



December 14, 2018

North Carolina Department of Transportation
Geotechnical Unit
Mail Service Center 1592
Raleigh, North Carolina 27699-1592

Attention: Mr. Craig Haden

email: cehaden@ncdot.gov

Reference: **Preliminary Site Assessment Report**
NCDOT Project I-5986B, WBS Element 47532.1.3
Parcel 29-Circle K/Hardees Truck Stop
873 Long Branch Road
Dunn, Harnett County, North Carolina
S&ME Project 4305-18-175

Dear Mr. Haden:

S&ME, Inc. (S&ME) is submitting this Preliminary Site Assessment (PSA) Report to the North Carolina Department of Transportation (NCDOT). This report presents the background/project information, field activities, findings, conclusions, and recommendations. These services were performed in general accordance with S&ME Proposal No. 43-1800583 REV-02 dated August 16, 2018, and Contract Number 7000018853 dated April 12, 2018 between NCDOT and S&ME, Inc., authorized by NCDOT in its August 20, 2018 Notice to Proceed Letter.

◆ Background/Project Information

Based on NCDOT’s July 30, 2018, Request for Technical and Cost Proposal, the PSA was conducted within the NCDOT right-of-way (ROW) and/or easement as indicated on the preliminary plan sheets provided by NCDOT at the following property:

NCDOT Parcel No.	Property Owner	Site Address
29	Roxy Drive, LLC	(Circle K/Hardees Truck Stop) 873 Long Branch Road, Dunn, NC

The PSA included a geophysical survey and subsequent limited soil sampling (seven soil borings up to 10 feet below ground surface (ft.-bgs.), within accessible areas of the proposed ROW/easement in preparation for construction activities. Groundwater was not encountered during the advancement of soil borings at the site. Therefore, groundwater sampling was not performed. **Figure 1** shows the vicinity and site location, and **Figure 2** shows the site and boring locations. Soil sampling results are shown on **Figure 3**.



◆ Field Services

Prior to field activities, a site specific Health and Safety Plan was prepared as required by the Occupational Health and Safety Act (OSHA). Underground utilities were located and marked by the North Carolina One-Call Service. A private utility locator (Troxler Geologic, Inc.) was also used to locate and mark underground utilities.

◆ Geophysical Survey

On September 11 and 12, 2018, S&ME personnel performed a geophysical survey within accessible areas of the proposed ROW/easement at Parcel 29. S&ME used a combination of the Time Domain Electromagnetic (TDEM) and Ground Penetrating Radar (GPR) methods to explore for buried subsurface features at the site such as underground storage tanks (USTs) and other possible buried obstructions. Brief descriptions of the proposed complementary geophysical techniques are presented in the following paragraphs.

Time Domain Electromagnetics (TDEM)

TDEM measures the electrical conductivity of subsurface materials and discriminates between moderately conductive earth materials and very conductive metallic targets within the shallow subsurface. The conductivity is determined by transmitting a time-varying magnetic pulse into the subsurface and measuring the amplitude and phase shift of the secondary magnetic field. The secondary magnetic field is created when the conductive materials become an inductor as the primary magnetic field is passed through them. TDEM data are acquired continuously at a walking pace typically along a series of parallel or perpendicular lines. The system generates audible and visual indications when metallic targets are encountered. These measurements can also be supported with a global positioning system (GPS) which is output directly into the TDEM data file.

We used a Geonics Limited EM-61 MK2 TDEM system in general accordance with ASTM D6820-02 (2007) "Standard Guide for Use of the Time Domain Electromagnetic Method for Subsurface Investigation." Data was collected along lines spaced at approximately five feet using a Juniper® Systems Geode™ sub-meter GPS as positioning support. The presence of vehicles, heavy vegetation, and other surficial obstructions within the requested survey area however prevented TDEM data collection in several locations. The approximate TDEM data collection paths are presented in **Figure 4**. Golden Software's Surfer® program was used to grid and plot the data (**Figures 5 and 6**). The TDEM data has been presented as Plots A and B in order to provide both opaque and transparent views, respectively.

Ground Penetrating Radar (GPR)

GPR transmits electromagnetic waves into the subsurface from an antenna at a specific frequency and measures the time for wave reflections to be received by interfaces between materials with differing material properties (e.g. soil/metal, etc.). The intensity of the reflected GPR wave is a function of the contrast in the material properties (i.e. dielectric permittivity) at the interface, the conductivity of the material that the wave is traveling through, and the frequency of the signal.

We used a Geophysical Survey Systems, Inc. (GSSI) SIR® 3000 GPR system equipped with a 400 MHz antenna in general accordance with ASTM D6432-11 "Standard Guide for Using the Surface Ground Penetrating Radar Method for Subsurface Investigation" to further characterize anomalies/features identified during the TDEM survey.



A total of 19 GPR profiles (Lines 1 through 19) were collected for documentation (**Figure 7**). The data was post-processed using the GSSI Radan® 7 GPR software program for additional analysis.

Geophysical Findings

Responses indicative of a potential UST were not identified in the geophysical data sets collected at the site. However, five anomalous features were identified in the geophysical data sets (**Figures 5 through 7**). Anomaly A is an approximate 10 foot linear feature characterized by high amplitude GPR responses at about three ft.-bgs. TDEM responses were not identified over Anomaly A which indicates it may be a buried non-metallic feature possibly related to the nearby water utility. Anomalies B through E are characterized by relatively high TDEM values (greater than about 500 mV) and high amplitude GPR responses located within the upper two feet. The anomalies range from about one to three feet in size and likely related to buried isolated metallic targets/debris. Anomalies were also marked in the field using white spray paint. Example GPR profiles are presented in **Figures 9 through 12**

◆ Soil Sampling

On October 1, 2018, S&ME's drill crew utilized a track mounted Geoprobe® rig to advance seven soil borings (B-1 through B-7) and to collect soil samples within accessible areas of the proposed ROW/easement at Parcel 29. The approximate location of the soil borings are shown in **Figure 2**. A photographic log is included in **Appendix I**. During our field activities, five groundwater monitoring wells, which appear to have been abandoned (filled with grout) were observed within the proposed ROW/easement. The approximate locations of the wells are presented in **Figure 2**. S&ME's drill crew advanced the Geoprobe® borings to a depth of approximately 10 ft.-bgs. During the advancement of the soil borings, groundwater was not encountered. Soil samples were continuously collected in four-foot long disposable acetate-plastic sleeves that line the hollow stainless-steel sample probes. Soil recovered from the sleeves was classified on-site by S&ME personnel and screened with a Photoionization Detector (PID) at approximately two foot depth intervals to measure relative headspace concentrations of volatile organic compounds (VOCs).

VOC headspace readings were obtained from an aliquot of each soil sample that was placed in a re-sealable bag. Another portion of the sample was placed in a separate re-sealable bag and stored in an insulated container with ice for possible laboratory analyses. After waiting approximately 15 minutes to allow the sample to reach ambient temperature and headspace equilibrium, the PID probe was inserted into the bag to obtain a headspace reading. A summary of the PID readings and logs of the soil borings are included in **Appendix II**.

No petroleum odors, staining or elevated PID readings were noted within the collected soil samples. Therefore, two soil samples (two to four foot depth interval and eight to ten foot depth interval) were selected from each boring and provided to RED Lab, LLC (Red Lab) for on-site analysis. An additional soil sample (six to eight foot depth interval) was also selected from boring B-7. A total of fifteen soil samples were analyzed by RED Lab for Total Petroleum Hydrocarbons (TPH)-Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) using ultra-violet fluorescence (UVF) spectroscopy with product (fuel) identification.



Soil Analytical Results

Based upon analytical results of soil samples analyzed by RED Lab using UVP spectroscopy, TPH-GRO and TPH-DRO were not reported at concentrations exceeding the North Carolina TPH Action Levels. TPH-DRO was reported at borings B-1, B-2, B-3 and B-4 at the two to four foot depth intervals at concentrations ranging from 0.23 milligrams per kilograms (mg/kg) to 1.4 mg/kg, which are below its North Carolina TPH Action Level of 100 mg/kg. TPH-GRO was reported at borings B-1 and B-4 at the two to four foot depth interval at a concentration of 1 mg/kg and 0.73 mg/kg, respectively, which is below its North Carolina TPH Action Level of 50 mg/kg. TPH-GRO and TPH-DRO were not reported at concentrations exceeding the laboratory method reporting limits for the remaining soil samples. A summary of the soil analytical results is presented in **Table 1** and shown on **Figure 3**. A copy of the laboratory analytical report provided by RED Lab is presented in **Appendix III**.

◆ Conclusion and Recommendations

The geophysical survey identified five anomalous features (Anomaly A through E). Anomaly A appears to be a non-metallic feature possibly related to the nearby water utility. Anomalies B through E are likely related to buried isolated metallic targets/debris. Responses indicative of a potential UST were not identified in the geophysical data sets collected at the site. Five groundwater monitoring wells were observed within the proposed ROW/easement. However, the monitoring wells appear to have been abandoned by being filled with grout.

S&ME advanced seven soil borings (B-1 through B-7) to a depth of approximately 10 ft.-bgs at the site. No petroleum odors, staining or elevated PID readings were noted within soil samples collected from the soil borings. Selected soil samples from the soil borings were analyzed onsite for TPH-GRO and TPH-DRO using UVP spectroscopy. TPH-GRO and TPH-DRO were reported in the two to four foot depth interval at two soil borings and TPH-DRO was reported in the two to four foot depth interval at two soil borings at concentrations slightly above the laboratory method reporting limits, but well below the North Carolina TPH Action Levels. During the soil boring advancement, groundwater was not encountered. Therefore, groundwater sampling was not performed.

S&ME recommends maintaining an awareness level for the presence of marginally impacted petroleum in soil (below TPH Action Levels) at the site for the safety of workers and the public. If petroleum stained or odorous soils are encountered during construction, these soils should be properly handled and disposed at a licensed facility..

◆ Limitations

The results of this preliminary investigation are limited to the boring locations presented herein. The results of this Preliminary Site Assessment are not all inclusive and may not represent existing conditions across the entire property. These results only reflect the current conditions at the locations sampled on the date this Preliminary Site Assessment was performed. This report has been prepared in accordance with generally accepted environmental engineering and geophysical practice for specific application to this project. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other warranty, expressed or implied, is made.

The geophysical methods used for this survey have inherent limitations. Site metallic features (e.g., buildings, reinforced concrete, vehicles, etc.) and overhead transmission lines can produce a false electromagnetic response



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Parcel 29-Circle K/Hardees Truck Stop
Dunn, Harnett County, North Carolina
S&ME Project No. 4305-18-175**

and may mask subsurface features. The depth of exploration of the GPR signal is highly site specific, and is greatly limited by signal attenuation (absorption) of the subsurface materials. Signal attenuation is dependent upon the electrical conductivity of the subsurface materials. Signal attenuation is greatest in materials with relatively high electrical conductivities such as clay soils, and lowest in relatively low conductivity materials such as unsaturated sand. For this project location, the GPR data sets appear to have a maximum depth of penetration of approximately about five feet below ground surface.

Regardless of the thoroughness of a geophysical study, there is always a possibility that actual conditions may not match the interpretations. The results should be considered accurate only to the degree implied by the methods used and the method's limitations and data coverage. Accordingly, the possibility exists that not all features at a project site will be located due to either subsurface soil conditions or the occurrence of features outside the lateral limits and below the depth of penetration of the methods used. As with most surface geophysical methods, resolution of the subsurface will also decrease with depth. As such, the size and/or contrast of features compared to the imaged subsurface media must be significant enough to produce the anticipated response. The location and/or determination (or the lack thereof) of potential buried features is based on our review of the provided information and of the geophysical survey. Under no circumstances does S&ME assume any responsibility for damages resulting from the presence of subsurface features that may exist but were not identified by our survey.

This Preliminary Site Assessment was performed solely for NCDOT regarding the above-referenced site and assessment area. This report is provided for the sole use of NCDOT. Use of this report by any other parties will be at such party's sole risk. S&ME disclaims liability for any such use or reliance by third parties. The observations presented in this report are indicative of conditions during the time of the assessment and of the specific areas referenced.



◆ **Closing**

S&ME appreciates the opportunity to provide these services to you. If you have any questions or comments regarding this report, please contact us at your convenience.

Sincerely,

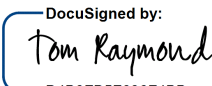
S&ME, Inc.

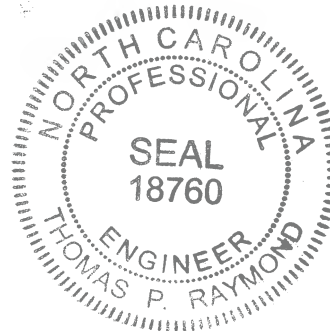
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Attachments: 1/22/2019

Table 1: Summary of Soil Sampling Results

- Figure 1:** Vicinity Map
- Figure 2:** Site Map
- Figure 3:** Soil Constituent Map
- Figure 4:** TDEM Path Location Plan
- Figure 5:** TDEM Data Plot A
- Figure 6:** TDEM Data Plot B
- Figure 7:** Geophysical Anomaly Location Plan
- Figure 8:** Example GPR Data – Lines 3 and 4
- Figure 9:** Example GPR Data-Lines 5 and 6
- Figure 10:** Example GPR Data-Lines 10 and 11
- Figure 11:** Example GPR Data-Lines 14 and 15
- Figure 12:** Example GPR Data-Lines 18 and 19

- Appendix I:** Photographs
- Appendix II:** Boring Logs
- Appendix III:** Laboratory Analytical Reports and Chain of Custody

Tables



TABLE 1
SUMMARY OF SOIL SAMPLING RESULTS
NCDOT Project I-5986B
Parcel 29 - (Circle K/Hardees Truck Stop)
873 Long Branch Road
Dunn, Harnett County, North Carolina
S&ME Project No. 4305-18-175

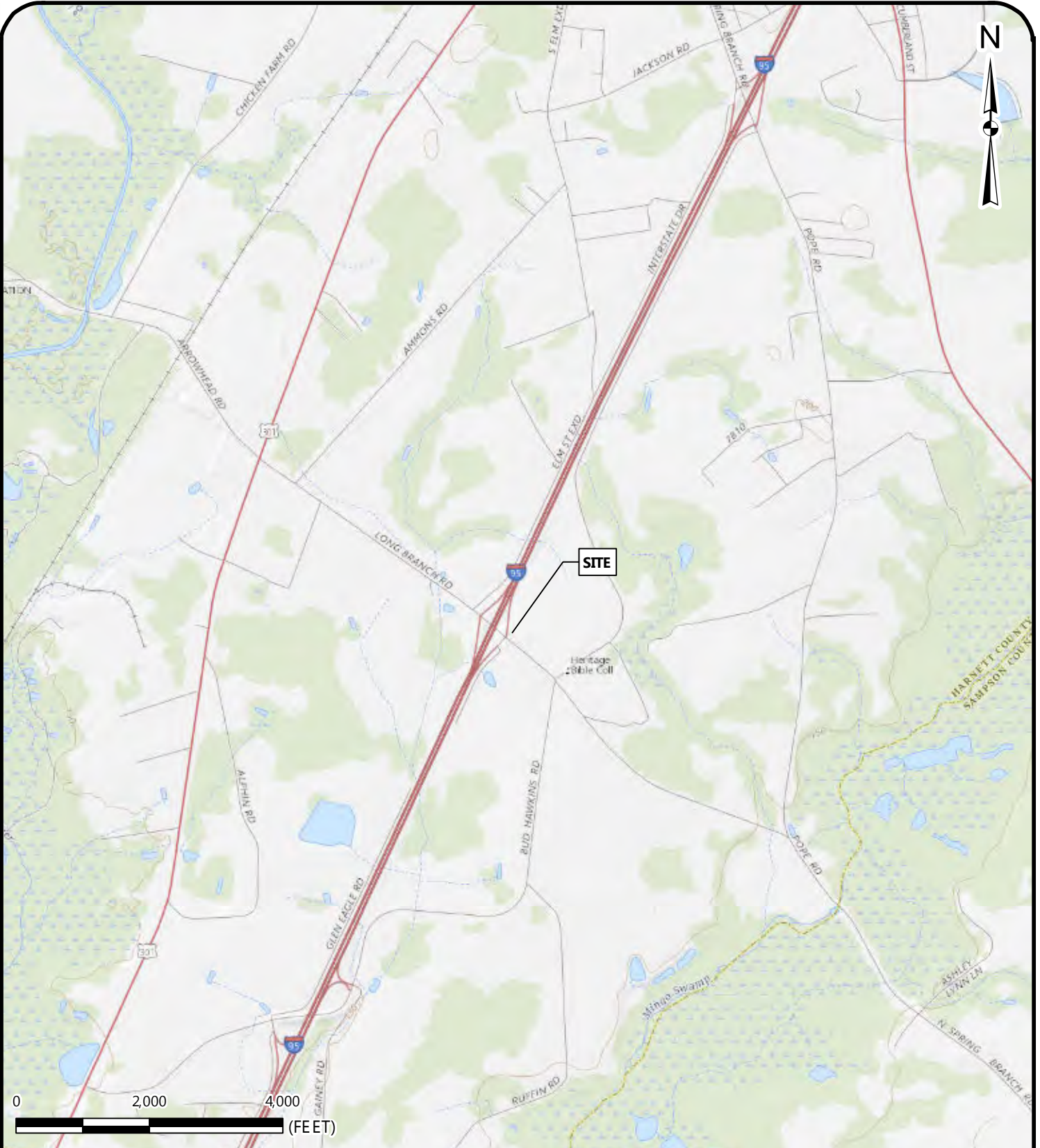
Analytical Method→			Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) by Ultraviolet Fluorescence (UVF) Spectrometry	
Sample ID	Date	Contaminant of Concern→	TPH-GRO	TPH-DRO
		Sample Depth (ft.-bgs)		
Parcel 29 B-1	10/1/2018	2 to 4	1	1.3
		8 to10	<0.62	<0.62
Parcel 29 B-2	10/1/2018	2 to 4	<0.29	1.4
		8 to10	<0.27	<0.27
Parcel 29 B-3	10/1/2018	2 to 4	<0.23	0.23
		8 to10	<0.49	<0.49
Parcel 29 B-4	10/1/2018	2 to 4	0.73	0.27
		8 to10	<0.55	<0.55
Parcel 29 B-5	10/1/2018	2 to 4	<0.28	<0.28
		8 to10	<0.59	<0.59
Parcel 29 B-6	10/1/2018	2 to 4	<0.27	<0.27
		8 to10	<0.62	<0.62
Parcel 29 B-7	10/1/2018	2 to 4	<0.23	<0.23
		6 to 8	<0.28	<0.28
		8 to10	<0.26	<0.26
North Carolina TPH Action Levels			50	100

Notes:

1. UVF analysis performed by RED Lab, LLC
2. Concentrations are reported in milligrams per kilogram (mg/Kg).
3. ft.-bgs:- feet below ground surface.
4. Concentrations exceeding the laboratory's reporting limits are shown in **BOLD** fields.
5. Concentrations exceeding the North Carolina TPH Action Levels are shown in Shaded and **BOLD** fields.

Figures

Drawing Path: T:\Projects\2018\ENV\4305-18-175 NCDOT I-5986B PSAs\GIS\Parcel29\VICINITY.mxd, plotted by abentz 10-29-2018



REFERENCE:
 GIS BASE LAYERS WERE OBTAINED FROM THE USGS NATIONAL TOPO MAP VIEWER. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.

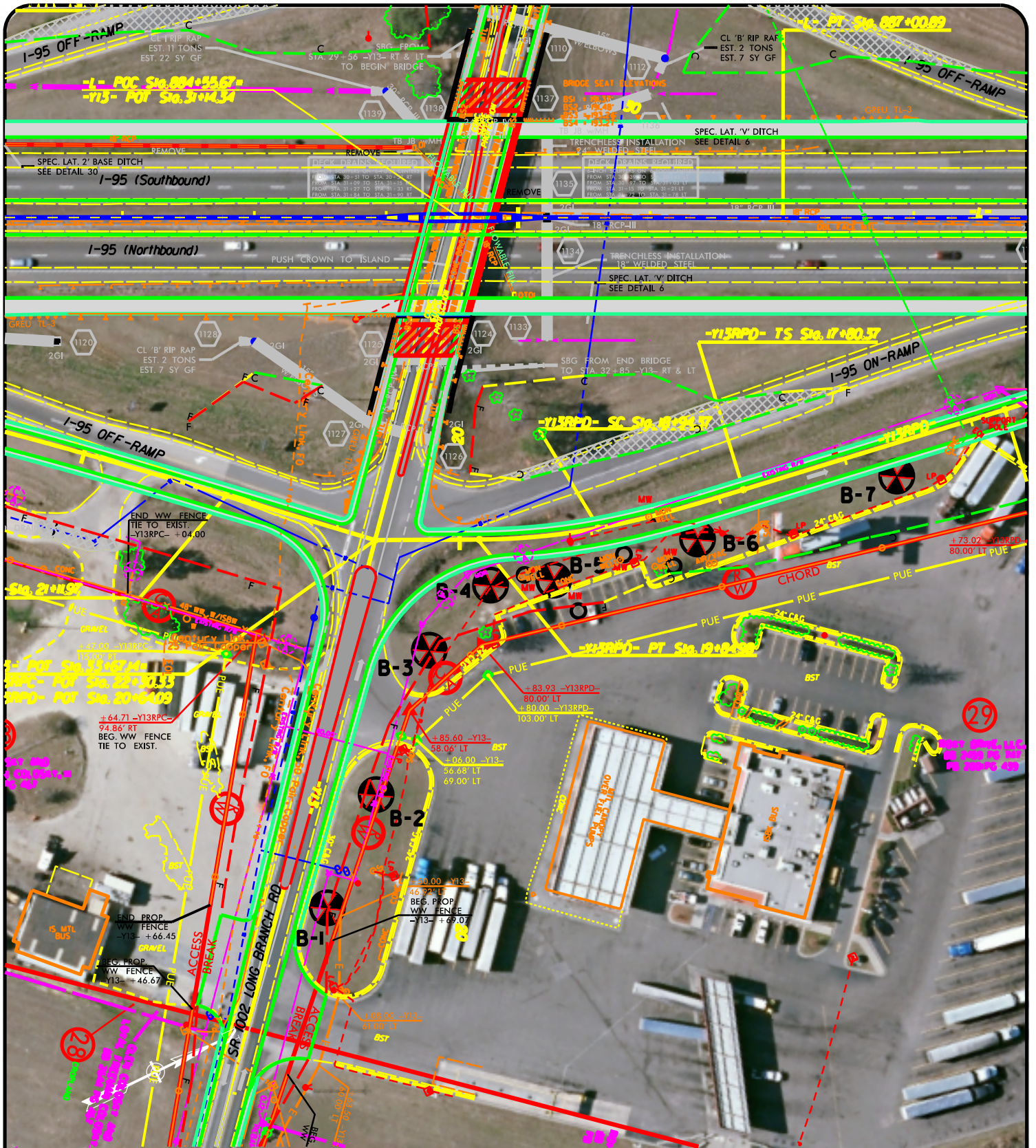


VICINITY MAP

NCDOT PROJECT I-5986B
 PARCEL 29 (CIRCLE K/HARDEES TRUCK STOP)
 873 LONG BRANCH ROAD, DUNN, HARNETT CO., NORTH CAROLINA

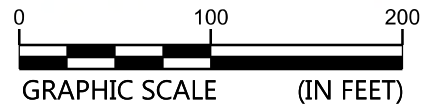
SCALE:
 1" = 2,000'
 DATE:
 10-29-18
 PROJECT NUMBER
 4305-18-175

FIGURE NO.
1



LEGEND

- Geo-environmental Boring:
- Underground Storage Tank (UST):
- TW-1: Temporary Monitor Well Location
- Map Source: NCDOT Project I-5986B
- Image Source: NC ONEMAP, Dated 2016
- Known Soil Contamination:
- Possible Soil Contamination:
- Abandoned Monitor Well:



SITE MAP

NCDOT PROJECT: I-5986B
 PARCEL 29 - (CIRCLE K/HARDEES TRUCK STOP)
 873 Long Branch Rd., Dunn, Harnett County, NC

SCALE:	FIGURE NO.
1" = 100'	2
DATE:	
PROJECT NUMBER	
4305-18-175	

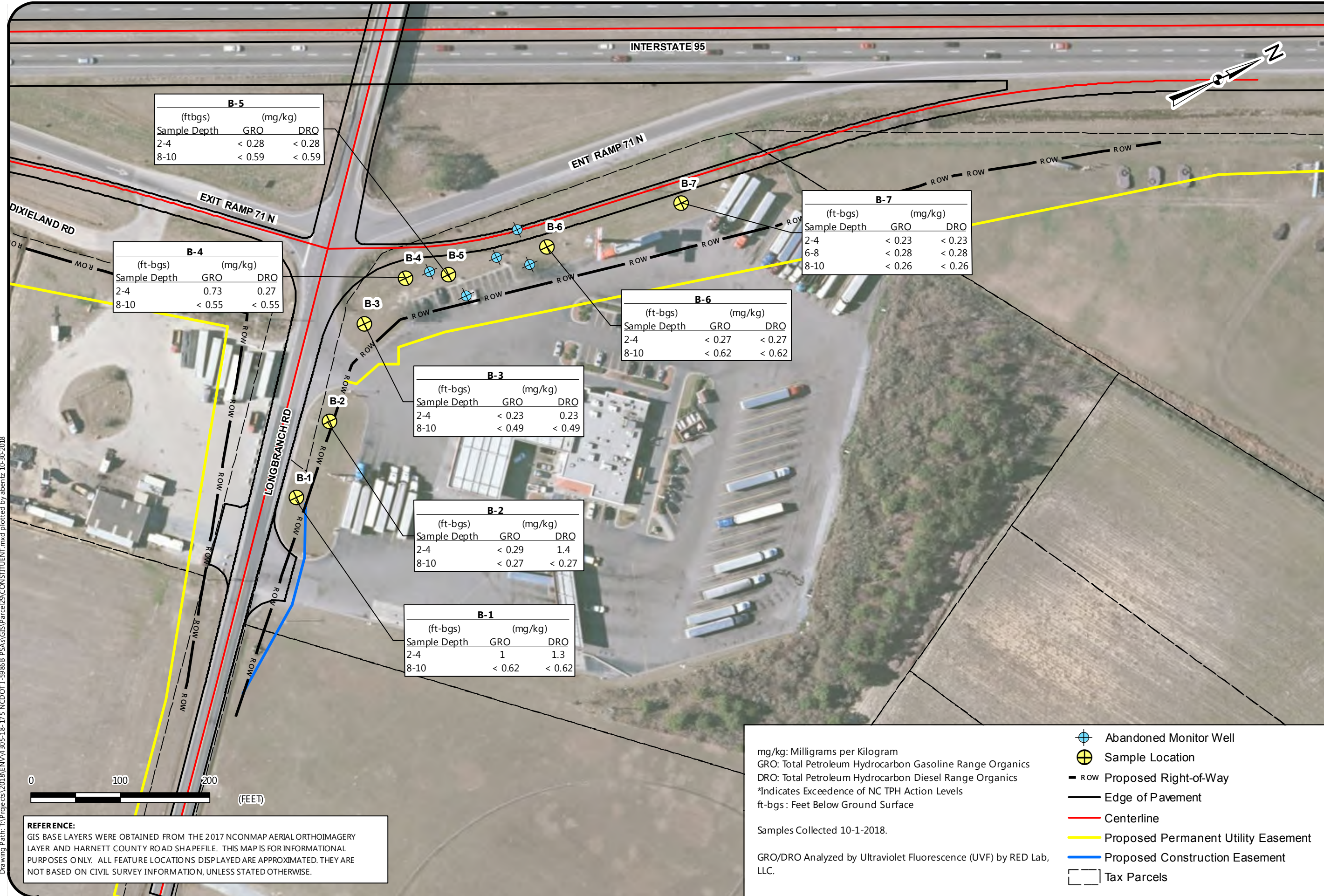


SOIL CONSTITUENT MAP

NC DOT PROJECT I-5986B
PARCEL 29 (CIRCLE K/HARDEES TRUCK STOP)
873 LONG BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE:
1" = 100'
DATE:
10-30-18
PROJECT NUMBER
4305-18-175
FIGURE NO.

3



B-5		
(ft-bgs)	(mg/kg)	
Sample Depth	GRO	DRO
2-4	< 0.28	< 0.28
8-10	< 0.59	< 0.59

B-7		
(ft-bgs)	(mg/kg)	
Sample Depth	GRO	DRO
2-4	< 0.23	< 0.23
6-8	< 0.28	< 0.28
8-10	< 0.26	< 0.26

B-4		
(ft-bgs)	(mg/kg)	
Sample Depth	GRO	DRO
2-4	0.73	0.27
8-10	< 0.55	< 0.55

B-6		
(ft-bgs)	(mg/kg)	
Sample Depth	GRO	DRO
2-4	< 0.27	< 0.27
8-10	< 0.62	< 0.62

B-3		
(ft-bgs)	(mg/kg)	
Sample Depth	GRO	DRO
2-4	< 0.23	0.23
8-10	< 0.49	< 0.49

B-2		
(ft-bgs)	(mg/kg)	
Sample Depth	GRO	DRO
2-4	< 0.29	1.4
8-10	< 0.27	< 0.27

B-1		
(ft-bgs)	(mg/kg)	
Sample Depth	GRO	DRO
2-4	1	1.3
8-10	< 0.62	< 0.62

mg/kg: Milligrams per Kilogram
 GRO: Total Petroleum Hydrocarbon Gasoline Range Organics
 DRO: Total Petroleum Hydrocarbon Diesel Range Organics
 *Indicates Exceedence of NC TPH Action Levels
 ft-bgs: Feet Below Ground Surface

Samples Collected 10-1-2018.

GRO/DRO Analyzed by Ultraviolet Fluorescence (UVF) by RED Lab, LLC.

- Abandoned Monitor Well
- Sample Location
- Proposed Right-of-Way
- Edge of Pavement
- Centerline
- Proposed Permanent Utility Easement
- Proposed Construction Easement
- Tax Parcels

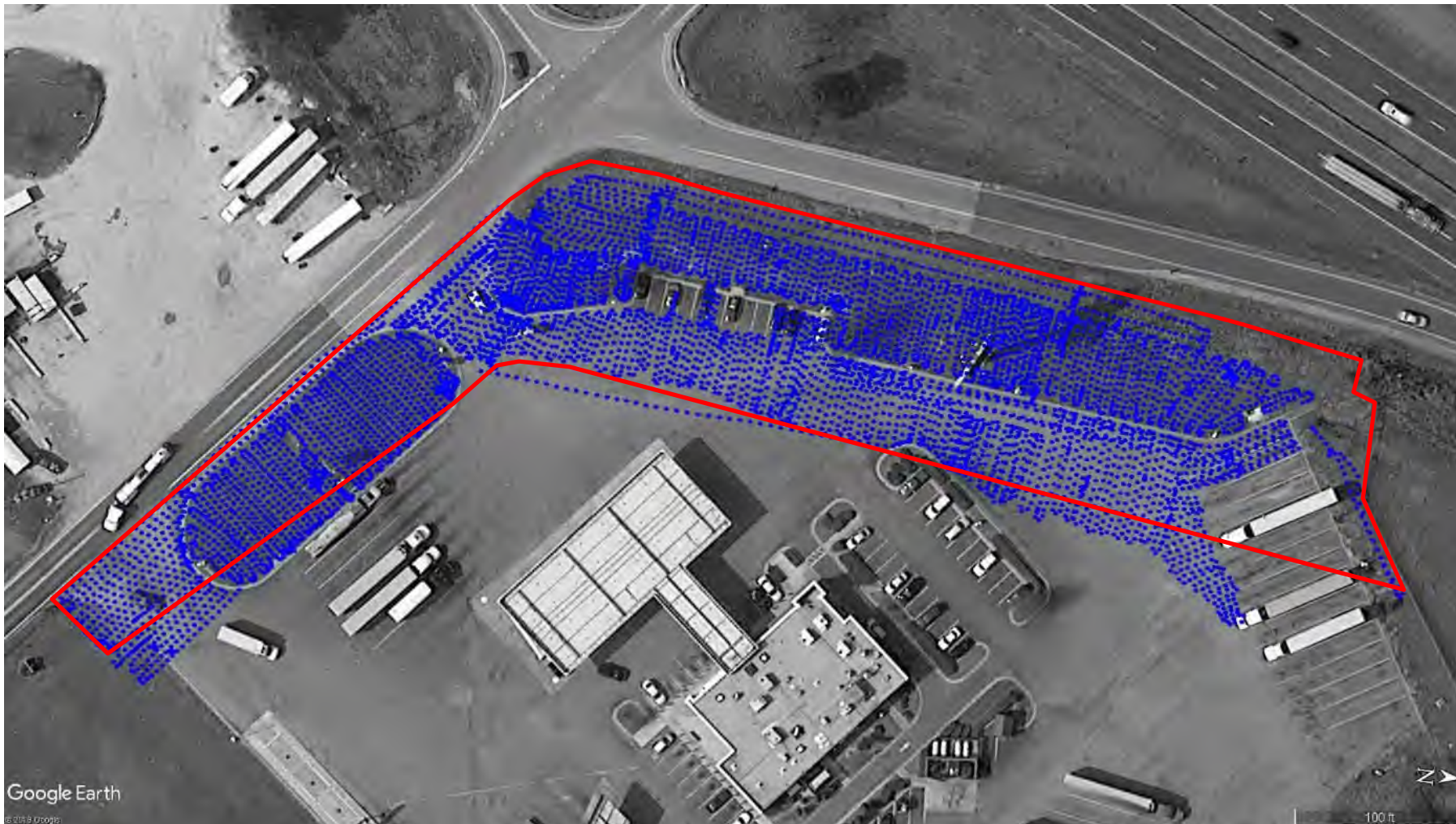


REFERENCE:
 GIS BASE LAYERS WERE OBTAINED FROM THE 2017 NCONMAP AERIAL ORTHOIMAGERY LAYER AND HARNETT COUNTY ROAD SHAPEFILE. THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS DISPLAYED ARE APPROXIMATED. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.

Drawing Path: T:\Projects\2018\ENV\4305-18-175\NCDOT\I-5986B_PSA\GIS\Parcel29\CONSTITUENT.mxd plotted by abentz 10-30-2018



REFERENCE:
(GOOGLE EARTH PRO) AERIAL PHOTOGRAPH
(DATED, MARCH, 04 2018)



Google Earth
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LEGEND

..... Approximate TDEM Path



Approximate Requested Survey Area

TDEM PATH LOCATION PLAN

NC DOT PROJECT: I-59866
PARCEL 29 - (CIRCLE K/HARDEES TRUCK STOP)
873 LONG BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE:
AS SHOWN

DATE:
10/30/2018

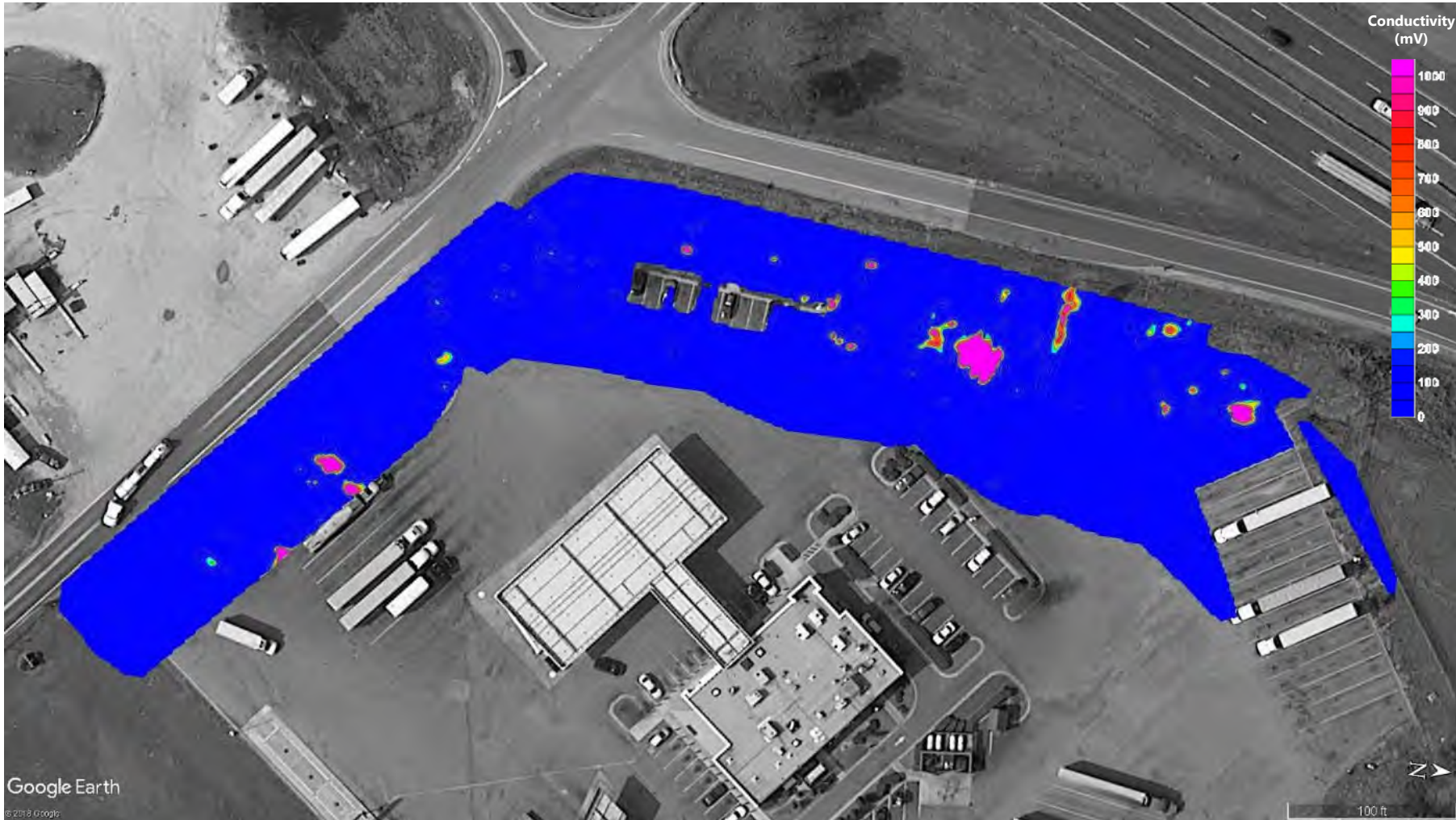
PROJECT NUMBER
4305-18-175

FIGURE NO.

4



REFERENCE:
(GOOGLE EARTH PRO) AERIAL PHOTOGRAPH
(DATED, MARCH, 04 2018)



Google Earth
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TDEM DATA PLOT A

NC DOT PROJECT: I-59866
PARCEL 29 - (CIRCLE K/HARDEES TRUCK STOP)
873 LONG BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE:
AS SHOWN

DATE:
10/30/2018

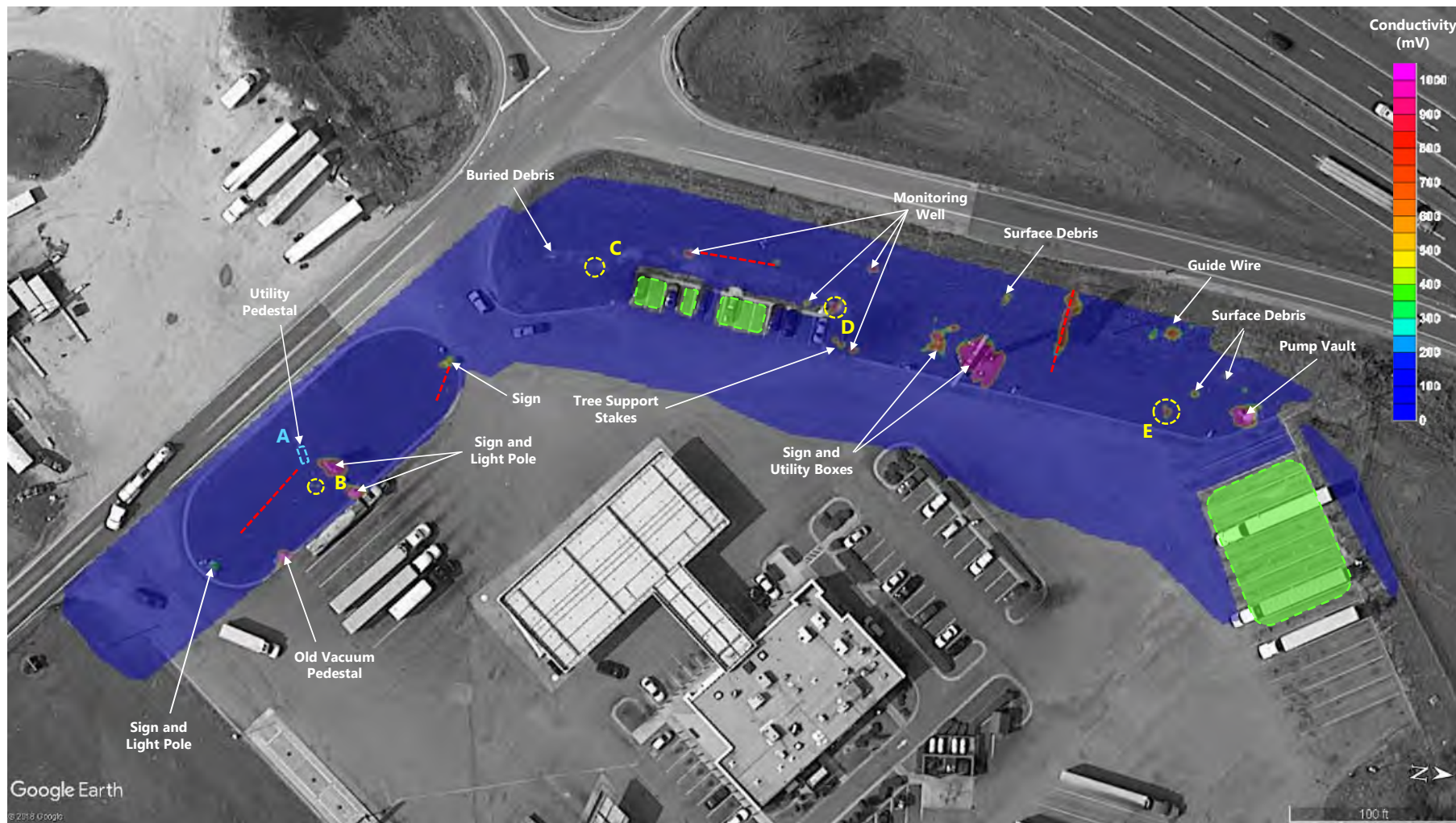
PROJECT NUMBER
4305-18-175

FIGURE NO.

5



REFERENCE:
 (GOOGLE EARTH PRO) AERIAL PHOTOGRAPH
 (DATED, MARCH, 04 2018)



Google Earth
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LEGEND

- Approximate Location of TDEM Anomaly
- Approximate Location of GPR Anomaly
- Approximate Location of Possible Utility
- Approximate Location of Vehicle

TDEM DATA PLOT B

NC DOT PROJECT: I-59868
 PARCEL 29 - (CIRCLE K/HARDEES TRUCK STOP)
 873 LONG BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE:
 AS SHOWN

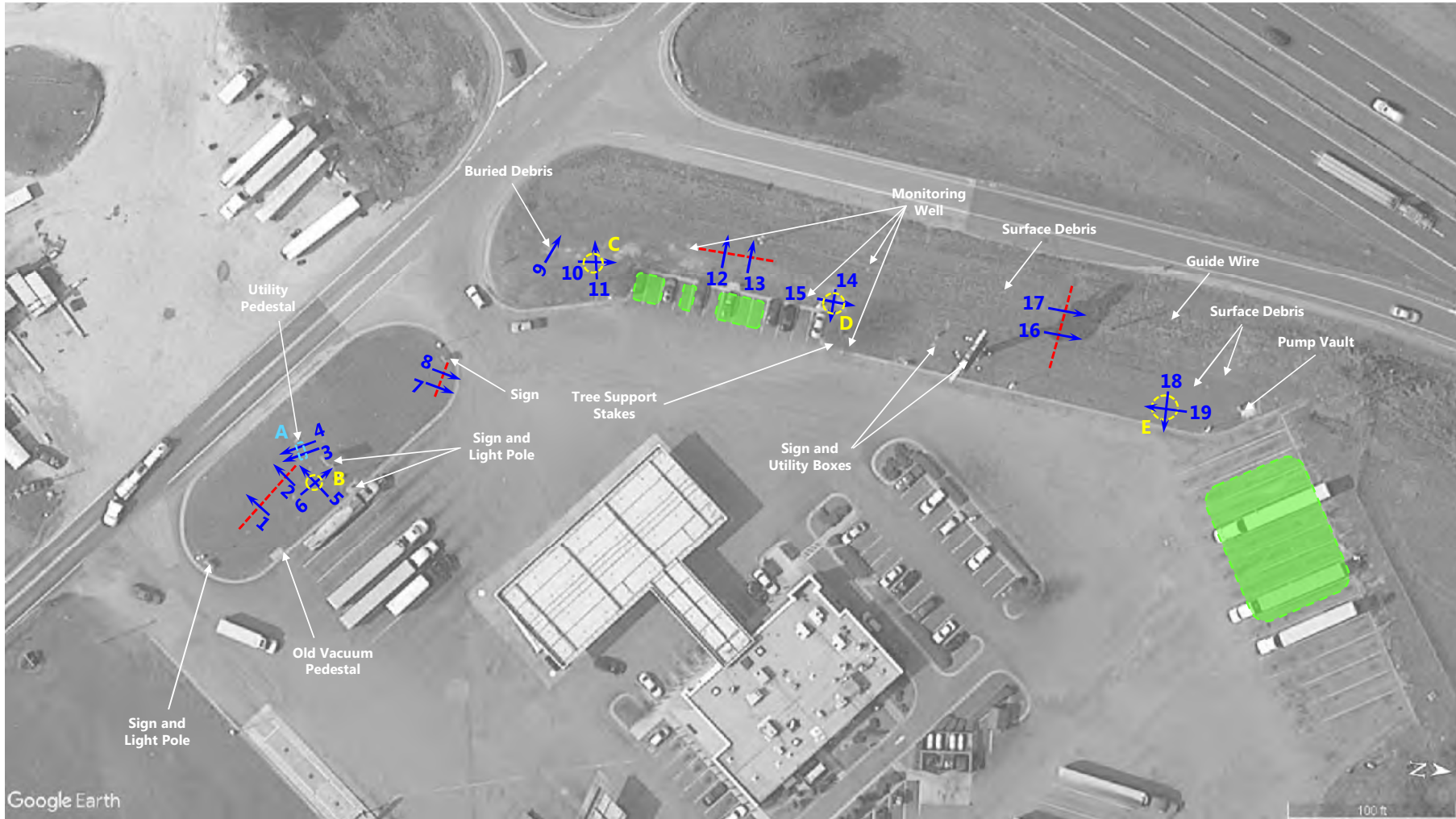
DATE:
 10/30/2018

PROJECT NUMBER
 4305-18-175

FIGURE NO.







REFERENCE:
 (GOOGLE EARTH PRO) AERIAL PHOTOGRAPH
 (DATED, MARCH, 04 2018)




Google Earth

LEGEND

-  Approximate Location of TDEM Anomaly
-  Approximate Location of Possible Utility

-  Approximate Location of GPR Anomaly
-  Approximate Location of GPR Profile

-  Approximate Location of Vehicle

GEOPHYSICAL ANOMALY LOCATION PLAN

NC DOT PROJECT: I-59866
 PARCEL 29 - (CIRCLE K/HARDEES TRUCK STOP)
 873 LONG BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

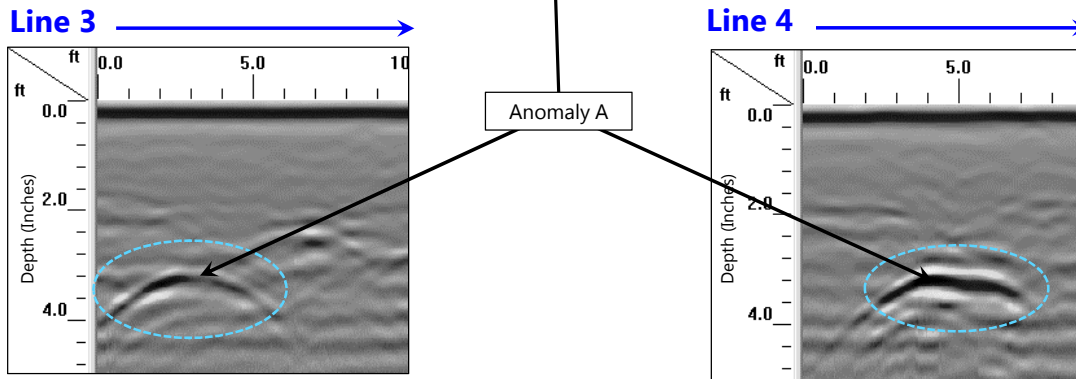
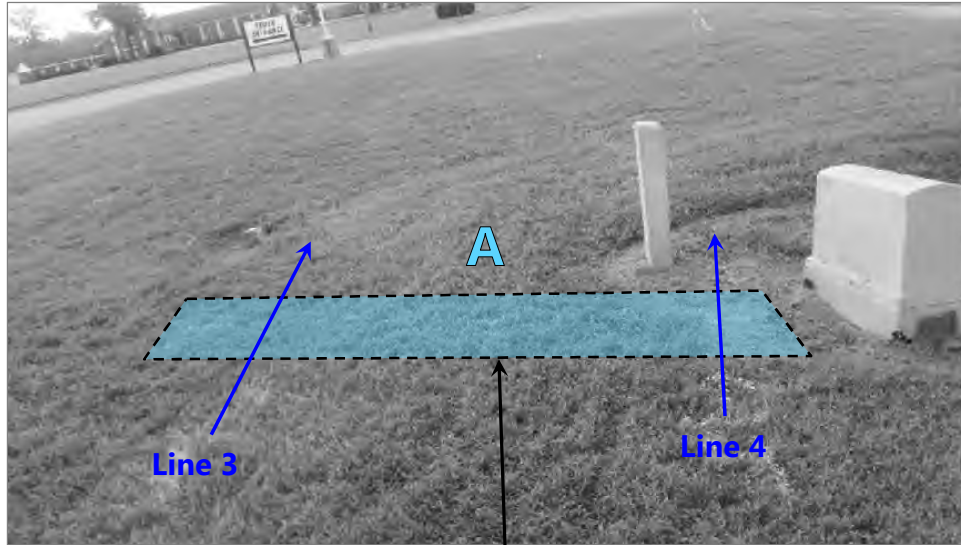
SCALE:
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DATE:
 10/30/2018

PROJECT NUMBER
 4305-18-175

FIGURE NO.

7



Note: Presented GPR profile depths are based on an assumed average dielectric and should be considered approximate



EXAMPLE GPR DATA – LINES 3 AND 4

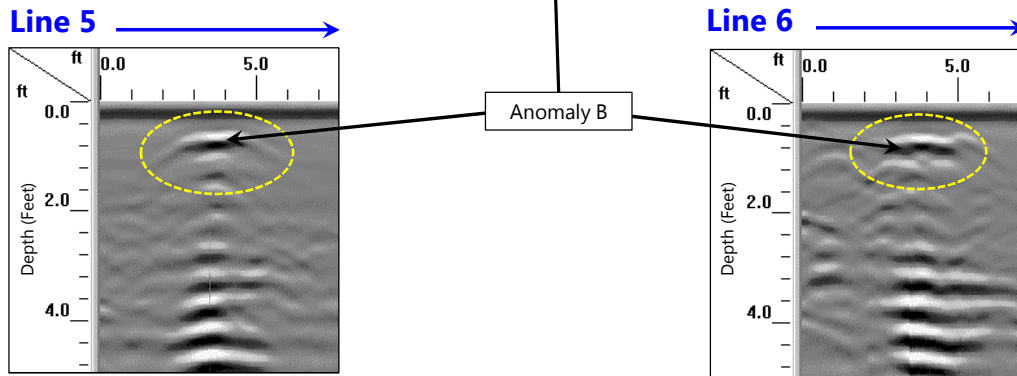
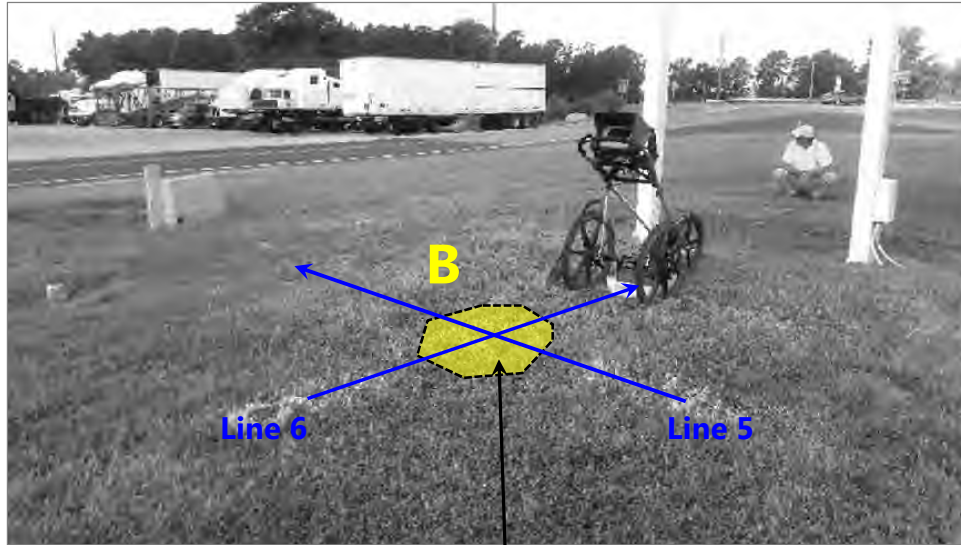
NC DOT PROJECT: I-59866
 PARCEL: 29 – (CIRCLE K/HARDEES TRUCK STOP)
 873 LONG BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE:
 AS SHOWN

DATE:
 10/30/2018

PROJECT NUMBER
 4305-18-175

FIGURE NO.



Note: Presented GPR profile depths are based on an assumed average dielectric and should be considered approximate



EXAMPLE GPR DATA – LINES 5 AND 6

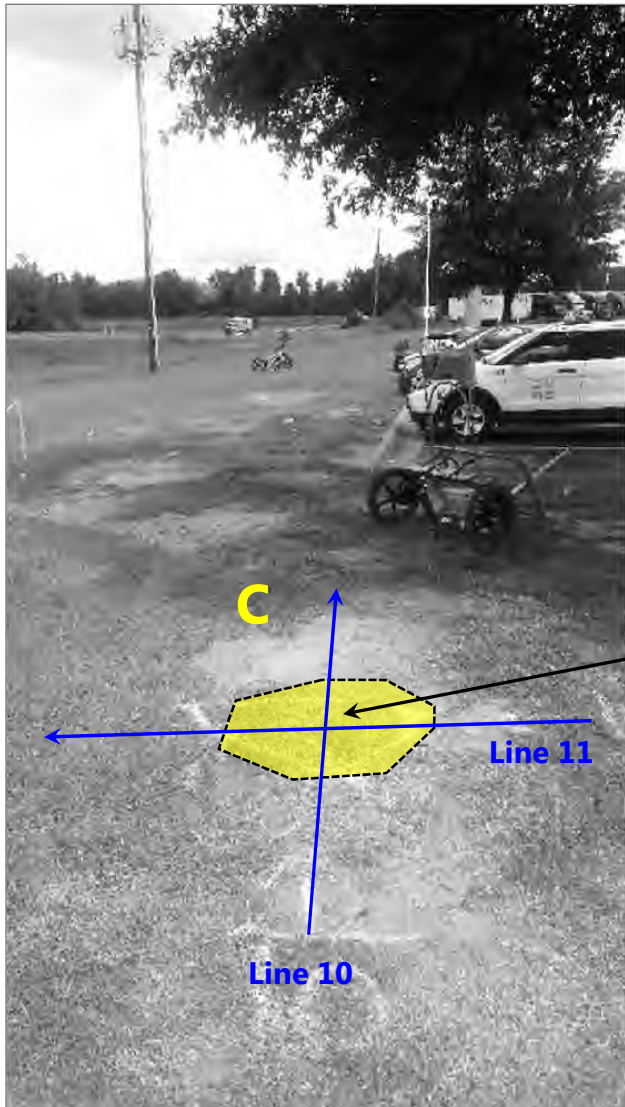
NC DOT PROJECT: I-59866
 PARCEL 29 – (CIRCLE K/HARDEES TRUCK STOP)
 873 LONG BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE:
 AS SHOWN

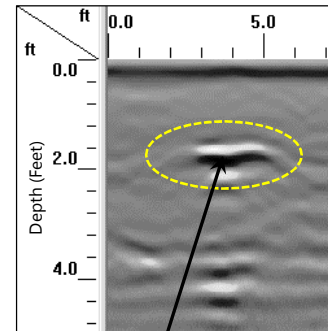
DATE:
 10/30/2018

PROJECT NUMBER
 4305-18-175

FIGURE NO.

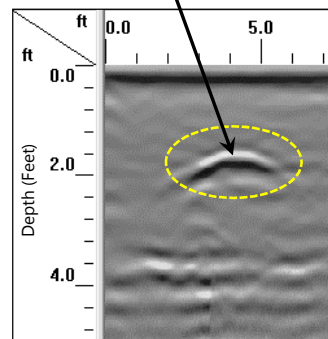


Line 10 →



Anomaly C

Line 11 →



Note: Presented GPR profile depths are based on an assumed average dielectric and should be considered approximate



EXAMPLE GPR DATA – LINES 10 AND 11

NC DOT PROJECT: I-59868
 PARCEL 29 – (CIRCLE K/HARDEES TRUCK STOP)
 873 LONG BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

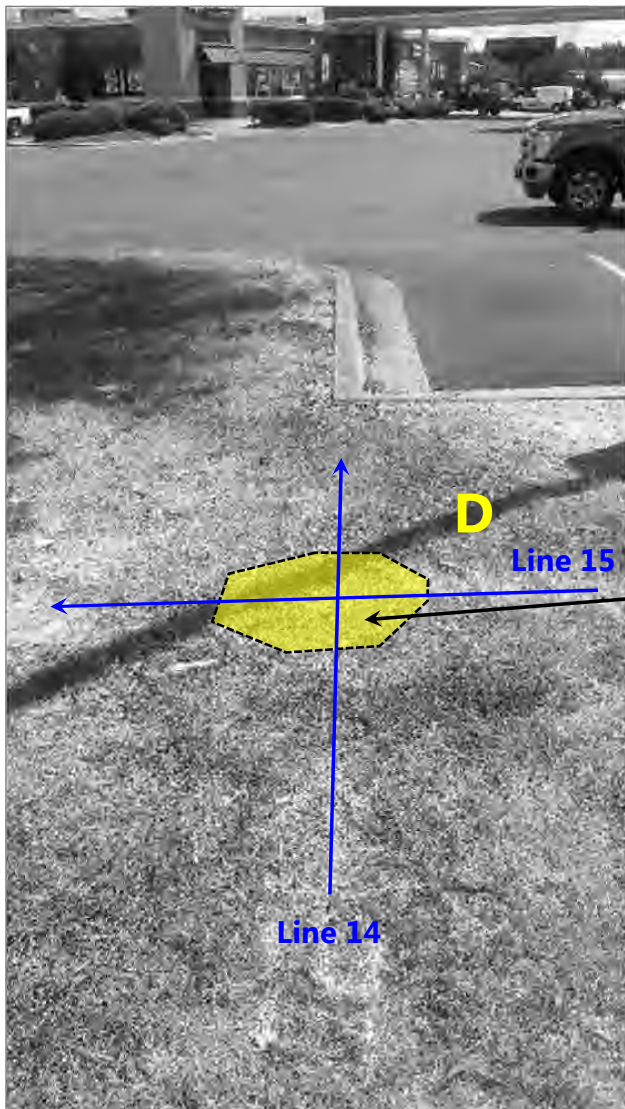
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DATE:
 10/30/2018

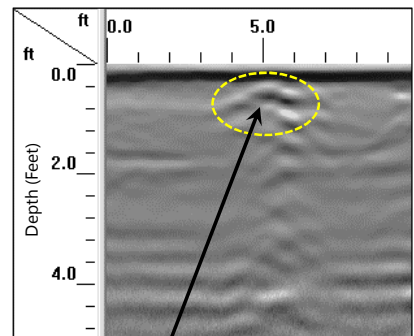
PROJECT NUMBER
 4305-18-175

FIGURE NO.

10

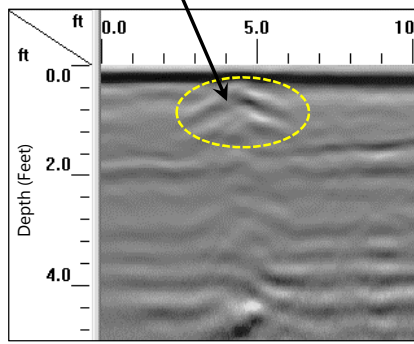


Line 14 →



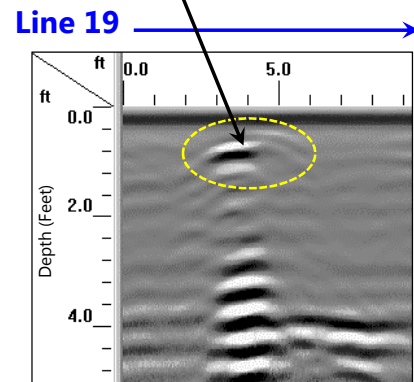
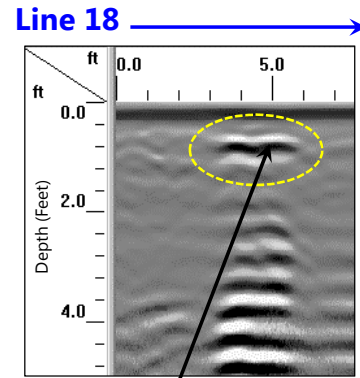
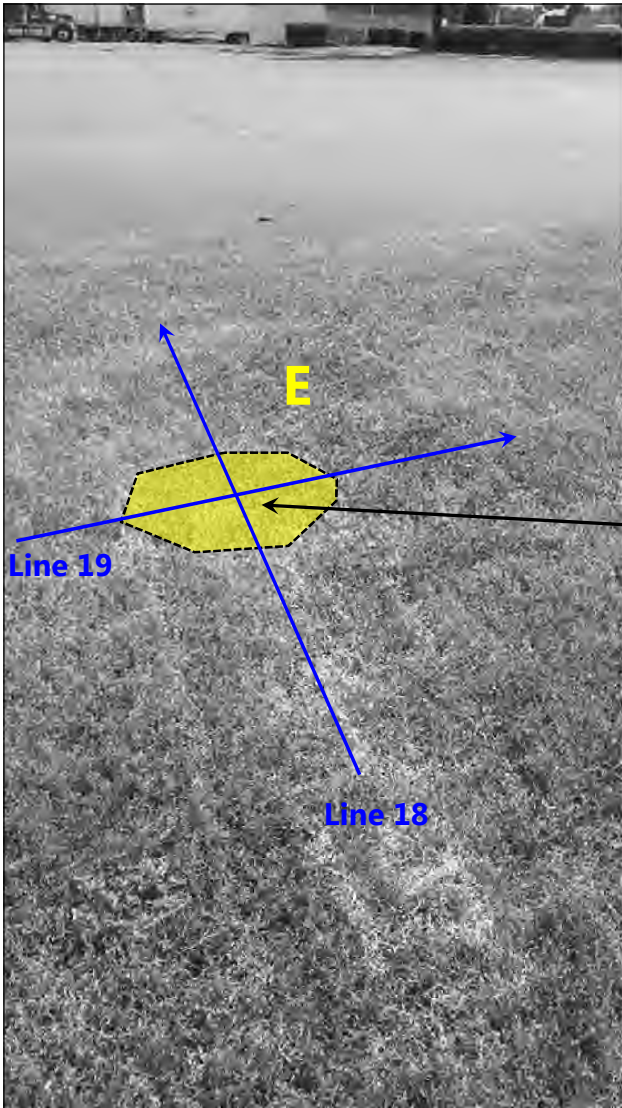
Anomaly D

Line 15 →



Note: Presented GPR profile depths are based on an assumed average dielectric and should be considered approximate

EXAMPLE GPR DATA – LINES 14 AND 15	
<small> NCDOT PROJECT: I-59868 PARCEL 29 – (CIRCLE K/HARDEES TRUCK STOP) 873 LONG BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA </small>	
<small>SCALE: AS SHOWN</small>	
<small>DATE: 10/30/2018</small>	
<small>PROJECT NUMBER 4305-18-175</small>	
<small>FIGURE NO.</small>	
11	



Anomaly E

Note: Presented GPR profile depths are based on an assumed average dielectric and should be considered approximate

EXAMPLE GPR DATA – LINES 18 AND 19

NC DOT PROJECT: I-59868
PARCEL 29 – (CIRCLE K/HARDEES TRUCK STOP)
873 LONG BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE:
AS SHOWN
DATE:
10/30/2018
PROJECT NUMBER
4305-18-175
FIGURE NO.

Appendix I – Photographs

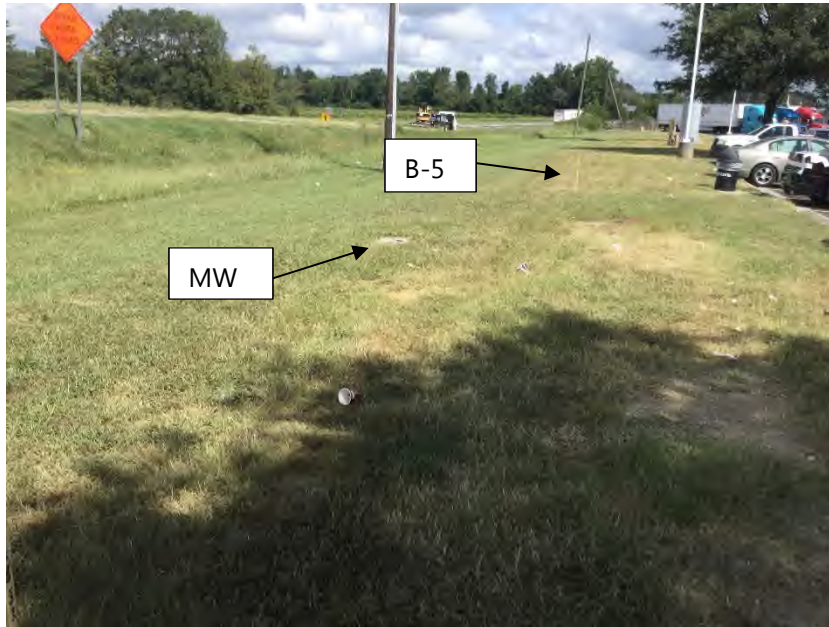


Preliminary Site Assessment Report
NCDOT Project I-5986B, WBS Element 47532.1.3
Parcel 29-Circle K/Hardees Truck Stop
Dunn, Harnett County, North Carolina
S&ME Project No. 4305-18-175

1	Location / Orientation	View of site looking north.	Date: 10/1/2018 Photographer: JTH
	Remarks	None	



2	Location / Orientation	View looking north.	Date: 10/1/2018 Photographer: JTH
	Remarks	Soil boring B-5 and abandoned monitor well (MW).	





Preliminary Site Assessment Report
NCDOT Project I-5986B, WBS Element 47532.1.3
Parcel 29-Circle K/Hardees Truck Stop
Dunn, Harnett County, North Carolina
S&ME Project No. 4305-18-175

3	Location / Orientation	View of B-6 looking north.	Date: 10/1/2018 Photographer: JTH
	Remarks	None	



Appendix II – Boring Logs

Appendix III – Laboratory Analytical Reports and Chain of Custody



Hydrocarbon Analysis Results

Client: S&ME
 Address:
 Contact: JAMIE HONEYCUTT
 Project: PARCEL 29 - PROJ 4305-18-175

Samples taken: Monday, October 01, 2018
 Samples extracted: Monday, October 01, 2018
 Samples analysed: Monday, October 01, 2018

Operator: MAX MOYER

U00904

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	PARCEL 29 B-3 (8'-10')	19.4	<0.49	<0.49	<0.49	<0.49	<0.1	<0.16	<0.019	0	100	0	PHC not detected,(P)
s	PARCEL 29 B-3 (2'-4')	9.3	<0.23	<0.23	0.23	0.23	0.15	<0.07	<0.009	0	73.1	26.9	V.Deg.PHC 91.3%,(FCM),(P)
s	PARCEL 29 B-4 (2'-4')	10.8	<0.27	0.73	0.27	1	0.17	<0.09	<0.011	84.1	10.4	5.5	V.Deg.PHC 82.2%,(FCM)
s	PARCEL 29 B-4 (8'-10')	21.8	<0.55	<0.55	<0.55	<0.55	<0.11	<0.17	<0.022	0	60.9	39.1	Residual HC,(BO),(P)
s	PARCEL 29 B-5 (2'-4')	11.0	<0.28	<0.28	<0.28	<0.28	<0.06	<0.09	<0.011	0	59.5	40.5	Residual HC,(BO)
s	PARCEL 29 B-5 (8'-10')	23.4	<0.59	<0.59	<0.59	<0.59	<0.12	<0.19	<0.023	0	35.5	64.5	Residual HC,(BO)
s	PARCEL 29 B-6 (2'-4')	10.7	<0.27	<0.27	<0.27	<0.27	<0.05	<0.09	<0.011	0	34.5	65.5	Residual HC,(BO)
s	PARCEL 29 B-6 (8'-10')	24.8	<0.62	<0.62	<0.62	<0.62	<0.12	<0.2	<0.025	0	0	0	PHC not detected,(BO)
s	PARCEL 29 B-7 (2'-4')	9.4	<0.23	<0.23	<0.23	<0.23	<0.05	<0.08	<0.009	0	27.5	72.5	,(FCM),(BO)
s	PARCEL 29 B-7 (6'-8')	11.2	<0.28	<0.28	<0.28	<0.28	<0.06	<0.09	<0.011	0	0	0	,(FCM),(P)

Initial Calibrator QC check OK

Final FCM QC Check OK

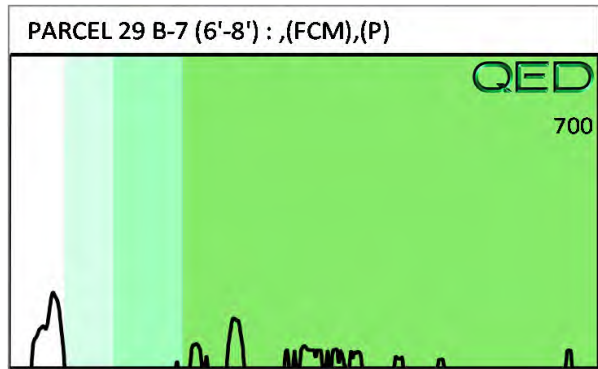
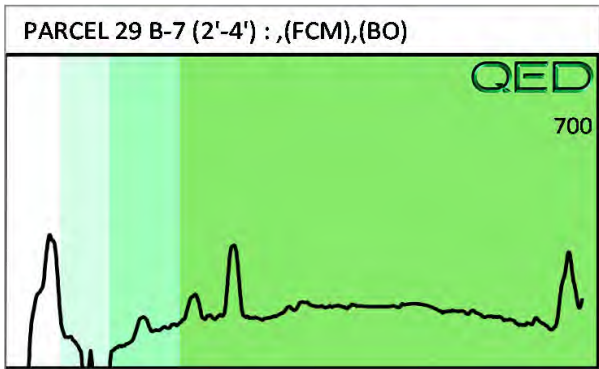
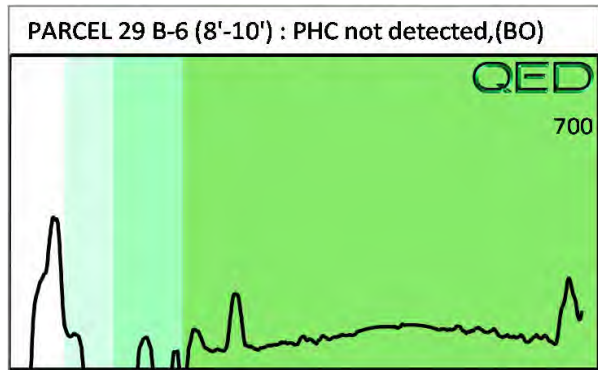
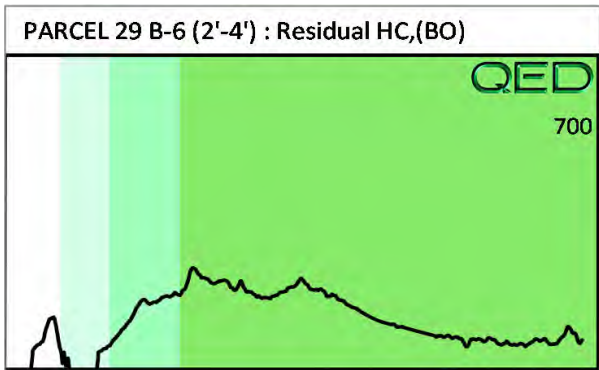
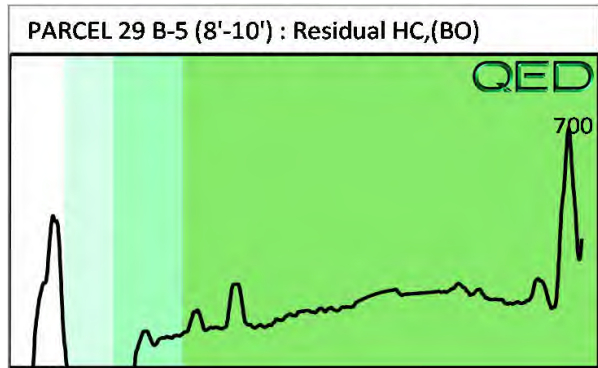
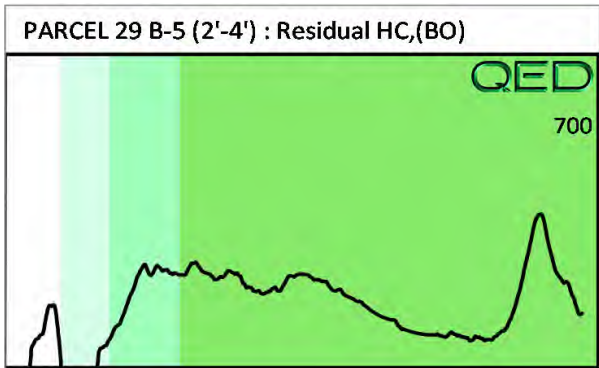
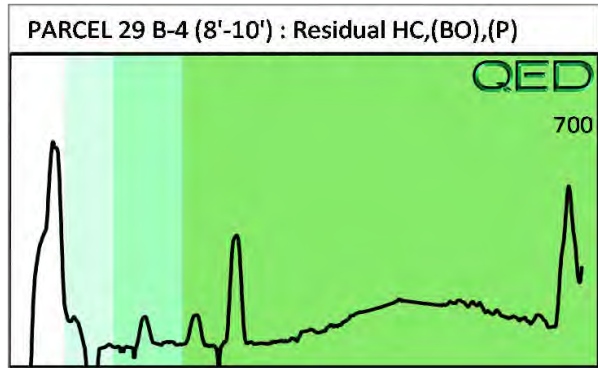
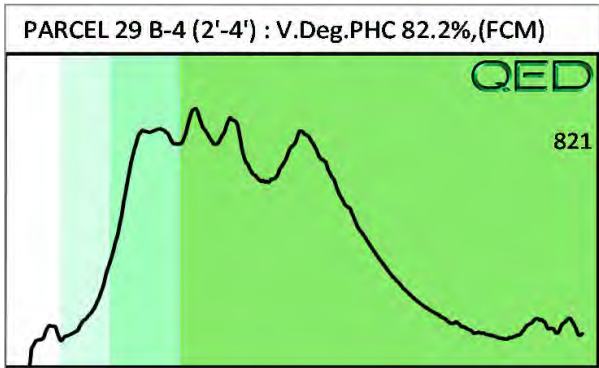
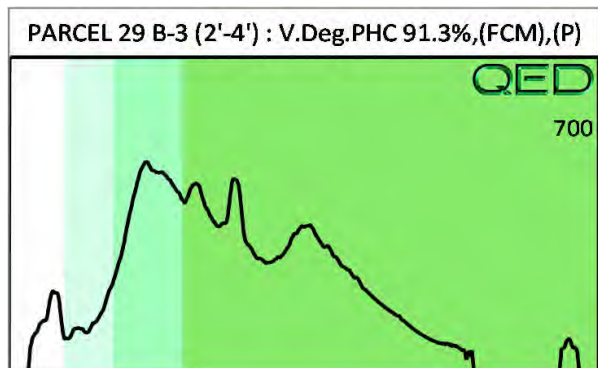
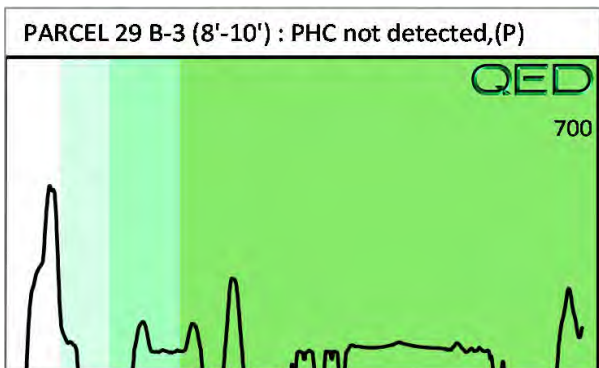
89 %

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

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

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

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





Hydrocarbon Analysis Results

Client: S&ME	Samples taken	Monday, October 01, 2018
Address:	Samples extracted	Monday, October 01, 2018
	Samples analysed	Monday, October 01, 2018

Contact: JAMIE HONEYCUTT **Operator** MAX MOYER

Project: PARCEL 29 - PROJ 4305-18-175

U00904

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	PARCEL 29 B-7 (8'-10')	10.2	<0.26	<0.26	<0.26	<0.26	<0.05	<0.08	<0.01	0	0	0	,(FCM),(BO)
s	PARCEL 29 B-2 (2'-4')	11.7	<0.29	<0.29	1.4	1.4	1.4	<0.09	<0.012	0	57.5	42.5	V.Deg.PHC 71.4%,(FCM),(BO),(P)
s	PARCEL 29 B-2 (8'-10')	10.9	<0.27	<0.27	<0.27	<0.27	<0.05	<0.09	<0.011	0	0	0	,(FCM),(BO),(P)
s	PARCEL 29 B-1 (2'-4')	9.6	<0.24	1	1.3	2.3	0.88	<0.08	<0.01	57	31.2	11.8	V.Deg.PHC 75.8%,(FCM),(BO)
s	PARCEL 29 B-1 (8'-10')	24.8	<0.62	<0.62	<0.62	<0.62	<0.12	<0.2	<0.025	0	0	100	PHC not detected,(BO),(P)

Initial Calibrator QC check OK	Final FCM QC Check OK	98 %
---------------------------------------	------------------------------	-------------

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

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

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

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

