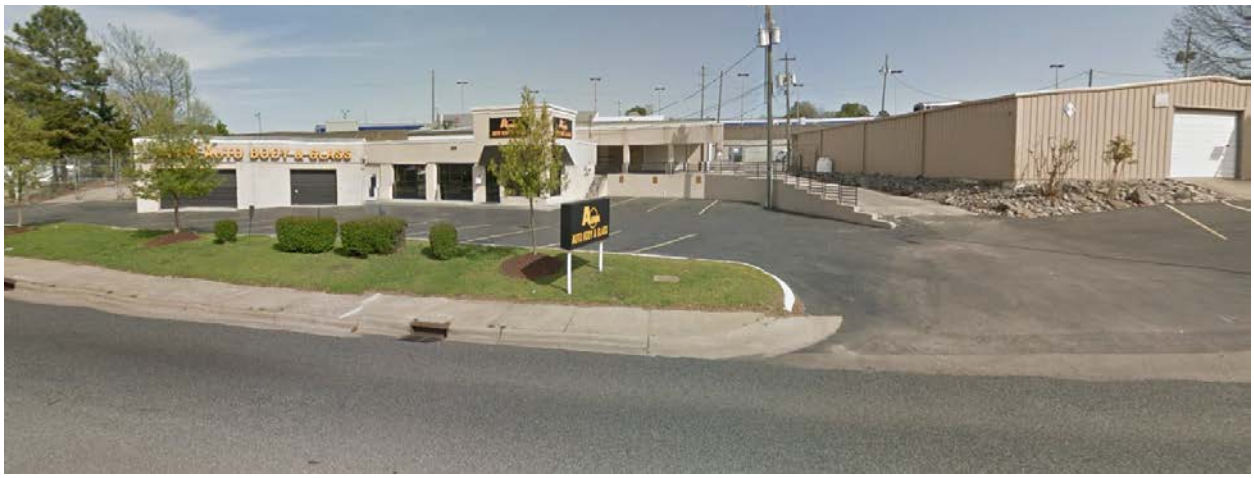
FROEHLING & ROBERTSON, INC.



PRELIMINARY SITE ASSESSMENT

HENRY J. VANPALA (PARCEL #23)
908 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

SINCE 1881

FROEHLING & ROBERTSON, INC.

Engineering Stability Since 1881

310 Hubert Street
Raleigh, North Carolina 27603-2302
T 919.828.3441 I F 919.828.5751
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 #23 – Henry J. Vanpala (Abra Auto Body & Glass)
908 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 Henry J. Vanpala 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
Henry J. Vanpala Property (Parcel #23)
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 Henry J. Vanpala Property addressed as 908 Capital Boulevard in Raleigh, Wake County, North Carolina. The site is located on the east side of Capital Boulevard at the Wade Avenue exit, as shown in Appendix I, Figures 1 and 2. As indicated in the Request for Technical and Cost Proposal (RFTCP), the existing automotive repair business (ABRA Auto Body & Glass) may have previously operated as an automotive dealership.

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.

As outlined by the NCDOT in their RFTCP, acquisition of the 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: one service garage (with main office) is located at the northwestern portion of the site, one service garage on the eastern portion of the site, and one service garage on the southern portion of the site. The remainder of the site consists of an asphalt paved parking lot and manicured landscaping. Access to the site is gained from Capital Boulevard to the west. The site is bordered to the north by a used car lot and the Wade Avenue exit ramp; to the east by railroad tracks; to the south by a property owned by NCDOT with asphalt parking lots; and to the west by Capital Boulevard. 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 between the proposed right-of-way and the existing edge of pavement on Capital Boulevard and the Wade Avenue exit ramp.

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 five 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 with the exception of the building footprint and areas immediately adjacent to metallic objects and other obstacles (such as vehicles). Isolated EM anomalies were identified on the site, including signs, utilities parking barriers, and suspected reinforced concrete.

Based on the EM data collected at the site, Pyramid did not observe anomalies that were interpreted to be the results of metallic USTs within about 6 feet of the ground surface. The complete geophysical report is attached as Appendix II.

3.0 Site Assessment Activities

F&R visited the site on July 23, 2015 to perform the Preliminary Site Assessment. The assessment consisted of advancing five borings into the soils at the project site using direct-push technology (Geoprobe). The borings (B-1 through B-5) were generally located throughout the parking lot, driveway, and landscape island areas on the site within the proposed construction easement (Appendix I, Figure 3). Boring locations were determined by F&R staff based on the results of the geophysical survey, site features and proposed construction activities. 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.

The soil sample which exhibited the highest PID concentration or the sample at boring termination 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).

F&R returned to the site on July 29, 2015, in order to collect an additional sample from Boring B-4 that was misplaced during field activities conducted on July 23, 2015.

The samples were collected in laboratory-supplied sample containers, placed in a cooler with ice, and shipped via 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 primarily included layers of moist, tan to gray to brown sandy and silty clay (USCS – CL) and isolated layers of tan-gray silty sand (SM). 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-1, from 2 to 10 feet bgs;
- Boring B-2, from 5 to 8 feet bgs;
- Boring B-3, from 2 to 5 feet bgs; and
- Boring B-5, from 9 to 10 feet bgs.

F&R also noted a solvent-like odor in Boring B-5 from 6 to 9 feet bgs. Due to the olfactory evidence of two separate contaminants, F&R collected and submitted two laboratory samples from Boring B-5.

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

PID readings in Boring B-4 did not exceed 1.1 ppm. However, elevated PID readings were recorded in Borings B-1 (from existing ground surface to 10 feet bgs), B-2 (from 4 to 10 feet bgs), B-3 (from 2 to 10 feet bgs), and B-5 (from 6 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 collected at the five boring locations advanced at the site (B-1 through B-5), at depths from 4 feet bgs (B-1 and B-3) to 10 feet bgs (B-5). The laboratory results indicate that the DRO concentrations ranged from 2.4 mg/kg (B-4) to 362.5 mg/kg (B-5). DRO concentrations above the NCDENR Action Level of 10 mg/kg were detected in five of the samples submitted (Borings B-1 through B-3, and the two samples submitted from Boring B-5).

In addition, GRO was detected in the two samples obtained from Boring B-5 at concentrations of 17.6 and 32.5 mg/kg, which are above the NCDENR Action Level of 10 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 in the six samples submitted. In addition, Benzo (a) pyrene (BaP) was detected in sample B-1 at a concentration above the NCDENR Soil-to-Water MSCC (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	7/23/15	4-5	425	< 6.9	**113.6**	**113.6**	< 13.9	72.5	2.8	**0.14**
B-2		5-6	38.8	< 0.55	**26.9**	**26.9**	< 1.1	17	0.68	0.008
B-3		4-5	14.7	< 0.51	**52.1**	**52.1**	< 1	24.8	1	0.025
B-4	7/29/15	6-7	1.1	< 0.49	2.4	2.4	< 0.98	2	0.28	0.09
B-5	7/23/15	6-7	127	**17.6**	**30.5**	**48.1**	< 1	26.8	1.3	0.024
B-5		9-10	309	**32.5**	**362.5**	**395**	< 1.2	52.5	2.1	0.005
NC DENR 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 Henry J. Vanpala Property located at 908 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 in the proposed right-of-way. Based on the results of the geophysical survey, it was determined that USTs were not present within the surveyed area.

Five 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 within the areas evaluated. 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 through B-3, from existing ground surface to a depth of at least six feet bgs; and
- Area 2: In the vicinity of Boring B-5, from existing ground surface to a depth of at least ten feet bgs.

No below grade utilities appear on the proposed improvement plans. However, a proposed realignment of the curbline and the exit ramp from Capital Boulevard onto Wade Avenue 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: 4,581.4 square feet, extending to a depth of six feet bgs;
- Area 2: 2,340.8 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 (4,581.4 SF) X 6' depth	27,488.4	1,649.3
Area 2 (vicinity of B-5 through B-8)	L x W varies (2,340.8 SF) X 10' depth	23,408.0	1,404.5
Soil Volume (assuming a soil density of 120 pcf)		**Total**	**3,053.8**

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 possibly 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

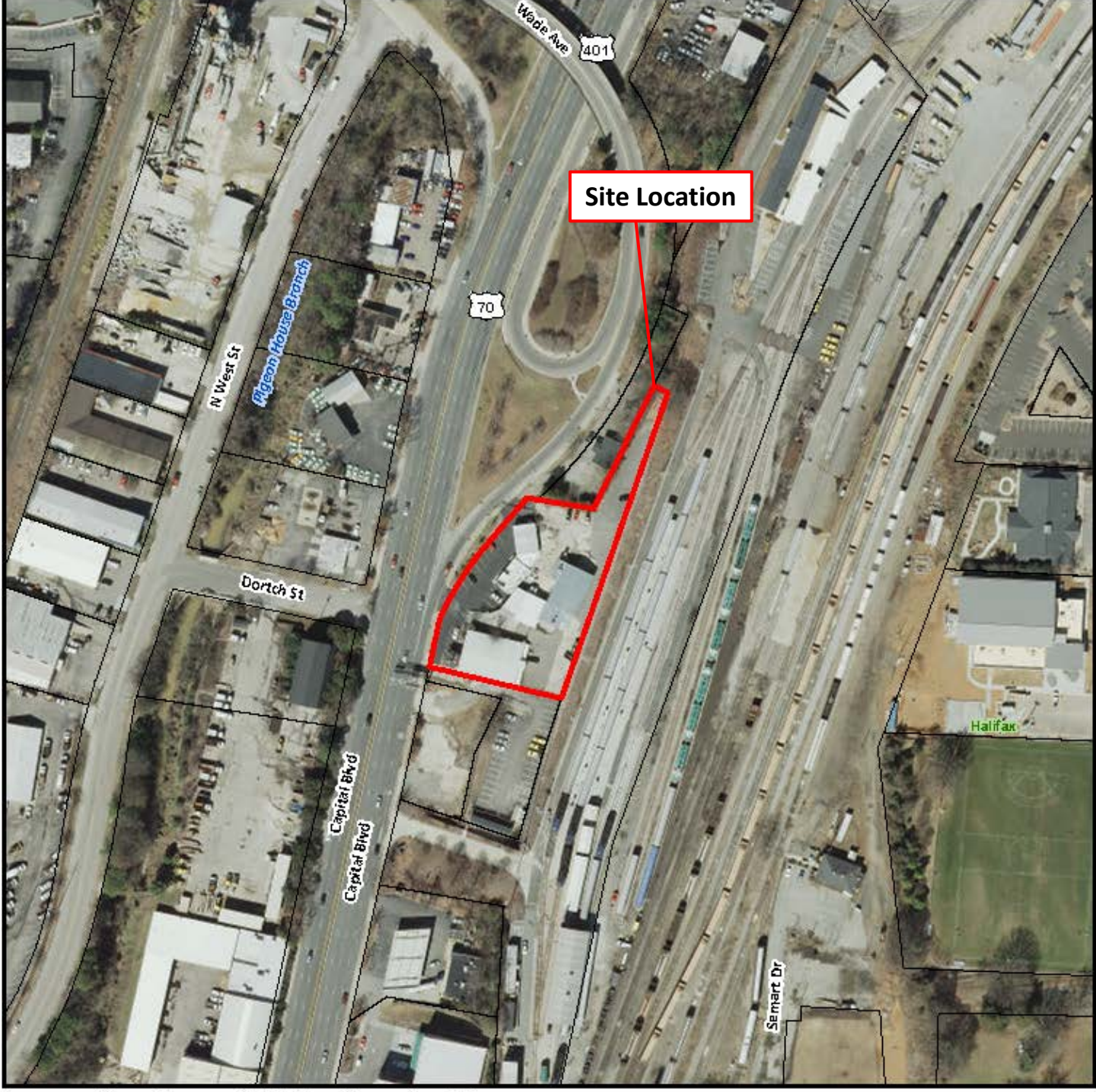

Image Courtesy of Wake County iMaps

N

0 100 200 400 Feet

1 inch = 200 feet

SITE VICINITY MAP

North

SINCE F&R 1881

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Engineering • Environmental • Geotechnical
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Raleigh, North Carolina 27603-2302 | USA
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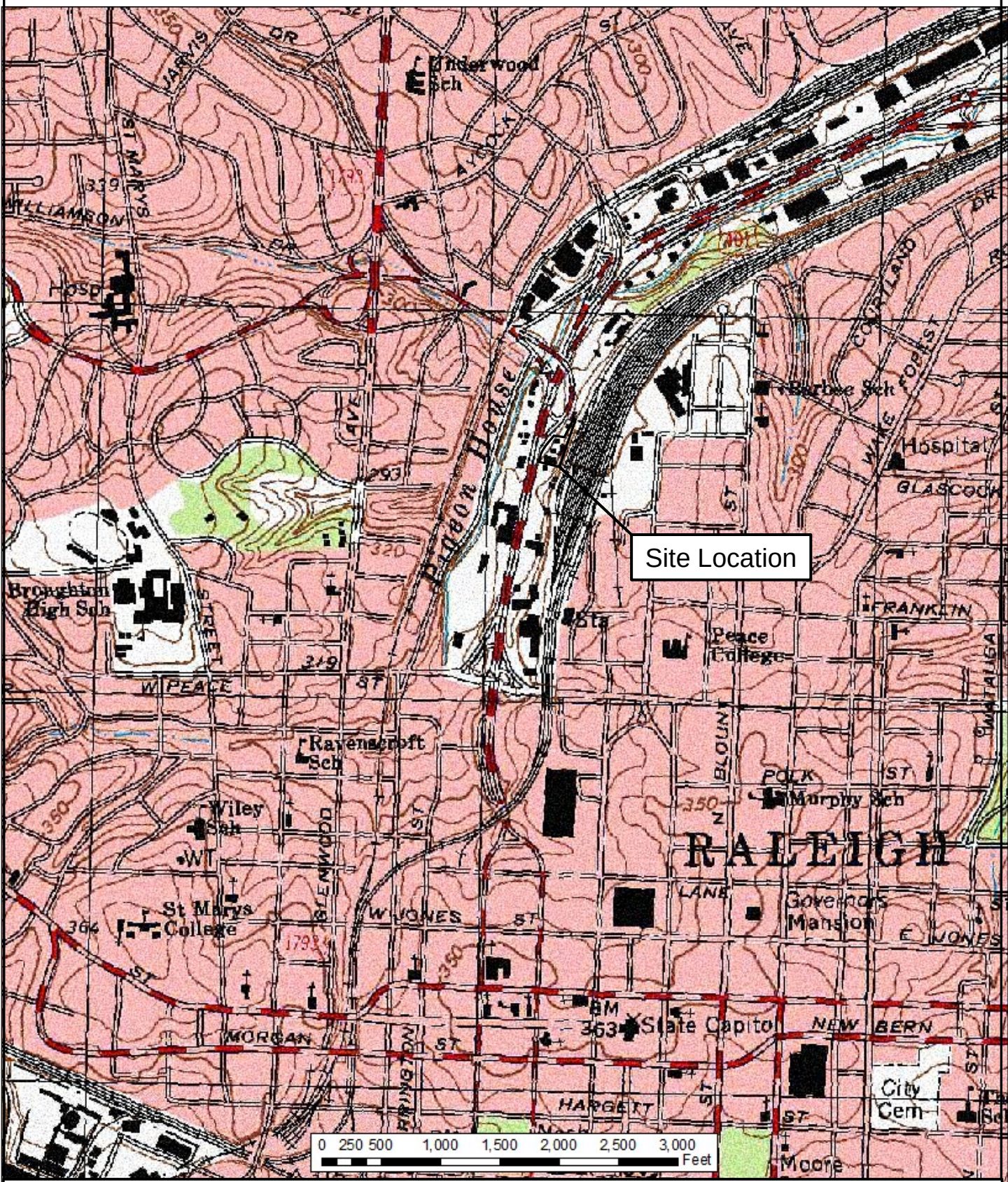
CLIENT: NCDOT	
PROJECT: B-5121 & B-5317, Henry J. Vanpala Property, NCDOT Parcel #23	
LOCATION: Raleigh, Wake County, North Carolina	
F&R PROJECT No.: 66T-0097	FIGURE No.: 1
DRAWN BY: B. Whitley	
DATE: August 2015	**SCALE**: 1" = 200 '



TOPOGRAPHIC MAP – RALEIGH, NC

North

SINCE F&R 1881

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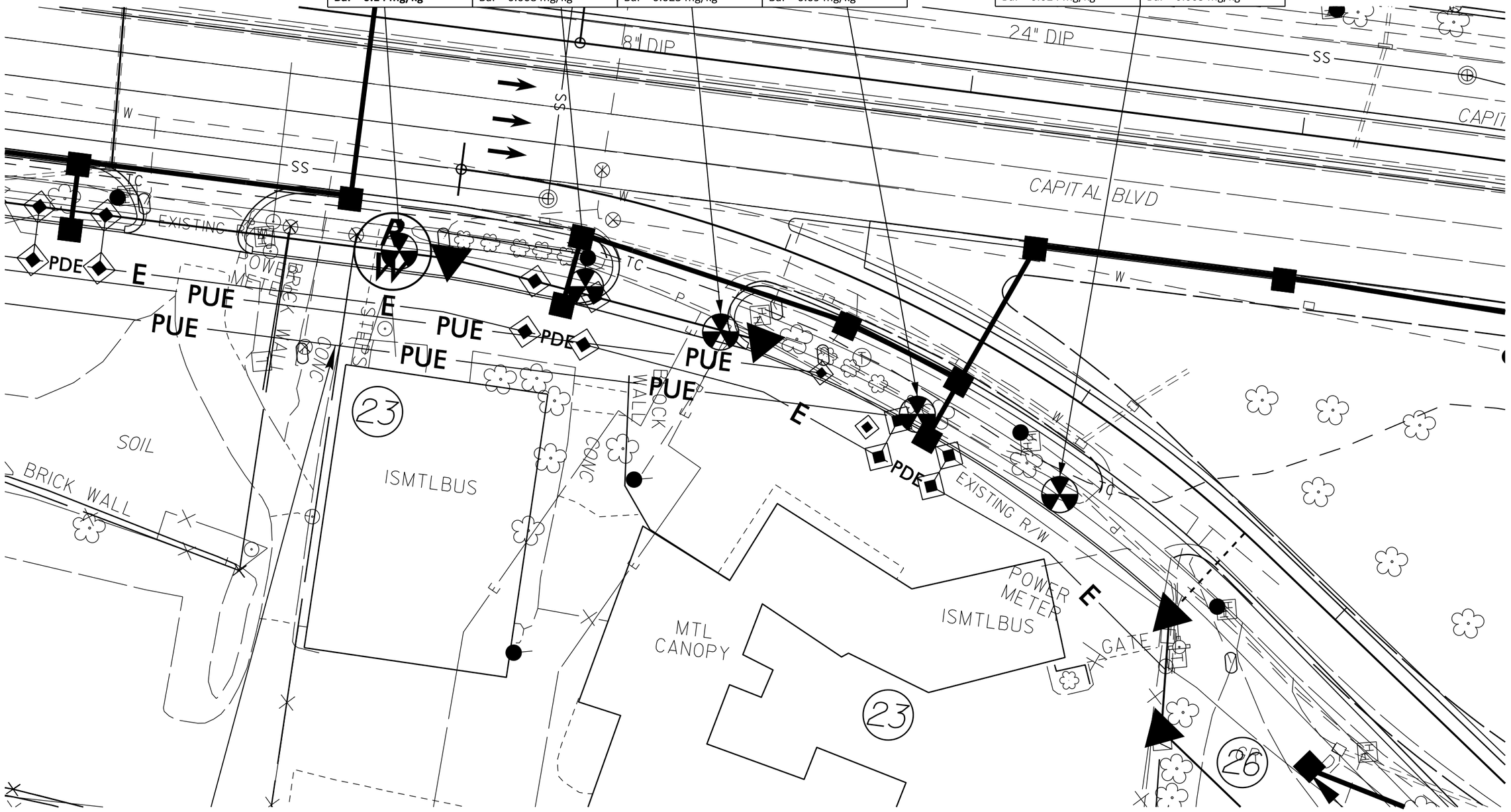
CLIENT: NCDOT	
PROJECT: B-5121 & B-5317, Henry J. Vanpala Property, NCDOT Parcel #23	
LOCATION: Raleigh, Wake County, North Carolina	
F&R PROJECT No.: 66T-0097	FIGURE No.: 2
DRAWN BY: B. Whitley	
DATE: August 2015	**SCALE**: As Shown

B-1: 4.0'-5.0'	B-2: 5.0'-6.0'	B-3: 4.0'-5.0'	B-4: 6.0'-7.0'	B-5: 6.0'-7.0'	B-5: 9.0'-10.0'
DRO= 113.6 mg/kg	**DRO= 26.9 mg/kg**	**DRO= 52.1 mg/kg**	DRO= 2.4 mg/kg	**DRO= 30.5 mg/kg**	**DRO= 362.5 mg/kg**
GRO=<6.9 mg/kg	GRO=<0.55 mg/kg	GRO=<0.51 mg/kg	GRO= <0.49 mg/kg	**GRO= 17.6 mg/kg**	**GRO= 32.5 mg/kg**
TOTAL BTEX=<13.9 mg/kg	TOTAL BTEX=<1.1 mg/kg	TOTAL BTEX=<1 mg/kg	TOTAL BTEX=<0.98 mg/kg	TOTAL BTEX=<1 mg/kg	TOTAL BTEX=<1.2 mg/kg
16 EPA PAHs= 2.8 mg/kg	16 EPA PAHs= 0.68 mg/kg	16 EPA PAHs= 1 mg/kg	16 EPA PAHs= 0.28 mg/kg	16 EPA PAHs= 1.3 mg/kg	16 EPA PAHs= 2.1 mg/kg
BaP= 0.14 mg/kg	BaP= 0.008 mg/kg	BaP= 0.025 mg/kg	BaP= 0.09 mg/kg	BaP= 0.024 mg/kg	BaP= 0.005 mg/kg



NAD 83/NSRS 2007

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

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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 Henry J. Vanpala (Parcel #23)		
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'	

AREA 1:
Estimated Extents of Soil Contamination
L x W varies (4,581.4 SF)
x 6' depth= 1,649.3 tons

B-1: 4.0'-5.0'	B-2: 5.0'-6.0'	B-3: 4.0'-5.0'	B-4: 6.0'-7.0'	B-5: 6.0'-7.0'	B-5: 9.0'-10.0'
DRO= 113.6 mg/kg	**DRO= 26.9 mg/kg**	**DRO= 52.1 mg/kg**	DRO= 2.4 mg/kg	**DRO= 30.5 mg/kg**	**DRO= 362.5 mg/kg**
GRO=<6.9 mg/kg	GRO=<0.55 mg/kg	GRO=<0.51 mg/kg	GRO= <0.49 mg/kg	**GRO= 17.6 mg/kg**	**GRO= 32.5 mg/kg**
TOTAL BTEX=<13.9 mg/kg	TOTAL BTEX=<1.1 mg/kg	TOTAL BTEX=<1 mg/kg	TOTAL BTEX=<0.98 mg/kg	TOTAL BTEX=<1 mg/kg	TOTAL BTEX=<1.2 mg/kg
16 EPA PAHs= 2.8 mg/kg	16 EPA PAHs= 0.68 mg/kg	16 EPA PAHs= 1 mg/kg	16 EPA PAHs= 0.28 mg/kg	16 EPA PAHs= 1.3 mg/kg	16 EPA PAHs= 2.1 mg/kg
BaP= 0.14 mg/kg	BaP= 0.008 mg/kg	BaP= 0.025 mg/kg	BaP= 0.09 mg/kg	BaP= 0.024 mg/kg	BaP= 0.005 mg/kg

8" DIP
24" DIP
SS
CAPITAL BLVD
W
TC
EXISTING R/W
PDE
E
PUE
POWER METER
BRICK WALL
SOIL
ISMTLBUS
MTL CANOPY
GATE
23
26

AREA 2:
Estimated Extents of Soil Contamination
L x W varies (2,340.8 SF)
x 10' depth= 1,404.5 tons

NAD 83/NSRS 2007

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

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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

ESTIMATED EXTENTS OF SOIL CONTAMINATION

CLIENT: NCDOT		
PROJECT: B-5121/B-5317 Henry J. Vanpala (Parcel #23)		
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 PYRAMID

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.

PYRAMID ENVIRONMENTAL & ENGINEERING
(PROJECT 2015-176)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 23 – HENRY J. VANPALA
NCDOT PROJECT B-5121/B5317
(WBS 42263.1.1)

908 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 23 – Henry J. Vanpala
Raleigh, Wake County, North Carolina

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Figures

Appendices

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 23, located at 908 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: A large area in the upper two thirds of the site was suspected to contain reinforced concrete, and resulted in a widespread high amplitude EM response. This entire area was further investigated by the GPR. One EM anomaly was suspected to be associated with reinforced parking barriers, and a second EM feature was suspected to be associated with a storm drain pipe. These features were also investigated by the GPR.

The remaining EM anomalies were associated with visible cultural features. The GPR survey verified the presence of metal reinforcement in the concrete, the location of the storm drain pipe, and an area possibly containing buried debris. No significant subsurface structures were identified that would be suggestive of a UST. Collectively, the geophysical data did not record any evidence of unknown metallic USTs at the property.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Froehling & Robertson (F&R) at Parcel 23, located at 908 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 body repair facility consisting of two structures surrounded by asphalt and concrete parking areas. Significant portions of the parking areas were apparently underlain by reinforced concrete. 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 July 1, 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. 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	Chain Link Fence	
2	Light Pole	
3	Manhole	
4	Sign/Water Meter	
5	Light Pole	
6	Drop Inlet	
7	Parking Barriers	☑
8	Sign	
9	Utility Box	
10	Billboard	
11	Suspected Storm Pipe	☑
12	Reinforced Concrete	☑
13	Vehicle	
14	Reinforced Concrete	☑

The majority of the northern two thirds of the survey area exhibited an extensive high amplitude EM response that was suspected to be the result of metal reinforcement within the concrete. This entire area was further investigated by the GPR due to the interference. Additionally, an EM anomaly (Anomaly #7) was suspected to be associated with adjacent reinforced parking barriers, but was also further investigated by the GPR for verification. Anomaly #11 was suspected to be associated with a buried storm drain

pipe that connected to a visible drop inlet, and was also investigated by the GPR. The remaining EM anomalies were directly attributed to visible cultural features at the ground surface such as fences, light poles, signs, and utilities.

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 31 formal GPR transects were performed at the property. Transect 1 was performed across the suspected storm drain pipe, and verified the presence of a conduit/utility extending from west to east across the location of the EM anomaly. Transects 2-3 were performed across EM Anomaly #7. These transects recorded some isolated lateral reflectors and disruptions in the soil that were suggestive of possible buried debris in this area. No clear evidence of a significant structure such as a UST was observed. The remaining transects (4-31) were performed in grid-like fashion across the areas suspected to contain reinforced concrete in the northern two thirds of the survey area. These GPR scans all verified the presence of metal reinforcement in the concrete, as well as isolated hyperbolic reflectors that are characteristic of utility lines running through the site. No evidence of significant subsurface structures such as USTs was observed.

Collectively, the geophysical data did not record any evidence of unknown metallic USTs at the property.

SUMMARY & CONCLUSIONS

Our evaluation of the EM61 and GPR data collected at Parcel 23 in Raleigh, Wake County, North Carolina, provides the following summary and conclusions:

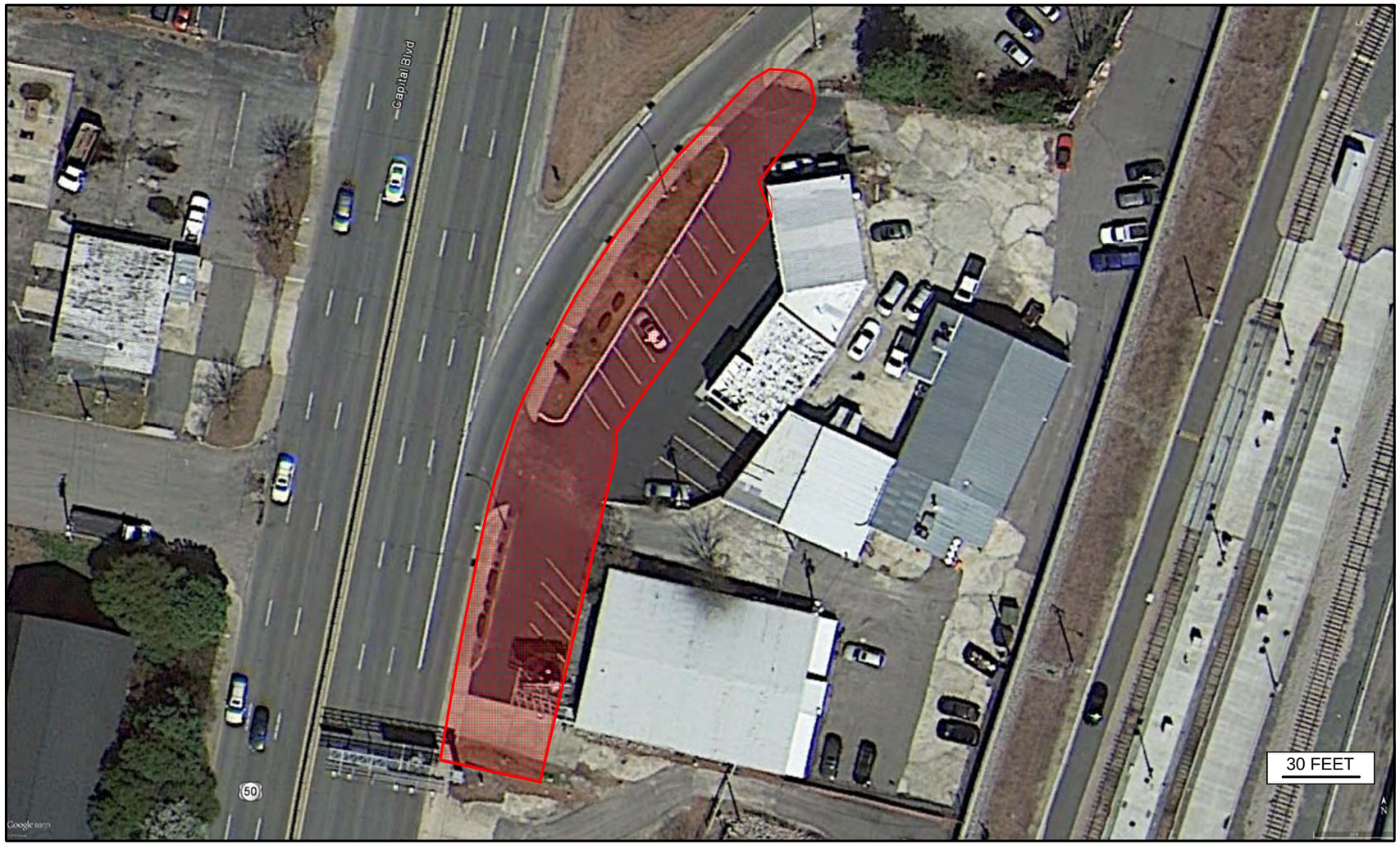
- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.

- A large area in the upper two thirds of the site was suspected to contain reinforced concrete, and resulted in a widespread high amplitude EM response. This entire area was further investigated by the GPR.
- One EM anomaly was suspected to be associated with reinforced parking barriers, and a second EM feature was suspected to be associated with a storm drain pipe. These features were also investigated by the GPR.
- The remaining EM anomalies were associated with visible cultural features.
- The GPR survey verified the presence of metal reinforcement in the concrete, the location of the storm drain pipe, and an area possibly containing buried debris.
- No significant subsurface structures were identified that would be suggestive of a UST.
- Collectively, the geophysical data did not record any evidence of unknown metallic USTs 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 AREA

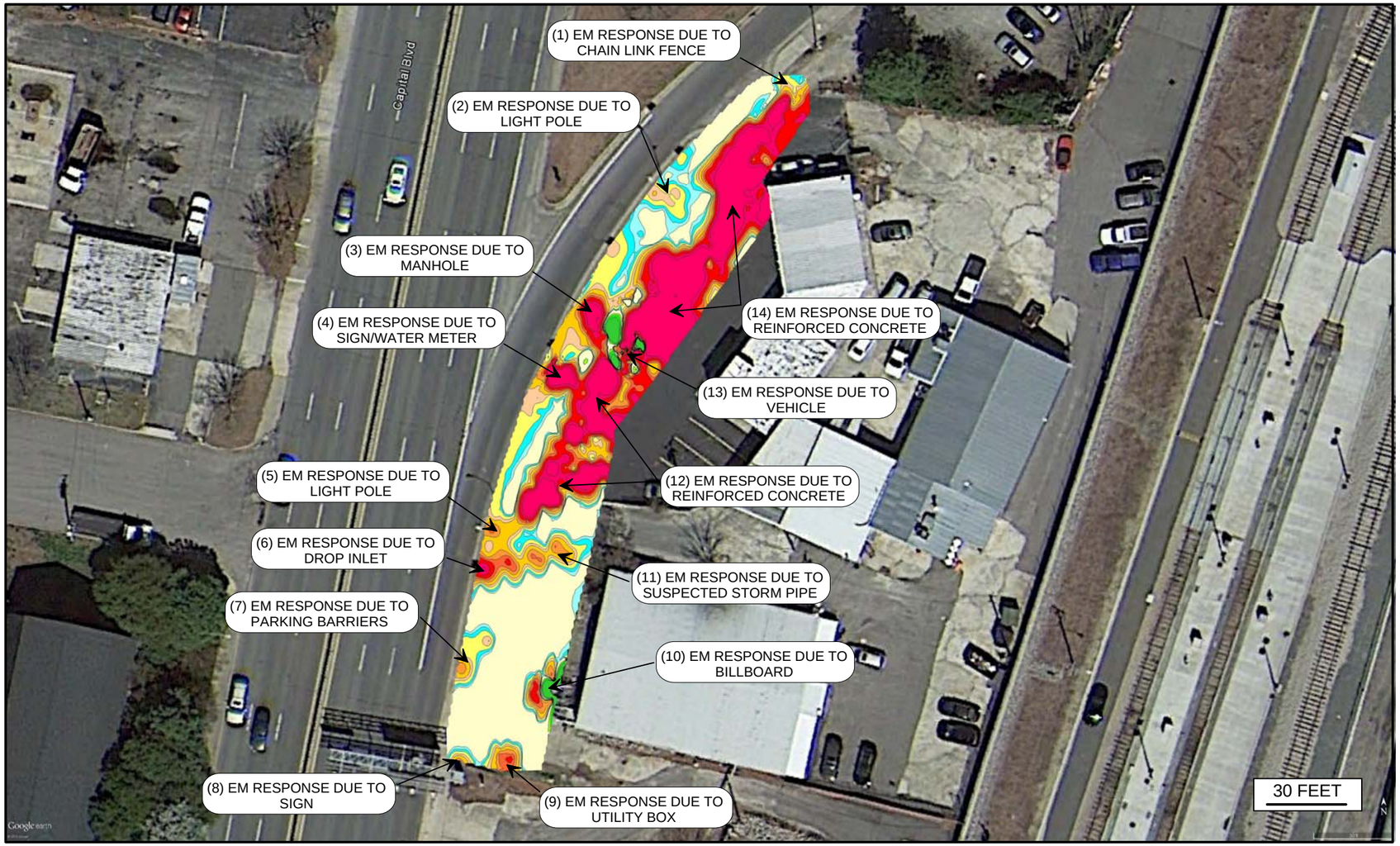
View of North Survey Area
(Facing Approximately Northeast)

View of South Survey Area
(Facing Approximately South)

TITLE	PARCEL 23 - 908 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 23 - EM61 Differential Results

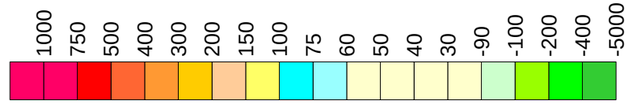


Locations of metallic anomalies detected by the EM61 survey. Numbers correspond to descriptive Table in report.

NO EVIDENCE OF METALLIC USTs OBSERVED

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)



TITLE
PARCEL 23 - 908 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

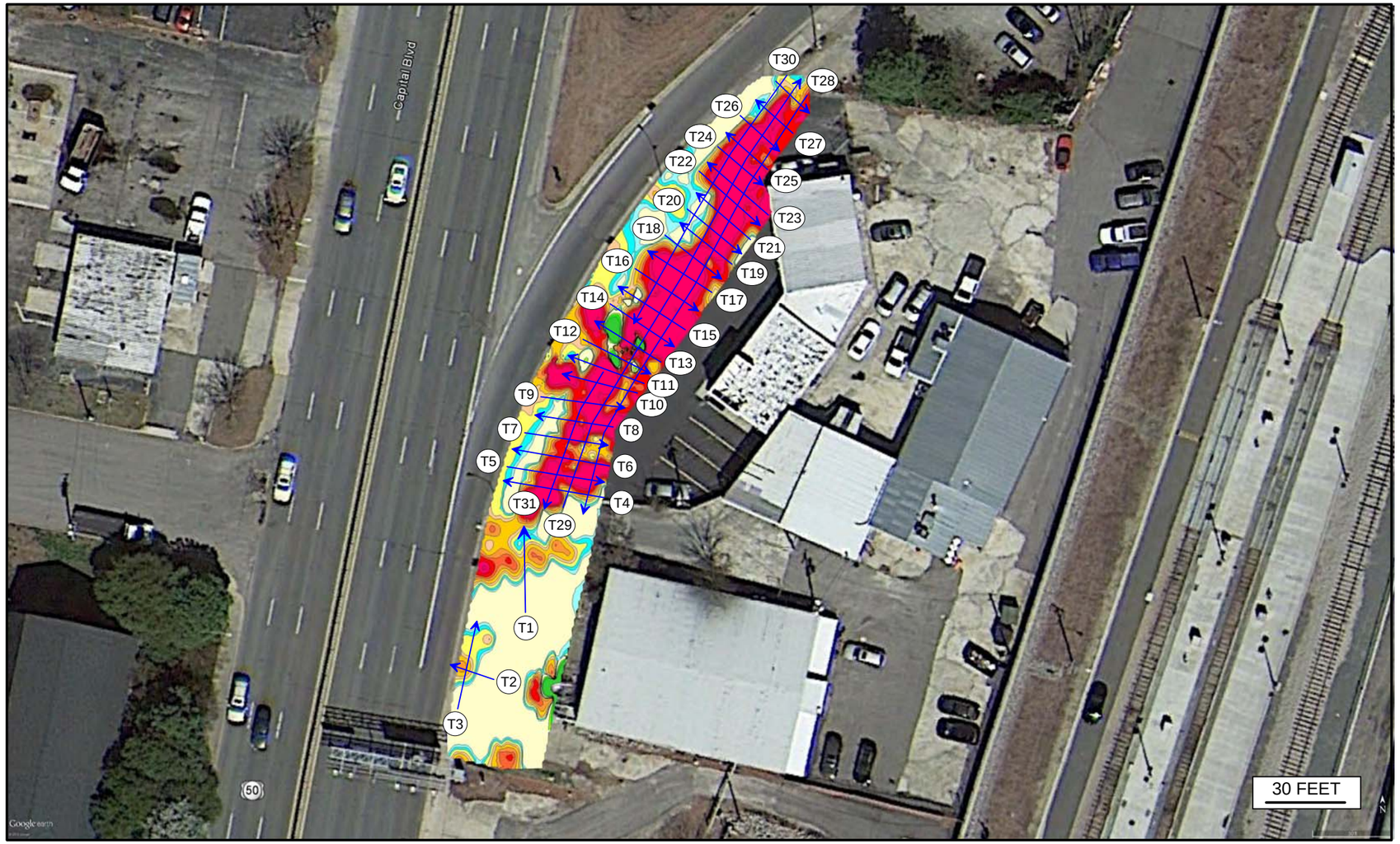
DATE 7/6/2015

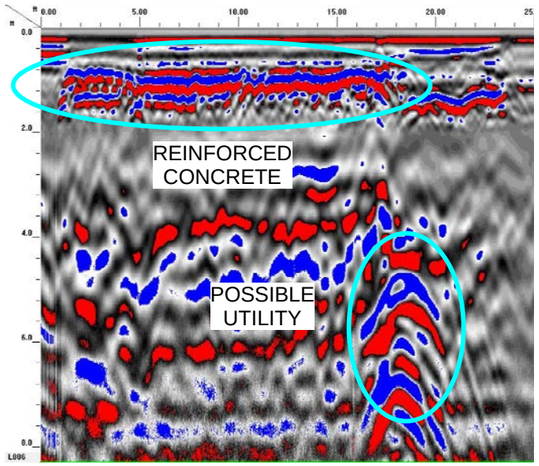
CLIENT FROEHLING & ROBERTSON

PYRAMID PROJECT #: 2015-176

FIGURE 2

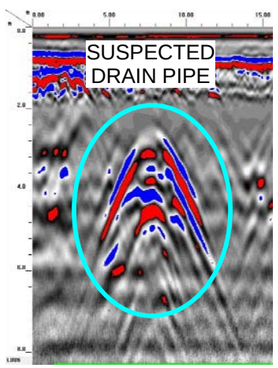
Parcel 23 - Approximate Locations of GPR Transects





GPR TRANSECT 23 (T23)

N



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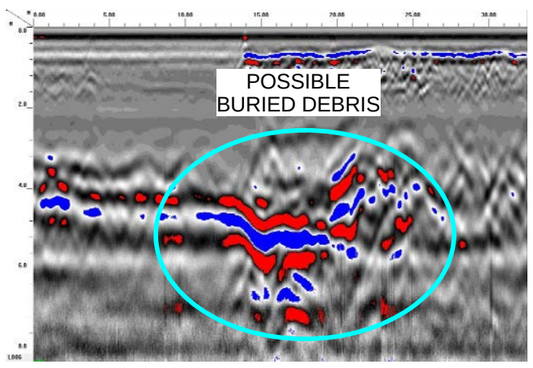
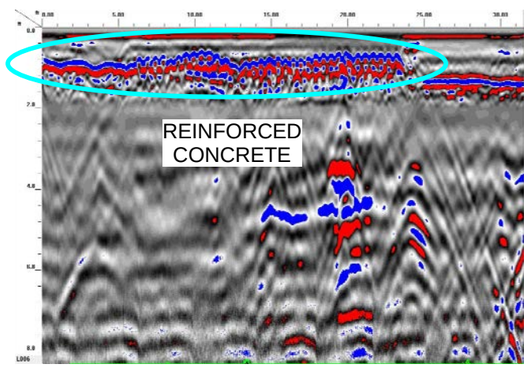


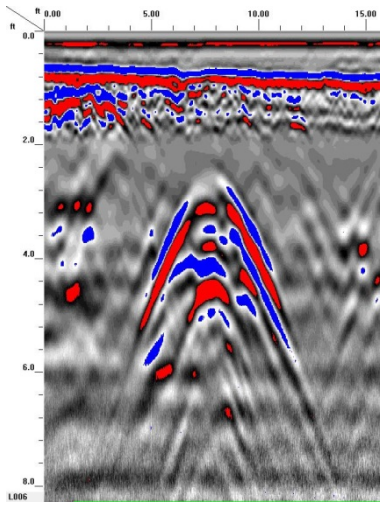
GPR TRANSECT 3 (T3)



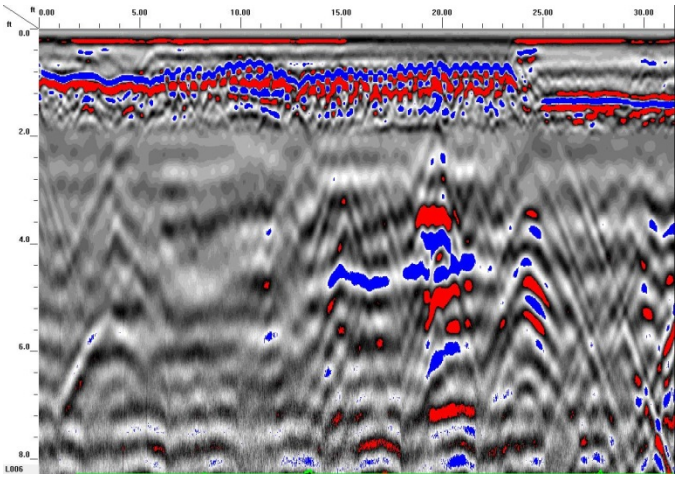
GPR TRANSECT 4 (T4)

TITLE	PARCEL 23 - 908 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) License # C1251 Eng. / License # C257 Geology
DATE 7/6/2015	CLIENT FROEHLING & ROBERTSON
PYRAMID PROJECT #: 2015-176	**FIGURE 3**

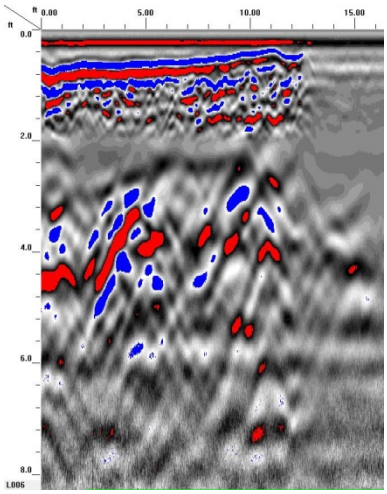
Appendix A – GPR Transects



GPR TRANSECT 1



GPR TRANSECT 4



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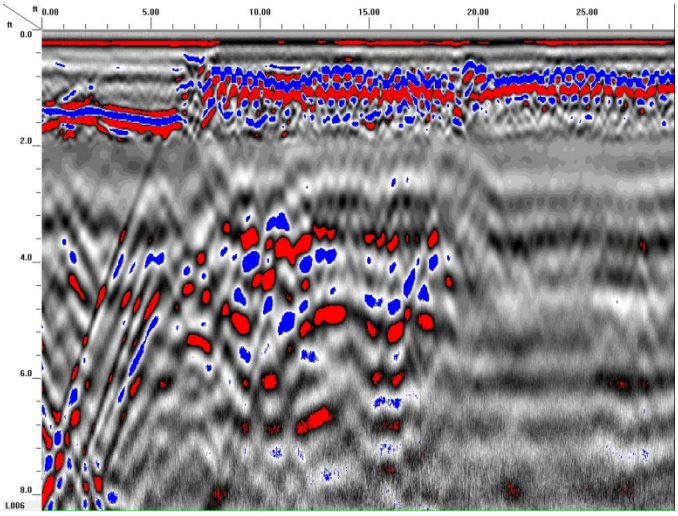

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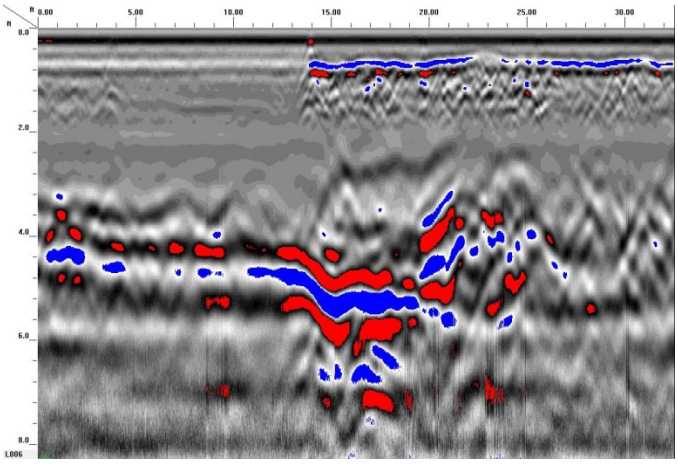

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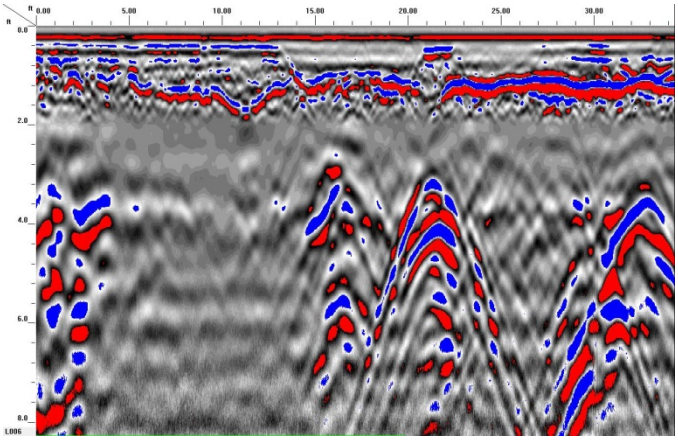

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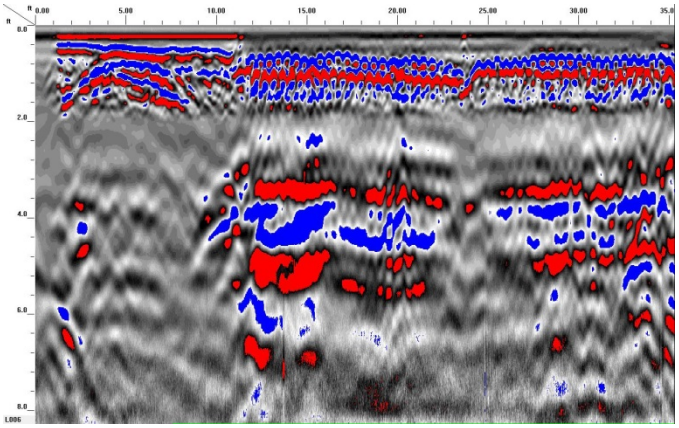

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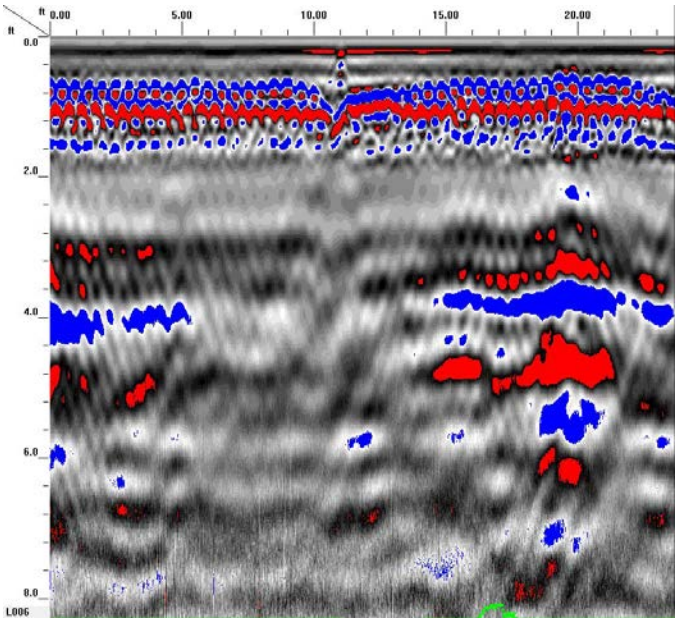

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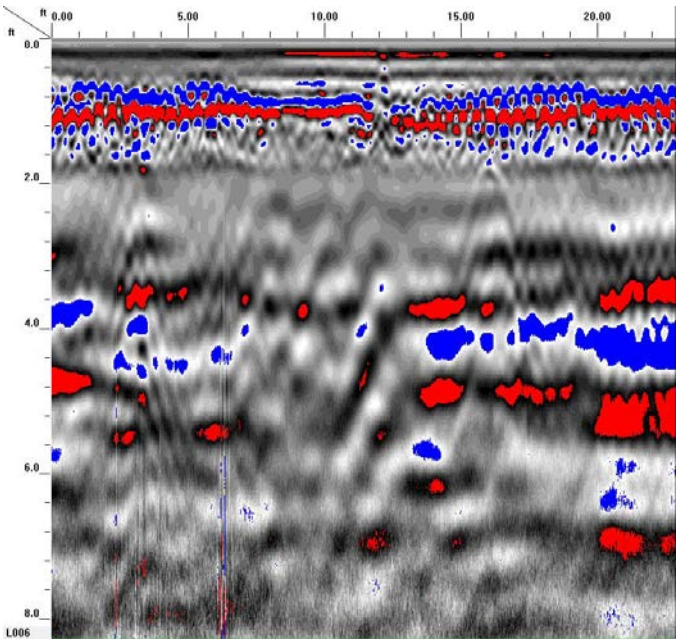

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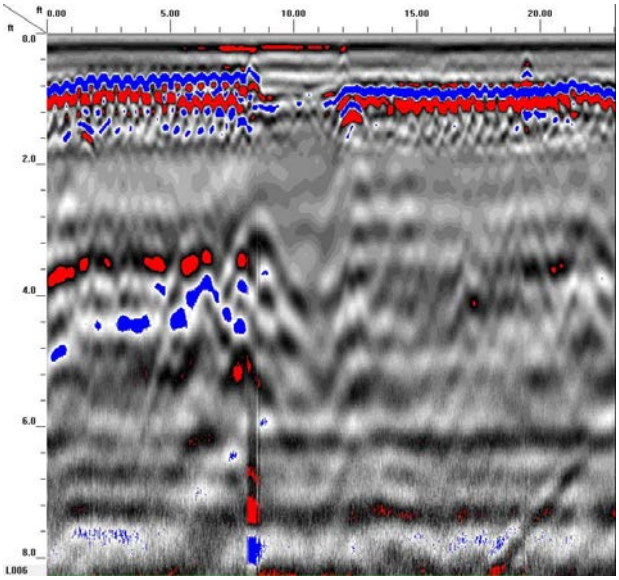

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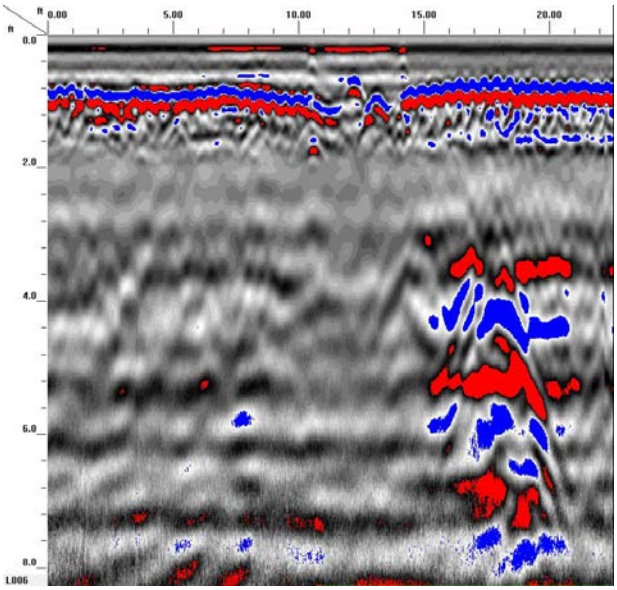

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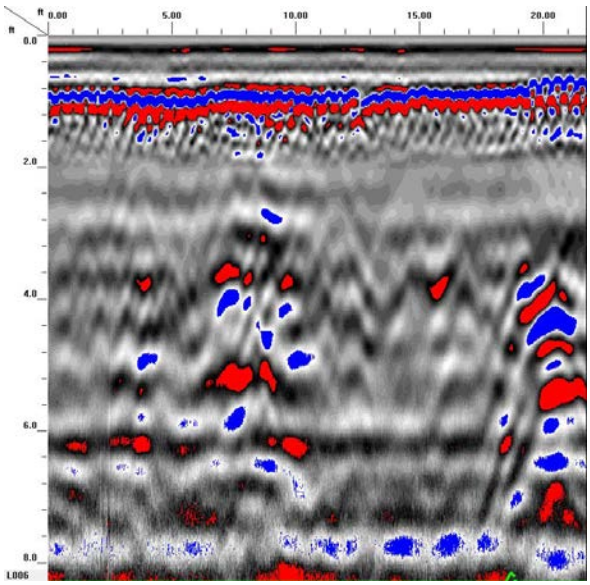

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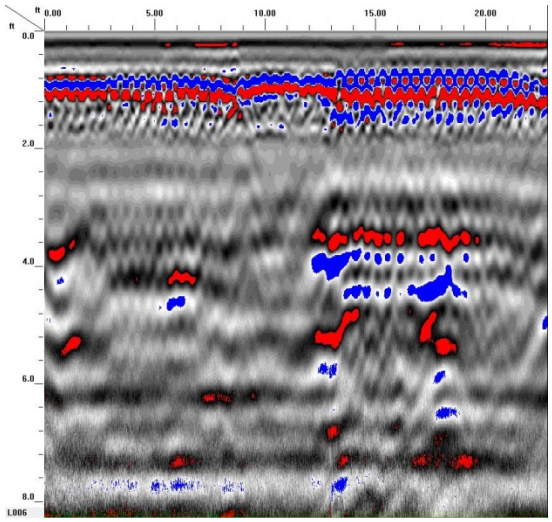

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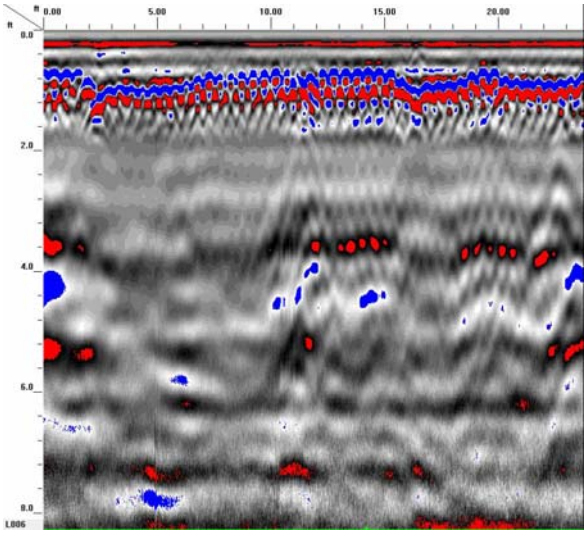

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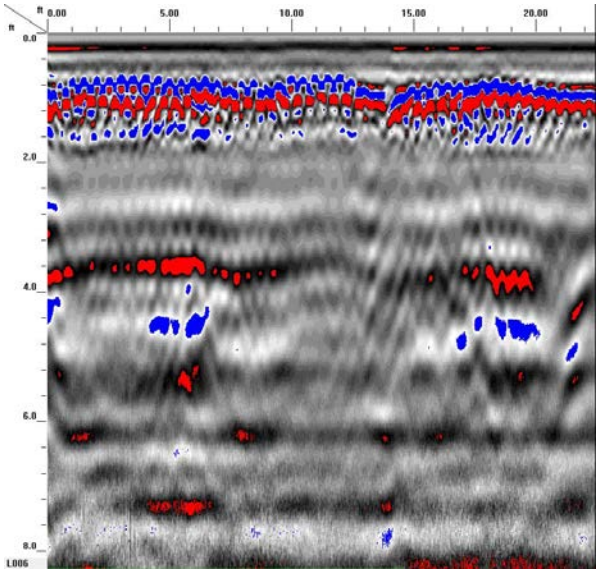

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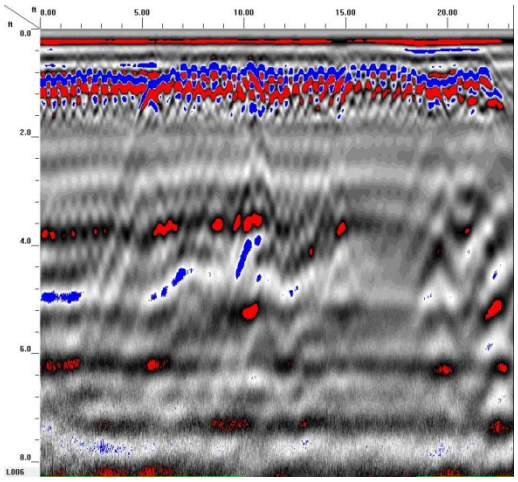

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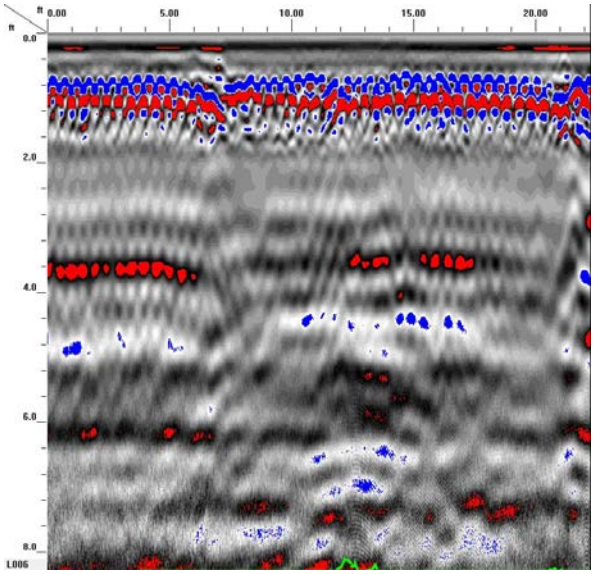

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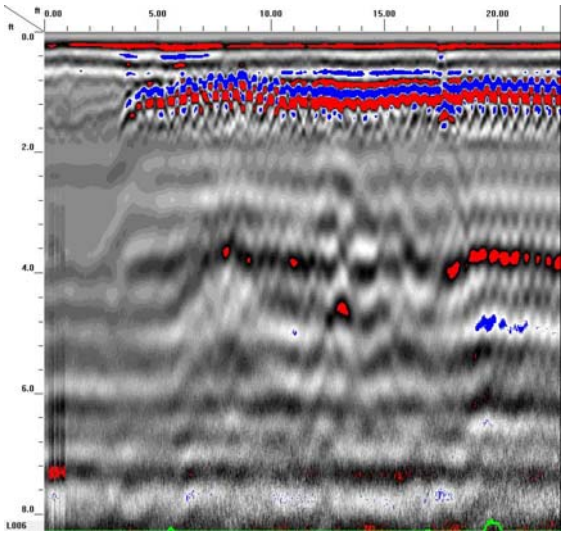

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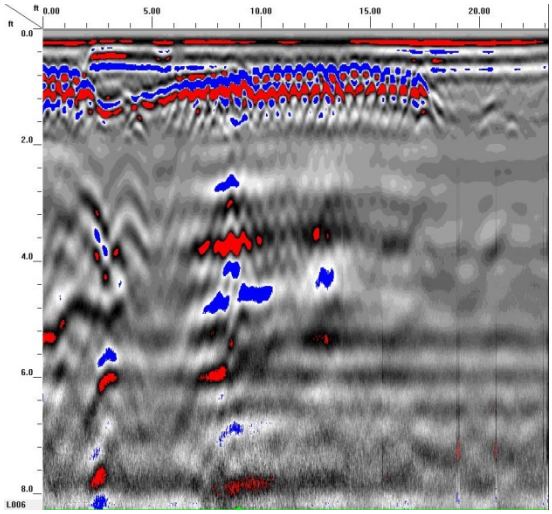

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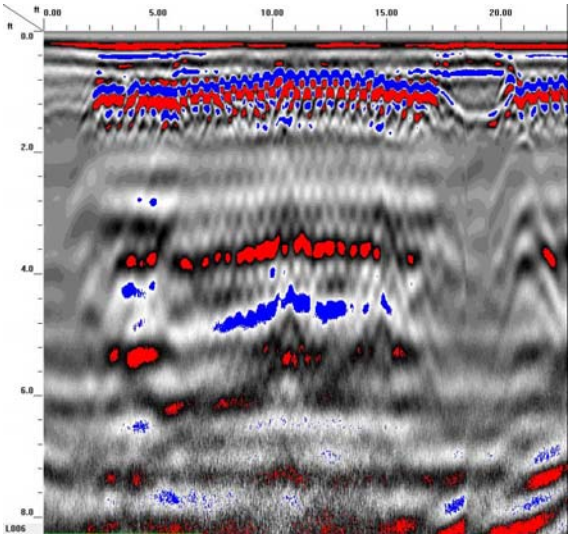

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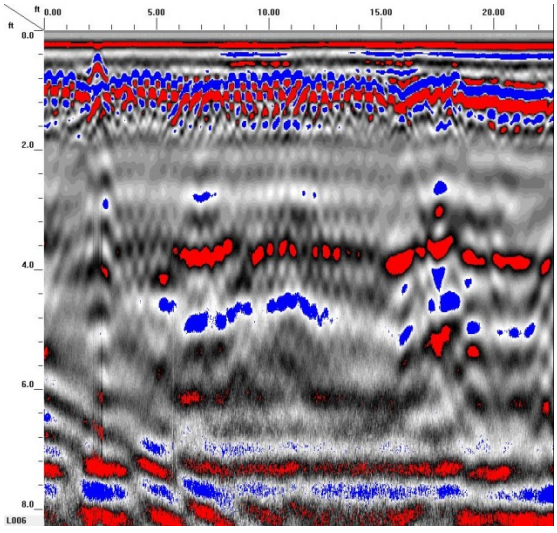

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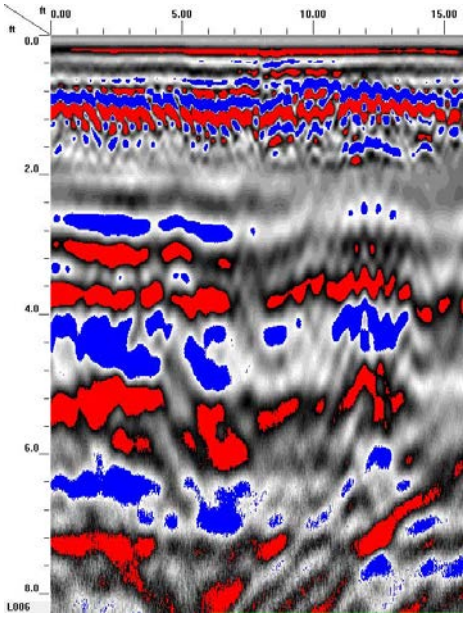

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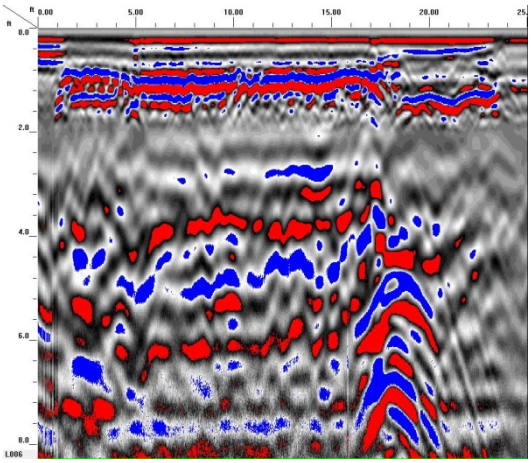

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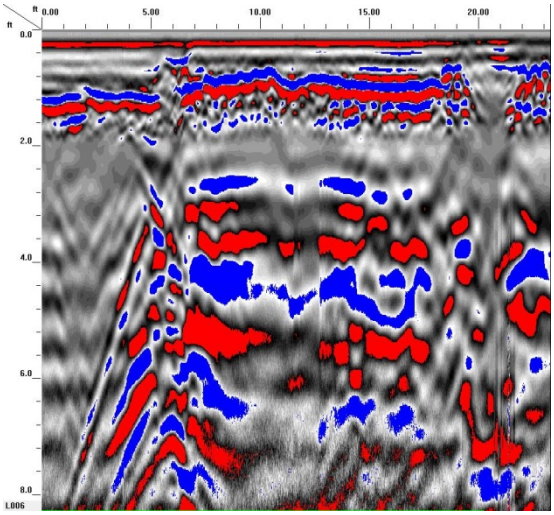

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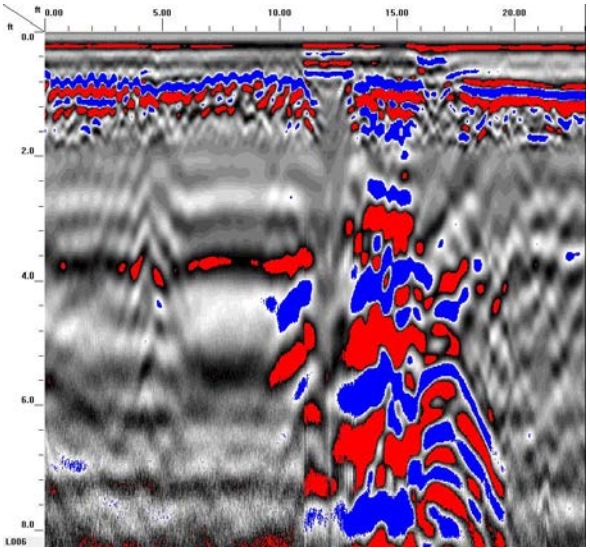

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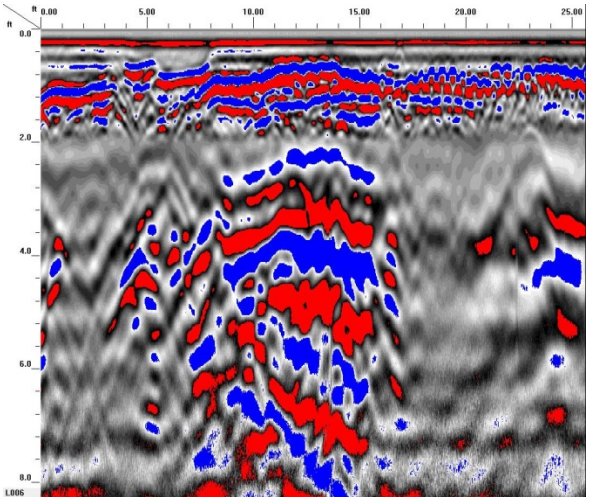

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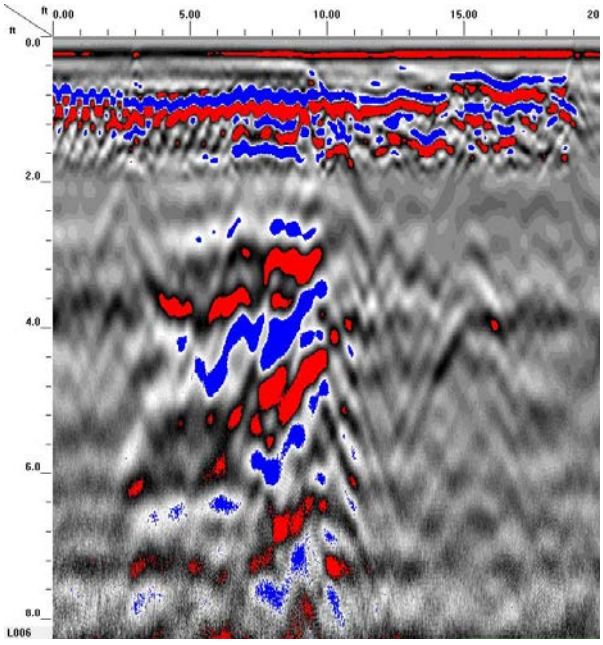

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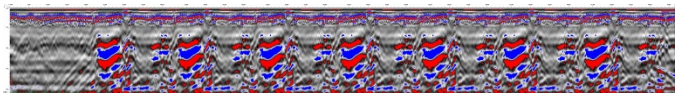

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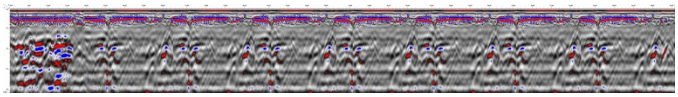

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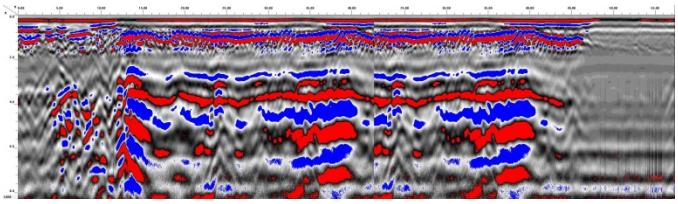

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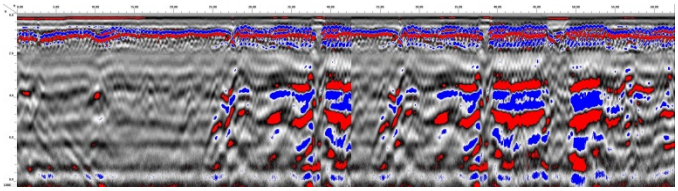


GPR TRANSECT 31

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-5137 Henry J. Vanpala (Parcel 23)
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	9.8	Organic Odor Observed
	1.0	Moist, Black, Silty Sandy CLAY (CL)	1.0	4.0	
	2.0	Moist, Gray, Silty Medium to Coarse SAND (SM)	2.0	4.1	Petroleum Odor Observed from 2'-9'
		Moist, Tan-Brown, Sandy CLAY (CL)	3.0	36.2	
			4.0	425*	*Sample Submitted for Laboratory Analysis for TPH, DRO/GRO, Total BTEX, 16 PAHs, and BaP
			5.0	333	
			6.0	249	
	7.0	Moist, Tan-Brown, Sandy CLAY with White-Gravel (CL)	7.0	175	
	8.0	Moist, Gray, Medium to Coarse Sandy CLAY (CL)	8.0	26.7	
	9.0	Moist, Tan, Medium Sandy CLAY (CL)	9.0	7.1	
	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-5137 Henry J. Vanpala (Parcel 23)
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	1.7	Organic Odor Observed
		Moist, Gray, Medium to Coarse Sandy CLAY (CL)			
	1.0	Moist, Gray-Tan, Medium to Coarse Sandy CLAY (CL)	1.0	1.8	
	2.0	Moist, Tan, Fine Sandy Silty CLAY (CL)	2.0	1.5	
	3.0	Moist, Tan, Fine Sandy CLAY (CL)	3.0	3.5	
	4.0	Moist, Tan-Gray, Fine Sandy CLAY (CL)	4.0	9.5	
	5.0	Moist, Tan-Gray, Fine to Coarse Sandy CLAY (CL)	5.0	38.8*	*Sample Submitted for Laboratory Analysis for TPH, DRO/GRO, Total BTEX, 16 PAHs, and BaP
			6.0	17.6	Petroleum Odor Observed from 5'-8'
	7.0	Moist, Tan-Gray, Medium Sandy CLAY (CL)	7.0	4.8	
	8.0	Moist, Tan-Brown, Medium Sandy CLAY (CL)	8.0	3.0	
	9.0	Moist, Orange-Tan, Fine to Medium Sandy CLAY (CL)	9.0	1.4	
	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-3 (1 of 1)

Project No: 66T-0097
Client: NCDOT
Project: B-5121/B-5137 Henry J. Vanpala (Parcel 23)
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	1.5	
		Moist, Tan, Medium Sandy CLAY (CL)	1.0	1.9	
	2.0	Moist, Tan-Gray, Fine to Medium Sandy CLAY (CL)	2.0	12.9	Petroleum Odor Observed from 2'-5'
	3.0	Moist, Tan, Fine Sandy Silty CLAY (CL)	3.0	11.2	
			4.0	14.7*	*Sample Submitted for Laboratory Analysis for TPH, DRO/GRO, Total BTEX, 16 PAHs, and BaP
	5.0	Moist, Tan-Gray, Fine to Medium Sandy CLAY (CL)	5.0	3.5	
			6.0	2.5	
			7.0	1.4	
	8.0	Moist, Gray, Medium to Coarse Sandy CLAY (CL)	8.0	1.6	
			9.0	1.3	
	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-4 (1 of 1)

Project No: 66T-0097
Client: NCDOT
Project: B-5121/B-5137 Henry J. Vanpala (Parcel 23)
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
	0.1	Surficial Organic Soils	0.0	1.0	Petroleum Odors not Observed in Boring
		Moist to Wet, Orange-Red, Medium to Coarse Sandy CLAY (CL)			
	1.0	Moist, Orange-Tan, Medium to Coarse Sandy CLAY (CL)	1.0	0.9	
			2.0	0.9	
	3.0	Moist, Orange-Tan, Silty Fine Sandy CLAY (CL)	3.0	0.7	
	4.0	Moist, Orange-Tan, Silty Fine to Medium Sandy CLAY (CL)	4.0	0.6	
	5.0	Moist to Wet, Orange-Tan, Medium Coarse Sandy CLAY (CL)	5.0	1.0	
	6.0	Moist to Wet, Tan-Gray, Medium to Coarse Sandy CLAY (CL)	6.0	1.1*	*Sample Submitted for Laboratory Analysis for TPH, DRO/GRO, Total BTEX, 16 PAHs, and BaP
	7.0	Moist to Wet, Tan-Gray, Fine to Medium, Sandy CLAY (CL)	7.0	1.0	
	8.0	Moist, Gray, Silty Fine to Medium SAND (SM)	8.0	0.8	
	9.0	Moist, Tan-Gray, Medium SAND (SP)	9.0	0.9	
	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-5137 Henry J. Vanpala (Parcel 23)
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
	0.1	Surficial Organic Soils	0.0	0.9	
		Moist, Red-Orange, Sandy CLAY with Gravel (CL)			
	1.0	Moist, Orange-Tan, Medium Sandy CLAY (CL)	1.0	1.2	
			2.0	1.1	
	3.0	Moist, Tan-Gray, Fine Sandy Silty CLAY (CL)	3.0	1.3	
	4.0	Moist, Gray, Medium Sandy CLAY (CL)	4.0	2.3	
	5.0	Moist, Tan, Medium Sandy CLAY (CL)	5.0	1.6	
	6.0	Moist, Tan, Medium to Coarse Sandy CLAY (CL)	6.0	127*	*Sample Submitted for Laboratory Analysis for TPH, DRO/GRO, Total BTEX, 16 PAHs, and BaP
	7.0	Moist, Tan, Medium Sandy CLAY (CL)	7.0	87.5	Solvent Like Odor Observed from 6'-9'
	8.0	Moist, Tan-Gray, Medium Sandy CLAY (CL)	8.0	14.5	
	9.0	Moist, Gray, Fine to Medium SAND (SP)	9.0	309*	*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.

APPENDIX IV

SITE PHOTOS

Photo #1: A view of Boring B-1, facing south.

Photo #2: A view of boring locations B-2 and B-3, facing southwest.

Photo #3: A view of Boring B-4, facing northeast.

Photo #4: A view of Boring B-5, facing southwest.

APPENDIX V

LABORATORY ANALYTICAL RESULTS

QED

AQROS

Hydrocarbon Analysis Results

Client: F & R
Address: Raleigh, NC

Samples taken Thursday, July 23, 2015
Samples extracted Thursday, July 23, 2015
Samples analysed Friday, July 24, 2015

Contact: Ben Whitley

Operator F. Owen

Project: NC DOT Parcel 23 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 4-5	277.0	<13.9	<6.9	113.6	113.6	72.5	2.8	0.14	0	94.4	5.6	Deg Fuel (FCM) 85.9% B
s	B2 5-6	22.0	<1.1	<0.55	26.9	26.9	17	0.68	0.008	0	92.4	7.6	Deg Fuel (FCM) 73.3%
s	B3 4-5	20.5	<1	<0.51	52.1	52.1	24.8	1	0.025	0	88.9	11.1	Deg Fuel (FCM) 57.6%
s	B5 6-7	20.2	<1	17.6	30.5	48.1	26.8	1.3	0.024	40	51.8	8.1	V.Deg.PHC (FCM) 74.1%
s	B5 9-10	24.1	<1.2	32.5	362.5	395	52.5	2.1	0.005	38.2	60	1.8	Deg.Fuel (FCM) 86.8%

Initial Calibrator QC check OK

Final FCM QC Check OK 101.8%

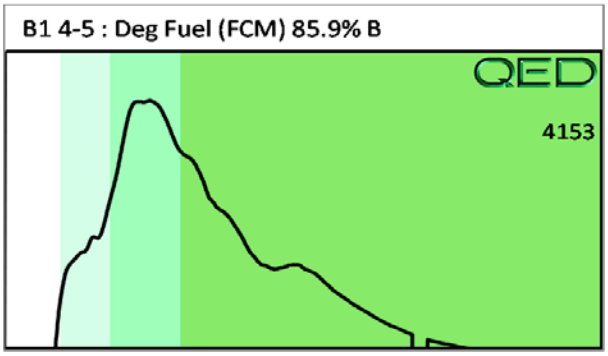
Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

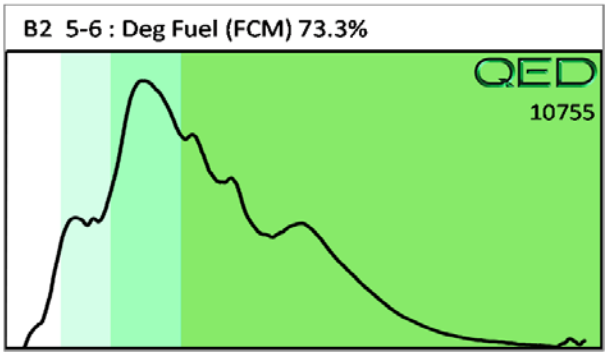
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

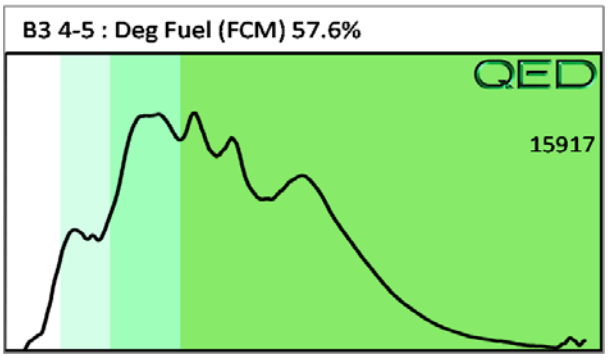
(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

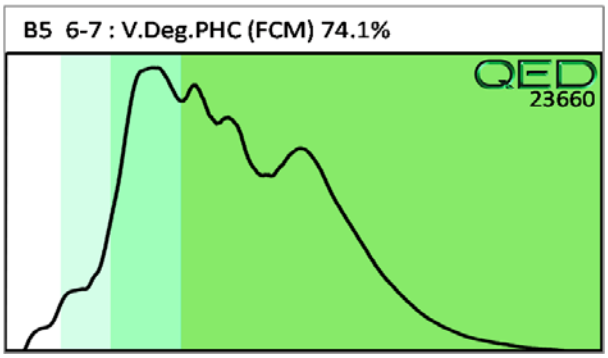
QED Hydrocarbon Fingerprints

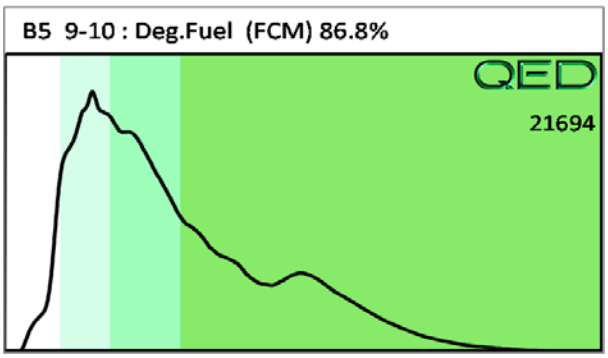
Project: NC DOT Parcel 23 B-5121/ B-5317 Friday, July 24, 2015











QED

AQROS

Hydrocarbon Analysis Results

Client: F&R
Address:

Samples taken Wednesday, July 29, 2015
Samples extracted Wednesday, July 29, 2015
Samples analysed Monday, August 03, 2015

Contact: Ben Whitley

Operator King

Project: NCDOT 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	B-4 6-7	19.7	<0.98	<0.49	2.4	2.4	2	0.28	0.09	0	65.9	34.1	Pyrogenic HC (FCM) 59.6% B

Initial Calibrator QC check OK

Final FCM QC Check OK 97.7%

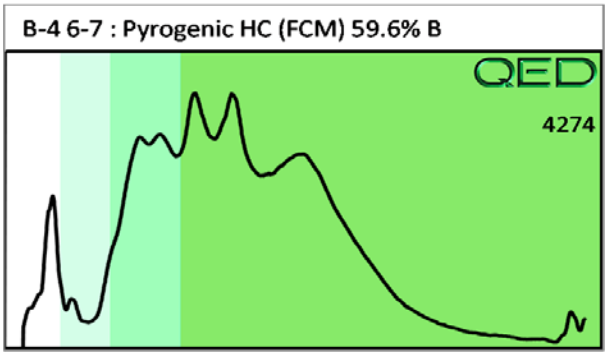
Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

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: NCDOT B-5121/B-5317 ##################



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

Chain of Custody Record and Analytical Request Form

	Sample ID	Sample Collection			TAT Requested	
	QED UVF	Date	Time	Initials	24 Hour	48 Hour
Parcel 23	B-4 6-7	7-29-15	1620	BMW	13.2	X
Parcel 27	B-1 9-10		955		11.5	
	B-2 7-8		1015		13.5	
	B-3 2-3		1035		14.2	
Parcel 25	B-1 7-8		1110		12.7	
	B-2 8-10		1120		9.8	
	B-3 8-9		1150		12.8	
Parcel 24	B-1 7-8		1255		12.7	
	B-2 7-8		1315		11.0	
	B-3 5-6		1350		13.0	
	B-4 5-6		1415		12.6	
	B-5 8-9		1445		12.2	
	B-6 5-6		1500		11.6	
	B-7 8-9		1530		13.3	
	B-8 6-7		1540		11.9	

Client: FGR

Contact: Ben Whitley

Phone: 919-630-5661

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.

FGR	7-31-15	UPS overnight	7-31-15
Relinquished by	Date/Time	Accepted by	Date/Time
		[illegible]	8/1/15
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.

* test results on seperate spreadsheets for each parcel please

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

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