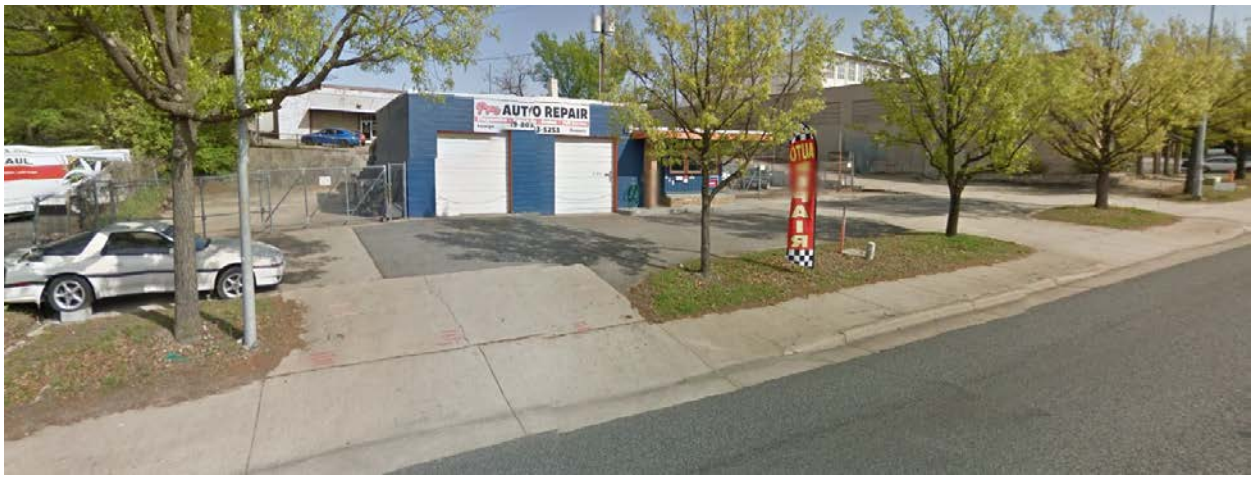
FROEHLING & ROBERTSON, INC.



PRELIMINARY SITE ASSESSMENT

622 CAPITAL, LLC (PARCEL #16)
628 Capital Boulevard
Raleigh, North Carolina
State Project: B-5121 & B-5317
WBS Element: 42263.1.1
F&R Project #66T-0097

August 21, 2015

Prepared for:

North Carolina Department of Transportation
Geotechnical Engineering Unit
1020 Birch Ridge Drive
Raleigh, NC 27610

310 Hubert Street Raleigh, North Carolina 27603 919.828.3441

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Raleigh, North Carolina 27603-2302
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NC License #F-0266

August 21, 2015

North Carolina Department of Transportation
Geotechnical Engineering Unit
1020 Birch Ridge Drive
Raleigh, North Carolina 27610

Attn.: Mr. Terry Fox, L.G.
GeoEnvironmental Project Manager

Re: State Project: B-5121 & B-5317
WBS Element: 42263.1.1
BR 277 on US 70/US 401/NC 50 (Capital Blvd.) over Peace Street and
BR 213 on US 70/NC 50 (Wade Ave.) over US 401 (Capital Blvd.)

Subject: **Preliminary Site Assessment**
Parcel #16 – 622 Capital, LLC (Pro Auto Repair)
628 Capital Blvd
Raleigh, North Carolina
F&R Project #66T-0097

Dear Mr. Fox:

Froehling and Robertson, Inc. (F&R) has completed the authorized Preliminary Site Assessment at the 622 Capital, LLC property in Raleigh, North Carolina. The work was performed in general accordance with F&R's Proposal No. 1666-00058, dated May 19, 2015. Notice to Proceed was issued to F&R on June 25, 2015. This report documents our field activities, presents the results of laboratory analysis and provides estimated quantities of petroleum impacted soils.

Please do not hesitate to contact us if you should have any questions regarding this report.

Sincerely,

FROEHLING & ROBERTSON, INC.

DocuSigned by:
Benjamin A. Whitley
E425D6E8C23545B...

Benjamin A. Whitley, P.E.
Project Engineer

NORTH CAROLINA PROFESSIONAL SEAL 038743 ENGINEER BENJAMIN A. WHITLEY

DocuSigned by:
Michael Sabodish
B4FED45203C345C...

Michael S. Sabodish, Jr., Ph.D, P.E.
Engineering and Remediation Services Manager

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Preliminary Site Assessment Report
622 Capital, LLC Property (Parcel #16)
Raleigh, Wake County, North Carolina
F&R Project No. 66T-0097

1.0 Introduction

Froehling and Robertson, Inc. (F&R) has prepared this Preliminary Site Assessment (PSA) Report to document soil assessment activities performed at the 622 Capital, LLC Property addressed as 628 Capital Boulevard in Raleigh, Wake County, North Carolina. The site is located just north of the former Raleigh Typewriter Exchange Building and on the east side of Capital Boulevard as shown in Appendix I, Figures 1 and 2. As indicated in the Request for Technical and Cost Proposal (RFTCP), the site currently operates as Pro Auto Repair, an automotive repair business. According to the NCDENR UST Section Registry, there are two underground storage tanks at the site in temporary status.

The PSA was performed in general accordance with F&R's Proposal No. 1666-00058, dated May 19, 2015 with Notice to Proceed issued to F&R by the NCDOT on June 25, 2015. The purpose of this report is to document field activities, present the results of laboratory analysis, and provide estimated quantities of petroleum impacted soils.

According to the NCDOT within their RFTCP, acquisition of right-of-way is necessary for the Peace Street Bridge, Wade Avenue Bridge and Capital Boulevard improvements in Raleigh (See Figure No. 3). As such, the NCDOT requested a PSA be performed to assess the possibility of encountering petroleum impacted soil from known or unknown USTs which may exist/existed at the project site.

Three structures are located on the site: an automotive repair building on the northwestern portion, a light industrial building on the central portion, and a warehouse building on the eastern portion of the property. The automotive repair building is one-story in height and is constructed of brick and concrete masonry unit (CMU) block with wood framing. Two roll-up garage doors are located on the western (front) side of the garage. The light industrial building is two stories in height and contains 16,350 square feet of space. According to a tenant interviewed during field activities, the industrial building is currently leased to numerous tenants for storage and music recording spaces. The warehouse building is currently leased to several commercial retail tenants and contains 10,195 square feet of space.

The remainder of the site consists of asphalt and concrete paved parking lot. The site is bordered to the north by a U-Haul facility; to the south by the Cotton Mill residential condominiums; to the east by railroad tracks; and to the west by Capital Boulevard. Access to the site is gained from Capital Boulevard to the west. Photos detailing existing site features are attached as Appendix IV of this report.

2.0 Geophysical Survey

Prior to F&R's soil assessment activities, Pyramid Environmental & Engineering, P.C. (Pyramid) conducted a geophysical survey to locate suspect metal underground storage tanks (USTs). The geophysical work was conducted from June 26 to July 1, 2015, and was performed within the proposed right-of-way.

The geophysical investigation consisted of electromagnetic (EM) induction surveys using a Geonics EM61 instrument. Ground-penetrating radar (GPR) investigations of selected EM61 anomalies were investigated using a Geophysical Survey Systems UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. The EM61 data was collected along parallel survey lines spaced approximately 5 feet apart. The data was reviewed in the field to evaluate the possible presence of USTs and later transferred to a desktop computer for further review. Data was collected over most of the planned survey site (from the existing edge of pavement into the proposed right-of-way and/or proposed easements). Isolated EM anomalies were identified on the site, including utilities, light poles, signs, a metal fence and vehicles. In addition, one probable metallic UST was identified in the parking lot just south of the automotive repair building. The GPR data suggest that the top of the probable UST is approximately 2.5 feet below ground surface (bgs). Pyramid estimated the probable UST is 8 feet in diameter and 21 feet long. However, the location of the probable UST was outside of the proposed right-of-way on Parcel #16.

Pyramid noted that while two USTs were reported to be in temporary status at the site, only one UST was apparent during the geophysical survey. Pyramid noted that the second UST may be located beyond the limits of the survey area, or may have been removed.

The complete geophysical report is attached as Appendix II.

3.0 Site Assessment Activities

F&R visited the site on July 22 and 23, 2015 to perform the Preliminary Site Assessment. The assessment consisted of advancing 8 borings into the soils at the project site using direct-push technology (Geoprobe). The boring locations were determined by F&R staff based on the results of the geophysical survey, site features and proposed construction activities. Three of the borings (B-1 through B-3) were advanced on the southern portion of the site, in the parking lot south of the former Raleigh Typewriter Exchange building. Two of the borings (B-4 and B-5) were advanced in front of the former Raleigh Typewriter Exchange building, and three of the borings were advanced in the parking area just west of the Pro Auto Repair building. The probable UST identified by Pyramid was located outside of the proposed right-of-way south of the automotive repair building; therefore, F&R was not able to assess the area immediately surrounding the probable UST (Appendix I, Figure 3). However, F&R advanced Boring B-6 in the proposed right-of-way within 15 feet of the probable UST. The borings were advanced to the proposed depth of 10 feet bgs.

Soil sample cores from the borings were collected in disposable, 4-foot long acetate sleeves. The soil samples were visually/manually classified and screened in the field using a photo-ionization detector (PID) for evidence of petroleum hydrocarbons. Evaluation of VOC concentrations were performed using a MiniRae 2000 PID which produces results in parts per million (ppm). A representative soil sample was collected from one foot sections of each sleeve and placed in a re-sealable plastic bag. The vapors were then allowed to equilibrate in the headspace of the bag for approximately ten minutes prior to measurement with the PID. The measurements were collected by placing the probe tip into the headspace of the bag. PID measurements can be found in the Geoprobe Logs in Appendix III, as well as in Table 1 in Section 5.0 below.

Generally, the soil sample which exhibited the highest PID concentration was submitted for laboratory analysis for diesel range organics (DRO), gasoline range organics (GRO), Total BTEX (benzene, toluene, ethylbenzene and xylenes), 16 PAHs (polycyclic aromatic hydrocarbons) and BaP (Benzo(a)pyrene) by Ultraviolet Fluorescence (UVF) technology (QROS QED Hydrocarbon Analyzer).

The samples were collected in laboratory-supplied sample containers, placed in a cooler with ice, and delivered by UPS to QROS in Wilmington, North Carolina following standard chain-of custody procedures.

4.0 Subsurface Conditions

As indicated in the attached Geoprobe Logs (Appendix III), subsurface conditions from existing ground surface to boring termination generally included various layers of moist, tan, silty fine to coarse sand (USCS – SM), silty sandy clay (USCS – CL), and/or sandy silt (USCS – ML). The soils encountered at Boring B-6 consisted of well-graded sand from beneath the concrete pavement to a depth of 10 feet bgs. The borings were terminated at the proposed depth of 10 feet bgs.

F&R notes that petroleum odors were observed at the following depths:

- Boring B-3, from 9 to 10 feet bgs;
- Boring B-6, from 6 to 8 feet bgs;
- Boring B-7, from 1 to 10 feet bgs; and
- Boring B-8, from 4 to 10 feet bgs.

Groundwater was not observed during field screening or sample collection activities.

Of the samples screened, PID readings generally did not exceed 1.4 ppm; however, elevated readings were obtained in Borings B-6 (from 8 to 10 feet bgs), B-7 (from 1 to 10 feet bgs), and B-8 (from 4 to 10 feet bgs).

5.0 Analytical Results

As shown in the following table, petroleum hydrocarbons identified as DRO were encountered in the soil samples at the eight boring locations advanced at the site (B-1 through B-8), at depths from 2 feet bgs (B-4) to 10 feet bgs (B-3 and B-6). At boring locations B-1, B-2, and B-5 through B-10, the laboratory results indicate the DRO concentrations ranged from 10.9 mg/kg (B-5) to 384.2 mg/kg (B-10), which are above the NCDENR Action Level of 10 mg/kg. DRO was also detected at Borings B-3 and B-4, at concentrations of 0.23 and 2.9 mg/kg, respectively. GRO was also detected in Borings B-6, B-7 and B-8 at concentrations ranging from 21.7 to 698.1 mg/kg.

The laboratory analytical results indicate concentrations of the Sum of 16 PAHs above the method detection limit, but below the NCDENR Action Level of 7,041.14 mg/kg at Borings B-1, B-2, and B4 through B-6. In addition, Benzo(a)pyrene (BaP) was detected in samples B-1, B-2 and B-5 at concentrations above the NCDENR Soil-to-Water MSCC of 0.096 mg/kg.

The soil analytical results are summarized in Table 1 below. The laboratory analytical results can also be found in the attached Appendix V of this report.

Table 1
Soil Sampling Analytical Results

Sample ID	Sample Date	Sample Depth (ft bgs)	PID Reading (ppm)	GRO (mg/kg)	DRO (mg/kg)	TPH (mg/kg)	Total BTEX (mg/kg)	Total Aromatics (mg/kg)	16 EPA PAHs (mg/kg)	BaP (mg/kg)
B-1	7/22/15	7-8	1.4	< 0.54	**31.3**	**31.3**	< 1.1	28.8	5.3	**0.13**
B-2		3-4	1.1	< 0.66	**25.2**	**25.2**	< 1.3	24.6	2.9	**0.47**
B-3		9-10	5.3	< 0.58	0.23	0.23	< 1.2	< 0.19	< 0.02	< 0.012
B-4	7/23/15	2-4	0.5	< 0.55	2.9	2.9	< 1.1	1.4	0.05	< 0.011
B-5		8-9	0.5	< 0.51	**10.9**	**10.9**	< 1	10.2	1.5	**0.11**
B-6		8-10	490	**21.7**	**11**	**32.7**	< 1.1	5.5	0.21	< 0.011
B-7		4-5	1,382	**251.5**	**134.4**	**385.9**	< 15.1	89.3	3.4	0.038
B-8		5-6	1,227	**698.1**	**384.2**	**1,082.3**	< 15.9	116.7	4.6	< 0.16
NCDENR Action Level				**10**	**10**	**10**	**13.8**	**NSE**	**7,041.41**	**0.096**

Samples shown in bold exceed the NCDENR Action Level as outlined in the NCDENR, DWM, UST Section Guidelines
ppm = parts per million
GRO = Gasoline Range Organics
DRO = Diesel Range Organics
TPH = Total Petroleum Hydrocarbons
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
NSE = No Standard Exists

6.0 Conclusions and Recommendations

F&R conducted a PSA at the 622 Capital, LLC Property located at 628 Capital Boulevard in Raleigh, Wake County, North Carolina. A geophysical investigation was performed by Pyramid Environmental & Engineering to investigate the existence of unknown/known USTs at the site. Based on the results of the geophysical survey, it was determined that one probable UST was present on Parcel #16, located in the parking lot south of the automotive repair structure. However, the probable UST was identified outside of the proposed right-of-way; therefore, F&R was not able to advance borings to investigate the area immediately adjacent to the probable UST.

Eight Geoprobe borings were advanced during the assessment within the proposed right-of-way, where grading activities are proposed in association with the Peace Street Bridge, Wade Avenue Bridge and Capital Boulevard improvements. Based on the results of laboratory testing and observed PID readings, petroleum impacted soils were found at concentrations above the NCDENR Action Level of 10 mg/kg at boring locations B-1, B-2, and B-5 through B-8. Therefore,

it is estimated that petroleum impacted soils, at concentrations above the NCDENR Action Level, are present at the following areas:

- Area 1: In the vicinity of Borings B-1 and B-2, from existing ground surface to a depth of at least eight feet bgs; and
- Area 2: In the vicinity of Borings B-5 through B-8, from existing ground surface to a depth of at least ten feet bgs.

In Boring B-6, F&R notes that well graded sand was observed from just beneath the concrete pavement to 10 feet bgs. The sand was not characteristic of the soils observed in other borings advance at Parcel 16, and appeared to be backfill material. In addition, petroleum odors were noted in this boring from approximately 6 to 10 feet bgs. Based upon these observations, it is possible that this boring was located in a previous UST basin, which may be the location of the second UST that was not found during the geophysical survey.

No below grade utilities appear on the proposed improvement plans. However, driveway reconstruction and curbline realignment is depicted, which will likely require re-grading of the existing ground surface during the construction. To account for impacted soils generated during re-grading activities and for unknown below grade utilities that may be installed during construction, we have estimated the following approximate petroleum-impacted areas:

- Area 1: 3,507.7 square feet, extending to a depth of eight feet bgs; and
- Area 2: 5,046.8 square feet, extending to a depth of ten feet bgs.

These areas were determined by averaging distances between the proposed right-of-way and the proposed edge of pavement on the construction drawings (Appendix I, Figure 4).

Table 2
Approximate Volume of Petroleum Impacted Soil

Excavation Location (As Shown on Figure 4)	L x W x D (feet)	Soil Volume (cubic feet)	Soil Volume (tons)
Area 1 (vicinity of B-1 to B-2)	L x W varies (3,507.7 SF) X 8' depth	28,061.6	1,683.7
Area 2 (vicinity of B-5 through B-8)	L x W varies (5,046.8 SF) X 10' depth	50,468.0	3,028.1
Soil Volume (assuming a soil density of 120 pcf)		**Total**	**4,711.8**

It should be noted that a delineation of the soil contamination was not performed, as this was not included in the proposed scope of work. The above estimates are based on interpretations of soil analytical results, PID readings and our experience with petroleum UST releases. In order to generate estimated quantities of petroleum impacted soils, we have inferred that the contamination has occurred between the existing ground surface and the sample collection depth. The amount of impacted soil can only be determined after excavation or by advancing additional borings and performing additional laboratory analysis to delineate the extents (horizontal and vertical) of contamination.

7.0 Limitations

These services have been performed, under authorization of the North Carolina Department of Transportation for specific application on this project. These services have been performed in accordance with generally accepted environmental and hydrogeological practices. No other warranty, expressed or implied is made. As with any subsurface investigation, actual conditions exist only at the precise locations from which samples were taken. Certain inferences are based on the results of sampling and related testing to form a professional opinion of conditions in areas beyond those from which samples were taken. Our conclusions and recommendations are based upon information provided to us by others, our sampling and testing results and our site observations. We have not verified the completeness or accuracy of the information provided by others, unless otherwise noted. Our observations are based upon conditions readily visible at the site at the time of our site visits.

Froehling & Robertson, Inc. by virtue of providing the services described in this report, does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state or federal public agencies any conditions at the site that may present a potential danger to public health, safety or the environment. In areas that require notification of local, state, or federal public agencies as required by law, it is the Client's responsibility to so notify.

APPENDIX I

Figure No. 1 – SITE VICINITY MAP

Figure No. 2 – TOPOGRAPHIC MAP

Figure No. 3 – LABORATORY RESULTS & BORING LOCATION PLAN

Figure No. 4 – ESTIMATED EXTENTS OF SOIL CONTAMINATION

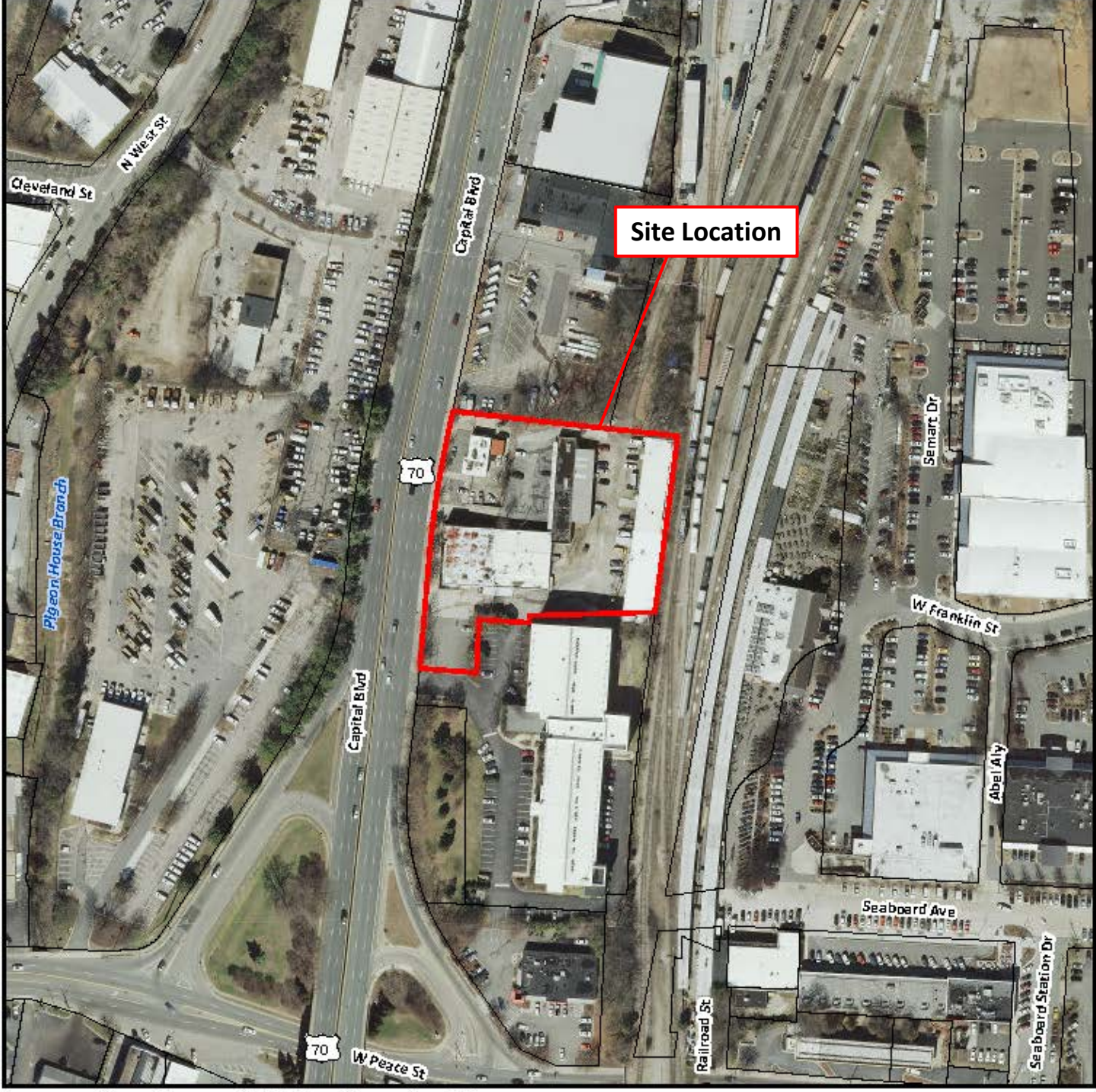

Image Courtesy of Wake County iMaps

N

0 100 200 400 Feet

1 inch = 200 feet

SITE VICINITY MAP

North

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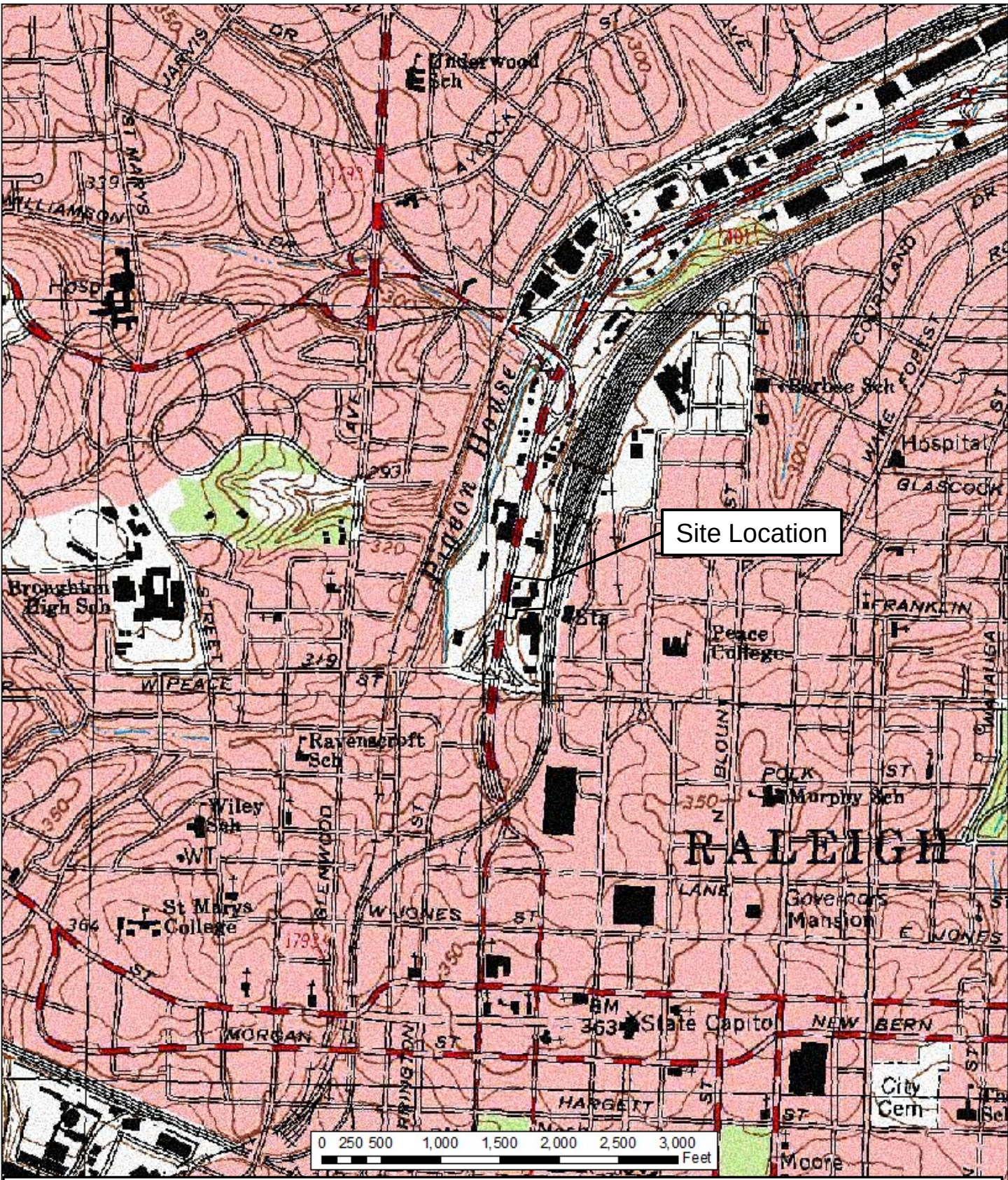
FROEHLING & ROBERTSON, INC.
Engineering • Environmental • Geotechnical
310 Hubert Street
Raleigh, North Carolina 27603-2302 | USA
T 919.828.3441 | F 919.828.5751
www.fandr.com

CLIENT: NCDOT	
PROJECT: B-5121 & B-5317, 622 Capital, LLC Property, NCDOT Parcel #16	
LOCATION: Raleigh, Wake County, North Carolina	
F&R PROJECT No.: 66T-0097	FIGURE No.: 1
DRAWN BY: B. Whitley	
DATE: August 2015	**SCALE**: 1" = 200 '



TOPOGRAPHIC MAP – RALEIGH, NC

North

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310 Hubert Street
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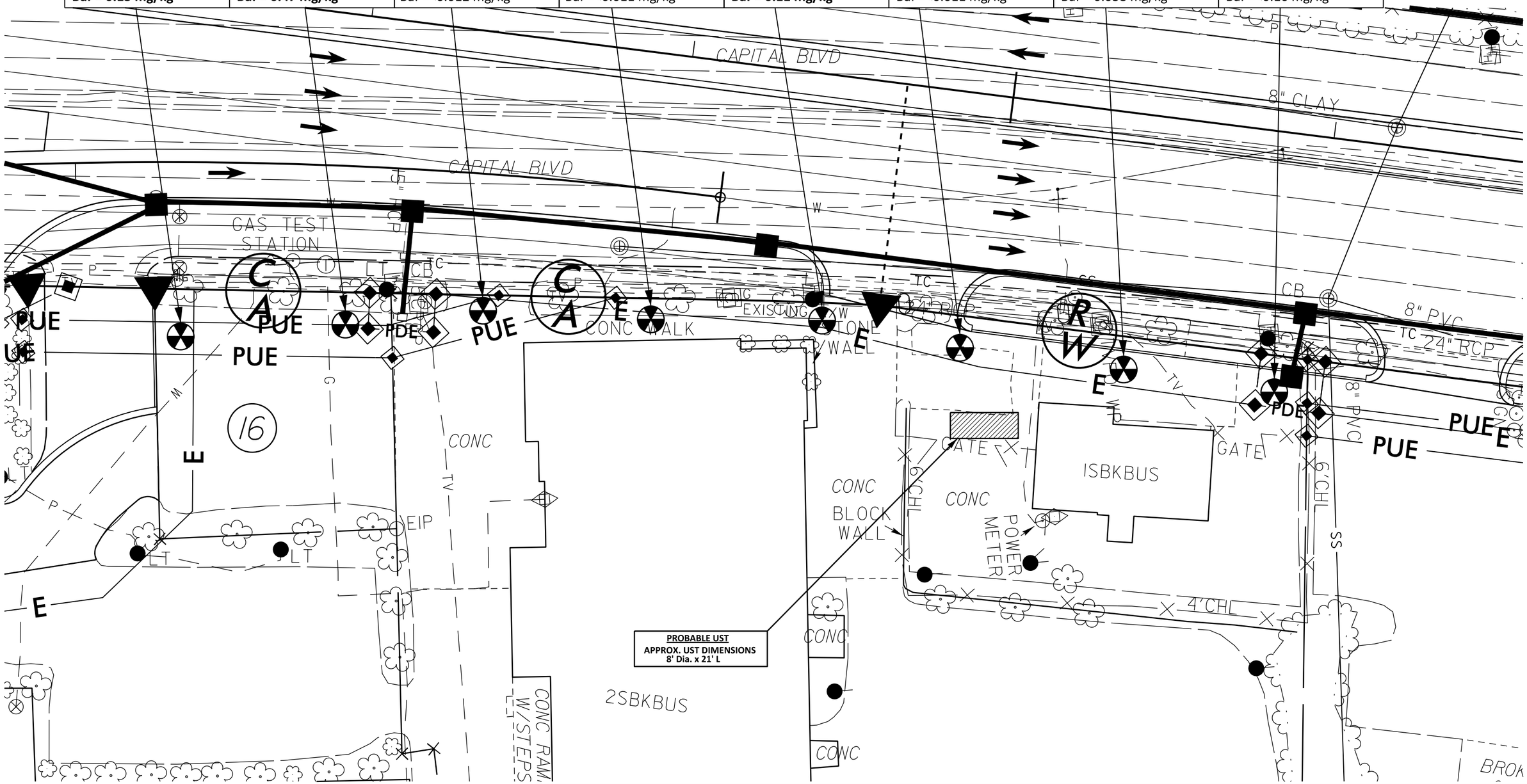
T 919.828.3441 | F 919.828.5751
www.fandr.com

CLIENT: NCDOT	
PROJECT: B-5121 & B-5317, 622 Capital, LLC Property, NCDOT Parcel #16	
LOCATION: Raleigh, Wake County, North Carolina	
F&R PROJECT No.: 66T-0097	FIGURE No.: 2
DRAWN BY: B. Whitley	
DATE: August 2015	**SCALE**: As Shown

B-1: 7.0'-8.0'	B-2: 3.0'-4.0'	B-3: 9.0'-10.0'	B-4: 2.0'-4.0'	B-5: 8.0'-9.0'	B-6: 8.0'-10.0'	B-7: 4.0'-5.0'	B-8: 5.0'-6.0'
DRO= 31.3 mg/kg	**DRO= 25.2 mg/kg**	DRO= 0.23 mg/kg	DRO= 2.9 mg/kg	**DRO= 10.9 mg/kg**	**DRO= 11 mg/kg**	**DRO= 134.4 mg/kg**	**DRO= 384.2 mg/kg**
GRO=<0.54 mg/kg	GRO=<0.66 mg/kg	GRO=<0.58 mg/kg	GRO=<0.55 mg/kg	GRO=<0.51 mg/kg	**GRO= 21.7 mg/kg**	**GRO= 251.5 mg/kg**	**GRO= 698.1 mg/kg**
TOTAL BTEX=<1.1 mg/kg	TOTAL BTEX=<1.3 mg/kg	TOTAL BTEX=<1.2 mg/kg	TOTAL BTEX=<1.1 mg/kg	TOTAL BTEX=<1 mg/kg	TOTAL BTEX=<1.1 mg/kg	TOTAL BTEX=<15.1 mg/kg	TOTAL BTEX=<15.9 mg/kg
16 EPA PAHs= 5.3 mg/kg	16 EPA PAHs= 2.9 mg/kg	16 EPA PAHs=<0.02 mg/kg	16 EPA PAHs= 0.05 mg/kg	16 EPA PAHs= 1.5 mg/kg	16 EPA PAHs= 0.21 mg/kg	16 EPA PAHs= 3.4 mg/kg	16 EPA PAHs= 4.6 mg/kg
BaP= 0.13 mg/kg	**BaP= 0.47 mg/kg**	BaP=<0.012 mg/kg	BaP=<0.011 mg/kg	**BaP= 0.11 mg/kg**	BaP=<0.011 mg/kg	BaP= 0.038 mg/kg	BaP=<0.16 mg/kg



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310 Hubert Street
Raleigh, North Carolina 27603-2302|USA
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LEGEND

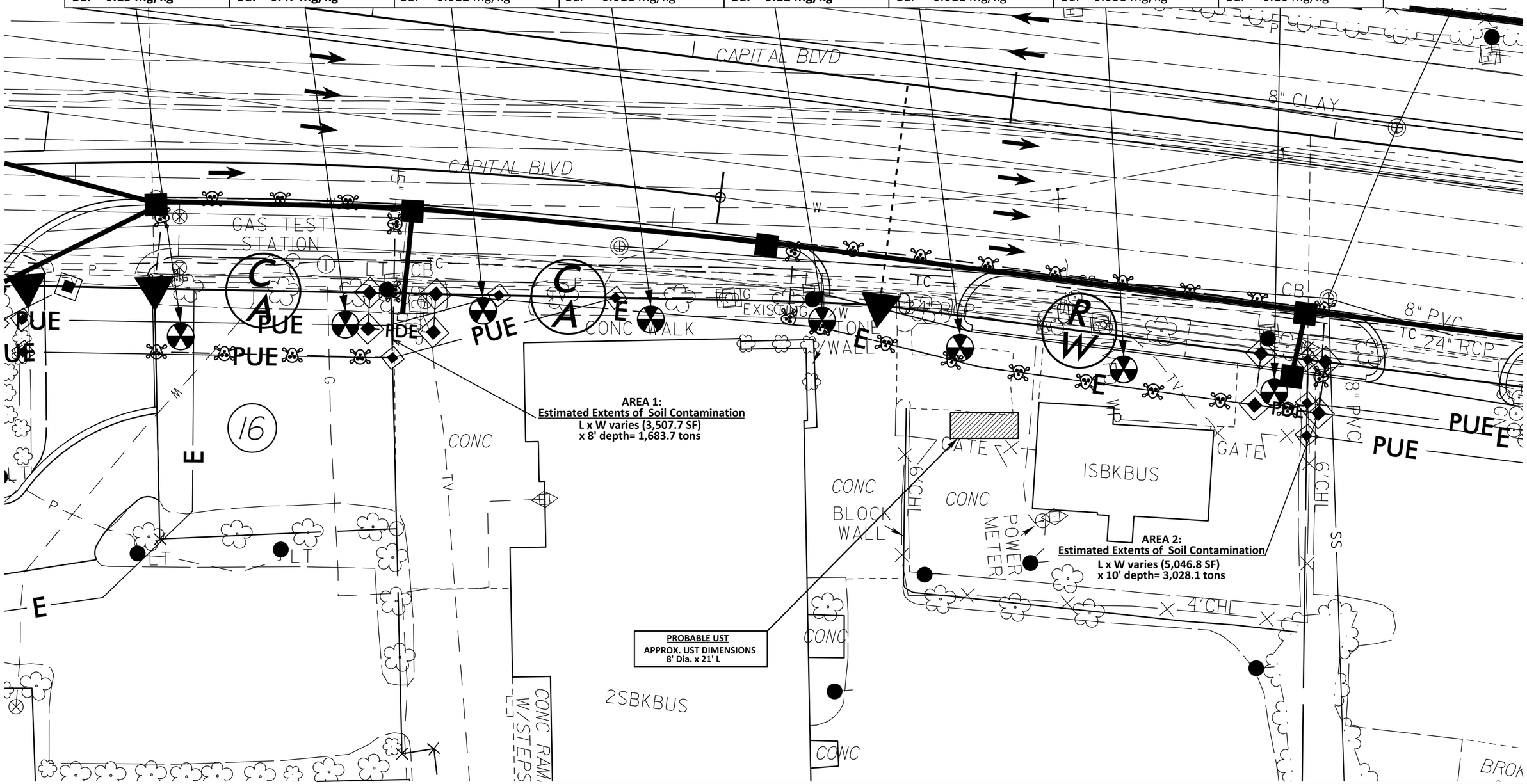
Approximate Geoprobe Boring Location

Samples Shown in Bold Exceed the NCDENR Action Level as Outlined in the NCDENR, DWM, UST Section Guideline

LABORATORY RESULTS & BORING LOCATION PLAN

CLIENT: NCDOT		
PROJECT: B-5121/B-5317 622 Capital, LLC (Parcel #16)		
LOCATION: Raleigh, Wake County, North Carolina		
F&R PROJECT No.: 66T-0097		FIGURE No.: 3
DRAWN BY: T. T. Walker	CHECKED BY: M. Sabodish, P.E.	
DATE: August 2015	SCALE: 1"=30'	

B-1: 7.0'-8.0'	B-2: 3.0'-4.0'	B-3: 9.0'-10.0'	B-4: 2.0'-4.0'	B-5: 8.0'-9.0'	B-6: 8.0'-10.0'	B-7: 4.0'-5.0'	B-8: 5.0'-6.0'
DRO= 31.3 mg/kg	**DRO= 25.2 mg/kg**	DRO= 0.23 mg/kg	DRO= 2.9 mg/kg	**DRO= 10.9 mg/kg**	**DRO= 11 mg/kg**	**DRO= 134.4 mg/kg**	**DRO= 384.2 mg/kg**
GRO=<0.54 mg/kg	GRO=<0.66 mg/kg	GRO=<0.58 mg/kg	GRO=<0.55 mg/kg	GRO=<0.51 mg/kg	**GRO= 21.7 mg/kg**	**GRO= 251.5 mg/kg**	**GRO= 698.1 mg/kg**
TOTAL BTEX=<1.1 mg/kg	TOTAL BTEX=<1.3 mg/kg	TOTAL BTEX=<1.2 mg/kg	TOTAL BTEX=<1.1 mg/kg	TOTAL BTEX=<1 mg/kg	TOTAL BTEX=<1.1 mg/kg	TOTAL BTEX=<15.1 mg/kg	TOTAL BTEX=<15.9 mg/kg
16 EPA PAHs= 5.3 mg/kg	16 EPA PAHs= 2.9 mg/kg	16 EPA PAHs=<0.02 mg/kg	16 EPA PAHs= 0.05 mg/kg	16 EPA PAHs= 1.5 mg/kg	16 EPA PAHs= 0.21 mg/kg	16 EPA PAHs= 3.4 mg/kg	16 EPA PAHs= 4.6 mg/kg
BaP= 0.13 mg/kg	**BaP= 0.47 mg/kg**	BaP=<0.012 mg/kg	BaP=<0.011 mg/kg	**BaP= 0.11 mg/kg**	BaP=<0.011 mg/kg	BaP= 0.038 mg/kg	BaP=<0.16 mg/kg



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SCALE (FEET)
0 15' 30'
1"=30'

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FROEHLING & ROBERTSON, INC.
Engineering Stability Since 1881
310 Hubert Street
Raleigh, North Carolina 27603-2302|USA
T 919.828.3441|F 919.828.5751
www.fandr.com

LEGEND

Approximate Geoprobe Boring Location

Samples Shown in Bold Exceed the NCDENR Action Level as Outlined in the NCDENR, DWM, UST Section Guideline

ESTIMATED EXTENTS OF SOIL CONTAMINATION

CLIENT: NCDOT		
PROJECT: B-5121/B-5317 622 Capital, LLC (Parcel #16)		
LOCATION: Raleigh, Wake County, North Carolina		
F&R PROJECT No.: 66T-0097		FIGURE No.: 4
DRAWN BY: T. T. Walker	CHECKED BY: M. Sabodish, P.E.	
DATE: August 2015	SCALE: 1"=30'	

APPENDIX II

GEOPHYSICAL REPORT PREPARED BY SCHNABEL ENGINEERING

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.

PYRAMID ENVIRONMENTAL & ENGINEERING
(PROJECT 2015-176)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 16 – 622 CAPITAL, LLC
NCDOT PROJECT B-5121/B5317
(WBS 42263.1.1)

628 CAPITAL BLVD., RALEIGH, WAKE COUNTY, NC

JULY 17, 2015

Report prepared for: **Michael Sabodish Jr., Ph.D., P.E.**
Froehling and Robertson
310 Hubert Street
Raleigh, North Carolina 27603

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

Reviewed by: _____
Douglas A. Canavello, P.G.
NC License #1066

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

GEOPHYSICAL INVESTIGATION REPORT
Parcel 16 – 622 Capital, LLC
Raleigh, Wake County, North Carolina

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Appendix A – GPR Transect Images

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
SVE	Soil Vapor Extraction
UST	Underground Storage Tank

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Froehling & Robertson (F&R) at Parcel 16, located at 628 Capital Blvd., Raleigh, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project B-5121/B-5317). F&R 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 line and/or proposed easements, whichever distance was greater. Conducted from June 26 to July 1, 2015, 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. A large area of asphalt suspected to be underlain by reinforced concrete resulted in an extensive high amplitude EM response in the northern third of the survey area surrounding the auto repair facility. An apparent fill port was observed directly to the east of the formal survey area outside of the NCDOT proposed ROW and easement. GPR scans at the location of the fill port identified a probable metallic UST at this location, delineated to be outside of the ROW. The probable metallic UST was observed to be approximately 8 feet wide and 21 feet long at a depth of approximately 2.5 feet below the ground surface. GPR scans across the northern third of the survey area verified the presence of metal reinforcement underlying the asphalt near the auto repair facility. No evidence of additional unknown USTs was observed. Collectively, the geophysical data recorded evidence of one probable metallic UST at the property.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Froehling & Robertson (F&R) at Parcel 16, located at 628 Capital Blvd., Raleigh, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project B-5121/B-5317). F&R 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 line and/or proposed easements, whichever distance was greater. Conducted from June 26 to July 1, 2015, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site included an auto repair business surrounded by fencing, and an asphalt parking area underlain by reinforced concrete in some areas. The NCDOT site history for Parcel 16 provided to Pyramid by F&R listed two USTs in temporary status located within the parcel. Portions of the survey area were inaccessible due to parked vehicles. Aerial photographs 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 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 11.0 software programs.

GPR data were acquired across select EM anomalies on June 30, 2015, 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 and in a grid-like fashion across areas containing reinforced concrete. 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 10 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 to us 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 to 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	Vehicles	
2	Vehicle	
3	Utility Box	
4	Reinforced Concrete Under Asphalt	☑
5	**Probable UST**	☑
6	Water Meter	
7	Light Pole	
8	Utility Box	
9	Street Sign	
10	Water Meter	
11	Reinforced Concrete	
12	Suspected Water Main	
13	Light Pole	
14	Utilities/Water	

The majority of the EM anomalies observed at the site were directly attributed to visible cultural features at the ground surface such as utilities, light poles, signs, fences, and vehicles (see above table and **Figure 2**). However, two areas were investigated further with the GPR. First, the majority of the asphalt in the northern third of the survey area surrounding the auto repair facility was suspected to be underlain by reinforced concrete due to the extensive high amplitude EM response observed at this location. Due to this

interference, GPR scans were performed across the length of the area containing suspected reinforcement.

Second, an apparent fill port was observed on the south side of the auto repair facility. This type of fill port is typically associated with a UST. It should be noted that the fill port was located outside (directly adjacent to) the proposed ROW and easement lines, as indicated on the NCDOT drawing provided to Pyramid. However, its proximity to the proposed ROW warranted further investigation by the GPR.

Discussion of GPR Results

Figure 3 presents the locations of the formal GPR transects performed at the property, as well as select transect images. A total of 23 formal GPR transects were performed at the property. GPR transects 1-3 were performed in the vicinity of the apparent fill port on the south side of the auto repair facility. As noted above, this fill port as well as the GPR transects were all located outside of (directly east) the proposed ROW and easement lines on the NCDOT engineering plans. However, Pyramid will typically delineate any feature that may be a UST outside of the ROW if its proximity deems it is warranted to do so.

Transects 1 and 2 both recorded distinct hyperbolic reflectors that are characteristic of the width of a UST. Transect 3 recorded laterally well-defined reflectors that are typical when passing the GPR across the length of a UST. These data, combined with the visual confirmation of a fill port, result in the classification of this feature as a probable metallic UST. The probable metallic UST was observed to be approximately 8 feet wide and 21 feet long at a depth of approximately 2.5 feet below the ground surface.

Transects 4-23 were performed in grid-like fashion across the area of asphalt suspected to be underlain by reinforced concrete surrounding the auto repair facility. These GPR scans verified the presence of reinforcement below the asphalt. No evidence of additional subsurface structures such as USTs was observed.

It should be noted that although the documentation provided to F&R by the NCDOT stated that two tanks were in temporary status at the site, no other tanks were evidenced

by the collective geophysical surveys. It is possible the second tank is located well beyond the limits of the survey area, or has been removed.

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

SUMMARY & CONCLUSIONS

Our evaluation of the EM61 and GPR data collected at Parcel 16 in Raleigh, Wake County, North Carolina, provides the following summary and conclusions:

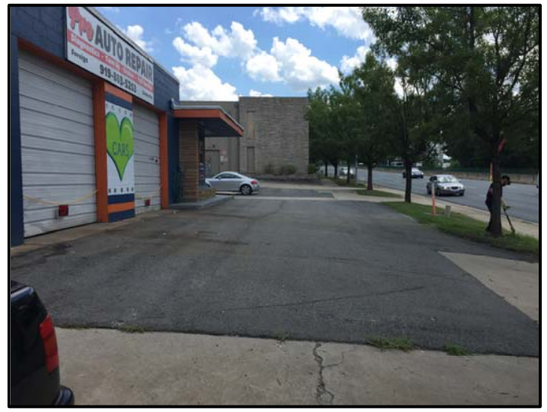
- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface.
- A large area of asphalt suspected to be underlain by reinforced concrete resulted in an extensive high amplitude EM response in the northern third of the survey area surrounding the auto repair facility.
- An apparent fill port was observed directly to the east of the formal survey area outside of the NCDOT proposed ROW and easement.
- GPR scans at the location of the fill port identified a probable metallic UST at this location, delineated to be outside of the ROW.
    - The probable metallic UST was observed to be approximately 8 feet wide and 21 feet long at a depth of approximately 2.5 feet below the ground surface.
- GPR scans across the northern third of the survey area verified the presence of metal reinforcement underlying the asphalt near the auto repair facility. No evidence of additional unknown USTs was observed.
- Collectively, the geophysical data recorded evidence of one probable metallic UST at the property.

LIMITATIONS

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

N↑

APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREAS.



View of North Survey Area
(Facing Approximately South)

View of South Survey Area
(Facing Approximately South)

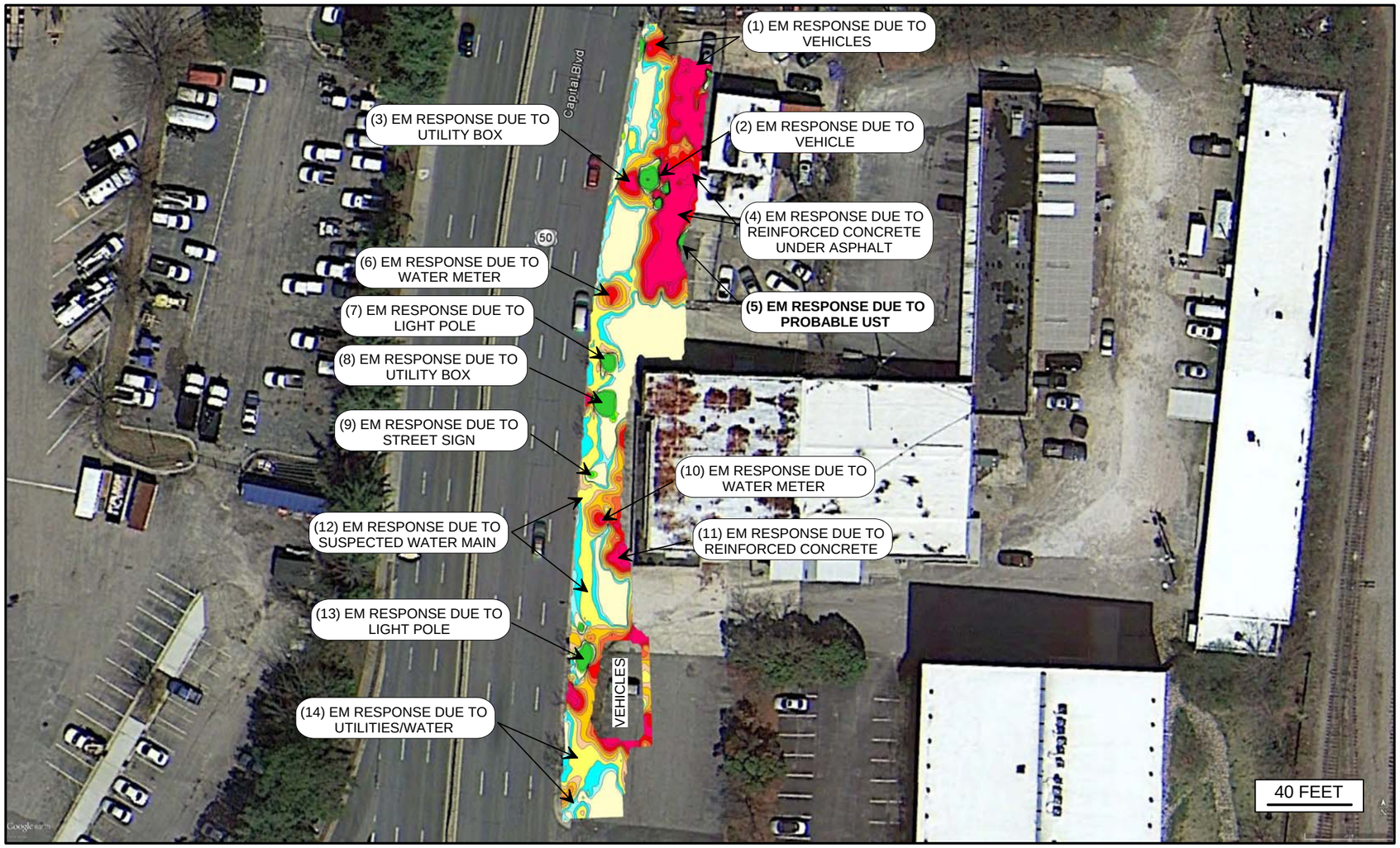
TITLE	PARCEL 16 - 628 CAPITAL BLVD. GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS
PROJECT	METALLIC UST INVESTIGATION NCDOT B-5121/B-5317, RALEIGH, NC

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

DATE 7/6/2015	CLIENT FROEHLING & ROBERTSON
PYRAMID PROJECT #: 2015-176	**FIGURE 1**

N↑

Parcel 16 - EM61 Differential Results



Locations of metallic anomalies detected by the EM61 survey. Numbers correspond to descriptive Table in report.

EVIDENCE OF ONE PROBABLE METALLIC UST OBSERVED (OUTSIDE OF ROW)

The contour plot shows the differential results of the EM61 instrument in millivolts (mV). The EM61 data were collected on June 26, 2015, using a Geonics EM61 instrument. Ground penetrating radar (GPR) data were aquired on June 30, 2015, using a GSSI UtilityScan DF unit with a dual frequency 300/800 MHz antenna.

EM61 Metal Detection Response (millivolts)

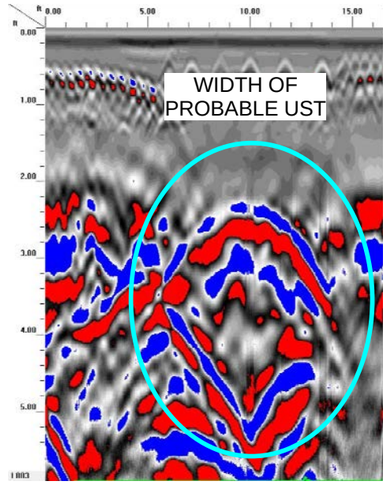
1000 750 500 400 300 200 150 100 75 60 50 40 30 -90 -100 -200 -400 -5000

TITLE	PARCEL 16 - 628 CAPITAL BLVD. EM 61 RESULTS CONTOUR MAP
PROJECT	METALLIC UST INVESTIGATION NCDOT PROJECT B-5121/B-5317 (42263.1.1)

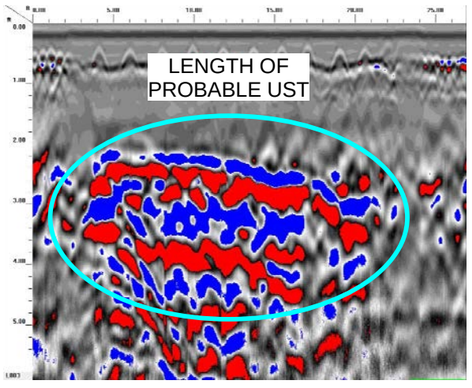
PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE 7/6/2015	CLIENT FROEHLING & ROBERTSON
PYRAMID PROJECT #: 2015-176	**FIGURE 2**

Parcel 16 - Approximate Locations of GPR Transects



GPR TRANSECT 1 (T1)



GPR TRANSECT 3 (T3)

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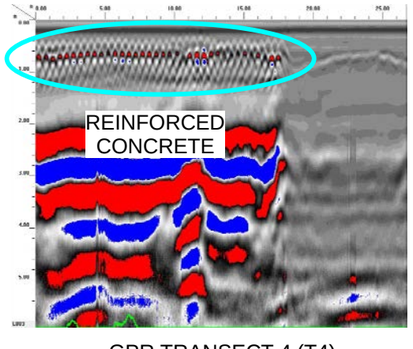
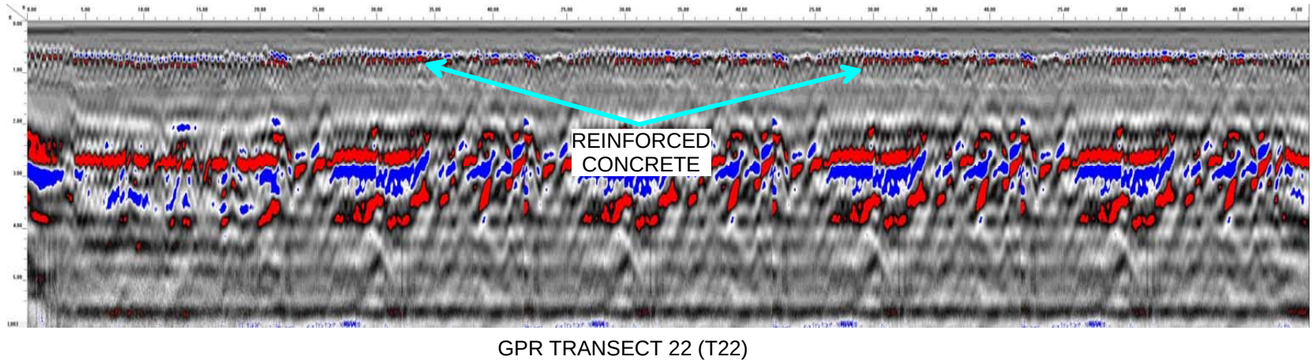


GPR TRANSECT 4 (T4)



GPR TRANSECT 22 (T22)

TITLE
PARCEL 16 - 628 CAPITAL BLVD.
GPR TRANSECT LOCATIONS
AND SELECT IMAGES

PROJECT
METALLIC UST INVESTIGATION
NCDOT PROJECT B-5121/B-5317 (42263.1.1)

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
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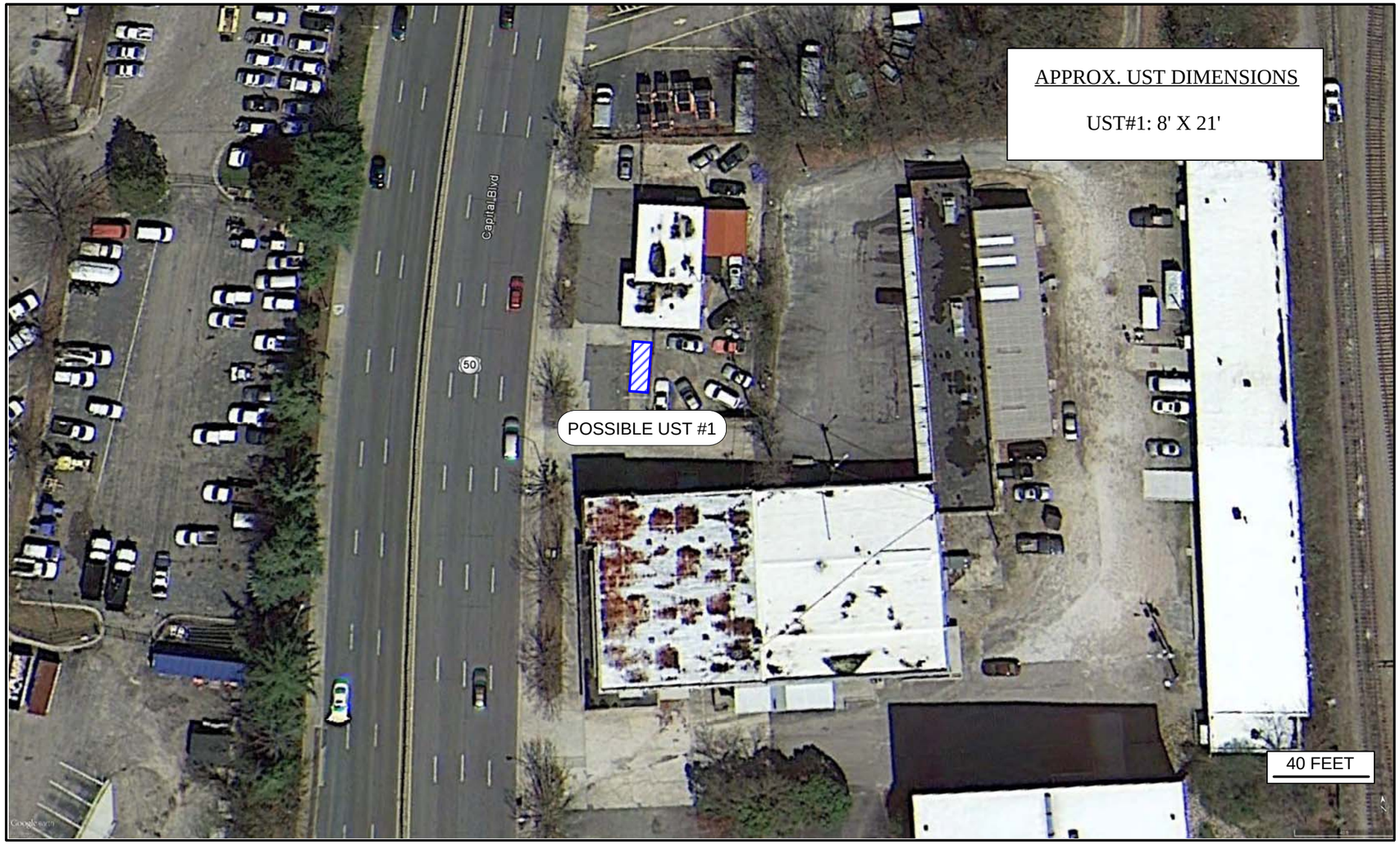
DATE 7/6/2015

CLIENT FROEHLING & ROBERTSON

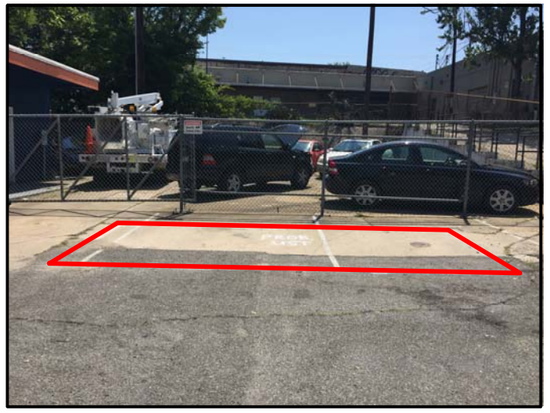
PYRAMID PROJECT #: 2015-176

FIGURE 3

N↑



APPROXIMATE LOCATION OF PROBABLE METALLIC UST.



Approximate Location of
Probable UST

TITLE	PARCEL 16 - 628 CAPITAL BLVD. APPROXIMATE LOCATION OF PROBABLE UST
PROJECT	METALLIC UST INVESTIGATION NCDOT B-5121/B-5317, RALEIGH, NC

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
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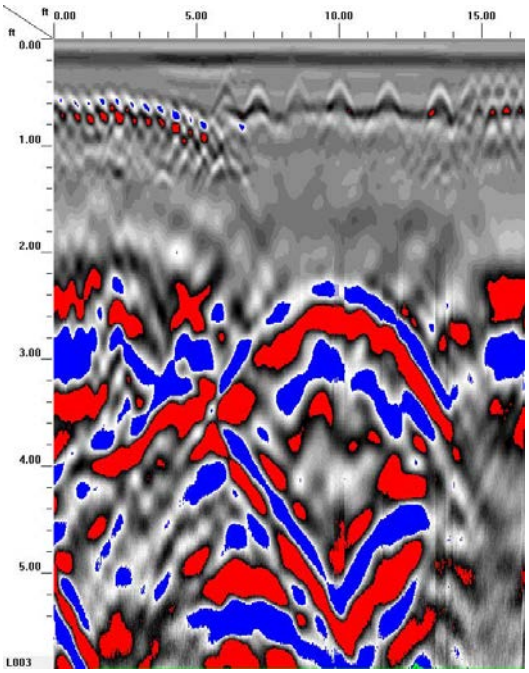
DATE 7/6/2015	CLIENT FROEHLING & ROBERTSON
PYRAMID PROJECT #: 2015-176	**FIGURE 4**

Appendix A – GPR Transects



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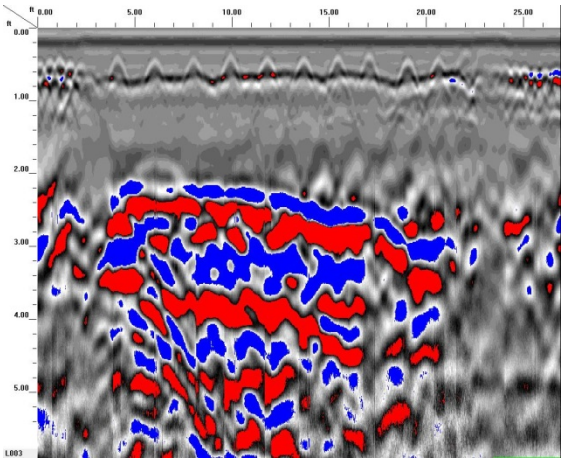

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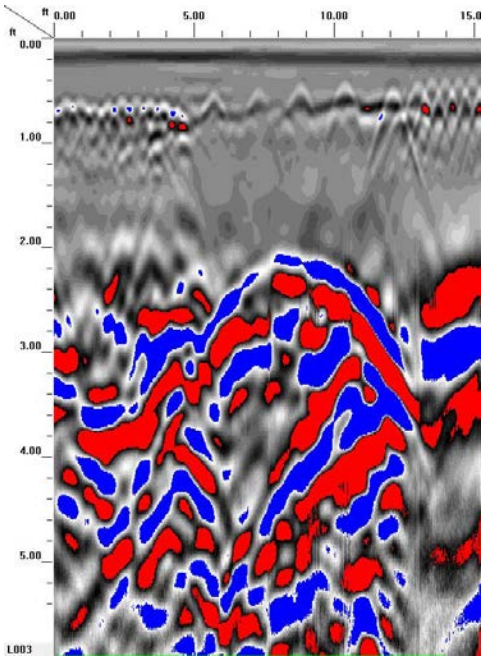

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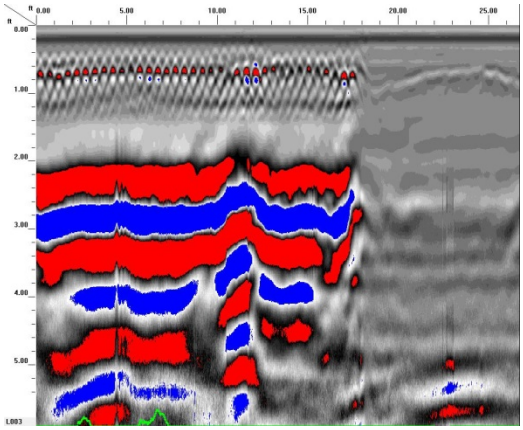

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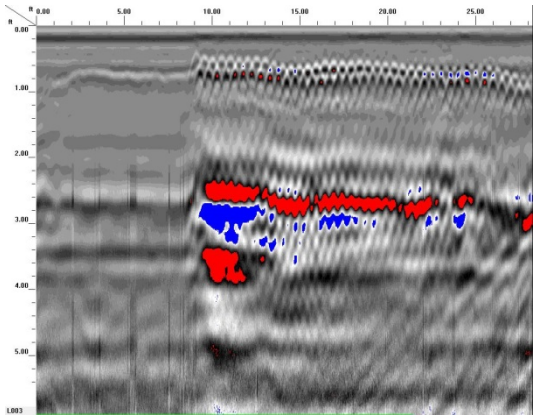

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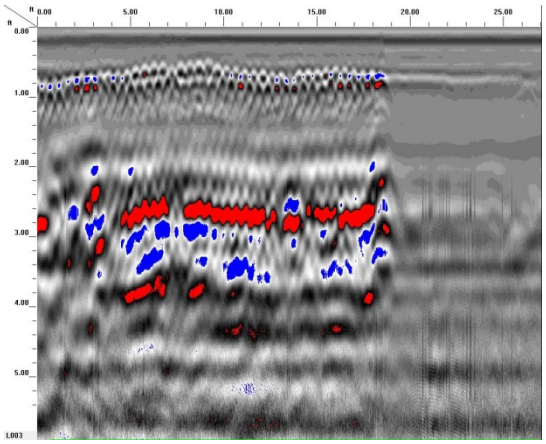

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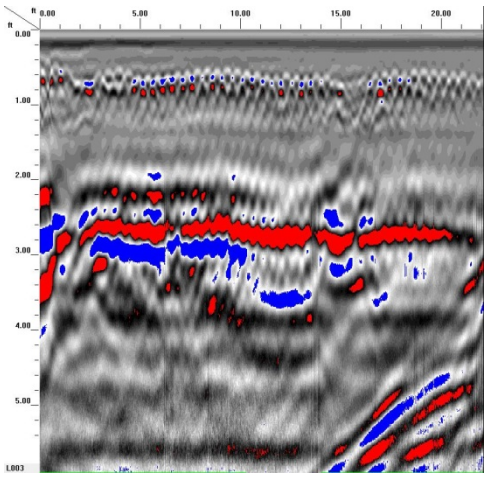

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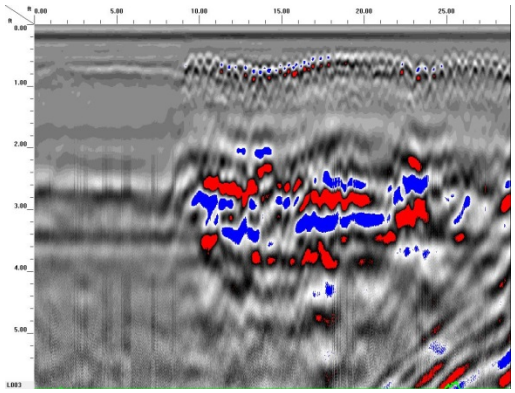

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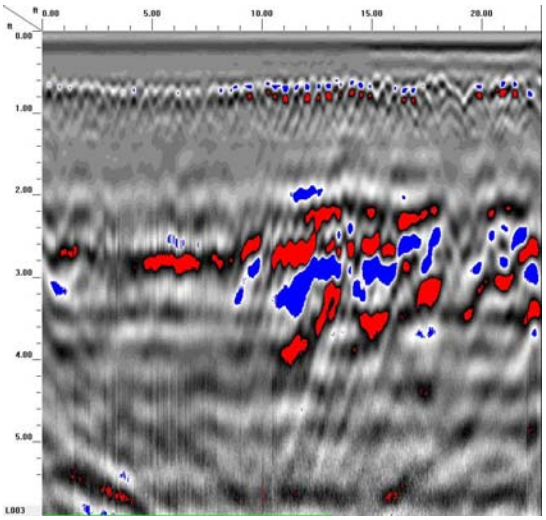

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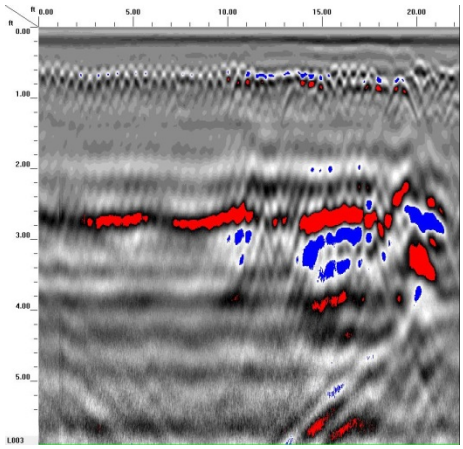

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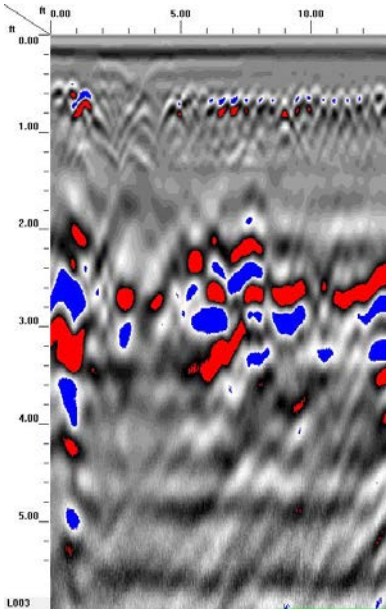

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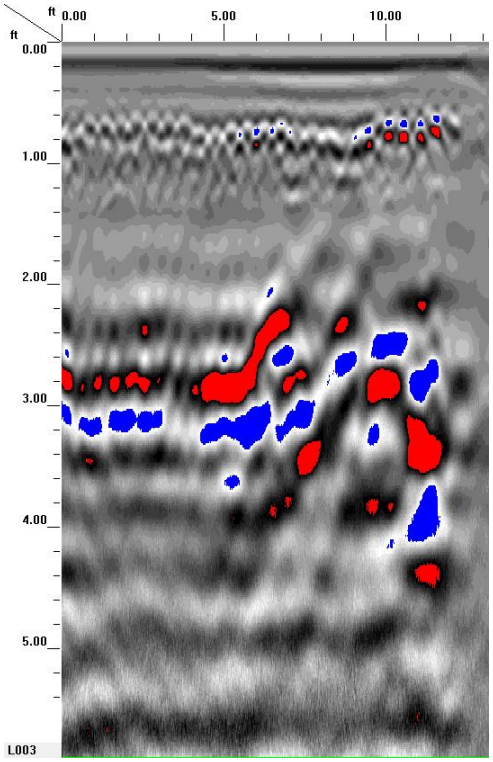

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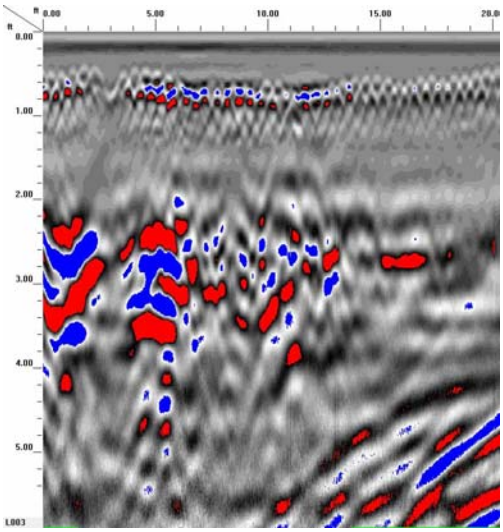

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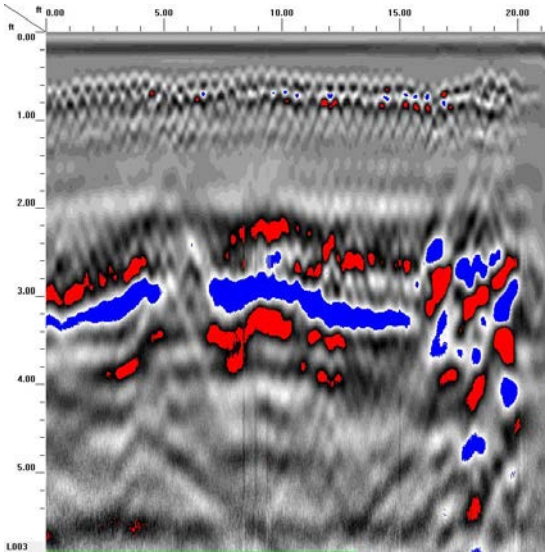

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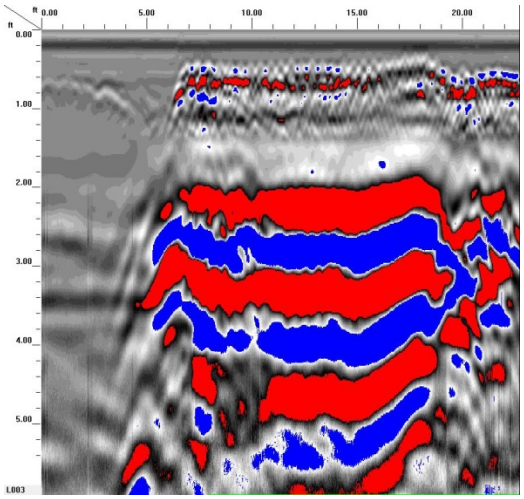

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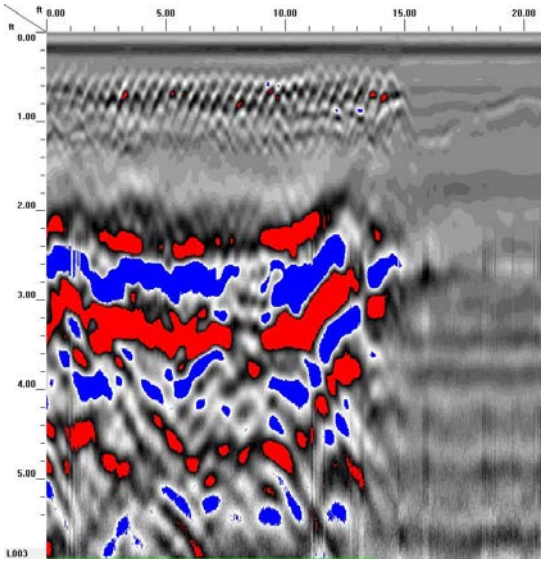

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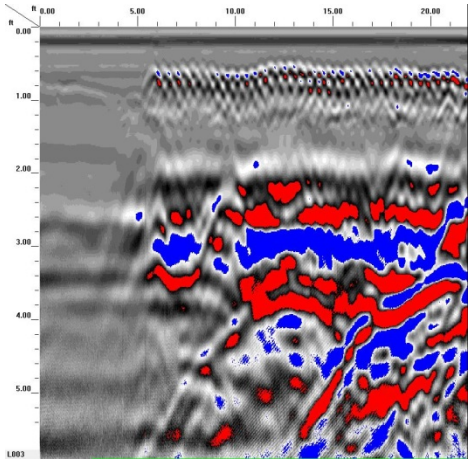

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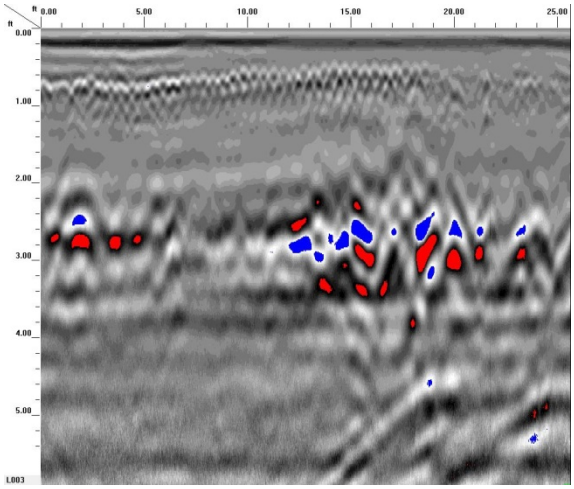

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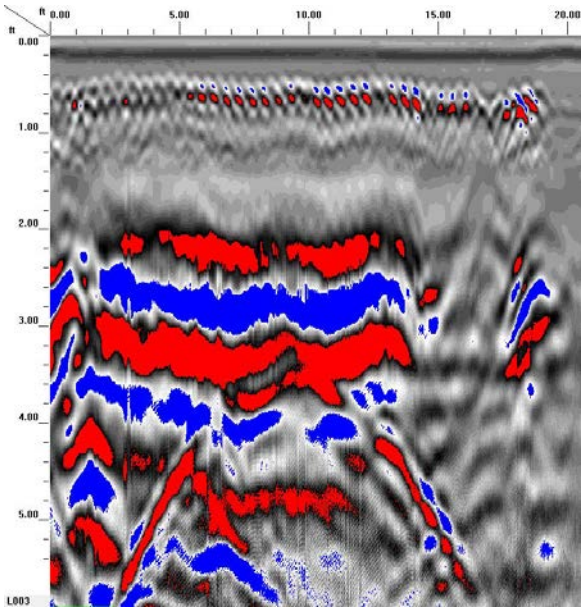

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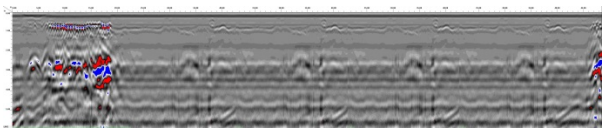

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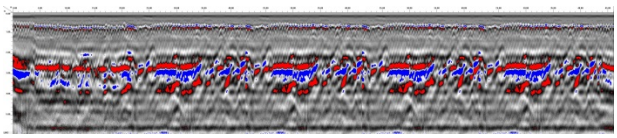
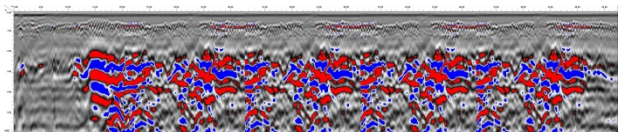
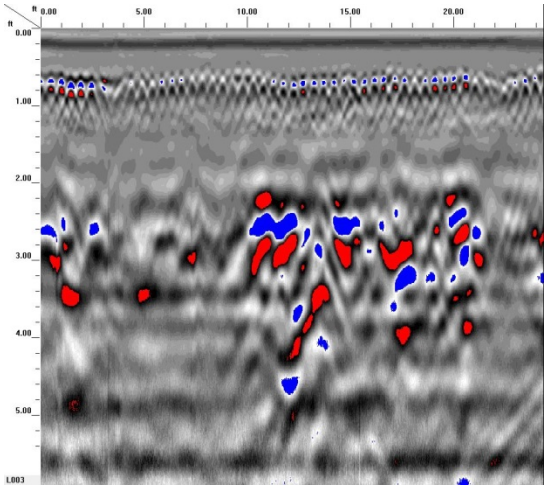


GPR TRANSECT 22



GPR TRANSECT 23



GPR TRANSECT 19

APPENDIX III

GEOPROBE LOGS

FROEHLING & ROBERTSON, INC.

GEOPROBE LOG

Boring: B-1 (1 of 1)

Project No: 66T-0097
Client: NCDOT
Project: B-5121/B-5317 622 Capital LLC(Parcel #16)
City/State: Raleigh, NC

Elevation: Existing Ground Surface
Total Depth: 10.0'
Boring Location: See Plan

Drilling Method: Geoprobe
Hammer Type: N/A
Date Drilled: 7/22/15
Driller: Regional Probing Services

Elevation	Depth	Description of Materials (Classification)	*Sample Depth (feet)	PID (ppm)	Remarks
	0.2	Asphalt	0.0	0.6	Petroleum Odors not Observed in Boring
		Dry, Tan-Black, Silty Fine to Coarse SAND (SM)	1.0	0.8	
			2.0	0.8	
	3.0	Dry, Black, Silty Fine to Medium SAND (SM)	3.0	0.9	
	4.0	Dry, Brown, Silty Fine to Medium SAND (SM)	4.0	1.1	
			5.0	1.1	
			6.0	1.2	
			7.0	1.4*	*Sample Submitted for Laboratory Analysis for TPH, DRO/GRO, Total BTEX, 16 PAHs, and BaP
	8.0	Dry, Tan-Gray, Silty Sandy CLAY (CL)	8.0	1.0	
			9.0	0.8	
	10.0	Geoprobe Boring Terminated at 10 feet.	10.0		

*Geoprobe soil samples were collected by continuous push of a 2 inch ID stainless steel barrel containing a 4 foot long acetate collection sleeve. The 4 foot long soil sample sleeves were cut open and the soil was separated into 1 foot long sample intervals.

FROEHLING & ROBERTSON, INC.

GEOPROBE LOG

Boring: B-2 (1 of 1)

Project No: 66T-0097
Client: NCDOT
Project: B-5121/B-5317 622 Capital LLC(Parcel #16)
City/State: Raleigh, NC

Elevation: Existing Ground Surface
Total Depth: 10.0'
Boring Location: See Plan

Drilling Method: Geoprobe
Hammer Type: N/A
Date Drilled: 7/22/15
Driller: Regional Probing Services

Elevation	Depth	Description of Materials (Classification)	*Sample Depth (feet)	PID (ppm)	Remarks
	0.2	Asphalt	0.0	0.7	Petroleum Odors not Observed in Boring
		Moist, Tan, Sandy CLAY (CL)			
	1.0	Moist, Black, Sandy CLAY (CL)	1.0	0.9	
	2.0	Dry, Dark-Brown, Silty Fine to Medium SAND (SM)	2.0	1.0	
	3.0	Dry, Brown, Silty Fine to Medium SAND (SM)	3.0	1.1*	*Sample Submitted for Laboratory Analysis for TPH, DRO/GRO, Total BTEX, 16 PAHs, and BaP
			4.0	0.9	
			5.0	0.9	
			6.0	1.0	
	7.0	Moist, Brown, Silty Fine to Medium SAND (SM)	7.0	1.1	
	8.0	Moist, Tan-Brown, Sandy CLAY (CL)	8.0	0.6	
			9.0	0.7	
	10.0		10.0		
		Geoprobe Boring Terminated at 10 feet.			

*Geoprobe soil samples were collected by continuous push of a 2 inch ID stainless steel barrel containing a 4 foot long acetate collection sleeve. The 4 foot long soil sample sleeves were cut open and the soil was separated into 1 foot long sample intervals.

FROEHLING & ROBERTSON, INC.

GEOPROBE LOG

Boring: B-3 (1 of 1)

Project No: 66T-0097
Client: NCDOT
Project: B-5121/B-5317 622 Capital LLC(Parcel #16)
City/State: Raleigh, NC

Elevation: Existing Ground Surface
Total Depth: 10.0'
Boring Location: See Plan

Drilling Method: Geoprobe
Hammer Type: N/A
Date Drilled: 7/22/15
Driller: Regional Probing Services

Elevation	Depth	Description of Materials (Classification)	*Sample Depth (feet)	PID (ppm)	Remarks
	0.2	Concrete	0.0	0.9	
		Dry, Dark Brown, Silty Fine to Medium SAND (SM)			
	1.0	Dry, Red-Brown, Silty Fine to Medium SAND (SM)	1.0	0.8	
	2.0	Dry, Red-Brown, Sandy CLAY (CL)	2.0	0.8	
			3.0	0.8	
	4.0	Moist, Tan-Brown, Sandy CLAY (CL)	4.0	0.7	
			5.0	0.8	
			6.0	0.9	
	7.0	Moist, Tan, Sandy CLAY (CL)	7.0	0.8	
			8.0	0.7	
	9.0	Moist to Wet, Tan, Sandy CLAY (CL)	9.0	5.3*	*Sample Submitted for Laboratory Analysis for TPH, DRO/GRO, Total BTEX, 16 PAHs, and BaP
	10.0	Geoprobe Boring Terminated at 10 feet.	10.0		Petroleum Odor Observed from 9'-10'

*Geoprobe soil samples were collected by continuous push of a 2 inch ID stainless steel barrel containing a 4 foot long acetate collection sleeve. The 4 foot long soil sample sleeves were cut open and the soil was separated into 1 foot long sample intervals.

GEOPROBE_LOG B5121_GEOENV_GEOPROBEBORELOGS_PARCEL16.GPJ F&R.GDT 8/13/15

FROEHLING & ROBERTSON, INC.

GEOPROBE LOG

Boring: B-4 (1 of 1)

Project No: 66T-0097
Client: NCDOT
Project: B-5121/B-5317 622 Capital LLC(Parcel #16)
City/State: Raleigh, NC

Elevation: Existing Ground Surface
Total Depth: 10.0'
Boring Location: See Plan

Drilling Method: Geoprobe
Hammer Type: N/A
Date Drilled: 7/23/15
Driller: Regional Probing Services

Elevation	Depth	Description of Materials (Classification)	*Sample Depth (feet)	PID (ppm)	Remarks
	0.2	Concrete	0.0	0.5	Petroleum Odors not Observed in Boring
		Dry, Red-Tan, Silty Sandy CLAY (CL)	2.0	0.5*	*Sample Submitted for Laboratory Analysis for TPH, DRO/GRO, Total BTEX, 16 PAHs, and BaP
	4.0	Dry, Orange-Tan, Silty Sandy CLAY (CL)	4.0	0.4	
			5.0	0.2	
			6.0	0.3	
			7.0	0.3	
			8.0	0.5	
	9.0	Dry, Tan, Silty Fine to Medium SAND (SM)	9.0	0.5	
	10.0	Geoprobe Boring Terminated at 10 feet.	10.0		

*Geoprobe soil samples were collected by continuous push of a 2 inch ID stainless steel barrel containing a 4 foot long acetate collection sleeve. The 4 foot long soil sample sleeves were cut open and the soil was separated into 1 foot long sample intervals.

FROEHLING & ROBERTSON, INC.

GEOPROBE LOG

Boring: B-5 (1 of 1)

Project No: 66T-0097
Client: NCDOT
Project: B-5121/B-5317 622 Capital LLC(Parcel #16)
City/State: Raleigh, NC

Elevation: Existing Ground Surface
Total Depth: 10.0'
Boring Location: See Plan

Drilling Method: Geoprobe
Hammer Type: N/A
Date Drilled: 7/23/15
Driller: Regional Probing Services

Elevation	Depth	Description of Materials (Classification)	*Sample Depth (feet)	PID (ppm)	Remarks
	0.2	Concrete	0.0	0.4	Petroleum Odors not Observed in Boring
		Dry, Tan, Silty Sandy CLAY (CL)	1.0	0.5	
	2.0	Dry, Tan-Brown, Silty Sandy CLAY (CL)	2.0	0.4	
	3.0	Moist, Tan-Brown, Silty Sandy CLAY (CL)	3.0	0.2	
			4.0	0.3	
	5.0	Moist, Tan-Gray, Silty Sandy CLAY (CL)	5.0	0.4	
			6.0	0.3	
	7.0	Moist, Tan, Silty Sandy CLAY (CL)	7.0	0.4	
			8.0	0.5*	*Sample Submitted for Laboratory Analysis for TPH, DRO/GRO, Total BTEX, 16 PAHs, and BaP
			9.0	0.3	
	10.0	Geoprobe Boring Terminated at 10 feet.	10.0		

*Geoprobe soil samples were collected by continuous push of a 2 inch ID stainless steel barrel containing a 4 foot long acetate collection sleeve. The 4 foot long soil sample sleeves were cut open and the soil was separated into 1 foot long sample intervals.

FROEHLING & ROBERTSON, INC.

GEOPROBE LOG

Boring: B-6 (1 of 1)

Project No: 66T-0097
Client: NCDOT
Project: B-5121/B-5317 622 Capital LLC(Parcel #16)
City/State: Raleigh, NC

Elevation: Existing Ground Surface
Total Depth: 10.0'
Boring Location: See Plan

Drilling Method: Geoprobe
Hammer Type: N/A
Date Drilled: 7/23/15
Driller: Regional Probing Services

Elevation	Depth	Description of Materials (Classification)	*Sample Depth (feet)	PID (ppm)	Remarks
	0.2	Concrete	0.0	0.3	Likely Old UST Basin Backfill
		Dry, Tan, Well Graded SAND (SW)	2.0	0.5	
			4.0	0.6	
			6.0	0.4	Light Petroleum Odor Observed from 6'-8'
			8.0	490*	*Sample Submitted for Laboratory Analysis for TPH, DRO/GRO, Total BTEX, 16 PAHs, and BaP Strong Petroleum Odor Observed from 8'-10'
	10.0	Geoprobe Boring Terminated at 10 feet.	10.0		

*Geoprobe soil samples were collected by continuous push of a 2 inch ID stainless steel barrel containing a 4 foot long acetate collection sleeve. The 4 foot long soil sample sleeves were cut open and the soil was separated into 1 foot long sample intervals.

FROEHLING & ROBERTSON, INC.

GEOPROBE LOG

Boring: B-7 (1 of 1)

Project No: 66T-0097
Client: NCDOT
Project: B-5121/B-5317 622 Capital LLC(Parcel #16)
City/State: Raleigh, NC

Elevation: Existing Ground Surface
Total Depth: 10.0'
Boring Location: See Plan

Drilling Method: Geoprobe
Hammer Type: N/A
Date Drilled: 7/23/15
Driller: Regional Probing Services

Elevation	Depth	Description of Materials (Classification)	*Sample Depth (feet)	PID (ppm)	Remarks
	0.2	Asphalt	0.0	2.5	
		Dry, Tan, Silty Sandy CLAY (CL)			
	1.0	Dry, Tan, Silty Fine to Medium SAND (SM)	1.0	401	Strong Petroleum Odor Observed 1'-10'
			2.0	1245	
			3.0	1101	
			4.0	1382*	*Sample Submitted for Laboratory Analysis for TPH, DRO/GRO, Total BTEX, 16 PAHs, and BaP
	5.0	Moist, Red-Tan, Sandy SILT (ML) with Mica	5.0	1373	
			6.0	756	
			7.0	1211	
	8.0	Moist, Tan-Brown, Silty Fine to Medium SAND (SM) with Mica	8.0	1083	
	9.0	Moist, Gray-Tan, Silty Fine to Medium SAND (SM) with Mica	9.0	590	
	10.0	Geoprobe Boring Terminated at 10 feet.	10.0		

*Geoprobe soil samples were collected by continuous push of a 2 inch ID stainless steel barrel containing a 4 foot long acetate collection sleeve. The 4 foot long soil sample sleeves were cut open and the soil was separated into 1 foot long sample intervals.

FROEHLING & ROBERTSON, INC.

GEOPROBE LOG

Boring: B-8 (1 of 1)

Project No: 66T-0097
Client: NCDOT
Project: B-5121/B-5317 622 Capital LLC(Parcel #16)
City/State: Raleigh, NC

Elevation: Existing Ground Surface
Total Depth: 10.0'
Boring Location: See Plan

Drilling Method: Geoprobe
Hammer Type: N/A
Date Drilled: 7/23/15
Driller: Regional Probing Services

Elevation	Depth	Description of Materials (Classification)	*Sample Depth (feet)	PID (ppm)	Remarks
	0.2	Concrete	0.0	0.6	
		Dry, Tan, Sandy CLAY (CL)	1.0	0.7	
	2.0	Dry, Tan, Silty Sandy CLAY (CL)	2.0	0.6	
	3.0	Dry, Tan, Silty Fine to Medium SAND (SM)	3.0	0.6	
	4.0	Dry, Brown-Gray, Silty Fine to Medium SAND (SM)	4.0	464	Strong Petroleum Odor Observed 4'-10'
			5.0	1227*	*Sample Submitted for Laboratory Analysis for TPH, DRO/GRO, Total BTEX, 16 PAHs, and BaP
			6.0	1213	
	7.0	Moist, Gray, Silty Fine to Medium SAND (SM)	7.0	1218	
			8.0	61.8	
	9.0	Moist, Gray-Tan, Silty Fine to Medium SAND (SM)	9.0	16.5	
	10.0	Geoprobe Boring Terminated at 10 feet.	10.0		

*Geoprobe soil samples were collected by continuous push of a 2 inch ID stainless steel barrel containing a 4 foot long acetate collection sleeve. The 4 foot long soil sample sleeves were cut open and the soil was separated into 1 foot long sample intervals.

APPENDIX IV

SITE PHOTOS

Photo #1: A view of Borings B-1 and B-2, facing north.

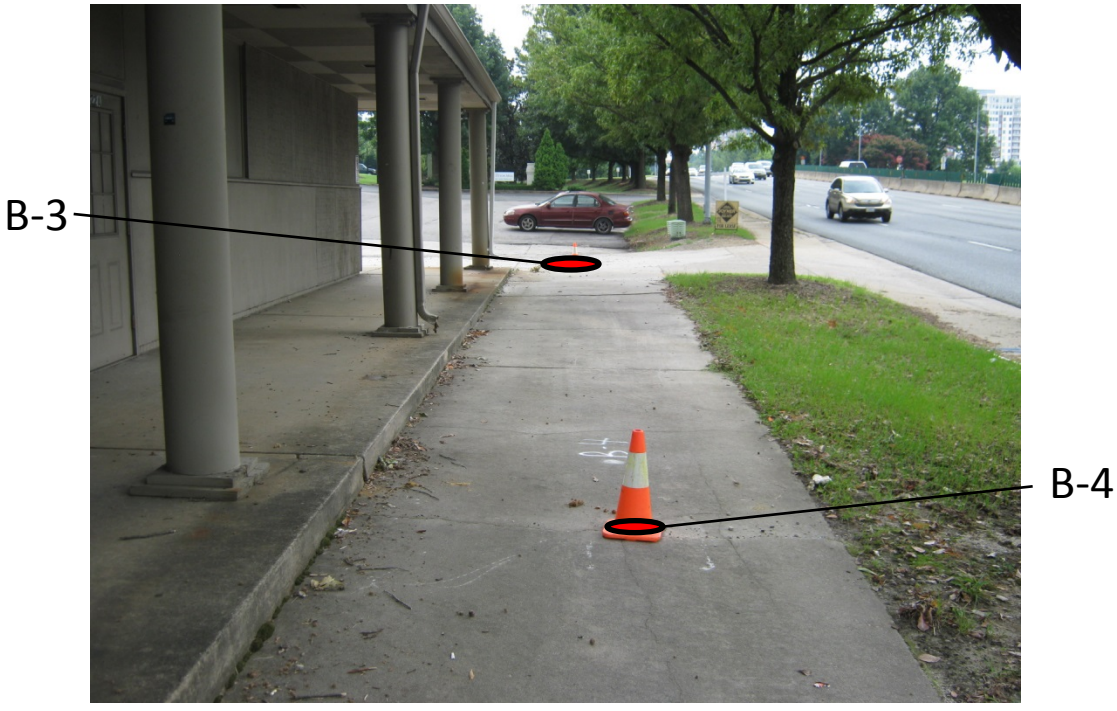


Photo #2: A view of Borings B-3 and B-4, facing south.

Photo #3: A view of boring location B-5, facing north.

Photo #4: A view of Boring B-6, facing west.

Photo #5: A view of Borings B-7 and B-8, facing north

Photo #6: A view of the location of the probable UST located just south of the automotive repair building, facing northwest

APPENDIX V

LABORATORY ANALYTICAL RESULTS

QED

AQROS

Hydrocarbon Analysis Results

Client: F & R
Address: Raleigh, NC

Samples taken July 22 and 23, 2015
Samples extracted July 22 and 23, 2015
Samples analysed Friday, July 24, 2015

Contact: Ben Whitley

Operator F. Owen

Project: NC DOT Parcel 16 B-5121/ B-5317

Fingerprints Only

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	B1 7-8	21.7	<1.1	<0.54	31.3	31.3	28.8	5.3	0.13	0	91.5	8.5	V.Deg.PHC (FCM) 93.5%
s	B2 3-4	26.5	<1.3	<0.66	25.2	25.2	24.6	2.9	0.47	0	76.4	23.6	Pyrogenic HC (FCM) 71.4%
s	B3 9-10	23.2	<1.2	<0.58	0.23	0.23	<0.19	<0.02	<0.012	0	53.2	46.8	Pet.Hyd Traces 39.7%
s	B4 2-4	21.8	<1.1	<0.55	2.9	2.9	1.4	0.05	<0.011	0	91.1	8.9	Deg Fuel (FCM) 75.2%
s	B5 8-9	20.3	<1	<0.51	10.9	10.9	10.2	1.5	0.11	0	80.7	19.3	V.Deg.PHC (FCM) 86.2%
s	B6 8-10	22.4	<1.1	21.7	11	32.7	5.5	0.21	<0.011	79.7	20	0.3	Deg Gas (FCM) 24.9%
s	B7 4-5	301.8	<15.1	251.5	134.4	385.9	89.3	3.4	0.038	73.3	25.3	1.4	Deg Gas (FCM) 91.1%
s	B8 5-6	318.9	<15.9	698.1	384.2	1082.3	116.7	4.6	<0.16	85.3	14.6	0.1	Deg Gas (FCM) 78.1%

Initial Calibrator QC check OK

Final FCM QC Check OK 97.0%

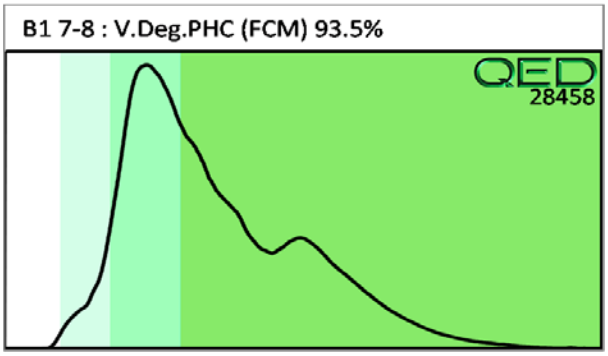
Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

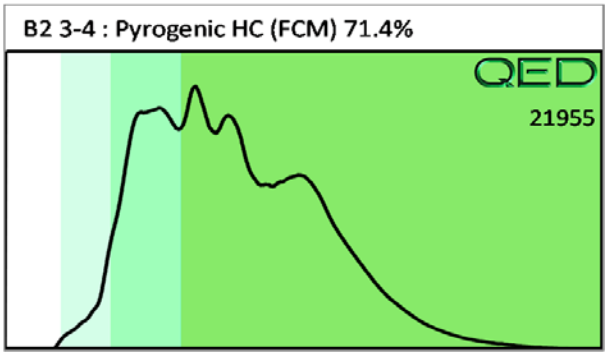
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

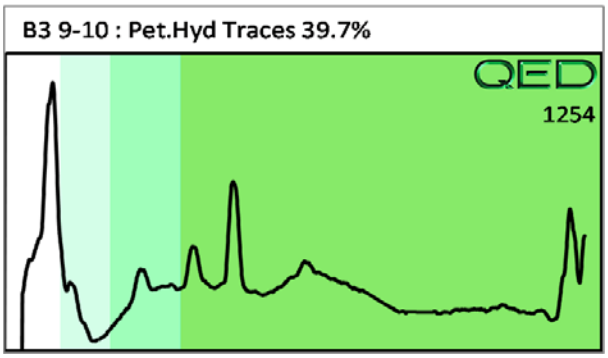
(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

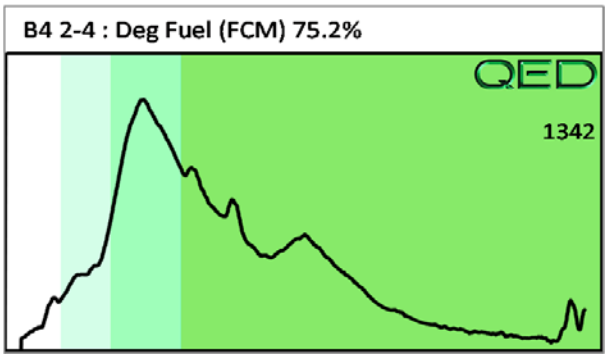
QED Hydrocarbon Fingerprints

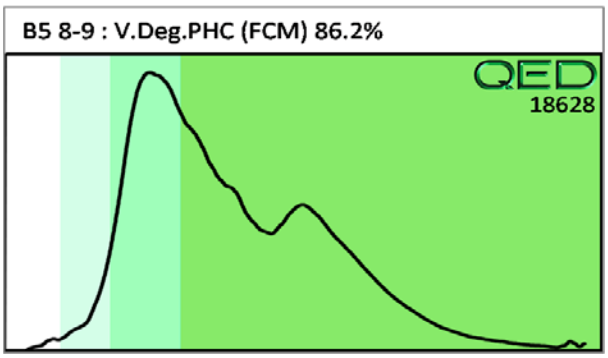
Project: NC DOT Parcel 16 B-5121/ B-5317 Friday, July 24, 2015

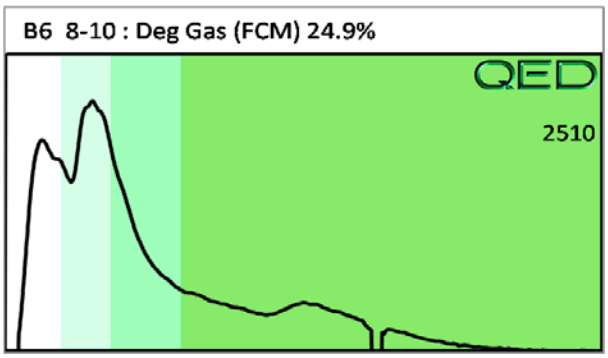


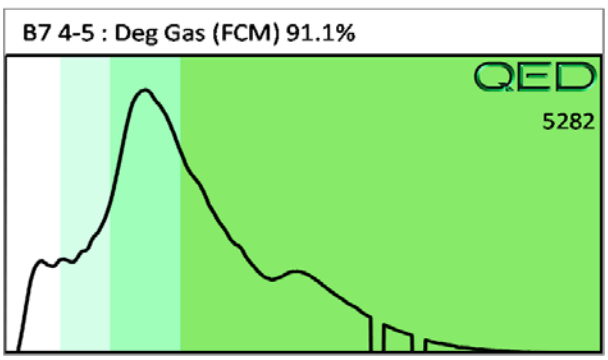


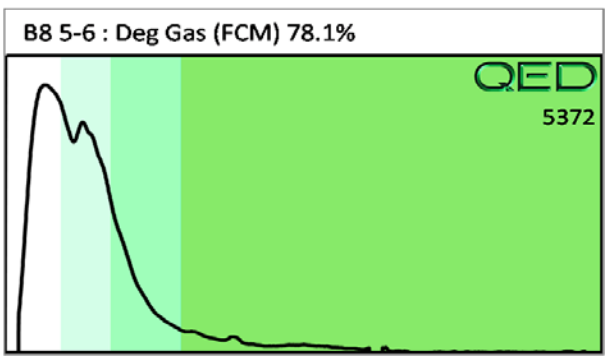












QROS

Chain of Custody Record and Analytical Request Form

	Sample ID	Sample Collection			TAT Requested	
	QED UVF	Date	Time	Initials	24 Hour	48 Hour
	Parcel	—	—	—	—	—
Parcel 16	B-1 7-8	7-22-15	1640	BAW		X
	B-2 3-4		1650			
	B-3 9-10		1705			
	B-4 2-4	7-23-15	855			
	B-5 8-9		905			
	B-6 8-10		920			
	B-7 4-5		945			
	B-8 5-6		1010			
Parcel 19	B-1 5-6		1250			
	B-2 8-9		1305			
	B-3 6-8		1320			
	B-4 6-8		1335			
	B-5 8-9		1400			
Parcel 23	B-1 4-5		1440			
	B-2 5-6		1455			
	B-3 4-5		1520			
	B-5 6-7		1615			
	B-5 9-10		1618			

Client: F&R

Contact: Ben Whitley

Phone: 919.630.5641

Email: bwhitley@fandr.com

Project Reference:
NCDOT B-5121 / B-5317

Each sample will be analyzed for total

BTEX, GRO, DRO, TPH and PAH

Each sample will generate a fingerprint representative of the petroleum product within the samples. Electronic data will be submitted to the email above.

F&R	7-23-15 1800	UPS	7-23-15 1800
Relinquished by	Date/Time	Accepted by	Date/Time
			7-24-15 10:30
Relinquished by	Date/Time	Accepted by	Date/Time
Relinquished by	Date/Time	Accepted by	Date/Time

SHIP TO:
QROS, LLC
420 Raleigh Street, Suite E
Wilmington, NC 28412

Hannah King
hannahk@grosllc.com
(704)-654-7391

ATTENTION

When shipping, please DO NOT submerge sample vials in ice or water. This is to avoid dilution errors and contamination. To keep the samples cool we suggest using a freezer pack or a bag of ice sealed that will not leak.

* Please send results for Parcels 16, 19, and 23 on separate spreadsheets

Corporate HQ: 3015 DUMBARTON ROAD RICHMOND, VIRGINIA 23228 T 804.264.2701 F 804.264.1202 www.fandr.com

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