



September 20, 2021
Kleinfelder File No. RAL21R130662

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 140, Billy R. and Elaine M. Michael AKA Elaine Michael
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-P140
20221238.001A | RAL21R130662
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903 Statesville Road
September 20, 2021
www.kleinfelder.com



**PRELIMINARY SITE ASSESSMENT REPORT
PARCEL 140, BILLY R. AND ELAINE M. MICHAEL AKA ELAINE
MICHAEL
PIN 1404649
903 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 20, 2021

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**903 Statesville Road
September 20, 2021
www.kleinfelder.com**

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 20, 2021

Kleinfelder Project No. 20221238.001A

PRELIMINARY SITE ASSESSMENT REPORT

Site Name and Location: Parcel 140
903 Statesville Road
North Wilkesboro, Wilkes County, North Carolina

Latitude and Longitude: 36.16419°N, -81.12650°W

County Parcel Number 1404649

Facility ID Number: N/A

Leaking UST Incident: N/A

State Project No.: R-5759

NCDOT Project No.: NCDOT WBS Element 44691.1.1

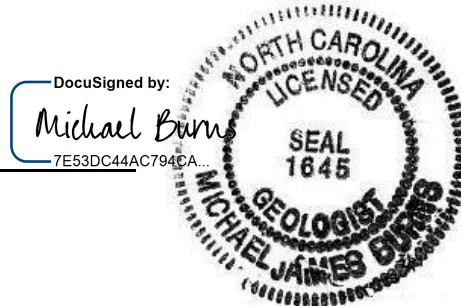
Description: Proposed widening of NC 115 from US 421 to 2nd Street in Wilkesboro and North Wilkesboro

Date of Report: September 20, 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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- 2 Site Plan

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- B Geophysical Survey Report

**PRELIMINARY SITE ASSESSMENT REPORT
PARCEL 140, BILLY R. AND ELAINE M. MICHAEL AKA ELAINE MICHAEL
PIN 1404649
903 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 140 (the assessment area is hereafter referred to as the "Project Study Area"). The Project Study Area consists of the southern, western, and northern portions of a parcel that are within the right-of-way and/or easement on Wilkes County Tax Assessor's Office Parcel Number 1404649. Parcel 140 is currently occupied by an apparent storefront with a parking area and two other buildings on site. Parcel 140 is located along the eastern side of NC 115 (US 421 BUS AKA Statesville Road), south of Armory Road, in North Wilkesboro, Wilkes County, North Carolina (Figure 1).

Information regarding Parcel 140 was not provided in the Pre-Scoping Comments letter, dated September 20, 2018, prepared by the North Carolina Department of Transportation (NCDOT). Kleinfelder's Technical and Cost Proposal, dated June 16, 2021, identified the site as the location an apparent storefront with multiple parking spaces and two other buildings on site. As such, the purpose of the PSA was to: (A) conduct a geophysical survey to evaluate for the presence of underground storage tanks (USTs), magnetic anomalies, and/or buried debris within the Project Study Area; and to (B) recommend additional assessments to the NCDOT if the geophysical survey identified conditions that may warrant further environmental investigation on Parcel 140.

1.1 SITE DESCRIPTION

Parcel 140 has listed owners of Billy R. and Elaine M. Michael AKA Elaine Michael. The parcel's street address is 903 Statesville Road. The parcel consists of a brick apparent storefront in the central portion of the parcel with paved asphalt parking areas on its southwestern side (along NC 115) and in the northwestern portion of the parcel, an adjacent building east of the apparent

storefront along NC 115 in the southern portion of the parcel, a derelict residential home in the eastern portion of the parcel, and a maintained grass area in the northern portion of the parcel.

The parcel is bounded by NC 115 to the south, beyond which is wooded land and residential homes; by vacant, vegetated land and wooded land to the east, beyond which is a paved asphalt parking lot, Cedar Lane, and residential homes; by Armory Road to the north, beyond which are paved asphalt and gravel fill parking areas, Peach Street, commercial land (associated with Kilby's Livestock Market and Wilkes Livestock Market), and a National Guard compound; and by the intersection of NC 115 and Armory Road to the west, beyond which is commercial land (associated with Jack's Sons Seafood, 704 GTB, and A&J Rental).

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 1.21-acre parcel consists of a brick apparent storefront in the central portion of the parcel with paved asphalt parking areas on its southwestern side (along NC 115) and in the northwestern portion of the parcel, an adjacent building east of the apparent storefront along NC 115 in the southern portion of the parcel, a derelict residential home in the eastern portion of the parcel, and a maintained grass area in the northern portion of the parcel.

The September 20, 2018 Pre-Scoping Comments letter did not provide information regarding Parcel 140. The proposed NCDOT easement passes through the southern, western, and northern portions of the parcel and may include portions of the two buildings along NC 115.

Kleinfelder conducted historical research to determine whether additional environmental listings were identified for Parcel 140. 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 Wilkes County parcel tax records the site appeared to have similar development since at least 1950, when a 1,000 square foot (ft²) paved asphalt parking area was added to the property, and the parcel tax records also list a 1-ft² “miscellaneous structure” constructed on the property in 1900. Online documentation of the exact construction dates for the 1,560-ft² apparent storefront, its 780-ft² adjacent eastern building along NC 115 (listed as a “warehouse” on parcel tax records), and the 1,200-ft² derelict residential home in the eastern portion of the parcel were not available. Additional structures, possibly outbuildings associated with the building that is now the apparent storefront, were observed in 1959 aerial imagery in the western portion of the Project Study Area at the intersection of NC 115 and Armory Road; these structures were not apparent in 1983 aerial imagery (the next year of imagery available after 1959). Historical imagery was not available prior to 1959.
- Based on a review of the 1962-1963 North Wilkesboro City Directory, the apparent storefront building may have been previously operated as a tavern (Parkway Tavern), and its adjacent eastern building may have been previously operated as a metal fabrication workshop (Wilkesboro Sheet Metal Shop). These buildings were not identified in a review of prior North Wilkesboro City Directories and may have been listed under different names.

- No NC Sanborn fire insurance maps were available online associated with the site to determine additional information regarding the current or possible former structures located on Parcel 140.
- Deed ownership of the parcel transferred from Cynthia G. Sturdivant to Billy R. and Elaine M. Michael on November 8, 1990. Kleinfelder did not identify any restrictions associated with the deed ownership. The parcel is fully serviced by public utilities and there are no available online records of alternative heating sources or USTs associated with the property.
- 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 140 were identified on any of the available NCDEQ pollution incident databases. No additional documentation associated with the site was identified through a review of the NC Live or the Digital NC databases.

2.2 FACILITY ID NUMBERS

Kleinfelder reviewed the NCDEQ UST database for Parcel 140. 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 140 at this time.

3 OBSERVATIONS

3.1 GROUNDWATER MONITORING WELLS

No active groundwater monitoring wells were observed on Parcel 140 at the time of site exploration, Wednesday, July 14, 2021.

3.2 ACTIVE USTS

Based on review of the NCDEQ UST database, site visits and previous reports, there are no active regulated USTs located on site.

3.3 FEATURES APPARENT BEYOND THE PROJECT STUDY AREA

The Project Study Area consisted of the southern, western, and northern portions of the parcel within the NCDOT right-of-way or easement. Between the apparent storefront and its adjacent eastern building, outside of the Project Study Area, an approximately 275-gallon heating oil aboveground storage tank (AST) was observed. The derelict residential home in the eastern portion of the parcel is also outside of the Project Study Area; the structure had a caved-in roof and was apparently unoccupied at the time of site exploration, Wednesday, July 14, 2021. No other features of concern were observed outside of the Project Study Area at the time of site exploration, Wednesday, July 14, 2021. Photographs of features outside of the Project Study Area are included in Appendix A.

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 ten (10) EM anomalies were identified, of which six (6) were directly attributed to visible cultural features at the ground surface, including metal on the ground surface, signs, a water meter, and a building.

One (1) EM Anomaly (listed as Metallic Anomaly # 1 in the geophysical report) was attributed to possible metal-reinforced infrastructure not typical of a UST in the northwestern corner of the Project Study Area just under a sign, and this feature was classified as a "no confidence anomaly". No Confidence Anomaly # 1 was approximately 6.5-ft long by 4.5-ft wide.

One (1) EM Anomaly (listed as Metallic Anomaly # 6 in the geophysical report) was attributed to suspected buried utilities and/or a suspected buried culvert in the northeastern portion of the Project Study Area along Armory Road.

Two (2) EM anomalies (listed as Metallic Anomaly # 7 and Metallic Anomaly #9 in the geophysical report) were attributed to suspected buried utilities and/or suspected buried metallic debris in the northern and southeastern portions of the Project Study Area, respectively.

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

5 RESULTS

5.1 GEOPHYSICAL INVESTIGATION

The EM and GPR surveys did not identify unknown metallic USTs within the Project Study Area but did identify one (1) no confidence anomaly in the northwestern corner of the Project Study Area possibly indicative of metal-reinforced infrastructure. No Confidence Anomaly # 1 was approximately 6.5-ft long by 4.5-ft wide.

6 CONCLUSIONS

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

- The EM and GPR surveys did not identify unknown metallic USTs within the Project Study Area but did identify one (1) no confidence anomaly in the northwestern corner of the Project Study Area possibly indicative of metal-reinforced infrastructure. No Confidence Anomaly # 1 was approximately 6.5-ft long by 4.5-ft wide and was located in the vicinity of possible historical outbuildings that may have been on-site from at least 1959 and that were removed prior to 1983.
- An approximately 275-gallon heating oil AST was observed in the southern portion of the parcel, outside of the Project Study Area, between the apparent storefront and the adjacent eastern building along NC 115.
- The site is not listed in the NCDEQ UST Database with a Facility ID Number. No indication of the presence or likely presence of inactive USTs was observed on Parcel 140 at the time of site exploration, July 14, 2021.
- No other features of concern were observed at the time of site exploration, July 14, 2021.
- Based on the geophysical investigation, historical review of the site, and site observations, Kleinfelder identified conditions that may warrant further environmental investigation on Parcel 140 within the Project Study Area.

7 RECOMMENDATIONS

Based on results of this Preliminary Site Assessment, Kleinfelder recommends that additional sampling or special handling of soils be performed in the vicinity of No Confidence Anomaly # 1, depicted on Figure 2, within the Project Study Area on Parcel 140 in North Wilkesboro, Wilkes County, North Carolina.

8 LIMITATIONS

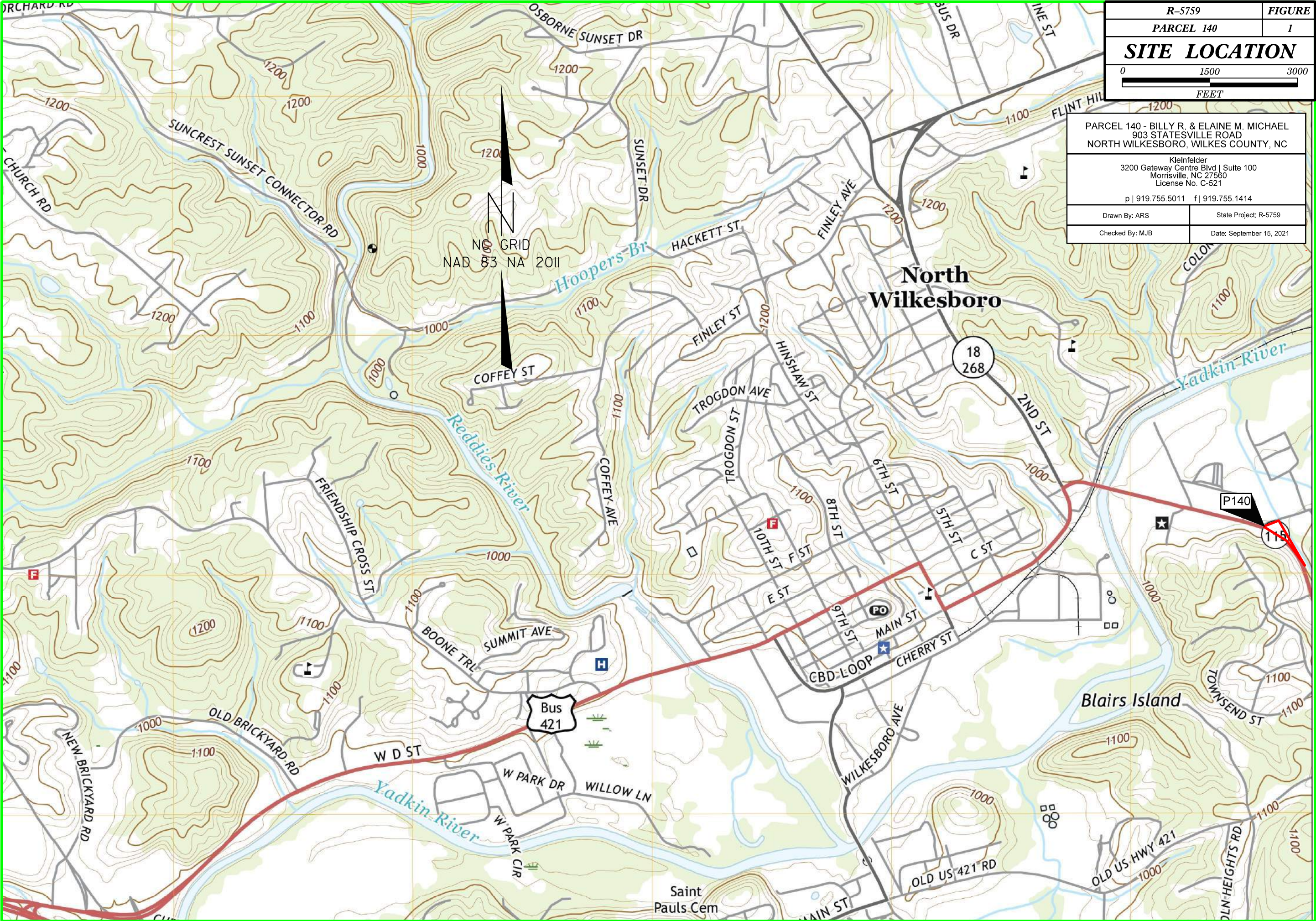
Kleinfelder's work will be performed in a manner consistent with that level of care and skill ordinarily exercised by other members of its profession practicing in the same locality, under similar conditions and at the date the services are provided. Kleinfelder's conclusions, opinions and recommendations 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

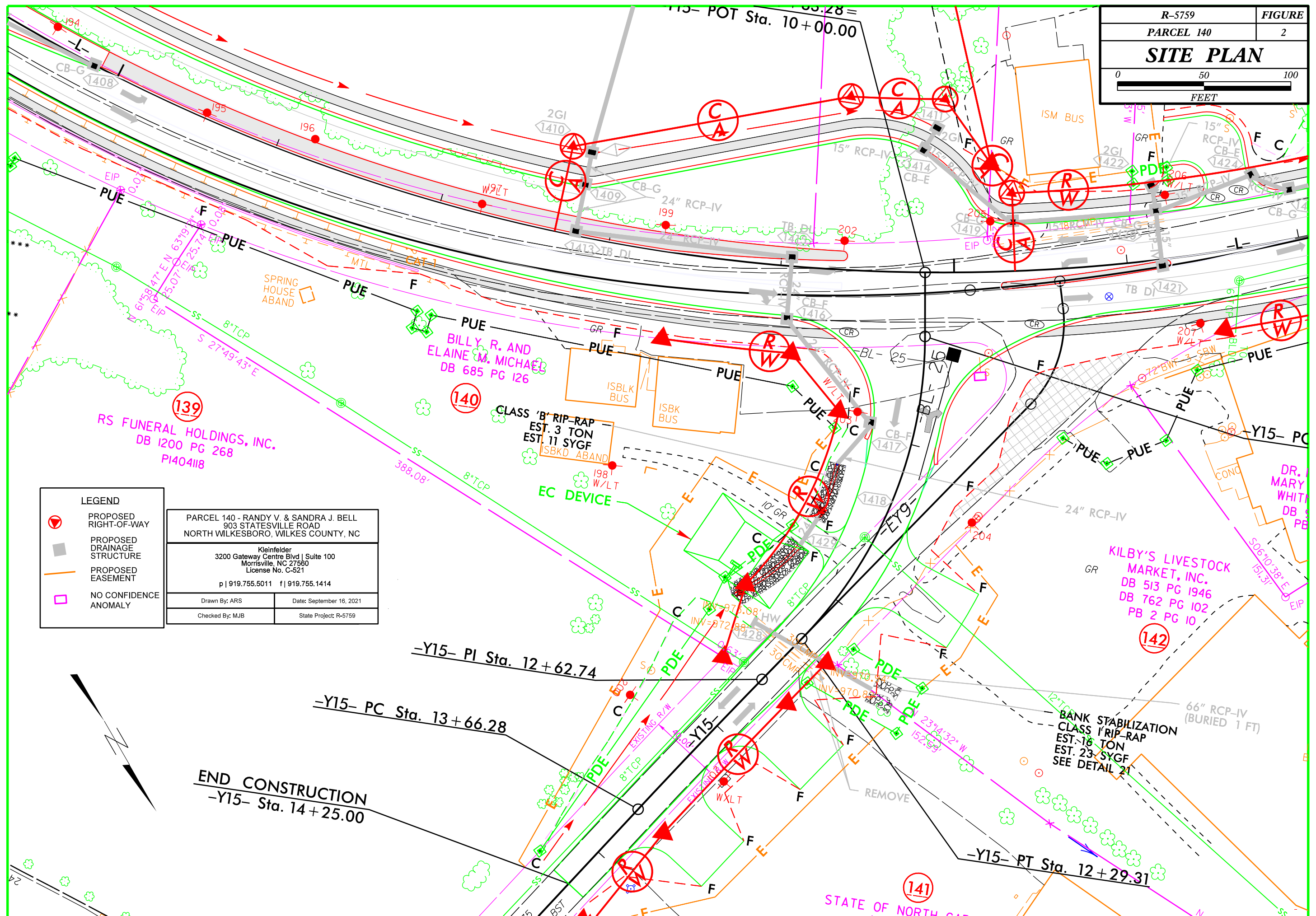
Kleinfelder's services. NCDOT is responsible for directing all arrangements to lawfully store, treat, recycle, dispose, or otherwise handle hazardous materials, including cuttings and samples resulting from Kleinfelder's services.

FIGURES



R-5759	FIGURE
PARCEL 140	1
SITE LOCATION	
015003000 FEET	

PARCEL 140 - BILLY R. & ELAINE M. MICHAEL 903 STATESVILLE ROAD NORTH WILKESBORO, WILKES COUNTY, NC	
Kleinfelder 3200 Gateway Centre Blvd Suite 100 Morrisville, 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 east from the central portion of the Project Study Area, depicting the apparent storefront.



View facing southeast from the northwestern portion of the Project Study Area at the intersection of NC 115 and Armory Road.

Original in Color

SITE PHOTOGRAPHS

Preliminary Site Assessment Report
 R-5759 – Parcel 140, Billy R. and Elaine M.
 Michael AKA Elaine Michael
 903 Statesville Road
 North Wilkesboro, Wilkes County, NC 28659

FIGURE

A-1



View facing east from the western portion of the Project Study Area along NC 115, depicting the eastern adjacent building of the apparent storefront.



View facing northwest from the southern portion of the Project Study Area along NC 115.

Original in Color

	PROJECT NO:20221238.001A	SITE PHOTOGRAPHS	FIGURE A-2
	DRAWN: September 2021		
	DRAWN BY: EDA	Preliminary Site Assessment Report R-5759 – Parcel 140, Billy R. and Elaine M. Michael AKA Elaine Michael 903 Statesville Road North Wilkesboro, Wilkes County, NC 28659	
	CHECKED BY: MB		
	FILE NAME: Photo Pages		



View facing southeast from the southern portion of the Project Study Area along NC 115.



View facing east from the southwestern portion of the Project Study Area along NC 115, depicting the area between the apparent storefront and the adjacent eastern building outside of the Project Study Area.

Original in Color

 KLEINFELDER <i>Bright People. Right Solutions.</i> www.kleinfelder.com	PROJECT NO:20221238.001A	SITE PHOTOGRAPHS	FIGURE A-3
	DRAWN: September 2021		
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View facing southeast from the northwestern portion of the Project Study Area along Armory Road.



View facing east from the western corner of the Project Study Area along Armory Road.

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 KLEINFELDER <i>Bright People. Right Solutions.</i> www.kleinfelder.com	PROJECT NO:20221238.001A	SITE PHOTOGRAPHS	FIGURE A-4
	DRAWN: September 2021		
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	FILE NAME: Photo Pages		



View facing south from the northern portion of the Project Study Area, depicting the northern sides of the apparent storefront and the adjacent eastern building, and a residential home in the eastern portion of the parcel.



View depicting the northern side of the eastern adjacent building of the apparent storefront, outside of the Project Study Area.

Original in Color

 KLEINFELDER <i>Bright People. Right Solutions.</i> www.kleinfelder.com	PROJECT NO:20221238.001A	SITE PHOTOGRAPHS	FIGURE A-5
	DRAWN: September 2021		
	DRAWN BY: EDA	Preliminary Site Assessment Report R-5759 – Parcel 140, Billy R. and Elaine M. Michael AKA Elaine Michael 903 Statesville Road North Wilkesboro, Wilkes County, NC 28659	
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View facing southwest from the eastern portion of the parcel, depicting an approximately 275-gallon heating oil AST located outside of the Project Study Area between the apparent storefront and the eastern adjacent building.

Original in Color

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APPENDIX B
GEOPHYSICAL SURVEY REPORT



PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2021-190)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION: PARCEL 140 NCDOT PROJECT U-5759

903 STATESVILLE ROAD, NORTH WILKESBORO, NC

August 6, 2021

Report prepared for: Michael Burns, P.G.
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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.
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C257: GEOLOGY

C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
Parcel 140 - 903 Statesville Road
North Wilkesboro, Wilkes County, North Carolina

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- Figure 2 – Parcel 140 - EM61 Metal Detection Contour Map
- Figure 3 – Parcel 140 - GPR Transect Locations and Select Images
- Figure 4 – Parcel 140 - Location and Size of One No Confidence Anomaly
- Figure 5 – Overlay of Metal Detection Results and One No Confidence Anomaly on
NCDOT Engineering Plans

Appendices

- Appendix A – GPR Transect Images

LIST OF ACRONYMS

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

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental (Pyramid) conducted a geophysical investigation for Kleinfelder, Inc. at Parcel 140, located at 903 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 ten 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, culverts, and/or buried debris.

A no confidence anomaly was identified on the northwest corner of the property, just under a sign. EM and GPR showed evidence of possible metal-reinforced infrastructure. These reflectors are not typical of a UST and this feature is classified as a no confidence anomaly. No Confidence Anomaly #1 is approximately 6.5 feet long by 4.5 feet wide. Collectively, the geophysical data recorded evidence of one no confidence anomaly at Parcel 140. No evidence of unknown metallic USTs was observed.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Kleinfelder, Inc. at Parcel 140, located at 903 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 two commercial buildings surrounded by asphalt, gravel, 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	One No Confidence Anomaly	✓
2	Metal on Ground Surface	
3	Sign	
4	Water Meter	
5	Sign	
6	Suspected Buried Culvert	✓
7	Suspected Utility/Buried Metallic Debris	✓
8	Building	
9	Suspected Buried Metallic Debris	✓
10	Metal on Ground Surface	

The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface, including metal on the ground surface, signs, a water meter, and a building. EM Anomalies 1, 6, 7, and 9 were investigated with GPR to examine whether the anomalies were the result of significant structures such as a 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 eight formal GPR transects were performed at the site.

GPR Transects 1-2 and 6-8 were performed across EM Anomalies 9 and 7, respectively. These transects showed hyperbolic reflectors consistent with suspected buried utilities and/or metallic debris. No evidence of significant structures such as USTs was observed.

GPR Transects 3 and 4 were performed across EM Anomaly 1. These transects showed large, shallow lateral reflectors consistent with possible metal-reinforced infrastructure. These reflectors are not typical of a UST and this feature is classified as a no confidence anomaly. No Confidence Anomaly #1 is approximately 6.5 feet long by 4.5 feet wide. **Figure 4** provides the location and size of the no confidence anomaly, overlain on an aerial, along with ground-level photographs.

GPR Transect 5 was performed across EM Anomaly 6. This transect showed hyperbolic reflectors consistent with suspected buried utilities and/or a suspected buried culvert. No evidence of significant structures such as USTs was observed.

Collectively, the geophysical data recorded evidence of one no confidence anomaly at Parcel 140. No evidence of unknown metallic USTs was observed. **Figure 5** provides an overlay of the metal detection results and one no confidence anomaly on the NCDOT engineering plans for reference.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 and GPR data collected at Parcel 140 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, culverts, and/or buried debris.
- A no confidence anomaly was identified on the northwest corner of the property, just under a sign. EM and GPR showed evidence of possible metal-reinforced infrastructure. These reflectors are not typical of a UST and this feature is classified as a no confidence anomaly. No Confidence Anomaly #1 is approximately 6.5 feet long by 4.5 feet wide.
- Collectively, the geophysical data recorded evidence of one no confidence anomaly at Parcel 140. No evidence of unknown metallic USTs was observed.

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 Southeast)



View of Survey Area (Facing Approximately Northeast)



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PROJECT
PARCEL 140
NORTH WILKESBORO, NORTH CAROLINA
NCDOT PROJECT U-5759

TITLE
PARCEL 140 -
GEOPHYSICAL SURVEY BOUNDARIES
AND SITE PHOTOGRAPHS

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

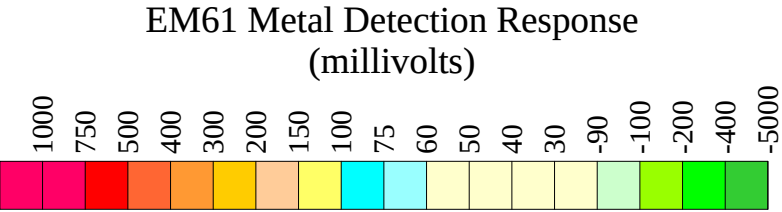
CLIENT
Kleinfelder
FIGURE 1

EM61 METAL DETECTION RESULTS



EVIDENCE OF ONE NO CONFIDENCE ANOMALY 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.



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PROJECT
PARCEL 140
NORTH WILKESBORO, NORTH CAROLINA
NCDOT PROJECT U-5759

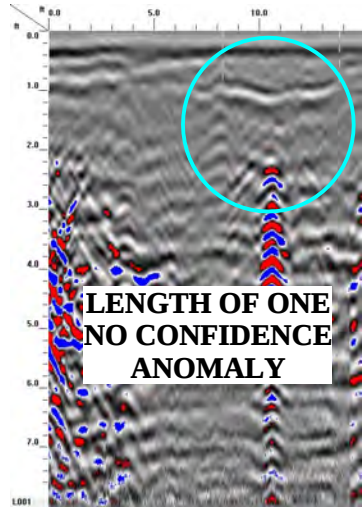
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PARCEL 140 -
EM61 METAL DETECTION CONTOUR MAP

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

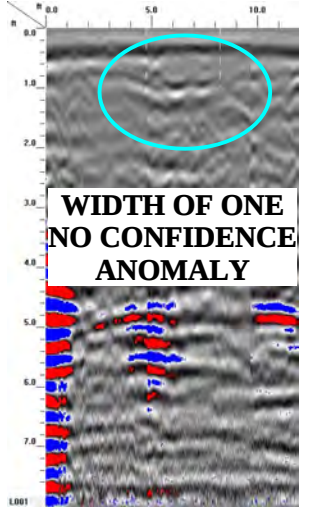
CLIENT
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FIGURE 2



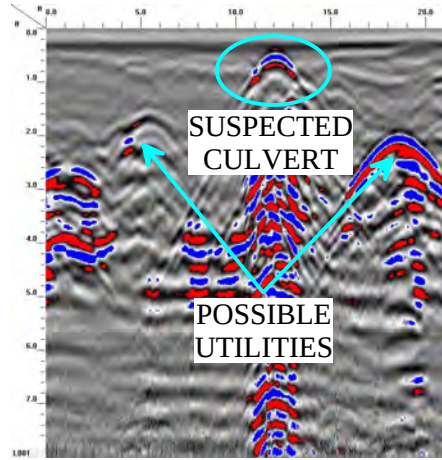
GPR TRANSECT LOCATIONS



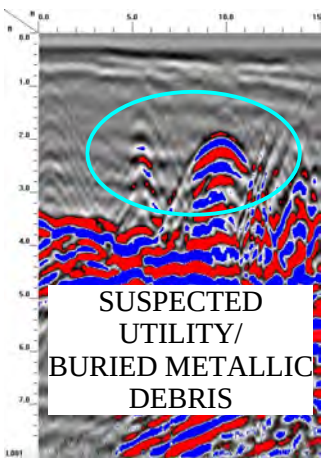
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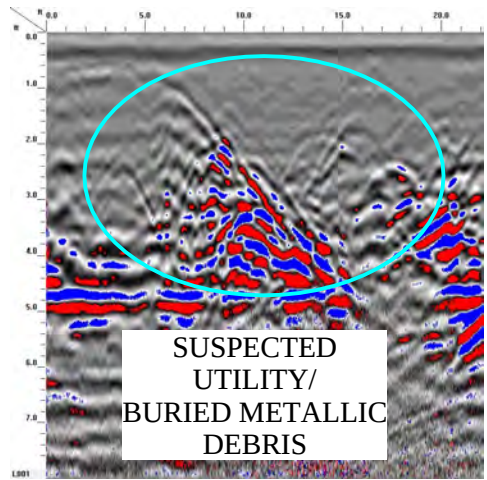
GPR TRANSECT 4 (T4)



GPR TRANSECT 5 (T5)



GPR TRANSECT 6 (T6)



GPR TRANSECT 8 (T8)



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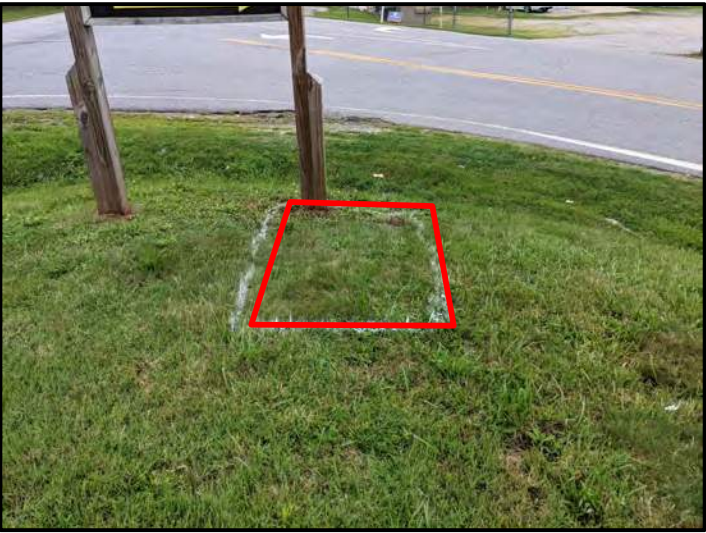
PROJECT
PARCEL 140
NORTH WILKESBORO, NORTH CAROLINA
NCDOT PROJECT U-5759

TITLE
PARCEL 140 -
GPR TRANSECT LOCATIONS AND SELECT IMAGES

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

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FIGURE 3

LOCATION OF ONE NO CONFIDENCE ANOMALY



View of One No Confidence Anomaly
(Facing Approximately Northwest)



View of One No Confidence Anomaly
(Facing Approximately West)



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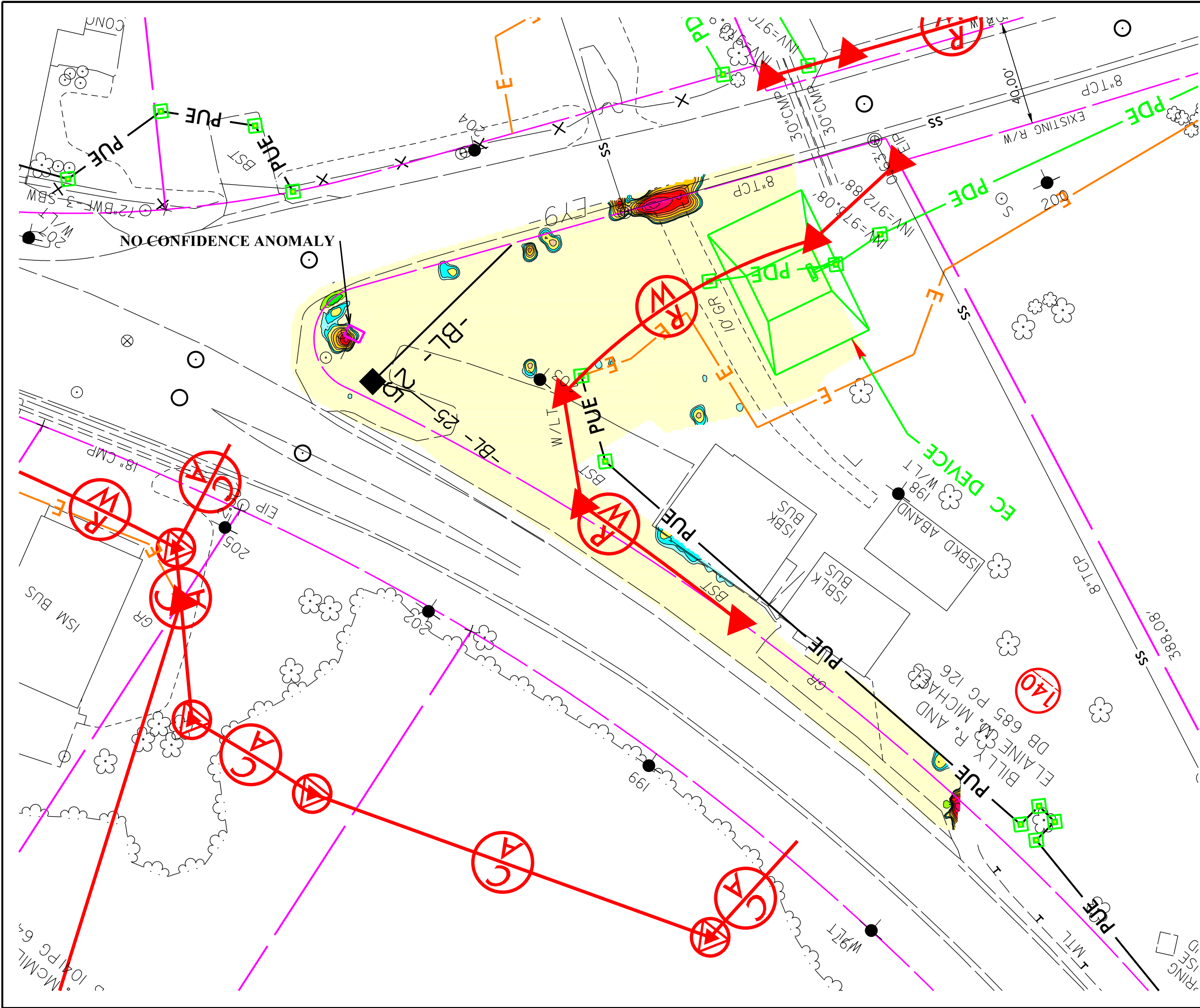
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PARCEL 140 -
LOCATION AND SIZE OF ONE NO
CONFIDENCE ANOMALY

DATE
7/19/2021

CLIENT
Kleinfelder

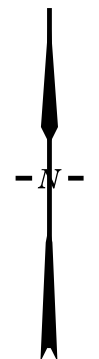
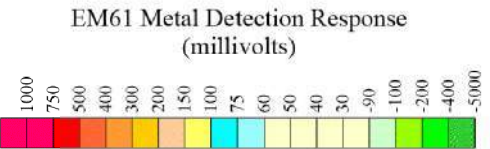
PYRAMID
PROJECT #:
2021-190

FIGURE 4



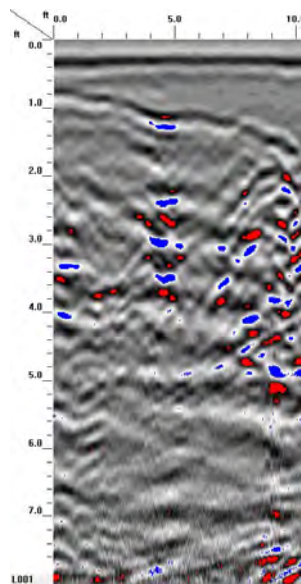
LEGEND

- EXISTING ROW
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROW LINE
- TEMPORARY CONSTRUCTION EASEMENT
- PUE PROPOSED PERMANENT UTILITY
- PROPOSED SS CUT LINE
- PROPOSED SS FILL LINE
- NO CONFIDENCE ANOMALY

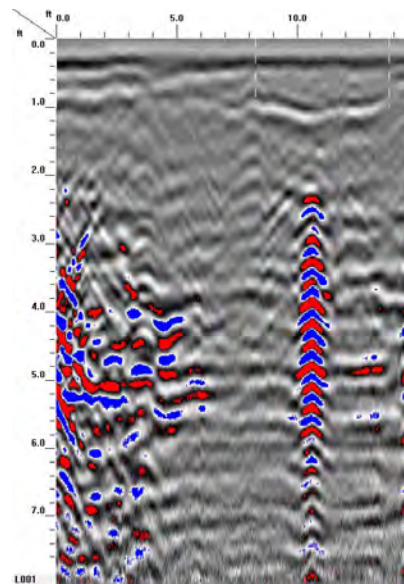


TITLE	OVERLAY OF METAL DETECTION RESULTS AND ONE NO CONFIDENCE ANOMALY ON NCDOT ENGINEERING PLANS		
PROJECT	PARCEL 140 WILKESBORO, NORTH CAROLINA NCDOT PROJECT R-5759		
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	DATE: 8-9-2021	REVISION NO. 0	
PYRAMID PROJECT NO. 2021-190		FIGURE NO. 5	

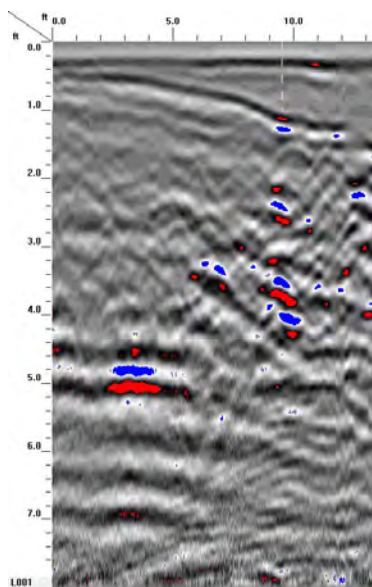
Appendix A – GPR Transect Images



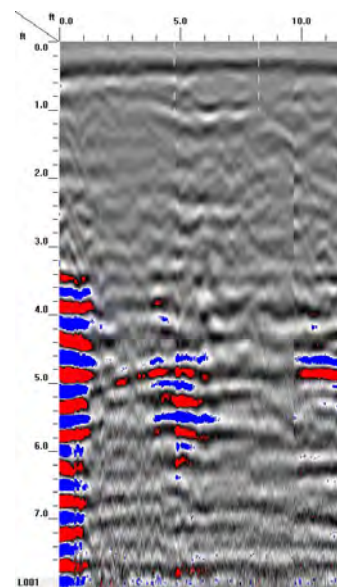
GPR TRANSECT 1



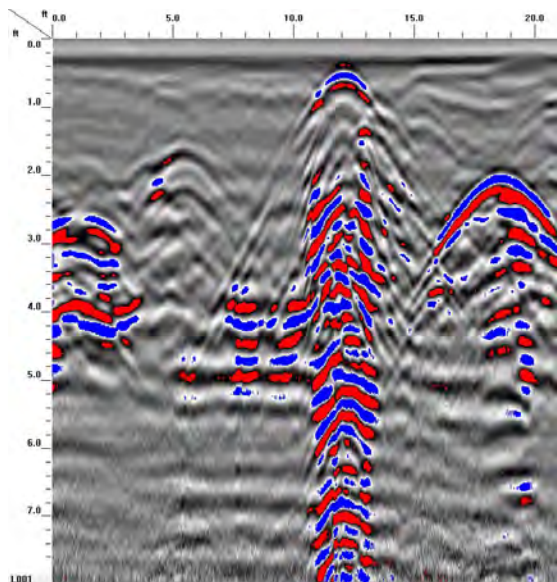
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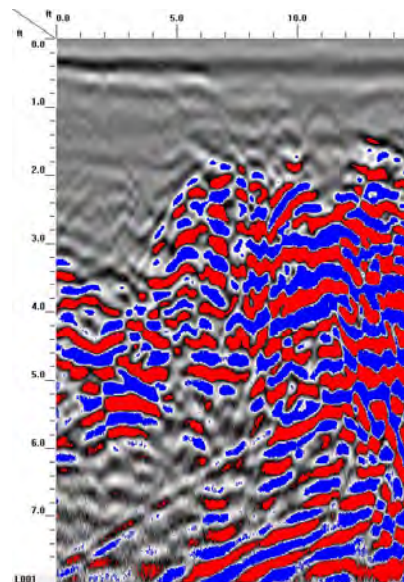
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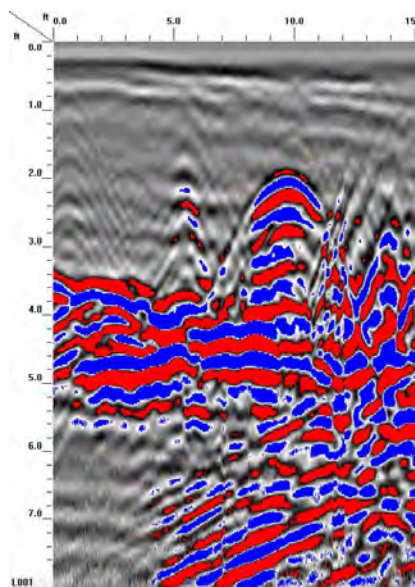
GPR TRANSECT 4



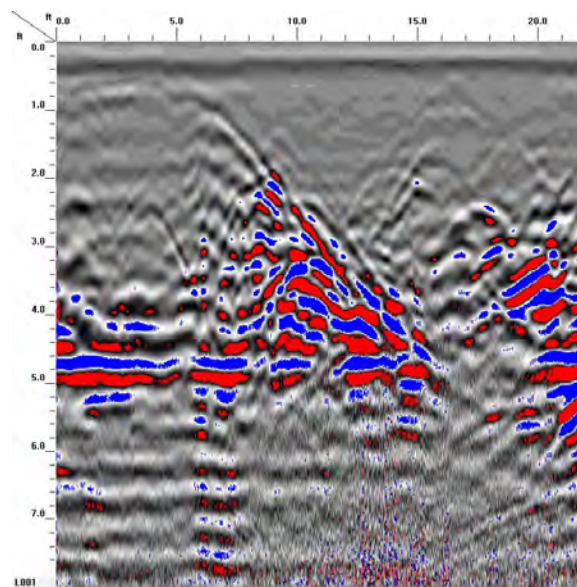
GPR TRANSECT 5



GPR TRANSECT 7



GPR TRANSECT 6



GPR TRANSECT 8