

# Preliminary Site Assessment

US 221 South of US 74 Business (Charlotte Road) to North of  
SR 1366 (Roper Loop Road)  
Parcel 125 – Timothy and Lois Mace  
137 and 145 US Highway 64, Rutherfordton, North Carolina

State Project No. R-2233BB

WBS Element: 34400.1.S5

December 1, 2017

Terracon Project No. 71177323



**Prepared for:**

North Carolina Department of Transportation  
Raleigh, North Carolina

**Prepared by:**

Terracon Consultants, Inc.  
Charlotte, North Carolina

[terracon.com](http://terracon.com)

**Terracon**

Environmental



Facilities



Geotechnical



Materials

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Exhibit 1 – Topographic Vicinity Map

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Appendix A: Geophysical Survey Report



December 1, 2017

North Carolina Department of Transportation  
Attention: Mr. Craig Haden  
GeoEnvironmental Engineering Unit  
Century Center Complex  
Building B  
1020 Birch Ridge Drive  
Raleigh, North Carolina 27610

Re: Preliminary Site Assessment (PSA)  
US 221 South of US 74 Business (Charlotte Road) to North SR 1366 (Roper Loop Road)  
Parcel 125 – Timothy and Lois Mace  
137 and 145 US Highway 64, Rutherfordton, North Carolina  
State Project No. R-2233BB  
WBS Element: 34400.1.S5

Dear Mr. Haden:

Terracon Consultants, Inc. (Terracon) is pleased to submit a limited Preliminary Site Assessment (PSA) report for the above referenced site. This assessment was performed in accordance with our Proposal for Preliminary Site Assessment (Terracon Proposal No. P71177323) dated June 2, 2017. This report includes the findings of the investigation, and provides our conclusions and recommendations.

Terracon appreciates the opportunity to provide these services to the North Carolina Department of Transportation (NCDOT). If you have any questions concerning this report or need additional information, please contact us at 919-873-2211.

Sincerely,

**Terracon Consultants, Inc.**

Prepared by:

DocuSigned by:  
*S. Alex Chinery*  
F3F142104F4941D...

S. Alex Chinery, E.I.  
Senior Staff Environmental Engineer

Reviewed by:

DocuSigned by:  
*Christopher L. Corbitt*  
D334903BD0324DE...

Christopher L. Corbitt, P.G.  
Senior Geologist

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Environmental



Facilities



Geotechnical



Materials

# PRELIMINARY SITE ASSESSMENT

US 221 SOUTH OF US 74 BUSINESS (CHARLOTTE ROAD) TO NORTH SR 1366 (ROPER LOOP ROAD)

RUTHERFORDTON, RUTHERFORD COUNTY, NORTH CAROLINA

STATE PROJECT NO. R-2233BB

WBS ELEMENT: 34400.1.S5

PARCEL 125 – TIMOTHY AND LOIS MACE

137 AND 145 US HIGHWAY 64, RUTHERFORDTON, NORTH CAROLINA

## 1.0 INTRODUCTION

### 1.1 Site Description

<b>Site Name</b>	US 221 South of US 74 Business (Charlotte Road) to North SR 1366 (Roper Loop Road) in Rutherfordton
<b>Site Location/Address</b>	137 and 145 US Highway 64, Rutherfordton, NC 27834 (Rutherford County Tax PIN: 1206798)
<b>General Site Description</b>	The site currently operates as a gasoline station/convenience store and includes an apparent residence, a mobile home and a storage building.

### 1.2 Site History

The site is located at 137 and 145 US Highway 64 in Rutherfordton, Rutherford County, North Carolina (site). At the time of the PSA, the site was developed with several buildings including a one-story commercial building operating as a CITGO gasoline station and convenience store, an apparent residence, a mobile home and a storage building. According to the UST database of registered tanks, three USTs are currently maintained at the site. The database also indicates four other tanks were permanently closed at the property in 1993. A petroleum release incident (10873) is also associated with the site.

### 1.3 Scope of Work

Terracon conducted the following limited Preliminary Site Assessment (PSA) scope of work in accordance with Terracon's Proposal No. P71177323 dated June 2, 2017. This PSA is being completed prior to planned roadway improvements along US Highway 221 in Rutherfordton, North Carolina. The limited scope of work included only a geophysical investigation and preparation of a report documenting the geophysical investigation activities. *No soil sampling activities were conducted at the site at the request of the property owner.* The PSA is not intended to delineate



## Preliminary Site Assessment

Parcel 125 – Timothy and Lois Mace ■ Rutherfordton, North Carolina  
December 1, 2017 ■ Terracon Project No. 71177323



potential impacts. The PSA was performed within the proposed right-of-way (ROW) as indicated by North Carolina Department of Transportation (NCDOT) provided plan sheets.

### 1.4 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. Terracon makes no warranties, either expressed or implied, regarding the findings, conclusions or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third parties supplying information used in the preparation of the report. These services were performed in accordance with Terracon Proposal No. P71177323 dated June 2, 2017 and were not conducted in accordance with ASTM E1903-11.

### 1.5 Additional Scope Limitations

Findings, conclusions and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, undetectable or not present during these services; thus, we cannot represent that the site is free of hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this PSA. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations or exploratory services; the data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

### 1.6 Reliance

This report has been prepared for the exclusive use of the NCDOT. Authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the expressed written authorization of the client and Terracon.

## 2.0 FIELD ACTIVITIES

The following PSA activities are presented in the order that they were conducted in the field.

**Exhibit 1** presents the topography of the site on a portion of the USGS topographic quadrangle map of Rutherfordton North, NC 2002. **Exhibit 2** is a site layout plan that indicates the

## Preliminary Site Assessment

Parcel 125 – Timothy and Lois Mace ■ Rutherfordton, North Carolina  
December 1, 2017 ■ Terracon Project No. 71177323



approximate locations of the site features. No soil borings or sample collection activities were conducted at the site at the request of the property owner.

### 2.1 Geophysical Survey

On July 28 and August 2-3, 2017, Geophysical Survey Investigations, conducted a geophysical investigation at the site in an effort to evaluate and detect potentially unknown, metallic underground storage tanks and buried utilities beneath the proposed ROW area. The geophysical investigation included an electromagnetic (EM) induction survey using a Geonics EM61-MK2A metal detection instrument with a Hemisphere A101 GPS unit and a ground penetrating radar (GPR) survey using a Geophysical Survey Systems SIR-3000 unit equipped with a 400 MHz antenna.

The geophysical investigation detected the presence of three known USTs in the survey area that are associated with the operations of the on-site gasoline station. The geophysical investigation also identified a small metallic flat-lying structure near the apparent residence that could be a potential UST. The metal detection and GPR scans also identified underground utility lines within the depth interval of zero to eight feet below land surface (bls). A copy of the geophysical report is included in **Appendix A**.

### 2.2 Soil Sampling

Based on the findings of the geophysical investigation and Terracon's site observations, Terracon mobilized to the site to provide oversight for the advancement of nine soil borings on Parcel 125; however, at the request of the property owner no borings were advanced at the site.

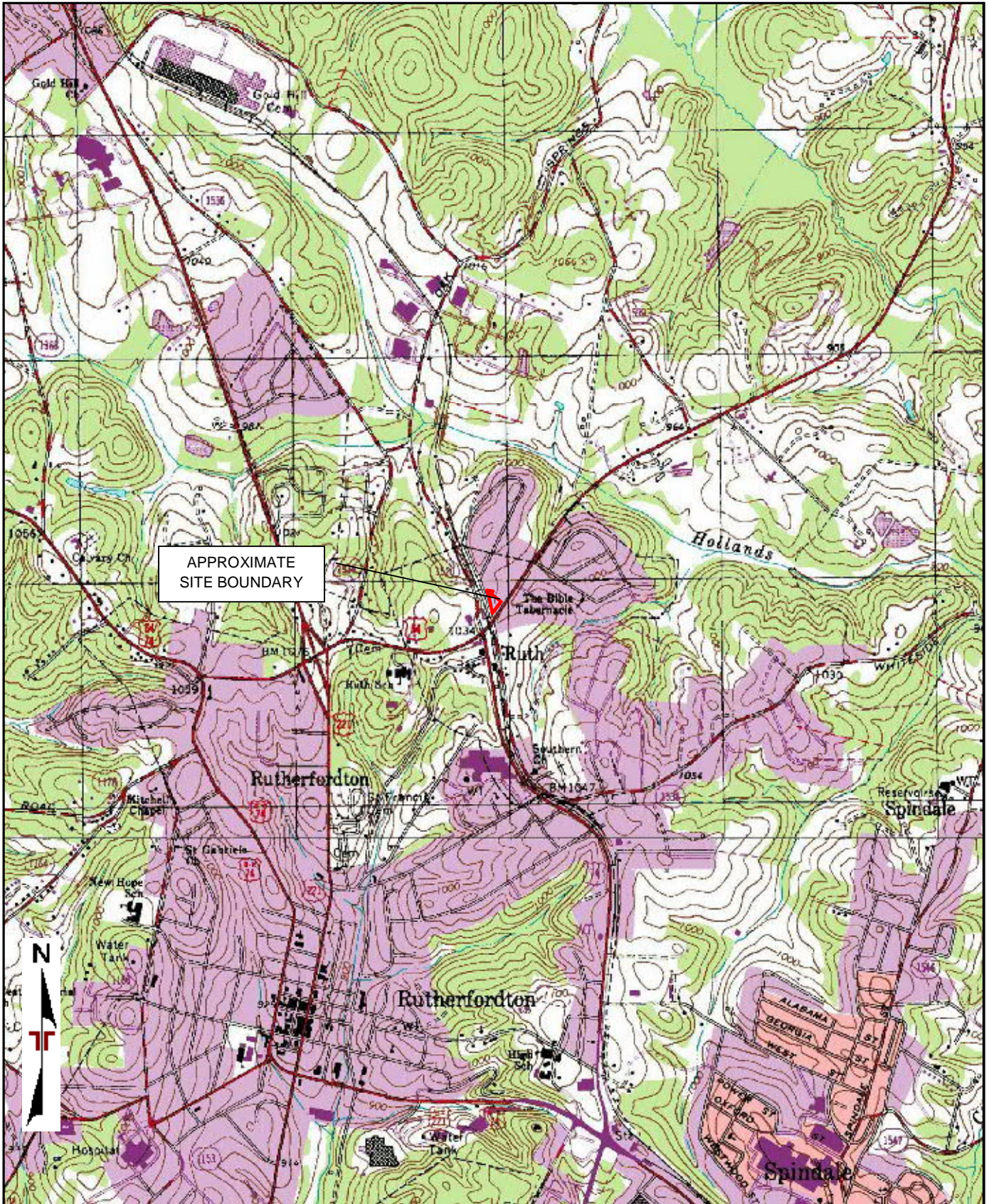
## 3.0 CONCLUSIONS AND RECOMMENDATIONS

The findings of this investigation are discussed below.

- n The geophysical investigation confirmed the presence of three USTs associated with the operations of the gasoline station as well as a potential fourth UST located near the on-site residence. The metal detection and GPR scans also identified underground utility lines within the depth interval of zero to eight feet bls.
- n Terracon recommends the NCDOT obtain permission from the property owner prior to conducting the planned soil sampling activities at Parcel 125.

**FIGURES**  
**EXHIBIT 1 - TOPOGRAPHIC MAP**  
**EXHIBIT 2 – SITE DIAGRAM WITH SOIL BORING LOCATIONS**





APPROXIMATE  
SITE BOUNDARY

TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY  
 QUADRANGLES INCLUDE: RUTHERFORDTON NORTH, NC (1/1/2002) and RUTHERFORDTON SOUTH, NC (1/1/1993).

Project Manager:	SAC
Drawn by:	SAC
Checked by:	CLC
Approved by:	CLC
Project No.:	71177323
Scale:	1"=2,000'
File Name:	PARCEL125
Date:	SEPT. 2017

**Terracon**  
 2020 Starita Rd Ste E  
 Charlotte, NC 28206-1298

**TOPOGRAPHIC VICINITY MAP**  
 Parcel 125 – Timothy and Lois Mace  
 137 and 145 US Highway 64  
 Rutherfordton, NC

Exhibit  
**1**



**SITE DIAGRAM WITH BORING LOCATIONS AND ANALYTICAL DATA**

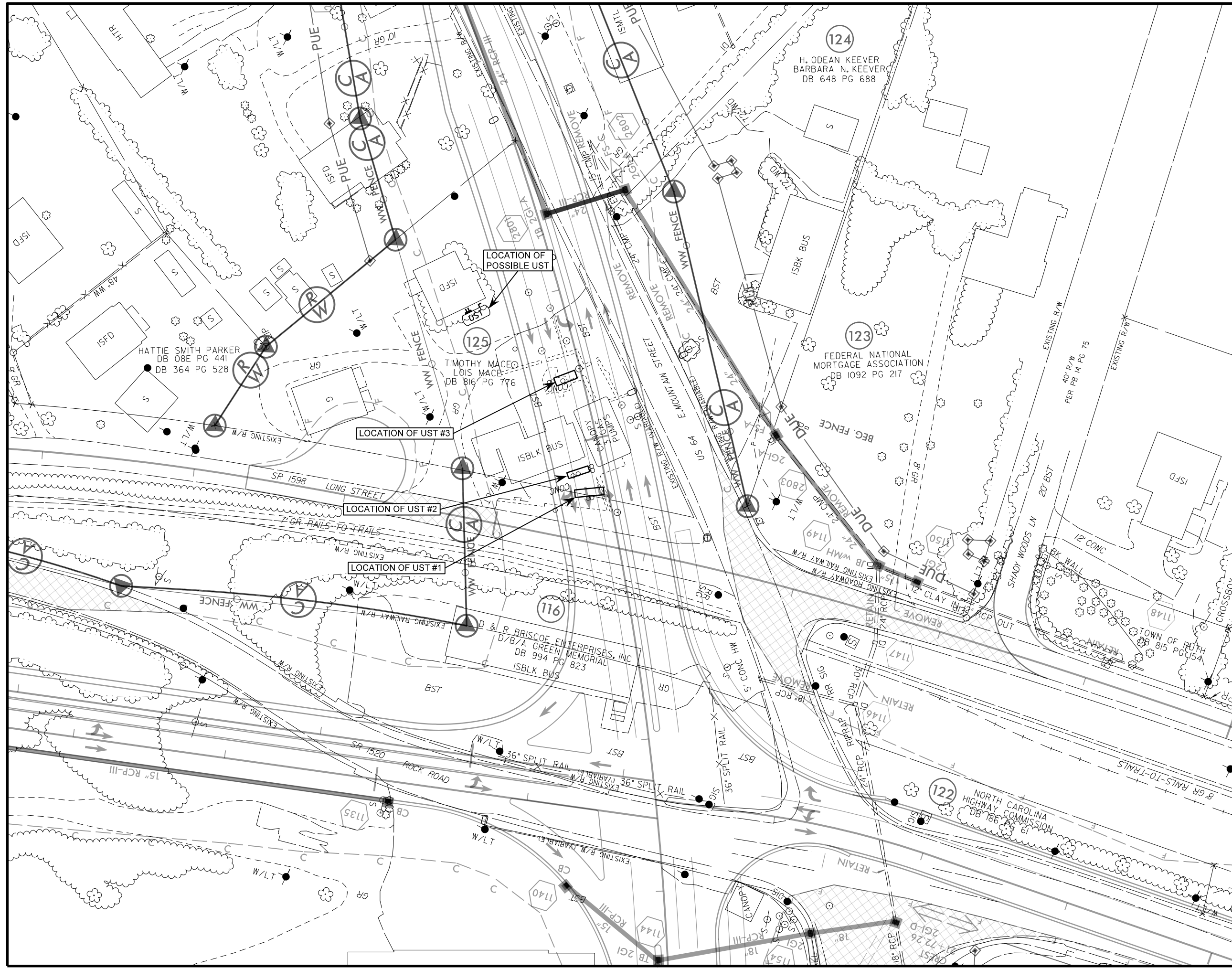
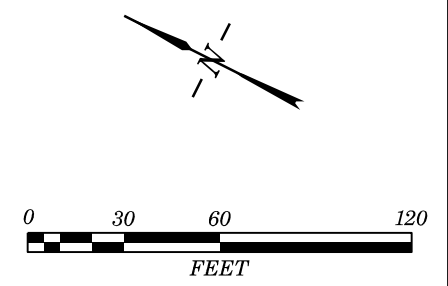
**PARCEL 125 - TIMOTHY AND LOIS MACE PROPERTY**  
137 E MOUNTAIN STREET  
RUTHERFORDTON, RUTHERFORD COUNTY

**LEGEND**

- PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- ⊙ PROPOSED CONTROL OF ACCESS LINE WITH CONCRETE MARKER
- ⊙ PROPOSED RIGHT OF WAY WITH MARKER
- - - EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF TRAVEL
- F C PROPOSED CUT / FILL LINE
- PROPOSED CATCH BASIN
- PROPOSED DRAINAGE PIPING
- PUE PROPOSED PERMANENT UTILITY EASEMENT
- DUE PROPOSED PERMANENT DRAINAGE / UTILITY EASEMENT
- ⊙ BORING LOCATION
- OUTLINE OF KNOWN UST LOCATION
- UST POSSIBLE UST LOCATION

**NOTES:**

ACCESS NOT GRANTED TO PERFORM SOIL BORINGS. TANK LOCATIONS BASED ON GPR SURVEY PERFORMED IN JULY AND AUGUST 2017.

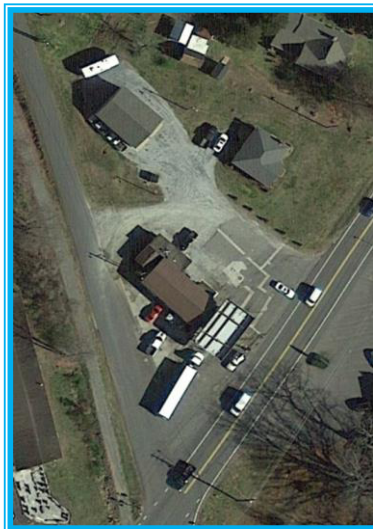


**APPENDIX A**  
**GEOPHYSICAL SURVEY REPORT**

**Terracon Consultants, Inc.**

**GEOPHYSICAL INVESTIGATION  
TO LOCATE METALLIC USTS**

**Timothy & Lois Mace Property  
(Parcel 125) 137 & 145 US Highway 64  
Rutherford County, North Carolina**



November 27, 2017

Geophysical Survey Investigations, PLLC Project No. 2017-22



4 Willimantic Drive, Greensboro, NC 27455  
Office Tel: (336) 286-9718  
denilm@bellsouth.net

**Terracon Consultants, Inc.**  
**GEOPHYSICAL INVESTIGATION**  
**TO LOCATE METALLIC USTS**  
**Timothy & Lois Mace Property**  
**(Parcel 125) 137 & 145 US Highway 64**  
**Rutherford County, North Carolina**

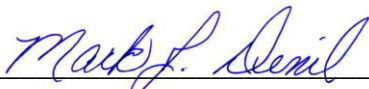
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FIGURES

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Figure 2	EM61-MK2A Metal Detection – Early Time Gate Results
Figure 3	EM61-MK2A Metal Detection – Differential Results
Figure 4	GPR Images & Photograph Across Known USTS-1 & 2
Figure 5	GPR Image & Photograph Across Known UST-3
Figure 6	GPR Image & Photograph Across Buried Metallic Object
Figure 7	NCDOT Map – EM61 Early Time Gate Results
Figure 8	NCDOT Map – EM61 Differential Results

Report prepared for: Christopher L. Corbitt, PG  
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2020 Starita Road, Suite E  
Charlotte, North Carolina 28206

Prepared by:   
Mark J. Denil, P.G.  
Geophysical Survey Investigations, PLLC



## **1.0 INTRODUCTION**

Geophysical Survey Investigations, PLLC (GSI) conducted an electromagnetic (EM) metal detection survey, ground penetrating radar (GPR) scanning and utility line clearance search for Terracon Consultants, Inc. on July 28 and August 2-3, 2017 across the accessible portions of the Timothy & Lois Mace property (Parcel 125) located at 137 and 145 US Highway 64 in Rutherford County, North Carolina. The geophysical investigation was performed as part of the North Carolina Department of Transportation (NCDOT) preliminary site assessment for State Project R-2233BB (WBS Element 34400.1.S1) US 221 south of US 74 Business (Charlotte Rd) to north of SR 1366.

The geophysical investigation was conducted to determine if buried, metallic, underground, storage tanks (USTs) are present beneath the proposed Right-of-Way (ROW) and PUE areas of the site. The perimeter of the geophysical survey area (approximate ROW & PUE areas) is shown as a red polygon in the aerial photograph presented in **Figure 1**. The property consists of an active gas station/store as well as a large garage and an occupied residential home.

Terracon representative Mr. Christopher L. Corbitt, PG provided guidance and site maps to Geophysical Survey Investigations, PLLC personnel prior to conducting the geophysical field work. The geophysical survey area at Parcel 125 has a maximum length and width of 335 feet and 230 feet, respectively. Please note that the ROW and PUE areas at this site were not marked in the field or the survey markers were not visible at the time the geophysical investigation was conducted.

## **2.0 FIELD METHODOLOGY**

The EM investigation was performed across the geophysical survey area (proposed ROW and PUE areas) using a Geonics EM61-MK2A metal detection instrument with a Hemisphere A101 GPS unit. EM61 metal detection data and GPS coordinates were digitally collected in latitude and longitude geodetic format (NAD83) using a Juniper data recorder at approximately 1.0 foot intervals along survey lines spaced approximately five feet apart. The Trackmaker NAV61MK2 software program was used with the data recorder to view the relative positions of the survey lines in real time during data acquisition.

According to the instrument specifications, the EM61-MK2A can detect a metal drum down to a maximum depth of approximately 8 to 10 feet. Objects less than one foot in size can be detected to a maximum depth of 4 or 5 feet. The EM61 and GPS data were downloaded to a computer and processed in the field using the Trackmaker61 and Surfer for Windows software programs. GPS coordinates were converted during data processing to Universal Transverse Mercator (UTM) coordinates (in feet) which are used as location control in this report.

GPR scans were performed along northerly-southerly and easterly-westerly directions spaced primarily 3 to 5 feet apart across selected EM61 differential anomalies and areas containing steel reinforced concrete using the Geophysical Survey Systems SIR-3000 unit equipped with a 400 MHz antenna. GPR data were viewed in real time in a continuous mode using a vertical scan of 512 samples, at a sampling rate of 48 scans per second. A 70 MHz high pass filter and an 800 MHz low pass filter were used during data acquisition with the 400 MHz antenna. GPR data were viewed to a maximum investigating depth of approximately 6.0 feet based on an estimated two-way travel time of 8.0 nanoseconds per foot.

Following the UST investigation, areas around the proposed Terracon soil borings were scanned with the GPR unit and a DitchWitch 910 utility locator for buried utility line clearance and no further discussion regarding the utility clearance work will be made in this report. Photographs of the geophysical equipment used for the investigation and of the site are presented in Figure 1.

### **3.0 DISCUSSION OF RESULTS**

Contour plots of the EM61 early time gate results and the EM61 differential results are presented in **Figures 2 and 3**, respectively. The early time gate results represent the most sensitive component of the EM61 instrument and detect metal objects regardless of size. The early time gate response can be used to delineate metallic conduits or utility lines, small, isolated, metal objects and areas containing insignificant metal debris. The differential results are obtained from the difference between the early time gate channel and late time gate channel of the EM61 instrument. The differential results focus on the larger metal objects such as drums and UST-size objects and ignore the smaller, insignificant, metal objects or debris.

The linear, EM61 early time gate anomalies intersecting UTM coordinates 1357987-E 12848127-N, 1358066-E 12848091-N, 1358091-E 12847950-N, and 1358155-E 12848024-N are probably in response to buried utility lines or conduits. The early time gate anomalies at 1358003-E 12848151-N, 1357996-E 12848210-N, 1358046-E 12848173-N, 1358087-E 12848153-N, and 1358100-E 12848142-N are probably in response to parked vehicles, buildings or mobile home. The early time gate anomalies centered near coordinates 1358011-E 12848105-N, 1357993-E 12848223-N and 1358068-E 12848192-N are probably in response to buried, miscellaneous debris or small objects.

GPR scanning suggests the EM61 differential anomalies located near UTM coordinates 1358091-E 12847998-N and 1358116-E 12847987-N are in response to buried lines, conduits, equipment, steel reinforced concrete and other known surface objects.

GPR scanning suggests that the large, high amplitude, EM61 differential anomaly centered near UTM coordinates 1358052-E 12847989-N is in response to an active (known) tank referred to in this report as “UST-1”. Based on the GPR data, UST-1 is approximately 19.0 feet long, 5.0 feet wide and lies 2.0 feet below present grade. GPR scanning suggests that the large, high amplitude, EM61 differential anomaly centered near UTM coordinates 1358060-E 12848001-N is in response to an active (known) tank referred to in this report as “UST-2”. Based on the GPR data, UST-2 is approximately 14.5 feet long, 4.0 feet wide and 2.3 feet below present grade. A portion of UST-2 lies beneath an active above ground storage tank (AST). Several valve covers are present at each of the two USTs which are oriented in a northwesterly-southeasterly direction. GPR images of the USTs and a photograph showing the locations of the USTs are presented in **Figure 4**.

GPR scanning suggests that the large, high amplitude, EM61 differential anomaly centered near UTM coordinates 1358111-E 12848035-N is in response to an active tank referred to in this report as “UST-3”. Based on the GPR data, UST-3 is approximately 14.5 feet long, 5.5 feet wide and 2.0 feet below present grade. Several valve covers are present at UST-3 which are oriented in a northwesterly-southeasterly direction. A GPR image of UST-3 and a photograph showing the location of the UST are presented in **Figure 5**. The foot prints of the three USTs were marked in the field using red marking paint.

GPR scanning suggests that the EM61 differential anomaly centered near UTM coordinates 1358117-E 12848105-N is probably in response to a flat-lying, miscellaneous, metallic object or to a possible (low confidence) small UST. Based on the GPR data, the probable buried object or possible UST is approximately 3.5 feet long, 2.5 feet wide and buried 0.75 feet below present grade. The foot print of the buried object was marked in the field using red marking paint and pin flags. A GPR image across the buried object and a photograph showing the location of the buried object are presented in **Figure 6**. An intrusive investigation is recommended to determine the identity of the buried object or possible UST.

Excluding the aforementioned active three USTs and the possible, small UST located adjacent to the home, the EM61 and GPR investigation suggests the remaining portion of the geophysical survey area (proposed ROW/PUE area) at Parcel 125 does not contain metallic USTs. Please refer to Figures 2 through 6 for additional (detailed) information regarding the geophysical findings at this site. The EM61 results are also shown on NCDOT base maps in **Figures 7 and 8**.

#### **4.0 SUMMARY & CONCLUSIONS**

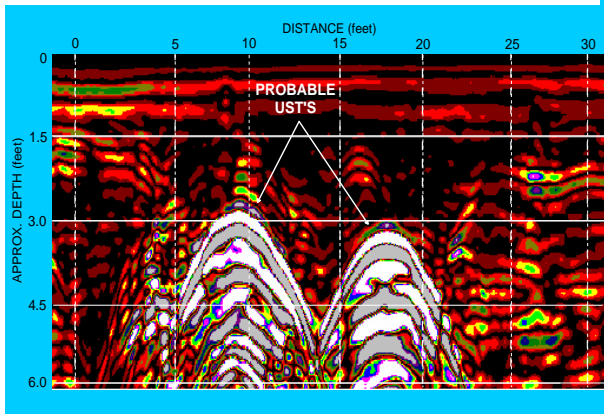
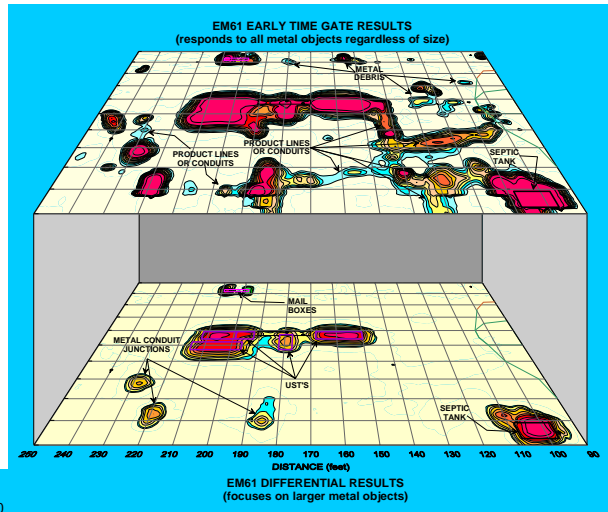
Our evaluation of the EM61 and GPR data collected across the geophysical survey area at the Timothy & Lois Mace property (Parcel 125) located at 137 & 145 US Highway 64 in Rutherford County, North Carolina provides the following summary and conclusions:

- The combination of EM61 and GPR surveys provided reliable results for the detection of metallic USTs across the survey area within the depth interval of 0 to 8 feet.
- The linear, EM61 early time gate anomalies intersecting UTM coordinates 1357987-E 12848127-N, 1358066-E 12848091-N, 1358091-E 12847950-N, and 1358155-E 12848024-N are probably in response to buried utility lines and conduits.
- Three active (known) USTs (USTs-1, 2 and 3) were detected by the geophysical investigation and are located near UTM coordinates 1358052-E 12847989-N, 1358060-E 12848001-N and 1358111-E 12848035-N, respectively.

- GPR scanning suggests that the EM61 differential anomaly centered near UTM coordinates 1358117-E 12848105-N is probably in response to a flat-lying, miscellaneous, metallic object or to a possible (low confidence) small UST. An intrusive investigation is recommended to determine the identity of the buried object or possible UST.
- Excluding the aforementioned active three USTs and the possible, small UST located adjacent to the home, the EM61 and GPR investigation suggests the remaining portion of the geophysical survey area (proposed ROW/PUE area) at Parcel 125 does not contain metallic USTs.

## **5.0 LIMITATIONS**

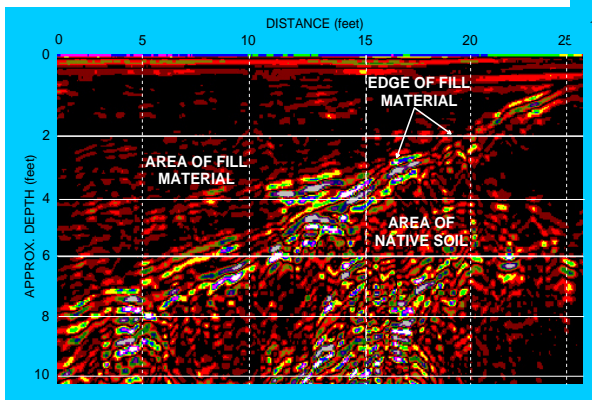
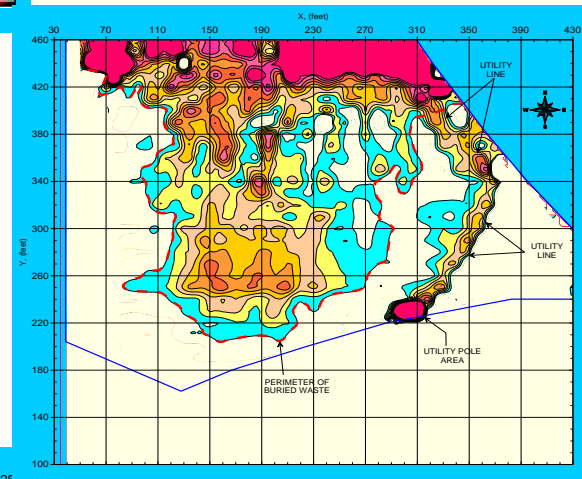
EM61 and GPR surveys have been performed and this report prepared for Terracon Consultants, Inc. in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the geophysical surveys are non-unique and may not represent actual subsurface conditions. Some of the EM61 and GPR anomalies interpreted as possible/probable USTs, utility lines, conduits, steel reinforced concrete, or miscellaneous, metal debris may be attributed to other surface or subsurface features and/or interference from cultural features.



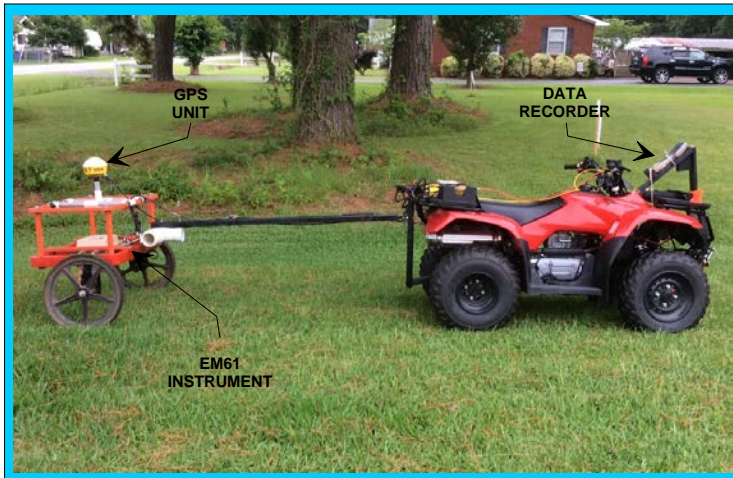
## REPORT FIGURES

(on the following pages)

Figures shown on this page are for  
esthetic purposes only and are not  
related to the site discussed in this report







**EM61 METAL DETECTOR**

The photograph shows the Geonics EM61-MK2A metal detector, a Hemisphere A101 GPS unit, a Juniper data recorder, and a Honda Recon ATV which were used to conduct the metal detection survey across the Timothy & Lois Mace property.

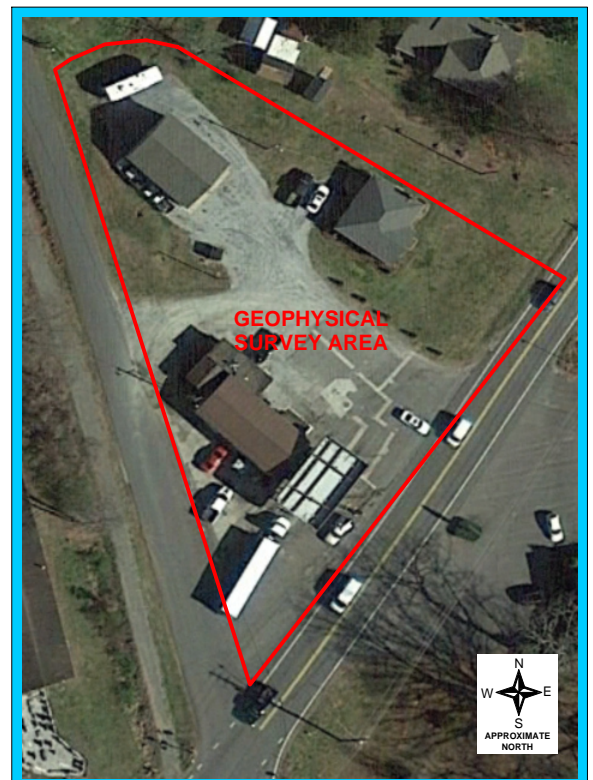
**GROUND PENETRATING RADAR UNIT**

The photograph shows the Geophysical Survey Systems SIR-3000 ground penetrating radar (GPR) unit equipped with a 400 MHz antenna that were used to conduct the GPR scanning across selected portions of the site.



**DITCHWITCH UTILITY LOCATOR**

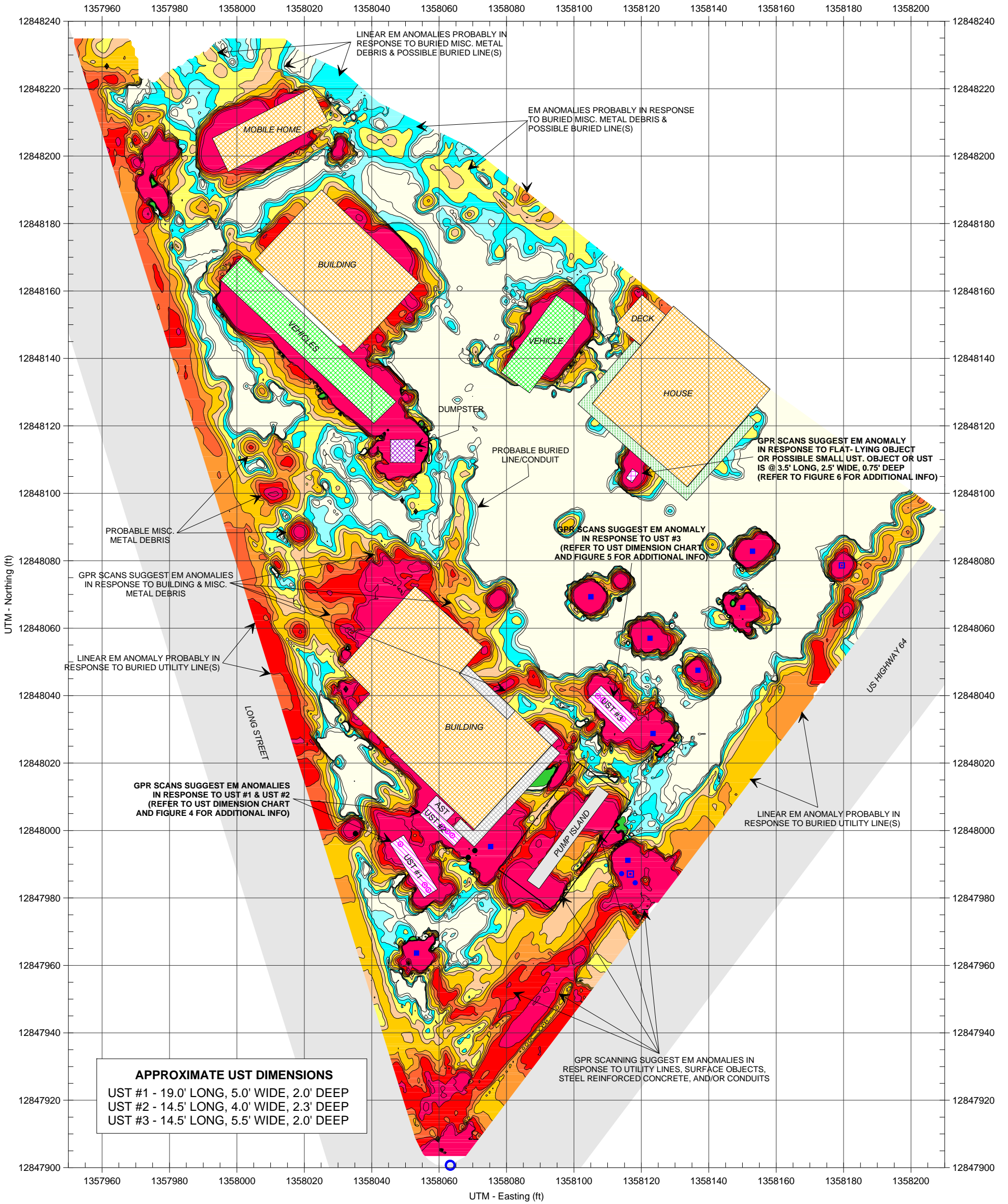
The photograph shows the DitchWitch 910 utility locator which was used to detect buried lines across the proposed boring locations.



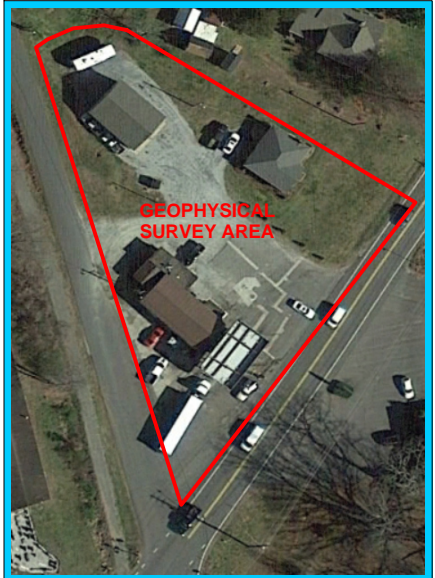
**GEOPHYSICAL SURVEY AREA**

The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at the Timothy & Lois Mace property (Parcel 125). The geophysical investigation was conducted on July 28 and August 2-3, 2017.

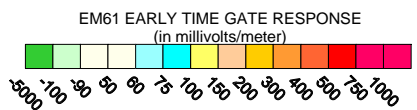




**APPROXIMATE UST DIMENSIONS**  
 UST #1 - 19.0' LONG, 5.0' WIDE, 2.0' DEEP  
 UST #2 - 14.5' LONG, 4.0' WIDE, 2.3' DEEP  
 UST #3 - 14.5' LONG, 5.5' WIDE, 2.0' DEEP



The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at Parcel 125



**LEGEND**

- SURVEY AREA: EM61 ACQUIRED ALONG LINES SPACED APPROX. 5 FEET APART
- BUILDING
- VEHICLES
- MISCELLANEOUS EQUIPMENT
- BUSHES
- UTILITY LINE COVER
- WATER METER COVER
- REMEDIATION SYSTEM COVER
- UTILITY BOX, POLE OR GUY WIRE
- MONITORING WELL
- UST COVER
- PROBABLE (KNOWN) OR POSSIBLE USTS, AS SUGGESTED BY GEOPHYSICAL DATA



The contour plot shows the early time gate (most sensitive) response of the Geonics EM61-MK2A metal detection instrument in millivolts (mV). The early time gate response shows buried, metallic objects, lines and conduits regardless of size. GPR scans were conducted across selected EM61 anomalies and steel reinforced concrete using a Geophysical Survey Systems SIR 3000 instrument with a 400 MHz antenna. The geophysical investigation was conducted on July 28 and August 2 - 3, 2017.

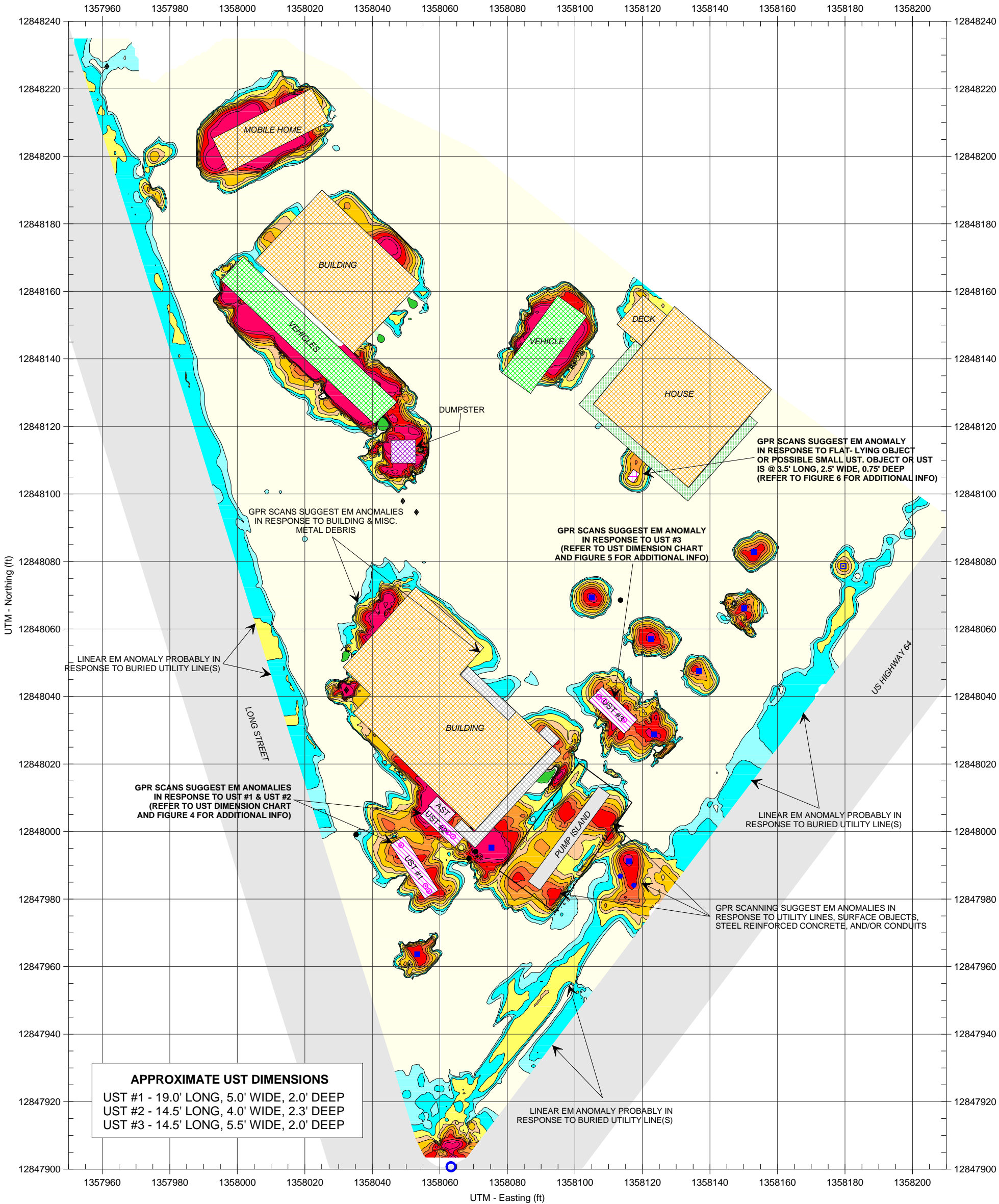
**EM61-MK2A METAL DETECTION  
(EARLY TIME GATE RESULTS)**

**TERRACON, INC.**  
 Timothy & Lois Mace Property  
 (Parcel 125) 137 & 145 US Highway 64  
 Rutherford County, North Carolina

**GEOPHYSICAL**  
 SURVEY INVESTIGATIONS

11/27/17      336-286-9718      FIGURE 2

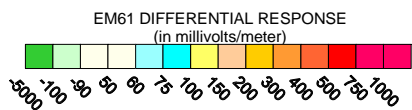




**APPROXIMATE UST DIMENSIONS**  
 UST #1 - 19.0' LONG, 5.0' WIDE, 2.0' DEEP  
 UST #2 - 14.5' LONG, 4.0' WIDE, 2.3' DEEP  
 UST #3 - 14.5' LONG, 5.5' WIDE, 2.0' DEEP



The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at Parcel 125



LEGEND	
[White box]	SURVEY AREA: EM61 ACQUIRED ALONG LINES SPACED APPROX. 5 FEET APART
[Orange hatched box]	BUILDING
[Green hatched box]	VEHICLES
[Grey hatched box]	MISCELLANEOUS EQUIPMENT
[Blue hatched box]	BUSHES
[Blue circle]	UTILITY LINE COVER
[Blue square]	WATER METER COVER
[Blue diamond]	REMEDIATION SYSTEM COVER
[Black diamond]	UTILITY BOX, POLE OR GUY WIRE
[Black circle]	MONITORING WELL
[Pink circle]	UST COVER
[Pink circle with 'UST' text]	PROBABLE (KNOWN) OR POSSIBLE USTS, AS SUGGESTED BY GEOPHYSICAL DATA

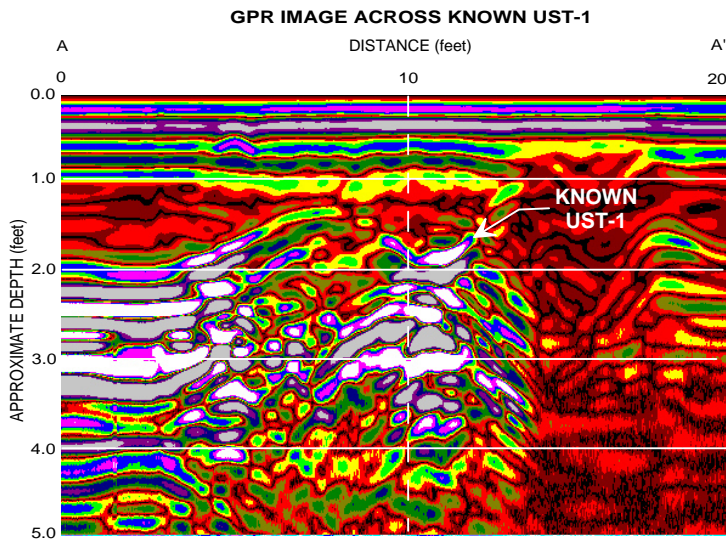
Note: The contour plot shows the differential response between the early time gate and the late time gate channels of the Geonics EM61-MK2A metal detection instrument in millivolts (mV). The differential response focuses on larger, buried, metallic objects such as drums and USTs and ignores smaller miscellaneous, metal debris. Ground penetrating radar (GPR) scans were conducted across selected EM61 anomalies and areas containing reinforced concrete using a Geophysical Survey Systems SIR 3000 unit with a 400 MHz antenna. The geophysical investigation was conducted on July 28 and August 2 - 3, 2017.



**EM61-MK2A METAL DETECTION  
(DIFFERENTIAL RESULTS)**

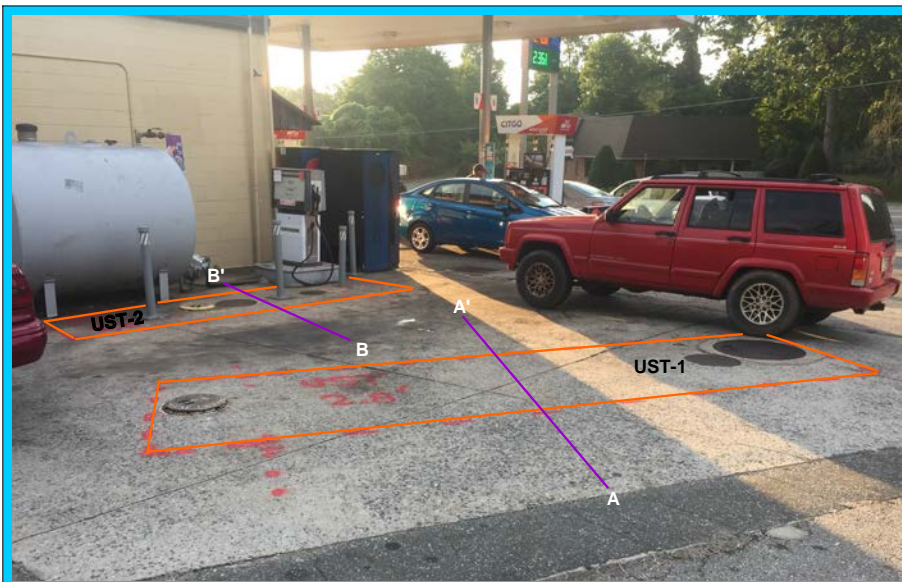
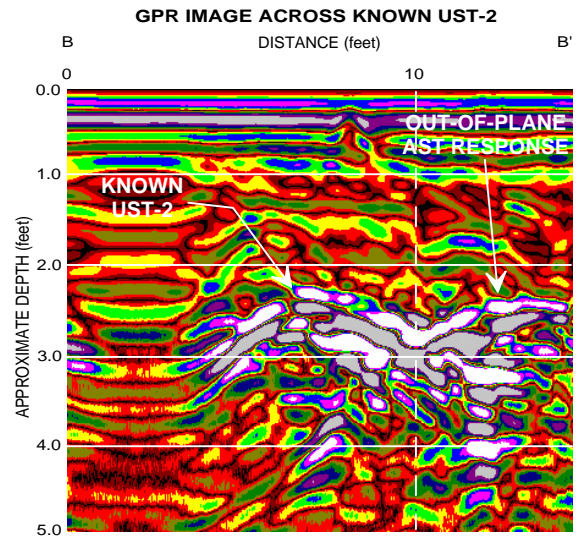
**TERRACON, INC.**  
 Timothy & Lois Mace Property  
 (Parcel 125) 137 & 145 US Highway 64  
 Rutherford County, North Carolina





The high amplitude, hyperbolic reflections in the GPR image (left) are probably in response to known (active) UST-1 buried approximately 2.0 feet below present grade. The purple line labeled AA' in the photograph shown below represents the approximate location of the GPR image.

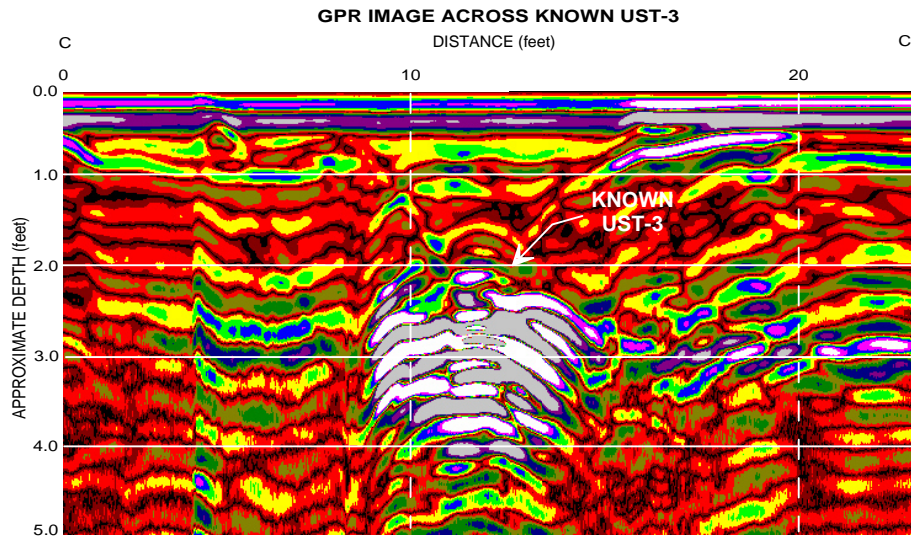
The high amplitude, hyperbolic reflections in the GPR image (right) are probably in response to known (active) UST-2 buried approximately 2.3 feet below present grade. The purple line labeled BB' in the photograph shown below represents the approximate location of the GPR image.



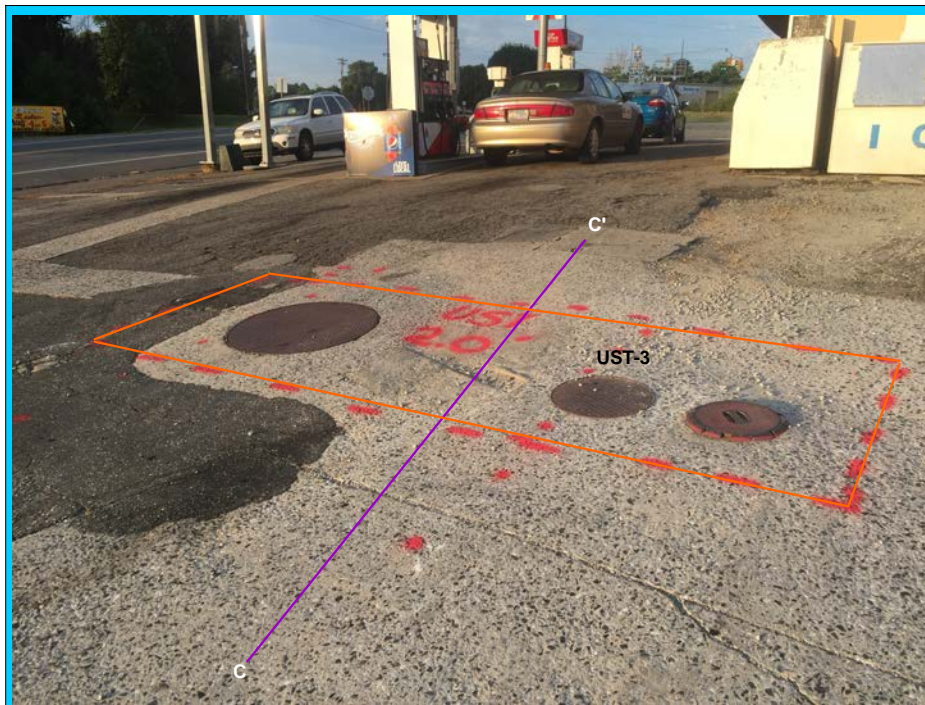
The orange rectangles in the photograph represent the approximate foot prints of known USTs-1 and 2 that were detected by the geophysical investigation. Based on the GPR data, active UST-1 is approximately 19.0 feet long, 5.0 feet wide and buried 2.0 feet below present grade. Active UST-2 is approximately 14.5 feet long, 4.0 feet wide and buried 2.3 feet below present grade.

The solid purple lines labeled AA' and BB' in the photograph represent the approximate location of GPR images AA' and BB' shown above. The photograph is viewed in an easterly direction.

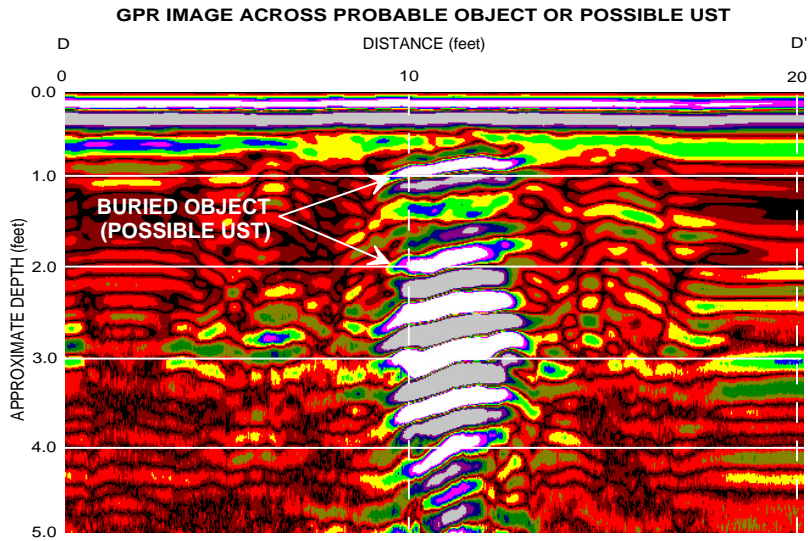




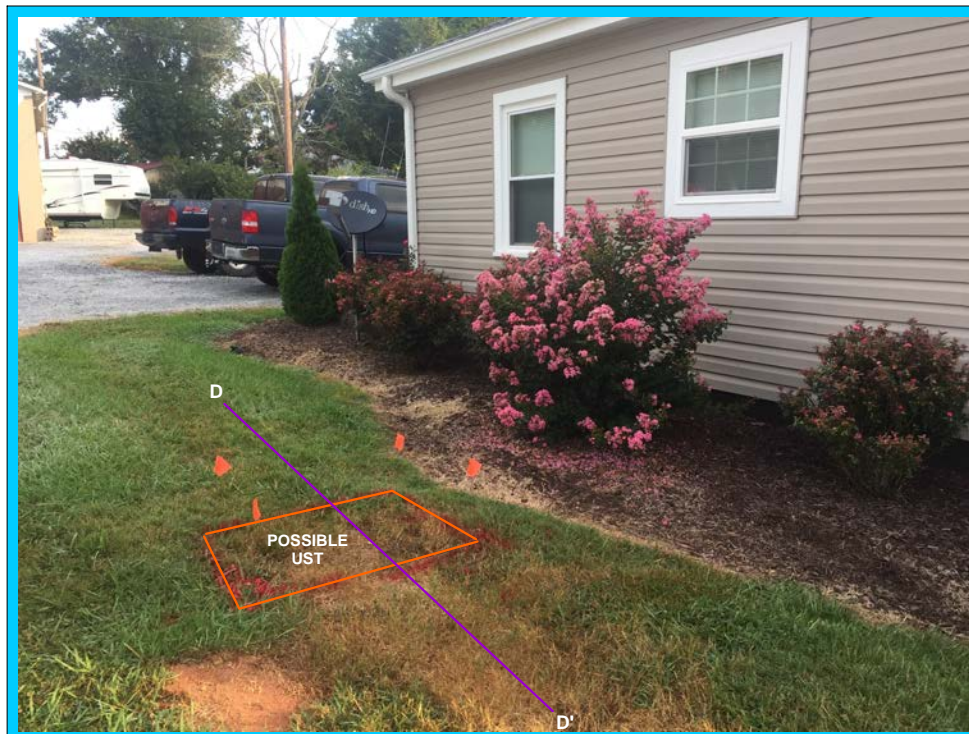
The high amplitude, hyperbolic reflections in the GPR image (above) are probably in response to known (active) UST-3 buried approximately 2.0 feet below present grade. The purple line labeled CC' in the photograph shown below represents the approximate location of the GPR image.



The orange rectangle in the photograph represents the approximate foot print of known UST-3 that was detected by the geophysical investigation. Based on the GPR data, the active UST is approximately 14.5 feet long, 5.5 feet wide and buried 2.0 feet below present grade. The solid purple line labeled CC' in the photograph represents the approximate location of GPR image CC' shown above. The photograph is viewed in a southwesterly direction.



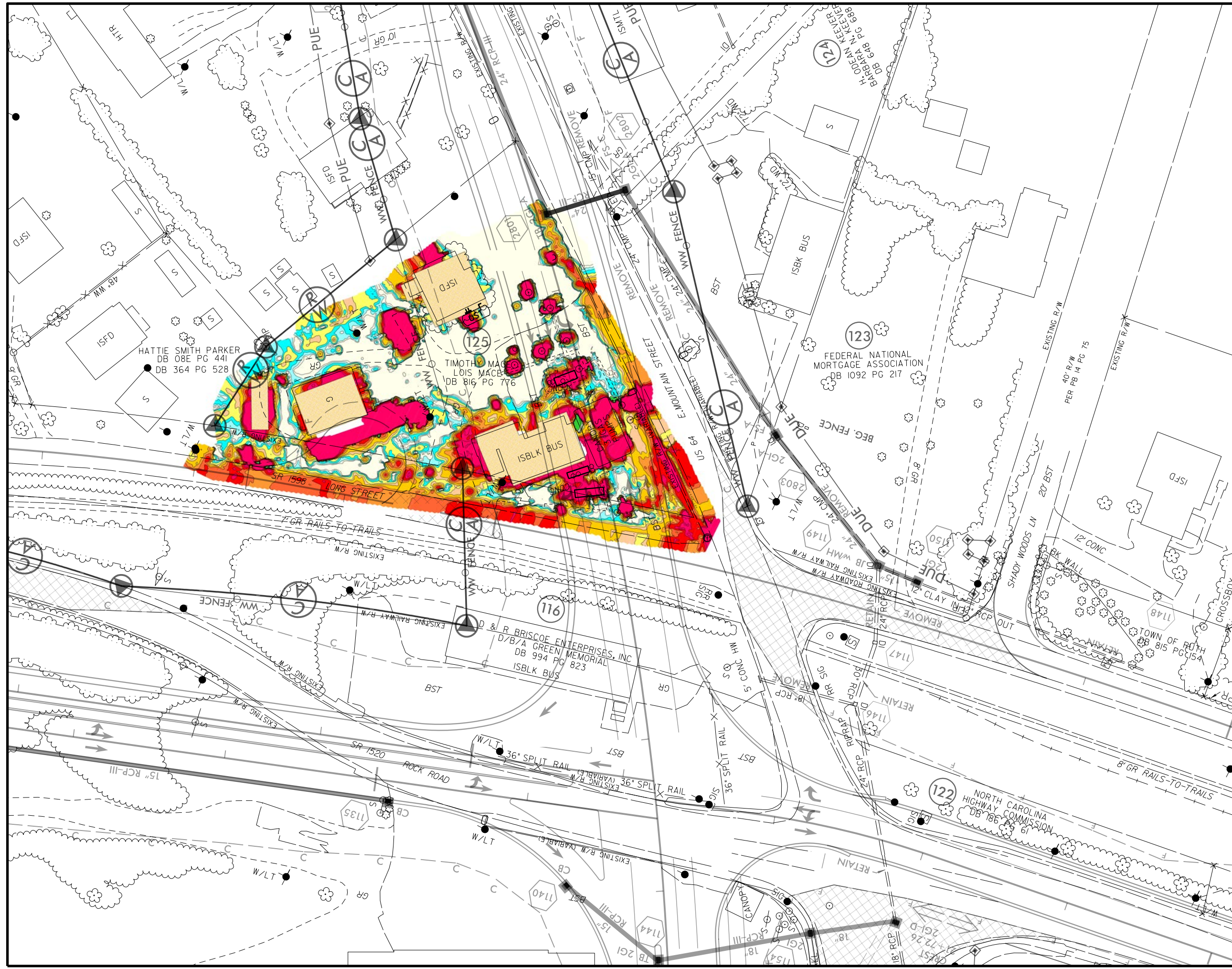
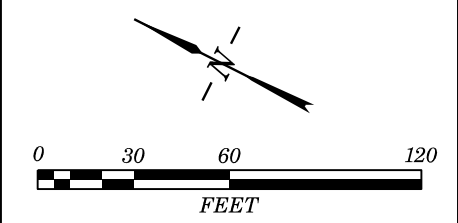
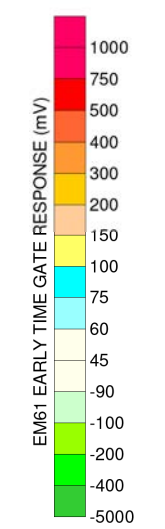
The high amplitude, flat-lying reflections in the GPR image (above) are probably in response to a miscellaneous, metal object or a possible (low confidence) UST buried approximately 0.75 feet below present grade. The purple line labeled DD' in the photograph shown below represents the approximate location of the GPR image.



The orange rectangle in the photograph represents the approximate foot print of a probable, miscellaneous, buried, metallic object or a possible (low confidence) UST that was detected by the geophysical investigation. Based on the GPR data, the probable object/possible UST is approximately 3.5 feet long, 2.5 feet wide and buried 0.75 feet below present grade. The solid purple line labeled DD' in the photograph represents the approximate location of GPR image DD' shown above. The photograph is viewed in a northerly direction.



- LEGEND**
- PROPERTY LINE
  - EXISTING RIGHT OF WAY LINE
  - ⊙ PROPOSED CONTROL OF ACCESS LINE WITH CONCRETE MARKER
  - ⊙ PROPOSED RIGHT OF WAY WITH MARKER
  - EXISTING EDGE OF PAVEMENT
  - PROPOSED EDGE OF TRAVEL
  - F C PROPOSED CUT / FILL LINE
  - PROPOSED CATCH BASIN
  - PROPOSED DRAINAGE PIPING
  - PUE PROPOSED PERMANENT UTILITY EASEMENT
  - DUE PROPOSED PERMANENT DRAINAGE / UTILITY EASEMENT
  - ⊙ BORING LOCATION
  - OUTLINE OF KNOWN UST LOCATION
  - ▭ UST POSSIBLE UST LOCATION





- LEGEND**
- PROPERTY LINE
  - EXISTING RIGHT OF WAY LINE
  - ⊙ ⊙ PROPOSED CONTROL OF ACCESS LINE WITH CONCRETE MARKER
  - ⊙ ⊙ PROPOSED RIGHT OF WAY WITH MARKER
  - EXISTING EDGE OF PAVEMENT
  - PROPOSED EDGE OF TRAVEL
  - F C PROPOSED CUT / FILL LINE
  - PROPOSED CATCH BASIN
  - PROPOSED DRAINAGE PIPING
  - PUE PROPOSED PERMANENT UTILITY EASEMENT
  - DUE PROPOSED PERMANENT DRAINAGE / UTILITY EASEMENT
  - ⊙ BORING LOCATION
  - OUTLINE OF KNOWN UST LOCATION
  - ▭ UST POSSIBLE UST LOCATION

