

Prepared for:

**North Carolina Department of Transportation**

**Geotechnical Engineering Unit**

**GeoEnvironmental Section**

**1589 Mail Service Center**

**Raleigh, North Carolina, 27699-1589**

## Preliminary Site Assessment Report

Issam A. Al-Awar & Rola I. W. Property

Parcel # 48

2200 N. William Street

Goldsboro, Wayne County, North Carolina

US 117 Alternate from US 70 Bypass to Belfast

TIP Number: U-2714

WBS Element: 38979.1.2



**Apex Companies, LLC**

**10610 Metromont Parkway, Suite 206**

**Charlotte, North Carolina 28269**

Prepared by:

DocuSigned by:

*Troy Holzschuh*

2D73445FBBB9455...

Troy L. Holzschuh

Assistant Project Manager

Reviewed by:

DocuSigned by:

*Kathleen Roush*

72DD754524A74DD...

Kathleen Roush, L.G. RSM

Division Manager

NC Geologist License No. 1353



**July 31, 2017**

*not considered final unless all signatures are completed*

## TABLE OF CONTENTS

<b>1.0</b>	<b>INTRODUCTION</b> .....	<b>1</b>
1.1	Site History .....	1
1.2	Site Description.....	1
<b>2.0</b>	<b>GEOLOGY</b> .....	<b>2</b>
2.1	Regional Geology .....	2
2.2	Site Geology .....	2
<b>3.0</b>	<b>FIELD ACTIVITIES</b> .....	<b>3</b>
3.1	Preliminary Activities.....	3
3.2	Site Reconnaissance .....	3
3.3	Geophysics Survey Results .....	3
3.4	Well Survey.....	3
3.5	Soil Sampling.....	4
3.6	Groundwater Sampling .....	4
<b>4.0</b>	<b>SAMPLING RESULTS</b> .....	<b>4</b>
4.1	Soil Sampling Results .....	4
4.2	Groundwater Sampling Results.....	5
<b>5.0</b>	<b>CONCLUSIONS</b> .....	<b>5</b>
<b>6.0</b>	<b>RECOMMENDATIONS</b> .....	<b>6</b>

### TABLES

Table 1	UVF Onsite Hydrocarbon Analytical Soil and Groundwater Data from June 2017
---------	--

### FIGURES

Figure 1	Site Location Map
Figure 2	Site Map with Soil Boring Locations
Figure 3	Onsite UVF Hydrocarbon Analysis Results - Soil
Figure 4	Onsite UVF Hydrocarbon Analysis Results - Groundwater

### APPENDICES

Appendix A	Photograph Log
Appendix B	Boring Logs
Appendix C	Geophysical Report
Appendix D	UVF Hydrocarbon Analysis Results

## 1.0 INTRODUCTION

This report presents the results of a Preliminary Site Assessment (PSA) for the North Carolina Department of Transportation (NCDOT) Parcel 48 performed by Apex Companies, LLC (Apex) on behalf of the NCDOT. The subject site of this PSA report will be affected by the widening of the US Highway 117 from US Highway 70 to Belfast Road. The Site is comprised of one parcel and is located at 2200 North William Street and is identified as Parcel 48, Edith S. Smith Property, within the NCDOT U-2714 design project. The property is located at the northeast corner of the intersection of North William Street and East Patetown Road in Goldsboro, Wayne County, North Carolina, as shown in the attached Site Location Map (**Figure 1**). The site investigation was conducted in accordance with Apex Company's Technical and Cost proposal dated June 7, 2017.

NCDOT contracted Apex to perform the PSA over the entire Parcel 48 Property due to the potential presence of contamination at the site and the fact that excavation and grading may occur within the area. The PSA was performed to evaluate if soils have been impacted as a result of past and present uses of the property within the proposed investigation area, if buried underground storage tanks (USTs) are present in the area of investigation, and if groundwater is impacted.

The following report presents the results of a ground penetrating radar (GPR) evaluation to identify underground storage tanks (USTs) in the investigation area, and describes the subsurface field investigation at the site. The report includes the evaluation of field screening, as well as field and laboratory analyses with regards to the presence or absence of soil and groundwater contamination within the area of investigation across Parcel 48. **Appendix A** includes a Photograph log for the site.

### 1.1 Site History

Parcel 48 has been identified with the address of 2200 N William Street. Based on a search of the North Carolina Department of Environmental Quality (NCDEQ) UST database registry, no registered tanks were identified for the 1710 N William Street site. No visible evidence was noted during field activities. However, the geophysical survey did identify one probable UST on site. Currently the site operates as Triangle Restaurant in a one-story concrete building. Apex personnel also reviewed the NCDEQ Incident Management Database and no groundwater incidents are associated with this parcel.

### 1.2 Site Description

The site is located in a mixed commercial and residential area of Goldsboro in Wayne County. The property is developed with one structure, currently occupied by Triangle Restaurant, and an

asphalt-paved parking area located to the east of the building. The site is bordered to the north by Pennington Automotive and to the east by East Patetown Road followed by a local fire station. The intersection of North William Street and East Patetown Road is located south of the site and North William Street followed by a multi-tenant is located to the west. Additionally, the geophysical surveyor, Pyramid Environmental & Engineering, PC, (Pyramid) did identify one GPR anomaly characteristic of an UST in the investigation area.

## 2.0 GEOLOGY

### 2.1 Regional Geology

Parcel 48 is located within the Coastal Plain Physiographic Province. The Coastal Plain is the largest physiographic province in the state, covering about 45 percent of the land area. According to the US Geological Survey Professional Paper 1404-I entitled "Hydrogeologic Framework of the North Carolina Coastal Plain" (Winner and Coble, 1996), the geology consists of an eastward-dipping and eastward-thickening series of sedimentary rocks which range in age from Holocene to Cretaceous. The most common type of sediment types are sand and clay, although a significant amount of limestone occurs in the southern part of the coastal plain. The site overlies the Black Creek Formation. The Black Creek Formation is Late Cretaceous in age and was deposited in a lagoonal to marine environment. It generally consists of thinly laminated gray to black clay with interbedded gray to tan sands. The most notable characteristic of the formation is the high concentration of wood and organic material. Shells and glauconite are also common.

### 2.2 Site Geology

Site geology was observed through the drilling and sampling of 17 direct push probe soil borings (SB) onsite. **Figure 2** presents the boring locations and site layout. Borings did not exceed a total depth of ten feet below ground surface (bgs) since that depth was the maximum excavation depth for proposed drainage features. Soil consisting predominantly of tan, gray, brown, and yellow sand was observed across the parcel. The soils were unconsolidated and as a result the borings often collapsed. The topography is relatively flat and streams are located to the east and further to the west. Groundwater flow direction can only be determined with the installation of groundwater monitoring wells, however, groundwater flow may likely be to the east based on the present of surface water bodies in that direction. 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 prepared to include the site-specific health and safety information necessary for the field activities. North Carolina-One Call was contacted on May 31, 2017 to report the proposed drilling activities and notify affected utilities. Apex subcontracted Pyramid to locate subsurface utilities and other subsurface drilling hazards as well as to perform a geophysical survey. Carolina Soil Investigations, LLC (CSI) of Olin, North Carolina was retained by Apex to perform the direct push sampling for soil borings. REDLAB, LLC (REDLAB) provided an ultraviolet fluorescence (UVF) Hydrocarbon Analyzer and Eastern Solutions provided a calibrated Flame Ionization/Photoionization Detector (FID/PID). Boring locations were strategically placed in a pattern within the area of investigation to maximize the opportunity to encounter potentially contaminated soil.

### 3.2 Site Reconnaissance

Apex personnel performed a site reconnaissance on June 6, 2017. During the site reconnaissance, the area was visually examined for the presence of USTs or areas/obstructions that could potentially affect the subsurface investigation. The proposed boring locations were marked based on the site inspection and geophysical survey results. Apex personnel also used the site visit as an opportunity to contact the property manager/owner to inform them of upcoming field activities.

### 3.3 Geophysics Survey Results

The geophysical survey of the site was conducted on June 8 through June 10, 2017. Pyramid performed an electromagnetic (EM) induction metal survey followed by a GPR survey. A copy of the Geophysical Report is presented in **Appendix C**. EM anomalies were observed at the southeast corner of the building that were associated with unknown buried metal and were investigated further with the GPR method. Results of GPR scans indicated evidence of one probable UST. The probable UST is located on the southeast corner of the existing building in the southeastern portion of the survey area and is approximately nine feet long and four feet wide. The anomaly location is depicted on **Figure 2**.

### 3.4 Well Survey

No water supply or groundwater monitoring wells were observed on Parcel 48.

### 3.5 Soil Sampling

Apex conducted drilling activities at the site on June 15, 2017. Apex drilling subcontractor, CSI, advanced 17 direct push soil borings within the proposed investigation area. These 17 boring locations were placed by the probable UST system and in a pattern to maximize the likelihood of intercepting potential soil contamination. **Figure 2** presents the Site Map with boring locations and identifications.

The purpose of soil sampling was to determine if a petroleum release has occurred within the investigation area, and if so, to estimate the volume of impacted soil that might require special handling during construction activities.

Soil sampling was performed utilizing hand auger and direct push methods accompanied by field screening with the FID/PID unit and onsite quantitative analyses with the UVF Hydrocarbon Analyzer. One to two intervals of the soil boring, exhibiting the most elevated FID/PID readings, were selected for onsite quantitative analysis of total petroleum hydrocarbons (TPH) and polycyclic aromatic hydrocarbons (PAH) in soil using the REDLAB UVF Hydrocarbon Analyzer. The analysis was performed onsite by Kristen Hartsen, a certified REDLAB UVF technician with Apex. The UVF results were generated concurrent with soil boring activities so that rapid assessment could be utilized for strategic boring placement.

### 3.6 Groundwater Sampling

Apex personnel mobilized to the Site on June 15, 2017 to obtain groundwater grab samples. Groundwater grab sample locations were chosen based on data generated from the UVF analyzer and on site conditions such as the likely groundwater gradient and UST locations. The soils encountered were very sandy and unconsolidated, and as a result the borings would not stand open. Apex instructed CSI personnel to temporarily install a one-inch diameter 10-slot screen into two of the soil borings for the purposes of collecting a groundwater grab sample. Apex personnel collected groundwater grab samples from borings P48-SB2 and P48-SB4 for onsite quantitative analysis of TPH using the REDLAB UVF Hydrocarbon Analyzer. The analysis was performed onsite by Kristen Hartsen, a certified REDLAB UVF technician with Apex.

## 4.0 SAMPLING RESULTS

### 4.1 Soil Sampling Results

Based on FID/PID field screening and onsite UVF hydrocarbon analysis from the June 2017 soil sampling there is evidence of significant petroleum hydrocarbon contamination onsite, within the area of investigation. Apex personnel delineated the plume to south and to the west. However,

because of utilities to the east and the building to the north, the limits of impact could not be fully delineated in these areas. Therefore, horizontal extent of the soil impact to the east and north is uncertain. The estimated extent of the area of contamination is assumed to be 930 square feet.

Elevated FID/PID readings, above ten parts per million (ppm), were not observed in the borings conducted at the site above the smear zone. The FID readings ranged from non-detectable to 520 ppm and the PID readings ranged from non-detectable to 1500 ppm. The FID/PID field screening results are provided on the boring logs in **Appendix B**.

Soil concentrations of TPH gasoline range organics (GRO) and diesel range organics (DRO) measured using the onsite UVF unit are presented in **Table 1**, with instrument generated tables and chromatographs in **Appendix D**. **Figure 3** presents the TPH-GRO and TPH-DRO results at each boring.

Based on the UVF analyses, TPH-GRO and TPH-DRO was identified in soils on Parcel 48. TPH-GRO concentrations ranged from below detectable levels to 284.9 milligram per kilogram (mg/kg) (P48-SB4a). TPH-DRO concentrations ranged from below detectable levels to 632.8 mg/kg (P48-SB4bbb). TPH-GRO concentrations exceeded the regulatory action level of 50 mg/kg in sample P48-SB4a (284.9 mg/kg) and the TPH-DRO concentrations exceeded the regulatory action level of 100 mg/kg in samples P48-SB4 (219.9 mg/kg), P48-SB4bb (285.2 mg/kg), P48-SB4bbb (632.8 mg/kg), and P48-SB4c (217.1 mg/kg). These concentrations were observed at approximately two feet below land surface. As described above, the area of impact was not delineated to the east and north due to obstructions.

## 4.2 Groundwater Sampling Results

Apex personnel collected groundwater grab samples from two soil borings (P48-SB2 and P48-SB4) for onsite quantitative analysis of TPH using the REDLAB UVF Hydrocarbon Analyzer. Based on the real time UVF analysis of the two groundwater grab samples, groundwater impact is not present on Parcel 48 at significant levels. P48-SB2-WATER indicated TPH-GRO concentrations of 0.028 mg/L and TPH-DRO concentrations of 0.07 mg/L, while P48-SB4-WATER indicated TPH-GRO concentrations <0.015 mg/L and TPH-DRO concentrations of 0.15 mg/L. The groundwater UVF results are tabulated in **Table 1**. The instrument generated tables and chromatographs are included in **Appendix D**. Groundwater analytical data are summarized on **Figure 4**.

## 5.0 CONCLUSIONS

Based on site observations and onsite UVF analysis, petroleum-impacted soil contamination was identified above the NCDEQ Action level of 50 mg/kg for TPH-GRO and above the NCDEQ

Action level of 100 mg/kg for TPH-DRO. The estimated area of soil contamination in the southern portion of Parcel 48 is approximately 930 square feet in size. The estimated area of impact is presented in **Figure 5**. The onsite UVF analysis of groundwater did not indicate groundwater contamination to be present at significant concentrations.

The following bulleted summary is based upon Apex's evaluation of field observations and onsite quantitative analyses of samples collected from the Site on June 15, 2017.

- Results of the geophysical survey produced evidence of one anomaly characteristic of UST. The likely UST is present at the corner of the existing building and is depicted on **Figure 2**.
- Seventeen soil borings were advanced onsite. Soil samples collected from each boring were analyzed in the field using a REDLAB UVF Hydrocarbon Analyzer.
- Soil samples analyzed using the UVF did contain TPH-DRO and TPH-GRO concentrations above their respective NCDEQ Action levels of 100 mg/kg and 50 mg/kg and encompass an area of approximately 930 square feet in size. The limits of impact to the east and north could not be fully defined due to utilities and the existing building.
- Two groundwater grab samples were collected and analyzed for TPH-DRO and TPH-GRO with the REDLAB UVF Hydrocarbon Analyzer. These samples did not exhibit impact at significant concentrations.

## 6.0 RECOMMENDATIONS

Based on these PSA results, additional work will likely be required prior to road construction. The UST located at the corner of the building will need to be closed in accordance with NCDEQ requirements. In addition, the shallow soils impacted with TPH will likely require removal if invasive construction activities are planned in this portion of the parcel. These soils should be excavated and transported off-site for disposal in accordance with local, state and federal requirements.



## TABLES

**Table 1**  
**UVF Onsite Hydrocarbon Analytical Soil and Groundwater Data from June 2017**  
**U-2714, Parcel 48, Issam A Al-Awar & Rola I W Property**  
**Goldsboro, North Carolina**

Sample ID Number	Sample Date	Sample Depth (ft bgs)	GRO (mg/kg) (C5-C10)	DRO (mg/kg) (C10-C35)
<b>SOIL</b>				
NCDEQ Action Level in mg/kg			<b>50</b>	<b>100</b>
P48-SB1	6/15/2017	2	<0.49	7
P48-SB2	6/15/2017	2	0.49	7.1
P48-SB3	6/15/2017	2	<0.5	4.2
P48-SB4	6/15/2017	2	<2.8	<b>219.9</b>
P48-SB5	6/15/2017	2	<0.49	1.1
P48-SB6	6/15/2017	2	<0.53	0.53
P48-SB7	6/15/2017	2	<0.62	7.1
P48-SB8	6/15/2017	2	<0.54	6.6
P48-SB9	6/15/2017	2	3.5	24.6
P48-SB10	6/15/2017	2	<0.53	15.2
P48-SB4a	6/15/2017	2	<b>284.9</b>	93.7
P48-SB4aa	6/15/2017	2	<0.6	1.2
P48-SB4b	6/15/2017	2	<2.3	35.5
P48-SB4bb	6/15/2017	2	<2.9	<b>285.2</b>
P48-SB4bbb	6/15/2017	2	<269.9	<b>632.8</b>
P48-SB4c	6/15/2017	2	<6.6	<b>217.1</b>
P48-SB4d	6/15/2017	2	<0.65	11
<b>GROUNDWATER (mg/L)</b>				
P48-SB2-WATER	6/15/2017	NM	0.028	0.07
P48-SB4-WATER	6/15/2017	NM	<0.15	0.15

**NOTES:**

(mg/kg) = Milligrams per kilogram

(mg/L) = Milligrams per liter

GRO = Gasoline Range Organics

DRO = Diesel Range Organics

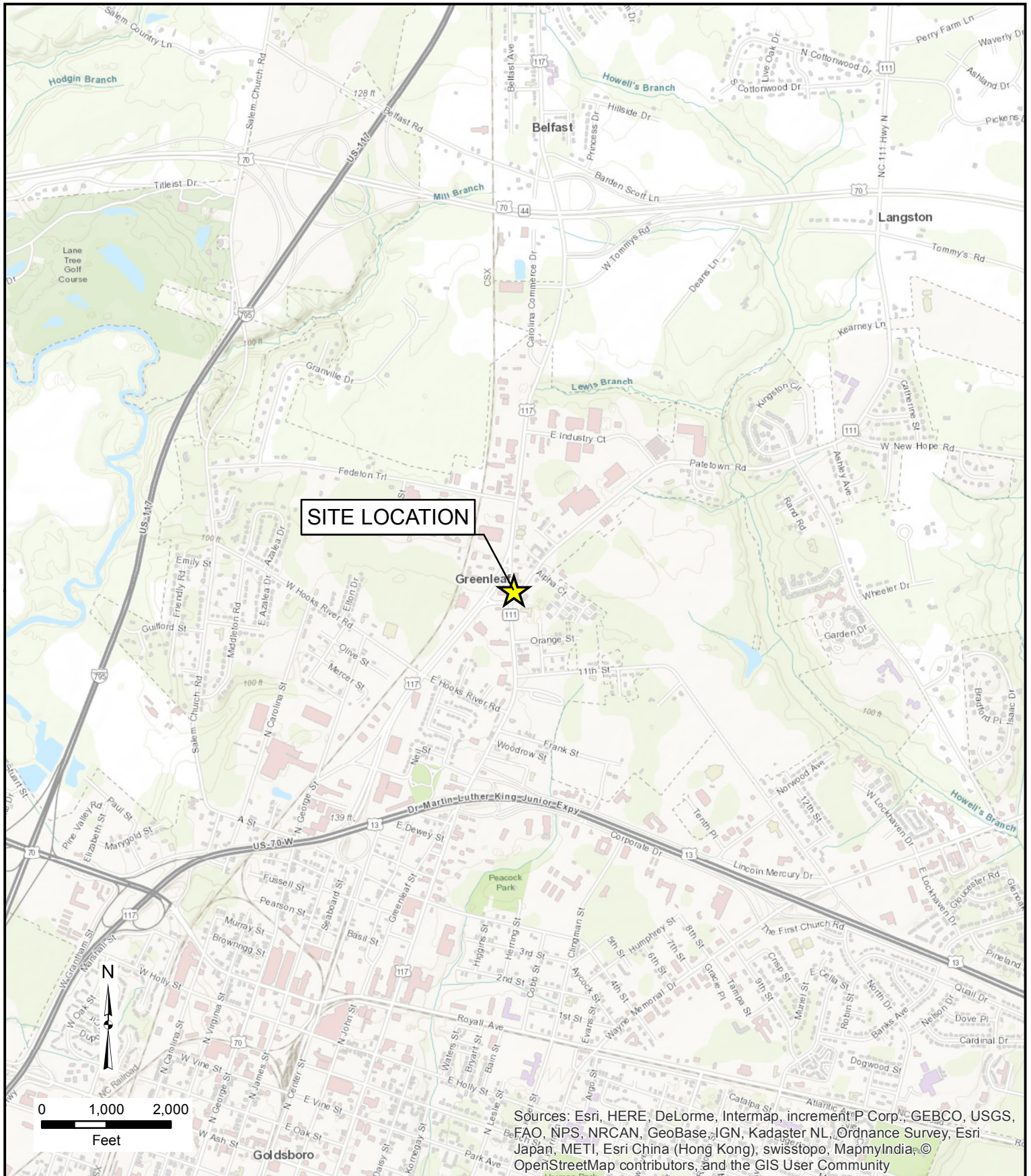
ft bgs = feet below ground surface

NM = Not Measured

TPH - GRO values in exceedance of NCDEQ Action Level of 50 mg/kg are shown in Bold

TPH - DRO values in exceedance of NCDEQ Action Level of 100 mg/kg are shown in Bold

## FIGURES

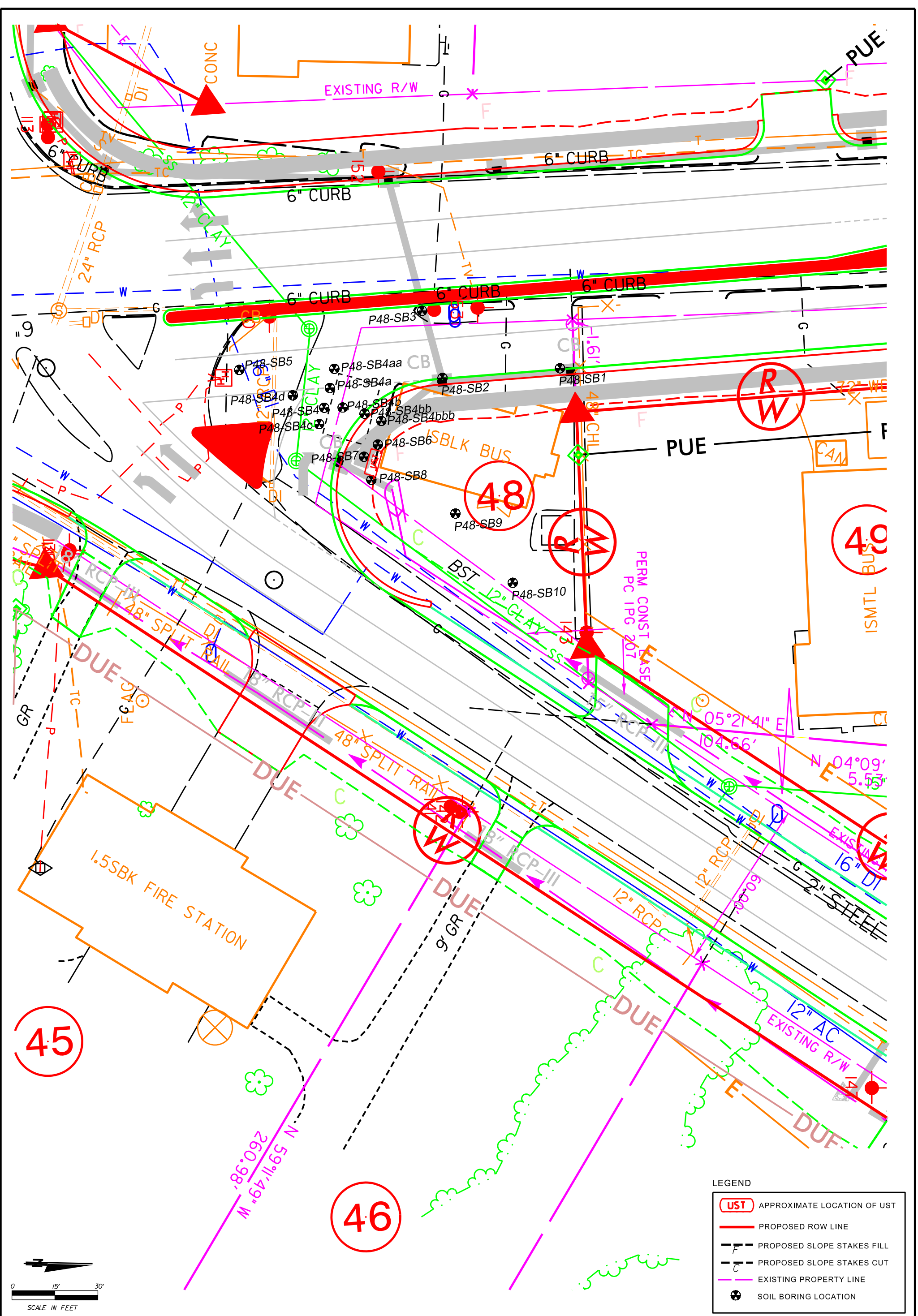


CHECK BY: TH
DRAWN BY: SP
DATE: 7/17/17
SCALE: AS SHOWN
CAD NO.: 510497-003
PRJ NO.: 510497-003

**SITE LOCATION MAP**  
**PARCELS #48**  
**2200 N. WILLIAM STREET**  
**GOLDSBORO, NORTH CAROLINA**

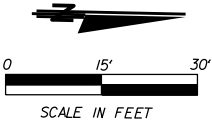


FIGURE  
1



**LEGEND**

- UST APPROXIMATE LOCATION OF UST
- PROPOSED ROW LINE
- PROPOSED SLOPE STAKES FILL
- PROPOSED SLOPE STAKES CUT
- EXISTING PROPERTY LINE
- SOIL BORING LOCATION




APEX COMPANIES, LLC  
 10610 METROMONT PARKWAY  
 SUITE 206  
 CHARLOTTE, NC 28117  
 PHONE: (704) 799-6390

**FIGURE 2**  
**PARCEL 48**  
**SITE MAP WITH SOIL BORING**  
**LOCATIONS**

Date:	7/15/17	GOLDSBORO U-2714			
Proj. #	510497-003				
CAD File:	pc_48_fig 2.dgn	Project Title:			
Approx. Scale:	1" = 30'	Drawn by:	MJO	Client:	NC DOT

Sample Identification	P48-SB4a
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	284.9
THP DRO (mg/kg)	93.7

Sample Identification	P48-SB4
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.28
THP DRO (mg/kg)	219.9

Sample Identification	P48-SB4d
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.65
THP DRO (mg/kg)	11

Sample Identification	P48-SB5
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.49
THP DRO (mg/kg)	1.1

Sample Identification	P48-SB4c
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<6.6
THP DRO (mg/kg)	217.1

Sample Identification	P48-SB4bb
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<2.9
THP DRO (mg/kg)	285.2

Sample Identification	P48-SB8
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.54
THP DRO (mg/kg)	6.6

Sample Identification	P48-SB9
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	3.5
THP DRO (mg/kg)	24.6

Sample Identification	P48-SB4aa
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.6
THP DRO (mg/kg)	1.2

Sample Identification	P48-SB3
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.5
THP DRO (mg/kg)	4.2

Sample Identification	P48-SB4b
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<2.3
THP DRO (mg/kg)	35.5

Sample Identification	P48-SB2
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	0.49
THP DRO (mg/kg)	7.1

Sample Identification	P48-SB1
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.49
THP DRO (mg/kg)	7

Sample Identification	P48-SB4bbb
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<269.9
THP DRO (mg/kg)	632.8

Sample Identification	P48-SB6
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.53
THP DRO (mg/kg)	0.53

Sample Identification	P48-SB7
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.62
THP DRO (mg/kg)	7.1

Sample Identification	P48-SB10
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.53
THP DRO (mg/kg)	15.2

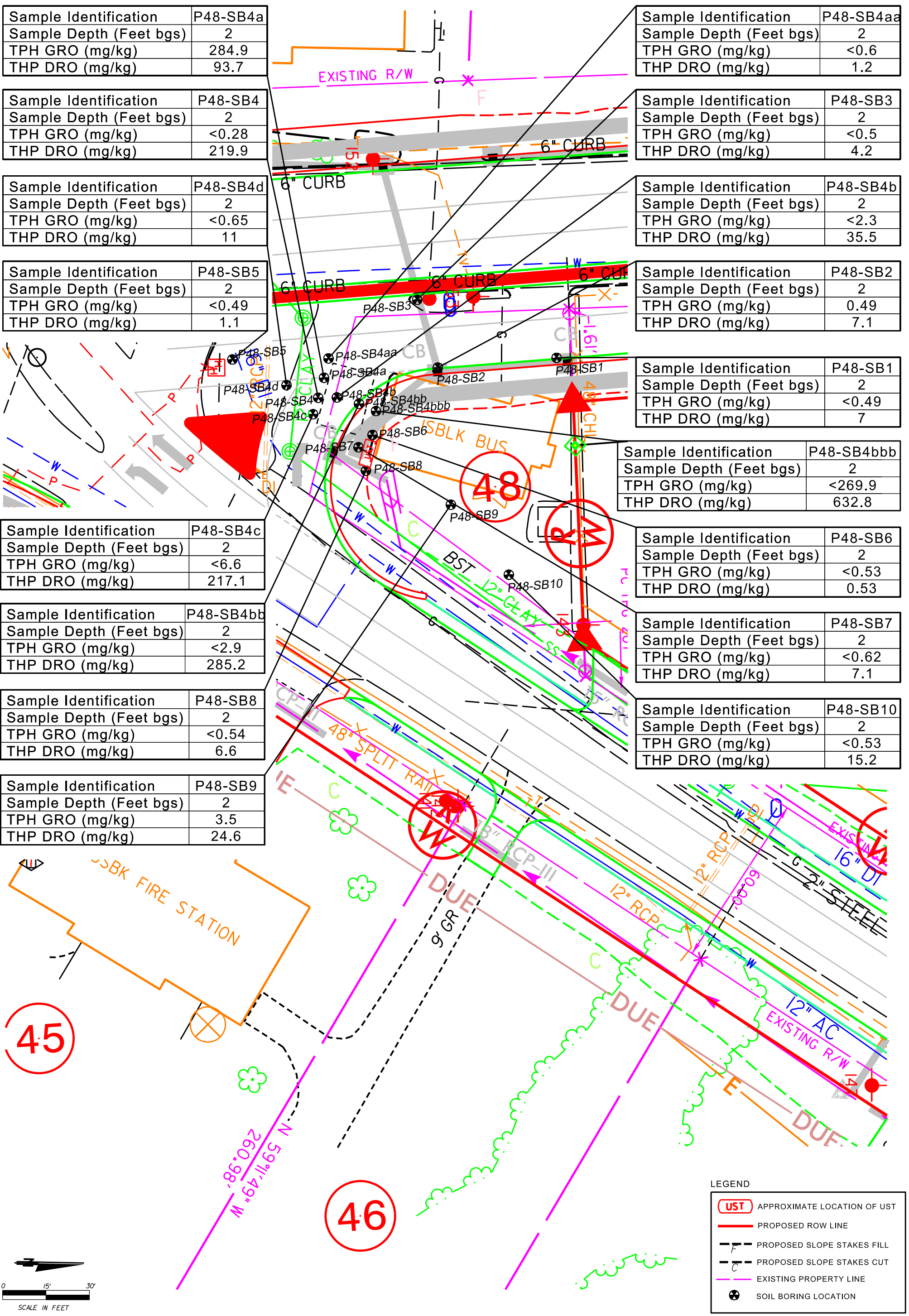
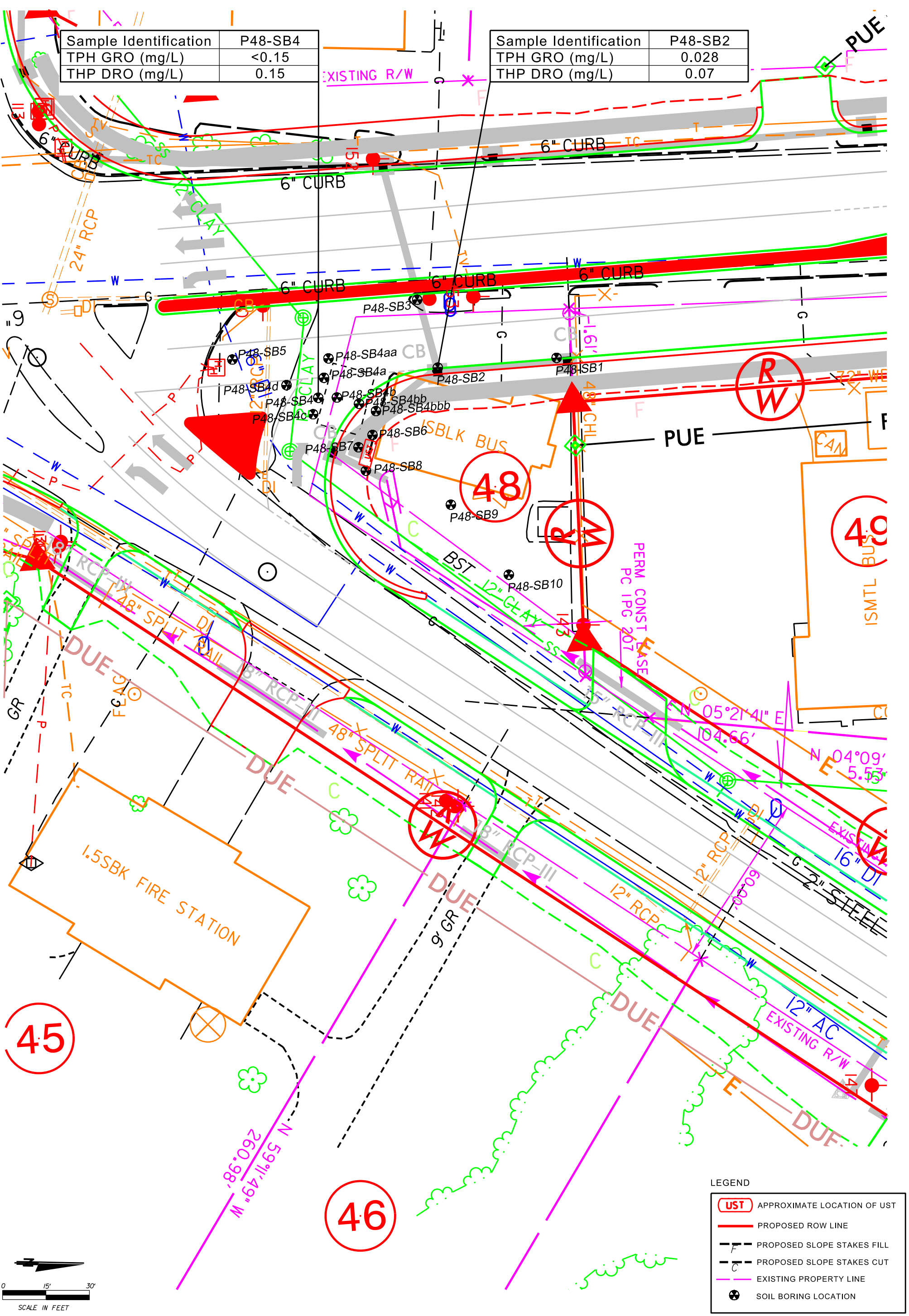


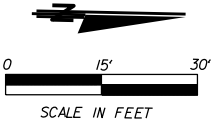
FIGURE 3  
 PARCEL 48  
 ONSITE UVF HYDROCARBON  
 ANALYSIS RESULTS - SOIL  
 6/15/17

Sample Identification	P48-SB4
TPH GRO (mg/L)	<0.15
THP DRO (mg/L)	0.15

Sample Identification	P48-SB2
TPH GRO (mg/L)	0.028
THP DRO (mg/L)	0.07



LEGEND	
<span style="border: 1px solid red; padding: 2px;">UST</span>	APPROXIMATE LOCATION OF UST
<span style="border-bottom: 2px solid red; width: 20px; display: inline-block;"></span>	PROPOSED ROW LINE
<span style="border-bottom: 2px dashed black; width: 20px; display: inline-block;"></span>	PROPOSED SLOPE STAKES FILL
<span style="border-bottom: 2px dashed black; width: 20px; display: inline-block;"></span>	PROPOSED SLOPE STAKES CUT
<span style="border-bottom: 2px solid magenta; width: 20px; display: inline-block;"></span>	EXISTING PROPERTY LINE
<span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%;"></span>	SOIL BORING LOCATION

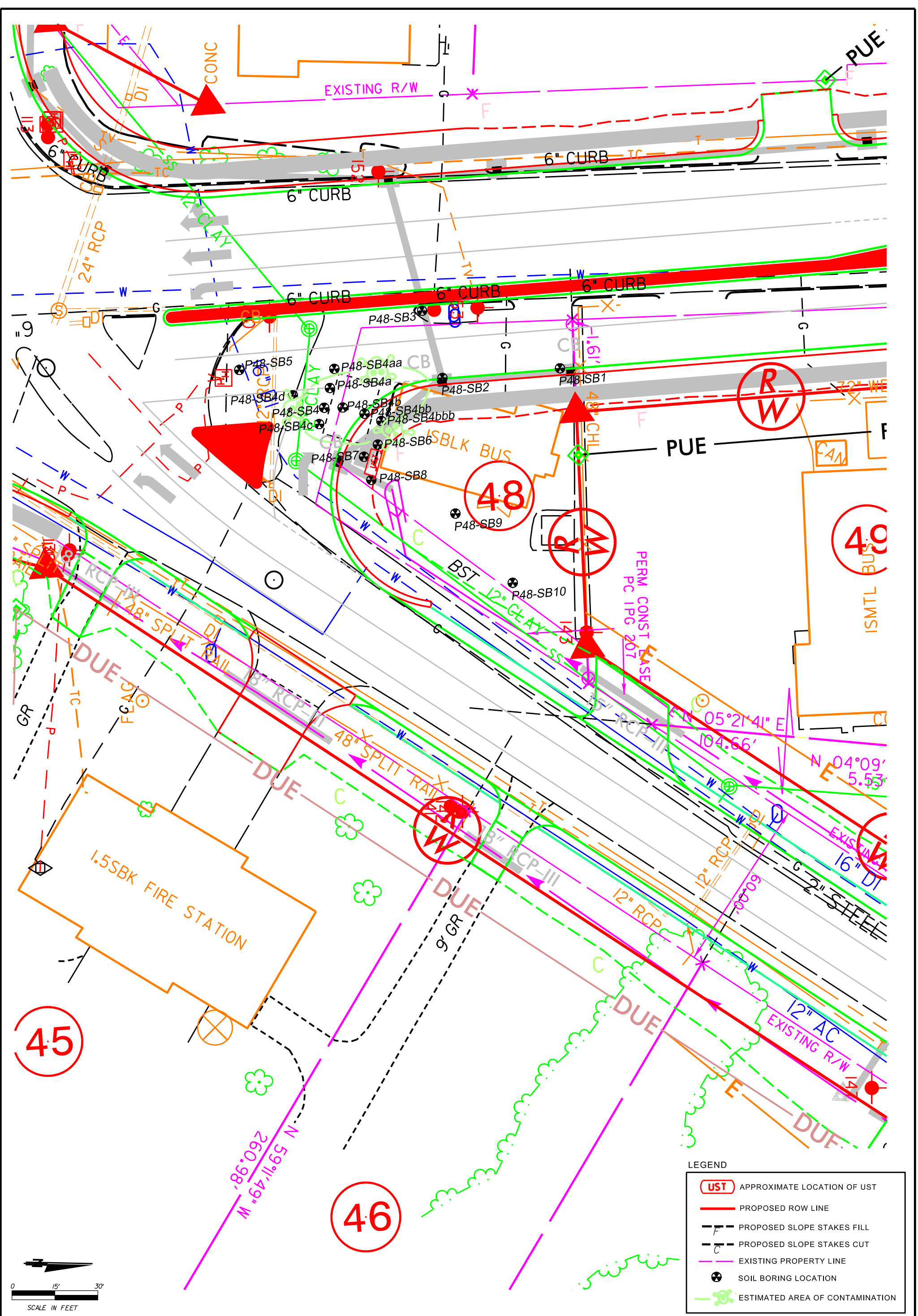


**FIGURE 4  
PARCEL 48  
ONSITE UVF HYDROCARBON  
ANALYSIS RESULTS -  
GROUNDWATER 6/15/17**



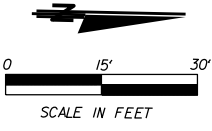
APEX COMPANIES, LLC  
10610 METROMONT PARKWAY  
SUITE 206  
CHARLOTTE, NC 28117  
PHONE: (704) 799-6390

Date:	7/15/17	Project #	GOLDSBORO U-2714
Proj. #	510497-003		
CAD File:	pc_48_fig 4.dgn	Project Title:	
Approx. Scale:	1" = 30'	Drawn by:	MJO
		Client:	NC DOT



**LEGEND**

<span style="border: 1px solid red; border-radius: 50%; padding: 2px;">UST</span>	APPROXIMATE LOCATION OF UST
<span style="border-bottom: 2px solid red; width: 20px; display: inline-block;"></span>	PROPOSED ROW LINE
<span style="border-bottom: 2px dashed black; width: 20px; display: inline-block;"></span>	PROPOSED SLOPE STAKES FILL
<span style="border-bottom: 2px dashed black; width: 20px; display: inline-block;"></span>	PROPOSED SLOPE STAKES CUT
<span style="border-bottom: 2px solid magenta; width: 20px; display: inline-block;"></span>	EXISTING PROPERTY LINE
<span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%;"></span>	SOIL BORING LOCATION
<span style="border-bottom: 2px dashed green; width: 20px; display: inline-block;"></span>	ESTIMATED AREA OF CONTAMINATION



45

46

48

49



**APEX**  
 APEX COMPANIES, LLC  
 10610 METROMONT PARKWAY  
 SUITE 206  
 CHARLOTTE, NC 28117  
 PHONE: (704) 799-6390

**FIGURE 5  
 PARCEL 48  
 SITE MAP WITH ESTIMATED  
 AREA OF CONTAMINATION**

Date:	7/15/17	GOLDSBORO U-2714		
Proj. #	510497-003			
CAD File:	pc_48_fig 5.dgn	Project Title:		
Approx. Scale:	1" = 30'	Drawn by:	MJO	NC DOT
		Client:		



**APPENDIX A**  
**PHOTOGRAPH LOG**



**Photo 1**

Overview of the site prior to preliminary site assessment activities.



**Photo 2**

View of probable UST located at the southeast corner of the building.



**Photo 3**

CSI preparing to begin drilling activities.



**Photo 4**

View of utilities and utility mark outs.

**APPENDIX B**  
**BORING LOGS**



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P48-SB-1	<b>Site Name:</b> Parcel 48 - Issam A Al-Awar & Rola I W Property
<b>Date:</b> 06/15/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers / 2579

**Remarks:**

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					Asphalt
1					Brown, Sandy Silt
2		0	0	Sample at 2'	
3					Tan Sand, Fine, Moist
4		0	0		
5					
					Boring terminated at 5 feet
6					
7					
8					
9					
10					
11					
12					
13					
14					

### 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:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P48-SB-2	<b>Site Name:</b> Parcel 48 - Issam A Al-Awar & Rola I W Property
<b>Date:</b> 06/15/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers / 2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1				Asphalt
2	0	0	Sample at 2'	Brown, Silty Sand, Fine
3				Gray Sand, Fine, Odor
4	5.6	0		Smear Zone
5				Water
6	8.7	0		Orange and White Marbled Clayed Silt.
7				
8	9.1	1.5		
9				
10	15.4	2.1		
				Boring terminated at 10 feet
11				
12				
13				
14				

### 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:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P48-SB-3	<b>Site Name:</b> Parcel 48 - Issam A Al-Awar & Rola I W Property
<b>Date:</b> 06/15/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers / 2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					Asphalt
1					Black Sand, Fine
2		0	0	Sample at 2'	
3					Gray Sand, Fine
4		0	0		Gray, Clayey Sand
5					
					Boring terminated at 5 feet
6					
7					
8					
9					
10					
11					
12					
13					
14					

### 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:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P48-SB-4	<b>Site Name:</b> Parcel 48 - Issam A Al-Awar & Rola I W Property
<b>Date:</b> 06/15/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers / 2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					Asphalt
1					Black Sand, Fine
2		5.6	43.07	Sample at 2'	Gray Sand, Fine
3					Gray, Clayey Sand, Fine
4		10.1	196		
5					Water
					Boring terminated at 5 feet
6					
7					
8					
9					
10					
11					
12					
13					
14					

### 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:





# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P48-SB-4a	<b>Site Name:</b> Parcel 48 - Issam A Al-Awar & Rola I W Property
<b>Date:</b> 06/15/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers / 2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					Asphalt
1					
2		10.8	1500	Sample at 2'	
3					
4		35	1297		
5					Water
					Boring terminated at 5 feet
6					
7					
8					
9					
10					
11					
12					
13					
14					

### 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:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P48-SB-4aa	<b>Site Name:</b> Parcel 48 - Issam A Al-Awar & Rola I W Property
<b>Date:</b> 06/15/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers / 2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					Asphalt
1					Tan Sand, Fine
2		0	7.1	Sample at 2'	
3					
4		0	6.4		
5					Water
Boring terminated at 5 feet					
6					
7					
8					
9					
10					
11					
12					
13					
14					

### 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:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P48-SB-4bb	<b>Site Name:</b> Parcel 48 - Issam A Al-Awar & Rola I W Property
<b>Date:</b> 06/15/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers / 2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					Concrete
1					Tan Sand
2		220	988	Sample at 2'	
3					
4		345	745		
5					Water
Boring terminated at 5 feet					
6					
7					
8					
9					
10					
11					
12					
13					
14					

### 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:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P48-SB-4bb	<b>Site Name:</b> Parcel 48 - Issam A Al-Awar & Rola I W Property
<b>Date:</b> 06/15/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers / 2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					Concrete
1					Tan Sand
2		110	42.8	Sample at 2'	
3					
4		127	57.6		
5					Water
Boring terminated at 5 feet					
6					
7					
8					
9					
10					
11					
12					
13					
14					

### 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:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P48-SB-4bbb	<b>Site Name:</b> Parcel 48 - Issam A Al-Awar & Rola I W Property
<b>Date:</b> 06/15/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers / 2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					Concrete
1					Tan Sand
2		486	17.99	Sample at 2'	
3					
4		520	11.23		
5					Water
Boring terminated at 5 feet					
6					
7					
8					
9					
10					
11					
12					
13					
14					

### 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:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P48-SB-4c	<b>Site Name:</b> Parcel 48 - Issam A Al-Awar & Rola I W Property
<b>Date:</b> 06/15/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers / 2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					Asphalt
1					Tan Sand
2		320	0	Sample at 2'	
3					
4		189	0		
5					Water
Boring terminated at 5 feet					
6					
7					
8					
9					
10					
11					
12					
13					
14					

### 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:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P48-SB-4d	<b>Site Name:</b> Parcel 48 - Issam A Al-Awar & Rola I W Property
<b>Date:</b> 06/15/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers / 2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1					White Sand
2		0	0	Sample at 2'	Brown Sand, Fine
3					
4		0	0		Tan Sand
5					Water
Boring terminated at 5 feet					
6					
7					
8					
9					
10					
11					
12					
13					
14					

### 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:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P48-SB-5	<b>Site Name:</b> Parcel 48 - Issam A Al-Awar & Rola I W Property
<b>Date:</b> 06/15/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers / 2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					White Sand
1					Brown Sand, Fine
2		4.5	8.3	Sample at 2'	
3					Tan Sand, Medium
4		6.2	0		
5					
					Boring terminated at 5 feet
6					
7					
8					
9					
10					
11					
12					
13					
14					

### 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:





# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P48-SB-6	<b>Site Name:</b> Parcel 48 - Issam A Al-Awar & Rola I W Property
<b>Date:</b> 06/15/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers / 2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					Asphalt
1					Tan Sand
2		4.1	0	Sample at 2'	
3					Clay Sand
4		8.9	18.5		Water
5					
					Boring terminated at 5 feet
6					
7					
8					
9					
10					
11					
12					
13					
14					

### 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:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P48-SB-7	<b>Site Name:</b> Parcel 48 - Issam A Al-Awar & Rola I W Property
<b>Date:</b> 06/15/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers / 2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					Asphalt
1					Tan Sand, Fine
2		7.2	0	Sample at 2'	
3					Gray, Clayey Sand
4		4.5	12.2		
5					Water
Boring terminated at 5 feet					
6					
7					
8					
9					
10					
11					
12					
13					
14					

### 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:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P48-SB-8	<b>Site Name:</b> Parcel 48 - Issam A Al-Awar & Rola I W Property
<b>Date:</b> 06/15/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers / 2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					Asphalt
1					Tan, Silty Sand
2		0	0	Sample at 2'	
3					
4		0	0		
5					
					Boring terminated at 5 feet
6					
7					
8					
9					
10					
11					
12					
13					
14					

### 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:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P48-SB-9	<b>Site Name:</b> Parcel 48 - Issam A Al-Awar & Rola I W Property
<b>Date:</b> 06/15/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers / 2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					Asphalt
1					Black and Yellow Marbled, Sand
2		0	0	Sample at 2'	
3					Yellow Sand
4		0	0		
5					Water
					Boring terminated at 5 feet
6					
7					
8					
9					
10					
11					
12					
13					
14					

### 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:



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P48-SB-10	<b>Site Name:</b> Parcel 48 - Issam A Al-Awar & Rola I W Property
<b>Date:</b> 06/15/17	<b>Location:</b> Goldsboro, Wayne County, NC
<b>Job No.:</b> 510497-003	<b>Sample Method:</b> Hand Auger and Direct Push
<b>Apex Rep:</b> Troy L. Holzschuh	<b>Drilling Method:</b> Hand Auger and Direct Push
<b>Drilling Company:</b> Carolina Soil Investigations	<b>Driller Name/Cert #:</b> Danny Summers / 2579

Remarks:

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Asphalt
1				Yellow Sand, Fine
2	0	0	Sample at 2'	
3				
4	0	0		
5				Water
Boring terminated at 5 feet				
6				
7				
8				
9				
10				
11				
12				
13				
14				

### 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**



PYRAMID GEOPHYSICAL SERVICES  
(PROJECT 2017-156)

# GEOPHYSICAL SURVEY


---


## METALLIC UST INVESTIGATION: PARCEL 048 NCDOT PROJECT U-2714

2200 N. WILLIAM STREET, GOLDSBORO, NC

JULY 17, 2017

Report prepared for: Troy Holzschuh  
Apex Companies  
10610 Metromont Parkway, Suite 206  
Charlotte, North Carolina 28269

Prepared by:   
Eric C. Cross, P.G.  
NC License #2181

Reviewed by:   
Mike Jones, P.G.  
NC License #1168

**GEOPHYSICAL INVESTIGATION REPORT**  
**Parcel 048 – 2200 N. William Street**  
**Goldsboro, Wayne County, North Carolina**

**Table of Contents**

Executive Summary .....1  
Introduction.....2  
Field Methodology.....2  
Discussion of Results.....3  
Summary and Conclusions .....5  
Limitations .....5

**Figures**

- Figure 1 – Parcel 048 Geophysical Survey Boundaries and Site Photographs
- Figure 2 – Parcel 048 EM61 Results Contour Map
- Figure 3 – Parcel 048 GPR Transect Locations & Images
- Figure 4 – Parcel 048 Location and Size of Probable Metallic UST
- Figure 5 – Parcel 048 Overlay of EM Survey Boundaries on NCDOT Engineering Plans



## 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 Apex Companies (Apex) at Parcel 048, located at 2200 N. William Street, Goldsboro, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-2714). Apex directed Pyramid as to the geophysical survey boundaries at the project site, which were designed to cover all accessible portions of the parcel due to its designation by the NCDOT as a total take. Conducted from June 8-10, 2017, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

**Geophysical Results:** The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. EM anomalies were observed at the southeast corner of the building that were associated with unknown buried metal, and were investigated further by GPR.

A total of 2 GPR Transects identified the following:

- One probable UST at the southeast corner of the building, approximately 9 feet long and 4 feet wide.

Collectively, the geophysical data recorded evidence of one probable metallic UST at Parcel 048.

## INTRODUCTION

---

Pyramid Environmental conducted a geophysical investigation for Apex at Parcel 048, located at 2200 N. William Street, Goldsboro, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-2714). Apex directed Pyramid as to the geophysical survey boundaries at the project site, which were designed to cover all accessible portions of the parcel due to its designation by the NCDOT as a total take. Conducted from June 8-10, 2017, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site included a restaurant building surrounded by asphalt and gravel. An aerial photograph showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

## FIELD METHODOLOGY

---

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. Pyramid collected the EM data using a Geonics EM61 metal detector integrated with a Trimble AG-114 GPS antenna. The integrated GPS system allows the location of the instrument to be recorded in real-time during data collection, resulting in an EM data set that is geo-referenced and can be overlain on aerial photographs and CADD drawings. A boundary grid was established around the perimeter of the site with marks every 10 feet to maintain orientation of the instrument throughout the survey and assure complete coverage of the area.

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, generally parallel survey lines spaced five feet apart. The data were downloaded to a

computer and reviewed in the field and office using the Geonics NAV61 and Surfer for Windows Version 14.0 software programs.

GPR data were acquired across select EM anomalies on June 10, 2017, using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. Data were collected both in reconnaissance fashion as well as along formal transect lines across EM features. The GPR data were viewed in real-time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 6 feet, based on dielectric constants calculated by the DF unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the DF unit for post-processing and figure generation.

Pyramid’s classifications of USTs for the purposes of this report are based directly on the geophysical UST ratings provided by the NCDOT. These ratings are as follows:

Geophysical Surveys for Underground Storage Tanks on NCDOT Projects			
High Confidence	Intermediate Confidence	Low Confidence	No Confidence
<b>Known UST</b> Active tank - spatial location, orientation, and approximate depth determined by geophysics.	<b>Probable UST</b> Sufficient geophysical data from both magnetic and radar surveys that is characteristic of a tank. Interpretation may be supported by physical evidence such as fill/vent pipe, metal cover plate, asphalt/concrete patch, etc.	<b>Possible UST</b> Sufficient geophysical data from either magnetic or radar surveys that is characteristic of a tank. Additional data is not sufficient enough to confirm or deny the presence of a UST.	Anomaly noted but not characteristic of a UST. Should be noted in the text and may be called out in the figures at the geophysicist’s discretion.

## DISCUSSION OF RESULTS

### *Discussion of EM Results*

A contour plot of the EM61 results obtained across the survey area at the property is presented in **Figure 2**. Each EM anomaly is numbered for reference in the figure. The following table presents the list of EM anomalies and the cause of the metallic response, if known:

**LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY**

<b>Metallic Anomaly #</b>	<b>Cause of Anomaly</b>	<b>Investigated with GPR</b>
1	Signs	
2	Storm drain/manhole	
3	Water meter/water line	
4	AC/vault	
5	Chain link fence	
6	Suspected utility	
7	<b>One Probable UST</b>	✓
8	Storm drain/manhole	
9	Responses around structure due to building	

The majority of the EM anomalies (Anomalies 1-6, 8, and 9) were directly attributed to known cultural features such as signs, storm drains, manholes, an AC unit, a metal vault cover, a chain link fence, suspected utilities, and the building foundation. Anomaly 7 consisted of a high-amplitude feature that was associated with unknown buried metal; its size and amplitude was suggestive of a large structure such as a UST. This feature was investigated further by GPR.

*Discussion of GPR Results*

**Figure 3** presents the locations of the formal GPR transects performed at the property, as well as the transect images. A total of two GPR transects were performed at the site. GPR Transects 1-2 were performed across EM Anomaly 7, located at the southeast corner of the building. These transects recorded a distinct hyperbolic reflector and a discreet lateral reflector that were consistent with a metallic UST. Due to the clear hyperbolic and lateral reflectors, Pyramid is classifying this feature as one probable UST. The probable UST was approximately 9 feet long and 4 feet wide.

Collectively, the geophysical data recorded evidence of one probable metallic UST at Parcel 048. **Figure 4** shows the location and size of the probable UST identified by the survey. **Figure 5** provides an overlay of the geophysical survey area onto the NCDOT MicroStation engineering plans (proposed ROW and easements) for reference.

## SUMMARY & CONCLUSIONS

---

Pyramid's evaluation of the EM61 and GPR data collected at Parcel 048 in Goldsboro, North Carolina, provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface.
- EM anomalies were observed at the southeast corner of the building that were associated with unknown buried metal, and were investigated further by GPR.
- A total of 2 GPR Transects identified the following:
  - One probable UST at the southeast corner of the building, approximately 9 feet long and 4 feet wide.
- Collectively, the geophysical data recorded evidence of one probable metallic UST at Parcel 048.

## LIMITATIONS

---

Geophysical surveys have been performed and this report was prepared for Apex 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 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.

N ↑


APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREA



View of Survey Area  
(Facing Approximately South)

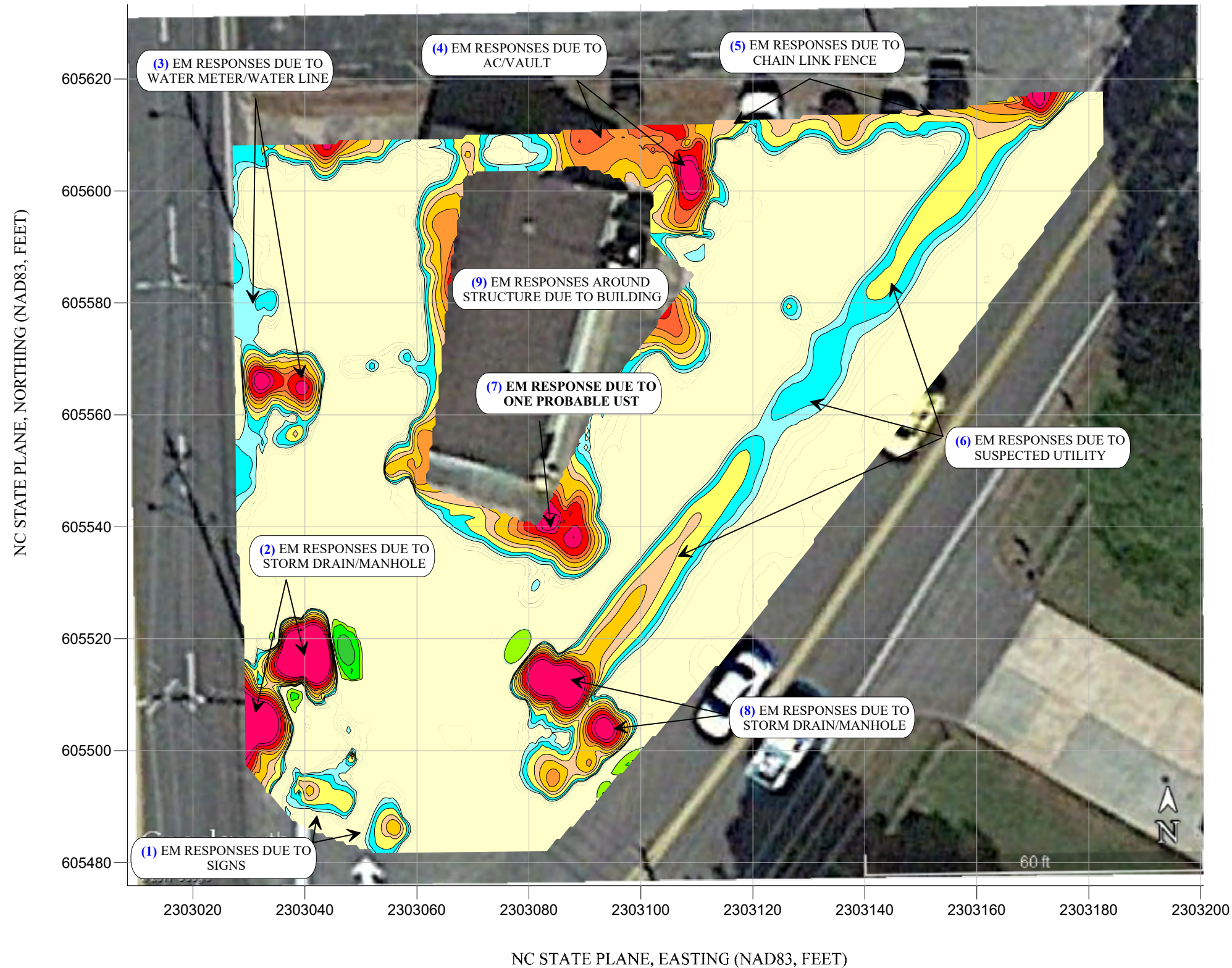


View of Survey Area  
(Facing Approximately Northeast)

TITLE		PARCEL 048 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS	
PROJECT		PARCEL 048 GOLDSBORO, NORTH CAROLINA NCDOT PROJECT U-2714	
		503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	
DATE	6/30/2017	CLIENT	APEX COMPANIES
PYRAMID PROJECT #:	2017-156	<b>FIGURE 1</b>	



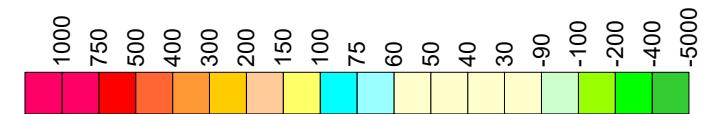
### EM61 METAL DETECTION RESULTS




### EVIDENCE OF ONE PROBABLE METALLIC UST OBSERVED.

The contour plot shows the differential results of the EM61 instrument in millivolts (mV). The differential results focus on larger metallic objects such as USTs and drums. The EM61 data were collected on June 8, 2017, using a Geonics EM61 instrument. Verification GPR data were collected using a GSSI UtilityScan DF instrument with a dual frequency 300/800 MHz antenna on June 10, 2017.

#### EM61 Metal Detection Response (millivolts)

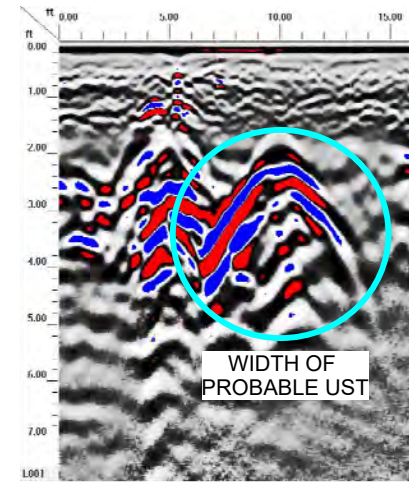


TITLE	PARCEL 048 - EM61 RESULTS CONTOUR MAP	
PROJECT	PARCEL 048 GOLDSBORO, NORTH CAROLINA NCDOT PROJECT U-2714	
	 503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	
DATE	6/30/2017	CLIENT APEX COMPANIES
PYRAMID PROJECT #:	2017-156	<b>FIGURE 2</b>

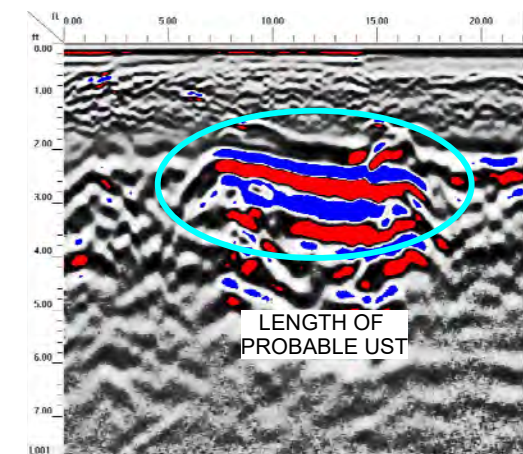


N ↑


LOCATIONS OF GPR TRANSECTS



GPR TRANSECT 1 (T1)

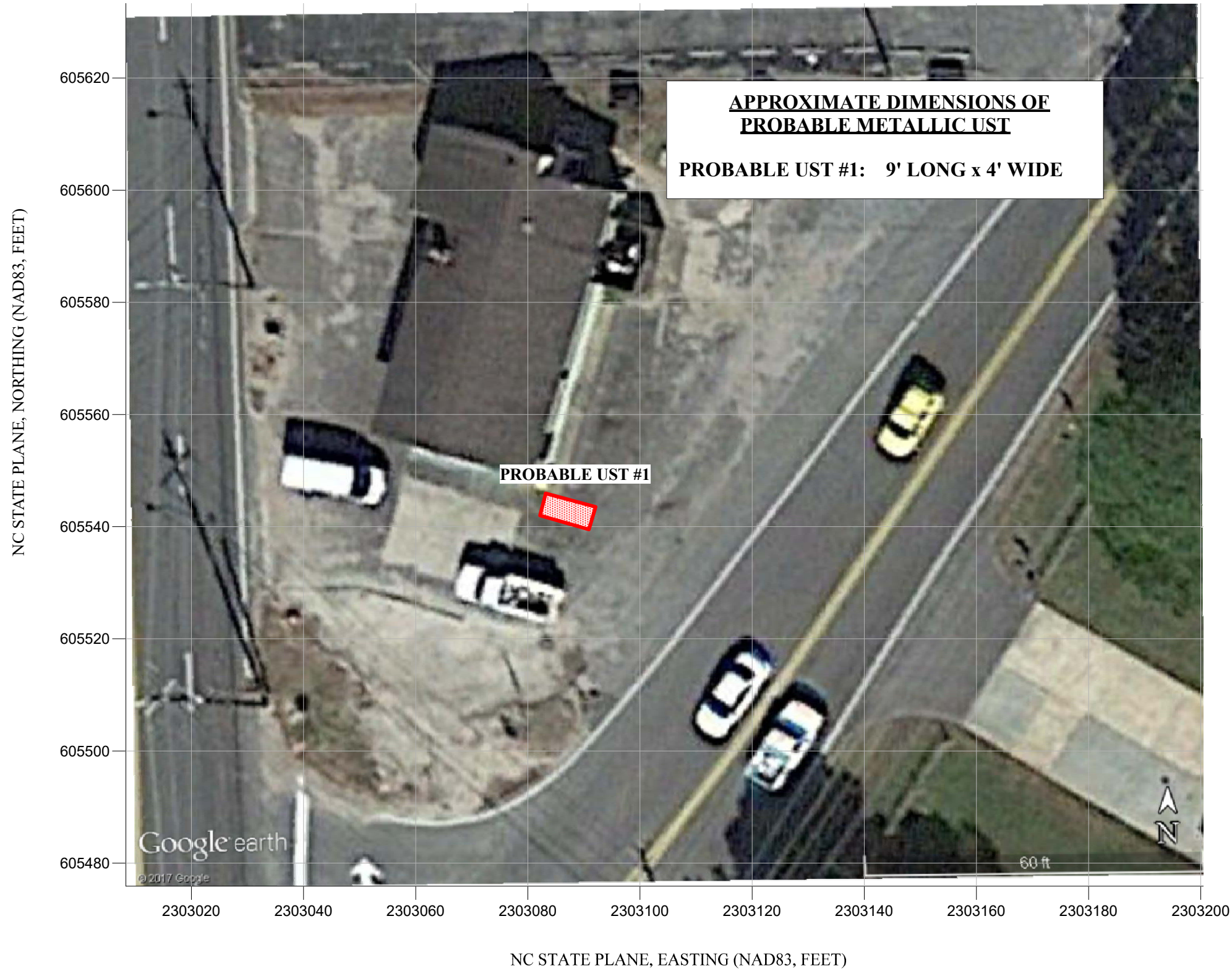


GPR TRANSECT 2 (T2)


TITLE	PARCEL 048 - GPR TRANSECT LOCATIONS AND IMAGES	
PROJECT	PARCEL 048 GOLDSBORO, NORTH CAROLINA NCDOT PROJECT U-2714	
	 503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	
DATE	6/30/2017	CLIENT APEX COMPANIES
PYRAMID PROJECT #:	2017-156	<b>FIGURE 3</b>

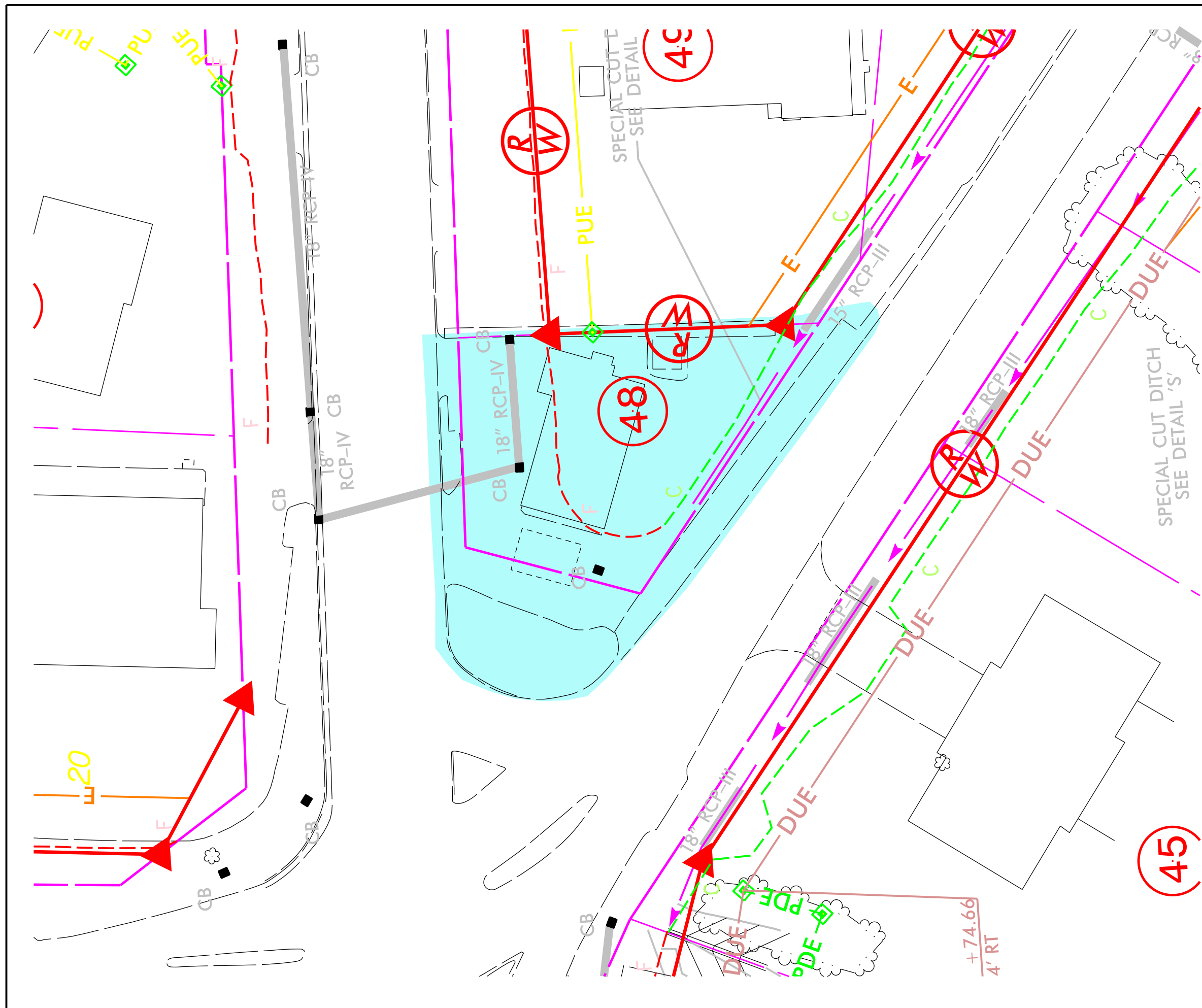
N ↑

LOCATIONS OF PROBABLE METALLIC UST



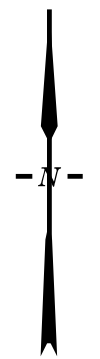
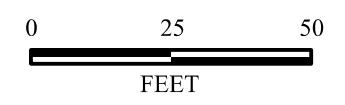
PROBABLE UST #1  
 FACING APPROXIMATELY WEST

TITLE	PARCEL 048 - LOCATIONS AND SIZES OF PROBABLE UST	
PROJECT	PARCEL 048 GOLDSBORO, NORTH CAROLINA NCDOT PROJECT U-2714	
	 503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	
DATE	6/30/2017	CLIENT APEX COMPANIES
PYRAMID PROJECT #:	2017-156	<b>FIGURE 4</b>



**LEGEND**

	EXISTING ROW
	EXISTING PROPERTY BOUNDARY
	PROPOSED ROW LINE
	PROPOSED UTILITY EASEMENT
	PROPOSED DRAINAGE EASEMENT
	PROPOSED SS FILL LINE
	PROPOSED SS CUT LINE
	GEOPHYSICAL SURVEY AREA



TITLE: OVERLAY OF GEOPHYSICAL SURVEY BOUNDARIES ON NCDOT ENGINEERING PLANS	
PROJECT: PARCEL 048 GOLDSBORO, NORTH CAROLINA NCDOT PROJECT U-2714	
503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 336.335.3174 (p) 336.691.0648 (f) License # C1251 Eng. / #C257 Geology	
DATE: 6-30-17	REVISION NO. 0
PYRAMID PROJECT NO. 2017-156	FIGURE NO. 5

**APPENDIX D**  
**UVF HYDROCARBON ANALYSIS RESULTS**



### Hydrocarbon Analysis Results

**Client:** NCDOT  
**Address:** PARCEL 48  
 2200 N William St  
 Goldsboro, NC

**Samples taken** Thursday, June 15, 2017  
**Samples extracted** Thursday, June 15, 2017  
**Samples analysed** Thursday, June 15, 2017

**Contact:** Dennis Li

**Operator** KH

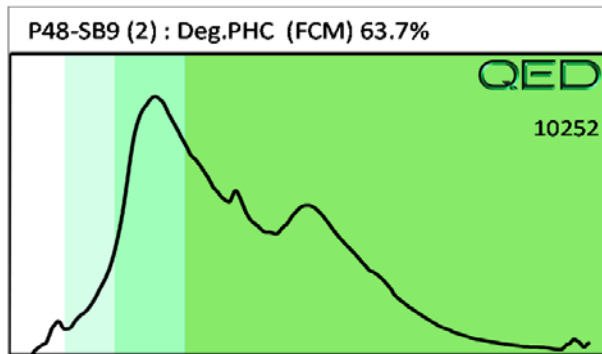
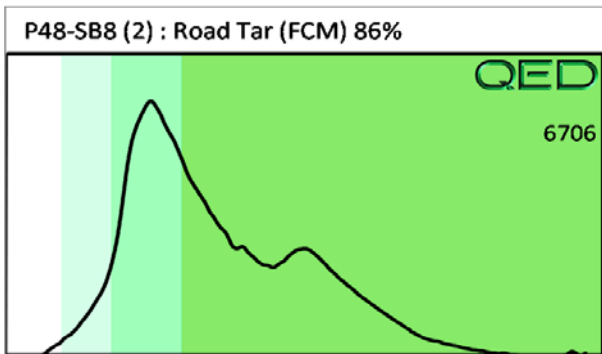
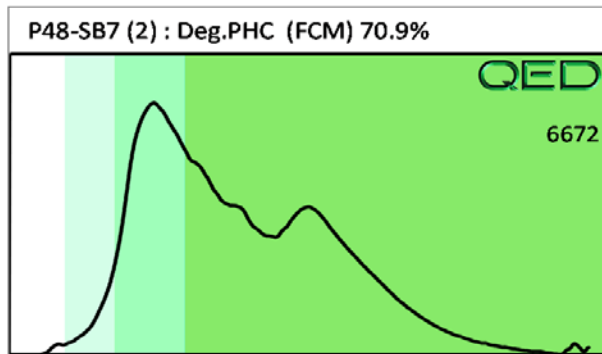
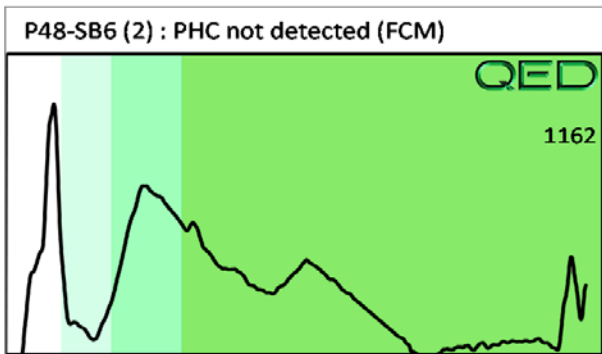
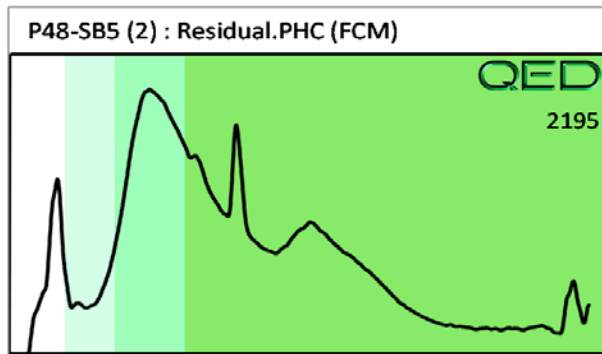
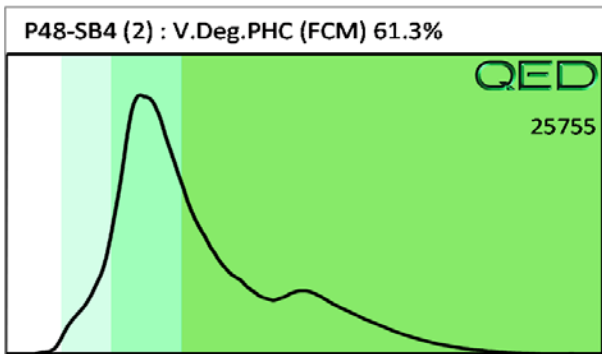
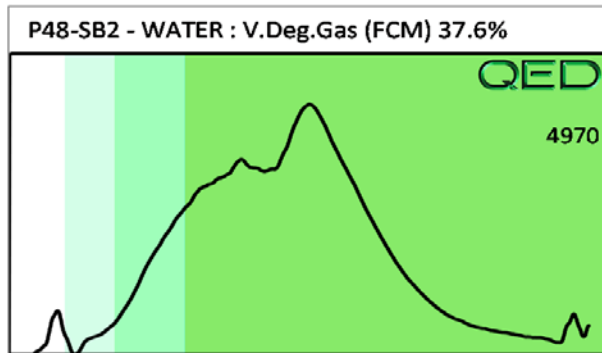
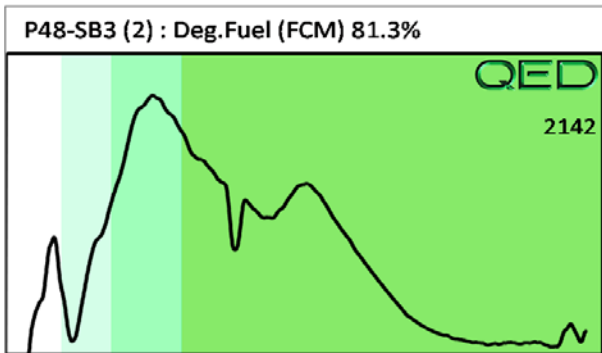
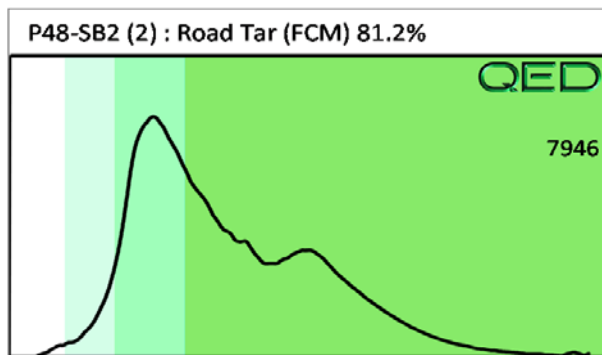
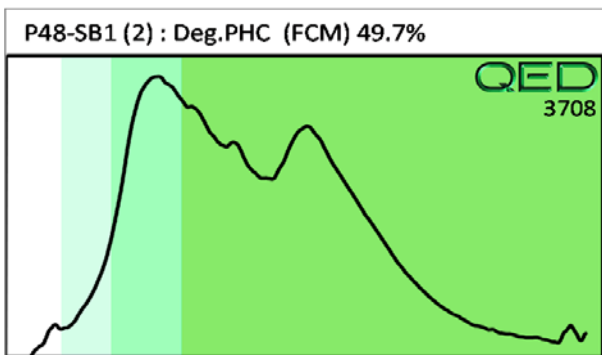
**Project:** 510497-003

											F03640			
Matrix	Sample ID	Dilution used	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	P48-SB1 (2)	19.5	<0.49	<0.49	7	7	3.1	0.15	0.002	0	79.5	20.5	Deg.PHC (FCM) 49.7%	
s	P48-SB2 (2)	19.7	<0.49	0.49	7.1	7.6	5.6	0.61	0.009	6.1	77.3	16.6	Road Tar (FCM) 81.2%	
s	P48-SB3 (2)	20.0	<0.5	<0.5	4.2	4.2	2.1	0.1	<0.002	0	87.6	12.4	Deg.Fuel (FCM) 81.3%	
W	P48-SB2 - WATER	1.0	<0.025	0.028	0.07	0.1	0.05	0.004	0	33.9	26.4	39.7	V.Deg.Gas (FCM) 37.6%	
s	P48-SB4 (2)	111.9	<2.8	<2.8	219.9	219.9	131.7	5.9	0.041	0	90.3	9.7	V.Deg.PHC (FCM) 61.3%	
s	P48-SB5 (2)	19.5	<0.49	<0.49	1.1	1.1	1	0.1	<0.002	0	76.6	23.4	Residual.PHC (FCM)	
s	P48-SB6 (2)	21.1	<0.53	<0.53	0.53	0.53	0.26	0.03	<0.002	0	65.8	34.2	PHC not detected (FCM)	
s	P48-SB7 (2)	24.8	<0.62	<0.62	7.1	7.1	5.8	0.61	0.009	0	79	21	Deg.PHC (FCM) 70.9%	
s	P48-SB8 (2)	21.5	<0.54	<0.54	6.6	6.6	5	0.52	0.006	0	83.3	16.7	Road Tar (FCM) 86%	
s	P48-SB9 (2)	21.3	<0.53	3.5	24.6	28.1	9.5	0.46	0.005	28.5	59	12.5	Deg.PHC (FCM) 63.7%	
Initial Calibrator QC check									OK	Final FCM QC Check			OK	96.6 %

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. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present





### Hydrocarbon Analysis Results

**Client:** NCDOT  
**Address:** PARCEL 48  
 2200 N William St  
 Goldsboro, NC

**Samples taken** Thursday, June 15, 2017  
**Samples extracted** Thursday, June 15, 2017  
**Samples analysed** Thursday, June 15, 2017

**Contact:** Dennis Li

**Operator** KH

**Project:** 510497-003

											F03640		
Matrix	Sample ID	Dilution used	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	P48-SB10 (2)	21.3	<0.53	<0.53	15.2	15.2	7.8	0.93	0.099	0	69.3	30.7	V.Deg.PHC (FCM) 77%
s	P48-SB4a (2)	103.4	<2.6	284.9	93.7	378.6	87.4	3.4	<0.01	76.5	23.5	0	Deg Gas (FCM) 94.2%
s	P48-SB4aa (2)	24.1	<0.6	<0.6	1.2	1.2	0.76	0.04	<0.002	0	92.2	7.8	(PFM) (FCM) 23.7%
s	P48-SB4b (2)	93.8	<2.3	<2.3	35.5	35.5	17.5	0.67	<0.009	0	100	0	Deg.PHC (FCM)
s	P48-SB4bb (2)	114.0	<2.9	<2.9	285.2	285.2	137.4	4.3	<0.011	0	98.5	1.5	Deg.Diesel (FCM) 45.1%
s	P48-SB4bbb (2)	10796.3	<269.9	<269.9	632.8	632.8	602.7	72.3	<1.1	0	100	0	(FCM)
s	P48-SB4c (2)	262.0	<6.6	<6.6	217.1	217.1	124.2	5.5	<0.026	0	89.3	10.7	V.Deg.PHC (FCM) 53.2%
s	P48-SB4d (2)	26.0	<0.65	<0.65	11	11	4.4	0.2	<0.003	0	85.9	14.1	V.Deg.PHC (FCM) 69.2%
W	P48-SB4 - WATER	6.0	<0.15	<0.15	0.15	0.15	0.06	0.007	<0.001	0	36.8	63.2	Residual.PHC (FCM)
Initial Calibrator QC check			OK			Final FCM QC Check			OK			97.5 %	

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. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library (SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

