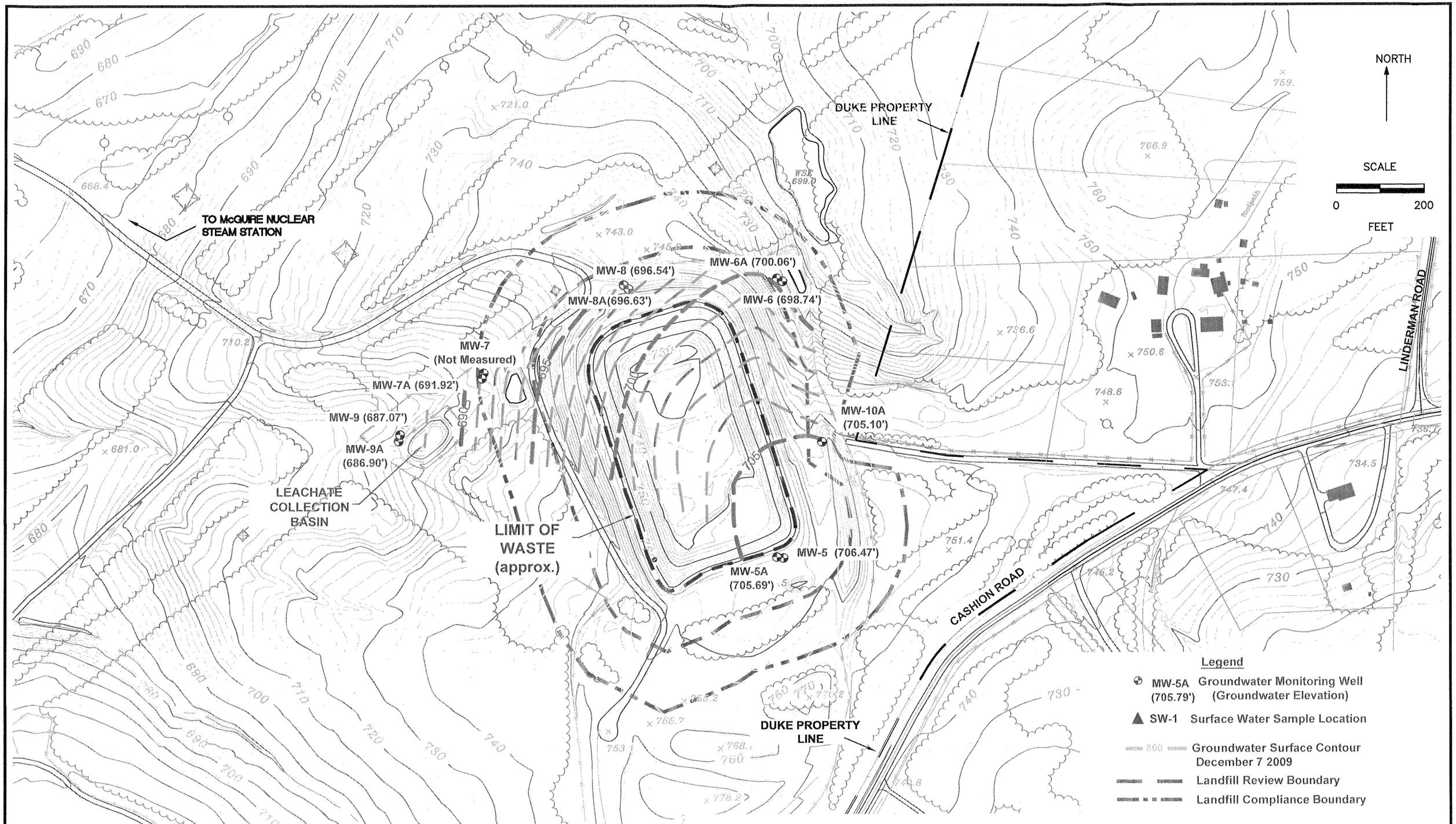
S&ME

44 Buck Shoals Road
Suite C-3
Arden, NC
PH. (828) 687-9080
FAX. (828) 687-8003

McGUIRE LANDFILL #2 - Permit #60-04
SITE MAP
DUKE ENERGY MCGUIRE NUCLEAR STATION

JOB NO: 1411-09-047

FIGURE NO: 1



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

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CHECKED BY:	L. Armsytrong
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S&ME

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Suite C-3
Arden, NC
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GROUNDWATER SURFACE CONTOURS
DECEMBER 2009
McGUIRE LANDFILL #2 - Permit #60-04
DUKE ENERGY MCGUIRE NUCLEAR STATION

JOB NO: 1411-09-047

FIGURE NO: 2

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 # 09-NOV-0254 | Sample Class GWATER | Samples Originating From NC √ SC ___

Logged By EBC | Date & Time 11/13/09 15:30 | SAMPLE PROGRAM: Ground Water √, NPDES ___, Drinking Water ___, UST ___, RCRA Waste ___

Vendor - PACE (ALL samples) | Cooler Temp (C) All < 5°C

PO # ISW01.341 | 15 Preserv.: 1=HCL 2=H_2SO_4 3=HNO_3 4=Ice 5=None

MR #

[19] Page 1 of 2

DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

9259006

1) Project Name	2) Phone No: 875-5257
MNS LANDFILL 2	
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.

LAB USE ONLY 11 Lab ID	12 Chem Desktop No.	13 Sample Description or ID	14 Collection Date	Time	Signature	17 Comp.	18 Grab	VOC's	ALK, SO4, Cl				Hg	METALS - (Ag, As, Ba, Ca, Cd, Cr, K, Mg, Na, Pb, Se)	8015 / 3520 DRO for TPH	Chlorine (ppm)	20 Total # of Containers	
							16 Analyses Required	1, 4	4				3	3	4			
29026176		TRIP BLANK	12/7/09	0510	[illegible]		X	3						DDI		n/a	3	
29026177		MW-5 — NO SAMPLE — LDC					X	3	1				1	1	1		7	
29026178		MW-5A	12/7/09	0750	[illegible]		X	3	1				1	1	1	Ø	7	002
29026179		MW-6	12/7/09	0840	[illegible]		X	3	1				1	1	1	Ø	7	003
29026180		MW-6A	12/7/09	0900	[illegible]		X	3	1				1	1	1	Ø	7	004
29026181		MW-7 — NO SAMPLE — LDC					X	3	1				1	1	1		7	
29026182		MW-7A	12/7/09	0915	[illegible]		X	3	1				1	1	1	Ø	7	005
29026183		MW-8	12/7/09	1010	[illegible]		X	3	1				1	1	1	Ø	7	006
29026184		MW-8A	12/7/09	1020	[illegible]		X	3	1				1	1	1	Ø	7	007
29026185		MW-9	12/7/09	1240	[illegible]		X	3	1				1	1	1	Ø	7	008
29026186		MW-9A	12/7/09	1255	[illegible]		X	3	1				1	1	1		7	009
29026187		MW-10A	12/7/09	0735	[illegible]		X	3	1				1	1	1	Ø	7	010

21) Relinquished By: [illegible]	Date/Time 12-7-09 1335	Accepted By: EB Calder	Date/Time 12-7-09 1335
Relinquished By: EB Calder	Date/Time 12-8-09 11:17	Accepted By: [illegible]	Date/Time 12-8-09 11:17
Relinquished By: [illegible]	Date/Time 12-8-09 12:30	Accepted By:	Date/Time
23) Seal/Locked By: EB Calder	Date/Time 12-7-09 1435	Seal/Lock Opened By: [illegible]	Date/Time 12/8/09 1435

24) Comments

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

[22] Requested Turnaround

12-18-09

PLEASE!!

Send pdf and excel

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

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) 87

Analytical Laboratory Use Only

LIMS # 09-NOV-0254 | Sample Class GWATER | Samples Originating From NC √ SC

Logged By EBC | Date & Time 11/13/09 15:30

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

Vendor - PACE (ALL samples) | All < 5°C Cooler Temp (C)

PO # ISW01.341

MR #

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

[19]Page 2 of 2

DISTRIBUTION ORIGINAL to LAB, COPY to CLIENT

9259006

1)Project Name: MNS LANDFILL 2		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.

LAB USE ONLY [11]Lab ID	[12]Chem Desktop No.	[13]Sample Description or ID	[14]Collection Information Date	Time	Signature	[17]Comp.	[16]Grab	VOC's	ALK, SO4, Cl				Hg	METALS - (Ag, As, Ba, Ca, Cd, Cr, K, Mg, Na, Pb, Se)	8015 / 3520 DRO for TPH	Chlorine (ppm)	[20]Total # of Containers	
29026188		SW-1	12/7/09	1045	[signature]		X	3	1				1	1	1	Ø	7	011
29026189		SW-2	12/7/09	1020	[signature]		X	3	1				1	1	1	Ø	7	012
29026190		LEACHATE POND	12/7/09	0940	[signature]		X	3	1				1	1	1	Ø	7	013
29026191		QC - DAY 1 (WELL # MW-7A)	12/7/09	0915	[signature]		X								1	Ø	1	015
29026192		QC - DAY 2 (WELL #)	NO SAMPLE — USE				X								1			
29026193		FIELD BLANK	12/7/09	1310	[signature]		X	3	1				1	1	1	n/a	7	014

Customer to complete appropriate columns to right

Customer to sign & date below

21)Relinquished By: [signature]	Date/Time: 12-7-09 1335	Accepted By: EB Calder	Date/Time: 12-7-09 1335
Relinquished By: EB Calder	Date/Time: 12-8-09 11:17	Accepted By: [signature] pace ctr	Date/Time: 12-8-09 11:17
Relinquished By: [signature] pace ctr	Date/Time: 12-8-09 12:30	Accepted By:	Date/Time:
23)Seal/Locked By: EB Calder	Date/Time: 12-7-09 1435	Sealed/Lock Opened By: [signature] PACE	Date/Time: 12/08/09 1435

24)Comments

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

Customer important please indicate desired turnaround

[22]Requested Turnaround

14 Days √

*7 Days ___

*48 Hr ___

*Other ___

* Add. Cost Will Apply

Page 6 of 66