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

Edith S. Smith Property
Parcel # 15
1710 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
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July 14, 2017

not considered final unless all signatures are completed

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1.0 INTRODUCTION

This report presents the results of a Preliminary Site Assessment (PSA) for the North Carolina Department of Transportation (NCDOT) Parcel 15 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 1710 North William Street and is identified as Parcel 15, 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 Woodrow Street 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 15 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 15. **Appendix A** includes a Photograph log for the site.

1.1 Site History

Parcel 15 has been identified with the address of 1710 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. Vent lines and fuel ports were noted during field activities. Additionally, the geophysical survey did identify three probable USTs on site. Currently the site operates as Flower Creations in a one-story stucco 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 currently operates as Flower Creations and is developed with one structure

located in the north central portion of the parcel with an asphalt-paved parking area to the south and west. Residential properties border the site to the north and east. The property is bordered by Woodrow Street and North William Street to the south and west, respectively, followed by a vacant property to the south and residential properties to the west. Additionally, the geophysical surveyor, Pyramid Environmental & Engineering, PC, (Pyramid) did identify three GPR anomalies characteristic of USTs in the investigation area.

2.0 GEOLOGY

2.1 Regional Geology

Parcel 15 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 nine 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 to orange sandy, clayey silt was observed across the parcel. The soils were unconsolidated and as a result the borings often collapsed. Borings on the north side of the property (believed to be the upgradient location) intercepted water at approximately five and a half feet bgs while those borings on the south side of the property (likely down-gradient location) intercepted water at approximately five feet bgs. 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 7, 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**. Two areas contained EM anomalies that were associated with unknown features and were investigated further with the GPR method. Results of GPR scans indicated evidence of three probable USTs. One probable UST is located on the east side of the existing building in the northeast portion of the survey area and is approximately nine feet long and six feet wide. The other two probable USTs are located on the west side of the existing building. The potential UST on east side of the tank bed was approximately ten feet long and 5.5 feet wide. The potential UST on the western side of the tank bed was approximately eight feet long and five feet wide. The anomaly locations are depicted on **Figure 2.**

3.4 Well Survey

No water supply or groundwater monitoring wells were observed on Parcel 15.

3.5 Soil Sampling

Apex conducted drilling activities at the site on June 7 through June 8, 2017. Apex drilling subcontractor, CSI, advanced nine direct push soil borings within the proposed investigation area. These nine boring locations were placed by the probable UST systems or 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 8th, 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 P15-SB3 and P15-SB7 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 no evidence of significant petroleum hydrocarbon contamination onsite, within the area of investigation.

<u>Onsite Soil Screening and UVF Analysis</u>
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

2.6 ppm and the PID readings ranged from non-detectable to 1.5 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 15. TPH-GRO concentrations ranged from below detectable levels to 8.7 milligram per kilogram (mg/kg) (P15-SB6). TPH-DRO concentrations ranged from below detectable levels to 40.9 mg/kg (P15-SB1). TPH-GRO concentrations did not exceed the regulatory action level of 50 mg/kg and the TPH-DRO concentrations did not exceed the regulatory action level of 100 mg/kg.

4.2 Groundwater Sampling Results

Apex personnel collected groundwater grab samples from two soil borings (P15-SB3 and P15-SB7) 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 15 at significant levels. P15-SB3-WATER indicated TPH-GRO concentrations of 0.075 mg/L and TPH-DRO concentrations of 0.07 mg/L, while P15-SB7-WATER indicated TPH-GRO concentrations <0.025 mg/L and TPH-DRO concentrations of 0.24 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, no petroleum-impacted soil contamination was identified above the NCDEQ Action level of 50 mg/kg for TPH-GRO or above the NCDEQ Action level of 100 mg/kg for TPH-DRO. 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 7 and June 8, 2017.

- Results of the geophysical survey produced evidence of three anomalies characteristic of USTs. The location of the anomalies are depicted on **Figure 2**.

- Nine 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 not contain either TPH-DRO or TPH-GRO concentrations above their respective NCDEQ Action levels of 100 mg/kg and 50 mg/kg.

- 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, Apex does not recommend further assessment or soil sampling in the area of investigation.

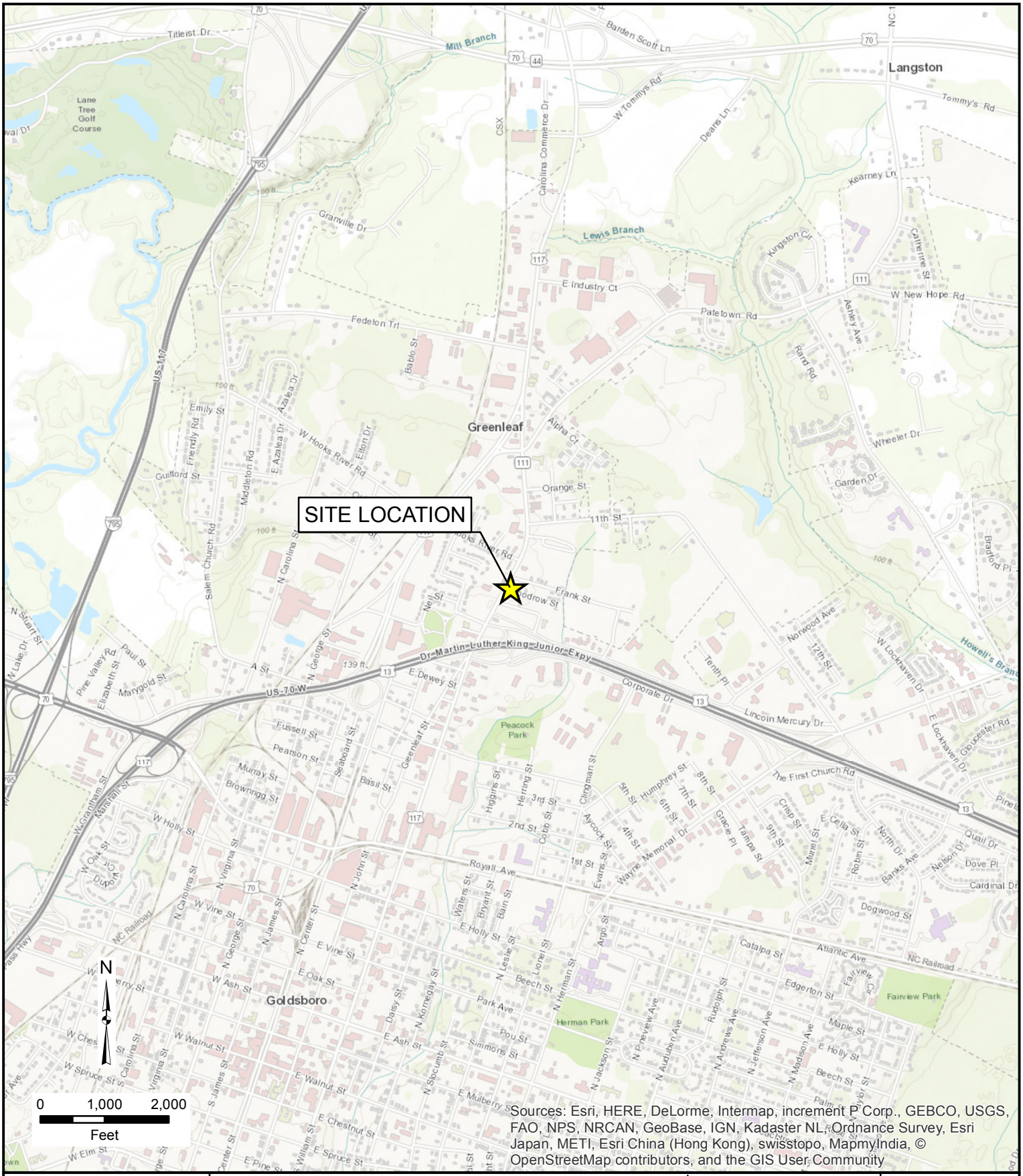
TABLES

Table 1
UVF Onsite Hydrocarbon Analytical Soil and Groundwater Data (June 2017)
U-2714, Parcel 15, Edith S. Smith Property
Goldsboro, North Carolina

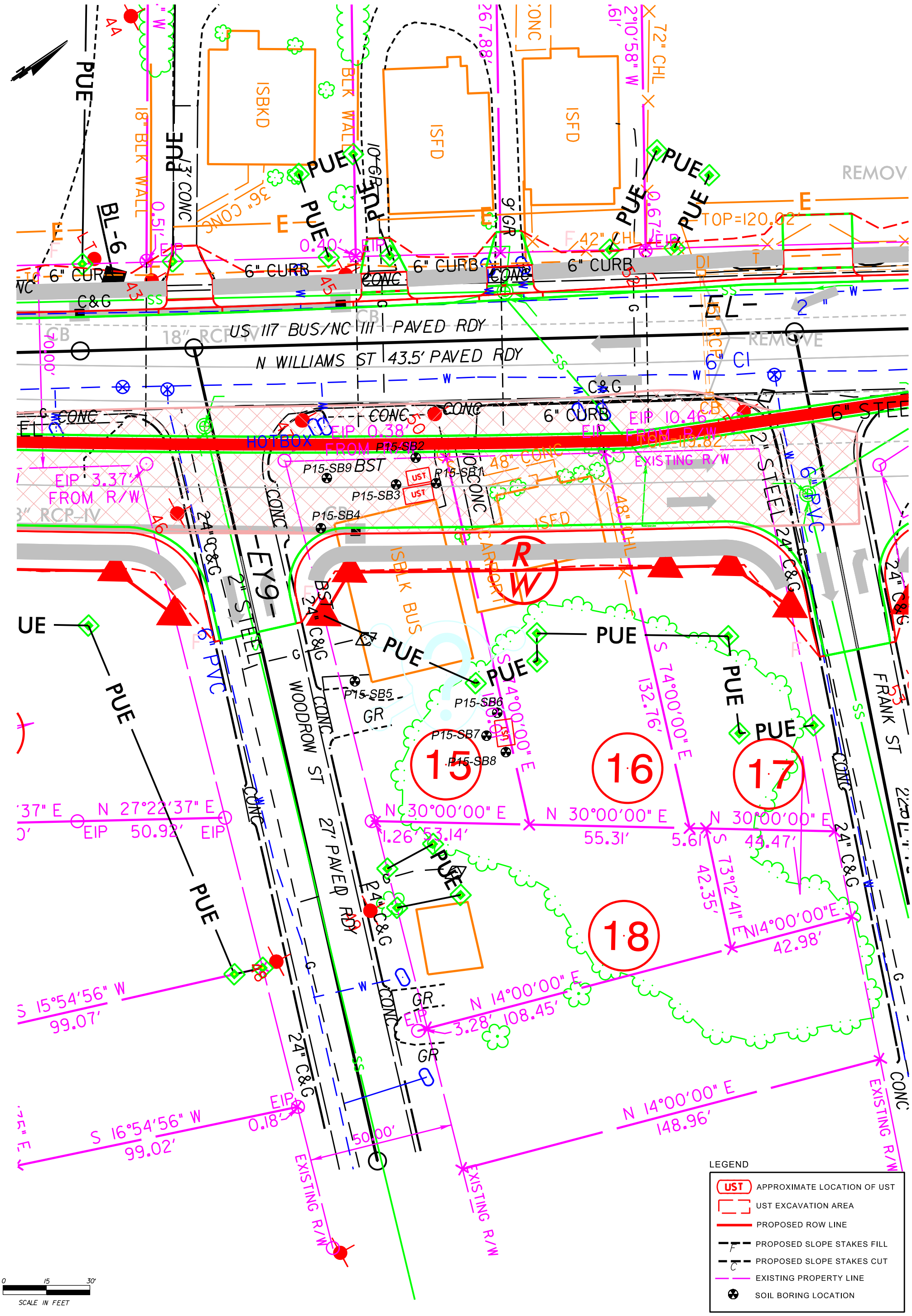
Sample ID Number	Sample Date	Sample Depth (ft bgs)	GRO (mg/kg) (C5-C10)	DRO (mg/kg) (C10-C35)
SOIL				
NCDEQ Action Level in mg/kg			**50**	**100**
P15-SB1	6/7/2017	3	<0.49	40.9
P15-SB2	6/7/2017	2.5	1.4	11.4
P15-SB3	6/7/2017	2.5	1.6	8.5
P15-SB4	6/7/2017	2.5	0.48	1.9
P15-SB5	6/7/2017	3	<0.48	<0.48
P15-SB6	6/7/2017	2.5	8.7	0.47
P15-SB7	6/7/2017	2.5	<0.49	<0.49
P15-SB8	6/7/2017	2.5	1.4	0.84
P15-SB9	6/7/2017	2.5	1.3	1.2
GROUNDWATER (mg/L)				
P15-SB3-WATER	6/7/2017	NM	0.075	0.07
P15-SB7-WATER	6/7/2017	NM	<0.025	0.24

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	SITE LOCATION MAP	APEX	FIGURE
DRAWN BY: SP			1
DATE: 7/17/17	PARCEL #15		
SCALE: AS SHOWN	1710 N. WILLIAM STREET		
CAD NO.: 510497-003	GOLDSBORO, NORTH CAROLINA		
PRJ NO.: 510497-003			



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CHARLOTTE, NC 28117
PHONE: (704) 799-6390

FIGURE 2
PARCEL 15
SITE MAP WITH SOIL BORING LOCATIONS

Date:	7/15/17
Proj. #	510497-003
CAD File:	pc_15_fig 2.dgn
Approx. Scale:	1" = 30'
Drawn by:	MJO
Client:	NC DOT
Project Title:	GOLDSBORO U-2714

Sample Identification	P15-SB3
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	1.6
THP DRO (mg/kg)	8.5

Sample Identification	P15-SB9
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	1.3
THP DRO (mg/kg)	1.2

Sample Identification	P15-SB2
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	1.4
THP DRO (mg/kg)	11.4

Sample Identification	P15-SB1
Sample Depth (Feet bgs)	3
TPH GRO (mg/kg)	<0.49
THP DRO (mg/kg)	40.9

Sample Identification	P15-SB4
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	0.48
THP DRO (mg/kg)	1.9

Sample Identification	P15-SB5
Sample Depth (Feet bgs)	3
TPH GRO (mg/kg)	<0.48
THP DRO (mg/kg)	<0.48

Sample Identification	P15-SB6
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	8.7
THP DRO (mg/kg)	0.47

Sample Identification	P15-SB7
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	<0.49
THP DRO (mg/kg)	<0.49

Sample Identification	P15-SB8
Sample Depth (Feet bgs)	2.5
TPH GRO (mg/kg)	1.4
THP DRO (mg/kg)	0.84

LEGEND

- UST — APPROXIMATE LOCATION OF UST
- UST EXCAVATION AREA
- PROPOSED ROW LINE
- PROPOSED SLOPE STAKES FILL (F)
- PROPOSED SLOPE STAKES CUT (C)
- EXISTING PROPERTY LINE
- SOIL BORING LOCATION

0 15 30′

SCALE IN FEET

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FIGURE 3
PARCEL 15
ONSITE UVF HYDROCARBON
ANALYSIS RESULTS - SOIL (6/7/17)

Date:	7/15/17
Proj. #	510497-003
CAD File:	pc_15_fig 3.dgn
Approx. Scale:	1" = 30'
Drawn by:	MJO
Client:	NC DOT
Project Title:	GOLDSBORO U-2714

Sample Identification	P15-SB3
TPH GRO (mg/L)	0.075
THP DRO (mg/L)	0.07

Sample Identification	P15-SB7
TPH GRO (mg/L)	<0.025
THP DRO (mg/L)	0.24

US 117 BUS/NC 111 PAVED RDY

N WILLIAMS ST 43.5' PAVED RDY

HOTBOX

P15-SB1 P15-SB2 P15-SB3 P15-SB4 P15-SB5 P15-SB6 P15-SB7 P15-SB8 P15-SB9

15 16 18

LEGEND

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

0 15 30'

SCALE IN FEET

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

FIGURE 3
PARCEL 15
ONSITE UVF HYDROCARBON
ANALYSIS RESULTS - GROUNDWATER
(6/7/17)

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

APPENDIX A

PHOTOGRAPH LOG

Photo 1

Overview of Site Prior to Preliminary Site Activities.

Photo 2

Two Probable USTs Identified in Front of the Building.

10610 Metromont Pkwy
Suite 206
Charlotte, NC 28269

APEX

WBS	38979.1.2
PROCESSED	TLH
DATE	June 2017
PAGE	

PHOTOGRAPHIC LOG

PSA Field Activities
Parcel 15
1710 N. William Street, Goldsboro, NC

Photo 3

CSI hand clearing the boring location.

Photo 4

CSI preparing to begin drilling with the track mounted rig.

APPENDIX B

BORING LOGS

Apex Companies, LLC

Boring Log

Boring/Well No.: P15-SB1	**Site Name: Parcel 15 - Edith S Smith Property**
Date: 06/07/17	**Location: Goldsboro, Wayne County, NC**
Job No.: 510497-003	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Asphalt
1				Tan, Sandy, Clayey Silt, Moist
2				
3	0	0	Sample at 3'	
4	0	0		Smear Zone
5				
				Water
6				
				Boring terminated at 6 feet
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

Boring/Well No.: P15-SB2	**Site Name: Parcel 15 - Edith S Smith Property**
Date: 06/07/17	**Location: Goldsboro, Wayne County, NC**
Job No.: 510497-003	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Asphalt
1				Tan, Sandy, Clayey Silt, Moist
2				
	1.7	1.2	Sample at 2.5'	
3				Orange and Yellow Marbled, Clayey Silt
4				
5				
				Water
6	7	3		Confined Aquifer
7				
8				
9				
10				Orange, Sand, Medium Grain
				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

Boring/Well No.: P15-SB3	**Site Name: Parcel 15 - Edith S Smith Property**
Date: 06/07/17	**Location: Goldsboro, Wayne County, NC**
Job No.: 510497-003	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Asphalt
1	0	0		Tan, Sandy, Clayey Silt, Moist
2				
	1.5	0.75	Sample at 2.5'	
3				
				Orange and White Marbled, Clayey Silt
4				
5				
				Water
6	8.2	1.8		Confined Aquifer
7				
8				
9				
10				Orange, Sand, Medium Grain
				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

Boring/Well No.: P15-SB4	**Site Name: Parcel 15 - Edith S Smith Property**
Date: 06/07/17	**Location: Goldsboro, Wayne County, NC**
Job No.: 510497-003	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Asphalt
1				Tan, Sandy, Clayey Silt, Moist
2				
	0	0	Sample at 2.5'	
3				
4	0	0		Smear Zone
5				
				Water
6				
				Boring terminated at 6 feet
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

Boring/Well No.: P15-SB5	**Site Name: Parcel 15 - Edith S Smith Property**
Date: 06/07/17	**Location: Goldsboro, Wayne County, NC**
Job No.: 510497-003	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Asphalt
1				Tan, Sandy, Clayey Silt, Moist
2				
	0	0		
3			Sample at 3'	
4	0	0		Smear Zone
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

Boring/Well No.: P15-SB6	**Site Name: Parcel 15 - Edith S Smith Property**
Date: 06/07/17	**Location: Goldsboro, Wayne County, NC**
Job No.: 510497-003	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Gravel
1				Tan, Clayey, Sandy Silt
2				
	1.5	1.0	Sample at 2.5'	
3				Orange, Clayey Silt
4	2.3	0.3		Smear Zone
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

Boring/Well No.: P15-SB7	**Site Name: Parcel 15 - Edith S Smith Property**
Date: 06/08/17	**Location: Goldsboro, Wayne County, NC**
Job No.: 510497-003	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Grass and Gravel
1				Tan, Sandy Silt
				Tan, Clayey, Sandy Silt
2				
	2.6	1.5	Sample at 2.5'	
3				Orange, Clayey Silt
4	2.5	1.95		Smear Zone
5				Water
				Orange and White Marbled, Clayey Silt
6				
	2.7	2.0		
7				
8				
				Orange, Sand, Medium Grain
9				
10	2.0	0.4		
				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

Boring/Well No.: P15-SB8	**Site Name: Parcel 15 - Edith S Smith Property**
Date: 06/08/17	**Location: Goldsboro, Wayne County, NC**
Job No.: 510497-003	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Grass
1				Black, Sandy Silt
				Tan, Sandy Silt
2				Yellow, Clayey, Sandy Silt
	2	1.03	Sample at 2.5'	
3				
4	1.2	0		Smear Zone
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

Boring/Well No.: P15-SB9	**Site Name: Parcel 15 - Edith S Smith Property**
Date: 06/08/17	**Location: Goldsboro, Wayne County, NC**
Job No.: 510497-003	**Sample Method: Hand Auger and Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Hand Auger and Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579**
Remarks:	

Depth (ft BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
				Asphalt and Rock Base
1				Black and Tan Sand
				Yellowish Brown, Clayey Silt
2				
	0	0	Sample at 2.5'	
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 015
NCDOT PROJECT U-2714

1710 N. WILLIAM STREET, GOLDSBORO, NC

JULY 13, 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

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

GEOPHYSICAL INVESTIGATION REPORT
Parcel 015 – 1710 N. William Street
Goldsboro, Wayne County, North Carolina

Table of Contents

Figures

LIST OF ACRONYMS

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

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Apex Companies (Apex) at Parcel 015, located at 1710 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 6-7, 2017, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

Geophysical Results: Several of the EM anomalies were directly attributed to visible cultural features at the ground surface. Two areas contained EM anomalies that were associated with unknown buried metal, and were investigated further by GPR. A total of 5 GPR Transects identified the following:

- One probable UST on the east side of the existing building, approximately 9 feet long and 6 feet wide.
- Two probable USTs on the west side of the existing building.
  - The eastern probable UST was approximately 10 feet long and 5.5 feet wide.
  - The western probable UST was approximately 8 feet long and 5 feet wide.

Collectively, the geophysical data recorded evidence of three probable metallic USTs at Parcel 015.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Apex at Parcel 015, located at 1710 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 6-7, 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 commercial building surrounded by asphalt parking areas and grass/dirt ground cover. 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 7, 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
Known UST Active tank - spatial location, orientation, and approximate depth determined by geophysics.	**Probable UST** 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.	**Possible UST** 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

Metallic Anomaly #	Cause of Anomaly	Investigated with GPR
1	Poles/utility box	
2	**Two probable USTs**	☑
3	Sign	
4	Reinforced concrete	
5	Building/utilities	
6	**One probable UST**	☑
7	Metal Shed	
8	Gas/power meters	

Several of the EM anomalies (Anomalies 1, 3, 4, 5, 7 and 8) were directly attributed to known cultural features such as poles, utilities, a sign, reinforced concrete, the building, and a metal shed. However, Anomalies 2 and 6 were high-amplitude features that were associated with unknown buried metal; their size and amplitude were suggestive of large structures such as USTs. These features were 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 five GPR transects were performed at the site. GPR Transects 1 and 2 were performed across EM Anomaly 6, located on the east side of the building. These two transects recorded a relatively 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 6 feet wide.

GPR Transects 3-5 were performed across Anomaly 2 in the northwest portion of the parcel. Transect 3 showed evidence of two clear hyperbolic reflectors, suggesting this transect crossed the width of two USTs. Transects 4 and 5 showed evidence of discreet lateral reflectors that were consistent with the length of two USTs. Pyramid has classified these features as two probable metallic USTs. The eastern probable UST was approximately 10 feet long and 5.5 feet wide, and the western probable UST was approximately 8 feet long and 5 feet wide.

Collectively, the geophysical data recorded evidence of three probable metallic USTs at Parcel 015. **Figure 4** shows the locations and sizes of all probable USTs 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 015 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.
- Several of the EM anomalies were directly attributed to visible cultural features at the ground surface.
- Two areas contained EM anomalies that were associated with unknown buried metal, and were investigated further by GPR.
- A total of 5 GPR Transects identified the following:
    - One probable UST on the east side of the existing building, approximately 9 feet long and 6 feet wide.
    - Two probable USTs on the west side of the existing building.

- The eastern probable UST was approximately 10 feet long and 5.5 feet wide.
- The western probable UST was approximately 8 feet long and 5 feet wide.

- Collectively, the geophysical data recorded evidence of three probable metallic USTs at Parcel 015.

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 North)

View of Survey Area
(Facing Approximately East)

TITLE
PARCEL 015 - GEOPHYSICAL SURVEY
BOUNDARIES AND SITE PHOTOGRAPHS

PROJECT
PARCEL 015
GOLDSBORO, NORTH CAROLINA
NCDOT PROJECT U-2714

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
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License # C1251 Eng. / License # C257 Geology

DATE 6/30/2017

CLIENT APEX COMPANIES

PYRAMID PROJECT #: 2017-156

FIGURE 1

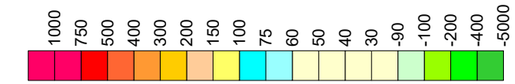
N

EM61 METAL DETECTION RESULTS

EVIDENCE OF THREE PROBABLE METALLIC USTs 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 6, 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 6-7, 2017.

EM61 Metal Detection Response (millivolts)



TITLE
PARCEL 015 -
EM61 RESULTS CONTOUR MAP

PROJECT
PARCEL 015
GOLDSBORO, NORTH CAROLINA
NCDOT PROJECT U-2714

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DATE 6/30/2017

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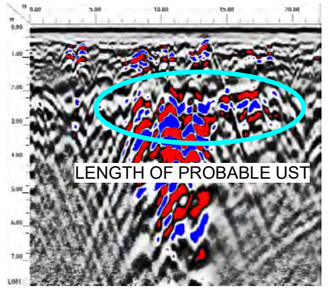
PYRAMID PROJECT #: 2017-156

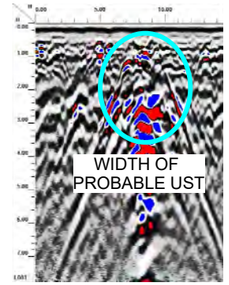
FIGURE 2

N

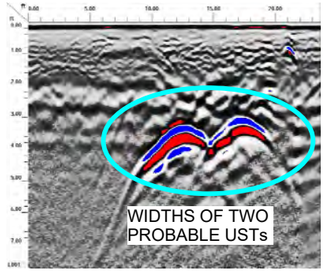
LOCATIONS OF GPR TRANSECTS



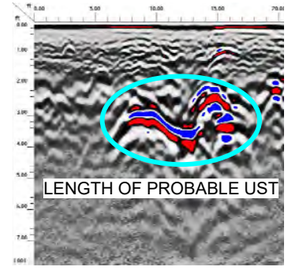
GPR TRANSECT 1 (T1)



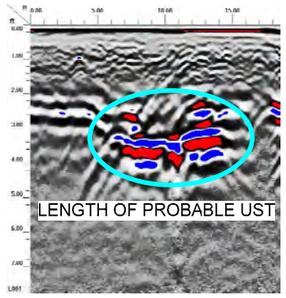
GPR TRANSECT 2 (T2)



GPR TRANSECT 3 (T3)



GPR TRANSECT 4 (T4)



GPR TRANSECT 5 (T5)

TITLE
PARCEL 015 -
GPR TRANSECT LOCATIONS
AND IMAGES

PROJECT
PARCEL 015
GOLDSBORO, NORTH CAROLINA
NCDOT PROJECT U-2714

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DATE 6/30/2017

CLIENT APEX COMPANIES

PYRAMID PROJECT #: 2017-156

FIGURE 3

N↑

LOCATIONS OF PROBABLE METALLIC USTs

PROBABLE UST #1
(FACING APPROXIMATELY EAST)

PROBABLE USTs #2 & #3
(FACING APPROXIMATELY EAST)

TITLE	PARCEL 015 - LOCATIONS AND SIZES OF PROBABLE USTs
PROJECT	PARCEL 015 GOLDSBORO, NORTH CAROLINA NCDOT PROJECT U-2714
PYRAMID GEOPHYSICS	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	**FIGURE 4**

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

0 25 50
FEET

N

TITLE: OVERLAY OF GEOPHYSICAL SURVEY BOUNDARIES ON NCDOT ENGINEERING PLANS

PROJECT: PARCEL 015
GOLDSBORO, NORTH CAROLINA
NCDOT PROJECT U-2714

PYRAMID GEOPHYSICS
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

HYDROCARBON ANALYSIS RESULTS

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: NCDOT
Address: PARCEL 15
1710 N William St
Goldsboro, NC

Contact: Dennis Li

Project: 510497-003

Samples taken Wednesday, June 07, 2017
Samples extracted Wednesday, June 07, 2017
Samples analysed Wednesday, June 07, 2017

Operator KH

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	P15-SB1 (3)	19.7	<0.49	<0.49	40.9	40.9	22.2	0.96	0.01	0	86.3	13.7	V.Deg.PHC (FCM) 71.2%
s	P15-SB2 (2.5)	20.8	<0.52	1.4	11.4	12.8	8.7	0.9	0.015	14	72.6	13.4	Road Tar (FCM) 81%
s	P15-SB3 (2.5)	19.7	<0.49	1.6	8.5	10.1	3.1	0.14	0.002	35.9	54.3	9.8	V.Deg.PHC (FCM) 73.4%
s	P15-SB4 (2.5)	19.1	<0.48	0.48	1.9	2.4	1.5	0.08	<0.002	14.8	69.9	15.3	Deg Fuel (FCM) 70.2%
s	P15-SB5 (3)	19.1	<0.48	<0.48	<0.48	<0.48	<0.1	<0.02	<0.002	0	49.6	50.4	PHC not detected (P)

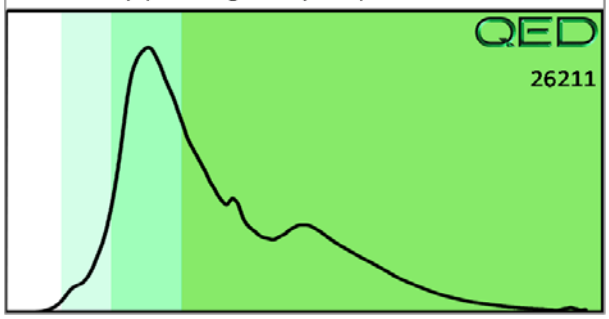
Initial Calibrator QC check OK Final FCM QC Check OK 114.8 %

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

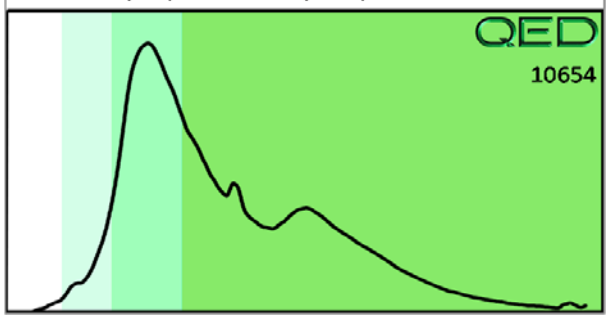
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library (SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint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

Project: 510497-003 Wednesday, June 07, 2017

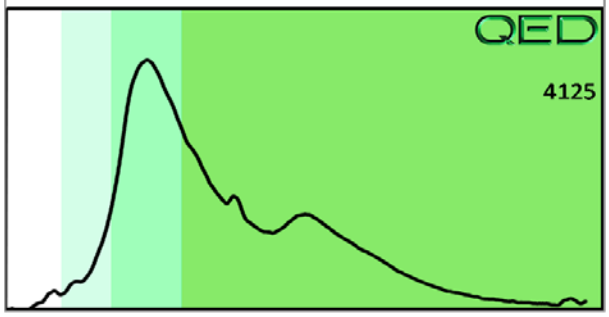
P15-SB1 (3) : V.Deg.PHC (FCM) 71.2%



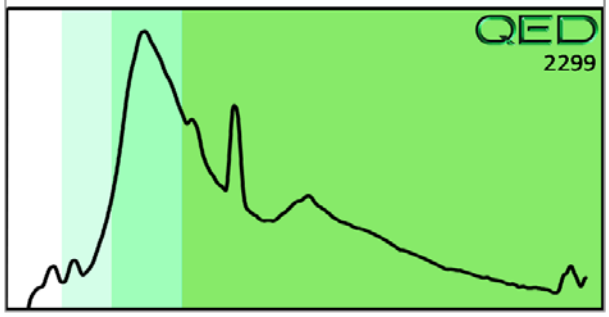
P15-SB2 (2.5) : Road Tar (FCM) 81%



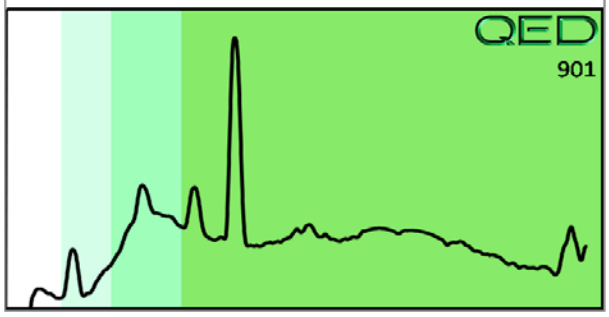
P15-SB3 (2.5) : V.Deg.PHC (FCM) 73.4%



P15-SB4 (2.5) : Deg Fuel (FCM) 70.2%



P15-SB5 (3) : PHC not detected (P)



QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: NCDOT
Address: PARCEL 15
1710 N William St
Goldsboro, NC

Contact: Dennis Li

Project: 510497-003

Samples taken Thursday, June 08, 2017
Samples extracted Thursday, June 08, 2017
Samples analysed Thursday, June 08, 2017

Operator KH

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	P15-SB6 (2.5)	18.8	<0.47	8.7	0.47	9.17	<0.19	<0.02	<0.002	98.2	0.7	1.1	V.Deg.Gas (FCM) (P) (BO) 34%
s	P15-SB7 (2.5)	19.5	<0.49	<0.49	<0.49	<0.49	<0.1	<0.02	<0.002	0	74.3	25.7	Residual.PHC
s	P15-SB8 (2.5)	22.0	<0.55	1.4	0.84	2.24	0.81	0.04	<0.002	65.5	27.2	7.3	V.Deg.Gas (FCM) (P) 66.1%
W	P15-SB7 - WATER	1.0	<0.025	<0.025	0.24	0.24	0.14	0.006	<0	0	92.4	7.6	Deg.Fuel (FCM) (P) (BO) 55%
S	P15-SB9 (2.5)	20.0	<0.5	1.3	1.2	2.5	0.85	0.04	<0.002	62.7	29.3	8	V.Deg.PHC (FCM) (P) 74.2%
W	P15-SB3 - WATER	1.0	<0.05	0.075	0.07	0.15	0.06	0.002	<0	54.2	42	3.7	V.Deg.Gas (FCM) 53.5%

Initial Calibrator QC check OK Final FCM QC Check OK 103.5 %

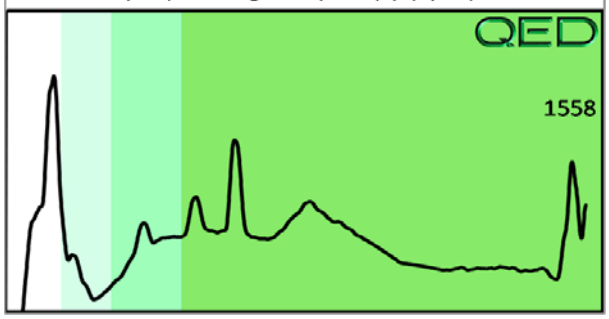
Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

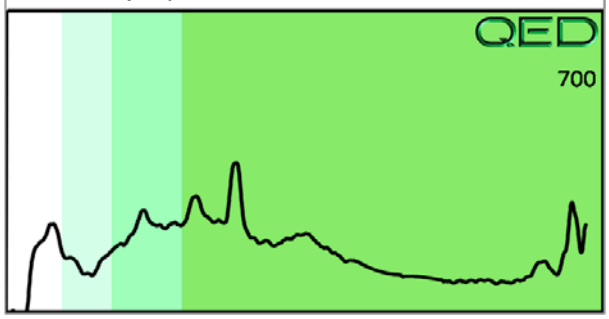
(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

Project: 510497-003 Thursday, June 08, 2017

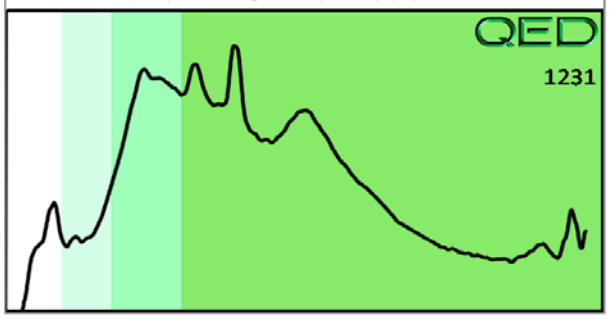
P15-SB6 (2.5) : V.Deg.Gas (FCM) (P) (BO) 34%



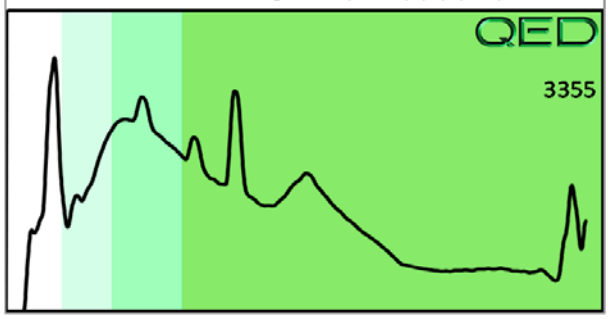
P15-SB7 (2.5) : Residual.PHC



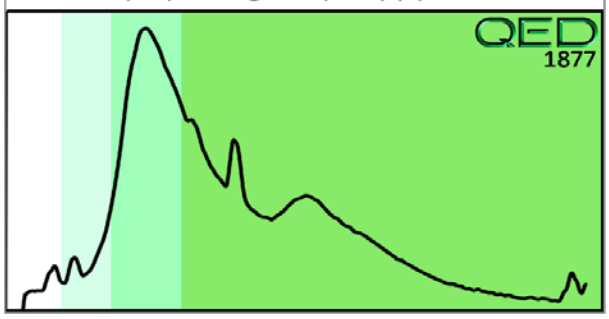
P15-SB8 (2.5) : V.Deg.Gas (FCM) (P) 66.1%



P15-SB7 - WATER : Deg.Fuel (FCM) (P) (BO) 55%



P15-SB9 (2.5) : V.Deg.PHC (FCM) (P) 74.2%



P15-SB3 - WATER : V.Deg.Gas (FCM) 53.5%