



September 16, 2021
Kleinfelder File No. RAL21R130546

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 117, Gregory Allen and Brenda Kay Stewart AKA Stuart, Brenda
Anderson
WBS Element No. 44691.1.1, TIP No. R-5759
Proposed widening of NC 115 from US 421 to 2nd Street in Wilkesboro and
North Wilkesboro, Wilkes County, NC
Kleinfelder Project No. 20221238.001A**

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.

Evan D. Amber
Staff Professional I

Michael J Burns, LG
Environmental Program Manager

EDA/MJB:asp

R-5759-P117
20221238.001A | RAL21R130546
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1055 Statesville Road
September 16, 2021
www.kleinfelder.com



**PRELIMINARY SITE ASSESSMENT REPORT
PARCEL 117, GREGORY ALLEN AND BRENDA KAY STEWART
AKA STUART, BRENDA ANDERSON
PIN 2202113 & 2207614
1055 STATESVILLE ROAD
NORTH WILKESBORO, WILKES COUNTY, NORTH CAROLINA**

**NCDOT WBS ELEMENT 44691.1.1
STATE PROJECT R-5759
PROPOSED WIDENING OF NC 115 FROM US 421 TO 2ND
STREET IN WILKESBORO AND NORTH WILKESBORO**

KLEINFELDER PROJECT NO. 20221238.001A

SEPTEMBER 16, 2021

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PROJECT FOR WHICH THIS REPORT WAS PREPARED.**

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

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PROPOSED WIDENING OF NC 115 FROM US 421 TO 2ND STREET IN WILKESBORO AND
NORTH WILKESBORO**

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September 16, 2021

Kleinfelder Project No. 20221238.001A

PRELIMINARY SITE ASSESSMENT REPORT

Site Name and Location: Parcel 117
1055 Statesville Road
North Wilkesboro, Wilkes County, North Carolina

Latitude and Longitude: 36.15920°N, -81.12232°W

County Parcel Number 2202113 & 2207614

Facility ID Number: N/A

Leaking UST Incident: N/A

State Project No.: R-5759

NCDOT Project No.: NCDOT WBS Element 44691.1.1

Description: Proposed widening of NC 115 from US 421 to 2nd Street in Wilkesboro and North Wilkesboro

Date of Report: September 16, 2021

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.

Michael J Burns, LG
NC License No. 1645



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**PRELIMINARY SITE ASSESSMENT REPORT
PARCEL 117, GREGORY ALLEN AND BRENDA KAY STEWART AKA STUART, BRENDA
ANDERSON
PIN 2202113 & 2207614
1055 STATESVILLE ROAD
NORTH WILKESBORO, WILKES COUNTY, NORTH CAROLINA**

**NCDOT WBS ELEMENT 44691.1.1
STATE PROJECT R-5759
PROPOSED WIDENING OF NC 115 FROM US 421 TO 2ND STREET IN WILKESBORO AND
NORTH WILKESBORO**

1 INTRODUCTION

Kleinfelder, Inc. (Kleinfelder) has prepared this Preliminary Site Assessment (PSA) report to document assessment activities performed on Parcel 117 (the assessment area is hereafter referred to as the “Project Study Area”). The Project Study Area consists of the northwestern, southern, and eastern portions of two parcels that are within the right-of-way and/or easement on Wilkes County Tax Assessor’s Office Parcel Numbers 2202113 & 2207614. Parcel 117 is currently occupied by an office building of Jerry Love Realtor. Parcel 117 is located along the eastern side of NC 115 (US 421 BUS AKA Statesville Road), north of Cedar Lane, in North Wilkesboro, Wilkes County, North Carolina (Figure 1).

Based on the information provided in the Pre-Scoping Comments letter, dated September 20, 2018, prepared by the North Carolina Department of Transportation (NCDOT), the parcel (listed as Site # 16 in the letter) was described as the site of an office building of Jerry Love Realtor, and reportedly may have been a former retail gasoline filling station until about 1993. The letter listed anticipated impacts as the possible presence of underground storage tanks (USTs) and petroleum impacted soil and/or groundwater. As such, the purpose of the PSA was to evaluate whether USTs are present in the Project Study Area and to observe for the presence of hydraulic lifts in one parcel building. The presence of USTs and/or hydraulic lifts may result in increased project costs and future liability if acquired by the NCDOT.

1.1 SITE DESCRIPTION

Parcel 117 has listed owners of Gregory Allen and Brenda Kay Stewart AKA Stuart, Brenda Anderson. The parcel’s street address is 1055 Statesville Road. The parcel consists of an office building (Jerry Love Realtor) in the southern portion of the parcel and a garage building with two bay doors in the northeastern portion of the parcel, which respectively may have formerly

supported a retail gasoline fueling station and an automotive service garage; also apparent were maintained grass areas and a mobile home in the central portion of the parcel, and a paved asphalt driveway, a residential home, and a private shed in the northwestern portion of the parcel.

The parcel is bounded by NC 115 to the south and to the west, beyond which are residential homes, a gray-painted cinderblock garage with two bay doors, and wooded land; by Cedar Lane to the east, beyond which are wooded lands and residential homes; by wooded land to the north, beyond which are residential homes; and by commercial land to the west associated with a restaurant (Ted's Famous Kickin' Chicken), beyond which are vacant, vegetated and wooded lands.

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 June 1, 2021, Request for Technical and Cost Proposal (RFP) and Kleinfelder's June 16, 2021, Technical and Cost Proposal. The NCDOT granted a formal Notice to Proceed on June 21, 2021.

2 HISTORY

2.1 PARCEL USAGE

The 1.69-acre parcel consists of an office building (Jerry Love Realtor) in the southern portion of the parcel and a garage building with two bay doors in the northeastern portion of the parcel, which respectively may have formerly supported a retail gasoline fueling station and an automotive service garage; also apparent were maintained grass areas and a mobile home in the central portion of the parcel, and a paved asphalt driveway, a residential home, and a private shed in the northwestern portion of the parcel.

The September 20, 2018, Pre-Scoping Comments letter did not list a Facility ID Number associated with the property, but did identify that the site may have been a former retail gasoline fueling station until about 1993. The proposed NCDOT easement passes through a portion of the parcel that encompasses a portion of the current office building and suggests that the building may be demolished by NCDOT.

Kleinfelder conducted historical research to determine whether additional environmental listings were identified for Parcel 117. The following are the results of the additional research:

- Based on a review of historical aerial photographs using Google Earth Pro, the NCDOT Historical Aerial Imagery Index, and parcel tax records, the blue and white painted 1,244 square foot (ft²) residential home in the northwestern portion of the parcel and the 480-ft² garage building with two bay doors along Cedar Lane in the northeastern portion of the parcel were both constructed in 1938. A 2,400- ft² asphalt driveway was added on the eastern side of the residential home in 1968. The gray-painted cinderblock building at the intersection of Statesville Road and Cedar Lane (i.e., the current office building of Jerry Love Realtor) was apparent in aerial imagery from March 1964, but the construction date was not listed in the property tax records. Historical imagery prior to 1964 was not available. The mobile home in the central portion of the parcel was established on-site in 1986.
- Kleinfelder searched the registered UST database, maintained by the NCDEQ. The site was not listed with a Facility ID Number.
- No other listings for Parcel 117 were identified on any of the available NCDEQ pollution incident databases.

2.2 FACILITY ID NUMBERS

Kleinfelder reviewed the NCDEQ UST database for Parcel 117. The site was not listed with a Facility ID Number.

2.3 GROUNDWATER INCIDENT NUMBERS

No active groundwater incidents are known to be associated with Parcel 117 at this time.

3 OBSERVATIONS

3.1 GROUNDWATER MONITORING WELLS

No active groundwater monitoring wells were observed on Parcel 117 at the time of site exploration, Thursday, August 5, 2021.

3.2 ACTIVE USTS

Based on review of the NCDEQ UST database, site visits and previous reports, there is one (1) probable UST along the northern side of the blue and white painted residential home in the northernmost portion of the Project Study Area. The probable UST is likely inactive, but this could not be confirmed at the time of site exploration, August 5, 2021. A photograph of the probable UST area is provided in Appendix A.

3.3 FEATURES APPARENT BEYOND THE PROJECT STUDY AREA

The Project Study Area consisted of the northwestern, southern, and eastern portions of two parcels within the NCDOT right-of-way or easement. An approximately 500-gallon aboveground storage tank (AST) was observed along the northern side of the blue and white painted residential home in the northernmost portion of the Project Study Area. The AST is located adjacent to a probable UST and stressed vegetation was observed. The AST may contain heating oil. A photograph of the AST is provided in Appendix A. A mobile home was also observed in the central portion of the parcel, northeast of the Project Study Area. A private shed was observed northeast of the Project Study Area at the end of the paved asphalt driveway for the residential home in the northern portion of the parcel.

3.4 INTERIOR OF THE GARAGE BUILDING

Kleinfelder was not able to observe the interior of the garage building on Parcel 117 to evaluate for the presence of in-ground hydraulic lifts, as Kleinfelder had not received entry authorization from the NCDOT Right of Way Agent by the time of site exploration, Thursday, August 5, 2021.

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 14 and 16, 2021. Pyramid utilized electromagnetic (EM) induction technology and ground penetrating radar (GPR) to locate potential geophysical anomalies and potential USTs within the Project Study Area.

A total of thirteen (13) EM anomalies were identified, of which eleven (11) were directly attributed to visible cultural features at the ground surface, including steel storm pipes, a sign, a mailbox, metal on the ground surface, buildings, an AST, a mobile home, an air conditioner, and metal doors. One (1) EM anomaly (listed as Metallic Anomaly #11 in the geophysical report) was attributed to suspected buried metallic debris in the eastern portion of the Project Study Area along Cedar Lane. One (1) EM anomaly (listed as Metallic Anomaly #6 in the geophysical report) was attributed to a probable UST along the northern side of the blue and white painted residential home in the northernmost portion of the Project Study Area. Probable UST #1 is approximately 8.5-ft long by 6-ft wide.

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 maybe migrating off-site. The soil borings were planned to be advanced to maximum depths of 10-feet below the ground surface (ft bgs) which is estimated to be one foot below the bottom of the tank. Field screening using a photoionization detector (PID) was conducted at 1-foot intervals beginning from the ground surface to total boring depth. The soil sample with the highest PID reading above background or the sample from the maximum drilled depth was 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 South Atlantic Environmental Drilling and Construction Company (SAEDACCO) to perform the drilling on-site on August 5, 2021. SAEDACCO advanced two (2) soil borings (P117-B1 and P117-B2) by direct-push technology at locations specified by Kleinfelder. The soil boring locations were identified in the field using a GPS. The borings were located within the right-of-way adjacent to the AST and Probable UST #1 in the northernmost portion of the Project Study Area. The soil boring locations are shown on Figure 2.

Soil samples were collected by driving Macro Core™ samplers in 5-foot intervals to boring termination where direct-push technology was applied. Each soil core was cut open, the soil samples were classified, and the soil divided into 1-foot sections. Each 1-foot section, collected via either method, was screened in the field using a PID. The PID readings are summarized in Table 1.

Soils from soil boring P117-B1 were determined to be primarily composed of red and yellowish-brown clayey silt from below the topsoil to about 5-ft bgs, and to be primarily composed of yellowish-brown and reddish-brown silt from 5-10-ft bgs. Soils from soil boring P117-B2 were determined to be primarily composed of white and yellowish-brown sand from below the topsoil to about 4-ft bgs, and to be primarily composed of yellowish-brown and reddish-brown silt from 4-

10-ft bgs. Groundwater was not encountered in any of the borings at the termination depths of 10-ft bgs. Copies of the boring logs are included in Appendix C.

4.5 SOIL ANALYSIS

The PID readings from soil borings advanced were noted to be low, with a maximum of concentration of 10.4 parts per million (ppm) from soil boring P117-B2 at 2-ft bgs. Based on the PID data and visual observations, one or two of the samples from each boring were selected for on-site laboratory analysis.

Selected 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 suspected historical or current use of petroleum products on Parcel 117. 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 identify unknown geophysical anomalies within the Project Study Area. One (1) probable UST was identified along the northern side of the blue and white painted residential home in the northernmost portion of the Project Study Area. Probable UST #1 is approximately 8.5-ft long by 6-ft wide.

5.2 SOIL SAMPLING DATA

The UVF analysis of soil samples did not indicate the presence of petroleum impact in any of the soil samples analyzed. As such, shallow soil impact does not appear to be present within the existing right-of-way above NCDEQ Action Levels. A summary of soil sample PID readings are presented in Table 1, and laboratory analytical results are presented in Table 2. The laboratory results associated with each boring are presented on Figure 2. The laboratory report and graphs are included in Appendix D.

5.3 SAMPLE OBSERVATIONS

Soils were observed for any obvious evidence of contamination. No visual or olfactory evidence of contamination was noted in any of the soil samples from the borings.

5.4 QUANTITY CALCULATIONS

Kleinfelder did not identify soil impact in the current right-of-way.

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. The GPR and EM investigation identified one (1) probable UST along the northern side of the blue and white painted residential home in the northernmost portion of the Project Study Area. Probable UST #1 is approximately 8.5-ft long by 6-ft wide.
- The site is not listed in the NCDEQ UST Database with a Facility ID Number. There is one (1) probable UST along the northern side of the blue and white painted residential home in the northernmost portion of the Project Study Area. The probable UST is likely inactive, but this could not be confirmed at the time of site exploration, August 5, 2021.
- An approximately 500-gallon AST that may contain heating oil was observed along the northern side of the blue and white painted residential home in the northernmost portion of the Project Study Area adjacent to Probable UST #1, with stressed vegetation noted at the time of site exploration, August 5, 2021.
- No soil impact was detected in borings advanced within the current right-of-way above the NCDEQ Action Levels for TPH GRO and DRO.
- Groundwater was not encountered in the soil borings at a depth of 10-ft bgs.
- Kleinfelder was not provided access to the interior of the garage building to observe for the presence of in-ground hydraulic lifts by the time of site exploration, Thursday, August 5, 2021. As such, the presence/absence of in-ground hydraulic lifts is unknown at this time.

7 RECOMMENDATIONS

Based on results of this Preliminary Site Assessment completed with limiting conditions, Kleinfelder recommends no additional sampling or special handling of soils be performed within the Project Study Area on Parcel 117 in North Wilkesboro, Wilkes 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
8/5/2021	R-5759-P117-B1	1	1.1	
		2	2.4	
		3	3.1	
		4	4.6	
		5	3.5	
		6	5.0	
		7	6.3	UVF Analysis
		8	2.9	
		9	0.5	
		10	4.6	
8/5/2021	R-5759-P117-B2	1	5.1	
		2	10.4	UVF Analysis
		3	3.9	
		4	4.1	
		5	3.9	
		6	7.2	
		7	1.5	
		8	1.8	
		9	2.0	
		10	5.2	UVF Analysis

- 1) PID = Photoionization Detector
- 2) PID readings in parts per million (ppm)
- 3) NA = Not Analyzed
- 4) UVF = Ultraviolet Fluorescence

TABLE 2: Soil Sample Analytical Summary

Parameter	Analytical Results			Comparison Criteria		
	Soil Sample Results					
Sample ID	P117-B1-7	P117-B2-2	P117-B2-10	State Action Level	Protection of Groundwater	Residential Health
PID Reading (ppm)	6.3	10.4	5.2			
Collection Depth (ft bgs)	7	2	10			
Collection Date	8/5/21	8/5/21	8/5/21			
UVF Method						
Diesel Range Organics	0.16	<0.12	<0.2	100	--	--
Gasoline Range Organics	<0.6	<0.3	<0.5	50	--	--

Notes:

Results displayed in milligrams per kilogram (mg/kg)

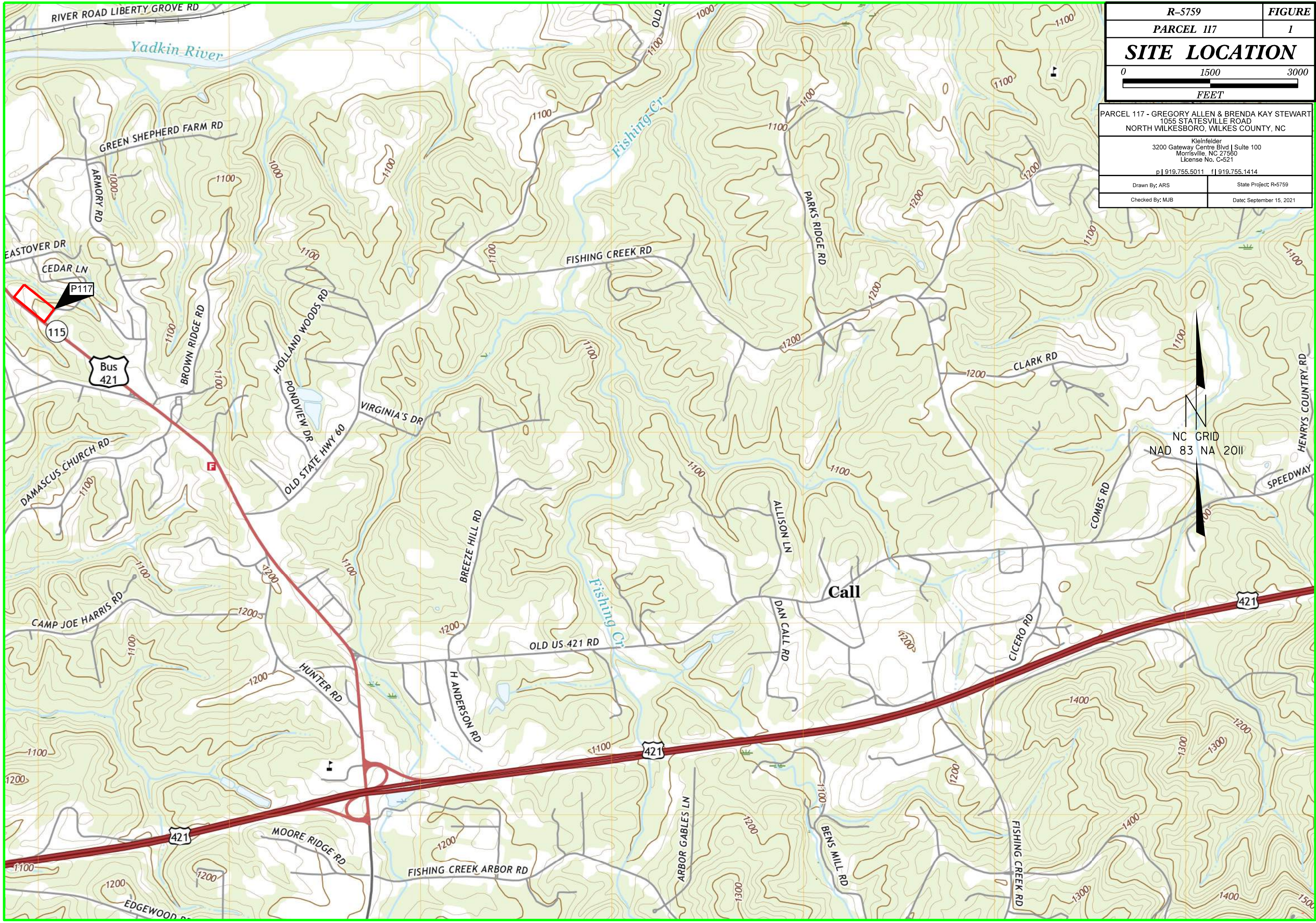
ft bgs = Feet below ground surface

Bold = Above Laboratory Detection Level

Highlighted concentrations exceed the NCDEQ action level

UVF = Ultraviolet Fluorescence

FIGURES



R-5759	FIGURE
PARCEL 117	1
SITE LOCATION	
0 1500 3000 FEET	
PARCEL 117 - GREGORY ALLEN & BRENDA KAY STEWART 1055 STATESVILLE ROAD NORTH WILKESBORO, WILKES COUNTY, NC	
Kleinfelder 3200 Gateway Centre Blvd Suite 100 Morristown, NC 27560 License No. C-521 p 919.755.5011 f 919.755.1414	
Drawn By: ARS	State Project: R-5759
Checked By: MJB	Date: September 15, 2021

APPENDIX A

SITE PHOTOGRAPHS



View facing northwest from the southern corner of the Project Study Area, along NC 115 at the corner of NC 115 and Cedar Lane and depicting the office building of Jerry Love Realtor.



View facing northeast from the southern corner of the Project Study Area, along Cedar Lane at the intersection of Cedar Lane and NC 115.

Original in Color



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SITE PHOTOGRAPHS

Preliminary Site Assessment Report
R-5759 – Parcel 117, Gregory Allen and Brenda
Kay Stewart AKA Stuart, Brenda Anderson
1055 Statesville Road
North Wilkesboro, Wilkes County, NC 28659

FIGURE

A-1



View facing west from the eastern portion of the Project Study Area, depicting the northeastern side of the gray-painted cinderblock building.



View facing northwest from the southern portion of the Project Study Area, west of the gray-painted cinderblock building and along NC 115.

Original in Color

 KLEINFELDER <i>Bright People. Right Solutions.</i> www.kleinfelder.com	PROJECT NO:20221238.001A	SITE PHOTOGRAPHS	FIGURE A-2
	DRAWN: September 2021		
	DRAWN BY: EDA	Preliminary Site Assessment Report R-5759 – Parcel 117, Gregory Allen and Brenda Kay Stewart AKA Stuart, Brenda Anderson 1055 Statesville Road North Wilkesboro, Wilkes County, NC 28659	
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	FILE NAME: Photo Pages		



View facing southwest from the northeastern corner of the Project Study Area, depicting the garage with two bay doors located along Cedar Lane.



View facing southwest from the northeastern corner of the Project Study Area, along Cedar Lane.

Original in Color

	PROJECT NO:20221238.001A	SITE PHOTOGRAPHS	FIGURE A-3
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View facing north from the northeastern portion of the Project Study Area, depicting the garage with two bay doors located along Cedar Lane.



View facing northeast from the northeastern portion of the parcel, depicting the western side of the garage with two bay doors located along Cedar Lane.

Original in Color

 KLEINFELDER <i>Bright People. Right Solutions.</i> www.kleinfelder.com	PROJECT NO:20221238.001A	SITE PHOTOGRAPHS	FIGURE A-4
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View facing southeast from the western portion of the Project Study Area, along NC 115.



View facing northeast from the northwestern portion of the Project Study Area, depicting a shed adjacent to the blue and white painted house along the northernmost portion of the parcel.

Original in Color

	PROJECT NO:20221238.001A	SITE PHOTOGRAPHS	FIGURE A-5
	DRAWN: September 2021		
	DRAWN BY: EDA	Preliminary Site Assessment Report R-5759 – Parcel 117, Gregory Allen and Brenda Kay Stewart AKA Stuart, Brenda Anderson 1055 Statesville Road North Wilkesboro, Wilkes County, NC 28659	
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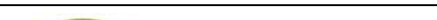


View facing north from the northwestern portion of the Project Study Area, depicting the blue and white painted house along the northernmost portion of the parcel (1055 Statesville Road).



View facing east from the northwestern corner of the Project Study Area, depicting a 500-gallon AST (likely heating oil) along the northern side of the blue and white painted house in the northernmost portion of the parcel. One (1) probable heating oil UST adjacent to the AST was observed as part of the geophysical survey and was outlined with white spray paint.

Original in Color

 KLEINFELDER <i>Bright People. Right Solutions.</i> www.kleinfelder.com	PROJECT NO:20221238.001A	SITE PHOTOGRAPHS	FIGURE A-6
	DRAWN: September 2021		
	DRAWN BY: EDA	Preliminary Site Assessment Report R-5759 – Parcel 117, Gregory Allen and Brenda Kay Stewart AKA Stuart, Brenda Anderson 1055 & 2454 Statesville Road North Wilkesboro, Wilkes County, NC 28659	
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APPENDIX B

GEOPHYSICAL SURVEY REPORT



PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2021-190)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION: PARCEL 117 NCDOT PROJECT U-5759

1055 & 2454 STATESVILLE ROAD, NORTH WILKESBORO, NC

August 6, 2021

Report prepared for: Michael Burns, P.G.
Kleinfelder, Inc.
3200 Gateway Centre Blvd., Suite 100
Morrisville, NC 27560

Prepared by: _____

A handwritten signature in black ink, appearing to read "E. Cross".

Eric C. Cross, P.G.
NC License #2181

Reviewed by: _____

A handwritten signature in black ink, appearing to read "Doug Canavella".

Douglas A. Canavella, P.G.
NC License #1066

503 INDUSTRIAL AVENUE, GREENSBORO, NC 27406

P: 336.335.3174 F: 336.691.0648

C257: GEOLOGY

C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
Parcel 117 - 1055 & 2454 Statesville Road
North Wilkesboro, Wilkes County, North Carolina

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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 (Pyramid) conducted a geophysical investigation for Kleinfelder, Inc. at Parcel 117, located at 1055 & 2454 Statesville Road, in North Wilkesboro, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-5759). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted on July 14-20, 2021, 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 thirteen EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. GPR was performed around all sources of significant metallic interference to confirm that the interference did not obscure any significant structures such as USTs. The geophysical survey identified evidence of utilities and/or buried debris.

A probable UST was identified next to the aboveground storage tank (AST) on the northwest side of the westernmost house. Probable UST #1 is approximately 8.5 feet long by 6 feet wide. Collectively, the geophysical data recorded evidence of one probable UST at Parcel 117.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Kleinfelder, Inc. at Parcel 117, located at 1055 & 2454 Statesville Road, in North Wilkesboro, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-5759). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted on July 14-20, 2021, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site consisted of a house, a mobile home, a garage, and a commercial building, surrounded by asphalt 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 20, 2021, using a Geophysical Survey Systems, Inc. (GSSI) SIR 4000 control unit coupled to a 350 MHz HS 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 SIR 4000 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	Steel Storm Pipe	
2	Sign	
3	Steel Storm Pipe	
4	Mailbox	
5	Metal on Ground Surface	
6	Building/AST/ One Probable UST	✓
7	Building	✓
8	Mobile Home	✓
9	Air Conditioner	
10	Building/Metal Door	✓
11	Suspected Buried Metallic Debris	✓
12	Building/Metal Door	✓
13	Metal on Ground Surface	

The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface, including steel storm pipes, a sign, a mailbox, metal on the ground surface, buildings, an AST, a mobile home, an air conditioner, and metal doors. EM Anomalies 6 and 11 were investigated with GPR to examine whether the anomalies were the result of significant structures such as a USTs. GPR was also performed around areas of significant metallic interference to confirm that the metallic interference did not obscure any significant structures such as USTs.

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 nine formal GPR transects were performed at the site.

GPR Transects 2 and 3 were performed across EM Anomaly 11. These transects showed shallow reflectors consistent with suspected buried metallic debris. No evidence of significant structures such as USTs was observed.

GPR Transects 3-9 were performed across the areas of significant metallic interference. GPR Transects 8 and 9 were performed next to the AST on the northwest side of the westernmost house. These transects showed a large, high-amplitude lateral reflector and a large, high-amplitude hyperbolic reflector consistent with a UST. Probable UST #1 is approximately 8.5 feet long by 6 feet wide. **Figure 4** provides the location and size of the probable UST, overlain on an aerial, along with ground-level photographs. The remaining transects showed evidence of possible buried utilities and/or debris.

Collectively, the geophysical data recorded evidence of one probable UST at Parcel 117. **Figure 5** provides an overlay of the metal detection results and one probable UST on the NCDOT engineering plans for reference.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 and GPR data collected at Parcel 117 in North Wilkesboro, 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.
- GPR was performed around all sources of significant metallic interference to confirm that the interference did not obscure any significant structures such as USTs.
- The geophysical survey identified evidence of utilities and/or buried debris.
- A probable UST was identified next to the AST on the northwest side of the westernmost house. Probable UST #1 is approximately 8.5 feet long by 6 feet wide.
- Collectively, the geophysical data recorded evidence of one probable UST at Parcel 117.

LIMITATIONS

Geophysical surveys have been performed and this report was prepared for Kleinfelder, Inc. 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 Northwest)



View of Survey Area (Facing Approximately Northeast)



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PROJECT
PARCEL 117
NORTH WILKESBORO, NORTH CAROLINA
NCDOT PROJECT U-5759

TITLE
PARCEL 117 -
GEOPHYSICAL SURVEY BOUNDARIES
AND SITE PHOTOGRAPHS

DATE 7/19/2021

PYRAMID PROJECT #: 2021-190

CLIENT Kleinfelder

FIGURE 1

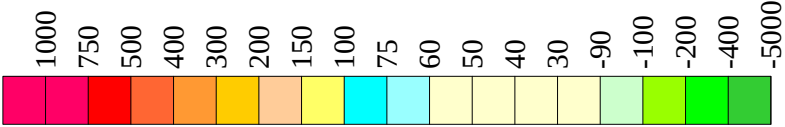
EM61 METAL DETECTION RESULTS



EVIDENCE OF ONE PROBABLE METALLIC UST 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 14, 2021, using a Geonics EM61-MK2 instrument. Verification GPR data were collected using a GSSI SIR 4000 instrument with a 350 MHz HS antenna on July 20, 2021.

EM61 Metal Detection Response (millivolts)



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PROJECT
PARCEL 117
NORTH WILKESBORO, NORTH CAROLINA
NCDOT PROJECT U-5759

TITLE
PARCEL 117 -
EM61 METAL DETECTION CONTOUR MAP

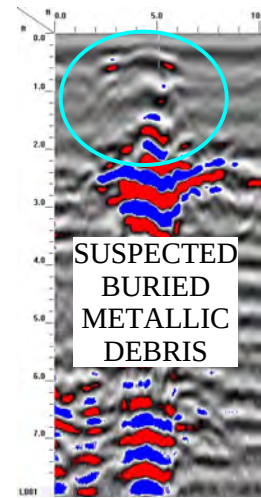
DATE
7/19/2021

PYRAMID
PROJECT #:
2021-190

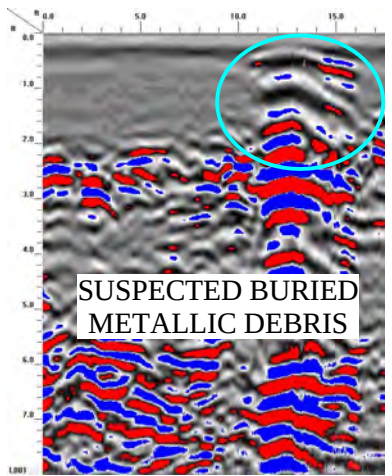
CLIENT
Kleinfelder

FIGURE 2

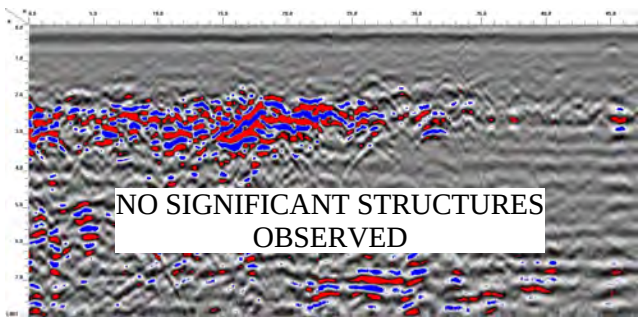
GPR TRANSECT LOCATIONS



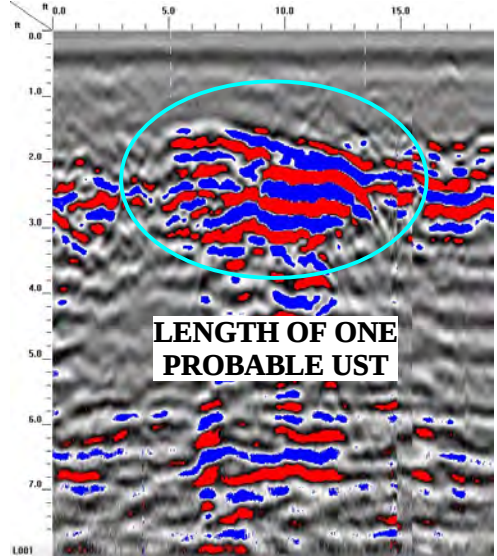
GPR TRANSECT 2 (T2)



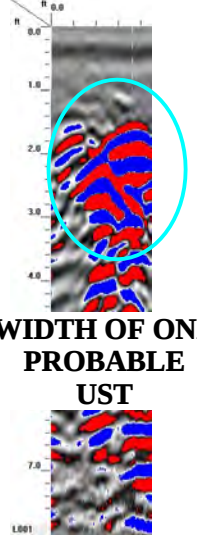
GPR TRANSECT 3 (T3)



GPR TRANSECT 6 (T6)



GPR TRANSECT 8 (T8)



GPR TRANSECT 9 (T9)



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PROJECT
PARCEL 117
NORTH WILKESBORO, NORTH CAROLINA
NCDOT PROJECT U-5759

TITLE
PARCEL 117 -
GPR TRANSECT LOCATIONS AND SELECT IMAGES

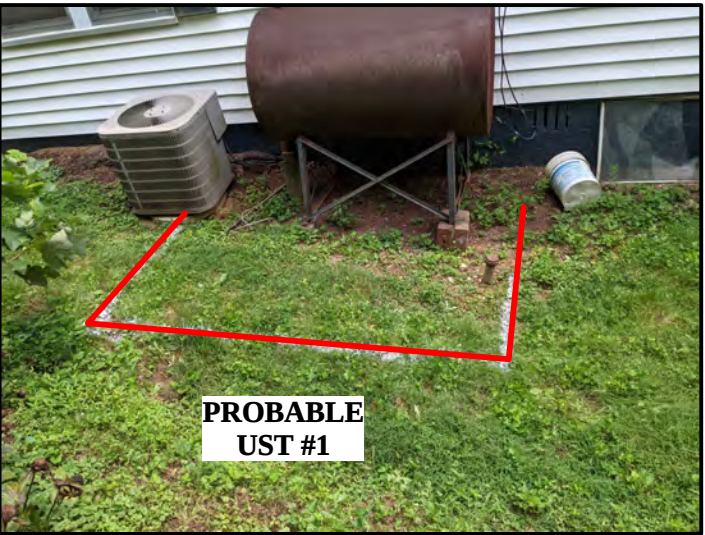
DATE
7/19/2021
PYRAMID PROJECT #:
2021-190

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FIGURE 3

LOCATION OF ONE PROBABLE UST



View of One Probable UST
(Facing Approximately North)



View of One Probable UST
(Facing Approximately East)



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PROJECT
PARCEL 117
NORTH WILKESBORO, NORTH CAROLINA
NCDOT PROJECT U-5759

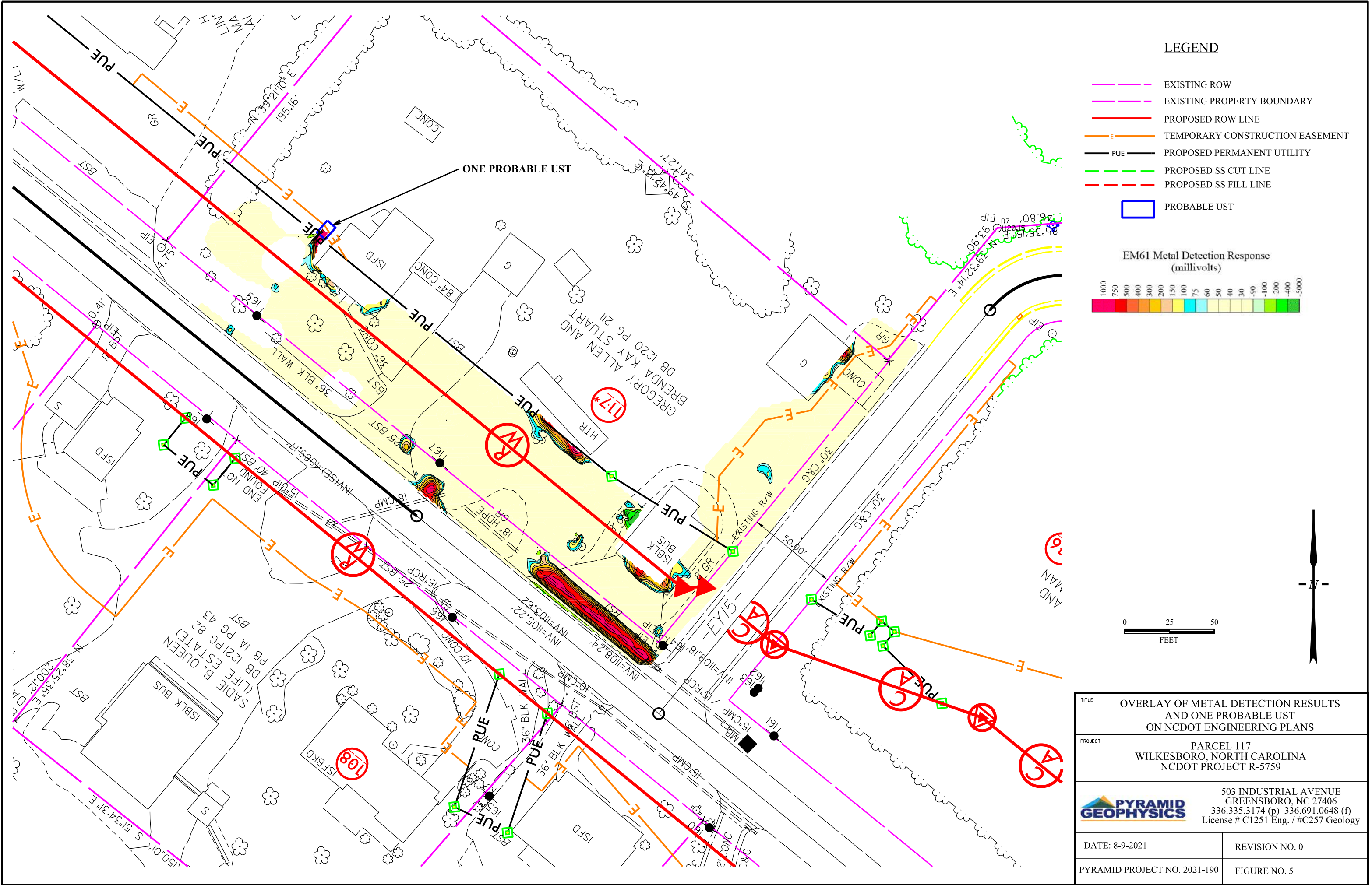
TITLE
PARCEL 117 -
LOCATION AND SIZE OF ONE
PROBABLE UST

DATE
7/19/2021

PYRAMID
PROJECT #:
2021-190

CLIENT
Kleinfelder

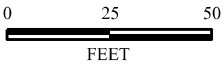
FIGURE 4



LEGEND

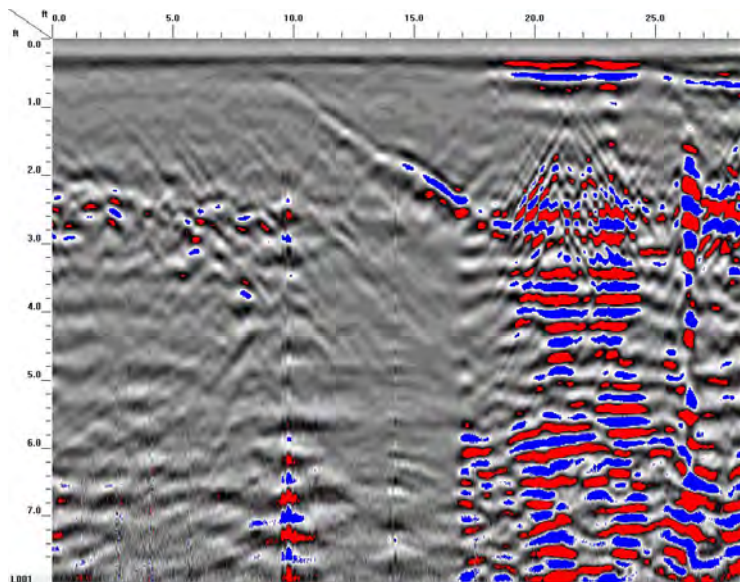
- EXISTING ROW
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROW LINE
- TEMPORARY CONSTRUCTION EASEMENT
- PUE
- PROPOSED PERMANENT UTILITY
- PROPOSED SS CUT LINE
- PROPOSED SS FILL LINE
- PROBABLE UST

EM61 Metal Detection Response
(millivolts)

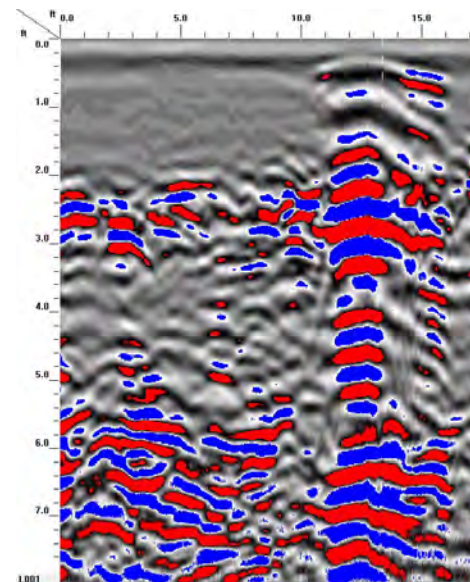


TITLE OVERLAY OF METAL DETECTION RESULTS AND ONE PROBABLE UST ON NCDOT ENGINEERING PLANS	
PROJECT PARCEL 117 WILKESBORO, NORTH CAROLINA NCDOT PROJECT R-5759	
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DATE: 8-9-2021	REVISION NO. 0
PYRAMID PROJECT NO. 2021-190	FIGURE NO. 5

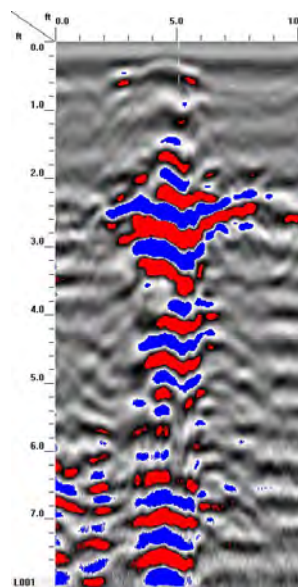
Appendix A – GPR Transect Images



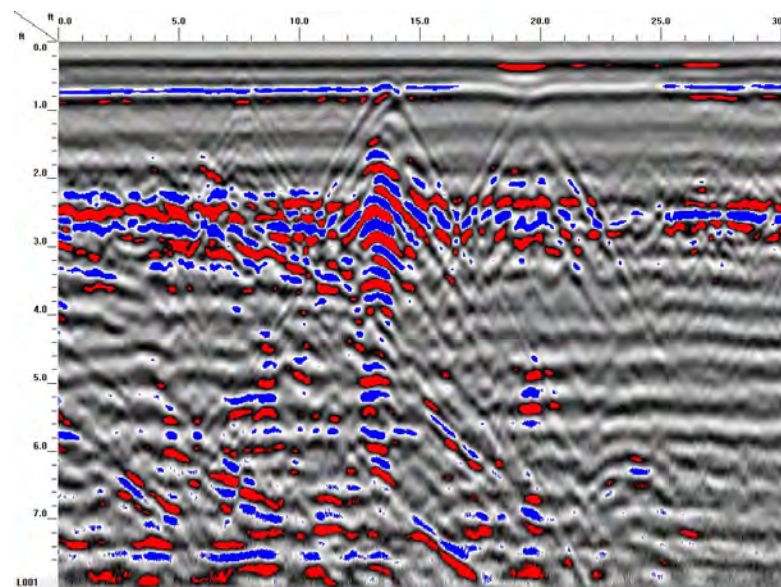
GPR TRANSECT 1



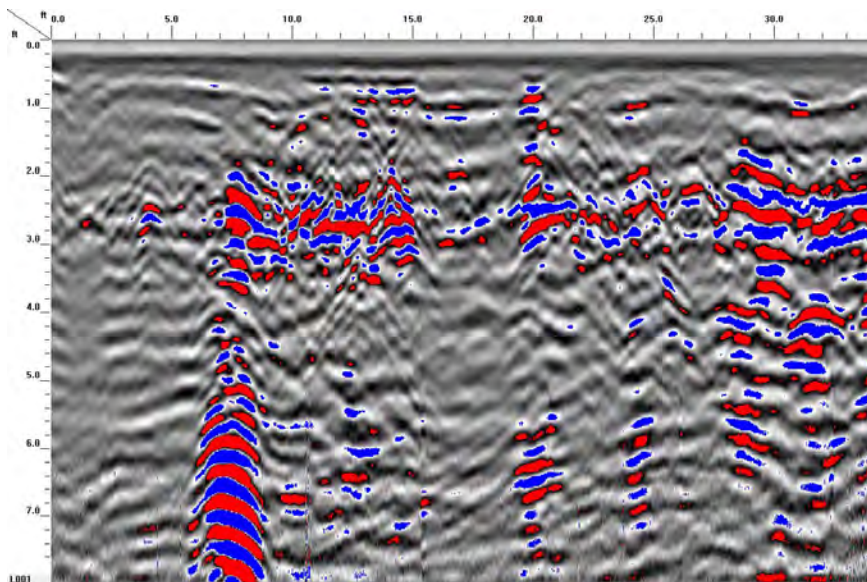
GPR TRANSECT 3



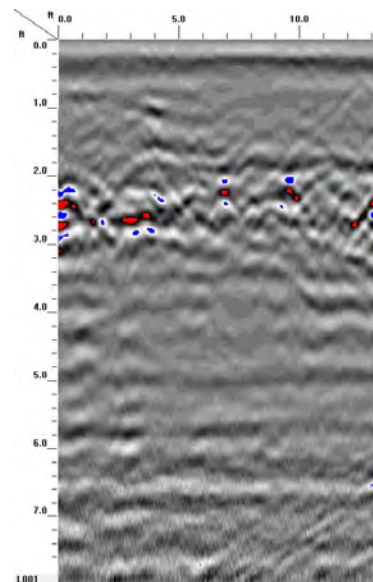
GPR TRANSECT 2



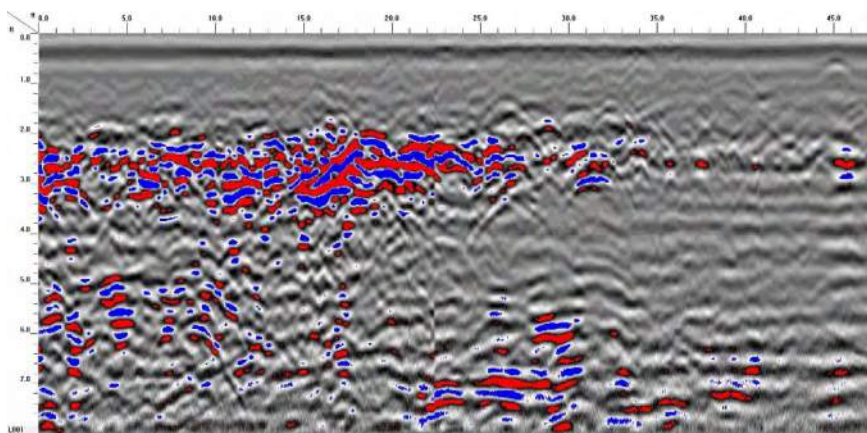
GPR TRANSECT 4



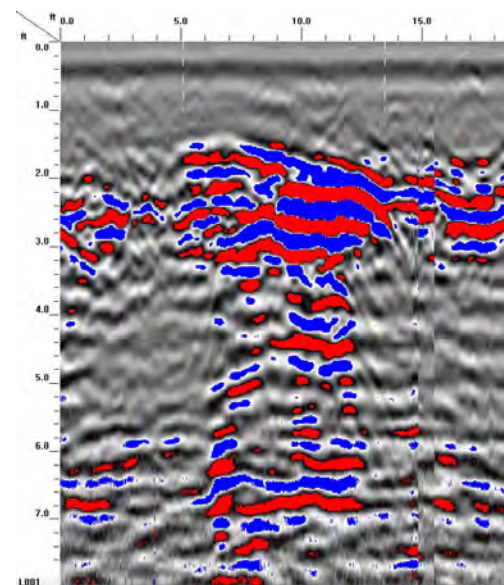
GPR TRANSECT 5



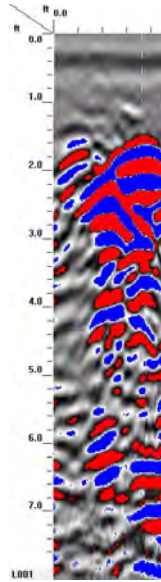
GPR TRANSECT 7



GPR TRANSECT 6



GPR TRANSECT 8



GPR TRANSECT 9

APPENDIX C

BORING LOGS

Date Begin - End:	8/05/2021	Drilling Company:	SAEDACCO	ENVIRONMENTAL BORING LOG P117-B1
Logged By:	E. AMBER	Drill Crew:	S. HUNT	
Hor.-Vert. Datum:	Not Available	Drilling Equipment:	6620DT GeoProbe	
Plunge:	-90 degrees	Drilling Method:	See Drilling Method Column	
Weather:	SUNNY	Bore Diameter:		

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	FIELD EXPLORATION
							Lithologic Description
							Surface Condition: Grass & Weeds
							TOPSOIL: brown
					1.1		Clayey SILT: red and yellowish brown
					2.4		
					3.1		
					4.6		
					3.5		
					5.0		SILT: yellowish brown and reddish brown
					6.3		
					2.9		
					0.5		
					4.6		
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: The environmental boring was backfilled with bentonite.

PROJECT NO.:
20221238.001A

DRAWN BY: EA

CHECKED BY: MJB

DATE: 8/12/2021

ENVIRONMENTAL BORING LOG
P117-B1NCDOT R-5759 PSAs
North Wilkesboro, NC

Date Begin - End: 8/05/2021
Logged By: E. AMBER
Hor.-Vert. Datum: Not Available
Plunge: -90 degrees
Weather: SUNNY

Drilling Company: SAEDACCO
Drill Crew: S. HUNT
Drilling Equipment: 6620DT GeoProbe
Drilling Method: See Drilling Method Column
Bore Diameter:

ENVIRONMENTAL BORING LOG P117-B2

FIELD EXPLORATION							
Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Surface Condition: Grass & Weeds
							Lithologic Description
5 <							



PROJECT NO.:
20221238.001A

DRAWN BY: EA

CHECKED BY: MJB

DATE: 8/12/2021

ENVIRONMENTAL BORING LOG P117-B2

NCDOT R-5759 PSAs
North Wilkesboro, NC

APPENDIX D

ANALYTICAL REPORT AND GRAPHS

Hydrocarbon Analysis Results



Client: KLEINFELDER

Address:



Samples taken
Samples extracted
Samples analysed



Thursday, August 5, 2021

Thursday, August 5, 2021

Thursday, August 5, 2021

Contact: ABI SHURTLEFF

Operator

MAX MOYER

Project: R-5759 ; PARCEL 117

T03308

Matrix	Sample ID	Dilution used	BTEX	GRO	DRO	TPH	Total Aromatics	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
			C6-C9	C5-C10	C10-C35	C5-C35	C10-C35			C5:10	C10:C18	C18+	
Soil	B1 - 7	25.0	<0.6	<0.6	0.16	0.16	0.14	0.015	<0.008	0	91.9	8.1	Residual HC
Soil	B2 - 2	12.0	<0.3	<0.3	<0.12	0.008	0.008	0.001	<0.004	0	100	0	Residual HC
Soil	B2 - 10	20.0	<0.5	<0.5	<0.2	0.022	0.022	0.001	<0.006	0	52.8	47.2	Residual HC

Initial Calibrator QC check **OK**

Final FCM QC Check **OK**

97.5%

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.

Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modified Result.

% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only.

Data generated by HC-1 Analyser

