

# PRELIMINARY SITE ASSESSMENT

**SR 1997 (FAYETTEVILLE ROAD) WIDENING  
TIP NO. U-5797, WBS NO. 44367.1.1**

**NCDOT PARCEL NO. 27**

**OWNER: LUMBERTON SQUARE LLC**

**3211 FAYETTEVILLE STREET**

**LUMBERTON, ROBESON COUNTY, NORTH CAROLINA**



PREPARED FOR:  
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
C/O STV ENGINEERS, INC.  
1600 PERIMETER PARK DRIVE, SUITE 225  
MORRISVILLE, NC 2756002

PREPARED BY:  
FALCON ENGINEERING, INC.  
1210 TRINITY ROAD, SUITE 110  
CARY, NC 27513

PROJECT NUMBER: G19011.00  
JUNE 9, 2020





June 9, 2020

Mr. Patrick Livingston, PE  
STV Engineers, Inc.  
900 W. Trade St, Suite 715  
Charlotte, NC 28202

Re: **Preliminary Site Assessment**  
SR 1997 (Fayetteville Road) Widening  
TIP No. U-5797, WBS No. 44367.1.1  
Parcel No. 27  
Owner: Lumberton Square LLC  
3211 Fayetteville Street  
Lumberton, Robeson County, North Carolina

Dear: Mr. Livingston:

Falcon is pleased to present the following Preliminary Site Assessment in support of the above-mentioned Project. Specifically, Falcon sampled soil in proximity to the project limits on this parcel in general accordance with the approved scope of work. Soils requiring remediation or special handling during construction were not identified.

Falcon recommends if drums, USTs, above ground storage tanks (ASTs), petroleum odors or sheen are observed during any excavation associated with any property involved in the project that all work in the vicinity stop until further assessment takes place. Further assessment can include but is not limited to; sampling the soil and groundwater, excavation, and proper handling and disposal of contaminated soils and groundwater.

Please review this report and advise us if you have any questions or concerns. We appreciate this opportunity to provide services to you and look forward to partnering with you on future projects. If you have any questions, please give Falcon a call at (919) 871-0800.

Sincerely,

**FALCON ENGINEERING, INC.**

A handwritten signature in blue ink, reading 'Christopher J. Burkhardt'.

Christopher J. Burkhardt  
Environmental Services Manager

A handwritten signature in blue ink, reading 'Jeremy R. Hamm'.

Jeremy R. Hamm, PE  
Geotechnical Services Manager

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**VICINITY MAP**

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**PARCEL LOCATION MAP**

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**STATE FILE REVIEW DOCUMENTS**

**LABORATORY RESULTS**

**GEOPHYSICAL SURVEY**

## SECTION 1: INTRODUCTION

### 1.1 DESCRIPTION

Falcon Engineering, Inc. (Falcon) has completed a Preliminary Site Assessment of NCDOT TIP Project U-5797 Parcel No. 27. Parcel No. 27 is addressed as 3211 Fayetteville Road, Lumberton Robeson County, North Carolina. NCDOT is proposing to widen Fayetteville Road (SR 1997) from Farringdom Street to 22nd Street. The limits of the assessment are between the existing edge of NCDOT maintained pavement (within the existing NCDOT ROW) where accessible, and the proposed NCDOT ROW and/or easement (whichever boundary represents the largest area). Boring locations were placed in the vicinity of proposed excavations for drainage features, utilities, and roadway/ditch cuts to determine if soils requiring remediation or special handling were present where excavation was planned to take place.

### 1.2 SCOPE OF WORK

Falcon's scope of work included coordination of; public and private utility location near the proposed borings, geophysical surveys, collecting soil samples using direct push technology, and laboratory analysis. Samples were analyzed for petroleum hydrocarbons via UVF technology.

## SECTION 2: HISTORY

### 2.1 PARCEL USAGE

Falcon performed a Phase I Environmental Site Assessment (ESA) for U-5797 under Project No. G17057 dated April 2018. The ESA identified this parcel as a Recognized Environmental Condition (REC) based on the history of the parcel and adjoining parcels. Falcon contacted Mr. Joe Oliver the County Fire Marshal during the ESA to inquire about known USTs along Fayetteville Road in the general area of Parcel No. 27. Mr. Oliver sent documents pertaining to USTs that had been installed and/or removed from Nichols addressed as 3100 Fayetteville Road, Baxley's addressed as Highway 211 East, and Taco Bell addressed as Fayetteville Road and Roberts Ave.

Falcon also contacted Mr. Brandon Love, City of Lumberton Director of Planning & Neighborhood Services, to request information on permits for USTs, wells, or septic systems. Mr. Love remembered the former Nichols Grocery Store being in the general area of Parcel No. 27. Historic air photographs dated 1976 through 2000 show the majority of Parcel No. 27 as a parking lot with a portion of a large commercial building along the eastern parcel line. The exact location of USTs associated with the above listed facilities is unknown. UST closure documentation including soil sampling results were not available for review.

### 2.2 FACILITY IDENTIFICATION NUMBER

Facility Identification Number 00-0-0000018350 is associated with the former Nichols Grocery Store which may have been located on this parcel.

### 2.3 GROUNDWATER INCIDENT NUMBER

A Groundwater Incident Number was not identified for this parcel.

## **SECTION 3: SITE OBSERVATIONS**

### **3.1 GROUNDWATER MONITORING WELLS**

Groundwater monitoring wells (MWs) were not observed on this parcel.

### **3.2 ACTIVE USTS**

Active USTs were not observed within the project limits or registered at this parcel.

### **3.3 FEATURES APPARENT BEYOND ROW/EASEMENT**

USTs, monitoring wells, remediation systems, or hydraulic lifts were not observed.

## SECTION 4: METHODOLOGY

### 4.1 GEOPHYSICS

Pyramid Geophysical Services (Pyramid) was subcontracted to perform a geophysical survey of the assessment area. The assessment area is between the existing edge of NCDOT maintained pavement (within the existing NCDOT ROW) where accessible, and the proposed NCDOT ROW and/or easement (whichever boundary represents the largest area). The survey was used to locate private utility lines, as well as possible indications of USTs, and/or their pits.

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 georeferenced and can be overlain on aerial photographs and CADD drawings.

GPR data was acquired across select EM anomalies (where identified), using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. Pyramid marked their findings on the surface with paint. 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 to obtain adequate coverage. A copy of the full Geophysical Report is included in the Attachments.

### 4.2 BORINGS

Regional Probing was subcontracted to advance soil borings using direct push technology. Regional Probing used a truck-mounted Geoprobe® 5410 unit mounted on an off-road modified Ford F350 Diesel 4x4. The unit has auger-capabilities and is equipped with a GH-42 soil-probing hammer, with 21,700 pounds of down force and 28,900 pounds of retraction force. The unit has an on-board tank for decontaminating the geoprobe rods before advancing the probe at each sample location.

### 4.3 SAMPLE PROTOCOL

Prior to initiating sample collection Falcon contacted NC One Call and requested public utility locations be marked around the proposed sample locations. Sampling was in general accordance with the NC Department of Environmental Quality (DEQ) Division of Waste Management's (DWM) "Guidelines for Site Checks, Tank Closure, and Initial Response and Abatement for UST Releases" (March 1, 2007 Version Change 9 – February 1, 2019) guidance document. Sampling strategy was derived based upon the project scope and objectives as outlined above. Red Lab, LLC was selected to perform the UVF laboratory analytical analysis. Appropriate sterile containers were received by Falcon from Red Lab prior to beginning the fieldwork. The containers were labeled appropriately.



A Minirae 3000 photoionization detector (PID) was used to field screen samples for volatile organics to determine if a release had occurred. The instrument was calibrated per manufacturer instructions prior to use. Falcon staff bagged composite soil samples of each boring in approximately two-foot sections. Representative samples were placed in a sealed plastic bag for approximately 10 minutes to allow soil hydrocarbons to reach equilibrium within the headspace prior to scanning with the PID. One sample per boring was collected from the depth of the proposed cut or from the section above the depth of cut with the highest PID reading.

To avoid cross contamination, a new unused pair of non-powdered nitrile gloves was worn while extracting each sample. Samples were placed in the appropriate laboratory provided containers. The labels on each container were then completed so that each provided the date and time of sampling, method of analysis, sample collector, preservative used and sampling location identification. Samples were placed in an ice filled cooler and transported to the lab. Appropriate chain-of-custody procedures, including the completion of necessary forms, were followed.

## SECTION 5: RESULTS

### 5.1 GEOPHYSICS

The geophysical investigation was performed on March 19 through 27, 2019 to investigate for metallic underground storage tanks (USTs) beneath the survey area. The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. A total of sixteen EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. One EM anomaly was associated with interference from a car and was further investigated with GPR. The GPR transects did not record any evidence of buried structures, such as USTs.

### 5.2 SAMPLE DATA

Falcon and our subcontractor advanced six borings (B-42 through B-47) to the proposed excavation depth of the drainage features, utilities, or roadway/ditch cut being assessed. Groundwater was not observed. Please see the boring Layout Plan in the attachments for a visual depiction of the sample locations. The coordinates (latitude and longitude) that correspond to the sample locations are shown below in Table No. 1 Boring Coordinates.

TABLE NO. 1 BORING COORDINATES

Boring	Latitude	Longitude
B-42	34.6404085	-79.0004311
B-43	34.6406113	-79.0003512
B-44	34.6408538	-79.0001934
B-45	34.6408191	-78.9999011
B-46	34.6406929	-78.9996821
B-47	34.6404792	-78.9995567

Borings were field screened with a PID in sections for evidence of volatile organics. The PID screening results are presented in Table No. 2 PID Readings. Falcon selected soil samples based on the field screening results and the needs of the project. Red Lab analyzed the selected samples and their full analytical report is attached. The results of the laboratory analysis are shown in Table No. 3 Summary of UVF Soil Sampling Results.

Petroleum hydrocarbons above State Action Levels were not detected in the samples.

TABLE NO. 2 PID READINGS

Boring	Depth BGS*	PID**
B-42	0-2.0	0.3
	2.0-4.0	0.4
	4.0-6.0	1
	6.0-8.0	<b>1.1</b>
B-43	0-2.5	0.5
	2.5-5.0	<b>0.3</b>
B-44	0-2.5	0.6
	2.5-5.0	<b>0.5</b>
B-45	0-2.0	0.7
	2.0-4.0	<b>0.8</b>
B-46	0-2.0	0.4
	2.0-4.0	<b>0.5</b>
B-47	0-1.5	1.1
	1.5-3.0	<b>0.8</b>

\*BGS = Depth below ground surface in feet

\*\*PID readings are in parts per million

Samples shown in **bold** were selected for analysis

TABLE NO. 3 SUMMARY OF UVF SOIL SAMPLING RESULTS

Sample ID	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
								% light	% mid	% heavy	
B-42	<0.57	<0.57	1.1	1.1	0.48	<0.18	<0.023	0	88.1	11.9	Road Tar 85.1%,(FCM)
B-43	<0.48	0.7	9.7	10.4	4.6	0.53	<0.019	15.4	74	10.6	Road Tar 96.8%,(FCM)
B-44	<0.28	0.38	0.28	0.66	0.16	<0.09	<0.011	71.6	22	6.4	Deg.PHC 91.3%,(FCM)
B-45	<0.51	0.97	24	25	11.6	1.3	0.033	9	81.6	9.4	Road Tar 96.4%,(FCM)
B-46	<0.47	<0.47	15.2	15.2	7.3	0.82	0.025	0	86.2	13.8	Road Tar 94.5%,(FCM)
B-47	<0.55	<0.55	<0.55	<0.55	<0.11	<0.18	<0.022	0	100	0	PHC not detected

Results reported in mg/kg (milligrams per kilogram)

### 5.3 SAMPLE OBSERVATIONS

Obvious visual indications of a release (stained soils, odors, or oily sheen) were not observed. Table No. 4 Soil Observations lists visual soil observations of color and texture.

TABLE NO. 4 SOIL OBSERVATIONS

Sample ID	Depth	Color	Soil Type
B-42	0-2.0	Tan Orange	Silty Clayey Sand (A-2-6)
	2.0-4.0	Brown Tan	Silty Clayey Sand (A-2-6)
	4.0-6.0	Brown Orange	Silty Clayey Sand (A-2-6)
	6.0-8.0	Gray & Tan (mottled)	Sandy Clay (A-6)
B-43	0-2.5	Tan Brown	Clayey Sand (A-2-6)
	2.5-5.0	Brown Tan	Slightly Clayey Silty Sand (A-2-4)
B-44	0-2.5	Brown Orange	Slightly Clayey Silty Sand (A-2-4)
	2.5-5.0	Gray Brown	Sandy Clay (A-6)
B-45	0-2.0	Gray Tan	Silty Clayey Sand (A-2-6)
	2.0-4.0	Gray Brown	Slightly Clayey Silty Sand (A-2-4)
B-46	0-2.0	Brown Tan	Slightly Clayey Silty Sand (A-2-4)
	2.0-4.0	Dark Gray to Brown	Silty Sandy Clay (A-6)
B-47	0-1.5	Brown Tan	Silty Clayey Sand (A-2-6)
	1.5-3.0	Brown Orange	Silty Clayey Sand (A-2-6)

Depth is in feet below ground surface

### 5.4 QUANTITIES CALCULATIONS

Soils requiring quantity calculations were not identified.

## SECTION 6: CONCLUSIONS

### 6.1 INTERPRETATION OF RESULTS

This Preliminary Site Assessment was performed to evaluate the soils in proximity to the project limits on this parcel for the presence of petroleum hydrocarbons. The findings are as follows:

- Soil sampling completed on the parcel did not identify contaminants in the soil at levels requiring remediation.

### 6.2 GEOPHYSICS

The geophysical data did not record any evidence of unknown metallic USTs within the geophysical survey area at Parcel 27. Falcon does not anticipate USTs will be encountered within the project limits on this parcel during construction.

### 6.3 SAMPLING

Sampling results did not identify contaminants in the soil which require remediation in the areas sampled. Based on past project experience, Falcon does not anticipate soil remediation or special handling and disposal will be required during construction on this parcel.

### 6.4 QUANTITIES

Soils requiring quantities calculations were not identified.

## **SECTION 7: RECOMMENDATIONS**

### **7.1 ADDITIONAL SAMPLING**

Contaminants above the Industrial / Commercial Soil Cleanup Levels were not identified; therefore, additional assessment is not warranted at this time. Falcon recommends if drums, USTs, above ground storage tanks (ASTs), petroleum odors or sheen are observed during any excavation associated with any property involved in the project that all work in the vicinity stop until further assessment takes place. Further assessment can include but is not limited to; sampling the soil and groundwater, excavation, and proper handling and disposal of contaminated soils and groundwater.

### **7.2 SPECIAL HANDLING OF IMPACTED SOIL**

Soils requiring special handling were not identified. If suspect contaminated soils are encountered during construction Falcon and the NCDOT GeoEnvironmental Group should be contacted for proper handling instructions.



## **SECTION 7: RECOMMENDATIONS**

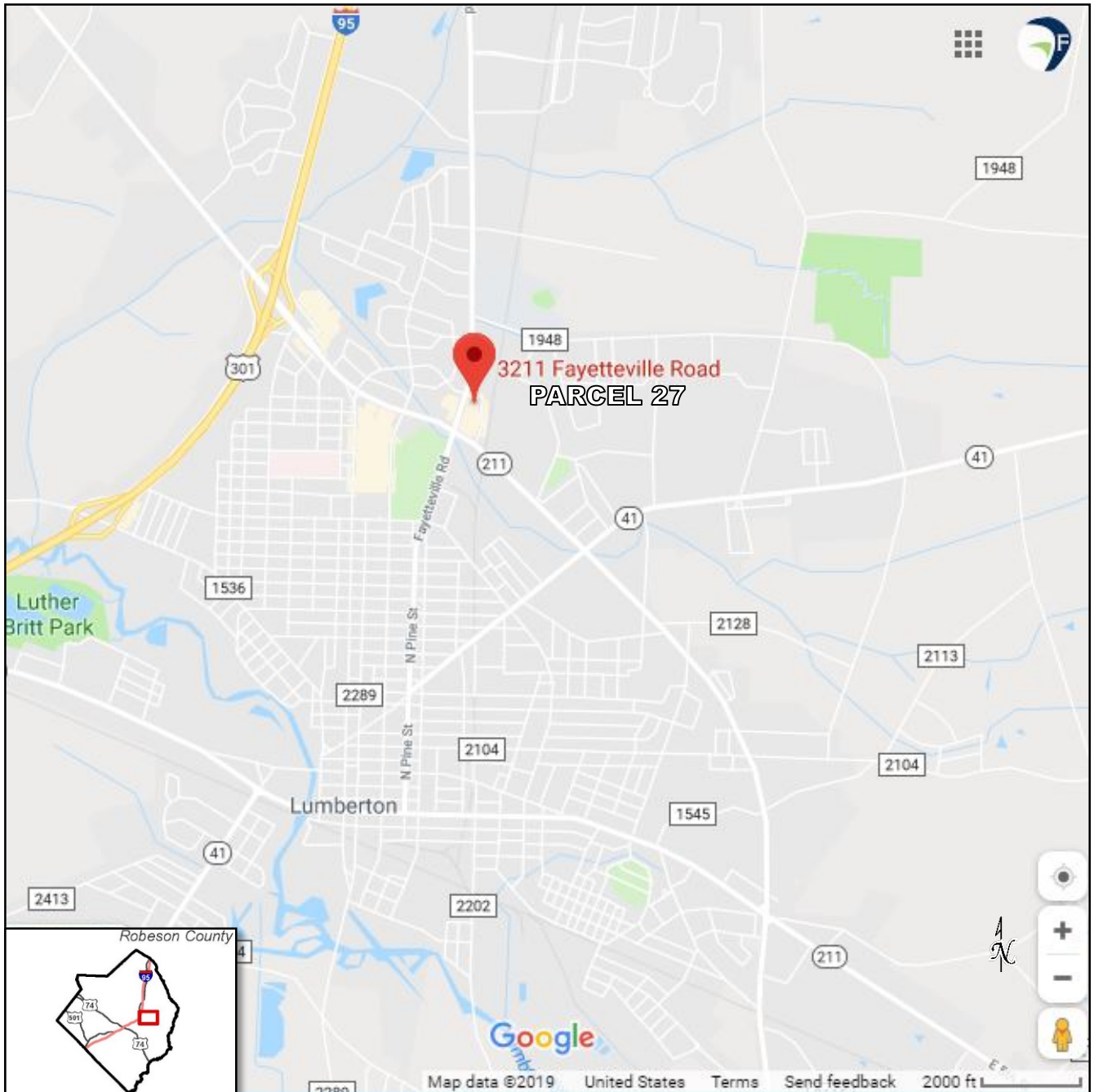
### **7.1 ADDITIONAL SAMPLING**

Contaminants above the Industrial / Commercial Soil Cleanup Levels were not identified; therefore, additional assessment is not warranted at this time. Falcon recommends if drums, USTs, above ground storage tanks (ASTs), petroleum odors or sheen are observed during any excavation associated with any property involved in the project that all work in the vicinity stop until further assessment takes place. Further assessment can include but is not limited to; sampling the soil and groundwater, excavation, and proper handling and disposal of contaminated soils and groundwater.

### **7.2 SPECIAL HANDLING OF IMPACTED SOIL**

Soils requiring special handling were not identified. If suspect contaminated soils are encountered during construction Falcon and the NCDOT GeoEnvironmental Group should be contacted for proper handling instructions.

**NCDOT U-5797 (SR 1997 Widening) Parcel 27**  
**Preliminary Site Assessment**  
**Vicinity Map**



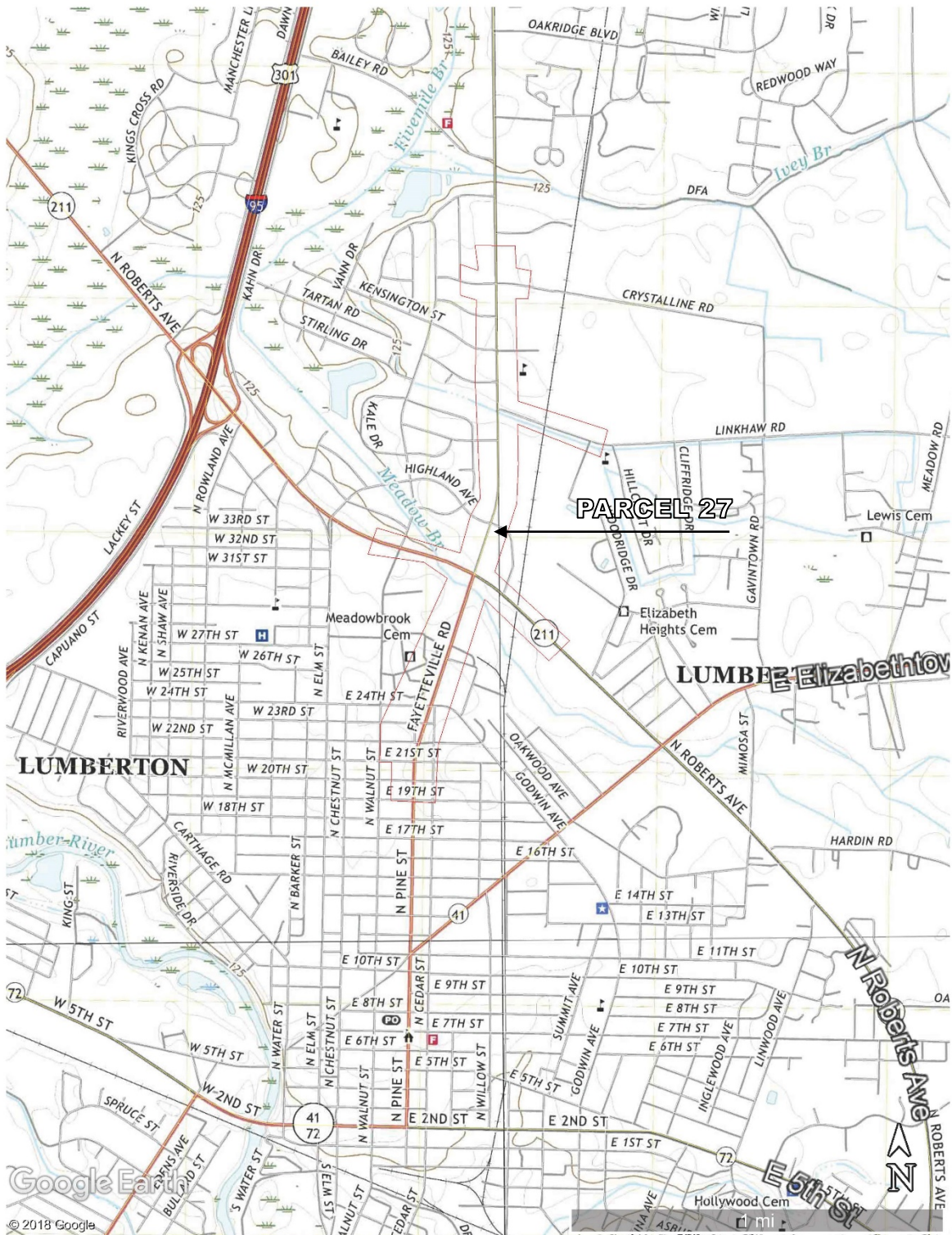
Project No.: G19011.00  
Date: September 2019  
Source: Google Maps



# NCDOT U-5797 (SR 1997 Widening) Parcel 27

## Preliminary Site Assessment

### USGS Topographic Maps



Project No.: G19011.00  
Date: September 2019  
Source: "NW, NE, SW, and SE Lumberton, NC" 2019



# NCDOT U-5797 (SR 1997 Widening) Parcel 27

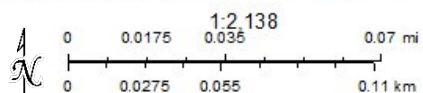
## Preliminary Site Assessment

### Parcel Location Map



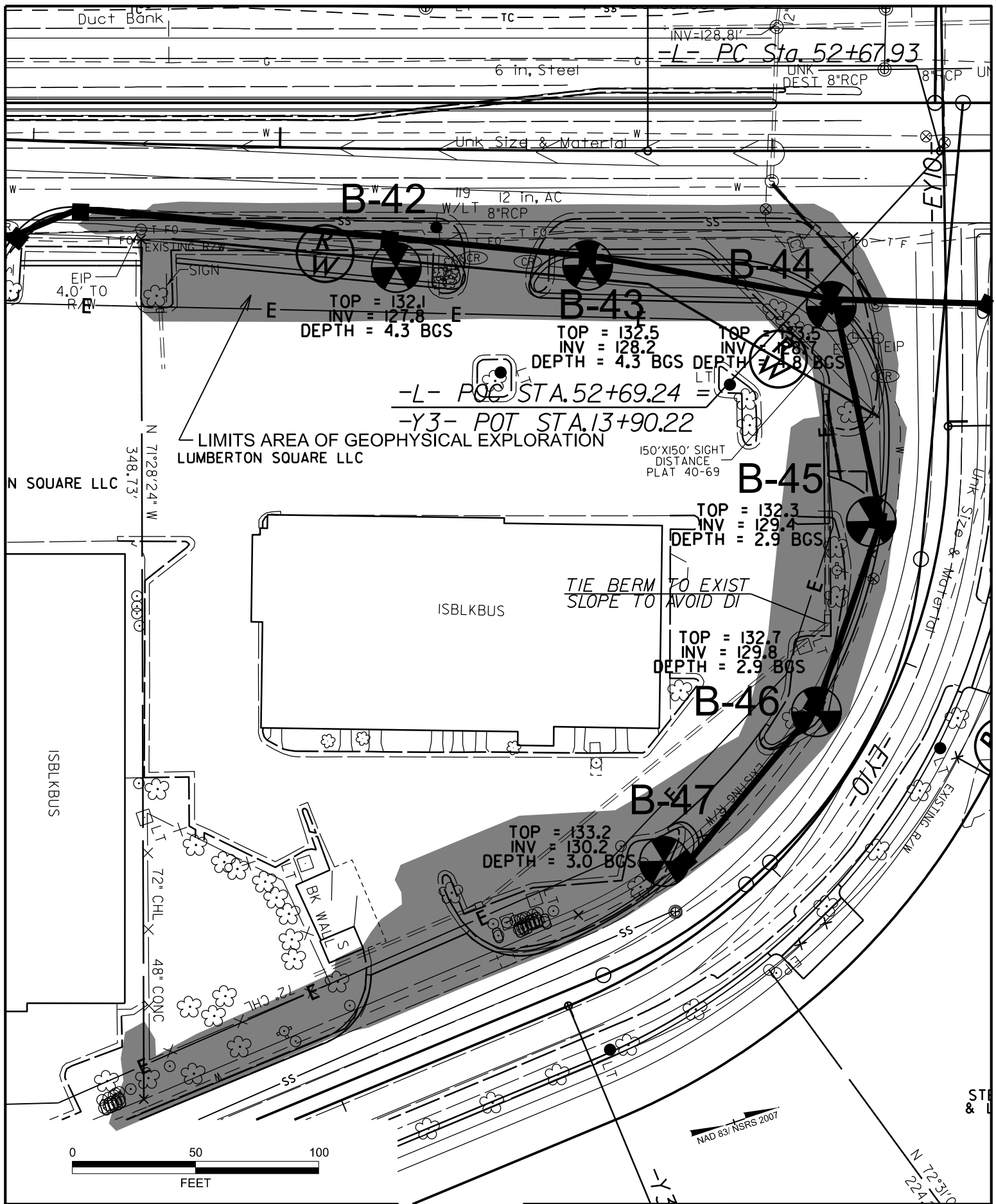
September 5, 2019

-  County Line
-  City Limits
-  Streets
-  Parcels



Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community  
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Project No.: G19011.00  
Date: September 2019  
Source: Robeson County GIS



**NOTES:**

• BGS = BELOW GROUND SURFACE



FALCON ENGINEERING, INC.  
1210 TRINITY ROAD, SUITE 110  
RALEIGH, NC 27607  
PHONE: 919.871.0800  
FAX: 919.871.0803

**BORING LOCATION PLAN**

NCDOT U-5797 (SR 1997 WIDENING)  
PARCEL 27 - LUMBERTON SQUARE LLC  
ROBESON / LUMBERTON, NC  
WBS NO.: 44367.1.1 & TIP NO.: U-5797  
FALCON PROJECT NO. G19011.00

NCDOT U-5797 (SR 1997 Widening) Parcel 27  
Preliminary Site Assessment  
1990 Aerial Photograph



Project No.: G19011.00  
Date: September 2019  
Source: NCDOT Historical Aerial Imagery Index



NCDOT U-5797 (SR 1997 Widening) Parcel 27  
Preliminary Site Assessment  
1985 Aerial Photograph



Project No.: G19011.00  
Date: September 2019  
Source: NCDOT Historical Aerial Imagery Index

NCDOT U-5797 (SR 1997 Widening) Parcel 27  
Preliminary Site Assessment  
1976 Aerial Photograph



Project No.: G19011.00  
Date: September 2019  
Source: ERIS Aerial Photographs



NCDOT U-5797 (SR 1997 Widening) Parcel 27  
Preliminary Site Assessment  
Site Photographs



Photograph No. 1: General view of Boring B-42.



Photograph No. 2: General view of Boring B-43.

**NCDOT U-5797 (SR 1997 Widening) Parcel 27**  
**Preliminary Site Assessment**  
**Site Photographs**



Photograph No. 3: General view of Boring B-44.



Photograph No. 4: General view of Boring B-45.



**NCDOT U-5797 (SR 1997 Widening) Parcel 27**  
**Preliminary Site Assessment**  
**Site Photographs**



Photograph No. 5: General view of Boring B-46.



Photograph No. 6: General view of Boring B-47.

DIVISION OF ENVIRONMENTAL MANAGEMENT

June 26, 1991

Mr. Sam Everett  
1203 East 11th Street  
Lumberton, NC 28358

SUBJECT: Review of Lab Results  
UST Soil Assessment  
Oscar Baxley Grocery  
Highway 211 - East  
Lumberton, Robeson County

Dear Mr. Everett:

This is to acknowledge receipt of the above mentioned soil assessment dated June 14, 1991.

Based on review of the lab results, no additional soil excavation and removal is required. Should new information become available concerning this matter, we reserve the right to reverse this finding.

Should you have any questions or need clarification, please contact Mrs. Cindy Hegg of this office at (919) 486-1541.

Sincerely,

*original signed by*

*[Signature]*  
M. J. Noland, P.E.  
Regional Supervisor

C.H/  
MJN/CH/gc

# Site Investigation Report For Permanent Closure of U.S.T.

FOR TANKS IN NC	Return Completed Form To: The appropriate DEM Regional Office according to the county of the facility's location. [SEE MAP ON REVERSE SIDE OF OWNER'S COPY (BLUE) FOR REGIONAL OFFICE ADDRESS].	Sate Use Only I.D. Number _____ Date Received _____
--------------------------	--	---

## INSTRUCTIONS

Please complete and return within (30) days following completion of site investigation.

I. Ownership of Tank(s)	II. Location of Tank(s)
Owner Name (Corporation, Individual, Public Agency, or Other Entity) <i>Pauline Barker Everett</i>	Facility Name or Company <i>Oscar Barker Grocery</i>
Street Address <i>1203 East 11th Street</i>	Facility ID # (if available) <i>None</i>
City <i>Robeson</i>	Street Address or State Road <i>1203 East</i>
County <i>Lumberton NC</i>	City <i>Robeson Lumberton</i>
Zip Code <i>28358</i>	Zip Code <i>28358</i>
Area Code <i>919</i>	Area Code <i>None</i>
Telephone Number <i>738-5863</i>	Telephone Number <i>None</i>

## III. Contact Person

Name <i>Sam Everett</i>	Job Title <i>Husband of owner</i>	Telephone Number <i>(919) 738-5863</i>
Closure Contractor <i>Floyd Grading Co</i>	<i>PO Box 3107 Lumberton NC 28359</i>	
Lab <i>Oxford Laboratories Inc</i>	<i>1316 South 5th Street Wilmington, NC 28401</i>	

IV. U.S.T. Information				V. Excavation Condition				VI. Additional Information Required	
Tank No.	Size in Gallons	Tank Dimensions	Last Contents	Water In Excavation		Free Product		Notable Odor or Visible Soil Contamination	
				Yes	No	Yes	No	Yes	No
1	550	42" x 7'6"	GAS		✓		✓		✓
2	550	42" x 7'6"	GAS		✓		✓		✓

See reverse side of blue copy (owner's copy) for additional information required by N.C. - DEM in the written report and sketch.

## VII. Check List

Check the activities completed.

- ☒ Contact local fire marshal
  - ☒ Notify DEM Regional Office before abandonment.
  - ☒ Drain & flush piping into tank.
  - ☒ Remove all product and residuals from tank
  - ☒ Excavate down to tank.
  - ☒ Clean and inspect tank.
  - ☒ Remove drop tube, fill pipe, gauge pipe, vapor recovery tank connections, submersible pumps and other tank fixtures.
  - ☒ Cap or plug all lines except the vent and fill lines.
  - ☒ Purge tank of all product & flammable vapors.
  - ☒ Cut one or more large holes in the tanks.
  - ☒ Backfill the area.
- Date Tank Permanently closed: *5/23/91*

- ABANDONMENT IN PLACE**
- ☐ Fill tank until material overflows tank opening;
  - ☐ Plug or cap all openings;
  - ☐ Disconnect and cap or remove vent line
  - ☐ Solid inert material used - please specify: \_\_\_\_\_

- REMOVAL**
- ☒ Create vent hole
  - ☒ Label tank
  - ☒ Dispose of tank in approved manner
  - Final tank destination: *Floyd Grading Co*

## VIII. Certification (Read and Sign)

Certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Print name and official title of owner or owner's authorized representative <i>Sam Everett</i>	Signature <i>Sam Everett</i>	Date Signed <i>5/23/91</i>
---	---------------------------------	-------------------------------

# Notice of Intent: UST Permanent Closure or Change-in-Service

FOR  
TANKS  
IN  
NC

## Return Completed Form To:

The appropriate DEM Regional Office according to the county of the facility's location. [SEE REVERSE SIDE OF OWNER'S COPY (BLUE) FOR REGIONAL OFFICE ADDRESS].

State Use Only

I. D. Number \_\_\_\_\_

Date Received \_\_\_\_\_

## INSTRUCTIONS

Complete and return thirty (30) days prior to closure or change-in-service.

### I. OWNERSHIP OF TANK(S)

Tank Owner Name: Pauline Bentley Everett  
(Corporation, Individual, Public Agency, or Other Entity)  
Street Address: 1203 East 11th Street  
County: Robeson  
City: Lumberton State: NC Zip Code: 28358  
Tele. No. (Area Code): 919-738-5863

### II. LOCATION OF TANK(S)

Facility Name or Company: Oscar Bentley Grocery  
Facility ID # (if available): None  
Street Address or State Road: Highway 211 - East  
County: Robeson City: Lumberton Zip Code: 28358  
Tele. No. (Area Code): None

### III. CONTACT PERSON

Name: Sam Everett Job Title: Husband Telephone Number: 919, 738-5863

### IV. TANK REMOVAL, CLOSURE IN PLACE, CHANGE-IN-SERVICE

1. Contact Local Fire Marshall.
2. Plan the entire closure event.
3. Conduct Site Soil Assessments.
4. If Removing Tanks or Closing in Place refer to API Publications. 2015 "Cleaning Petroleum Storage Tanks" & 1604 "Removal & Disposal of Used Underground Petroleum Storage Tanks".
5. Provide a sketch locating piping, tanks and soil sampling locations.
6. Fill out form GW/UST-2 "Site Investigation Report for Permanent Closure" and return within 30 days following the site investigation.
7. Keep records for 3 years.

### V. WORK TO BE PERFORMED BY:

(Contractor) Name: Floyd Grading Co.  
Address: P.O. Box 3197 Lumberton State: N.C. Zip Code: 28359  
Contact: Calvin F. Floyd Phone: Office 671-1177

### VI. TANK(S) SCHEDULED FOR CLOSURE OR CHANGE-IN-SERVICE

TANK ID#	TANK CAPACITY	LAST CONTENTS	PROPOSED ACTIVITY		
			CLOSURE		CHANGE-IN-SERVICE
			Removal	Abandonment In Place	New Contents Stored
<u>1</u>	<u>550</u>	<u>GAS</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<u>2</u>	<u>550</u>	<u>GAS</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	

### VII. OWNER OR OWNER'S AUTHORIZED REPRESENTATIVE

Print name and official title

Sam Everett - Owner

\*Scheduled Removal Date: 5/23/91

Signature: Sam Everett

Date Submitted: 5/23/91

\*If scheduled work date changes, notify your appropriate DEM Regional Office 48 hours prior to originally scheduled date.

APPLICATION TO USE, INSTALL, CONDUCT PROCESSES OR  
CARRY ON OPERATIONS INVOLVING OR CREATING CONDI-  
TIONS DEEMED HAZARDOUS TO LIFE OR PROPERTY

10-14-83  
Date

To Chief of Fire Department, City of Lumberton, N. C.

Application is hereby made by the undersigned for a Permit to

Use  
Install  
Operate  
Conduct

in or on the premises known as TACO-BELL / FAYETTEVILLE ROAD + ROBERTS ~~Street~~ or Avenue  
the following materials, processes or operations.

(Describe briefly what is to be done and state what hazardous materials are to be used.)

FOR THE REMOVAL OF 4 - 4000 GALLON

UNDERGROUND GASOLINE STORAGE TANKS.

#12-83

Conditions, surroundings and arrangements to be in accordance with the Fire Prevention Ordinance.

This application <sup>is</sup> ~~is not~~ approved insofar  
as Zoning and Building Ordinances are  
concerned.

Inspector of Buildings

C. M. Lumberton Jr.  
Name of Applicant

P.O. Box 1887  
Lumberton N.C.  
Address of Applicant

Complete plans and construction details must be filed on all major projects and when requested by the chief of the fire department.

550 gal.

Fire Prevention Form 1.

APPLICATION TO USE, INSTALL, CONDUCT PROCESSES OR  
CARRY ON OPERATIONS INVOLVING OR CREATING CONDI-  
TIONS DEEMED HAZARDOUS TO LIFE OR PROPERTY

6-1-92  
Date

To Chief of Fire Department, City of Lumberton, N. C.

Application is hereby made by the undersigned for a Permit to

Use  
Install  
Operate  
Conduct ☒

in or on the premises known as NICHOLS / 3100 FAYETTEVILLE ROAD Street or Avenue  
the following materials, processes or operations.

(Describe briefly what is to be done and state what hazardous materials are to be used.)

TO REMOVE ONE 550 GALLON UNDERGROUND STORAGE  
TANK, FOR USED MOTOR OIL, FROM PREMISES.

#20-92

Conditions, surroundings and arrangements to be in accordance with the Fire Prevention Ordinance.

This application <sup>is</sup> is not approved insofar  
as Zoning and Building Ordinances are  
concerned.

Inspector of Buildings

Chas. J. G.  
Name of Applicant

3041 Stantonburg Rd.  
Address of Applicant  
Wilson NC 27893

Complete plans and construction details must be filed on all major projects and when requested by the chief of the  
fire department.



### Hydrocarbon Analysis Results

**Client:** FALCON  
**Address:** 1210 TRINITY RD SUITE 110  
CARY, NC 28513

**Samples taken** Tuesday, April 9, 2019  
**Samples extracted** Tuesday, April 9, 2019  
**Samples analysed** Monday, April 15, 2019

**Contact:** CHRISTOPHER BURKHARDT

**Operator** CAROLINE STEVENS

**Project:** G19011 U5797

U00902

Matrix	Sample ID	Dilution used	BTX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	B42	22.6	<0.57	<0.57	1.1	1.1	0.48	<0.18	<0.023	0	88.1	11.9	Road Tar 85.1%,(FCM)
s	B43	19.1	<0.48	0.7	9.7	10.4	4.6	0.53	<0.019	15.4	74	10.6	Road Tar 96.8%,(FCM)
s	B44	11.4	<0.28	0.38	0.28	0.66	0.16	<0.09	<0.011	71.6	22	6.4	Deg.PHC 91.3%,(FCM)
s	B45	20.5	<0.51	0.97	24	25	11.6	1.3	0.033	9	81.6	9.4	Road Tar 96.4%,(FCM)
s	B46	19.0	<0.47	<0.47	15.2	15.2	7.3	0.82	0.025	0	86.2	13.8	Road Tar 94.5%,(FCM)
s	B47	22.0	<0.55	<0.55	<0.55	<0.55	<0.11	<0.18	<0.022	0	100	0	PHC not detected

Initial Calibrator QC check OK

Final FCM QC Check OK

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

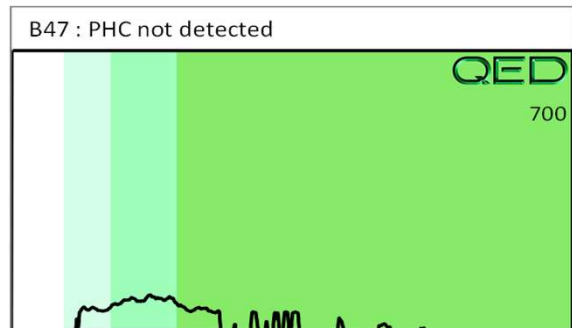
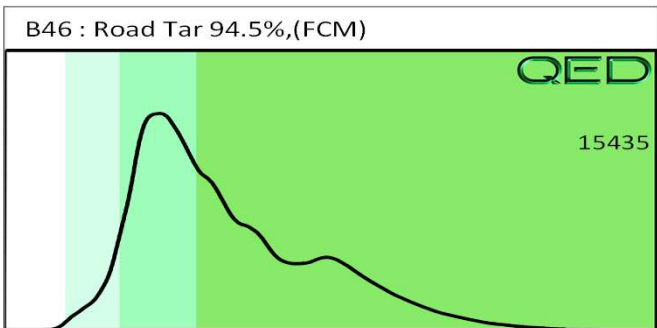
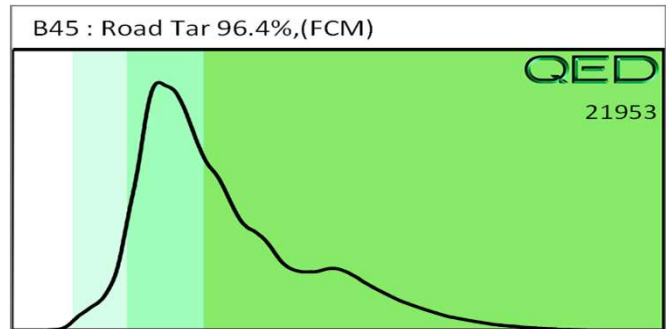
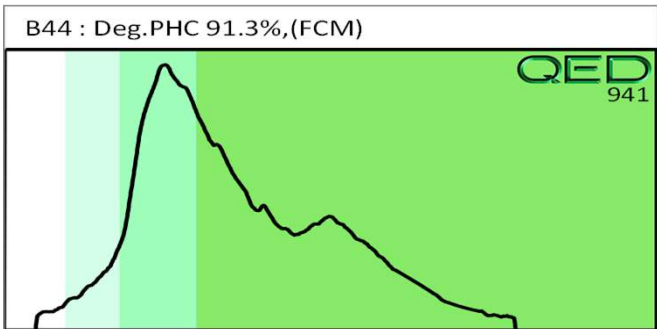
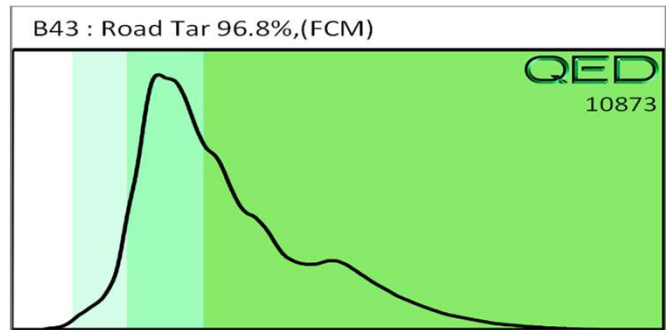
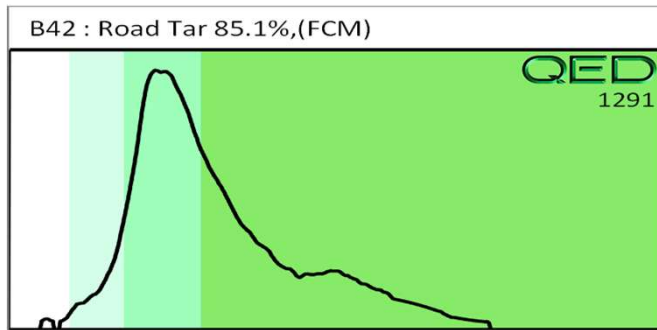
B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modified Result.

% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

QED Hydrocarbon Fingerprints

Project: G19011 U5797

Monday, April 15, 2019







PYRAMID GEOPHYSICAL SERVICES  
(PROJECT 2019-091)

# GEOPHYSICAL SURVEY

---

## METALLIC UST INVESTIGATION: PARCEL 27 NCDOT PROJECT U-5797

3002 FAYETTEVILLE RD., LUMBERTON, NC

APRIL 24, 2019

Report prepared for: Christopher J. Burkhardt, PWS  
Falcon Engineers  
1210 Trinity Rd. #110  
Raleigh, NC 27607

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 27 - 3002 Fayetteville Rd.**  
**Lumberton, Robeson County, North Carolina**

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- Figure 2 – Parcel 27 - EM61 Results Contour Map
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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

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**Project Description:** Pyramid Environmental conducted a geophysical investigation for Falcon Engineers at Parcel 27, located at 3002 Fayetteville Rd. in Lumberton, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project U-5797). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from March 19-27, 2019, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

**Geophysical Results:** The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. A total of sixteen EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. One EM anomaly was associated with interference from a car and was further investigated with GPR. The GPR transects did not record any evidence of buried structures, such as USTs. Collectively, the geophysical data did not record any evidence of unknown metallic USTs within the geophysical survey area at Parcel 27.

## INTRODUCTION

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Pyramid Environmental conducted a geophysical investigation for Falcon Engineers at Parcel 27, located at 3002 Fayetteville Rd. in Lumberton, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project U-5797). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from March 19-27, 2019, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

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

## FIELD METHODOLOGY

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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 March 27, 2019, using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. Data were collected both in reconnaissance fashion as well as along formal transect lines across EM features. The GPR data were viewed in real-time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 6 feet, based on dielectric constants calculated by the DF unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the DF unit for post-processing and figure generation.

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

Geophysical Surveys for Underground Storage Tanks on NCDOT Projects			
High Confidence	Intermediate Confidence	Low Confidence	No Confidence
<b>Known UST</b> Active tank - spatial location, orientation, and approximate depth determined by geophysics.	<b>Probable UST</b> 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.	<b>Possible UST</b> 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**

<b>Metallic Anomaly #</b>	<b>Cause of Anomaly</b>	<b>Investigated with GPR</b>
1	Sign	
2	Car	☑
3	Metal Post	
4	Utility	
5	Drop Inlet	
6	Bollard	
7	Drop Inlets	
8	Storm Sewer	
9	Utility	
10	Hydrant	
11	Storm Sewer	
12	Utility	
13	Storm Sewer	
14	Drop Inlet	
15	Fence	
16	Utility	

The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface, including a sign, a metal post, utilities, drop inlets, a bollard, storm sewers, a hydrant, and a fence. EM Anomaly 2 was associated with interference from a car and was further investigated with GPR to verify that the interference did not obscure buried 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 the transect images. A total of three formal GPR transects were performed at the site. GPR Transects 1-3 were performed across EM Anomaly 2. These transects recorded no evidence of buried structures, such as USTs.

Collectively, the geophysical data did not record any evidence of unknown metallic USTs within the geophysical survey area at Parcel 27. **Figure 4** provides an overlay of the EM61

metal detection contour map onto the NCDOT MicroStation engineering plans for reference.

## SUMMARY & CONCLUSIONS

---

Pyramid's evaluation of the EM61 and GPR data collected at Parcel 27 in Lumberton, 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.
- One EM anomaly associated with interference from a car and was further investigated with GPR. The GPR transects did not record any evidence of buried structures, such as USTs.
- Collectively, the geophysical data did not record any evidence of unknown metallic USTs within the geophysical survey area at Parcel 27.

## LIMITATIONS

---

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



APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREA




View of Survey Area  
(Facing Approximately South)



View of Survey Area  
(Facing Approximately South)



 <div>503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology</div>	PROJECT PARCEL 27 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797	TITLE PARCEL 27 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS	DATE 3/27/2019	CLIENT FALCON ENGINEERS
			PYRAMID PROJECT #: 2019-091	<b>FIGURE 1</b>

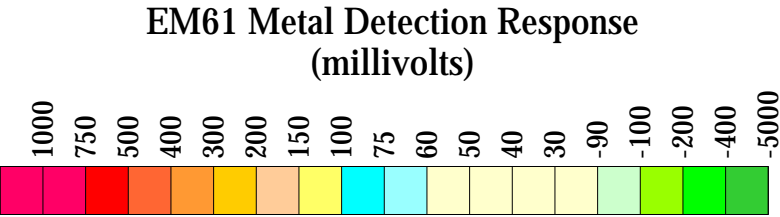


EM61 METAL DETECTION RESULTS



NO EVIDENCE OF METALLIC  
USTs 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 March 19, 2019, using a Geonics EM61-MK2 instrument. Verification GPR data were collected using a GSSI UtilityScan DF instrument with a dual frequency 300/800 MHz antenna on March 27, 2019.



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PROJECT  
PARCEL 27  
LUMBERTON, NORTH CAROLINA  
NCDOT PROJECT U-5797

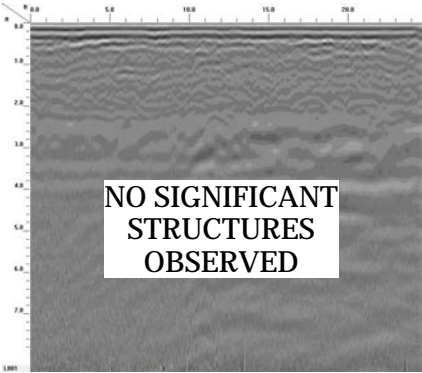
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PARCEL 27 -  
EM61 METAL DETECTION CONTOUR MAP

DATE  
3/27/2019  
PYRAMID  
PROJECT #: 2019-091

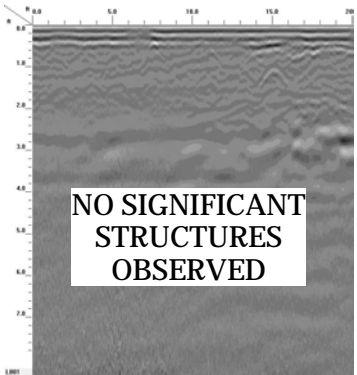
CLIENT  
FALCON ENGINEERS  
**FIGURE 2**



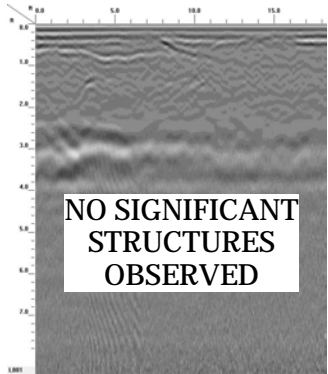
LOCATIONS OF GPR TRANSECTS



GPR TRANSECT 1 (T1)



GPR TRANSECT 2 (T2)



GPR TRANSECT 3 (T3)



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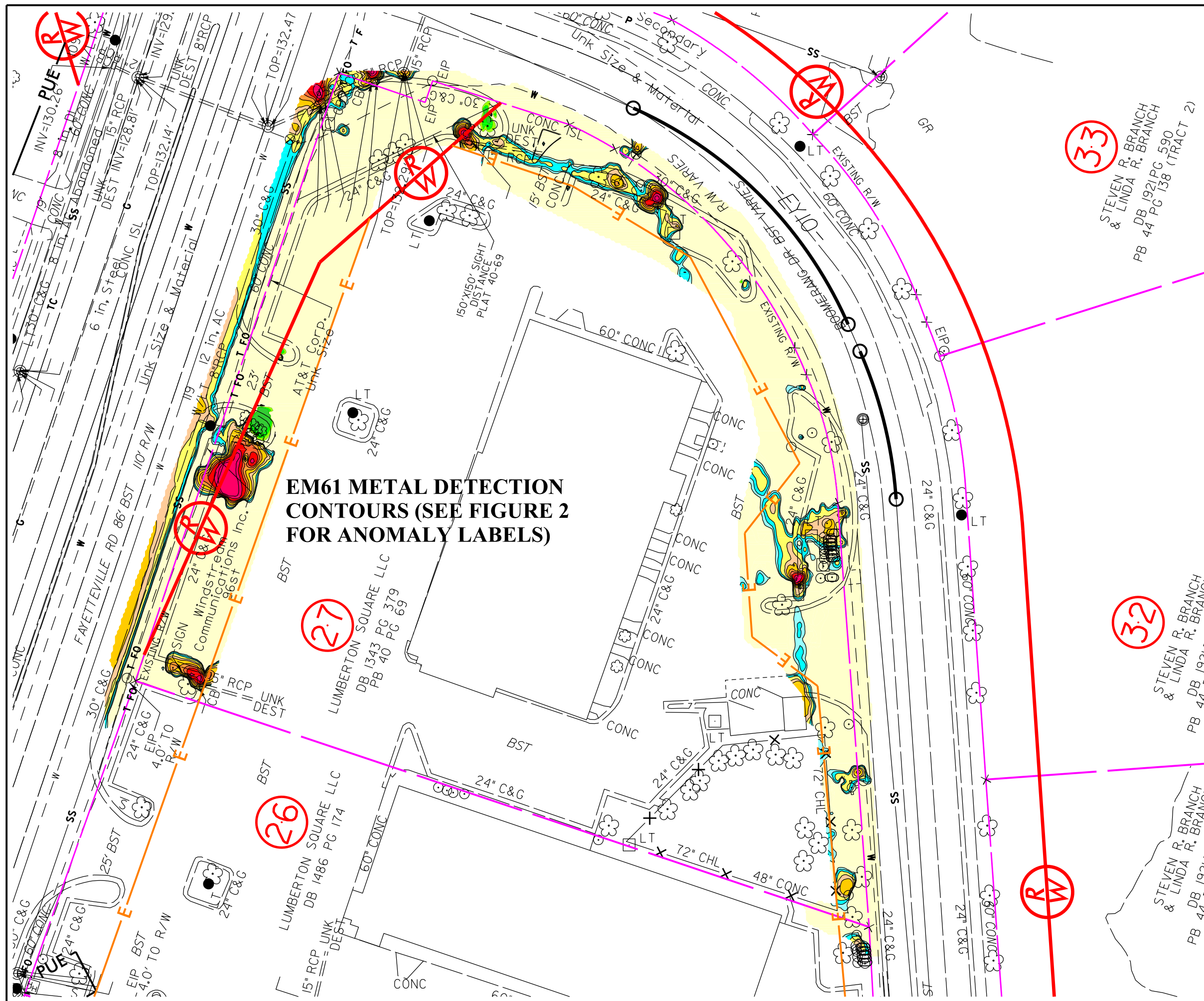
PROJECT  
PARCEL 27  
LUMBERTON, NORTH CAROLINA  
NCDOT PROJECT U-5797

TITLE  
PARCEL 27 -  
GPR TRANSECT LOCATIONS AND IMAGES

DATE  
3/27/2019  
PYRAMID  
PROJECT #: 2019-091

CLIENT  
FALCON ENGINEERS  
**FIGURE 3**

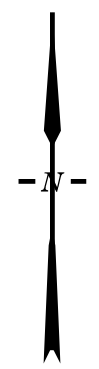
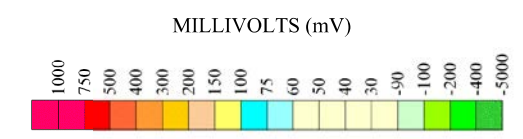




**EM61 METAL DETECTION  
CONTOURS (SEE FIGURE 2  
FOR ANOMALY LABELS)**

**LEGEND**

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



TITLE OVERLAY OF METAL DETECTION RESULTS ON NCDOT ENGINEERING PLANS	
PROJECT PARCEL 027 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797	
503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 336.335.3174 (p) 336.691.0648 (f) License # C1251 Eng. / #C257 Geology	
DATE: 04-11-2019	REVISION NO. 0
PYRAMID PROJECT NO. 2019-091	FIGURE NO. 4