### PRELIMINARY SITE ASSESSMENT

PARCEL 27, CHARLES SUTTON
1975 U.S. HIGHWAY 1 NORTH
ROCKINGHAM, RICHMOND COUNTY, NORTH CAROLINA
STATE PROJECT: R-2501C
WBS ELEMENT: 34437.1.1
JANUARY 21, 2014

Report prepared for:

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C-257 – Geology C-1251 - Engineering

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# PRELIMINARY SITE ASSESSMENT PARCEL 27, CHARLES SUTTON 1975 N. US 1 ROCKINGHAM, RICHMOND COUNTY, NORTH CAROLINA

### **EXECUTIVE SUMMARY OF RESULTS**

Pyramid Environmental & Engineering P.C. (Pyramid) has prepared this Preliminary Site Assessment (PSA) report documenting background information, field activities, assessment activities, findings, conclusions, and recommendations for Parcel 27, the Charles Sutton property. The purpose of this assessment was to determine the presence or absence of underground storage tanks (USTs) and impacted soils at the subject property within the proposed right-of-way (ROW) and/or easement and edge of pavement (State Project R-2501C). The PSA was conducted with particular attention to the areas to be cut as indicated by slope stake lines and cross sections or to be excavated for the installation of drainage features. This preliminary site assessment was conducted on behalf of the North Carolina Department of Transportation (NCDOT) in accordance with Pyramid's October 16, 2013, technical proposal.

The following statements summarize the results of the PSA:

• **Site History:** A review of the North Carolina Department of Environment and Natural Resources (DENR) registered UST database and incident database indicated no environmental incidents were on file for the Charles Sutton property (Parcel 27). On November 26, 2013, Pyramid emailed the Richmond County R-2501C parcel addresses to Mr. Kenneth Currie, the Richmond County Incident Manager for the DENR UST Section, with a request to investigate any environmental incidents associated with the parcels. On December 2, 2013, Mr. Currie responded to the email and stated that site address 1975 N. US 1 (Parcel 27) does not have any environmental incidents in the DENR database.

On November 26, 2013, Pyramid Project Manager Eric Cross conducted an onsite interview with the property owner, Charles Sutton. Mr. Sutton indicated that he had owned the property since 2003, and utilized it as an auto repair facility. Mr. Sutton was not aware of any USTs at the property, with the exception of a septic tank on the north side of the building, outside of the area of investigation. He was not aware of any incidents associated with the property.

• **Geophysical Survey:** The geophysical investigation provided no evidence of metallic USTs within the existing and proposed ROW and/or easement.

- Limited Soil Assessment: A total of three borings were performed across the property and at least one soil sample from each boring was analyzed with the QED UVF HC-1 Analyzer system from QROS-US for total petroleum hydrocarbon (TPH) petroleum contamination. If field screening detected an elevated reading, then additional soil samples from each boring were selectively analyzed with the QED UVF HC-1 Analyzer. The QED did not detect TPH gasoline range organic (GRO) or TPH diesel range organic (DRO) concentrations above 10 milligrams per kilogram (mg/kg) in any of the soil samples analyzed. The DENR action levels for both TPH-GRO and TPH-DRO are 10 mg/kg. A duplicate of soil sample 27-2(5-7.5) was shipped to Pace Analytical for laboratory analysis. The laboratory results for soil sample 27-2(5-7.5) did not detect GRO or DRO concentrations above detection limits. No odors were detected during the field screening.
- Limited Groundwater Assessment: Based on field observations and the groundwater level observed at other parcels included in this PSA, Pyramid concluded that it was unlikely that groundwater would be encountered during the NCDOT excavation and construction activities at this parcel. Therefore, it was deemed unnecessary to install a temporary well and collect a groundwater sample.
- Contaminated Soil Volumes: No petroleum-impacted soils above 10 mg/kg were encountered during the PSA investigation at Parcel 27, nor was any evidence of probable or possible USTs recorded within the proposed right of way or easement. Therefore, no recommendations are necessary for the treatment or disposal of such materials. It should be noted that, if impacted soil is encountered during road construction outside of the area analyzed by this investigation, the impacted soil should be managed according to NC DENR Division of Waste Management (DWM) UST Section Guidelines and disposed of at a permitted facility.

### 1.0 Introduction

Pyramid Environmental & Engineering P.C. (Pyramid) has prepared this Preliminary Site Assessment (PSA) report documenting background information, field activities, assessment activities, findings, conclusions, and recommendations for Parcel 27, the Charles Sutton property. The Charles Sutton property is currently an automobile repair shop (Chuck's Trucks) and an ATV sales building located at 1975 N. US 1 in Rockingham, NC. This preliminary site assessment was conducted on behalf of the North Carolina Department of Transportation (NCDOT) in accordance with Pyramid's October 16, 2013, technical proposal.

The purpose of this assessment was to determine the presence or absence of underground storage tanks (USTs) and the potential for impacted soils at the subject properties within the proposed ROW and/or easement and edge of pavement (State Project R-2501C). The location of the subject site is shown on **Figure 1**.

### 1.1 Background Information

Based on the NCDOT's October 10, 2013, *Request for Technical and Cost Proposal*, the PSA was conducted in the proposed easement/proposed right of way (ROW) and the area between the existing NCDOT right of way and the edge of pavement, with emphasis on the areas to be cut as indicated by slope stake lines and cross sections or to be excavated for the installation of drainage features and/or other utilities, in accordance with the CADD files provided to Pyramid by the NCDOT. The PSA included the following:

- Research the properties for past uses and possible releases.
- Conduct a preliminary geophysical site assessment and limited soil assessment in
  the proposed easement and the area between the existing ROW and the edge of
  pavement with emphasis on the areas to be cut as indicated by slope stake lines and
  cross sections or to be excavated for the installation of drainage features and/or other
  utilities.
- Should groundwater be encountered at a depth that might impact the NCDOT construction activities, report the depth to groundwater for that site and attempt to obtain one groundwater sample for laboratory analysis by installing a temporary monitoring well.

### **1.2 Project Information**

Prior to field activities, a Health and Safety Plan was prepared. Prior to drilling activities, the public underground utilities were located and marked by the North Carolina One-Call Service. A private utility locator, Northstate Utility Locating Incorporated of Colfax, North Carolina was used to mark the on-site private, buried utilities.

### 2.0 Site History

The NCDOT description of the parcel in the RFP provided to Pyramid on October 10, 2013, provided the following background information related to the site:

Two automotive repair businesses are located on this parcel on the north side of US 1. Chuck's Trucks, a 4X4 repair business, is located approximately 100 feet north of the existing US 1 centerline; the EHS Racing shop is located approximately 150 feet north of the existing US 1 centerline. A Facility ID has not been discovered for this site. Evidence of soil staining and/or USTs or UST removal was not observed during field reconnaissance along the project corridor on November 14, 2007. However, there may be environmental concerns with this site such as USTs, hydraulic lifts, or chemical concerns.

Pyramid completed a records review of the parcel, interviewed DENR personnel, interviewed property owners, and reviewed aerial photographs to assess past uses of the property. Pyramid reviewed historical aerial photographs dating back to 1938 available from the Richmond County Soil and Water Conservation office in Rockingham and on Google Earth. The 1938, 1956, 1975, 1993, 1999, 2005, 2008, 2011, and 2013 aerial photographs are included in **Appendix A**. Historical information reviewed as part of the PSA indicated that the Charles Sutton property was partially developed for commercial use between 1975 and 1993 (west building), and the east building was constructed between 1993 and 1999. The earliest aerial to show the west building was the 1993 aerial, and the earliest building to show the east building was the 1999 aerial. The 1938, 1956, and 1975 aerials show the property to be undeveloped agricultural land.

On November 26, 2013, Pyramid emailed the Richmond County R-2501C parcel addresses to Mr. Kenneth Currie, the Richmond County Incident Manager for the DENR UST Section, with a request to investigate any environmental incidents associated with the parcels. On December 2, 2013, Mr. Currie responded to the email and stated that site address 1975 N. US 1 (Parcel 27) does not have any environmental incidents in the DENR database.

On November 26, 2013, Pyramid Project Manager Eric Cross conducted an on-site interview with the property owner, Charles Sutton. Mr. Sutton indicated that he had owned the property since 2003, and utilized it as an auto repair facility. He also indicated that the previous owner utilized the property as an auto repair center for approximately 20 years. Aerial photographs indicate that the buildings were likely not constructed prior to that previous owner's use. Mr. Sutton was not aware of any USTs at the property, with the exception of a septic tank on the north side of the building, outside of the area of investigation. Mr. Sutton indicated that a private water well was present near the southwest corner of the property, which was observed during our site inspection. He was not aware of any environmental concerns associated with the property.

### 3.0 Geophysical Investigation

Pyramid performed an electromagnetic (EM) survey across the <u>accessible</u> portions of the Parcel. All of the EM61 anomalies detected could be attributed to visible objects at the ground surface such as signs and other cultural features. For this reason, a GPR survey was not required. No evidence was observed to indicate the presence of metallic USTs within the survey area.

The geophysical investigation <u>did not record evidence of metallic USTs</u> within the proposed ROW and/or easement.

The full details of the geophysical investigation are included in the Geophysical Investigation Report as **Appendix B**.

### 4.0 Soil Sampling Activities & Results

### **4.1 Soil Assessment Field Activities**

On December 16, 2013, Pyramid mobilized to the site, drilled soil borings, and collected the proposed soil samples for the PSA. The soil borings were completed using a track mounted Geoprobe® Direct-Push rig. Three (3) soil borings (27-1, 27-2, and 27-3) were advanced on the subject property between the NCDOT proposed ROW and easements, and edge of pavement. The selected locations were chosen to avoid public utilities along U.S. 1 and private utilities associated with the business while remaining in the proposed right of way. The soil borings were installed parallel to U.S. 1 in an area proposed to be cut as indicated by the slope stake line. Boring 27-1 was installed at the location of a proposed drainage feature (NCDOT label 0804). The locations of the borings are shown on **Figure 2**.

Soil samples were continuously collected in four foot long disposable sleeves from each boring for geologic description, and visual examination for signs of contamination. Soil recovered from each sleeve was screened in the field using a Photo-Ionization Detector (PID) approximately every 2 feet depending on the soil recovery of each sleeve. In general, the soil sample with the highest PID reading was selected from each boring for laboratory analysis. If field screening detected elevated reading, then additional soil samples from each boring were selectively analyzed with the QED UVF HC-1 Analyzer. The soil boring logs with the soil descriptions, visual examination, and PID screening results are included in **Appendix C**. The PID field screening results are summarized in **Table 1**. To prevent cross contamination, new disposable nitrile gloves were worn by the sampling technician during the sampling activities, and were changed between samples. No odors were detected during the field screening.

The soil samples selected for Total Petroleum Hydrocarbon (TPH) analyses were analyzed utilizing the QED UVF HC-1 Analyzer system from QROS-US. The NCDOT has indicated that this instrument is an acceptable method to provide total petroleum hydrocarbon (TPH) results for soil analysis for the PSA projects. Pyramid's QED-certified technician performed the soil analyses. The soil samples selected for analysis using the QED Analyzer were analyzed for TPH as diesel range organics (DRO) and TPH as gasoline range organics (GRO). The soil samples selected for analysis using the QED were preserved in the field with methanol and were analyzed at the end of each day using the QED. One duplicate soil sample was selected for laboratory analysis from Parcel 27.

The duplicate soil sample selected for laboratory analyses 27-2(5-7.5) was placed in laboratory prepared containers and shipped to Pace Analytical in Huntersville, NC for analysis. The selected soil sample was analyzed for TPH as GRO by EPA Method 8015C and DRO by EPA Method 8015C/3541.

### **4.2 Soil Sample Analytical Results**

The QED results for soil samples 27-1(1-2.5), 27-1(5-7.5), 27-2(1-2.5), 27-2(5-7.5) and 27-3(7.5-10) did not detect TPH-GRO or TPH-DRO concentrations above 10 mg/kg. The DENR action levels for both TPH-GRO and TPH-DRO are 10 mg/kg. The soil sample QED results are summarized in **Table 2**. A copy of the QED analysis report is included in **Appendix D**.

A duplicate of soil sample 27-2(5-7.5) was shipped to Pace Analytical for laboratory analysis. The laboratory results for soil sample 27-2(5-7.5) did not detect GRO or DRO concentrations above detection limits. A copy of the Pace Analytical laboratory report and chain-of-custody is included in **Appendix E**. To maintain consistency, the QED results are utilized in this report to determine the presence and level of potential contamination.

### 4.3 Temporary Monitoring Well Installation

Based on field observations and the groundwater level observed at other parcels included in this PSA, Pyramid concluded that it was unlikely that groundwater would be encountered during the NCDOT excavation and construction activities at this parcel. Therefore, it was deemed unnecessary to install a temporary well and collect a groundwater sample.

### **4.4 Groundwater Analytical Results**

As discussed above, no groundwater sample was collected at the property, therefore, no analytical results are reported for this parcel.

### 5.0 Conclusions and Recommendations

As requested by NCDOT, Pyramid has completed a PSA at the Charles Sutton property located 1975 N. US 1, Rockingham, NC (Parcel 27). The following is a summary of the assessment activities and results.

### **5.1 Geophysical Investigation**

The geophysical investigation provided no evidence of metallic USTs within the existing and proposed ROW and/or easement.

### **5.2 Limited Soil Assessment**

The QED did not detect TPH gasoline range organic (GRO) or TPH diesel range organic (DRO) concentrations above 10 mg/kg in any of the soil samples analyzed. The DENR action levels for both TPH-GRO and TPH-DRO are 10 mg/kg. A duplicate of soil sample 27-2(5-7.5) was shipped to Pace Analytical for laboratory analysis. The laboratory results for soil sample 27-2(5-7.5) did not detect GRO or DRO concentrations above detection limits. To maintain consistency, the QED results are utilized in this report to determine the presence and level of potential contamination.

### **5.3 Limited Groundwater Assessment**

Based on field observations and the groundwater level observed at other parcels included in this PSA, Pyramid concluded that it was unlikely that groundwater would be encountered during the NCDOT excavation and construction activities at this parcel. Therefore, it was deemed unnecessary to install a temporary well and collect a groundwater sample.

### **5.4 Recommendations**

No petroleum-impacted soils above 10 mg/kg were encountered during the PSA investigation at Parcel 27, no odors were detected during the field screening, and there was no evidence of probable or possible USTs recorded within the proposed right of way or easement. Therefore, no recommendations are necessary for the treatment or disposal of such materials.

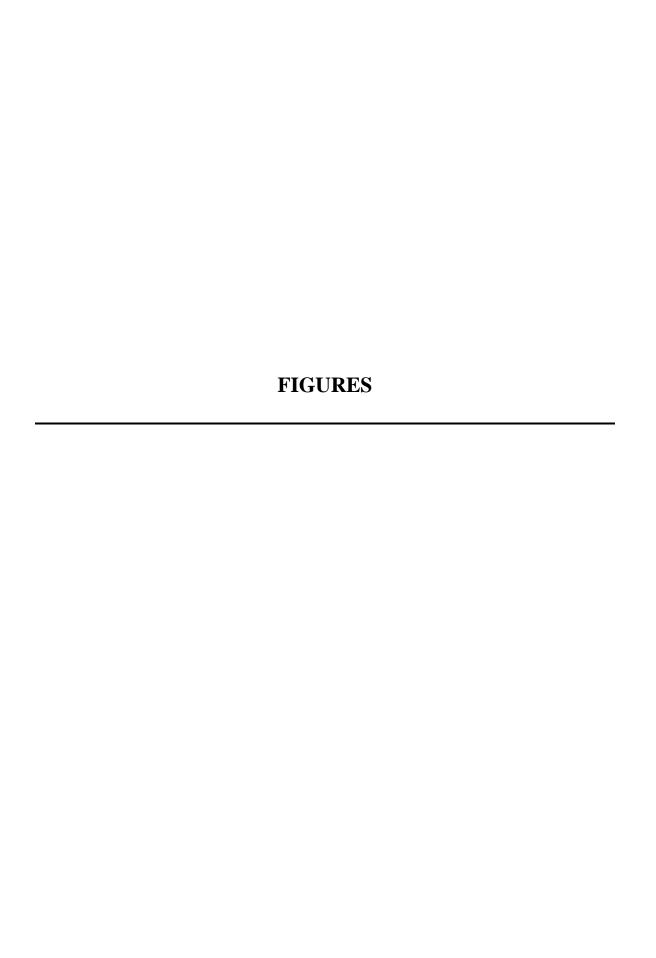
It should be noted that, if impacted soil is encountered during road construction outside of the area analyzed by this investigation, the impacted soil should be managed according to NC DENR Division of Waste Management (DWM) UST Section Guidelines and disposed of at a permitted facility.

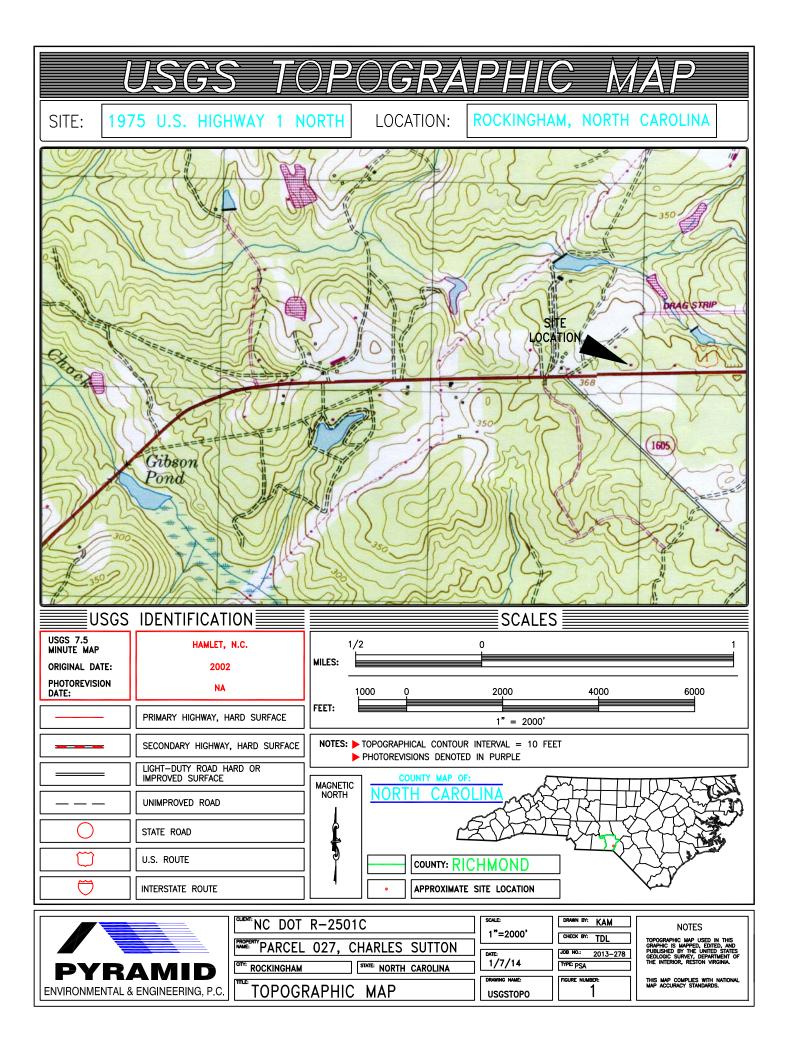
### **6.0 Limitations**

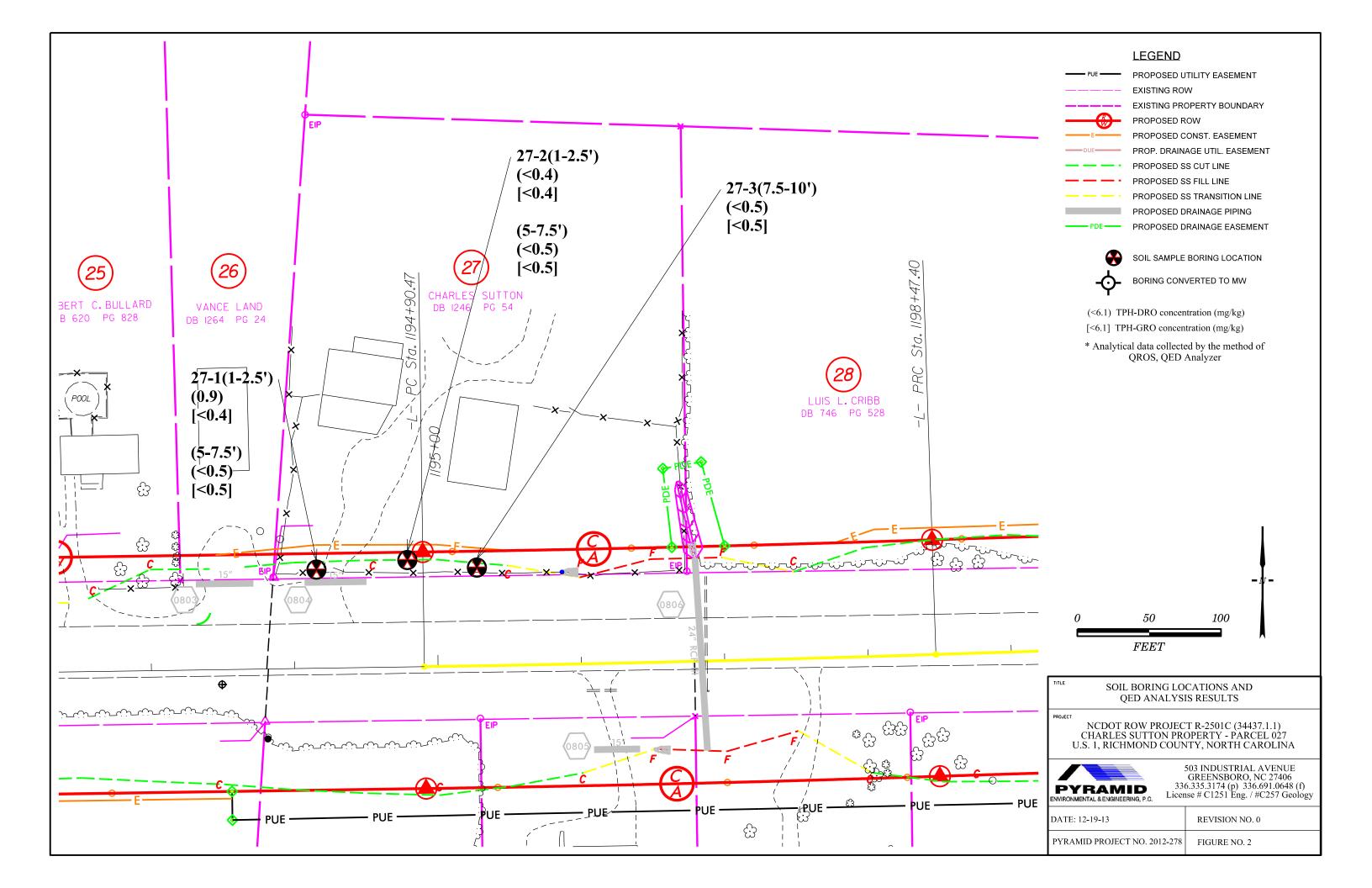
The results of this preliminary investigation are limited to the boring locations completed during this limited assessment and presented in this report. The laboratory results only reflect the current conditions at the locations sampled on the date this PSA was performed.

### 7.0 Closure

This report was prepared for, and is available solely for use by NCDOT and their designees. The contents thereof may not be used or relied upon by any other person without the express written consent and authorization of Pyramid Environmental & Engineering, P.C. (Pyramid). The observations, conclusions, and recommendations documented in this report are based on site conditions and information reviewed at the time of Pyramid's investigation. Pyramid appreciates the opportunity to provide this environmental service.







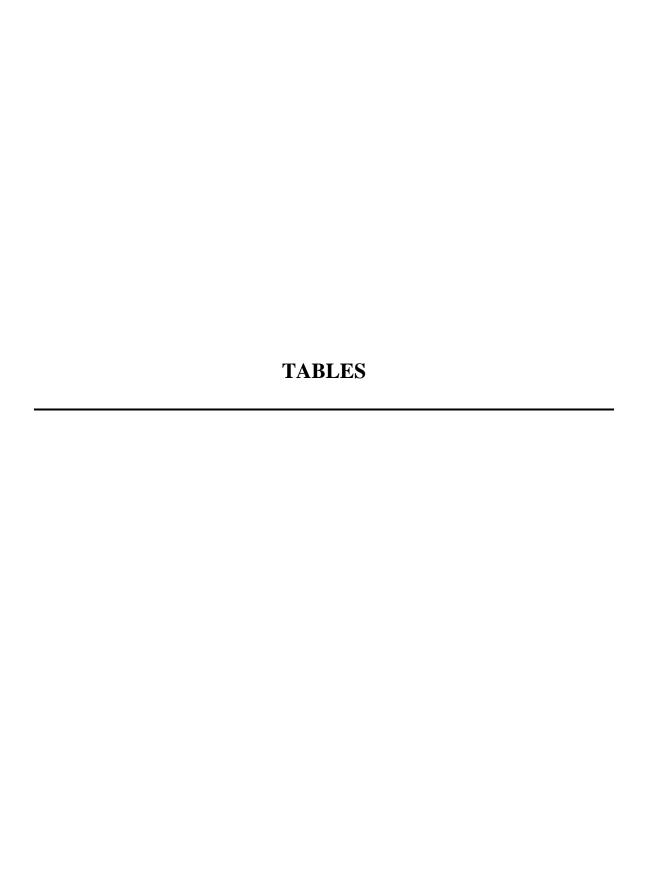


TABLE 1
Summary of Soil Field Screening Results
NCDOT Project R-2501C
1975 US Highway 1 North - Parcel 27

Rockingham, Richmond County, North Carolina

SOIL BORING	SAMPLE ID	DEPTH (feet bgs)	PID READINGS (PPM)
	27-1(1-2.5)	1 to 2.5	4.2
27-1	27-1(2.5-5)	2.5 to 5	3.1
	27-1(5-7)	5 to 7	8.2
	27-1(7.5-10)	7.5 to 10	2.4
	27-2(1-2.5)	1 to 2.5	5.1
27-2	27-2(2.5-5)	2.5 to 5	1.4
	27-2(5-7.5)	5 to 7.5	7.4
	27-2(7.5-10)	7.5 to 10	6.0
	27-3(1-2.5)	1 to 2.5	2.6
27-3	27-3(2.5-5)	2.5 to 5	5.0
	27-3(5-7.5)	5 to 7.5	5.6
	27-3(7.5-10)	7.5 to 10	7.6

bgs= below ground surface
PID= photo-ionization detector

PPM= parts-per-million

= sampled for lab analysis &/or QROS-QED analysis

**OVA= Organic Vapor Analyzer** 

**TABLE 2** 

### **Summary of Soil Sample Analytical Results**

NCDOT State Project R-2501C 1975 US Highway 1 North - Parcel 027

Rockingham, Richmond County, North Carolina

				QROS - QED Analysis			Laboratory Analysis (Pace)	
SAMPLE ID	DATE	DEPTH (feet)	PID (ppm)	GRO (mg/kg) (C5-C10)	DRO (mg/kg) (C10-C35)	TPH (mg/kg) (C5-C35)	EPA Method 3550 DRO (mg/kg)	EPA Method 5035 GRO (mg/kg)
27-1(1-2.5)	12/16/2013	1 to 2.5	4.2	<0.4	0.9	0.9		
27-1(5-7.5)	12/16/2013	5 to 7.5	8.2	<0.5	<0.5	<0.5		
27-2(1-2.5)	12/16/2013	1 to 2.5	5.1	<0.4	<0.4	<0.4		
27-2(5-7.5)	12/16/2013	5 to 7.5	7.4	<0.5	<0.5	<0.5	<5.9	<4.6
27-3(7.5-10)	12/16/2013	7.5 to 10	7.6	<0.5	<0.5	<0.5		
NC Initial Action Level - UST Section for 5035/5030-GRO; 3550-DRO		10	10	NA	10	10		

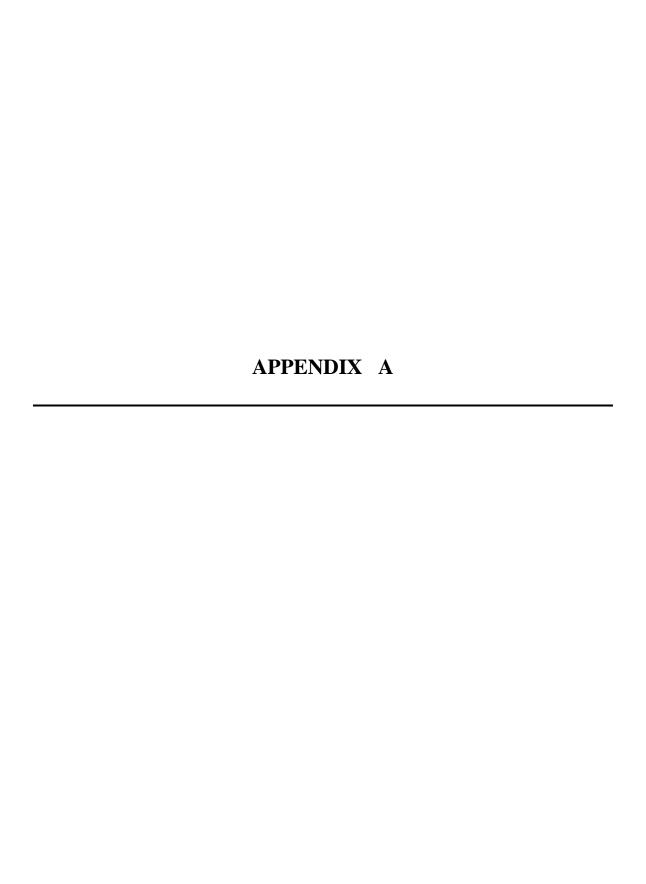
PID= photo-ionizaton detector PPM= parts-per-million

GRO= Gasoline Range Organics
DRO= Diesel Range Organics

TPH= Total Petroleum Hydrocarbons (GRO + DRO) NA= Not Applicable
"-----" = No Laboratory Analysis

mg/kg= milligrams-per-kilogram

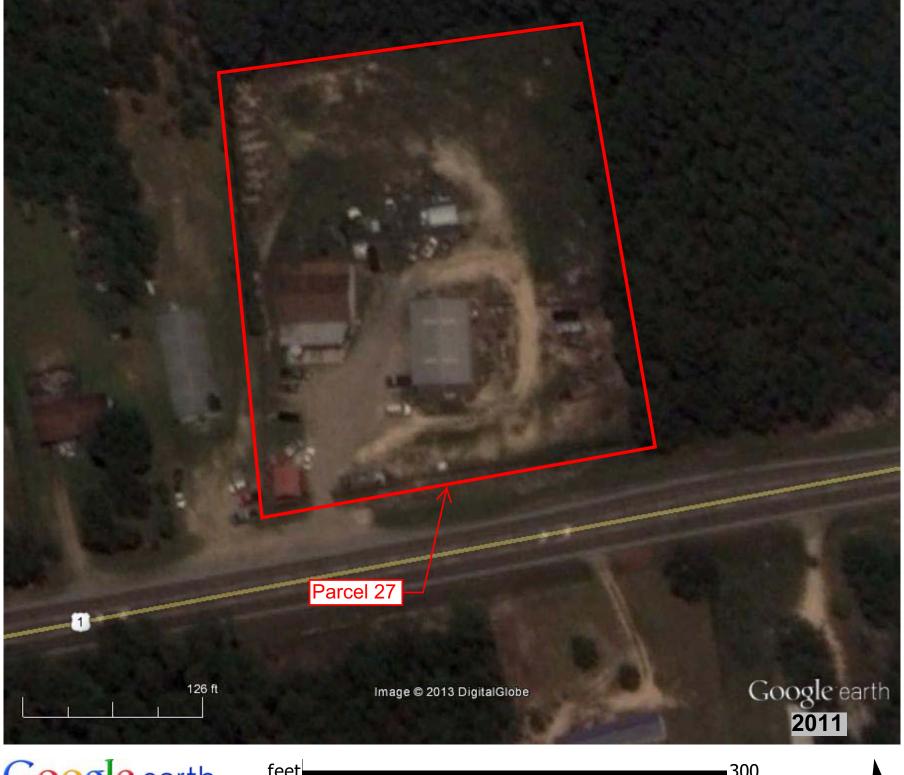
<sup>\*</sup> Bold values indicate concentrations above initial action levels







feet 300 meters 90



















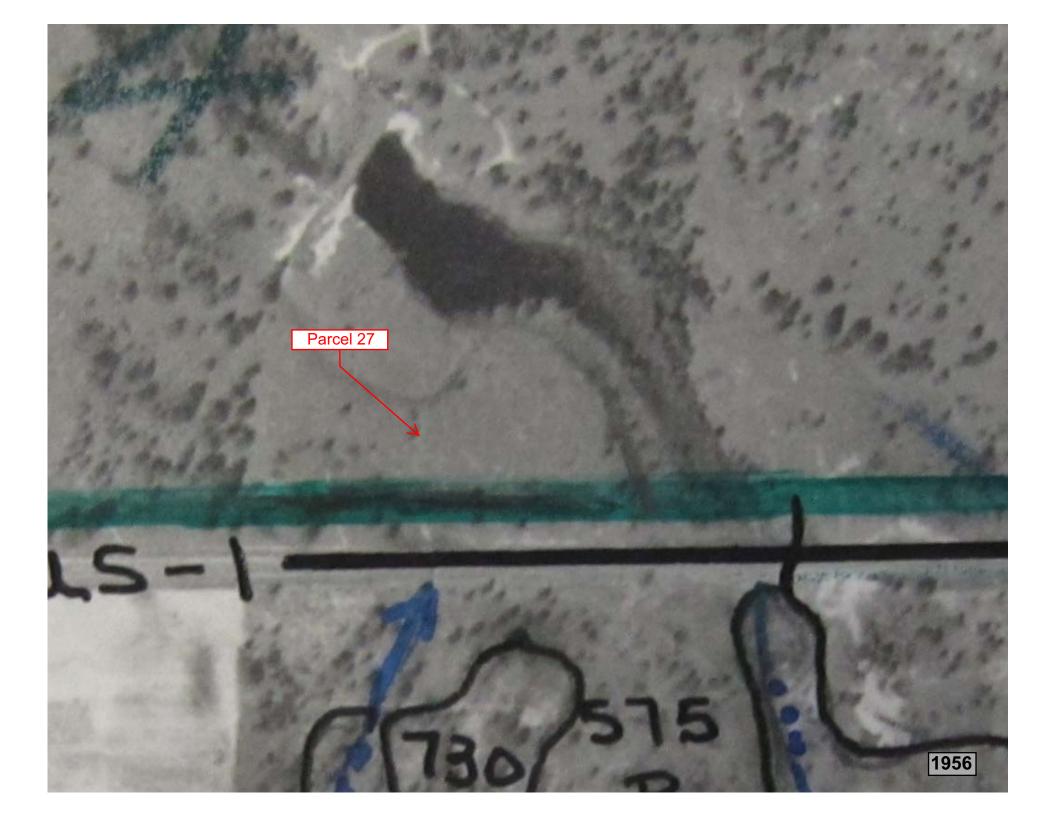


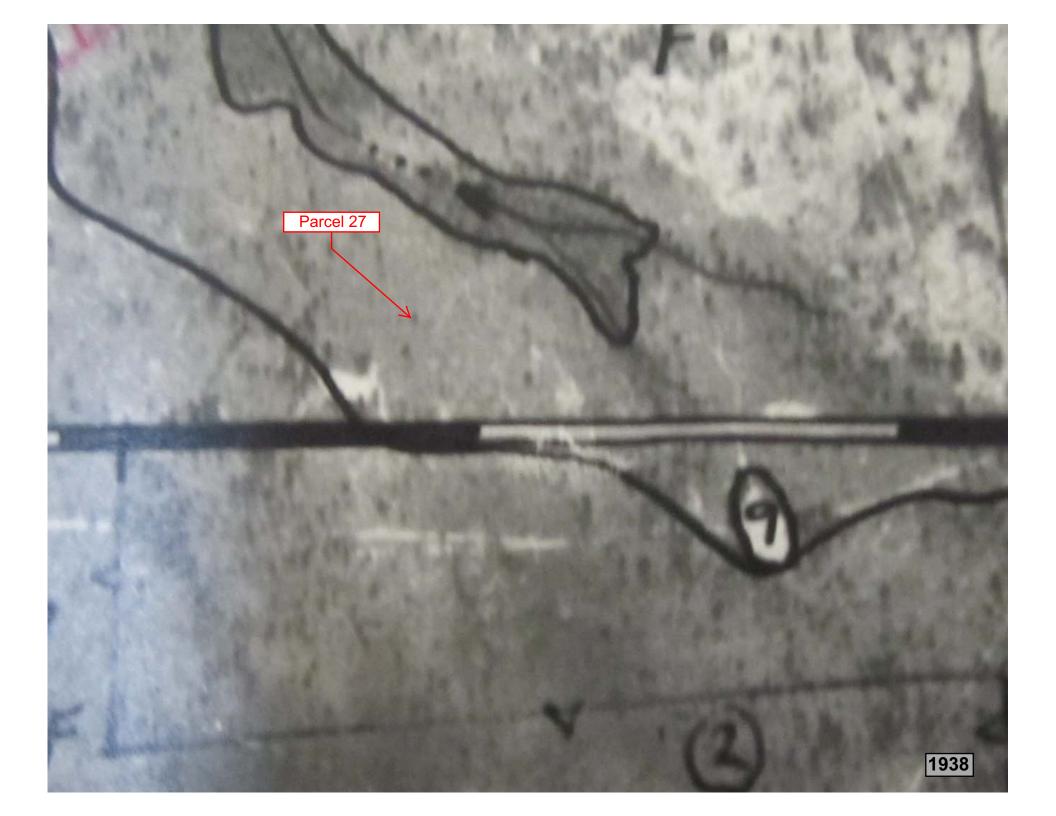
feet 300 meters 90











# APPENDIX B



### PYRAMID ENVIRONMENTAL & ENGINEERING (PROJECT 2013-278)

## GEOPHYSICAL SURVEY

### PARCEL 027 - CHARLES SUTTON 1975 N. US 1 NCDOT PROJECT R-2501C (34437.1.1)

### ROCKINGHAM, RICHMOND COUNTY, NC **JANUARY 13, 2013**

Report prepared for: Mr. Gordon Box

> GeoEnvironmental Project Manager Geotechnical Engineering Unit

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### GEOPHYSICAL INVESTIGATION REPORT

### Parcel 027, 1975 N. US 1

### Rockingham, Richmond County, North Carolina

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- Figure 2 Parcel 027 EM61 Bottom Coil & Differential Results Contour Maps
- Figure 3 Parcel 027 Overlay of EM61 Contour Map On Engineering Plans

**Project Description:** Pyramid Environmental conducted a geophysical investigation for the North Carolina Department of Transportation (NCDOT), at the Charles Sutton property, Parcel 027, 1975 N. US 1, Rockingham, Richmond County, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project R-2501C). The geophysical survey boundaries at the project site were designed to include the portions of the property between the existing edge of pavement and the proposed ROW and easements, whichever distance was greater. The geophysical investigation consisted of an electromagnetic (EM) induction-metal detection survey.

**Geophysical Results:** All of the EM61 anomalies detected could be attributed to visible objects at the ground surface such as signs, fences, and other cultural features. The geophysical investigation <u>did not record evidence of any metallic USTs</u> at the property.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for the North Carolina Department

of Transportation (NCDOT), at the Charles Sutton property, Parcel 027, 1975 N. US 1,

Rockingham, Richmond County, NC. The survey was part of an NCDOT Right-of-Way (ROW)

investigation (NCDOT Project R-2501C). The geophysical survey boundaries at the project site

were designed to include the portions of the property between the existing edge of pavement and

the proposed ROW and easements, whichever distance was greater. The survey grid spanned

approximately 300 feet from west to east and approximately 60 feet from north to south.

Conducted on December 3, 2013, the geophysical investigation was performed to determine if

unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site contained an auto repair shop and ATV sales store, and otherwise consisted primarily of

open grassy and gravel areas. It should be noted that dense vegetation on the eastern half of the

survey area prevented a portion of the parcel from being surveyed with the geophysical

Aerial photographs showing the survey area boundaries and ground-level equipment.

photographs are shown in **Figure 1**.

FIELD METHODOLOGY

Prior to conducting the geophysical investigation, a 20-foot by 10-foot survey grid was

established across the geophysical survey areas using measuring tapes and water-based marking

paint. These grid marks were used as X-Y coordinates for location control when collecting the

geophysical data and establishing base maps for the geophysical results.

The geophysical investigation consisted of an electromagnetic (EM) induction-metal detection

survey. The EM survey was performed on December 3, 2013, using a Geonics EM61 metal

detection instrument. According to the instrument specifications, the EM61 can detect a metal

drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size)

can be detected to a maximum depth of 4 to 5 feet. The EM61 data were digitally collected at

approximately 0.8 foot intervals along north-south trending or east-west trending, parallel survey

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lines spaced five feet apart. The data were downloaded to a computer and reviewed in the field and office using the Geonics DAT61 and Surfer for Windows Version 11.0 software programs.

GPR data were not required due to all EM anomalies being directly attributable to cultural features at the ground surface (see discussion below).

### DISCUSSION OF RESULTS

Contour plots of the EM61 bottom coil and differential results obtained across survey area at the property are presented in **Figure 2**. The bottom coil results represent the most sensitive component of the EM61 instrument and detect metal objects regardless of size. The bottom coil response can be used to delineate metal conduits or utility lines; small, isolated metal objects, and areas containing insignificant metal debris. The differential results are obtained from the difference between the top and bottom coils of the EM61 instrument. The differential results focus on the larger metal objects such as drum and UST-size objects and ignore the smaller insignificant metal objects.

**Discussion of EM Anomalies**: The high amplitude EM feature spanning the entire survey area from west to east at Y=50 was the result of a chain link fence at that location. A metal carport on the west side of the survey area resulted in the EM response surrounding that structure. The EM feature at X=115, Y=55 was the result of a metal sign. The EM anomalies at X=120, Y=25 and X=234, Y=25 were the result of metal mailboxes. The EM feature at X=250, Y=80 was the result of an adjacent parked vehicle outside of the survey area. The EM anomaly at X=275, Y=75 was associated with visible metal debris at the ground surface. The EM response at the east boundary of the survey area was the result of a metal fence extending from south to north at that location. As discussed above, it should be noted that an area of dense vegetation on the eastern half of the survey area (shown on **Figure 2**) was not surveyed due to inaccessibility. **Figure 3** provides an overlay of the bottom coil EM contour map on the NCDOT engineering plans for reference.

GPR data were not required due to all EM anomalies being directly attributable to cultural features at the ground surface. The geophysical investigation <u>did not record evidence of any metallic USTs</u> at the property.

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### **SUMMARY & CONCLUSIONS**

Our evaluation of the EM61 data collected across Parcel 027 in Rockingham, North Carolina, provides the following summary and conclusions:

- The EM61 survey provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- All of the EM61 anomalies detected could be attributed to visible objects at the ground surface such as signs, fences, and other cultural features.
- The geophysical investigation <u>did not record evidence of any metallic USTs</u> at the property.

### LIMITATIONS

Geophysical surveys have been performed and this report prepared for the NCDOT in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the EM61 and GPR surveys are non-unique and may not represent actual subsurface conditions. The EM61 and GPR results obtained for this project have not conclusively determined the definitive presence or absence of metallic USTs, but that the evidence collected is sufficient to result in the conclusions made in this report. Additionally, it should be understood that areas containing extensive vegetation, reinforced concrete, or other restrictions to the accessibility of the geophysical instruments could not be fully investigated.





Approximate Boundaries of the Geophysical Survey Area



View of East Portion of Survey Area (Facing Approximately East)



View of West Portion of Survey Area (Facing Approximately West)

TITLE PARCEL 027: GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS

PROJECT

NCDOT PROJECT R-2501C (34437.1.1) ROCKINGHAM, RICHMOND COUNTY, NC



503 INDUSTRIAL AVENUE GREENSBORO, NC 27460

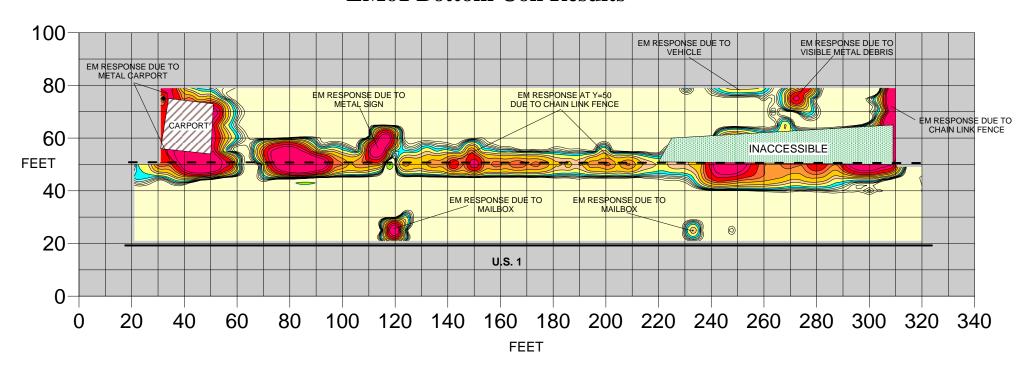
(336) 335-3174 (p) (336) 691-0648 (f)

License # C1251 Eng. / License # C257 Geology

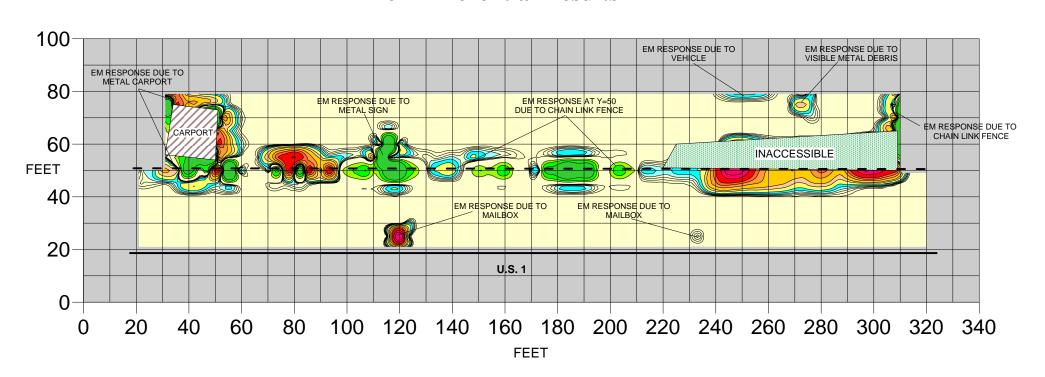
DATE	1/6/2014	CLIENT NCDOT		
PYRAMID PROJECT#:	2013-278	FIGURE 1		



### **EM61 Bottom Coil Results**



### **EM61 Differential Results**



# NO EVIDENCE OF METALLIC USTs OBSERVED

The contour plots show the bottom coil (most sensitive) and differential results of the EM61 instrument in millivolts (mV). The bottom coil response shows buried metallic objects regardless of size. The differential response focuses on larger, buried metallic objects such as drums and USTs and ignores smaller miscellaneous buried, metal debris. The EM61 data were collected on December 3, 2013 using a Geonics EM61 instrument. Ground penetrating radar (GPR) data were not required due to all anomalies being explained by cultural features at the ground surface.

# EM61 Metal Detection Response (millivolts)



PARCEL 027:
EM61 BOTTOM COIL & DIFFERENTIAL
RESULTS CONTOUR MAPS

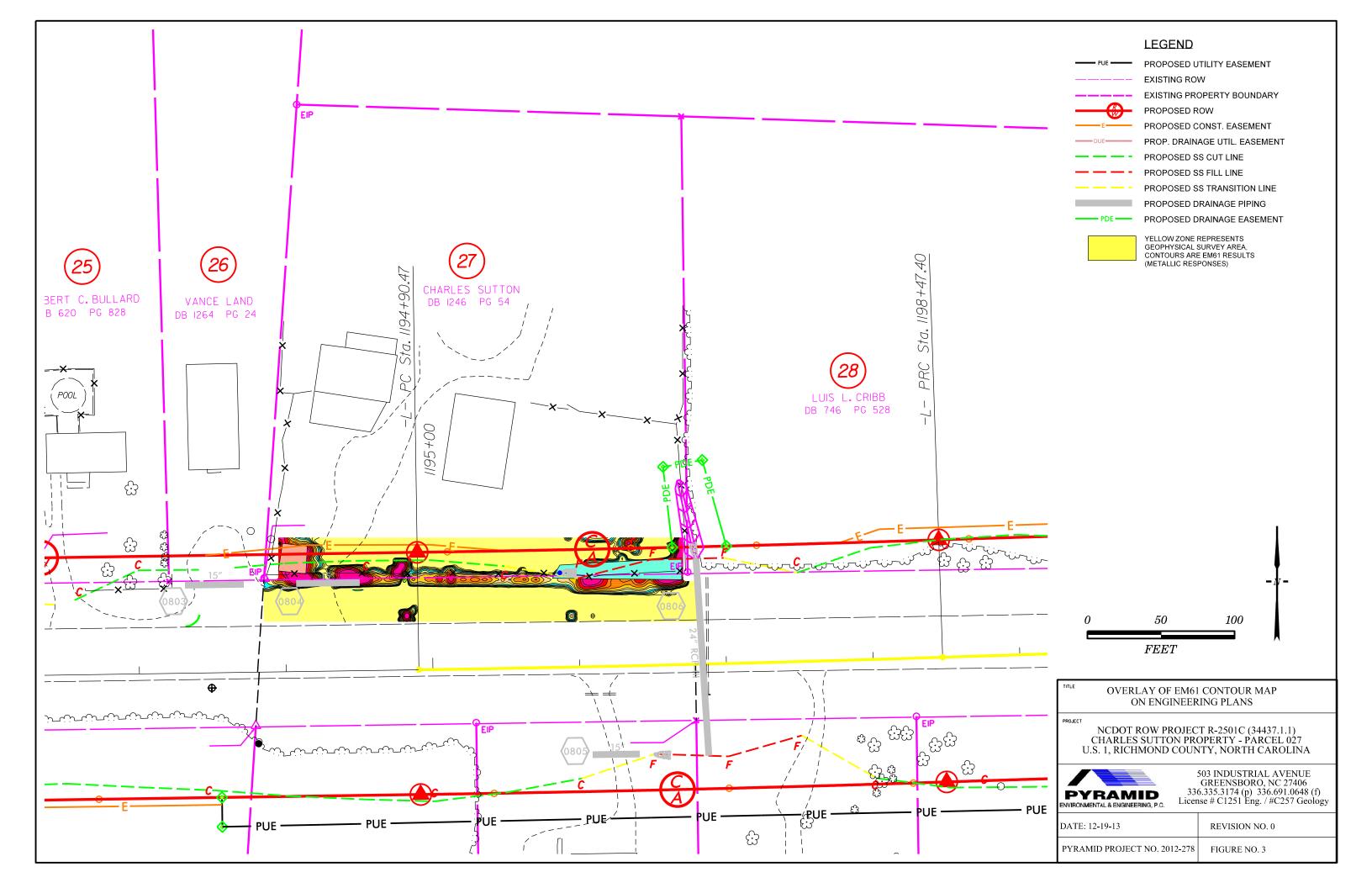
PROJECT

NCDOT PROJECT R-2501C (34437.1.1) ROCKINGHAM, RICHMOND COUNTY, NC



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

DATE	1/6/2014	CLIENT	NCDOT
PYRAMID PROJECT#:	2013-278	I	FIGURE 2



## APPENDIX C

### Pyramid Environmental & Engineering, P.C.

### FIELD DRILLING RECORD

PROJECT NAME: PROJECT NUMBER:	NC DOT R-2501C, Parcel 027, Charles Sutton, Rockingham, NC / 2013-278	BORING/WELL NO:	27-1
SITE LOCATION:	Richmond County, NC	BORING/WELL LOCATION:	Parcel 027, Charles Sutton, West Side/Edge of Property
START DATE:	12/16/13	COMPLETED:	12/16/13
GEOLOGIST:	Eric Cross	DRILLER:	Geologic Exploration
DRILL METHOD:	Geoprobe	SAMPLE METHOD:	Macro-core
BORING DIA:	2-inch	CASING DIA:	N/A
TOTAL DEPTH:	10 feet	CASING DEPTH:	N/A

DEPTH	VISUAL MANUAL SOIL CLASSIFICATION COLOR, TEXTURE, STRUCTURE, CONSISTENCY, ODOR, ETC.	OVA RESULTS PERCENT RECOVERY
(ft.)		BLOW COUNTS
	I=	
	Depths correspond to soil type transitions	Core Sample Depths
1-2.5'	Brown, fine to medium grain sand (SP) to clayey-sand (SC), moist at	PID=27-1(1-2.5): 4.2 PPM
	2.5 feet, no odor	
2.5-5'	Brown, fine to medium grain sand (SP) to clayey-sand (SC), no odor	PID=27-1(2.5-5): 3.1 PPM
5-7.5'	Brown, fine grain sand (SP) to clayey-sand (SC), no odor	PID=27-1(5-7.5): 8.2 PPM
7.5-10'	Tan to reddish gray, fine grain sand (SP), no odor	PID=27-1(7.5-10): 2.4 PPM
L	MONITORING WELL INFORMATION (IF APPLICA	ARIE)

### MONITORING WELL INFORMATION (IF APPLICABLE)

RISER LENGTH (ft)	DEPTH (ft)	DIAMETER (in)	MATERIAL
SCREEN LENGTH (ft)	DEPTH (ft)	DIAMETER (in)	MATERIAL
DEPTH TO TOP OF SAND _		BAGS OF SAND	
DEPTH TO TOP SEAL	BENTONIT	TE USED	BAGS OF CEMENT USED 0

### Pyramid Environmental & Engineering, P.C.

### FIELD DRILLING RECORD

PROJECT NAME: PROJECT NUMBER:	NC DOT R-2501C, Parcel 027, Charles Sutton, Rockingham, NC / 2013-278	BORING/WELL NO:	27-2
SITE LOCATION:	Richmond County, NC	BORING/WELL LOCATION:	Parcel 027, Charles Sutton, East of Entrance
START DATE:	12/16/13	COMPLETED:	12/16/13
GEOLOGIST:	Eric Cross	DRILLER:	Geologic Exploration
DRILL METHOD:	Geoprobe	SAMPLE METHOD:	Macro-core
BORING DIA:	2-inch	CASING DIA:	N/A
TOTAL DEPTH:	10 feet	CASING DEPTH:	N/A

2.5-7.5' Light to pale tan to tan with red mottling, fine grain clay (CL), no odor PID=27-2(2.5-5): 1.4 PPM PID=27-2(5-7.5): 7.4 PPM	DEPTH (ft.)	VISUAL MANUAL SOIL CLASSIFICATION COLOR, TEXTURE, STRUCTURE, CONSISTENCY, ODOR, ETC.	OVA RESULTS PERCENT RECOVERY BLOW COUNTS
1-2.5' Brown, fine to medium grain sand (SP) to clayey-sand (SC), no odor  2.5-7.5' Light to pale tan to tan with red mottling, fine grain clay (CL), no odor  PID=27-2(1-2.5): 5.1 PPM  PID=27-2(2.5-5): 1.4 PPM  PID=27-2(5-7.5): 7.4 PPM  7.5-10' Light to pale tan to tan with red mottling, fine grain clay (CL), grading  PID=27-2(7.5-10): 6.0 PPM			
2.5-7.5' Light to pale tan to tan with red mottling, fine grain clay (CL), no odor  PID=27-2(2.5-5): 1.4 PPM  PID=27-2(5-7.5): 7.4 PPM  7.5-10' Light to pale tan to tan with red mottling, fine grain clay (CL), grading  PID=27-2(7.5-10): 6.0 PPM		Depths correspond to soil type transitions	Core Sample Depths
PID=27-2(5-7.5): 7.4 PPM 7.5-10' Light to pale tan to tan with red mottling, fine grain clay (CL), grading PID=27-2(7.5-10): 6.0 PPM	1-2.5'	Brown, fine to medium grain sand (SP) to clayey-sand (SC), no odor	PID=27-2(1-2.5): 5.1 PPM
7.5-10' Light to pale tan to tan with red mottling, fine grain clay (CL), grading PID=27-2(7.5-10): 6.0 PPN	2.5-7.5'	Light to pale tan to tan with red mottling, fine grain clay (CL), no odor	PID=27-2(2.5-5): 1.4 PPM
			PID=27-2(5-7.5): 7.4 PPM
into brown, fine grain sand, no odor	7.5-10'	Light to pale tan to tan with red mottling, fine grain clay (CL), grading	PID=27-2(7.5-10): 6.0 PPM
		into brown, fine grain sand, no odor	

### MONITORING WELL INFORMATION (IF APPLICABLE)

RISER LENGTH (ft)	DEPTH (ft)	DIAMETER (in)	MATERIAL
SCREEN LENGTH (ft)	DEPTH (ft)	DIAMETER (in)	MATERIAL
DEPTH TO TOP OF SAND _		BAGS OF SAND	
DEPTH TO TOP SEAL	BENTONIT	TE USED	BAGS OF CEMENT USED 0

### Pyramid Environmental & Engineering, P.C.

### FIELD DRILLING RECORD

PROJECT NAME: PROJECT NUMBER:	NC DOT R-2501C, Parcel 027, Charles Sutton, Rockingham, NC / 2013-278	BORING/WELL NO:	27-3
SITE LOCATION:	Richmond County, NC	BORING/WELL LOCATION:	Parcel 027, Charles Sutton, South of the Building
START DATE:	12/16/13	COMPLETED:	12/16/13
GEOLOGIST:	Eric Cross	DRILLER:	Geologic Exploration
DRILL METHOD:	Geoprobe	SAMPLE METHOD:	Macro-core
BORING DIA:	2-inch	CASING DIA:	N/A
TOTAL DEPTH:	10 feet	CASING DEPTH:	N/A

DEPTH (ft.)	VISUAL MANUAL SOIL CLASSIFICATION COLOR, TEXTURE, STRUCTURE, CONSISTENCY, ODOR, ETC.	OVA RESULTS PERCENT RECOVERY BLOW COUNTS
	Depths correspond to soil type transitions	Core Sample Depths
1-2.5'	Brown, fine to medium grain sand (SP) to clayey-sand (SC), no odor	PID=27-3(1-2.5): 2.6 PPM
2.5-5'	Brown to orange, fine grain clayey-sand (SC) to sandy-clay (CL), no odor	PID=27-3(2.5-5): 5.0 PPM
5-7.5'	Orange to brown, fine to medium grain clayey-sand (SC), no odor	PID=27-3(5-7.5): 5.6 PPM
7.5-10'	Reddish brown, fine to medium grain clayey-sand (SC) to sand (SP),	PID=27-3(7.5-10): 7.6 PPM
	no odor	
	MONITORING WELL INCODICATION (IF ADDITION	

### MONITORING WELL INFORMATION (IF APPLICABLE)

RISER LENGTH (ft)	DEPTH (ft)	DIAMETER (in)	MATERIAL
SCREEN LENGTH (ft)	DEPTH (ft)	DIAMETER (in)	MATERIAL
DEPTH TO TOP OF SAND _		BAGS OF SAND	
DEPTH TO TOP SEAL	BENTONIT	TE USED	BAGS OF CEMENT USED 0

## APPENDIX D





### Hydrocarbon Analysis Results

NCDOT Richmond County Client:

Address: PARCEL 027

1975 US Highway 1 North

Rockingham, NC

Contact:

Samples taken Samples extracted

Samples analysed

Five Samples Five Samples

Five Samples

Tim Leatherman

Operator

Project: NCDOT Richmond R-2501C

						Marie Sanda	A CONTRACT						
Matrix	Sample ID	Dilution	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP		Ratios		HC Fingerprint Match
										% light % mid		% heavy	
s	27-3(7.5-10)	9.5	<0.5	<0.5	#DIV/0i	#DIV/0i	< 0.48		< 0.05 < 0.024	0	0	100	100 Match not possible
S	27-1(1-2.5)	8.5	<0.4	<0.4	0.0	0.9	0.76		0.07 < 0.021	82.4	14.2	3.4	3.4 Match not possible
တ	27-2(5-7.5)	10.5	<0.5	<0.5	<0.5	<0.5	< 0.53	< 0.05	< 0.05 < 0.026	0	0	100	100 Match not possible
v	27-3(7.5-10)	9.5	<0.5	<0.5	<0.5	<0.5	< 0.48		< 0.05 < 0.024	0	0	1001	100 Match not possible
w	27-1(5-7.5)	10.1	<0.5	<0.5	<0.5	<0.5	< 0.51		< 0.05 < 0.025	0	0	1001	100 Match not possible
S	27-2(1-2.5)	8.8	<0.4	<0.4	<0.4	<0.4	< 0.44	< 0.04	< 0.04 < 0.022	0	0	1001	100 Match not possible
A STATE OF THE PARTY OF THE PAR	Initial Ca	Initial Calibrator QC check	(C check				Low Range Calibrator Final check High Range Calibrator Final check	e Calibra	tor Final tor Final	check			

Results generated by a QED HC-1 analyser

Concentration values in mg/kg for soil samples and mg/L for water samples.

Soil values are not corrected for moisture or stone content

Fingerprints provide a tentative hydrocarbon identification based on operator selected library matches Fingerprint match abbreviations

Est = Specific calibrator not used, result estimated (PFM)= Poor library fingerprint match (SBS)= site specific background subracted (LBS)= Library background subtracted

% = match confidence

Requested Analysis ō RISIRIA Page: TEO Parted OST G 100 Date Signed: (ス/)(6/173 N Methanol preserved Date Ė Mrs. roal Krichmarch By Containers CHAIN-OF-CUSTODY / Analytical Request Document - QROS / QED Accepted By / Affillation 3:15 13:30 Time COLLECTED SAMPLER NAME AND SIGNATURE Date Purchase Order No.: שומל Project Number: Project Name: Signature of Sampler: C≕Comp. G≕Grab Print Name of Sampler: T]me **600 U**U Matrix Date Date Pyramid Environmental & Engineering, P.C. Pyramid Environmental & Engineering, P.C. Address: 503 Industrial Ave. Greensboro, NC 27406 Relinquished By / Affillation SAMPLE ID Company: ITEM

# APPENDIX E



Pace Analytical Services, Inc. 205 East Meadow Road - Suite A Eden, NC 27288 (336)623-8921 Pace Analytical Services, Inc. 2225 Riverside Dr. Asheville, NC 28804 (828)254-7176 Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

December 31, 2013

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

RE: Project: Richmond Co. 027 #34437.1.1

Pace Project No.: 92184266

### Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on December 20, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

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

Sincerely,

Jon D Bradley

jon.bradley@pacelabs.com Project Manager

Enclosures

cc: Tim Leatherman, Pyramid





Pace Analytical Services, Inc.

205 East Meadow Road - Suite A Eden, NC 27288 (336)623-8921 Pace Analytical Services, Inc. 2225 Riverside Dr. Asheville, NC 28804

(828)254-7176

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

### **CERTIFICATIONS**

Project: Richmond Co. 027 #34437.1.1

Pace Project No.: 92184266

**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 West Virginia Certification #: 357 Virginia/VELAP Certification #: 460221

### **REPORT OF LABORATORY ANALYSIS**



### Pace Analytical Services, Inc.

205 East Meadow Road - Suite A Eden, NC 27288 (336)623-8921

### Pace Analytical Services, Inc. 2225 Riverside Dr. Asheville, NC 28804 (828)254-7176

Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078

(704)875-9092

### **SAMPLE ANALYTE COUNT**

Project: Richmond Co. 027 #34437.1.1

Pace Project No.: 92184266

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92184266001	27-2 (5-7.5)	EPA 8015 Modified	NU1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C



Pace Analytical Services, Inc. 205 East Meadow Road - Suite A

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### **PROJECT NARRATIVE**

Project: Richmond Co. 027 #34437.1.1

Pace Project No.: 92184266

Method: EPA 8015 Modified

Description: 8015 GCS THC-Diesel
Client: NCDOT East Central
Date: December 31, 2013

### **General Information:**

1 sample was analyzed for EPA 8015 Modified. All samples were received in acceptable condition with any exceptions noted below.

### **Hold Time:**

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

### Sample Preparation:

The samples were prepared in accordance with EPA 3546 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.

### Surrogates:

All surrogates were within QC limits 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:**



Pace Analytical Services, Inc. 205 East Meadow Road - Suite A

Eden, NC 27288 (336)623-8921 Pace Analytical Services, Inc. 2225 Riverside Dr. Asheville, NC 28804 (828)254-7176 Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

### **PROJECT NARRATIVE**

Project: Richmond Co. 027 #34437.1.1

Pace Project No.: 92184266

Method: EPA 8015 Modified

Description: Gasoline Range Organics

Client: NCDOT East Central

Date: December 31, 2013

### **General Information:**

1 sample was analyzed for EPA 8015 Modified. All samples were received in acceptable condition with any exceptions noted below.

### **Hold Time:**

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

### Sample Preparation:

The samples were prepared in accordance with EPA 5035A/5030B 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.

### Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

### Surrogates:

All surrogates were within QC limits 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:**

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



### Pace Analytical Services, Inc. 205 East Meadow Road - Suite A Eden, NC 27288

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### **ANALYTICAL RESULTS**

Project: Richmond Co. 027 #34437.1.1

Pace Project No.: 92184266

Date: 12/31/2013 03:26 PM

Lab ID: 92184266001 Received: 12/20/13 14:11 Sample: 27-2 (5-7.5) Collected: 12/16/13 13:15 Matrix: Solid Results reported on a "dry-weight" basis **Parameters** Results Units Report Limit DF Prepared Analyzed CAS No. Qual 8015 GCS THC-Diesel Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546 **Diesel Components** ND mg/kg 5.9 12/20/13 18:42 12/23/13 15:07 68334-30-5 Surrogates 87 % 41-119 n-Pentacosane (S) 12/20/13 18:42 12/23/13 15:07 629-99-2 Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B **Gasoline Range Organics** 

Gasoline Range Organics ND mg/kg 4.6 1 12/30/13 14:50 12/30/13 21:11 8006-61-9

 Surrogates

 4-Bromofluorobenzene (S)
 102 %
 70-167
 1
 12/30/13 14:50
 12/30/13 21:11
 460-00-4

Percent Moisture Analytical Method: ASTM D2974-87

Percent Moisture 15.0 % 0.10 1 12/28/13 10:37



### Pace Analytical Services, Inc. 205 East Meadow Road - Suite A

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### Pace Analytical Services, Inc. 2225 Riverside Dr. Asheville, NC 28804 (828)254-7176

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

### **QUALITY CONTROL DATA**

Project: Ric

Richmond Co. 027 #34437.1.1

Pace Project No.:

92184266

QC Batch:

GCV/7658

QC Batch Method: EPA 5035A/5030B

Analysis Method:

EPA 8015 Modified

Analysis Description:

Gasoline Range Organics

Associated Lab Samples: 9
METHOD BLANK: 1114325

92184266001

Matrix: Solid

Associated Lab Samples:

92184266001

Blank Result Reporting Limit

J

Analyzed Qualifiers

Parameter

Gasoline Range Organics
4-Bromofluorobenzene (S)

Units mg/kg

%

ND 103 6.0 12/30/13 20:25 70-167 12/30/13 20:25

LABORATORY CONTROL SAMPLE:

Parameter

1114326

Units

92184283001

Result

ND

Spike Conc. LCS Result LCS % Rec % Rec Limits

Qualifiers

Gasoline Range Organics 4-Bromofluorobenzene (S)

mg/kg %

Units

mg/kg

%

49.7

100 103 70-165 70-167

MSD

% Rec

111

102

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1114327

1114328

1114

49.5

MSD

MS

% Rec Limits

RPD Qual

Gasoline Range Organics 4-Bromofluorobenzene (S)

Date: 12/31/2013 03:26 PM

Parameter

MS Spike Conc.

34.7

Spike Conc.

MSD

34.7

MS Result 38.2

Result 2 38.4

4 Rec 110 107

47-187 70-167

187 1



### Pace Analytical Services, Inc.

205 East Meadow Road - Suite A Eden, NC 27288 (336)623-8921

### Pace Analytical Services, Inc. 2225 Riverside Dr. Asheville, NC 28804 (828)254-7176

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

### **QUALITY CONTROL DATA**

Project: Richmond Co. 027 #34437.1.1

Pace Project No.: 92184266

Date: 12/31/2013 03:26 PM

QC Batch: OEXT/25303
QC Batch Method: EPA 3546

Analysis Method: Analysis Description: EPA 8015 Modified 8015 Solid GCSV

Associated Lab Samples: 92184266001

METHOD BLANK: 1111061 Matrix: Solid

Associated Lab Samples: 92184266001

Blank Reporting Parameter Units Result Limit Qualifiers Analyzed **Diesel Components** ND 12/23/13 12:23 mg/kg 5.0 n-Pentacosane (S) % 89 41-119 12/23/13 12:23

LABORATORY CONTROL SAMPLE: 1111062

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Diesel Components** mg/kg 66.7 49.8 75 49-113 n-Pentacosane (S) % 81 41-119

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1111063 1111064

MSD MS 92184266001 Spike Spike MS MSD MS MSD % Rec Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** Qual ND **Diesel Components** mg/kg 78.4 78.4 54.8 62.2 68 77 10-146 13 n-Pentacosane (S) % 77 82 41-119



### Pace Analytical Services, Inc. 205 East Meadow Road - Suite A

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

### **QUALITY CONTROL DATA**

Project: Richmond Co. 027 #34437.1.1

Pace Project No.: 92184266

QC Batch: PMST/6122 Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture

Associated Lab Samples: 92184266001

SAMPLE DUPLICATE: 1113487

92184176001 Dup
Parameter Units Result Repl Qualifiers

Percent Moisture % 99.0 99.0 0

SAMPLE DUPLICATE: 1113488

Date: 12/31/2013 03:26 PM

ParameterUnits92184283002 ResultDup ResultRPDQualifiersPercent Moisture%6.76.27

### **REPORT OF LABORATORY ANALYSIS**



Pace Analytical Services, Inc. 205 East Meadow Road - Suite A Eden, NC 27288

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Pace Analytical Services, Inc. 2225 Riverside Dr. Asheville, NC 28804 (828)254-7176 Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

### **QUALIFIERS**

Project: Richmond Co. 027 #34437.1.1

Pace Project No.: 92184266

### **DEFINITIONS**

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

**DUP - Sample Duplicate** 

**RPD - Relative Percent Difference** 

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

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

TNI - The NELAC Institute.

### **LABORATORIES**

Date: 12/31/2013 03:26 PM

PASI-C Pace Analytical Services - Charlotte



Pace Analytical Services, Inc. 205 East Meadow Road - Suite A Eden, NC 27288 (336)623-8921 Pace Analytical Services, Inc. 2225 Riverside Dr. Asheville, NC 28804 (828)254-7176 Pace Analytical Services, Inc. 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 (704)875-9092

### **QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: Richmond Co. 027 #34437.1.1

Pace Project No.: 92184266

Date: 12/31/2013 03:26 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92184266001	27-2 (5-7.5)	EPA 3546	OEXT/25303	EPA 8015 Modified	GCSV/16310
92184266001	27-2 (5-7.5)	EPA 5035A/5030B	GCV/7658	EPA 8015 Modified	GCV/7661
92184266001	27-2 (5-7.5)	ASTM D2974-87	PMST/6122		

### Pace Analytical

### росипент маше. Sample Condition Upon Receipt (SCUR)

**Document Number:** F-CHR-CS-03-rev.13 DOCUMENT VEASOR Decombon 10 Page 1 of 2

Issuing Authority:
Pace Huntersville Quality Office

Client Name: Vyramid Environne	istal
	ent Commercial Pace OtherOptional
Custody Seal on Cooler/Box Present:  yes	Proj. Due Date:
Packing Material:   Bubble Wrap   Bubble	
Thermometer Used: IR Gun T1102 (T130)	Type of Ice: (Vet) Blue None
Temp Correction Factor T1102: No Corre	
Corrected Cooler Temp.: 2.3 °C Temp should be above freezing to 6°C	Biological Tissue is Frozen: Yes No N/A Comments:
Chain of Custody Present:	ØYes □No □N/A 1.
Chain of Custody Filled Out:	∀Yes □No □N/A 2.
Chain of Custody Relinquished:	ØYes □No □N/A 3.
Sampler Name & Signature on COC:	√ Yes □No □N/A 4.
Samples Arrived within Hold Time:	☑Yes □No □N/A 5.
Short Hold Time Analysis (<72hr):	□Yes ☑No □N/A 6.
Rush Turn Around Time Requested:	□Yes ⊅No □N/A 7.
Sufficient Volume:	☐Yes ☐No ☐N/A 8.
Correct Containers Used:	Pres □No □N/A 9.
-Pace Containers Used:	☑Yes □No □N/A
Containers Intact:	ØYes □No ØN/A 10.
Filtered volume received for Dissolved tests	□Yes □No ÁN/A 11.
Sample Labels match COC:	□ Yes □ No □ N/A 12.
-Includes date/time/ID/Analysis Matrix:	
All containers needing preservation have been checked.	□Yes □No ☑N/A 13.
All containers needing preservation are found to be in compliance with EPA recommendation.	□Yes □No ☑N/A
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	□Yes ☑No
Samples checked for dechlorination:	□Yes □No ☑N/A 14.
Headspace in VOA Vials ( >6mm):	□Yes □No ☑N/A 15.
Trip Blank Present:	□Yes □No ☑N/A 16.
Trip Blank Custody Seals Present	□Yes □No □N/A
Pace Trip Blank Lot # (if purchased):	,
Client Notification/ Resolution:	Field Data Required? Y / N
Person Contacted:	Date/Time:
Comments/ Resolution:	
	WOH: 0240400
3/1/	WO#: 92184266
	ate: 12/21/13
Note: Whenever there is a discrepancy affecting No samples, a copy of this form will be sent to the No Certification Office (i.e out of hold, incorrect pres	orth Carolina DEHNR 92184266

incorrect containers)

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Pace Analytical www.pacelabs.com

### CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Project No./ Lab I.D. DRINKING WATER (N/X) Samples Intact 9284266 SAMPLE CONDITIONS F-ALL-Q-020rev.07, 15-May-2007 OTHER 3 (N/Y) Sealed Cooler × Custody of Ice (Y/N) Received on **GROUND WATER** Residual Chlorine (Y/N) 23 O° ni qmaT Page: REGULATORY AGENCY RCRA Requested Analysis Filtered (Y/N) TIME = 3 Site Location STATE: 21/12 NPDES DATE UST D DATE Signed (MM/DD/YY): ACCEPTED BY JAFFILIATION 2 3220 09 3 Analysis Test N/A Other Jon Brad eference Owole NBS#3443 Methanol \*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invidices not paid within 30 days Preservatives Na2S2O3 NaOH HCI HNO<sup>3</sup> <sup>†</sup>OS<sup>Z</sup>H Section C Attention: Unpreserved 0711 Address: TIME # OF CONTAINERS SIGNATURE of SAMPLER: SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: SAMPLE TEMP AT COLLECTION 202 eathornen-Pyramio DATE 2/6/3/2:15 TIME COMPOSITE END/GRAB DATE COLLECTED RELINQUISHED BY / AFFILIATION TIME Project Winders 24437. COMPOSITE DATE Required Project Information: (G=GRAB C=COMP) SAMPLE TYPE Copy To: (see valid codes to left) MATRIX CODE Report To: Section B ORIGINAL DW WT WW SL OLL OLL WWP ARR TS Matrix Codes
MATRIX / CODE 0 Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Tissue Other 7(5-75 Environ menta ADDITIONAL COMMENTS Requested Due Date/TAT: Notwood (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE 100 CO SAMPLE ID sreensbord, NO Section A Required Client Information: Required Client Information 336335,3174 Carmic Section D 7 4 5 9 10 7 12 ITEM # 3 7 00 6 Page 13 of 13

### APPENDIX F

### FIELD PERSONNEL LOG **PROJECT NAME**: NCDOT Richmond County ROW PROJECT NO.: R-2501C PARCELS 11, 27, 33, 42, 45, 49 and 63 Mon Tue Wed Th Fri Sat Sun Name: Eric Cross **Date:** 11/26/13 TASKS PERFORMED: E. Cros: On site: 8AM Mobilize to site. Performed site visits and owner interviews. Leave site: 3PM (additional processing performed in evening)

### FIELD PERSONNEL LOG **PROJECT NAME**: NCDOT Richmond County ROW PROJECT NO.: R-2501C PARCELS 11, 27, 33, 42, 45, 49 and 63 Mon Tue Wed Th Fri Sat Sun Name: Eric Cross & Mika Trifunovic Date: 12/3/13 **TASKS PERFORMED:** E. Cross & M. Trifunovic: On site: 8AM Mobilize to site. Performed geophysical surveys. Leave site: 5:30PM (additional processing performed in evening)

### FIELD PERSONNEL LOG **PROJECT NAME**: NCDOT Richmond County ROW PROJECT NO.: R-2501C PARCELS 11, 27, 33, 42, 45, 49 and 63 Mon Tue Wed Th Fri Sat Sun Name: Eric Cross & Mika Trifunovic Date: 12/4/13 **TASKS PERFORMED:** E. Cross & M. Trifunovic: On site: 8AM Mobilize to site. Performed geophysical surveys. Leave site: 5:30PM (additional processing performed in evening)

### FIELD PERSONNEL LOG **PROJECT NAME**: NCDOT Richmond County ROW PROJECT NO.: R-2501C PARCELS 11, 27, 33, 42, 45, 49 and 63 Mon Tue Wed Th Fri Sat Sun Name: Eric Cross & Mika Trifunovic Date: 12/5/13 **TASKS PERFORMED:** E. Cross & M. Trifunovic: On site: 8AM Mobilize to site. Performed geophysical surveys. Leave site: 6:00PM (additional processing performed in evening)

### FIELD PERSONNEL LOG **PROJECT NAME**: NCDOT Richmond County ROW PARCELS 11, 27, 33, 42, 45, 49 and 63 PROJECT NO.: R-2501C **Date:** 12/6/13 Mon Tue Wed Th Fri Sat Sun Name: Eric Cross TASKS PERFORMED: E. Cross: On site: 8AM Mobilize to site. Performed geophysical surveys. Demobilize. Leave site: 5:00PM

FIELD PERSONNEL LOG			
PROJECT NAME: NCDOT Richmond OPARCELS 11, 27, 33, 42, 45, 49 and 63	County ROW	PROJECT NO.: R-2501C	
Name: Eric Cross & Tim Leatherman	<b>Date:</b> 12/9/13	Mon Tue Wed Th Fri Sat Sun	
TASKS PERFORMED:			
E. Cross: On site: 8AM Mobilize to site. Performed geophysical st Leave site: 5:30PM	urveys & boring	location selection. Demobilize.	
T. Leatherman: On site: 9AM Mobilize to site. Assisted with geophysics Demobilize. Leave site: 4:00PM	, boring location	selection and site research.	


### FIELD PERSONNEL LOG **PROJECT NAME**: NCDOT Richmond County ROW PARCELS 11, 27, 33, 42, 45, 49 and 63 PROJECT NO.: R-2501C Mon Tue Wed Th Fri Sat Sun Name: Tim Leatherman **Date:** 12/13/13 TASKS PERFORMED: T. Leatherman: On site: 8AM Mobilize to site. Geophysics (private locating) and site research. Demobilize. Leave site: 3:30PM

FIELD PERSONNEL LOG			
PROJECT NAME: NCDOT Richmon PARCELS 11, 27, 33, 42, 45, 49 and 63		PROJECT NO.: R-2501C	
Name: Eric Cross &Tim Leatherman	<b>Date:</b> 12/16/13	Mon Tue Wed Th Fri Sat Sun	
TASKS PERFORMED:			
E. Cross & T. Leatherman: On site: 8AM Mobilize to site. Supervision of geoprol Leave site: 5:30PM (additional QED an			

FIELD PERSONNEL LOG		
<b>PROJECT NAME</b> : NCDOT PARCELS 11, 27, 33, 42, 45		OW PROJECT NO.: R-2501C
Name: Tim Leatherman	<b>Date:</b> 12/17/13	Mon Tue Wed Th Fri Sat Sun
TASKS PERFORMED:		
T. Leatherman: On site: 8AM Mobilize to site. Supervision Leave site: 4:00PM (addition		classifications, QED prep & analysis. rmed in evening)

FIELD PERSONNEL LOG  PROJECT NAME: NCDOT Richmond County ROW PROJECT NO.: R-2501C  PARCELS 11, 27, 33, 42, 45, 49 and 63		
TASKS PERFORMED:		
T. Leatherman: On site: 8AM Mobilize to site. Supervision of Leave site: 3:00PM (additional		g, classifications, QED prep & analysis. formed in evening)

FIELD PERSONNEL LOG		
<b>PROJECT NAME</b> : NCDO PARCELS 11, 27, 33, 42, 45		OW PROJECT NO.: R-2501C
Name: Tim Leatherman	<b>Date:</b> 12/19/13	Mon Tue Wed Th Fri Sat Sun
TASKS PERFORMED:		
T. Leatherman: On site: 8AM Mobilize to site. QED prep & Leave site: 4:30PM	k analysis, photos, disp	pose of samples. Demobilize.