October 8, 2019
Kleinfelder File No. RAL19R102250

Mr. John L. Pilipchuk, LG., PE
North Carolina Department of Transportation
State Geotechnical Engineer
Geotechnical Engineering Unit
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

SUBJECT: Preliminary Site Assessment Report
Parcel 46, Priscilla Harb & Michelle Moore
WBS Element No. 54035.1.1, TIP No. U-5757
NC 8 (Winston Road) from 9th Street to SR 1408 (Biesecker Rd) in Lexington. Widen to multi lanes
Kleinfelder Project No. 20201105.001A

Dear Mr. Pilipchuk,

Kleinfelder is pleased to provide its report detailing the activities conducted as part of the preliminary site assessment for the subject project.

Kleinfelder appreciates the opportunity to be of service to you. Should you have questions or require additional information, please do not hesitate to contact the undersigned.

Sincerely,
KLEINFELDER, INC.

Abigail R. Shurtleff
Environmental Staff Professional

Michael J Burns, PG
Environmental Program Manager

ARS/MJB:asp

KLEINFELDER 3200 Gateway Centre Blvd. Suite 100, Morrisville, NC 27560 **p |** 919.755.5011 **f |** 919.755.1414

PRELIMINARY SITE ASSESSMENT REPORT
PARCEL 46, PRISCILLA HARB & MICHELLE MOORE
PARCEL 11332E0000022
1409 WINSTON ROAD
LEXINGTON, DAVIDSON COUNTY, NORTH CAROLINA

NCDOT WBS ELEMENT 54035.1.1
STATE PROJECT U-5757
NC 8 (WINSTON RD) FROM 9TH STREET TO SR 1408 (BIESECKER RD) IN LEXINGTON. WIDEN TO MULTI LANES

KLEINFELDER PROJECT NO. 20201105.001A

OCTOBER 8, 2019

A Report Prepared for:

Mr. John L. Pilipchuk, LG., PE
North Carolina Department of Transportation
State Geotechnical Engineer
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Reviewed by:

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Environmental Program Manager

KLEINFELDER
3200 Gateway Centre Blvd. | Suite 100
Raleigh, North Carolina 27560
P | 919.755.5011

October 8, 2019

Kleinfelder Project No. 20201105.001A

PRELIMINARY SITE ASSESSMENT REPORT

Site Name and Location:	Parcel 46 1409 Winston Road Lexington, Davidson County, North Carolina
Latitude and Longitude:	35.845128°N, -80.253940°W
County Parcel Number	11332E0000022
Facility ID Number:	N/A
Leaking UST Incident:	N/A
State Project No.:	U-5757
NCDOT Project No.:	NCDOT WBS Element 54035.1.1
Description:	NC 8 (Winston Rd) from 9th Street to SR 1408 (Biesecker Rd) in Lexington. Widen to multi lanes
Date of Report:	October 8, 2019
Consultant:	Kleinfelder, Inc. 3200 Gateway Center Boulevard | Suite 100 Morrisville, North Carolina 27560 Corporate Geology License No. C-521 Corporate Licensure for Engineering F-1312

SEAL AND SIGNATURE OF CERTIFYING LICENSED GEOLOGIST

I, Michael J Burns, a Licensed Geologist for Kleinfelder, Inc., do certify that the information contained in this report is correct and accurate to the best of my knowledge.

DocuSigned by:
7E53DC44AC794CA...
10/28/2019

Michael J Burns, LG
NC License No. 1645

NORTH CAROLINA LICENSED SEAL 1645 GEOLOGIST MICHAEL JAMES BURNS

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LEXINGTON, DAVIDSON COUNTY, NORTH CAROLINA

NCDOT WBS ELEMENT 54035.1.1
STATE PROJECT U-5757
NC 8 (WINSTON RD) FROM 9TH STREET TO SR 1408 (BIESECKER RD) IN LEXINGTON.
WIDEN TO MULTI LANES

1 INTRODUCTION

Kleinfelder, Inc. (Kleinfelder) has prepared this Preliminary Site Assessment (PSA) report to document assessment activities performed on a parcel known to the Davidson County, NC Tax Assessor's Office as Parcel 11332E0000022 and by NCDOT as Parcel 46 (the assessment area is hereafter referred to as the "Project Study Area"). The Project Study Area consists of the western portion of Parcel 46. The western portion of the parcel is occupied by a former furniture store (now vacant) and the central and eastern portions of the parcel are occupied by an overgrown vegetated and forested area. The parcel is located southeast of the intersection of NC Highway 8 (Winston Road) and Biesecker Road in the Town of Lexington, Davidson County, North Carolina (Figure 1).

Based on information provided in the Hazardous Materials Survey Report, dated February 28, 2018, prepared by Kleinfelder for SEPI Engineering & Construction, the parcel is a former woodworking and furniture store with no registered active/inactive underground storage tanks (USTs). As such, the purpose of the PSA was to evaluate whether unknown USTs or contaminated soil are present in the Project Study Area that may result in increased project costs and future liability if acquired by the NCDOT.

1.1 SITE DESCRIPTION

Parcel 46 has a listed owner of Priscilla Harb & Michelle Moore. The parcel has a street address of 1409 Winston Road. The parcel consists of a vacant building (formerly occupied by a furniture store) and an undeveloped kudzu-covered/forested area in the central and eastern portions of the parcel. The parcel is bounded by NC Highway 8 (Winston Road) to the west, beyond which is vacant residential land; by Dallas Street to the east, beyond which is residential land; First Wesleyan Church and associated paved parking areas to the south; and by Parcel 47 to the north,

a former gasoline service station and automotive repair center. Photographs of the Project Study Area are provided in Appendix A.

1.2 SCOPE OF WORK

Kleinfelder conducted this PSA in accordance with the NCDOT's May 24, 2019, Request for Technical and Cost Proposal (RFP) and Kleinfelder's June 18, 2019 Technical and Cost Proposal. The NCDOT granted a formal Notice to Proceed on June 27, 2019.

2 HISTORY

2.1 PARCEL USAGE

The western portion of the parcel consists of a vacant building (former furniture store) and the central and eastern portions of the parcel consist of a thick, kudzu-covered vegetated/forested area. The intersection of Biesecker Road and NC Highway 8 (Winston Road) is located immediately west of the parcel.

The February 2018 Hazardous Materials Survey Report identifies the parcel as Parcel 51 (since changed to Parcel 46) located at 1409 Old US Highway 52 (Winston Road). This report indicates no records of USTs for the parcel.

Kleinfelder conducted historical research to determine whether additional environmental listings were identified for Parcel 46 and identified a woodworking and furniture store, Northside Furniture, which apparently operated on site from the early 1940's until the 1970's. The building remains on site and vacant. No records of the presence of USTs or UST closure activities were reported for the site. However, the northern adjoining property, Parcel 47, was found to be a former gasoline service station and automotive repair facility (now vacant).

2.2 FACILITY ID NUMBERS

Kleinfelder reviewed the NCDEQ UST database for Parcel 46. The parcel was not listed in the database at the time of this report.

2.3 GROUNDWATER INCIDENT NUMBERS

No known groundwater incident numbers are associated with Parcel 46 at this time.

.

3 OBSERVATIONS

3.1 GROUNDWATER MONITORING WELLS

No groundwater monitoring wells were observed on Parcel 46 at the time of site exploration, August 7, 2019.

3.2 ACTIVE USTS

No indication of the active use of USTs at Parcel 46 was observed at the time of site exploration, August 7, 2019.

3.3 OTHER FEATURES APPARENT BEYOND PROJECT STUDY AREA

The Project Study Area consisted of the western portion of the parcel. There were no features of concern observed in the thickly vegetated areas of the parcel beyond the Project Study Area.

4 METHODS

4.1 PROPERTY OWNER CONTACTS

As part of Kleinfelder's scope of work, the listed property owner was contacted about the work schedule for the field work and the type of work being performed. The owner did not express any concern or special conditions associated with the work being performed.

4.2 HEALTH AND SAFETY

Prior to commencing the field work, Kleinfelder personnel developed a Site-Specific Health and Safety Plan (HASP) covering activities to be performed. The site-specific HASP was discussed with all Kleinfelder personnel involved with the project and at a daily on-site "tail gate" safety meetings with subcontractors and sub consultants. In addition to the HASP, Kleinfelder utilized its comprehensive Corporate Health and Safety Program, targeted to address those specific and critical tasks that involve Kleinfelder personnel and subcontractors. The Loss Prevention System (LPS™), a behavior-based program, is Kleinfelder's company-wide safety system implemented and embraced by all levels of the company.

4.3 GEOPHYSICAL INVESTIGATION

Pyramid Environmental & Engineering, P.C (Pyramid) conducted a geophysical investigation in the Project Study Area between July 15 and 16, 2019. Pyramid utilized electromagnetic (EM) induction technology and ground penetrating radar (GPR) to locate potential geophysical anomalies and potential USTs within the Project Study Area. However, the eastern portion of the property (between the vacant building and Public Utility Easement) could not be accessed due to thick intervening vegetation.

There were no EM responses that were not associated with known utilities, vehicles, or other previously known conditions.

A copy of the Pyramid Geophysical Investigation Report, detailing the field methodology, is included in Appendix B.

4.4 SOIL ASSESSMENT

The scope of work for the soil assessment was to evaluate the presence of soil contamination along the existing right-of-way and/or easement to evaluate whether known impact is present in this area and may be migrating off-site. The soil borings were planned to be advanced to maximum depths of 10 feet below the ground surface (bgs) unless groundwater was encountered.

Field screening using a photo ionization detector (PID) was to be conducted at 1-foot intervals beginning at 0 foot to 1 foot. The soil sample with the highest PID reading above background or the sample from the maximum drilled depth would be selected for on-site laboratory analyses.

Prior to the drilling activities, public utilities were marked by NC One Call and private utilities were marked by Pyramid.

Kleinfelder subcontracted Quantex, Inc. (Quantex) to perform the drilling on-site on August 7, 2019. Quantex advanced three (3) soil borings (P46-B1 through B46-B3) by direct-push technology from the ground surface to boring termination (10 feet bgs) at locations specified by Kleinfelder. The soil boring locations were identified in the field using a GPS. The soil boring locations are shown on Figure 2. The borings were located within the public utility easement along NC Highway 8 (Winston Road) and the parcel boundaries. However, no borings were advanced on the eastern side of the vacant building because it was not accessible to drilling equipment due to thick intervening vegetation. Soil samples were collected by driving Macro Core™ samplers in 5-foot intervals. Each soil core was cut open, the soil samples were classified, and the soil was divided into 1-foot sections. Each 1-foot section was screened in the field using a PID. The PID readings are summarized in Table 1.

Soils from Parcel 46 generally consisted of silt within the first two feet, underlain by a silty clay for the next 7 or 8 feet, underlain by a sandy silt. Groundwater was not encountered in any of the borings at the termination depth of 10 feet bgs. Copies of the boring logs are included in Appendix C.

4.5 SOIL ANALYSIS

The PID readings from soil borings advanced at P46-B2 and P46-B3 were noted to be low. The PID readings from P46-B1 were noted to be higher. Based on the PID data and visual/olfactory observations, two (2) of the samples from borings P46-B1 and P46-B3 and one (1) sample from P46-B2 were selected for on-site laboratory analysis.

The samples were analyzed by RED Lab, LLC utilizing ultraviolet fluorescence (UVF) methodology to provide real-time analytical results of Total Petroleum Hydrocarbons (TPH), Gasoline Range Organics (GRO), Diesel Range Organics (DRO), and benzene, toluene, ethylbenzene, and total xylenes (BTEX). The UVF method was selected because of the possible use of petroleum products on Parcel 46 and the northern adjoining property (Parcel 47). The UVF analysis also provided data regarding Environmental Protection Agency 16 total Polycyclic

Aromatic Hydrocarbons (PAHs), and Benzo(a)pyrene (BaP). Analysis by EPA Method 8260 was not performed because the on-site laboratory data indicated a heavy petroleum hydrocarbon presence in the P46-B1 soil sample.

5 RESULTS

5.1 GEOPHYSICAL INVESTIGATION

The EM and GPR surveys did not identified unknown geophysical anomalies within the Project Study Area that was accessible to Pyramid personnel.

5.2 SOIL SAMPLING DATA

The PID analysis of soil samples indicated the presence of petroleum impact in soil boring P46-B1 between four and nine ft bgs; however, this impact did not exceed NCDEQ Action Limits. Soil borings P46-B2 and P46-B3 also returned low levels of petroleum impact at 5-ft bgs. As such, shallow soil impact does not appear to be present within the accessible portions of the existing right-of-way or along the northern parcel boundary above NCDEQ Action Limits.

Soil samples P46-B1-4, P46-B1-10, P46-B2-5, P46-B3-3, and P46-B3-9 returned no VOC detections via UVF analysis above NCDEQ Action Levels. The on-site laboratory data indicated a heavier petroleum hydrocarbon presence in the samples, and thus the potential presence of chlorinated solvent impact within the soil and/or groundwater of Parcel 46 within the existing right-of-way is unlikely.

A summary of soil sample analytical results is presented in Table 2. The laboratory results associated with each soil boring are presented on Figure 3. The laboratory report and graphs are included in Appendix D.

5.3 SAMPLE OBSERVATIONS

Soils were observed for any obvious evidence of contamination. Olfactory evidence of contamination was noted in soil samples collected between four and nine feet bgs in soil boring P46-B1; however, the on-site UVF analysis revealed impacts did not exceed NCDEQ Action Limits.

5.4 QUANTITY CALCULATIONS

Kleinfelder did not identify soil impact in the current accessible portions of the right-of-way, nor have previous assessments identified quantifiable soil impact on Parcel 46.

6 CONCLUSIONS

Based on results of the EM/GPR survey, soil assessment and field observations, Kleinfelder has reached the following conclusions:

- The GPR and EM investigation did not identify unknown features within the accessible portions of Parcel 46.
- Parcel 46 is not listed on the NCDEQ UST database, nor are any groundwater incident numbers known to be associated with Parcel 46 at this time.
- No soil impact above the NCDEQ Action Limits for TPH GRO and DRO was detected in borings advanced along the western and southern parcel boundaries and NC Highway 8 (Winston Road). Borings were not able to be advanced east of the vacant building on site, within the Public Utility Easement, due to thick intervening vegetation.
- Groundwater was not encountered in the soil borings at a depth of 10 feet bgs.

7 RECOMMENDATIONS

Based on results of this Preliminary Site Assessment, Kleinfelder recommends no additional sampling or special handling of soils be performed within the Project Study Area on Parcel 46 in Lexington, Davidson County, North Carolina.

8 LIMITATIONS

Kleinfelder's work will be performed in a manner consistent with that level of care and skill ordinarily exercised by other members of its profession practicing in the same locality, under similar conditions and at the date the services are provided. Kleinfelder's conclusions, opinions and recommendations will be based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no guarantee or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

Kleinfelder offers various levels of investigative and engineering services to suit the varying needs of different clients. It should be recognized that definition and evaluation of geologic and environmental conditions are a difficult and inexact science. Judgments leading to conclusions and recommendations are generally made with incomplete knowledge of the subsurface conditions present due to the limitations of data from field studies. Although risk can never be eliminated, more detailed and extensive studies yield more information, which may help understand and manage the level of risk. Since detailed study and analysis involves greater expense, Kleinfelder's clients participate in determining levels of service that provide adequate information for their purposes at acceptable levels of risk. More extensive studies, including subsurface studies or field tests, should be performed to reduce uncertainties. Acceptance of this report will indicate that NCDOT has reviewed the document and determined that it does not need or want a greater level of service than provided.

During the course of the performance of Kleinfelder's services, hazardous materials may have been discovered. Kleinfelder assumes no responsibility or liability whatsoever for any claim, loss of property value, damage, or injury that results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials. Nothing contained in this report should be construed or interpreted as requiring Kleinfelder to assume the status of an owner, operator, or generator, or person who arranges for disposal, transport, storage or treatment of hazardous materials within the meaning of any governmental statute, regulation or order. NCDOT is solely responsible for directing notification of all governmental agencies, and the public at large, of the existence, release, treatment or disposal of any hazardous materials observed at the project site, either before or during performance of

Kleinfelder's services. NCDOT is responsible for directing all arrangements to lawfully store, treat, recycle, dispose, or otherwise handle hazardous materials, including cuttings and samples resulting from Kleinfelder's services.

TABLES

Table 1: Soil Sample Screening Results

Date	Sample ID	Depth (ft)	PID Reading	Notes
8/7/2019	U5757-P46-B1	1	2.7	
		2	1.9	
		3	2.6	
		4	140.8	UVF Analysis
		5	386.7	
		6	728.4	
		7	395.1	
		8	378.3	
		9	358.3	
		10	77.2	UVF Analysis
8/7/2019	U5757-P46-B2	1	4.4	
		2	4.0	
		3	2.9	
		4	2.5	
		5	2.8	UVF Analysis
		6	2.4	
		7	2.3	
		8	2.2	
		9	2.3	
		10	2.0	
8/7/2019	U5757-P46-B3	1	1.7	
		2	1.4	
		3	2.3	UVF Analysis
		4	1.7	
		5	2.0	
		6	0.9	
		7	1.7	
		8	1.6	
		9	4.8	UVF Analysis
		10	4.3	

Notes:
1) PID = Photoionization Detector
2) PID readings in parts per million (ppm)

TABLE 2: Soil Sample Analytical Summary

Parameter	Analytical Results					Comparison Criteria		
	Soil Sample Results							
Sample ID	P46-B1-4	P46-B1-10	P46-B2-5	P46-B3-3	P46-B3-9	State Action Limit	Protection of Groundwater	Residential Health
PID Reading (ppm)	140.8	77.2	2.8	2.3	4.8			
Collection Depth (ft bgs)	4	10	5	3	9			
Collection Date	8/7/19	8/7/19	8/7/19	8/7/19	8/7/19			
UVF Method								
Diesel Range Organics	**0.52**	**0.48**	<0.52	<0.49	<0.49	100	--	--
Gasoline Range Organics	<0.52	<0.48	<0.52	<0.49	<0.49	50	--	--

Notes:

Results displayed in milligram per kilogram (mg/kg)

ft bgs = Feet below ground surface

Bold = Above Laboratory Detection Limit

UVF = Ultraviolet Flouresence

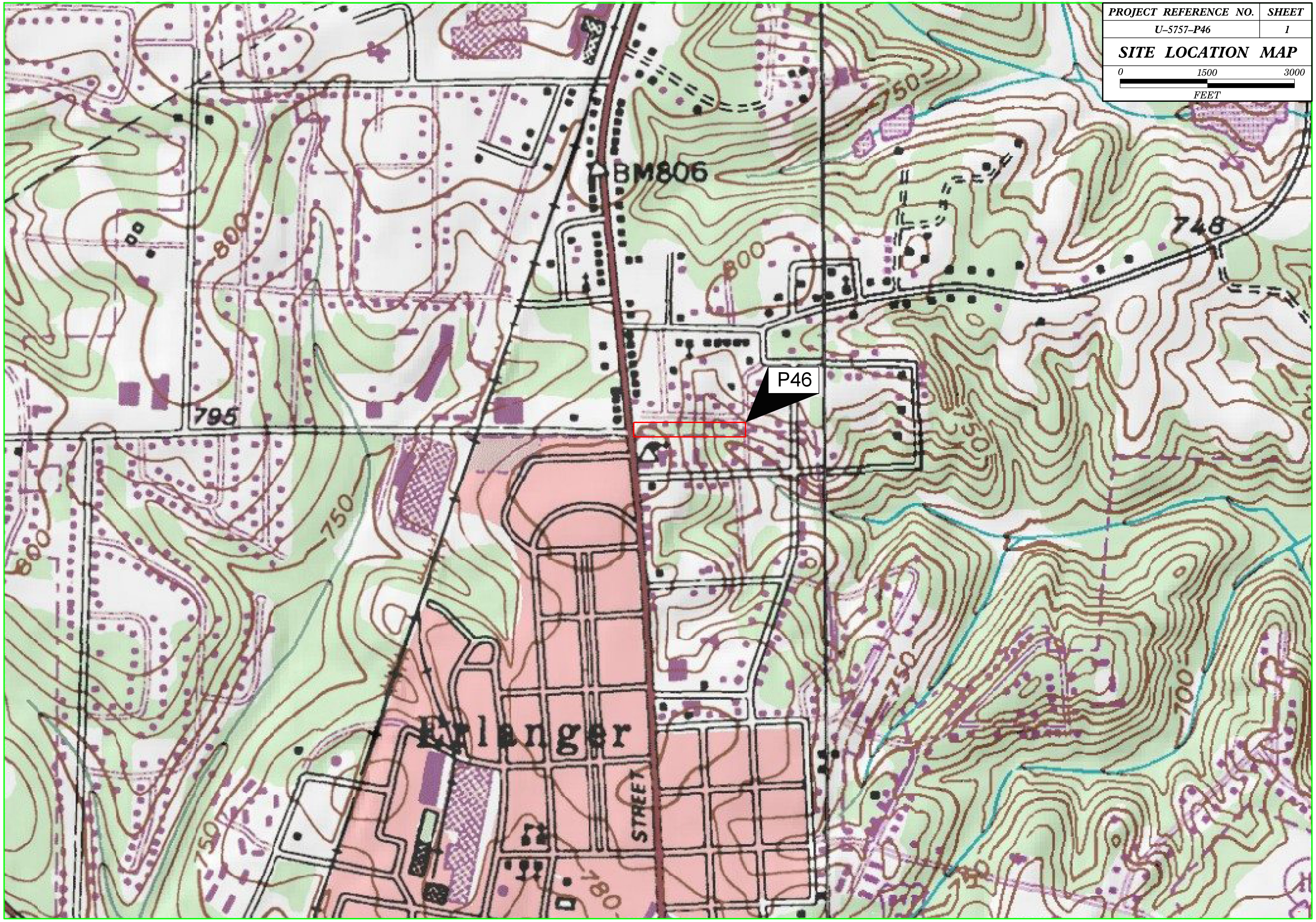
FIGURES

PROJECT REFERENCE NO.	SHEET
U–5757–P46	1

SITE LOCATION MAP

0 1500 3000

FEET



PROJECT REFERENCE NO.	SHEET
U-5757-P46	2

SITE MAP

0 20 40

FEET

LEGEND

P46B1 SOIL SAMPLE LOCATIONS

P46-B1

P46-B2

P46-B3

NC GRID
NAD 83 NA 2011

PROJECT REFERENCE NO.	SHEET
U–5757–P46	3

SOIL SAMPLE ANALYTICAL RESULTS

0 20 40
FEET

LEGEND

P46B1 SOIL SAMPLE LOCATIONS

SOIL SAMPLE RESULTS

	DRO	GRO
P46-B1-4	0.52	<0.52
P46-B1-10	0.48	<0.48
P46-B2-5	<0.52	<0.52
P46-B3-3	<0.49	<0.49
P46-B3-9	<0.49	<0.49

NOTES:
1) All results reported in mg/kg
2) DRO = Diesel Range Organics
3) GRO = Gasoline Range Organics
4) Bold concentrations exceed the NCDEQ TPH Action Limit

P46-B1
P46-B3
P46-B2

APPENDIX A
SITE PHOTOGRAPHS

View facing northwesterly toward the intersection of Biesecker Road and NC Highway 8 (Winston Road), the southwestern corner of Parcel 46.

Original in Color

View facing southerly along NC Highway 8 (Winston Road) and the western border of Parcel 46.

KLEINFELDER *Bright People. Right Solutions.* www.kleinfelder.com	PROJECT NO:20201105.001A DRAWN: October 2019 DRAWN BY: ARS CHECKED BY: MB FILE NAME: Photo Pages	**SITE PHOTOGRAPHS** Preliminary Site Assessment Report U-5757-P46 Lexington, Davidson County, North Carolina	FIGURE **A-1**

View facing easterly along the southern boundary of Parcel 46.

Original in Color

View facing northerly of the southeastern corner of the vacant building on Parcel 46, toward soil boring P46-B2.

KLEINFELDER *Bright People. Right Solutions.* www.kleinfelder.com	PROJECT NO:20201105.001A DRAWN: October 2019 DRAWN BY: ARS CHECKED BY: MB FILE NAME: Photo Pages	**SITE PHOTOGRAPHS** Preliminary Site Assessment Report U-5757-P46 Lexington, Davidson County, North Carolina	FIGURE **A-2**

View facing northerly along the western boundary of Parcel 46, NC Highway 8 (Winston Road), and the southwestern corner of the vacant building on Parcel 46, toward soil boring P46-B3.

Original in Color

KLEINFELDER *Bright People. Right Solutions.* www.kleinfelder.com	PROJECT NO:20201105.001A DRAWN: October 2019 DRAWN BY: ARS CHECKED BY: MB FILE NAME: Photo Pages	**SITE PHOTOGRAPHS** Preliminary Site Assessment Report U-5757-P46 Lexington, Davidson County, North Carolina	FIGURE **A-3**

APPENDIX B

GEOPHYSICAL SURVEY REPORT

PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2019-211)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 46
NCDOT PROJECT U-5757 (54035.1.1)

1409 WINSTON ROAD, LEXINGTON, NC

August 20, 2019

Report prepared for: **Michael Burns, P.G.**
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Prepared by: _____

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GEOPHYSICAL INVESTIGATION REPORT
Parcel 46- 1409 Winston Road
Lexington, Davidson County, North Carolina

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Figures

LIST OF ACRONYMS

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

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Kleinfelder, Inc. at Parcel 46 located at 1409 Winston Road in Lexington, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project U-5757). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from July 16-17, 2019, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

Geophysical Results: The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. A total of four EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. The presence of reinforcement within the concrete pad at the site. No evidence of significant structures such as USTs was observed. Collectively, the geophysical data did not record any evidence of unknown metallic USTs at Parcel 46.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Kleinfelder, Inc. at Parcel 46 located at 1409 Winston Road in Lexington, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project U-5757). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from July 16-17, 2019, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site included a vacant commercial building surrounded by asphalt, concrete, and grass surfaces. An aerial photograph showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. Pyramid collected the EM data using a Geonics EM61-MK2 (EM61) metal detector integrated with a Geode External GPS/GLONASS receiver. The integrated GPS system allows the location of the instrument to be recorded in real-time during data collection, resulting in an EM data set that is geo-referenced and can be overlain on aerial photographs and CADD drawings. A boundary grid was established around the perimeter of the site with marks every 10 feet to maintain orientation of the instrument throughout the survey and assure complete coverage of the area.

According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size) can be detected to a maximum depth of 4 to 5 feet. The EM61 data were digitally collected at approximately 0.8-foot intervals along north-south trending or east-west trending, generally parallel survey lines, spaced five feet apart. The data were downloaded to a

computer and reviewed in the field and office using the Geonics NAV61 and Surfer for Windows Version 15.0 software programs.

GPR data were acquired across select EM anomalies on July 17, 2019, using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. Data were collected both in reconnaissance fashion as well as along formal transect lines across EM features. The GPR data were viewed in real-time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 6 feet, based on dielectric constants calculated by the DF unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the DF unit for post-processing and figure generation.

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

Geophysical Surveys for Underground Storage Tanks
on NCDOT Projects

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

DISCUSSION OF RESULTS

Discussion of EM Results

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

LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY

Metallic Anomaly #	Cause of Anomaly	Investigated with GPR
1	Building/Utility	✓
2	Metal Door	
3	Reinforced Concrete	✓
4	Surface Metal/Fence	✓

The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface including the building, a metal door, and surface metal/fence. EM Anomaly 1 was associated with interference from the building/utility and was investigated further with GPR. EM Anomaly 3 was associated with suspected reinforced concrete and was investigated further with GPR. EM Anomaly 4 was associated with interference from surface metal/fence and was investigated further with GPR to confirm that no larger structures were obscured by the interference.

Discussion of GPR Results

Figure 3 presents the locations of the formal GPR transects performed at the property as well as the transect images. A total of three formal GPR transects were performed at the site. GPR Transect 1 was performed across an area associated with interference from surface metal/fence (EM Anomaly 4). No significant structures were observed.

GPR Transect 2 was performed across an area associated with interference from the building/utility (EM Anomaly 1). No evidence of any significant structures was observed, verifying that the EM anomaly was the result of interference from the building.

GPR Transect 3 was performed across an area of suspected reinforced concrete (EM Anomaly 3). This transect confirmed the presence of metal reinforcement in the concrete north of the building. No evidence of any buried structures such as USTs was observed.

Collectively, the geophysical data did not record any evidence of unknown metallic USTs at Parcel 46. **Figure 4** provides an overlay of the metal detection results on the NCDOT MicroStation engineering plans for reference.

SUMMARY & CONCLUSIONS

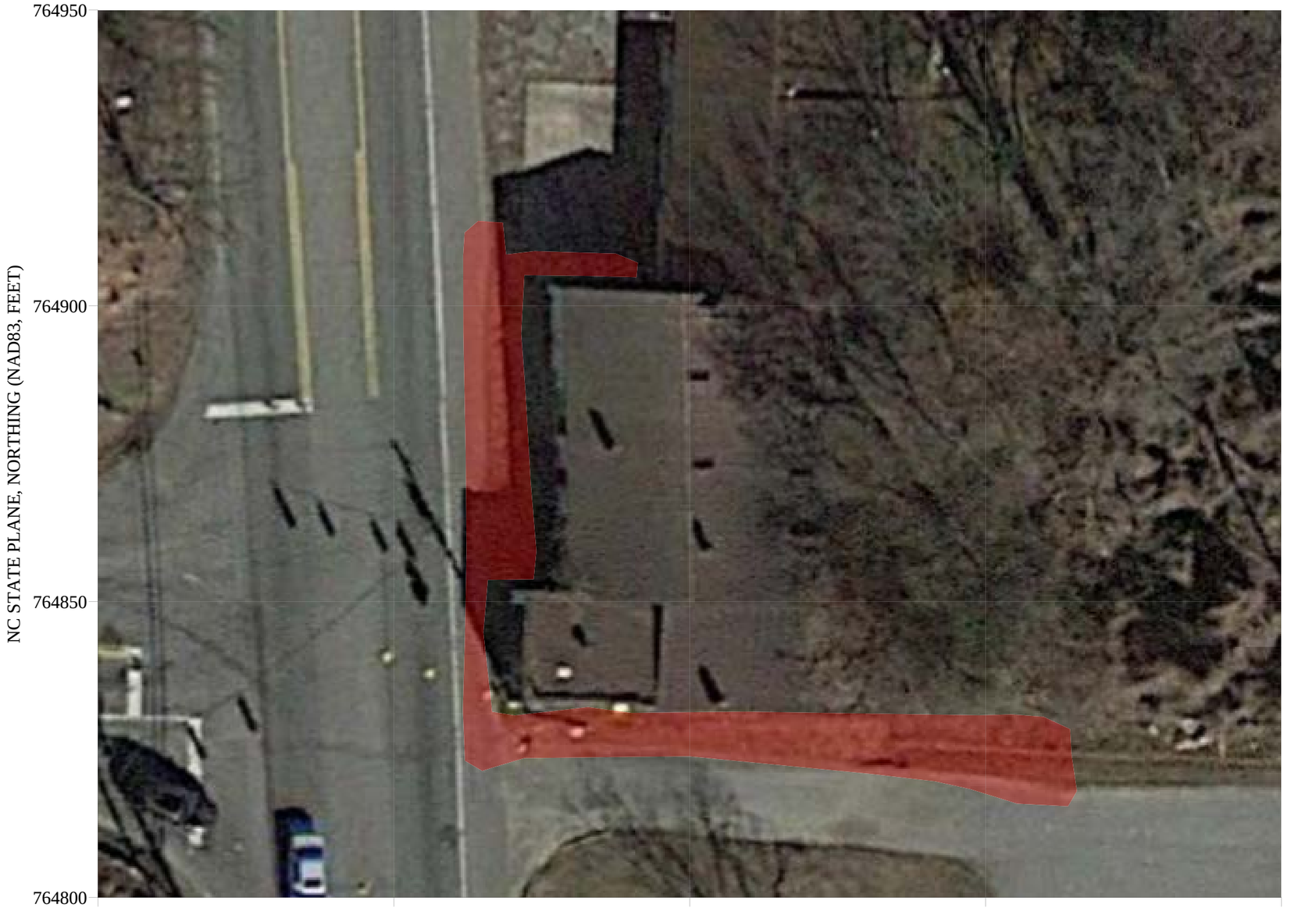
Pyramid's evaluation of the EM61 and GPR data collected at Parcel 46 in Lexington, North Carolina, provides the following summary and conclusions:

- 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.
- The presence of reinforcement within the concrete pad at the site. No evidence of significant structures such as USTs was observed.
- Collectively, the geophysical data did not record any evidence of unknown metallic USTs at Parcel 46.

LIMITATIONS

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

APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREA



View of Survey Area
(Facing Approximately South)

View of Survey Area
(Facing Approximately East)

N

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

PROJECT	PARCEL 46 LEXINGTON, NORTH CAROLINA NCDOT PROJECT U-5757	TITLE	PARCEL 46 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS	DATE	7/19/2019
				PYRAMID PROJECT #:	2019-211
CLIENT	KLEINFELDER				**FIGURE 1**

EM61 METAL DETECTION RESULTS

NO EVIDENCE OF METALLIC USTs WAS OBSERVED.

The contour plot shows the differential results of the EM61 instrument in millivolts (mV). The differential results focus on larger metallic objects such as USTs and drums. The EM data were collected on July 16, 2019, using a Geonics EM61-MK2 instrument. Verification GPR data were collected using a GSSI UtilityScan DF instrument with a dual frequency 300/800 MHz antenna on July 17, 2019.

EM61 Metal Detection Response (millivolts)

N

PYRAMID GEOPHYSICS
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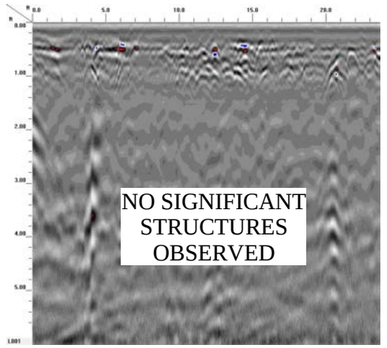
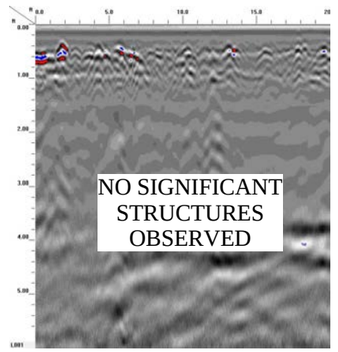
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

PROJECT	PARCEL 46 LEXINGTON, NORTH CAROLINA NCDOT PROJECT U-5757
TITLE	PARCEL 46 - EM61 METAL DETECTION CONTOUR MAP
DATE	7/19/2019
PYRAMID PROJECT #:	2019-211
CLIENT	KLEINFELDER
	FIGURE 2

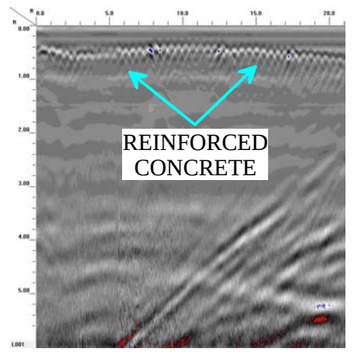
LOCATIONS OF GPR TRANSECTS



GPR TRANSECT 1 (T1)



GPR TRANSECT 2 (T2)



GPR TRANSECT 3 (T3)

N

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

PROJECT	PARCEL 46 LEXINGTON, NORTH CAROLINA NCDOT PROJECT U-5757	TITLE	PARCEL 46 - GPR TRANSECT LOCATIONS AND IMAGES	DATE 7/19/2019	CLIENT KLEINFELDER
				PYRAMID PROJECT #: 2019-211	**FIGURE 3**

LEGEND

- EXISTING ROW
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROW LINE
- TEMPORARY CONSTRUCTION EASEMENT
- PROPOSED PERMANENT UTILITY
- PROPOSED SS CUT LINE
- PROPOSED SS FILL LINE

EM61 Metal Detection Response
(millivolts)

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

N

0 15 30
FEET

LARRY R. HARVEY
NANCY G. HARVEY
DB 1955, PG 590
(TRACT TWO)

HAPPY HOLLOW
HOLDINGS, LLC
DB 2263 PG 2327
PB 8 PG 93

MITCHELL ABRAHAM HARB
PRISCILLA HARB
MICHELLE H. MOORE
DB 2071, PG 1496
(TRACT 28)
REF DB 631 PG 689
(REMAINDER PIECE)

EXISTING R/W VARIES

EXISTING R/W

RR SPIKE

PK NAIL

-L- POT Sta.41+93.76=
-Y13- POT Sta.11+88.70

-L- POT Sta.43+63.30=
-Y14- POT Sta.12+26.45

TITLE
OVERLAY OF METAL DETECTION RESULTS
ON NCDOT ENGINEERING PLANS

PROJECT
PARCEL 46
LEXINGTON, NORTH CAROLINA
NCDOT PROJECT U-5757

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
336.335.3174 (p) 336.691.0648 (f)
License # C1251 Eng. / #C257 Geology

DATE: 08-13-2019 | REVISION NO. 0

PYRAMID PROJECT NO. 2019-211 | FIGURE NO. 4

APPENDIX C
BORING LOGS

Date Begin - End:	8/07/2019	**Drilling Company:**	Quantex
Logged By:	A Shurtleff	**Drill Crew:**	Andrew C
Hor.-Vert. Datum:	WGS 1984 - Not Available	**Drilling Equipment:**	Genuine Geoprobe
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column
Weather:	90°F Clear	**Borehole Diameter:**	

BORING LOG P46-B1

FIELD EXPLORATION

Latitude: 35.84550° N
Longitude: -80.25377° E
Surface Condition: Bare Earth

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
							SILT: brown
					2.7		**CLAY with Silt**: reddish brown nodules light greenish gray, dry
					1.9		
					2.6		
	Direct Push Sleeves		P46-B1-4		140.8		
							SILT with Clay: bluish gray streaked red, odor, dry to moist
5					386.7		
					728.4		
					395.1		
					378.3		
					358.3		
			P46-B1-10		77.2		**SILT**: reddish yellow, odor, dry to moist, trace sand
10							

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
An iPad integrated GPS unit was used to locate the borehole with an accuracy of 5 meters.
The boring was backfilled with bentonite

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.: 20201105.001A
DRAWN BY: A SHURTLEFF
CHECKED BY: M BURNS
DATE: 10/7/2019

BORING LOG P46-B1

NCDOT: U-5757
Biesecker Road
Lexington, NC

1

PAGE: 1 of 1

Date Begin - End:	8/07/2019	**Drilling Company:**	Quantex	**BORING LOG P46-B2**	
Logged By:	A Shurtleff	**Drill Crew:**	Andrew C		
Hor.-Vert. Datum:	WGS 1984 - Not Available	**Drilling Equipment:**	Genuine Geoprobe		
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column		
Weather:	85°F Partly Cloudy	**Borehole Diameter:**			

FIELD EXPLORATION

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Latitude: 35.84550° N Longitude: -80.25377° E Surface Condition: Grass Lithologic Description
					4.4		**SAND with Silt**: brown, dry
					4.0		**SILT**: light brown, moist
					2.9		**CLAY with Silt**: light brown and red, dry to moist
	Direct Push Sleeves		P46-B2-5		2.5		
5					2.8		
					2.4		
					2.3		**SILT with Clay**: light brown and red, dry to moist
					2.2		
					2.3		**SILT with Sand**: pink and reddish yellow, dry to moist
10					2.0		

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
An iPad integrated GPS unit was used to locate the borehole with an accuracy of 5 meters.
The boring was backfilled with bentonite

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.: 20201105.001A
DRAWN BY: A SHURTLEFF
CHECKED BY: M BURNS
DATE: 10/7/2019

BORING LOG P46-B2

NCDOT: U-5757
Biesecker Road
Lexington, NC

2

PAGE: 1 of 1

Date Begin - End:	8/07/2019	**Drilling Company:**	Quantex
Logged By:	A Shurtleff	**Drill Crew:**	Andrew C
Hor.-Vert. Datum:	WGS 1984 - Not Available	**Drilling Equipment:**	Genuine Geoprobe
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column
Weather:	85°F Partly Cloudy	**Borehole Diameter:**	

BORING LOG P46-B3

FIELD EXPLORATION

Latitude: 35.84550° N
Longitude: -80.25377° E
Surface Condition: Grass

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
							SILT: dark brown, dry, trace sand
					1.7		**SILT**: light brown, moist
					1.4		**CLAY with Silt**: reddish yellow and red, dry to moist
	Direct Push Sleeves		P46-B3-3		2.3		
					1.7		
					2.0		
5					0.9		**SILT with Clay**: reddish yellow and red, dry to moist
					1.7		
					1.6		
			P46-B3-9		4.8		
					4.3		**SILT with Sand**: pink and reddish yellow, dry to moist
10							

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
An iPad integrated GPS unit was used to locate the borehole with an accuracy of 5 meters.
The boring was backfilled with bentonite

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.: 20201105.001A
DRAWN BY: A SHURTLEFF
CHECKED BY: M BURNS
DATE: 10/7/2019

BORING LOG P46-B3

NCDOT: U-5757
Biesecker Road
Lexington, NC

3

PAGE: 1 of 1

APPENDIX D

ANALYTICAL REPORT AND GRAPHS

QED

REDLAB™ RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: KLEINFELDER
Address:

Samples taken Wednesday, August 7, 2019
Samples extracted Wednesday, August 7, 2019
Samples analysed Wednesday, August 7, 2019

Contact: ABI SHURTLEFF

Operator MAX MOYER

Project: NCDOT U-5757 ; PARCEL 46

F03640

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	P46 - B1 - 4	21.0	<0.52	<0.52	0.52	0.52	0.3	<0.17	<0.021	0	18.8	81.2	PHC not detected
s	P46 - B1 - 10	19.1	<0.48	<0.48	0.48	0.48	0.3	<0.15	<0.019	0	42.6	57.4	Residual HC
s	P46 - B2 - 5	20.6	<0.52	<0.52	<0.52	<0.52	<0.1	<0.17	<0.021	0	0	0	PHC not detected,(BO)
s	P46 - B3 - 3	19.5	<0.49	<0.49	<0.49	<0.49	<0.1	<0.16	<0.02	0	0	0	PHC not detected,(BO)
s	P46 - B3 - 9	19.4	<0.49	<0.49	<0.49	<0.49	<0.1	<0.16	<0.019	0	0	0	PHC not detected,(BO)

Initial Calibrator QC check OK

Final FCM QC Check OK 98.7 %

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

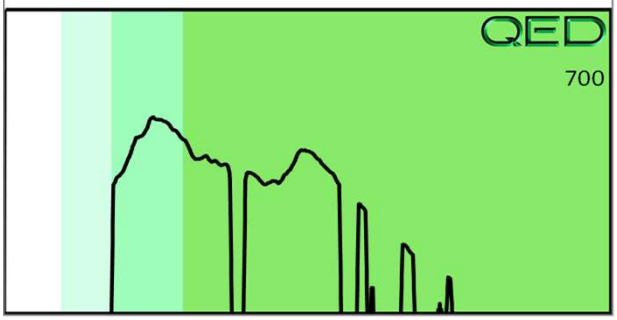
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

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

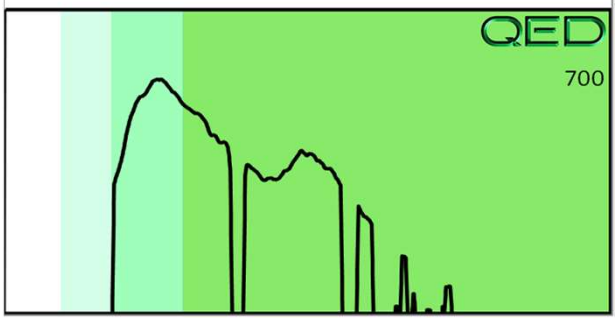
QED Hydrocarbon Fingerprints

Project: NCDOT U-5757 ; PARCEL 46 Wednesday, August 7, 2019

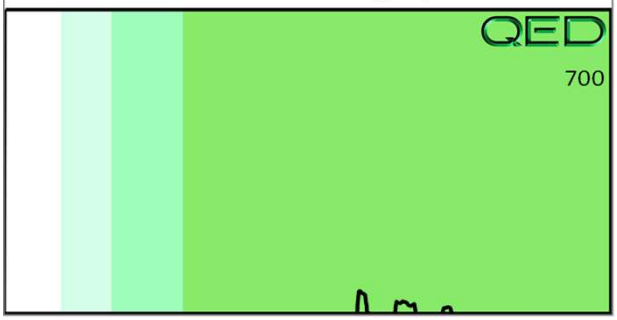
P46 - B1 - 4 : PHC not detected



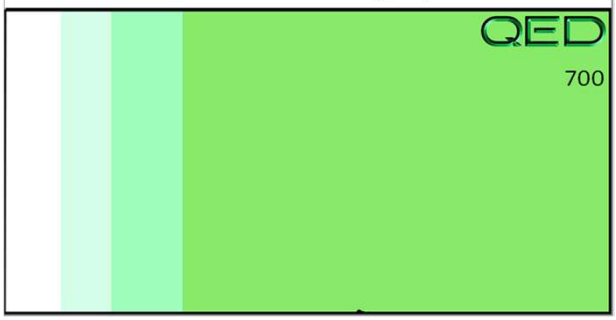
P46 - B1 - 10 : Residual HC



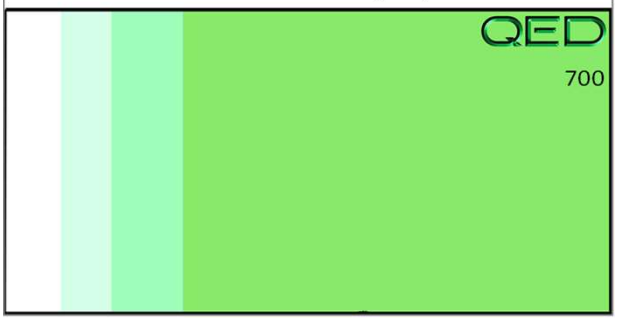
B46 - B2 - 5 : PHC not detected,(BO)



B46 - B3 - 3 : PHC not detected,(BO)



P46 - B3 - 9 : PHC not detected,(BO)



October 10, 2019
Kleinfelder File No. RAL19R102415

Mr. John L. Pilipchuk, LG., PE
North Carolina Department of Transportation
State Geotechnical Engineer
Geotechnical Engineering Unit
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

SUBJECT: Preliminary Site Assessment Report
Parcel 47, Priscilla Harb & Michelle Moore
WBS Element No. 54035.1.1, TIP No. U-5757
NC 8 (Winston Road) from 9th Street to SR 1408 (Biesecker Rd) in Lexington. Widen to multi lanes
Kleinfelder Project No. 20201105.001A

Dear Mr. Pilipchuk,

Kleinfelder is pleased to provide its report detailing the activities conducted as part of the preliminary site assessment for the subject project.

Kleinfelder appreciates the opportunity to be of service to you. Should you have questions or require additional information, please do not hesitate to contact the undersigned.

Sincerely,
KLEINFELDER, INC.

Abigail R. Shurtleff
Environmental Staff Professional

Michael J Burns, PG
Environmental Program Manager

ARS/MJB:asp

KLEINFELDER 3200 Gateway Centre Blvd. Suite 100, Morrisville, NC 27560 **p |** 919.755.5011 **f |** 919.755.1414

PRELIMINARY SITE ASSESSMENT REPORT
PARCEL 47, PRISCILLA HARB & MICHELLE MOORE
PARCEL 11332E0000021A
1458 OLD US HIGHWAY 52
LEXINGTON, DAVIDSON COUNTY, NORTH CAROLINA

NCDOT WBS ELEMENT 54035.1.1
STATE PROJECT U-5757
NC 8 (WINSTON RD) FROM 9TH STREET TO SR 1408 (BIESECKER RD) IN LEXINGTON. WIDEN TO MULTI LANES

KLEINFELDER PROJECT NO. 20201105.001A

OCTOBER 10, 2019

A Report Prepared for:

Mr. John L. Pilipchuk, LG., PE
North Carolina Department of Transportation
State Geotechnical Engineer
Geotechnical Engineering Unit
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

PRELIMINARY SITE ASSESSMENT REPORT
PARCEL 47 PRISCILLA HARB & MICHELLE MOORE
PARCEL 11332E0000021A
1458 OLD US HIGHWAY 52
LEXINGTON, DAVIDSON COUNTY, NORTH CAROLINA

NCDOT WBS ELEMENT 54035.1.1
STATE PROJECT U-5757
NC 8 (WINSTON RD) FROM 9TH STREET TO SR 1408 (BIESECKER RD) IN LEXINGTON. WIDEN TO MULTI LANES

Prepared by:

Abigail R. Shurtleff
Environmental Staff Professional

Reviewed by:

Michael J. Burns, PG
Environmental Program Manager

KLEINFELDER
3200 Gateway Centre Blvd. | Suite 100
Raleigh, North Carolina 27560
P | 919.755.5011

October 10, 2019

Kleinfelder Project No. 20201105.001A

PRELIMINARY SITE ASSESSMENT REPORT

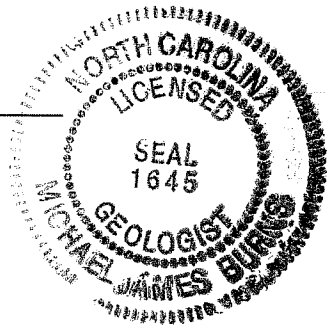
Site Name and Location:	Parcel 47 1458 Old US Highway 52 Lexington, Davidson County, North Carolina
Latitude and Longitude:	35.845362°N, -80.253925°W
County Parcel Number	11332E0000021A
Facility ID Number:	N/A
Leaking UST Incident:	N/A
State Project No.:	U-5757
NCDOT Project No.:	NCDOT WBS Element 54035.1.1
Description:	NC 8 (Winston Rd) from 9th Street to SR 1408 (Biesecker Rd) in Lexington. Widen to multi lanes
Date of Report:	October 10, 2019
Consultant:	Kleinfelder, Inc. 3200 Gateway Center Boulevard | Suite 100 Morrisville, North Carolina 27560 Corporate Geology License No. C-521 Corporate Licensure for Engineering F-1312

SEAL AND SIGNATURE OF CERTIFYING LICENSED GEOLOGIST

I, Michael J Burns, a Licensed Geologist for Kleinfelder, Inc., do certify that the information contained in this report is correct and accurate to the best of my knowledge.

DocuSigned by:
7E53DC44AC794CA... 10/28/2019

Michael J Burns, LG
NC License No. 1645



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PRELIMINARY SITE ASSESSMENT
PARCEL 47 PRISCILLA HARB AND MICHELLE MOORE
PARCEL 11332E0000021A
1458 OLD US HIGHWAY 52
LEXINGTON, DAVIDSON COUNTY, NORTH CAROLINA

NCDOT WBS ELEMENT 54035.1.1
STATE PROJECT U-5757
NC 8 (WINSTON RD) FROM 9TH STREET TO SR 1408 (BIESECKER RD) IN LEXINGTON. WIDEN TO MULTI LANES

1 INTRODUCTION

Kleinfelder, Inc. (Kleinfelder) has prepared this Preliminary Site Assessment (PSA) report to document assessment activities performed on a parcel known by the Davidson County, NC Tax Assessor's Office as Parcel Number 11332E0000021A and by the NCDOT as Parcel 47 (the assessment area is hereafter referred to as the "Project Study Area"). The Project Study Area consists of the western and northern portions of Parcel 47. Parcel 47 is currently occupied by a vacant former tire shop, a dilapidated shed structure, and an overgrown kudzu-covered vegetated/forested area. The parcel is located northeast of the intersection of NC Highway 8 (Winston Road) and Biesecker Road and southeast of the intersection of NC Highway 8 and Evans Street, in the Town of Lexington, Davidson County, North Carolina (Figure 1).

Based on information provided in the Hazardous Materials Survey Report, dated February 28, 2018, prepared by Kleinfelder for SEPI Engineering & Construction, the parcel is a former gasoline service station, grocery store, and most recently a tire shop; there are no registered active/inactive underground storage tank (USTs). As such, the purpose of the PSA was to evaluate whether unknown USTs or contaminated soil are present in the Project Study Area that may result in increased project costs and future liability if acquired by the NCDOT.

1.1 SITE DESCRIPTION

Parcel 47 has a listed owner of Priscilla Harb and Michelle Moore. The parcel has a street address of 1478 Old US Highway 52. The parcel consists of a vacant former tire shop on the western portion, a dilapidated shed structure on the eastern portion, and kudzu-covered vegetated/forested areas. The parcel is bounded by NC Highway 8 (Winston Road) to the west, beyond which is vacant residential land; by vegetated/forested land to the east, beyond which is residential land; by Evans Street to the north, beyond which is a used car and service business;

and by First Wesleyan Church property to the south with associated paved asphalt parking areas. Photographs of the Project Study Area are provided in Appendix A.

1.2 SCOPE OF WORK

Kleinfelder conducted this PSA in accordance with the NCDOT's May 24, 2019, Request for Technical and Cost Proposal (RFP) and Kleinfelder's June 18, 2019 Technical and Cost Proposal. The NCDOT granted a formal Notice to Proceed on June 27, 2019.

2 HISTORY

2.1 PARCEL USAGE

The parcel consists of a vacant former tire shop in the western portion, a dilapidated shed in the eastern portion, and intervening kudzu-covered vegetated/forested areas. The intersection of NC Highway 8 (Winston Road) and Biesecker Road is located immediately southwest of the parcel.

The February 2018 Hazardous Materials Survey Report identifies the parcel as Parcel 53 (since changed to 47) with no record of previously registered USTs or UST closure activities and/or LUST incidents. However, because the facility has operated as a gasoline service station previously, there is a potential that orphan USTs and soil and/or groundwater contamination exist in the Project Study Area.

Kleinfelder conducted historical research to determine whether additional environmental listings were identified for Parcel 47 and identified a gasoline filling station which operated on-site from the early 1940's until the 1960's, Lamb's Grocery form the 1960's to 1970's, and Mitch Harb's tire for an undetermined period of time. No records of USTs or UST closure activities were reported for the site.

2.2 FACILITY ID NUMBERS

Kleinfelder reviewed the North Carolina Department of Environmental Quality (NCDEQ) UST database for Parcel 47. The parcel was not listed at the time of this report.

2.3 GROUNDWATER INCIDENT NUMBERS

No known groundwater incident numbers area associated with Parcel 47 at this time.

3 OBSERVATIONS

3.1 GROUNDWATER MONITORING WELLS

No groundwater monitoring wells were observed on Parcel 47 at the time of site exploration, August 7th, 2019.

3.2 ACTIVE USTS

No indication of the active use of USTs at Parcel 47 was observed at the time of site exploration, August 7th, 2019.

3.3 OTHER FEATURES APPARENT BEYOND PROJECT STUDY AREA

The Project Study Area consisted of the western and northern portions of the parcel. There were no features of concern observed in the vegetated portion of the parcel beyond the Project Study Area, other than a dilapidated shed structure. The interior of the former tire shop could not be observed for the presence of in-ground hydraulic lifts.

4 METHODS

4.1 PROPERTY OWNER CONTACTS

As part of Kleinfelder's scope of work, the listed property owner was contacted about the work schedule for the field work and the type of work being performed. The owner did not express any concern or special conditions associated with the work being performed.

4.2 HEALTH AND SAFETY

Prior to commencing the field work, Kleinfelder personnel developed a Site-Specific Health and Safety Plan (HASP) covering activities to be performed. The site-specific HASP was discussed with all Kleinfelder personnel involved with the project and at a daily on-site "tail gate" safety meetings with subcontractors and sub consultants. In addition to the HASP, Kleinfelder utilized its comprehensive Corporate Health and Safety Program, targeted to address those specific and critical tasks that involve Kleinfelder personnel and subcontractors. The Loss Prevention System (LPS™), a behavior-based program, is Kleinfelder's company-wide safety system implemented and embraced by all levels of the company.

4.3 GEOPHYSICAL INVESTIGATION

Pyramid Environmental & Engineering, P.C (Pyramid) conducted a geophysical investigation in the Project Study Area between July 16th and 17th, 2019. Pyramid utilized electromagnetic (EM) induction technology and ground penetrating radar (GPR) to locate potential geophysical anomalies and potential USTs within the Project Study Area. Portions of Project Study Area east of the vacant building on-site were inaccessible to machinery due to thick intervening vegetation.

There were no EM responses that were not associated with known utilities, vehicles, or other previously known conditions.

A copy of the Pyramid Geophysical Investigation Report, detailing the field methodology, is included in Appendix B.

4.4 SOIL ASSESSMENT

The scope of work for the soil assessment was to evaluate the presence of soil contamination along the existing right-of-way and/or easement, and, if encountered, to define the horizontal and vertical extent of contamination. The soil borings were planned to be advanced to maximum depths of 10 feet below the ground surface (bgs) unless groundwater was encountered. Field screening using a photo ionization detector (PID) was to be conducted at 1-foot intervals

beginning at 0 foot to 1 foot. The soil sample with the highest PID reading above background or the sample from the maximum drilled depth would be selected for on-site laboratory analyses.

Prior to the drilling activities, public utilities were marked by NC One Call and private utilities were marked by Pyramid.

Kleinfelder subcontracted Quantex, Inc. (Quantex) to perform the drilling on-site on August 7th, 2019. Quantex advanced five (5) soil borings (P47-B1 through P47-B5) by direct-push technology from the ground surface to boring termination at locations specified by Kleinfelder. Borings were advanced to 10 feet bgs, with the exception of boring P47-B2 which was advanced to 15-ft bgs where groundwater was encountered. The soil boring locations were identified in the field using a GPS and locations are shown on Figure 2. The borings were located within the public utility easement and the western and northern parcel boundaries. Soil samples were collected by driving Macro Core™ samplers in 5-foot intervals. Each soil core was cut open, the soil samples were classified, and the soil was divided into 1-foot sections. Each 1-foot section was screened in the field using a PID. The PID readings are summarized in Table 1.

Soils from Parcel 47 generally consisted of a foot of silt, underlain by several feet each of a silty clay, then a clayey silt, then a sandy silt. Groundwater was encountered in soil boring P47-B2, which was advanced to a termination depth of 15 feet bgs. Moist soil (and pink and reddish yellow sandy silt) was encountered at 9 feet bgs in soil borings P47-B2, P47-B3, and P47-B4. Copies of the boring logs are included in Appendix C.

4.5 SOIL ANALYSIS

The PID readings from soil borings P47-B1 and P47-B5 were noted to be low. Based on the PID data and visual observations, one (1) of the samples from each boring was selected for on-site laboratory analysis. PID readings from soil borings P47-B2 through P47-B4 were noted to be high, thus, two (2) samples each from each boring were selected for on-site laboratory analysis.

The samples were analyzed by RED Lab, LLC utilizing ultraviolet fluorescence (UVF) methodology to provide real-time analytical results of Total Petroleum Hydrocarbons (TPH), Gasoline Range Organics (GRO), Diesel Range Organics (DRO), and benzene, toluene, ethylbenzene, and total xylenes (BTEX). The UVF method was selected because of the known historical use of petroleum products on Parcel 47. The UVF analysis also provided data regarding

Environmental Protection Agency 16 total Polycyclic Aromatic Hydrocarbons (PAHs), and Benzo(a)pyrene (BaP).

5 RESULTS

5.1 GEOPHYSICAL INVESTIGATION

The EM and GPR surveys did not identified unknown geophysical anomalies within the Project Study Area which was accessible to Pyramid personnel. Portions of the parcel east of the vacant building on-site were not accessible to machinery due to thick intervening vegetation.

5.2 SOIL SAMPLING DATA

The UVF analysis of soil samples indicated TPH GRO and DRO above NCDEQ Action Limits at 10 feet bgs from soil borings P47-B2 and P47-B4. Fingerprint analysis of the samples identified the contamination as undegraded kerosene. A summary of soil sample analytical results is presented in Table 2. The laboratory results associated with each soil boring are presented on Figure 3. The laboratory report and graphs are included in Appendix D.

5.3 SAMPLE OBSERVATIONS

Soils were observed for any obvious evidence of contamination. Obvious visual and olfactory contamination was observed from approximately 9 feet bgs in soil borings P47-B2, P47-B3, and P47-B4. However, UVF analysis of soil samples from 10 feet bgs in each boring revealed TPH GRO and DRO above the NCDEQ Action Limits only in soil borings P47-B2 and P47-B4, and not in P47-B3.

5.4 QUANTITY CALCULATIONS

Kleinfelder identified soil impact in the current right-of-way above the NCDEQ Action Limits for TPH DRO and GRO. The estimated extent of the petroleum soil plume is shown on Figure 3. Soil boring P50-B3 was utilized to determine the northern extent of the contamination with low PID readings at 10 feet bgs in the same soil type. Soil boring P47-B5 was used to determine the eastern extent of the contamination; however, the western extent could not be determined due to the presence of NC Highway 8 (Winston Road). Soil boring P47-B2 was advanced in another 5-foot Macro Core™ sampler interval to 15-feet bgs in an attempt to define the vertical extent of contamination. Groundwater was encountered at approximately 13 feet bgs. Therefore, the vertical extent of soil contamination appears to extend to the groundwater zone. Based on PID readings, the shallowest encounter of undegraded kerosene contaminated soil occurs at approximately 4 feet bgs in soil boring P47-B2. Cross section A-A' is depicted in Figure 5, a cross section B-B' is depicted in Figure 6, and a map of the borings utilized in the cross sections is depicted in Figure 4. Below is the estimated quantity of impacted soil on-site:

(Figure 3) **Estimated Area**: 70-ft x 66-ft = 4,620-ft^2

(Figure 5 and 6) **Average Thickness**: 6.7-ft

Total: 773.85 tons of undegraded kerosene impacted soil

6 CONCLUSIONS

Based on results of the EM/GPR survey, soil assessment and field observations, Kleinfelder has reached the following conclusions:

- The GPR and EM investigation did not identify unknown features within the accessible portions of the Project Study Area. Areas east of the vacant building on-site were not accessible to machinery due to thick intervening vegetation.
- Parcel 47 is not associated with any known USTs, groundwater incidents, or database listings of environmental concern at this time.
- Approximately 774 tons of petroleum-impacted soils (undegraded kerosene) are present within the western portion of the Project Study Area, and contamination extends into the groundwater zone.
- Groundwater was encountered in soil boring P47-B2 at approximately 13-ft bgs.

7 RECOMMENDATIONS

Based on results of this Preliminary Site Assessment, Kleinfelder recommends additional sampling and/or special handling of encountered petroleum-contaminated soils be performed within the Project Study Area on Parcel 47 in Lexington, Davidson County, North Carolina.

8 LIMITATIONS

Kleinfelder's work will be performed in a manner consistent with that level of care and skill ordinarily exercised by other members of its profession practicing in the same locality, under similar conditions and at the date the services are provided. Kleinfelder's conclusions, opinions and recommendations will be based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no guarantee or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

Kleinfelder offers various levels of investigative and engineering services to suit the varying needs of different clients. It should be recognized that definition and evaluation of geologic and environmental conditions are a difficult and inexact science. Judgments leading to conclusions and recommendations are generally made with incomplete knowledge of the subsurface conditions present due to the limitations of data from field studies. Although risk can never be eliminated, more detailed and extensive studies yield more information, which may help understand and manage the level of risk. Since detailed study and analysis involves greater expense, Kleinfelder's clients participate in determining levels of service that provide adequate information for their purposes at acceptable levels of risk. More extensive studies, including subsurface studies or field tests, should be performed to reduce uncertainties. Acceptance of this report will indicate that NCDOT has reviewed the document and determined that it does not need or want a greater level of service than provided.

During the course of the performance of Kleinfelder's services, hazardous materials may have been discovered. Kleinfelder assumes no responsibility or liability whatsoever for any claim, loss of property value, damage, or injury that results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials. Nothing contained in this report should be construed or interpreted as requiring Kleinfelder to assume the status of an owner, operator, or generator, or person who arranges for disposal, transport, storage or treatment of hazardous materials within the meaning of any governmental statute, regulation or order. NCDOT is solely responsible for directing notification of all governmental agencies, and the public at large, of the existence, release, treatment or disposal of any hazardous materials observed at the project site, either before or during performance of

Kleinfelder's services. NCDOT is responsible for directing all arrangements to lawfully store, treat, recycle, dispose, or otherwise handle hazardous materials, including cuttings and samples resulting from Kleinfelder's services.

TABLES

Table 1: Soil Sample Screening Results

Date	Sample ID	Depth (ft)	PID Reading	Notes
8/7/2019	U5757-P47-B1	1	0.6	
		2	1.2	
		3	1.2	
		4	1.1	
		5	1.5	UVF Analysis
		6	1.1	
		7	1.5	
		8	1.6	
		9	1.0	
		10	1.5	
8/7/2019	U5757-P47-B2	1	22.8	
		2	8.6	
		3	49.3	UVF Analysis
		4	347.4	
		5	818.6	
		6	792.4	
		7	620.5	
		8	450.9	
		9	818.7	
		10	539.1	UVF Analysis
		11	659.2	
		12	470.5	
		13	432.7	
		14	408.0	
		15	603.2	
8/7/2019	U5757-P47-B3	1	10.8	
		2	6.1	
		3	3.3	
		4	15.7	
		5	70.0	UVF Analysis
		6	4.3	
		7	14.3	
		8	41.6	
		9	90.8	
		10	183.9	UVF Analysis
8/7/2019	U5757-P47-B4	1	2.5	
		2	3.1	
		3	3.2	
		4	28.5	UVF Analysis
		5	89.2	
		6	104.3	
		7	173.4	
		8	294.1	
		9	387.1	
		10	394.2	UVF Analysis
8/7/2019	U5757-P47-B5	1	0.8	
		2	0.9	
		3	1.0	
		4	1.1	
		5	1.2	UVF Analysis
		6	1.1	
		7	1.0	
		8	0.8	
		9	0.6	
		10	0.5	

Notes:
1) PID = Photoionization Detector
2) PID readings in parts per million (ppm)

TABLE 2: Soil Sample Analytical Summary

Parameter	Analytical Results								Comparison Criteria		
	Soil Sample Results										
Sample ID	P47-B1-5	P47-B2-10	P47-B2-3	P47-B3-5	P47-B3-10	P47-B4-4	P47-B4-10	P47-B5-5	State Action Limit	Protection of Groundwater	Residential Health
PID Reading (ppm)	1.5	49.3	539.1	70.0	183.9	28.5	394.2	1.2			
Collection Depth (ft bgs)	5	10	3	5	10	4	10	5			
Collection Date	8/7/19	8/7/19	8/7/19	8/7/19	8/7/19	8/7/19	8/7/19	8/7/19			
UVF Method											
Diesel Range Organics	**0.47**	**61,299**	**1.1**	<0.49	<0.51	<0.53	**1,586**	<0.5	100	--	--
Gasoline Range Organics	<0.47	**18,272**	<0.54	<0.49	<0.51	<0.53	**375.2**	<0.5	50	--	--

Notes:

Results displayed in milligram per kilogram (mg/kg)
ft bgs = Feet below ground surface
Bold = Above Laboratory Detection Limit
Highlighted = Above State Action Limit
UVF = Ultraviolet Flouresence

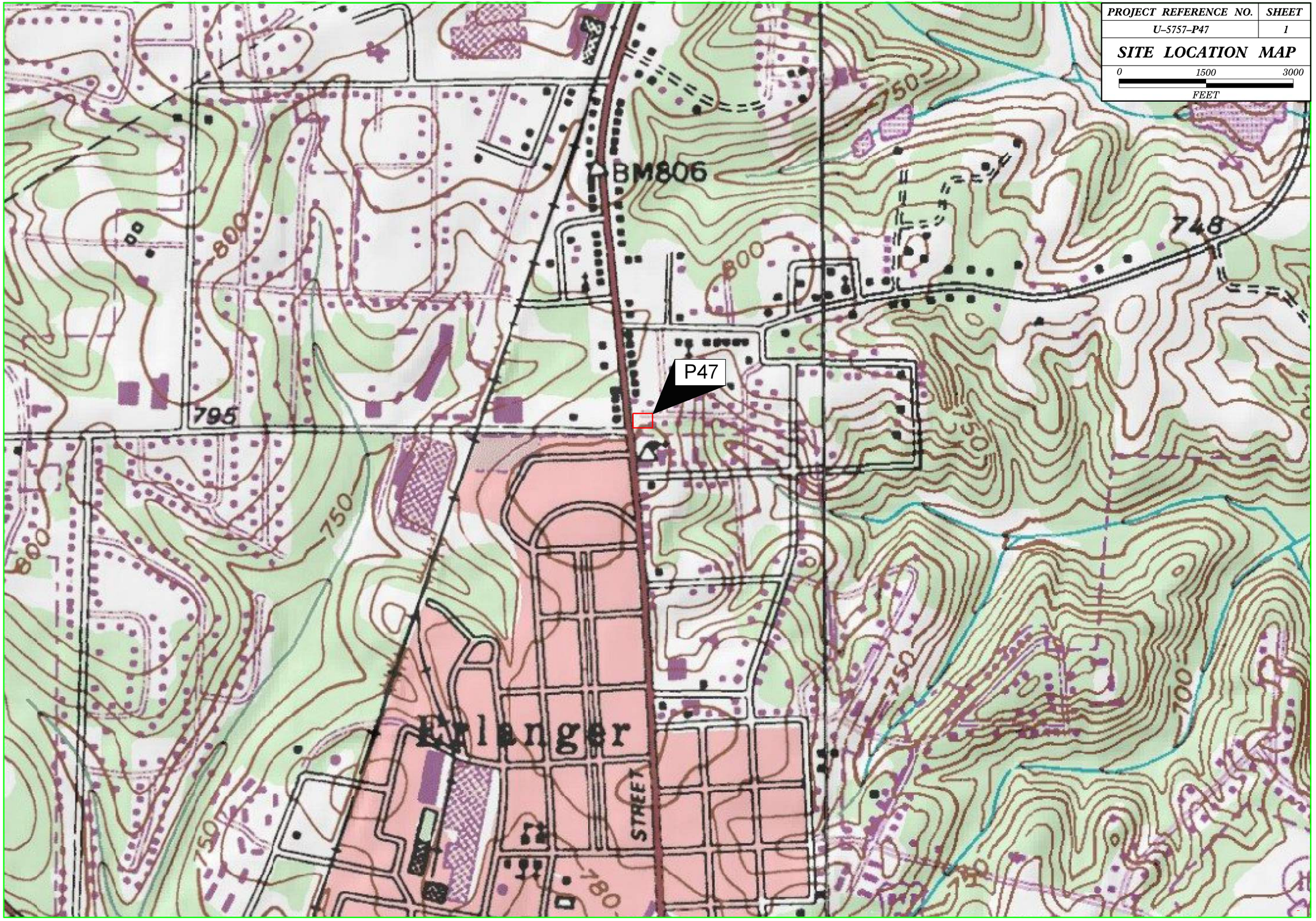
FIGURES

PROJECT REFERENCE NO.	SHEET
U–5757–P47	1

SITE LOCATION MAP

0 1500 3000

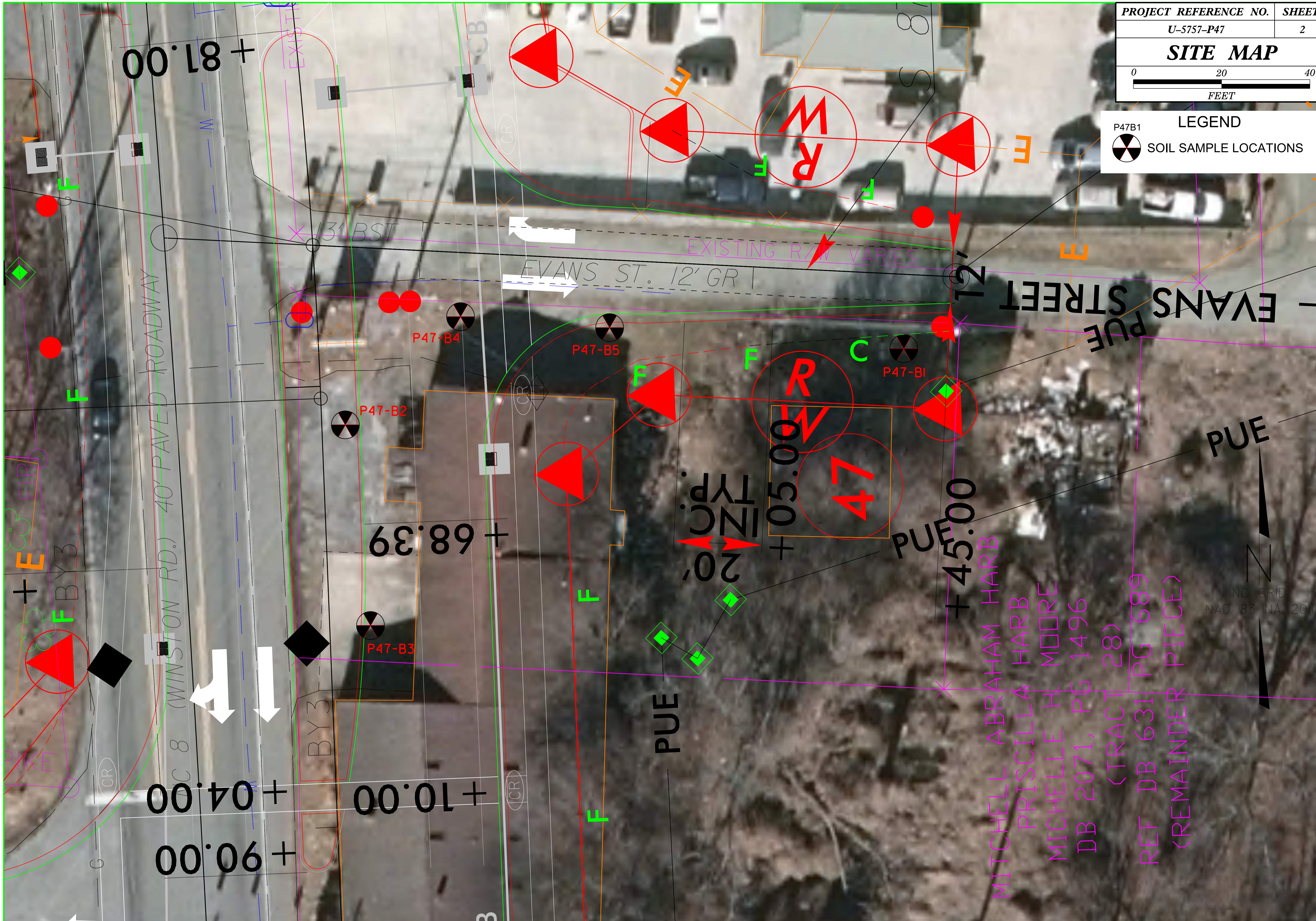
FEET



PROJECT REFERENCE NO.	SHEET
U-5757-P47	2

SITE MAP

0 20 40
FEET



PROJECT REFERENCE NO.	SHEET
U-5757-P47	3
SOIL SAMPLE ANALYTICAL RESULTS	

0 20 40
FEET

LEGEND

P47B1 SOIL SAMPLE LOCATIONS

AREA OF KNOWN SOIL CONTAMINATION

AREA OF SUSPECTED SOIL CONTAMINATION

SOIL SAMPLE RESULTS

	DRO	GRO
P47-B1-5	<0.47	<0.47
P47-B2-10	**61,299**	**18,272**
P47-B2-3	1.1	<0.54
P47-B3-5	<0.49	<0.49
P47-B3-10	<0.51	<0.51
P47-B4-4	<0.53	<0.53
P47-B4-10	**1,586**	**375.2**
P47-B5-5	<0.5	<0.5
P50-B3-6	<0.5	<0.5

NOTES:
1) All results reported in mg/kg
2) DRO = Diesel Range Organics
3) GRO = Gasoline Range Organics
4) Bold concentrations exceed the NCDEQ TPH Action Limit

P50-B3
P47-B4
P47-B5
P47-B1
P47-B2
P47-B3
EVANS ST. 12' GR
EXISTING R/W VARIES
PUE
NC GRID
NAD 83 NA 2011
MITCHELL ABRAHAM HARB
PRISCILLA HARB
MICHELLE K MOORE
DB 2071, PG 1496
(TRACT 28)
REF DB 631 PG 689
(REMAINDER PIECE)

PROJECT REFERENCE NO.	SHEET
U-5757-P47	4

CROSS SECTION MAP

0 20 40

FEET

LEGEND

P47B1 SOIL SAMPLE LOCATIONS

CROSS SECTION LOCATIONS

A P50-B3

B P47-B2

A' P47-B3

P47-B4

P47-B5

B' P47-B5

C P47-B1

+81.00

+68.39

+10.00

+04.00

+90.00

+45.00

EXISTING R/W VARIES

EVANS ST. 12' GRT

13' BST

40' PAVED ROADWAY (WINSTON RD.)

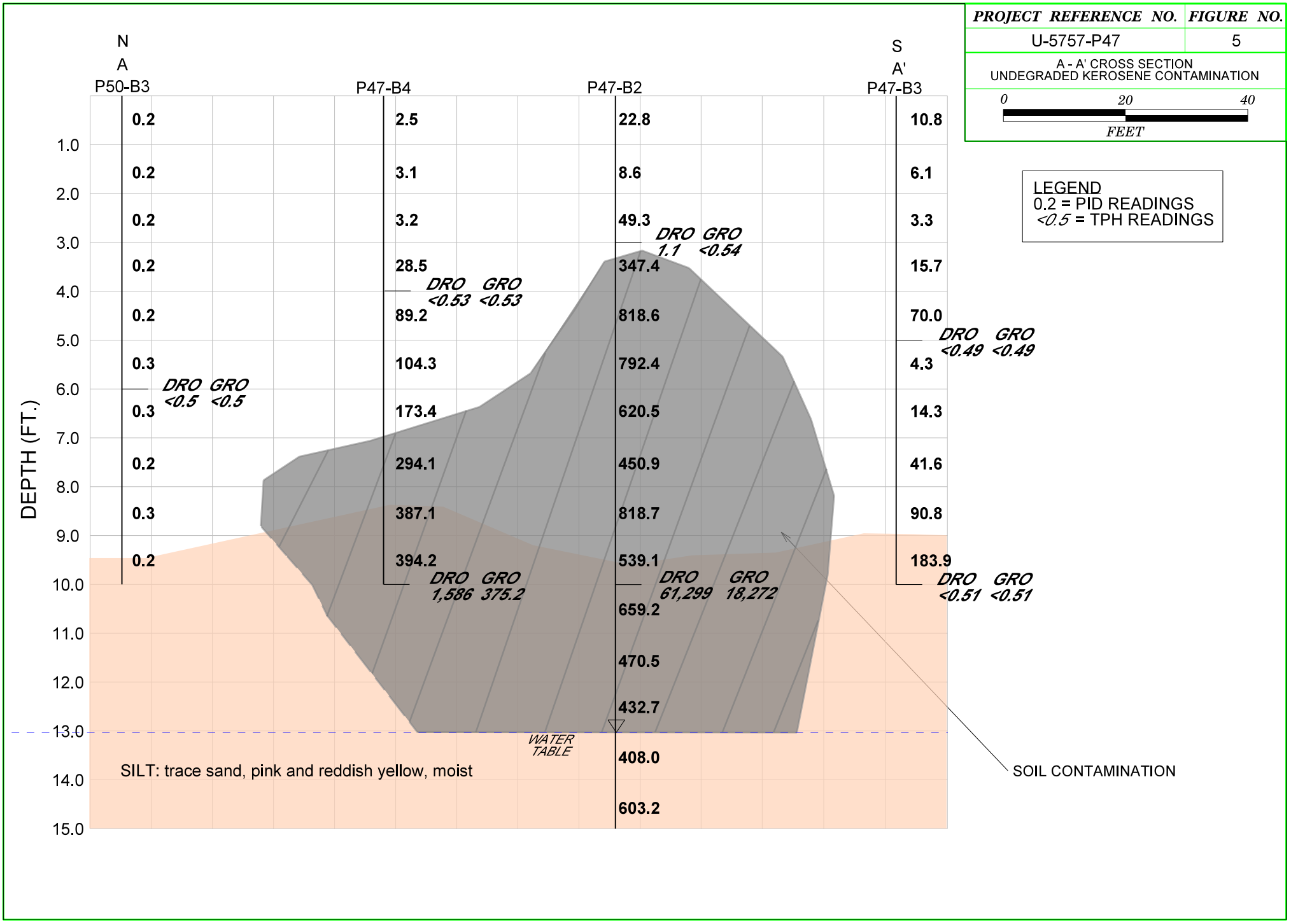
PUE

20' INGR TYP.

47

MITCHELL ABRAHAM HARB
PRISCILLA HARB
MICHELLE H. MOORE
DB 2071, PG 1496
(TRACT 28)
REF DB 631 PG 689
(REMAINDER PIECE)

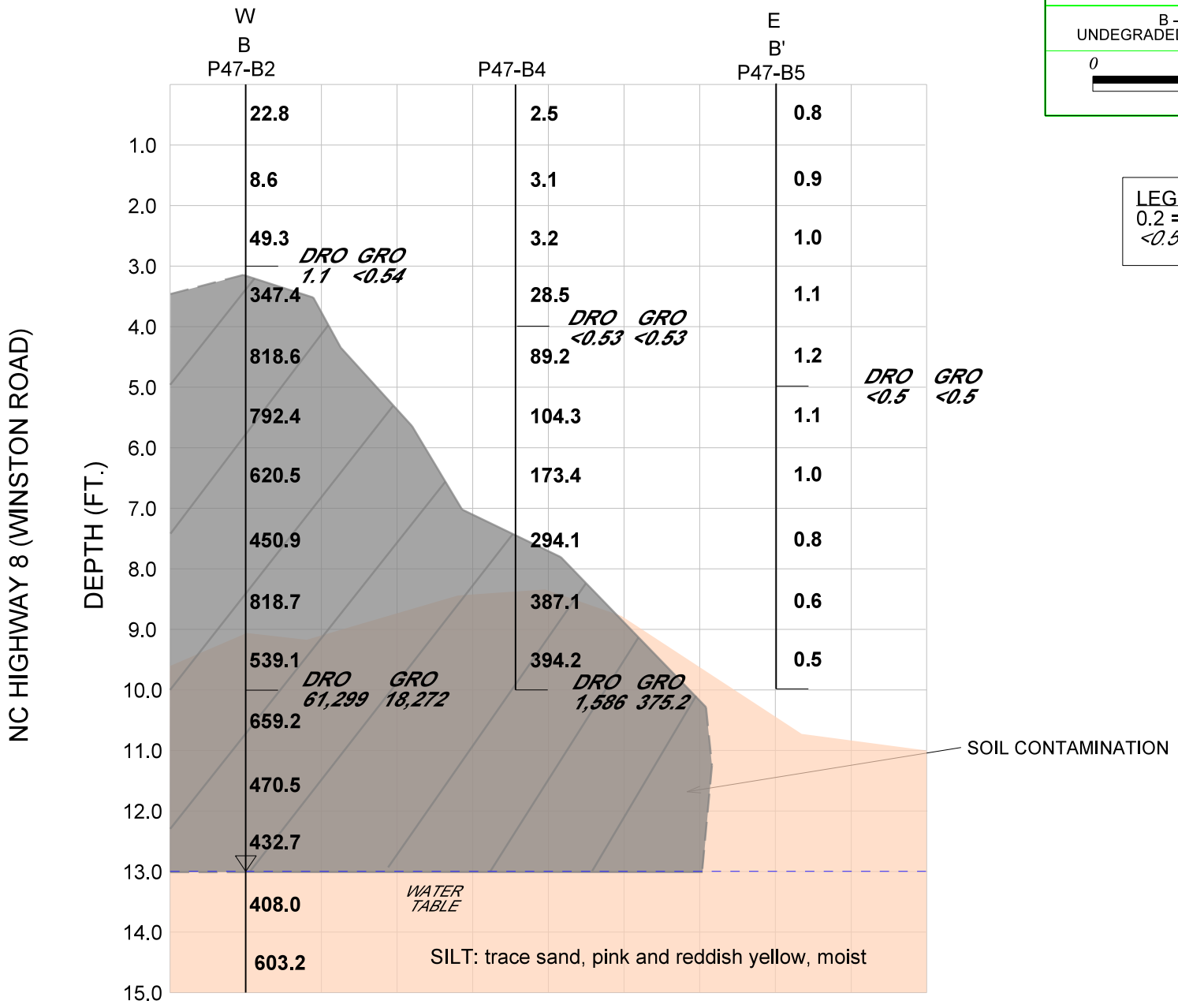
NC GRID
NAD 83 NA 2011


PROJECT REFERENCE NO.
U-5757-P47
FIGURE NO.
5
A - A' CROSS SECTION
UNDEGRADED KEROSENE CONTAMINATION
0
20
40
FEET
N
A
S
A'
P50-B3
P47-B4
P47-B2
P47-B3
DEPTH (FT.)
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
13.0
14.0
15.0
0.2
0.2
0.2
0.2
0.3
0.3
0.2
0.3
0.2
DRO GRO
<0.5 <0.5
2.5
3.1
3.2
28.5
89.2
104.3
173.4
294.1
387.1
394.2
DRO GRO
<0.53 <0.53
DRO GRO
1,586 375.2
22.8
8.6
49.3
347.4
818.6
792.4
620.5
450.9
818.7
539.1
659.2
470.5
432.7
408.0
603.2
DRO GRO
1.1 <0.54
DRO GRO
61,299 18,272
10.8
6.1
3.3
15.7
70.0
4.3
14.3
41.6
90.8
183.9
DRO GRO
<0.49 <0.49
DRO GRO
<0.51 <0.51
WATER TABLE
SILT: trace sand, pink and reddish yellow, moist
SOIL CONTAMINATION
LEGEND
0.2 = PID READINGS
<0.5 = TPH READINGS

PROJECT REFERENCE NO.	FIGURE NO.
U-5757-P47	6

B - B' CROSS SECTION
UNDEGRADED KEROSENE CONTAMINATION

0 20 40
FEET



LEGEND
0.2 = PID READINGS
<0.5 = TPH READINGS

APPENDIX A
SITE PHOTOGRAPHS

View facing southeast toward the former service station on Parcel 47.

View facing southwest towards former service station on Parcel 47.

Original in Color

KLEINFELDER *Bright People. Right Solutions.* www.kleinfelder.com	PROJECT NO:20201105.001A DRAWN: September 2019 DRAWN BY: ARS CHECKED BY: MB FILE NAME: Photo Pages	**SITE PHOTOGRAPHS** Preliminary Site Assessment Report U-5757-P47 Lexington, Davidson County, North Carolina	FIGURE **A-1**

View facing south along Winston Road on Parcel 47.

View facing north along Winston Road on Parcel 47.

Original in Color

KLEINFELDER *Bright People. Right Solutions.* www.kleinfelder.com	PROJECT NO:20201105.001A DRAWN: September 2019 DRAWN BY: ARS CHECKED BY: MB FILE NAME: Photo Pages	**SITE PHOTOGRAPHS** Preliminary Site Assessment Report U-5757-P47 Lexington, Davidson County, North Carolina	FIGURE **A-2**

APPENDIX B

GEOPHYSICAL SURVEY REPORT

PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2019-211)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 47
NCDOT PROJECT U-5757 (54035.1.1)

1458 WINSTON ROAD, LEXINGTON, NC

August 20, 2019

Report prepared for: **Michael Burns, P.G.**
Kleinfelder, Inc.
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Prepared by: _____

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C257: GEOLOGY C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
Parcel 47 - 1458 Winston Road
Lexington, Davidson County, North Carolina

Table of Contents

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
UST .....Underground Storage Tank

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Kleinfelder, Inc. at Parcel 47 located at 1458 Winston Road in Lexington, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project U-5757). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from July 16-17, 2019, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

Geophysical Results: The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. A total of three EM anomalies were identified. All of the EM anomalies were directly attributed to visible cultural features at the ground surface. GPR verified the presence of metal reinforcement in the concrete west of the building. No evidence of any buried structures such as USTs was observed beneath the reinforcement. Collectively, the geophysical data did not record any evidence of unknown metallic USTs at Parcel 47.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Kleinfelder, Inc. at Parcel 47 located at 1458 Winston Road in Lexington, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project U-5757). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from July 16-17, 2019, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

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

FIELD METHODOLOGY

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. Pyramid collected the EM data using a Geonics EM61-MK2 (EM61) metal detector integrated with a Geode External GPS/GLONASS receiver. The integrated GPS system allows the location of the instrument to be recorded in real-time during data collection, resulting in an EM data set that is geo-referenced and can be overlain on aerial photographs and CADD drawings. A boundary grid was established around the perimeter of the site with marks every 10 feet to maintain orientation of the instrument throughout the survey and assure complete coverage of the area.

According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size) can be detected to a maximum depth of 4 to 5 feet. The EM61 data were digitally collected at approximately 0.8-foot intervals along north-south trending or east-west trending, generally parallel survey lines, spaced five feet apart. The data were downloaded to a

computer and reviewed in the field and office using the Geonics NAV61 and Surfer for Windows Version 15.0 software programs.

GPR data were acquired across select EM anomalies on July 17, 2019, using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. Data were collected both in reconnaissance fashion as well as along formal transect lines across EM features. The GPR data were viewed in real-time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 6 feet, based on dielectric constants calculated by the DF unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the DF unit for post-processing and figure generation.

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

Geophysical Surveys for Underground Storage Tanks
on NCDOT Projects

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

DISCUSSION OF RESULTS

Discussion of EM Results

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

LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY

Metallic Anomaly #	Cause of Anomaly	Investigated with GPR
1	Reinforced Concrete	✓
2	Signs/Mailbox/Utilities/Debris	
3	Metal Siding	

All of the EM anomalies were directly attributed to visible cultural features at the ground surface including signs, a mailbox, utilities, debris, and metal siding. EM Anomaly 1 was associated with suspected reinforced concrete and was investigated further with 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. All of the transect images are included in **Appendix A**. A total of eight formal GPR transects were performed at the site.

GPR Transects 1-8 were performed in a grid-like fashion across an area associated of suspected reinforced concrete (EM Anomaly 1). These transects confirmed the presence of metal reinforcement in the concrete west of the building. No evidence of any buried structures such as USTs was observed beneath the reinforcement.

Collectively, the geophysical data did not record any evidence of unknown metallic USTs at Parcel 47. **Figure 4** provides an overlay of the metal detection results on the NCDOT MicroStation engineering plans for reference.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 and GPR data collected at Parcel 47 in Lexington, 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.
- All of the EM anomalies were directly attributed to visible cultural features at the

ground surface.

- GPR verified the presence of metal reinforcement in the concrete west of the building. No evidence of any buried structures such as USTs was observed beneath the reinforcement.
- Collectively, the geophysical data did not record any evidence of unknown metallic USTs at Parcel 47.

LIMITATIONS

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

APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREA

View of Survey Area
(Facing Approximately South)

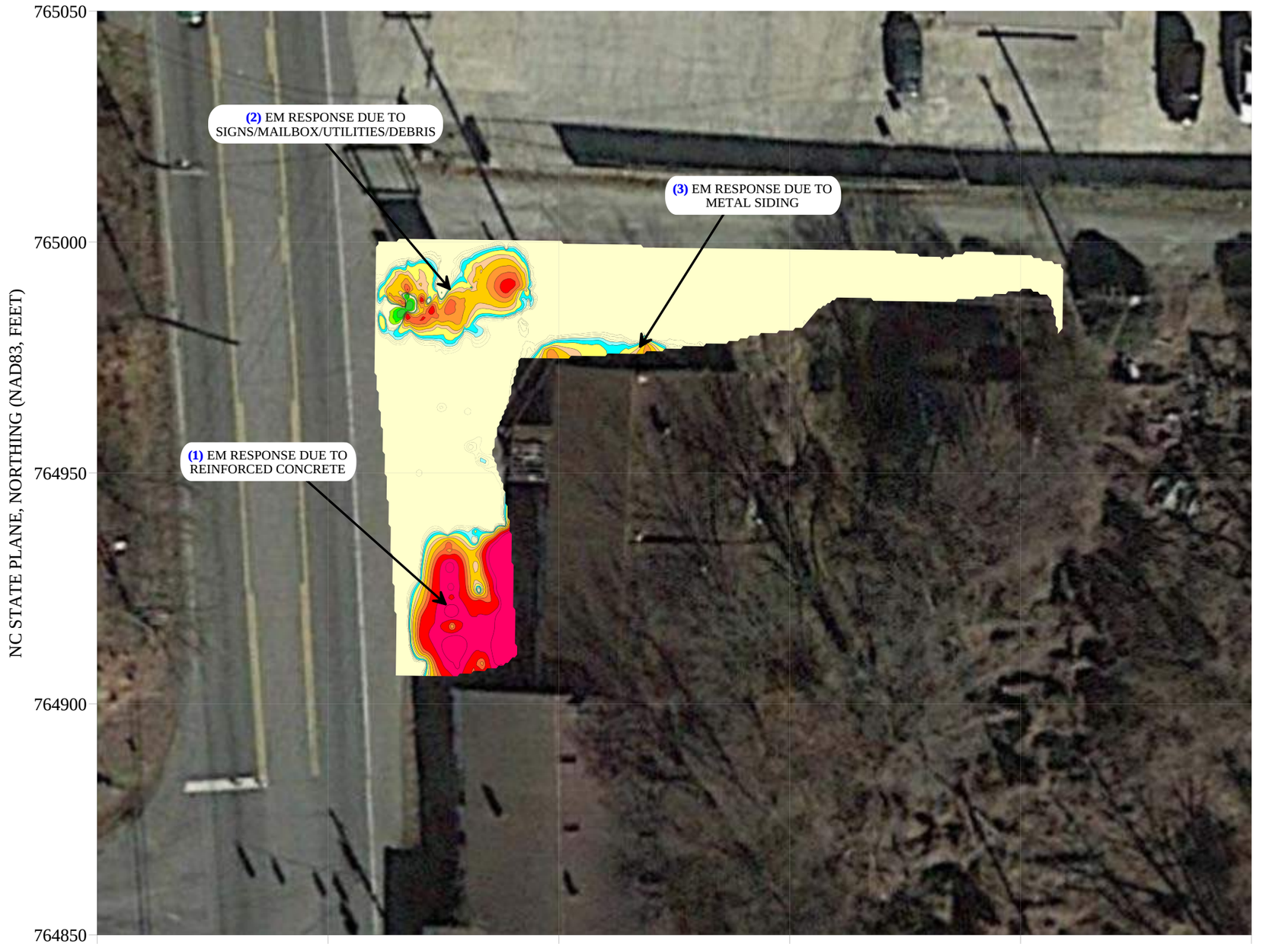
View of Survey Area
(Facing Approximately East)

N

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

PROJECT	PARCEL 47 LEXINGTON, NORTH CAROLINA NCDOT PROJECT U-5757	TITLE	PARCEL 47 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS	DATE	7/19/2019
				CLIENT	KLEINFELDER
				PYRAMID PROJECT #:	2019-211
					FIGURE 1

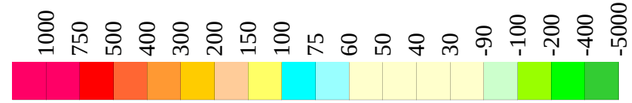
EM61 METAL DETECTION RESULTS



NO EVIDENCE OF METALLIC USTs WAS OBSERVED.

The contour plot shows the differential results of the EM61 instrument in millivolts (mV). The differential results focus on larger metallic objects such as USTs and drums. The EM data were collected on July 16, 2019, using a Geonics EM61-MK2 instrument. Verification GPR data were collected using a GSSI UtilityScan DF instrument with a dual frequency 300/800 MHz antenna on July 17, 2019.

EM61 Metal Detection Response (millivolts)

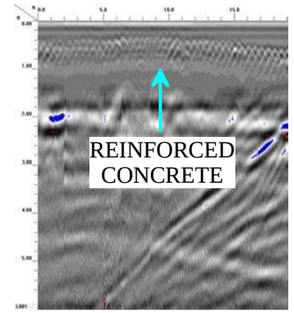


N

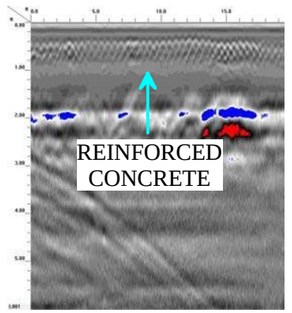
PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

PROJECT	PARCEL 47 LEXINGTON, NORTH CAROLINA NCDOT PROJECT U-5757	TITLE	PARCEL 47 - EM61 METAL DETECTION CONTOUR MAP	DATE 7/19/2019
				PYRAMID PROJECT #: 2019-211
CLIENT	KLEINFELDER			**FIGURE 2**

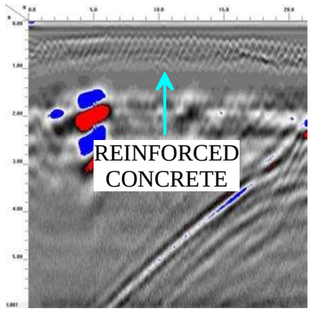
LOCATIONS OF GPR TRANSECTS



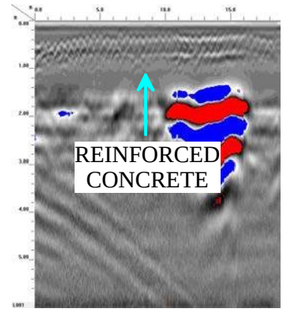
GPR TRANSECT 1 (T1)



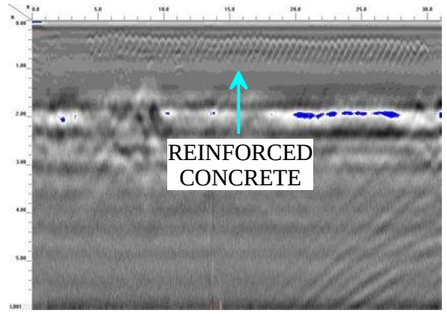
GPR TRANSECT 2 (T2)



GPR TRANSECT 3 (T3)



GPR TRANSECT 4 (T4)



GPR TRANSECT 5 (T5)

N

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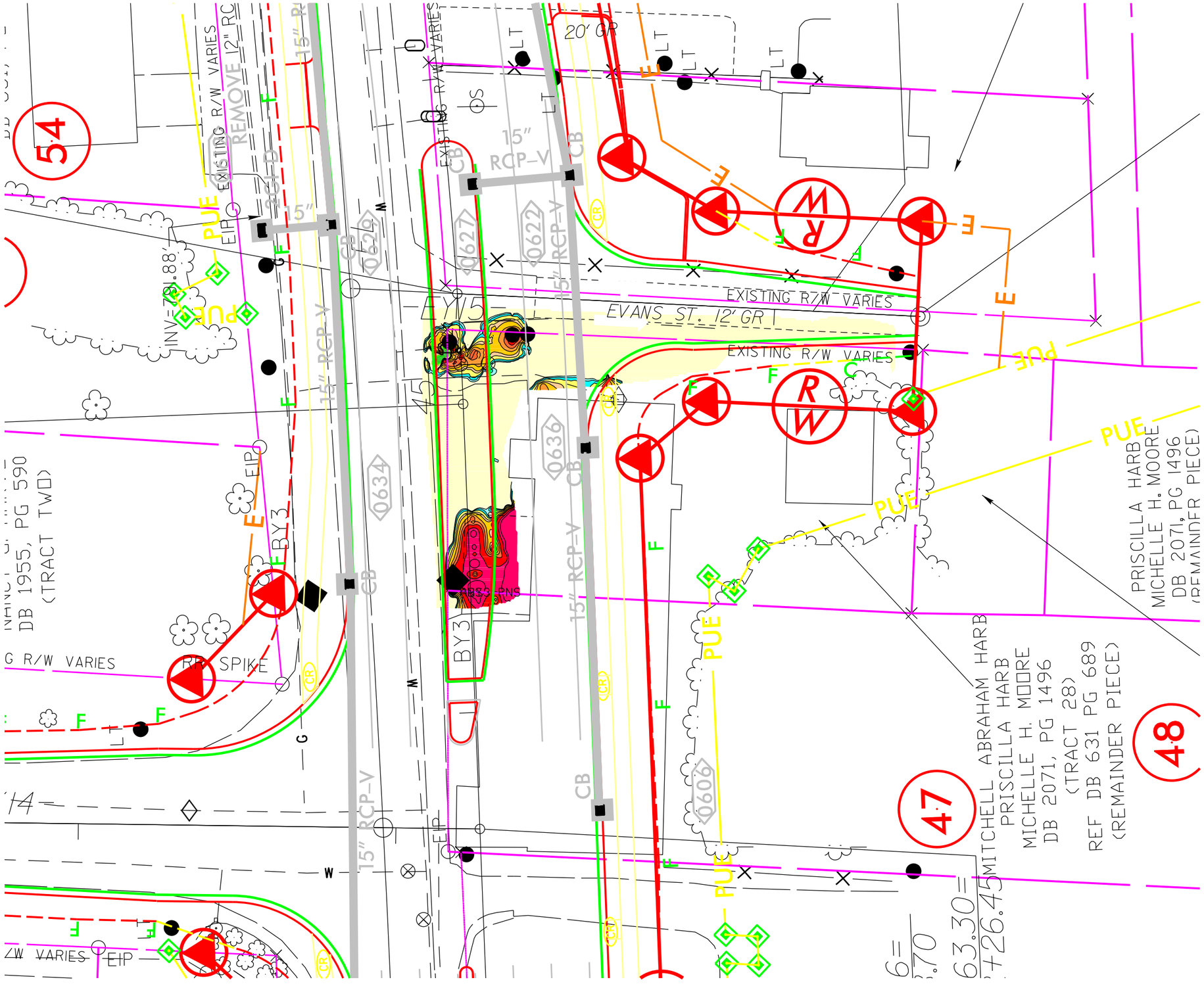
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

PROJECT	PARCEL 47 LEXINGTON, NORTH CAROLINA NCDOT PROJECT U-5757	TITLE	PARCEL 47 - GPR TRANSECT LOCATIONS AND SELECT IMAGES	DATE 7/19/2019 PYRAMID PROJECT #: 2019-211
				CLIENT KLEINFELDER **FIGURE 3**



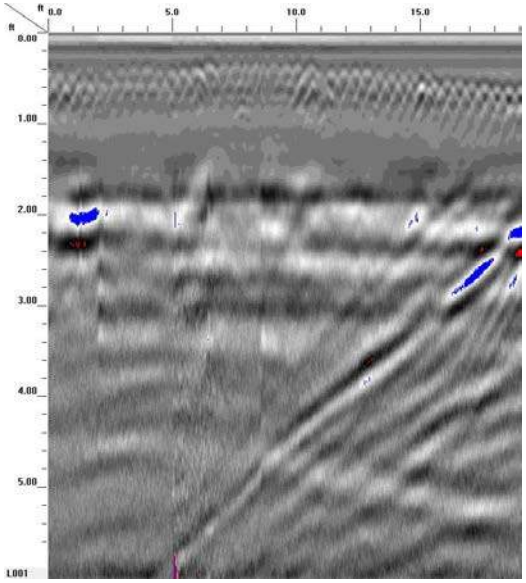
TITLE
OVERLAY OF METAL DETECTION RESULTS
ON NCDOT ENGINEERING PLANS

PROJECT
PARCEL 47
LEXINGTON, NORTH CAROLINA
NCDOT PROJECT U-5757

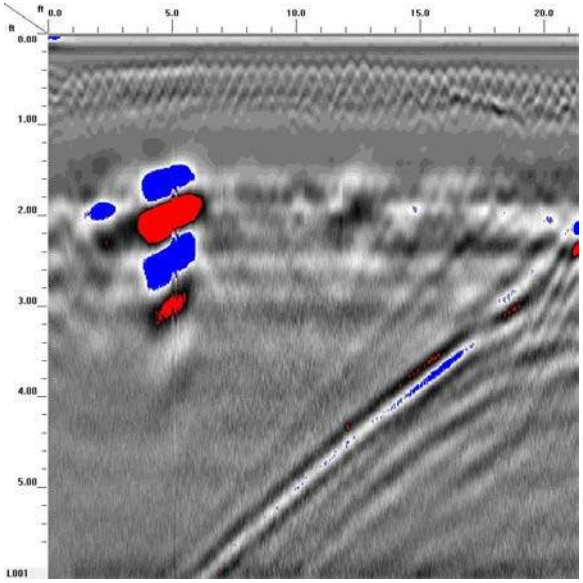
PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
336.335.3174 (p) 336.691.0648 (f)
License # C1251 Eng. / #C257 Geology

DATE: 08-13-2019	REVISION NO. 0
PYRAMID PROJECT NO. 2019-211	FIGURE NO. 4

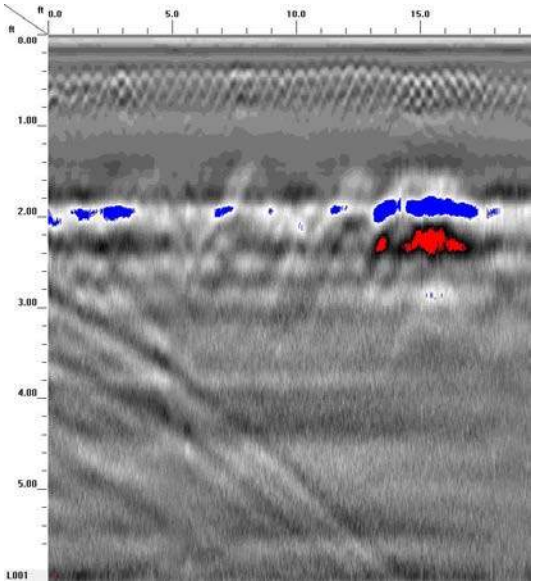
Appendix A – GPR Transect Images



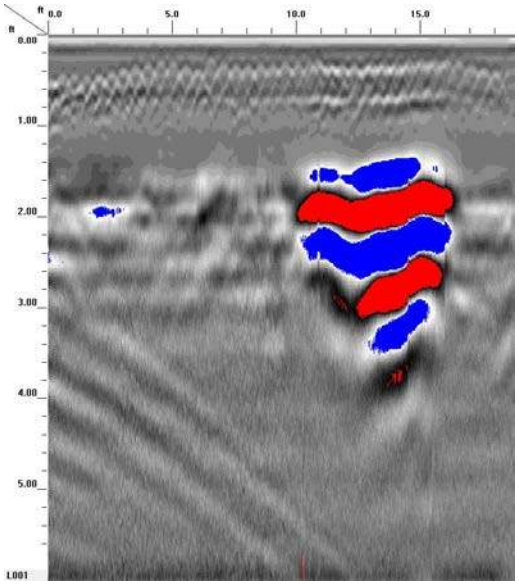
GPR TRANSECT 1



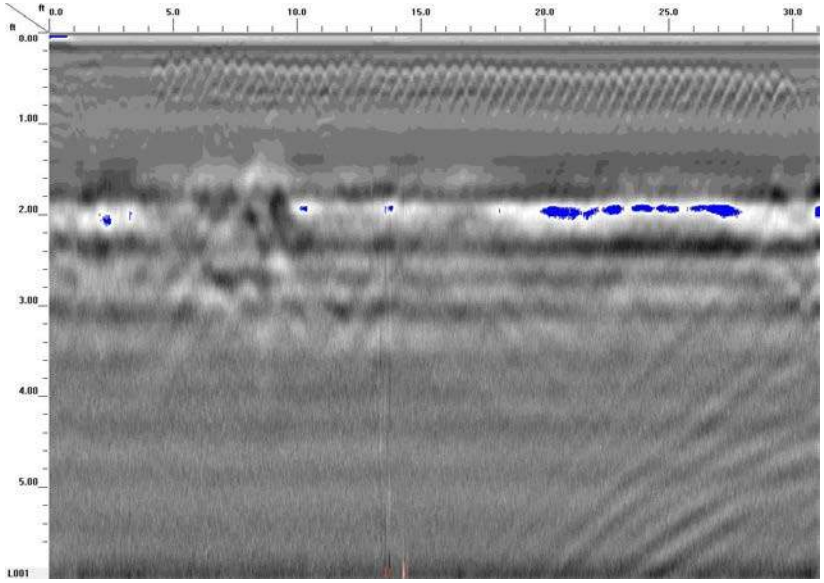
GPR TRANSECT 3



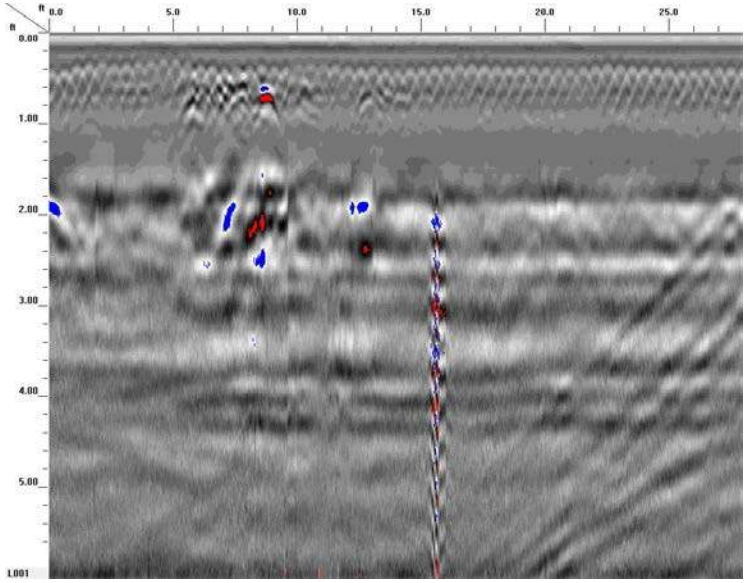
GPR TRANSECT 2



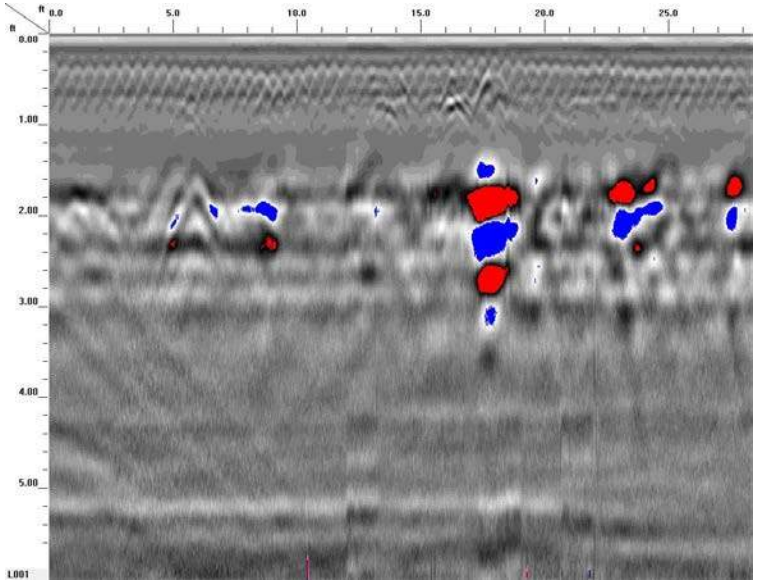
GPR TRANSECT 4



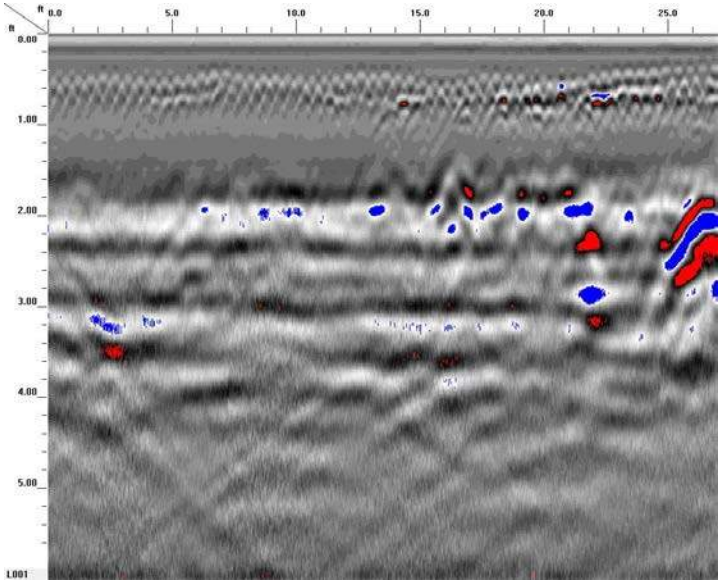
GPR TRANSECT 5



GPR TRANSECT 7



GPR TRANSECT 6



GPR TRANSECT 8

APPENDIX C
BORING LOGS

Date Begin - End:	8/07/2019	**Drilling Company:**	Quantex
Logged By:	A Shurtleff	**Drill Crew:**	Andrew C
Hor.-Vert. Datum:	WGS 1984 - Not Available	**Drilling Equipment:**	Genuine Geoprobe
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column
Weather:	80°F Partly Cloudy	**Borehole Diameter:**	

BORING LOG P47-B1

FIELD EXPLORATION

Latitude: 35.84551° N
Longitude: -80.25376° E
Surface Condition: Bare Earth

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
					0.6		**SILT**: brown and dark brown, dry
					1.2		**CLAY with Silt**: yellowish brown nodules light gray, dry to moist
					1.2		
					1.1		
5	Direct Push Sleeves		P47-B1-5		1.5		
					1.1		**Silty CLAY**: reddish yellow streaked light brown, dry to moist
					1.5		
					1.6		
					1.0		
10					1.5		

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
An iPad integrated GPS unit was used to locate the borehole with an accuracy of 5 meters.
The boring was backfilled with bentonite

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.: 20201105.001A	BORING LOG P47-B1		
DRAWN BY: A SHURTLEFF	NCDOT: U-5757 Biesecker Road Lexington, NC	1	
CHECKED BY: M BURNS			
DATE: 10/8/2019		PAGE: 1 of 1	

Date Begin - End:	8/07/2019	**Drilling Company:**	Quantex	**BORING LOG P47-B2**	
Logged By:	A Shurtleff	**Drill Crew:**	Andrew C		
Hor.-Vert. Datum:	WGS 1984 - Not Available	**Drilling Equipment:**	Genuine Geoprobe		
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column		
Weather:	80°F Partly Cloudy	**Borehole Diameter:**			

FIELD EXPLORATION

Latitude: 35.84551° N
Longitude: -80.25376° E
Surface Condition: Bare Earth

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
					22.8		**SILT**: brown and dark brown, dry
	Direct Push Sleeves		P47-B2-3		8.6		**CLAY with Silt**: yellowish brown nodules light gray, weak odor, dry to moist
					49.3		
					347.4		
5					818.6		**Silty CLAY**: reddish yellow streaked light brown, strong odor, dry to moist
					792.4		
					620.5		
					450.9		
					818.7		
			P47-B2-10		539.1		**SILT**: pink and reddish yellow, strong odor, moist, petroleum staining, trace sand
10					659.2		
					470.5		
▽					432.7		
					408.0		
15					603.2		

The borehole was terminated at approximately 15 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
▽ Groundwater was observed at approximately 13 ft. below ground surface during drilling.
GENERAL NOTES:
An iPad integrated GPS unit was used to locate the borehole with an accuracy of 5 meters.
The boring was backfilled with bentonite

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.: 20201105.001A
DRAWN BY: A SHURTLEFF
CHECKED BY: M BURNS
DATE: 10/8/2019

BORING LOG P47-B2

NCDOT: U-5757
Biesecker Road
Lexington, NC

2

PAGE: 1 of 1

Date Begin - End:	8/07/2019	**Drilling Company:**	Quantex
Logged By:	A Shurtleff	**Drill Crew:**	Andrew C
Hor.-Vert. Datum:	WGS 1984 - Not Available	**Drilling Equipment:**	Genuine Geoprobe
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column
Weather:	80°F Clear	**Borehole Diameter:**	

BORING LOG P47-B3

FIELD EXPLORATION

Latitude: 35.84551° N
Longitude: -80.25376° E
Surface Condition: Bare Earth

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
							CONCRETE
					10.8		**SILT**: brown and dark brown, dry
					6.1		**CLAY with Silt**: yellowish brown nodules light gray, weak odor, dry to moist
					3.3		
					15.7		
	Direct Push Sleeves		P47-B3-5		70.0		
5					4.3		**SILT with Clay**: reddish yellow and light brown, strong odor, dry to moist
					14.3		
					41.6		
					90.8		
							SILT: pink and reddish yellow, strong odor, moist, petroleum staining, trace sand
			P47-B3-10		183.9		
10							

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
An iPad integrated GPS unit was used to locate the borehole with an accuracy of 5 meters.
The boring was backfilled with bentonite

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.: 20201105.001A
DRAWN BY: A SHURTLEFF
CHECKED BY: M BURNS
DATE: 10/8/2019

BORING LOG P47-B3

NCDOT: U-5757
Biesecker Road
Lexington, NC

3

PAGE: 1 of 1

BORING LOG P47-B4

Date Begin - End:	8/07/2019	**Drilling Company:**	Quantex
Logged By:	A Shurtleff	**Drill Crew:**	Andrew C
Hor.-Vert. Datum:	WGS 1984 - Not Available	**Drilling Equipment:**	Genuine Geoprobe
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column
Weather:	80°F Clear	**Borehole Diameter:**	

FIELD EXPLORATION

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Latitude: 35.84551° N Longitude: -80.25376° E Surface Condition: Bare Earth Lithologic Description
							SILT: brown and dark brown, dry
					2.5		
							CLAY with Silt: yellowish brown nodules light gray, weak odor, dry to moist
					3.1		
					3.2		
	Direct Push Sleeves		P47-B4-4		28.5		
					89.2		
5							
					104.3		**SILT with Clay**: reddish yellow and light brown, strong odor, dry to moist
					173.4		
					294.1		
					387.1		**SILT**: pink and reddish yellow, strong odor, moist, petroleum staining, trace sand
			P47-B4-10		394.2		
10							

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
An iPad integrated GPS unit was used to locate the borehole with an accuracy of 5 meters.
The boring was backfilled with bentonite

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.: 20201105.001A
DRAWN BY: A SHURTLEFF
CHECKED BY: M BURNS
DATE: 10/8/2019

BORING LOG P47-B4

NCDOT: U-5757
Biesecker Road
Lexington, NC

4

PAGE: 1 of 1

Date Begin - End:	8/07/2019	**Drilling Company:**	Quantex
Logged By:	A Shurtleff	**Drill Crew:**	Andrew C
Hor.-Vert. Datum:	WGS 1984 - Not Available	**Drilling Equipment:**	Genuine Geoprobe
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column
Weather:	85°F Partly Cloudy	**Borehole Diameter:**	

BORING LOG P47-B5

FIELD EXPLORATION

Latitude: 35.84551° N
Longitude: -80.25376° E
Surface Condition: Bare Earth

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
					0.8		**SILT**: brown and dark brown
					0.9		**Silty CLAY**: yellowish brown nodules light gray
					1.0		
					1.1		
	Direct Push Sleeves		P47-B5-5		1.2		
5					1.1		**Silty CLAY**: reddish yellow streaked light brown, dry to moist
					1.0		
					0.8		
					0.6		
					0.5		
10							

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
An iPad integrated GPS unit was used to locate the borehole with an accuracy of 5 meters.
The boring was backfilled with bentonite

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.: 20201105.001A
DRAWN BY: A SHURTLEFF
CHECKED BY: M BURNS
DATE: 10/8/2019

BORING LOG P47-B5

NCDOT: U-5757
Biesecker Road
Lexington, NC

5

PAGE: 1 of 1

APPENDIX D

ANALYTICAL REPORT AND GRAPHS

QED

REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: KLEINFELDER
Address:

Samples taken Wednesday, August 7, 2019
Samples extracted Wednesday, August 7, 2019
Samples analysed Wednesday, August 7, 2019

Contact: ABI SHURTLEFF

Operator MAX MOYER

Project: NCDOT U-5757 ; PARCEL 47

F03640

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	P47 - B1 - 5	19.0	<0.47	<0.47	0.47	0.47	0.28	<0.15	<0.019	0	35	65	Residual HC
s	P47 - B2 - 10	18103.0	2894	18272	61299	79571	2816	<144.8	<18.1	99.9	0.1	0	Undeg.Kerosene 93%,(FCM)
s	P47 - B2 - 3	21.5	<0.54	<0.54	1.1	1.1	0.42	<0.17	<0.021	0	70.3	29.7	Deg Fuel 87.8%,(FCM)

Initial Calibrator QC check OK

Final FCM QC Check OK 98.8 %

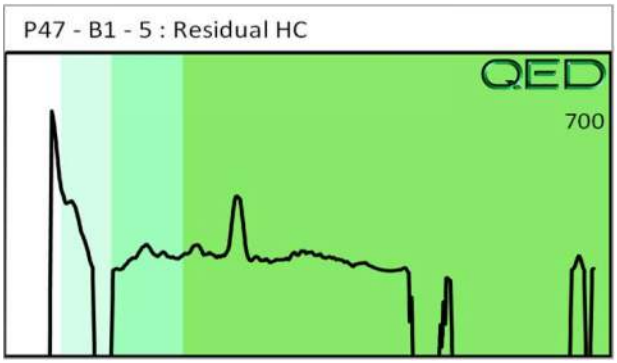
Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

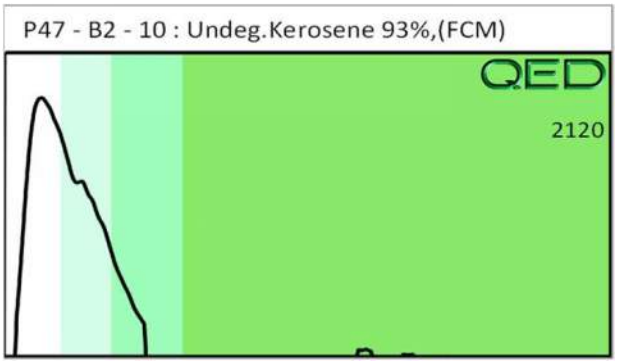
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

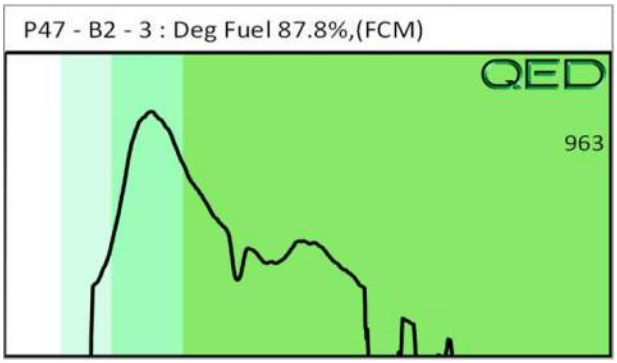
(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

QED Hydrocarbon Fingerprints

Project: NCDOT U-5757 ; PARCEL 40 Wednesday, August 7, 2019







QED

REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: KLEINFELDER
Address:

Samples taken Wednesday, August 7, 2019
Samples extracted Wednesday, August 7, 2019
Samples analysed Wednesday, August 7, 2019

Contact: ABI SHURTLEFF

Operator MAX MOYER

Project: NCDOT U-5757 ; PARCEL 47

F03640

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	P47 - B3 - 5	19.7	<0.49	<0.49	<0.49	<0.49	<0.1	<0.16	<0.02	0	0	0	PHC not detected,(BO)
s	P47 - B3 - 10	20.5	<0.51	<0.51	<0.51	<0.51	<0.1	<0.16	<0.02	0	0	0	PHC not detected,(BO)
s	P47 - B4 - 4	21.1	<0.53	<0.53	<0.53	<0.53	<0.11	<0.17	<0.021	0	0	0	PHC not detected,(BO)
s	P47 - B4 - 10	150.0	<3.8	375.2	1586	1961	88.8	3.3	<0.15	99.9	0.1	0	Undeg.Kerosene 92.5%,(FCM)
s	P47 - B5 - 5	20.0	<0.5	<0.5	<0.5	<0.5	<0.1	<0.16	<0.02	0	0	0	PHC not detected,(BO)

Initial Calibrator QC check OK

Final FCM QC Check OK 101.9 %

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

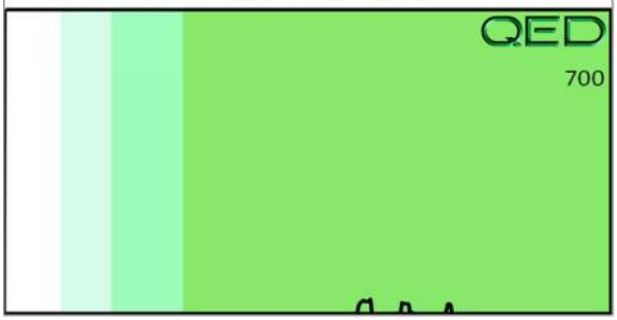
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

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

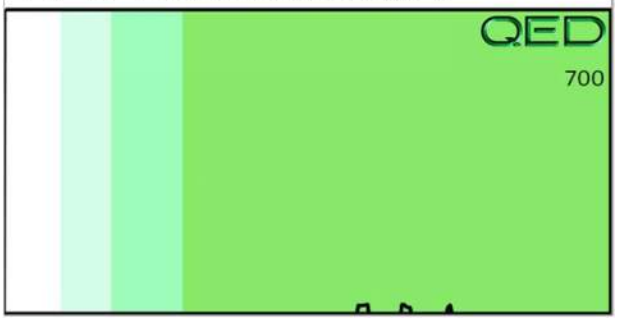
QED Hydrocarbon Fingerprints

Project: NCDOT U-5757 ; PARCEL 47 Wednesday, August 7, 2019

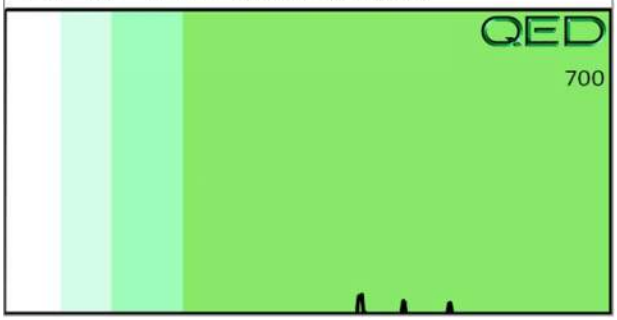
P47 - B3 - 5 : PHC not detected,(BO)



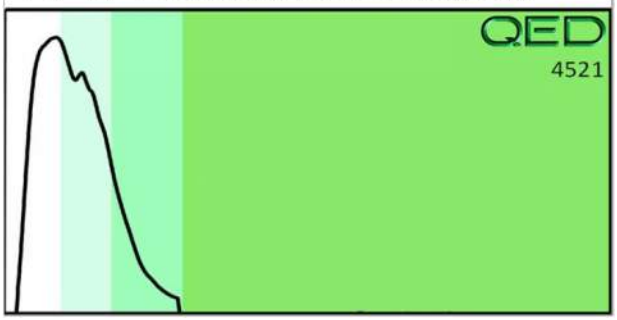
P47 - B3 - 10 : PHC not detected,(BO)



P47 - B4 - 4 : PHC not detected,(BO)



P47 - B4 - 10 : Undeg.Kerosene 92.5%,(FCM)



P47 - B5 - 5 : PHC not detected,(BO)