ECS Southeast, LLP

GeoEnvironmental Phase II Investigation

TIP Number: B-4838
WBS Number: 38608.1.1
Description: Replace Bridge 20 over CSX Transportation Railroad Tracks on US 70 Business in Goldsboro

301 W. Grantham St
Goldsboro, North Carolina 27533
Parcel # 22 PSH 8
Owner: Nagla Alsaidi
ECS Project Number 49:17192
July 26, 2022

ECS SOUTHEAST, LLP
"Setting the Standard for Service"
Geotechnical • Construction Materials • Environmental • Facilities
NC Registered Engineering Firm F-1078
NC Registered Geologists Firm C-553
SC Registered Engineering Firm 3239

July 26, 2022

Mr. John L. Pilipchuk, L.G., P.E.
State Geotechnical Engineer
Geotechnical Engineering Unit (GEU)
1589 Mail Service Center
Raleigh, NC. 27699-1589

Reference: **Proposal for GeoEnvironmental Phase II Investigation**
TIP No.: B-4838
WBS No.: 38608.1.1
County: Wayne
Description: Replace Bridge 20 over CSX Transportation Railroad tracks on US 70 Business in Goldsboro

Site Address: 301 W. Grantham St, Goldsboro, North Carolina 27533

Dear Mr. Pilipchuck:

ECS Southeast, LLP (ECS) is pleased to provide NCDOT with the results of our Phase II Investigation for the above-referenced site. ECS's services were provided in accordance with ECS Proposal No. 49:30647 dated and authorized on April 28, 2022. ECS appreciates the opportunity to provide our services to you. If there are questions regarding this report, or a need for further information, please contact us.

Respectfully submitted,

ECS SOUTHEAST, LLP

Ron Navarro, G.I.T
Staff Project Manager
rnavarro@ecslimited.com

NORTH CAROLINA LICENSED SEAL 1027 GEOLOGIST JOSEPH P. NESTOR
07-26-2022

DocuSigned by:
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07/28/2022

Joseph P. Nestor, P. G., P.E.
Environmental Principal
jnestor@ecslimited.com

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1.0 PROJECT INFORMATION

ECS completed the scope of work in accordance with the Request for Request for Technical and Cost Proposal (RFP) GeoEnvironmental Phase II Investigation dated March 31, 2022 (TIP No. B-4838, WBS No. 38608.1.1). The project consisted of testing soil in the vicinity of future stormwater installation activities at 301 W. Grantham St in Goldsboro, Wayne County, North Carolina (**Figure 1 and Figure 2**), as well as attempting to survey for in place USTs within the area of investigation.

The property is owned by Nagla Alsaidi and is assigned DOT parcel number 22 PSH 8. According to the Wayne County GIS website, the property identification number (PIN) of the property is 2599990539 and encompasses 0.36 acres of land. The property is currently developed with a gasoline service station that includes a 1,375 square foot convenience store constructed in 1966 and two gasoline dispenser islands with associated canopies. The property has been used as a gas station since as far back as 1966. According to the North Carolina Department of Environmental Quality (NCDEQ) Division of Waste Management (DWM) site locator tool, the property was issued an Underground Storage Tank (UST) incident number by NCDEQ (incident #11821, site name Conoco #33025). No other historic uses outside of that of a gas station could be determined using the NCDEQ DWM Site locator tool or using the Wayne County GIS website.

2.0 SCOPE OF SERVICES

Drilling activities were conducted using a track mounted Direct Push Technology (DPT) drill rig. The drilling subcontractor used for this assessment was Quantex, Inc. (Quantex). Drilling and sampling activities were conducted on May 24, 2022. Photo documentation collected during field activities has been included as **Appendix A**.

Prior to assessment activities, private utility locating utilizing Electromagnetic Survey (EM) and Ground Penetrating Radar (GPR) was conducted by KCI Technologies Inc. (KCI). KCI also attempted to locate any USTs in the investigation area as defined in the RFP. ECS proposed to collect a soil sample in the vicinity of any USTs identified only in the proposed right-of-way and/or easement as defined by plan sheets provided to ECS prior to field activities, however, no USTs were observed at the time of investigation.

A total of two (2) soil borings for the collection of soil samples were advanced on the subject property. Both borings were advanced to a total depth of 10 ft below ground surface (bgs). See **Figure 2** for soil sample locations.

2.1 Utility Locate Services

Prior to commencing with field activities, ECS contacted North Carolina One-Call (811) to locate/mark public utilities at the site. ECS also contracted with KCI to locate private utilities on the subject property using GPR and EM methods. KCI was requested to identify and mark any potential USTs on the subject property. KCI did not identify any USTs on the property at 301 W Grantham St. Required separation distances between subsurface activities and marked utilities (typically 30-inches) were maintained during the field activities. A copy of the geophysical report provided by KCI is located in **Appendix B**.

2.2 Soil Sampling Activities

On May 24 2022, two soil borings (SB-1 and SB-2) were drilled at the property on 301 W Grantham St to collect soil samples in the proposed right-of-way/easement as defined by plan sheets provided by NCDOT with the RFP prior to conducting field services. The borings were advanced to a total depth of 10 ft below ground surface (bgs). See **Figure 2** for soil sample locations.

Soils were collected with a Terracore sampler using new dedicated nitrile gloves from the liner retrieved from the soil sample probe and placed directly into laboratory provided containers. PID readings were screened in 2-ft intervals from the ground surface to the observed water table at the time of boring in the soil sleeve. Boring logs are provided in **Appendix C.**

The soil sample containers were labeled with ECS project number, sample identification, sample date and time, and requested analytical analysis. The soil samples were identified as SB-1 and SB-2. The container was placed into a cooler with ice to maintain the sample at approximately four degrees Celsius. The samples were submitted to Rapid Environmental Diagnostics (Redlab) in Wilmington, North Carolina to be analyzed for total petroleum hydrocarbons (TPH) similar to diesel and gasoline range organics (DRO/GRO) using ultraviolet fluorescence technology (UVF). ECS maintained chain-of-custody (COC) procedures throughout the sample collection and transportation process. A copy of the COC is included in **Appendix D**.

3.0 RESULTS

3.2 Soil Sample Analytical Results

Laboratory analytical results indicated TPH-DRO above laboratory reporting limits in SB-1. TPH-GRO was detected above laboratory reporting limits in SB-2. TPH-DRO was detected in SB-1 at a concentration of 2.8 milligrams per kilogram (mg/kg). TPH-GRO was detected in SB-2 at a concentration of 2.1 mg/kg. Neither of these two soil samples collected identified TPH-DRO or TPH-GRO above the NCDEQ action limits of 100 mg/kg and 50 mg/kg respectively. A copy of the laboratory analytical report is included in **Appendix D**. A summary of soil sample analytical results is included as **Table 1**.

4.0 CONCLUSIONS

Based on the laboratory analytical results; ECS concludes the following:

- Both of the soil samples collected at 301 W Grantham St indicated TPH-GRO or TPH-DRO above their laboratory reporting limits. However, petroleum hydrocarbons were not detected above NCDEQ action limits in either of the soil samples collected.
- The geophysical survey conducted by KCI did not identify USTs within the proposed area of investigation.

5.0 RECOMMENDATIONS

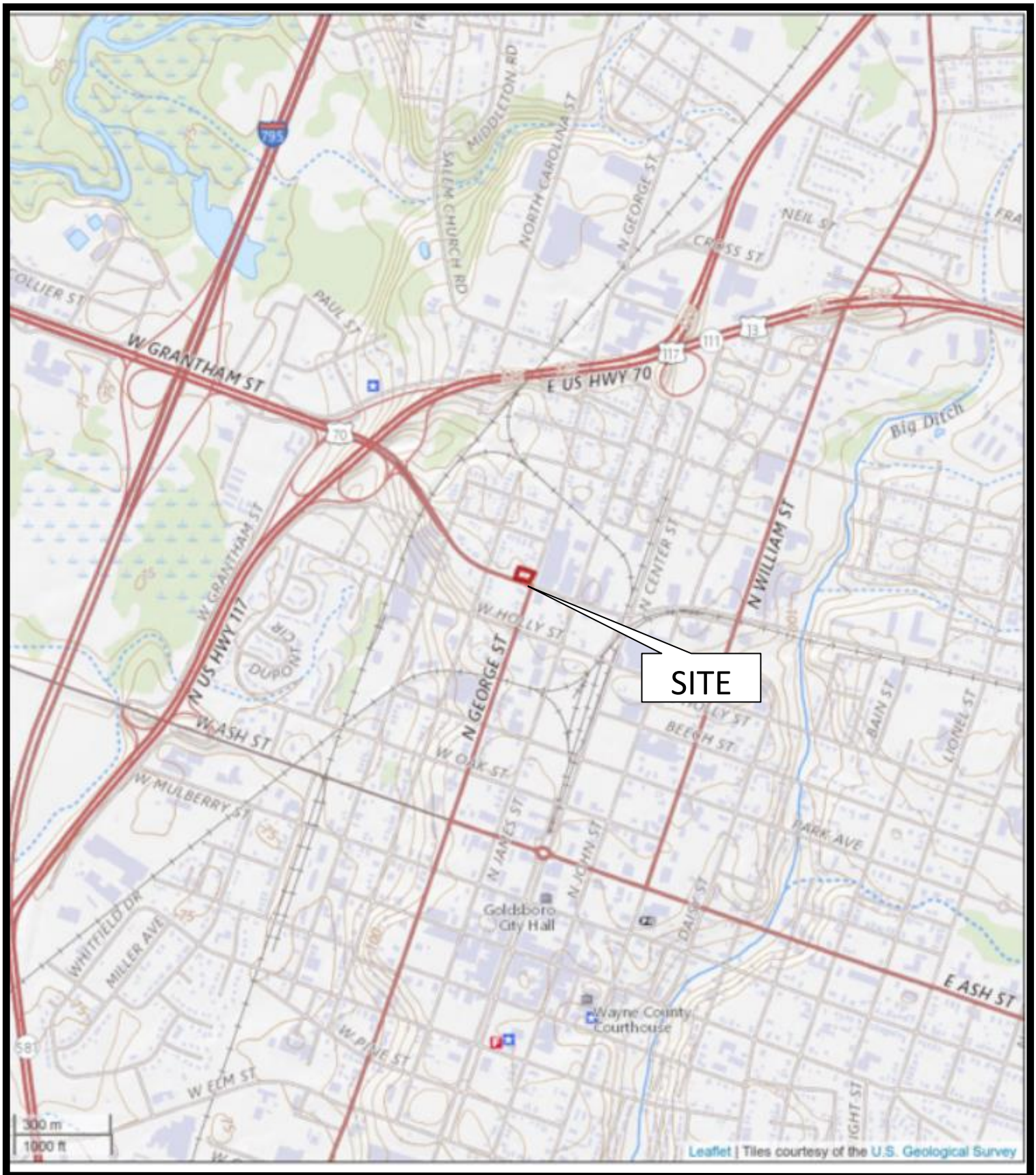
Based on the results of the environmental assessment, ECS recommends the following:

- No further environmental services are recommended at this time.
- A copy of this report be retained for future reference.

6.0 QUALIFICATIONS OF REPORT

The activities and evaluative approaches used in this assessment are consistent with those normally employed in environmental assessment projects of this type. Our evaluation of site conditions has been based on our understanding of the site project information and the data obtained during our field activities. This report was prepared for the express use of NCDOT. Use of this report by other individuals or companies implies their acceptance of the General Conditions of Service of the original contract.

FIGURES



SOURCE:
USGS 7.5-MINUTE TOPOGRAPHIC SERIES –
NORTHWEST GOLDSBORO QUADRANGLE

SCALE SHOWN ABOVE

FIGURE 1
SITE TOPOGRAPHIC MAP

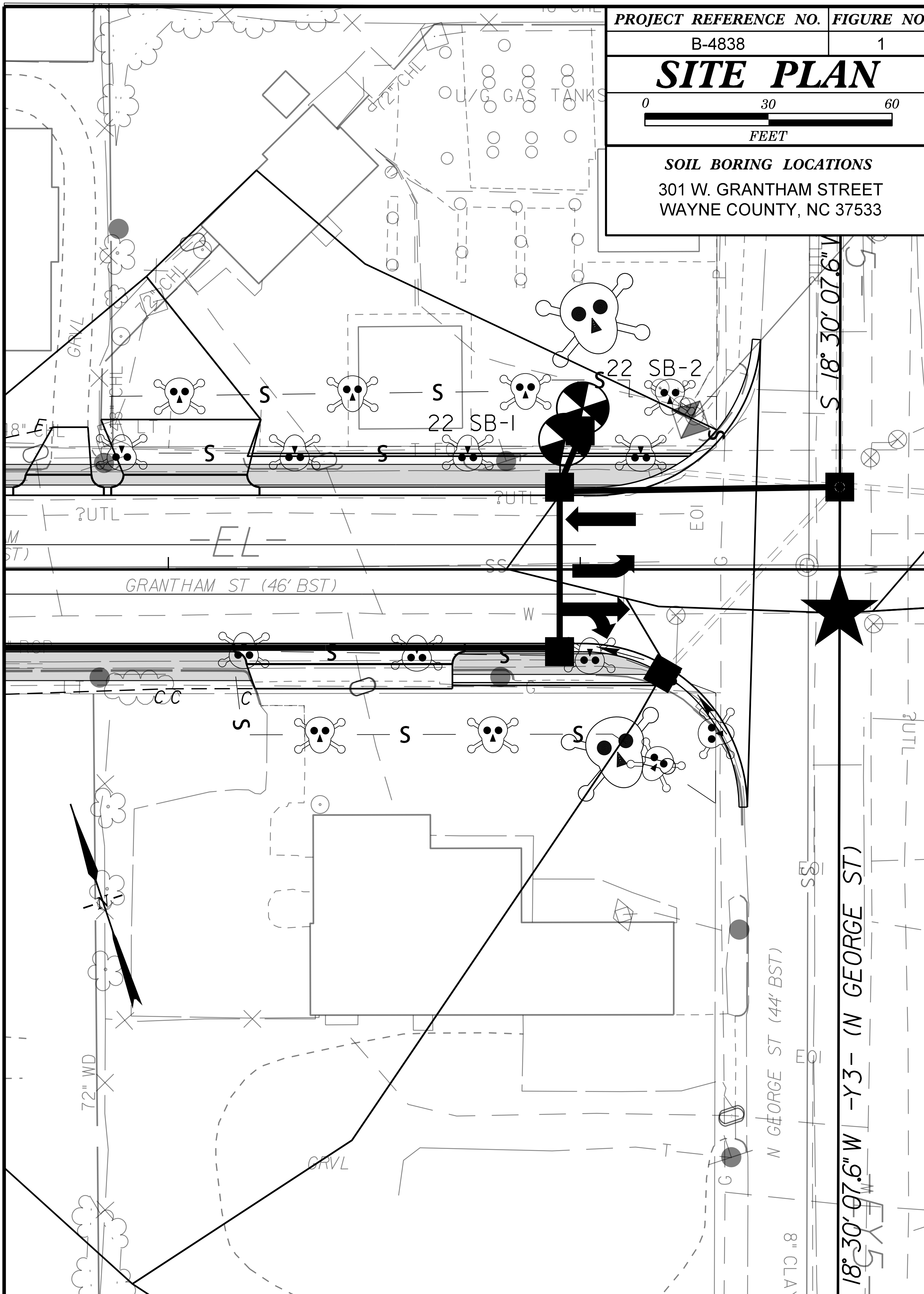
301 W Grantham Street
Goldsboro, Wayne County, NC
ECS Project Number: 49:17192
NCDOT TIP No. B-4838

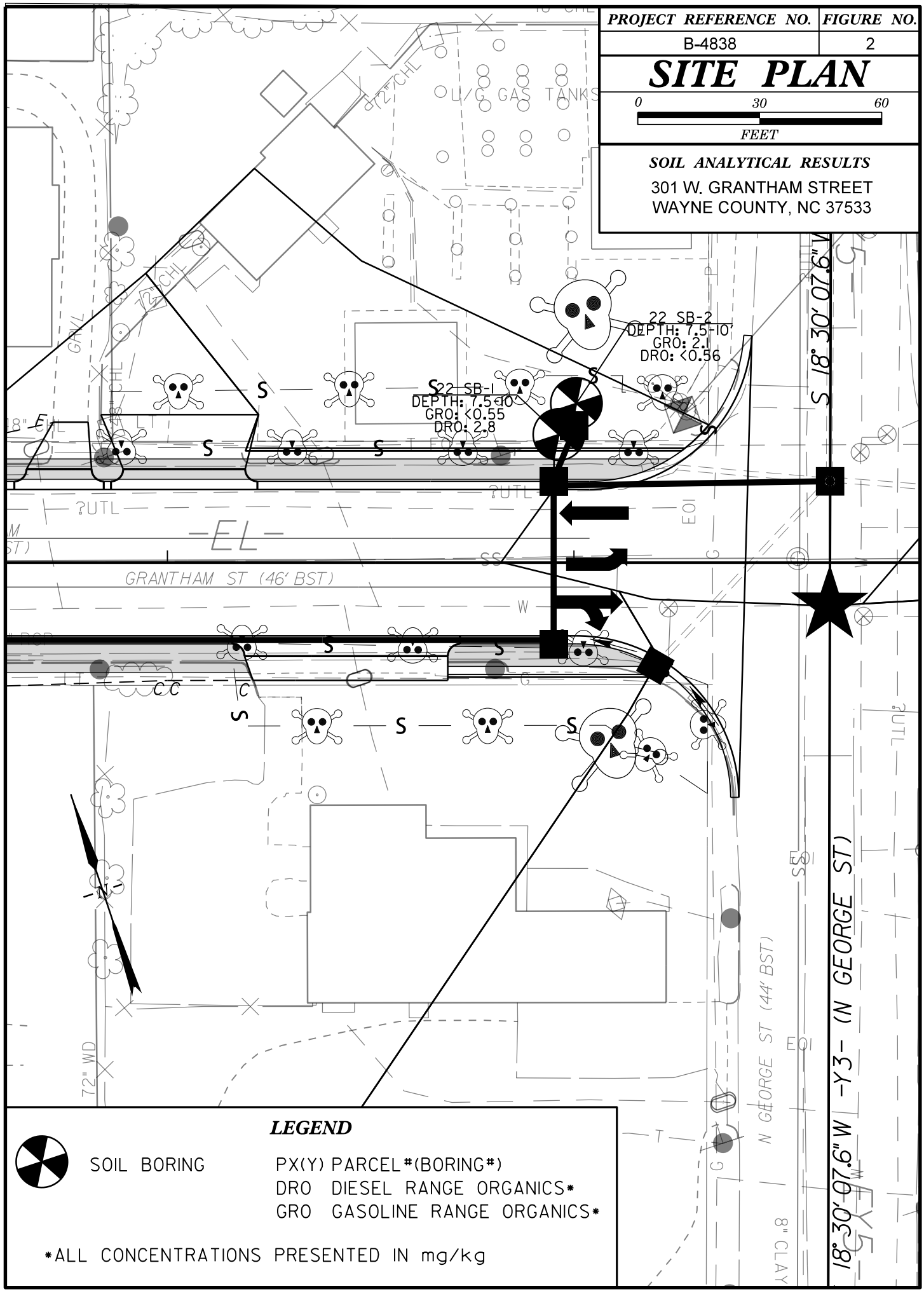
PROJECT REFERENCE NO.	FIGURE NO.
B-4838	1

SITE PLAN

SOIL BORING LOCATIONS

301 W. GRANTHAM STREET
WAYNE COUNTY, NC 37533




PROJECT REFERENCE NO.
B-4838
FIGURE NO.
2
SITE PLAN
0
30
60
FEET
SOIL ANALYTICAL RESULTS
301 W. GRANTHAM STREET
WAYNE COUNTY, NC 37533
22 SB-2
DEPTH: 7.5-10'
GRO: 2.1
DRO: <0.56
22 SB-1
DEPTH: 7.5-10'
GRO: <0.55
DRO: 2.8
GRANTHAM ST (46' BST)
N GEORGE ST (44' BST)
S 18° 30' 07.6" W
18° 30' 07.6" W -Y3- (N GEORGE ST)
LEGEND
SOIL BORING
PX(Y) PARCEL#(BORING#)
DRO DIESEL RANGE ORGANICS*
GRO GASOLINE RANGE ORGANICS*
*ALL CONCENTRATIONS PRESENTED IN mg/kg

Summary of Hydrocarbon Analysis Results

B-4838 Phase II Investigation

301 W Grantham St

Goldsboro, North Carolina 27533

ECS Project No. 49:17192

Sample ID	Sample Matrix	Sample Depth (ft bgs)	Sample Date	Sample Location (lat/long)	GRO (C5-C10)	DRO (C10-C35)
NCDEQ Action Levels					**50**	**100**
SB-1	Soil	7.5 - 10	05/24/22	35.393202, -77.99653	<0.55	2.8
SB-2	Soil	7.5 - 10	05/24/22	35.393176, -77.99656	2.1	<0.56

Notes:

Results Generated by a QED HC-1 analyser.

Concentration values in mg/kg

Soil values are not corrected for moisture or stone content

< = not detected

Bold indicates analytes above NCDEQ Action Levels for TPH DRO / GRO

APPENDIX A

Photo 1 – View facing south of SB-1 boring location on 5/24/2022.

Photo 2 – View facing southeast of SB-2 boring location on 5/24/2022.

PHOTO DOCUMENTATION		B-4838 301 W. GRANTHAM STREET GOLDSBORO, WAYNE COUNTY, NC ECS PROJECT NO. 49:17192

APPENDIX B

1.0 SCOPE OF WORK : 301 W Grantham St, Goldsboro NC

The objective of this survey was to investigate the subsurface for any USTs and/or former excavations. The secondary objective was to trace any subsurface utilities within a 10' radius of the proposed soil boring locations. All findings would be marked and sketched on ARCGIS as well as conveyed to the on-site personnel.

2.0 METHODOLOGY

Selection of survey equipment is dependent site conditions and project objectives. For this project the technician utilized the following equipment to survey the area of concern:

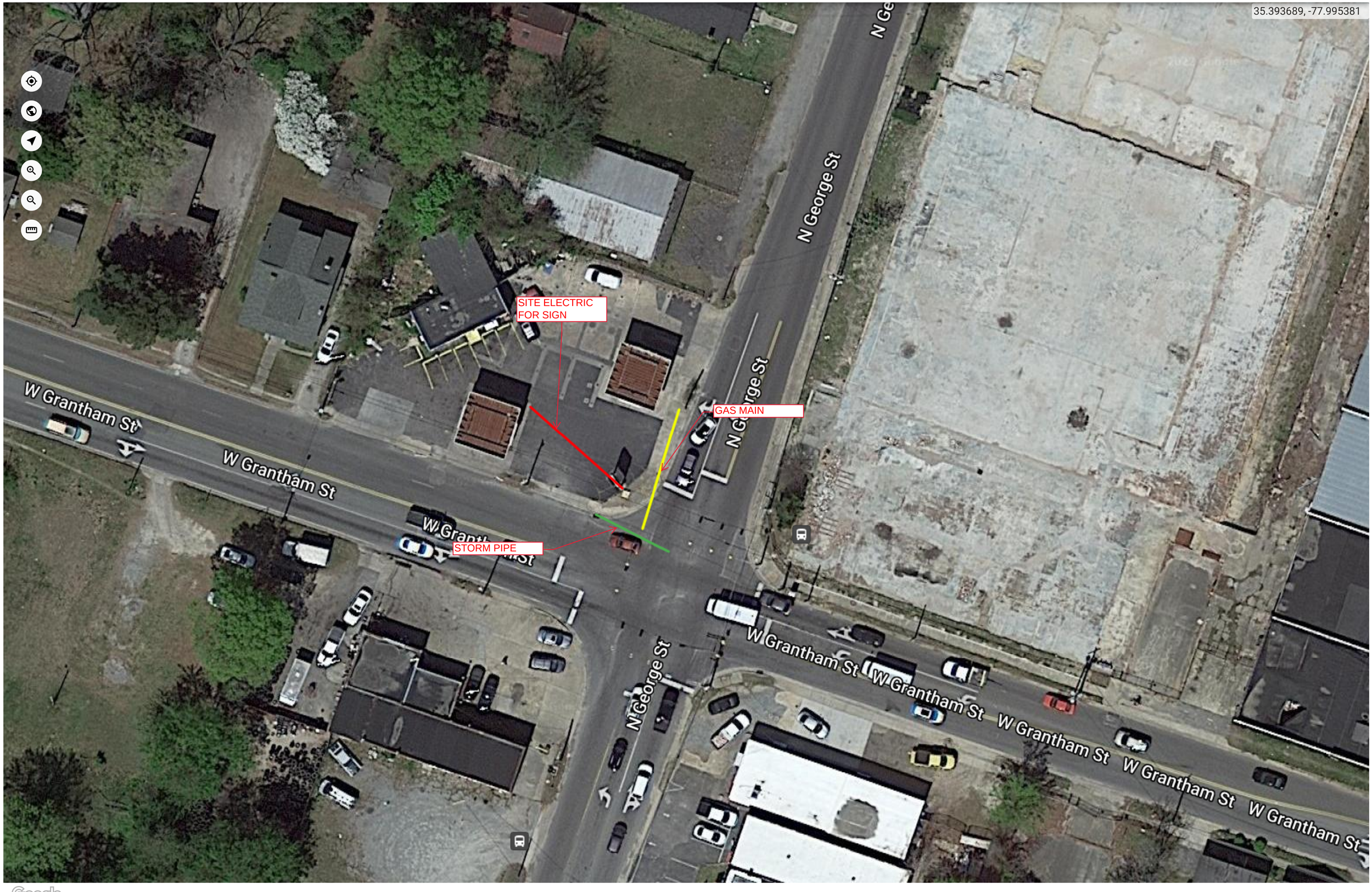
- LMX100 Ground Penetrating Radar (GPR) unit with a 250 Mhz antenna.
- Vivax vLocPro3 (VLP2) multiple frequency pipe and cable locator.
- Fisher M-Scope TW-6 pipe and cable locator / metal detector.

Ground penetrating radar (commonly called GPR) is a geophysical method that has been developed over the past thirty years for shallow, high-resolution, subsurface investigations of the earth. GPR uses high frequency pulsed electromagnetic waves (generally 10 MHz to 1,000 MHz) to acquire subsurface information. Energy is propagated downward into the ground and is reflected back to the surface from boundaries at which there are electrical property contrasts. GPR is a method that is commonly used for environmental, engineering, archeological, and other shallow investigations.

The LMX100 GPR with high resolution touchscreen uses state-of-the art hardware and Sensors & Software latest GPR technology. The 250 MHz antenna can achieve depths of penetration up to about 20 feet, but this depth may be greatly reduced due to site-specific conditions. Signal penetration decreases with increased soil conductivity. Conductive materials attenuate or absorb the GPR signal. As depth increases the return signal becomes weaker. Penetration is the greatest in unsaturated sands and fine gravels. Clay, highly saline or saturated soils, areas covered by steel reinforced concrete, foundry slag, of other highly conductive materials significantly reduces GPR depth of penetration.

The Vivax vLocPro3 is an electromagnetic utility locator that has the capability to use multiple frequencies ranging from 512Hz to 200 kHz to horizontally trace metallic pipes and cables. The vLocPro 3 can use three different methods to trace utilities inductive, conductive and passive.

The TW-6 is designed to find pipes, cables and other metallic objects such as underground storage tanks. One surveyor can carry both the transmitter and receiver together, making it ideally suited for exploration type searches of ferrous metal masses. Metal detectors of this type operate by generating a magnetic field at the transmitter which causes metallic objects in the subsurface to generate a secondary magnetic field. The induced secondary field is detected by the receiver, which generates an audible tone equal to the strength of the secondary field.



APPENDIX D

Project Name:	**B-4838 – Phase II Investigation**	Sheet: **1 of 1**	Boring No:	**SB-1**	
Client:	**NCDOT-Geotechnical Engineering Unit**	Project No.: **49:17192**			
Site Location:	**301 W. Grantham Street, Goldsboro, North Carolina 27533**	Driller:	**Quantex**	Drill Rig:	**GeoProbe**
Latitude/Longitude:	**35.393202**	**-77.99653**			

Depth/Elevation	PID Reading	Sample Number	Sample Recovery (in)	Graphic Log	Soil Classification	Description
					Asphalt	Asphalt
					SW/GW	Gray Sand with Gravel. Slight Petrol Odor
	9.2				**SC**	Yellowish Tan Clayey Sand, Slight Petrol Odor
	6.9					
5 -5						
	3.0				**SC**	Yellowish Tan Clayey Sand, Slight Petrol Odor
	17.9	SB-1				
10 -10						**END OF DRILLING AT 10.0 FT**

▽ WL (First Encountered)		Boring Started:	**May 24 2022**
▼ WL (Completion)		Boring Completed:	**Jun 24 2022**
Remarks:		Logged By:	**Emery Lovecamp**
		Principal Engineer/ Responsible PG:	**Scott Werley**

Project Name:	**B-4838 – Phase II Investigation**	Sheet: **1 of 1**	Boring No:	**SB-2**	
Client:	**NCDOT-Geotechnical Engineering Unit**	Project No.: **49:17192**			
Site Location:	**301 W. Grantham Street, Goldsboro, North Carolina 27533**	Driller:	**Quantex**	Drill Rig:	**GeoProbe**
Latitude/Longitude:	**35.393176**	**-77.99656**			

Depth/Elevation	PID Reading	Sample Number	Sample Recovery (in)	Graphic Log	Soil Classification	Description
					Asphalt	Asphalt
	0.0				**SC**	Yellowish Tan Clayey Sand
	0.0					
5 -5					**CL**	Yellowish Tan Clay
	0.0					
	1.5	SB-2			**SC**	Light Gray Sandy Clay
10 -10						**END OF DRILLING AT 10.0 FT**

▽ WL (First Encountered)		Boring Started:	**May 24 2022**
▼ WL (Completion)		Boring Completed:	**Jun 24 2022**
Remarks:		Logged By:	**Emery Lovecamp**
		Principal Engineer/ Responsible PG:	**Scott Werley**

APPENDIX C

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: ECS SOUTHEAST
Address: 5260 GREENE DAIRY ROAD
RALEIGH NC 27616

Contact: EMERY LOVEKAMP

Project: #49-17192

Samples taken Tuesday, May 24, 2022
Samples extracted Tuesday, May 24, 2022
Samples analysed Wednesday, May 25, 2022

Operator MAX MOYER

T03308

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
										% light	% mid	% heavy	
s	SB-1	22.0	<0.55	<0.55	2.8	2.8	1.3	<0.18	<0.022	0	79.3	20.7	Deg.PHC 84.6%,(FCM)
s	SB-2	22.2	<0.56	2.1	<0.56	2.1	<0.11	<0.18	<0.022	99.1	0.9	0	Deg.Gas,(FCM)
s	SB-3	12.3	<0.31	<0.31	<0.31	<0.31	<0.06	<0.1	<0.012	0	100	0	Residual HC,(P)
s	SB-4	20.2	<0.5	<0.5	<0.5	<0.5	<0.1	<0.16	<0.02	0	0	0	PHC not detected,(P)
s	SB-5	23.9	<0.6	<0.6	0.6	0.6	0.31	<0.19	<0.024	0	70	30	V.Deg.PHC 92.1%,(FCM)

Initial Calibrator QC check OK Dilution not within recommended range OK 97.8 %

Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

Client Name:	ECS SOUTHEAST, LLP
Address:	5260 GREENS DAIRY ROAD RALEIGH, NC 27616
Contact:	EMERY LOVELAMP
Project Ref.:	49-17192
Email:	ELOVELAMP@ECSLIMITED.COM
Phone #:	919-414-6036
Collected by:	EMERY LOVELAMP

REDLAB™
RAPID ENVIRONMENTAL DIAGNOSTICS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

RED Lab, LLC
5598 Marvin K Moss Lane
MARBIONC Bldg, Suite 2003
Wilmington, NC 28409

Each UVF sample will be analyzed for total BTEX, GRO, DRO, TPH, PAH total aromatics and BaP. Standard GC Analyses are for BTEX and Chlorinated Solvents: VC, 1,1 DCE, 1,2 cis DCE, 1,2 trans DCE, TCE, and PCE. Specify target analytes in the space provided below.

Sample Collection	TAT Requested		Analysis Type		Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
Date/Time	24 Hour	48 Hour	UVF	GC					
5/24 0930		X	X		EL	SB-1	52.0	40.2	11.8
" 0950		X	X		EL	SB-2	51.8	40.1	11.7
" 1000		X	X		EL	SB-3	51.6	40.2	11.4
" 1010		X	X		EL	SB-4	52.9	40.0	12.9
" 1030		X	X		EL	SB-5	51.1	40.2	10.9

COMMENTS/REQUESTS:

TARGET GC/UVF ANALYTES:

Relinquished by		Accepted by	Date/Time
EMERY LOVELAMP 5/24 1655		MM 5/25/22	1195
Relinquished by		Accepted by	Date/Time

RED Lab USE ONLY

Ref. No 15