

NC DENR

Environmental Monitoring Reporting Form

Division of Waste Management - Solid Waste

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):

HDR Engineering, Inc. of the Carolinas (Consultant)

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

Name: Ian Holdeman Phone: (704) 338-6839

E-mail: ian.holdeman@hdrinc.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Duke Energy Carolinas, LLC Marshall Steam Station Dry Ash Landfill	8320 East NC Highway 150 Terrel, NC 28682	1804	.0500	February 09, 2015

Environmental Status: (Check all that apply)

- Initial/Background Monitoring Detection Monitoring Assessment Monitoring Corrective Action

Type of data submitted: (Check all that apply)

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

Notification attached?

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

Certification

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

William M. Miller Senior Engineer (828) 891-6296

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

William M. Miller *4/30/2015*
Signature Date

Affix NC Professional Geologist Seal

440 S. Church Street Suite 1000, Charlotte, NC 28202

Facility Representative Address

F-0116

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



William M. Miller 4/30/2015

Marshall Steam Station

Semiannual Groundwater Monitoring Report

Dry Ash Landfill, Permit No. 1804

February 2015 Sampling Event

April 30, 2015



Report Verification

**PROJECT: SEMIANNUAL GROUNDWATER MONITORING REPORT
MARSHALL STEAM STATION
DRY ASH LANDFILL
PERMIT NO. 1804**

TITLE: FEBRUARY 2015 SAMPLING EVENT

This document has been reviewed for accuracy and quality commensurate with the intended application.

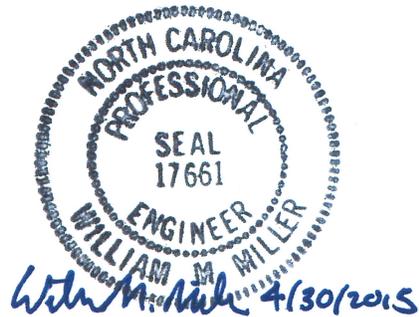
Prepared by: *Alan Miller* Date: 4/30/2015

Checked by: *William M. Miller* Date: 4/30/2015

Approved by: *Brooke Ahrens* Date: 4/30/2015

Project Manager: Brooke Ahrens, PE

Professional Engineer Seal:



HDR Engineering, Inc. of the Carolinas
440 South Church St., Suite 1000
Charlotte, NC 28202
North Carolina Engineering Firm Number F-0116



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Section 1 - Background

The Marshall Dry Ash Landfill is located at Marshall Steam Station which is owned and operated by Duke Energy Carolinas, LLC (Duke Energy). Marshall Steam Station is a four-unit, coal-fired generating facility located on Lake Norman in Catawba County, North Carolina.

The Marshall Dry Ash Landfill consists of two separate disposal areas permitted in December 1983 under North Carolina Department of Environment and Natural Resources (NCDENR) Solid Waste Permit No. 1804. Placement of fly-ash began in September 1984 in the area designated as Phase I. Phase I consists of approximately 14.5 acres and approximately 280,000 tons of fly-ash placed between September 1984 and March 1986. Placement of ash in this area was completed around March 1986. Placement of ash in Phase II, approximately 46 acres, began around March 1986 and was completed in 1999.

The location of the landfill and nearby surrounding areas is shown on Figure 1. The landfill is located north of the power plant and south of Island Point Road. The Marshall Steam Station ash basin is located adjacent to the western boundary of the landfill.

The groundwater monitoring system for the Marshall Dry Ash Landfill consists of the following:

Monitoring Wells: MW-1
MW-2
MW-3
MW-4
MW-5

Observation Well: OB-1

The locations of the wells are shown on Figure 2. Monitoring wells MW-2, MW-3, and MW-5 are located adjacent to the 46-acre landfill. Monitoring well MW-1 and observation well OB-1 are located adjacent to the 14.5-acre landfill. Observation well OB-1 is only used to measure groundwater levels.

Monitoring well MW-4 is located upgradient from the 46-acre landfill and is described in the Post-Closure Ground-Water Monitoring Program Sampling and Analysis Plan¹ (SAP) as representing upgradient groundwater quality. All of the groundwater monitoring wells are screened to monitor the shallow aquifer. Table 1 presents well construction information for the landfill monitoring wells.

¹ Marshall Steam Station Industrial Landfill-Phase II Permit #18-04 Post-Closure Ground-Water Monitoring Program Sampling and Analysis Plan. Dated September 20, 1999.

Section 2 - Methods

2.1 Sampling and Analysis Methods

Groundwater sampling and documentation of sampling activities were performed by Duke Energy personnel (Field Certification #5193) according to the North Carolina Solid Waste Management Guidelines. Copies of the field sampling forms are included in Appendix A. The parameters and constituents reported were selected by Duke Energy and the NCDENR Division of Solid Waste and were analyzed by Duke Energy Analytical Laboratory (North Carolina Laboratory Certification #248), Pace Analytical Services, Inc., Asheville (North Carolina Laboratory Certification #40), and Summit Environmental Technologies, Inc. (North Carolina Laboratory Certification #631).

The groundwater samples were analyzed for the following constituents and/or parameters:

- Barium, boron, calcium, chromium, copper, iron, manganese, nickel, silver, and zinc using U.S. Environmental Protection Agency (EPA) Method 200.7
- Arsenic, cadmium, lead, and selenium using EPA Method 200.8
- Mercury using EPA Method 245.1
- Total Dissolved Solids using Standard Method (SM) 2540C
- Chloride, fluoride, nitrate as nitrogen, and sulfate using EPA Method 300.0
- Biological oxygen demand using SM 5210B
- Chemical oxygen demand using the HACH Method 8000
- Total organic carbon using SM 5310C/EPA 9060A
- Total organic halide using EPA Method 9020

2.2 Statement of Work

HDR completed the following tasks:

- Received field sampling information provided by Duke Energy for monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-5 and water level information for observation well OB-1. The samples were collected on February 9, 2015, and HDR received the data on March 3, 2015.
- Reviewed the laboratory analytical results for samples. The Electronic Data Deliverable (EDD) provided by Duke Energy was adapted to conform to the format requirements of the NCDENR EDD template. HDR added an italicized J data qualifier (*J*) to indicate a detected concentration that attains or is greater than the laboratory's method reporting



limit (MRL) but less than the Solid Waste Section Limit² (SWSL). A copy of the original EDD is retained in HDR's files.

- Developed a generalized groundwater surface contour map using map data and groundwater elevation data supplied by Duke Energy. Calculated groundwater flow velocities based on groundwater surface contours.
- Prepared and submitted this Semiannual Groundwater Monitoring Report to Duke Energy.

² The Solid Waste Section Limit (SWSL) is defined by NCDENR as the lowest amount of analyte in a sample that can be quantitatively determined with suitable precision and accuracy. The SWSL is the concentration below which reported results must be qualified as estimated. NCDENR Division of Waste Management Memorandum dated February 23, 2007.

Section 3 - Results

3.1 Site Groundwater Flow

Generalized groundwater surface contours and groundwater flow direction arrows for the site are shown on Figure 3. These contours were developed using the groundwater elevations measured in the wells on the date of sampling and using the approximate surface water elevations for the Marshall Ash Basin and the adjacent Lake Norman. Calculated groundwater flow velocities are presented in Table 2.

The ground surface in the area of the larger landfill slopes from the elevation along Island Point Road (located north of MW-4), approximate elevation 880 feet to 890 feet, downward toward the Marshall Ash Basin which has a surface water elevation of approximately 790 feet. Lake Norman is located to the east of the Marshall Ash Basin. The full pond elevation of Lake Norman is 760 feet.

Groundwater flow at the site is from areas of higher topography toward the ash basin and on toward Lake Norman. Monitoring well MW-4 is located north of the 46-acre landfill and is at the highest topographic elevation. Groundwater flow is generally from MW-4 toward the 46-acre landfill and to the ash basin. It is expected that flow would be from the topographically higher region north of MW-3 and MW-5 toward the 46-acre landfill, or in the case of MW-5, toward the portion of ash basin located to the east of the 46-acre landfill.

Based on an August 6, 2012, survey, monitoring well MW-2 is located approximately 100 feet inside the landfill review boundary and approximately 25 feet to 30 feet outside the limit of waste.

Duke Energy has acquired property north of the 46-acre landfill. The compliance boundary on the north side of the 46-acre landfill was previously coincident with the property boundary. The revised property and compliance boundaries are depicted on Figure 2. Due to the property boundary revision, monitoring well MW-3 is located approximately 50 feet inside the landfill review boundary and approximately 75 feet outside the limit of waste.

The water elevation at monitoring well MW-3 is approximately the same as the pond elevation of two adjacent ponded areas. These ponded areas were part of the original ash basin and were cut off from the main body of the ash basin during construction of the 46-acre landfill. Monitoring well MW-5 is located on the east side of the 46-acre landfill adjacent to an inactive portion of the ash basin. This inactive portion of the ash basin no longer contains appreciable free water and is filled with ash that was sluiced from the ash basin.

The groundwater flow in the region near the 14.5-acre landfill area appears to be from the ash basin (elevation 790 feet) toward the arm of Lake Norman (elevation 760 feet) located east of OB-1 and MW-1.

3.2 Analytical Results

A summary of the field data is presented in Table 3.

The field and laboratory results of groundwater sampling are summarized in Table 4. Concentrations with values that equal or are greater than the SWSLs are noted on Table 4 by



gray cells. Concentrations with values that attain or exceed the Title 15A NCAC 02L .0202 (g) Standards (2L Standards) are noted on Table 4 by bold font.

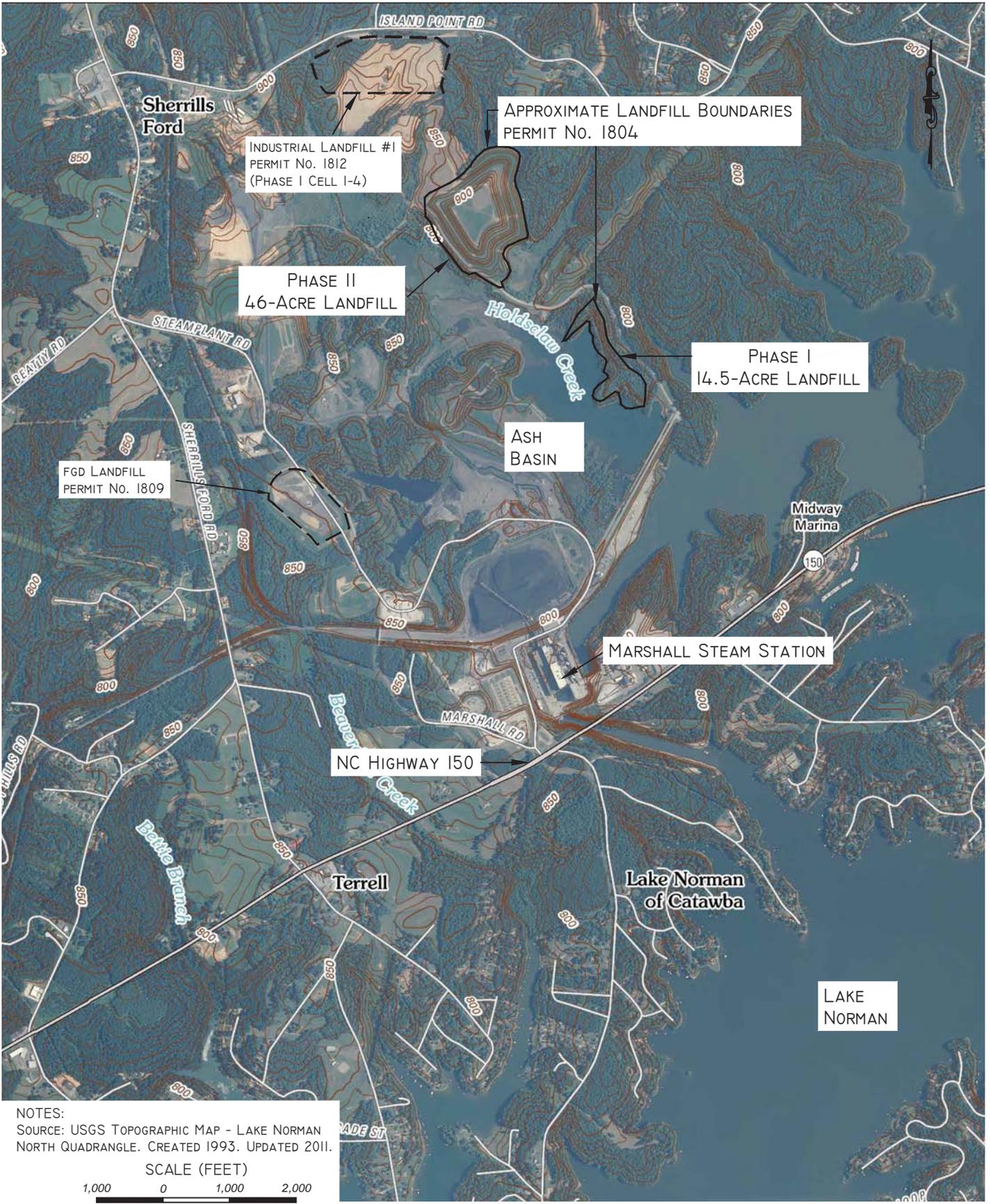
A summary of the field and analytical results that attain or exceed the 2L Standards and a preliminary analysis of the cause and significance of the exceedances are presented in Table 5.

Selected samples were diluted as is normal laboratory practice to bring samples to the calibrated range of the analysis. Specifics regarding the samples that were diluted, including the dilution amount, are reported in the EDD.

The laboratory report and chain-of-custody forms can be found in Appendix B.

HDR prepared and submitted an assessment to NCDENR on historic exceedances of the 2L Standards at this landfill (Groundwater Assessment, Marshall Steam Station, Dry Ash Landfill, December 21, 2012). The report assessed 2L Standard exceedances for manganese at monitoring wells MW-3 and MW-5. The report concluded that for the period of analytical results reviewed, the manganese exceedances at monitoring wells MW-3 and MW-5 were likely the result of naturally-occurring manganese and were not caused by impacts from the landfill.

FIGURES



NOTES:
 SOURCE: USGS TOPOGRAPHIC MAP - LAKE NORMAN
 NORTH QUADRANGLE. CREATED 1993. UPDATED 2011.



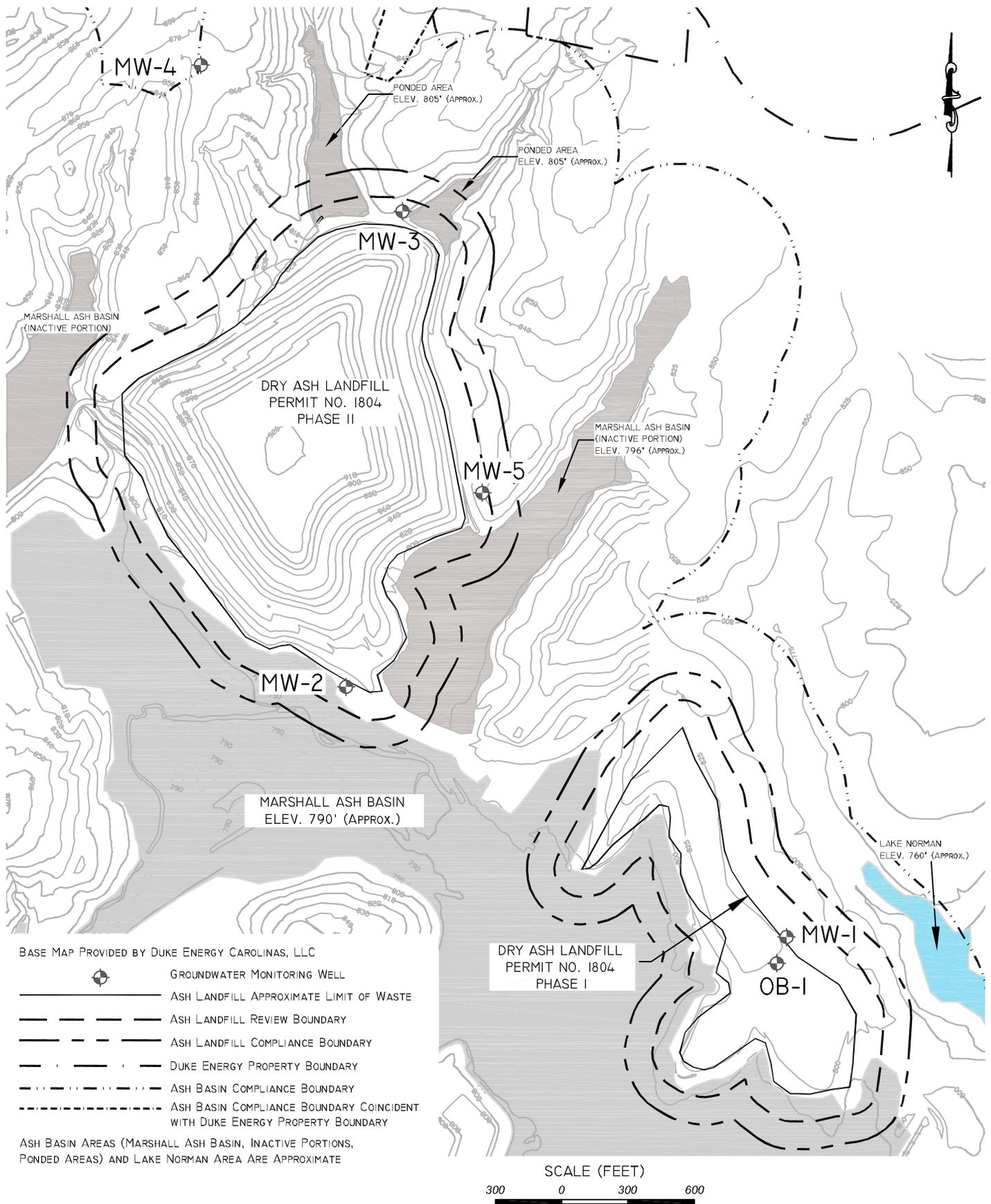
**SITE LOCATION MAP
 MARSHALL STEAM STATION
 DRY ASH LANDFILL
 PERMIT NO. 1804**

DATE
 MAY 10, 2015

FIGURE
1



License Number: F-0116
 440 South Church Street Charlotte, NC 28202

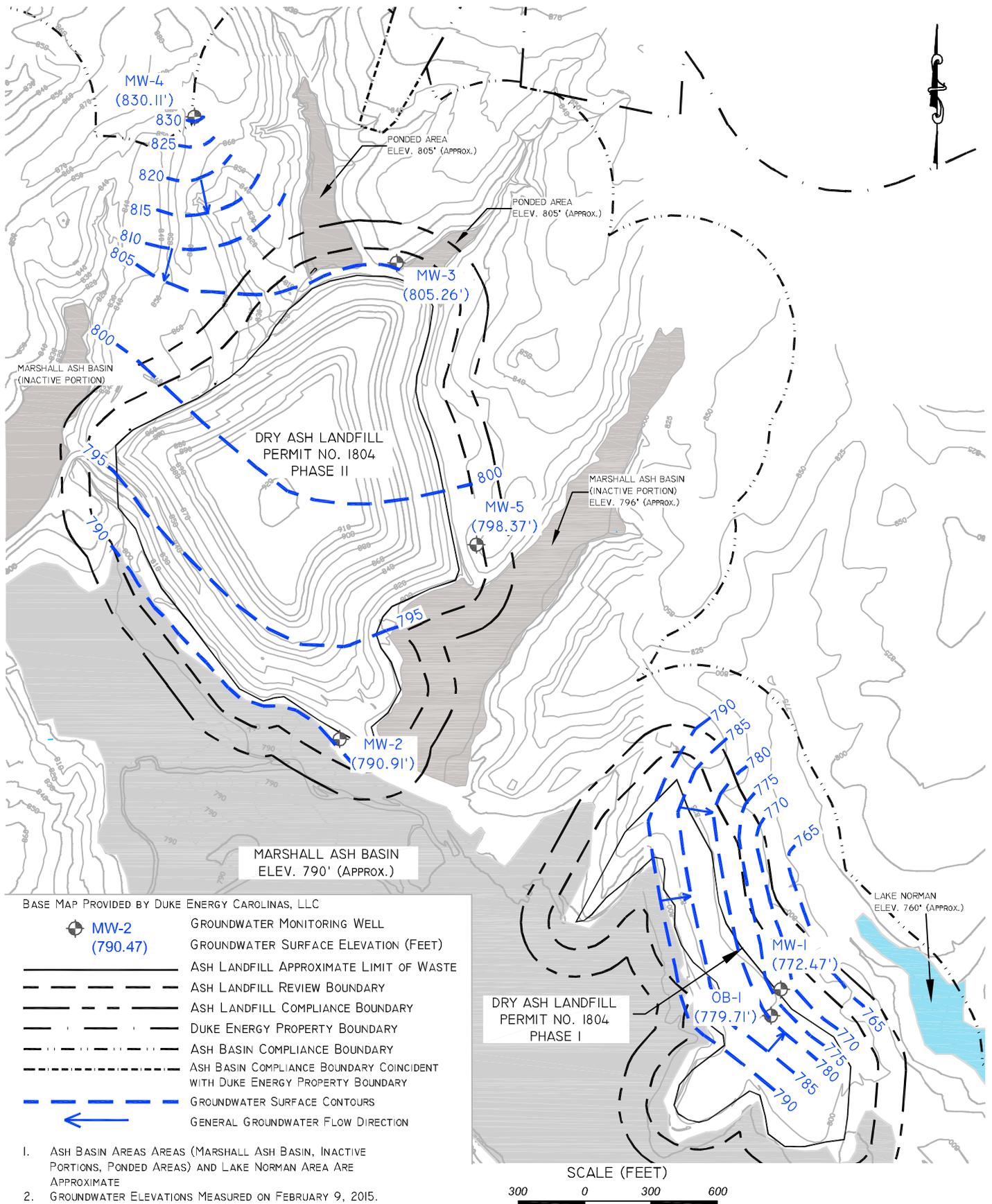


**SAMPLE LOCATIONS
MARSHALL STEAM STATION
DRY ASH LANDFILL
PERMIT NO. 1804**

DATE
MAY 10, 2015

FIGURE
2





BASE MAP PROVIDED BY DUKE ENERGY CAROLINAS, LLC

- MW-2 (790.47) GROUNDWATER MONITORING WELL
- GROUNDWATER SURFACE ELEVATION (FEET)
- ASH LANDFILL APPROXIMATE LIMIT OF WASTE
- ASH LANDFILL REVIEW BOUNDARY
- ASH LANDFILL COMPLIANCE BOUNDARY
- DUKE ENERGY PROPERTY BOUNDARY
- ASH BASIN COMPLIANCE BOUNDARY
- ASH BASIN COMPLIANCE BOUNDARY COINCIDENT WITH DUKE ENERGY PROPERTY BOUNDARY
- GROUNDWATER SURFACE CONTOURS
- GENERAL GROUNDWATER FLOW DIRECTION

1. ASH BASIN AREAS (MARSHALL ASH BASIN, INACTIVE PORTIONS, PONED AREAS) AND LAKE NORMAN AREA ARE APPROXIMATE
2. GROUNDWATER ELEVATIONS MEASURED ON FEBRUARY 9, 2015.

DRY ASH LANDFILL PERMIT NO. 1804 PHASE I

SCALE (FEET)



License Number: F-0116
440 South Church Street Charlotte, NC 28202

GENERALIZED GROUNDWATER SURFACE CONTOURS FEBRUARY 9, 2015 MARSHALL STEAM STATION DRY ASH LANDFILL PERMIT NO. 1804

DATE

MAY 10, 2015

FIGURE

3

TABLES

Table 1 - Well Construction Information
Duke Energy Carolinas, LLC/Marshall Steam Station
Dry Ash Landfill - Permit No. 1804

Well ID	Well Installation Date	Coordinates		Well TOC Elevation (ft.)	Ground Surface Elevation (ft.)	Well Stick-up Height Above Ground Surface (ft.)	Groundwater Elevation (ft.)	Depth to Water below TOC (ft.)	Total Well Depth below TOC (ft.)	Depth to Top of Screen from TOC (ft.)	Screened Interval below TOC (ft.)	Geology of Screened Interval	Well Diameter (in.)	Casing Type
		Latitude	Longitude											
MW-1	8/15/1989	35.6103797	-80.9609129	823.70	821.20	2.50	772.47	51.23	78.75	68.75	68.75-78.75	Saprolite	2	PVC
MW-2	8/15/1988	35.6131973	-80.9679753	797.21	794.90	2.31	790.91	6.31	35.10	25.10	25.10-35.10	Saprolite	2	PVC
MW-3	8/15/1989	35.6191355	-80.9672341	813.07	811.00	2.07	805.26	7.81	28.15	18.15	18.15-28.15	Saprolite	2	PVC
MW-4	8/15/1989	35.6209184	-80.9703623	867.15	864.50	2.65	830.11	37.27	50.20	40.20	40.20-50.20	Saprolite	2	PVC
MW-5	8/10/2000	35.6158450	-80.9656901	822.69	820.19	2.50	798.37	24.32	30.71	20.71	20.71-30.71	Saprolite	2	PVC
OB-1	6/28/1989	35.6100507	-80.9610530	825.85	823.60	2.25	779.71	46.14	65.50	55.50	55.50-65.50	Saprolite	2	PVC

Notes:

1. TOC indicates top of casing.
2. ft. indicates feet.
3. in. indicates inches nominal diameter.
4. PVC indicates polyvinyl chloride.
5. PWR indicates partially weathered rock.
6. Horizontal datum NAD83.
7. Vertical datum is NAVD 88.
8. Depth to groundwater gauged on February 9, 2015.
9. Information provided by Duke Energy.
10. Screened geology for OB-1 using data from MW-1 as geology at OB-1 not recorded and MW-1 is the closest proxy.

**Table 2 - Groundwater Flow Velocities
Duke Energy Carolinas, LLC/Marshall Steam Station
Dry Ash Landfill - Permit No. 1804**

Well ID	Upgradient Groundwater Contour Elevation (ft)	Downgradient Groundwater Contour Elevation (ft)	Linear Distance Between Contours through Well (ft)	Hydraulic Gradient (ft/ft)	Hydraulic Conductivity (ft/day)	Effective Porosity (%/100)	Groundwater Velocity (ft/day)
MW-1	780.00	765.00	355.16	0.04	0.41	0.259	0.07
MW-2	795.00	790.91	418.91	0.01	0.41	0.259	0.02
MW-3	805.26	800.00	1136.14	0.005	0.41	0.259	0.01
MW-4	830.11	815.00	433.22	0.03	0.41	0.259	0.06
MW-5	800.00	798.37	271.83	0.01	0.41	0.259	0.01
OB-1	790.00	765.00	593.85	0.04	0.41	0.259	0.07

Notes:

1. Linear distance measured through monitoring wells is generally perpendicular to groundwater contours.
2. At monitoring well locations where downgradient contours are not present, the groundwater elevation at the monitoring well is used as the downgradient groundwater elevation.
3. At monitoring well locations where upgradient contours are not present, the groundwater elevation at the monitoring well is used as the upgradient groundwater elevation.
4. Monitoring wells are not listed where insufficient groundwater contour information or well construction data is available to calculate velocity.
5. Hydraulic gradients and groundwater velocities are approximate.
6. Hydraulic conductivity presented is the geometric mean of the conductivity data for the alluvium/soil/saprolite and PWR hydrostratigraphic layer in the HDR Conductivity Database (unpublished data from Piedmont Carolina sites with foliated/layered bedrock).
7. Effective porosity presented is the mean value of the alluvium/soil/saprolite and PWR hydrostratigraphic layer estimated from soil testing using Fetter/Bear Diagrams.

Table 3 - Field Data Parameters
Duke Energy Carolinas, LLC/Marshall Steam Station
Dry Ash Landfill - Permit No. 1804

DATE	SAMPLE ID	WELL DEPTH (feet)	DEPTH TO WATER (feet)	WATER ELEV. (feet)	APPEARANCE	ODOR	PURGE METHOD	PUMP RATE (mL/min)	WELL VOLUME (gal)	EVAC VOLUME (gal)	EVAC (yes/no)	TEMP (deg C)	SPECIFIC CONDUCTANCE (umho/cm)	pH (SU)	TURBIDITY (NTU)	ORP (mV-NHE)	DO (mg/L)
2/9/2015	MW-1	78.75	51.23	772.47	Normal	None	CP	N/A	4.49	13.50	NO	15.46	176	5.7	2.9	379	0.59
2/9/2015	MW-2	35.10	6.31	790.91	Normal	None	CP	N/A	4.70	14.25	NO	15.70	397	5.3	1.9	394	0.80
2/9/2015	MW-3	28.15	7.81	805.26	Normal	None	CP	N/A	3.32	10.50	NO	15.67	87	4.9	1.6	464	3.14
2/9/2015	MW-4	50.20	37.27	830.11	Normal	None	CP	N/A	2.11	3.25	YES	15.29	47	5.8	5.6	453	8.03
2/9/2015	MW-5	30.71	24.32	798.37	Normal	None	CP	N/A	1.04	3.75	NO	14.43	38	5.2	2.4	397	3.14
2/9/2015	OB-1	65.50	46.14	779.71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

1. Purge Methods; LF=Low Flow, CP=Conventional Purge (3-5 well volumes), NP=No Purge (HydraSleeve), EOP=Equipment Only Purge. Pump rate applicable to LF purging only.
2. Field sampling performed by Duke Energy Carolinas, LLC personnel.
3. EVAC indicates whether the water level in the well was drawn down to the level of the pump during purging.
4. umho/cm indicates micro mhos per centimeter.
5. SU indicates Standard Units.
6. NTU indicates Nephelometric Turbidity Units.
7. mV-NHE indicates millivolts-Normal Hydrogen Electrode.
8. mg/L indicates milligrams per liter.
9. N/A indicates not applicable.
10. Information provided by Tim Hunsucker of Duke Energy Carolinas, LLC on March 03, 2015.

**Table 4 - Groundwater Field and Analytical Results
Duke Energy Carolinas, LLC/Marshall Steam Station
Dry Ash Landfill - Permit No. 1804**

Sample Date: February 9, 2015				Laboratory Certificate Codes: Duke Energy Carolinas Field #5193 Duke Energy Analytical Laboratory #248 Pace Analytical Services, Inc. #40 Summit Environmental Technologies, Inc. #631										
Field Sampling performed by Duke Energy Carolinas, LLC														
Parameter	SWS ID	Units	Certificate Code	Monitoring Wells					Field Blank	MDL	SWSL	15A NCAC 2L Standard	Federal MCL	
				1804 MW-1	1804 MW-2	1804 MW-3	1804 MW-4	1804 MW-5						
Field pH	320	SU	5193	5.7	5.3	4.9	5.8	5.2	-	-	NE	6.5-8.5	6.5-8.5*	
Specific Conductance	323	umho/cm	5193	176	397	87	47	38	-	-	NE	NE	NE	
Temperature	325	°C	5193	15.46	15.70	15.67	15.29	14.43	-	-	NE	NE	NE	
Top of Casing	328	feet	-	823.70	797.22	813.07	867.38	822.69	-	-	NE	NE	NE	
Depth to Water	318	feet	-	51.23	6.31	7.81	37.27	24.32	-	-	NE	NE	NE	
Water Elevation	427	feet	-	772.47	790.91	805.26	830.11	798.37	-	-	NE	NE	NE	
Well Depth	411	feet	-	78.75	35.10	28.15	50.20	30.71	-	-	NE	NE	NE	
Arsenic	14	µg/L	248	0.078 U	0.144 J	0.078 U	0.078 U	0.078 U	0.078 U	0.078	10	10	10	
Barium	15	µg/L	248	92 J	56.9 J	266	47.2 J	47.6 J	0.528 J	0.1	100	700	2,000	
Biological Oxygen Demand, 5-day	316	mg/L	40	2 U	2 U	2 U	2 U	2 U	NA	2	NE	NE	NE	
Boron	428	µg/L	248	286	3,070	7.69 J	7.39 J	6.05 J	3.91 J	3.3	NE	700	NE	
Cadmium	34	µg/L	248	0.101 U	0.101 U	0.101 U	0.101 U	0.101 U	0.101 U	0.101	1	2	5	
Chloride	455	µg/L	248	24,000	4,880	8,830	1,960	2,550	22 U	22	NE	250,000	250,000*	
Chromium	51	µg/L	248	7.85 J	0.5 U	1.97 J	1.94 J	0.517 J	0.5 U	0.5	10	10	100	
Chemical Oxygen Demand	317	µg/L	248	3,780 U	3,780 U	3,780 U	3,780 U	3,780 U	3,780 U	3,780	NE	NE	NE	
Copper	54	µg/L	248	1.76 J	1 U	1.73 J	1.7 J	1.93 J	2.32 J	1	10	1,000	1,000*	
Fluoride	312	µg/L	248	101 J	90.9 J	63.7 J	99.2 J	55.3 J	17 U	17	2,000	2,000	2,000*	
Iron	340	µg/L	248	178 J	45.6 J	14.6 J	218 J	34.2 J	1.67 J	1.3	300	300	300*	
Lead	131	µg/L	248	0.073 J	0.065 U	0.065 U	0.089 J	0.065 U	0.065 U	0.065	10	15	15	
Manganese	342	µg/L	248	18.1 J	13.8 J	47.1 J	6.62 J	24.8 J	0.204 J	0.2	50	50	50*	
Mercury	132	µg/L	248	0.006 U	0.006 U	0.009 J	0.008 J	0.01 J	0.013 J	0.006	0.2	1	2	
Nickel	152	µg/L	248	1.55 J	0.61 J	2.26 J	0.823 J	0.5 U	0.5 U	0.5	50	100	NE	
Nitrate as Nitrogen	303	µg/L	248	393 J	522 J	5,140 J	15.3 J	5.4 U	5.4 U	5.4	10,000	10,000	10,000	
Selenium	183	µg/L	248	1.07 J	29.4	0.092 U	0.092 U	0.092 U	0.092 U	0.092	10	20	50	
Silver	184	µg/L	248	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7	10	20	100*	
Sulfate	315	µg/L	248	22,400 J	160,000 J	126 J	134 J	28.4 J	18 U	18	250,000	250,000	250,000*	
Total Dissolved Solids	311	µg/L	248	119,000	284,000	44,000	36,000	36,000	NA	16,700	NE	500,000	500,000*	
Total Organic Carbon	357	µg/L	248	164	407	228	290	281	86 J	18	NE	NE	NE	
Total Organic Halide	396	mg/L	631	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1	NE	NE	NE	
Zinc	213	µg/L	248	6.77 J	3.97 J	14.6	2.82 J	2.6 U	2.6 U	2.6	10	1,000	5,000*	

Notes:

- Concentrations presented in micrograms per liter (µg/L) and milligrams per liter (mg/L).
- SWS ID is the Solid Waste Section Identification Number.
- MDL is the laboratory method detection limit. The MDL values presented are for samples not diluted by the laboratory during analysis.
- SWSL is the Solid Waste Section Limit. NCDENR defines the SWSL as the lowest amount of analyte in a sample that can be quantitatively determined with suitable precision and accuracy.
- 15A NCAC 2L Standard refers to Class GA Standards as found in 15A NCAC 02L .0202 Groundwater Quality Standards, last amended on April 1, 2013.
- MCL is the Federal Maximum Contaminant Level as found in 40 CFR, Subpart G, §141.62.
- * Concentration listed is a secondary maximum contaminant level (SMCL). SMCLs are established by EPA in the National Secondary Drinking Water Regulations as found in 40 CFR §143.3.
- NE indicates not established. NA indicates not analyzed. Blank cells indicate that there is no information relevant to the respective row.
- Grayed values indicate values that equal or are greater than the SWSL.
- Bold values indicate values that attain or exceed the 15A NCAC 2L Standard.
- Qualifiers in non-italicized text are laboratory data qualifiers or "flags". "U" is used to identify results not detected at concentrations which equal the laboratory's MDL. "J" is used to identify estimated concentrations which equal or are greater than the MDL but are less than the laboratory's method reporting limit (MRL). An italicized J-flag is a data qualifier, added by HDR to indicate concentrations which equal or are greater than the laboratory's MRL but are less than the SWSL.
- SU indicates Standard Units.
- umho/cm indicates micromhos per centimeter.
- According to the Constituent Look-up webpage on the NCDENR Division of Waste Management webpage, there is no SWSL or 2L Standard for choride associated with CAS number 16887-00-6, which is the CAS reported by the laboratory for the analyses completed. Therefore, the SWSL and 2L Standard listed are for the chloride with CAS number SW301 as specified on the Constituent Look-up webpage (last updated June 13, 2011).
- Analytical results obtained from Electronic Data Deliverable (EDD) provided by Tim Hunsucker of Duke Energy Carolinas, LLC on March 03, 2015.

**Table 5 - Field and Analytical Results that Equal or Exceed
15A NCAC 2L Groundwater Quality Standards
Duke Energy Carolinas, LLC/Marshall Steam Station
Dry Ash Landfill - Permit No. 1804**

Sample Date: February 9, 2015						
Field sampling performed by Duke Energy Carolinas, LLC						
Parameter	Sample ID	Result	Units	15A NCAC 2L Standard	Historical Concentrations	Cause and Significance
pH	MW-1	5.7	SU	6.5 - 8.5	5.2 - 6.2	pH is consistent with historical readings at MW-1.
	MW-2	5.3			5.1 - 6.1	pH is consistent with historical readings at MW-2. MW-2 is located within review boundary.
	MW-3	4.9			4.4 - 5.4	pH is consistent with historical readings at MW-3. MW-3 is located within review boundary.
	MW-4	5.8			5.1 - 6.3	pH is consistent with historical readings at MW-4.
	MW-5	5.2			5.1 - 5.8	pH is consistent with historical readings at MW-5.
Boron	MW-2	3,070	µg/L	700	2,175 - 3,230	Boron concentration is consistent with historical readings at MW-2. MW-2 is located within review boundary.
Selenium	MW-2	29.4	µg/L	20	<1 - 44.0	Selenium concentration is consistent with historical readings at MW-2. MW-2 is located within review boundary.

Notes:

1. 15A NCAC 2L Standard refers to Class GA Standards as found in 15A NCAC 02L .0202 Groundwater Quality Standards, last amended on April 1, 2013.
2. µg/L indicates micrograms per liter.
3. SU indicates Standard Units.
4. Historical concentrations based on data in Duke Energy Carolinas, LLC analytical results database.
5. Historical concentrations not measured at values which equal or are greater than the laboratory method reporting limit are presented as <MRL.
6. Analytical results obtained from Electronic Data Deliverable (EDD) provided by Tim Hunsucker of Duke Energy Carolinas, LLC on March 03, 2015.



A

Appendix A Field Sampling Forms

FIELD SAMPLING CALIBRATION FORM

STUDY:	MARSHALL STEAM STATION - DRY ASH LANDFILL GROUNDWATER MONITORING		
DATE (s):	February 9, 2015	SURFACE UNIT READER:	LDC
COLLECTORS:	LDC	SURFACE UNIT SERIAL #:	S05042
ANALYZER MODEL#:	MS5	ANALYZER SERIAL #:	66121
OTHER EQUIPMENT:	TURBIDIMETER NO.3 - 3260-GW		
		WEATHER CONDITIONS:	Cloudy, some rain, calm, 50 deg F

PROCEDURE #: HYDROLAB 3210.5 VALIDATED BY:

LDC 2/9/15

Calibration Date / Time		DATE:	9-Feb-15	TIME:	515	DATE:		9-Feb-15	TIME:	1335
		BP (mmHg)				BP (mmHg)				
		738.1				736.3				
Parameter	Calibration Standard	Instrument Value		Standard Value	Calibration Results	Instrument Value		Standard Value	Calibration Results	
SPEC. COND. (uS/cm)	SS	0.0	—/—▶	0.0	Instrument Zeroed Calibration Accepted Calibration Accepted	0.0	—/—▶	0.0	Zero Pass Calibration Pass Calibration Pass	
	SS	358.7	—▶	350		343.3	—/—▶	350		
	SS	75.4	—/—▶	75		74.8	—/—▶	75		
pH (units)	B (7.00)	7.03	—▶	7.02	Calibration Accepted Calibration Accepted Calibration Accepted	7.08	—/—▶	7.01	Calibration Pass Calibration Pass Calibration Pass	
	B (4.00)	3.96	—▶	4.00		4.07	—/—▶	4.00		
	B (10.00)	10.06	—/—▶	10.04		10.10	—/—▶	10.03		
	Buffer Temp.		21.42			Buffer Temp.		21.77		
Mid-Day Ck	B (7.00)	—▶								
Time:		Buffer Temp.								
<input checked="" type="checkbox"/> ORP (mV)	SS (7.00) SS (4.00)	299 N/A	—▶ —/—▶	292 468	Calibration Accepted	288 N/A	—/—▶ —/—▶	291 467	Calibration Pass	
		ORP Temp.		21.51		ORP Temp.		21.88		
<input checked="" type="checkbox"/> DO (mg/L)	W W AW	8.61	—▶	8.50 8.60 8.55	Calibration Accepted	8.59	—/—▶	8.50 8.50 8.50	Calibration Pass	
<input checked="" type="checkbox"/> TURB (ntu)	SS	49.0	—/—▶	49.1	Calibration Accepted	49.4	—/—▶	49.1	Calibration Accepted	
Temp Cert Device #										
TEMP (deg C)	NIST	N/A	—/—▶	N/A	Adjustment Not Available	N/A	—/—▶	N/A	Adjustment Not Available	
AMMONIUM (mg/L)	SS	N/A	—/—▶	N/A		N/A	—/—▶	N/A		
	SS	N/A	—/—▶	N/A		N/A	—/—▶	N/A		

INSTRUMENT MAINTENANCE	DATE / TIME
Conductance Subsystem	pH Subsystem
<input type="checkbox"/> Cleaned Electrodes <input type="checkbox"/> Tested - OK <input type="checkbox"/> See Notes	<input type="checkbox"/> Cleaned Electrodes <input type="checkbox"/> Replaced ref Electrode KCL <input type="checkbox"/> Replaced Ref. Electrode Tip <input type="checkbox"/> Tested - OK <input type="checkbox"/> See Notes
Dissolved Oxygen Subsystem	Ammonium Subsystem
<input type="checkbox"/> Replaced Teflon Membrane <input type="checkbox"/> Replaced DO electrolyte <input type="checkbox"/> Cleaned Electrode <input type="checkbox"/> See Notes	<input type="checkbox"/> Cleaned Electrode Tip <input type="checkbox"/> Installed New Electrode <input type="checkbox"/> Removed Electrode / Installed Plug <input type="checkbox"/> Tested - OK <input type="checkbox"/> See Notes
Oxidation Reduction Subsystem	Turbidity Subsystem
<input type="checkbox"/> Cleaned Electrode <input type="checkbox"/> Tested - OK <input type="checkbox"/> See Notes	<input type="checkbox"/> Cleaned Electrode & Wiper <input type="checkbox"/> Tested - OK <input type="checkbox"/> See Notes
Temperature Subsystem	Depth Subsystem
<input type="checkbox"/> Cleaned Electrode <input type="checkbox"/> Tested - OK <input type="checkbox"/> See Notes	<input type="checkbox"/> Reset / Calibrated <input type="checkbox"/> Tested - OK <input type="checkbox"/> See Notes

KEY: B = Buffer W = Winkler —▶ = Adjusted To N/A = Not Applicable
 SS = Standard solution AW = Average Winkler —/—▶ = Not Adjusted To

NOTES:



DUKE ENERGY

GROUNDWATER MONITORING DATA SHEET FOR CONVENTIONAL SAMPLING

PROCEDURE NO	3175.2
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SITE NAME	MARSHALL STEAM STATION	PERMIT #	18-04	SITE ID	N/A
PROJECT NAME	DRY ASH LANDFILL	FIELD CREW	LDC		
SAMPLING DATE(s)	<input checked="" type="checkbox"/> 9-Feb-2015 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	WELL/LOCATION NAME	MW-1		

MONITORING WELL INFORMATION					
WELL DIAMETER (in)	2	TOC ELEV (ft msl)	823.70	MIDDLE OF WETTED SCREEN (ft toc)	73.75
WELL DEPTH (ft TOC)	78.75	GS ELEV (ft msl)	821.20	PUMP INTAKE DEPTH (ft TOC)	77.80
SCREEN LENGTH (ft)	10.00	ELEV REF	NAVD 88	SCREEN INTERVAL (ft TOC)	68.75 TO 78.75

EQUIPMENT INFORMATION					
LEVEL METER SERIAL#	28650	SAMPLING EQUIPMENT	QED T1200	PURGE METHOD	
		TUBING DIAMETER (in)	1/2 OD	Conventional	
PUMP CONTROLLER SETTINGS					
PRESSURE	40 (psi)	RECHARGE	11 (sec)	DISCHARGE	9 (sec)

SAMPLING INFORMATION					
INITIAL DEPTH TO WATER (ft TOC)	51.23	WATER COLUMN (ft)	27.52	<i>Well Volume = water column X conversion factor</i> <i>(Conversion factor dependent on well diameter and selected well volume units)</i>	
WATER ELEVATION (ft msl)	772.47	WELL VOLUME (gal)	4.49		
DETECTED ODOR	None	CONVERSION FACTOR	0.1631		
APPEARANCE	Normal				

PURGE VOLUME	WATER LEVEL AFTER PURGE *	COMPLETE EVACUATION	<input checked="" type="checkbox"/> TEMP	<input checked="" type="checkbox"/> SPECIFIC COND.	<input checked="" type="checkbox"/> pH	<input checked="" type="checkbox"/> TURBIDITY	<input type="checkbox"/> ORP	<input type="checkbox"/> DISSOLVED OXYGEN	<input type="checkbox"/> WELL VOL (gal)	
(gal)	(ft)	(YES/NO)	(deg C)	(umho/cm)	(SU)	(NTU)	(mV-NHE)	(mg/L)	(recalculates on current water level)	
4.49										
4.50		NO	15.47	171	5.71	3.4	396	0.84		
4.50		NO	15.46	176	5.71	2.4	387	0.60		
4.50		NO	15.46	176	5.71	2.9	379	0.59		
TOTAL PURGE VOLUME		* Optional measurement to recalculate well volume when purging results in substantial drawdown of water column		COLLECT SAMPLE - SAMPLE CRITERIA SATISFIED						CHLORINE (mg/l)
13.50				SAMPLE COLLECTED BY		DATE	TIME			
				LDC	2/9/2015	@	0955		0	

QC By: WJC 2/9/15

WELL CONDITION			ADDITIONAL WELL CONDITION NOTES
PROTECTIVE CASING	Good Condition		
WELL PAD	Good Condition		
WELL CASING	Good Condition		
WELL TAG	Good Tag		

SAMPLING NOTES



DUKE ENERGY

GROUNDWATER MONITORING DATA SHEET FOR CONVENTIONAL SAMPLING

PROCEDURE NO	3175.2
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SITE NAME	MARSHALL STEAM STATION	PERMIT #	18-04	SITE ID	N/A
PROJECT NAME	DRY ASH LANDFILL	FIELD CREW	LDC		
SAMPLING DATE(s)	<input checked="" type="checkbox"/> 9-Feb-2015 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	WELL/LOCATION NAME	MW-2		

MONITORING WELL INFORMATION					
WELL DIAMETER (in)	2	TOC ELEV (ft msl)	797.22	MIDDLE OF WETTED SCREEN (ft toc)	30.10
WELL DEPTH (ft TOC)	35.10	GS ELEV (ft msl)	794.90	PUMP INTAKE DEPTH (ft TOC)	34.10
SCREEN LENGTH (ft)	10.00	ELEV REF	NAVD 88	SCREEN INTERVAL (ft TOC)	25.10 TO 35.10

EQUIPMENT INFORMATION					
LEVEL METER SERIAL#	28650	SAMPLING EQUIPMENT	QED T1200	PURGE METHOD	
		TUBING DIAMETER (in)	1/2 OD	Conventional	
PUMP CONTROLLER SETTINGS					
PRESSURE	20 (psi)	RECHARGE	5 (sec)	DISCHARGE	10 (sec)

SAMPLING INFORMATION					
INITIAL DEPTH TO WATER (ft TOC)	6.31	WATER COLUMN (ft)	28.79	<i>Well Volume = water column X conversion factor</i> (Conversion factor dependent on well diameter and selected well volume units)	
WATER ELEVATION (ft msl)	790.91	WELL VOLUME (gal)	4.70		
DETECTED ODOR	None	CONVERSION FACTOR	0.1631		
APPEARANCE	Normal				

PURGE VOLUME	WATER LEVEL AFTER PURGE *	COMPLETE EVACUATION	<input checked="" type="checkbox"/> TEMP	<input checked="" type="checkbox"/> SPECIFIC COND.	<input checked="" type="checkbox"/> pH	<input checked="" type="checkbox"/> TURBIDITY	<input type="checkbox"/> ORP	<input type="checkbox"/> DISSOLVED OXYGEN	<input type="checkbox"/> WELL VOL	
(gal)	(ft)	(YES/NO)	(deg C)	(umho/cm)	(SU)	(NTU)	(mV-NHE)	(mg/L)	(gal) (recalculates on current water level)	
4.70										
4.75		NO	15.64	394	5.30	2.5	405	0.79		
4.75		NO	15.69	395	5.32	1.9	397	0.79		
4.75		NO	15.70	397	5.32	1.9	394	0.80		
TOTAL PURGE VOLUME		* Optional measurement to recalculate well volume when purging results in substantial drawdown of water column			COLLECT SAMPLE - SAMPLE CRITERIA SATISFIED					CHLORINE (mg/l)
14.25					SAMPLE COLLECTED BY		DATE	TIME		
				LDC	2/9/2015	@	0850		0	

QC By: VOC 2/9/15

WELL CONDITION			ADDITIONAL WELL CONDITION NOTES
PROTECTIVE CASING	Good Condition		
WELL PAD	Good Condition		
WELL CASING	Good Condition		
WELL TAG	Good Tag		

SAMPLING NOTES
QC for BOD collected.



DUKE ENERGY

GROUNDWATER MONITORING DATA SHEET FOR CONVENTIONAL SAMPLING

PROCEDURE NO	3175.2
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SITE NAME	MARSHALL STEAM STATION	PERMIT #	18-04	SITE ID	N/A
PROJECT NAME	DRY ASH LANDFILL	FIELD CREW	LDC		
SAMPLING DATE(s)	<input checked="" type="checkbox"/> 9-Feb-2015	WELL/LOCATION NAME	MW-3		

MONITORING WELL INFORMATION					
WELL DIAMETER (in)	2	TOC ELEV (ft msl)	813.07	MIDDLE OF WETTED SCREEN (ft toc)	23.15
WELL DEPTH (ft TOC)	28.15	GS ELEV (ft msl)	811.00	PUMP INTAKE DEPTH (ft TOC)	27.20
SCREEN LENGTH (ft)	10.00	ELEV REF	NAVD 88	SCREEN INTERVAL (ft TOC)	18.15 TO 28.15

EQUIPMENT INFORMATION					
LEVEL METER SERIAL#	28650	SAMPLING EQUIPMENT	QED T1200	PURGE METHOD	
		TUBING DIAMETER (in)	1/2 OD	Conventional	
PUMP CONTROLLER SETTINGS					
PRESSURE	18 (psi)	RECHARGE	8 (sec)	DISCHARGE	7 (sec)

SAMPLING INFORMATION					
INITIAL DEPTH TO WATER (ft TOC)	7.81	WATER COLUMN (ft)	20.34	<i>Well Volume = water column X conversion factor</i> (Conversion factor dependent on well diameter and selected well volume units)	
WATER ELEVATION (ft msl)	805.26	WELL VOLUME (gal)	3.32		
DETECTED ODOR	None	CONVERSION FACTOR	0.1631		
APPEARANCE	Normal				

PURGE VOLUME	WATER LEVEL AFTER PURGE *	COMPLETE EVACUATION	<input checked="" type="checkbox"/> TEMP	<input checked="" type="checkbox"/> SPECIFIC COND.	<input checked="" type="checkbox"/> pH	<input checked="" type="checkbox"/> TURBIDITY	<input type="checkbox"/> ORP	<input type="checkbox"/> DISSOLVED OXYGEN	<input type="checkbox"/> WELL VOL (gal)
		(YES/NO)	(deg C)	(umho/cm)	(SU)	(NTU)	(mV-NHE)	(mg/L)	(recalculates on current water level)
3.32 (gal)									
3.50		NO	15.63	87	4.85	2.3	459	3.50	
3.50		NO	15.68	87	4.86	2.2	462	3.23	
3.50		NO	15.67	87	4.85	1.6	464	3.14	
TOTAL PURGE VOLUME		* Optional measurement to recalculate well volume when purging results in substantial drawdown of water column			COLLECT SAMPLE - SAMPLE CRITERIA SATISFIED				
10.50					SAMPLE COLLECTED BY		DATE	TIME	CHLORINE (mg/l)
		LDC		2/9/2015	@ 1050	0			

QC By: VSC 2/9/15

WELL CONDITION			ADDITIONAL WELL CONDITION NOTES
PROTECTIVE CASING	Damaged / Funtional		Hinge on protective casing lid needs replacing - open gap.
WELL PAD	Good Condition		
WELL CASING	Good Condition		
WELL TAG	Good Tag		

SAMPLING NOTES



DUKE ENERGY

GROUNDWATER MONITORING DATA SHEET FOR CONVENTIONAL SAMPLING

PROCEDURE NO	3175.2
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SITE NAME	MARSHALL STEAM STATION	PERMIT #	18-04	SITE ID	N/A
PROJECT NAME	DRY ASH LANDFILL	FIELD CREW	LDC		
SAMPLING DATE(s)	<input checked="" type="checkbox"/> 9-Feb-2015 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	WELL/LOCATION NAME	MW-4		

MONITORING WELL INFORMATION					
WELL DIAMETER (in)	2	TOC ELEV (ft msl)	867.38	MIDDLE OF WETTED SCREEN (ft toc)	45.20
WELL DEPTH (ft TOC)	50.20	GS ELEV (ft msl)	864.50	PUMP INTAKE DEPTH (ft TOC)	49.20
SCREEN LENGTH (ft)	10.00	ELEV REF	NAVD 88	SCREEN INTERVAL (ft TOC)	40.20 TO 50.20

EQUIPMENT INFORMATION					
LEVEL METER SERIAL#	28650	SAMPLING EQUIPMENT	QED T1200	PURGE METHOD	
		TUBING DIAMETER (in)	1/2 OD	Conventional	
PUMP CONTROLLER SETTINGS					
PRESSURE	25 (psi)	RECHARGE	10 (sec)	DISCHARGE	10 (sec)

SAMPLING INFORMATION					
INITIAL DEPTH TO WATER (ft TOC)	37.27	WATER COLUMN (ft)	12.93	<i>Well Volume = water column X conversion factor</i> (Conversion factor dependent on well diameter and selected well volume units)	
WATER ELEVATION (ft msl)	830.11	WELL VOLUME (gal)	2.11		
DETECTED ODOR	None	CONVERSION FACTOR	0.1631		
APPEARANCE	Normal				

PURGE VOLUME	WATER LEVEL AFTER PURGE *	COMPLETE EVACUATION	<input checked="" type="checkbox"/> TEMP	<input checked="" type="checkbox"/> SPECIFIC COND.	<input checked="" type="checkbox"/> pH	<input checked="" type="checkbox"/> TURBIDITY	<input type="checkbox"/> ORP	<input type="checkbox"/> DISSOLVED OXYGEN	<input checked="" type="checkbox"/> WELL VOL
(gal)	(ft)	(YES/NO)	(deg C)	(umho/cm)	(SU)	(NTU)	(mV-NHE)	(mg/L)	(gal) (recalculates on current water level)
2.11									
2.25	45.08	NO	15.44	48	5.70	7.2	455	7.38	0.84
1.00		YES	15.29	47	5.78	5.6	453	8.03	
TOTAL PURGE VOLUME	* Optional measurement to recalculate well volume when purging results in substantial drawdown of water column			COLLECT SAMPLE - SAMPLE CRITERIA SATISFIED					CHLORINE (mg/l)
3.25				SAMPLE COLLECTED BY		DATE	TIME		
	LDC		2/9/2015	@	1140				

Evacuated 2/9/15 at 1135 hrs

QC By:

LDC 2/9/15

WELL CONDITION			ADDITIONAL WELL CONDITION NOTES		
PROTECTIVE CASING	Good Condition				
WELL PAD	Good Condition				
WELL CASING	Good Condition				
WELL TAG	Good Tag				

SAMPLING NOTES



DUKE ENERGY

GROUNDWATER MONITORING DATA SHEET FOR CONVENTIONAL SAMPLING

PROCEDURE NO	3175.2
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SITE NAME	MARSHALL STEAM STATION	PERMIT #	18-04	SITE ID	N/A
PROJECT NAME	DRY ASH LANDFILL	FIELD CREW	LDC		
SAMPLING DATE(s)	<input checked="" type="checkbox"/> 9-Feb-2015 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	WELL/LOCATION NAME	MW-5		

MONITORING WELL INFORMATION					
WELL DIAMETER (in)	2	TOC ELEV (ft msl)	822.69	MIDDLE OF WETTED SCREEN (ft toc)	27.52
WELL DEPTH (ft TOC)	30.71	GS ELEV (ft msl)	820.19	PUMP INTAKE DEPTH (ft TOC)	29.70
SCREEN LENGTH (ft)	10.00	ELEV REF	NAVD 88	SCREEN INTERVAL (ft TOC)	20.71 TO 30.71

EQUIPMENT INFORMATION					
LEVEL METER SERIAL#	28650	SAMPLING EQUIPMENT	QED T1200	PURGE METHOD	
		TUBING DIAMETER (in)	1/2 OD	Conventional	
PUMP CONTROLLER SETTINGS					
PRESSURE	20 (psi)	RECHARGE	4 (sec)	DISCHARGE	6 (sec)

SAMPLING INFORMATION					
INITIAL DEPTH TO WATER (ft TOC)	24.32	WATER COLUMN (ft)	6.39	<i>Well Volume = water column X conversion factor</i> (Conversion factor dependent on well diameter and selected well volume units)	
WATER ELEVATION (ft msl)	798.37	WELL VOLUME (gal)	1.04		
DETECTED ODOR	None	CONVERSION FACTOR	0.1631		
APPEARANCE	Normal				

PURGE VOLUME	WATER LEVEL AFTER PURGE *	COMPLETE EVACUATION	<input checked="" type="checkbox"/> TEMP	<input checked="" type="checkbox"/> SPECIFIC COND.	<input checked="" type="checkbox"/> pH	<input checked="" type="checkbox"/> TURBIDITY	<input type="checkbox"/> ORP	<input type="checkbox"/> DISSOLVED OXYGEN	<input type="checkbox"/> WELL VOL	
(gal)	(ft)	(YES/NO)	(deg C)	(umho/cm)	(SU)	(NTU)	(mV-NHE)	(mg/L)	(gal) (recalculates on current water level)	
1.04										
1.25		NO	14.49	38	5.15	2.4	378	3.29		
1.25		NO	14.46	38	5.17	1.9	391	3.07		
1.25		NO	14.43	38	5.19	2.4	397	3.14		
TOTAL PURGE VOLUME		* Optional measurement to recalculate well volume when purging results in substantial drawdown of water column			COLLECT SAMPLE - SAMPLE CRITERIA SATISFIED					CHLORINE (mg/l)
3.75					SAMPLE COLLECTED BY		DATE		TIME	
		LDC		2/9/2015		@ 0755		0		

QC By: LDC 2/9/15

WELL CONDITION	ADDITIONAL WELL CONDITION NOTES
PROTECTIVE CASING	Good Condition
WELL PAD	Good Condition
WELL CASING	Good Condition
WELL TAG	Good Tag

SAMPLING NOTES



DUKE ENERGY

GROUNDWATER MONITORING DATA SHEET FOR LEVEL ONLY

PROCEDURE NO	3175.2
--------------	--------

SITE NAME	MARSHALL STEAM STATION	PERMIT #	18-04	SITE ID	N/A
PROJECT NAME	DRY ASH LANDFILL	FIELD CREW	LDC		
SAMPLING DATE(s)	<input checked="" type="checkbox"/> 9-Feb-2015 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	WELL/LOCATION NAME	OB-1		

MONITORING WELL INFORMATION					
WELL DIAMETER (in)	2	TOC ELEV (ft msl)	825.85	MIDDLE OF WETTED SCREEN (ft toc)	60.50
WELL DEPTH (ft TOC)	65.50	GS ELEV (ft msl)		PUMP INTAKE DEPTH (ft TOC)	N/A
SCREEN LENGTH (ft)	10.00	ELEV REF	NAVD 88	SCREEN INTERVAL (ft TOC)	55.50 TO 65.50

EQUIPMENT INFORMATION					
LEVEL METER SERIAL#	28650	SAMPLING EQUIPMENT		PURGE METHOD	
		TUBING DIAMETER (in)		Level Only	
PUMP CONTROLLER SETTINGS					
PRESSURE	(psi)	RECHARGE	(sec)	DISCHARGE	(sec)

WATER LEVEL ONLY

SAMPLING INFORMATION					
INITIAL DEPTH TO WATER (ft TOC)	46.14	WATER COLUMN (ft)	19.36	<i>Well Volume = water column X conversion factor</i> (Conversion factor dependent on well diameter and selected well volume units)	
WATER ELEVATION (ft msl)	779.71	WELL VOLUME (gal)	3.16		
DETECTED ODOR	None	CONVERSION FACTOR	0.1631		
APPEARANCE					

PURGE VOLUME	WATER LEVEL AFTER PURGE *	COMPLETE EVACUATION	<input checked="" type="checkbox"/> TEMP	<input checked="" type="checkbox"/> SPECIFIC COND.	<input checked="" type="checkbox"/> pH	<input checked="" type="checkbox"/> TURBIDITY	<input type="checkbox"/> ORP	<input type="checkbox"/> DISSOLVED OXYGEN	<input type="checkbox"/> WELL VOL
3.16 (gal)	(ft)	(YES/NO)	(deg C)	(umho/cm)	(SU)	(NTU)	(mV-NHE)	(mg/L)	(recalculates on current water level)
N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	
TOTAL PURGE VOLUME	* Optional measurement to recalculate well volume when purging results in substantial drawdown of water column			SAMPLE COLLECTED BY		DATE	TIME	CHLORINE (mg/l)	
0.00				LDC		2/9/2015	@ 0915	N/A	

QC By: wlc 2/9/15

WELL CONDITION	ADDITIONAL WELL CONDITION NOTES
PROTECTIVE CASING	Good Condition
WELL PAD	Good Condition
WELL CASING	Good Condition
WELL TAG	Good Tag

SAMPLING NOTES

NORTH CAROLINA GROUNDWATER SAMPLING SITE CHECKLIST

LOCATION / SITE
SITE CONTACT
WEATHER
PAGE 1 OF 1

MARSHALL STEAM STATION - DRY ASH LANDFILL GROUNDWATER MONITORING
 Don Scruggs
 Cloudy, some rain, calm, 50 deg F

PERMIT #

18-04

SAMPLE DATE
FIELD CREW

February 9, 2015
 LDC

	MW-1	MW-2	MW-3	MW-4	MW-5	OB-1											
ACCESS TO WELLS																	
Access cleared into well	YES	YES	YES	YES	YES	YES											
Access cleared around well	YES	YES	YES	YES	YES	YES											
Tall grass or weeds - needs mowing																	
Road washing out / muddy / needs grading																	
Fallen tree blocking access																	
WELL SECURITY																	
Well found locked	YES	YES	YES	YES	YES	YES											
Well found unlocked																	
WELL LOCK CONDITION																	
Lock in good condition	YES	YES	YES	YES	YES	YES											
Lock rusted, difficult to open / needs replacing																	
Replaced damaged lock																	
WELL CASINGS																	
Casing in good condition	YES	YES	YES	YES	YES	YES											
Damaged casing / still functional																	
Damaged casing / repair required																	
CONCRETE PADS																	
Pad in good condition	YES	YES	YES	YES	YES	YES											
Minor cracks																	
Major cracks / broken / repair required																	
Undermined / washing out																	
Fire ants around concrete pad																	
WELL PROTECTIVE CASINGS																	
Casing in good condition	YES	YES	YES	YES	YES	YES											
Damaged casing / still functional																	
Damaged casing / repair required																	
Broken hinge on protective lid																	
Wasp nest inside protective casing																	
Ants inside protective casing																	
WELL CAPS																	
Well cap in good conditon	YES	YES	YES	YES	YES	YES											
Damaged / needs replacement																	
Replaced damaged well cap																	
FLUSH MOUNT WELLS																	
Vault in good condition	N/A	N/A	N/A	N/A	N/A	N/A											
Water inside vault																	
Vault bolt holes broken or stripped																	
Bolts stripped																	
Vault lid cracked or broken																	
WELL ID TAGS																	
Well tag in good condition	YES	YES	YES	YES	YES	YES											
Well tag missing																	
Well tag damaged / illegible																	
Lacks required information - Driller Reg #																	
Lacks required information - Completion date																	
Lacks required information - Total well depth																	
Lacks required information - Depth to screen																	
Lacks required information - Non potable tag																	

NOTE:

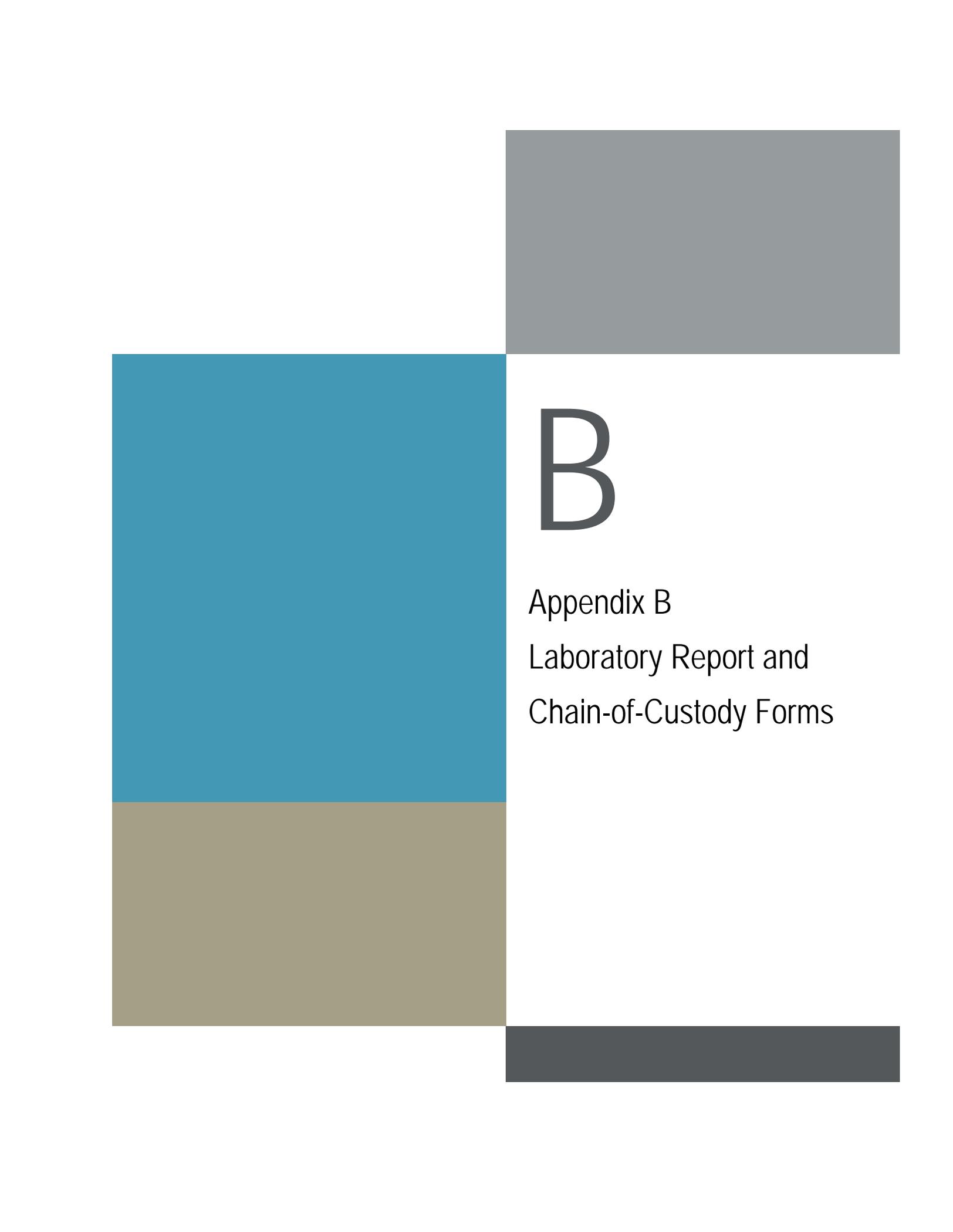
**MARSHALL STEAM STATION
 DRY ASH LANDFILL
 GROUNDWATER MONITORING FIELD DATA
 PERMIT # 18-04**

DATE	WELL NO.	WELL DEPTH (feet-toc)	DEPTH TO WATER (feet-toc)	WATER ELEV. (feet)	APPEARANCE	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)
2/9/2015	MW-1	78.75	51.23	772.47	Normal	None	C	N/A	4.49	13.50	NO	15.46	176	5.7	2.9	379	0.59
2/9/2015	MW-2	35.10	6.31	790.91	Normal	None	C	N/A	4.70	14.25	NO	15.70	397	5.3	1.9	394	0.80
2/9/2015	MW-3	28.15	7.81	805.26	Normal	None	C	N/A	3.32	10.50	NO	15.67	87	4.9	1.6	464	3.14
2/9/2015	MW-4	50.20	37.27	830.11	Normal	None	C	N/A	2.11	3.25	YES	15.29	47	5.8	5.6	453	8.03
2/9/2015	MW-5	30.71	24.32	798.37	Normal	None	C	N/A	1.04	3.75	NO	14.43	38	5.2	2.4	397	3.14
2/9/2015	OB-1	65.50	46.14	779.71	N/A	N/A	LO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2/9/2015	MW-6	122.14	DRY	DRY	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2/9/2015	MW-7	57.25	45.42	813.74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Purge Methods

LF = Low Flow
 LF(M) = Low Flow (Mod.)
 C = Conventional
 NP = No Purge
 EOP = Equip. Only Purge
 LO = Level Only

* = Applicable to LF & LF(M) Purging Only



B

Appendix B

Laboratory Report and
Chain-of-Custody Forms

13339 Hagers Ferry Road
Huntersville, NC 28078-7929
McGuire Nuclear Complex - MG03A2
Phone: 980-875-5245 Fax: 980-875-4349

Order Summary Report

Order Number: J15020005

Project Name: MARSHALL GROUNDWATER DRY ASH LANDFILL

Customer Name(s): Chuck Campbell, Ed Sullivan, Tim Hunsucker

Customer Address: 8320 NC Hwy 150 East
Mail Code: Marshall Steam Station
Terrell, NC 28682

Lab Contact: Jason C Perkins Phone: 980-875-5348

Report Authorized By:  Date: 3/2/2015
(Signature) _____
Jason C Perkins

Program Comments:

Please contact the Program Manager (Jason C Perkins) with any questions regarding this report.

Data Flags & Calculations:

Any analytical tests or individual analytes within a test flagged with a Qualifier indicate a deviation from the method quality system or quality control requirement. The qualifier description is found at the end of the Certificate of Analysis (sample results) under the qualifiers heading. All results are reported on a dry weight basis unless otherwise noted. Subcontracted data included on the Duke Certificate of Analysis is to be used as information only. Certified vendor results can be found in the subcontracted lab final report. Duke Energy Analytical Laboratory subcontracts analyses to other vendor laboratories that have been qualified by Duke Energy to perform these analyses except where noted.

Data Package:

This data package includes analytical results that are applicable only to the samples described in this narrative. An estimation of the uncertainty of measurement for the results in the report is available upon request. This report shall not be reproduced, except in full, without the written consent of the Analytical Laboratory. Please contact the Analytical laboratory with any questions. The order of individual sections within this report is as follows:

Job Summary Report, Sample Identification, Technical Validation of Data Package, Analytical Laboratory Certificate of Analysis, Analytical Laboratory QC Reports, Sub-contracted Laboratory Results, Customer Specific Data Sheets, Reports & Documentation, Customer Database Entries, Test Case Narratives, Chain of Custody (COC)

Certification:

The Analytical Laboratory holds the following State Certifications : North Carolina (DENR) Certificate #248, South Carolina (DHEC) Laboratory ID # 99005. Contact the Analytical Laboratory for definitive information about the certification status of specific methods.

Sample ID's & Descriptions:

Sample ID	Plant/Station	Collection Date and Time	Collected By	Sample Description
2015002441	MARSHALL	09-Feb-15 9:55 AM	C Campbell	MW-1
2015002442	MARSHALL	09-Feb-15 8:50 AM	C Campbell	MW-2
2015002443	MARSHALL	09-Feb-15 10:50 AM	C Campbell	MW-3
2015002444	MARSHALL	09-Feb-15 11:40 AM	C Campbell	MW-4
2015002445	MARSHALL	09-Feb-15 7:55 AM	C Campbell	MW-5
2015002446	MARSHALL	09-Feb-15 8:50 AM	C Campbell	QC SAMPLE WELL#
2015002447	MARSHALL	09-Feb-15 12:20 PM	C Campbell	FIELD BLANK
7 Total Samples				

Technical Validation Review

Checklist:

- COC and .pdf report are in agreement with sample totals and analyses (compliance programs and procedures). Yes No
- All Results are less than the laboratory reporting limits. Yes No
- All laboratory QA/QC requirements are acceptable. Yes No

Report Sections Included:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Job Summary Report | <input checked="" type="checkbox"/> Sub-contracted Laboratory Results |
| <input checked="" type="checkbox"/> Sample Identification | <input type="checkbox"/> Customer Specific Data Sheets, Reports, & Documentation |
| <input checked="" type="checkbox"/> Technical Validation of Data Package | <input type="checkbox"/> Customer Database Entries |
| <input checked="" type="checkbox"/> Analytical Laboratory Certificate of Analysis | <input checked="" type="checkbox"/> Chain of Custody |
| <input type="checkbox"/> Analytical Laboratory QC Report | <input checked="" type="checkbox"/> Electronic Data Deliverable (EDD) Sent Separatel |

Reviewed By: DBA Account

Date: 3/2/2015

Certificate of Laboratory Analysis

This report shall not be reproduced, except in full.

Order # J15020005

Site: MW-1

Collection Date: 09-Feb-15 9:55 AM

Sample #: 2015002441

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>LOW LEVEL ALKALINITY (FIXED END POINT)</u>								
Alkalinity (mg/L CaCO ₃)	12	mg/L (CaCO ₃)		5	1	SM 2320B4d	02/19/2015 10:33	TJA7067
<u>BIOCHEMICAL OXYGEN DEMAND (BOD) - (Analysis Performed by Pace Laboratories)</u>								
Vendor Parameter	Complete					Vendor Method		V_PACE
<u>CHEMICAL OXYGEN DEMAND</u>								
COD	< 20	mg/L		20	1	HACH 8000	02/13/2015 14:30	TJA7067
<u>INORGANIC IONS BY IC</u>								
Chloride	24	mg/L		1	10	EPA 300.0	02/09/2015 18:15	JAHERMA
Fluoride	0.10	mg/L		0.1	1	EPA 300.0	02/09/2015 18:15	JAHERMA
Nitrate	1.7	mg/L		0.1	1	EPA 300.0	02/09/2015 18:15	JAHERMA
Nitrate as N	0.39	mg-N/L		0.023	1	EPA 300.0	02/09/2015 18:15	JAHERMA
Sulfate	22	mg/L		1	10	EPA 300.0	02/09/2015 18:15	JAHERMA
<u>MERCURY (COLD VAPOR) IN WATER</u>								
Mercury (Hg)	< 0.05	ug/L		0.05	1	EPA 245.1	02/12/2015 09:28	TLINN
<u>TOTAL RECOVERABLE METALS BY ICP</u>								
Barium (Ba)	0.092	mg/L		0.005	1	EPA 200.7	02/12/2015 10:58	MHH7131
Boron (B)	0.286	mg/L		0.05	1	EPA 200.7	02/12/2015 10:58	MHH7131
Calcium (Ca)	14.4	mg/L		0.01	1	EPA 200.7	02/12/2015 10:58	MHH7131
Chromium (Cr)	0.008	mg/L		0.005	1	EPA 200.7	02/12/2015 10:58	MHH7131
Copper (Cu)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 10:58	MHH7131
Iron (Fe)	0.178	mg/L		0.01	1	EPA 200.7	02/12/2015 10:58	MHH7131
Magnesium (Mg)	3.76	mg/L		0.005	1	EPA 200.7	02/12/2015 10:58	MHH7131
Manganese (Mn)	0.018	mg/L		0.005	1	EPA 200.7	02/12/2015 10:58	MHH7131
Nickel (Ni)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 10:58	MHH7131
Potassium (K)	3.44	mg/L		0.1	1	EPA 200.7	02/12/2015 10:58	MHH7131
Silver (Ag)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 10:58	MHH7131
Sodium (Na)	8.28	mg/L		0.05	1	EPA 200.7	02/12/2015 10:58	MHH7131
Zinc (Zn)	0.007	mg/L		0.005	1	EPA 200.7	02/12/2015 10:58	MHH7131
<u>TOTAL RECOVERABLE METALS BY ICP-MS</u>								
Arsenic (As)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 13:25	JAHERMA
Cadmium (Cd)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 13:25	JAHERMA
Lead (Pb)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 13:25	JAHERMA
Selenium (Se)	1.07	ug/L		1	1	EPA 200.8	02/19/2015 13:25	JAHERMA
<u>PH IN WATER (NON-COMPLIANCE ANALYSIS)</u>								
pH	5.9	SI Units	H3	0.1	1	SM4500B	02/13/2015 15:25	TJA7067

Certificate of Laboratory Analysis

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Order # J15020005

Site: MW-1

Collection Date: 09-Feb-15 9:55 AM

Sample #: 2015002441

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>TOTAL DISSOLVED SOLIDS</u>								
TDS	120	mg/L		25	1	SM2540C	02/12/2015 15:21	GHUTCHI
<u>Total Carbon</u>								
TOC	0.164	mg/L		0.1	1	SM5310C/EPA9060A	02/19/2015 15:53	TJA7067
<u>TOX (TOTAL ORGANIC HALIDES) - (Analysis Performed by Pace Laboratories)</u>								
Vendor Parameter	Complete					Vendor Method		V_PACE

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Order # J15020005

Site: MW-2

Collection Date: 09-Feb-15 8:50 AM

Sample #: 2015002442

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>ALKALINITY (FIXED END POINT 4.5)</u>								
Alkalinity (mg/L CaCO3)	23	mg/L (CaCO3)		20	1	SM2320B	02/12/2015 13:04	TJA7067
<u>BIOCHEMICAL OXYGEN DEMAND (BOD) - (Analysis Performed by Pace Laboratories)</u>								
Vendor Parameter	Complete					Vendor Method		V_PACE
<u>CHEMICAL OXYGEN DEMAND</u>								
COD	< 20	mg/L		20	1	HACH 8000	02/13/2015 14:30	TJA7067
<u>INORGANIC IONS BY IC</u>								
Chloride	4.9	mg/L		0.1	1	EPA 300.0	02/09/2015 18:31	JAHERMA
Fluoride	< 0.1	mg/L		0.1	1	EPA 300.0	02/09/2015 18:31	JAHERMA
Nitrate	2.3	mg/L		0.1	1	EPA 300.0	02/09/2015 18:31	JAHERMA
Nitrate as N	0.52	mg-N/L		0.023	1	EPA 300.0	02/09/2015 18:31	JAHERMA
Sulfate	160	mg/L		0.1	1	EPA 300.0	02/09/2015 18:31	JAHERMA
<u>MERCURY (COLD VAPOR) IN WATER</u>								
Mercury (Hg)	< 0.05	ug/L		0.05	1	EPA 245.1	02/12/2015 09:35	TLINN
<u>TOTAL RECOVERABLE METALS BY ICP</u>								
Barium (Ba)	0.057	mg/L		0.005	1	EPA 200.7	02/12/2015 11:37	MHH7131
Boron (B)	3.07	mg/L		0.05	1	EPA 200.7	02/12/2015 11:37	MHH7131
Calcium (Ca)	29.1	mg/L		0.05	5	EPA 200.7	02/12/2015 11:37	MHH7131
Chromium (Cr)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:37	MHH7131
Copper (Cu)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:37	MHH7131
Iron (Fe)	0.046	mg/L		0.01	1	EPA 200.7	02/12/2015 11:37	MHH7131
Magnesium (Mg)	11.3	mg/L		0.005	1	EPA 200.7	02/12/2015 11:37	MHH7131
Manganese (Mn)	0.014	mg/L		0.005	1	EPA 200.7	02/12/2015 11:37	MHH7131
Nickel (Ni)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:37	MHH7131
Potassium (K)	2.60	mg/L		0.1	1	EPA 200.7	02/12/2015 11:37	MHH7131
Silver (Ag)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:37	MHH7131
Sodium (Na)	28.9	mg/L		0.25	5	EPA 200.7	02/12/2015 11:37	MHH7131
Zinc (Zn)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:37	MHH7131
<u>TOTAL RECOVERABLE METALS BY ICP-MS</u>								
Arsenic (As)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 13:31	JAHERMA
Cadmium (Cd)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 13:31	JAHERMA
Lead (Pb)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 13:31	JAHERMA
Selenium (Se)	29.4	ug/L		1	1	EPA 200.8	02/19/2015 13:31	JAHERMA
<u>PH IN WATER (NON-COMPLIANCE ANALYSIS)</u>								
pH	5.6	SI Units	H3	0.1	1	SM4500B	02/13/2015 15:25	TJA7067

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Order # J15020005

Site: MW-2

Collection Date: 09-Feb-15 8:50 AM

Sample #: 2015002442

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>TOTAL DISSOLVED SOLIDS</u>								
TDS	280	mg/L		25	1	SM2540C	02/12/2015 15:21	GHUTCHI
<u>Total Carbon</u>								
TOC	0.407	mg/L		0.1	1	SM5310C/EPA9060A	02/19/2015 15:53	TJA7067
<u>TOX (TOTAL ORGANIC HALIDES) - (Analysis Performed by Pace Laboratories)</u>								
Vendor Parameter	Complete					Vendor Method		V_PACE

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Order # J15020005

Site: MW-3

Collection Date: 09-Feb-15 10:50 AM

Sample #: 2015002443

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>LOW LEVEL ALKALINITY (FIXED END POINT)</u>								
Alkalinity (mg/L CaCO ₃)	< 5	mg/L (CaCO ₃)		5	1	SM 2320B4d	02/19/2015 10:33	TJA7067
<u>BIOCHEMICAL OXYGEN DEMAND (BOD) - (Analysis Performed by Pace Laboratories)</u>								
Vendor Parameter	Complete					Vendor Method		V_PACE
<u>CHEMICAL OXYGEN DEMAND</u>								
COD	< 20	mg/L		20	1	HACH 8000	02/13/2015 14:30	TJA7067
<u>INORGANIC IONS BY IC</u>								
Chloride	8.8	mg/L		0.5	5	EPA 300.0	02/09/2015 17:58	JAHERMA
Fluoride	< 0.1	mg/L		0.1	1	EPA 300.0	02/09/2015 17:58	JAHERMA
Nitrate	23	mg/L		0.5	5	EPA 300.0	02/09/2015 17:58	JAHERMA
Nitrate as N	5.1	mg-N/L		0.023	1	EPA 300.0	02/09/2015 17:58	JAHERMA
Sulfate	0.13	mg/L		0.1	1	EPA 300.0	02/09/2015 17:58	JAHERMA
<u>MERCURY (COLD VAPOR) IN WATER</u>								
Mercury (Hg)	< 0.05	ug/L		0.05	1	EPA 245.1	02/12/2015 09:37	TLINN
<u>TOTAL RECOVERABLE METALS BY ICP</u>								
Barium (Ba)	0.266	mg/L		0.005	1	EPA 200.7	02/12/2015 11:41	MHH7131
Boron (B)	< 0.05	mg/L		0.05	1	EPA 200.7	02/12/2015 11:41	MHH7131
Calcium (Ca)	0.662	mg/L		0.01	1	EPA 200.7	02/12/2015 11:41	MHH7131
Chromium (Cr)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:41	MHH7131
Copper (Cu)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:41	MHH7131
Iron (Fe)	0.015	mg/L		0.01	1	EPA 200.7	02/12/2015 11:41	MHH7131
Magnesium (Mg)	3.76	mg/L		0.005	1	EPA 200.7	02/12/2015 11:41	MHH7131
Manganese (Mn)	0.047	mg/L		0.005	1	EPA 200.7	02/12/2015 11:41	MHH7131
Nickel (Ni)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:41	MHH7131
Potassium (K)	2.36	mg/L		0.1	1	EPA 200.7	02/12/2015 11:41	MHH7131
Silver (Ag)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:41	MHH7131
Sodium (Na)	5.84	mg/L		0.05	1	EPA 200.7	02/12/2015 11:41	MHH7131
Zinc (Zn)	0.015	mg/L		0.005	1	EPA 200.7	02/12/2015 11:41	MHH7131
<u>TOTAL RECOVERABLE METALS BY ICP-MS</u>								
Arsenic (As)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 13:37	JAHERMA
Cadmium (Cd)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 13:37	JAHERMA
Lead (Pb)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 13:37	JAHERMA
Selenium (Se)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 13:37	JAHERMA
<u>PH IN WATER (NON-COMPLIANCE ANALYSIS)</u>								
pH	5.0	SI Units	H3	0.1	1	SM4500B	02/13/2015 15:25	TJA7067

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Order # J15020005

Site: MW-3

Collection Date: 09-Feb-15 10:50 AM

Sample #: 2015002443

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>TOTAL DISSOLVED SOLIDS</u>								
TDS	44	mg/L		25	1	SM2540C	02/12/2015 15:21	GHUTCHI
<u>Total Carbon</u>								
TOC	0.228	mg/L		0.1	1	SM5310C/EPA9060A	02/19/2015 15:53	TJA7067
<u>TOX (TOTAL ORGANIC HALIDES) - (Analysis Performed by Pace Laboratories)</u>								
Vendor Parameter	Complete					Vendor Method		V_PACE

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Order # J15020005

Site: MW-4

Collection Date: 09-Feb-15 11:40 AM

Sample #: 2015002444

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>LOW LEVEL ALKALINITY (FIXED END POINT)</u>								
Alkalinity (mg/L CaCO ₃)	17	mg/L (CaCO ₃)		5	1	SM 2320B4d	02/19/2015 10:33	TJA7067
<u>BIOCHEMICAL OXYGEN DEMAND (BOD) - (Analysis Performed by Pace Laboratories)</u>								
Vendor Parameter	Complete					Vendor Method		V_PACE
<u>CHEMICAL OXYGEN DEMAND</u>								
COD	< 20	mg/L		20	1	HACH 8000	02/13/2015 14:30	TJA7067
<u>INORGANIC IONS BY IC</u>								
Chloride	2.0	mg/L		0.1	1	EPA 300.0	02/09/2015 15:49	JAHERMA
Fluoride	< 0.1	mg/L		0.1	1	EPA 300.0	02/09/2015 15:49	JAHERMA
Nitrate	< 0.1	mg/L		0.1	1	EPA 300.0	02/09/2015 15:49	JAHERMA
Nitrate as N	< 0.023	mg-N/L		0.023	1	EPA 300.0	02/09/2015 15:49	JAHERMA
Sulfate	0.13	mg/L		0.1	1	EPA 300.0	02/09/2015 15:49	JAHERMA
<u>MERCURY (COLD VAPOR) IN WATER</u>								
Mercury (Hg)	< 0.05	ug/L		0.05	1	EPA 245.1	02/12/2015 09:40	TLINN
<u>TOTAL RECOVERABLE METALS BY ICP</u>								
Barium (Ba)	0.047	mg/L		0.005	1	EPA 200.7	02/12/2015 11:54	MHH7131
Boron (B)	< 0.05	mg/L		0.05	1	EPA 200.7	02/12/2015 11:54	MHH7131
Calcium (Ca)	3.42	mg/L		0.01	1	EPA 200.7	02/12/2015 11:54	MHH7131
Chromium (Cr)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:54	MHH7131
Copper (Cu)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:54	MHH7131
Iron (Fe)	0.218	mg/L		0.01	1	EPA 200.7	02/12/2015 11:54	MHH7131
Magnesium (Mg)	0.732	mg/L		0.005	1	EPA 200.7	02/12/2015 11:54	MHH7131
Manganese (Mn)	0.007	mg/L		0.005	1	EPA 200.7	02/12/2015 11:54	MHH7131
Nickel (Ni)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:54	MHH7131
Potassium (K)	2.00	mg/L		0.1	1	EPA 200.7	02/12/2015 11:54	MHH7131
Silver (Ag)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:54	MHH7131
Sodium (Na)	4.08	mg/L		0.05	1	EPA 200.7	02/12/2015 11:54	MHH7131
Zinc (Zn)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:54	MHH7131
<u>TOTAL RECOVERABLE METALS BY ICP-MS</u>								
Arsenic (As)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 13:43	JAHERMA
Cadmium (Cd)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 13:43	JAHERMA
Lead (Pb)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 13:43	JAHERMA
Selenium (Se)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 13:43	JAHERMA
<u>PH IN WATER (NON-COMPLIANCE ANALYSIS)</u>								
pH	5.9	SI Units	H3	0.1	1	SM4500B	02/13/2015 15:25	TJA7067

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Order # J15020005

Site: MW-4

Collection Date: 09-Feb-15 11:40 AM

Sample #: 2015002444

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>TOTAL DISSOLVED SOLIDS</u>								
TDS	36	mg/L		25	1	SM2540C	02/12/2015 15:21	GHUTCHI
<u>Total Carbon</u>								
TOC	0.290	mg/L		0.1	1	SM5310C/EPA9060A	02/19/2015 15:53	TJA7067
<u>TOX (TOTAL ORGANIC HALIDES) - (Analysis Performed by Pace Laboratories)</u>								
Vendor Parameter	Complete					Vendor Method		V_PACE

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Order # J15020005

Site: MW-5

Collection Date: 09-Feb-15 7:55 AM

Sample #: 2015002445

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>LOW LEVEL ALKALINITY (FIXED END POINT)</u>								
Alkalinity (mg/L CaCO3)	8.0	mg/L (CaCO3)		5	1	SM 2320B4d	02/19/2015 10:33	TJA7067
<u>BIOCHEMICAL OXYGEN DEMAND (BOD) - (Analysis Performed by Pace Laboratories)</u>								
Vendor Parameter	Complete					Vendor Method		V_PACE
<u>CHEMICAL OXYGEN DEMAND</u>								
COD	< 20	mg/L		20	1	HACH 8000	02/13/2015 14:30	TJA7067
<u>INORGANIC IONS BY IC</u>								
Chloride	2.5	mg/L		0.1	1	EPA 300.0	02/09/2015 16:36	JAHERMA
Fluoride	< 0.1	mg/L		0.1	1	EPA 300.0	02/09/2015 16:36	JAHERMA
Nitrate	< 0.1	mg/L		0.1	1	EPA 300.0	02/09/2015 16:36	JAHERMA
Nitrate as N	< 0.023	mg-N/L		0.023	1	EPA 300.0	02/09/2015 16:36	JAHERMA
Sulfate	< 0.1	mg/L		0.1	1	EPA 300.0	02/09/2015 16:36	JAHERMA
<u>MERCURY (COLD VAPOR) IN WATER</u>								
Mercury (Hg)	< 0.05	ug/L		0.05	1	EPA 245.1	02/12/2015 09:42	TLINN
<u>TOTAL RECOVERABLE METALS BY ICP</u>								
Barium (Ba)	0.048	mg/L		0.005	1	EPA 200.7	02/12/2015 11:59	MHH7131
Boron (B)	< 0.05	mg/L		0.05	1	EPA 200.7	02/12/2015 11:59	MHH7131
Calcium (Ca)	1.12	mg/L		0.01	1	EPA 200.7	02/12/2015 11:59	MHH7131
Chromium (Cr)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:59	MHH7131
Copper (Cu)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:59	MHH7131
Iron (Fe)	0.034	mg/L		0.01	1	EPA 200.7	02/12/2015 11:59	MHH7131
Magnesium (Mg)	0.639	mg/L		0.005	1	EPA 200.7	02/12/2015 11:59	MHH7131
Manganese (Mn)	0.025	mg/L		0.005	1	EPA 200.7	02/12/2015 11:59	MHH7131
Nickel (Ni)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:59	MHH7131
Potassium (K)	0.859	mg/L		0.1	1	EPA 200.7	02/12/2015 11:59	MHH7131
Silver (Ag)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:59	MHH7131
Sodium (Na)	4.61	mg/L		0.05	1	EPA 200.7	02/12/2015 11:59	MHH7131
Zinc (Zn)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 11:59	MHH7131
<u>TOTAL RECOVERABLE METALS BY ICP-MS</u>								
Arsenic (As)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 14:06	JAHERMA
Cadmium (Cd)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 14:06	JAHERMA
Lead (Pb)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 14:06	JAHERMA
Selenium (Se)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 14:06	JAHERMA
<u>PH IN WATER (NON-COMPLIANCE ANALYSIS)</u>								
pH	5.4	SI Units	H3	0.1	1	SM4500B	02/13/2015 15:25	TJA7067

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Order # J15020005

Site: MW-5

Collection Date: 09-Feb-15 7:55 AM

Sample #: 2015002445

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>TOTAL DISSOLVED SOLIDS</u>								
TDS	36	mg/L		25	1	SM2540C	02/12/2015 15:21	GHUTCHI
<u>Total Carbon</u>								
TOC	0.281	mg/L		0.1	1	SM5310C/EPA9060A	02/19/2015 15:53	TJA7067
<u>TOX (TOTAL ORGANIC HALIDES) - (Analysis Performed by Pace Laboratories)</u>								
Vendor Parameter	Complete					Vendor Method		V_PACE

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Order # J15020005

Site: QC SAMPLE WELL#

Collection Date: 09-Feb-15 8:50 AM

Sample #: 2015002446

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>BIOCHEMICAL OXYGEN DEMAND (BOD) - (Analysis Performed by Pace Laboratories)</u>								
Vendor Parameter	Complete					Vendor Method		V_PACE

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Order # J15020005

Site: FIELD BLANK

Collection Date: 09-Feb-15 12:20 PM

Sample #: 2015002447

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>LOW LEVEL ALKALINITY (FIXED END POINT)</u>								
Alkalinity (mg/L CaCO3)	< 5	mg/L (CaCO3)		5	1	SM 2320B4d	02/19/2015 10:33	TJA7067
<u>CHEMICAL OXYGEN DEMAND</u>								
COD	< 20	mg/L		20	1	HACH 8000	02/13/2015 14:30	TJA7067
<u>INORGANIC IONS BY IC</u>								
Chloride	< 0.1	mg/L		0.1	1	EPA 300.0	02/09/2015 16:53	JAHERMA
Fluoride	< 0.1	mg/L		0.1	1	EPA 300.0	02/09/2015 16:53	JAHERMA
Nitrate	< 0.1	mg/L		0.1	1	EPA 300.0	02/09/2015 16:53	JAHERMA
Nitrate as N	< 0.023	mg-N/L		0.023	1	EPA 300.0	02/09/2015 16:53	JAHERMA
Sulfate	< 0.1	mg/L		0.1	1	EPA 300.0	02/09/2015 16:53	JAHERMA
<u>MERCURY (COLD VAPOR) IN WATER</u>								
Mercury (Hg)	< 0.05	ug/L		0.05	1	EPA 245.1	02/12/2015 09:45	TLINN
<u>TOTAL RECOVERABLE METALS BY ICP</u>								
Barium (Ba)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 12:03	MHH7131
Boron (B)	< 0.05	mg/L		0.05	1	EPA 200.7	02/12/2015 12:03	MHH7131
Calcium (Ca)	< 0.01	mg/L		0.01	1	EPA 200.7	02/12/2015 12:03	MHH7131
Chromium (Cr)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 12:03	MHH7131
Copper (Cu)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 12:03	MHH7131
Iron (Fe)	< 0.01	mg/L		0.01	1	EPA 200.7	02/12/2015 12:03	MHH7131
Magnesium (Mg)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 12:03	MHH7131
Manganese (Mn)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 12:03	MHH7131
Nickel (Ni)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 12:03	MHH7131
Potassium (K)	< 0.1	mg/L		0.1	1	EPA 200.7	02/12/2015 12:03	MHH7131
Silver (Ag)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 12:03	MHH7131
Sodium (Na)	< 0.05	mg/L		0.05	1	EPA 200.7	02/12/2015 12:03	MHH7131
Zinc (Zn)	< 0.005	mg/L		0.005	1	EPA 200.7	02/12/2015 12:03	MHH7131
<u>TOTAL RECOVERABLE METALS BY ICP-MS</u>								
Arsenic (As)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 14:11	JAHERMA
Cadmium (Cd)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 14:11	JAHERMA
Lead (Pb)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 14:11	JAHERMA
Selenium (Se)	< 1	ug/L		1	1	EPA 200.8	02/19/2015 14:11	JAHERMA
<u>PH IN WATER (NON-COMPLIANCE ANALYSIS)</u>								
pH	5.3	SI Units	H3	0.1	1	SM4500B	02/13/2015 15:25	TJA7067
<u>Total Carbon</u>								
TOC	< 0.1	mg/L		0.1	1	SM5310C/EPA9060A	02/19/2015 15:53	TJA7067

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Order # J15020005

Site: FIELD BLANK

Collection Date: 09-Feb-15 12:20 PM

Sample #: 2015002447

Matrix: GW_RCRA

Analyte	Result	Units	Qualifiers	RDL	DF	Method	Analysis Date/Time	Analyst
<u>TOX (TOTAL ORGANIC HALIDES) - (Analysis Performed by Pace Laboratories)</u>								
Vendor Parameter	Complete					Vendor Method		V_PACE

Qualifiers:

H3 pH sample analyzed outside of the EPA hold time of 15 minutes. Analyzed at the request of the client.

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Order # J15020005

Level II QC Summary

Q15020242 ALK_FIX4.5 ALKALINITY (FIXED END POINT 4.5)

Duplicate # 1

Parent Sample: J15010387 -- 2015001516

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>		<u>RPD</u>	<u>Qualifier</u>
Alkalinity (mg/L CaCO3)		1160	mg/L (CaCO3)	1		0.138	-

LCS # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Alkalinity (mg/L CaCO3)		59.8	mg/L (CaCO3)	1	62.1	96.4	80	120	-

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Order # J15020005

Level II QC Summary

Q15020371 ALK_LL_Fix LOW LEVEL ALKALINITY (FIXED END POINT)

Duplicate # 1

Parent Sample: J15010543 -- 2015002185

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>		<u>RPD</u>	<u>Qualifier</u>
Alkalinity (mg/L CaCO ₃)		20.6	mg/L (CaCO ₃)	1		0.706	-

LCS # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Alkalinity (mg/L CaCO ₃)		11.8	mg/L (CaCO ₃)	1	12.42	95	80	120	-

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Order # J15020005

Level II QC Summary

Q15020257 COD CHEMICAL OXYGEN DEMAND

Blank # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>RDL</u>	<u>Relative Concentration</u>	<u>Qualifier</u>
COD		3.28	mg/L	1	20	> RDL	-

IS # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
COD		19.6	mg/L	1	20	93.3			-

ISD # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>RPD</u>	<u>Qualifier</u>
COD		20.3	mg/L	1	20	96.5			3.43	-

LCS # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
COD		74	mg/L	1	77.9	94.9	80	120	-

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Order # J15020005

Level II QC Summary

Q15020168 Dionex INORGANIC IONS BY IC

Blank # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>RDL</u>	<u>Relative Concentration</u>	<u>Qualifier</u>
Chloride	0	0	mg/L	1	0.1	< 1/2 RDL	-
Fluoride	0	0	mg/L	1	0.1	< 1/2 RDL	-
Nitrate	0	0	mg/L	1	0.1	< 1/2 RDL	-
Sulfate	0	0	mg/L	1	0.1	< 1/2 RDL	-

IS # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Chloride	6.3	6.3	mg/L	1	5	103	80	120	-
Fluoride	5.08	5.08	mg/L	1	5	99.4	80	120	-
Nitrate	5.22	5.22	mg/L	1	5	100	80	120	-
Sulfate	6.41	6.41	mg/L	1	5	101	80	120	-

ISD # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>RPD</u>	<u>Qualifier</u>
Chloride	6.27	6.27	mg/L	1	5	103	80	120	0.416	-
Fluoride	5.07	5.07	mg/L	1	5	99.1	80	120	0.298	-
Nitrate	5.24	5.24	mg/L	1	5	101	80	120	0.417	-
Sulfate	6.42	6.42	mg/L	1	5	101	80	120	0.196	-

IS # 2

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Chloride	7.19	7.19	mg/L	1	5	104	80	120	-
Fluoride	5.06	5.06	mg/L	1	5	99.1	80	120	-
Nitrate	5.09	5.09	mg/L	1	5	100	80	120	-
Sulfate	5.2	5.2	mg/L	1	5	101	80	120	-

ISD # 2

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>RPD</u>	<u>Qualifier</u>
Chloride	7.17	7.17	mg/L	1	5	104	80	120	0.238	-
Fluoride	5.06	5.06	mg/L	1	5	99.1	80	120	0	-
Nitrate	5.1	5.1	mg/L	1	5	101	80	120	0.117	-
Sulfate	5.21	5.21	mg/L	1	5	101	80	120	0.203	-

LCS # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Chloride	4.94	4.94	mg/L	1	5	98.8	80	120	-
Fluoride	4.99	4.99	mg/L	1	5	99.7	80	120	-
Nitrate	4.86	4.86	mg/L	1	5	97.1	80	120	-
Sulfate	4.92	4.92	mg/L	1	5	98.3	80	120	-

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Order # J15020005

Level II QC Summary

Q15020203 HG 245.1 MERCURY (COLD VAPOR) IN WATER

Blank # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>RDL</u>	<u>Relative Concentration</u>	<u>Qualifier</u>
Mercury (Hg)	0.001	0.001	ug/L	1	0.05	< 1/2 RDL	-

Blank # 2

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>RDL</u>	<u>Relative Concentration</u>	<u>Qualifier</u>
Mercury (Hg)	0.002	0.002	ug/L	1	0.05	< 1/2 RDL	-

Blank # 3

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>RDL</u>	<u>Relative Concentration</u>	<u>Qualifier</u>
Mercury (Hg)	0.005	0.005	ug/L	1	0.05	< 1/2 RDL	-

IS # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Mercury (Hg)		97.8	ug/L	1	100	93.3	70	130	-

ISD # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>RPD</u>	<u>Qualifier</u>
Mercury (Hg)		97.3	ug/L	1	100	92.8	70	130	0.537	-

LCS # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Mercury (Hg)	2.14	2.14	ug/L	1	2	107	85	115	-

LCS # 2

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Mercury (Hg)	2.14	2.14	ug/L	1	2	107	85	115	-

LCS # 3

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Mercury (Hg)	2.04	2.04	ug/L	1	2	102	85	115	-

MS # 1

Parent Sample: J15020005 -- 2015002441

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Mercury (Hg)	1.02	1.02	ug/L	1	1	102	70	130	-

MSD # 1

Parent Sample: J15020005 -- 2015002441

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>RPD</u>	<u>Qualifier</u>
Mercury (Hg)	1.05	1.05	ug/L	1	1	105	70	130	2.51	-

MS # 2

Parent Sample: J15020055 -- 2015002659

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Mercury (Hg)	1.04	1.04	ug/L	1	1	104	70	130	-

MSD # 2

Parent Sample: J15020055 -- 2015002659

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>RPD</u>	<u>Qualifier</u>
Mercury (Hg)	0.84	0.84	ug/L	1	1	83.8	70	130	21.6	-

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Order # J15020005

Level II QC Summary

Q15020203 HG 245.1 MERCURY (COLD VAPOR) IN WATER

MS # 3

Parent Sample: J15020073 -- 2015002677

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Mercury (Hg)	1.01	1.01	ug/L	1	1	101	70	130	-

MSD # 3

Parent Sample: J15020073 -- 2015002677

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>RPD</u>	<u>Qualifier</u>
Mercury (Hg)	1	1	ug/L	1	1	100	70	130	0.498	-

MS # 4

Parent Sample: J15020166 -- 2015003052

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Mercury (Hg)	1.04	1.04	ug/L	1	1	103	70	130	-

MSD # 4

Parent Sample: J15020166 -- 2015003052

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>RPD</u>	<u>Qualifier</u>
Mercury (Hg)	1.03	1.03	ug/L	1	1	102	70	130	1.17	-

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Order # J15020005

Level II QC Summary

Q15020198 ICP_TRM TOTAL RECOVERABLE METALS BY ICP

Blank # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>RDL</u>	<u>Relative Concentration</u>	<u>Qualifier</u>
Barium (Ba)	0.0003	0.0003	mg/L	1	0.005	< 1/2 RDL	-
Boron (B)	0.0036	0.0036	mg/L	1	0.05	< 1/2 RDL	-
Calcium (Ca)	0.00484	0.00484	mg/L	1	0.01	< 1/2 RDL	-
Chromium (Cr)	0.000416	0.000416	mg/L	1	0.005	< 1/2 RDL	-
Copper (Cu)	0.0016	0.0016	mg/L	1	0.005	< 1/2 RDL	-
Iron (Fe)	0.00146	0.00146	mg/L	1	0.01	< 1/2 RDL	-
Magnesium (Mg)	0.000844	0.000844	mg/L	1	0.005	< 1/2 RDL	-
Manganese (Mn)	0.000385	0.000385	mg/L	1	0.005	< 1/2 RDL	-
Nickel (Ni)	0.000441	0.000441	mg/L	1	0.005	< 1/2 RDL	-
Potassium (K)	0.000968	0.000968	mg/L	1	0.1	< 1/2 RDL	-
Silver (Ag)	0.000225	0.000225	mg/L	1	0.005	< 1/2 RDL	-
Sodium (Na)	0.00311	0.00311	mg/L	1	0.05	< 1/2 RDL	-
Zinc (Zn)	0.000584	0.000584	mg/L	1	0.005	< 1/2 RDL	-

LCS # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Barium (Ba)	4.91	4.91	mg/L	1	5	98.2	80	120	-
Boron (B)	4.9	4.9	mg/L	1	5	97.9	80	120	-
Calcium (Ca)	5.03	5.03	mg/L	1	5	101	80	120	-
Chromium (Cr)	4.99	4.99	mg/L	1	5	99.7	80	120	-
Copper (Cu)	4.96	4.96	mg/L	1	5	99.1	80	120	-
Iron (Fe)	5.05	5.05	mg/L	1	5	101	80	120	-
Magnesium (Mg)	4.97	4.97	mg/L	1	5	99.5	80	120	-
Manganese (Mn)	5.01	5.01	mg/L	1	5	100	80	120	-
Nickel (Ni)	5.08	5.08	mg/L	1	5	102	80	120	-
Potassium (K)	4.91	4.91	mg/L	1	5	98.1	80	120	-
Silver (Ag)	0.482	0.482	mg/L	1	0.5	96.5	80	120	-
Sodium (Na)	4.93	4.93	mg/L	1	5	98.7	80	120	-
Zinc (Zn)	5.09	5.09	mg/L	1	5	102	80	120	-

MS # 1

Parent Sample: J15020005 -- 2015002441

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Barium (Ba)	5.01	5.01	mg/L	1	5	98.4	75	125	-
Boron (B)	5.19	5.19	mg/L	1	5	98.1	75	125	-
Calcium (Ca)	19.3	19.3	mg/L	1	5	98.2	75	125	-
Chromium (Cr)	4.97	4.97	mg/L	1	5	99.3	75	125	-
Copper (Cu)	4.92	4.92	mg/L	1	5	98.3	75	125	-
Iron (Fe)	5.22	5.22	mg/L	1	5	101	75	125	-
Magnesium (Mg)	8.57	8.57	mg/L	1	5	96.1	75	125	-
Manganese (Mn)	5	5	mg/L	1	5	99.6	75	125	-

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Order # J15020005

Level II QC Summary

Q15020198 ICP_TRM TOTAL RECOVERABLE METALS BY ICP

MS # 1

Parent Sample: J15020005 -- 2015002441

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Nickel (Ni)	5.03	5.03	mg/L	1	5	100	75	125	-
Potassium (K)	8.33	8.33	mg/L	1	5	97.7	75	125	-
Silver (Ag)	0.479	0.479	mg/L	1	0.5	95.9	75	125	-
Sodium (Na)	13.3	13.3	mg/L	1	5	100	75	125	-
Zinc (Zn)	5.03	5.03	mg/L	1	5	100	75	125	-

MSD # 1

Parent Sample: J15020005 -- 2015002441

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>RPD</u>	<u>Qualifier</u>
Barium (Ba)	5.06	5.06	mg/L	1	5	99.3	75	125	0.89	-
Boron (B)	5.24	5.24	mg/L	1	5	99.1	75	125	1.03	-
Calcium (Ca)	19.5	19.5	mg/L	1	5	101	75	125	3.24	-
Chromium (Cr)	5.01	5.01	mg/L	1	5	100	75	125	0.803	-
Copper (Cu)	4.96	4.96	mg/L	1	5	99.2	75	125	0.871	-
Iron (Fe)	5.27	5.27	mg/L	1	5	102	75	125	0.927	-
Magnesium (Mg)	8.62	8.62	mg/L	1	5	97.1	75	125	0.973	-
Manganese (Mn)	5.04	5.04	mg/L	1	5	101	75	125	0.939	-
Nickel (Ni)	5.06	5.06	mg/L	1	5	101	75	125	0.714	-
Potassium (K)	8.41	8.41	mg/L	1	5	99.4	75	125	1.7	-
Silver (Ag)	0.485	0.485	mg/L	1	0.5	97	75	125	1.14	-
Sodium (Na)	13.4	13.4	mg/L	1	5	102	75	125	1.43	-
Zinc (Zn)	5.06	5.06	mg/L	1	5	101	75	125	0.576	-

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Order # J15020005

Level II QC Summary

Q15020199 IMS_TRM TOTAL RECOVERABLE METALS BY ICP-MS

Blank # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>RDL</u>	<u>Relative Concentration</u>	<u>Qualifier</u>
Arsenic (As)	-0.173	-0.173	ug/L	1	1	< 1/2 RDL	-
Cadmium (Cd)	-0.0262	-0.0262	ug/L	1	1	< 1/2 RDL	-
Lead (Pb)	-0.0467	-0.0467	ug/L	1	1	< 1/2 RDL	-
Selenium (Se)	-0.0302	-0.0302	ug/L	1	1	< 1/2 RDL	-
Silver (Ag)	0.0106	0.0106	ug/L	1	1	< 1/2 RDL	-

LCS # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Arsenic (As)	50.9	50.9	ug/L	1	50	102	80	120	-
Cadmium (Cd)	50.2	50.2	ug/L	1	50	100	80	120	-
Lead (Pb)	50.6	50.6	ug/L	1	50	101	80	120	-
Selenium (Se)	49.7	49.7	ug/L	1	50	99.4	80	120	-
Silver (Ag)	50.4	50.4	ug/L	1	50	101	80	120	-

MS # 1

Parent Sample: J15010543 -- 2015002182

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
Arsenic (As)	49.5	49.5	ug/L	1	50	98.9	80	120	-
Cadmium (Cd)	49.8	49.8	ug/L	1	50	99.6	80	120	-
Lead (Pb)	50.1	50.1	ug/L	1	50	99.3	80	120	-
Selenium (Se)	50.4	50.4	ug/L	1	50	101	80	120	-
Silver (Ag)	48.5	48.5	ug/L	1	50	97	80	120	-

MSD # 1

Parent Sample: J15010543 -- 2015002182

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>RPD</u>	<u>Qualifier</u>
Arsenic (As)	49.5	49.5	ug/L	1	50	98.9	80	120	0.0202	-
Cadmium (Cd)	49.4	49.4	ug/L	1	50	98.7	80	120	0.907	-
Lead (Pb)	50	50	ug/L	1	50	99.1	80	120	0.202	-
Selenium (Se)	49	49	ug/L	1	50	97.9	80	120	2.88	-
Silver (Ag)	48.9	48.9	ug/L	1	50	97.7	80	120	0.678	-

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Order # J15020005

Level II QC Summary

Q15020277 PH_WAT_WAS PH IN WATER (NON-COMPLIANCE ANALYSIS)

Duplicate # 1

Parent Sample: J15020005 -- 2015002441

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>		<u>RPD</u>	<u>Qualifier</u>
pH		5.9	SI Units	1		0.851	-

LCS # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
pH		6	SI Units	1	6	100	85	115	-

LCS2 # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
pH		8.03	SI Units	1	8	100	85	115	-

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Order # J15020005

Level II QC Summary

Q15020221 TDS TOTAL DISSOLVED SOLIDS

Blank # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>RDL</u>	<u>Relative Concentration</u>	<u>Qualifier</u>
TDS		0	mg/L	1	25	< 1/2 RDL	-

Duplicate # 1

Parent Sample: J15020005 -- 2015002441

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>RPD</u>	<u>Qualifier</u>
TDS		117	mg/L	1	1.69	-

Duplicate # 2

Parent Sample: J15020194 -- 2015003196

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>RPD</u>	<u>Qualifier</u>
TDS		110	mg/L	1	3.7	-

LCS # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
TDS		96	mg/L	1	100.2	95.8	90	110	-

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Order # J15020005

Level II QC Summary

Q15020388 Total Carbon Total Carbon

Blank # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>RDL</u>	<u>Relative Concentration</u>	<u>Qualifier</u>
TOC		0.031	mg/L	1	0.1	< 1/2 RDL	-

IS # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
TOC		2.26	mg/L	1	2	105	80	120	-

ISD # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>RPD</u>	<u>Qualifier</u>
TOC		2.21	mg/L	1	2	103	80	120	2.07	-

IS # 2

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
TOC		2.41	mg/L	1	2	96.4	80	120	-

ISD # 2

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>RPD</u>	<u>Qualifier</u>
TOC		2.45	mg/L	1	2	98.7	80	120	2.36	-

LCS # 1

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
TOC		3.08	mg/L	1	3.1	99.4	85	115	-

LCS # 2

<u>Parameter</u>	<u>Measured</u>	<u>Final</u>	<u>Units:</u>	<u>Dil</u>	<u>Spike</u>	<u>% Recovery</u>	<u>LCL</u>	<u>UCL</u>	<u>Qualifier</u>
TOC		3.02	mg/L	1	3.1	97.5	85	115	-

February 18, 2015

Program Manager
Duke Energy
13339 Hagers Ferry Road
Bldg. 7405 MG30A2
Huntersville, NC 28078

RE: Project: J15020005
Pace Project No.: 92237169

Dear Program Manager:

Enclosed are the analytical results for sample(s) received by the laboratory on February 10, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,



Kevin Herring
kevin.herring@pacelabs.com
HORIZON Database Administrator

Enclosures



REPORT OF LABORATORY ANALYSIS

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February 18, 2015
Page 2

cc: Program Manager, Duke Energy
Rodney Wike, Duke Energy



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: J15020005

Pace Project No.: 92237169

Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804

Florida/NELAP Certification #: E87648

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40

South Carolina Certification #: 99030001

West Virginia Certification #: 356

Virginia/VELAP Certification #: 460222

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SAMPLE ANALYTE COUNT

Project: J15020005

Pace Project No.: 92237169

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92237169001	2015002441	SM 5210B	ERK	1	PASI-A
92237169002	2015002442	SM 5210B	ERK	1	PASI-A
92237169003	2015002443	SM 5210B	ERK	1	PASI-A
92237169004	2015002444	SM 5210B	ERK	1	PASI-A
92237169005	2015002445	SM 5210B	ERK	1	PASI-A
92237169006	2015002446	SM 5210B	ERK	1	PASI-A

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PROJECT NARRATIVE

Project: J15020005

Pace Project No.: 92237169

Method: SM 5210B

Description: 5210B BOD, 5 day

Client: Duke Energy

Date: February 18, 2015

General Information:

6 samples were analyzed for SM 5210B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: J15020005

Pace Project No.: 92237169

Sample: 2015002441		Lab ID: 92237169001	Collected: 02/09/15 09:55	Received: 02/10/15 17:34	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5210B BOD, 5 day		Analytical Method: SM 5210B						
BOD, 5 day	ND	mg/L	2.0	1	02/11/15 06:57	02/16/15 09:55		

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ANALYTICAL RESULTS

Project: J15020005

Pace Project No.: 92237169

Sample: 2015002442	Lab ID: 92237169002	Collected: 02/09/15 08:50	Received: 02/10/15 17:34	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5210B BOD, 5 day		Analytical Method: SM 5210B						
BOD, 5 day	ND	mg/L	2.0	1	02/11/15 06:57	02/16/15 09:55		

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ANALYTICAL RESULTS

Project: J15020005

Pace Project No.: 92237169

Sample: 2015002443	Lab ID: 92237169003	Collected: 02/09/15 10:50	Received: 02/10/15 17:34	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5210B BOD, 5 day		Analytical Method: SM 5210B						
BOD, 5 day	ND	mg/L	2.0	1	02/11/15 06:57	02/16/15 09:55		

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ANALYTICAL RESULTS

Project: J15020005

Pace Project No.: 92237169

Sample: 2015002444	Lab ID: 92237169004	Collected: 02/09/15 11:40	Received: 02/10/15 17:34	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5210B BOD, 5 day		Analytical Method: SM 5210B						
BOD, 5 day	ND	mg/L	2.0	1	02/11/15 06:57	02/16/15 09:55		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J15020005

Pace Project No.: 92237169

Sample: 2015002445	Lab ID: 92237169005	Collected: 02/09/15 07:55	Received: 02/10/15 17:34	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5210B BOD, 5 day		Analytical Method: SM 5210B						
BOD, 5 day	ND	mg/L	2.0	1	02/11/15 06:57	02/16/15 09:55		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: J15020005

Pace Project No.: 92237169

Sample: 2015002446	Lab ID: 92237169006	Collected: 02/09/15 08:50	Received: 02/10/15 17:34	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
5210B BOD, 5 day		Analytical Method: SM 5210B						
BOD, 5 day	ND	mg/L	2.0	1	02/11/15 06:57	02/16/15 09:55		

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: J15020005

Pace Project No.: 92237169

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

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

TNI - The NELAC Institute.

LABORATORIES

PASI-A Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: J15020005

Pace Project No.: 92237169

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92237169001	2015002441	SM 5210B	WET/35648	SM 5210B	WET/35652
92237169002	2015002442	SM 5210B	WET/35648	SM 5210B	WET/35652
92237169003	2015002443	SM 5210B	WET/35648	SM 5210B	WET/35652
92237169004	2015002444	SM 5210B	WET/35648	SM 5210B	WET/35652
92237169005	2015002445	SM 5210B	WET/35648	SM 5210B	WET/35652
92237169006	2015002446	SM 5210B	WET/35648	SM 5210B	WET/35652

REPORT OF LABORATORY ANALYSIS

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Client Name: Duke

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 V Ip Bubble Bags None Other _____

Thermometer Used: IR Gun **T1401** Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Temp Correction Factor **T1401** No Correction

Corrected Cooler Temp.: 39 °C Biological Tissue is Frozen: Yes No N/A
Temp should be above freezing to 6°C

Date and Initials of person examining contents: IM 2/10

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

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

SCURF Review: AS Date: 2/10/15
 SRF Review: IM Date: 2/11/15

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)

Place label here

WO# : 92237169



92237169



Duke Energy Analytical Laboratories
 Mail Code MGO3A2 (Building 7405)
 13339 Hagers Ferry Rd
 Huntersville, N. C. 28078
 Fax: (980) 875-5245
 (980) 875-5038

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

92237109

Customer must Complete

1) Project Name: MARSHALL DRY ASH LANDFILL
 Permit #18-04
 2) Phone No: 980-875-5257
 3) Client: C CAMPBELL, T HUNSUCKER, ED SULLIVAN
 4) Fax No: 980-875-4349
 5) Business Unit: 20035
 6) Process: BENWVT
 7) Resp. To: MS00
 8) Task ID: 9) Activity ID: MGO3A3
 10) Mail Code: MGO3A3

Analytical Laboratory Use Only

LIMS # J15020005 MATRIX: GW_PCRA
 Logged By: [Signature] Date & Time: 2/9/15 1426
 Vendor: PACE PO# 1115040
 Order Temp (C): 0.9
 15) Preserve: 1-HCL, 2-H2SO4, 3-HNO3, 4-None
 Volume: 500 mL
 16) Analyze: 1-None, 2-None, 3-None, 4-None, 5-None, 6-None, 7-None, 8-None, 9-None, 10-None, 11-None, 12-None, 13-None, 14-None, 15-None, 16-None, 17-None, 18-None, 19-None, 20-None, 21-None, 22-None, 23-None, 24-None, 25-None, 26-None, 27-None, 28-None, 29-None, 30-None, 31-None, 32-None, 33-None, 34-None, 35-None, 36-None, 37-None, 38-None, 39-None, 40-None, 41-None, 42-None, 43-None, 44-None, 45-None, 46-None, 47-None, 48-None, 49-None, 50-None, 51-None, 52-None, 53-None, 54-None, 55-None, 56-None, 57-None, 58-None, 59-None, 60-None, 61-None, 62-None, 63-None, 64-None, 65-None, 66-None, 67-None, 68-None, 69-None, 70-None, 71-None, 72-None, 73-None, 74-None, 75-None, 76-None, 77-None, 78-None, 79-None, 80-None, 81-None, 82-None, 83-None, 84-None, 85-None, 86-None, 87-None, 88-None, 89-None, 90-None, 91-None, 92-None, 93-None, 94-None, 95-None, 96-None, 97-None, 98-None, 99-None, 100-None

11) Lab ID	13) Sample Description or ID	14) Collection Information			15) Analyze Required	16) Grab	17) Volume	18) Tests	19) Turnaround	20) Total # of Containers
		Date	Time	Signature						
2015002441	MMW-1	2/9/15	0955	[Signature]	X	500 mL	(Metals Prep - TRM) (ICP - EPA 200.7) Ag, B, Ba, Ca, Cu, Cr, Fe, K, Mg, Mn, Na, Ni, Zn (13) / Hg (EPA 245.1) (1) / (IMS - EPA 200.8) As, Cd, Pb, Se (4)	1	1	6
2015002442	MMW-2	2/9/15	0850	[Signature]	X	500 mL	NO3-N, Cl, F, SO4 (IC) lab pH, F_Alk (4.5)	1	1	6
2015002443	MMW-3	2/9/15	1050	[Signature]	X	500 mL	TOX - Pace w/ St EDD	1	1	6
2015002444	MMW-4	2/9/15	1140	[Signature]	X	500 mL	BOD - Pace w/ St EDD	1	1	6
2015002445	MMW-5	2/9/15	0255	[Signature]	X	500 mL	TOC, COD	1	1	6
2015002446	OC SAMPLE (WELL # MW-2)	2/9/15	0350	[Signature]	X	500 mL	TDS	1	1	6
2015002447	FIELD BLANK	2/9/15	1220	[Signature]	X	500 mL	CHLORINE (STRIPS) PPM	1	1	4

Customer to complete appropriate columns to right

Customer to sign & date below

21) Reinquished By: [Signature] Date/Time: 2/9/15 1350 Accepted By: [Signature] Date/Time: 2/9/15 1350
 21) Reinquished By: [Signature] Date/Time: 2/9/15 1350 Accepted By: [Signature] Date/Time: 2/10/15 1315
 21) Reinquished By: [Signature] Date/Time: 2/9/15 1350 Accepted By: [Signature] Date/Time: 2/10/15 1330
 22) Sealed/Locked By: [Signature] Date/Time: 2/9/15 1350 Sealed/Lock Opened By: [Signature] Date/Time: 2/10/15 1330

23) Comments: Regulatory Agency: NCDENR/DWM - SW Section - State EDD Format Required NOTE: As, Cd, Pb, Se - analyzed by IMS - All other metals analyzed by ICP.

Customer, Important please indicate desired turnaround

14 Days: 2/23/15
 7 Days: _____
 48 Hr: _____

Other: _____ Apply Add Cost Will



Summit Environmental Technologies, Inc.
3310 Win St.
Cuyahoga Falls, Ohio 44223
TEL: (330) 253-8211 FAX: (330) 253-4489
Website: <http://www.settek.com>

February 17, 2015

Kevin Herring
Pace Analytical Services Inc
9800 Kincey Avenue Suite 100
Huntersville, NC 28078
TEL: (704) 875-9092
FAX: (704) 875-9091
RE: 92237169

Order No.: 15021039

Dear Kevin Herring:

Summit Environmental Technologies, Inc. received 6 sample(s) on 2/12/2015 for the analyses presented in the following report.

There were no problems with the analytical events associated with this report unless noted in the Case Narrative.

Quality control data is within laboratory defined or method specified acceptance limits except where noted.

If you have any questions regarding these tests results, please feel free to call the laboratory.

Sincerely,

Dr. Mo Osman
Project Manager
3310 Win St.
Cuyahoga Falls, Ohio 44223

A2LA 0724.01, Alabama 41600, Arizona AZ0788, Arkansas 88-0735, California 07256CA, Colorado, Connecticut PH-0105, Delaware, Florida NELAC E87688, Georgia E87688 and 943, Idaho OH00923, Illinois 200061 and Reg.5, Indiana C-OH-13, Kansas E-10347, Kentucky (Underground Storage Tank) 3, Kentucky 90146, Louisiana 04061 and LA12004, Maine 2012015, Maryland 339, Massachusetts M-OPH923, Minnesota 409711, Montana CERT0099, New Hampshire 2996, New Jersey OH006, New York 11777, North Carolina 39705 and 631, Ohio Drinking Water 4170, Ohio VAP CL0052, Oklahoma 9940, Oregon OH200001, Pennsylvania 68-01335, Rhode Island LA000317, South Carolina 92016001, Tennessee TN04018, Texas T104704466-11-5, Region 8 8TMS-L, USDA/APHIS P330-11-00244, Utah OH009232011-1, Vermont VT-87688, Virginia 00440 and 1581, Washington C891, West Virginia 248 and 9957C and E87688, Wisconsin 399013010



Summit Environmental Technologies, Inc.
 3310 Win St.
 Cuyahoga Falls, Ohio 44223
 TEL: (330) 253-8211 FAX: (330) 253-4489
 Website: <http://www.settek.com>

Workorder Sample Summary

WO#: **15021039**
17-Feb-15

CLIENT: Pace Analytical Services Inc
Project: 92237169

Lab SampleID	Client Sample ID	Tag No	Date Collected	Date Received	Matrix
15021039-001	92237169001		2/9/2015 9:55:00 AM	2/12/2015 10:00:00 AM	Non-Potable Water
15021039-002	92237169002		2/9/2015 8:50:00 AM	2/12/2015 10:00:00 AM	Non-Potable Water
15021039-003	92237169003		2/9/2015 10:50:00 AM	2/12/2015 10:00:00 AM	Non-Potable Water
15021039-004	92237169004		2/9/2015 11:40:00 AM	2/12/2015 10:00:00 AM	Non-Potable Water
15021039-005	92237169005		2/9/2015 7:55:00 AM	2/12/2015 10:00:00 AM	Non-Potable Water
15021039-006	92237169007		2/9/2015 12:20:00 PM	2/12/2015 10:00:00 AM	Non-Potable Water



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 Cuyahoga Falls, Ohio 44223
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Case Narrative

WO#: 15021039
 Date: 2/17/2015

CLIENT: Pace Analytical Services Inc
Project: 92237169

This report in its entirety consists of the documents listed below. All documents contain the Summit Environmental Technologies, Inc., Work Order Number assigned to this report.

Paginated Report including Cover Letter, Case Narrative, Analytical Results, Applicable Quality Control Summary Reports, and copies of the Chain of Custody Documents are supplied with this sample set.

Concentrations reported with a J-Flag in the Qualifier Field are values below the Limit of Quantitation (LOQ) but greater than the established Method Detection Limit (MDL).

Method numbers, unless specified as SM (Standard Methods) or ASTM, are EPA methods.

Estimated uncertainty values are available upon request.

All results for Solid Samples are reported on an "as received" or "wet weight" basis unless indicated as "dry weight" using the "-dry" designation on the reporting units.

Summit Environmental Technologies, Inc., holds the accreditations/certifications listed at the bottom of the cover letter that may or may not pertain to this report.

Any comments or problems with the analytical events associated with this report are noted below.



Summit Environmental Technologies, Inc.
 3310 Win St.
 Cuyahoga Falls, Ohio 44223
 TEL: (330) 253-8211 FAX: (330) 253-4489
 Website: <http://www.settek.com>

WO#: 15021039
 Date Reported: 2/17/2015
 Company: Pace Analytical Services Inc
 Address: 9800 Kincey Avenue Suite 100
 Huntersville NC 28078
 Received: 2/12/2015
 Project#: 92237169

Client ID#	Lab ID#	Collected Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
92237169001	001	2/9/2015 Total Organic Halides	ND	mg/L	Non-Potable Water	EPA 9020	1	0.100	2/13/2015	CXS

Client ID#	Lab ID#	Collected Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
92237169002	002	2/9/2015 Total Organic Halides	ND	mg/L	Non-Potable Water	EPA 9020	1	0.100	2/17/2015	CXS

Client ID#	Lab ID#	Collected Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
92237169003	003	2/9/2015 Total Organic Halides	ND	mg/L	Non-Potable Water	EPA 9020	1	0.100	2/13/2015	CXS

Client ID#	Lab ID#	Collected Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
92237169004	004	2/9/2015 Total Organic Halides	ND	mg/L	Non-Potable Water	EPA 9020	1	0.100	2/13/2015	CXS

Client ID#	Lab ID#	Collected Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
92237169005	005	2/9/2015 Total Organic Halides	ND	mg/L	Non-Potable Water	EPA 9020	1	0.100	2/13/2015	CXS

Client ID#	Lab ID#	Collected Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
92237169007	006	2/9/2015 Total Organic Halides	ND	mg/L	Non-Potable Water	EPA 9020	1	0.100	2/13/2020	CXS



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QC SUMMARY REPORT

WO#: 15021039
 17-Feb-15

Client: Pace Analytical Services Inc
Project: 92237169

TestCode: TOX_NPW(9020)

Sample ID	MB-R32465	SampType:	MBLK	TestCode:	TOX_NPW(90	Units:	mg/L	Prep Date:	RunNo:	32465	
Client ID:	PBW	Batch ID:	R32465	TestNo:	SW9020			Analysis Date:	2/13/2015	SeqNo:	455384
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Halides	ND	0.100									

Sample ID	LCS-R32465	SampType:	LCS	TestCode:	TOX_NPW(90	Units:	mg/L	Prep Date:	RunNo:	32465	
Client ID:	LCSW	Batch ID:	R32465	TestNo:	SW9020			Analysis Date:	2/13/2015	SeqNo:	455385
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Halides	0.220	0.100	0.2000	0	110	90	110				

Sample ID	15021039-004AMS	SampType:	MS	TestCode:	TOX_NPW(90	Units:	mg/L	Prep Date:	RunNo:	32465	
Client ID:	92237169004	Batch ID:	R32465	TestNo:	SW9020			Analysis Date:	2/13/2015	SeqNo:	455394
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Halides	0.870	0.100	1.000	0.04800	82.2	90	110				S

Sample ID	15021039-004AMSD	SampType:	MSD	TestCode:	TOX_NPW(90	Units:	mg/L	Prep Date:	RunNo:	32465	
Client ID:	92237169004	Batch ID:	R32465	TestNo:	SW9020			Analysis Date:	2/13/2015	SeqNo:	455395
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Halides	1.08	0.100	1.000	0.04800	103	90	110	0.8700	21.5	20	R

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	C	Value is below Minimum Compound Limit.
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	M	Manual Integration used to determine area response	ND	Not Detected at the Reporting Limit	O	RSD is greater than RSDlimit
	P	Second column confirmation exceeds	PL	Permit Limit	R	RPD outside accepted recovery limits
	RL	Reporting Detection Limit	S	Spike Recovery outside accepted recovery limits	U	Samples with CalcVal < MDL



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 3310 Win St.
 Cuyahoga Falls, Ohio 44223
 TEL: (330) 253-8211 FAX: (330) 253-4489
 Website: <http://www.settek.com>

QC SUMMARY REPORT

WO#: 15021039
 17-Feb-15

Client: Pace Analytical Services Inc
Project: 92237169

TestCode: TOX_NPW(9020)

Sample ID	MB-R32516	SampType:	MBLK	TestCode:	TOX_NPW(90	Units:	mg/L	Prep Date:		RunNo:	32516		
Client ID:	PBW	Batch ID:	R32516	TestNo:	SW9020			Analysis Date:	2/17/2015	SeqNo:	456235		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Total Organic Halides ND 0.100

Sample ID	LCS-R32516	SampType:	LCS	TestCode:	TOX_NPW(90	Units:	mg/L	Prep Date:		RunNo:	32516		
Client ID:	LCSW	Batch ID:	R32516	TestNo:	SW9020			Analysis Date:	2/17/2015	SeqNo:	456236		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Total Organic Halides 0.348 0.100 0.3300 0 105 90 110

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- P Second column confirmation exceeds
- RL Reporting Detection Limit

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PL Permit Limit
- S Spike Recovery outside accepted recovery limits

- C Value is below Minimum Compound Limit.
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL

Chain of Custody



Workorder: 92237169 Workorder Name: J15020005
 Results Requested 2/17/2015

Requested Analysis

Subcontract To

Kevin Herring
 Pace Analytical Charlotte
 9800 Kinney Ave. Suite 100
 Huntersville, NC 28078
 Phone (704)875-9092
 Email: kevin.herring@pacelabs.com

P.O. CHS 021115K

SUMMIT

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers		LAB USE ONLY
1	2015002441	2/9/2015 09:55	92237169001	Water			
2	2015002442	2/9/2015 08:50	92237169002	Water			
3	2015002443	2/9/2015 10:50	92237169003	Water			
4	2015002444	2/9/2015 11:40	92237169004	Water			
5	2015002445	2/9/2015 07:55	92237169005	Water			
6	2016002446	2/9/2015 08:50	92237169006	Water			
7	2015002447	2/9/2015 12:20	92237169007	Water			

Tox

15021039-001-006 sc

Transfers	Released By	Date/Time	Received By	Date/Time	Received on Ice	Y or N	Samples Intact	Y or N
1				2/2/15				
2				1000				
3								

Cooler Temperature on Receipt °C Custody Seal Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Rev. 12
Date: 07/27/13

Summit Environmental Technologies, Inc. Cooler Receipt Form

Client: Pace Initials of person inspecting cooler and samples: CSC
 Order Number: _____
 Date Received: 2/12/15 Time Received: 1000 Date cooler(s) opened and samples inspected: 2/12/15

Number of Coolers/Boxes: _____ N/A
 Shipper: FED EX UPS DHL Airborne US Postal Walk-in Pickup Other: _____

Packaging: Peanuts Bubble Wrap Paper Foam None Other: _____

Tape on cooler/box: Y N N/A

Custody Seals intact Y N N/A

C-O-C in plastic Y N N/A

Ice ✓ Blue ice _____ present / absent / melted N/A

Sample Temperature IR Gun #16020459 CF 0.0°C 2.6°C N/A

Radiological Testing Instrument serial #35127 Y N N/A
 (see page 2 for scan results)

****Use 1 sheet per sample for Radiological Testing. If sample is HOT, the Radiological Safety Officer must be notified immediately.**

C-O-C filled out properly Y N N/A

Samples in separate bags Y N N/A

Sample containers intact* Y N N/A

*If no, list broken sample(s): _____

Sample label(s) complete (ID, date, etc.) Y N N/A

Label(s) agree with C-O-C Y N N/A

Correct containers used Y N N/A

Sufficient sample received Y N N/A

Bubbles absent from 40 mL vials** Y N N/A

** Samples with bubbles <6mm are acceptable. Indicate bubble size if >6mm. _____

Was client contacted about samples Y N

Will client send new samples Y N

Client contact: _____

Date/Time: _____

Logged in by: _____

Comments: _____



CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Duke Energy Analytical Laboratories
 Mail Code MGO3A2 (Building 7405)
 13339 Hagers Ferry Rd
 Huntersville, N. C. 28078
 (980) 875-5245
 Fax: (980) 875-5038

1) Project Name: MARSHALL DRY ASH LANDFILL Permit #18-04
 2) Phone No: 980-875-5257
 3) Client: C CAMPBELL, T HUNSUCKER, ED SULLIVIAN
 4) Fax No: 980-875-4349
 5) Business Unit: 20035
 6) Process: BENVWT
 7) Resp. To: M500
 8) Task ID:
 9) Activity ID:
 10) Mail Code: MGO3A3

LIMS # J15020005
 Logged By: *CR*
 Date & Time: 2/9/15 14:26
 MATRIX: GW_RCRA
 Vendor: **PAGE**
 PO # **PO# 1115040**
 Cooler Temp (C): 0.9

19) Page 1 of 1
 DISTRIBUTION COPY to CLIENT
 ORIGINAL to LAB, CLIENT
 Revised: 12/5/2014

SAMPLE PROGRAM
 Ground Water NPDES
 Drinking Water UST
 RCRA Waste

LAB USE ONLY	11) Lab ID	13) Sample Description or ID	14) Collection Information			15) Analyze	16) Grab	17) Required	18) Volume	19) Preserv.: 1=HCL, 2=H2SO4, 3=HNO3, 4=Ice, 5=None	20) Total # of Containers
			Date	Time	Signature						
	2015002441	MW-1	2/9/15	0955	VDC	11	X	1	(Metals Prep - TRM) (ICP - EPA 200.7) Ag, B, Ba, Ca, Cu, Cr, Fe, K, Mg, Mn, Na, Ni, Zn (13) / Hg (EPA 245.1) (1) / (IMS - EPA 200.8) As, Cd, Pb, Se (4)	500 mL	4
	2015002442	MW-2	2/9/15	0850	VDC	11	X	1	NO3-N, Cl, F, SO4 (C)lab	500 mL	4
	2015002443	MW-3	2/9/15	1050	VDC	11	X	1		500 mL	2, 4
	2015002444	MW-4	2/9/15	1140	VDC	11	X	1		500 mL	4
	2015002445	MW-5	2/9/15	0255	VDC	11	X	1		500 mL	4
	2015002446	QC SAMPLE (WELL # MW-2)	2/9/15	0850	VDC	1	X	1		500 mL	4
	2015002447	FIELD BLANK	2/9/15	1220	VDC	9	X	1		500 mL	4

Customer to sign & date below

21) Relinquished By: *[Signature]* Date/Time: 2/9/15 1350
 Accepted By: *[Signature]* Date/Time: 2/9/15 1350

21) Relinquished By: *[Signature]* Date/Time: 2/10/15 1315
 Accepted By: *[Signature]* Date/Time: 2/10/15 1315

21) Relinquished By: *[Signature]* Date/Time: _____
 Accepted By: _____ Date/Time: _____

23) Seal/Locked By: _____ Date/Time: _____
 Sealed/Lock Opened By: _____ Date/Time: _____

24) Comments: Regulatory Agency: NCDENR/DWM - SW Section - State EDD Format Required NOTE: As, Cd, Pb, Se - analyzed by IMS - All other metals analyzed by ICP.

Customer, Important please indicate desired turnaround

22) Requested Turnaround: 14 Days
 *7 Days _____
 *48 Hr _____
 *Other _____ Apply
 *Add. Cost Will _____