North Carolina Department of Transportation
Preliminary Site Assessment
State Project: U-5114
WBS Element: 42376.1.R2
Parcel Number: 26
Mecklenburg County

Parcel 26
Vernon L. Krause Property
13825 Statesville Road
Huntersville, North Carolina
June 23, 2017

Amec Foster Wheeler Environment and Infrastructure, Inc.
Project: 1530U5114

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1.0 INTRODUCTION

In accordance with the North Carolina Department of Transportation (NCDOT) Request for Proposal, dated February 21, 2017 (received February 23, 2017), Amec Foster Wheeler Environment and Infrastructure, Inc. (Amec Foster Wheeler) has performed a Preliminary Site Assessment (PSA) for a portion of Parcel 26. The northern portion of Parcel 26 (Site) is to be affected by construction of a proposed drainage ditch associated with road construction activities. The proposed drainage ditch covers an area of approximately 0.3 acres. The Site, which is located on 13825 Statesville Road, is currently composed of a vacant grass field in the north and a car dealership called Huntersville Ford in the south. It is identified as Parcel 26, Vernon L. Krause Property, within the NCDOT U-5114 design project. The property is located west of Statesville Road and east of Interstate 77 as shown in the Vicinity Map, **Figure 1**. This is in Huntersville of Mecklenburg County, North Carolina. The investigation was conducted in accordance with Amec Foster Wheeler's Technical and Cost proposal dated March 7, 2017.

NCDOT contracted Amec Foster Wheeler to perform the PSA within the proposed easement for a drainage ditch feature due to the potential presence of coal fly ash in an area requiring excavation, grading and construction. The area of investigation is the portion of the parcel where drainage feature construction activities are proposed to occur as shown on **Figure 2**. The proposed permanent drainage easement cuts east to west across most of the width of the parcel. The PSA was performed to determine if fly ash is present on the property within the proposed investigation area.

The following report summarizes a geophysical survey and describes our subsurface field investigation at the site. The report includes the evaluation of visual field observations with regards to the presence or absence of fly ash as well as laboratory analyses with regards to potential related soil contamination within the Site area of Parcel 26. **Appendix A** includes a photographic log for the site.

1.1 Site History

The southern portion of Parcel 26 operates as a car dealership (Huntersville Ford) and the northern portion is a vacant grass field. According to North Carolina Department of

Environmental Quality (NCDEQ) records and the property deed, approximately 75,000 tons of ash was disposed on this property and used as fill in 1997.

1.2 Site Description

Parcel 26 is located in a residential and commercial area of Huntersville in Mecklenburg County and covers approximately 15.7 acres. The southern portion of Parcel 26 occupied by the car dealership (approximately 10 acres) is mostly asphalt parking lot with a large commercial building. The northern portion of the parcel (approximately 5.7 acres) is a relatively flat vacant grass field. The western edge of the property is forested and steeply slopes downward to a stream and is adjacent to Interstate 77. The eastern edge of the property is bounded by Statesville Road. The parcel is adjacent to commercial properties to the north and south.

2.0 GEOLOGY

2.1 Regional Geology

Parcel 26 is located within the Charlotte Terrane of the Piedmont Physiographic Province of North Carolina. According to the 1985 State Geologic Map of North Carolina, the area is underlain by foliated to massive metamorphosed quartz diorite.

2.2 Site Geology

Site geology was observed through the drilling of 12 shallow direct push probe soil borings (SB). **Figure 2** presents the boring locations and site layout. Borings did not exceed a total depth of 20 feet bgs. Fill material was observed in each of the 12 borings. Fill material was observed to be composed of silt or fly ash. Fly ash fill material was observed in 11 of the 12 borings. Additional site geologic information is discussed in Section 4, Soil Sampling Results. Boring logs are presented in **Appendix B**.

3.0 FIELD ACTIVITIES

3.1 Preliminary Activities

Prior to commencing field sampling activities at the site, several tasks were accomplished in preparation for the subsurface investigation. A Health and Safety Plan (HASP) was created including the site-specific health and safety information necessary for the field activities. North Carolina One Call was contacted on May 1, 2017 to report the proposed drilling activities and subsequently notify all affected utilities for the parcel. Probe Utility Locating, LLC (Probe Utility Locating) was procured by Amec Foster Wheeler to perform utility locating at the Site. Pyramid Environmental & Engineering, P.C. (Pyramid) was procured by Amec Foster Wheeler to perform a geophysical survey. Geologic Exploration, Inc. (Geologic Exploration) of Statesville, North Carolina was retained by Amec Foster Wheeler to perform the direct push sampling for soil borings. Sample containers were obtained from Pace Analytical Services, LLC (Pace Analytical) of Huntersville, North Carolina.

Amec Foster Wheeler understands that a permanent drainage easement and drainage ditch is proposed for the Site. The future excavation cut depth for construction of this drainage ditch was not provided to Amec Foster Wheeler, however drainage ditch details on the non-final design indicate a maximum ditch depth of 2 ft. bgs. Boring depths were chosen to be between 10 and 20 ft bgs to observe potential fly ash thickness but with a shallow sample focus. Boring locations were strategically placed in a pattern within the area of investigation to maximize the opportunity to encounter potential fly ash and contaminated soil.

3.2 Site Reconnaissance

Amec Foster Wheeler personnel performed a site reconnaissance concurrent with the geophysical survey on March 24, 2017. During the site reconnaissance, the area was visually examined for the presence of any areas/obstructions that could potentially affect the subsurface investigation. Dense vegetation, trees, and a steep slope were observed on the western side of the property where the end of the drainage ditch and the rip rap outfall apron are proposed to be constructed. The majority of the area of proposed construction was observed to be a relatively flat grass field.

A surface deposit of unidentified material was observed in the grass field on the western side of the site within the proposed drainage easement. The material was observed to be black, sandy, and included blue paint chips. The material covers an area of approximately 40 square feet (eight feet by five feet) and is approximately four inches thick.

3.3 Geophysics Survey Results

The geophysical survey of the site occurred on March 24, 2017. Pyramid performed an electromagnetic (EM) survey of the northern vacant grass field at the Site to attempt to identify and delineate potential fly ash. Their complete geophysical report is presented as **Appendix C**. Pyramid reported that the majority of the Site is underlain by high conductivity soils, which were interpreted as fly ash. Pyramid reported that, according to the interpretation of high conductivity values indicating buried fly ash, fly ash could cover approximately 2.5 acres at the parcel and may potentially extend further south into the paved area of the car dealership. Pyramid reported that "an overlay of the proposed NCDOT drainage feature suggests that buried ash will be encountered during construction activities, depending on the total depth of excavation and the depth of the ash" (**Appendix C**).

3.4 Soil Sampling

In advance of drilling activities, Probe Utility Locating performed utility locating at the site on May 3, 2017. A potential drainage pipe was identified running northeast-southwest beneath the western proposed end of the drainage feature, at a depth of approximately 30 feet bgs. Amec Foster Wheeler did not perform any soil borings in close proximity to the identified potential drainage pipe.

Amec Foster Wheeler conducted drilling activities at the site on May 5, 2017. Amec Foster Wheeler's drilling subcontractor Geologic Exploration advanced 12 direct push soil borings across the area of investigation to depths between 10 and 20 feet bgs. **Figure 2** presents the Site Map with boring locations and identifications.

The purpose of soil sampling was to determine if fly ash exists on the parcel within the proposed drainage easement and to provide information that can be used to estimate the volume of fly ash and impacted soil that might require special handling during construction activities.

Soil sampling was performed utilizing direct push methods accompanied by visual field observations and offsite quantitative analyses. Amec Foster Wheeler conducted visual field screening of the soil borings for fly ash identification. Representative samples of soil and fill material observed on Site were collected. Samples including fly ash, soil with intermixed fly ash, and soil with no visible fly ash were collected. Sixteen total samples were collected from the Site; 15 from soil borings and 1 from the black surface deposit. Five borings had two samples each collected at distinct depths for vertical profiling. Five borings had one sample collected from each boring. Two borings were utilized only for visual soil observations and had no samples collected (P26SB-5 and P26SB-9).

Samples were collected in laboratory provided containers and immediately placed on ice. Samples were delivered under standard chain of custody protocol by Amec Foster Wheeler personnel to Pace Analytical in Huntersville, North Carolina. Sixteen samples were analyzed for the RCRA eight metals following EPA methods 6010 and 7471, while two samples were analyzed for toxicity characteristic leaching procedure (TCLP) RCRA eight metals by EPA methods 6010 and 7470.

4.0 SOIL SAMPLING RESULTS

Based on field observations and offsite metals analysis, there is evidence of extensive, buried fly ash onsite within the area of investigation. Results are presented below.

Fly ash was observed in 11 of the 12 soil borings on site. The thickness of the observed ash layers ranged between 1 and 16 feet thick. Fly ash was observed at depths ranging from the ground surface to 20 feet bgs. Complete vertical fly ash delineation was not performed as a part of this assessment as the focus was on shallow soils expected to be encountered during drainage feature construction activities. Fly ash layers were observed to be both thinner and shallower at the east and west ends of the proposed construction area, and thickest and deepest in the central area. Soils in the following borings appeared to transition to native soils beneath the identified fly ash at the specified depths: P26SB-3 at 19.8 feet bgs; SB-5 at 9.5 feet bgs; SB-6 at 9 feet bgs; SB-7 at 9 feet bgs; SB-8 at 8 feet bgs; SB-9 at 8 feet bgs; SB-10 at 8 feet bgs; and SB-11 at 4 feet bgs. No fly ash was observed in the easternmost sample (P26SB-12), which was collected outside of the proposed drainage ditch construction area. The field observations are provided in the boring logs in **Appendix B**.

Summary results from laboratory analyses are presented in **Table 1** and **Table 2**. The Pace Analytical laboratory report is included in **Appendix D**.

The RCRA eight metals are arsenic (As), barium (Ba), cadmium (Cd), chromium (Cr), lead (Pb), mercury (Hg), selenium (Se), and silver (Ag). Each of the eight metals were detected in at least one or more samples above laboratory detection limits. RCRA eight metals concentrations were compared to NCDEQ Inactive Hazardous Sites Branch (IHSB) Preliminary Soil Remediation Goals (PSRGs). The Industrial/ Commercial Health Based PSRGs are applicable for the proposed construction activities and will be discussed in the following sections. The Unrestricted Use Health Based PSRGs and Protection of Groundwater PSRGs were included in **Table 1** for reference.

Concentrations of 13 of the 16 samples exceed the Industrial/ Commercial Health Based PSRG of 3.0 mg/kg for arsenic. Concentrations of 16 of the 16 samples exceed the Industrial/ Commercial Health Based PSRG of 6.3 mg/kg for chromium (total chromium PSRG not established, chromium (VI) PSRG used to be conservative). No other exceedances of Industrial/ Commercial Health Based PSRGs were noted.

Soil samples P26SB-1-2, SB10-2 and SB-12 were obtained from soil or fill that did not include fly ash, as based on visual observations. Distinctive metals results from these three samples exhibited significantly lower arsenic and selenium values. Select RCRA eight metals detections are shown in relation to their respective sample locations in **Figure 3**. Areas of known and potential soil contamination are shown in **Figure 4**.

Two samples were analyzed for TCLP (P26SB-6 and P26SB-10-1) RCRA eight metals. Arsenic, Barium, and Selenium were detected in one or more samples at concentrations above laboratory reporting limits. No reported concentrations exceeded US EPA Regulatory Levels thus resulting in a non-hazardous designation based on toxicity (*TCLP for VOCs, SVOCs, Chlorinated Pesticides and Herbicides, and Metals by SW-846 Method 1311 and Analysis,* January 2000). Since the fly ash was placed as fill 20 years ago, one would anticipate that predominant leaching of metals would have already occurred.

5.0 CONCLUSIONS

Based on the geophysical survey and site observations, fly ash was identified on the investigated Site in the area of proposed construction activities.

The following bulleted summary is based upon Amec Foster Wheeler's evaluation of field observations and offsite quantitative analyses of samples collected from the Site in May 2017.

- The property in the area of proposed construction activities is a vacant grass field with forested area on the western edge.

- Results of the geophysical survey produced evidence of probable buried fly ash on Site. According to EM results interpretation, buried fly ash was identified across at least 2.5 acres.

- Twelve soil borings were conducted to depths between 10 and 20 feet bgs. Fly ash was visually observed in 11 of the 12 soil borings. No fly ash was observed in the easternmost soil boring outside of the proposed construction area.

- Fly ash thickness was observed to range between 1 and 16 feet thick. Fly ash was observed at depths ranging from the ground surface to 20 feet bgs. Complete vertical fly ash delineation was not performed as a part of this assessment as the focus was on shallow soils expected to be encountered during drainage feature construction activities. The total depth of fly ash was not determined in all areas of the Site as observed fly ash exceeded the depths proposed for this PSA.

- Two soil samples each were collected from five borings. One soil sample each was collected from five borings. Two soil borings were not sampled for laboratory analysis. Each laboratory sample was analyzed for the RCRA eight metals in an offsite laboratory.

- Sample analyses of fly ash samples notably differ than soil or typical fill samples. Results from the 13 samples with fly ash exhibited exceedance of the Industrial/ Commercial Health Based PSRG for arsenic and or chrome, conservatively assuming it to be chromium VI.

- The estimated area of fly ash corresponding to the proposed drainage ditch feature has been calculated to be 1936 cubic yards. This assumes an excavation depth of 4 feet for the proposed drainage feature maximum depth of 2 feet.

- One sample was collected from the surface deposit of unidentified material. Analytical results indicate an exceedance of the chrome VI Industrial/ Commercial Health Based PSRG in this sample.

- Two soil samples with fly ash (P26SB-6 and P26SB-10-1) were analyzed for TCLP RCRA eight metals. Arsenic, Barium, and Selenium were detected in one or more samples at concentrations above laboratory reporting limits. No reported concentrations exceeded US EPA Regulatory Levels for hazardous toxicity.

6.0 RECOMMENDATIONS

Based on these PSA results, Amec Foster Wheeler does not recommend further assessment or soil sampling in the area of investigation; however, special handling should be performed during excavation and construction for the drainage ditch feature. The confirmed fly ash is considered a coal combustion residual, which should be handled by a qualified specialty contractor. Such qualified specialty contractor may differ from the selected U-5114 roadway contractor. A qualified specialty contractor should take into account factors such as, but not limited to the following: moisture management and dust control; erosion control planning; soil stabilization; possible overexcavation with suitable fill import for base material; worker safety; personal protective equipment; community perception; and proper hauling with lining and containment suitable for fly ash. Amec Foster Wheeler can assist with qualified specialty contractor selected and/or oversight.

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TABLES

Table 1
Soil Analytical Data
RCRA 8 Metals
U-5114, Parcel 26
Huntersville, North Carolina

Sample ID	Sample Date	Sample Depth (ft bgs)	RCRA 8 Metals (mg/kg)							
			Arsenic	Barium	Cadmium	Chromium[1]	Lead	Mercury	Selenium	Silver
Unrestricted Use Health Based PSRG			*0.68*	*3,000*	*14.2*	*0.3*	*400*	*2.2*	*78*	*78*
Industrial/ Commercial Health Based PSRG			*3.0*	*44,000*	*196*	*6.3*	*800*	*3.13*	*1,160*	*1,160*
Protection of Groundwater PSRG			*5.8*	*580*	*3.0*	*3.8*	*270*	*1.0*	*2.1*	*3.4*
P26SB-1-1	5/5/2017	3	**39.0**	203	0.29	**21.5**	18.8	0.096	8.6	<0.49
P26SB-1-2	5/5/2017	10	**3.8**	84.4	0.99	**28.5**	8.8	0.024	<1.0	<0.50
P26SB-2	5/5/2017	4	**49.5**	260	0.28	**21.9**	20.9	0.12	12.8	<0.39
P26SB-3-1	5/5/2017	1	**24.6**	186	0.54	**18.6**	10.9	0.15	2.9	<0.45
P26SB-3-2	5/5/2017	18	**54.9**	209	0.46	**23.4**	23.4	0.096	10.3	<0.54
P26SB-4	5/5/2017	3	**51.9**	282	0.32	**23.7**	23.3	0.11	14.5	<0.41
P26SB-6	5/5/2017	3	**69.8**	373	0.34	**24.7**	24.8	0.12	14.8	<0.41
P26SB-7-1	5/5/2017	1	**26.3**	186	0.57	**20.9**	12.9	0.045	4.0	<0.56
P26SB-7-2	5/5/2017	6	**75.1**	199	0.71	**28.8**	26.6	0.13	15.3	<0.89
P26SB-8	5/5/2017	2	**74.7**	381	<0.81	**29.6**	28.3	0.14	19	<4.0
P26SB-10-1	5/5/2017	2	**49.6**	276	0.61	**24.8**	22.3	0.19	14.5	<0.61
P26SB-10-2	5/5/2017	9	<0.86	29.3	<0.086	**22.3**	9.4	0.0069	2.2	0.49
P26SB-11-1	5/5/2017	1	**24.3**	180	0.23	**22.2**	16.0	0.061	4.0	<0.59
P26SB-11-2	5/5/2017	4	**43.5**	167	0.39	**16.7**	13.8	0.041	7.2	<0.46
P26SB-12	5/5/2017	3	<0.91	68.1	<0.091	**13.7**	7.5	0.012	2.1	<0.46
P26- Surface Deposit	5/5/2017	0	<6.0	**4760**	<0.60	**35.0**	5.3	<0.0030	<6.0	<3.0

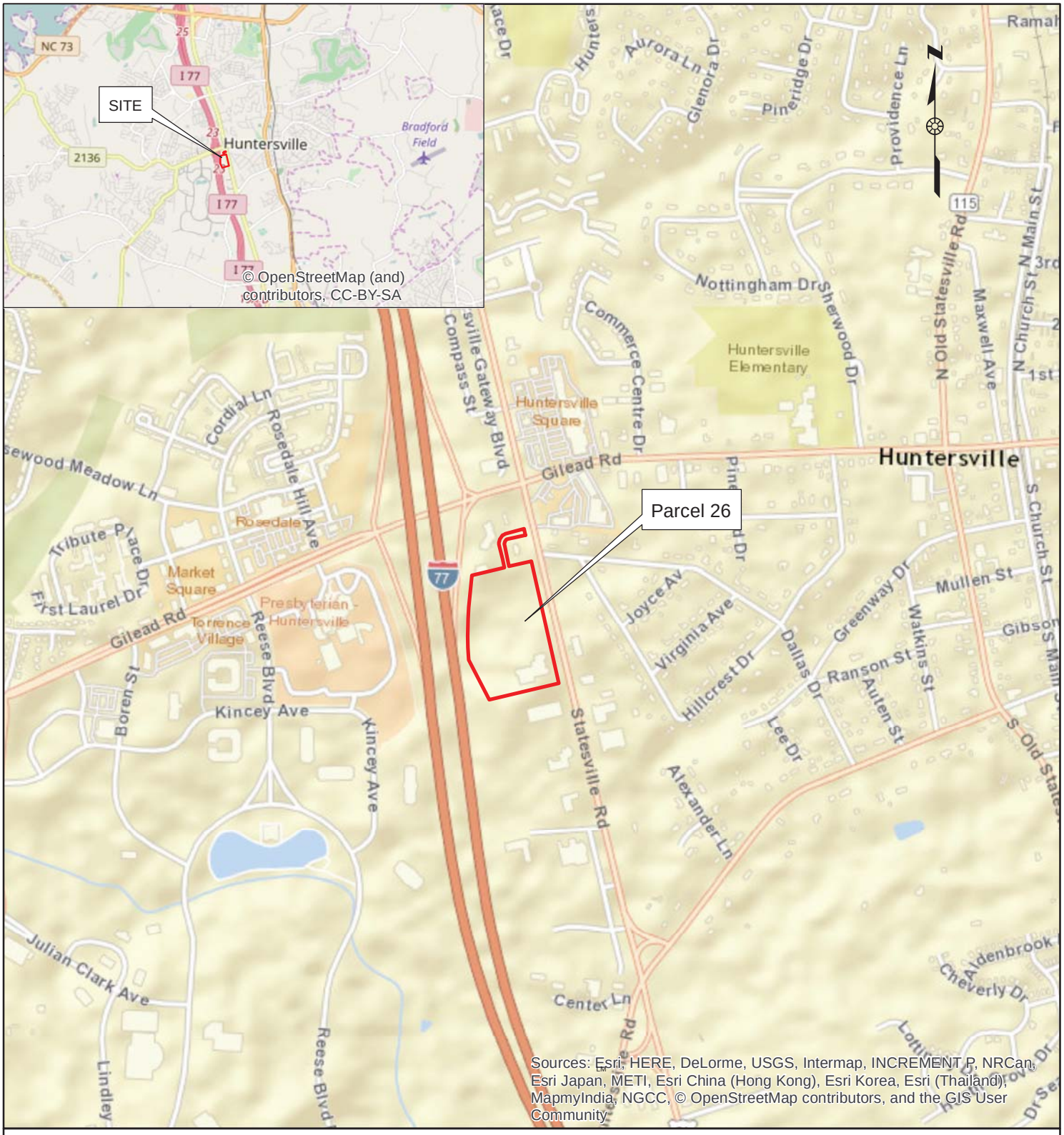
NOTES:
(mg/kg) = Milligrams per kilogram
PSRG = Preliminary Soil Remediation Goals (North Carolina Department of Environmental Quality, Inactive Hazardous Sites Branch, October 2016)
RCRA = Resource Conservation and Recovery Act
ft bgs = feet below ground surface
Concentrations which exceed the Unrestricted Health Based PSRGs are highlighted in **BOLD**
Concentrations which exceed the Industrial/ Commercial Health Based PSRGs are highlighted in **BOLD** and Underlined
Concentrations which exceed the Protection of Groundwater PSRG are highlighed in **BOLD**, Underlined and Shaded Gray
[1] Total Chromium PSRG not established. PSRG for Chromium(VI) listed.

Table 2
Soil Analytical Data
TCLP RCRA 8 Metals
U-5114, Parcel 26
Huntersville, North Carolina

Sample ID	Sample Date	Sample Depth (ft bgs)	TCLP- RCRA 8 Metals (mg/L)							
			Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
US EPA TCLP Metals Regulatory Level			*5.0*	*100*	*1.0*	*5.0*	*5.0*	*0.2*	*1.0*	*5.0*
P26SB-6	5/5/2017	3	<0.050	0.30	<0.0050	<0.050	<0.025	<0.00020	<0.10	<0.025
P26SB-10-1	5/5/2017	2	0.14	2.4	<0.0050	<0.050	<0.025	<0.00020	0.39	<0.025

NOTES:
(mg/L) = Milligrams per liter
TCLP = Toxicity Characteristic Leaching Procedure
US EPA = United States Environmental Protection Agency
RCRA = Resource Conservation and Recovery Act
US EPA Regulatory Levels from *TCLP for VOCs, SVOCs, Chlorinated Pesticides and Herbicides, and Metals by SW-846 Method 1311 and Analysis (TCLPCRF, January 2000)*
ft bgs = feet below ground surface
Concentrations which exceed the US EPA TCLP Metals Regulatory Level are highlighted in **BOLD**

FIGURES



1,000 500 0 1,000 Feet

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SITE VICINITY
PARCEL 26
13825 STATESVILLE ROAD
HUNTERSVILLE, NORTH CAROLINA

PREPARED BY: LM	Date: 6/8/2017	CHECKED BY: JM	Date: 6/8/2017	JOB NUMBER 1530U5114.003	FIGURE 1

Boring Location

Surface Deposit of Unidentified Material

0 25 50 100 Feet

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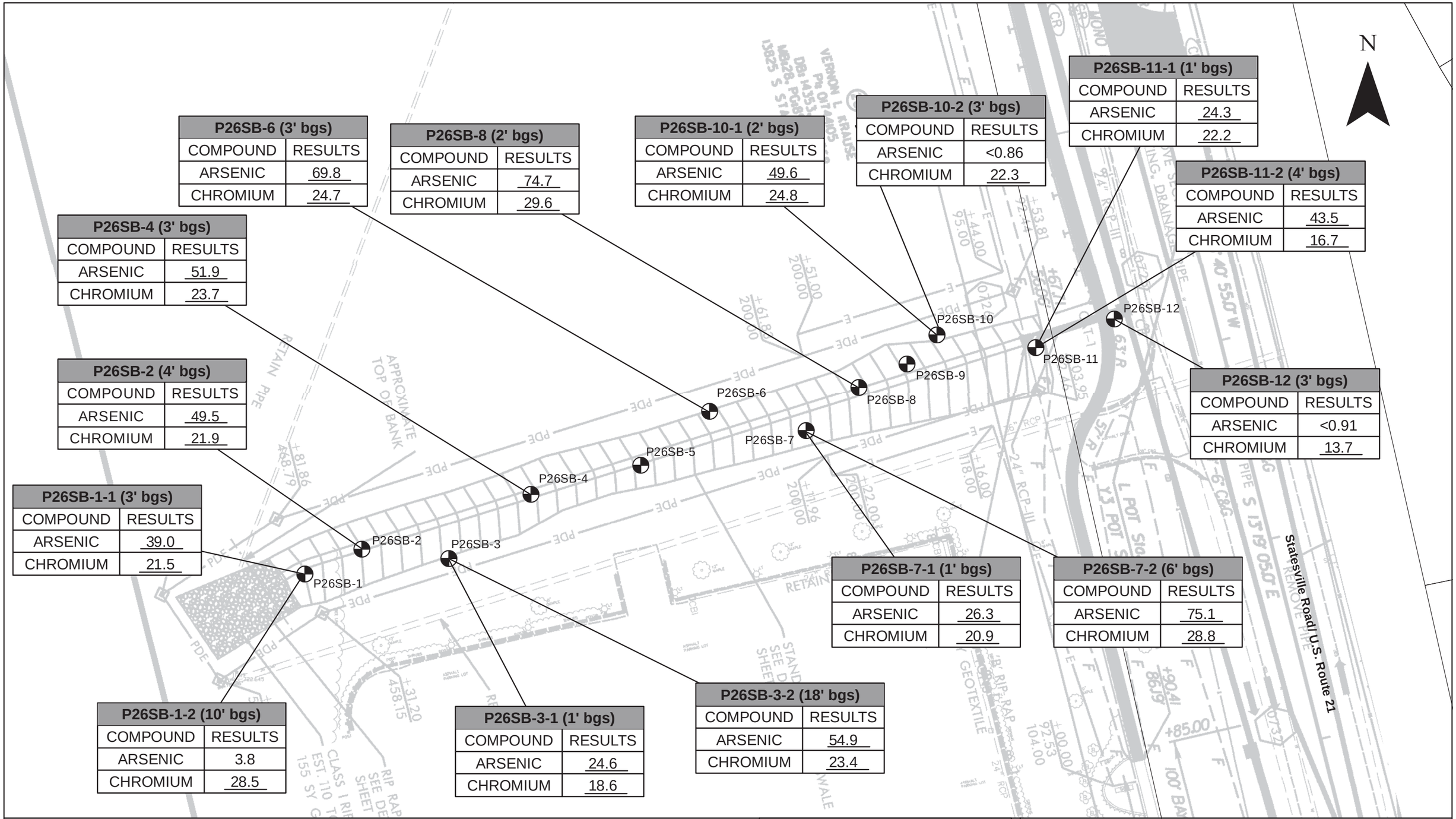
SITE MAP AND SOIL BORING LOCATIONS
PARCEL 26
13825 STATESVILLE ROAD
HUNTERSVILLE, NORTH CAROLINA

PREPARED BY: LM	Date: 6/14/2017	CHECKED BY: JM	Date: 6/14/2017	JOB NUMBER 1530U5114.003	FIGURE 2



NOTES:
Concentrations are shown in mg/kg
bgs= below ground surface
Underline indicates concentrations which exceed the Protection of Groundwater PSRG Standards

Only constituents exceeding the NCDEQ IHSB Industrial/ Commercial Health Based PSRGs are shown. See Table 1 and the Laboratory Report for complete analytical results. Total Chromium PSRGs not established. Results compared to PSRGs for Chromium(VI).

0 25 50 100 Feet

Boring Location

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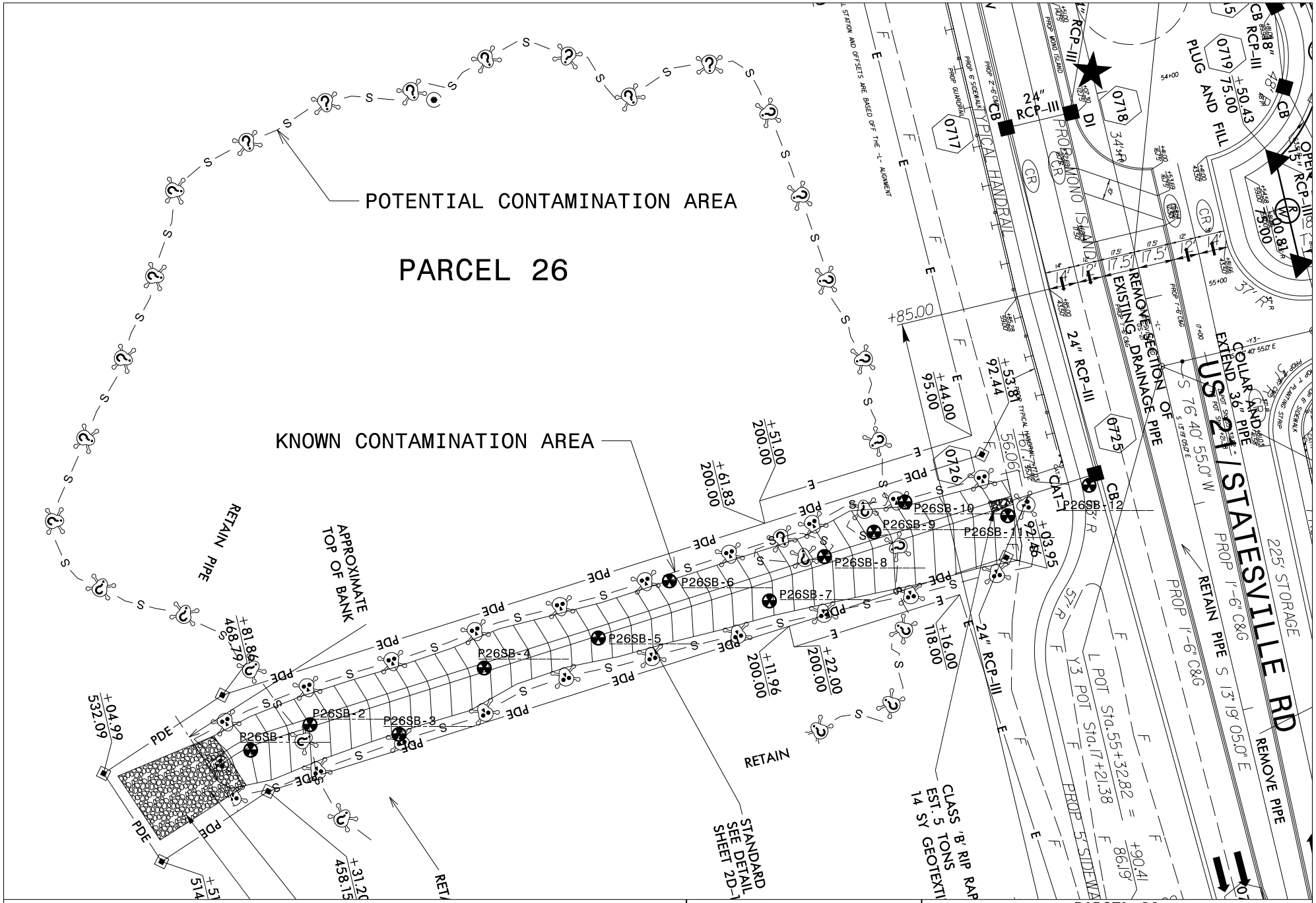
Select RCRA 8 Metal Detections

PARCEL 26
13825 STATESVILLE ROAD
HUNTERSVILLE, NORTH CAROLINA

PREPARED BY:	Date: 6/14/2017	CHECKED BY:	Date: 6/14/2017	JOB NUMBER	FIGURE
LM		JM		1530U5114.003	3



Geoenvironmental Borings

Known Contamination Area: Soil

Potential Contamination Area: Soil

30′ 0′ 30′ 60′

15′

(ENGLISH)

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PARCEL 26
SOIL CONTAMINATION AREAS
13825 STATESVILLE ROAD
HUNTERSVILLE, NORTH CAROLINA

PREPARED BY: CHL	DATE: 6/27/17	CHECKED BY: HPC	DATE: 6/27/17	JOB NUMBER 1530U5114.003	FIGURE 4

APPENDIX A
PHOTOGRAPH LOG

Photo 1

View west of the northern portion of Parcel 26 occupied by a vacant field.

Photo 2

View south of the southern portion of Parcel 26 occupied by a car dealership along Statesville Road.

2801 Yorkmont Rd,
Suite 100
Charlotte, NC 28208

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PROCESSED	JRM
DATE	May 2017
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PHOTOGRAPHIC LOG

Preliminary Site Assessment
Parcel 26, Huntersville, NC

Photo 3

View east along the proposed drainage feature in the northern portion of Parcel 26.

Photo 4

View of soil cores extracted from boring P26SB-1. Depths listed in feet below ground surface (bgs).

Photo 5

View of soil cores extracted from boring P26SB-3. Depths listed in feet bgs.

Photo 6

View of soil cores extracted from boring P26SB-12. Depths listed in feet bgs.

Photo 7

View of the surface deposit of unidentified black material near boring P26SB-4 on the eastern side of Parcel 26.

2801 Yorkmont Rd,
Suite 100
Charlotte, NC 28208

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PHOTOGRAPHIC LOG

Preliminary Site Assessment
Parcel 26, Huntersville, NC

APPENDIX B
BORING LOGS

Amec Foster Wheeler Environment & Infrastructure

Boring Log

Boring/Well No.: P26SB-1	**Site Name:** U-5114 Parcel 26
Date: 5-5-17	**Location:** Huntersville, Mecklenburg Co., NC
Job No.: 1530U5114	**Sample Method:** Direct Push
Logged By: John Maas	**Drilling Method:** Direct Push
Drilling Company: Geologic Exploration	**Driller Name:** Paul McVey

Remarks: bgs=below ground surface. No PID readings collected as target constituents were metals.

Lithologic Unit Depth (ft bgs)	Sample Depth (ft bgs)	Lab Sample ID	Soil/Lithologic Description
0-1.4			Brown, sandy SILT, moist, organics, some rock fragments
1.4-1.5			Gray, FLY ASH, fine, moist
1.5-3			Tan orange, SILT, moist, mica
3-4	3	P26SB-1-1	Gray, FLY ASH, fine, moist
4-15	10	P26SB-1-2	Brown, silty CLAY, moist
			Termination of boring at 15 ft bgs

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Amec Foster Wheeler Environment & Infrastructure

Boring Log

Boring/Well No.: P26SB-2	**Site Name:** U-5114 Parcel 26
Date: 5-5-17	**Location:** Huntersville, Mecklenburg Co., NC
Job No.: 1530U5114	**Sample Method:** Direct Push
Logged By: John Maas	**Drilling Method:** Direct Push
Drilling Company: Geologic Exploration	**Driller Name:** Paul McVey

Remarks: bgs=below ground surface. No PID readings collected as target constituents were metals.

Lithologic Unit Depth (ft bgs)	Sample Depth (ft bgs)	Lab Sample ID	Soil/Lithologic Description
0-1			Brown, sandy SILT, moist, organics, some rock fragments
1-1.1			Gray, FLY ASH, fine, moist
1.1-2			Tan, SILT, moist, high mica content
2-3			Tan orange, SILT, moist, mica
3-15	4	P26SB-2	Gray, FLY ASH, fine, moist
			Termination of boring at 15 ft bgs

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Amec Foster Wheeler Environment & Infrastructure

Boring Log

Boring/Well No.: P26SB-3	**Site Name:** U-5114 Parcel 26
Date: 5-5-17	**Location:** Huntersville, Mecklenburg Co., NC
Job No.: 1530U5114	**Sample Method:** Direct Push
Logged By: John Maas	**Drilling Method:** Direct Push
Drilling Company: Geologic Exploration	**Driller Name:** Paul McVey

Remarks: bgs=below ground surface. No PID readings collected as target constituents were metals.

Lithologic Unit Depth (ft bgs)	Sample Depth (ft bgs)	Lab Sample ID	Soil/Lithologic Description
0-0.5			Brown, sandy SILT, moist, organics
0.5-1			Gray, FLY ASH, fine, moist
1-2	1	P26SB-3-1	Mixed: gray, FLY ASH, fine, moist; and brown, SILT, moist
2-4			Tan orange, SILT, moist, mica
4-19.8	18	P26SB-3-2	Gray, FLY ASH, fine, moist
19.8-20			Red orange tan, clayey SILT, moist, mica, spots of black
			mineralization
			Termination of boring at 20 ft bgs

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Amec Foster Wheeler Environment & Infrastructure

Boring Log

Boring/Well No.: P26SB-4	**Site Name:** U-5114 Parcel 26
Date: 5-5-17	**Location:** Huntersville, Mecklenburg Co., NC
Job No.: 1530U5114	**Sample Method:** Direct Push
Logged By: John Maas	**Drilling Method:** Direct Push
Drilling Company: Geologic Exploration	**Driller Name:** Paul McVey

Remarks: bgs=below ground surface. No PID readings collected as target constituents were metals.

Lithologic Unit Depth (ft bgs)	Sample Depth (ft bgs)	Lab Sample ID	Soil/Lithologic Description
0-2.5			Tan orange, SILT, moist, mica, some fly ash mixed in upper
			few inches
2.5-10	3	P26SB-4	Gray, FLY ASH, fine, moist
			Termination of boring at 10 ft bgs

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Amec Foster Wheeler Environment & Infrastructure

Boring Log

Boring/Well No.: P26SB-5	**Site Name:** U-5114 Parcel 26
Date: 5-5-17	**Location:** Huntersville, Mecklenburg Co., NC
Job No.: 1530U5114	**Sample Method:** Direct Push
Logged By: John Maas	**Drilling Method:** Direct Push
Drilling Company: Geologic Exploration	**Driller Name:** Paul McVey

Remarks: bgs=below ground surface. No PID readings collected as target constituents were metals.

Lithologic Unit Depth (ft bgs)	Sample Depth (ft bgs)	Lab Sample ID	Soil/Lithologic Description
0-2			Tan orange, SILT, moist, mica, some fly ash mixed in upper
			few inches and at 1 ft bgs
2-9.5			Gray, FLY ASH, fine, moist
9.5-10			Red orange tan, clayey SILT, moist, mica, spots of black
			mineralization
			Termination of boring at 10 ft bgs

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Amec Foster Wheeler Environment & Infrastructure

Boring Log

Boring/Well No.: P26SB-6	**Site Name:** U-5114 Parcel 26
Date: 5-5-17	**Location:** Huntersville, Mecklenburg Co., NC
Job No.: 1530U5114	**Sample Method:** Direct Push
Logged By: John Maas	**Drilling Method:** Direct Push
Drilling Company: Geologic Exploration	**Driller Name:** Paul McVey

Remarks: bgs=below ground surface. No PID readings collected as target constituents were metals.

Lithologic Unit Depth (ft bgs)	Sample Depth (ft bgs)	Lab Sample ID	Soil/Lithologic Description
0-0.5			Mixed: gray, FLY ASH, fine, moist; and tan orange, SILT, moist
0.5-1			Tan, SILT, moist, high mica content
1-3			Tan orange, SILT, moist, mica
3-9	3	P26SB-6	Gray, FLY ASH, fine, moist
9-15			Red orange tan, clayey SILT, moist, mica, spots of black
			mineralization
			Termination of boring at 15 ft bgs
		SB-6 at 9 feet bgs,	

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Amec Foster Wheeler Environment & Infrastructure

Boring Log

Boring/Well No.: P26SB-7	**Site Name:** U-5114 Parcel 26
Date: 5-5-17	**Location:** Huntersville, Mecklenburg Co., NC
Job No.: 1530U5114	**Sample Method:** Direct Push
Logged By: John Maas	**Drilling Method:** Direct Push
Drilling Company: Geologic Exploration	**Driller Name:** Paul McVey

Remarks: bgs=below ground surface. No PID readings collected as target constituents were metals.

Lithologic Unit Depth (ft bgs)	Sample Depth (ft bgs)	Lab Sample ID	Soil/Lithologic Description
0-1.5	1	P26SB-7-1	Mixed: gray, FLY ASH, fine, moist; and tan orange, SILT, moist
1.5-2			Tan, SILT, moist, high mica content
2-4			Tan orange, SILT, moist, mica
4-9	6	P26SB-7-2	Gray, FLY ASH, fine, moist
9-10			Red orange tan, clayey SILT, moist, mica, spots of black
			mineralization
			Termination of boring at 10 ft bgs

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Amec Foster Wheeler Environment & Infrastructure

Boring Log

Boring/Well No.: P26SB-8	**Site Name:** U-5114 Parcel 26
Date: 5-5-17	**Location:** Huntersville, Mecklenburg Co., NC
Job No.: 1530U5114	**Sample Method:** Direct Push
Logged By: John Maas	**Drilling Method:** Direct Push
Drilling Company: Geologic Exploration	**Driller Name:** Paul McVey

Remarks: bgs=below ground surface. No PID readings collected as target constituents were metals.

Lithologic Unit Depth (ft bgs)	Sample Depth (ft bgs)	Lab Sample ID	Soil/Lithologic Description
0-0.5			Mixed: gray, FLY ASH, fine, moist; and brown, SILT, moist
0.5-1.5			Tan, SILT, moist, high mica content
1.5-2			Tan orange, SILT, moist, mica
2-8	2	P26SB-8	Gray, FLY ASH, fine, moist
8-10			Red orange tan, clayey SILT, moist, mica, spots of black
			mineralization
			Termination of boring at 10 ft bgs

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Amec Foster Wheeler Environment & Infrastructure

Boring Log

Boring/Well No.: P26SB-9	**Site Name:** U-5114 Parcel 26
Date: 5-5-17	**Location:** Huntersville, Mecklenburg Co., NC
Job No.: 1530U5114	**Sample Method:** Direct Push
Logged By: John Maas	**Drilling Method:** Direct Push
Drilling Company: Geologic Exploration	**Driller Name:** Paul McVey

Remarks: bgs=below ground surface. No PID readings collected as target constituents were metals.

Lithologic Unit Depth (ft bgs)	Sample Depth (ft bgs)	Lab Sample ID	Soil/Lithologic Description
0-0.5			Mixed: gray, FLY ASH, fine, moist; and brown, SILT, moist
0.5-1.5			Tan, SILT, moist, high mica content
1.5-2			Tan orange, SILT, moist, mica
2-8			Gray, FLY ASH, fine, moist
8-10			Red orange tan, clayey SILT, moist, mica, spots of black
			mineralization
			Termination of boring at 10 ft bgs

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Amec Foster Wheeler Environment & Infrastructure

Boring Log

Boring/Well No.: P26SB-10	**Site Name:** U-5114 Parcel 26
Date: 5-5-17	**Location:** Huntersville, Mecklenburg Co., NC
Job No.: 1530U5114	**Sample Method:** Direct Push
Logged By: John Maas	**Drilling Method:** Direct Push
Drilling Company: Geologic Exploration	**Driller Name:** Paul McVey

Remarks: bgs=below ground surface. No PID readings collected as target constituents were metals.

Lithologic Unit Depth (ft bgs)	Sample Depth (ft bgs)	Lab Sample ID	Soil/Lithologic Description
0-0.5			Mixed: gray, FLY ASH, fine, moist; and brown, SILT, moist
0.5-1.5			Tan, SILT, moist, high mica content
1.5-2			Tan orange, SILT, moist, mica
2-8	2	P26SB-10-1	Gray, FLY ASH, fine, moist
8-10	9	P26SB-10-2	Red orange tan, clayey SILT, moist, mica, spots of black
			mineralization
			Termination of boring at 10 ft bgs

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Amec Foster Wheeler Environment & Infrastructure

Boring Log

Boring/Well No.: P26SB-11	**Site Name:** U-5114 Parcel 26
Date: 5-5-17	**Location:** Huntersville, Mecklenburg Co., NC
Job No.: 1530U5114	**Sample Method:** Direct Push
Logged By: John Maas	**Drilling Method:** Direct Push
Drilling Company: Geologic Exploration	**Driller Name:** Paul McVey

Remarks: bgs=below ground surface. No PID readings collected as target constituents were metals.

Lithologic Unit Depth (ft bgs)	Sample Depth (ft bgs)	Lab Sample ID	Soil/Lithologic Description
0-2	1	P26SB-11-1	Mixed: gray, FLY ASH, fine, moist, coal fragments; and tan
			orange, SILT, moist
2-3			Tan orange, SILT, moist, mica, high mica content in upper inch
3-4	4	P26SB-11-2	Gray, FLY ASH, fine, moist
4-10			Red orange tan, clayey SILT, moist, mica, spots of black
			mineralization
			Termination of boring at 10 ft bgs

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Amec Foster Wheeler Environment & Infrastructure

Boring Log

Boring/Well No.: P26SB-12	**Site Name:** U-5114 Parcel 26
Date: 5-5-17	**Location:** Huntersville, Mecklenburg Co., NC
Job No.: 1530U5114	**Sample Method:** Direct Push
Logged By: John Maas	**Drilling Method:** Direct Push
Drilling Company: Geologic Exploration	**Driller Name:** Paul McVey

Remarks: bgs=below ground surface. No PID readings collected as target constituents were metals.

Lithologic Unit Depth (ft bgs)	Sample Depth (ft bgs)	Lab Sample ID	Soil/Lithologic Description
0-13	3	P26SB-12	Red orange tan, clayey SILT, moist, mica, spots of black
			mineralization
13-14			Tan, SAND, medium to coarse grained, possible former stream
			bed or bank
14-15			Brown and blue gray, silty CLAY, medium stiffness, organics
			Termination of boring at 15 ft bgs

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

APPENDIX C
GEOPHYSICAL REPORT

GEOPHYSICAL SURVEY

PARCEL 26 – GEOPHYSICAL INVESTIGATION TO DELINEATE BURIED ASH

NCDOT PROJECT U-5114
14013 STATESVILLE ROAD, HUNTERSVILLE, NC

MARCH 28, 2017

Report prepared for:

John Maas
Amec Foster Wheeler
2801 Yorkmont Road, Suite 100
Charlotte, NC 28208

Prepared by: _____

Eric C. Cross, P.G.
NC License #2181

Reviewed by: _____

Douglas A. Canavello, P.G.
NC License #1066

503 INDUSTRIAL AVENUE, GREENSBORO, NC 27406
P: 336.335.3174 F: 336.691.0648
C257: GEOLOGY C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
Parcel 26 – 14013 Statesville Road
Huntersville, North Carolina

Table of Contents

Figures

LIST OF ACRONYMS

CADD .....Computer Assisted Drafting and Design
DF .....Dual Frequency
EM.....Electromagnetic
GPR.....Ground Penetrating Radar
GPS .....Global Positioning System
NCDOT.....North Carolina Department of Transportation
ROW .....Right-of-Way
UST .....Underground Storage Tank

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Amec Foster Wheeler (AMECFW) at Parcel 26, as part of the North Carolina Department of Transportation (NCDOT) Project U-5114. AMECFW directed Pyramid as to the geophysical survey boundaries, which were designed to extend from the existing edge of pavement across the location of a proposed drainage feature and its associated easements. Historical research suggested that a large volume of fly ash had been deposited in this area. The purpose of the geophysical investigation was to locate and delineate the horizontal extents of the buried ash deposit (if present) across the portion of the property containing the proposed drainage feature and easements.

Geophysical Results:

- The EM31 mapping was successful in delineating a zone of high conductivity soils across the site.
- Analysis of conductivity trends resulted in the interpretation that buried ash was represented by conductivity values greater than 55 mS/m.
- Using a threshold of 55 mS/m, Pyramid estimates that the buried ash covers an area of approximately 2.5 acres at the parcel. The buried ash may also extend further south into the adjacent property.
- An overlay of the proposed NCDOT drainage feature suggests that buried ash will be encountered during excavation activities, depending on the total depth of excavation and depth of the ash.
- It is recommended that invasive testing (i.e. soil borings) be performed to depths of at least 20 feet across the property within the various ranges of conductivities to verify the threshold that represents the boundary between ash and native soil. The geophysical results can then be used to extrapolate this boundary around the perimeter of the entire site with greater accuracy.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Amec Foster Wheeler (AMECFW) at Parcel 26, as part of the North Carolina Department of Transportation (NCDOT) Project U-5114. AMECFW directed Pyramid as to the geophysical survey boundaries, which were designed to extend from the existing edge of pavement across the location of a proposed drainage feature and its associated easements. Historical research suggested that a large volume of fly ash had been deposited in this area. The purpose of the geophysical investigation was to locate and delineate the horizontal extents of the buried ash deposit (if present) across the portion of the property containing the proposed drainage feature and easements.

The property was an undeveloped drainage basin bounded on the south side by a car dealership, on the east side by Statesville Road, and on the north and west sides by undeveloped land. It should be noted that a row of vehicles was present along the south side of the survey boundary. The metal vehicles can cause localized interference during geophysical data collection. Dense vegetation on the west side of the survey boundary dictated where the geophysical survey lines were terminated.

Figure 1 provides a map showing the actual geophysical survey boundary, as well as the track of the geophysical instrument recorded during the survey. The track of the survey was logged using the GPS which is discussed below.

FIELD METHODOLOGY

Pyramid utilized electromagnetic geophysical methods to delineate the horizontal extents of ash at the subject property. Specifically, Pyramid utilized a Geonics EM31-MK1 (EM 31) ground conductivity meter which measures apparent ground conductivity and metal detection down to a maximum depth of 17 feet below ground surface. The EM31 instrument was coupled to a Trimble AG-114 GPS unit to record the position of the EM data to sub-meter accuracy during the survey.

The EM31 ground conductivity meter measures apparent ground conductivity (quadrature phase) and metal detection (in-phase) conditions down to a maximum depth of 15 to 17 feet below ground surface. The EM31 method determines electrical properties of the earth materials by inducing electromagnetic currents in the ground and measuring the secondary

magnetic field produced by these currents. An alternating current is generated in the transmitter coil located at one end of the instrument. The secondary magnetic field, which is produced by currents through the earth, induces a corresponding alternating current in the receiver coil located at the opposite end of the instrument. The instrument runs at an operating frequency of 9.8 kHz.

After compensating for the primary field, which can be computed from the relative positions and orientations of both coils, the magnitude and relative phase of the secondary field are measured. These measurements are then converted to components of in-phase and 90 degrees out-of-phase (quadrature) with the transmitted field. The out-of-phase or quadrature component, using certain simple assumptions, is converted to a measurement of apparent ground conductivity in millisiemens per meter (mS/m). These conductivity values can be used to infer changes related to anomalous subsurface deposits such as fly ash. The in-phase component responds to high conductive areas (above 100 mS/m) or to areas containing metallic objects and debris and the values are expressed in terms of relative units or parts per thousand. Therefore, the in-phase data can be used to identify areas that may contain buried metallic material across areas recording lower conductivity values.

In accordance with Pyramid's proposal submitted to AMECFW, a series of transects were performed using the EM31 instrument in the east-west direction spaced 8 feet apart within the directed survey area spanning across the proposed NCDOT drainage feature. Subsequent to the initial data collection, Pyramid collected additional reconnaissance EM data along transects at a coarser spacing north of the proposed survey area to provide full coverage across the entire parcel (see **Figure 1**). The locations of the 8-foot transects were measured and marked in the field with pin flags prior to data collection. The reconnaissance transects were collected at evenly spaced intervals without using a formal measuring technique.

Following the field survey, data were downloaded and processed using TrackMaker31 EM processing software, and a contour map of conductivity was generated using Surfer 11.0 contouring software (see **Figure 2**).

DISCUSSION OF RESULTS

A contour map of the EM31 quadrature results (conductivity) is presented in **Figure 2**. It was expected that the presence of buried ash would result in a significant increase in ground conductivity relative to the surrounding native soil. The figure clearly shows a large region of increased conductivity spanning the majority of the survey area, with the highest values on the west and southwest portions of the parcel. These locations are interpreted to contain the thickest deposit of ash, with the ash deposit becoming thinner in all directions moving away from the high points. Soil borings have not yet been performed at the site. Boring data would allow Pyramid to determine the exact conductivity value that represents the boundary between native soil and ash. However, the trend observed in the geophysical data suggests that there is a sharp decrease in conductivity surrounding the ash deposit at a value of approximately 55 mS/m.

The relative consistency of soil conductivity lower than 55 mS/m around the perimeter of the site indicates that this value can be used as an approximate threshold to distinguish between native soil and the ash deposit. The dashed line on **Figure 2** uses this threshold to provide an estimated boundary of the ash deposit at Parcel 26. Using this boundary, the survey results suggest that the limits of the ash deposit extend to the edges of the east, north and west sides of the property. This interpretation results in a total area of approximately 2.5 acres containing buried ash within Parcel 26. The results also suggest that the ash deposit may extend further south into the adjacent car dealership property; however, the row of vehicles along the south side of the survey area also resulted in a localized increase in conductivity values. This interference complicates any interpretations that can be made associated with the southern boundary of the ash deposit.

Figure 3 provides a view of the interpreted ash deposit using a different color scale to better differentiate the boundary between the ash and native soil. This figure also provides an overlay of the proposed NCDOT drainage feature and easements onto the conductivity results. It is apparent that, based on the interpretations described above, the NCDOT would likely encounter ash during the excavation of the drainage ditch depending on the depth of the ash deposit relative to the depth of excavation.

In summary, the EM31 mapping at Parcel 26 site was successful in delineating a clear zone of high conductivity soils across the site that are likely associated with buried ash. The thickest portions of ash are interpreted to be on the west and southwest sides of the property. The ash is interpreted to extend to a lesser degree across the majority of the

property; therefore, soil boring data would help to extract a specific conductivity threshold, allowing for a more accurate boundary interpretation.

SUMMARY & CONCLUSIONS

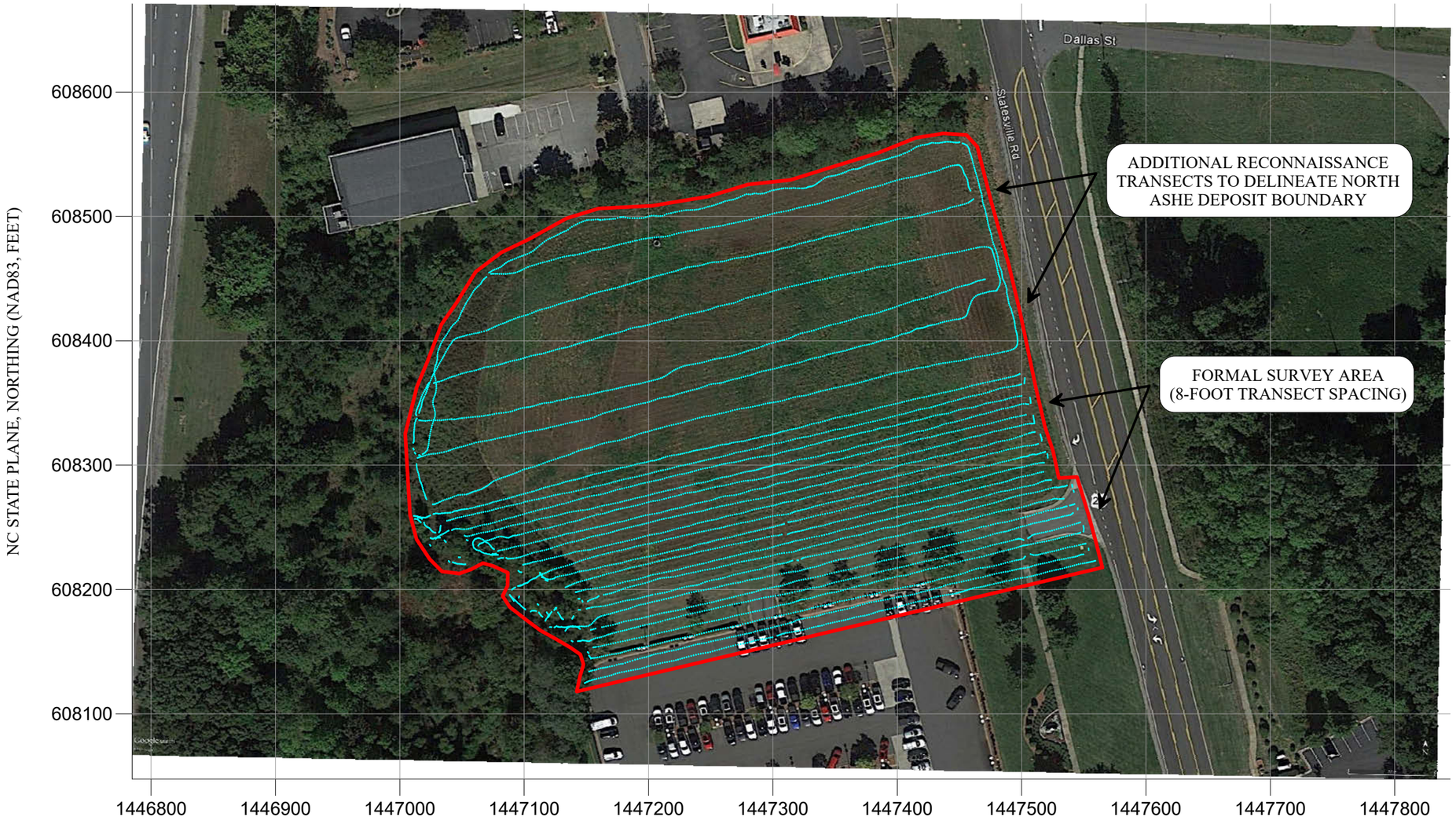
Pyramid's evaluation of the geophysical data collected at Parcel 26 (NCDOT Project U-5114), provides the following summary and conclusions:

- The EM31 mapping was successful in delineating a zone of high conductivity soils across the site.
- Analysis of conductivity trends resulted in the interpretation that buried ash was represented by conductivity values greater than 55 mS/m.
- Using a threshold of 55 mS/m, Pyramid estimates that the buried ash covers an area of approximately 2.5 acres at the parcel. The buried ash may also extend further south into the adjacent property.
- An overlay of the proposed NCDOT drainage feature suggests that buried ash will be encountered during excavation activities, depending on the total depth of excavation and depth of the ash.
- It is recommended that invasive testing (i.e. soil borings) be performed to depths of at least 20 feet across the property within the various ranges of conductivities to verify the threshold that represents the boundary between ash and native soil. The geophysical results can then be used to extrapolate this boundary around the perimeter of the entire site with greater accuracy.

LIMITATIONS

Geophysical surveys have been performed and this report prepared for AMECFW in accordance with generally accepted guidelines for EM31 surveys. It is generally recognized that the results of the geophysical surveys are non-unique and may not represent actual subsurface conditions. The EM31 results obtained for this project have been used to delineate the suspected ash deposit. However, some of the ash may not be detected by the EM31 investigation. Furthermore, some EM31 apparent conductivity anomalies may be in response to other hydrologic or geologic factors. The EM31 data is a function of the average conditions within the upper 15-17 feet of soil directly underlying the instrument at the time of data collection.

PARCEL 26 - EM31 GEOPHYSICAL SURVEY BOUNDARIES AND INSTRUMENT TRACK



View of Survey Area
(Facing Approximately West)

View of Survey Area
(Facing Approximately North)

N

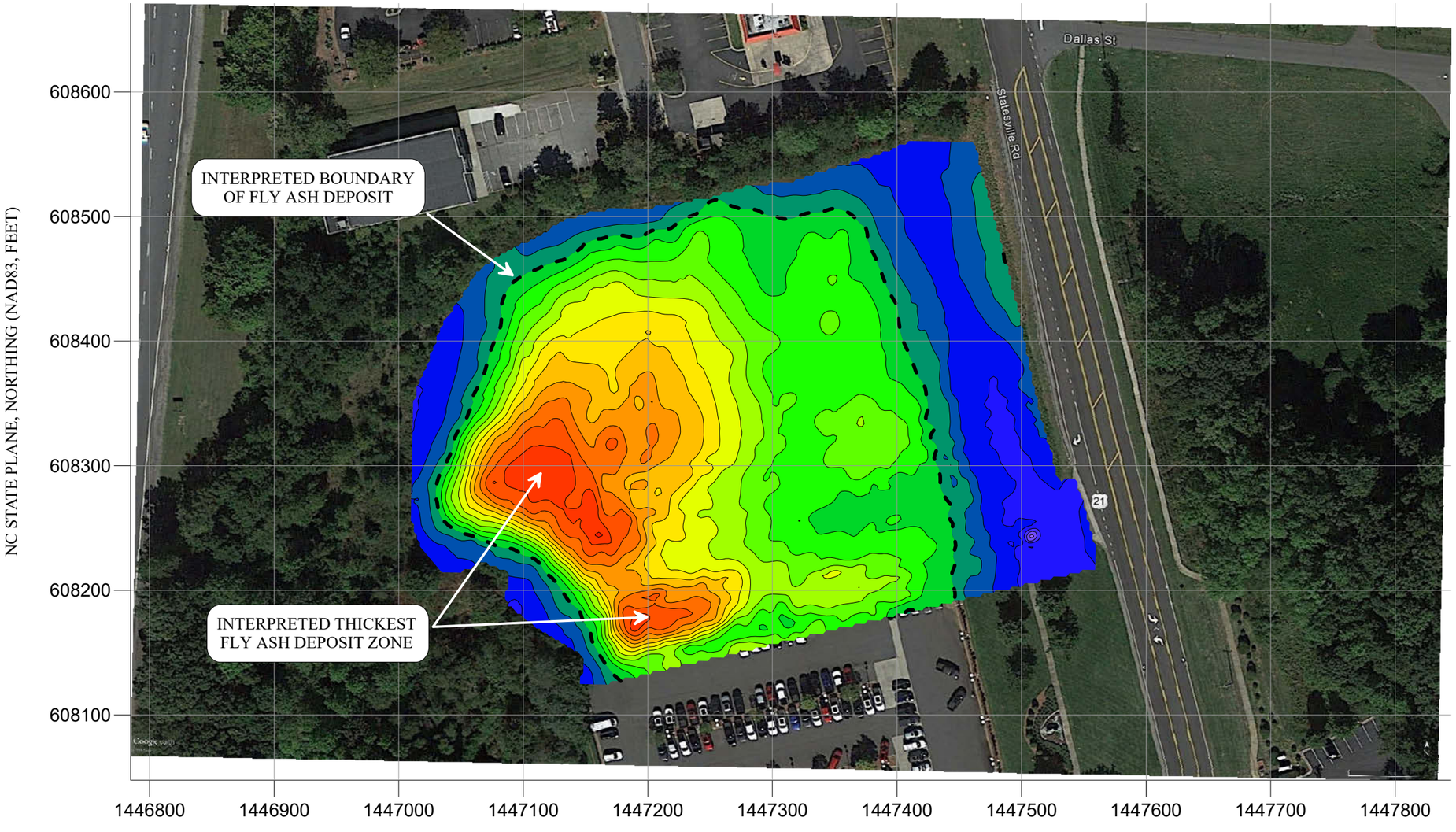
TITLE	GEOPHYSICAL SURVEY BOUNDARIES, INSTRUMENT TRACK AND SITE PHOTOGRAPHS
PROJECT	PARCEL 26 FLY ASH DELINEATION NCDOT PROJECT U-5114 HUNTERSVILLE, NC

Pyramid Geophysics

503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE	3/27/2017	CLIENT	AMECFW
PYRAMID PROJECT #:	2017-081		**FIGURE 1**

PARCEL 26 - EM31 CONDUCTIVITY CONTOUR MAP



INTERPRETED LOCATION OF FLY ASH DEPOSIT EVIDENCED BY INCREASED CONDUCTIVITY VALUES (mS/m)

The contour plot shows the quadrature phase results of the EM31 instrument in millisiemens per meter (mS/m). The EM31 data were collected on March 24, 2017, using a Geonics EM31 MK-1 instrument coupled to a Trimble AG-114 GPS antenna.

EM31 Quadrature Phase Response
(millisiemens per meter)

170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10 -20

Higher conductivity values associated with buried ash deposit

Low conductivity values associated with native soil

ESTIMATED BOUNDARY OF BURIED WASTE

N

TITLE	EM31 CONDUCTIVITY RESULTS AND INTERPRETED BOUNDARY OF BURIED FLY ASH DEPOSIT
PROJECT	PARCEL 26 FLY ASH DELINEATION NCDOT PROJECT U-5114 HUNTERSVILLE, NC

Pyramid Geophysics

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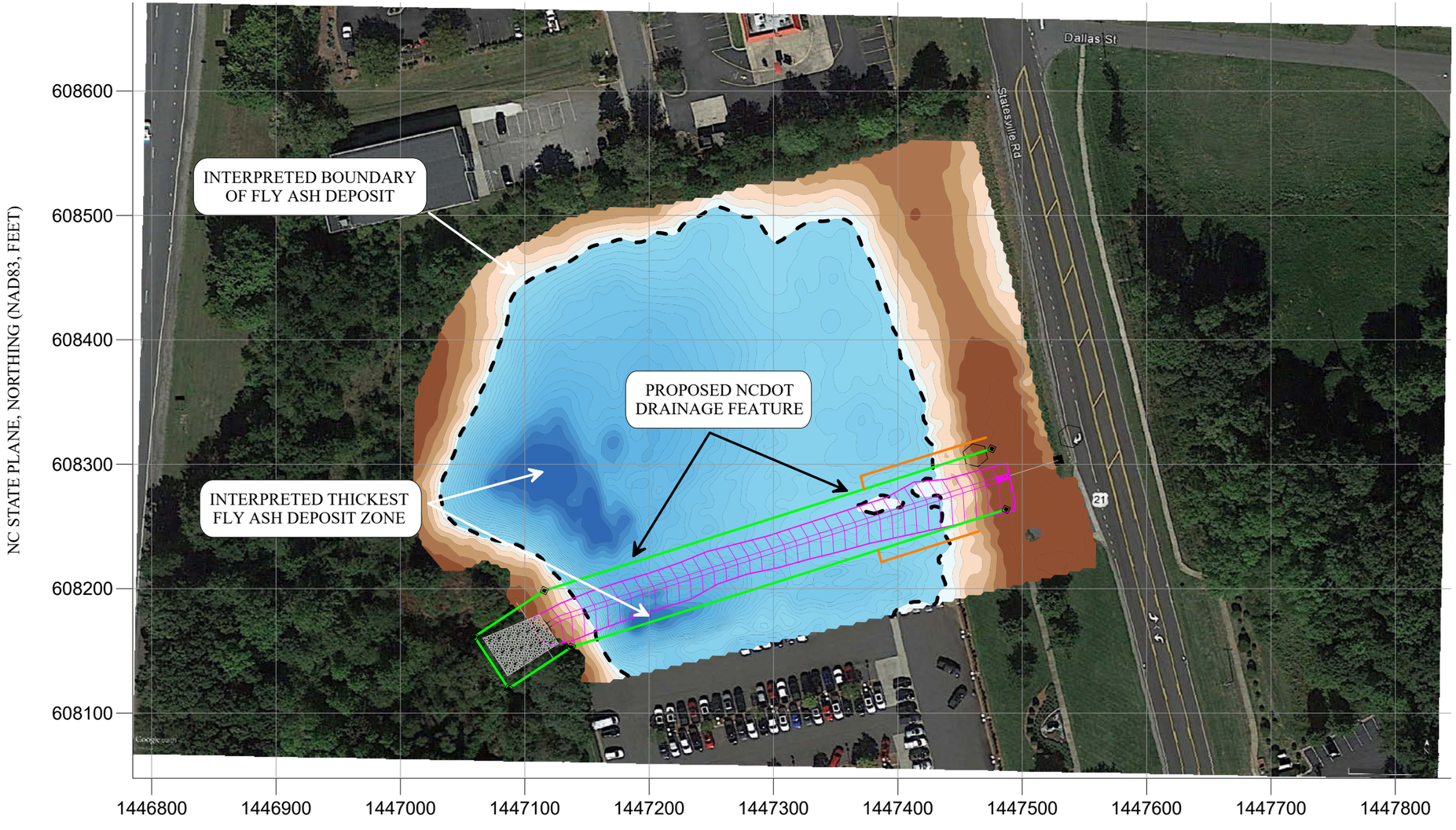
License # C1251 Eng. / License # C257 Geology

DATE	3/27/2017	CLIENT	AMECFW
PYRAMID PROJECT #:	2017-081		**FIGURE 2**

PARCEL 26 - INTERPRETED LIMITS OF ASH WITH NCDOT DRAINAGE OVERLAY



INTERPRETED LOCATION OF FLY ASH DEPOSIT EVIDENCED BY INCREASED CONDUCTIVITY VALUES (mS/m)

An interpreted conductivity value of 55 mS/m was used as a threshold between native soil and buried ash. This threshold can be verfied with invasive testing such as soil borings to depths of approximately 20 feet below ground surface.

EM31 Quadrature Phase Response
(millisiemens per meter)

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10

ASH SOIL

55 mS/m threshold used as boundary between ash and soil

- NCDOT TEMPORARY CONSTRUCTION EASEMENT
- NCDOT PERMANENT DRAINAGE EASEMENT
- NCDOT PROPOSED HYDRAULIC DITCH
- INTERPRETED BURIED ASH BOUNDARY

N

TITLE: INTERPRETED BOUNDARY OF BURIED FLY ASH DEPOSIT WITH NCDOT DRAINAGE OVERLAY

PROJECT: PARCEL 26 FLY ASH DELINEATION
NCDOT PROJECT U-5114
HUNTERSVILLE, NC

Pyramid Geophysics
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(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE: 3/27/2017

CLIENT: AMECFW

PYRAMID PROJECT #: 2017-081

FIGURE 3

APPENDIX D
LABORATORY ANALYTICAL RESULTS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

May 12, 2017

Chemical Testing Engineer
NCDOT
Materials & Tests Unit
1801 Blue Ridge Road
Raleigh, NC 27607

RE: Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Dear Chemical Engineer:
Enclosed are the analytical results for sample(s) received by the laboratory on May 05, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE ANALYTE COUNT

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92339624001	**P26SB-1-1**	EPA 6010	SER	7	PASI-A
		EPA 7471	KAL	1	PASI-A
		ASTM D2974-87	KDF	1	PASI-C
92339624002	**P26SB-1-2**	EPA 6010	SER	7	PASI-A
		EPA 7471	KAL	1	PASI-A
		ASTM D2974-87	KDF	1	PASI-C
92339624003	**P26SB-2**	EPA 6010	SER	7	PASI-A
		EPA 7471	KAL	1	PASI-A
		ASTM D2974-87	KDF	1	PASI-C
92339624004	**P26SB-3-1**	EPA 6010	SER	7	PASI-A
		EPA 7471	KAL	1	PASI-A
		ASTM D2974-87	KDF	1	PASI-C
92339624005	**P26SB-3-2**	EPA 6010	SER	7	PASI-A
		EPA 7471	KAL	1	PASI-A
		ASTM D2974-87	KDF	1	PASI-C
92339624006	**P26SB-4**	EPA 6010	SER	7	PASI-A
		EPA 7471	KAL	1	PASI-A
		ASTM D2974-87	KDF	1	PASI-C
92339624007	**P26SB-6**	EPA 6010	SER	7	PASI-A
		EPA 6010	SH1	7	PASI-A
		EPA 7470	KAL	1	PASI-A
		EPA 7471	KAL	1	PASI-A
		ASTM D2974-87	KDF	1	PASI-C
92339624008	**P26SB-7-1**	EPA 6010	SER	7	PASI-A
		EPA 7471	KAL	1	PASI-A
		ASTM D2974-87	KDF	1	PASI-C
92339624009	**P26SB-7-2**	EPA 6010	CDF	7	PASI-A
		EPA 7471	KAL	1	PASI-A
		ASTM D2974-87	KDF	1	PASI-C
92339624010	**P26SB-8**	EPA 6010	CDF	7	PASI-A
		EPA 7471	KAL	1	PASI-A
		ASTM D2974-87	KDF	1	PASI-C
92339624011	**P26SB-10-1**	EPA 6010	SH1	7	PASI-A
		EPA 6010	SH1	7	PASI-A
		EPA 7470	KAL	1	PASI-A
		EPA 7471	KAL	1	PASI-A
		ASTM D2974-87	KDF	1	PASI-C

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SAMPLE ANALYTE COUNT

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92339624012	**P26SB-10-2**	EPA 6010	SH1	7	PASI-A
		EPA 7471	KAL	1	PASI-A
		ASTM D2974-87	KDF	1	PASI-C
92339624013	**P26SB-11-1**	EPA 6010	SH1	7	PASI-A
		EPA 7471	KAL	1	PASI-A
		ASTM D2974-87	KDF	1	PASI-C
92339624014	**P26SB-11-2**	EPA 6010	SH1	7	PASI-A
		EPA 7471	KAL	1	PASI-A
		ASTM D2974-87	KDF	1	PASI-C
92339624015	**P26SB-12**	EPA 6010	SH1	7	PASI-A
		EPA 7471	KAL	1	PASI-A
		ASTM D2974-87	KDF	1	PASI-C
92339624016	**P26-Surface Deposit**	EPA 6010	CDF	7	PASI-A
		EPA 7471	KAL	1	PASI-A
		ASTM D2974-87	KDF	1	PASI-C

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PROJECT NARRATIVE

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Method: **EPA 6010**
Description: 6010 MET ICP
Client: NCDOT West Central
Date: May 12, 2017

General Information:
16 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

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

Sample Preparation:
The samples were prepared in accordance with EPA 3050 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

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

QC Batch: 359671

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92339591003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1994602)
  - Lead
- MSD (Lab ID: 1994603)
  - Lead

R1: RPD value was outside control limits.

- MSD (Lab ID: 1994603)
  - Arsenic
  - Cadmium
  - Selenium
  - Silver

Additional Comments:

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PROJECT NARRATIVE

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Method: **EPA 6010**
Description: 6010 MET ICP, TCLP
Client: NCDOT West Central
Date: May 12, 2017

General Information:
2 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

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

Sample Preparation:
The samples were prepared in accordance with EPA 3010A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

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

Additional Comments:

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PROJECT NARRATIVE

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Method: **EPA 7470**
Description: 7470 Mercury, TCLP
Client: NCDOT West Central
Date: May 12, 2017

General Information:
2 samples were analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

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

Sample Preparation:
The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

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

Additional Comments:

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PROJECT NARRATIVE

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Method: **EPA 7471**
Description: 7471 Mercury
Client: NCDOT West Central
Date: May 12, 2017

General Information:
16 samples were analyzed for EPA 7471. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

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

Sample Preparation:
The samples were prepared in accordance with EPA 7471 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

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

QC Batch: 359939

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92339624001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 1996157)
  - Mercury

R1: RPD value was outside control limits.

- MSD (Lab ID: 1996157)
  - Mercury

QC Batch: 359941

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92339552001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1996160)
  - Mercury

R1: RPD value was outside control limits.

- MSD (Lab ID: 1996161)
  - Mercury

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PROJECT NARRATIVE

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Method: **EPA 7471**
Description: 7471 Mercury
Client: NCDOT West Central
Date: May 12, 2017

Additional Comments:

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

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ANALYTICAL RESULTS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Sample: P26SB-1-1 **Lab ID: 92339624001** Collected: 05/05/17 12:50 Received: 05/05/17 15:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**39.0**	mg/kg	0.98	1	05/09/17 14:55	05/10/17 23:45	7440-38-2	
Barium	**203**	mg/kg	0.49	1	05/09/17 14:55	05/10/17 23:45	7440-39-3	
Cadmium	**0.29**	mg/kg	0.098	1	05/09/17 14:55	05/10/17 23:45	7440-43-9	
Chromium	**21.5**	mg/kg	0.49	1	05/09/17 14:55	05/10/17 23:45	7440-47-3	
Lead	**18.8**	mg/kg	0.49	1	05/09/17 14:55	05/10/17 23:45	7439-92-1	
Selenium	**8.6**	mg/kg	0.98	1	05/09/17 14:55	05/10/17 23:45	7782-49-2	
Silver	ND	mg/kg	0.49	1	05/09/17 14:55	05/10/17 23:45	7440-22-4	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.096**	mg/kg	0.0064	1	05/10/17 23:45	05/11/17 18:19	7439-97-6	M1,R1
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**23.8**	%	0.10	1		05/08/17 09:44		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Sample: P26SB-1-2 **Lab ID: 92339624002** Collected: 05/05/17 12:55 Received: 05/05/17 15:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**3.8**	mg/kg	1.0	1	05/09/17 14:55	05/10/17 23:49	7440-38-2	
Barium	**84.4**	mg/kg	0.50	1	05/09/17 14:55	05/10/17 23:49	7440-39-3	
Cadmium	**0.99**	mg/kg	0.10	1	05/09/17 14:55	05/10/17 23:49	7440-43-9	
Chromium	**28.5**	mg/kg	0.50	1	05/09/17 14:55	05/10/17 23:49	7440-47-3	
Lead	**8.8**	mg/kg	0.50	1	05/09/17 14:55	05/10/17 23:49	7439-92-1	
Selenium	ND	mg/kg	1.0	1	05/09/17 14:55	05/10/17 23:49	7782-49-2	
Silver	ND	mg/kg	0.50	1	05/09/17 14:55	05/10/17 23:49	7440-22-4	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.024**	mg/kg	0.0058	1	05/10/17 23:45	05/11/17 18:22	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**21.1**	%	0.10	1		05/08/17 09:44		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Sample: P26SB-2 **Lab ID: 92339624003** Collected: 05/05/17 13:00 Received: 05/05/17 15:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**49.5**	mg/kg	0.77	1	05/09/17 14:55	05/10/17 23:54	7440-38-2	
Barium	**260**	mg/kg	0.39	1	05/09/17 14:55	05/10/17 23:54	7440-39-3	
Cadmium	**0.28**	mg/kg	0.077	1	05/09/17 14:55	05/10/17 23:54	7440-43-9	
Chromium	**21.9**	mg/kg	0.39	1	05/09/17 14:55	05/10/17 23:54	7440-47-3	
Lead	**20.9**	mg/kg	0.39	1	05/09/17 14:55	05/10/17 23:54	7439-92-1	
Selenium	**12.8**	mg/kg	0.77	1	05/09/17 14:55	05/10/17 23:54	7782-49-2	
Silver	ND	mg/kg	0.39	1	05/09/17 14:55	05/10/17 23:54	7440-22-4	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.12**	mg/kg	0.0045	1	05/10/17 23:45	05/11/17 18:24	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**26.6**	%	0.10	1		05/08/17 09:44		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Sample: P26SB-3-1 **Lab ID: 92339624004** Collected: 05/05/17 13:03 Received: 05/05/17 15:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**24.6**	mg/kg	0.90	1	05/09/17 14:55	05/10/17 23:58	7440-38-2	
Barium	**186**	mg/kg	0.45	1	05/09/17 14:55	05/10/17 23:58	7440-39-3	
Cadmium	**0.54**	mg/kg	0.090	1	05/09/17 14:55	05/10/17 23:58	7440-43-9	
Chromium	**18.6**	mg/kg	0.45	1	05/09/17 14:55	05/10/17 23:58	7440-47-3	
Lead	**10.9**	mg/kg	0.45	1	05/09/17 14:55	05/10/17 23:58	7439-92-1	
Selenium	**2.9**	mg/kg	0.90	1	05/09/17 14:55	05/10/17 23:58	7782-49-2	
Silver	ND	mg/kg	0.45	1	05/09/17 14:55	05/10/17 23:58	7440-22-4	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.15**	mg/kg	0.0059	1	05/10/17 23:45	05/11/17 18:26	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**23.2**	%	0.10	1		05/08/17 09:44		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Sample: P26SB-3-2 **Lab ID: 92339624005** Collected: 05/05/17 13:05 Received: 05/05/17 15:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**54.9**	mg/kg	1.1	1	05/09/17 14:55	05/11/17 00:02	7440-38-2	
Barium	**209**	mg/kg	0.54	1	05/09/17 14:55	05/11/17 00:02	7440-39-3	
Cadmium	**0.46**	mg/kg	0.11	1	05/09/17 14:55	05/11/17 00:02	7440-43-9	
Chromium	**23.4**	mg/kg	0.54	1	05/09/17 14:55	05/11/17 00:02	7440-47-3	
Lead	**23.4**	mg/kg	0.54	1	05/09/17 14:55	05/11/17 00:02	7439-92-1	
Selenium	**10.3**	mg/kg	1.1	1	05/09/17 14:55	05/11/17 00:02	7782-49-2	
Silver	ND	mg/kg	0.54	1	05/09/17 14:55	05/11/17 00:02	7440-22-4	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.096**	mg/kg	0.0045	1	05/10/17 23:45	05/11/17 18:29	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**19.9**	%	0.10	1		05/08/17 09:45		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Sample: P26SB-4 **Lab ID: 92339624006** Collected: 05/05/17 13:15 Received: 05/05/17 15:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**51.9**	mg/kg	0.82	1	05/09/17 14:55	05/11/17 00:07	7440-38-2	
Barium	**282**	mg/kg	0.41	1	05/09/17 14:55	05/11/17 00:07	7440-39-3	
Cadmium	**0.32**	mg/kg	0.082	1	05/09/17 14:55	05/11/17 00:07	7440-43-9	
Chromium	**23.7**	mg/kg	0.41	1	05/09/17 14:55	05/11/17 00:07	7440-47-3	
Lead	**23.3**	mg/kg	0.41	1	05/09/17 14:55	05/11/17 00:07	7439-92-1	
Selenium	**14.5**	mg/kg	0.82	1	05/09/17 14:55	05/11/17 00:07	7782-49-2	
Silver	ND	mg/kg	0.41	1	05/09/17 14:55	05/11/17 00:07	7440-22-4	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.11**	mg/kg	0.0062	2	05/10/17 23:45	05/11/17 18:39	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**23.7**	%	0.10	1		05/08/17 09:45		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Sample: P26SB-6 **Lab ID: 92339624007** Collected: 05/05/17 13:20 Received: 05/05/17 15:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**69.8**	mg/kg	0.82	1	05/09/17 14:55	05/11/17 00:11	7440-38-2	
Barium	**373**	mg/kg	0.41	1	05/09/17 14:55	05/11/17 00:11	7440-39-3	
Cadmium	**0.34**	mg/kg	0.082	1	05/09/17 14:55	05/11/17 00:11	7440-43-9	
Chromium	**24.7**	mg/kg	0.41	1	05/09/17 14:55	05/11/17 00:11	7440-47-3	
Lead	**24.8**	mg/kg	0.41	1	05/09/17 14:55	05/11/17 00:11	7439-92-1	
Selenium	**14.8**	mg/kg	0.82	1	05/09/17 14:55	05/11/17 00:11	7782-49-2	
Silver	ND	mg/kg	0.41	1	05/09/17 14:55	05/11/17 00:11	7440-22-4	
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010A Leachate Method/Date: EPA 1311; 05/08/17 17:15 Initial pH: 7.13; Final pH: 4.93							
Arsenic	ND	mg/L	0.050	1	05/09/17 12:30	05/09/17 20:42	7440-38-2	
Barium	**0.30**	mg/L	0.25	1	05/09/17 12:30	05/09/17 20:42	7440-39-3	
Cadmium	ND	mg/L	0.0050	1	05/09/17 12:30	05/09/17 20:42	7440-43-9	
Chromium	ND	mg/L	0.050	1	05/09/17 12:30	05/09/17 20:42	7440-47-3	
Lead	ND	mg/L	0.025	1	05/09/17 12:30	05/09/17 20:42	7439-92-1	
Selenium	ND	mg/L	0.10	1	05/09/17 12:30	05/09/17 20:42	7782-49-2	
Silver	ND	mg/L	0.025	1	05/09/17 12:30	05/09/17 20:42	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Leachate Method/Date: EPA 1311; 05/08/17 17:15 Initial pH: 7.13; Final pH: 4.93							
Mercury	ND	mg/L	0.00020	1	05/10/17 12:50	05/11/17 00:24	7439-97-6	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.12**	mg/kg	0.0071	2	05/10/17 23:45	05/11/17 16:06	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**21.8**	%	0.10	1		05/08/17 09:45		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Sample: P26SB-7-1 **Lab ID: 92339624008** Collected: 05/05/17 13:30 Received: 05/05/17 15:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**26.3**	mg/kg	1.1	1	05/09/17 14:55	05/11/17 00:16	7440-38-2	
Barium	**186**	mg/kg	0.56	1	05/09/17 14:55	05/11/17 00:16	7440-39-3	
Cadmium	**0.57**	mg/kg	0.11	1	05/09/17 14:55	05/11/17 00:16	7440-43-9	
Chromium	**20.9**	mg/kg	0.56	1	05/09/17 14:55	05/11/17 00:16	7440-47-3	
Lead	**12.9**	mg/kg	0.56	1	05/09/17 14:55	05/11/17 00:16	7439-92-1	
Selenium	**4.0**	mg/kg	1.1	1	05/09/17 14:55	05/11/17 00:16	7782-49-2	
Silver	ND	mg/kg	0.56	1	05/09/17 14:55	05/11/17 00:16	7440-22-4	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.045**	mg/kg	0.0036	1	05/10/17 23:45	05/11/17 15:36	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**22.4**	%	0.10	1		05/08/17 09:45		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Sample: P26SB-7-2 **Lab ID: 92339624009** Collected: 05/05/17 13:32 Received: 05/05/17 15:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**75.1**	mg/kg	1.8	2	05/10/17 13:40	05/11/17 17:19	7440-38-2	
Barium	**199**	mg/kg	0.89	2	05/10/17 13:40	05/11/17 17:19	7440-39-3	
Cadmium	**0.71**	mg/kg	0.18	2	05/10/17 13:40	05/11/17 17:19	7440-43-9	
Chromium	**28.8**	mg/kg	0.89	2	05/10/17 13:40	05/11/17 17:19	7440-47-3	
Lead	**26.6**	mg/kg	0.89	2	05/10/17 13:40	05/11/17 17:19	7439-92-1	
Selenium	**15.3**	mg/kg	1.8	2	05/10/17 13:40	05/11/17 17:19	7782-49-2	
Silver	ND	mg/kg	0.89	2	05/10/17 13:40	05/11/17 17:19	7440-22-4	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.13**	mg/kg	0.0054	1	05/10/17 23:45	05/11/17 15:38	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**20.0**	%	0.10	1		05/08/17 09:45		

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ANALYTICAL RESULTS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Sample: P26SB-8 **Lab ID: 92339624010** Collected: 05/05/17 13:40 Received: 05/05/17 15:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**74.7**	mg/kg	8.1	10	05/10/17 13:40	05/11/17 17:22	7440-38-2	
Barium	**381**	mg/kg	4.0	10	05/10/17 13:40	05/11/17 17:22	7440-39-3	
Cadmium	ND	mg/kg	0.81	10	05/10/17 13:40	05/11/17 17:22	7440-43-9	
Chromium	**29.6**	mg/kg	4.0	10	05/10/17 13:40	05/11/17 17:22	7440-47-3	
Lead	**28.3**	mg/kg	4.0	10	05/10/17 13:40	05/11/17 17:22	7439-92-1	
Selenium	**19.0**	mg/kg	8.1	10	05/10/17 13:40	05/11/17 17:22	7782-49-2	
Silver	ND	mg/kg	4.0	10	05/10/17 13:40	05/11/17 17:22	7440-22-4	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.14**	mg/kg	0.0080	2	05/10/17 23:45	05/11/17 16:08	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**26.2**	%	0.10	1		05/08/17 09:45		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Sample: P26SB-10-1 **Lab ID: 92339624011** Collected: 05/05/17 13:46 Received: 05/05/17 15:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**49.6**	mg/kg	1.2	1	05/10/17 13:40	05/11/17 03:33	7440-38-2	
Barium	**276**	mg/kg	0.61	1	05/10/17 13:40	05/11/17 03:33	7440-39-3	
Cadmium	**0.61**	mg/kg	0.12	1	05/10/17 13:40	05/11/17 03:33	7440-43-9	
Chromium	**24.8**	mg/kg	0.61	1	05/10/17 13:40	05/11/17 03:33	7440-47-3	
Lead	**22.3**	mg/kg	0.61	1	05/10/17 13:40	05/11/17 03:33	7439-92-1	
Selenium	**14.5**	mg/kg	1.2	1	05/10/17 13:40	05/11/17 03:33	7782-49-2	
Silver	ND	mg/kg	0.61	1	05/10/17 13:40	05/11/17 03:33	7440-22-4	
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010A Leachate Method/Date: EPA 1311; 05/08/17 17:15 Initial pH: 8.42; Final pH: 4.98							
Arsenic	**0.14**	mg/L	0.050	1	05/09/17 12:30	05/09/17 20:46	7440-38-2	
Barium	**2.4**	mg/L	0.25	1	05/09/17 12:30	05/09/17 20:46	7440-39-3	
Cadmium	ND	mg/L	0.0050	1	05/09/17 12:30	05/09/17 20:46	7440-43-9	
Chromium	ND	mg/L	0.050	1	05/09/17 12:30	05/09/17 20:46	7440-47-3	
Lead	ND	mg/L	0.025	1	05/09/17 12:30	05/09/17 20:46	7439-92-1	
Selenium	**0.39**	mg/L	0.10	1	05/09/17 12:30	05/09/17 20:46	7782-49-2	
Silver	ND	mg/L	0.025	1	05/09/17 12:30	05/09/17 20:46	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Leachate Method/Date: EPA 1311; 05/08/17 17:15 Initial pH: 8.42; Final pH: 4.98							
Mercury	ND	mg/L	0.00020	1	05/10/17 12:50	05/11/17 00:27	7439-97-6	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.19**	mg/kg	0.0085	2	05/10/17 23:45	05/11/17 16:10	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**26.0**	%	0.10	1		05/08/17 09:45		

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ANALYTICAL RESULTS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Sample: P26SB-10-2 **Lab ID: 92339624012** Collected: 05/05/17 13:44 Received: 05/05/17 15:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	ND	mg/kg	0.86	1	05/10/17 13:40	05/11/17 03:36	7440-38-2	
Barium	**29.3**	mg/kg	0.43	1	05/10/17 13:40	05/11/17 03:36	7440-39-3	
Cadmium	ND	mg/kg	0.086	1	05/10/17 13:40	05/11/17 03:36	7440-43-9	
Chromium	**22.3**	mg/kg	0.43	1	05/10/17 13:40	05/11/17 03:36	7440-47-3	
Lead	**9.4**	mg/kg	0.43	1	05/10/17 13:40	05/11/17 03:36	7439-92-1	
Selenium	**2.2**	mg/kg	0.86	1	05/10/17 13:40	05/11/17 03:36	7782-49-2	
Silver	**0.49**	mg/kg	0.43	1	05/10/17 13:40	05/11/17 03:36	7440-22-4	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.0069**	mg/kg	0.0051	1	05/10/17 23:45	05/11/17 15:45	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**25.3**	%	0.10	1		05/08/17 09:45		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Sample: P26SB-11-1 **Lab ID: 92339624013** Collected: 05/05/17 13:50 Received: 05/05/17 15:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**24.3**	mg/kg	1.2	1	05/10/17 13:40	05/11/17 03:49	7440-38-2	
Barium	**180**	mg/kg	0.59	1	05/10/17 13:40	05/11/17 03:49	7440-39-3	
Cadmium	**0.23**	mg/kg	0.12	1	05/10/17 13:40	05/11/17 03:49	7440-43-9	
Chromium	**22.2**	mg/kg	0.59	1	05/10/17 13:40	05/11/17 03:49	7440-47-3	
Lead	**16.0**	mg/kg	0.59	1	05/10/17 13:40	05/11/17 03:49	7439-92-1	
Selenium	**4.0**	mg/kg	1.2	1	05/10/17 13:40	05/11/17 03:49	7782-49-2	
Silver	ND	mg/kg	0.59	1	05/10/17 13:40	05/11/17 03:49	7440-22-4	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.061**	mg/kg	0.0060	1	05/10/17 23:45	05/11/17 15:48	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**23.2**	%	0.10	1		05/08/17 09:46		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Sample: P26SB-11-2 **Lab ID: 92339624014** Collected: 05/05/17 13:52 Received: 05/05/17 15:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	**43.5**	mg/kg	0.93	1	05/10/17 13:40	05/11/17 03:52	7440-38-2	
Barium	**167**	mg/kg	0.46	1	05/10/17 13:40	05/11/17 03:52	7440-39-3	
Cadmium	**0.39**	mg/kg	0.093	1	05/10/17 13:40	05/11/17 03:52	7440-43-9	
Chromium	**16.7**	mg/kg	0.46	1	05/10/17 13:40	05/11/17 03:52	7440-47-3	
Lead	**13.8**	mg/kg	0.46	1	05/10/17 13:40	05/11/17 03:52	7439-92-1	
Selenium	**7.2**	mg/kg	0.93	1	05/10/17 13:40	05/11/17 03:52	7782-49-2	
Silver	ND	mg/kg	0.46	1	05/10/17 13:40	05/11/17 03:52	7440-22-4	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.041**	mg/kg	0.0039	1	05/10/17 23:45	05/11/17 15:58	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**21.8**	%	0.10	1		05/08/17 09:46		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Sample: P26SB-12 **Lab ID: 92339624015** Collected: 05/05/17 13:55 Received: 05/05/17 15:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	ND	mg/kg	0.91	1	05/10/17 13:40	05/11/17 03:55	7440-38-2	
Barium	**68.1**	mg/kg	0.46	1	05/10/17 13:40	05/11/17 03:55	7440-39-3	
Cadmium	ND	mg/kg	0.091	1	05/10/17 13:40	05/11/17 03:55	7440-43-9	
Chromium	**13.7**	mg/kg	0.46	1	05/10/17 13:40	05/11/17 03:55	7440-47-3	
Lead	**7.5**	mg/kg	0.46	1	05/10/17 13:40	05/11/17 03:55	7439-92-1	
Selenium	**2.1**	mg/kg	0.91	1	05/10/17 13:40	05/11/17 03:55	7782-49-2	
Silver	ND	mg/kg	0.46	1	05/10/17 13:40	05/11/17 03:55	7440-22-4	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	**0.012**	mg/kg	0.0024	1	05/10/17 23:45	05/11/17 16:17	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**21.7**	%	0.10	1		05/08/17 09:43		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Sample: P26-Surface Deposit **Lab ID: 92339624016** Collected: 05/05/17 13:10 Received: 05/05/17 15:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	ND	mg/kg	6.0	10	05/10/17 13:40	05/12/17 12:31	7440-38-2	
Barium	**4760**	mg/kg	3.0	10	05/10/17 13:40	05/12/17 12:31	7440-39-3	
Cadmium	ND	mg/kg	0.60	10	05/10/17 13:40	05/12/17 12:31	7440-43-9	
Chromium	**35.0**	mg/kg	3.0	10	05/10/17 13:40	05/12/17 12:31	7440-47-3	
Lead	**5.3**	mg/kg	3.0	10	05/10/17 13:40	05/12/17 12:31	7439-92-1	
Selenium	ND	mg/kg	6.0	10	05/10/17 13:40	05/12/17 12:31	7782-49-2	
Silver	ND	mg/kg	3.0	10	05/10/17 13:40	05/12/17 12:31	7440-22-4	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	ND	mg/kg	0.0030	1	05/10/17 23:45	05/11/17 16:20	7439-97-6	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**15.6**	%	0.10	1		05/08/17 09:42		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

QC Batch: 359858 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury TCLP
Associated Lab Samples: 92339624007, 92339624011

METHOD BLANK: 1995623 Matrix: Water
Associated Lab Samples: 92339624007, 92339624011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	ND	0.00020	05/10/17 23:56	

LABORATORY CONTROL SAMPLE: 1995624

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.0025	0.0022	90	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1995625 1995626

Parameter	Units	92339426001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Mercury	mg/L	ND	.0025	.0025	0.0022	0.0022	87	88	75-125	1	

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QUALITY CONTROL DATA

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

QC Batch: 359939 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 92339624001, 92339624002, 92339624003, 92339624004, 92339624005, 92339624006

METHOD BLANK: 1996154 Matrix: Solid
Associated Lab Samples: 92339624001, 92339624002, 92339624003, 92339624004, 92339624005, 92339624006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.0060	05/11/17 17:05	

LABORATORY CONTROL SAMPLE: 1996155

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.083	0.088	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1996156 1996157

Parameter	Units	92339624001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Mercury	mg/kg	0.096	.039	.066	0.14	0.22	116	189	75-125	43	M1,R1

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QUALITY CONTROL DATA

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

QC Batch: 359941 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 92339624007, 92339624008, 92339624009, 92339624010, 92339624011, 92339624012, 92339624013, 92339624014, 92339624015, 92339624016

METHOD BLANK: 1996158 Matrix: Solid
Associated Lab Samples: 92339624007, 92339624008, 92339624009, 92339624010, 92339624011, 92339624012, 92339624013, 92339624014, 92339624015, 92339624016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.0060	05/11/17 15:27	

LABORATORY CONTROL SAMPLE: 1996159

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.083	0.082	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1996160 1996161

Parameter	Units	92339552001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Mercury	mg/kg	ND	.049	.047	0.085	0.056	172	121	75-125	40	M1,R1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL DATA

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

QC Batch: 359671 Analysis Method: EPA 6010
QC Batch Method: EPA 3050 Analysis Description: 6010 MET
Associated Lab Samples: 92339624001, 92339624002, 92339624003, 92339624004, 92339624005, 92339624006, 92339624007, 92339624008

METHOD BLANK: 1994600 Matrix: Solid
Associated Lab Samples: 92339624001, 92339624002, 92339624003, 92339624004, 92339624005, 92339624006, 92339624007, 92339624008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	1.0	05/10/17 22:13	
Barium	mg/kg	ND	0.50	05/10/17 22:13	
Cadmium	mg/kg	ND	0.10	05/10/17 22:13	
Chromium	mg/kg	ND	0.50	05/10/17 22:13	
Lead	mg/kg	ND	0.50	05/10/17 22:13	
Selenium	mg/kg	ND	1.0	05/10/17 22:13	
Silver	mg/kg	ND	0.50	05/10/17 22:13	

LABORATORY CONTROL SAMPLE: 1994601

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	50	44.0	88	80-120	
Barium	mg/kg	50	46.3	93	80-120	
Cadmium	mg/kg	50	45.7	91	80-120	
Chromium	mg/kg	50	46.0	92	80-120	
Lead	mg/kg	50	45.7	91	80-120	
Selenium	mg/kg	50	45.7	91	80-120	
Silver	mg/kg	25	24.1	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1994602 1994603

Parameter	Units	92339591003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Arsenic	mg/kg	9.5	109	88	98.9	80.4	82	81	75-125	21	R1
Barium	mg/kg	186	109	88	279	264	86	88	75-125	6	
Cadmium	mg/kg	2.0	109	88	91.5	73.7	83	82	75-125	22	R1
Chromium	mg/kg	63.6	109	88	155	137	84	83	75-125	12	
Lead	mg/kg	75.3	109	88	154	137	73	70	75-125	12	M1
Selenium	mg/kg	ND	109	88	86.5	69.6	80	79	75-125	22	R1
Silver	mg/kg	ND	54.1	44	49.9	40.4	92	92	75-125	21	R1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

QC Batch: 359797 Analysis Method: EPA 6010
QC Batch Method: EPA 3050 Analysis Description: 6010 MET
Associated Lab Samples: 92339624009, 92339624010, 92339624011, 92339624012, 92339624013, 92339624014, 92339624015, 92339624016

METHOD BLANK: 1995375 Matrix: Solid
Associated Lab Samples: 92339624009, 92339624010, 92339624011, 92339624012, 92339624013, 92339624014, 92339624015, 92339624016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	1.0	05/11/17 03:17	
Barium	mg/kg	ND	0.50	05/11/17 03:17	
Cadmium	mg/kg	ND	0.10	05/11/17 03:17	
Chromium	mg/kg	ND	0.50	05/11/17 03:17	
Lead	mg/kg	ND	0.50	05/11/17 03:17	
Selenium	mg/kg	ND	1.0	05/11/17 03:17	
Silver	mg/kg	ND	0.50	05/11/17 03:17	

LABORATORY CONTROL SAMPLE: 1995376

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	50	48.7	97	80-120	
Barium	mg/kg	50	49.6	99	80-120	
Cadmium	mg/kg	50	49.9	100	80-120	
Chromium	mg/kg	50	48.5	97	80-120	
Lead	mg/kg	50	49.3	99	80-120	
Selenium	mg/kg	50	51.1	102	80-120	
Silver	mg/kg	25	25.5	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1995484 1995485

Parameter	Units	92339552001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Arsenic	mg/kg	2.9	41.8	46	38.1	41.6	84	84	75-125	9	
Barium	mg/kg	50.1	41.8	46	83.4	88.1	80	83	75-125	5	
Cadmium	mg/kg	0.15	41.8	46	36.4	40.3	87	87	75-125	10	
Chromium	mg/kg	13.4	41.8	46	48.7	51.4	85	83	75-125	5	
Lead	mg/kg	25.3	41.8	46	60.0	64.0	83	84	75-125	7	
Selenium	mg/kg	ND	41.8	46	36.2	40.5	86	88	75-125	11	
Silver	mg/kg	ND	20.8	23	18.9	20.9	90	91	75-125	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

QC Batch: 359708
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010
Analysis Description: 6010 MET TCLP
Associated Lab Samples: 92339624007, 92339624011

METHOD BLANK: 1994846 Matrix: Water
Associated Lab Samples: 92339624007, 92339624011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.050	05/09/17 19:53	
Barium	mg/L	ND	0.25	05/09/17 19:53	
Cadmium	mg/L	ND	0.0050	05/09/17 19:53	
Chromium	mg/L	ND	0.050	05/09/17 19:53	
Lead	mg/L	ND	0.025	05/09/17 19:53	
Selenium	mg/L	ND	0.10	05/09/17 19:53	
Silver	mg/L	ND	0.025	05/09/17 19:53	

LABORATORY CONTROL SAMPLE: 1994847

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	2.5	2.4	96	80-120	
Barium	mg/L	2.5	2.2	88	80-120	
Cadmium	mg/L	2.5	2.3	92	80-120	
Chromium	mg/L	2.5	2.3	92	80-120	
Lead	mg/L	2.5	2.2	86	80-120	
Selenium	mg/L	2.5	2.5	102	80-120	
Silver	mg/L	1.2	1.3	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1994848 1994849

Parameter	Units	92339594001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Arsenic	mg/L	ND	2.5	2.5	2.3	2.3	90	90	75-125	1	
Barium	mg/L	ND	2.5	2.5	2.4	2.4	92	91	75-125	1	
Cadmium	mg/L	ND	2.5	2.5	2.3	2.3	93	91	75-125	2	
Chromium	mg/L	ND	2.5	2.5	2.4	2.3	94	92	75-125	1	
Lead	mg/L	ND	2.5	2.5	2.3	2.2	90	88	75-125	2	
Selenium	mg/L	ND	2.5	2.5	2.4	2.3	94	93	75-125	1	
Silver	mg/L	ND	1.2	1.2	1.2	1.2	98	96	75-125	2	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

QC Batch: 359433 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92339624001, 92339624002, 92339624003, 92339624004, 92339624005, 92339624006, 92339624007, 92339624008, 92339624009, 92339624010, 92339624011, 92339624012, 92339624013, 92339624014

SAMPLE DUPLICATE: 1993614

Parameter	Units	92339624001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	23.8	24.0	1	

SAMPLE DUPLICATE: 1993615

Parameter	Units	92339580006 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	22.7	21.0	8	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

QC Batch: 359435
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92339624015, 92339624016

SAMPLE DUPLICATE: 1993630

Parameter	Units	92339624015 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	21.7	22.1	2	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALIFIERS

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-A	Pace Analytical Services - Asheville
PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
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(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92339624001	**P26SB-1-1**	EPA 3050	359671	EPA 6010	359770
92339624002	**P26SB-1-2**	EPA 3050	359671	EPA 6010	359770
92339624003	**P26SB-2**	EPA 3050	359671	EPA 6010	359770
92339624004	**P26SB-3-1**	EPA 3050	359671	EPA 6010	359770
92339624005	**P26SB-3-2**	EPA 3050	359671	EPA 6010	359770
92339624006	**P26SB-4**	EPA 3050	359671	EPA 6010	359770
92339624007	**P26SB-6**	EPA 3050	359671	EPA 6010	359770
92339624008	**P26SB-7-1**	EPA 3050	359671	EPA 6010	359770
92339624009	**P26SB-7-2**	EPA 3050	359797	EPA 6010	360005
92339624010	**P26SB-8**	EPA 3050	359797	EPA 6010	360005
92339624011	**P26SB-10-1**	EPA 3050	359797	EPA 6010	360005
92339624012	**P26SB-10-2**	EPA 3050	359797	EPA 6010	360005
92339624013	**P26SB-11-1**	EPA 3050	359797	EPA 6010	360005
92339624014	**P26SB-11-2**	EPA 3050	359797	EPA 6010	360005
92339624015	**P26SB-12**	EPA 3050	359797	EPA 6010	360005
92339624016	**P26-Surface Deposit**	EPA 3050	359797	EPA 6010	360005
92339624007	**P26SB-6**	EPA 3010A	359708	EPA 6010	359786
92339624011	**P26SB-10-1**	EPA 3010A	359708	EPA 6010	359786
92339624007	**P26SB-6**	EPA 7470	359858	EPA 7470	359990
92339624011	**P26SB-10-1**	EPA 7470	359858	EPA 7470	359990
92339624001	**P26SB-1-1**	EPA 7471	359939	EPA 7471	360067
92339624002	**P26SB-1-2**	EPA 7471	359939	EPA 7471	360067
92339624003	**P26SB-2**	EPA 7471	359939	EPA 7471	360067
92339624004	**P26SB-3-1**	EPA 7471	359939	EPA 7471	360067
92339624005	**P26SB-3-2**	EPA 7471	359939	EPA 7471	360067
92339624006	**P26SB-4**	EPA 7471	359939	EPA 7471	360067
92339624007	**P26SB-6**	EPA 7471	359941	EPA 7471	360070
92339624008	**P26SB-7-1**	EPA 7471	359941	EPA 7471	360070
92339624009	**P26SB-7-2**	EPA 7471	359941	EPA 7471	360070
92339624010	**P26SB-8**	EPA 7471	359941	EPA 7471	360070
92339624011	**P26SB-10-1**	EPA 7471	359941	EPA 7471	360070
92339624012	**P26SB-10-2**	EPA 7471	359941	EPA 7471	360070
92339624013	**P26SB-11-1**	EPA 7471	359941	EPA 7471	360070
92339624014	**P26SB-11-2**	EPA 7471	359941	EPA 7471	360070
92339624015	**P26SB-12**	EPA 7471	359941	EPA 7471	360070
92339624016	**P26-Surface Deposit**	EPA 7471	359941	EPA 7471	360070
92339624001	**P26SB-1-1**	ASTM D2974-87	359433		
92339624002	**P26SB-1-2**	ASTM D2974-87	359433		
92339624003	**P26SB-2**	ASTM D2974-87	359433		
92339624004	**P26SB-3-1**	ASTM D2974-87	359433		
92339624005	**P26SB-3-2**	ASTM D2974-87	359433		
92339624006	**P26SB-4**	ASTM D2974-87	359433		
92339624007	**P26SB-6**	ASTM D2974-87	359433		
92339624008	**P26SB-7-1**	ASTM D2974-87	359433		
92339624009	**P26SB-7-2**	ASTM D2974-87	359433		
92339624010	**P26SB-8**	ASTM D2974-87	359433		

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
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(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: U-5114 Parcel 26 42376.1.R2
Pace Project No.: 92339624

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92339624011	**P26SB-10-1**	ASTM D2974-87	359433		
92339624012	**P26SB-10-2**	ASTM D2974-87	359433		
92339624013	**P26SB-11-1**	ASTM D2974-87	359433		
92339624014	**P26SB-11-2**	ASTM D2974-87	359433		
92339624015	**P26SB-12**	ASTM D2974-87	359435		
92339624016	**P26-Surface Deposit**	ASTM D2974-87	359435		

Pace Analytical®	Document Name: **Sample Condition Upon Receipt(SCUR)**	Document Revised: Sept. 21, 2016 Page 1 of 2
	Document No.: **F-CAR-CS-033-Rev.01**	Issuing Authority: Pace Quality Office

Laboratory receiving samples:

Asheville ☐ **Eden** ☐ **Greenwood** ☐ **Huntersville** ☑ **Raleigh** ☐ **Mechanicsville** ☐

Sample Condition Upon Receipt **Client Name:** Amec **Project #:**

WO# : 92339624

92339624

Courier: ☐ Commercial ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ Other:____

Custody Seal Present? ☐ Yes ☐ No **Seals Intact?** ☐ Yes ☐ No

Date/Initials Person Examining Contents: DM5/5

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other:____

Thermometer: ☐ IR Gun ID: T1603 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

Correction Factor: **Cooler Temp Corrected (°C):** 6.0 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C

USDA Regulated Soil (☑ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☐ Yes	☑ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Samples Field Filtered?	☐ Yes	☐ No	☑ N/A	8. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: SL				
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☐ No	☑ N/A	10.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	11.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☐ N/A	

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Sample Discrepancy: _____

Project Manager SCURF Review: JZ **Date:** 5/8/17

Project Manager SRF Review: JZ **Date:** 5/8/17

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

***Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.**

****Bottom half of box is to list number of bottles**

Project #

WO# : 92339624

PM: KRG **Due Date: 05/12/17**

CLIENT: 92-NCDOT

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP3S-250 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP3Z-250 mL Plastic ZN Acetate & NaOH (>9)	BP3C-250 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	Cubitainer	VSGU-20 mL Scintillation vials (N/A)	GN
1									1																				
2									1																				
3									1																				
4									1																				
5									1																				
6									1																				
7									1			1																	
8									1																				
9									1																				
10									1																				
11									1			1																	
12									1																				

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

***Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.**

****Bottom half of box is to list number of bottles**

Project # **WO# : 92339624**

PM: KRG Due Date: 05/12/17

CLIENT: 92-NCDOT

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP3S-250 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP3Z-250 mL Plastic ZN Acetate & NaOH (>9)	BP3C-250 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	Cubitainer	VSGU-20 mL Scintillation vials (N/A)	GN
1	\				\	\	\	\	1		\		\	\	\										\	\			
2	\				\	\	\	\	1		\		\	\	\										\	\			
3	\				\	\	\	\	1		\		\	\	\										\	\			
4	\				\	\	\	\	1		\		\	\	\										\	\			
5	\				\	\	\	\			\		\	\	\										\	\			
6	\				\	\	\	\			\		\	\	\										\	\			
7	\				\	\	\	\			\		\	\	\										\	\			
8	\				\	\	\	\			\		\	\	\										\	\			
9	\				\	\	\	\			\		\	\	\										\	\			
10	\				\	\	\	\			\		\	\	\										\	\			
11	\				\	\	\	\			\		\	\	\										\	\			
12	\				\	\	\	\			\		\	\	\										\	\			

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Amec Foster Wheeler, Charlotte	Report To:	Helen Corley	Attention:	
Address:	2801 Yorkmont Rd	Copy To:	John Mans	Company Name:	
	Charlotte, NC 28208			Address:	
Email:	helen.corley@amec.com	Purchase Order #:		Pace Quote:	
Phone:	(704)357-5516 Fax	Project Name:	DOT U-5114 Parcel 26 42376.1.R2	Pace Project Manager:	kevin.godwin@pacelabs.com,
Requested Due Date:	Std	Project #:		Pace Profile #:	4098-1

Regulatory Agency	
State / Location	NC

MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analyses Test: TCLP 8 RCRA Metals	RCRA Metals	Residual Chlorine (Y/N)	92339624
1	P26SB-1-1	SL	G			5/5/17	1250		1	X									X	X		001
2	P26SB-1-2						1255		1											X		002
3	P26SB-2						1300		1											X		003
4	P26SB-3-1						1303		1											X		004
5	P26SB-3-2						1305		1											X		005
6	P26SB-4						1315		1											X		006
7	P26SB-6						1320		2										X	X		007
8	P26SB-7-1						1330		1											X		008
9	P26SB-7-2						1332		1											X		009
10	P26SB-8						1340		1											X		010
11	P26SB-10-1						1346		2										X	X		011
12	P26SB-10-2					V	1344		1	V										X		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
		5/5/17	1550	MorrisPace HW	5/5/17	1550	6.0	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: John Mans

SIGNATURE of SAMPLER: DATE Signed: 5/5/17

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Amec Foster Wheeler, Charlotte	Report To:	Helen Corley	Attention:	
Address:	2801 Yorkmont Rd	Copy To:	John Mays	Company Name:	
Charlotte, NC 28208				Address:	
Email:	helen.corley@amec.com	Purchase Order #:		Pace Quote:	
Phone:	(704)357-5516 Fax	Project Name:	DOT U-5114 Parcel 26 42376.1.R2	Pace Project Manager:	kevin.godwin@pacelabs.com,
Requested Due Date:		Project #:		Pace Profile #:	4098-1

Regulatory Agency	
State / Location	NC

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analyses Test: TCLP 8 RCRA Metals	RCRA Metals	Residual Chlorine (Y/N)	92339624
1	P26SB-11-1	SL	G			5/5/17	1350		1	X										X		013
2	P26SB-11-2	↓	↓			↓	1352		1	↓										X		014
3	P26SB-12	↓	↓			↓	1355		1	↓										X		015
4	~~Blank~~ P26-Surface Deposit	↓	↓			↓	1310		1	↓										X		016
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
P26-Surface Deposit unknown sandy material w/ blue paint flakes		5/5/17	1550	Omolle/Pace	5/5	1350	6.0	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: John Mays

SIGNATURE of SAMPLER: [signature] DATE Signed: 5/5/17

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

APPENDIX E

DRUM DISPOSAL DOCUMENTATION

A&D Environmental Services — Bill of Lading / Material Manifest

A&D Job No:	Generator ID Number	Page 1 of	Emergency Response Phone	Tracking Number
38185		1	800-255-3924-MIS0007951	20341

Generator's Name and Mailing Address
NCDOT-Huntersville
13825 Statesville Road
Huntersville, NC 28078 USA
919-707-6871

Generator's site address (if different from mailing address)

Transporter 1 ☐ 2 ☐ Company Name **A&D Environmental Services, Inc.** US EPA ID No: **NCD986232221**

Transporter 1 ☒ 2 ☐ Company Name **A&D Environmental Services (SC), LLC** US EPA ID No: **SCD987598331**

☒ Designated Facility	☐ Designated Facility	☐ Designated Facility	☐ Designated Facility
A&D Environmental Services, Inc. **2718 Uwharrie Road** **Archdale, NC 27263** **336-434-7750** **NCD986232221**	**A&D Environmental Services, Inc.** **3149 Lear Drive** **Burlington, NC 27215** **336-229-0058** **NCR000138628**	**A&D Environmental Services (SC), LLC** **1741 Calks Ferry Road** **Lexington, SC 29073** **803-957-9175** **SCD987598331**	**A&D Environmental Services (SC), LLC** **1321 White Horse Road, Suite C** **Greenville, SC 29605** **864-234-6055**

HM	Hazardous Materials Shipping Name and Description (if applicable)	No.	Type	QTY	Wt/Vol	Profile Number
	Non-Regulated Material (IDW-Solids)	001	DM	200	P	20170190

	Petroleum Products for Recycle	No.	Type	QTY	Wt/Vol	Profile Number
X	NA1993, Diesel fuel, 3, III ERG# 128					
X	NA1993, Fuel oil (No.1,2,4,5 or 6), 3, III ERG# 128					
X	UN1203, Gasoline, 3, II ERG# 128					
	USED OIL (Not a USDOT Hazardous Material)					
	Petroleum Contact Water (Not a USDOT Hazardous Material)					

Universal Waste Lamps, Batteries, Ballasts, and Electronics for Recycle

HM	No.	Type	Est. Wt.	Count	Shipping Name and Description (if applicable)	Common Name	Discrepancy
X					RQ, UN2809, Mercury contained in manufactured articles, 8, III ERG# 172	Mercury Containing Articles	
X					RQ, UN3432, Polychlorinated biphenyls, solid, 9, II ERG# 171	TSCA Exempt PCB Lamp Ballasts	
X					UN2800, Batteries, wet, nonspillable, 8, III ERG# 154	Sealed Lead Acid Batteries	
X					UN2794, Batteries, wet, filled with acid, 8, III ERG# 154	Lead Acid Batteries	
X					UN2795, Batteries, wet, filled with alkali, 8, III ERG# 154	Wet NiCad Batteries	
X					UN3090, Lithium batteries, 9, II ERG# 138	Lithium Batteries	
X					UN3028, Batteries, dry, containing potassium hydroxide solid, 8, III ERG# 154	Alkaline Batteries	
X					UN3028, Batteries, dry, containing potassium hydroxide solid, 8, III ERG# 154	NiCad Batteries	
					Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164(e)	Fluorescent lamps 4' or <	
					Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164(e)	Fluorescent lamps 4'	
					Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164(e)	Circular/U-tube lamps	
					Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164(e)	Compact Lamps	
					Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164(e)	Shattershield	
					Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164(e)	HID/MV/UV Lamps	
					Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164(e)	Incandescent Lamps	
					Non-PCB Light Ballasts for Recycle (Not DOT-Regulated)	Non-PCB Light Ballasts	
					Electronic Equipment for Recycle (Not DOT-Regulated)	Electronics	

Generator's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. I further certify that none of the materials described above are a hazardous waste as defined by EPA 40CFR Part 261 or any applicable state law, and unless specifically identified above the materials contain less than 1,000 ppm total halogens and do not contain quantifiable levels (2ppm) of PCBs as defined by EPA 40 CFR Parts 279 and 761.

Generator's/Offeror's Printed/Typed Name	Signature	Month	Day	Year
Agent for NCDOT Leanna Muroski		06	09	17
Transporter 1 Printed/Typed Name	**Signature**	**Month**	**Day**	**Year**
Matt Wray		06	09	17
Transporter 2 Printed/Typed Name	**Signature**	**Month**	**Day**	**Year**

Discrepancy Indication / Additional Information:

Designated Facility Certification: I hereby acknowledge receipt of the materials covered by this manifest except for any discrepancy indicated above.

Printed/Typed Name	Signature	Month	Day	Year