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NC DENR

Division of Waste Management - Solid Waste

Environmental Monitoring Reporting Form

Notice: This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

Instructions:

- Prepare one form for each individually monitored unit.
- Please type or print legibly.
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.)
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i)).
- Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

Solid Waste Monitoring Data Submittal Information

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

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	April 8-9, 2013

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
 Surface water monitoring data Other(specify) _____

Notification attached?

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

Certification

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

William M. Miller

Senior Engineer

(828) 891-6296

Facility Representative Name (Print)

Title

(Area Code) Telephone Number

William M. Miller
Signature

May 31, 2013

Date

Affix NC Licensed Professional Geologist Seal

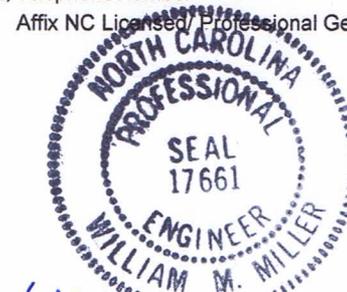
440 S. Church Street Suite 1000, Charlotte, NC 28202

Facility Representative Address

F-0116

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

Revised 6/2009



William M. Miller 5/31/2013

**SEMIANNUAL GROUNDWATER
MONITORING REPORT**

BELEWS CREEK STEAM STATION

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

APRIL 2013 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

May 31, 2013



REPORT VERIFICATION

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

TITLE: APRIL 2013 SAMPLING EVENT

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

Prepared by: *S. A. [Signature]*

Date: *May 31, 2013*

Checked by: *William M. Miller*

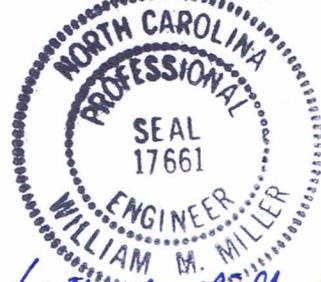
Date: *May 31, 2013*

Approved by: *T. Ziegler*

Date: *MAY 31, 2013*

Project Manager: Ty Ziegler, PE

Professional Engineer Seal:



William M. Miller 5/31/2013

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**

APRIL 2013 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	SW-2

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 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 April 8-9, 2013 and HDR received the data on May 9, 2013.
- 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 Limit (SWSL).¹ 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.

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 April 8 and 9, 2013.

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

A summary of the 2L Standard exceedances for the semiannual constituents 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 SWSLs 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 with values that attain or exceed the SWSLs are noted in Table 2 and Table 3 by gray cells. The MDL for beryllium was greater than the SWSL, but less than the Interim Maximum Allowable Concentration (IMAC) 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, Permit No. 8503, October 1, 2012*). The report assessed 2L Standard exceedances 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



NOTES:

1. SOURCE: USGS TOPOGRAPHIC MAP - BELEWS LAKE QUADRANGLE. CREATED 1971. REVISED 2010.
2. TOPOGRAPHIC MAP DOES NOT REFLECT REALIGNMENT OF CRAIG ROAD.

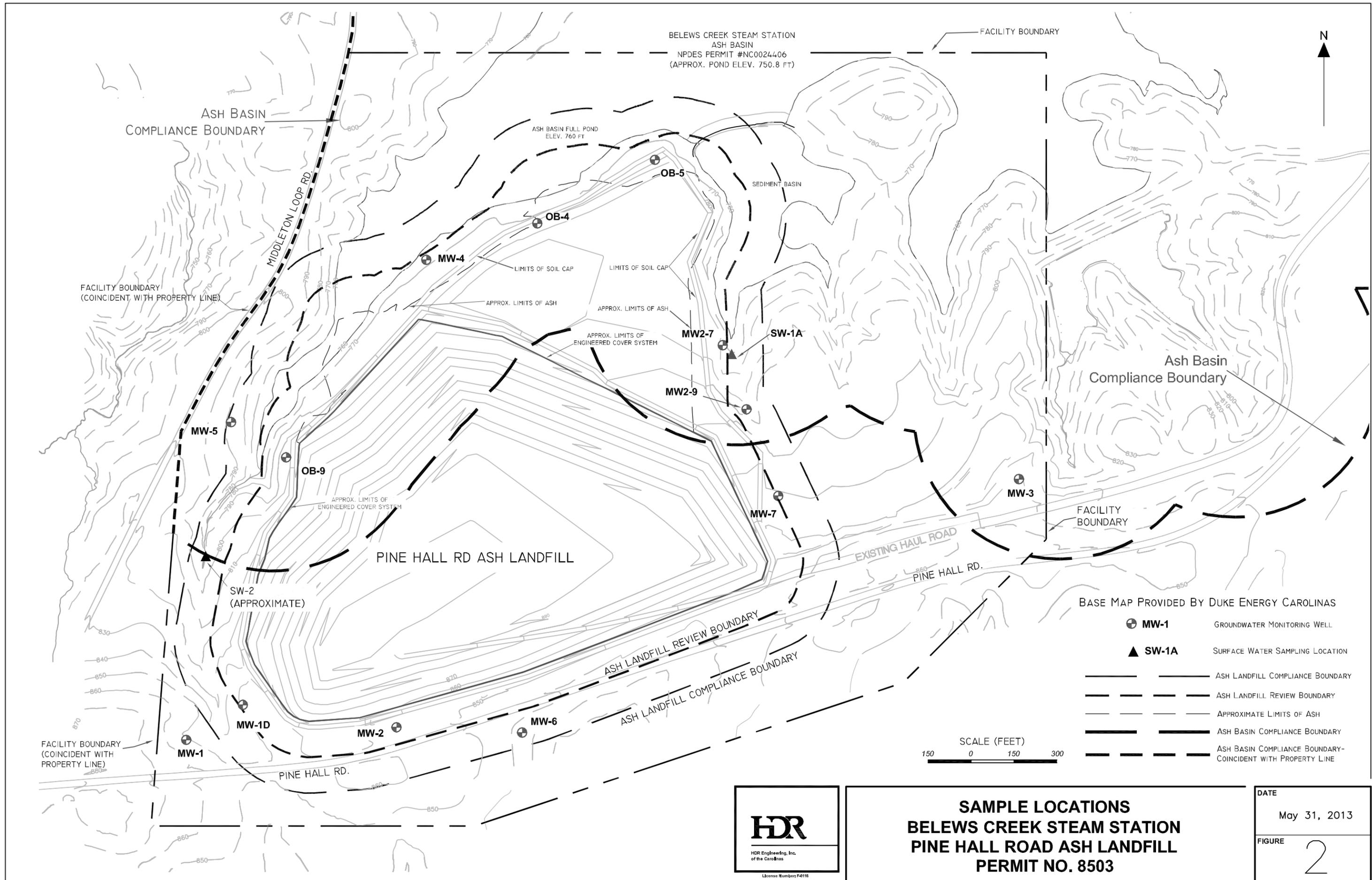
SCALE (FEET)



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

DATE	May 31, 2013
FIGURE	1

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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.

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

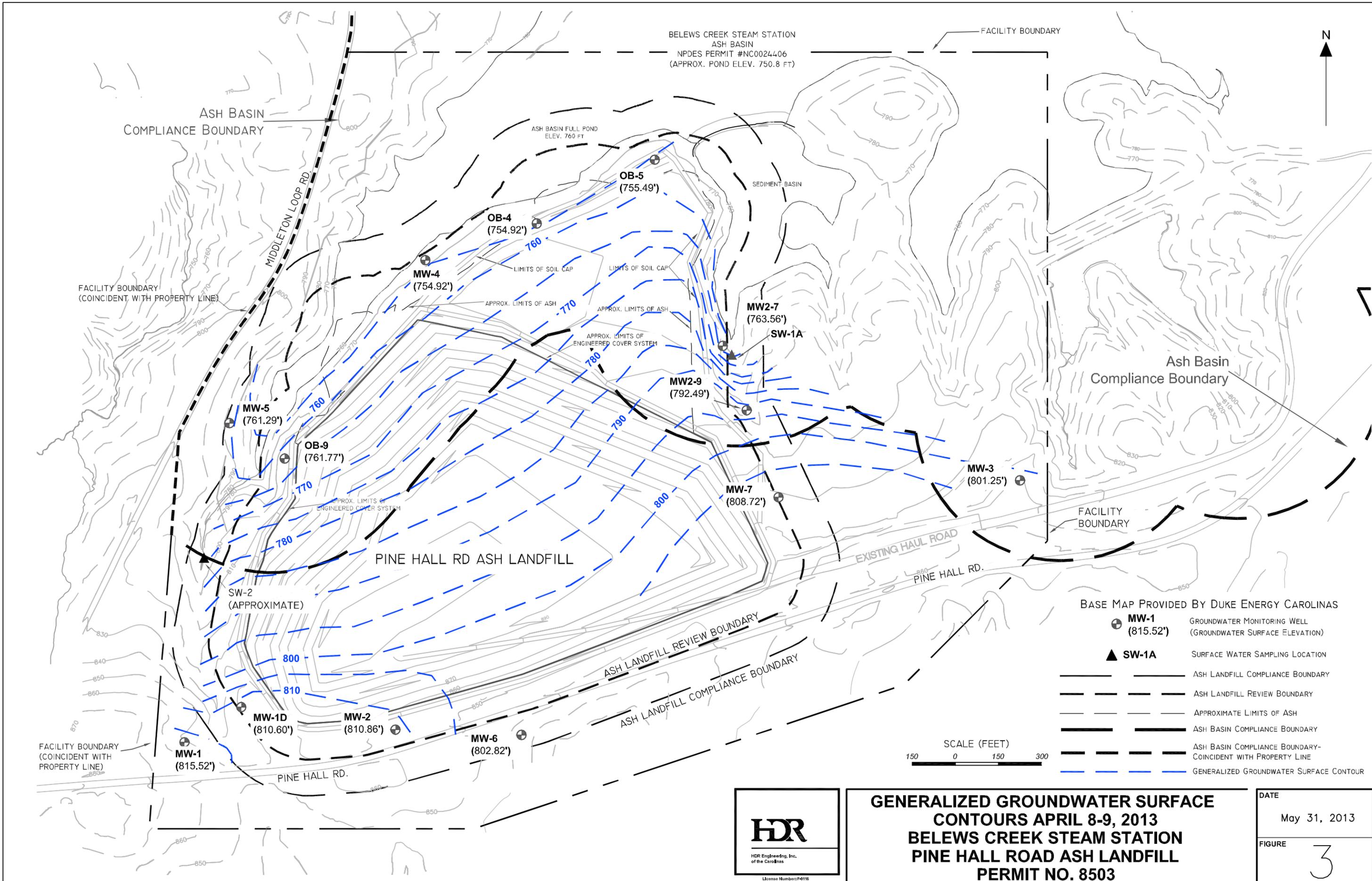


SAMPLE LOCATIONS
BELEWS CREEK STEAM STATION
PINE HALL ROAD ASH LANDFILL
PERMIT NO. 8503

DATE
 May 31, 2013

FIGURE
 2

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

FACILITY BOUNDARY

ASH BASIN
 COMPLIANCE BOUNDARY

ASH BASIN FULL POND
 ELEV. 760 FT

OB-5
 (755.49')

OB-4
 (754.92')

MW-4
 (754.92')

MW2-7
 (763.56')

SW-1A

MW2-9
 (792.49')

MW-7
 (808.72')

MW-3
 (801.25')

MW-5
 (761.29')

OB-9
 (761.77')

SW-2
 (APPROXIMATE)

MW-1D
 (810.60')

MW-2
 (810.86')

MW-6
 (802.82')

MW-1
 (815.52')

PINE HALL RD ASH LANDFILL

ASH LANDFILL REVIEW BOUNDARY

ASH LANDFILL COMPLIANCE BOUNDARY

EXISTING HAUL ROAD

PINE HALL RD.

BASE MAP PROVIDED BY DUKE ENERGY CAROLINAS

⊕ MW-1 (815.52') 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 APRIL 8-9, 2013
 BELEWS CREEK STEAM STATION
 PINE HALL ROAD ASH LANDFILL
 PERMIT NO. 8503**

DATE
 May 31, 2013
 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	AVERAGE	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)
								PUMP RATE (ml/min)									
4/9/2013	MW-1	47.20	37.17	815.52	N/A	None	LF	135	1.64	2.50	N/A	14.23	19	4.8	10.3	441	8.20
4/8/2013	MW-1D	90.53	43.55	810.60	N/A	None	CP	N/A	7.66	13.75	NO	14.03	126	6.5	2.1	328	3.84
4/9/2013	MW-2	50.00	47.19	810.86	N/A	None	EOP	N/A	0.46	0.41	N/A	17.91	66	6.1	3.3	370	8.63
4/9/2013	MW-3	49.50	41.56	801.25	N/A	None	CP	N/A	1.30	3.00	NO	14.48	51	5.5	8.1	402	8.53
4/8/2013	MW-4	40.20	12.66	754.92	N/A	None	CP	N/A	4.49	15.00	NO	14.79	222	6.0	6.9	252	3.14
4/9/2013	MW-5	60.20	25.48	761.29	N/A	None	CP	N/A	5.66	10.75	NO	15.04	36	5.5	6.4	375	7.00
4/9/2013	MW-6	36.84	34.09	802.82	N/A	None	CP	N/A	0.45	1.50	NO	14.87	54	5.2	2.3	404	2.11
4/8/2013	MW-7	14.26	6.85	808.72	N/A	None	CP	N/A	1.21	6.25	NO	12.54	440	5.1	17.1	418	6.07
4/8/2013	MW2-7	30.62	14.08	763.56	N/A	None	CP	N/A	2.70	13.75	NO	14.36	2,192	5.0	2.1	420	2.17
4/9/2013	MW2-9	14.61	4.89	792.49	N/A	None	CP	N/A	1.59	2.75	YES	10.75	371	6.0	26.5	350	1.18
4/8/2013	OB-4	30.03	22.68	754.92	N/A	None	CP	N/A	1.20	6.25	NO	15.76	2,726	7.5	2.5	246	0.48
4/8/2013	OB-5	36.60	25.44	755.49	N/A	None	CP	N/A	1.82	7.50	NO	15.86	28	5.2	7.6	390	6.06
4/8/2013	OB-9	48.57	37.82	761.77	N/A	None	CP	N/A	1.75	5.25	NO	15.19	2,121	5.0	1.7	403	0.14
4/8/2013	SW-1A	N/A	N/A	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	18.04	1,328	5.9	3.0	374	9.60
4/8/2013	SW-2	N/A	N/A	N/A	N/A	None	N/A	N/A	N/A	N/A	N/A	14.59	238	6.3	8.5	296	8.48

Notes:

1. Purge Methods; LF=Low Flow, LF(M)= Low Flow (Modified), CP=Conventional Purge (3-5 well volumes), EOP=Equipment Only Purge, NP=No Purge (HydraSleeve). Average pump rate applicable to LF and LF(M) purging only.
2. Field sampling performed by Duke Energy Carolinas, LLC personnel.
3. umho/cm indicates microohms 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 May 16, 2013.
8. N/A indicates not applicable.

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: April 8-9, 2013			Laboratory Certificate Codes: Duke Energy Carolinas Field #5193 Duke Energy Analytical Laboratory #248								
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	4.8	6.5	6.1	5.5	6.0	5.5	-	6.5-8.5
Field Specific Conductance	323	umho/cm	5193	19	126	66	51	222	36	-	-
Temperature	325	°C	5193	14.23	14.03	17.91	14.48	14.79	15.04	-	-
Top Casing	328	feet	-	852.69	854.15	858.05	842.81	767.58	786.77	-	-
Depth to Water	318	feet	-	37.17	43.55	47.19	41.56	12.66	25.48	-	-
Water Elevation	319	feet	-	815.52	810.60	810.86	801.25	754.92	761.29	-	-
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	17.8 J'	3.34 U	86.1 J'	50.9 J'	3.48 J	32.5 J'	100	700
Boron	428	ug/L	248	33.4 U	33.4 U	33.4 U	33.4 U	486	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	1,720	7,880	7,920	9,530	2,270	1,980	NE	250,000
Chromium	51	ug/L	248	3.34 U	3.34 U	3.34 U	3.34 U	12.8	3.34 U	10	10
Copper	54	ug/L	248	6.34 J'	3.34 U	3.34 U	3.34 U	3.34 U	90.6	10	1,000
Fluoride	312	ug/L	248	52.7 J	181 J'	69.7 J	65.6 J	116 J'	68.5 J	2,000	2,000
Iron	340	ug/L	248	44.9 J'	47.5 J'	2,140	59.9 J'	174 J'	145 J'	300	300
Lead	131	ug/L	248	0.706 J	0.667 U	0.667 U	0.667 U	0.667 U	7.26 J'	10	15
Manganese	342	ug/L	248	29.4 J'	39.7 J'	51.1	3.81 J	5.17 J'	8.92 J'	50	50
Mercury	132	ug/L	248	0.007 J	0.011 J	0.01 J	0.007 J	0.008 J	0.006 U	0.2	1
Nickel	152	ug/L	248	3.34 U	3.34 U	4.32 J	3.34 U	3.34 U	3.34 U	50	100
Nitrate (as Nitrogen)	303	ug/L	248	318 J'	1,800 J'	553 J'	36.7 J'	733 J'	795 J'	10,000	10,000
Selenium	183	ug/L	248	0.667 U	0.667 U	0.667 U	0.667 U	15.5	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	429 J'	1,350 J'	182 J'	185 J'	63,900 J'	107 J'	250,000	250,000
Total Dissolved Solids	311	ug/L	248	23,000 J	95,000	67,000	53,000	194,000	51,000	NE	500,000
Zinc	213	ug/L	248	42.2	3.34 U	4.75 J	3.34 U	3.34 U	54.2	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 April 1, 2013), Appendix I revised July 16, 2012.
- NE indicates not established. Blank cells indicate that there is no information relevant to the respective row.
- Grayed values indicate values that attain or exceed the SWSL Standard.
- 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 for parameters not detected at concentrations above the method detection limit (MDL). "J" is used for parameters detected at estimated concentrations greater than the MDL but less than the laboratory's method reporting limit (MRL). An italicized J' flag is a data qualifier, added by HDR to indicate a detected concentration which attains or 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 May 16, 2013.
- 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 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 Standards 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: April 8-9, 2013				Laboratory Certificate Codes:							
Field Sampling performed by Duke Energy Carolinas, LLC				Duke Energy Carolinas Field #5193 Duke Energy Analytical Laboratory #248							
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	5.2	5.1	5.0	6.0	7.5	5.2	-	6.5-8.5
Field Specific Conductance	323	umho/cm	5193	54	440	2,192	371	2,726	28	-	-
Temperature	325	°C	5193	14.87	12.54	14.36	10.75	15.76	15.86	-	-
Top Casing	328	feet	-	836.91	815.57	777.64	797.38	777.60	780.93	-	-
Depth to Water	318	feet	-	34.09	6.85	14.08	4.89	22.68	25.44	-	-
Water Elevation	319	feet	-	802.82	808.72	763.56	792.49	754.92	755.49	-	-
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	44.9	0.667 U	10	10
Barium	15	ug/L	248	60.8 J'	46.4 J'	36 J'	75.1 J'	32.8 J'	125	100	700
Boron	428	ug/L	248	33.4 U	2,890	21,800	478	26,400	33.4 U	NE	700
Cadmium	34	ug/L	248	0.667 U	0.667 U	0.978 J	0.667 U	6.58	0.667 U	1	2
Chloride	455	ug/L	248	7,010	9,420	13,100	3,990	11,700	4,420	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	65.9 J	391 J	731 J	172 J'	1,370 J'	73.8 J	2,000	2,000
Iron	340	ug/L	248	35.2 J'	364	35.5 J'	2,370	26 J'	301	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	5.26 J'	44.7 J'	410	2,580	88.7	24.3 J'	50	50
Mercury	132	ug/L	248	0.006 U	0.027 J	0.176 J'	0.012 J	0.007 J	0.007 J	0.2	1
Nickel	152	ug/L	248	3.34 U	3.34 U	15.5 J'	3.34 U	3.34 U	3.34 U	50	100
Nitrate (as Nitrogen)	303	ug/L	248	5.4 U	6,020 J'	37,100	470 J'	4,500 J'	5.4 U	10,000	10,000
Selenium	183	ug/L	248	0.667 U	30.3	188	1.81 J'	144	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	53.9 J	148,000 J'	1,200,000	47,600 J'	1,600,000	105 J'	250,000	250,000
Total Dissolved Solids	311	ug/L	248	64,000	366,000	2,130,000	244,000	2,770,000	38,000	NE	500,000
Zinc	213	ug/L	248	3.34 U	9.33 J'	24.2	5.03 J'	3.34 U	8.04 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 April 1, 2013), Appendix I revised July 16, 2012.
- NE indicates not established. Blank cells indicate that there is no information relevant to the respective row.
- Grayed values indicate values that attain or exceed the SWSL Standard.
- 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 for parameters not detected at concentrations above the method detection limit (MDL). "J" is used for parameters detected at estimated concentrations greater than the MDL but less than the laboratory's method reporting limit (MRL).
An italicized 'J' flag is a data qualifier, added by HDR to indicate a detected concentration which attains or 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 May 16, 2013.
- SU indicates Standard Units.
- umho/cm indicates micromhos per centimeter.

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: April 8-9, 2013										Laboratory Certificate Codes:			
Field Sampling performed by Duke Energy Carolinas, LLC										Duke Energy Carolinas Field #5193			
										Duke Energy Analytical Laboratory #248			
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		5.9		6.3	-	-	6.5-8.5		
Field Specific Conductance	323	umho/cm	5193	2,121		1,328		238	-	-	-		
Temperature	325	°C	5193	15.19		18.04		14.59	-	-	-		
Top Casing	328	feet	-	799.59		-		-	-	-	-		
Depth to Water	318	feet	-	37.82		N/A		N/A	-	-	-		
Water Elevation	319	feet	-	761.77		N/A		N/A	-	-	-		
Well Depth	411	feet	-	48.57		N/A		N/A	-	-	-		
Arsenic	14	ug/L	248	0.815	J	0.667	U	0.667	U	10	10		
Barium	15	ug/L	248	16.7	J'	51.3	J'	33.4	J'	100	700		
Boron	428	ug/L	248	30,400		12,200		2,500		33.4	U	NE	700
Cadmium	34	ug/L	248	4.34		0.667	U	0.667	U	0.667	U	1	2
Chloride	455	ug/L	248	10,200		10,400		5,180		24.4	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	410	J	683	J	102	J'	32.6	J	2,000	2,000
Iron	340	ug/L	248	6.67	U	73.8	J'	92.4	J'	6.67	U	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	3,310		645		51.3		3.34	U	50	50
Mercury	132	ug/L	248	0.182	J'	0.009	J	0.007	J	0.007	J	0.2	1
Nickel	152	ug/L	248	16.5	J'	3.34	U	3.34	U	3.34	U	50	100
Nitrate (as Nitrogen)	303	ug/L	248	5,600	J'	16,400		539	J'	5.4	U	10,000	10,000
Selenium	183	ug/L	248	337		71.9		15.5		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		657,000		76,900	J'	18	U	250,000	250,000
Total Dissolved Solids	311	ug/L	248	2,020,000		1,170,000		183,000		-		NE	500,000
Zinc	213	ug/L	248	70		11.3		7.96	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 amended on April 1, 2013), Appendix I revised July 16, 2012.
- NE indicates not established. Blank cells indicate that there is no information relevant to the respective row.
- Grayed values indicate values that attain or exceed the SWSL Standard.
- 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 for parameters not detected at concentrations above the method detection limit (MDL). "J" is used for parameters detected at estimated concentrations greater than the MDL but less than the laboratory's method reporting limit (MRL).
An italicized J' flag is a data qualifier, added by HDR to indicate a detected concentration which attains or 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 May 16, 2013.
- SU indicates Standard Units.
- umho/cm indicates micromhos per centimeter.

**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: April 8-9, 2013

	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	1.12 J'	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	0.929 J	0.667 U	0.741 J	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	0.162 J	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	2.05 J'	0.667 U
(15)	Zinc	**	**	**	**	**	**	**	**
(16)	Acetone	6,000	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)	Bromofrom	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	3,000	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	350	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)	4,000	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)	100*	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	2,000	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 April 1, 2013), Appendix I revised July 16, 2012.
- * Indicates a 2L Standard 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.
- 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 greater than the MDL but less than the laboratory's method reporting limit (MRL). An italicized "J" flag is a data qualifier, added by HDR to indicate a detected concentration which attains or 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 May 16, 2013.
- 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: April 8-9, 2013

	Compound	15A NCAC 2L Standard (µg/L)	SWSL Standard (µg/L)	8503-MW-6		8503-MW-7		8503-MW2-7		8503-MW2-9		8503-OB-4		8503-OB-5	
				µg/L	U	µg/L	U	µg/L	U	µg/L	U	µg/L	U	µg/L	U
(1)	Antimony	1*	6	0.667	U	0.667	U	0.667	U	0.667	U	31.5		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	0.667	U	0.667	U	0.898	J	1.17	J'	1.73	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	10.6		0.133	U
(14)	Vanadium	0.3*	25	0.667	U	0.667	U	0.667	U	0.667	U	198		0.667	U
(15)	Zinc	**	**	**		**		**		**		**		**	
(16)	Acetone	6,000	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	3,000	10	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U	0.54	U
(26)	Chloroform	70	5	0.12	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	350	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)	4,000	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)	100*	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	2,000	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 April 1, 2013), Appendix I revised July 16, 2012.
- * Indicates a 2L Standard 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.
- 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 greater than the MDL but less than the laboratory's method reporting limit (MRL). An italicized J'-flag is a data qualifier, added by HDR to indicate a detected concentration which attains or 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 May 16, 2013.
- 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: April 8-9, 2013

	Compound	15A NCAC 2L Standard (µg/L)	SWSL Standard (µg/L)	8503-OB-9	8503-SW-1A	8503-SW-2	FIELD BLANK
(1)	Antimony	1*	6	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
(5)	Cadmium	**	**	**	**	**	**
(6)	Chromium	**	**	**	**	**	**
(7)	Cobalt	1*	10	0.966 J	1.42 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	6,000	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	3,000	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	350	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)	4,000	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)	100*	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)	1,1,1,2-Tetrachloroethane	1*	5	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
(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	2,000	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 April 1, 2013), Appendix I revised July 16, 2012.
- * Indicates a 2L Standard 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.
- 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 greater than the MDL but less than the laboratory's method reporting limit (MRL). An italicized J-flag is a data qualifier, added by HDR to indicate a detected concentration which attains or 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 May 16, 2013.
- 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 15 A 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: April 8-9, 2013

Parameter	Well ID	Result	Units	15A NCAC 2L Standard	Historical Concentrations	Cause and Significance
pH	MW-1D	6.5	SU	6.5 - 8.5	6.3 - 6.9	pH at MW-1D is consistent with historical readings at well.
	MW-2	6.1	SU		4.8 - 6.2	pH at MW-2 is consistent with historical readings at well.
	MW-4	6.0	SU		5.4 - 6.7	pH at MW-4 is consistent with historical readings at well.
	MW-7	5.1	SU		5.1 - 6.2	pH at MW-7 is the lowest reading in the period of record.
	MW2-7	5.0	SU		5.0 - 5.5	pH in MW2-7 is consistent with the lowest historical reading at well.
	OB-5	5.2	SU		5.0 - 5.7	pH at OB-5 is consistent with historical readings at well.
	OB-9	5.0	SU		4.9 - 5.7	pH at OB-9 is consistent with historical readings at well.
	Arsenic	OB-4	44.9		ug/L	10
Boron	MW-7	2,890	ug/L	700	12.4 - 6,740	Boron concentration in MW-7 is consistent with historical readings at well. Turbidity measured at 17.1 NTUs.
	MW2-7	21,800	ug/L		10,000 - 22,900	Boron concentration in MW2-7 is consistent with historical readings at well.
	OB-4	26,400	ug/L		22,400 - 49,482	Boron concentration in OB-4 is consistent with historical readings at well.
	OB-9	30,400	ug/L		19,700 - 33,400	Boron concentration in OB-9 is consistent with historical readings at well.
Cadmium	OB-4	6.58	ug/L	2	<0.5 - 18.72	Cadmium concentration in OB-4 is consistent with historical readings at well.
	OB-9	4.34	ug/L		<2 - 5.66	Cadmium concentration in OB-9 is consistent with historical readings at well.
Chromium	MW-4	12.8	ug/L	10	5.8 - 29.0	Chromium concentration in MW-4 is consistent with historical readings at well.
Iron	MW-2	2,140	ug/L	300	<10 - 21,620	Iron concentration in MW-2 is consistent with historical readings at well.
	MW-7	364	ug/L		265 - 38,000	Iron concentration in MW-7 is consistent with historical readings at well. Turbidity measured at 17.1 NTUs.
	OB-5	301	ug/L		49.6 - 18,886	Iron concentration in OB-5 is consistent with historical readings at well.
Manganese	MW-2	51.1	ug/L	50	<5 - 401	Manganese concentration in MW2 is consistent with historical readings at well.
	MW2-7	410	ug/L		70.96 - 469	Manganese concentration in MW2-7 is consistent with historical readings at well.
	OB-4	88.7	ug/L		45.0 - 5,779	Manganese concentration in OB-4 is consistent with historical readings at well.
	OB-9	3,310	ug/L		1,010 - 3,766	Mangangese concentration in OB-9 is consistent with historical readings at well.
Nitrate as Nitrogen	MW2-7	37,100	ug/L	10,000	<300 - 38,700	Nitrate as Nitrogen concentration in MW2-7 is consistent with historical readings at well.
Selenium	MW-7	30.3	ug/L	20	6.7 - 66.73	Selenium concentration in MW-7 is consistent with historical readings at well. Turbidity measured at 17.1 NTUs.
	MW2-7	188	ug/L		66.32 - 204	Selenium concentration in MW2-7 is consistent with historical readings at well.
	OB-4	144	ug/L		10.63 - 350.4	Selenium concentration in OB-4 is consistent with historical readings at well.
	OB-9	337	ug/L		125.6 - 401.0	Selenium concentration in OB-9 is consistent with historical readings at well.
Sulfate	MW2-7	1,200,000	ug/L	250,000	190,400 - 1,240,000	Sulfate concentration in MW2-7 is consistent with historical readings at well.
	OB-4	1,600,000	ug/L		26,000 - 1,746,550	Sulfate concentration in OB-4 is consistent with historical readings at well.
	OB-9	1,290,000	ug/L		44,790 - 1,311,000	Sulfate concentration in OB-9 is consistent with historical readings at well.
Total Dissolved Solids	MW2-7	2,130,000	ug/L	500,000	536,000 - 2,130,000	TDS concentration in MW2-7 is the highest concentration measured over the period of monitoring.
	OB-4	2,770,000	ug/L		2,260,000 - 2,900,000	TDS concentration in OB-4 is consistent with historical readings at well.
	OB-9	2,020,000	ug/L		1,530,000 - 2,170,000	TDS concentration in OB-9 is consistent with historical readings at well.

Notes:

- 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 April 16, 2013) Appendix I revised July 16, 2012.
- Data obtained from Electronic Data Deliverable (EDD) provided by Tim Hunsucker of Duke Energy Carolinas, LLC on May 9, 2013.
- ug/L indicates micrograms per liter.
- SU indicates Standard Units.
- NTU indicates Nephelometric Turbidity Units.
- 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: April 8-9, 2013						
Parameter	Well ID	Result	Units	15A NCAC 2L Standard	Historical Concentrations	Cause and Significance
pH	MW-1	4.8	SU	6.5 - 8.5	4.3 - 5.6	pH at MW-1 is consistent with historical readings at well.
	MW-3	5.5	SU		5.0 - 6.1	pH at MW-3 is consistent with historical readings at well.
	MW-5	5.5	SU		5.0 - 6.4	pH at MW-5 is consistent with historical readings at well.
	MW-6	5.2	SU		4.9 - 5.7	pH at MW-6 is consistent with historical readings at well.
	MW2-9	6.0	SU		5.7 - 7.2	pH at MW2-9 is consistent with historical readings at well.
	SW-1A	5.9	SU		5.5 - 6.1	pH at SW-1A is consistent with historical readings.
	SW-2	6.3	SU		5.9 - 6.7	pH at SW-2 is consistent with historical readings.
Boron	SW-1A	12,200	ug/L	700	11,400 - 20,250	Boron concentration in SW-1A is consistent with historical readings.
	SW-2	2,500	ug/L		2,500 - 19,161	Boron concentration in SW-2 is lowest concentration measured in the period of monitoring.
Iron	MW2-9	2,370	ug/L		2,090 - 11,960	Iron concentration in MW2-9 is consistent with historical readings at well. Turbidity was measured at 26.5 NTUs.
Manganese	MW2-9	2,580	ug/L	50	793 - 13,070	Manganese concentration in MW2-9 is consistent with historical readings at well. Turbidity was measured at 26.5 NTUs.
	SW-1A	645	ug/L		45.22 - 1,660	Manganese concentration in SW-1A is consistent with historical readings.
	SW-2	51.3	ug/L		47.8 - 4,130	Manganese concentration in SW-2 is consistent with historical readings.
Nitrate as Nitrogen	SW-1A	16,400	ug/L	10,000	16,400 - 30,560	Nitrate as Nitrogen concentration in SW-1A is the lowest concentration measured during the period of monitoring.
Selenium	SW-1A	71.9	ug/L	20	39.1 - 159.0	Selenium concentration in SW-1A is consistent with historical readings.
Sulfate	SW-1A	657,000	ug/L	250,000	31,600 - 960,600	Sulfate concentration in SW-1A is consistent with historical readings.
Total Dissolved Solids	SW-1A	1,170,000	ug/L	500,000	1,010,000 - 1,717,000	Total Dissolved Solids concentration in SW-1A is consistent with historical readings.

- Notes:
1. 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 April 16, 2013) Appendix I revised July 16.
 2. Data obtained from Electronic Data Deliverable (EDD) provided by Tim Hunsucker of Duke Energy Carolinas, LLC on May 9, 2013.
 3. ug/L indicates micrograms per liter.
 4. SU indicates Standard Units.
 5. NTU indicates Nephelometric Turbidity Units.
 6. Historical concentrations based on data in Duke Energy Carolinas, LLC analytical results database.

**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: April 8-9, 2013						
Parameter	Well ID	Result	Units	15A NCAC 2L Standard	Historical Concentrations	Cause and Significance
Antimony	MW-2	1.12	ug/L	1*	<1 - 1.12	Antimony concentration in MW-2 is the highest concentration measured during the period of monitoring.
	OB-4	31.5	ug/L		7.1 - 98.5	Antimony concentration in OB-4 is consistent with historical readings at well.
Arsenic	OB-4	44.9	ug/L	10	29.46 - 91.80	Arsenic concentration in OB-4 is consistent with historical readings at well.
Cadmium	OB-4	6.58	ug/L	2	<0.5 - 18.72	Cadmium concentration in OB-4 is consistent with historical readings at well.
	OB-9	4.34	ug/L		<2 - 5.66	Cadmium concentration in OB-9 is consistent with historical readings at well.
Chromium	MW-4	12.8	ug/L	10	5.8 - 29.0	Chromium concentration in MW-4 is consistent with historical readings at well.
Cobalt	OB-4	1.73	ug/L	1*	<1 - 1.73	Cobalt concentration in OB-4 is the greatest concentration measured in the period of monitoring.
Selenium	MW-7	30.3	ug/L	20	6.7 - 66.73	Selenium concentration in MW-7 is consistent with historical readings at well.
	MW2-7	188	ug/L		66.32 - 204	Selenium concentration in MW2-7 is consistent with historical readings at well.
	OB-4	144	ug/L		10.63 - 350.40	Selenium concentration in OB-4 is consistent with historical readings at well.
	OB-9	337	ug/L		125.6 - 401.0	Selenium concentration in OB-9 is consistent with historical readings at well.
Thallium	OB-4	10.6	ug/L	0.2*	9.4 - 25.8	Thallium concentration in OB-4 is consistent with historical readings at well.
Vanadium	MW-4	2.05	ug/L	0.3*	<1 - 2.42	Vanadium concentration in MW-4 is consistent with historical readings at well.
	OB-4	198	ug/L		97.8 - 200.0	Vanadium concentration in OB-4 is consistent with historical readings at well.

Notes:

1. 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 April 16, 2013) Appendix I revised July 16, 2012.
2. Data obtained from Electronic Data Deliverable (EDD) provided by Tim Hunsucker of Duke Energy Carolinas, LLC on May 9, 2013.
3. µg/L indicates micrograms per liter.
4. Historical concentrations based on data in Duke Energy Carolinas, LLC analytical results database.
5. 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.
6. Parameters not detected at concentrations greater than the laboratory method reporting limit (MRL) are presented as <MRL.
7. * Indicates a 2L Standard Interim Maximum Allowable Concentration (IMAC).

**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: April 8-9, 2013						
Parameter	Well ID	Result	Units	15A NCAC 2L Standard	Historical Concentrations	Cause and Significance
Cobalt	MW2-9	1.17	ug/L	1*	1.17 - 20.6	Cobalt concentration in MW2-9 is the lowest concentration measured in the period of monitoring.
	SW-1A	1.42	ug/L		1.41 - 2.46	Cobalt concentration in SW-1A is consistent with historical readings.
Selenium	SW-1A	71.9	ug/L	20	39.1 - 159.0	Selenium concentration in SW-1A is consistent with historical readings.

- Notes:
1. 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 April 16, 2013) Appendix I revised J
 2. Data obtained from Electronic Data Deliverable (EDD) provided by Tim Hunsucker of Duke Energy Carolinas, LLC on May 9, 2013.
 3. ug/L indicates micrograms per liter.
 4. Historical concentrations based on data in Duke Energy Carolinas, LLC analytical results database.
 5. 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.

APPENDICES

APPENDIX A
CHAIN-OF-CUSTODY FORMS



CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

92154116

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

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

Customer must Complete Page 74 of 77

Analytical Laboratory Use Only		
LIMS #	J13040112	MATRIX: GW RCRA
Logged By	Date & Time	Samples Originating From
<i>cpk</i>	4-9-13 1530	NC <input checked="" type="checkbox"/> SC <input type="checkbox"/>
VENDOR	PACE	Cooler Temp (C)
PO #		Preserv.: 1=HCL 2=H ₂ SO ₄ 3=HNO ₃ 4=Ice 5=None
MR #		SAMPLE PROGRAM Ground Water <input checked="" type="checkbox"/> NPDES <input type="checkbox"/> Drinking Water <input type="checkbox"/> UST <input type="checkbox"/> RCRA Waste <input type="checkbox"/>

Page 1 of 2
 DISTRIBUTION
 ORIGINAL to LAB, CLIENT
 COPY to

Revised 10/2/12

1) Project Name	BELEWS CREEK LANDFILL - PINE HALL Permit #85-03	2) Phone No:	980-875-5257
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:	MG03A3

13 Sample Description or ID	14 Collection Information			15 TESTS	16 Analytes Required	17 Grab	NO3-N, Cl, F, SO4 (IC) and F, Alk (4.5)	TDS	EPA 8260B (Appendix I list - see attachment) - PACE	Chlorine (ppm)	20 Total # of Containers
	Date	Time	Signature								
TRIP BLANK	4/7/13	1200	WC	1	X				3	n/a	3
MW-1	4/9/13 0815	0830	WC	7	X	1		1	3		6
MW-1D	4/8/13 0815	0830	WC	7	X	1		1	3		6
MW-2	4/9/13	1105	WC	7	X	1		1	3		6
MW-3	4/9/13	1015	WC	7	X	1		1	3		6
MW-4	4/8/13	1000	WC	7	X	1		1	3		6
MW-5	4/9/13	1230	WC	7	X	1		1	3		6
MW-6	4/9/13	0915	WC	7	X	1		1	3		6
MW-7	4/8/13	1430	WC	7	X	1		1	3		6
MW2-7	4/8/13	1600	WC	7	X	1		1	3		6
MW2-9	4/9/13	1040	WC	7	X	1		1	3		6

11 Lab ID
2013007422
2013007423
2013007424
2013007425
2013007426
2013007427
2013007428
2013007429
2013007430
2013007431
2013007432

Customer to complete appropriate columns to right

Customer to complete all appropriate NON-SHADED areas.

21) Relinquished By	Date/Time	Accepted By:	Date/Time
<i>Ed Sullivan</i>	4/8/13 1830		
Relinquished By	Date/Time	Accepted By:	Date/Time
<i>Ed Sullivan</i>	4/9/13 1525	<i>Cindy Kmol</i>	4-9-13 1525
Relinquished By	Date/Time	Accepted By:	Date/Time
<i>R. Davis</i>	4/10/13 1310	<i>JP</i>	4-10-13 1310
23) Seal/Locked By	Date/Time	Seal/Lock Opened By	Date/Time
<i>JP</i>	4-10-13 1330	<i>JP</i>	4-10-13 1330
24) Comments	Regulatory Agency : NCDENR/DWM -SW Section - State EDD Format Required / Permit # 85-03 indicated or comparable analytical methods		

Customer, important indicate	22) Requested Turnaround
	14 Days <input checked="" type="checkbox"/>
	*7 Days _____
	*48 Hr _____
	*Other _____ * Add. Cost Will Apply



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
 (980) 875-5245
 Fax: (980) 875-5038

Analytical Laboratory Use Only			
LIMS #	J13040112	MATRIX: GW RCRA	Samples Originating From NC <input checked="" type="checkbox"/> SC <input type="checkbox"/>
Logged By	Date & Time		SAMPLE PROGRAM
<i>cpk</i>	<i>4-9-13</i>	<i>1530</i>	Ground Water <input checked="" type="checkbox"/> NPDES <input type="checkbox"/> Drinking Water <input type="checkbox"/> UST <input type="checkbox"/> RCRA Waste <input type="checkbox"/>
VENDOR PACE		Cooler Temp (C)	
PO #	Preserv.: 1=HCL 2=H ₂ SO ₄ 3=HNO ₃ 4=Ice 5=None		
MR #			

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

1) Project Name BELEWS CREEK LANDFILL - PINE HALL Permit #85-03	2) Phone No: 980-875-5257
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:	10) Mail Code: MG03A3

Customer to complete all appropriate NON-SHADED areas.				4	3	4	1, 4	1, 4	1, 4	1, 4
				15	Metals Prep - 3030C (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, Tl (LL), V (8)			TDS	EPA 8260B (Appendix I list -see attachment) - PACE	Chlorine (ppm)

LAB USE ONLY	
11) Lab ID	
2013007433	
2013007434	
2013007435	
2013007436	
2013007437	
2013007438	

13) Sample Description or ID	14) Collection Information			18) TESTS	19) Grab	NO ₃ -N, Cl, F, SO ₄ (IC) and F_Aik (4.5)	TDS	EPA 8260B	Chlorine (ppm)	Total # of Containers
	Date	Time	Signature							
OB-4	<i>4/8/13</i>	<i>1200</i>	<i>WC</i>	7	X	1	1	3	6	6
OB-5	<i>4/8/13</i>	<i>1100</i>	<i>WC</i>	7	X	1	1	3	6	6
OB-9	<i>4/8/13</i>	<i>1305</i>	<i>WC</i>	7	X	1	1	3	6	6
SW-1A	<i>4/8/13</i>	<i>1540</i>	<i>WC</i>	7	X	1	1	3	6	6
SW-2	<i>4/8/13</i>	<i>1215</i>	<i>WC</i>	7	X	1	1	3	6	6
FIELD BLANK	<i>4/9/13</i>	<i>1300</i>	<i>WC</i>	6	X	1	1	3	n/a	5

21) Relinquished By <i>WD LLA</i>	Date/Time <i>4/8/13 1830</i>	Accepted By: <i>Cindy Knox</i>	Date/Time <i>4-9-13 1525</i>	Customer, important indicate desired turnaround	22) Requested Turnaround 14 Days <input checked="" type="checkbox"/> *7 Days _____ *48 Hr _____ *Other _____ * Add. Cost Will Apply
Relinquished By <i>WD LLA</i>	Date/Time <i>4/9/13 1525</i>	Accepted By: <i>[Signature]</i>	Date/Time <i>4-10-13</i>		
Relinquished By <i>L. Harris</i>	Date/Time <i>4/10/13 1310</i>	Accepted By: <i>[Signature]</i>	Date/Time <i>4-10-13</i>		
23) Seal/Locked By <i>[Signature]</i>	Date/Time <i>4/10/13 1330</i>	Sealed/Lock Opened By <i>[Signature]</i>	Date/Time <i>4-10-13</i>		
24) Comments Regulatory Agency : NCDENR/DWM -SW Section - State EDD Format Required / Permit # 85-03 indicated or comparable analytical methods				Use	

Customer must Complete Page 75 of 77

Customer to complete appropriate columns to right

Customer to sign & date below