PRELIMINARY SITE ASSESSMENT

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

NCDOT PARCEL NO. 09
OWNER: FLOYD, CHRISTOPHER E. & KAREN R.
2303 PINE 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. 09
Owner: Floyd, Christopher E. & Karen R.
2303 Pine 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. Contaminants above the State Action Level for DRO were identified; however, additional assessment is not warranted at this time as the soil can be removed and properly disposed of during construction. Ten constituents were also identified in the groundwater above the North Carolina Groundwater Quality Standards but below the Gross Contamination Levels. Collectively, the geophysical data recorded evidence of two probable USTs within the geophysical survey area at Parcel No. 09.

Falcon recommends if drums, additional 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.

Christopher J. Burkhardt
Environmental Services Manager

Jeremy R. Hamm, PE
Geotechnical Services Manager

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LIST OF FIGURES AND ATTACHMENTS

SECTION 1: INTRODUCTION

1.1 DESCRIPTION

Falcon Engineering, Inc. (Falcon) has completed a Preliminary Site Assessment of NCDOT TIP Project U-5797 Parcel No. 09. Parcel No. 09 is addressed as 2303 Pine Street, 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 methods, and laboratory analysis. Soil samples were analyzed for petroleum hydrocarbons via UVF technology. Groundwater samples were analyzed for Volatile Organic Compounds (VOCs) and Semi-volatile Organic Compounds (SVOCs) using traditional laboratory methods.

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 Lumberton Oil Company being listed at the same address in historic City Directories. The potential use/storage of petroleum products and/or other hazardous chemicals prior to current environmental policies and best practices and the potential for an unreported or undiscovered release warranted further investigation.

2.2 FACILITY IDENTIFICATION NUMBER

A Facility Identification Number was not identified for 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 within the project limits.

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 of the soil. Pace Analytical (North Carolina Field Services Certification #: 5342) was selected to provide traditional lab testing

of groundwater. Appropriate sterile containers were received by Falcon from each laboratory 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 between March 19 and March 25, 2019 to investigate for metallic underground storage tanks (USTs) beneath the survey area. A total of eleven 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 unknown buried metal and was investigated further with GPR.

GPR provided evidence of two isolated hyperbolic reflectors and two discreet lateral reflectors on the southwest side of the building that are characteristic of USTs. The combined geophysical data resulted in these features being classified as two probable metallic USTs. The western probable metallic UST (UST-1) measured approximately 12 feet long and 5.5 feet wide at a depth of approximately 2 feet below the ground surface. The eastern probable metallic UST (UST-2) measued approximately 7 feet long and 5 feet wide at a depth of approximately 2 feet below the ground surface.

5.2 SAMPLE DATA

Falcon and our subcontractor advanced ten borings as identified in the below Table No. 1 Boring Coordinates. Borings were advanced to the proposed excavation depth of the drainage features, utilities, or roadway/ditch cut being assessed or to a maximum depth of 10 feet below ground surface (bgs) adjacent to the USTs. Saturated soil was observed at 4' below ground surface (BGS) in B-5. Based on the elevated PID readings and presence of groundwater a water sample was obtained from Boring 5.2. Borings 5.1 through 5.6 were added to assess the extent of the suspected area of contamination. Please see the Boring Location Plan in the attachments for a visual depiction of the sample locations. The coordinates (latitude and longitude) that correspond to the boring locations and two USTs are shown below in Table No. 1 Boring and UST Coordinates.

TABLE NO. 1 BORING COORDINATES

Boring	Latitude	Longitude
B-4	34.6336734	-79.0033009
B-5	34.6334720	-79.0033512
B-5.1	34.6334600	-79.0033248
B-5.2	34.6334381	-79.0033295
B-5.3	34.6334444	-79.0033713
B-5.4	34.6334219	-79.0032797
B-5.5	34.6333967	-79.0033621
B-5.6	34.6335419	-79.0034007
B-6	34.6334288	-79.0032179
B-7	34.6336228	-79.0031747
UST-1	34.6334502	-79.0033548
UST-2	34.6334579	-79.0033379

Borings were field screened with a PID in sections for evidence of volatile organics. The section increments and 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 soil samples for petroleum hydrocarbons via UVF technology. Groundwater samples were analyzed for Volatile Organic Compounds (VOCs) and Semi-volatile Organic Compounds (SVOCs) by Pace Analytical using traditional laboratory methods.

Gasoline Range Organics (GRO) above the State Action Level of 50 mg/kg were not detected. Diesel Range Organics (DRO) above the State Action Level of 100 mg/kg were detected in B-5 at 126.8mg/kg, B-5.1 at 130.1 mg/kg, B5.3 at 130.3 mg/kg, and B-5.4 at 150 mg/kg. Eleven constituents were identified in the groundwater at boring B-5.2. Ten of the constituents were above the North Carolina Groundwater Quality Standards but below the Gross Contamination Levels for Groundwater. The eleventh constituent was below the North Carolina Groundwater Quality Standards.

Full laboratory reports from Redlabs and Pace are attached. The results of the UVF laboratory analysis are shown in Table No. 3 Summary of UVF Soil Sampling Results. The results of the traditional laboratory analysis are shown in Table No. 4 Summary of Water Sampling Results. Please note that the sample ID for the water sample 5.2 was miss labeled on the chain of custody and reported as boring B-5.1.

TABLE NO. 2 PID READINGS

Boring	Depth BGS*	PID**
B-4	0-1.5	0.5
	1.5-3.0	**0.5**
B-5	0-2.5	0.9
	2.5-5.0	54.6
	5.0-7.5	486.4
	7.5-10.0	**1246.0**
B-5.1	0-2.5	7.2
	2.5-5.0	149.8
	5.0-7.5	395.8
	7.5-10.0	**1094.0**
B-5.2	0-2.5	25.0
	2.5-5.0	15.8
	5.0-7.5	515.0
	7.5-10.0	**1451.0**
B-5.3	0-2.5	33.0
	2.5-5.0	6.0
	5.0-7.5	138.0
	7.5-10.0	**1025.0**
B-5.4	0-2.5	4.2
	2.5-5.0	1.2
	5.0-7.5	15.7
	7.5-10.0	**2115.0**
B-5.5	0-2.5	11.6
	2.5-5.0	6.6
	5.0-7.5	6.0
	7.5-10.0	**123.9**
B-5.6	0-2.5	0.9
	2.5-5.0	0.9
	5.0-7.5	254.3
	7.5-10.0	**536.8**
B-6	0-2.0	0.6
	2.0-4.0	**0.8**
B-7	0-2.0	0.6
	2.0-4.0	**0.9**

*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	
B4	10.9	<0.27	<0.27	<0.27	<0.27	<0.05	<0.09	<0.011	0	100	(FCM)
B5	10.8	<0.27	126.8	251.1	377.9	18	0.7	<0.011	99.7	0.3	Deg Kerosene 90.8%,(FCM)
B5.1	11.4	<0.28	130.1	276.3	406.4	19.7	0.77	<0.011	99.7	0.3	Deg Kerosene 91%,(FCM)
B5.2	19.7	14.9	74.4	67.4	141.8	11.2	0.45	<0.02	98.1	1.7	Deg Gas 60.2%,(FCM),(PFM)
B5.3	19.8	31.7	130.3	122.3	252.6	17.9	0.71	<0.02	99.3	0.6	Deg Kerosene 67%,(FCM)
B5.4	10.1	33.7	150	4.1	154.1	3.4	0.18	<0.01	98.3	1.5	Deg Gas 58.1%,(FCM)
B5.5	9.9	<0.25	18.8	4.4	23.2	2.7	0.13	<0.01	87.1	11.3	Deg Fuel 82%,(FCM)
B5.6	11.9	<0.3	67.4	109.8	177.2	12.6	0.49	<0.012	99.5	0.4	Deg Kerosene 85.5%,(FCM)
B6	9.4	<0.23	0.69	12.9	13.6	6.5	0.32	<0.009	10.5	70.5	V Deg PHC 93.8%,(FCM),(BO)
B7	10.6	<0.27	<0.27	0.43	0.43	0.22	<0.08	<0.011	0	77.7	Deg Fuel 86.3%,(FCM)

Results reported in mg/kg (milligrams per kilogram)

TABLE NO. 4 SUMMARY OF WATER SAMPLING RESULTS

Sample ID	Method	Constituent	Result	GWQS	GCL
B-5.2	8270E	1-Methylnaphthalene	38.9	1	1000
B-5.2	8270E	2-Methylnaphthalene	85.9	30	12500
B-5.2	8270E	Naphthalene	421	6	6000
B-5.2	8260D	Benzene	217	1	5000
B-5.2	8260D	Ethylbenzene	1040	600	84500
B-5.2	8260D	p-isopropyltoluene	26.3	25	11700
B-5.2	8260D	Naphthalene	850	6	6000
B-5.2	8260D	Toluene	27.9	600	260000
B-5.2	8260D	Xylene (Total)	2500	500	85500
B-5.2	8260D	m&p-Xylene	1220	500	85500
B-5.2	8260D	o-Xylene	1280	500	85500

GWQS = North Carolina Groundwater Quality Standards
GCL = Gross Contamination Levels for Groundwater
Results = micrograms per liter (ug/L)

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. 5 SOIL OBSERVATIONS

Sample ID	Depth	Color	Soil Type
B-4	0-1.5	Dark Brown	Sandy Clay (A-6)
	1.5-3.0	Brown Orange (mottled)	Sandy Clay (A-6)
B-5	0-2.5	Dark Brown to Brown	Sandy Clay (A-6)
	2.5-5.0	Brown	Sandy Clay (A-6)
	5.0-7.5	Brown	Sandy Clay (A-6)
	7.5-10.0	Gray to Light Gray	Highly Sandy Clay (A-6)
B-5.1	0-2.5	Tan	Sand (A-3)
	2.5-5.0	Dark Brown	Clayey Sand (A-2-6)
	5.0-7.5	Gray	Clayey Sand (A-2-6)
	7.5-10.0	Gray	Clayey Sand (A-2-6)
B-5.2	0-2.5	Brown	Highly Sandy Clay (A-6)
	2.5-5.0	Gray Brown (mottled)	Sandy Clay (A-6)
	5.0-7.5	Gray Brown	Sandy Clay (A-6)
	7.5-10.0	Light Gray	Silty Clayey Sand (A-2-6)
B-5.3	0-2.5	Brown	Clayey Sand (A-2-6)
	2.5-5.0	Brown	Sandy Clay (A-6)
	5.0-7.5	Gray	Sandy Clay (A-6)
	7.5-10.0	Light Gray	Highly Sandy Clay (A-6)
B-5.4	0-2.5	Gray	Silty Sandy Clay (A-6)
	2.5-5.0	Brown Gray	Silty Sandy Clay (A-6)
	5.0-7.5	Gray	Silty Clayey Sand (A-2-6)
	7.5-10.0	Gray	Silty Sand (A-2-4)
B-5.5	0-2.5	Gray Brown	Silty Sandy Clay (A-6)
	2.5-5.0	Brown	Sandy Clay (A-6)
	5.0-7.5	Brown	Silty Sandy Clay (A-6)
	7.5-10.0	Gray	Sandy Clay (A-6)
B-5.6	0-2.5	Gray	Silty Sand (A-2-4)
	2.5-5.0	Brown	Silty Sandy Clay (A-6)
	5.0-7.5	Gray Brown	Sandy Clay (A-6)
	7.5-10.0	Gray	Slightly Clayey Silty Sand (A-2-4)
B-6	0-2.0	Brown	Sandy Clay (A-6)
	2.0-4.0	Brown Tan Orange (mottled)	Sandy Clay (A-6)
B-7	0-2.0	Brown	Sandy Clay (A-6)
	2.0-4.0	Brown Orange (mottled)	Sandy Clay (A-6)

Depth is in feet below ground surface

5.4 QUANTITIES CALCULATIONS

The depth of the borings were 10 feet BGS. The area of contaminated soil is assumed as an ellipse, approximately 45 feet long and 36 feet wide. Falcon used the following formula to calculate an estimated volume of contaminated soil:

$$\pi * R^1 * R^2 * D$$

Where R^1 & R^2 = the radii of ellipse and D = the depth of the boring. An assumed density of 120 lbs per cubic foot was used to calculate the soil quantity in tons.

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 identified DRO in the soils above state action levels.
- Groundwater sampling at the site identified ten constituents above the North Carolina Groundwater Quality Standards but below the Gross Contamination Levels for Groundwater.

6.2 GEOPHYSICS

Collectively, the geophysical data recorded evidence of two probable USTs within the geophysical survey area at Parcel No. 09.

6.3 SAMPLING

Gasoline Range Organics (GRO) above the State Action Level of 50 mg/kg were not detected. Diesel Range Organics (DRO) above the State Action Level of 100 mg/kg were detected in B-5 at 126.8mg/kg, B-5.1 at 130.1 mg/kg, B5.3 at 130.3 mg/kg, and B-5.4 at 150 mg/kg. Ten constituents were identified in the groundwater above the North Carolina Groundwater Quality Standards but below the Gross Contamination Levels.

6.4 QUANTITIES

Soils requiring quantities calculations were identified at sample locations B-5, B-5.1, B-5.3 and B-5.4. The estimate quantity of contaminated soil is 765 tons. However, this is only an estimate. The contamination plume was not delineated and therefore, the volume of contaminated soil required to be excavated will vary based on the actual plume dimensions and limits of excavation.

SECTION 7: RECOMMENDATIONS

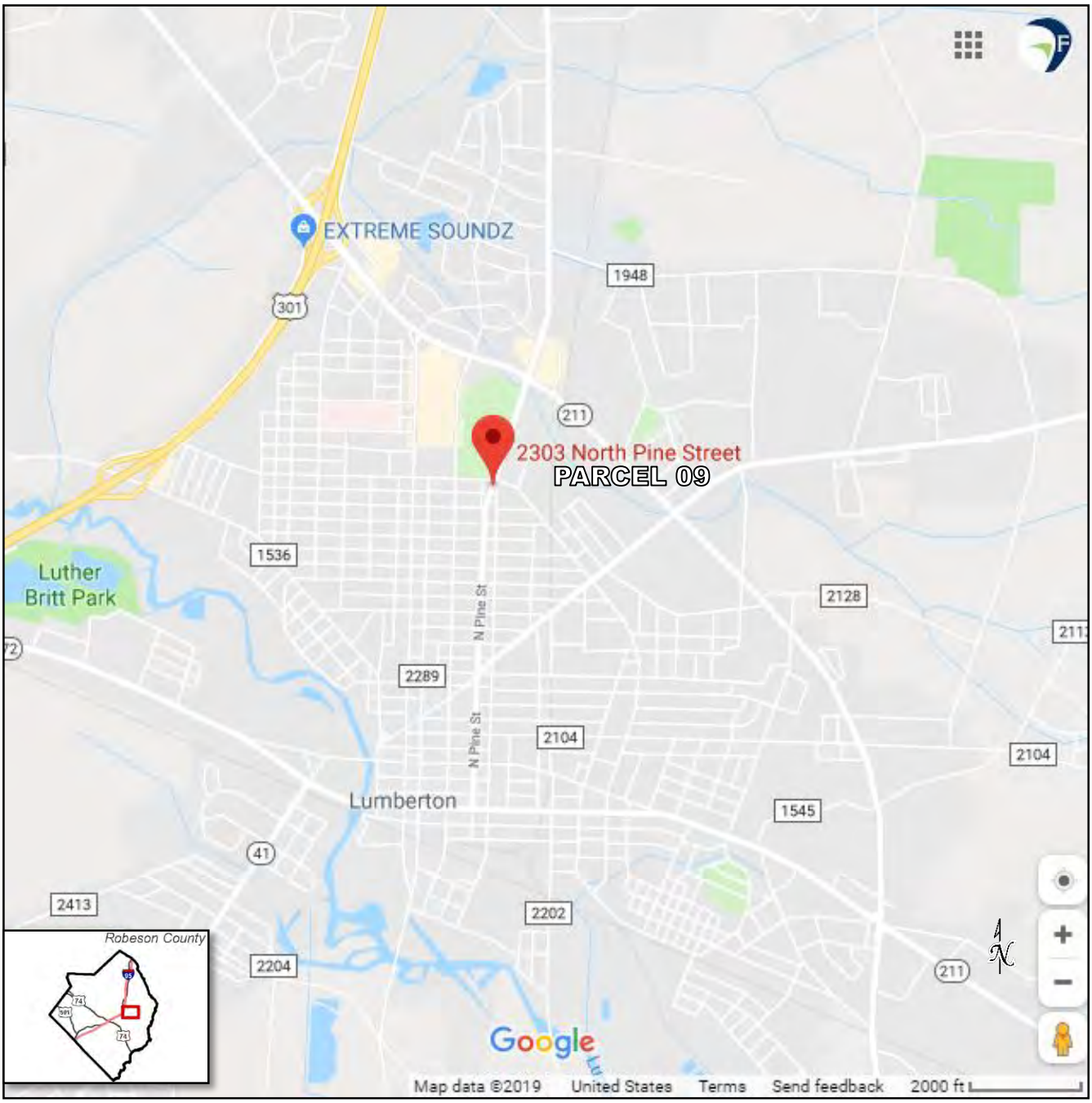
7.1 ADDITIONAL SAMPLING

Contaminants above the State Action Level for DRO were identified; however, additional assessment is not warranted at this time as the soil can be removed and properly disposed of during construction. 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

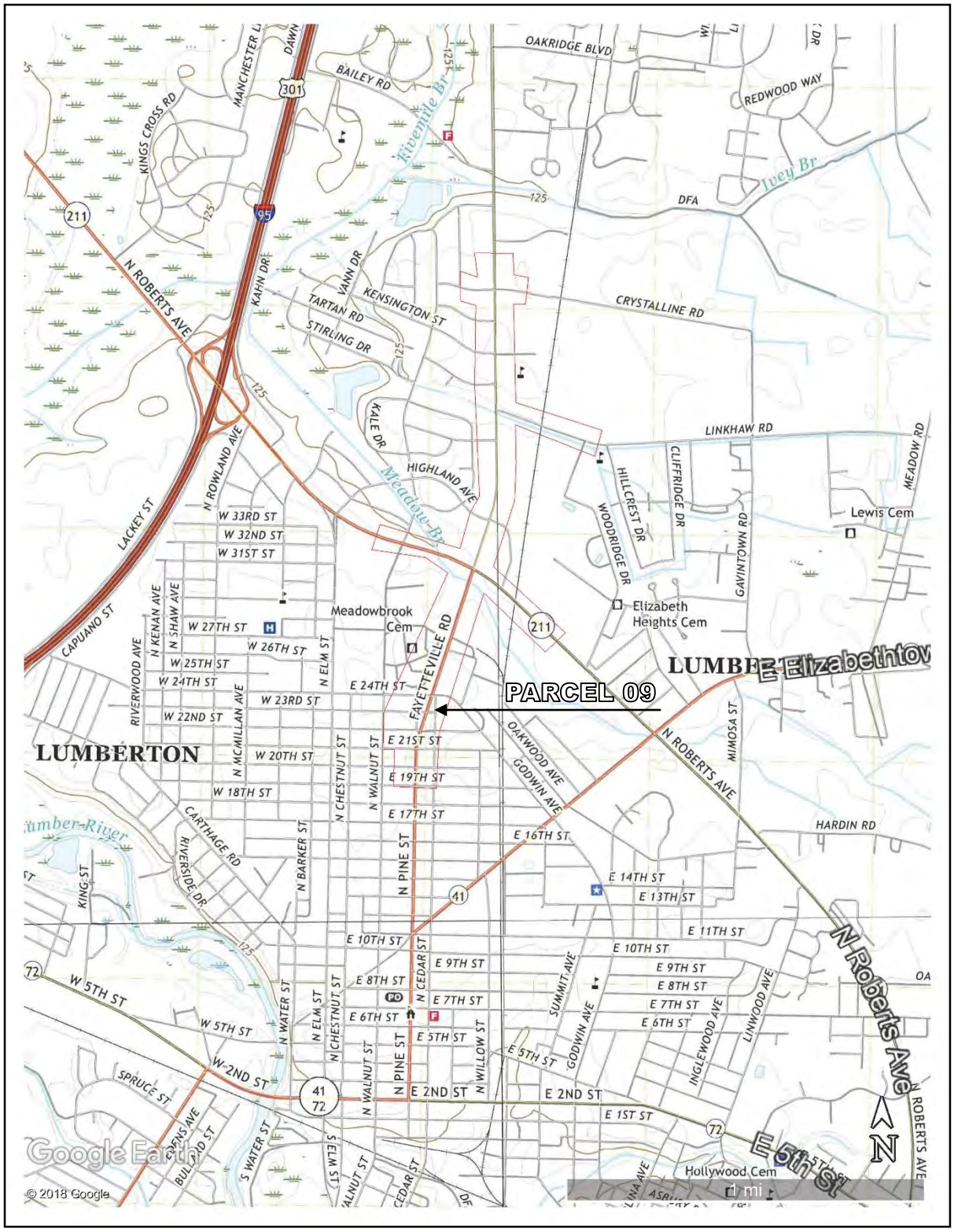
Soil requiring special handling was identified at B-5, B-5.1, B5.3, and B-5.4. Impacted soil encountered during construction should be removed and properly disposed of.

NCDOT U-5797 (SR 1997 Widening) Parcel 09
Preliminary Site Assessment
Vicinity Map



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

NCDOT U-5797 (SR 1997 Widening) Parcel 09
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 09
Preliminary Site Assessment
Parcel Location Map

December 5, 2019

County Line
City Limits
Streets
Parcels

1:2,009

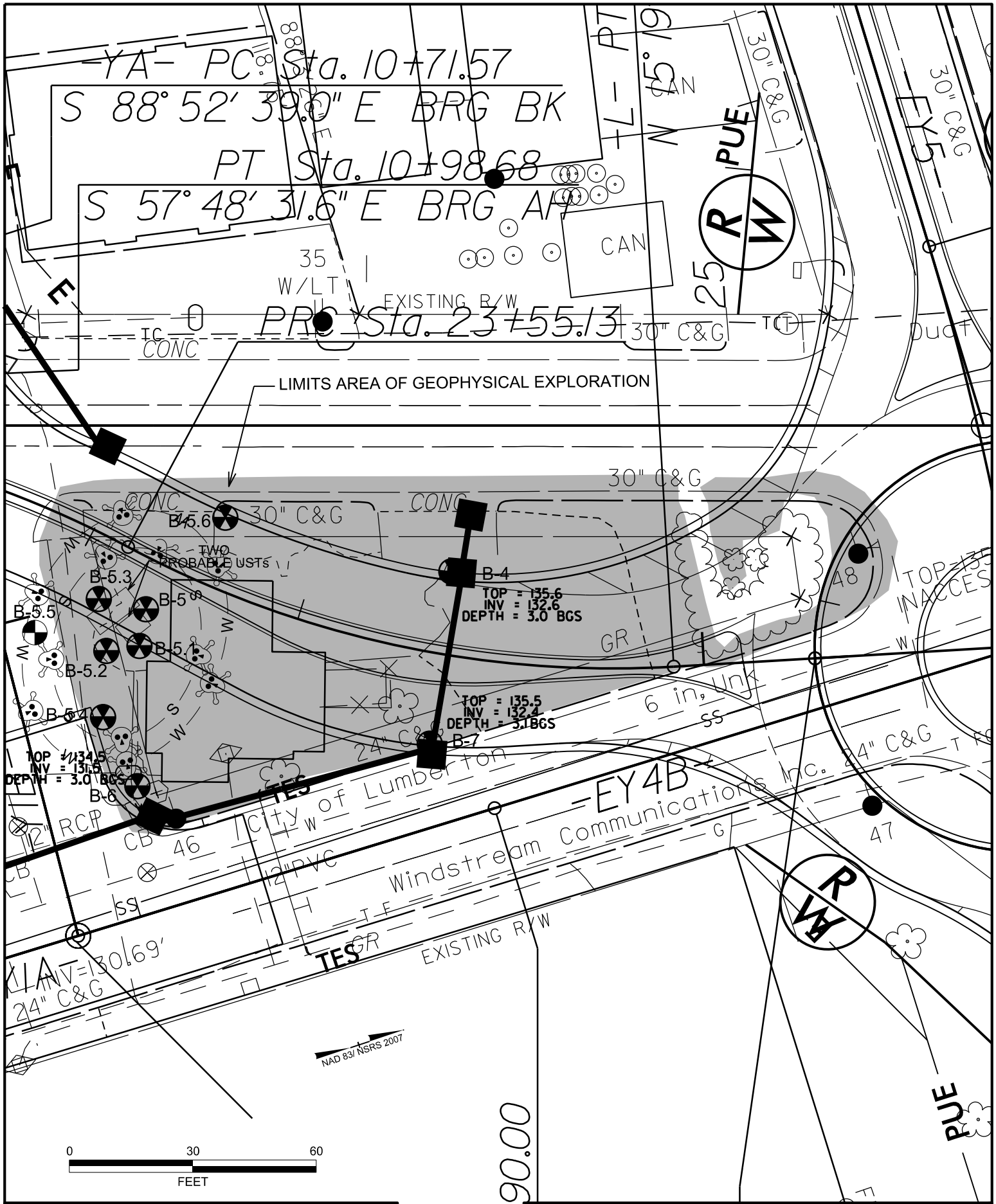
0 0.015 0.03 0.06 mi

0 0.0275 0.055 0.11 km

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

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

2019



NOTES:

- BGS = BELOW GROUND SURFACE
- BORINGS B-5, B5.1, B5.2, B5.3, B5.4, B5.5, & B5.6 WERE DRILLED TO 10.0 BGS

FALCON ENGINEERING

FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607

PHONE: 919.871.0800
FAX: 919.871.0803

BORING LOCATION PLAN

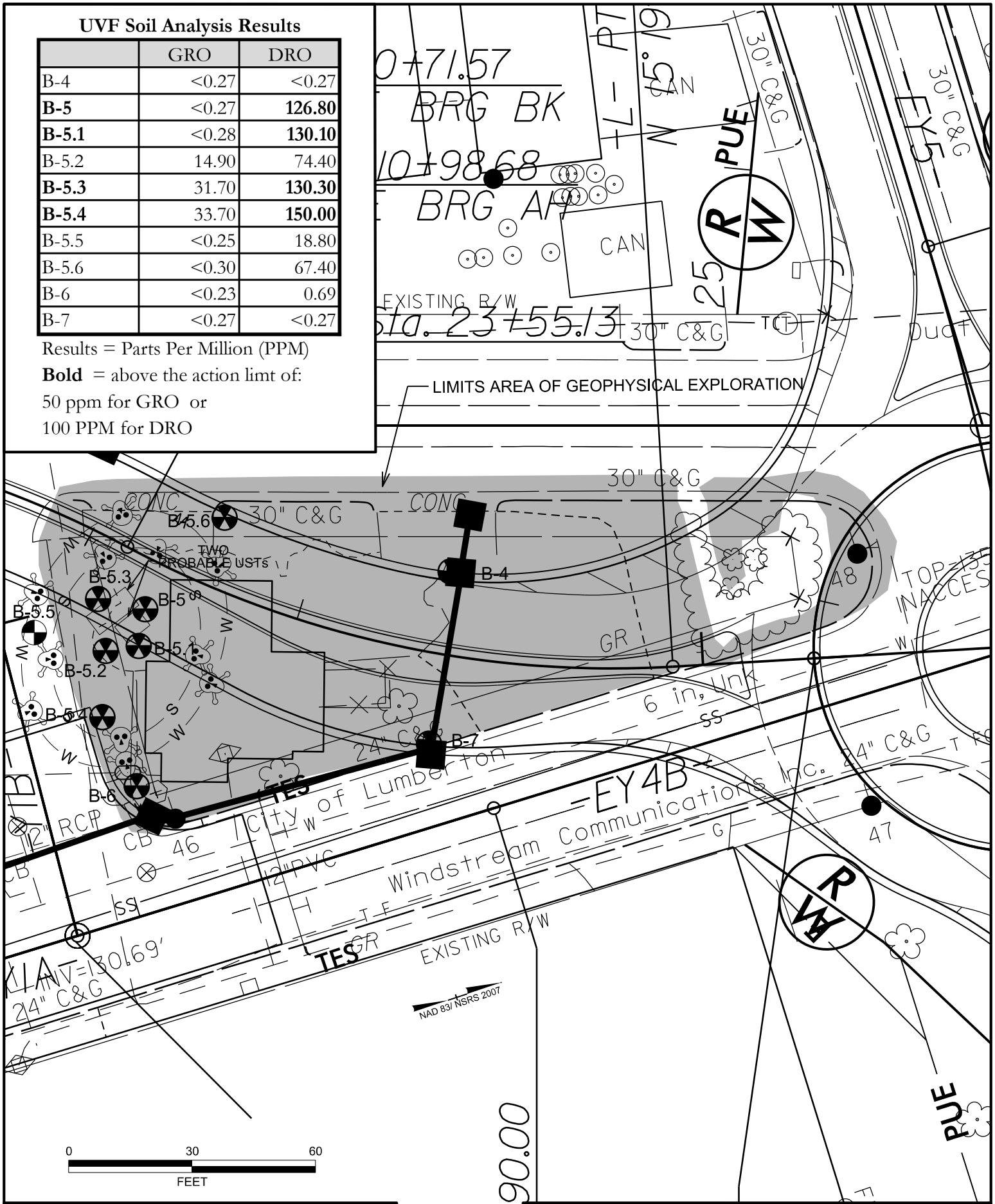
NCDOT U-5797 (SR 1997 WIDENING)
PARCEL 9
ROBESON / LUMBERTON, NC
WBS NO.: 44367.1.1 & TIP NO.: U-5797
FALCON PROJECT NO. G19011.00

UVF Soil Analysis Results

	GRO	DRO
B-4	<0.27	<0.27
B-5	<0.27	**126.80**
B-5.1	<0.28	**130.10**
B-5.2	14.90	74.40
B-5.3	31.70	**130.30**
B-5.4	33.70	**150.00**
B-5.5	<0.25	18.80
B-5.6	<0.30	67.40
B-6	<0.23	0.69
B-7	<0.27	<0.27

Results = Parts Per Million (PPM)

Bold = above the action limt of:
50 ppm for GRO or
100 PPM for DRO



NOTES:

FALCON ENGINEERING

FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607
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SOIL UVF LAB RESULTS

NCDOT U-5797 (SR 1997 WIDENING)
PARCEL 9
ROBESON / LUMBERTON, NC
WBS NO.: 44367.1.1 & TIP NO.: U-5797
FALCON PROJECT NO. G19011.00

B-5.2 8260D Analysis of Groundwater

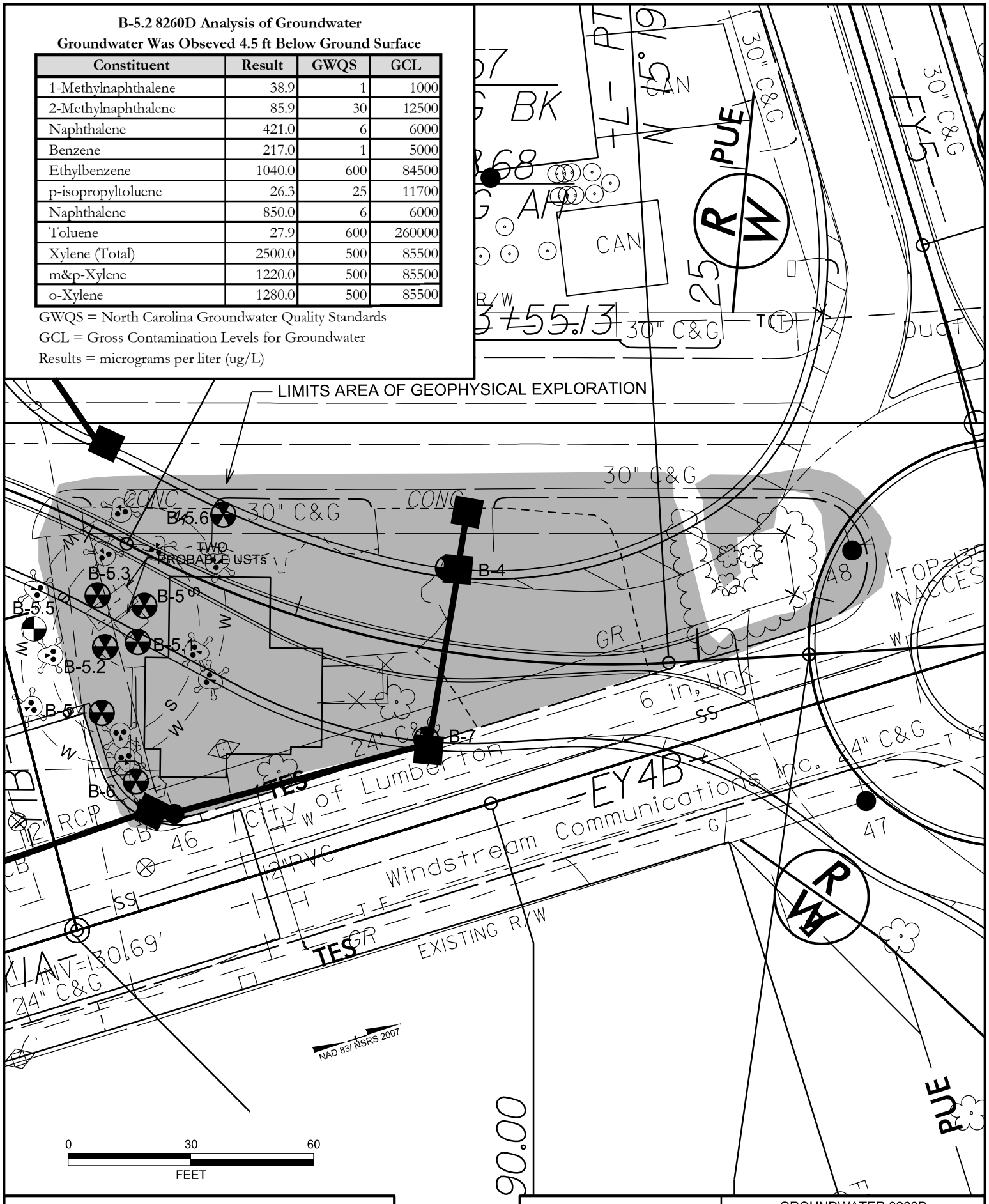
Groundwater Was Obseved 4.5 ft Below Ground Surface

Constituent	Result	GWQS	GCL
1-Methylnaphthalene	38.9	1	1000
2-Methylnaphthalene	85.9	30	12500
Naphthalene	421.0	6	6000
Benzene	217.0	1	5000
Ethylbenzene	1040.0	600	84500
p-isopropyltoluene	26.3	25	11700
Naphthalene	850.0	6	6000
Toluene	27.9	600	260000
Xylene (Total)	2500.0	500	85500
m&p-Xylene	1220.0	500	85500
o-Xylene	1280.0	500	85500

GWQS = North Carolina Groundwater Quality Standards

GCL = Gross Contamination Levels for Groundwater

Results = micrograms per liter (ug/L)



NOTES:

FALCON ENGINEERING

FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607

PHONE: 919.871.0800
FAX: 919.871.0803

GROUNDWATER 8260D
LAB RESULTS

NCDOT U-5797 (SR 1997 WIDENING)
PARCEL 9
ROBESON / LUMBERTON, NC
WBS NO.: 44367.1.1 & TIP NO.: U-5797
FALCON PROJECT NO. G19011.00

NCDOT U-5797 (SR 1997 Widening) Parcel 09
Preliminary Site Assessment
Site Photographs

Photograph No. 1: General view of Boring B-4.

Photograph No. 2: General view of Boring B-5 and the two probable USTs.

NCDOT U-5797 (SR 1997 Widening) Parcel 09
Preliminary Site Assessment
Site Photographs

Photograph No. 3: General view of Boring B-5.1.

Photograph No. 4: General view of Boring B-5.2.

NCDOT U-5797 (SR 1997 Widening) Parcel 09
Preliminary Site Assessment
Site Photographs

Photograph No. 5: General view of Boring B-5.3.

Photograph No. 6: General view of Boring B-5.4.

NCDOT U-5797 (SR 1997 Widening) Parcel 09
Preliminary Site Assessment
Site Photographs

Photograph No. 7: General view of Boring B-5.5.

Photograph No. 8: General view of Boring B-5.6.

NCDOT U-5797 (SR 1997 Widening) Parcel 09
Preliminary Site Assessment
Site Photographs

Photograph No. 9: General view of Boring B-6.

Photograph No. 10: General view of Boring B-7.

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: FALCON
Address: 1210 TRINITY ROAD SUITE 116
CARY NC 28513

Contact: CHRISTOPHER BURKHARDY

Project: G19011 U5797

Samples taken Tuesday, April 9, 2019
Samples extracted Tuesday, April 9, 2019
Samples analysed Tuesday, April 16, 2019

Operator DAVIS MARTINEC

U00902

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	B4	10.9	<0.27	<0.27	<0.27	<0.27	<0.05	<0.09	<0.011	0	100	0	,(FCM)
s	B5	10.8	<0.27	126.8	251.1	377.9	18	0.7	<0.011	99.7	0.3	0	Deg.Kerosene 90.8%,(FCM)
s	B5.1	11.4	<0.28	130.1	276.3	406.4	19.7	0.77	<0.011	99.7	0.3	0	Deg.Kerosene 91%,(FCM)
s	B5.2	19.7	14.9	74.4	67.4	141.8	11.2	0.45	<0.02	98.1	1.7	0.2	Deg Gas 60.2%,(FCM),(PFM)
s	B5.3	19.8	31.7	130.3	122.3	252.6	17.9	0.71	<0.02	99.3	0.6	0.1	Deg.Kerosene 67%,(FCM)
s	B5.4	10.1	33.7	150	4.1	154.1	3.4	0.18	<0.01	98.3	1.5	0.1	Deg Gas 58.1%,(FCM)
s	B5.5	9.9	<0.25	18.8	4.4	23.2	2.7	0.13	<0.01	87.1	11.3	1.7	Deg.Fuel 82%,(FCM)
s	B 5.6	11.9	<0.3	67.4	109.8	177.2	12.6	0.49	<0.012	99.5	0.4	0.1	Deg.Kerosene 85.5%,(FCM)
s	B6	9.4	<0.23	0.69	12.9	13.6	6.5	0.32	<0.009	10.5	70.5	19	V.Deg.PHC 93.8%,(FCM),(BO)
s	B7	10.6	<0.27	<0.27	0.43	0.43	0.22	<0.08	<0.011	0	77.7	22.3	Deg.Fuel 86.3%,(FCM)
	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

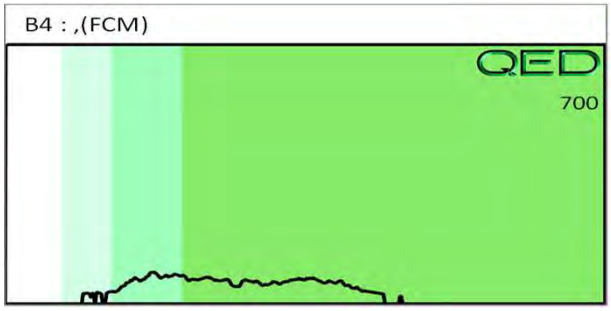
B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

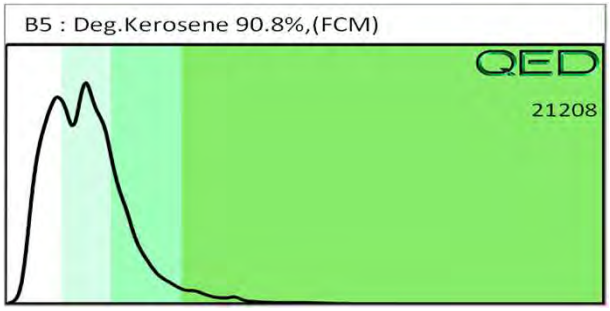
% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

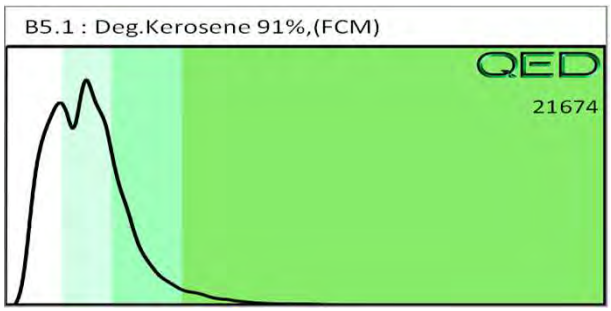
QED Hydrocarbon Fingerprints

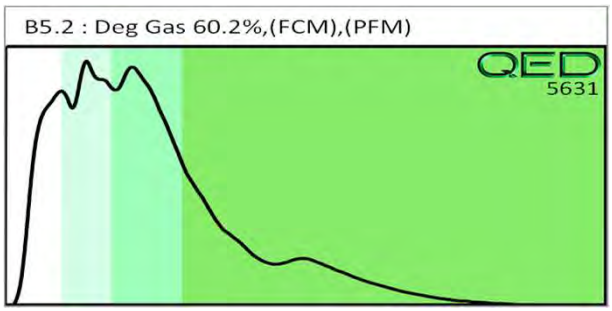
Project: G19011 U5797

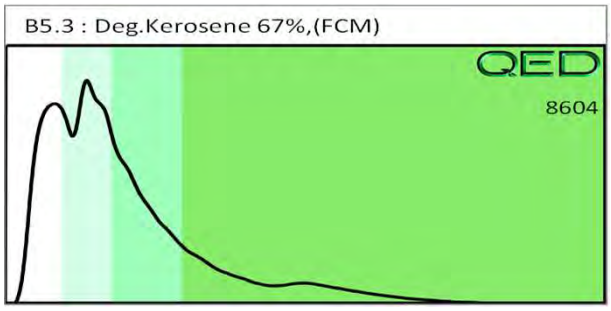
Tuesday, April 16, 2019

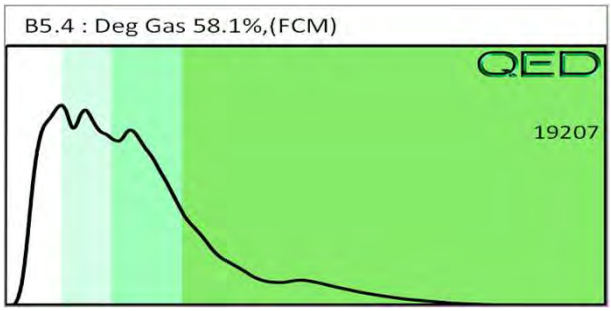


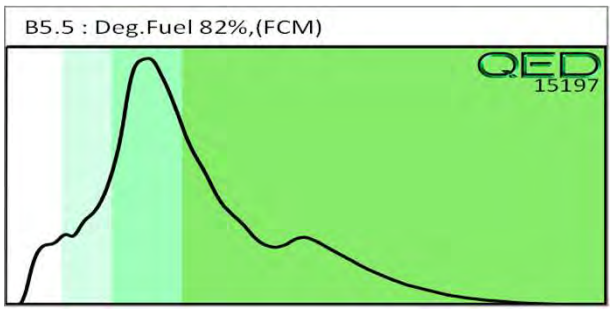


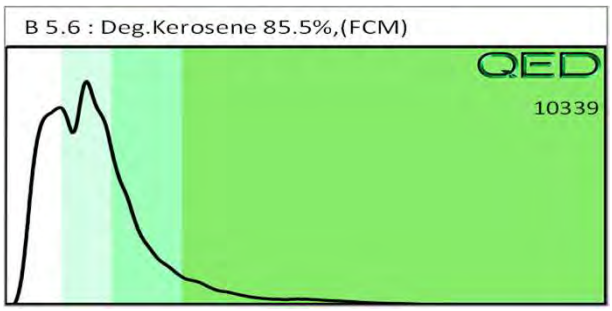


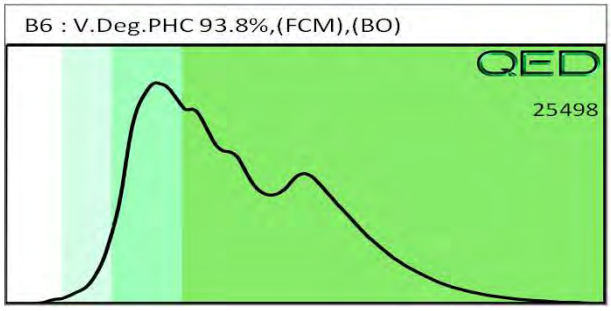


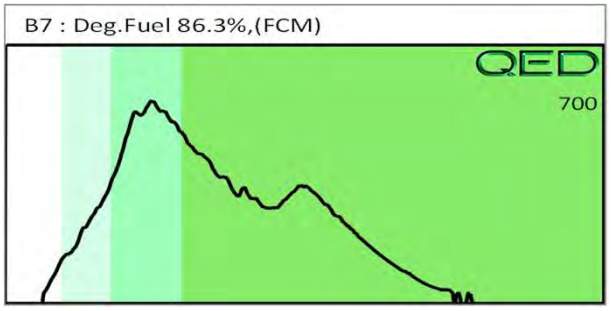












Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

April 25, 2019

Christopher Burkhardt
Falcon Engineering
1210 Trinity Road
Suite 110
Cary, NC 27513

RE: Project: U5797
Pace Project No.: 92425908

Dear Christopher Burkhardt:
Enclosed are the analytical results for sample(s) received by the laboratory on April 12, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Tyriek Hooks
tyriek.hooks@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Christopher Burkhardt, Falcon Engineering

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: U5797
Pace Project No.: 92425908

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE ANALYTE COUNT

Project: U5797
Pace Project No.: 92425908

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92425908001	**B3**	EPA 8270E	PKS	74	PASI-C
		EPA 8260D	DLK	63	PASI-C
92425908002	**B5.1**	EPA 8270E	PKS	74	PASI-C
		EPA 8260D	DLK	63	PASI-C
92425908003	**B18**	EPA 8260D	CL	70	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92425908004	**B19**	EPA 8260D	CL	70	PASI-C
		ASTM D2974-87	KDF	1	PASI-C

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: U5797
Pace Project No.: 92425908

Sample: B5.1 **Lab ID: 92425908002** Collected: 04/10/19 12:30 Received: 04/12/19 14:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270E RVE	Analytical Method: EPA 8270E Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	83-32-9	H2
Acenaphthylene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	208-96-8	H2
Aniline	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	62-53-3	H2
Anthracene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	120-12-7	H2
Benzo(a)anthracene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	56-55-3	H2
Benzo(a)pyrene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	50-32-8	H2
Benzo(b)fluoranthene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	205-99-2	H2
Benzo(g,h,i)perylene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	191-24-2	H2
Benzo(k)fluoranthene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	207-08-9	H2
Benzoic Acid	ND	ug/L	50.0	1	04/18/19 17:38	04/19/19 19:54	65-85-0	H2,L2
Benzyl alcohol	ND	ug/L	20.0	1	04/18/19 17:38	04/19/19 19:54	100-51-6	H2
4-Bromophenylphenyl ether	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	101-55-3	H2
Butylbenzylphthalate	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	85-68-7	H2
4-Chloro-3-methylphenol	ND	ug/L	20.0	1	04/18/19 17:38	04/19/19 19:54	59-50-7	H2
4-Chloroaniline	ND	ug/L	20.0	1	04/18/19 17:38	04/19/19 19:54	106-47-8	H2
bis(2-Chloroethoxy)methane	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	111-91-1	H2
bis(2-Chloroethyl) ether	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	111-44-4	H2
2-Chloronaphthalene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	91-58-7	H2
2-Chlorophenol	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	95-57-8	H2
4-Chlorophenylphenyl ether	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	7005-72-3	H2
Chrysene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	53-70-3	H2
Dibenzofuran	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	132-64-9	H2
1,2-Dichlorobenzene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	95-50-1	H2
1,3-Dichlorobenzene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	541-73-1	H2
1,4-Dichlorobenzene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	106-46-7	H2
3,3'-Dichlorobenzidine	ND	ug/L	20.0	1	04/18/19 17:38	04/19/19 19:54	91-94-1	H2
2,4-Dichlorophenol	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	120-83-2	H2
Diethylphthalate	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	84-66-2	H2
2,4-Dimethylphenol	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	105-67-9	H2
Dimethylphthalate	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	131-11-3	H2
Di-n-butylphthalate	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	84-74-2	H2
4,6-Dinitro-2-methylphenol	ND	ug/L	20.0	1	04/18/19 17:38	04/19/19 19:54	534-52-1	H2
2,4-Dinitrophenol	ND	ug/L	50.0	1	04/18/19 17:38	04/19/19 19:54	51-28-5	H2,L2
2,4-Dinitrotoluene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	121-14-2	H2
2,6-Dinitrotoluene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	606-20-2	H2
Di-n-octylphthalate	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	117-84-0	H2
bis(2-Ethylhexyl)phthalate	ND	ug/L	6.0	1	04/18/19 17:38	04/19/19 19:54	117-81-7	H2
Fluoranthene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	206-44-0	H2
Fluorene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	86-73-7	H2
Hexachloro-1,3-butadiene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	87-68-3	H2
Hexachlorobenzene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	118-74-1	H2
Hexachlorocyclopentadiene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	77-47-4	H2
Hexachloroethane	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	67-72-1	H2
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	193-39-5	H2
Isophorone	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	78-59-1	H2
1-Methylnaphthalene	**38.9**	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	90-12-0	H2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: U5797
Pace Project No.: 92425908

Sample: B5.1 **Lab ID: 92425908002** Collected: 04/10/19 12:30 Received: 04/12/19 14:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270E RVE	Analytical Method: EPA 8270E Preparation Method: EPA 3510C							
2-Methylnaphthalene	**85.9**	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	91-57-6	H2
2-Methylphenol(o-Cresol)	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	95-48-7	H2
3&4-Methylphenol(m&p Cresol)	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	15831-10-4	H2
Naphthalene	**421**	ug/L	40.0	4	04/18/19 17:38	04/22/19 13:10	91-20-3	H2
2-Nitroaniline	ND	ug/L	50.0	1	04/18/19 17:38	04/19/19 19:54	88-74-4	H2
3-Nitroaniline	ND	ug/L	50.0	1	04/18/19 17:38	04/19/19 19:54	99-09-2	H2
4-Nitroaniline	ND	ug/L	20.0	1	04/18/19 17:38	04/19/19 19:54	100-01-6	H2
Nitrobenzene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	98-95-3	H2
2-Nitrophenol	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	88-75-5	H2
4-Nitrophenol	ND	ug/L	50.0	1	04/18/19 17:38	04/19/19 19:54	100-02-7	H2
N-Nitrosodimethylamine	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	62-75-9	H2
N-Nitroso-di-n-propylamine	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	621-64-7	H2
N-Nitrosodiphenylamine	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	86-30-6	H2
2,2'-Oxybis(1-chloropropane)	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	108-60-1	H2
Pentachlorophenol	ND	ug/L	25.0	1	04/18/19 17:38	04/19/19 19:54	87-86-5	H2
Phenanthrene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	85-01-8	H2
Phenol	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	108-95-2	H2
Pyrene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	129-00-0	H2
1,2,4-Trichlorobenzene	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	120-82-1	H2
2,4,5-Trichlorophenol	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	95-95-4	H2
2,4,6-Trichlorophenol	ND	ug/L	10.0	1	04/18/19 17:38	04/19/19 19:54	88-06-2	H2
Surrogates								
Nitrobenzene-d5 (S)	68	%	13-130	1	04/18/19 17:38	04/19/19 19:54	4165-60-0	
2-Fluorobiphenyl (S)	55	%	13-130	1	04/18/19 17:38	04/19/19 19:54	321-60-8	
Terphenyl-d14 (S)	66	%	25-130	1	04/18/19 17:38	04/19/19 19:54	1718-51-0	
Phenol-d6 (S)	47	%	10-130	1	04/18/19 17:38	04/19/19 19:54	13127-88-3	
2-Fluorophenol (S)	52	%	10-130	1	04/18/19 17:38	04/19/19 19:54	367-12-4	
2,4,6-Tribromophenol (S)	75	%	10-137	1	04/18/19 17:38	04/19/19 19:54	118-79-6	
8260D MSV Low Level	Analytical Method: EPA 8260D							
Acetone	ND	ug/L	250	10		04/23/19 09:01	67-64-1	
Benzene	**217**	ug/L	10.0	10		04/23/19 09:01	71-43-2	
Bromobenzene	ND	ug/L	10.0	10		04/23/19 09:01	108-86-1	
Bromochloromethane	ND	ug/L	10.0	10		04/23/19 09:01	74-97-5	IK
Bromodichloromethane	ND	ug/L	10.0	10		04/23/19 09:01	75-27-4	
Bromoform	ND	ug/L	10.0	10		04/23/19 09:01	75-25-2	IK
Bromomethane	ND	ug/L	20.0	10		04/23/19 09:01	74-83-9	IK
2-Butanone (MEK)	ND	ug/L	50.0	10		04/23/19 09:01	78-93-3	
Carbon tetrachloride	ND	ug/L	10.0	10		04/23/19 09:01	56-23-5	
Chlorobenzene	ND	ug/L	10.0	10		04/23/19 09:01	108-90-7	
Chloroethane	ND	ug/L	10.0	10		04/23/19 09:01	75-00-3	IK
Chloroform	ND	ug/L	50.0	10		04/23/19 09:01	67-66-3	
Chloromethane	ND	ug/L	10.0	10		04/23/19 09:01	74-87-3	
2-Chlorotoluene	ND	ug/L	10.0	10		04/23/19 09:01	95-49-8	
4-Chlorotoluene	ND	ug/L	10.0	10		04/23/19 09:01	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	50.0	10		04/23/19 09:01	96-12-8	
Dibromochloromethane	ND	ug/L	10.0	10		04/23/19 09:01	124-48-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: U5797
Pace Project No.: 92425908

Sample: B5.1 **Lab ID: 92425908002** Collected: 04/10/19 12:30 Received: 04/12/19 14:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260D MSV Low Level	Analytical Method: EPA 8260D							
1,2-Dibromoethane (EDB)	ND	ug/L	10.0	10		04/23/19 09:01	106-93-4	
Dibromomethane	ND	ug/L	10.0	10		04/23/19 09:01	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	10.0	10		04/23/19 09:01	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	10.0	10		04/23/19 09:01	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	10.0	10		04/23/19 09:01	106-46-7	
Dichlorodifluoromethane	ND	ug/L	10.0	10		04/23/19 09:01	75-71-8	
1,1-Dichloroethane	ND	ug/L	10.0	10		04/23/19 09:01	75-34-3	
1,2-Dichloroethane	ND	ug/L	10.0	10		04/23/19 09:01	107-06-2	
1,1-Dichloroethene	ND	ug/L	10.0	10		04/23/19 09:01	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	10.0	10		04/23/19 09:01	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	10.0	10		04/23/19 09:01	156-60-5	
1,2-Dichloropropane	ND	ug/L	10.0	10		04/23/19 09:01	78-87-5	
1,3-Dichloropropane	ND	ug/L	10.0	10		04/23/19 09:01	142-28-9	
2,2-Dichloropropane	ND	ug/L	10.0	10		04/23/19 09:01	594-20-7	
1,1-Dichloropropene	ND	ug/L	10.0	10		04/23/19 09:01	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	10.0	10		04/23/19 09:01	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	10.0	10		04/23/19 09:01	10061-02-6	
Diisopropyl ether	ND	ug/L	10.0	10		04/23/19 09:01	108-20-3	
Ethylbenzene	**1040**	ug/L	10.0	10		04/23/19 09:01	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	10.0	10		04/23/19 09:01	87-68-3	
2-Hexanone	ND	ug/L	50.0	10		04/23/19 09:01	591-78-6	
p-Isopropyltoluene	**26.3**	ug/L	10.0	10		04/23/19 09:01	99-87-6	
Methylene Chloride	ND	ug/L	50.0	10		04/23/19 09:01	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	50.0	10		04/23/19 09:01	108-10-1	
Methyl-tert-butyl ether	**39.9**	ug/L	10.0	10		04/23/19 09:01	1634-04-4	
Naphthalene	**850**	ug/L	10.0	10		04/23/19 09:01	91-20-3	
Styrene	ND	ug/L	10.0	10		04/23/19 09:01	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	10.0	10		04/23/19 09:01	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	10.0	10		04/23/19 09:01	79-34-5	
Tetrachloroethene	ND	ug/L	10.0	10		04/23/19 09:01	127-18-4	
Toluene	**27.9**	ug/L	10.0	10		04/23/19 09:01	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	10.0	10		04/23/19 09:01	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	10.0	10		04/23/19 09:01	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	10.0	10		04/23/19 09:01	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	10.0	10		04/23/19 09:01	79-00-5	
Trichloroethene	ND	ug/L	10.0	10		04/23/19 09:01	79-01-6	
Trichlorofluoromethane	ND	ug/L	10.0	10		04/23/19 09:01	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	10.0	10		04/23/19 09:01	96-18-4	
Vinyl acetate	ND	ug/L	20.0	10		04/23/19 09:01	108-05-4	
Vinyl chloride	ND	ug/L	10.0	10		04/23/19 09:01	75-01-4	
Xylene (Total)	**2500**	ug/L	10.0	10		04/23/19 09:01	1330-20-7	
m&p-Xylene	**1220**	ug/L	20.0	10		04/23/19 09:01	179601-23-1	
o-Xylene	**1280**	ug/L	10.0	10		04/23/19 09:01	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	101	%	70-130	10		04/23/19 09:01	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-130	10		04/23/19 09:01	17060-07-0	
Toluene-d8 (S)	107	%	70-130	10		04/23/19 09:01	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

QC Batch: 470498 Analysis Method: EPA 8260D
QC Batch Method: EPA 5035A Analysis Description: 8260D MSV 5035A Volatile Organics
Associated Lab Samples: 92425908003, 92425908004

METHOD BLANK: 2554406 Matrix: Solid
Associated Lab Samples: 92425908003, 92425908004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	5.0	04/19/19 20:05	
1,1,1-Trichloroethane	ug/kg	ND	5.0	04/19/19 20:05	
1,1,2,2-Tetrachloroethane	ug/kg	ND	5.0	04/19/19 20:05	
1,1,2-Trichloroethane	ug/kg	ND	5.0	04/19/19 20:05	
1,1-Dichloroethane	ug/kg	ND	5.0	04/19/19 20:05	
1,1-Dichloroethene	ug/kg	ND	5.0	04/19/19 20:05	
1,1-Dichloropropene	ug/kg	ND	5.0	04/19/19 20:05	
1,2,3-Trichlorobenzene	ug/kg	ND	5.0	04/19/19 20:05	
1,2,3-Trichloropropane	ug/kg	ND	5.0	04/19/19 20:05	
1,2,4-Trichlorobenzene	ug/kg	ND	5.0	04/19/19 20:05	
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	04/19/19 20:05	
1,2-Dibromo-3-chloropropane	ug/kg	ND	5.0	04/19/19 20:05	
1,2-Dibromoethane (EDB)	ug/kg	ND	5.0	04/19/19 20:05	
1,2-Dichlorobenzene	ug/kg	ND	5.0	04/19/19 20:05	
1,2-Dichloroethane	ug/kg	ND	5.0	04/19/19 20:05	
1,2-Dichloropropane	ug/kg	ND	5.0	04/19/19 20:05	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	04/19/19 20:05	
1,3-Dichlorobenzene	ug/kg	ND	5.0	04/19/19 20:05	
1,3-Dichloropropane	ug/kg	ND	5.0	04/19/19 20:05	
1,4-Dichlorobenzene	ug/kg	ND	5.0	04/19/19 20:05	
2,2-Dichloropropane	ug/kg	ND	5.0	04/19/19 20:05	
2-Butanone (MEK)	ug/kg	ND	100	04/19/19 20:05	
2-Chlorotoluene	ug/kg	ND	5.0	04/19/19 20:05	
2-Hexanone	ug/kg	ND	50.0	04/19/19 20:05	
4-Chlorotoluene	ug/kg	ND	5.0	04/19/19 20:05	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	50.0	04/19/19 20:05	
Acetone	ug/kg	ND	100	04/19/19 20:05	
Benzene	ug/kg	ND	5.0	04/19/19 20:05	
Bromobenzene	ug/kg	ND	5.0	04/19/19 20:05	
Bromochloromethane	ug/kg	ND	5.0	04/19/19 20:05	
Bromodichloromethane	ug/kg	ND	5.0	04/19/19 20:05	
Bromoform	ug/kg	ND	5.0	04/19/19 20:05	
Bromomethane	ug/kg	ND	10.0	04/19/19 20:05	
Carbon tetrachloride	ug/kg	ND	5.0	04/19/19 20:05	
Chlorobenzene	ug/kg	ND	5.0	04/19/19 20:05	
Chloroethane	ug/kg	ND	10.0	04/19/19 20:05	
Chloroform	ug/kg	ND	5.0	04/19/19 20:05	
Chloromethane	ug/kg	ND	10.0	04/19/19 20:05	
cis-1,2-Dichloroethene	ug/kg	ND	5.0	04/19/19 20:05	
cis-1,3-Dichloropropene	ug/kg	ND	5.0	04/19/19 20:05	
Dibromochloromethane	ug/kg	ND	5.0	04/19/19 20:05	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

METHOD BLANK: 2554406 Matrix: Solid
Associated Lab Samples: 92425908003, 92425908004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromomethane	ug/kg	ND	5.0	04/19/19 20:05	
Dichlorodifluoromethane	ug/kg	ND	10.0	04/19/19 20:05	
Diisopropyl ether	ug/kg	ND	5.0	04/19/19 20:05	
Ethylbenzene	ug/kg	ND	5.0	04/19/19 20:05	
Hexachloro-1,3-butadiene	ug/kg	ND	5.0	04/19/19 20:05	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	04/19/19 20:05	
m&p-Xylene	ug/kg	ND	10.0	04/19/19 20:05	
Methyl-tert-butyl ether	ug/kg	ND	5.0	04/19/19 20:05	
Methylene Chloride	ug/kg	ND	20.0	04/19/19 20:05	
n-Butylbenzene	ug/kg	ND	5.0	04/19/19 20:05	
n-Propylbenzene	ug/kg	ND	5.0	04/19/19 20:05	
Naphthalene	ug/kg	ND	5.0	04/19/19 20:05	
o-Xylene	ug/kg	ND	5.0	04/19/19 20:05	
p-Isopropyltoluene	ug/kg	ND	5.0	04/19/19 20:05	
sec-Butylbenzene	ug/kg	ND	5.0	04/19/19 20:05	
Styrene	ug/kg	ND	5.0	04/19/19 20:05	
tert-Butylbenzene	ug/kg	ND	5.0	04/19/19 20:05	
Tetrachloroethene	ug/kg	ND	5.0	04/19/19 20:05	
Toluene	ug/kg	ND	5.0	04/19/19 20:05	
trans-1,2-Dichloroethene	ug/kg	ND	5.0	04/19/19 20:05	
trans-1,3-Dichloropropene	ug/kg	ND	5.0	04/19/19 20:05	
Trichloroethene	ug/kg	ND	5.0	04/19/19 20:05	
Trichlorofluoromethane	ug/kg	ND	5.0	04/19/19 20:05	
Vinyl acetate	ug/kg	ND	50.0	04/19/19 20:05	
Vinyl chloride	ug/kg	ND	10.0	04/19/19 20:05	
Xylene (Total)	ug/kg	ND	10.0	04/19/19 20:05	
1,2-Dichloroethane-d4 (S)	%	103	70-132	04/19/19 20:05	
4-Bromofluorobenzene (S)	%	99	70-130	04/19/19 20:05	
Toluene-d8 (S)	%	99	70-130	04/19/19 20:05	

LABORATORY CONTROL SAMPLE: 2554407

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	50	49.9	100	70-130	
1,1,1-Trichloroethane	ug/kg	50	43.2	86	70-130	
1,1,2,2-Tetrachloroethane	ug/kg	50	48.2	96	55-130	
1,1,2-Trichloroethane	ug/kg	50	47.0	94	70-130	
1,1-Dichloroethane	ug/kg	50	42.4	85	68-130	
1,1-Dichloroethene	ug/kg	50	43.0	86	70-130	
1,1-Dichloropropene	ug/kg	50	42.8	86	70-130	
1,2,3-Trichlorobenzene	ug/kg	50	47.5	95	70-130	
1,2,3-Trichloropropane	ug/kg	50	51.4	103	70-130	
1,2,4-Trichlorobenzene	ug/kg	50	46.7	93	70-130	
1,2,4-Trimethylbenzene	ug/kg	50	44.0	88	69-130	

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QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

LABORATORY CONTROL SAMPLE: 2554407

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dibromo-3-chloropropane	ug/kg	50	45.1	90	57-141	
1,2-Dibromoethane (EDB)	ug/kg	50	47.7	95	70-130	
1,2-Dichlorobenzene	ug/kg	50	44.9	90	70-130	
1,2-Dichloroethane	ug/kg	50	44.6	89	70-130	
1,2-Dichloropropane	ug/kg	50	46.5	93	70-130	
1,3,5-Trimethylbenzene	ug/kg	50	44.8	90	70-130	
1,3-Dichlorobenzene	ug/kg	50	44.2	88	70-130	
1,3-Dichloropropane	ug/kg	50	47.0	94	70-130	
1,4-Dichlorobenzene	ug/kg	50	44.2	88	70-130	
2,2-Dichloropropane	ug/kg	50	44.8	90	70-130	
2-Butanone (MEK)	ug/kg	100	101	101	60-130	
2-Chlorotoluene	ug/kg	50	44.8	90	70-130	
2-Hexanone	ug/kg	100	93.1	93	70-132	
4-Chlorotoluene	ug/kg	50	44.7	89	70-130	
4-Methyl-2-pentanone (MIBK)	ug/kg	100	93.1	93	69-130	
Acetone	ug/kg	100	102	102	49-148	
Benzene	ug/kg	50	45.6	91	70-130	
Bromobenzene	ug/kg	50	45.6	91	70-130	
Bromochloromethane	ug/kg	50	45.7	91	70-130	
Bromodichloromethane	ug/kg	50	46.8	94	70-130	
Bromoform	ug/kg	50	42.0	84	68-136	
Bromomethane	ug/kg	50	43.0	86	60-140	
Carbon tetrachloride	ug/kg	50	44.0	88	70-130	
Chlorobenzene	ug/kg	50	43.3	87	70-130	
Chloroethane	ug/kg	50	49.2	98	51-147	
Chloroform	ug/kg	50	43.8	88	70-130	
Chloromethane	ug/kg	50	42.4	85	48-130	
cis-1,2-Dichloroethene	ug/kg	50	43.8	88	70-130	
cis-1,3-Dichloropropene	ug/kg	50	47.8	96	70-130	
Dibromochloromethane	ug/kg	50	47.3	95	70-130	
Dibromomethane	ug/kg	50	47.3	95	70-130	
Dichlorodifluoromethane	ug/kg	50	43.1	86	49-130	
Diisopropyl ether	ug/kg	50	48.7	97	66-130	
Ethylbenzene	ug/kg	50	45.1	90	70-130	
Hexachloro-1,3-butadiene	ug/kg	50	45.1	90	70-130	
Isopropylbenzene (Cumene)	ug/kg	50	44.6	89	70-130	
m&p-Xylene	ug/kg	100	89.9	90	70-130	
Methyl-tert-butyl ether	ug/kg	50	48.2	96	70-130	
Methylene Chloride	ug/kg	50	38.3	77	50-137	
n-Butylbenzene	ug/kg	50	45.0	90	70-130	
n-Propylbenzene	ug/kg	50	45.0	90	70-130	
Naphthalene	ug/kg	50	47.1	94	70-131	
o-Xylene	ug/kg	50	44.2	88	70-130	
p-Isopropyltoluene	ug/kg	50	45.2	90	70-130	
sec-Butylbenzene	ug/kg	50	45.8	92	70-130	
Styrene	ug/kg	50	44.3	89	70-130	
tert-Butylbenzene	ug/kg	50	40.1	80	69-130	

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QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

LABORATORY CONTROL SAMPLE: 2554407

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/kg	50	44.7	89	56-130	
Toluene	ug/kg	50	44.4	89	70-130	
trans-1,2-Dichloroethene	ug/kg	50	43.1	86	70-130	
trans-1,3-Dichloropropene	ug/kg	50	49.0	98	70-130	
Trichloroethene	ug/kg	50	43.9	88	70-141	
Trichlorofluoromethane	ug/kg	50	43.5	87	67-130	
Vinyl acetate	ug/kg	100	92.7	93	10-136	
Vinyl chloride	ug/kg	50	43.2	86	67-130	
Xylene (Total)	ug/kg	150	134	89	70-130	
1,2-Dichloroethane-d4 (S)	%			96	70-132	
4-Bromofluorobenzene (S)	%			99	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE SAMPLE: 2555712

Parameter	Units	92425764001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	437	469	107	52-133	
1,1,1-Trichloroethane	ug/kg	ND	437	426	98	49-137	
1,1,2,2-Tetrachloroethane	ug/kg	ND	437	320	73	39-150	
1,1,2-Trichloroethane	ug/kg	ND	437	377	86	48-140	
1,1-Dichloroethane	ug/kg	ND	437	424	97	46-135	
1,1-Dichloroethene	ug/kg	ND	437	530	121	38-149	
1,1-Dichloropropene	ug/kg	ND	437	420	96	41-140	
1,2,3-Trichlorobenzene	ug/kg	ND	437	427	98	10-158	
1,2,3-Trichloropropane	ug/kg	ND	437	322	74	33-157	
1,2,4-Trichlorobenzene	ug/kg	ND	437	451	103	10-155	
1,2,4-Trimethylbenzene	ug/kg	ND	437	499	114	24-154	
1,2-Dibromo-3-chloropropane	ug/kg	ND	437	237	54	33-158	
1,2-Dibromoethane (EDB)	ug/kg	ND	437	330	76	40-136	
1,2-Dichlorobenzene	ug/kg	ND	437	440	101	27-146	
1,2-Dichloroethane	ug/kg	ND	437	335	77	49-140	
1,2-Dichloropropane	ug/kg	ND	437	411	94	44-143	
1,3,5-Trimethylbenzene	ug/kg	ND	437	456	104	40-144	
1,3-Dichlorobenzene	ug/kg	ND	437	443	102	33-140	
1,3-Dichloropropane	ug/kg	ND	437	408	93	47-147	
1,4-Dichlorobenzene	ug/kg	ND	437	447	102	35-139	
2,2-Dichloropropane	ug/kg	ND	437	446	102	41-140	
2-Butanone (MEK)	ug/kg	ND	873	397J	45	10-181	
2-Chlorotoluene	ug/kg	ND	437	457	105	38-147	
2-Hexanone	ug/kg	ND	873	468J	54	18-169	
4-Chlorotoluene	ug/kg	ND	437	462	106	36-145	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	873	509J	58	16-175	
Acetone	ug/kg	ND	873	ND	22	10-200	
Benzene	ug/kg	ND	437	435	100	46-136	
Bromobenzene	ug/kg	ND	437	464	106	38-149	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

MATRIX SPIKE SAMPLE: 2555712

Parameter	Units	92425764001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromochloromethane	ug/kg	ND	437	335	77	44-142	
Bromodichloromethane	ug/kg	ND	437	369	85	41-140	
Bromoform	ug/kg	ND	437	331	76	34-145	
Bromomethane	ug/kg	ND	437	385	88	14-162	
Carbon tetrachloride	ug/kg	ND	437	442	101	44-141	
Chlorobenzene	ug/kg	ND	437	446	102	39-141	
Chloroethane	ug/kg	ND	437	215	49	10-182	
Chloroform	ug/kg	ND	437	387	89	45-140	
Chloromethane	ug/kg	ND	437	517	119	19-149	
cis-1,2-Dichloroethene	ug/kg	ND	437	401	92	38-150	
cis-1,3-Dichloropropene	ug/kg	ND	437	459	105	30-144	
Dibromochloromethane	ug/kg	ND	437	405	93	36-145	
Dibromomethane	ug/kg	ND	437	291	67	41-145	
Dichlorodifluoromethane	ug/kg	ND	437	241	55	16-146	
Diisopropyl ether	ug/kg	ND	437	445	102	41-143	
Ethylbenzene	ug/kg	ND	437	473	108	35-144	
Hexachloro-1,3-butadiene	ug/kg	ND	437	411	94	10-160	
Isopropylbenzene (Cumene)	ug/kg	ND	437	440	101	30-152	
m&p-Xylene	ug/kg	ND	873	1020	116	33-145	
Methyl-tert-butyl ether	ug/kg	ND	437	361	83	49-140	
Methylene Chloride	ug/kg	ND	437	489	112	10-174	
n-Butylbenzene	ug/kg	ND	437	428	98	10-160	
n-Propylbenzene	ug/kg	ND	437	468	107	24-159	
Naphthalene	ug/kg	ND	437	336	77	10-171	
o-Xylene	ug/kg	ND	437	507	116	31-150	
p-Isopropyltoluene	ug/kg	ND	437	445	102	21-154	
sec-Butylbenzene	ug/kg	ND	437	452	104	19-159	
Styrene	ug/kg	ND	437	442	101	15-152	
tert-Butylbenzene	ug/kg	ND	437	395	91	31-141	
Tetrachloroethene	ug/kg	ND	437	432	99	19-141	
Toluene	ug/kg	ND	437	517	118	31-146	
trans-1,2-Dichloroethene	ug/kg	ND	437	425	97	28-157	
trans-1,3-Dichloropropene	ug/kg	ND	437	376	86	25-146	
Trichloroethene	ug/kg	ND	437	442	101	34-149	
Trichlorofluoromethane	ug/kg	ND	437	427	98	10-167	
Vinyl acetate	ug/kg	ND	873	807J	92	10-200	
Vinyl chloride	ug/kg	ND	437	248	57	36-155	
Xylene (Total)	ug/kg	ND	1310	1520	116	29-148	
1,2-Dichloroethane-d4 (S)	%				72	70-132	
4-Bromofluorobenzene (S)	%				100	70-130	
Toluene-d8 (S)	%				102	70-130	P2

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

SAMPLE DUPLICATE: 2555711

Parameter	Units	92425574001 Result	Dup Result	RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		
1,1,1-Trichloroethane	ug/kg	ND	ND		
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		
1,1,2-Trichloroethane	ug/kg	ND	ND		
1,1-Dichloroethane	ug/kg	ND	ND		
1,1-Dichloroethene	ug/kg	ND	ND		
1,1-Dichloropropene	ug/kg	ND	ND		
1,2,3-Trichlorobenzene	ug/kg	ND	ND		
1,2,3-Trichloropropane	ug/kg	ND	ND		
1,2,4-Trichlorobenzene	ug/kg	ND	ND		
1,2,4-Trimethylbenzene	ug/kg	ND	ND		
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		
1,2-Dichlorobenzene	ug/kg	ND	ND		
1,2-Dichloroethane	ug/kg	ND	ND		
1,2-Dichloropropane	ug/kg	ND	ND		
1,3,5-Trimethylbenzene	ug/kg	ND	ND		
1,3-Dichlorobenzene	ug/kg	ND	ND		
1,3-Dichloropropane	ug/kg	ND	ND		
1,4-Dichlorobenzene	ug/kg	ND	ND		
2,2-Dichloropropane	ug/kg	ND	ND		
2-Butanone (MEK)	ug/kg	ND	ND		
2-Chlorotoluene	ug/kg	ND	ND		
2-Hexanone	ug/kg	ND	ND		
4-Chlorotoluene	ug/kg	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		
Acetone	ug/kg	146	240	49	D6
Benzene	ug/kg	ND	ND		
Bromobenzene	ug/kg	ND	ND		
Bromochloromethane	ug/kg	ND	ND		
Bromodichloromethane	ug/kg	ND	ND		
Bromoform	ug/kg	ND	ND		
Bromomethane	ug/kg	ND	ND		
Carbon tetrachloride	ug/kg	ND	ND		
Chlorobenzene	ug/kg	ND	ND		
Chloroethane	ug/kg	ND	ND		
Chloroform	ug/kg	ND	ND		
Chloromethane	ug/kg	ND	ND		
cis-1,2-Dichloroethene	ug/kg	ND	ND		
cis-1,3-Dichloropropene	ug/kg	ND	ND		
Dibromochloromethane	ug/kg	ND	ND		
Dibromomethane	ug/kg	ND	ND		
Dichlorodifluoromethane	ug/kg	ND	ND		
Diisopropyl ether	ug/kg	ND	ND		
Ethylbenzene	ug/kg	ND	ND		
Hexachloro-1,3-butadiene	ug/kg	ND	ND		
Isopropylbenzene (Cumene)	ug/kg	ND	ND		

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

SAMPLE DUPLICATE: 2555711

Parameter	Units	92425574001 Result	Dup Result	RPD	Qualifiers
m&p-Xylene	ug/kg	ND	ND		
Methyl-tert-butyl ether	ug/kg	ND	ND		
Methylene Chloride	ug/kg	ND	ND		
n-Butylbenzene	ug/kg	ND	ND		
n-Propylbenzene	ug/kg	ND	ND		
Naphthalene	ug/kg	ND	ND		
o-Xylene	ug/kg	ND	ND		
p-Isopropyltoluene	ug/kg	ND	ND		
sec-Butylbenzene	ug/kg	ND	ND		
Styrene	ug/kg	ND	ND		
tert-Butylbenzene	ug/kg	ND	ND		
Tetrachloroethene	ug/kg	ND	ND		
Toluene	ug/kg	ND	ND		
trans-1,2-Dichloroethene	ug/kg	ND	ND		
trans-1,3-Dichloropropene	ug/kg	ND	ND		
Trichloroethene	ug/kg	ND	ND		
Trichlorofluoromethane	ug/kg	ND	ND		
Vinyl acetate	ug/kg	ND	ND		
Vinyl chloride	ug/kg	ND	ND		
Xylene (Total)	ug/kg	ND	ND		
1,2-Dichloroethane-d4 (S)	%	100	92		
4-Bromofluorobenzene (S)	%	97	98		
Toluene-d8 (S)	%	99	102		

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
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(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

QC Batch: 470847 Analysis Method: EPA 8260D
QC Batch Method: EPA 8260D Analysis Description: 8260D MSV Low Level
Associated Lab Samples: 92425908001, 92425908002

METHOD BLANK: 2555743 Matrix: Water
Associated Lab Samples: 92425908001, 92425908002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	04/22/19 23:47	
1,1,1-Trichloroethane	ug/L	ND	1.0	04/22/19 23:47	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	04/22/19 23:47	
1,1,2-Trichloroethane	ug/L	ND	1.0	04/22/19 23:47	
1,1-Dichloroethane	ug/L	ND	1.0	04/22/19 23:47	
1,1-Dichloroethene	ug/L	ND	1.0	04/22/19 23:47	
1,1-Dichloropropene	ug/L	ND	1.0	04/22/19 23:47	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	04/22/19 23:47	
1,2,3-Trichloropropane	ug/L	ND	1.0	04/22/19 23:47	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	04/22/19 23:47	
1,2-Dibromo-3-chloropropane	ug/L	ND	5.0	04/22/19 23:47	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	04/22/19 23:47	
1,2-Dichlorobenzene	ug/L	ND	1.0	04/22/19 23:47	
1,2-Dichloroethane	ug/L	ND	1.0	04/22/19 23:47	
1,2-Dichloropropane	ug/L	ND	1.0	04/22/19 23:47	
1,3-Dichlorobenzene	ug/L	ND	1.0	04/22/19 23:47	
1,3-Dichloropropane	ug/L	ND	1.0	04/22/19 23:47	
1,4-Dichlorobenzene	ug/L	ND	1.0	04/22/19 23:47	
2,2-Dichloropropane	ug/L	ND	1.0	04/22/19 23:47	
2-Butanone (MEK)	ug/L	ND	5.0	04/22/19 23:47	
2-Chlorotoluene	ug/L	ND	1.0	04/22/19 23:47	
2-Hexanone	ug/L	ND	5.0	04/22/19 23:47	
4-Chlorotoluene	ug/L	ND	1.0	04/22/19 23:47	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	04/22/19 23:47	
Acetone	ug/L	ND	25.0	04/22/19 23:47	
Benzene	ug/L	ND	1.0	04/22/19 23:47	
Bromobenzene	ug/L	ND	1.0	04/22/19 23:47	
Bromochloromethane	ug/L	ND	1.0	04/22/19 23:47	IK
Bromodichloromethane	ug/L	ND	1.0	04/22/19 23:47	
Bromoform	ug/L	ND	1.0	04/22/19 23:47	IK
Bromomethane	ug/L	ND	2.0	04/22/19 23:47	IK
Carbon tetrachloride	ug/L	ND	1.0	04/22/19 23:47	
Chlorobenzene	ug/L	ND	1.0	04/22/19 23:47	
Chloroethane	ug/L	ND	1.0	04/22/19 23:47	IK
Chloroform	ug/L	ND	5.0	04/22/19 23:47	
Chloromethane	ug/L	ND	1.0	04/22/19 23:47	
cis-1,2-Dichloroethene	ug/L	ND	1.0	04/22/19 23:47	
cis-1,3-Dichloropropene	ug/L	ND	1.0	04/22/19 23:47	
Dibromochloromethane	ug/L	ND	1.0	04/22/19 23:47	
Dibromomethane	ug/L	ND	1.0	04/22/19 23:47	
Dichlorodifluoromethane	ug/L	ND	1.0	04/22/19 23:47	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

METHOD BLANK: 2555743 Matrix: Water
Associated Lab Samples: 92425908001, 92425908002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	04/22/19 23:47	
Ethylbenzene	ug/L	ND	1.0	04/22/19 23:47	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	04/22/19 23:47	
m&p-Xylene	ug/L	ND	2.0	04/22/19 23:47	
Methyl-tert-butyl ether	ug/L	ND	1.0	04/22/19 23:47	
Methylene Chloride	ug/L	ND	5.0	04/22/19 23:47	
Naphthalene	ug/L	ND	1.0	04/22/19 23:47	
o-Xylene	ug/L	ND	1.0	04/22/19 23:47	
p-Isopropyltoluene	ug/L	ND	1.0	04/22/19 23:47	
Styrene	ug/L	ND	1.0	04/22/19 23:47	
Tetrachloroethene	ug/L	ND	1.0	04/22/19 23:47	
Toluene	ug/L	ND	1.0	04/22/19 23:47	
trans-1,2-Dichloroethene	ug/L	ND	1.0	04/22/19 23:47	
trans-1,3-Dichloropropene	ug/L	ND	1.0	04/22/19 23:47	
Trichloroethene	ug/L	ND	1.0	04/22/19 23:47	
Trichlorofluoromethane	ug/L	ND	1.0	04/22/19 23:47	
Vinyl acetate	ug/L	ND	2.0	04/22/19 23:47	
Vinyl chloride	ug/L	ND	1.0	04/22/19 23:47	
Xylene (Total)	ug/L	ND	1.0	04/22/19 23:47	
1,2-Dichloroethane-d4 (S)	%	103	70-130	04/22/19 23:47	
4-Bromofluorobenzene (S)	%	101	70-130	04/22/19 23:47	
Toluene-d8 (S)	%	109	70-130	04/22/19 23:47	

LABORATORY CONTROL SAMPLE: 2555744

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	56.0	112	70-130	
1,1,1-Trichloroethane	ug/L	50	53.0	106	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	52.5	105	70-130	
1,1,2-Trichloroethane	ug/L	50	54.9	110	70-130	
1,1-Dichloroethane	ug/L	50	51.7	103	70-130	
1,1-Dichloroethene	ug/L	50	51.0	102	70-130	
1,1-Dichloropropene	ug/L	50	51.3	103	70-130	
1,2,3-Trichlorobenzene	ug/L	50	53.3	107	70-130	
1,2,3-Trichloropropane	ug/L	50	55.1	110	70-130	
1,2,4-Trichlorobenzene	ug/L	50	53.4	107	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	53.3	107	70-130	
1,2-Dibromoethane (EDB)	ug/L	50	54.5	109	70-130	
1,2-Dichlorobenzene	ug/L	50	51.0	102	70-130	
1,2-Dichloroethane	ug/L	50	48.8	98	70-130	
1,2-Dichloropropane	ug/L	50	52.8	106	70-130	
1,3-Dichlorobenzene	ug/L	50	50.4	101	70-130	
1,3-Dichloropropane	ug/L	50	53.2	106	70-131	
1,4-Dichlorobenzene	ug/L	50	51.1	102	70-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

LABORATORY CONTROL SAMPLE: 2555744

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	54.4	109	69-130	
2-Butanone (MEK)	ug/L	100	113	113	64-135	
2-Chlorotoluene	ug/L	50	49.9	100	70-130	
2-Hexanone	ug/L	100	107	107	66-135	
4-Chlorotoluene	ug/L	50	49.6	99	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	104	104	70-130	
Acetone	ug/L	100	104	104	61-157	
Benzene	ug/L	50	51.8	104	70-130	
Bromobenzene	ug/L	50	51.9	104	70-130	
Bromochloromethane	ug/L	50	49.4	99	70-130	IK
Bromodichloromethane	ug/L	50	52.3	105	70-130	
Bromoform	ug/L	50	48.6	97	70-130	IK
Bromomethane	ug/L	50	50.9	102	38-130	IK
Carbon tetrachloride	ug/L	50	47.2	94	70-130	
Chlorobenzene	ug/L	50	49.8	100	70-130	
Chloroethane	ug/L	50	41.4	83	37-142	IK
Chloroform	ug/L	50	49.5	99	70-130	
Chloromethane	ug/L	50	50.1	100	48-130	
cis-1,2-Dichloroethene	ug/L	50	51.6	103	70-130	
cis-1,3-Dichloropropene	ug/L	50	57.6	115	70-130	
Dibromochloromethane	ug/L	50	54.9	110	70-130	
Dibromomethane	ug/L	50	51.4	103	70-130	
Dichlorodifluoromethane	ug/L	50	40.6	81	53-134	
Diisopropyl ether	ug/L	50	55.3	111	70-135	
Ethylbenzene	ug/L	50	50.2	100	70-130	
Hexachloro-1,3-butadiene	ug/L	50	50.6	101	68-132	
m&p-Xylene	ug/L	100	102	102	70-130	
Methyl-tert-butyl ether	ug/L	50	58.8	118	70-130	
Methylene Chloride	ug/L	50	47.3	95	67-132	
Naphthalene	ug/L	50	56.7	113	70-130	
o-Xylene	ug/L	50	51.8	104	70-131	
p-Isopropyltoluene	ug/L	50	53.6	107	70-130	
Styrene	ug/L	50	52.1	104	70-130	
Tetrachloroethene	ug/L	50	50.4	101	69-130	
Toluene	ug/L	50	49.4	99	70-130	
trans-1,2-Dichloroethene	ug/L	50	52.1	104	70-130	
trans-1,3-Dichloropropene	ug/L	50	51.2	102	70-130	
Trichloroethene	ug/L	50	51.6	103	70-130	
Trichlorofluoromethane	ug/L	50	44.0	88	63-130	
Vinyl acetate	ug/L	100	112	112	55-143	
Vinyl chloride	ug/L	50	52.1	104	70-131	
Xylene (Total)	ug/L	150	153	102	70-130	
1,2-Dichloroethane-d4 (S)	%			100	70-130	
4-Bromofluorobenzene (S)	%			98	70-130	
Toluene-d8 (S)	%			96	70-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

MATRIX SPIKE SAMPLE: 2555746

Parameter	Units	92425875006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	22.8	114	73-134	
1,1,1-Trichloroethane	ug/L	ND	20	25.0	125	82-143	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	21.2	106	70-136	
1,1,2-Trichloroethane	ug/L	ND	20	23.1	115	70-135	
1,1-Dichloroethane	ug/L	0.43J	20	24.2	119	70-139	
1,1-Dichloroethene	ug/L	ND	20	23.9	120	70-154	
1,1-Dichloropropene	ug/L	ND	20	23.8	119	70-149	
1,2,3-Trichlorobenzene	ug/L	ND	20	22.2	111	70-135	
1,2,3-Trichloropropane	ug/L	ND	20	22.7	113	71-137	
1,2,4-Trichlorobenzene	ug/L	ND	20	21.8	109	73-140	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	19.7	98	65-134	
1,2-Dibromoethane (EDB)	ug/L	ND	20	21.6	108	70-137	
1,2-Dichlorobenzene	ug/L	ND	20	21.2	106	70-133	
1,2-Dichloroethane	ug/L	ND	20	22.4	112	70-137	
1,2-Dichloropropane	ug/L	ND	20	23.8	119	70-140	
1,3-Dichlorobenzene	ug/L	ND	20	21.0	105	70-135	
1,3-Dichloropropane	ug/L	ND	20	21.8	109	70-143	
1,4-Dichlorobenzene	ug/L	ND	20	21.1	105	70-133	
2,2-Dichloropropane	ug/L	ND	20	19.4	97	61-148	
2-Butanone (MEK)	ug/L	ND	40	49.5	124	60-139	
2-Chlorotoluene	ug/L	ND	20	21.0	105	70-144	
2-Hexanone	ug/L	ND	40	42.4	106	65-138	
4-Chlorotoluene	ug/L	ND	20	21.3	106	70-137	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	42.5	106	65-135	
Acetone	ug/L	ND	40	55.4	139	60-148	
Benzene	ug/L	ND	20	23.6	118	70-151	
Bromobenzene	ug/L	ND	20	21.7	109	70-136	
Bromochloromethane	ug/L	ND	20	25.3	127	70-141	IK
Bromodichloromethane	ug/L	ND	20	22.8	114	70-138	
Bromoform	ug/L	ND	20	19.5	97	63-130	IK
Bromomethane	ug/L	ND	20	19.9	100	15-152	IK
Carbon tetrachloride	ug/L	ND	20	22.6	113	70-143	
Chlorobenzene	ug/L	ND	20	21.6	108	70-138	
Chloroethane	ug/L	ND	20	22.6	113	52-163	IK
Chloroform	ug/L	ND	20	23.7	116	70-139	
Chloromethane	ug/L	ND	20	19.9	99	41-139	
cis-1,2-Dichloroethene	ug/L	ND	20	23.9	119	70-141	
cis-1,3-Dichloropropene	ug/L	ND	20	22.1	110	70-137	
Dibromochloromethane	ug/L	ND	20	21.5	107	70-134	
Dibromomethane	ug/L	ND	20	22.9	114	70-138	
Dichlorodifluoromethane	ug/L	ND	20	19.2	96	47-155	
Diisopropyl ether	ug/L	ND	20	23.4	117	63-144	
Ethylbenzene	ug/L	ND	20	22.9	115	66-153	
Hexachloro-1,3-butadiene	ug/L	ND	20	20.2	101	65-149	
m&p-Xylene	ug/L	ND	40	46.2	116	69-152	
Methyl-tert-butyl ether	ug/L	ND	20	24.2	121	54-156	
Methylene Chloride	ug/L	ND	20	23.3	111	42-159	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
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QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

MATRIX SPIKE SAMPLE: 2555746

Parameter	Units	92425875006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/L	ND	20	23.2	116	61-148	
o-Xylene	ug/L	ND	20	23.1	116	70-148	
p-Isopropyltoluene	ug/L	ND	20	22.5	113	70-146	
Styrene	ug/L	ND	20	21.4	107	70-135	
Tetrachloroethene	ug/L	ND	20	22.0	110	59-143	
Toluene	ug/L	ND	20	22.8	114	59-148	
trans-1,2-Dichloroethene	ug/L	ND	20	24.3	122	70-146	
trans-1,3-Dichloropropene	ug/L	ND	20	20.2	101	70-135	
Trichloroethene	ug/L	ND	20	23.8	119	70-147	
Trichlorofluoromethane	ug/L	ND	20	24.5	122	70-148	
Vinyl acetate	ug/L	ND	40	35.2	88	49-151	
Vinyl chloride	ug/L	ND	20	23.4	117	70-156	
Xylene (Total)	ug/L	ND	60	69.3	116	63-158	
1,2-Dichloroethane-d4 (S)	%				104	70-130	
4-Bromofluorobenzene (S)	%				103	70-130	
Toluene-d8 (S)	%				100	70-130	

SAMPLE DUPLICATE: 2555745

Parameter	Units	92425875005 Result	Dup Result	RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		
1,1,1-Trichloroethane	ug/L	ND	ND		
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		
1,1,2-Trichloroethane	ug/L	ND	ND		
1,1-Dichloroethane	ug/L	ND	ND		
1,1-Dichloroethene	ug/L	ND	ND		
1,1-Dichloropropene	ug/L	ND	ND		
1,2,3-Trichlorobenzene	ug/L	ND	ND		
1,2,3-Trichloropropane	ug/L	ND	ND		
1,2,4-Trichlorobenzene	ug/L	ND	ND		
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		
1,2-Dibromoethane (EDB)	ug/L	ND	ND		
1,2-Dichlorobenzene	ug/L	ND	ND		
1,2-Dichloroethane	ug/L	ND	ND		
1,2-Dichloropropane	ug/L	ND	ND		
1,3-Dichlorobenzene	ug/L	ND	ND		
1,3-Dichloropropane	ug/L	ND	ND		
1,4-Dichlorobenzene	ug/L	ND	ND		
2,2-Dichloropropane	ug/L	ND	ND		
2-Butanone (MEK)	ug/L	ND	ND		
2-Chlorotoluene	ug/L	ND	ND		
2-Hexanone	ug/L	ND	ND		
4-Chlorotoluene	ug/L	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		
Acetone	ug/L	27.6	22.1J		

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

SAMPLE DUPLICATE: 2555745

Parameter	Units	92425875005 Result	Dup Result	RPD	Qualifiers
Benzene	ug/L	ND	ND		
Bromobenzene	ug/L	ND	ND		
Bromochloromethane	ug/L	ND	ND		IK
Bromodichloromethane	ug/L	ND	ND		
Bromoform	ug/L	ND	ND		IK
Bromomethane	ug/L	ND	ND		IK
Carbon tetrachloride	ug/L	ND	ND		
Chlorobenzene	ug/L	ND	ND		
Chloroethane	ug/L	ND	ND		IK
Chloroform	ug/L	ND	ND		
Chloromethane	ug/L	ND	ND		
cis-1,2-Dichloroethene	ug/L	ND	ND		
cis-1,3-Dichloropropene	ug/L	ND	ND		
Dibromochloromethane	ug/L	ND	ND		
Dibromomethane	ug/L	ND	ND		
Dichlorodifluoromethane	ug/L	ND	ND		
Diisopropyl ether	ug/L	ND	ND		
Ethylbenzene	ug/L	ND	ND		
Hexachloro-1,3-butadiene	ug/L	ND	ND		
m&p-Xylene	ug/L	ND	ND		
Methyl-tert-butyl ether	ug/L	ND	ND		
Methylene Chloride	ug/L	ND	ND		
Naphthalene	ug/L	ND	ND		
o-Xylene	ug/L	ND	ND		
p-Isopropyltoluene	ug/L	ND	ND		
Styrene	ug/L	ND	ND		
Tetrachloroethene	ug/L	ND	ND		
Toluene	ug/L	ND	ND		
trans-1,2-Dichloroethene	ug/L	ND	ND		
trans-1,3-Dichloropropene	ug/L	ND	ND		
Trichloroethene	ug/L	ND	ND		
Trichlorofluoromethane	ug/L	ND	ND		
Vinyl acetate	ug/L	ND	ND		
Vinyl chloride	ug/L	ND	ND		
Xylene (Total)	ug/L	ND	ND		
1,2-Dichloroethane-d4 (S)	%	103	100		
4-Bromofluorobenzene (S)	%	102	100		
Toluene-d8 (S)	%	111	108		

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

QC Batch: 470256 Analysis Method: EPA 8270E
QC Batch Method: EPA 3510C Analysis Description: 8270E Water MSSV RVE
Associated Lab Samples: 92425908001, 92425908002

METHOD BLANK: 2553172 Matrix: Water
Associated Lab Samples: 92425908001, 92425908002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	10.0	04/19/19 16:02	
1,2-Dichlorobenzene	ug/L	ND	10.0	04/19/19 16:02	
1,3-Dichlorobenzene	ug/L	ND	10.0	04/19/19 16:02	
1,4-Dichlorobenzene	ug/L	ND	10.0	04/19/19 16:02	
1-Methylnaphthalene	ug/L	ND	10.0	04/19/19 16:02	
2,2'-Oxybis(1-chloropropane)	ug/L	ND	10.0	04/19/19 16:02	
2,4,5-Trichlorophenol	ug/L	ND	10.0	04/19/19 16:02	
2,4,6-Trichlorophenol	ug/L	ND	10.0	04/19/19 16:02	
2,4-Dichlorophenol	ug/L	ND	10.0	04/19/19 16:02	
2,4-Dimethylphenol	ug/L	ND	10.0	04/19/19 16:02	
2,4-Dinitrophenol	ug/L	ND	50.0	04/19/19 16:02	
2,4-Dinitrotoluene	ug/L	ND	10.0	04/19/19 16:02	
2,6-Dinitrotoluene	ug/L	ND	10.0	04/19/19 16:02	
2-Chloronaphthalene	ug/L	ND	10.0	04/19/19 16:02	
2-Chlorophenol	ug/L	ND	10.0	04/19/19 16:02	
2-Methylnaphthalene	ug/L	ND	10.0	04/19/19 16:02	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	04/19/19 16:02	
2-Nitroaniline	ug/L	ND	50.0	04/19/19 16:02	
2-Nitrophenol	ug/L	ND	10.0	04/19/19 16:02	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	10.0	04/19/19 16:02	
3,3'-Dichlorobenzidine	ug/L	ND	20.0	04/19/19 16:02	
3-Nitroaniline	ug/L	ND	50.0	04/19/19 16:02	
4,6-Dinitro-2-methylphenol	ug/L	ND	20.0	04/19/19 16:02	
4-Bromophenylphenyl ether	ug/L	ND	10.0	04/19/19 16:02	
4-Chloro-3-methylphenol	ug/L	ND	20.0	04/19/19 16:02	
4-Chloroaniline	ug/L	ND	20.0	04/19/19 16:02	
4-Chlorophenylphenyl ether	ug/L	ND	10.0	04/19/19 16:02	
4-Nitroaniline	ug/L	ND	20.0	04/19/19 16:02	
4-Nitrophenol	ug/L	ND	50.0	04/19/19 16:02	
Acenaphthene	ug/L	ND	10.0	04/19/19 16:02	
Acenaphthylene	ug/L	ND	10.0	04/19/19 16:02	
Aniline	ug/L	ND	10.0	04/19/19 16:02	
Anthracene	ug/L	ND	10.0	04/19/19 16:02	
Benzo(a)anthracene	ug/L	ND	10.0	04/19/19 16:02	
Benzo(a)pyrene	ug/L	ND	10.0	04/19/19 16:02	
Benzo(b)fluoranthene	ug/L	ND	10.0	04/19/19 16:02	
Benzo(g,h,i)perylene	ug/L	ND	10.0	04/19/19 16:02	
Benzo(k)fluoranthene	ug/L	ND	10.0	04/19/19 16:02	
Benzoic Acid	ug/L	ND	50.0	04/19/19 16:02	
Benzyl alcohol	ug/L	ND	20.0	04/19/19 16:02	
bis(2-Chloroethoxy)methane	ug/L	ND	10.0	04/19/19 16:02	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
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(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

METHOD BLANK: 2553172 Matrix: Water
Associated Lab Samples: 92425908001, 92425908002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
bis(2-Chloroethyl) ether	ug/L	ND	10.0	04/19/19 16:02	
bis(2-Ethylhexyl)phthalate	ug/L	ND	6.0	04/19/19 16:02	
Butylbenzylphthalate	ug/L	ND	10.0	04/19/19 16:02	
Chrysene	ug/L	ND	10.0	04/19/19 16:02	
Di-n-butylphthalate	ug/L	ND	10.0	04/19/19 16:02	
Di-n-octylphthalate	ug/L	ND	10.0	04/19/19 16:02	
Dibenz(a,h)anthracene	ug/L	ND	10.0	04/19/19 16:02	
Dibenzofuran	ug/L	ND	10.0	04/19/19 16:02	
Diethylphthalate	ug/L	ND	10.0	04/19/19 16:02	
Dimethylphthalate	ug/L	ND	10.0	04/19/19 16:02	
Fluoranthene	ug/L	ND	10.0	04/19/19 16:02	
Fluorene	ug/L	ND	10.0	04/19/19 16:02	
Hexachloro-1,3-butadiene	ug/L	ND	10.0	04/19/19 16:02	
Hexachlorobenzene	ug/L	ND	10.0	04/19/19 16:02	
Hexachlorocyclopentadiene	ug/L	ND	10.0	04/19/19 16:02	
Hexachloroethane	ug/L	ND	10.0	04/19/19 16:02	
Indeno(1,2,3-cd)pyrene	ug/L	ND	10.0	04/19/19 16:02	
Isophorone	ug/L	ND	10.0	04/19/19 16:02	
N-Nitroso-di-n-propylamine	ug/L	ND	10.0	04/19/19 16:02	
N-Nitrosodimethylamine	ug/L	ND	10.0	04/19/19 16:02	
N-Nitrosodiphenylamine	ug/L	ND	10.0	04/19/19 16:02	
Naphthalene	ug/L	ND	10.0	04/19/19 16:02	
Nitrobenzene	ug/L	ND	10.0	04/19/19 16:02	
Pentachlorophenol	ug/L	ND	25.0	04/19/19 16:02	
Phenanthrene	ug/L	ND	10.0	04/19/19 16:02	
Phenol	ug/L	ND	10.0	04/19/19 16:02	
Pyrene	ug/L	ND	10.0	04/19/19 16:02	
2,4,6-Tribromophenol (S)	%	70	10-137	04/19/19 16:02	
2-Fluorobiphenyl (S)	%	54	13-130	04/19/19 16:02	
2-Fluorophenol (S)	%	45	10-130	04/19/19 16:02	
Nitrobenzene-d5 (S)	%	56	13-130	04/19/19 16:02	
Phenol-d6 (S)	%	33	10-130	04/19/19 16:02	
Terphenyl-d14 (S)	%	93	25-130	04/19/19 16:02	

LABORATORY CONTROL SAMPLE: 2553173

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/L	50	27.1	54	30-130	
1,2-Dichlorobenzene	ug/L	50	29.3	59	30-130	
1,3-Dichlorobenzene	ug/L	50	28.2	56	20-130	
1,4-Dichlorobenzene	ug/L	50	29.6	59	30-130	
1-Methylnaphthalene	ug/L	50	35.7	71	30-130	
2,2'-Oxybis(1-chloropropane)	ug/L	50	32.7	65	20-130	
2,4,5-Trichlorophenol	ug/L	50	35.4	71	40-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

LABORATORY CONTROL SAMPLE: 2553173

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	34.4	69	40-130	
2,4-Dichlorophenol	ug/L	50	35.3	71	31-130	
2,4-Dimethylphenol	ug/L	50	37.4	75	30-130	
2,4-Dinitrophenol	ug/L	250	ND	5	30-130	L2
2,4-Dinitrotoluene	ug/L	50	41.3	83	49-130	
2,6-Dinitrotoluene	ug/L	50	38.1	76	50-130	
2-Chloronaphthalene	ug/L	50	30.1	60	30-130	
2-Chlorophenol	ug/L	50	36.5	73	30-130	
2-Methylnaphthalene	ug/L	50	34.4	69	30-130	
2-Methylphenol(o-Cresol)	ug/L	50	37.0	74	30-130	
2-Nitroaniline	ug/L	100	76.3	76	40-130	
2-Nitrophenol	ug/L	50	34.6	69	20-130	
3&4-Methylphenol(m&p Cresol)	ug/L	50	33.5	67	20-130	
3,3'-Dichlorobenzidine	ug/L	100	77.8	78	10-150	
3-Nitroaniline	ug/L	100	84.0	84	40-130	
4,6-Dinitro-2-methylphenol	ug/L	100	46.1	46	40-130	
4-Bromophenylphenyl ether	ug/L	50	35.3	71	30-130	
4-Chloro-3-methylphenol	ug/L	100	72.7	73	30-130	
4-Chloroaniline	ug/L	100	74.5	75	20-130	
4-Chlorophenylphenyl ether	ug/L	50	34.5	69	20-130	
4-Nitroaniline	ug/L	100	91.7	92	40-130	
4-Nitrophenol	ug/L	250	48.6J	19	10-130	
Acenaphthene	ug/L	50	37.0	74	30-130	
Acenaphthylene	ug/L	50	39.1	78	30-130	
Aniline	ug/L	50	34.1	68	20-130	
Anthracene	ug/L	50	43.9	88	50-130	
Benzo(a)anthracene	ug/L	50	45.3	91	50-130	
Benzo(a)pyrene	ug/L	50	45.2	90	50-130	
Benzo(b)fluoranthene	ug/L	50	45.4	91	50-130	
Benzo(g,h,i)perylene	ug/L	50	47.8	96	50-130	
Benzo(k)fluoranthene	ug/L	50	47.3	95	50-130	
Benzoic Acid	ug/L	250	ND	0	10-130	L2
Benzyl alcohol	ug/L	100	71.0	71	20-130	
bis(2-Chloroethoxy)methane	ug/L	50	35.9	72	30-130	
bis(2-Chloroethyl) ether	ug/L	50	36.8	74	30-130	
bis(2-Ethylhexyl)phthalate	ug/L	50	41.8	84	50-130	
Butylbenzylphthalate	ug/L	50	38.8	78	50-150	
Chrysene	ug/L	50	45.2	90	50-130	
Di-n-butylphthalate	ug/L	50	42.4	85	50-130	
Di-n-octylphthalate	ug/L	50	40.9	82	50-130	
Dibenz(a,h)anthracene	ug/L	50	49.4	99	40-130	
Dibenzofuran	ug/L	50	34.6	69	40-130	
Diethylphthalate	ug/L	50	41.7	83	40-130	
Dimethylphthalate	ug/L	50	39.7	79	40-130	
Fluoranthene	ug/L	50	47.6	95	30-130	
Fluorene	ug/L	50	39.4	79	20-130	
Hexachloro-1,3-butadiene	ug/L	50	25.8	52	10-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

LABORATORY CONTROL SAMPLE: 2553173

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Hexachlorobenzene	ug/L	50	37.4	75	30-130	
Hexachlorocyclopentadiene	ug/L	50	23.9	48	10-150	
Hexachloroethane	ug/L	50	27.0	54	10-130	
Indeno(1,2,3-cd)pyrene	ug/L	50	48.1	96	40-130	
Isophorone	ug/L	50	34.6	69	30-130	
N-Nitroso-di-n-propylamine	ug/L	50	35.7	71	30-130	
N-Nitrosodimethylamine	ug/L	50	31.8	64	10-130	
N-Nitrosodiphenylamine	ug/L	50	38.4	77	30-130	
Naphthalene	ug/L	50	35.1	70	20-130	
Nitrobenzene	ug/L	50	33.7	67	20-130	
Pentachlorophenol	ug/L	100	64.9	65	10-140	
Phenanthrene	ug/L	50	44.0	88	50-130	
Phenol	ug/L	50	22.6	45	10-130	
Pyrene	ug/L	50	42.4	85	50-130	
2,4,6-Tribromophenol (S)	%			89	10-137	
2-Fluorobiphenyl (S)	%			71	13-130	
2-Fluorophenol (S)	%			61	10-130	
Nitrobenzene-d5 (S)	%			76	13-130	
Phenol-d6 (S)	%			48	10-130	
Terphenyl-d14 (S)	%			83	25-130	

MATRIX SPIKE SAMPLE: 2553236

Parameter	Units	92425875001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	50	12.3	25	30-130	M1
1,2-Dichlorobenzene	ug/L	ND	50	13.9	28	30-130	M1
1,3-Dichlorobenzene	ug/L	ND	50	13.2	26	20-130	
1,4-Dichlorobenzene	ug/L	ND	50	14.4	27	30-130	M1
1-Methylnaphthalene	ug/L	ND	50	16.8	34	30-130	
2,2'-Oxybis(1-chloropropane)	ug/L	ND	50	13.8	28	20-130	
2,4,5-Trichlorophenol	ug/L	ND	50	18.3	37	40-130	M1
2,4,6-Trichlorophenol	ug/L	ND	50	16.6	33	40-130	M1
2,4-Dichlorophenol	ug/L	ND	50	15.2	30	31-130	M1
2,4-Dimethylphenol	ug/L	ND	50	14.3	29	30-130	M1
2,4-Dinitrophenol	ug/L	ND	250	162	65	30-130	
2,4-Dinitrotoluene	ug/L	ND	50	30.4	61	49-130	
2,6-Dinitrotoluene	ug/L	ND	50	22.5	45	50-130	M1
2-Chloronaphthalene	ug/L	ND	50	13.9	28	30-130	M1
2-Chlorophenol	ug/L	ND	50	15.7	31	30-130	
2-Methylnaphthalene	ug/L	ND	50	16.3	33	30-130	
2-Methylphenol(o-Cresol)	ug/L	ND	50	16.0	32	30-130	
2-Nitroaniline	ug/L	ND	100	44.6J	45	40-130	
2-Nitrophenol	ug/L	ND	50	15.4	31	20-130	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	50	14.2	28	20-130	
3,3'-Dichlorobenzidine	ug/L	ND	100	24.4	24	10-150	

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REPORT OF LABORATORY ANALYSIS

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Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

MATRIX SPIKE SAMPLE: 2553236

Parameter	Units	92425875001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
3-Nitroaniline	ug/L	ND	100	53.9	54	40-130	
4,6-Dinitro-2-methylphenol	ug/L	ND	100	71.8	72	40-130	
4-Bromophenylphenyl ether	ug/L	ND	50	22.5	45	30-130	
4-Chloro-3-methylphenol	ug/L	ND	100	37.2	37	30-130	
4-Chloroaniline	ug/L	ND	100	25.0	25	20-130	
4-Chlorophenylphenyl ether	ug/L	ND	50	18.7	37	20-130	
4-Nitroaniline	ug/L	ND	100	66.6	67	40-130	
4-Nitrophenol	ug/L	ND	250	121	48	10-130	
Acenaphthene	ug/L	ND	50	19.0	38	30-130	
Acenaphthylene	ug/L	ND	50	19.4	39	30-130	
Aniline	ug/L	ND	50	3.2J	6	20-130	M1
Anthracene	ug/L	ND	50	32.7	65	50-130	
Benzo(a)anthracene	ug/L	ND	50	36.1	72	50-130	
Benzo(a)pyrene	ug/L	ND	50	35.6	71	50-130	
Benzo(b)fluoranthene	ug/L	ND	50	36.1	72	50-130	
Benzo(g,h,i)perylene	ug/L	ND	50	36.4	73	50-130	
Benzo(k)fluoranthene	ug/L	ND	50	37.2	74	50-130	
Benzoic Acid	ug/L	ND	250	60.2	24	10-130	
Benzyl alcohol	ug/L	ND	100	30.0	30	20-130	
bis(2-Chloroethoxy)methane	ug/L	ND	50	15.2	30	30-130	
bis(2-Chloroethyl) ether	ug/L	ND	50	15.6	31	30-130	
bis(2-Ethylhexyl)phthalate	ug/L	ND	50	33.1	66	50-130	
Butylbenzylphthalate	ug/L	ND	50	32.1	64	50-150	
Chrysene	ug/L	ND	50	36.3	73	50-130	
Di-n-butylphthalate	ug/L	ND	50	35.2	70	50-130	
Di-n-octylphthalate	ug/L	ND	50	33.3	67	50-130	
Dibenz(a,h)anthracene	ug/L	ND	50	37.2	74	40-130	
Dibenzofuran	ug/L	ND	50	17.9	36	40-130	M1
Diethylphthalate	ug/L	ND	50	30.3	61	40-130	
Dimethylphthalate	ug/L	ND	50	24.8	50	40-130	
Fluoranthene	ug/L	ND	50	39.9	80	30-130	
Fluorene	ug/L	ND	50	23.0	46	20-130	
Hexachloro-1,3-butadiene	ug/L	ND	50	11.1	22	10-130	
Hexachlorobenzene	ug/L	ND	50	22.3	45	30-130	
Hexachlorocyclopentadiene	ug/L	ND	50	10.7	21	10-150	
Hexachloroethane	ug/L	ND	50	12.3	25	10-130	
Indeno(1,2,3-cd)pyrene	ug/L	ND	50	36.6	73	40-130	
Isophorone	ug/L	ND	50	16.4	33	30-130	
N-Nitroso-di-n-propylamine	ug/L	ND	50	16.4	33	30-130	
N-Nitrosodimethylamine	ug/L	ND	50	14.4	29	10-130	
N-Nitrosodiphenylamine	ug/L	ND	50	8.5J	17	30-130	M1
Naphthalene	ug/L	ND	50	17.4	35	20-130	
Nitrobenzene	ug/L	ND	50	15.2	30	20-130	
Pentachlorophenol	ug/L	ND	100	63.7	64	10-140	
Phenanthrene	ug/L	ND	50	33.9	68	50-130	
Phenol	ug/L	ND	50	10.5	21	10-130	
Pyrene	ug/L	ND	50	34.8	70	50-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

MATRIX SPIKE SAMPLE: 2553236

Parameter	Units	92425875001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
2,4,6-Tribromophenol (S)	%				58	10-137	
2-Fluorobiphenyl (S)	%				30	13-130	
2-Fluorophenol (S)	%				26	10-130	
Nitrobenzene-d5 (S)	%				33	13-130	
Phenol-d6 (S)	%				20	10-130	
Terphenyl-d14 (S)	%				61	25-130	

SAMPLE DUPLICATE: 2553237

Parameter	Units	92425875002 Result	Dup Result	RPD	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	ND		
1,2-Dichlorobenzene	ug/L	ND	ND		
1,3-Dichlorobenzene	ug/L	ND	ND		
1,4-Dichlorobenzene	ug/L	ND	ND		
1-Methylnaphthalene	ug/L	ND	2.1J		
2,2'-Oxybis(1-chloropropane)	ug/L	ND	ND		
2,4,5-Trichlorophenol	ug/L	ND	ND		
2,4,6-Trichlorophenol	ug/L	ND	ND		
2,4-Dichlorophenol	ug/L	ND	ND		
2,4-Dimethylphenol	ug/L	ND	ND		
2,4-Dinitrophenol	ug/L	ND	ND		
2,4-Dinitrotoluene	ug/L	ND	ND		
2,6-Dinitrotoluene	ug/L	ND	ND		
2-Chloronaphthalene	ug/L	ND	ND		
2-Chlorophenol	ug/L	ND	ND		
2-Methylnaphthalene	ug/L	3.1J	5.5J		
2-Methylphenol(o-Cresol)	ug/L	ND	ND		
2-Nitroaniline	ug/L	ND	ND		
2-Nitrophenol	ug/L	ND	ND		
3&4-Methylphenol(m&p Cresol)	ug/L	ND	ND		
3,3'-Dichlorobenzidine	ug/L	ND	ND		
3-Nitroaniline	ug/L	ND	ND		
4,6-Dinitro-2-methylphenol	ug/L	ND	ND		
4-Bromophenylphenyl ether	ug/L	ND	ND		
4-Chloro-3-methylphenol	ug/L	ND	ND		
4-Chloroaniline	ug/L	ND	ND		
4-Chlorophenylphenyl ether	ug/L	ND	ND		
4-Nitroaniline	ug/L	ND	ND		
4-Nitrophenol	ug/L	ND	ND		
Acenaphthene	ug/L	ND	ND		
Acenaphthylene	ug/L	ND	ND		
Aniline	ug/L	ND	ND		
Anthracene	ug/L	ND	ND		
Benzo(a)anthracene	ug/L	ND	ND		
Benzo(a)pyrene	ug/L	ND	ND		

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

SAMPLE DUPLICATE: 2553237

Parameter	Units	92425875002 Result	Dup Result	RPD	Qualifiers
Benzo(b)fluoranthene	ug/L	ND	ND		
Benzo(g,h,i)perylene	ug/L	ND	ND		
Benzo(k)fluoranthene	ug/L	ND	ND		
Benzoic Acid	ug/L	ND	ND		
Benzyl alcohol	ug/L	ND	ND		
bis(2-Chloroethoxy)methane	ug/L	ND	ND		
bis(2-Chloroethyl) ether	ug/L	ND	ND		
bis(2-Ethylhexyl)phthalate	ug/L	ND	ND		
Butylbenzylphthalate	ug/L	ND	ND		
Chrysene	ug/L	ND	ND		
Di-n-butylphthalate	ug/L	ND	ND		
Di-n-octylphthalate	ug/L	ND	ND		
Dibenz(a,h)anthracene	ug/L	ND	ND		
Dibenzofuran	ug/L	ND	ND		
Diethylphthalate	ug/L	ND	ND		
Dimethylphthalate	ug/L	ND	ND		
Fluoranthene	ug/L	ND	ND		
Fluorene	ug/L	ND	ND		
Hexachloro-1,3-butadiene	ug/L	ND	ND		
Hexachlorobenzene	ug/L	ND	ND		
Hexachlorocyclopentadiene	ug/L	ND	ND		
Hexachloroethane	ug/L	ND	ND		
Indeno(1,2,3-cd)pyrene	ug/L	ND	ND		
Isophorone	ug/L	ND	ND		
N-Nitroso-di-n-propylamine	ug/L	ND	ND		
N-Nitrosodimethylamine	ug/L	ND	ND		
N-Nitrosodiphenylamine	ug/L	ND	ND		
Naphthalene	ug/L	7.8J	13.6		
Nitrobenzene	ug/L	ND	ND		
Pentachlorophenol	ug/L	ND	ND		
Phenanthrene	ug/L	ND	ND		
Phenol	ug/L	ND	2.7J		
Pyrene	ug/L	ND	ND		
2,4,6-Tribromophenol (S)	%	59	69		
2-Fluorobiphenyl (S)	%	51	57		
2-Fluorophenol (S)	%	46	48		
Nitrobenzene-d5 (S)	%	55	60		
Phenol-d6 (S)	%	36	37		
Terphenyl-d14 (S)	%	72	73		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: U5797
Pace Project No.: 92425908

QC Batch: 470258
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92425908003, 92425908004

SAMPLE DUPLICATE: 2553186

Parameter	Units	92425748006 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	18.6	16.4	13	

SAMPLE DUPLICATE: 2553187

Parameter	Units	92425874002 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	4.5	5.2	14	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALIFIERS

Project: U5797
Pace Project No.: 92425908

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
H2	Extraction or preparation conducted outside EPA method holding time.
IK	The recalculated concentration of the calibration standard(s) did not meet method acceptance criteria; this result should be considered an estimated value.
L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
P2	Re-extraction or re-analysis could not be performed due to insufficient sample amount.
S0	Surrogate recovery outside laboratory control limits.

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: U5797
Pace Project No.: 92425908

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92425908001	**B3**	EPA 3510C	470256	EPA 8270E	470471
92425908002	**B5.1**	EPA 3510C	470256	EPA 8270E	470471
92425908003	**B18**	EPA 5035A	470498	EPA 8260D	470560
92425908004	**B19**	EPA 5035A	470498	EPA 8260D	470560
92425908001	**B3**	EPA 8260D	470847		
92425908002	**B5.1**	EPA 8260D	470847		
92425908003	**B18**	ASTM D2974-87	470258		
92425908004	**B19**	ASTM D2974-87	470258		

Pace Analytical	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: February 7, 2018 Page 1 of 1
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☐ Raleigh ☑ Mechanicsville ☐

Sample Condition Upon Receipt

Client Name: Falcon Engineering Project

WO# : 92425908

92425908

Courier: ☐ Commercial ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ Other:

Custody Seal Present? ☐ Yes ☑ No Seals Intact? ☐ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Date/Initials Person Examining Contents: WBT 4/12/19

Thermometer: ☐ IR Gun ID: 9ITC005

Type of Ice: ☑ Wet ☐ Blue ☐ None

Biological Tissue Frozen? ☐ Yes ☐ No ☑ N/A

Cooler Temp (°C): 10.1 Correction Factor: Add/Subtract (°C) -0.1

Cooler Temp Corrected (°C): 10.0

Temp should be above freezing to 6°C
☑ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☑ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☐ No	☑ N/A	8.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: WT SL				
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☐ No	☑ N/A	10.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	11.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	

COMMENTS/SAMPLE DISCREPANCY

Field data required? ☐ Yes ☐ No

CLIENT NOTIFICATION/RESOLUTION Lot ID of split containers:

Person contacted: Date/Time:

Project Manager SCURF Review: JH Date: 4/18/19

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Excepitons: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Project: **WO#: 92425908**

PM: TIH **Due Date: 04/26/18**

CLIENT: 92-FALCON

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass Jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG0U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1	\																										
2	\																										
3	\																										
4	\																										
5	\																										
6	\																										
7	\																										
8	\																										
9	\																										
10	\																										
11	\																										
12	\																										

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e.

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page : 1 Of 1

Section A — Required Client Information:

Company:	Falcon Engineering
Address:	1210 Trinity Road
	Suite 110, Raleigh, NC 27513
Email:	
Phone:	919 730 0064 Fax
Requested Due Date:	

Section B — Required Project Information:

Report To:	Christopher Burkhardt
Copy To:	
Purchase Order #:	G19011
Project Name:	[redacted] U597
Project #:	G1901

Section C — Invoice Information:

Attention:	SAME
Company Name:	
Address:	
Pace Quote:	G19011 U597 7
Pace Project Manager:	tyriek.hooks@pacelabs.com,
Pace Profile #:	2766

Regulatory Agency: NC DOT

State / Location: NC

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test: 8260	8270	Y/N	Residual Chlorine (Y/N)	
1	B5	WT	G	4/10	830					X			X					X	X			9242908
2	B5.1	WT		4/10	1230													X	X			UST (Petro) 001
3	B18	SL		4/10	1441													X	X			UST (Petro) 002
4	B19	SL		4/10	1510													X				Cleaners 003
5																						Cleaners 004
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
CHRISTOPHER BURKHARDT	4/10	15:45	[signature]	4/10/19	~~15:45~~	4/11/19

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: CHRISTOPHER BURKHARDT

SIGNATURE of SAMPLER: [signature]

DATE Signed: 4/11/19

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2019-091)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 9
NCDOT PROJECT U-5797

2303 FAYETTEVILLE RD., LUMBERTON, NC

APRIL 22, 2019

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

Prepared by: _____

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

Reviewed by: _____

Douglas A. Canavello, 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 9 - 2303 Fayetteville Rd.
Lumberton, Robeson County, North Carolina

Table of Contents

Figures

LIST OF ACRONYMS

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

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Falcon Engineers at Parcel 9, located at 2303 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 19-25, 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 eleven 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 unknown buried metal and was investigated further with GPR.

GPR provided evidence of two isolated hyperbolic reflectors and two discreet lateral reflectors on the southwest side of the building that are characteristic of USTs. The combined geophysical data resulted in these features being classified as two probable metallic USTs. The western probable metallic UST (UST #1) was approximately 12 feet long and 5.5 feet wide at a depth of approximately 2 feet below the ground surface. The eastern probable metallic UST (UST#2) was approximately 7 feet long and 5 feet wide at a depth of approximately 2 feet below the ground surface. Collectively, the geophysical data recorded evidence of two probable USTs within the geophysical survey area at Parcel 9.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Falcon Engineers at Parcel 9, located at 2303 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 19-25, 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 restaurant 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

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 25, 2019, using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. Data were collected both in reconnaissance fashion as well as along formal transect lines across EM features. The GPR data were viewed in real-time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 6 feet, based on dielectric constants calculated by the DF unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the DF unit for post-processing and figure generation.

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

Geophysical Surveys for Underground Storage Tanks
on NCDOT Projects

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

DISCUSSION OF RESULTS

Discussion of EM Results

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

LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY

Metallic Anomaly #	Cause of Anomaly	Investigated with GPR
1	Signs	
2	Sign/Utilities	
3	Utility	
4	Building	
5	Sign	
6	Storm Drain	
7	Water Meter	
8	**Two Probable USTs**	☑
9	Signs	
10	Metal Pole	
11	Surface Metal	

The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface, including signs, utilities, a storm drain, a water meter, a metal pole, and surface metal. EM Anomaly 8 was associated with unknown buried metal and was further investigated with GPR.

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 8 and recorded two isolated hyperbolic reflectors and two discreet lateral reflectors on the southwest side of the building that are characteristic of USTs.

The combined geophysical data resulted in these features being classified as two probable metallic USTs. The western probable metallic UST (UST #1) was approximately 12 feet long and 5.5 feet wide at a depth of approximately 2 feet below the ground surface. The eastern probable metallic UST (UST#2) was approximately 7 feet long and 5 feet wide at a depth of approximately 2 feet below the ground surface. **Figure 4** provides the locations and sizes of the two probable USTs overlain on an aerial, along with ground-level photographs.

Collectively, the geophysical data recorded evidence of two probable USTs within the geophysical survey area at Parcel 9. **Figure 5** provides an overlay of the EM61 metal detection contour map, along with the locations of the two probable USTs, onto the NCDOT MicroStation engineering plans for reference.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 and GPR data collected at Parcel 9 in Lumberton, North Carolina, provides the following summary and conclusions:

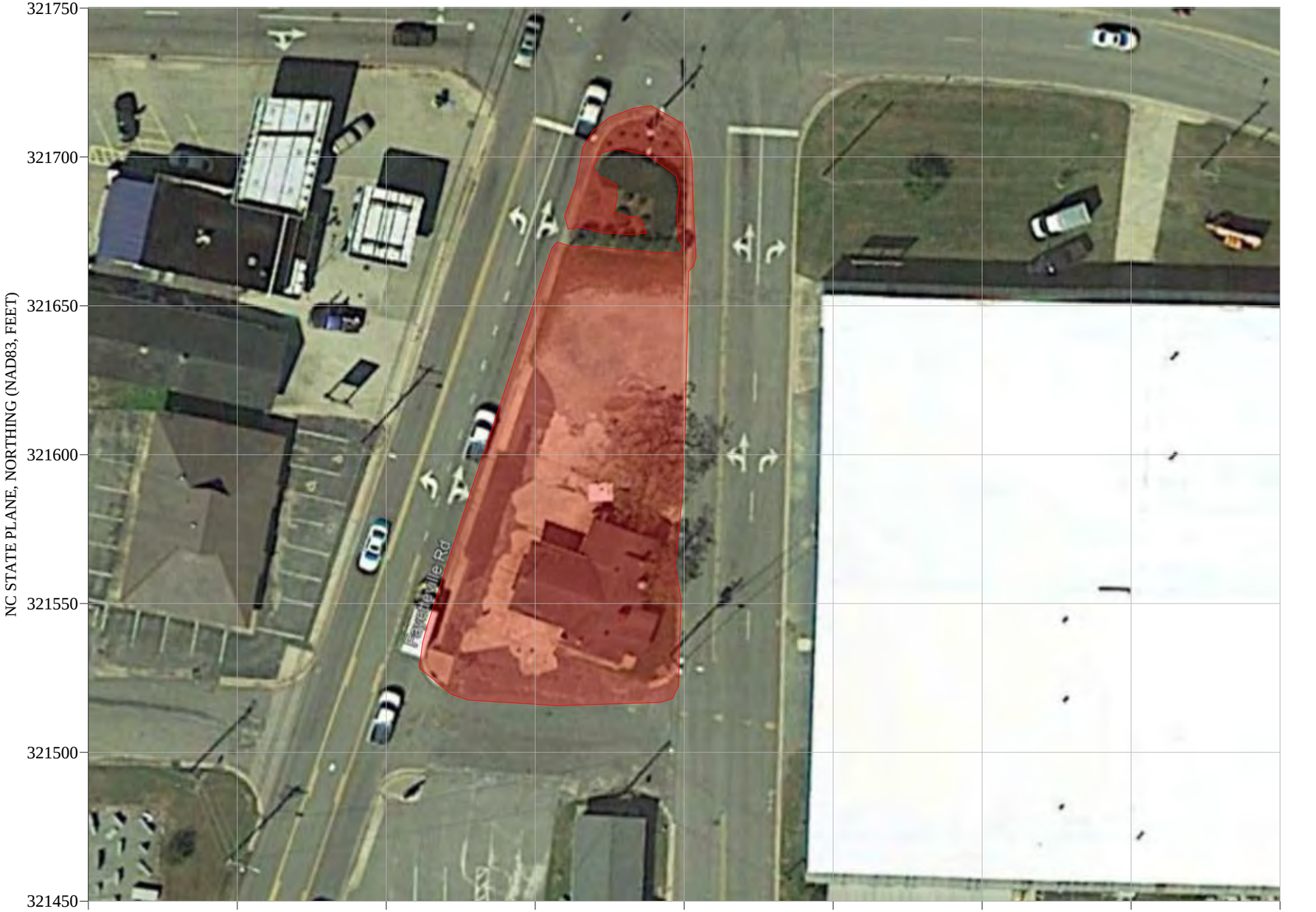
- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface.
- One EM anomaly was associated with unknown buried metal and was investigated further with GPR.
- GPR provided evidence of two isolated hyperbolic reflectors and two discreet lateral reflectors on the southwest side of the building that are characteristic of USTs. The combined geophysical data resulted in these features being classified as two probable metallic USTs.
- The western probable metallic UST (UST #1) was approximately 12 feet long and 5.5 feet wide at a depth of approximately 2 feet below the ground surface. The eastern probable metallic UST (UST#2) was approximately 7 feet long and 5 feet wide at a depth of approximately 2 feet below the ground surface.
- Collectively, the geophysical data recorded evidence of two probable USTs within the geophysical survey area at Parcel 9.

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 North)

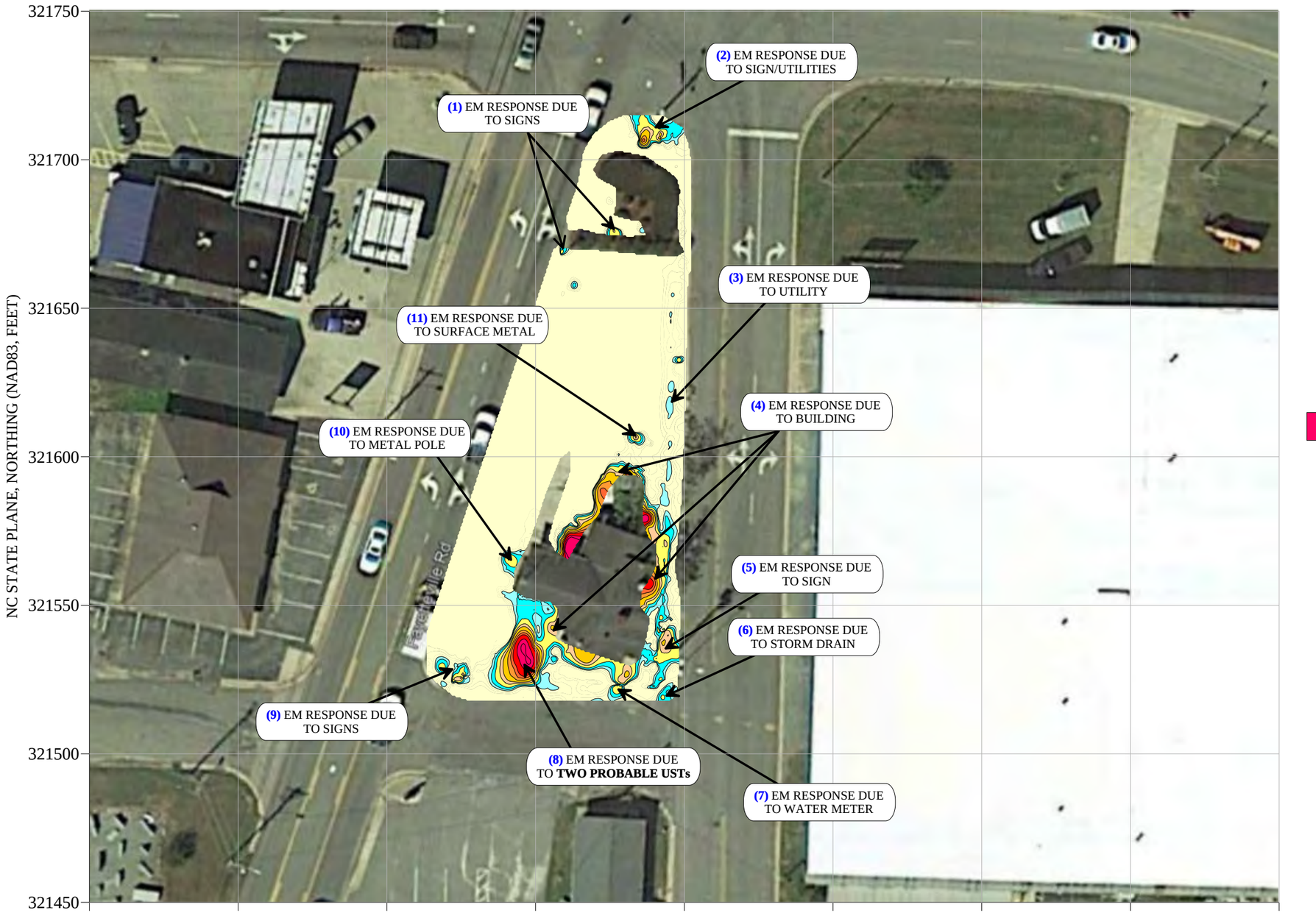
View of Survey Area
(Facing Approximately South)

N

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

PROJECT	PARCEL 9 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797
TITLE	PARCEL 9 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS
DATE	3/25/2019
PYRAMID PROJECT #:	2019-091
CLIENT	FALCON ENGINEERS
	FIGURE 1

EM61 METAL DETECTION RESULTS



EVIDENCE OF TWO PROBABLE 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 25, 2019.

EM61 Metal Detection Response (millivolts)

N

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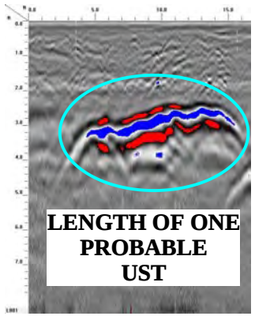
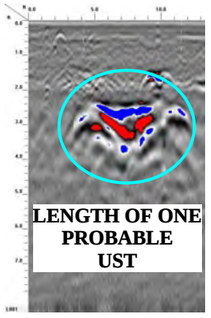
PROJECT	PARCEL 9 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797
TITLE	PARCEL 9 - EM61 METAL DETECTION CONTOUR MAP
DATE	3/25/2019
PYRAMID PROJECT #:	2019-091
CLIENT	FALCON ENGINEERS
	FIGURE 2

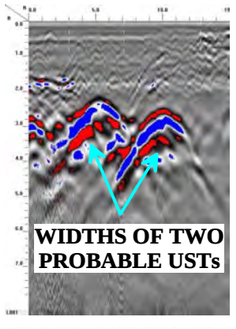
LOCATIONS OF GPR TRANSECTS



GPR TRANSECT 1 (T1)



GPR TRANSECT 2 (T2)



GPR TRANSECT 3 (T3)

N

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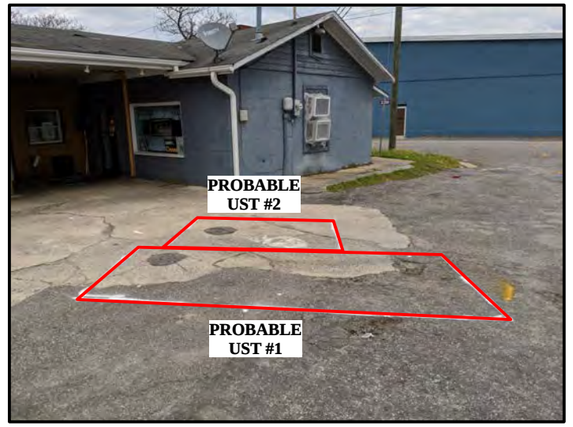
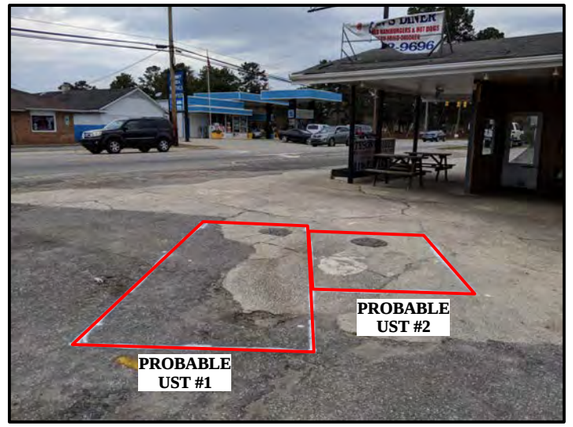
GREENSBORO, NC 27406
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

PROJECT	PARCEL 9 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797	TITLE	PARCEL 9 - GPR TRANSECT LOCATIONS AND IMAGES	DATE 3/25/2019 PYRAMID PROJECT #: 2019-091
CLIENT	FALCON ENGINEERS			**FIGURE 3**

LOCATIONS OF TWO PROBABLE USTs



View of Two Probable USTs Facing Approximately East



View of Two Probable USTs Facing Approximately North

N

PYRAMID GEOPHYSICS 503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	PROJECT PARCEL 9 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797	TITLE PARCEL 9 - LOCATIONS AND SIZES OF TWO PROBABLE USTs	DATE 3/25/2019 PYRAMID PROJECT #: 2019-091	CLIENT FALCON ENGINEERS **FIGURE 4**

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

TWO PROBABLE USTs

LEGEND

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

MILLIVOLTS (mV)

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

0 15 30
FEET

N

TITLE	OVERLAY OF METAL DETECTION RESULTS AND TWO PROBABLE USTs ON NCDOT ENGINEERING PLANS
PROJECT	PARCEL 009 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797
PYRAMID GEOPHYSICS	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. 5

PRELIMINARY SITE ASSESSMENT

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

NCDOT PARCEL NO. 11
OWNER: PAIT, JEAN MORRISON
2400 FAYETTEVILLE ROAD
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

FALCON ENGINEERING

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. 11
Owner: Pait, Jean Morrison
2400 Fayetteville Road
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. However; groundwater contamination above the North Carolina Groundwater Quality Standards but below the Gross Contamination Levels from the north adjoining gas station (NCDOT Parcel No. 3) may be present under the site. Groundwater is estimated to be at 8-10' below ground surface.

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.

Christopher J. Burkhardt
Environmental Services Manager

Jeremy R. Hamm, PE
Geotechnical Services Manager

TABLE OF CONTENTS

LIST OF FIGURES AND ATTACHMENTS

SECTION 1: INTRODUCTION

1.1 DESCRIPTION

Falcon Engineering, Inc. (Falcon) has completed a Preliminary Site Assessment of NCDOT TIP Project U-5797 Parcel No. 11. Parcel No. 11 is addressed as 2400 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 methods, 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 surrounding parcels. This parcel is developed with a large warehouse. The Phase I ESA identified several bulk oil facilities and UST's with addresses in this area that no longer correspond to the current addresses. The exact locations of the oil facilities and USTs is unknown.

2.2 FACILITY IDENTIFICATION NUMBER

A Facility Identification Number was not identified for 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 within the project limits. However, access to the building was not feasible. Windows with unobstructed views of the interior were not observed. Therefore; USTs and hydraulic lifts on this parcel cannot be ruled out.

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 between March 18 and March 26, 2019 to investigate for unknown, metallic underground storage tanks (USTs) beneath the survey area. A total of twelve EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. Additional EM anomalies were associated with interference from the building, a trailer, and vehicles and were further investigated with GPR. These GPR transects did not record any evidence of buried structures, such as USTs.

5.2 SAMPLE DATA

Falcon and our subcontractor advanced one boring (B-8) to the proposed excavation depth of the drainage features, utilities, or roadway/ditch cut being assessed. Groundwater was not observed. Please see the boring location 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-8	34.6345094	-79.0029466

Borings were field screened with a PID in two-foot 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-8	0-2.0	1.3
	2.0-4.0	**1.2**

*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-8	<0.22	<0.22	<0.22	<0.22	<0.04	<0.07	<0.009	0	91.6	8.4	Residual HC

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-8	0-2.0	Brown Orange	Sandy Clay (A-6)
	2.0-4.0	Brown Orange	Sandy Clay (A-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 evidence of unknown metallic USTs within the geophysical survey area at Parcel 11. 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 contaminates 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

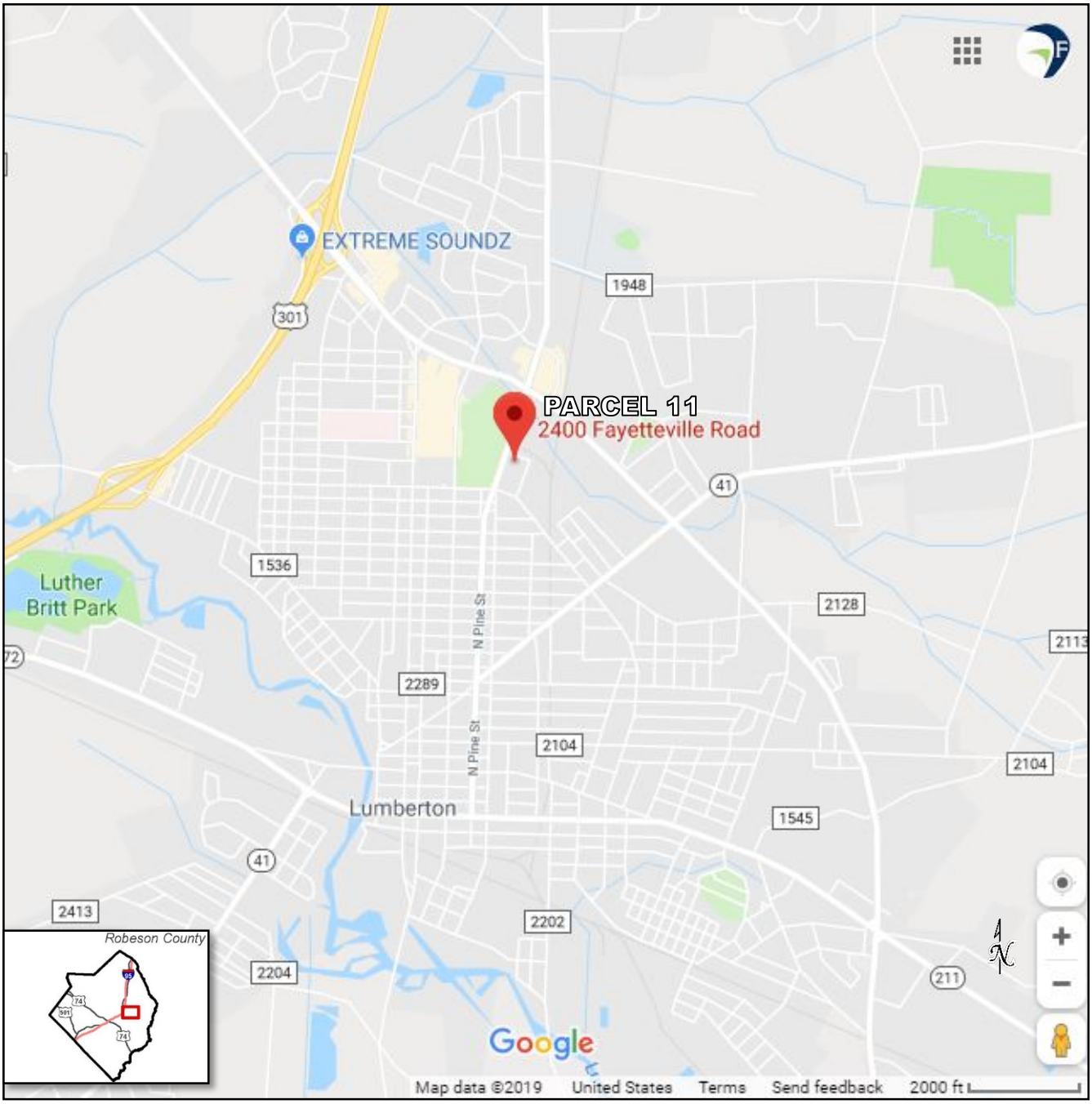
7.1 ADDITIONAL SAMPLING

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

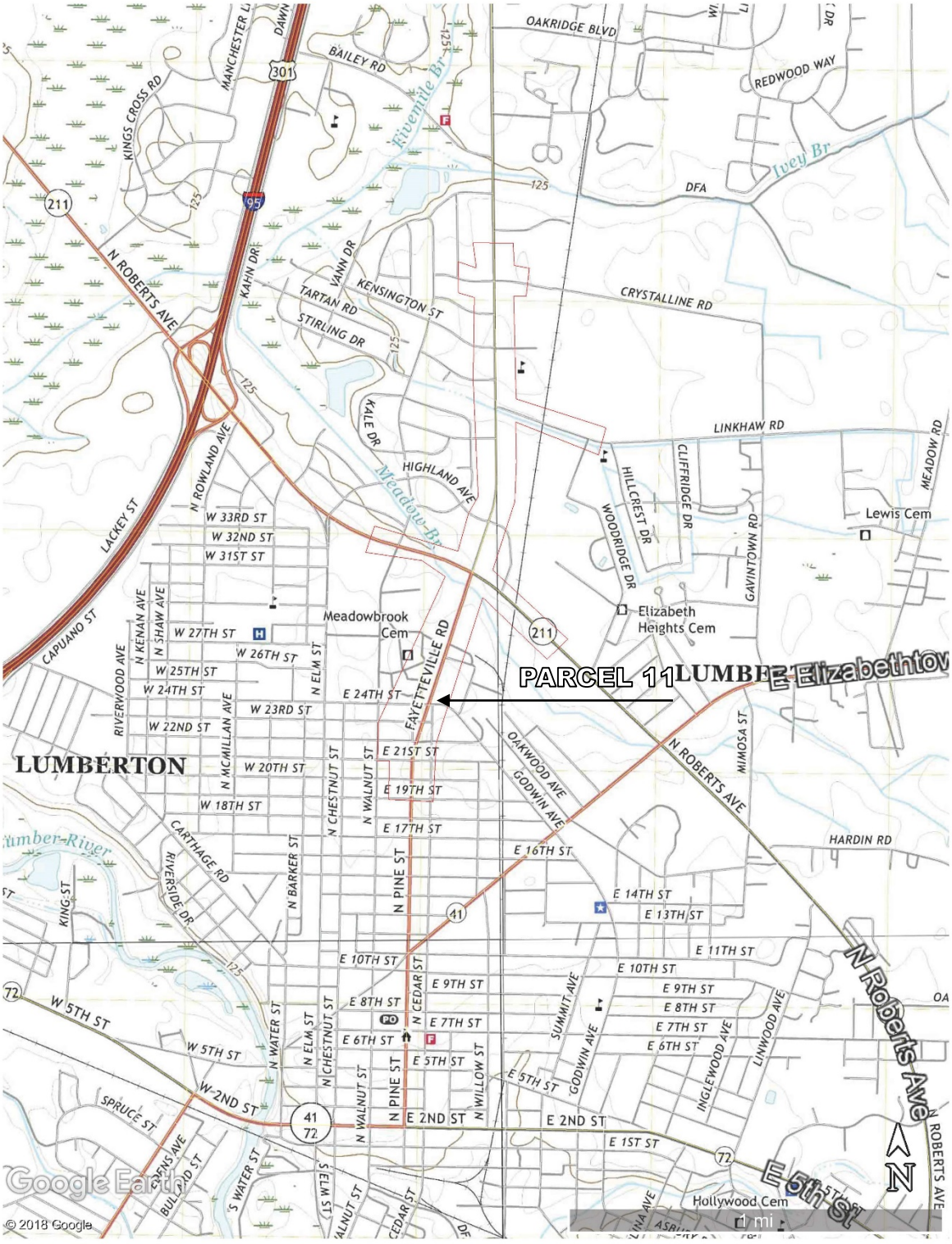
Soils requiring special handling were not identified. If suspect contaminated soils are encountered during construction Falcon and the NCDOT GeoEnvironmental Group should be contacted for proper handling instructions.

NCDOT U-5797 (SR 1997 Widening) Parcel 11
Preliminary Site Assessment
Vicinity Map



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

NCDOT U-5797 (SR 1997 Widening) Parcel 11
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 11
Preliminary Site Assessment
Parcel Location Map

September 5, 2019

1:4,275

0 0.035 0.07 0.14 mi

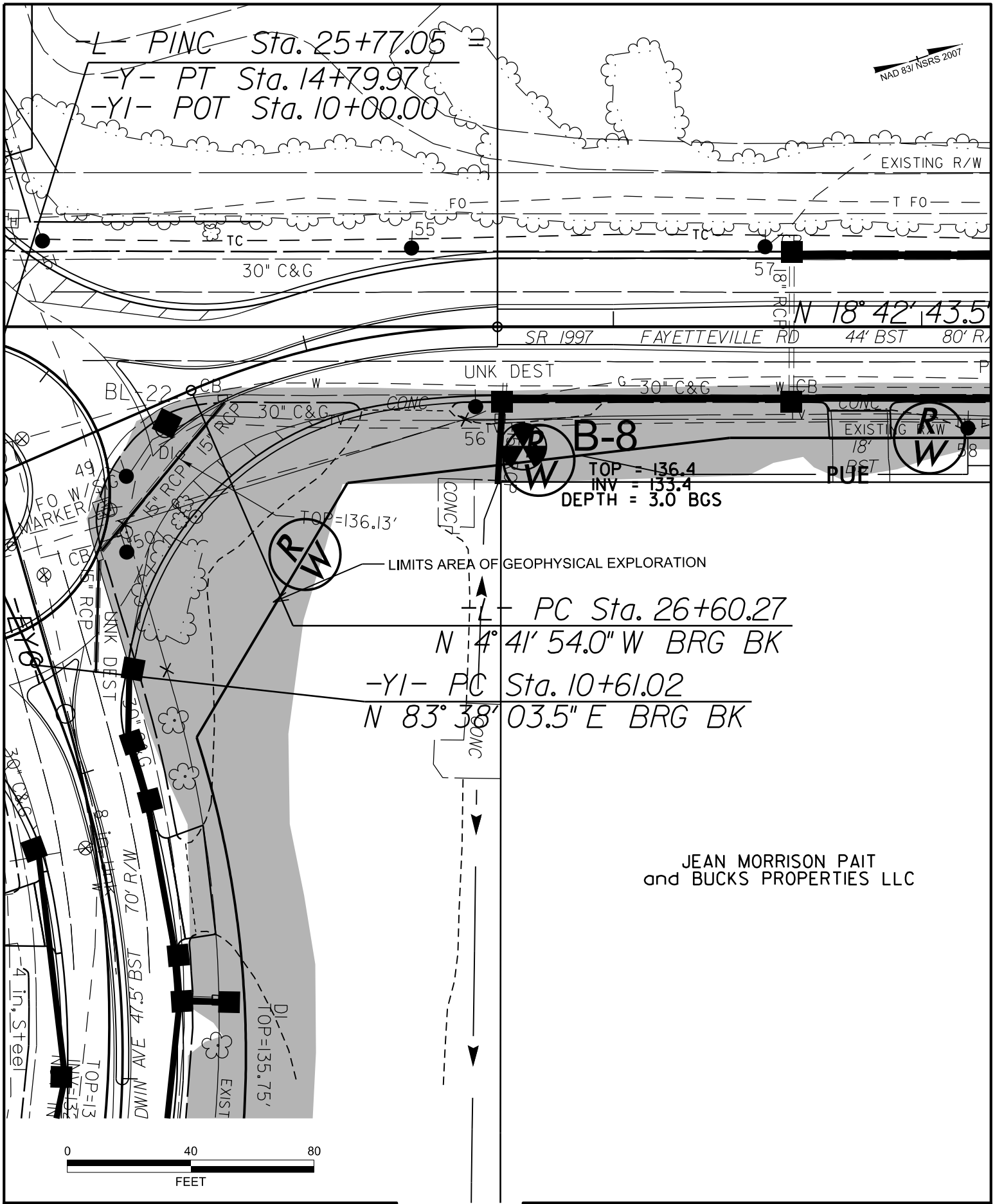
0 0.05 0.1 0.2 km

- 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

2019

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 11 - PAIT
ROBESON / LUMBERTON, NC
WBS NO.: 44367.1.1 & TIP NO.: U-5797
FALCON PROJECT NO. G19011.00

NCDOT U-5797 (SR 1997 Widening) Parcel 08
Preliminary Site Assessment
Site Photographs

Photograph No. 1: General view of Boring B-8.

Contact: CHRISTOPHER BURKHARDY **Operator** DAVIS MARTINEC

Project: G19011 U5797

													U00902
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	B8	8.9	<0.22	<0.22	<0.22	<0.22	<0.04	<0.07	<0.009	0	91.6	8.4	Residual HC
	Initial Calibrator QC check		OK						Final FCM QC Check		OK		97.1 %

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.

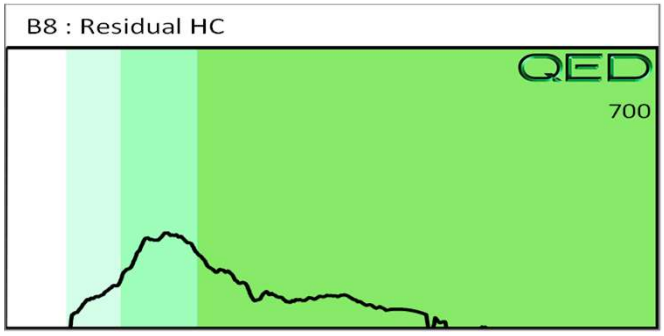
Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed 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 Tuesday, April 16, 2019



PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2019-091)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 11
NCDOT PROJECT U-5797

2400 FAYETTEVILLE RD., LUMBERTON, NC

APRIL 22, 2019

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

Prepared by: _____
Eric C. Cross, P.G.
NC License #2181

Reviewed by: _____
Douglas A. Canavello, 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 11 - 2400 Fayetteville Rd.
Lumberton, Robeson County, North Carolina

Table of Contents

Figures

Appendices

LIST OF ACRONYMS

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

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Falcon Engineers at Parcel 11, located at 2400 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 18-26, 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 twelve EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. Additional EM anomalies were associated with interference from the building, a trailer, and vehicles and were further investigated with GPR. These 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 11.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Falcon Engineers at Parcel 11, located at 2400 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 18-26, 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 gravel, concrete, and grass surfaces. An aerial photograph showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

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

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

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

GPR data were acquired across select EM anomalies on March 26, 2019, using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. Data were collected both in reconnaissance fashion as well as along formal transect lines across EM features. The GPR data were viewed in real-time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 6 feet, based on dielectric constants calculated by the DF unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the DF unit for post-processing and figure generation.

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

Geophysical Surveys for Underground Storage Tanks
on NCDOT Projects

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

DISCUSSION OF RESULTS

Discussion of EM Results

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

LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY

Metallic Anomaly #	Cause of Anomaly	Investigated with GPR
1	Drop Inlet/Sign	
2	Guy Wire	
3	Sign	
4	Sign	
5	Drop Inlet	
6	Trailer	☑
7	Truck	☑
8	Sign/Utilities	
9	Utility	
10	Surface Metal	
11	Drop Inlet	
12	Building/Vehicles	☑

The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface, including drop inlets, signs, a guy wire, a trailer, a truck, utilities, surface metal, the building, and vehicles. EM Anomalies 6, 7, and 12 were associated with interference from the building, a trailer, and vehicles and were 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 select transect images. All of the transect images are included in **Appendix A**. A total of six formal GPR transects were performed at the site. GPR Transects 1-2 were performed across EM Anomaly 6. These transects recorded minor reflectors that were suggestive of possible buried metallic debris. No evidence of any larger structures such as USTs was observed.

GPR Transects 3-4 were performed across EM Anomaly 7. These transects recorded minor reflectors that were suggestive of possible buried metallic debris. No evidence of any larger structures such as USTs was observed.

GPR Transects 5-6 were performed along the west side of the building (EM Anomaly 12). 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 11. **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 11 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.
- Additional EM anomalies were associated with interference from the building, a trailer, and vehicles and were further investigated with GPR. These 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 11.

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)

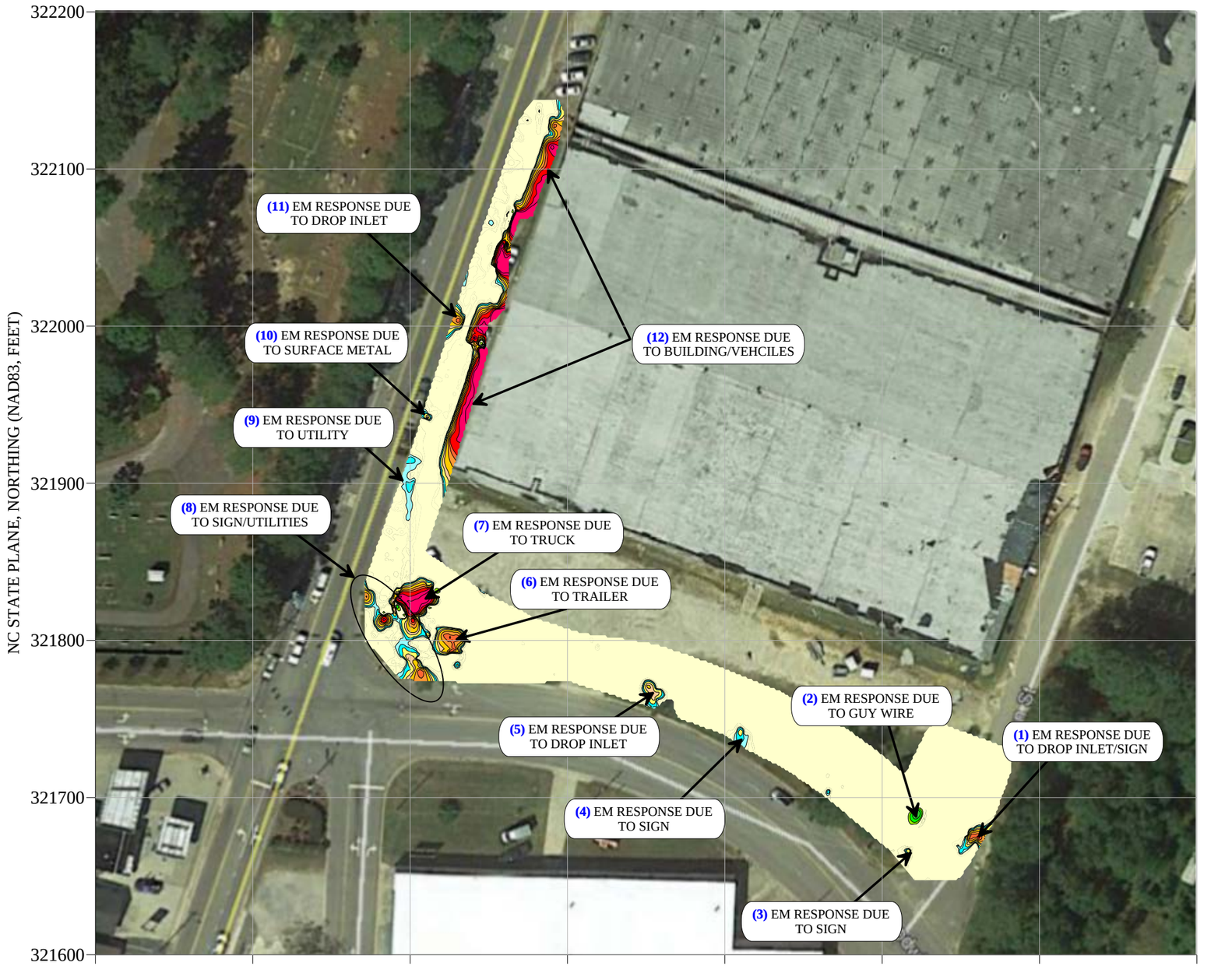
View of Survey Area
(Facing Approximately East)

N

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

PROJECT	PARCEL 11 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797
TITLE	PARCEL 11 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS
DATE	3/26/2019
PYRAMID PROJECT #:	2019-091
CLIENT	FALCON ENGINEERS
	FIGURE 1

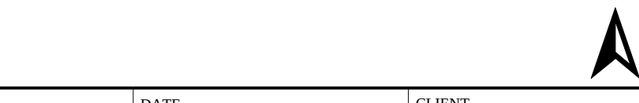
EM61 METAL DETECTION RESULTS



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 18, 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 26, 2019.

EM61 Metal Detection Response (millivolts)



N

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

PROJECT
PARCEL 11
LUMBERTON, NORTH CAROLINA
NCDOT PROJECT U-5797

TITLE
PARCEL 11 -
EM61 METAL DETECTION CONTOUR MAP

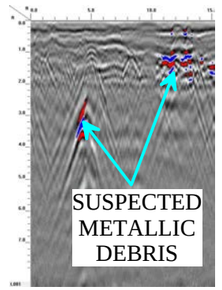
DATE 3/26/2019

PYRAMID PROJECT #: 2019-091

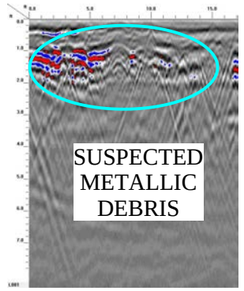
CLIENT FALCON ENGINEERS

FIGURE 2

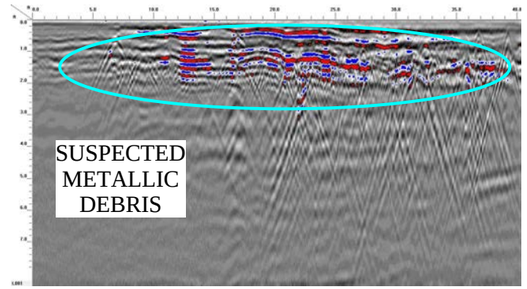
LOCATIONS OF GPR TRANSECTS



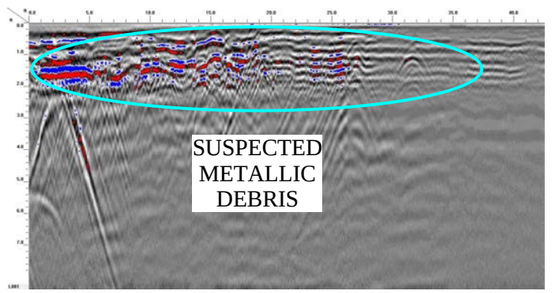
GPR TRANSECT 1 (T1)



GPR TRANSECT 2 (T2)



GPR TRANSECT 3 (T3)



GPR TRANSECT 4 (T4)

N

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

PROJECT
PARCEL 11
LUMBERTON, NORTH CAROLINA
NCDOT PROJECT U-5797

TITLE
PARCEL 11 -
GPR TRANSECT LOCATIONS AND SELECT IMAGES

DATE 3/26/2019

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
- E — TEMPORARY CONSTRUCTION EASEMENT
- PUE — PROPOSED PERMANENT UTILITY EASEMENT
- PROPOSED SS CUT LINE
- PROPOSED SS FILL LINE

MILLIVOLTS (mV)

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

0 25 50
FEET

N

TITLE
OVERLAY OF METAL DETECTION RESULTS ON NCDOT ENGINEERING PLANS

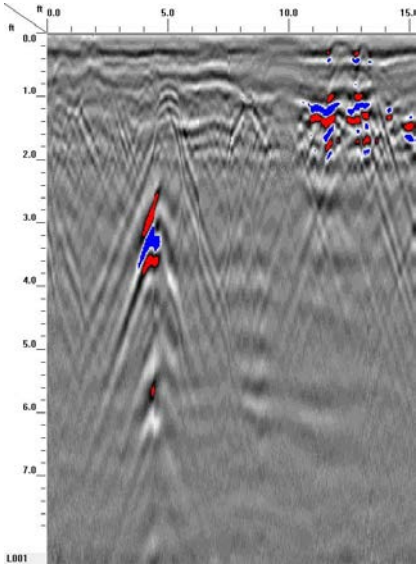
PROJECT
PARCEL 011
LUMBERTON, NORTH CAROLINA
NCDOT PROJECT U-5797

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

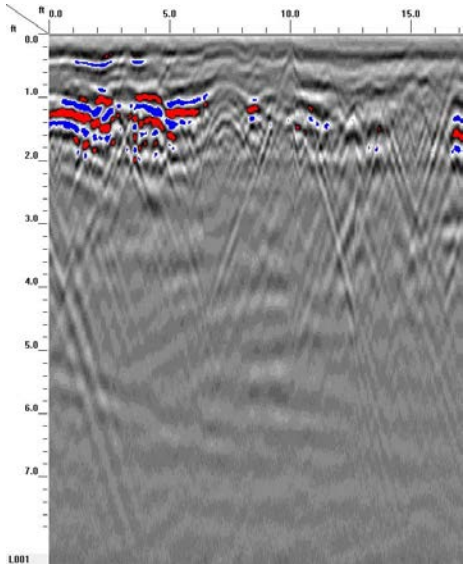
DATE: 04-11-2019 | REVISION NO. 0

PYRAMID PROJECT NO. 2019-091 | FIGURE NO. 4

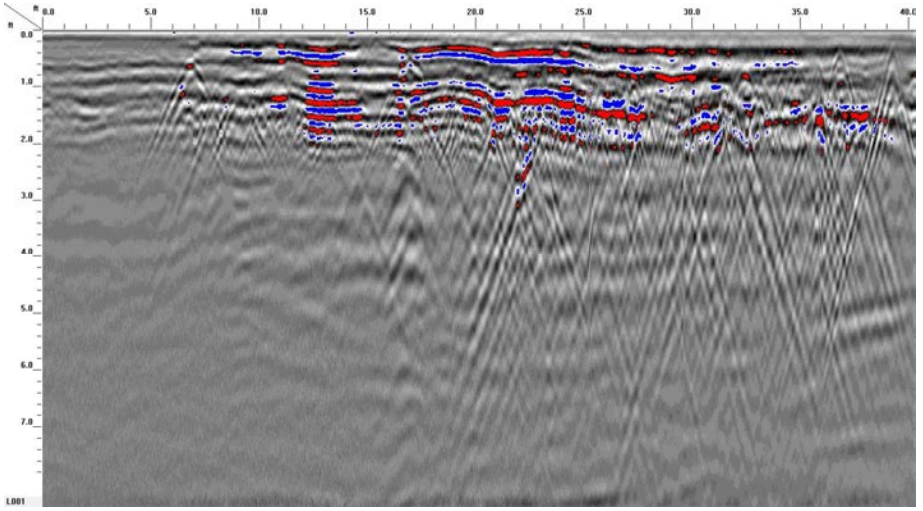
Appendix A – GPR Transect Images



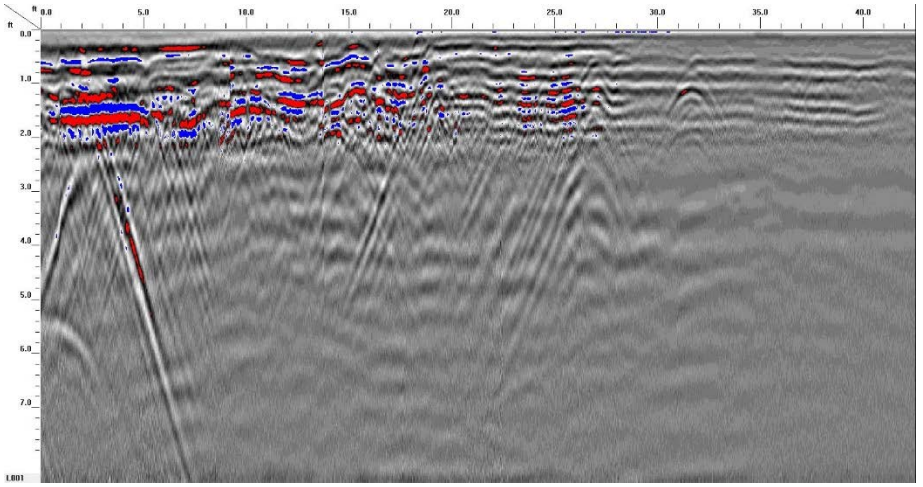
GPR TRANSECT 1



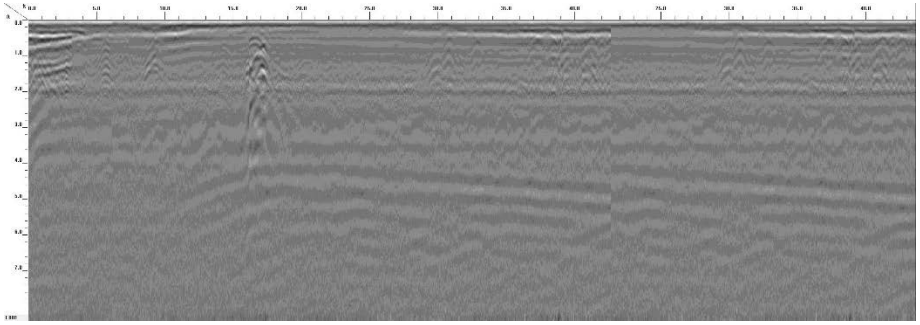
GPR TRANSECT 2



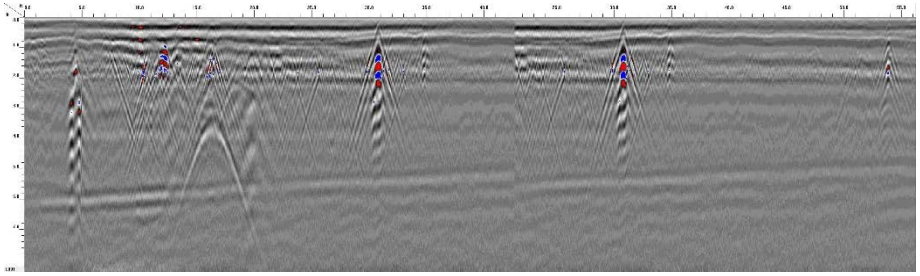
GPR TRANSECT 3



GPR TRANSECT 4



GPR TRANSECT 5



GPR TRANSECT 6

PRELIMINARY SITE ASSESSMENT

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

NCDOT PARCEL NO. 12
OWNER: BRANCH, STEVEN & LINDA
2402 FAYETTEVILLE ROAD
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

FALCON ENGINEERING

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. 12
Owner: Branch, Steven & Linda
2402 Fayetteville Road
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.

Christopher J. Burkhardt
Environmental Services Manager

Jeremy R. Hamm, PE
Geotechnical Services Manager

TABLE OF CONTENTS

LIST OF FIGURES AND ATTACHMENTS

SECTION 1: INTRODUCTION

1.1 DESCRIPTION

Falcon Engineering, Inc. (Falcon) has completed a Preliminary Site Assessment of NCDOT TIP Project U-5797 Parcel No. 12. Parcel No. 12 is addressed as 2402 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 methods, 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 surrounding parcels. This parcel is developed with a large warehouse. The Phase I ESA identified several bulk oil facilities and USTs with addresses in this area that no longer correspond to the current addresses. The exact location of the oil facilities and USTs is unknown.

2.2 FACILITY IDENTIFICATION NUMBER

A Facility Identification Number was not identified for 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 be 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 between March 18 and 26, 2019 to investigate for metallic underground storage tanks (USTs) beneath the survey area. A total of eight EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. Some of the EM anomalies were associated with interference from the building and suspected reinforced concrete and were further investigated with GPR.

GPR verified the presence of metal reinforcement in the concrete on the west side of the building. No evidence of any larger structures such as USTs was observed.

5.2 SAMPLE DATA

Falcon and our subcontractor advanced three borings (B-9, B-10, and B-11) to the proposed excavation depth of the drainage features, utilities, or roadway/ditch cut being assessed. Groundwater was not observed. Please see the boring location map 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-9	34.635327	-79.0026621
B-10	34.6357019	-79.0025016
B-11	34.6359072	-79.0023621

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-9	0-2.0	1.1
	2.0-4.0	**1.0**
B-10	0-2.0	1.5
	2.0-4.0	**1.6**
B-11	0-2.0	1.7
	2.0-4.0	**1.8**

*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-9	11.2	<0.28	<0.28	<0.28	<0.28	<0.06	<0.09	<0.011	0	100	0
B10	12.5	<0.31	<0.31	0.69	0.69	0.34	<0.1	<0.013	0	74.4	25.6
B-11	10.4	<0.26	<0.26	1.1	1.1	0.53	<0.08	<0.01	0	82.3	17.7

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-9	0-2.0	Brown	Sandy Clay (A-6)
	2.0-4.0	Gray Brown Orange	Sandy Clay (A-6)
B-10	0-2.0	Brown Orange	Silty Sand (A-2-4)
	2.0-4.0	Brown Orange	Silty Sand (A-2-4)
B-11	0-2.0	Brown Orange	Silty Clayey Sand (A-2-6)
	2.0-4.0	Brown	Sandy Clay (A-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

Collectively, the geophysical data did not record any evidence of unknown metallic UST's within the geophysical survey area at Parcel No. 12. Falcon does not anticipate UST's will be encountered within the project limits on this parcel during construction.

6.3 SAMPLING

Sampling results did not identify contaminates 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

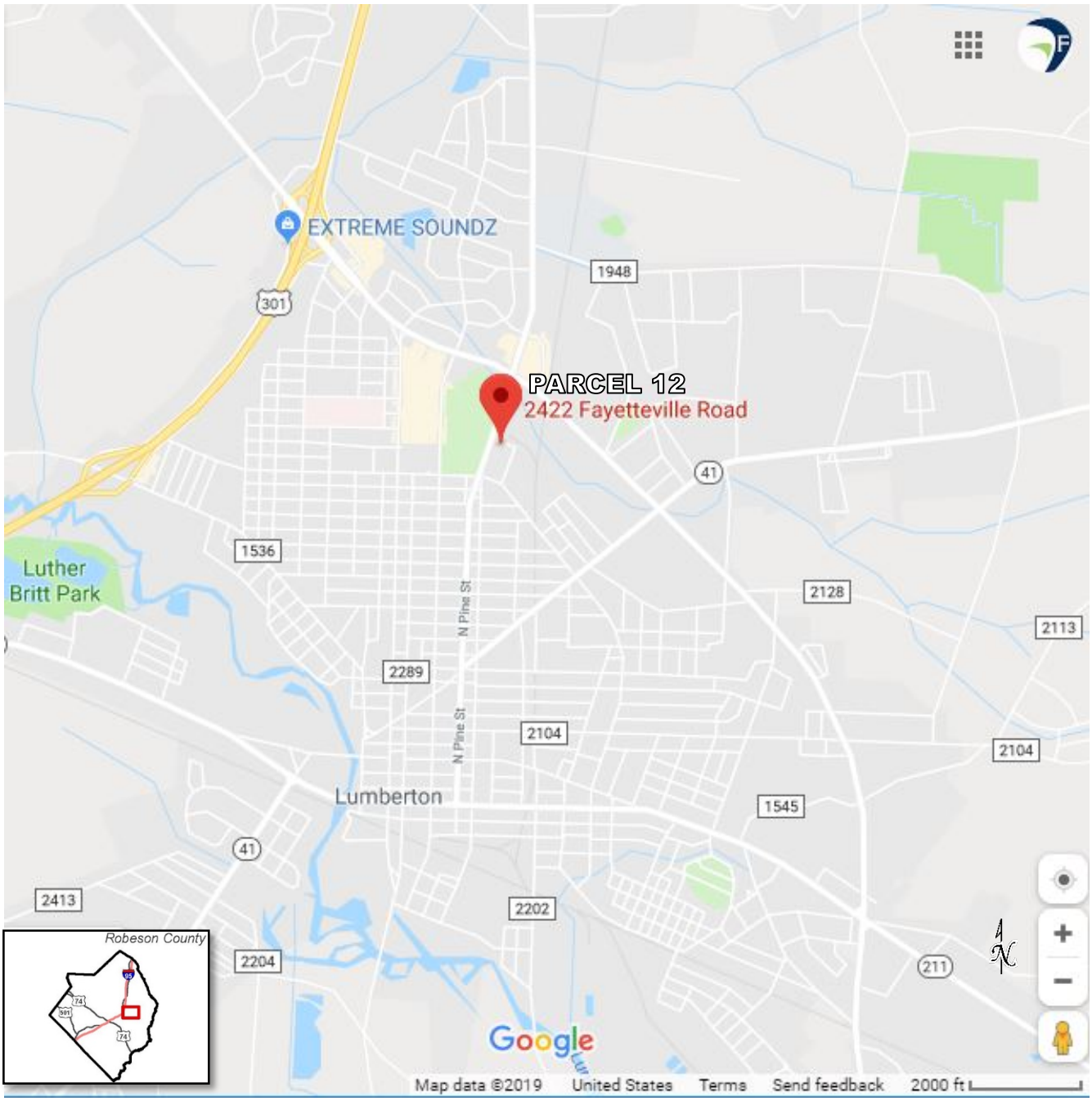
7.1 ADDITIONAL SAMPLING

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

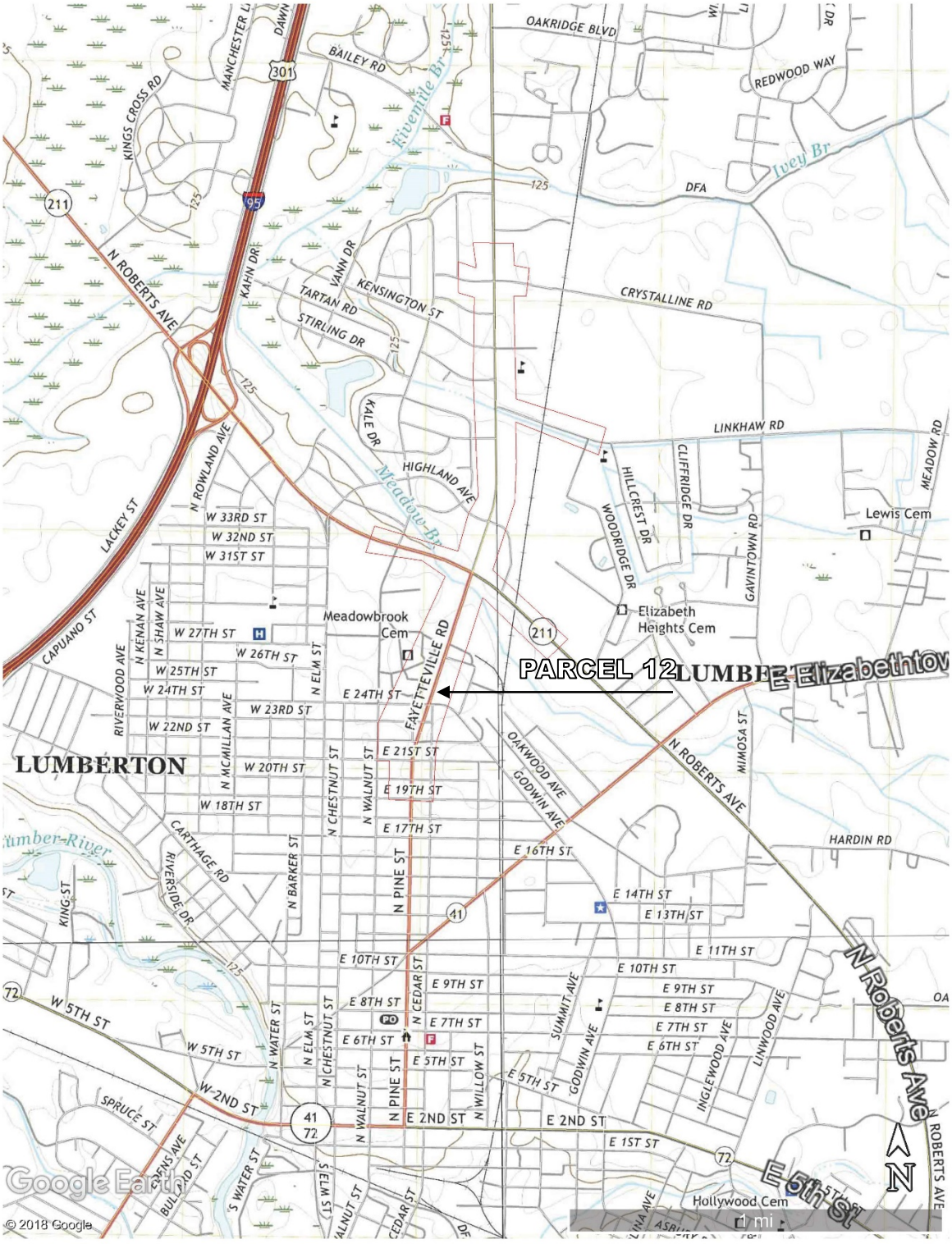
Soils requiring special handling were not identified. If suspect contaminated soils are encountered during construction Falcon and the NCDOT GeoEnvironmental Group should be contacted for proper handling instructions.

NCDOT U-5797 (SR 1997 Widening) Parcel 12
Preliminary Site Assessment
Vicinity Map



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

NCDOT U-5797 (SR 1997 Widening) Parcel 12
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 12
Preliminary Site Assessment
Parcel Location Map

September 5, 2019

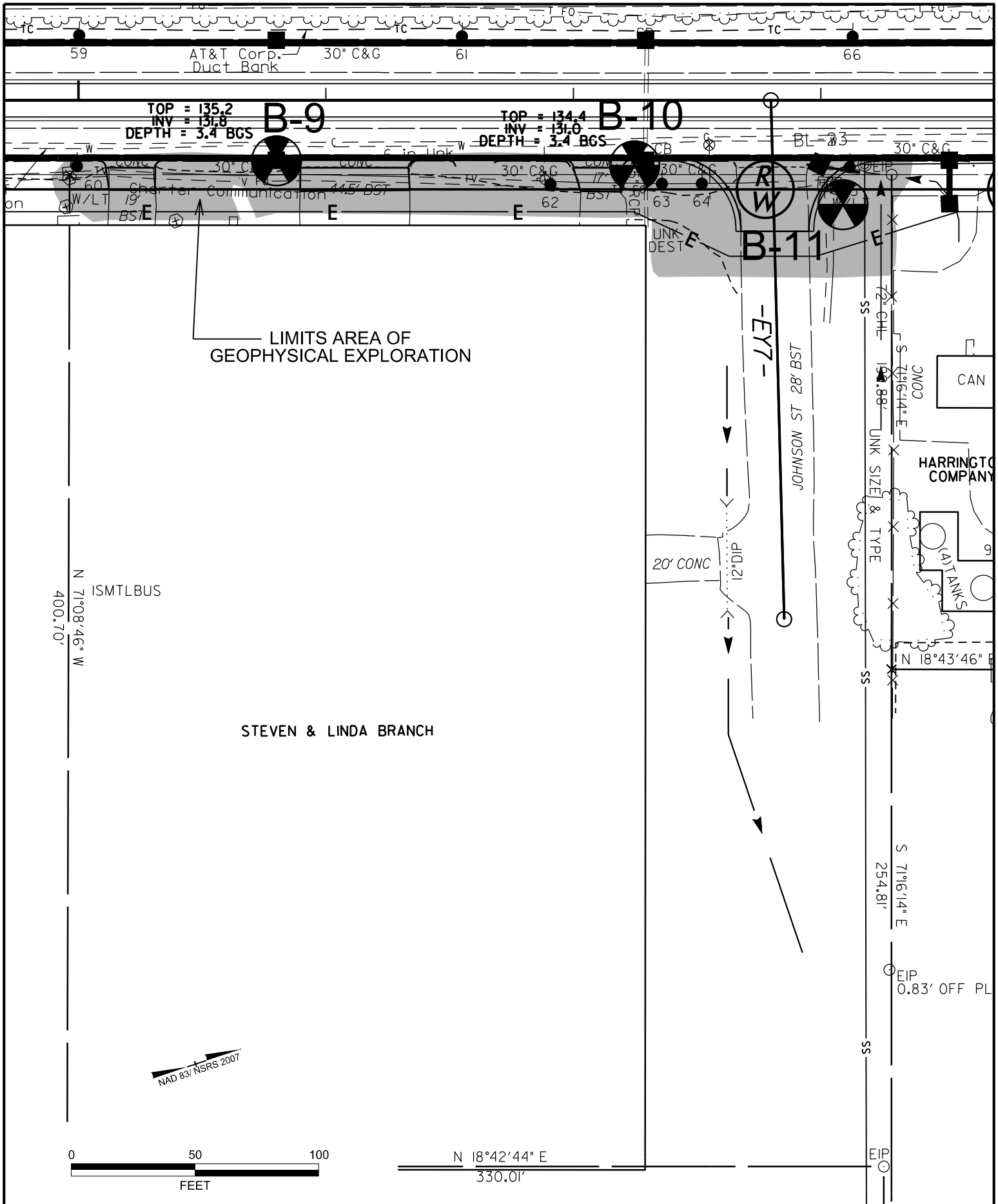
County Line
City Limits
Streets
Parcels

1:4,275
0 0.035 0.07 0.14 mi
0 0.05 0.1 0.2 km

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

2019

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



NOTES:

- BGS = BELOW GROUND SURFACE
- BORING B-11 WAS DRILLED TO 4.0 BGS

FALCON ENGINEERING

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 12 - BRANCH
ROBESON / LUMBERTON, NC
WBS NO.: 44367.1.1 & TIP NO.: U-5797
FALCON PROJECT NO. G19011.00

NCDOT U-5797 (SR 1997 Widening) Parcel 12
Preliminary Site Assessment
Site Photographs

Photograph No. 1: General view of B-9.

Photograph No. 2: General view of B-9 after patching.

NCDOT U-5797 (SR 1997 Widening) Parcel 12
Preliminary Site Assessment
Site Photographs

Photograph No. 3: General view of Boring B-10.

Photograph No. 4: General view of Boring B-11.

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS AQROS

Hydrocarbon Analysis Results

Client: FALCON
Address: 1210 TRINITY ROAD SUITE 116
CARY NC 28513

Contact: CHRISTOPHER BURKHARDY

Project: G19011 U5797

Samples taken Tuesday, April 9, 2019
Samples extracted Tuesday, April 9, 2019
Samples analysed Tuesday, April 16, 2019

Operator DAVIS MARTINEC

U00902

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	B9	11.2	<0.28	<0.28	<0.28	<0.28	<0.06	<0.09	<0.011	0	100	0	,(FCM)
s	B10	12.5	<0.31	<0.31	0.69	0.69	0.34	<0.1	<0.013	0	74.4	25.6	V.Deg.PHC 91.4%,(FCM)
s	B11	10.4	<0.26	<0.26	1.1	1.1	0.53	<0.08	<0.01	0	82.3	17.7	Road Tar 92.2%,(FCM)

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

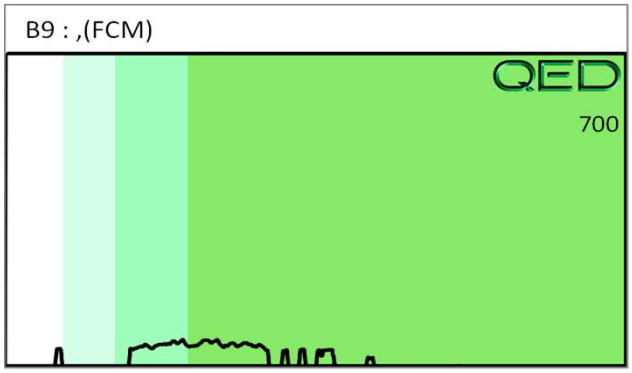
B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

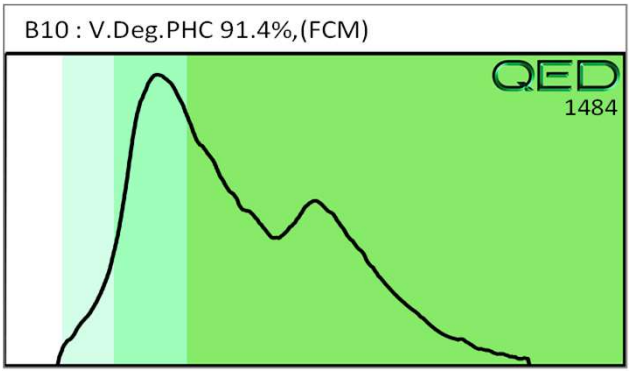
% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

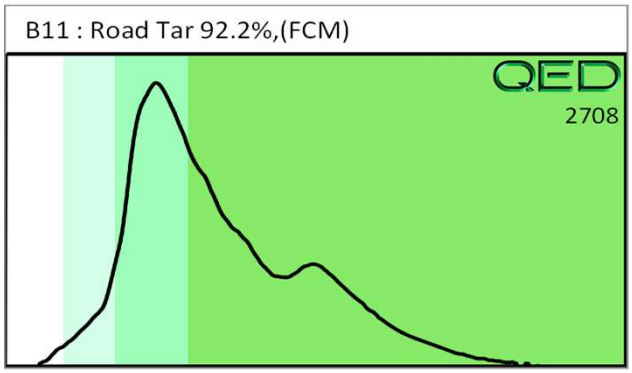
QED Hydrocarbon Fingerprints

Project: G19011 U5797

Tuesday, April 16, 2019







PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2019-091)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 12
NCDOT PROJECT U-5797

2422 FAYETTEVILLE RD., LUMBERTON, NC

APRIL 22, 2019

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

Prepared by: _____
Eric C. Cross, P.G.
NC License #2181

Reviewed by: _____
Douglas A. Canavello, 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 12 - 2422 Fayetteville Rd.
Lumberton, Robeson County, North Carolina

Table of Contents

Figures

Appendices

LIST OF ACRONYMS

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

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Falcon Engineers at Parcel 12, located at 2422 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 18-26, 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 eight EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. Some of the EM anomalies were associated with interference from the building and suspected reinforced concrete and were further investigated with GPR.

GPR verified the presence of metal reinforcement in the concrete on the west side of the building. No evidence of any larger structures such as USTs was observed. Collectively, the geophysical data did not record any evidence of unknown metallic USTs within the geophysical survey area at Parcel 12.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Falcon Engineers at Parcel 12, located at 2422 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 18-26, 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 gravel, concrete, asphalt, and grass surfaces. An aerial photograph showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

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

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

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

GPR data were acquired across select EM anomalies on March 26, 2019, using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. Data were collected both in reconnaissance fashion as well as along formal transect lines across EM features. The GPR data were viewed in real-time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 6 feet, based on dielectric constants calculated by the DF unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the DF unit for post-processing and figure generation.

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

Geophysical Surveys for Underground Storage Tanks
on NCDOT Projects

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

DISCUSSION OF RESULTS

Discussion of EM Results

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

LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY

Metallic Anomaly #	Cause of Anomaly	Investigated with GPR
1	Utilities	
2	Fence	
3	Utility	
4	Drop Inlet	
5	Hydrant/Utility	
6	Reinforced Concrete	☑
7	Building	☑
8	Vehicle	

The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface, including utilities, a fence, a drop inlet, a hydrant, the building, and a vehicle. EM Anomalies 6 and 7 were associated with interference from the building and suspected reinforced concrete and were 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 select transect images. All of the transect images are included in **Appendix A**. A total of six formal GPR transects were performed at the site. GPR Transects 1-5 were performed in a grid-like fashion across EM Anomaly 6. These transects verified the presence of metal reinforcement in the concrete on the west side of the building. No evidence of any larger structures such as USTs was observed.

GPR Transect 6 was performed across EM Anomaly 7 and showed no evidence of buried structures along the west side of the building.

Collectively, the geophysical data did not record any evidence of unknown metallic USTs within the geophysical survey area at Parcel 12. **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 12 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.
- Some of the EM anomalies were associated with interference from the building and suspected reinforced concrete and were further investigated with GPR.
- GPR verified the presence of metal reinforcement in the concrete on the west side of the building. No evidence of any larger structures such as USTs was observed.
- Collectively, the geophysical data did not record any evidence of unknown metallic USTs within the geophysical survey area at Parcel 12.

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 North)

View of Survey Area
(Facing Approximately South)

N

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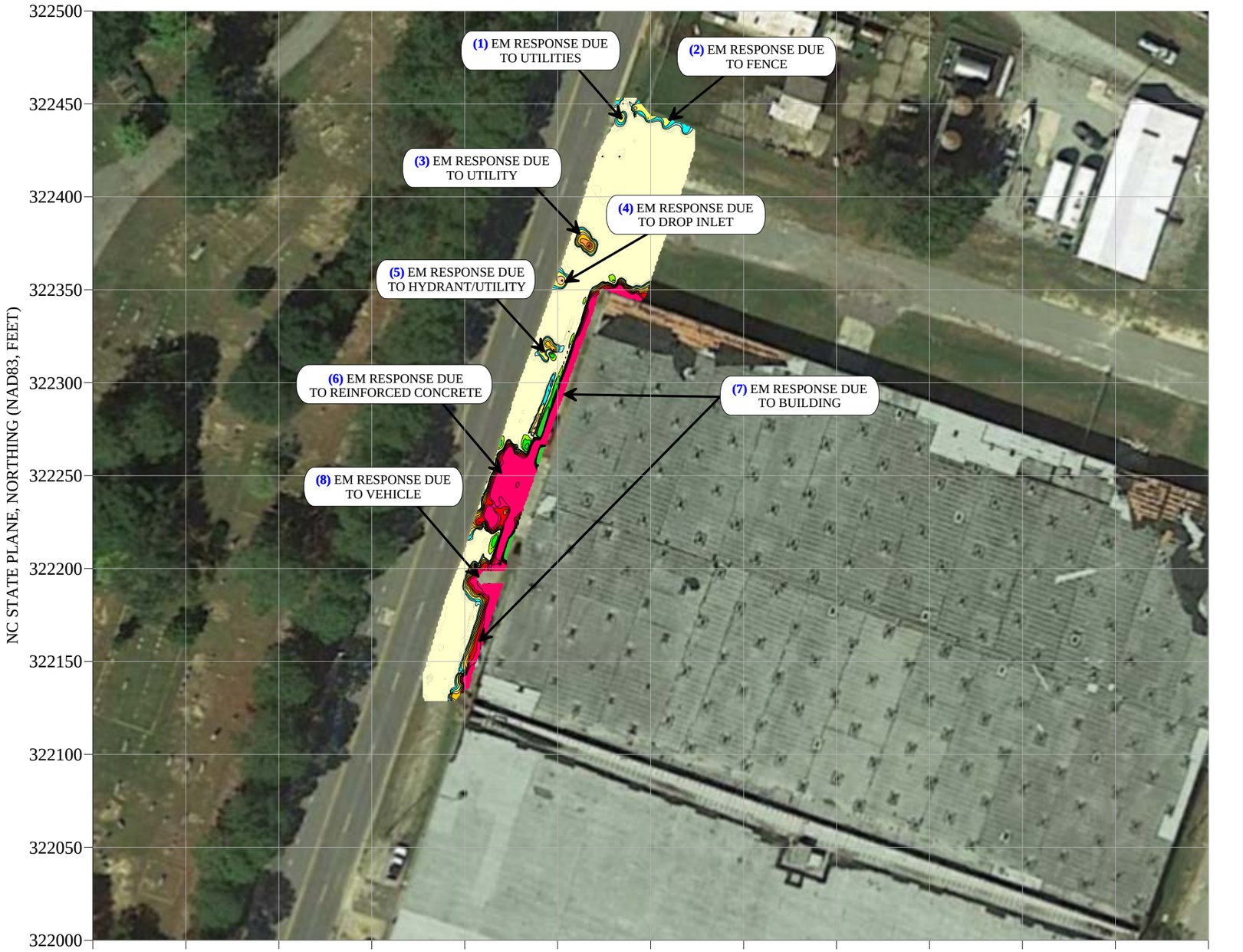
PROJECT: PARCEL 12 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797	TITLE: PARCEL 12 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS	DATE: 3/26/2019 PYRAMID PROJECT #: 2019-091	CLIENT: FALCON ENGINEERS **FIGURE 1**

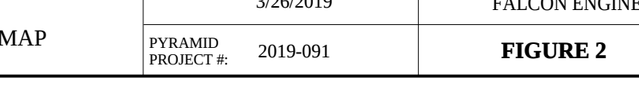
EM61 METAL DETECTION RESULTS



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 18, 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 26, 2019.

EM61 Metal Detection Response (millivolts)



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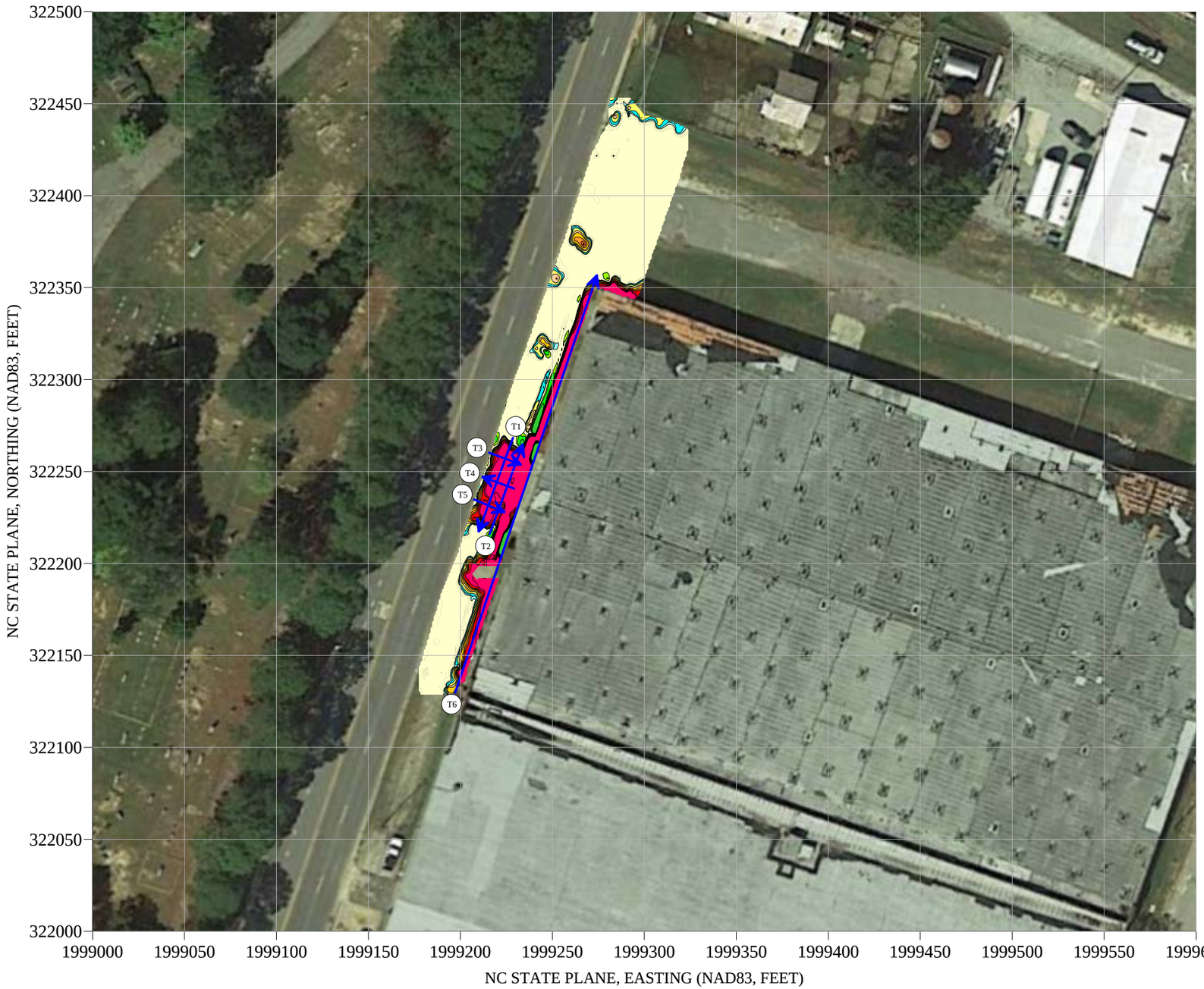
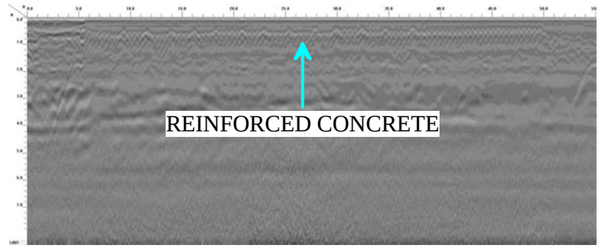
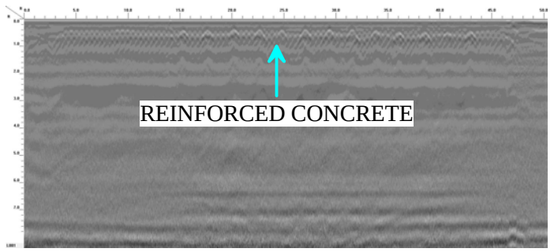
PROJECT: PARCEL 12 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797	TITLE: PARCEL 12 - EM61 METAL DETECTION CONTOUR MAP	DATE: 3/26/2019 PYRAMID PROJECT #: 2019-091	CLIENT: FALCON ENGINEERS **FIGURE 2**

LOCATIONS OF GPR TRANSECTS





GPR TRANSECT 1 (T1)



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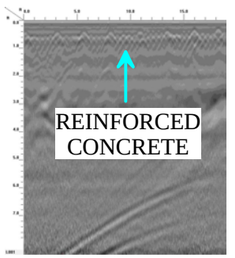
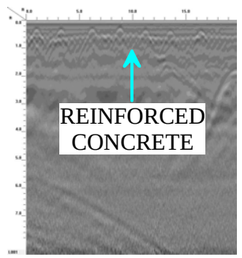
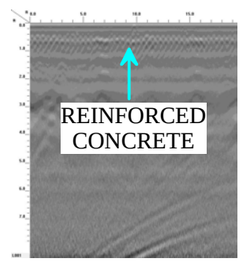


GPR TRANSECT 3 (T3)



GPR TRANSECT 4 (T4)



GPR TRANSECT 5 (T5)

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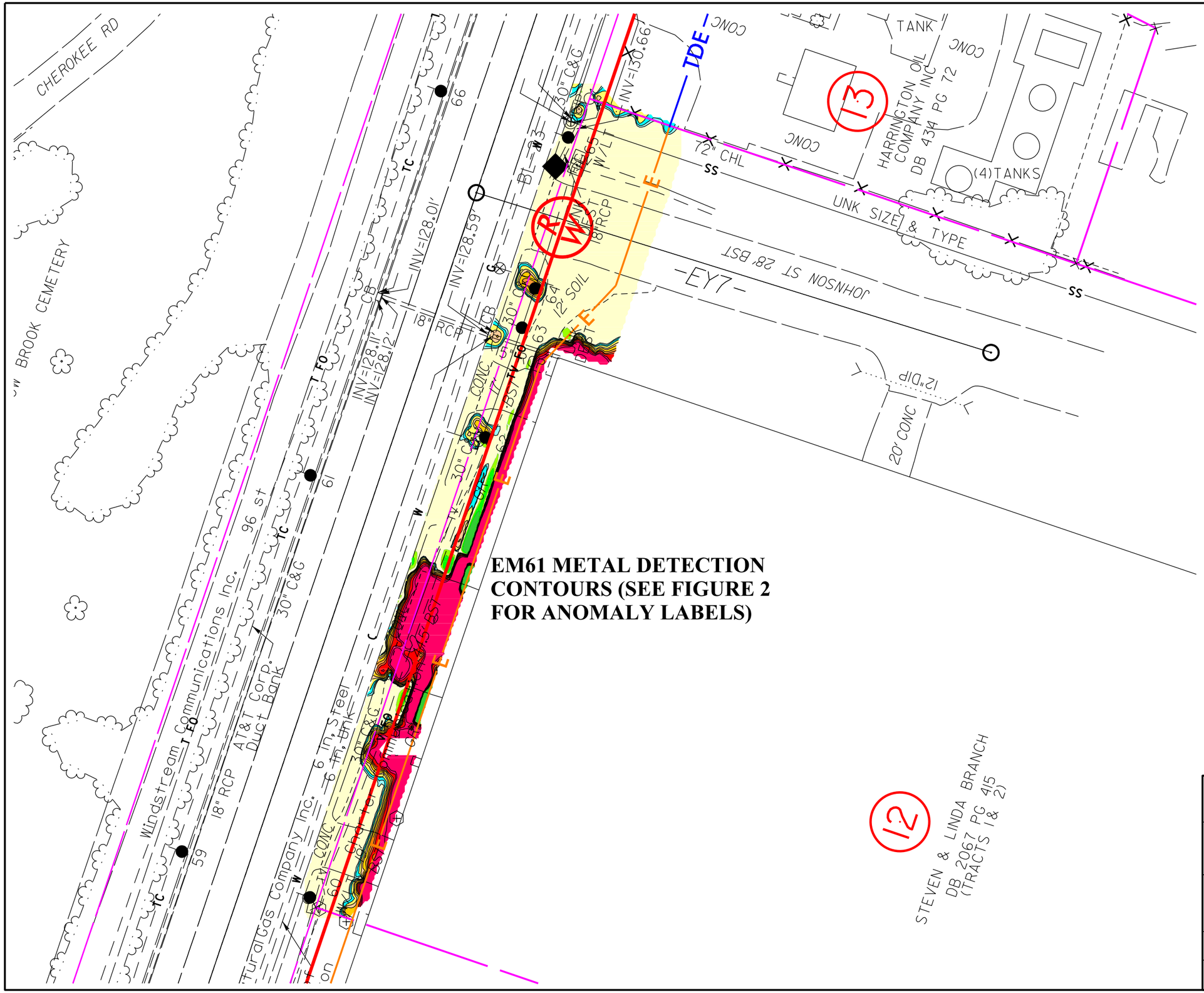
PROJECT: PARCEL 12 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797	TITLE: PARCEL 12 - GPR TRANSECT LOCATIONS AND SELECT IMAGES	DATE: 3/26/2019 PYRAMID PROJECT #: 2019-091	CLIENT: FALCON ENGINEERS **FIGURE 3**



TITLE

OVERLAY OF METAL DETECTION RESULTS ON NCDOT ENGINEERING PLANS

PROJECT

PARCEL 012
LUMBERTON, NORTH CAROLINA
NCDOT PROJECT U-5797

PYRAMID GEOPHYSICS
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GREENSBORO, NC 27406
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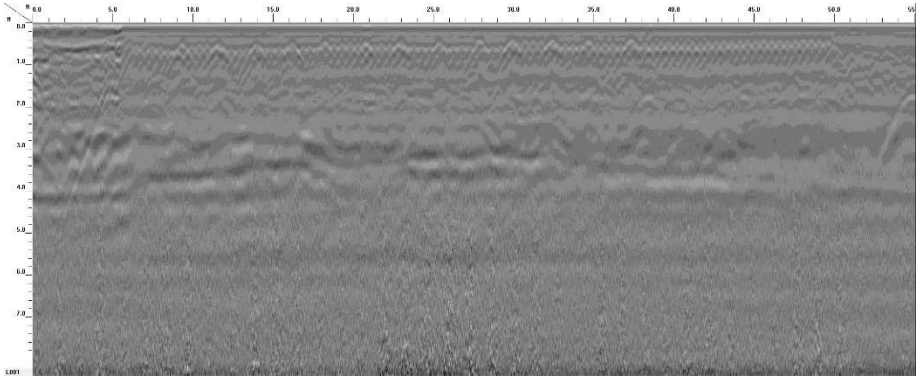
DATE: 04-11-2019	REVISION NO. 0
PYRAMID PROJECT NO. 2019-091	FIGURE NO. 4

Appendix A – GPR Transect Images



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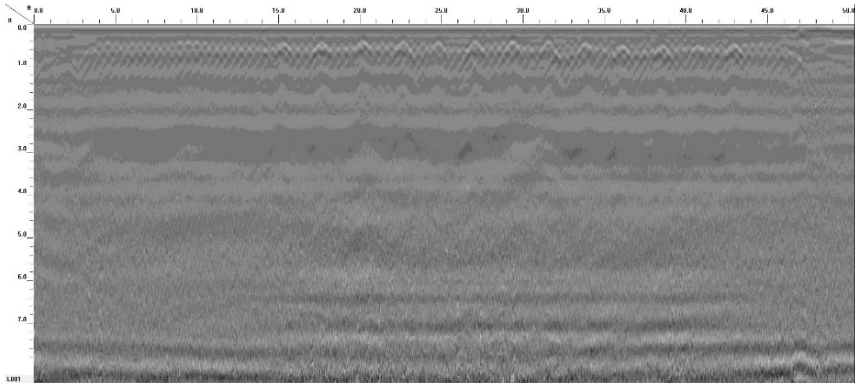

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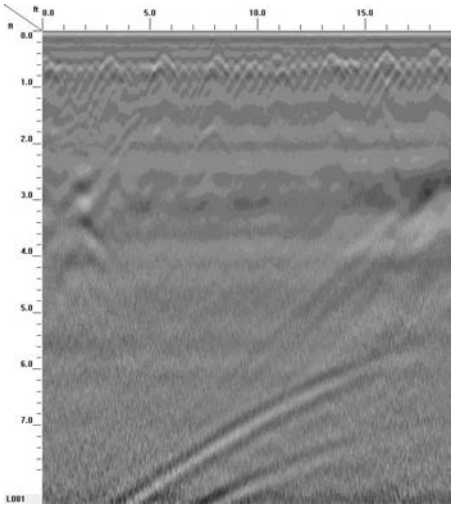

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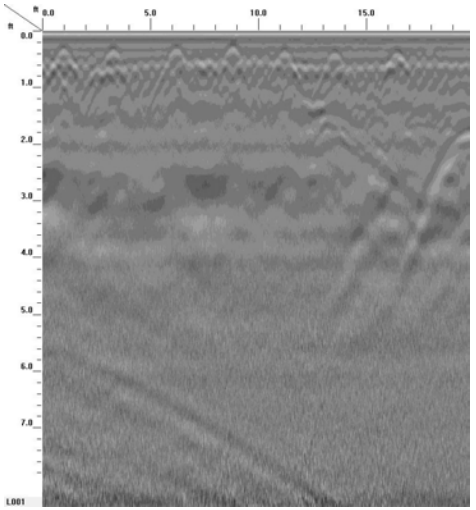

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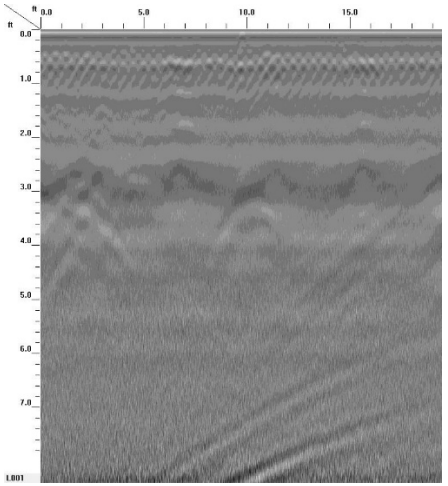

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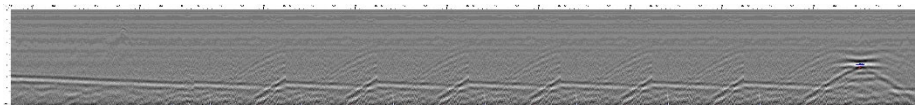


GPR TRANSECT 6

PRELIMINARY SITE ASSESSMENT

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

NCDOT PARCEL NO. 13
OWNER: HARRINGTON OIL CO INC
2420 FAYETTEVILLE ROAD
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

FALCON ENGINEERING

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. 13
Owner: Harrington Oil Co Inc
2420 Fayetteville Road
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.

Christopher J. Burkhardt
Environmental Services Manager

Jeremy R. Hamm, PE
Geotechnical Services Manager

TABLE OF CONTENTS

LIST OF FIGURES AND ATTACHMENTS

SECTION 1: INTRODUCTION

1.1 DESCRIPTION

Falcon Engineering, Inc. (Falcon) has completed a Preliminary Site Assessment of NCDOT TIP Project U-5797 Parcel No. 13. Parcel No. 13 is addressed as 2420 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 methods, 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 parcel's Use as a bulk oil storage facility and history of USTs and ASTs being used and stored on-site. 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. 13. Mr. Oliver sent documents pertaining to USTs that had been installed and/or removed from Parcel No. 13. According to paperwork one 10,000-gallon varsol AST was installed in 1984, one 2,000-gallon UST was closed in place in 1997. Falcon also reviewed the state file for a LUST incident associated with Parcel No. 13. The file contained a UST closure report prepared by GMA Consulting Scientists and Engineers (GMA). The closure was associated with a 2,000-gallon varsol UST in April of 1998. The file also contained a letter from the State dated April 1998. The letter acknowledged receipt of the UST Closure Report and stated*; "A review of the closure report for the UST system by the Groundwater staff indicates that no additional excavation, site investigation, nor monitoring is required.*" The file did not contain UST locations or soil sampling reports.

2.2 FACILITY IDENTIFICATION NUMBER

A Facility Identification Number was not identified for 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

Numerous ASTs (some at least 10,000 gallons in capacity) and several 55-gallon drums were observed on this parcel. One AST adjoins the row in the front of the building. USTs were reported during the Phase I ESA. 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 18 through March 27, 2019 to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area. A total of six EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. GPR was performed across EM anomalies associated with suspected metallic debris, reinforced concrete, and interference from a fence and metal poles.

GPR recorded minor reflectors that were suggestive of possible buried metallic debris and verified the presence of metal reinforcement in the concrete on the southwest side of the building. No evidence of larger structures such as USTs was observed.

5.2 SAMPLE DATA

Falcon and our subcontractor advanced two borings (B-12 and B-13) to the proposed excavation depth of the drainage features, utilities, or roadway/ditch cut being assessed. Groundwater was not observed. Please see the Boring Location Map 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-12	34.6360318	-79.0023867
B-13	34.6363111	-79.0022709

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-12	0-2.0	**2.9**
	2.0-4.0	2.0
B-13	0-2.0	**2.6**
	2.0-4.0	2.0

*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-12	<0.3	<0.3	16	16	7.7	0.85	0.02	0	88.5	11.5	Road Tar 96%,(FCM)
B-13	<0.26	<0.26	42.5	42.5	20.9	2.3	0.041	0	92.5	7.5	Road Tar 92.5%,(FCM),(BO)

Results reported in mg/kg (milligrams per kilogram)

5.3 SAMPLE OBSERVATIONS

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-12	0-2.0	Tan	Silty Sand (A-2-4)
	2.0-4.0	Tan	Silty Sand (A-2-4)
B-13	0-2.0	Brown Orange (mottled)	Sandy Clay (A-6)
	2.0-4.0	Brown Orange (mottled)	Sandy Clay (A-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 evidence of unknown metallic USTs within the geophysical survey area at Parcel 13. 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 contaminates 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

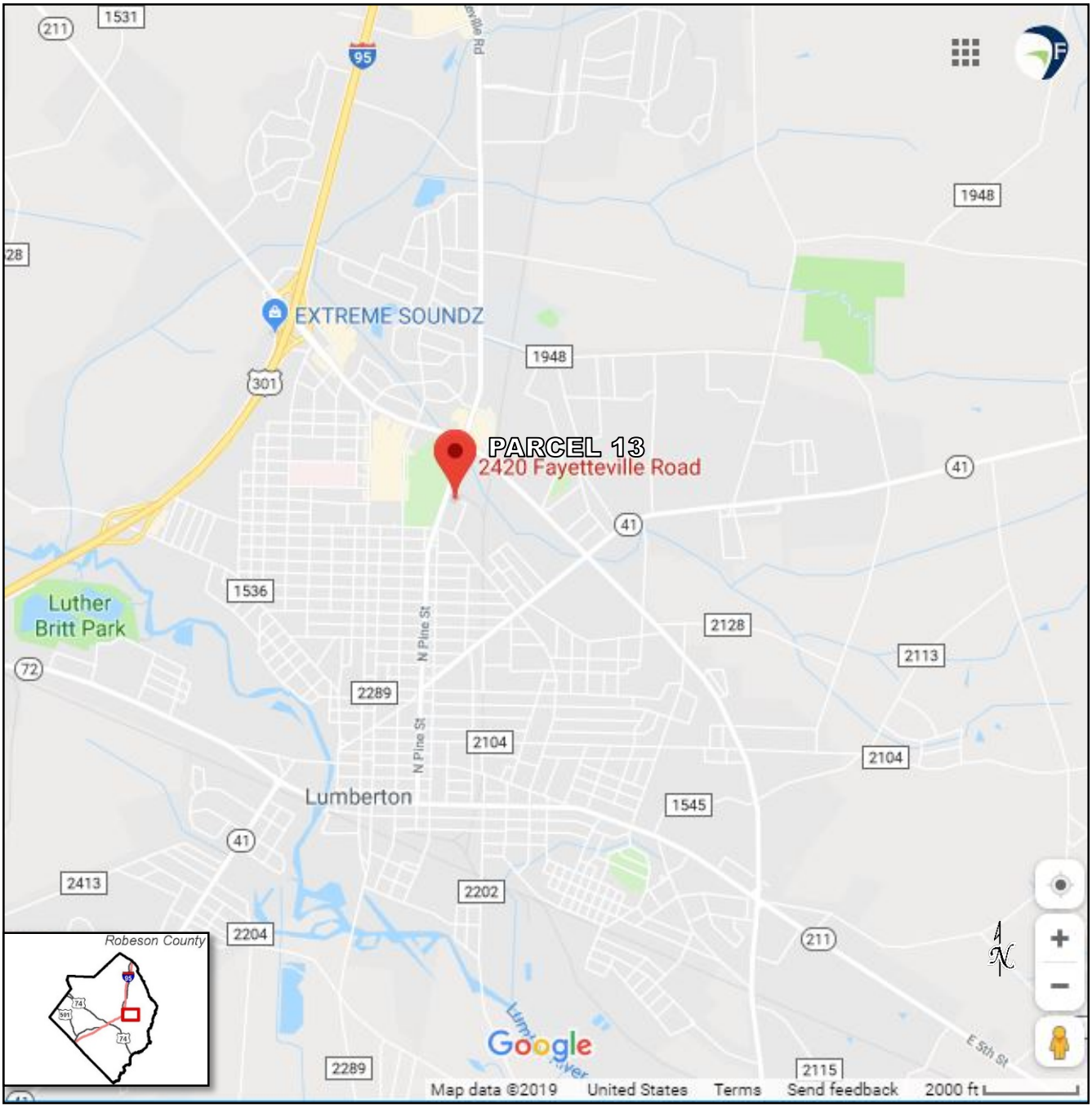
7.1 ADDITIONAL SAMPLING

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

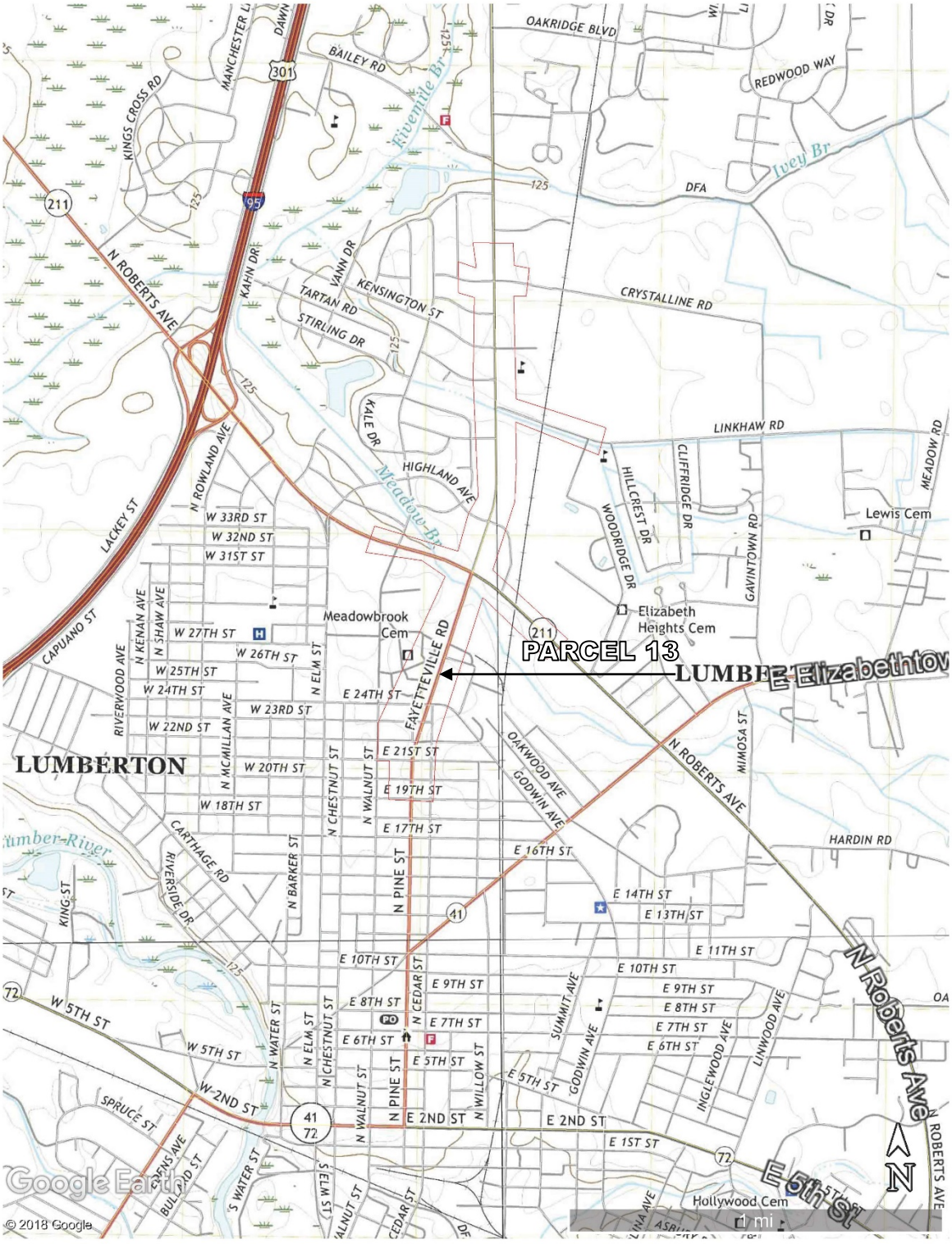
Soils requiring special handling were not identified. If suspect contaminated soils are encountered during construction Falcon and the NCDOT GeoEnvironmental Group should be contacted for proper handling instructions.

NCDOT U-5797 (SR 1997 Widening) Parcel 13
Preliminary Site Assessment
Vicinity Map



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

NCDOT U-5797 (SR 1997 Widening) Parcel 13
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 13
Preliminary Site Assessment
Parcel Location Map

September 5, 2019

- County Line
- City Limits
- Streets
- Parcels

1:1,064

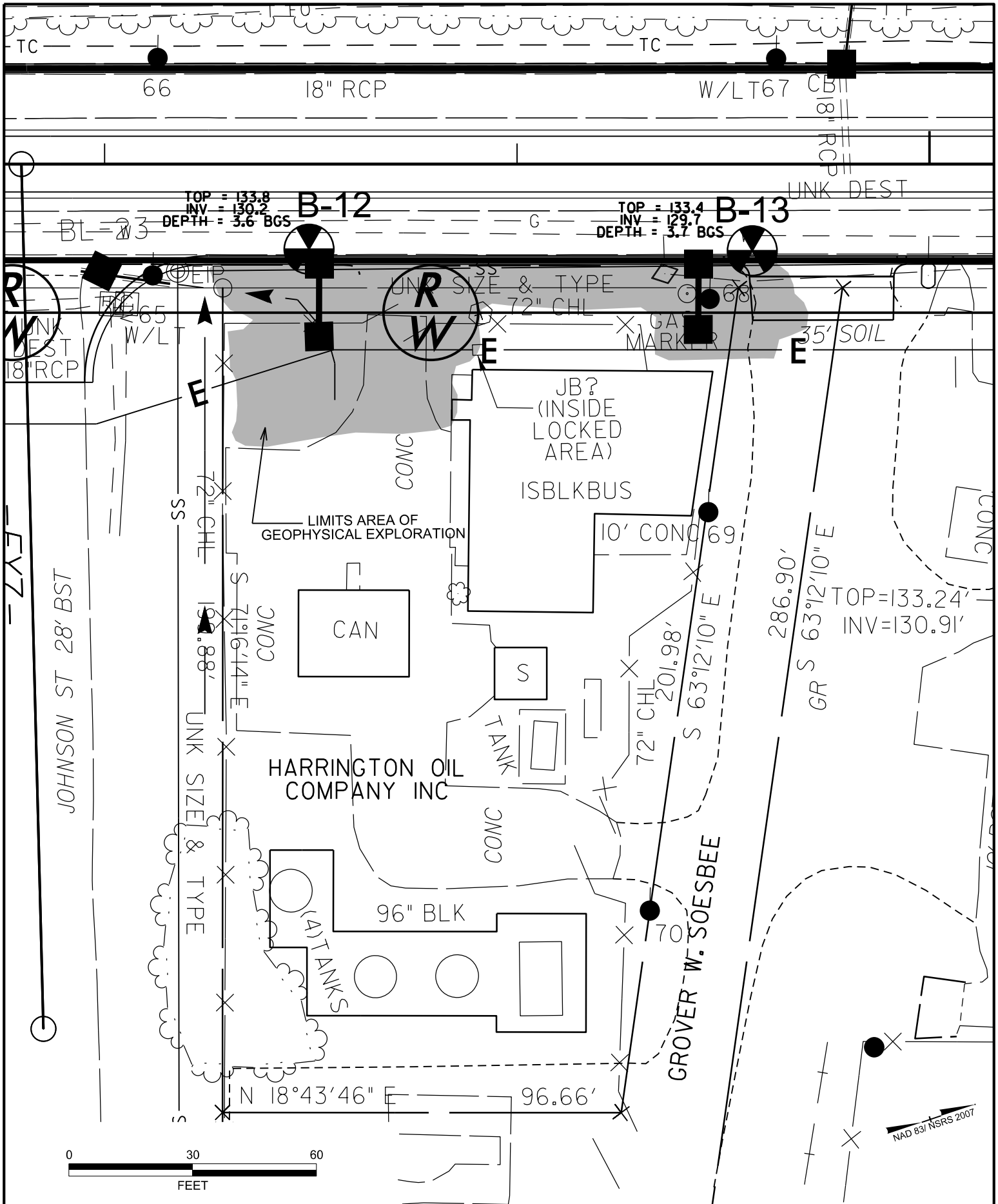
0 0.0075 0.015 0.03 mi

0 0.0125 0.025 0.05 km

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

2019

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



NOTES:

- BGS = BELOW GROUND SURFACE

FALCON ENGINEERING

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 13 - HARRINGTON OIL COMPANY
ROBESON / LUMBERTON, NC
WBS NO.: 44367.1.1 & TIP NO.: U-5797
FALCON PROJECT NO. G19011.00

NCDOT U-5797 (SR 1997 Widening) Parcel 13
Preliminary Site Assessment
Site Photographs

Photograph No. 1: General view of Boring B-12.

Photograph No. 2: General view of Boring B-13.

NCDOT U-5797 (SR 1997 Widening) Parcel 13
Preliminary Site Assessment
Site Photographs

Photograph No. 3: General view of the AST that adjoins the ROW.

Photograph No. 4: Additional view of the AST that adjoins the ROW.

NCDOT U-5797 (SR 1997 Widening) Parcel 13
Preliminary Site Assessment
Site Photographs

Photograph No. 3: General view of several ASTs behind the building.

Photograph No. 4: General view of several 55-gallon drums.

0-019556

FA-2288

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES
FAYETTEVILLE REGIONAL OFFICE

NCDENR

JAMES B. HUNT JR.,
GOVERNOR

WAYNE MCDEVITT
SECRETARY

DIVISION OF WATER QUALITY
GROUNDWATER SECTION

April 24, 1998

Mr. Jimmy Harrington
Harrington Oil Company
2420 Fayetteville Road
Lumberton, North Carolina 28358

SUBJECT: UST Closure Report for Harrington Oil Company
Lumberton, North Carolina 28358

Dear Mr. Harrington:

This is to acknowledge receipt of the above mentioned Underground Storage Tank Closure Report dated April 9, 1998, and received in the Fayetteville Regional Office on April 14, 1998.

A review of the closure report for the UST system by the Groundwater staff indicates that no additional excavation, site investigation, nor monitoring is required. Should new information become available concerning this matter, we reserve the right to reopen the investigation.

If you have any questions or need additional information, please contact me or any member of the Groundwater staff at this office at (910) 486-1541.

Sincerely,

Jennifer M. Phillips
Hydrogeological Technician

225 GREEN STREET, SUITE 714, FAYETTEVILLE, NORTH CAROLINA 28301-5043
PHONE 910-486-1541 FAX 910-486-0707

Fire Prevention Form 1.

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

11-21-97
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 HARRINGTON OIL COMPANY / 2420 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 ABANDONE IN PLACE ONE 2,000 GALLON UNDERGROUND STORAGE TANK BY FILLING WITH SLURRY.

#29-97

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

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

Inspector of Buildings

J. J. Hamilton Jr.
Name of Applicant

2420 Fayetteville Rd.
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.

FREEMAN PRINTING CO., LUMBERTON, N. C., 300-8/66

Fire Prevention Form 3

FIRE DEPARTMENT

CITY OF LUMBERTON, N.C.

PERMIT

No. 29-97

November 21, 1997
(Date)

TO WHOM IT MAY CONCERN:

By virtue of the provisions of the Fire Prevention Ordinance of the City of Lumberton, N.C. Harrington Oil Company
(Name of Concern)

No. 2420 Street Fayetteville Road conducting a Harrington Oil Company
(Business)

having made application in due form, and as the conditions, surrounding and arrangements are, in my opinion, such that the intent of the Ordinance can be observed, authority is hereby given and this PERMIT is GRANTED for To abandon in place one 2,000 gallon underground storage tank by filling with slurry.

This PERMIT is issued and accepted on condition that all Ordinance provisions now adopted, or that may hereafter be adopted, shall be complied with.

THIS PERMIT IS VALID FOR Indefinitely

This permit does not take the place of any License required by law and is not transferable. Any change in the use or occupancy of premises shall require a new permit.

Kenneth Rhodes
Fire Official

THIS PERMIT MUST BE POSTED ON THE PREMISES MENTIONED ABOVE AT ALL TIMES

GMA
CONSULTING SCIENTISTS AND ENGINEERS

101-E Woodwinds Industrial Court
Cary, North Carolina 27511
Telephone: 919.481.2631
Fax: 919.481.3219

222-C Cotanche Street
Greenville, North Carolina 27858
Telephone: 919.758.3310
Fax: 919.758.8835

All engineering is performed through the Cary office.

Clear ltr. 4/23/98

RECEIVED
APR 14 1998

April 9, 1998

Mr. Keith Puckett
Hydrogeological Technician
NCDENR/DWQ
225 Green Street, Suite 714
Fayetteville, North Carolina 28358

Re: Underground Storage Tank Closure Report
Harrington Oil Company, Inc.
2420 Fayetteville Road
Lumberton, Robeson County

Dear Mr. Puckett:

Enclosed is a closure report for the 2,000 gallon underground varsol tank at the Harrington Oil Company facility. A copy of the GW/UST-2 Form has been sent to the Underground Storage Tank Office. Please call me with questions or comments.

Sincerely yours,
GMA

Chad Leinbach, P.G.
Hydrogeologist

cc: Mr. Jimmy Harrington

GW/UST-2 **Site Investigation Report For Permanent Closure or Change-in-Service of U.S.T.**

FOR TANKS IN **NC**

Return Completed Form To:
The appropriate DWQ Regional Office according to the county of the facility's location. [SEE MAP ON REVERSE SIDE OF OWNER'S COPY (PINK) FOR REGIONAL OFFICE ADDRESS].

State Use Only
I.D. Number ______
Date Received ______

INSTRUCTIONS

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

I. Ownership of Tank(s)

Owner Name: Harrington Oil Company
Corporation, Individual, Public Agency, or Other Entity)
Street Address: 2420 Fayetteville Road
County: Robeson
City: Lumberton State: NC Zip Code: 28358
Telephone Number: (910) 739-3900
(Area Code)

II. Location of Tank(s)

Facility Name: Harrington Oil Company
(or Company)
Facility ID # (if available): 0-019556
Street Address 2420 Fayetteville Road
(or State Road)
County: Robeson City: Lumberton Zip Code: 28358
Telephone Number: (910) 739-3900
(Area Code)

III. Contact Person

Name: Jimmy Harrington Job Title: owner Tel. No.: 910-739-3900
Closure Contractor: Jimmy Harrington Address: 2420 Fayetteville Rd. Lumberton, NC Tel. No.: 910-739-3900
Primary Consultant: GMA Address: 101-E Woodwinds Ind. Ct., Cary, NC Tel. No.: 919-481-2631
Lab: Chemical & Env. Technology, Inc. Address: 102-A Woodwinds Ind. Ct., Cary, NC Tel. No.: 919-467-3090

IV. U.S.T. Information / V. Excavation Condition

Tank No.	Size in Gallons	Tank Dimensions	Last Contents	Water In Excavation: Yes	Water In Excavation: No	Free Product: Yes	Free Product: No	Notable Odor or Visible Soil Contamination: Yes	Notable Odor or Visible Soil Contamination: No
7	2000	5.33' x 12'	varsol		X		X		X

VI. Additional Information Required

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

NOTE: If a release from the tank(s) has occurred, the site assessment portion of the tank closure must be conducted under the supervision of a P.E. or L.G., with all closure site assessment reports bearing the signature and seal of the P.E. or L.G.

VII. Check List (Check the activities completed)

PERMANENT CLOSURE (For Removing or Abandoning-in-place)

- [x] Contact local fire marshal.
- [x] Notify DWQ Regional Office before abandonment.
- [x] Drain & flush piping into tank.
- [x] Remove all product and residuals from tank.
- [x] Excavate down to tank.
- [x] Clean and inspect tank.
- [ ] Remove drop tube, fill pipe, gauge pipe, vapor recovery tank connections, submersible pumps and other tank fixtures.
- [x] 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(s) Permanently closed: 3/25/98
Date of Change-in-Service: ______

ABANDONMENT IN PLACE

- [x] Fill tank until material overflows tank opening.
- [x] Plug or cap all openings.
- [x] Disconnect and cap or remove vent line.
- [x] Solid inert material used - specify: sand

REMOVAL

- [ ] Create vent hole.
- [ ] Label tank.
- [ ] Dispose of tank in approved manner.

Final tank destination: ______

VIII. Certification (Read and Sign)

I 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	Signature	Date Signed
Chad Leibach GMA	[signature]	4/9/98

GW/UST-2 (Rev. 10/96) White Copy - Regional Office Yellow Copy - Central Office Pink Copy - Owner

GW/UST-3 | Notice of Intent: UST Permanent Closure or Change-In-Service

FOR TANKS IN NC

Return Completed Form To:
The appropriate DWQ Regional Office according to the county of the facility's location. [SEE REVERSE SIDE OF OWNER'S COPY (PINK) FOR REGIONAL OFFICE ADDRESS].

State Use Only
I. D. Number _____
Date Received _____

INSTRUCTIONS

Complete and return at least five (5) working days prior to closure or change-in-service if a Professional Engineer (P.E.) or a Licensed Geologist (L.G.) provides supervision for closure or change-in-service site assessment activities and signs and seals all closure reports. Otherwise, thirty (30) days notice is required.

I. OWNERSHIP OF TANK(S)

Tank Owner Name: Harrington Oil Company, Inc.
(Corporation, Individual, Public Agency, or Other Entity)
Street Address: 2420 Fayetteville Rd.
County: Robeson
City: Lumberton State: NC Zip Code: 28358
Tele. No. (Area Code):

II. LOCATION OF TANK(S)

Facility Name or Company: Harrington Oil Co., Inc.
Facility ID # (if available): 0-019566
Street Address or State Road: 2420 Fayetteville Rd.
County: Robeson City: Lumberton Zip Code: 28358
Tele. No. (Area Code):

III. CONTACT PERSON

Name: Chad Leinbach Job Title: Project Manager Telephone Number: (919) 481-2631

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. Submit a closure report in the format of GW/UST-12 and include the form GW/UST-2 within 30 days following the site investigation.
7. If a release from the tank(s) has occurred, the site assessment portion of the tank closure must be conducted under the supervision of a P.E. or L.G., with all closure site assessment reports bearing signature and seal of the P.E. or L.G. If a release has not occurred, the supervision, signature, or seal of a P.E. or L.G. is not required.
8. Keep closure records for 3 years.

V. WORK TO BE PERFORMED BY

(Contractor) Name: To be determined
Address: State: Zip Code:
Contact: Phone:
Primary Consultant: GMA Phone: (919) 481-2631

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

TANK ID#	TANK CAPACITY	LAST CONTENTS	PROPOSED ACTIVITY: CLOSURE – Removal	CLOSURE – Abandonment In Place	CHANGE-IN-SERVICE – New Contents Stored
1	2000	varsol	☐	xxxx	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	

VII. OWNER OR OWNER'S AUTHORIZED REPRESENTATIVE

Print name and official title
Chad Leinbach, R.G., Project Manager *Scheduled Removal Date: 3-11-98
Signature: Chad Leinbach Date Submitted: 1-22-98

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

GW/UST-3 (Rev. 10/96) White Copy - Regional Office Yellow Copy - Central Office Pink Copy - Owner

Fire Prevention Form 1.

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

8-14-84
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 HARRINGTON OIL COMPANY / 2420 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 INSTALL ONE 10,000 GALLON ABOVE GROUND STORAGE TANK FOR VARSOL.

(STORAGE TANK SHALL BE DIKED)

#4-84

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

This application (is) / is not approved insofar as Zoning and Building Ordinances are concerned.

H. W. Townsend
Inspector of Buildings

J. D. Harrington III
Name of Applicant

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.

FREEMAN PRINTING CO., LUMBERTON, N. C., 500-2/68

QED

REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: FALCON
Address: 1210 TRINITY ROAD SUITE 116
CARY NC 28513

Contact: CHRISTOPHER BURKHARDY

Project: G19011 U5797

Samples taken Tuesday, April 9, 2019
Samples extracted Tuesday, April 9, 2019
Samples analysed Tuesday, April 16, 2019

Operator DAVIS MARTINEC

U00902

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	B12	12.1	<0.3	<0.3	16	16	7.7	0.85	0.02	0	88.5	11.5	Road Tar 96%,(FCM)
s	B13	10.3	<0.26	<0.26	42.5	42.5	20.9	2.3	0.041	0	92.5	7.5	Road Tar 92.5%,(FCM),(BO)

Initial Calibrator QC check OK

Final FCM QC Check OK 101.5 %

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

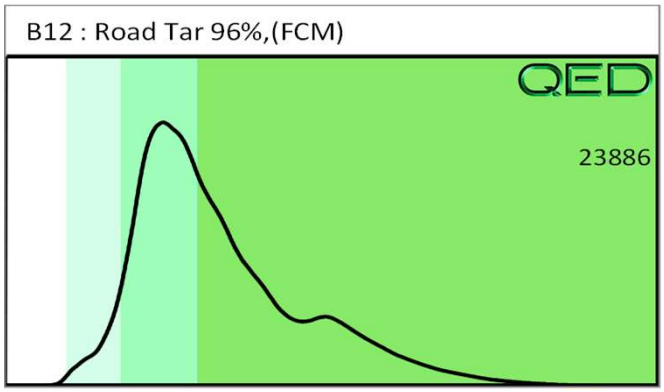
Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

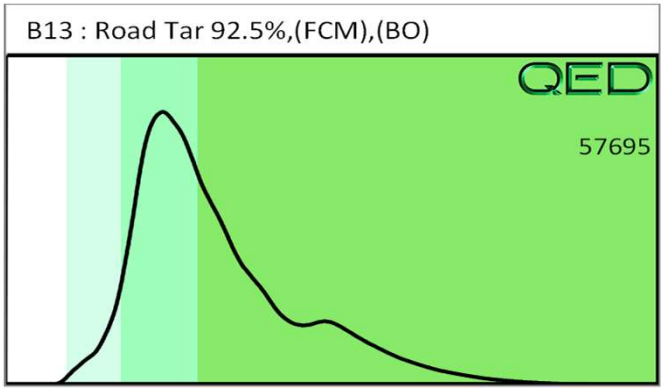
B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

% 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 Tuesday, April 16, 2019





PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2019-091)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 13
NCDOT PROJECT U-5797

2420 FAYETTEVILLE RD., LUMBERTON, NC

APRIL 22, 2019

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

Prepared by: _____
Eric C. Cross, P.G.
NC License #2181

Reviewed by: _____
Douglas A. Canavello, 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 13 - 2420 Fayetteville Rd.
Lumberton, Robeson County, North Carolina

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Figures

LIST OF ACRONYMS

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

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Falcon Engineers at Parcel 13, located at 2420 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 18-27, 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 six EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. GPR was performed across EM anomalies associated with suspected metallic debris, reinforced concrete, and interference from a fence and metal poles.

GPR recorded minor reflectors that were suggestive of possible buried metallic debris and verified the presence of metal reinforcement in the concrete on the southwest side of the building. No evidence of larger structures such as USTs was observed. Collectively, the geophysical data did not record any evidence of unknown metallic USTs within the geophysical survey area at Parcel 13.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Falcon Engineers at Parcel 13, located at 2420 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 18-27, 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, 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 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
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	Utilities	
2	Fence	
3	Suspected Metallic Debris	☑
4	Gate	
5	Reinforced Concrete	☑
6	Fence/Metal Poles	☑

The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface, including utilities, a fence, a gate, and metal poles. EM Anomaly 4 was associated with suspected metallic debris and was further investigated with GPR. EM Anomaly 5 was associated with suspected reinforced concrete and was further investigated with GPR. EM Anomaly 6 was associated with interference from the fence and metal poles and was 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 four formal GPR transects were performed at the site. GPR Transect 1 was performed across EM Anomaly 6 and recorded minor reflectors that were suggestive of possible buried metallic debris. No evidence of any larger structures such as USTs was observed.

GPR Transect 2 was performed across EM Anomaly 3 and recorded minor reflectors that were suggestive of possible buried metallic debris and verified the presence of metal reinforcement in the concrete. No evidence of any larger structures such as USTs was observed.

GPR Transects 3-4 were performed across EM Anomaly 5 and verified the presence of metal reinforcement in the concrete on the southwest side of the building. No evidence of any larger structures such as USTs was observed.

Collectively, the geophysical data did not record any evidence of unknown metallic USTs within the geophysical survey area at Parcel 13. **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 13 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.
- GPR was performed across EM anomalies associated with suspected metallic debris, reinforced concrete, and interference from a fence and metal poles.
- GPR recorded minor reflectors that were suggestive of possible buried metallic debris and verified the presence of metal reinforcement in the concrete on the southwest side of the building. No evidence of larger structures such as USTs was observed.
- Collectively, the geophysical data did not record any evidence of unknown metallic USTs within the geophysical survey area at Parcel 13.

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 North)

View of Survey Area
(Facing Approximately South)

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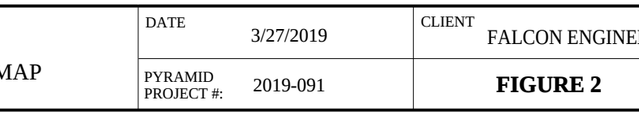
PROJECT: PARCEL 13 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797	TITLE: PARCEL 13 - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS	DATE: 3/27/2019 PYRAMID PROJECT #: 2019-091	CLIENT: FALCON ENGINEERS **FIGURE 1**

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 18-21, 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.

EM61 Metal Detection Response (millivolts)



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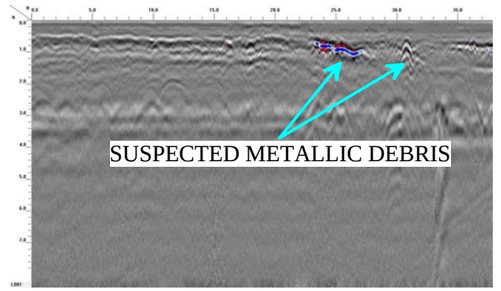
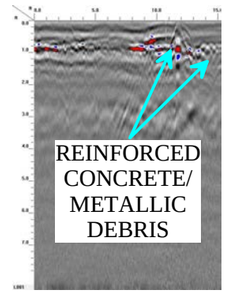
PROJECT	PARCEL 13 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797	TITLE	PARCEL 13 - EM61 METAL DETECTION CONTOUR MAP	DATE 3/27/2019 PYRAMID PROJECT #: 2019-091
CLIENT	FALCON ENGINEERS			**FIGURE 2**

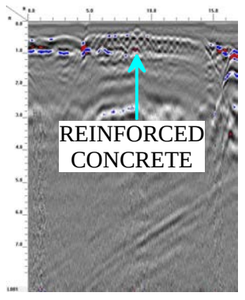
LOCATIONS OF GPR TRANSECTS



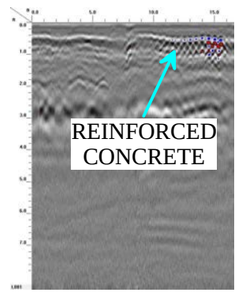
GPR TRANSECT 1 (T1)



GPR TRANSECT 2 (T2)



GPR TRANSECT 3 (T3)



GPR TRANSECT 4 (T4)

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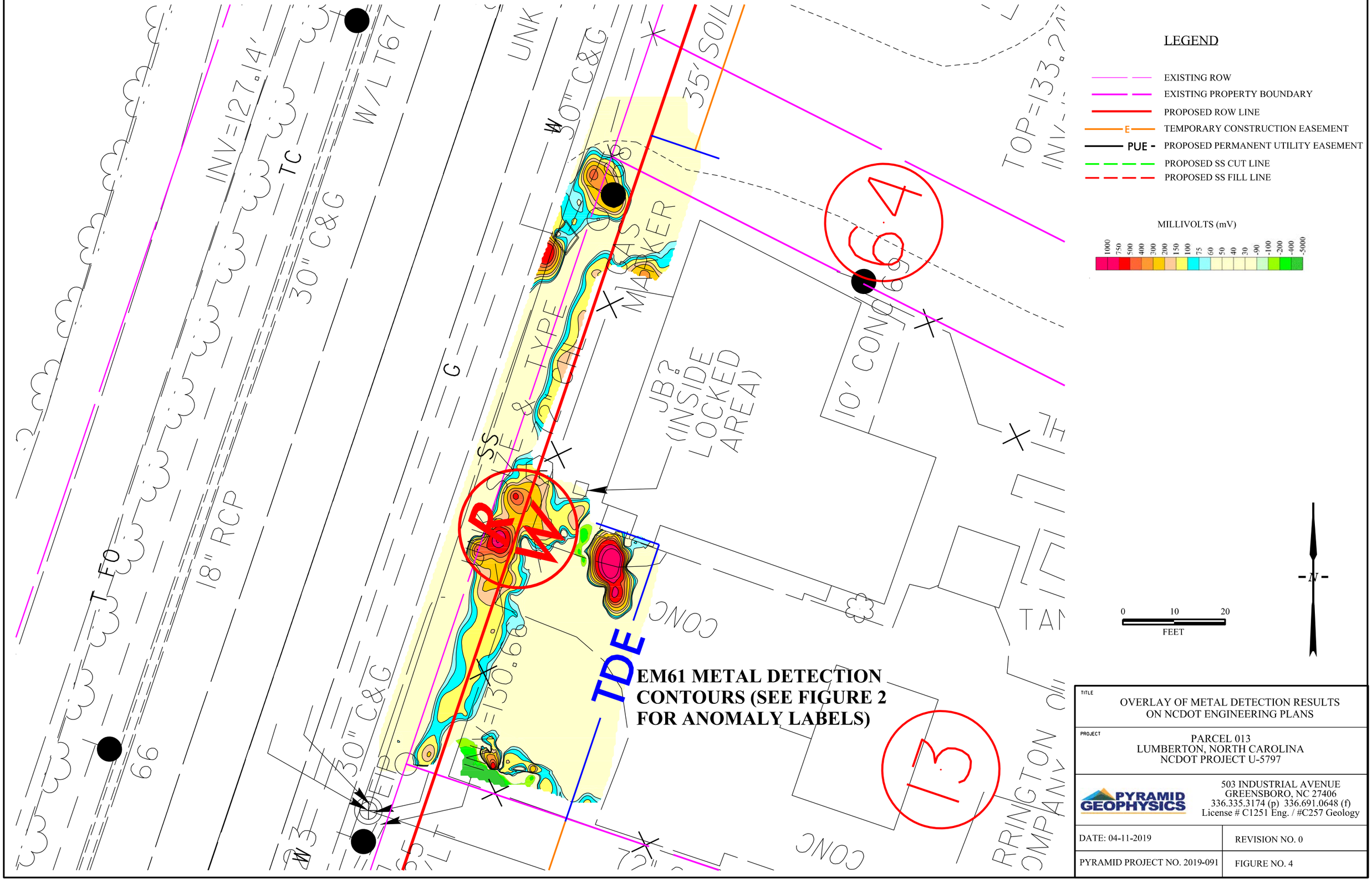
PROJECT: PARCEL 13 LUMBERTON, NORTH CAROLINA NCDOT PROJECT U-5797	TITLE: PARCEL 13 - GPR TRANSECT LOCATIONS AND IMAGES	DATE: 3/27/2019	CLIENT: FALCON ENGINEERS
		PYRAMID PROJECT #: 2019-091	**FIGURE 3**



TITLE

OVERLAY OF METAL DETECTION RESULTS ON NCDOT ENGINEERING PLANS

PROJECT

PARCEL 013
LUMBERTON, NORTH CAROLINA
NCDOT PROJECT U-5797

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DATE: 04-11-2019	REVISION NO. 0
PYRAMID PROJECT NO. 2019-091	FIGURE NO. 4