

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: William M. Miller

Phone: 828-891-6296

E-mail: bill.miller@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 Belews Creek Steam Station Pine Hall Road Ash Landfill	3195 Pine Hall Road Belews Creek, NC 27042	8503	.0500	October 17-18, 2012

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

December 14, 2012

Affix NC Licensed Professional Geologist Seal

Signature

Date

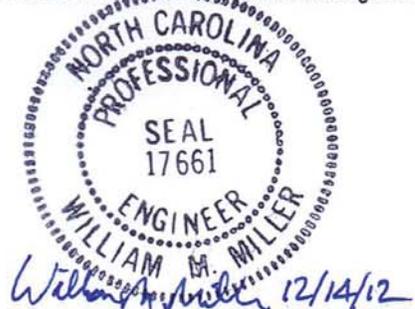
440 S. Church Street Suite 1000, Charlotte, NC 28202

Facility Representative Address

F-0116

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

Revised 6/2009



**SEMIANNUAL GROUNDWATER
MONITORING REPORT**

BELEWS CREEK STEAM STATION

**PINE HALL ROAD ASH LANDFILL
PERMIT NO. 8503**

OCTOBER 2012 SAMPLING EVENT

**Prepared for:
DUKE ENERGY CAROLINAS, LLC
Belews Creek Steam Station
3195 Pine Hall Road
Belews Creek, NC 27042**

**Prepared by:
HDR ENGINEERING, INC. OF THE CAROLINAS
Charlotte, North Carolina**

December 14, 2012



REPORT VERIFICATION

PROJECT: SEMIANNUAL GROUNDWATER MONITORING REPORT
BELEWS CREEK STEAM STATION
PINE HALL ROAD ASH LANDFILL
PERMIT NO. 8503

TITLE: OCTOBER 2012 SAMPLING EVENT

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

Prepared by: Abigail Voorhees

Date: 12/14/2012

Checked by: Justin Schumacher

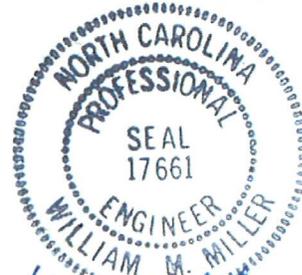
Date: 12/14/2012

Approved by: William M. Miller

Date: Dec 14, 2012

Project Manager: Ty Ziegler, PE

Professional Engineer Seal:



William M. Miller 12/14/12

HDR Engineering, Inc. of the Carolinas
440 South Church St., Suite 1000
Charlotte, NC 28202

North Carolina Engineering Firm Number F-0116

**SEMIANNUAL GROUNDWATER MONITORING REPORT
BELEWS CREEK STEAM STATION
PINE HALL ROAD ASH LANDFILL
PERMIT NO. 8503**

OCTOBER 2012 SAMPLING EVENT

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APPENDICES

- A. Chain-of-Custody Forms

Section 1

Background

The Pine Hall Road Ash Landfill is located at the Duke Energy Carolinas, LLC (Duke Energy) Belews Creek Steam Station, in Stokes County, North Carolina. The landfill is permitted under the North Carolina Department of Environment and Natural Resources (NCDENR) Solid Waste Permit No. 8503 and was closed in December 2008. The ash landfill was permitted to accept only fly ash from Belews Creek Steam Station operations.

The landfill was originally permitted in 1983. The original landfill was unlined and was permitted with a soil cap 1 foot thick on the side slopes and 2 feet thick on flatter areas. A subsequent expansion (Phase I Expansion) was permitted in 2003. This phase was also unlined, but was permitted with a synthetic cap system to be applied at closure.

After groundwater exceedances were observed in wells installed near the landfill, the placement of additional ash in the Phase I Expansion was halted. The closure design was changed to utilize an engineered, synthetic cover system for the entire landfill, both the original landfill and the Phase I Expansion. The construction of the synthetic cover system was completed in December 2008.

The ash landfill and nearby surrounding area are portrayed on Figure 1. The ash landfill is located to the north of the surface water divide that runs along Pine Hall Road and to the east of a surface water divide that runs along Middleton Loop Road. These surface water divides appear to mimic the shallow groundwater divides in the area near the landfill. Two surface water features are located in the area near the landfill. One surface water drainage feature drains along the eastern side of the landfill to the Ash Basin. The second surface water drainage feature is located on the western side of the landfill and drains to the Ash Basin. The surface water sample locations in these features are groundwater seeps and are believed to be representative of groundwater. Samples collected from these locations are compared to 15A North Carolina Administrative Code (NCAC) 2L groundwater quality standards (2L Standards). Groundwater flow beneath the landfill is from Pine Hall Road, generally northward, toward the Ash Basin. The Ash Basin is operated as a water treatment facility and is permitted by the National Pollutant Discharge Elimination System (NPDES) program (NPDES Permit #NC0024406).

The groundwater monitoring system at the landfill consists of the following sample locations as listed below.

Monitoring Wells:	MW-1	MW-1D
	MW-2	MW-3
	MW-4	MW-5
	MW-6	MW-7
	MW2-7	MW2-9
	OB-4	OB-5
	OB-9	
	Surface Water	
	Sample Locations:	SW-1A

The locations of the monitoring wells and surface water sample locations are shown on Figure 2. As defined by the *Groundwater Monitoring, Sampling and Analysis Plan (SAP)* for the Pine Hall Road Ash Landfill (prepared by S&ME, Inc. dated November 8, 2010, and approved by NCDENR on November 23, 2010), monitoring well MW-3 is considered to represent “background” groundwater quality conditions.

The groundwater and surface water sampling was conducted by Duke Energy according to North Carolina Solid Waste Management Guidelines. The constituents sampled and analyzed for were selected by Duke Energy and NCDENR Division of Solid Waste and are listed in the SAP, hereafter referred to as semiannual constituents. The samples were analyzed by a North Carolina certified laboratory.

In addition to the semiannual constituents listed in the SAP, the groundwater samples were also analyzed for Part 40 Code of Federal Regulations (CFR) Part 250, Appendix I constituents. Appendix I sampling and analysis was performed as part of the requirements contained in the *Closure Plan Approval* letter dated December 7, 2007, Document ID RC03425. Condition 11 of that document states:

Ground-water and surface water samples should be analyzed for Appendix I constituents in addition to currently analyzed constituents semi-annually. Appendix I analytical data will be evaluated, and based on results, the compliance Branch of the SWS may not require continued Appendix I analysis.

Section 2

Methods

2.1 Sampling and Analysis Methods

Groundwater sampling and documentation of sampling activities were performed by Duke Energy personnel (Duke Energy Carolinas Field Certification #5193). The groundwater samples were analyzed by the Duke Energy Analytical Laboratory (North Carolina Laboratory Certification #248) and Pace Analytical Services, Inc. (North Carolina Laboratory Certification #12) and provided to HDR Engineering, Inc. (HDR) by Duke Energy.

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

- Metals using U.S. Environmental Protection Agency (EPA) Method 200.7 and 200.8
- Mercury using EPA Method 245.1
- Chloride, fluoride, nitrate as nitrogen, and sulfate using EPA Method 300.0
- Total dissolved solids using Standard Method (SM) 2540C
- Volatile organic compounds (VOCs) using EPA Method 8260

2.2 Statement of Work

HDR Engineering, Inc. completed the following tasks:

- Received field sampling information provided by Duke Energy for monitoring wells MW-1, MW-1D, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW2-7, MW2-9, OB-4, OB-5, and OB-9 and surface water sampling locations SW-1A and SW-2. The samples were collected by Duke Energy personnel on October 17-18, 2012 and HDR received the data on November 7, 2012.
- 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 is greater than the laboratory's method reporting limit (MRL), but lower than the Solid Waste Section Limit¹ (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.
- Prepared this Semiannual Groundwater Monitoring Report and submitted it to Duke Energy and to NCDENR.

Some 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.

¹ Solid Waste Section Limits (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 for the site are shown on Figure 3. These contours were developed using the measured groundwater elevations in the wells on October 17 and 18, 2012.

Pine Hall Road is located generally along a surface water divide that also appears to be a groundwater divide. Groundwater flow at the landfill site is from areas of higher topography along Pine Hall Road, generally northward, toward the Ash Basin.

3.2 Analytical Results

A summary of the field data is presented in Table 1.

The field and analytical results of groundwater and surface water sampling are summarized in Table 2. The analysis results for the semiannual constituents are compared to the groundwater standards found in Title 15A NCAC 02L .0202 (g). The results of the laboratory analyses for Appendix I constituents are summarized in Table 3.

A summary of the 2L Standard exceedances and a preliminary analysis of the cause and significance of the exceedances is presented in Table 4 for sampling locations located inside of the review boundary and in Table 5 for sampling locations located at or beyond the review boundary. A summary of the 2L Standard exceedances for Appendix I constituents and a preliminary analysis of the cause and significance of the exceedances is presented in Table 6 for sampling locations located inside of the review boundary and in Table 7 for sampling locations located at or beyond the review boundary.

The method detection limit (MDL) was greater than the respective 2L Standard for the following constituents:

- 1,1,2,2-Tetrachloroethane

- 1,2,3-Trichloropropane
- 1,2-Dibromo-3-chloropropane
- 1,2-Dibromoethane (EDB)
- Vinyl chloride
- Vanadium

The MDLs for the abovementioned constituents were all below their corresponding SWSLs² as required by the February 23, 2007 NCDENR memo. Therefore, in accordance with the February 23, 2007 memo, the results for these constituents are qualified as estimated. These constituents, for samples that were not detected above the MDL, are not reported as exceedances of the 2L Standards in Tables 3, 6, and 7.

Concentrations for constituents at sampling locations listed in Tables 4, 5, 6 and 7 were measured in excess of the respective SWSLs with the following exceptions:

- pH- There is no SWSL for pH
- Cobalt- The SWSL for cobalt is greater than the values reported in Table 6 and Table 7
- Vanadium- The SWSL for vanadium is greater than the values reported in Table 6

In addition, concentrations equal to or above the respective SWSLs were measured at the following wells or surface water locations but did not exceed the 2L limits:

- Barium in OB-5
- Chloroform in MW-6
- Copper in MW-5
- Selenium in MW-4 and SW-2
- Toluene in MW-2
- Zinc in MW-2, MW-5, MW-7, MW2-7, OB-9, and SW-1A

² There is no SWSL for pH.

The MDL for beryllium was greater than the SWSL, but less than the 2L Standard for each of the analyzed samples.

HDR previously prepared and submitted an assessment to NCDENR for exceedances of 2L Standards at this landfill (*Groundwater Assessment Belews Creek Steam Station Pine Hall Road Ash Landfill, October 1, 2012*). The report assessed 2L Standard exceedances for iron and manganese at wells MW-3 and MW-6 and found those exceedances to be attributed to naturally occurring conditions.

The assessment report reviewed the location of wells and surface water sample locations with exceedances of 2L Standards (MW-4, MW-7, MW2-7, MW2-9, SW-1A, and SW-2) and found that the hydrologic boundaries and the groundwater flow at the site was such that the groundwater at these locations was discharging to the ash basin. The report also concluded that with the reduced infiltration, due to the engineered cover system installed in 2008, the groundwater concentration of constituents attributable to fly ash in these wells will likely continue to decrease over time.

The chain-of-custody forms are located in Appendix A.

FIGURES

C:\pwworking\tpa\0383242\Site Location Map.mxd, HDR Fig1, 12/6/2012 10:09:00 AM, avoorhee



NOTES
 1. SOURCE: USGS TOPOGRAPHIC QUADRANGLE MAP -
 BELEWS LAKE QUADRANGLE. CREATED 1971.
 REVISED 2011.

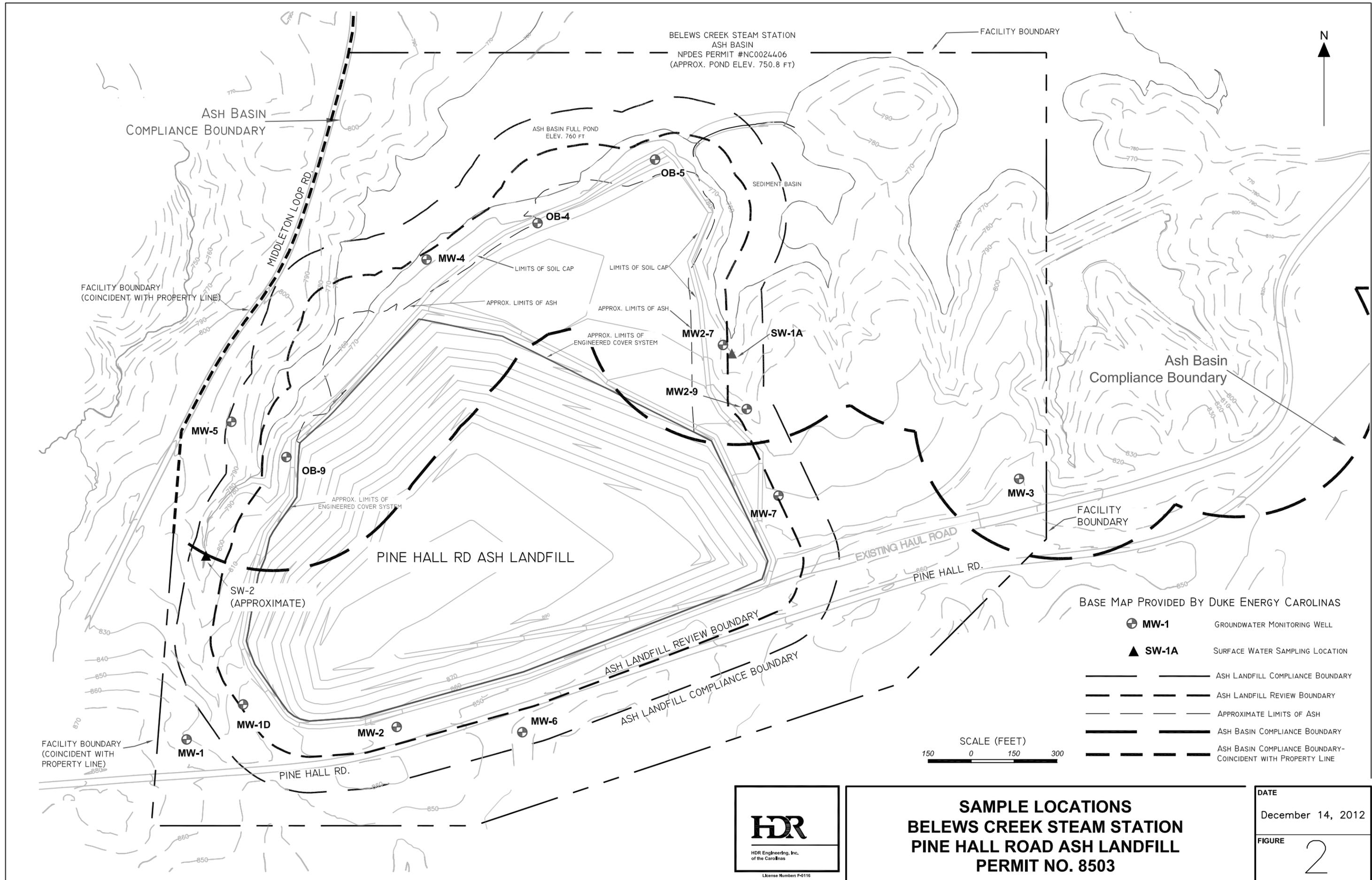


**SITE LOCATION MAP
 BELEWS CREEK STEAM STATION
 PINE HALL ROAD ASH LANDFILL
 PERMIT NO. 8503**

DATE
 December 14, 2012

FIGURE
 1

C:\pwworking\tpad\0383242\Pinehall Rd 2012 Figures 2 & 3 WMM.dwg, HDR Fig 2, 12/13/2012 1:53:04 PM, avoorhee



BELEWS CREEK STEAM STATION
 ASH BASIN
 NPDES PERMIT #NC0024406
 (APPROX. POND ELEV. 750.8 FT)

FACILITY BOUNDARY

ASH BASIN
 COMPLIANCE BOUNDARY

FACILITY BOUNDARY
 (COINCIDENT WITH PROPERTY LINE)

MIDDLETON LOOP RD

ASH BASIN FULL POND
 ELEV. 760 FT

OB-4

MW-4

OB-5

SEDIMENT BASIN

LIMITS OF SOIL CAP

LIMITS OF SOIL CAP

APPROX. LIMITS OF ASH

APPROX. LIMITS OF ASH

APPROX. LIMITS OF
 ENGINEERED COVER SYSTEM

MW2-7

SW-1A

MW2-9

MW-7

MW-3

FACILITY
 BOUNDARY

Ash Basin
 Compliance Boundary

PINE HALL RD ASH LANDFILL

EXISTING HAUL ROAD
 PINE HALL RD.

SW-2
 (APPROXIMATE)

MW-1D

MW-1

MW-2

MW-6

ASH LANDFILL REVIEW BOUNDARY

ASH LANDFILL COMPLIANCE BOUNDARY

FACILITY BOUNDARY
 (COINCIDENT WITH
 PROPERTY LINE)

PINE HALL RD.

BASE MAP PROVIDED BY DUKE ENERGY CAROLINAS

- ⊕ MW-1 GROUNDWATER MONITORING WELL
- ▲ SW-1A SURFACE WATER SAMPLING LOCATION
- ASH LANDFILL COMPLIANCE BOUNDARY
- - - ASH LANDFILL REVIEW BOUNDARY
- APPROXIMATE LIMITS OF ASH
- ASH BASIN COMPLIANCE BOUNDARY
- - - ASH BASIN COMPLIANCE BOUNDARY-
COINCIDENT WITH PROPERTY LINE

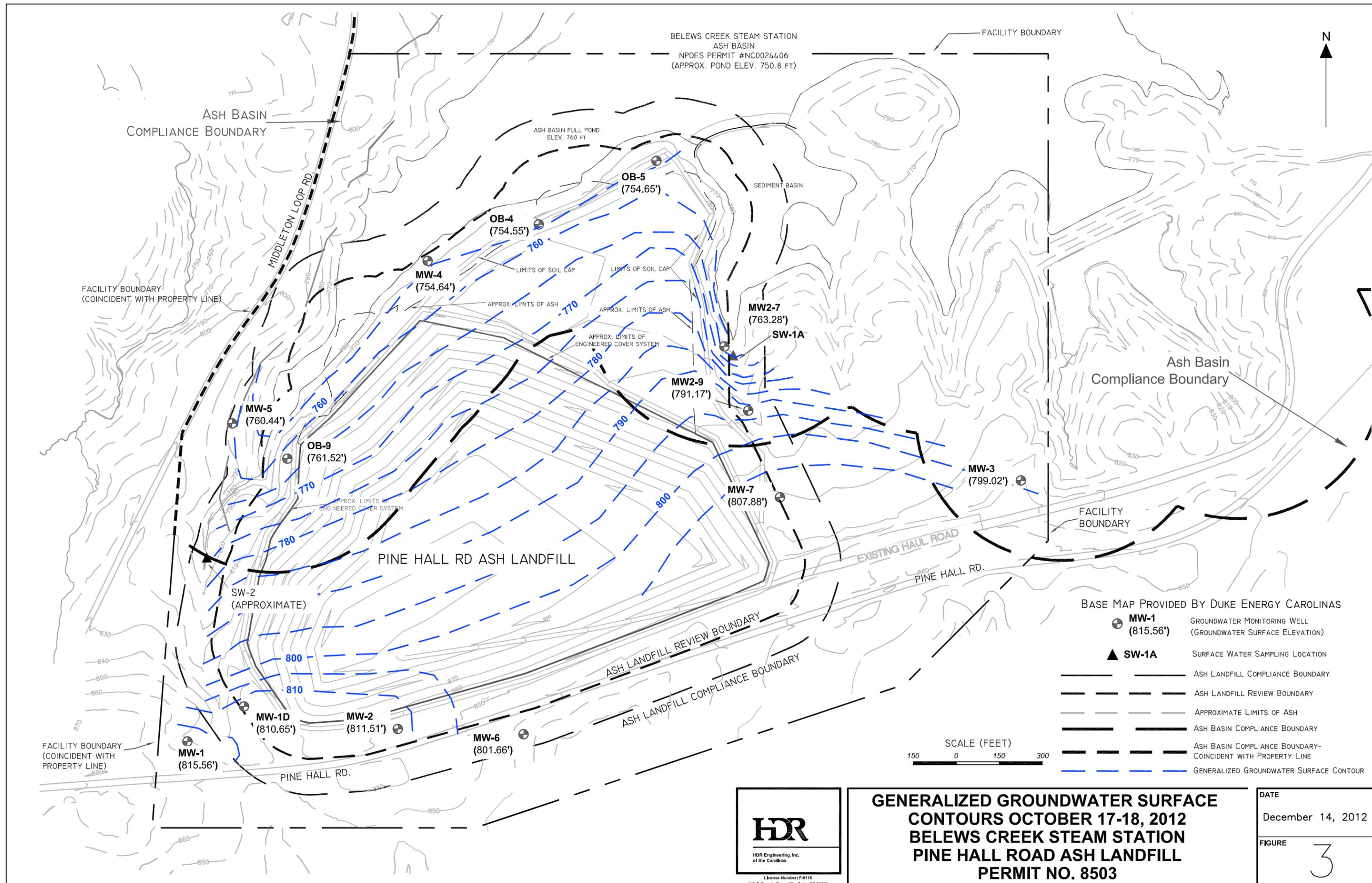


SAMPLE LOCATIONS
BELEWS CREEK STEAM STATION
PINE HALL ROAD ASH LANDFILL
PERMIT NO. 8503

DATE
 December 14, 2012

FIGURE
 2

C:\pwworking\tpa\0383242\Pinehall Rd 2012 Figures 2 & 3 WMM.dwg, HDR Fig 3, 12/13/2012 1:54:04 PM, avoorhee



BELEWS CREEK STEAM STATION
 ASH BASIN
 NPDES PERMIT #NC0024406
 (APPROX. POND ELEV. 750.8 FT)

FACILITY BOUNDARY

ASH BASIN
 COMPLIANCE BOUNDARY

FACILITY BOUNDARY
 (COINCIDENT WITH PROPERTY LINE)

Ash Basin
 Compliance Boundary

PINE HALL RD ASH LANDFILL

EXISTING HAUL ROAD
 PINE HALL RD.

ASH LANDFILL REVIEW BOUNDARY

ASH LANDFILL COMPLIANCE BOUNDARY

FACILITY BOUNDARY
 (COINCIDENT WITH PROPERTY LINE)

BASE MAP PROVIDED BY DUKE ENERGY CAROLINAS

- MW-1** (815.56') GROUNDWATER MONITORING WELL (GROUNDWATER SURFACE ELEVATION)
- SW-1A** SURFACE WATER SAMPLING LOCATION
- ASH LANDFILL COMPLIANCE BOUNDARY
- ASH LANDFILL REVIEW BOUNDARY
- APPROXIMATE LIMITS OF ASH
- ASH BASIN COMPLIANCE BOUNDARY
- ASH BASIN COMPLIANCE BOUNDARY - COINCIDENT WITH PROPERTY LINE
- GENERALIZED GROUNDWATER SURFACE CONTOUR

SCALE (FEET)
 150 0 150 300



**GENERALIZED GROUNDWATER SURFACE
 CONTOURS OCTOBER 17-18, 2012
 BELEWS CREEK STEAM STATION
 PINE HALL ROAD ASH LANDFILL
 PERMIT NO. 8503**

DATE	December 14, 2012
FIGURE	3

TABLES

**Table 1–Field Data Parameters
Duke Energy Carolinas, LLC/Belews Creek Steam Station
Pine Hall Road Ash Landfill - Permit No. 8503**

DATE	WELL NO.	WELL DEPTH (feet)	DEPTH TO WATER (feet)	WATER ELEV. (feet)	DEPTH TO PRODUCT (feet)	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)
10/17/2012	MW-1	47.20	37.13	815.56	N/A	None	CP	N/A	1.64	5.25	NO	13.91	16	4.9	1.7	480	8.18
10/17/2012	MW-1D	90.53	43.50	810.65	N/A	None	CP	N/A	7.67	12.75	NO	14.31	131	6.6	1.0	289	3.85
10/17/2012	MW-2	50.00	46.54	811.51	N/A	None	CP	N/A	0.56	1.00	YES	13.05	84	5.7	21.0	271	5.16
10/17/2012	MW-3	49.50	43.79	799.02	N/A	None	CP	N/A	0.93	1.00	YES	14.56	48	5.7	6.2	431	8.49
10/17/2012	MW-4	40.20	12.94	754.64	N/A	None	CP	N/A	4.45	13.50	NO	14.76	236	6.0	9.1	277	2.64
10/17/2012	MW-5	60.20	26.33	760.44	N/A	None	CP	N/A	5.52	16.50	NO	14.41	35	5.7	2.3	443	7.21
10/17/2012	MW-6	36.84	35.25	801.66	N/A	None	CP	N/A	0.26	1.00	NO	14.82	57	5.4	3.2	438	1.52
10/17/2012	MW-7	14.26	7.69	807.88	N/A	None	CP	N/A	1.07	5.00	NO	18.08	626	5.2	16.0	395	4.93
10/18/2012	MW2-7	30.62	14.36	763.28	N/A	None	CP	N/A	2.65	13.75	NO	16.00	2159	5.4	1.1	370	0.16
10/17/2012	MW2-9	14.61	6.21	791.17	N/A	None	CP	N/A	1.37	2.50	YES	15.78	211	6.0	12.9	343	2.10
10/17/2012	OB-4	30.03	23.05	754.55	N/A	None	CP	N/A	1.14	5.00	NO	15.50	2606	7.1	1.7	265	0.23
10/17/2012	OB-5	36.60	26.28	754.65	N/A	None	CP	N/A	1.68	8.75	NO	15.31	28	5.4	7.4	405	6.22
10/17/2012	OB-9	48.57	38.07	761.52	N/A	None	CP	N/A	1.71	7.00	NO	15.11	2125	5.0	0.1	432	0.15
10/17/2012	SW-1A	N/A	N/A	N/A	N/A	None	NP	N/A	N/A	N/A	N/A	11.78	1791	5.8	1.0	373	4.51
10/17/2012	SW-2	N/A	N/A	N/A	N/A	None	NP	N/A	N/A	N/A	N/A	11.73	256	6.2	2.8	286	7.94

Notes:

1. Purge Methods; LF=Low Flow, CP=Conventional Purge (3-5 well volumes), NP=No Purge (HydraSleeve), NS=No Sample Collected.
2. Field sampling performed by Duke Energy Carolinas, LLC personnel.
3. umho/cm indicates micro ohms per centimeter.
4. SU indicates Standard Units.
5. NTU indicates Nephelometric Turbidity Units.
6. mV-NHE indicates millivolts-Normal Hydrogen Electrode.
7. Information provided by Tim Hunsucker of Duke Energy Carolinas, LLC on November 7, 2012.

Table 2–Field and Analytical Results for Semiannual Constituents*
Duke Energy Carolinas, LLC/Belews Creek Steam Station
Pine Hall Road Ash Landfill - Permit No. 8503

Sample Dates: October 17-18, 2012 Laboratory Certificate Codes:
Duke Energy Carolinas Field #5193
Duke Energy Analytical Laboratory #248
Pace Analytical Laboratory #12
Field Sampling performed by Duke Energy Carolinas, LLC

Parameter	SWS ID	Units	Certificate Code	Monitoring Wells						SWSL	15A NCAC 2L Standard
				8503 MW-1	8503 MW-1D	8503 MW-2	8503 MW-3	8503 MW-4	8508 MW-5		
Field pH	320	SU	5193	4.9	6.6	5.7	5.7	6.0	5.7	-	6.5-8.5
Field Specific Conductance	323	umho/cm	5193	16	131	84	48	236	35	-	-
Temperature	325	°C	5193	13.91	14.31	13.05	14.56	14.76	14.41	-	-
Top Casing	328	feet	-	852.69	854.15	858.05	842.81	767.58	786.77	-	-
Depth to Water	318	feet	-	37.13	43.50	46.54	43.79	12.94	26.33	-	-
Water Elevation	319	feet	-	815.56	810.65	811.51	799.02	754.64	760.44	-	-
Well Depth	411	feet	-	47.20	90.53	50.00	49.50	40.20	60.20	-	-
Arsenic	14	ug/L	248	0.667 U	0.667 U	0.667 U	0.667 U	0.667 U	0.667 U	10	10
Barium	15	ug/L	248	17.7 J'	3.34 U	91 J'	50.6 J'	3.34 U	30.6 J'	100	700
Boron	428	ug/L	248	33.4 U	33.4 U	33.4 U	33.4 U	419	33.4 U	NE	700
Cadmium	34	ug/L	248	0.667 U	0.667 U	0.667 U	0.667 U	0.667 U	0.667 U	1	2
Chloride	455	ug/L	248	1,490	7,180	6,240	7,170	1,940	1,810	NE	250,000
Chromium	51	ug/L	248	3.34 U	3.34 U	3.34 U	3.34 U	12.4	3.34 U	10	10
Copper	54	ug/L	248	3.34 U	3.34 U	4.26 J	3.34 U	3.34 U	87.2	10	1,000
Fluoride	312	ug/L	248	31.9 J	154 J'	32.2 J	62.7 J	87.8 J	52.1 J	2,000	2,000
Iron	340	ug/L	248	23.3 J'	35.6 J'	585	307	290 J'	90.3 J'	300	300
Lead	131	ug/L	248	0.667 U	0.667 U	0.712 J	0.667 U	0.667 U	6.8 J'	10	15
Manganese	342	ug/L	248	24.6 J'	43.8 J'	47.8 J'	15 J'	7.73 J'	5.75 J'	50	50
Mercury	132	ug/L	248	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.2	1
Nickel	152	ug/L	248	3.34 U	3.34 U	3.34 U	3.34 U	3.34 U	3.34 U	50	100
Nitrate (as Nitrogen)	303	ug/L	248	262 J'	1,750 J'	590 J'	34.4 J'	674 J'	788 J'	10,000	10,000
Selenium	183	ug/L	248	0.667 U	0.667 U	0.667 U	0.667 U	13.5	0.667 U	10	20
Silver	184	ug/L	248	3.34 U	3.34 U	3.34 U	3.34 U	3.34 U	3.34 U	10	20
Sulfate	315	ug/L	248	358 J'	1,440 J'	288 J'	194 J'	65,500 J'	105 J'	250,000	250,000
Total Dissolved Solids	311	ug/L	248	14,000	97,000	69,000	49,000	170,000	46,000	NE	500,000
Zinc	213	ug/L	248	3.34 U	3.34 U	11.5	4.42 J	3.34 U	54.4	10	1,000

Notes:

- Concentrations presented in micrograms per liter (µg/L) except where noted.
- SWS ID is the Solid Waste Section Identification Number.
- 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 is from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subchapter 2L - Groundwater Classifications and Standards," NCDENR (last amended on January 1, 2010).
- Grayed values indicate values that attain or exceed the SWSL standard.
- Bold values indicate values that attain or exceed the 15A NCAC 2L Standard.
- NE indicates Not Established. Blank cells indicate that there is no information relevant to the respective row.
- Qualifiers in non-italicized text are laboratory data qualifiers or "flags". "U" is used for parameters not detected at concentrations above the method detection limit (MDL). "J" is used for parameters detected at estimated concentrations above the MDL but below the laboratory's method reporting limit (MRL). An italicized J'-flag is a data qualifier, added by HDR, to indicate a detected concentration that is greater than the laboratory's MRL but less than the SWSL.
- Data obtained from Electronic Data Deliverable (EDD) provided by Tim Hunsucker of Duke Energy Carolinas, LLC on November 7, 2012.
- According to the Constituent Look-up webpage on the NCDENR Division of Waste Management webpage, there is no SWSL or 2L Standard for chloride associated with CAS number 16887-00-6, which is the CAS reported by the laboratory for the analyses completed. Therefore, the SWSL and 2L listed are for the chloride with CAS number SW301 as specified on the Constituent Look-up webpage (last updated June 13, 2011).
- * Semiannual constituents refers to constituents required to be analyzed in the *Groundwater Monitoring, Sampling and Analysis Plan* for the Pine Hall Road Ash Landfill dated November 1, 2008.

Table 2–Field and Analytical Results for Semiannual Constituents*
Duke Energy Carolinas, LLC/Belews Creek Steam Station
Pine Hall Road Ash Landfill - Permit No. 8503

Sample Dates: October 17-18, 2012											Laboratory Certificate Codes:	
Field Sampling performed by Duke Energy Carolinas, LLC											Duke Energy Carolinas Field #5193	
											Duke Energy Analytical Laboratory #248	
											Pace Analytical Laboratory #12	
Parameter	SWS ID	Units	Certificate Code	Monitoring Wells						SWSL	15A NCAC 2L Standard	
				8503 MW-6	8503 MW-7	8503 MW2-7	8503 MW2-9	8503 OB-4	8503 OB-5			
Field pH	320	SU	5193	5.4	5.2	5.4	6.0	7.1	5.4	-	6.5-8.5	
Field Specific Conductance	323	umho/cm	5193	57	626	2159	211	2606	28	-	-	
Temperature	325	°C	5193	14.82	18.08	16.00	15.78	15.50	15.31	-	-	
Top Casing	328	feet	-	836.91	815.57	777.64	797.38	777.60	780.93	-	-	
Depth to Water	318	feet	-	35.25	7.69	14.36	6.21	23.05	26.28	-	-	
Water Elevation	319	feet	-	801.66	807.88	763.28	791.17	754.55	754.65	-	-	
Well Depth	411	feet	-	36.84	14.26	30.62	14.61	30.03	36.60	-	-	
Arsenic	14	ug/L	248	0.667 U	0.667 U	0.667 U	0.667 U	31.7	0.667 U	10	10	
Barium	15	ug/L	248	65.6 J'	46.1 J'	31.1 J'	55 J'	36.5 J'	127	100	700	
Boron	428	ug/L	248	33.4 U	5,020	21,900	338	22,400	33.4 U	NE	700	
Cadmium	34	ug/L	248	0.667 U	0.667 U	0.733 J	0.667 U	2.08	0.667 U	1	2	
Chloride	455	ug/L	248	6,660	12,900	14,600	3,590	8,910	3,190	NE	250,000	
Chromium	51	ug/L	248	3.34 U	3.34 U	3.34 U	3.34 U	3.34 U	3.34 U	10	10	
Copper	54	ug/L	248	3.34 U	3.34 U	3.34 U	3.34 U	3.34 U	3.34 U	10	1,000	
Fluoride	312	ug/L	248	59.2 J	101 J'	311 J	156 J'	922 J	57 J	2,000	2,000	
Iron	340	ug/L	248	691	398	28.6 J'	4,820	63.2 J'	124 J'	300	300	
Lead	131	ug/L	248	0.667 U	0.667 U	0.667 U	0.667 U	0.667 U	0.667 U	10	15	
Manganese	342	ug/L	248	18.9 J'	41.8 J'	420	793	2,220	9.27 J'	50	50	
Mercury	132	ug/L	248	0.006 U	0.012 J	0.189 J'	0.006 U	0.006 U	0.006 U	0.2	1	
Nickel	152	ug/L	248	3.34 U	3.34 U	12.2 J'	3.34 U	3.34 U	6.14 J'	50	100	
Nitrate (as Nitrogen)	303	ug/L	248	5.4 U	9,080 J'	38,700	544 J'	399 J'	5.4 U	10,000	10,000	
Selenium	183	ug/L	248	0.667 U	45.6	177	0.933 J	81.2	0.667 U	10	20	
Silver	184	ug/L	248	3.34 U	3.34 U	3.34 U	3.34 U	3.34 U	3.34 U	10	20	
Sulfate	315	ug/L	248	78.7 J	252,000	1,210,000	18,800 J'	1,590,000	211 J'	250,000	250,000	
Total Dissolved Solids	311	ug/L	248	61,000	495,000	2,000,000	153,000	2,640,000	33,000	NE	500,000	
Zinc	213	ug/L	248	3.63 J	10.6	14.8	4.7 J	4.38 J	5.98 J'	10	1,000	

Notes:

- Concentrations presented in micrograms per liter (µg/L) except where noted.
- SWS ID is the Solid Waste Section Identification Number.
- 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 is from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subchapter 2L - Groundwater Classifications and Standards," NCDENR (last amended on January 1, 2010).
- Grayed values indicate values that attain or exceed the SWSL standard.
- Bold values indicate values that attain or exceed the 15A NCAC 2L Standard.
- NE indicates Not Established. Blank cells indicate that there is no information relevant to the respective row.
- Qualifiers in non-italicized text are laboratory data qualifiers or "flags". "U" is used for parameters not detected at concentrations above the method detection limit (MDL). "J" is used for parameters detected at estimated concentrations above the MDL but below the laboratory's method reporting limit (MRL). An italicized J'-flag is a data qualifier, added by HDR, to indicate a detected concentration that is greater than the laboratory's MRL but less than the SWSL.
- Data obtained from Electronic Data Deliverable (EDD) provided by Tim Hunsucker of Duke Energy Carolinas, LLC on November 7, 2012.
- According to the Constituent Look-up webpage on the NCDENR Division of Waste Management webpage, there is no SWSL or 2L Standard for chloride associated with CAS number 16887-00-6, which is the CAS reported by the laboratory for the analyses completed. Therefore, the SWSL and 2L listed are for the chloride with CAS number SW301 as specified on the Constituent Look-up webpage (last updated June 13, 2011).
- * Semiannual constituents refers to constituents required to be analyzed in the *Groundwater Monitoring, Sampling and Analysis Plan* for the Pine Hall Road Ash Landfill dated November 1, 2008.

Table 2–Field and Analytical Results for Semiannual Constituents*
Duke Energy Carolinas, LLC/Belews Creek Steam Station
Pine Hall Road Ash Landfill - Permit No. 8503

Sample Dates: October 17-18, 2012				Laboratory Certificate Codes:									
Field Sampling performed by Duke Energy Carolinas, LLC				Duke Energy Carolinas Field #5193 Duke Energy Analytical Laboratory #248 Pace Analytical Laboratory #12									
Parameter	SWS ID	Units	Certificate Code	Monitoring Well		Surface Water Sample Locations			Field Blank	SWSL	15A NCAC 2L Standard		
				8503 OB-9		8503 SW-1A	8503 SW-2						
Field pH	320	SU	5193	5.0		5.8		6.2	-	-	6.5-8.5		
Field Specific Conductance	323	umho/cm	5193	2125		1791		256	-	-	-		
Temperature	325	°C	5193	15.11		11.78		11.73	-	-	-		
Top Casing	328	feet	-	799.59		-		-	-	-	-		
Depth to Water	318	feet	-	38.07		N/A		N/A	-	-	-		
Water Elevation	319	feet	-	761.52		N/A		N/A	-	-	-		
Well Depth	411	feet	-	48.57		N/A		N/A	-	-	-		
Arsenic	14	ug/L	248	0.728	J	0.667	U	0.667	U	10	10		
Barium	15	ug/L	248	18.1	J'	43.6	J'	33.1	J'	3.34	U	100	700
Boron	428	ug/L	248	31,400		18,600		2,710		33.4	U	NE	700
Cadmium	34	ug/L	248	5.1		0.738	J	0.667	U	0.667	U	1	2
Chloride	455	ug/L	248	12,100		13,200		4,800		31.2	J	NE	250,000
Chromium	51	ug/L	248	3.34	U	3.34	U	3.34	U	3.34	U	10	10
Copper	54	ug/L	248	3.34	U	3.34	U	3.34	U	3.34	U	10	1,000
Fluoride	312	ug/L	248	296	J	296	J	84.3	J	32.9	J	2,000	2,000
Iron	340	ug/L	248	6.67	U	61.2	J'	129	J'	17.9	J'	300	300
Lead	131	ug/L	248	0.667	U	0.667	U	0.667	U	0.667	U	10	15
Manganese	342	ug/L	248	3,540		841		47.8	J'	3.34	U	50	50
Mercury	132	ug/L	248	0.179	J'	0.006	U	0.006	U	0.006	U	0.2	1
Nickel	152	ug/L	248	18.4	J'	5.22	J'	3.34	U	3.34	U	50	100
Nitrate (as Nitrogen)	303	ug/L	248	5,680	J'	28,700		496	J'	5.4	U	10,000	10,000
Selenium	183	ug/L	248	350		130		16.7		0.667	U	10	20
Silver	184	ug/L	248	3.34	U	3.34	U	3.34	U	3.34	U	10	20
Sulfate	315	ug/L	248	1,290,000		917,000		81,500	J'	19.8	J	250,000	250,000
Total Dissolved Solids	311	ug/L	248	2,010,000		1,650,000		181,000		-		NE	500,000
Zinc	213	ug/L	248	76.5		12		4.6	J	3.34	U	10	1,000

Notes:

- Concentrations presented in micrograms per liter (µg/L) except where noted.
- SWS ID is the Solid Waste Section Identification Number.
- 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 is from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subchapter 2L - Groundwater Classifications and Standards," NCDENR (last a
- Grayed values indicate values that attain or exceed the SWSL standard.
- Bold values indicate values that attain or exceed the 15A NCAC 2L Standard.
- NE indicates Not Established. Blank cells indicate that there is no information relevant to the respective row.
- Qualifiers in non-italicized text are laboratory data qualifiers or "flags". "U" is used for parameters not detected at concentrations above the method detection limit (MDL). "J" is used for parameters detected at estimated concentrations above the MDL but below the laboratory's method reporting limit (MRL). An italicized J'-flag is a data qualifier, added by HDR, to indicate a detected concentration that is greater than the laboratory's MRL but less than the SWSL.
- Data obtained from Electronic Data Deliverable (EDD) provided by Tim Hunsucker of Duke Energy Carolinas, LLC on November 7, 2012.
- According to the Constituent Look-up webpage on the NCDENR Division of Waste Management webpage, there is no SWSL or 2L Standard for chloride associated with CAS number 16887-00-6, which is the CAS for the analyses completed. Therefore, the SWSL and 2L listed are for the chloride with CAS number SW301 as specified on the Constituent Look-up webpage (last updated June 13, 2011).
- * Semiannual constituents refers to constituents required to be analyzed in the *Groundwater Monitoring, Sampling and Analysis Plan* for the Pine Hall Road Ash Landfill dated November 1, 2008.

**Table 3—Analytical Results for Appendix I - 40 CFR Part 258 Constituents
Duke Energy Carolinas, LLC/Belews Creek Steam Station
Pine Hall Road Ash Landfill - Permit No. 8503**

Sample Dates: October 17-18, 2012

	Compound	15A NCAC 2L Standard (µg/L)	SWSL Standard (µg/L)	8503-MW-1	8503-MW-1D	8503-MW-2	8503-MW-3	8503-MW-4	8503-MW-5
(1)	Antimony	1*	6	0.667 U	0.667 U	0.667 U	0.667 U	0.667 U	0.667 U
(2)	Arsenic	**	**	**	**	**	**	**	**
(3)	Barium	**	**	**	**	**	**	**	**
(4)	Beryllium	4*	1	3.34 U	3.34 U	3.34 U	3.34 U	3.34 U	3.34 U
(5)	Cadmium	**	**	**	**	**	**	**	**
(6)	Chromium	**	**	**	**	**	**	**	**
(7)	Cobalt	1*	10	0.791 J	0.667 U	0.667 U	0.667 U	0.667 U	0.667 U
(8)	Copper	**	**	**	**	**	**	**	**
(9)	Lead	**	**	**	**	**	**	**	**
(10)	Nickel	**	**	**	**	**	**	**	**
(11)	Selenium	**	**	**	**	**	**	**	**
(12)	Silver	**	**	**	**	**	**	**	**
(13)	Thallium	0.2*	5.5	0.133 U	0.133 U	0.133 U	0.133 U	0.133 U	0.133 U
(14)	Vanadium	0.3*	25	0.667 U	0.667 U	0.667 U	0.667 U	2.14 J'	0.667 U
(15)	Zinc	**	**	**	**	**	**	**	**
(16)	Acetone	6000	100	10 U	10 U	10 U	10 U	10 U	10 U
(17)	Acrylonitrile	NE	200	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
(18)	Benzene	1	1	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
(19)	Bromochloromethane	NE	3	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
(20)	Bromodichloromethane	0.6	1	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
(21)	Bromoform	4	3	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
(22)	Carbon disulfide	700	100	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
(23)	Carbon tetrachloride	0.3	1	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
(24)	Chlorobenzene	50	3	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
(25)	Chloroethane	3000	10	0.54 U	0.54 U	0.54 U	0.54 U	0.54 U	0.54 U
(26)	Chloroform	70	5	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
(27)	Dibromochloromethane	0.4	3	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
(28)	1,2-Dibromo-3-chloropropane	0.04	13	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
(29)	1,2-Dibromoethane (EDB)	0.02	1	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
(30)	1,2-Dichlorobenzene	20	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
(31)	1,4-Dichlorobenzene	6	1	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
(32)	trans-1,4-Dichloro-2-butene	NE	100	1 U	1 U	1 U	1 U	1 U	1 U
(33)	1,1-Dichloroethane	6	5	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
(34)	1,2-Dichloroethane	0.4	1	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
(35)	1,1-Dichloroethene	7	5	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U
(36)	cis-1,2-Dichloroethene	70	5	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
(37)	trans-1,2-Dichloroethene	100	5	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U
(38)	1,2-Dichloropropane	0.6	1	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
(39)	cis-1,3-Dichloropropene	0.4	1	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
(40)	trans-1,3-Dichloropropene	0.4	1	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
(41)	Ethylbenzene	600	1	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
(42)	2-Hexanone	40*	50	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U
(43)	Bromomethane	10*	10	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
(44)	Chloromethane	3	1	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
(45)	Dibromomethane	70*	10	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
(46)	Methylene Chloride	5	1	0.97 U	0.97 U	0.97 U	0.97 U	0.97 U	0.97 U
(47)	2-Butanone (MEK)	4000	100	0.96 U	0.96 U	0.96 U	0.96 U	0.96 U	0.96 U
(48)	Iodomethane	NE	10	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
(49)	4-Methyl-2-pentanone (MIBK)	NE	100	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
(50)	Styrene	70	1	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
(51)	1,1,1,2-Tetrachloroethane	1*	5	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
(52)	1,1,2,2-Tetrachloroethane	0.2	3	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
(53)	Tetrachloroethene	0.7	1	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U
(54)	Toluene	600	1	0.26 U	0.26 U	6.7	0.26 U	0.26 U	0.26 U
(55)	1,1,1-Trichloroethane	200	1	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U
(56)	1,1,2-Trichloroethane	0.6*	1	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
(57)	Trichloroethene	3	1	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U
(58)	Trichlorofluoromethane	2000	1	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
(59)	1,2,3-Trichloropropane	0.005	1	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U
(60)	Vinyl acetate	88*	50	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
(61)	Vinyl chloride	0.03	1	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U	0.62 U
(62)	m,p,o-Xylenes	500	5	0.66 U	0.66 U	0.66 U	0.66 U	0.66 U	0.66 U

Notes:

- Concentrations presented in micrograms per liter (µg/L).
- 15A NCAC 2L Standard is from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subchapter 2L - Groundwater Classifications and Standards," NCDENR (last amended on January 1, 2010).
- * Indicates a 2L Interim Maximum Allowable Concentration (IMAC).
- SWSL is the Solid Waste Section Limit. This limit (identified by NCDENR) is the lowest amount of analyte in a sample that can be quantitatively determined with suitable precision and accuracy.
- Bold values indicate values that attain or exceed the 15A NCAC 2L Standard.
- Grayed values indicate values that attain or exceed the SWSL standard.
- NE means Not Established. Blank cells indicate that there is no information relevant to the respective row.
- Qualifiers in non-italicized text are laboratory data qualifiers or "flags". "U" is used for parameters not detected at concentrations above the Method Detection Limit (MDL). "J" is used for parameters detected at estimated concentrations above the Method Detection Limit (MDL) but below the laboratory's Method Reporting Limit (MRL). An italicized "J" flag is a data qualifier, added by HDR, to indicate a detected concentration that is greater than the laboratory's MRL but less than the SWSL.
- Data obtained from Electronic Data Deliverable (EDD) provided by Tim Hunsucker of Duke Energy Carolinas, LLC on November 7, 2012.
- Laboratory Certificate Codes:
Duke Energy Analytical Laboratory #248 - Compounds (1) through (15)
Pace Analytical Laboratory #12- Compound (16) through (62)
- ** See Table 2 for Analytical Results

**Table 3–Analytical Results for Appendix I - 40 CFR Part 258 Constituents
Duke Energy Carolinas, LLC/Belews Creek Steam Station
Pine Hall Road Ash Landfill - Permit No. 8503**

Sample Dates: October 17-18, 2012

Compound	15A NCAC	SWSL Standard (µg/L)	8503-MW-6		8503-MW-7		8503-MW2-7		8503-MW2-9		8503-OB-4		8503-OB-5	
	2L Standard (µg/L)		Value	Qualifier	Value	Qualifier	Value	Qualifier	Value	Qualifier	Value	Qualifier	Value	Qualifier
(1) Antimony	1*	6	0.667	U	0.667	U	0.667	U	0.667	U	18.3		0.84	J
(2) Arsenic	**	**	**		**		**		**		**		**	
(3) Barium	**	**	**		**		**		**		**		**	
(4) Beryllium	4*	1	3.34	U	3.34	U	3.34	U	3.34	U	3.34	U	3.34	U
(5) Cadmium	**	**	**		**		**		**		**		**	
(6) Chromium	**	**	**		**		**		**		**		**	
(7) Cobalt	1*	10	0.667	U	0.667	U	0.72	J	2.1	J'	1.19	J'	0.667	U
(8) Copper	**	**	**		**		**		**		**		**	
(9) Lead	**	**	**		**		**		**		**		**	
(10) Nickel	**	**	**		**		**		**		**		**	
(11) Selenium	**	**	**		**		**		**		**		**	
(12) Silver	**	**	**		**		**		**		**		**	
(13) Thallium	0.2*	5.5	0.133	U	0.133	U	0.133	U	0.133	U	12.4		0.133	U
(14) Vanadium	0.3*	25	0.67	J	0.667	U	0.667	U	0.667	U	114		0.667	U
(15) Zinc	**	**	**		**		**		**		**		**	
(16) Acetone	6000	100	10	U	10	U	10	U	10	U	10	U	10	U
(17) Acrylonitrile	NE	200	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
(18) Benzene	1	1	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
(19) Bromochloromethane	NE	3	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
(20) Bromodichloromethane	0.6	1	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
(21) Bromoform	4	3	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
(22) Carbon disulfide	700	100	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U
(23) Carbon tetrachloride	0.3	1	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
(24) Chlorobenzene	50	3	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U
(25) Chloroethane	3000	10	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U
(26) Chloroform	70	5	12.6		0.14	U	0.14	U	0.14	U	0.14	U	0.14	U
(27) Dibromochloromethane	0.4	3	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U
(28) 1,2-Dibromo-3-chloropropane	0.04	13	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
(29) 1,2-Dibromoethane (EDB)	0.02	1	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
(30) 1,2-Dichlorobenzene	20	5	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
(31) 1,4-Dichlorobenzene	6	1	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
(32) trans-1,4-Dichloro-2-butene	NE	100	1	U	1	U	1	U	1	U	1	U	1	U
(33) 1,1-Dichloroethane	6	5	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
(34) 1,2-Dichloroethane	0.4	1	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U
(35) 1,1-Dichloroethene	7	5	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U	0.56	U
(36) cis-1,2-Dichloroethene	70	5	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
(37) trans-1,2-Dichloroethene	100	5	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U
(38) 1,2-Dichloropropane	0.6	1	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U	0.27	U
(39) cis-1,3-Dichloropropene	0.4	1	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U
(40) trans-1,3-Dichloropropene	0.4	1	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
(41) Ethylbenzene	600	1	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
(42) 2-Hexanone	40*	50	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U
(43) Bromomethane	10*	10	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U
(44) Chloromethane	3	1	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
(45) Dibromomethane	70*	10	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U
(46) Methylene Chloride	5	1	0.97	U	0.97	U	0.97	U	0.97	U	0.97	U	0.97	U
(47) 2-Butanone (MEK)	4000	100	0.96	U	0.96	U	0.96	U	0.96	U	0.96	U	0.96	U
(48) Iodomethane	NE	10	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U	0.32	U
(49) 4-Methyl-2-pentanone (MIBK)	NE	100	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
(50) Styrene	70	1	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
(51) 1,1,1,2-Tetrachloroethane	1*	5	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U	0.33	U
(52) 1,1,2,2-Tetrachloroethane	0.2	3	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
(53) Tetrachloroethene	0.7	1	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U
(54) Toluene	600	1	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U
(55) 1,1,1-Trichloroethane	200	1	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U
(56) 1,1,2-Trichloroethane	0.6*	1	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U
(57) Trichloroethene	3	1	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
(58) Trichlorofluoromethane	2000	1	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
(59) 1,2,3-Trichloropropane	0.005	1	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U
(60) Vinyl acetate	88*	50	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
(61) Vinyl chloride	0.03	1	0.62	U	0.62	U	0.62	U	0.62	U	0.62	U	0.62	U
(62) m,p,o-Xylenes	500	5	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U

Notes:

- Concentrations presented in micrograms per liter (µg/L).
- 15A NCAC 2L Standard is from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subchapter 2L - Groundwater Classifications and Standards," NCDENR (last amended on January 1, 2010).
- * Indicates a 2L Interim Maximum Allowable Concentration (IMAC).
- SWSL is the Solid Waste Section Limit. This limit (identified by NCDENR) is the lowest amount of analyte in a sample that can be quantitatively determined with suitable precision and accuracy.
- Bold values indicate values that attain or exceed the 15A NCAC 2L Standard.
- Grayed values indicate values that attain or exceed the SWSL standard.
- NE means Not Established. Blank cells indicate that there is no information relevant to the respective row.
- Qualifiers in non-italicized text are laboratory data qualifiers or "flags". "U" is used for parameters not detected at concentrations above the Method Detection Limit (MDL). "J" is used for parameters detected at estimated concentrations above the Method Detection Limit (MDL) but below the laboratory's Method Reporting Limit (MRL). An italicized J'-flag is a data qualifier, added by HDR, to indicate a detected concentration that is greater than the laboratory's MRL but less than the SWSL.
- Data obtained from Electronic Data Deliverable (EDD) provided by Tim Hunsucker of Duke Energy Carolinas, LLC on November 7, 2012.
- Laboratory Certificate Codes:
Duke Energy Analytical Laboratory #248 - Compounds (1) through (15)
Pace Analytical Laboratory #12- Compound (16) through (62)
- ** See Table 2 for Analytical Results

**Table 3—Analytical Results for Appendix I - 40 CFR Part 258 Constituents
Duke Energy Carolinas, LLC/Belews Creek Steam Station
Pine Hall Road Ash Landfill - Permit No. 8503**

Sample Dates: October 17-18, 2012

	Compound	15A NCAC 2L Standard (µg/L)	SWSL Standard (µg/L)	8503-08-9	8503-SW-1A	8503-SW-2	FIELD BLANK
(1)	Antimony	1*	6	0.755 J	0.678 J	0.667 U	0.667 U
(2)	Arsenic	**	**	**	**	**	**
(3)	Barium	**	**	**	**	**	**
(4)	Beryllium	4*	1	3.34 U	3.34 U	3.34 U	3.34 U
(5)	Cadmium	**	**	**	**	**	**
(6)	Chromium	**	**	**	**	**	**
(7)	Cobalt	1*	10	0.667 U	1.41 J'	0.667 U	0.667 U
(8)	Copper	**	**	**	**	**	**
(9)	Lead	**	**	**	**	**	**
(10)	Nickel	**	**	**	**	**	**
(11)	Selenium	**	**	**	**	**	**
(12)	Silver	**	**	**	**	**	**
(13)	Thallium	0.2*	5.5	0.133 U	0.133 U	0.133 U	0.133 U
(14)	Vanadium	0.3*	25	0.667 U	0.667 U	0.667 U	0.667 U
(15)	Zinc	**	**	**	**	**	**
(16)	Acetone	6000	100	10 U	10 U	10 U	10 U
(17)	Acrylonitrile	NE	200	1.9 U	1.9 U	1.9 U	1.9 U
(18)	Benzene	1	1	0.25 U	0.25 U	0.25 U	0.25 U
(19)	Bromochloromethane	NE	3	0.17 U	0.17 U	0.17 U	0.17 U
(20)	Bromodichloromethane	0.6	1	0.18 U	0.18 U	0.18 U	0.18 U
(21)	Bromoform	4	3	0.26 U	0.26 U	0.26 U	0.26 U
(22)	Carbon disulfide	700	100	1.2 U	1.2 U	1.2 U	1.2 U
(23)	Carbon tetrachloride	0.3	1	0.25 U	0.25 U	0.25 U	0.25 U
(24)	Chlorobenzene	50	3	0.23 U	0.23 U	0.23 U	0.23 U
(25)	Chloroethane	3000	10	0.54 U	0.54 U	0.54 U	0.54 U
(26)	Chloroform	70	5	0.14 U	0.14 U	0.14 U	0.14 U
(27)	Dibromochloromethane	0.4	3	0.21 U	0.21 U	0.21 U	0.21 U
(28)	1,2-Dibromo-3-chloropropane	0.04	13	2.5 U	2.5 U	2.5 U	2.5 U
(29)	1,2-Dibromoethane (EDB)	0.02	1	0.27 U	0.27 U	0.27 U	0.27 U
(30)	1,2-Dichlorobenzene	20	5	0.3 U	0.3 U	0.3 U	0.3 U
(31)	1,4-Dichlorobenzene	6	1	0.33 U	0.33 U	0.33 U	0.33 U
(32)	trans-1,4-Dichloro-2-butene	NE	100	1 U	1 U	1 U	1 U
(33)	1,1-Dichloroethane	6	5	0.32 U	0.32 U	0.32 U	0.32 U
(34)	1,2-Dichloroethane	0.4	1	0.12 U	0.12 U	0.12 U	0.12 U
(35)	1,1-Dichloroethene	7	5	0.56 U	0.56 U	0.56 U	0.56 U
(36)	cis-1,2-Dichloroethene	70	5	0.19 U	0.19 U	0.19 U	0.19 U
(37)	trans-1,2-Dichloroethene	100	5	0.49 U	0.49 U	0.49 U	0.49 U
(38)	1,2-Dichloropropane	0.6	1	0.27 U	0.27 U	0.27 U	0.27 U
(39)	cis-1,3-Dichloropropene	0.4	1	0.13 U	0.13 U	0.13 U	0.13 U
(40)	trans-1,3-Dichloropropene	0.4	1	0.26 U	0.26 U	0.26 U	0.26 U
(41)	Ethylbenzene	600	1	0.3 U	0.3 U	0.3 U	0.3 U
(42)	2-Hexanone	40*	50	0.46 U	0.46 U	0.46 U	0.46 U
(43)	Bromomethane	10*	10	0.29 U	0.29 U	0.29 U	0.29 U
(44)	Chloromethane	3	1	0.11 U	0.11 U	0.11 U	0.11 U
(45)	Dibromomethane	70*	10	0.21 U	0.21 U	0.21 U	0.21 U
(46)	Methylene Chloride	5	1	0.97 U	0.97 U	0.97 U	0.97 U
(47)	2-Butanone (MEK)	4000	100	0.96 U	0.96 U	0.96 U	0.96 U
(48)	Iodomethane	NE	10	0.32 U	0.32 U	0.32 U	0.32 U
(49)	4-Methyl-2-pentanone (MIBK)	NE	100	0.33 U	0.33 U	0.33 U	0.33 U
(50)	Styrene	70	1	0.26 U	0.26 U	0.26 U	0.26 U
(51)	1,1,1,1-Tetrachloroethane	1*	5	0.33 U	0.33 U	0.33 U	0.33 U
(52)	1,1,1,2-Tetrachloroethane	0.2	3	0.4 U	0.4 U	0.4 U	0.4 U
(53)	Tetrachloroethene	0.7	1	0.46 U	0.46 U	0.46 U	0.46 U
(54)	Toluene	600	1	0.26 U	0.26 U	0.26 U	0.26 U
(55)	1,1,1-Trichloroethane	200	1	0.48 U	0.48 U	0.48 U	0.48 U
(56)	1,1,2-Trichloroethane	0.6*	1	0.29 U	0.29 U	0.29 U	0.29 U
(57)	Trichloroethene	3	1	0.47 U	0.47 U	0.47 U	0.47 U
(58)	Trichlorofluoromethane	2000	1	0.2 U	0.2 U	0.2 U	0.2 U
(59)	1,2,3-Trichloropropane	0.005	1	0.41 U	0.41 U	0.41 U	0.41 U
(60)	Vinyl acetate	88*	50	0.35 U	0.35 U	0.35 U	0.35 U
(61)	Vinyl chloride	0.03	1	0.62 U	0.62 U	0.62 U	0.62 U
(62)	m,p,o-Xylenes	500	5	0.66 U	0.66 U	0.66 U	0.66 U

Notes:

- Concentrations presented in micrograms per liter (µg/L).
- 15A NCAC 2L Standard is from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subchapter 2L - Groundwater Classifications and Standards," NCDENR (last amended on January 1, 2010).
- * Indicates a 2L Interim Maximum Allowable Concentration (IMAC).
- SWSL is the Solid Waste Section Limit. This limit (identified by NCDENR) is the lowest amount of analyte in a sample that can be quantitatively determined with suitable precision and accuracy.
- Bold values indicate values that attain or exceed the 15A NCAC 2L Standard.
- Grayed values indicate values that attain or exceed the SWSL standard.
- NE means Not Established. Blank cells indicate that there is no information relevant to the respective row.
- Qualifiers in non-italicized text are laboratory data qualifiers or "flags". "U" is used for parameters not detected at concentrations above the Method Detection Limit (MDL). "J" is used for parameters detected at estimated concentrations above the Method Detection Limit (MDL) but below the laboratory's Method Reporting Limit (MRL). An italicized "J" flag is a data qualifier, added by HDR, to indicate a detected concentration that is greater than the laboratory's MRL but less than the SWSL.
- Data obtained from Electronic Data Deliverable (EDD) provided by Tim Hunsucker of Duke Energy Carolinas, LLC on November 7, 2012.
- Laboratory Certificate Codes:
Duke Energy Analytical Laboratory #248 - Compounds (1) through (15)
Pace Analytical Laboratory #12-Compound (16) through (62)
- ** See Table 2 for Analytical Results

**Table 4—Semiannual Constituents 15A NCAC 2L Groundwater Quality Exceedances
for Wells Within Review Boundary
Duke Energy Carolinas, LLC/Belews Creek Steam Station
Pine Hall Road Ash Landfill - Permit No. 8503**

Sample Dates: October 17-18, 2012						
Parameter	Well ID	Result	Units	15A NCAC 2L Standard	Historic Concentrations	Cause and Significance
pH	MW-2	5.7	SU	6.5 - 8.5	4.8 - 6.2	pH at MW-2 is consistent with historic readings at well.
	MW-4	6.0	SU		5.4 - 6.7	pH at MW-4 is consistent with historic readings at well.
	MW-7	5.2	SU		5.2 - 6.2	pH at MW-7 is consistent with historic readings at well.
	MW2-7	5.4	SU		5.0 - 5.5	pH at MW2-7 is consistent with historic readings at well.
	OB-5	5.4	SU		5.0 - 5.7	pH at OB-5 is consistent with historic readings at well.
	OB-9	5.0	SU		4.9 - 5.7	pH at OB-9 is consistent with historic readings at well.
Arsenic	OB-4	31.7	ug/L	10	29.46 - 91.80	Arsenic concentration in OB-4 is consistent with historic readings at well.
Boron	MW-7	5,020	ug/L	700	12.4 - 6,740	Boron concentration in MW-7 is consistent with historic readings at well.
	MW2-7	21,900	ug/L		10,000 - 22,900	Boron concentration in MW2-7 is consistent with historic readings at well.
	OB-4	22,400	ug/L		22,400 - 49,482	Boron concentration in OB-4 is the lowest historic reading in the period of record.
	OB-9	31,400	ug/L		19,700 - 33,400	Boron concentration in OB-9 is consistent with historic readings at well.
Cadmium	OB-4	2.08	ug/L	2	<0.5 - 18.72	Cadmium concentration in OB-4 is consistent with historic readings at well.
	OB-9	5.1	ug/L		<2 - 5.66	Cadmium concentration in OB-9 is consistent with historic readings at well.
Chromium	MW-4	12.4	ug/L	10	5.80 - 29.00	Chromium concentration in MW-4 is consistent with historic readings at well.
Iron	MW-2	585	ug/L	300	<10 - 21,620	Iron concentration in MW-2 is consistent with historic readings at well.
	MW-7	398	ug/L		265 - 38,000	Iron concentration in MW-7 is consistent with historic readings at well.
Manganese	MW2-7	420	ug/L	50	70.96 - 469.00	Manganese concentration in MW2-7 is consistent with historic readings at well.
	OB-4	2,220	ug/L		45.00 - 5,779	Manganese concentration in OB-4 is consistent with historic readings at well.
	OB-9	3,540	ug/L		1,010 - 3,766	Manganese concentration in OB-9 is consistent with historic readings at well.
Nitrate as Nitrogen	MW2-7	38,700	ug/L	10,000	<300 - 38,700	Nitrate as Nitrogen concentration in MW2-7 is the highest historic reading in the period of record.
Selenium	MW-7	45.6	ug/L	20	<10 - 66.73	Selenium concentration in MW-7 is consistent with historic readings at well.
	MW2-7	177	ug/L		66.32 - 204.00	Selenium concentration in MW2-7 is consistent with historic readings at well.
	OB-4	81.2	ug/L		10.63 - 350.40	Selenium concentration in OB-4 is consistent with historic readings at well.
	OB-9	350	ug/L		125.6 - 401.00	Selenium concentration in OB-9 is consistent with historic readings at well.
Sulfate	MW-7	252,000	ug/L	250,000	2,500 - 311,300	Sulfate concentration in MW-7 is consistent with historic readings at well.
	MW2-7	1,210,000	ug/L		190,400 - 1,240,000	Sulfate concentration in MW2-7 is consistent with historic readings at well.
	OB-4	1,590,000	ug/L		26,000 - 1,746,550	Sulfate concentration in OB-4 is consistent with historic readings at well.
	OB-9	1,290,000	ug/L		44,790 - 1,311,000	Sulfate concentration in OB-9 is consistent with historic readings at well.
Total Dissolved Solids	MW2-7	2,000,000	ug/L	500,000	536,000 - 2,010,000	TDS concentration in MW2-7 is consistent with historic readings at well.
	OB-4	2,640,000	ug/L		2,260,000 - 2,900,000	TDS concentration in OB-4 is consistent with historic readings at well.
	OB-9	2,010,000	ug/L		1,530,000 - 2,170,000	TDS concentration in OB-9 is consistent with historic readings at well.

Notes:

- Concentrations presented in micrograms per liter (µg/L) except where noted.
- 15A NCAC 2L Standard is from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subchapter 2L - Groundwater Classifications and Standards," NCDENR (last amended on January 1, 2010).
- Data obtained from Electronic Data Deliverable (EDD) provided by Tim Hunsucker of Duke Energy Carolinas, LLC on November 7, 2012.
- Historical concentrations based on data in Duke Energy Carolinas, LLC analytical results database.
- Semiannual constituents refers to constituents required to be analyzed in the *Groundwater Monitoring, Sampling and Analysis Plan* for the Pine Hall Road Ash Landfill dated November 1, 2008.
- Parameters not detected at concentrations greater than the laboratory method reporting limit (MRL) are presented as <MRL.

**Table 5-- Semiannual Constituents NCAC 2L Groundwater Quality Exceedances
At or Beyond Review Boundary
Duke Energy Carolinas, LLC/Belews Creek Steam Station
Pine Hall Road Ash Landfill - Permit No. 8503**

Sample Dates: October 17-18, 2012						
Parameter	Well ID	Result	Units	15A NCAC 2L Standard	Historic Concentrations	Cause and Significance
pH	MW-1	4.9	SU	6.5 - 8.5	4.3 - 5.6	pH at MW-1 is consistent with historic readings at well.
	MW-3	5.7	SU		5.0 - 6.1	pH at MW-3 is consistent with historic readings at well.
	MW-5	5.7	SU		5.0 - 6.4	pH at MW-5 is consistent with historic readings at well.
	MW-6	5.4	SU		4.9 - 5.7	pH at MW-6 is consistent with historic readings at well.
	MW2-9	6.0	SU		5.7 - 7.2	pH at MW2-9 is consistent with historic readings at well.
	SW-1A	5.8	SU		5.5 - 6.1	pH at SW-1A is consistent with historic readings at well.
	SW-2	6.2	SU		5.9 - 6.7	pH at SW-2 is consistent with historic readings at well.
Boron	SW-1A	18,600	ug/L	700	11,400 - 20,250	Boron concentration in SW-1A is consistent with historic readings. The surface water in the area of SW-1A is expected to flow into the Ash Basin.
	SW-2	2,710	ug/L		2,710 - 19,161	Boron concentration in SW-2 is lowest historic reading in the period of record.
Iron	MW-3	307	ug/L	300	<10 - 8,540	Iron concentration in MW-3 is consistent with historic readings at well.
	MW-6	691	ug/L		61 - 1,522	Iron concentration in MW-6 is consistent with historic readings at well.
	MW2-9	4,820	ug/L		2,090 - 11,960	Iron concentration in MW2-9 is consistent with historic readings at well. The groundwater flow in the area of MW2-9 is expected to flow toward the Ash Basin.
Manganese	MW2-9	793	ug/L	50	793 - 13,070	Manganese concentration in MW2-9 is the lowest reading in the period of record. The groundwater flow in the area of MW2-9 is expected to flow toward the Ash Basin.
	SW-1A	841	ug/L		45.22 - 1,660	Manganese concentration in SW-1A is consistent with historic readings. The surface water in the area of SW-1A is expected to flow into the Ash Basin.
Nitrate as Nitrogen	SW-1A	28,700	ug/L	10,000	16,600 - 30,560	Nitrate as Nitrogen concentration in SW-1A is consistent with historic readings. The surface water in the area of SW-1A is expected to flow into the Ash Basin.
Selenium	SW-1A	130	ug/L	20	39.1 - 159.0	Selenium concentration in SW-1A is consistent with historic readings. The surface water in the area of SW-1A is expected to flow into the Ash Basin.
Sulfate	SW-1A	917,000	ug/L	250,000	31,600 - 960,600	Sulfate concentration in SW-1A is consistent with historic readings. The surface water in the area of SW-1A is expected to flow into the Ash Basin.
Total Dissolved Solids	SW-1A	1,650,000	ug/L	500,000	1,010,000 - 1,717,000	Total Dissolved Solids concentration in SW-1A is consistent with historic readings. The surface water in the area of SW-1A is expected to flow into the Ash Basin.

Notes:

- Concentrations presented in micrograms per liter (µg/L) except where noted.
- 15A NCAC 2L Standard is from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subchapter 2L - Groundwater Classifications and Standards," NCDENR (last amended on January 1, 2010).
- Data obtained from Electronic Data Deliverable (EDD) provided by Tim Hunsucker of Duke Energy Carolinas, LLC on November 7, 2012.
- Historical concentrations based on data in Duke Energy Carolinas, LLC analytical results database.
- Semiannual constituents refers to constituents required to be analyzed in the *Groundwater Monitoring, Sampling and Analysis Plan* for the Pine Hall Road Ash Landfill dated November 1, 2008.

**Table 6--Appendix I Constituents 15A NCAC 2L Groundwater Quality Exceedances
for Wells Within Review Boundary
Duke Energy Carolinas, LLC/Belews Creek Steam Station
Pine Hall Road Ash Landfill - Permit No. 8503**

Sample Dates: October 17-18, 2012						
Parameter	Well ID	Result	Units	15A NCAC 2L Standard	Historic Concentrations	Cause and Significance
Antimony	OB-4	18.3	ug/L	1*	7.1 - 98.5	Antimony concentration in OB-4 is consistent with historic readings at well.
Arsenic	OB-4	31.7	ug/L	10	29.46 - 91.80	Arsenic concentration in OB-4 is consistent with historic readings at well.
Cadmium	OB-4	2.08	ug/L	2	<0.5 - 18.72	Cadmium concentration in OB-4 is consistent with historic readings at well.
	OB-9	5.1	ug/L		<2 - 5.66	Cadmium concentration in OB-9 is consistent with historic readings at well.
Chromium	MW-4	12.4	ug/L	10	5.80 - 29.00	Chromium concentration in MW-4 is consistent with historic readings at well.
Cobalt	OB-4	1.19	ug/L	1*	<1 - 2.5	Cobalt concentration in OB-4 is consistent with historic readings at well.
Selenium	MW-7	45.6	ug/L	20	5.00 - 66.73	Selenium concentration in MW-7 is consistent with historic readings at well.
	MW-2-7	177	ug/L		66.32 - 204.00	Selenium concentration in MW2-7 is consistent with historic readings at well.
	OB-4	81.2	ug/L		10.63 - 350.40	Selenium concentration in OB-4 is consistent with historic readings at well.
	OB-9	350	ug/L		125.6 - 401.0	Selenium concentration in OB-9 is consistent with historic readings at well.
Thallium	OB-4	12.4	ug/L	0.2*	9.4 - 25.8	Thallium concentration in OB-4 is consistent with historic readings at well.
Vanadium	MW-4	2.14	ug/L	0.3*	<1 - 2.5	Vanadium concentration in MW-4 is consistent with historic readings at well.
	OB-4	114	ug/L		97.8 - 200.0	Vanadium concentration in OB-4 is consistent with historic readings at well.

Notes:

- Concentrations presented in micrograms per liter (ug/L).
- 15A NCAC 2L Standard is from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subchapter 2L - Groundwater Classifications and Standards," NCDENR (last amended on January 1, 2010).
- * Indicates a 2L Interim Maximum Allowable Concentration (IMAC).
- Data obtained from Electronic Data Deliverable (EDD) provided by Tim Hunsucker of Duke Energy Carolinas, LLC on November 7, 2012.
- Historical concentrations based on data in Duke Energy Carolinas, LLC analytical results database.
- Parameters not detected at concentrations greater than the laboratory method reporting limit (MRL) are presented as <MRL.

**Table 7--Appendix I Constituents 15A NCAC 2L Groundwater Quality Exceedances
for Wells At or Beyond Review Boundary
Duke Energy Carolinas, LLC/Belews Creek Steam Station
Pine Hall Road Ash Landfill - Permit No. 8503**

Sample Dates: October 17-18, 2012						
Parameter	Well ID	Result	Units	15A NCAC 2L Standard	Historic Concentrations	Cause and Significance
Cobalt	MW2-9	2.1	ug/L	1*	2.1 - 20.6	Cobalt concentration in MW2-9 is the lowest historic reading in the period of record.
	SW-1A	1.41	ug/L		1.41 - 2.50	Cobalt concentration in SW-1A is the lowest historic reading in the period of record. The surface water in the area of SW-1A is expected to flow into the Ash Basin.
Selenium	SW-1A	130	ug/L	20	39.10 - 159.00	Selenium concentration in SW-1A is consistent with historic readings. The surface water in the area of SW-1A is expected to flow into the Ash Basin.

Notes:

1. Concentrations presented in micrograms per liter (µg/L).
2. 15A NCAC 2L Standard is from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subchapter 2L - Groundwater Classifications and Standards," NCDENR (last amended on January 1, 2010).
3. * Indicates a 2L Interim Maximum Allowable Concentration (IMAC).
4. Data obtained from Electronic Data Deliverable (EDD) provided by Tim Hunsucker of Duke Energy Carolinas, LLC on November 7, 2012.
5. Historical concentrations based on data in Duke Energy Carolinas, LLC analytical results database.

APPENDICES

APPENDIX A
CHAIN-OF-CUSTODY FORMS



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

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

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

Analytical Laboratory Use Only			
LIMS # J12100195	MATRIX: GW RCRA	Samples Originating From	NC <input checked="" type="checkbox"/> SC <input type="checkbox"/>
Logged By	Date & Time	SAMPLE PROGRAM	
VENDOR PACE		Ground Water	<input checked="" type="checkbox"/>
		NPDES	<input type="checkbox"/>
		Drinking Water	<input type="checkbox"/>
		UST	<input type="checkbox"/>
		RCRA Waste	<input type="checkbox"/>

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DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

Rev 9/13/12

1) Project Name BELEWS CREEK LANDFILL - PINE HALL Permit #85-03	2) Phone No: 875-5257
3) Client C Campbell / T Hunsucker / Ed Sullivan	4) Fax No: 875-4349
5) Business Unit: 20003	6) Process: BENVWS
7) Resp. To: BC00	
8) Project ID:	9) Activity ID:
	10) Mail Code: MGO3A3

PO #	Cooler Temp (C) Preserv.: 1=HCL 2=H ₂ SO ₄ 3=HNO ₃ 4=Ice 5=None	4	3	4	4	1, 4		
MR #	Customer to complete all appropriate NON-SHADED areas.		Metals Prep - 3030C		(ICP - EPA-200.7) Ag, B, Ba, Be, Ca, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Zn (14)		EPA 8260B (Appendix I list - see attachment)	
			Hg (EPA 245.1) (1)		(IMS- 200.8) As, Cd, Co, Pb, Se, Sb, Tl (LL), V (8)		Chlorine (ppm)	

Customer must Complete

Customer to complete appropriate columns to right

LAB USE ONLY	14 Collection Information					18 TESTS	18 Grab	NO ₃ -N, Cl, F, SO ₄ (IC) ALK (4.5)	TDS	EPA 8260B (Appendix I list - see attachment)	Chlorine (ppm)	Total # of Containers
11 Lab ID	12 Chem Desktop No.	13 Sample Description or ID	Date	Time	Signature							
2012021572		TRIP BLANK	10/16/12	1450	MJR	1	X			3	n/a	3
2012021573		MW-1	10/17/12	0920	RAW	7	X	1	1	3		6
2012021574		MW-1D	10/17/12	1205	WC	7	X	1	1	3		6
2012021575		MW-2	10/17/12	1100	RAW	7	X	1	1	3		6
2012021576		MW-3	10/17/12	1245	RAW	7	X	1	1	3		6
2012021577		MW-4	10/17/12	1105	WC	7	X	1	1	3		6
2012021578		MW-5	10/17/12	1040	RAW	7	X	1	1	3		6
2012021579		MW-6	10/17/12	1145	RAW	7	X	1	1	3		6
2012021580		MW-7	10/17/12	0955	MJR	7	X	1	1	3		6
2012021581		MW2-7	10/18/12	0810	WC	7	X	1	1	3		6
2012021582		MW2-9	10/17/12	1235	MJR	7	X	1	1	3		6

Customer to sign & date below

21) Relinquished By LD Cell 10/17/12 1525	Accepted By: Candy Knox 10-17-12 1525
Relinquished By LD Cell 10/18/12 1203	Accepted By: Candy Knox 10-18-12 1203
Relinquished By Candy Knox 10-18-12 1425	Accepted By: Dan Price 10-18-12 1425
23) Seal/Locked By	Sealed/Lock Opened By

Customer, important please indicate desired turnaround

22 Requested Turnaround

14 Days

*7 Days _____

*48 Hr _____

10-25-12

*Other _____ * Add. Cost Will Apply

24) Comments
Regulatory Agency : NCDENR/DWM -SW Section - State EDD Format Required / Permit # 85-03
Use indicated or comparable analytical methods



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

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Duke Energy Analytical Lab Services

Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 87

Analytical Laboratory Use Only

LIMS # J12100195		MATRIX: GW RCRA		Samples Originating From	NC <input checked="" type="checkbox"/> SC <input type="checkbox"/>
Logged By	Date & Time		SAMPLE PROGRAM		
VENDOR PACE			Ground Water	<input checked="" type="checkbox"/>	
			NPDES	<input type="checkbox"/>	
			Drinking Water	<input type="checkbox"/>	
			UST	<input type="checkbox"/>	
			RCRA Waste	<input type="checkbox"/>	
			Cooler Temp (C)		
PO #	Preserv.: 1=HCL 2=H ₂ SO ₄ 3=HNO ₃ 4=Ice 5=None		4	3	4
MR #					

19 Page 2 of 2
DISTRIBUTION
ORIGINAL to LAB,
to CLIENT COPY

Rev 9/13/12

Customer must Complete

1) Project Name BELEWS CREEK LANDFILL - PINE HALL Permit #85-03		2) Phone No: 875-5257	
3) Client C Campbell / T Hunsucker / Ed Sullivan		4) Fax No: 875-4349	
5) Business Unit: 20003	6) Process: BENVWS	7) Resp. To: BC00	
8) Project ID:	9) Activity ID:	10) Mail Code: MGO3A3	

Customer to complete all appropriate NON-SHADED areas.		16 Analyses Required	NO ₃ -N, Cl, F, SO ₄ (IC) ALK (4.5)	Metals Prep - 3030C		TDS	EPA 8260B (Appendix I list - see attachment)	Chlorine (ppm)	Total # of Containers				
(ICP - EPA-200.7) Ag, B, Ba, Be, Ca, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Zn (14)													
Hg (EPA 245.1) (1)													
(IMS- 200.8) As, Cd, Co, Pb, Se, Sb, TI (LL), V (8)													
11 Lab ID	12 Chem Desktop No.	13 Sample Description or ID	14 Collection Information			15 TESTS	16 Grab	17	18	19	20	21	22
			Date	Time	Signature	TESTS	Grab						
2012021583		OB-4	10/17/12	1110	MJR	7	X	1		1	3		6
2012021584		OB-5	10/17/12	0940	WJC	7	X	1		1	3		6
2012021585		OB-9	10/17/12	1215	MJR	7	X	1		1	3		6
2012021586		SW-1A	10/17/12	0745	WJC	7	X	1		1	3		6
2012021587		SW-2	10/17/12	0745 0815	WJC	7	X	1		1	3		6
2012021588		FIELD BLANK	10/18/12	0900	WJC	6	X	1		1	3	n/a	5

Customer to complete appropriate columns to right

Customer to sign & date below

21) Relinquished By 20 GLL Date/Time 10/17/12 1525	Accepted By: Cindy Knox Date/Time 10-17-12 1525
Relinquished By 20 GLL Date/Time 10/18/12 1203	Accepted By: Cindy Knox Date/Time 10-18-12 1203
Relinquished By Cindy Knox Date/Time 10-18-12 1425	Accepted By: Ed Sullivan Date/Time 10-18-12 1425
23) Seal/Locked By _____ Date/Time _____	Sealed/Lock Opened By _____ Date/Time _____

Customer, important please indicate desired turnaround

22) Requested Turnaround

14 Days

*7 Days _____

*48 Hr _____

10-25-12

*Other _____ * Add. Cost Will Apply

24) Comments **Regulatory Agency : NCDENR/DWM -SW Section - State EDD Format Required / Permit # 85-03**
Use indicated or comparable analytical methods