

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

Wee Are The World Child Care Property  
Parcel # 50  
2206 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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**August 30, 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 50 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 2206 North William Street and is identified as Parcel 50, Wee Are The World Child Care Property, within the NCDOT U-2714 design project. The property is located north 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 within the proposed right-of-way (ROW) and/or easement of the Parcel 50 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 50. **Appendix A** includes a Photograph log for the site.

### 1.1 Site History

Parcel 50 has been identified with the address of 2206 North 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 2206 North William Street site. No visual evidence of USTs were noted during field activities. Currently the site operates as Wee Are The World Child Care in a one-story brick 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 currently occupied by Wee Are The World Child Care. The site is bordered to the north by Griffin Exterminating, and to the east by Patetown Road followed by a residential

property. Wanda's Neighborhood Bar & Grill borders the site to the south and North William Street and US Highway 117 Alternate are located to the west. Parcel 50 does not appear on the NCDEQ UST database registry and is not associated with known USTs. The geophysical surveyor, Pyramid Environmental & Engineering, PC, (Pyramid) did identify one anomaly characteristic of a UST in the investigation area.

## 2.0 GEOLOGY

### 2.1 Regional Geology

Parcel 50 is located within the Coastal Plain Physiographic Province. The Coastal Plain is the largest physiographic province in the state, covering about 45% 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 sand (upper five feet of soil column) and tan to brown silt was observed across the parcel. The soils were unconsolidated and as a result the borings often collapsed. There is little topographic relief to the site and there are streams located to the west and east. Determining groundwater flow directions can be difficult and would require at least three well locations. A groundwater investigation was conducted on a parcel located at 1609 North William Street and the groundwater data indicated groundwater was flowing to the east-southeast. Based on the location of surface water bodies, groundwater flow may be similar at this location. Groundwater was encountered at 4.5 to five feet bgs at the site. 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 and 8, 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**. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. EM anomalies were observed in the northern portion of the survey area that were associated with unknown buried metal and were investigated further with GPR. GPR results indicate that one possible UST approximately 12 feet long and six feet wide is located in the northern portion of the property. The UST location is also shown on **Figure 2**.

### 3.4 Well Survey

No water supply or groundwater monitoring wells were observed on Parcel 50.

### 3.5 Soil Sampling

Apex conducted drilling activities at the site on June 15, 2017. Apex drilling subcontractor, CSI, advanced nine direct push soil borings within the proposed investigation area. These nine boring locations (P50-SB2 through P50-SB10) were placed in a pattern to maximize the likelihood of intercepting potential soil contamination, and were located around the area of the possible UST. **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 in the upper five feet of the borings 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 three of the soil borings for the purposes of collecting a groundwater grab sample. Below five feet, clayey silt soils was encountered at the water table. Apex personnel only collected one groundwater grab sample from boring P50-SB10 for onsite quantitative analysis of TPH using the REDLAB UVF Hydrocarbon Analyzer. The analysis was performed on site 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 impact onsite, within the area of investigation. 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 2.9 ppm and the PID readings were non-detectable. 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-DRO was identified in soils on Parcel 50. TPH-GRO concentrations were below detectable levels in all nine samples. TPH-DRO concentrations ranged from below detectable levels to 8 milligrams per kilogram (mg/kg) (P50-SB6). 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 soil boring P50-SB10 for onsite quantitative analysis of TPH using the REDLAB UVF Hydrocarbon Analyzer. Based on the real time UVF analysis of the groundwater grab sample, significant groundwater impact is not present on Parcel 50. Water sample P50-SB10-WATER indicated TPH-GRO concentrations of <0.025 milligrams per liter (mg/L) and TPH-DRO concentrations of 0.04 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 significant groundwater contamination to be present and there was also no significant impact in shallow soils. One potential UST was identified in the northwestern corner of the parcel, immediately adjacent to Parcel 51/54.

Soil contamination was observed in shallow soils immediately north of this parcel, on the southwest corner of Parcel 51/54. This soil impact was approximately 11 feet north of the UST observed in the northwest corner of Parcel 50 and the potential UST. **Figures 2-4** illustrate the location of the UST on Parcel 50 and the estimated area of shallow soil contamination on Parcel 51/54. Four soil samples were collected on Parcel 50 around the UST, and no significant soil impact was identified. No significant groundwater impact was identified on either parcel.

Apex reviewed historical aerial photographs of the site to determine if dispensers may have been present on the adjacent parcel which were related to the UST located on Parcel 50. A historical aerial photograph from 1977 is shown in **Figure 5**. The aerial photo data was either inconclusive or did not indicate the presence of dispensers. Therefore, Apex did not identify any conclusive analytical or historical data to show that the impacted soils present on the adjacent parcel are related to the UST on Parcel 50.

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 8, 2017.

- Results of the geophysical survey produced evidence of one anomaly characteristic of UST. This UST is approximately 12 feet long and six feet wide is located in the northern portion of the property.
- 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. No samples exhibited TPH-GRO at concentrations exceeding the practical quantitation limit of the UVF.
- One groundwater grab samples were collected and analyzed for TPH-DRO and TPH-GRO with the REDLAB UVF Hydrocarbon Analyzer. This sample did not contain any detectable TPH-GRO and TPH-DRO at only 0.04 mg/L.

## 6.0 RECOMMENDATIONS

Based on these PSA results, there is no soil or groundwater impact which will require additional assessment or removal. A UST is present within the construction area which will likely require removal. The UST is located on the northern end of the parcel and is approximately 12 feet long and six feet wide. Apex recommends that the UST be removed in accordance with NCDEQ

requirements for UST closure. There are soil impacts present immediately adjacent to this parcel, in the southwestern corner of Parcel 51/54. There was no conclusive analytical or historical data obtained to indicate that the impacted soils identified on the adjacent parcel are related to the UST.

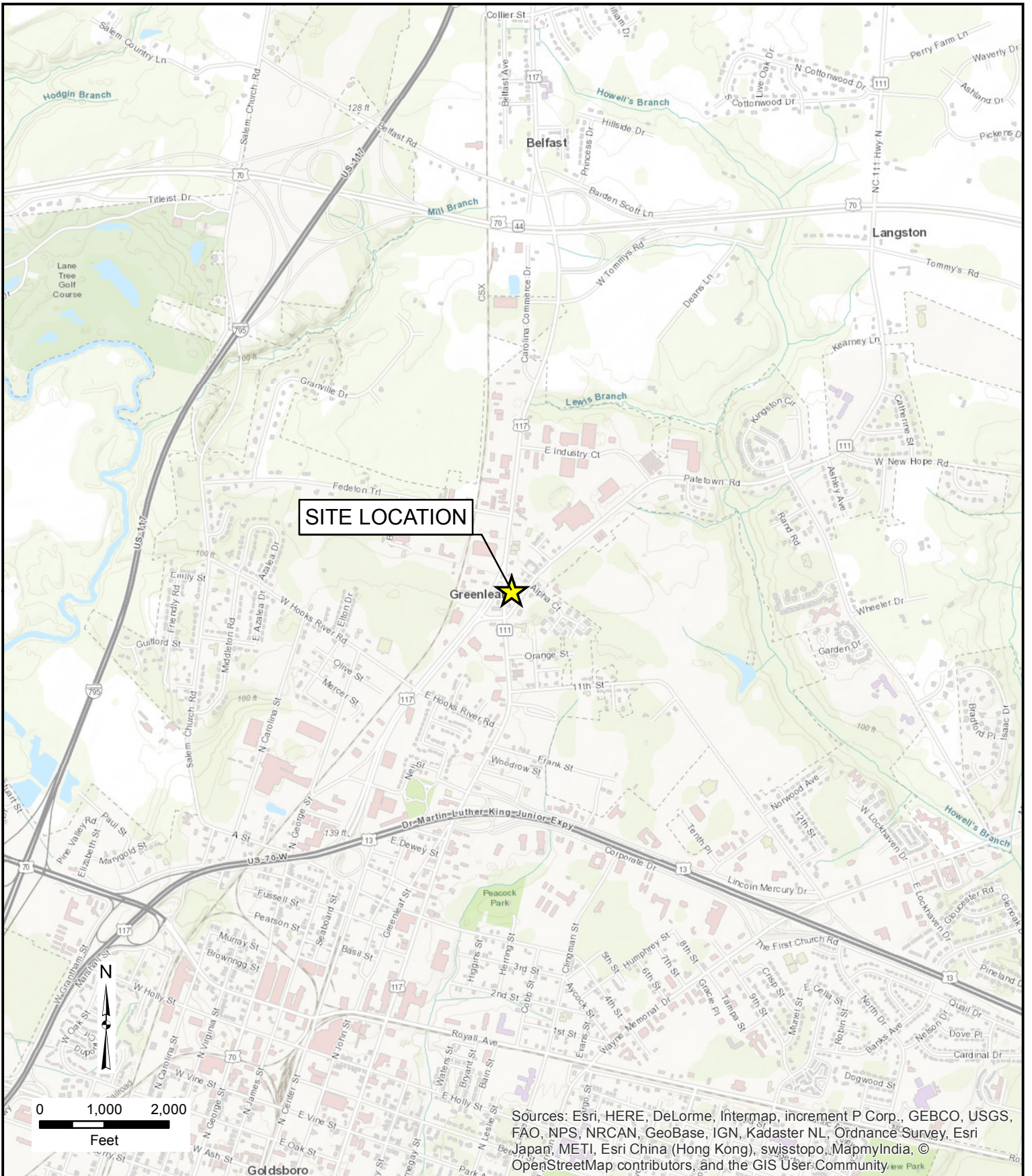
## TABLES

**Table 1**  
**UVF Onsite Hydrocarbon Analytical Soil and Groundwater Data from June 2017**  
**U-2714, Parcel 50, Wee Are The World Child 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>				
<b>NCDEQ Action Level in mg/kg</b>			<b>50</b>	<b>100</b>
<b>P50-SB2</b>	6/15/2017	2	<0.52	0.52
<b>P50-SB3</b>	6/15/2017	2	<0.49	2.5
<b>P50-SB4</b>	6/15/2017	2	<0.52	<0.52
<b>P50-SB5</b>	6/15/2017	2	<0.28	<0.28
<b>P50-SB6</b>	6/15/2017	2	<0.48	8
<b>P50-SB7</b>	6/15/2017	2	<0.53	<0.53
<b>P50-SB8</b>	6/15/2017	2	<0.21	<0.21
<b>P50-SB9</b>	6/15/2017	2	<0.49	3
<b>P50-SB10</b>	6/15/2017	2	<0.55	3.4
<b>GROUNDWATER (mg/L)</b>				
<b>P50-SB10-WATER</b>	6/15/2017	NM	<0.025	0.04
<b>NOTES:</b> (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





Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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

**SITE LOCATION MAP**  
  
**PARCEL #50**  
**2206 N. WILLIAM STREET**  
**GOLDSBORO, NORTH CAROLINA**



FIGURE

1





Sample Identification	P50-SB7
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.53
THP DRO (mg/kg)	<0.53

Sample Identification	P50-SB6
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.48
THP DRO (mg/kg)	8

Sample Identification	P50-SB5
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.28
THP DRO (mg/kg)	<0.28

Sample Identification	P50-SB8
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.21
THP DRO (mg/kg)	<0.21

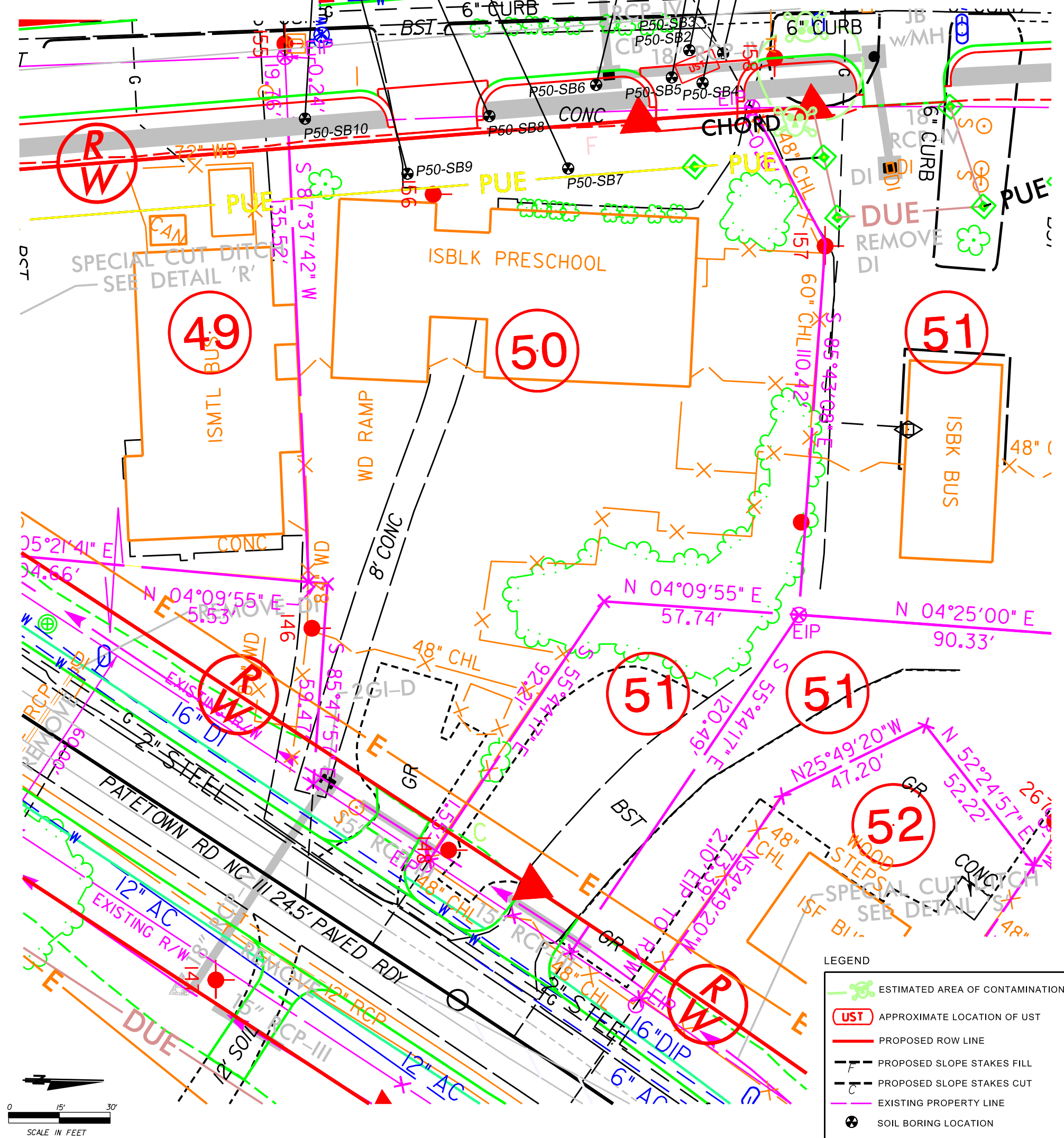
Sample Identification	P50-SB2
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.52
THP DRO (mg/kg)	0.52

Sample Identification	P50-SB9
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.49
THP DRO (mg/kg)	3

Sample Identification	P50-SB4
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.52
THP DRO (mg/kg)	<0.52

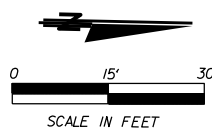
Sample Identification	P50-SB10
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.55
THP DRO (mg/kg)	3.4

Sample Identification	P50-SB3
Sample Depth (Feet bgs)	2
TPH GRO (mg/kg)	<0.49
THP DRO (mg/kg)	2.5



LEGEND

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



**FIGURE 3**  
**PARCEL 50**  
**ONSITE UVF HYDROCARBON**  
**ANALYSIS RESULTS - SOIL**  
 6/15/17



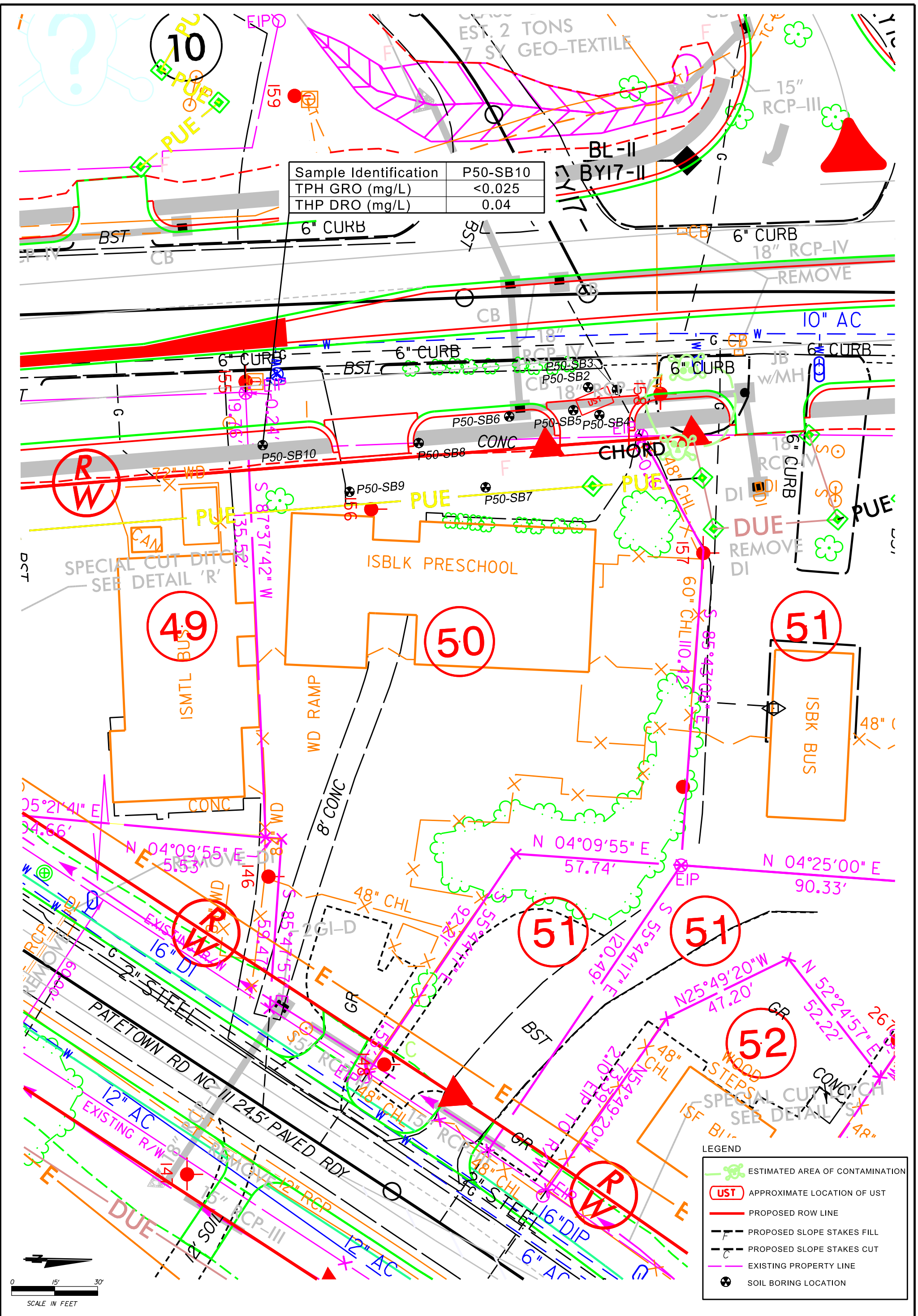


FIGURE 4  
 PARCEL 50  
 ONSITE UVF HYDROCARBON  
 ANALYSIS RESULTS -  
 GROUNDWATER 6/15/17



CHECK BY: TH
DRAWN BY: SP
DATE: 8/28/17
SCALE: AS SHOWN
CAD NO.: 510497-003
PRJ NO.: 510497-003

1977 AERIAL PHOTOGRAPH

PARCEL #50  
2206 NORTH WILLIAM STREET  
GOLDSBORO, NORTH CAROLINA



FIGURE

5

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





**Photo 1**

Overview of site prior to preliminary site assessment activities.



**Photo 2**

View of one possible UST in northwest corner of the site.



**Photo 3**

View of utility markouts.



**Photo 4**

View of CSI hand clearing utilities.

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Suite 206  
Charlotte, NC 28269



WBS 38979.1.2  
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DATE June 2017  
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PHOTOGRAPHIC LOG

PSA Field Activities  
Parcel 50  
2206 N. William Street, Goldsboro, NC



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



# Apex Companies, LLC

## Boring Log

<b>Boring/Well No.:</b> P50-SB-2	<b>Site Name:</b> Parcel 50 - Wee Are The World Child 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
				Concrete
1				Tan Sand
2	0	0	Sample at 2'	Brown Sand
3				
4	0	0		Orange Sand
5				
6	0	0		
7				
8	0	0		Red-Orange and White, Clayey Silt
9				
10	0	0		
				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> P50-SB-3	<b>Site Name:</b> Parcel 50 - Wee Are The World Child 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, Fine
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> P50-SB-4 (2)	<b>Site Name:</b> Parcel 50 - Wee Are The World Child 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 Silt
2		0	0	Sample at 2'	Tan Sand
3					
4		0	0		Orange Sand
5					Water
6		0	0		
7					
8		0	0		Orange and White Marbled Clayey Silt
9					
10		0	0		
					Boring terminated at 5 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> P50-SB-5	<b>Site Name:</b> Parcel 50 - Wee Are The World Child 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 Silt
2		0	0	Sample at 2'	Tan Sand
3					
4		0	0		Orange 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> P50-SB-6	<b>Site Name:</b> Parcel 50 - Wee Are The World Child 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		1.2	0	Sample at 2'	
3					Tan, Clayey Sand
4		1.4	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> P50-SB-7	<b>Site Name:</b> Parcel 50 - Wee Are The World Child 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		0	0	Sample at 2'	
3					Orange Sand
4		0	0		
5					Water
6		0	0		
7					White and Orange Marbled, Clayey Silt
8		0	0		
9					Confining layer
10		0	0		
					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> P50-SB-8	<b>Site Name:</b> Parcel 50 - Wee Are The World Child 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 Silt
2		0	0	Sample at 2'	Tan Sand, Fine
3					
4		0	0		Tan, Clayey Sand, Fine
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> P50-SB-9	<b>Site Name:</b> Parcel 50 - Wee Are The World Child 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 Silt
2		0	0	Sample at 2'	Brown Silt
3					
4		0	0		Tan, Clayey 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> P50-SB-10	<b>Site Name:</b> Parcel 50 - Wee Are The World Child 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 Silt
2		2.9	0	Sample at 2'	Brown Silt
3					Brown, Silty Sand
4		1.8	0		
5					Water
6		0	0		Orange and White Marbled, Clayey Silt
7					
8		0	0		
9					Yellow Sand, Medium
10		0	0		
					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:

**APPENDIX C**  
**GEOPHYSICAL REPORT**



PYRAMID GEOPHYSICAL SERVICES  
(PROJECT 2017-156)

# GEOPHYSICAL SURVEY


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## METALLIC UST INVESTIGATION: PARCEL 050 NCDOT PROJECT U-2714

2206 N. WILLIAM STREET, GOLDSBORO, NC

JULY 18, 2017

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

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NC License #2181

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P: 336.335.3174 F: 336.691.0648  
C257: GEOLOGY C1251: ENGINEERING

**GEOPHYSICAL INVESTIGATION REPORT**  
**Parcel 050 – 2206 N. William Street**  
**Goldsboro, Wayne County, North Carolina**

**Table of Contents**

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Discussion of Results.....3  
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**Figures**

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- Figure 2 – Parcel 050 EM61 Results Contour Map
- Figure 3 – Parcel 050 GPR Transect Locations & Images
- Figure 4 – Parcel 050 Location and Size of Possible Metallic UST
- Figure 5 – Parcel 050 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

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**Project Description:** Pyramid Environmental conducted a geophysical investigation for Apex Companies (Apex) at Parcel 050, located at 2206 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 extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from June 7-8, 2017, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

**Geophysical Results:** The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. EM anomalies were observed in the northern portion of the survey area that were associated with unknown buried metal, and were investigated further by GPR. A total of 2 GPR transects identified the following:

- One possible UST in the northern portion of the survey area, approximately 12 feet long and 6 feet wide.

An EM anomaly was also observed directly north of the possible UST. This feature was predominantly located on Parcel 51 to the north, and was examined with GPR as part of the investigation of that parcel. No evidence was collected that would suggest that this feature should be classified as a UST.

Collectively, the geophysical data recorded evidence of one possible metallic UST at Parcel 050.

## INTRODUCTION

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Pyramid Environmental conducted a geophysical investigation for Apex at Parcel 050, located at 2206 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 extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from June 7-8, 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, concrete, and grass areas. An aerial photograph showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

## FIELD METHODOLOGY

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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 8, 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

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### *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	Power/hydrant	
2	Sign	
3	OH power interference	
4	<b>One possible UST</b>	☑
5	Unknown structure	(See Parcel 51 Report)
6	Fence	
7	Vehicles	
8	Fence	

The majority of the EM anomalies (Anomalies 1-3 and 6-8) were directly attributed to known cultural features such as utilities, a hydrant, a sign, fences, and vehicles. Some data interference from overhead (OH) power lines also resulted in minor EM anomalies (Anomaly 3). Anomaly 4 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. It should also be noted that Anomaly 5 was associated with unknown buried metal; this feature was predominantly located on the north adjacent parcel (Parcel 51), and is discussed in further detail in Pyramid’s *Parcel 51\_54 Geophysical Letter Report*, dated July 6, 2017.

*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 4. These transects recorded a relatively distinct hyperbolic reflector and a discreet lateral reflector that were consistent with a metallic UST. Due to the somewhat unclear hyperbolic and lateral reflectors, Pyramid is classifying this feature as one possible UST. The possible UST was approximately 12 feet long and 6 feet wide.

As discussed above, an EM anomaly was also observed directly north of the possible UST. This feature was predominantly located on Parcel 51 to the north, and was examined with

GPR as part of the investigation of that parcel. The GPR indicated the presence of an anomalous structure; however, its size and shape were not consistent with a UST. It is possible this is a structure associated with the possible UST observed at Parcel 50.

Collectively, the geophysical data recorded evidence of one possible metallic UST at Parcel 050. **Figure 4** shows the location and size of the possible UST identified by the survey, as well as the location of the unknown structure to the north (not classified as a UST). **Figure 5** provides an overlay of the geophysical survey area onto the NCDOT MicroStation engineering plans (proposed ROW and easements) for reference.

## SUMMARY & CONCLUSIONS

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Pyramid's evaluation of the EM61 and GPR data collected at Parcel 050 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 in the northern portion of the survey area that were associated with unknown buried metal, and were investigated further by GPR.
- A total of 2 GPR Transects identified the following:
  - One possible UST in the northern portion of the survey area, approximately 12 feet long and 6 feet wide.
- An EM anomaly was also observed directly north of the possible UST. This feature was predominantly located on Parcel 51 to the north, and was examined with GPR as part of the investigation of that parcel. No evidence was collected that would suggest that this feature should be classified as a UST.
- Collectively, the geophysical data recorded evidence of one possible metallic UST at Parcel 050.

## 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



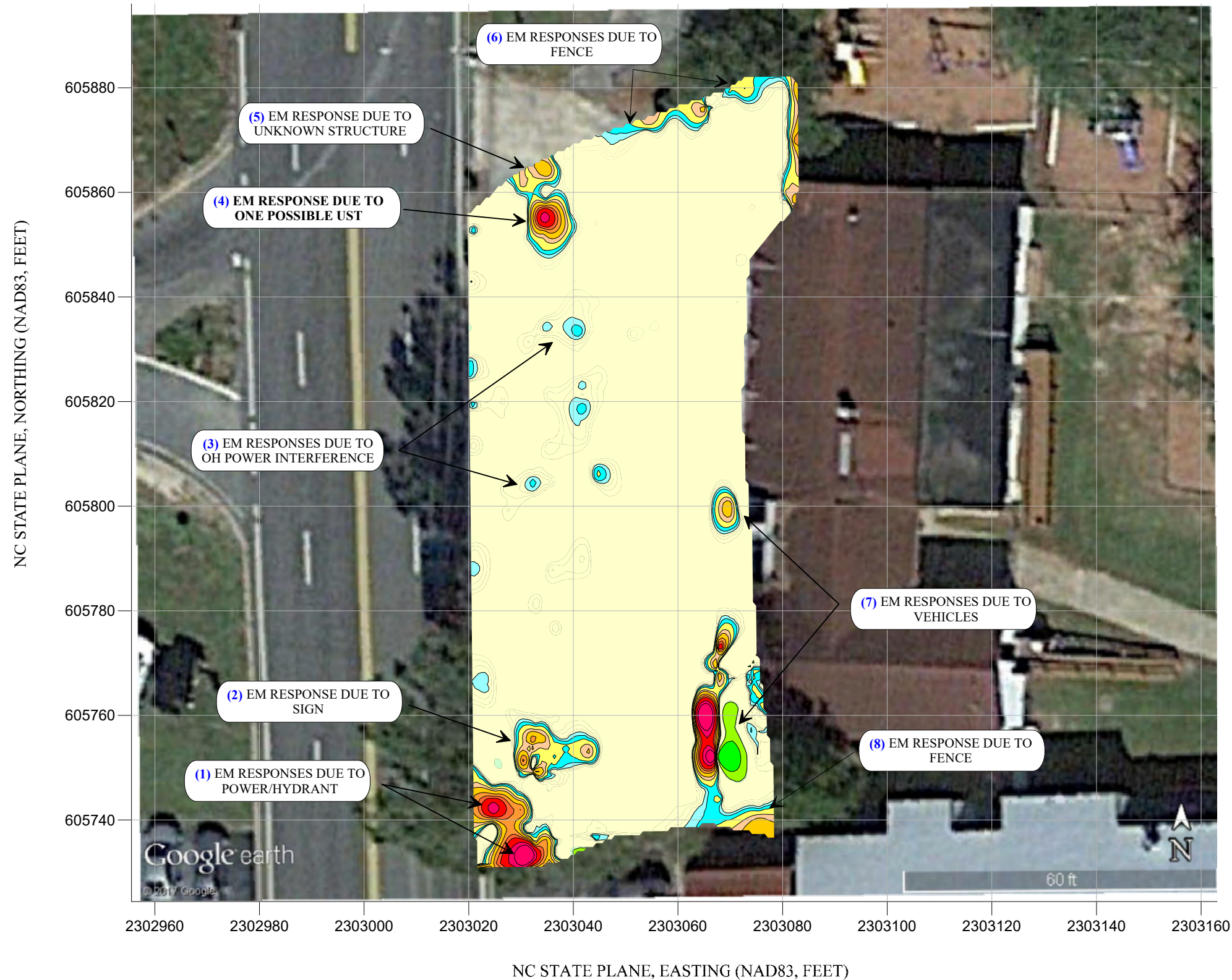
View of Survey Area  
(Facing Approximately South)

TITLE		PARCEL 050 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS	
PROJECT		PARCEL 050 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>	





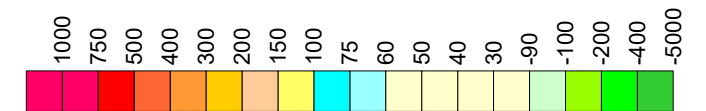
### EM61 METAL DETECTION RESULTS




### EVIDENCE OF ONE POSSIBLE METALLIC UST OBSERVED.

The contour plot shows the bottom results of the EM61 instrument in millivolts (mV). The bottom coil shows all metal detected, and was used due to interference in the differential data from overhead power lines. The EM61 data were collected on June 7, 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 8, 2017.

### EM61 Metal Detection Response (millivolts)

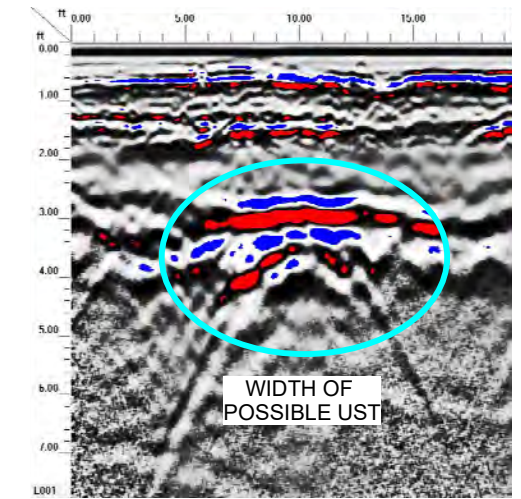


TITLE	PARCEL 050 - EM61 RESULTS CONTOUR MAP	
PROJECT	PARCEL 050 GOLDSBORO, NORTH CAROLINA NCDOT PROJECT U-2714	
		503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology
DATE	6/30/2017	CLIENT APEX COMPANIES
PYRAMID PROJECT #:	2017-156	<b>FIGURE 2</b>

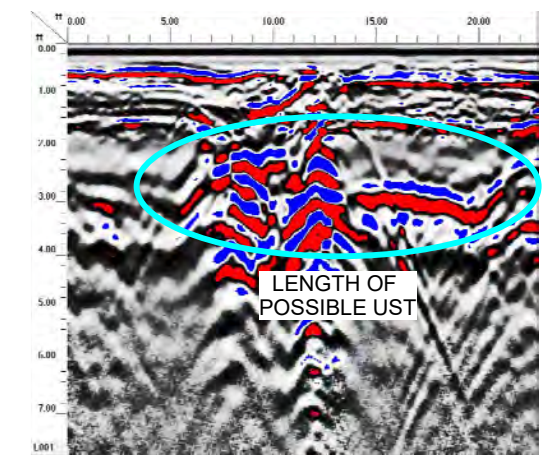


N ↑


LOCATIONS OF GPR TRANSECTS



GPR TRANSECT 1 (T1)



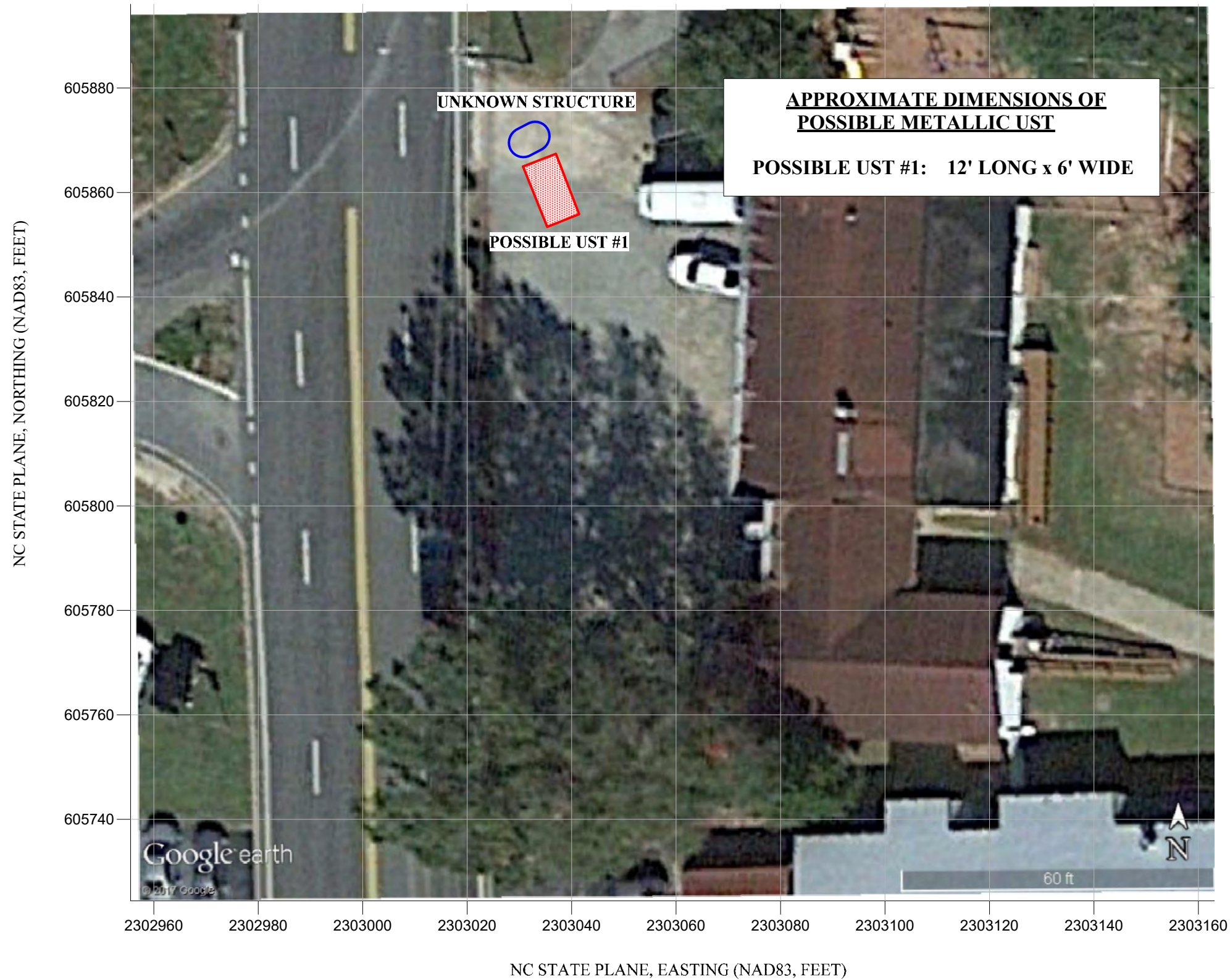
GPR TRANSECT 2 (T2)

TITLE	PARCEL 050 - GPR TRANSECT LOCATIONS AND IMAGES	
PROJECT	PARCEL 050 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 ↑

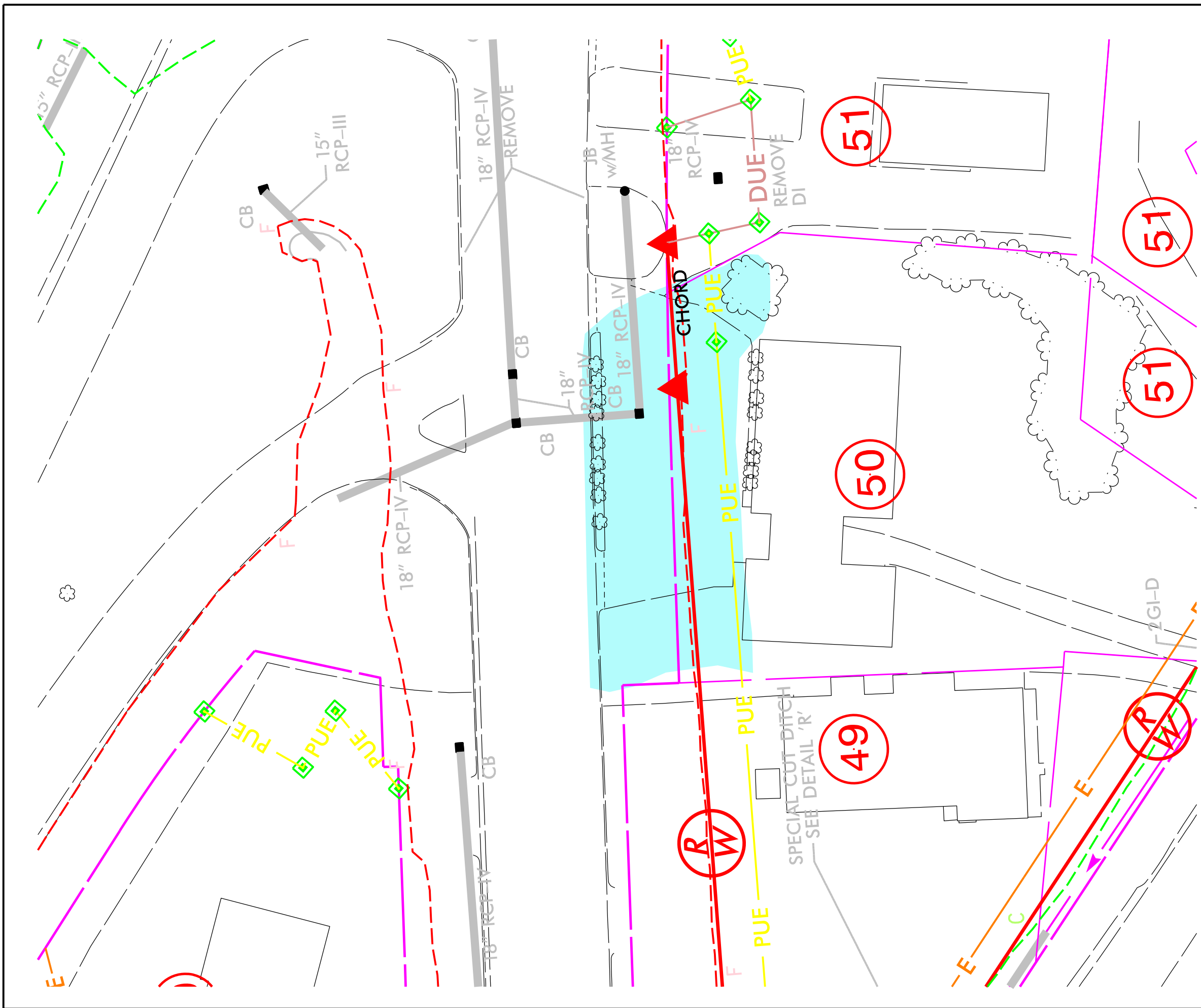
**LOCATION OF POSSIBLE UST**



POSSIBLE UST #1 AND UNKNOWN ASSOCIATED STRUCTURE FACING APPROXIMATELY SOUTH

TITLE	PARCEL 050 - LOCATION AND SIZE OF POSSIBLE UST	
PROJECT	PARCEL 050 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 050 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 50  
 2206 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	P50-SB2 (2)	20.6	<0.52	<0.52	0.52	0.52	0.3	0.04	<0.002	0	58	42	Residual.PHC (FCM)
s	P50-SB3(2)	19.7	<0.49	<0.49	2.5	2.5	1.2	0.07	0.002	0	68.7	31.3	V.Deg.PHC (FCM) 83.1%
s	P50-SB4 (2)	20.8	<0.52	<0.52	<0.52	<0.52	<0.19	<0.02	<0.002	0	53.9	46.1	PHC not detected
s	P50-SB5 (2)	11.2	<0.28	<0.28	<0.28	<0.28	<0.06	<0.009	<0.001	0	0	0	PHC not detected (OCR)
s	P50-SB6 (2)	19.3	<0.48	<0.48	8	8	6.6	0.69	0.015	0	76.9	23.1	Deg.PHC (FCM) 62.8%
s	P50-SB7 (2)	21.3	<0.53	<0.53	<0.53	<0.53	<0.13	<0.02	<0.002	0	12.8	87.2	PHC not detected
s	P50-SB8 (2)	8.3	<0.21	<0.21	<0.21	<0.21	<0.04	<0.007	<0.001	0	24.6	75.4	PHC not detected
s	P50-SB9 (2)	19.7	<0.49	<0.49	3	3	2.5	0.26	<0.002	0	78.6	21.4	Deg.PHC (FCM) 60.5%
s	P50-SB10 (2)	21.8	<0.55	<0.55	3.4	3.4	2.9	0.3	<0.002	0	80.6	19.4	Deg.PHC (FCM) 75.6%
W	P50-SB10 - WATER	1.0	<0.025	<0.025	0.04	0.04	0.04	0.004	<0	0	11.2	88.8	Residual.PHC (FCM)
Initial Calibrator QC check			OK		Final FCM QC Check			OK		102.4 %			

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

