



January 9, 2020

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-5878, WBS Element 53078.1.1
Parcel 49B-Allen Walker Former Texaco
Vacant Lot SE Corner of Pope Road and Bud Hawkins Road
Dunn, Harnett County, North Carolina
S&ME Project 4305-19-161

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. 43-1900576 REV-01 dated August 9, 2019, and Contract Number 7000018853 dated April 12, 2018 between NCDOT and S&ME, Inc., authorized by NCDOT in its September 5, 2019 Notice to Proceed Letter.

◆ Background/Project Information

Based on NCDOT's July 24, 2019, 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
49B	Jessie Anna Walker	(Allen Walker Former Texaco) Vacant Lot SE Corner of Pope Rd (aka Spring Branch Road) and Bud Hawkins Rd, Dunn, NC



The property was previously developed with a gasoline/service station identified as Allen Walker Former Texaco. At the time of our field activities, the majority of the property was an agricultural field. The area of the property previously occupied by the gasoline/service station was a gravel vacant lot. The former gasoline/service station building had been razed. The petroleum underground storage tanks (USTs) that the Allen Walker Former Texaco operated were previously removed. Information regarding the former UST system listed for this site is provided in the following table:

UST Facility ID No. Not Provided

Number of Tanks	Contents	Capacity (gallons)	Date Installed	Date Removed
1	Heating Oil	1,000	Not Provided	1/8/2001
Additional USTs were located on the site. Information regarding their numbers, sizes, installation/removal dates and previous contents were not provided.				

The property is listed with one North Carolina Department of Environmental Quality (NCDEQ) Incident (Incident #22976) associated with petroleum releases from USTs previously located on the property. According to the *Subsurface Investigation Report* dated April 27, 2000 prepared by Marshall Miller and Associates and the *1,000-Gallon Heating Oil Tank Closure* dated February 26, 2001 prepared by EMS, groundwater was measured in a temporary monitor well installed within the former UST basin area in August 2000 at a depth of 8.00 feet below ground surface (ft.-bgs). Naphthalene was reported in groundwater samples collected from the temporary well in 2000 at a concentration exceeding its 15A NCAC 2L Groundwater Quality Standards (2L Standard). In August 2000, soil samples collected from the former UST basin at a depth of four feet below ground surface (ft.-bgs) reported Total Petroleum Hydrocarbons-Diesel Range Organics and Gasoline Range Organics (TPH-DRO and TPH-GRO) at concentrations exceeding their North Carolina TPH Action Levels. In 2001, TPH-DRO was also reported in soil samples collected at a depth of 6.75 ft.-bgs during the removal of a 1,000-gallon heating oil tank located on the property but outside the ROW/easement. Copies of pertinent information obtained from the above referenced reports are included in **Appendix I**.

The PSA included a geophysical survey and subsequent limited soil sampling (13 soil borings up to 10 ft.-bgs), within accessible areas of the proposed ROW/easement in preparation for construction activities. **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 (East Coast Underground, LLC) was also used to locate and mark underground utilities.

◆ Geophysical Survey

On July 25, 2019, S&ME completed Time Domain Electromagnetic (TDEM) and Ground Penetrating Radar (GPR) surveys within accessible areas of the proposed ROW/easement at Parcel 49B. Brief descriptions of these 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 "*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 thick vegetation/crops and heavy construction equipment within the survey area, however, prevented TDEM data collection in a significant portion of the site. 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 semi-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® 4000 GPR system equipped with a 350 MHz antenna in general accordance with ASTM D6432 "*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 26 GPR profiles (Lines 1 through 26) 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. Five anomalous features unrelated to known surficial targets were identified in the geophysical data sets (Anomalies A through E; **Figures 6 and 7**). Anomalies A, B, C, and D are characterized by relatively small high amplitude GPR responses located within the upper two ft.-bgs while Anomaly E is characterized by two, vertically aligned, relatively small high amplitude GPR responses located at about 0.5 ft.-bgs and 4.5 ft.-bgs, respectively. Each of the identified anomalies may be related to isolated buried metallic objects. The anomalies were marked in the field using white spray paint. Example GPR profiles are presented in **Figures 8 through 12**.



◆ Soil Sampling

On October 18, 2019, Troxler Geologic, Inc. (Troxler's) drill crew utilized a track mounted Geoprobe® rig to advance 13 soil borings (B-1 through B-13) and to collect soil samples within accessible areas of the proposed ROW/easement at Parcel 49B. The approximate location of the soil borings are shown in **Figure 2**. A photographic log is included in **Appendix II**. Troxler's drill crew advanced the Geoprobe® borings up 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 III**.

Petroleum odors and elevated PID readings were noted at boring B-8, which was located within the former UST basin area, starting at a depth of approximately six ft.-bgs and extending to boring termination at 10 ft.-bgs. An elevated PID reading but no petroleum odor was noted at boring B-13 located near the former UST basin at a depth of eight to ten ft.-bgs. Petroleum odors and elevated PID readings were not noted at the other borings on the site. Therefore, soil samples were selected from boring B-8 and B-13 at the eight to ten foot depth interval. Various soil samples at varying depth intervals were selected from the remaining borings. The soil samples were placed into laboratory supplied containers and transported to RED Lab, LLC (Red Lab) in an insulated cooler with ice for analysis. A total of 13 soil samples (one soil sample per boring) were analyzed by RED Lab for TPH-GRO and TPH-DRO using ultra-violet fluorescence (UVF) spectroscopy with product (fuel) identification.

Upon completion of the soil sampling, the soil borings were backfilled with bentonite pellets and soil cuttings. Investigative derived wastes (IDW), such as additional soil cuttings generated during the soil boring advancement and decontamination water, were spread on the ground in accordance with the procedures specified by NCDEQ. Used gloves, re-sealable bags and acetate sleeves were bagged and disposed off-site.

Soil Analytical Results

Based upon analytical results of soil samples analyzed by RED Lab using UVP spectroscopy, TPH-GRO and TPH-DRO were reported at concentrations exceeding their respective North Carolina TPH Action Levels. TPH-GRO and TPH-DRO were reported in boring B-8 at the eight to ten foot depth interval, at concentrations of 293.3 milligrams per kilograms (mg/kg) and 713.9 mg/kg, respectively, which exceed their North Carolina TPH Action Levels of 50 mg/kg and 100 mg/kg, respectively. TPH-GRO and TPH-DRO were also reported in borings B-13 at the eight to ten foot depth interval, at concentrations slightly above the laboratory reporting limits but well below their respective North Carolina TPH Action Levels. TPH-DRO was reported in borings B-4 at the two to four foot depth interval and boring B-7 at the eight to ten foot depth interval, at concentrations slightly above the laboratory reporting limits but well below its North Carolina TPH Action Level. TPH-GRO and TPH-DRO were not reported at concentrations exceeding the laboratory method reporting limits at 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 IV**.

◆ Conclusion and Recommendations

The geophysical survey identified five anomalies (Anomalies A through E) which may be related to isolated buried metallic objects. Responses indicative of a potential UST were not identified in the geophysical data sets collected at the site.

S&ME advanced 13 soil borings (B-1 through B-13) to a depth of up to approximately 10 ft.-bgs at the site. Petroleum odors and elevated PID readings were noted at boring B-8, which was located within the former UST basin area, starting at a depth of approximately six ft.-bgs and extending to boring termination at 10 ft.-bgs. Elevated PID readings but no petroleum odors were also noted at boring B-13, which was located outside the former UST basin area, at the eight to ten ft.-bgs interval. Selected soil samples from the soil borings were analyzed for TPH-GRO and TPH-DRO using UVF spectroscopy.

TPH-GRO and TPH-DRO were reported at boring B-8 at the eight to ten foot depth interval at concentrations exceeding their North Carolina TPH Action Levels. TPH-GRO and TPH-DRO were also reported in borings B-13 at the eight to ten foot depth interval, at concentrations slightly above the laboratory reporting limits but well below their respective North Carolina TPH Action Levels. TPH-DRO was reported in borings B-4 at the two to four foot depth interval and boring B-7 at the eight to ten foot depth interval, at concentrations slightly above the laboratory reporting limits but well below its North Carolina TPH Action Level. TPH-GRO and TPH-DRO were not reported at concentrations exceeding the laboratory method reporting limits at the remaining soil samples. During the soil boring advancement, groundwater was not encountered. Therefore, groundwater sampling was not performed.

However, in 2000 groundwater was reported within the former UST excavation area at a depth of 8.00 ft.-bgs with naphthalene reported in the groundwater above its 2L Standard. In 2000, TPH-GRO and TPH-DRO were reported in soil samples collected within the UST basin at a depth of four ft.-bgs at concentrations exceeding their North Carolina TPH Action Levels. In 2001, TPH-DRO was also reported at concentrations exceeding its North Carolina TPH Action Level in soil samples collected at a depth of 6.75 ft.-bgs during the removal of a 1,000-gallon heating oil UST. However, the heating oil tank was located outside the ROW/easement.

Based on the findings of the geophysical survey, analytical results of soil samples and analytical results of previous soil and groundwater samples, it is likely that during construction, NCDOT may encounter soil and groundwater impacted with petroleum at the site. Petroleum impacted soil at concentrations exceeding the North Carolina TPH Action Levels may be encountered within the vicinity of boring B-8 located within the former UST basin. Assuming that a section of petroleum impacted soil approximately four feet thick, 40 feet in diameter at a depth of six to ten ft.-bgs; up to 190 cubic yards of soil near boring B-8 may be impacted. According to previous sampling, petroleum impacted soil may be encountered within the UST basin area at a shallower depth (four ft.-bgs), but our field observations and laboratory data did not identify petroleum impacted soil within this area at a shallower depth.



If construction excavations extend deeper than 10 ft.-bgs, petroleum impacted groundwater may also be encountered within boring B-8.

If petroleum stained or odorous soils are encountered during construction, these soils should be properly handled and disposed at a licensed facility. If construction dewatering is required, petroleum impacted groundwater must be properly disposed or treated at a licensed facility.

S&ME recommends maintaining an awareness level for the presence of petroleum in the soil and groundwater at the site for the safety of workers and the public.

◆ **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., surficial debris, reinforced concrete, utilities, etc.) and overhead transmission lines can produce a false electromagnetic response 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 about five ft.-bgs.

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.
DocuSigned by:

4C890FAEC25F488...
Jamie T Honeycutt
Environmental Professional
jhoneycutt@smeinc.com

DocuSigned by:

861E52DDEF4C7...

Michael W. Pfeifer
Senior Project Manager
mpfeifer@smeinc.com



DocuSigned by:

D4B9FB5F636F4BB...

1/27/2020

Thomas P. Raymond, P.E., P.M.P.
Senior Consultant
traymond@smeinc.com

Attachments:

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 8 and 9

Figure 9: Example GPR Data – Lines 18 and 19

Figure 10: Example GPR Data – Lines 6 and 7

Figure 11: Example GPR Data – Lines 3 and 4

Figure 12: Example GPR Data – Lines 1 and 2

Appendix I: NCDEQ File Review

Appendix II: Photographs

Appendix III: Boring Logs

Appendix IV: Laboratory Analytical Reports and Chain of Custody

Tables



TABLE 1
SUMMARY OF SOIL SAMPLING RESULTS
NCDOT Project I-5878
Parcel 49B - (Allen Walker Former Texaco)
Vacant Lot SE Corner Pope Rd. and Bud Hawkins Rd.
Dunn, Harnett County, North Carolina
S&ME Project No. 4305-19-161

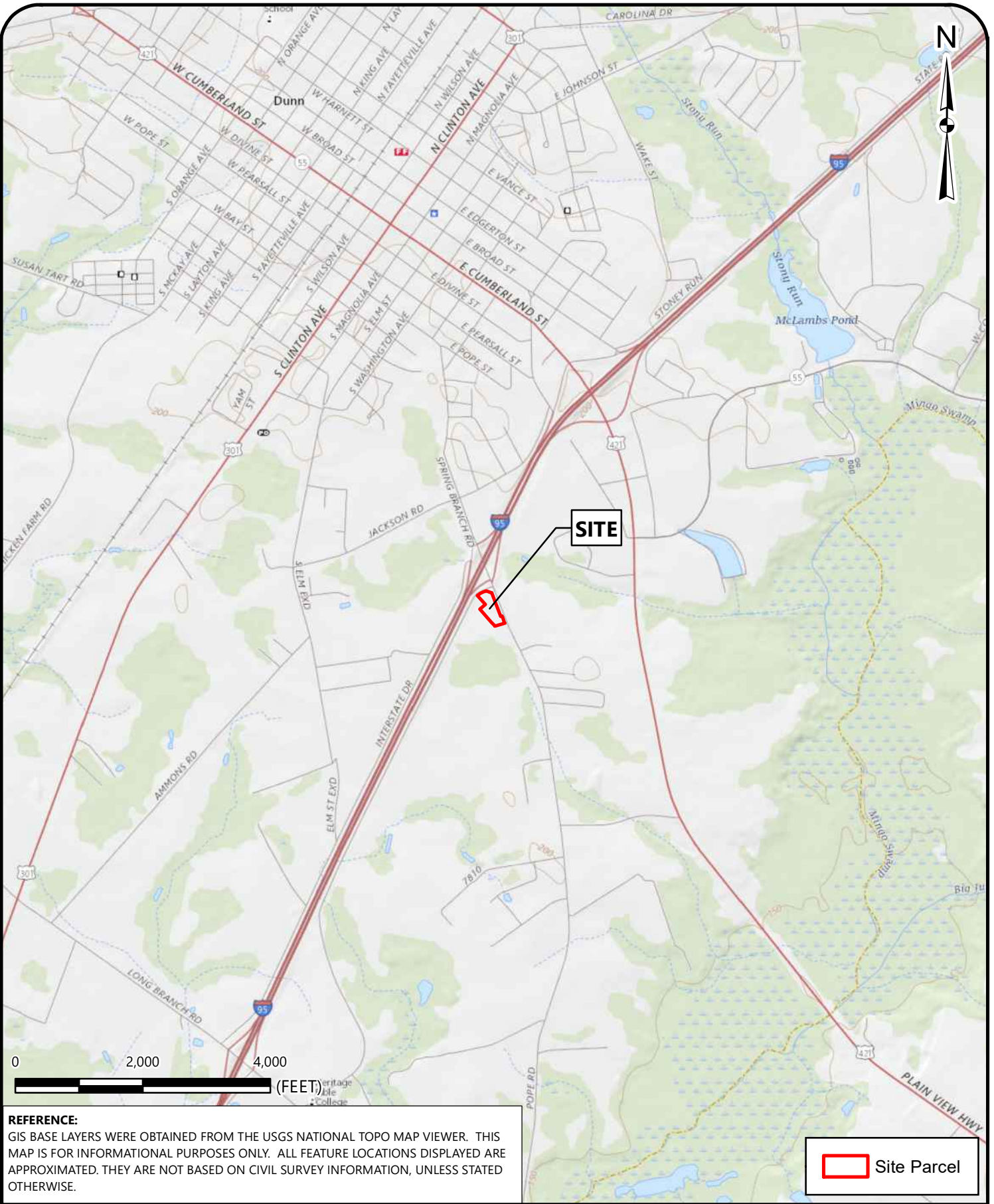
Analytical Method→			Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) by Ultraviolet Fluorescence (UVF) Spectrometry	
Sample ID	Date	Contaminant of Concern→	TPH-GRO	TPH-DRO
		Sample Depth (ft.-bgs)		
B-1	10/18/2019	6 to 8	<0.48	<0.48
B-2	10/18/2019	8 to 10	<0.52	<0.52
B-3	10/18/2019	8 to 10	<0.61	<0.61
B-4	10/18/2019	2 to 4	<0.5	0.5
B-5	10/18/2019	8 to 10	<0.48	<0.48
B-6	10/18/2019	8 to 10	<0.28	<0.28
B-7	10/18/2019	8 to 10	<0.51	0.51
B-8	10/18/2019	8 to 10	293.3	713.9
B-9	10/18/2019	8 to 10	<0.5	<0.5
B-10	10/18/2019	6 to 8	<0.5	<0.5
B-11	10/18/2019	8 to 10	<0.49	<0.49
B-12	10/18/2019	8 to 10	<0.5	<0.5
B-13	10/18/2019	8 to 10	12.7	3
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\2019\ENV\4305-19-161 NCDOT I-5878 PSAs\GIS\Parcel_49B\VICINITY.mxd plotted by abentz 11-21-2019



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.

 Site Parcel

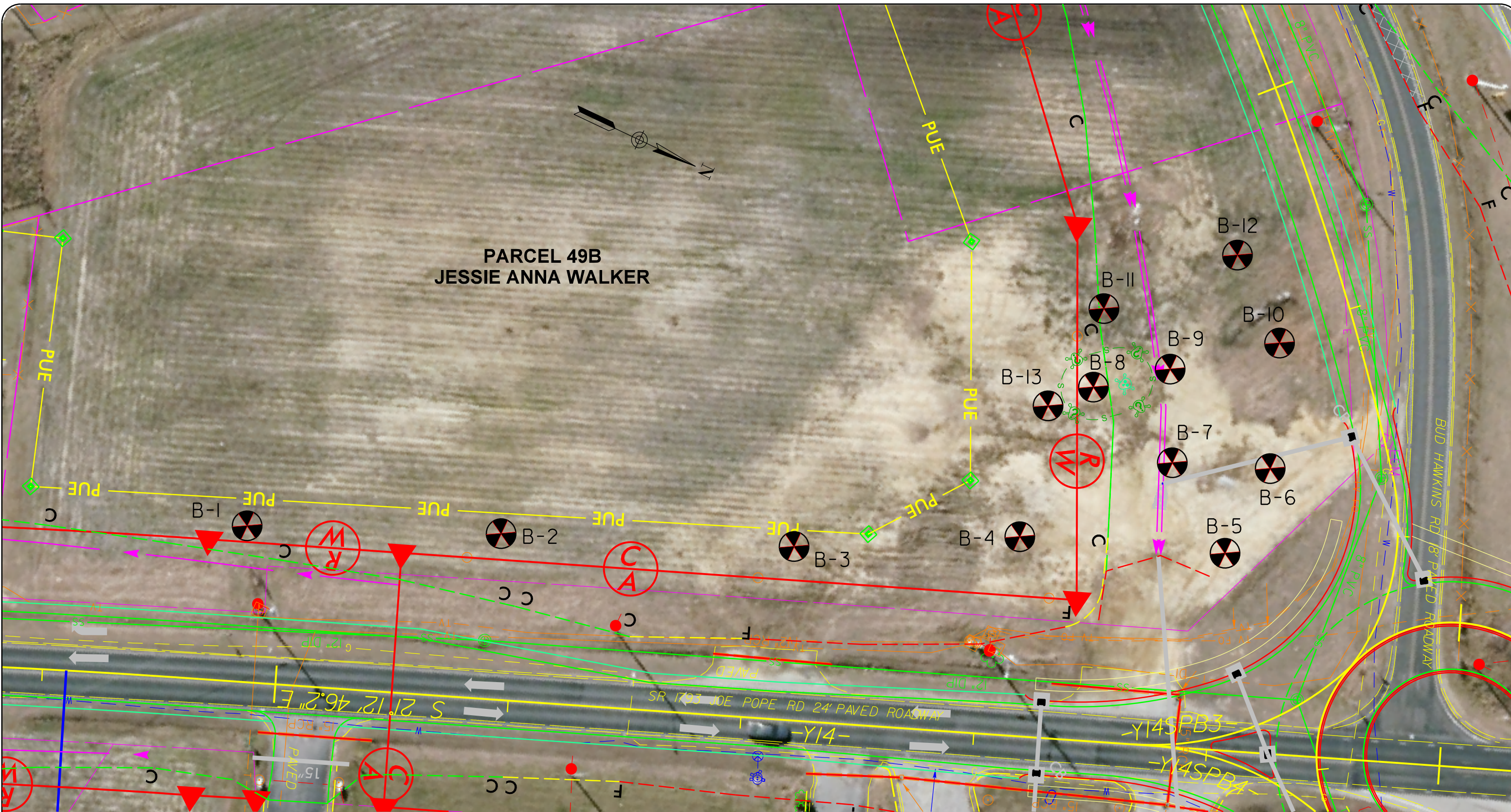


VICINITY MAP

NCDOT PROJECT I-5878
PARCEL NO. 49B (ALLEN WALKER FORMER TEXACO)
VACANT LOT SE CORNER POPE RD AND BUD HAWKINS RD
DUNN, HARNETT COUNTY, NORTH CAROLINA

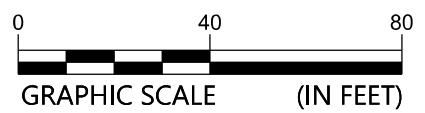
SCALE:
1" = 2,000'
DATE:
11-21-19
PROJECT NUMBER
4305-19-161

FIGURE NO.
1



LEGEND
 Geoenvironmental Boring:
 Underground Storage Tank (UST):
 Map Source: NCDOT Project I-59868
 Image Source: NC ONEMAP, Dated 2016

Known Soil Contamination:
 Possible Soil Contamination:
 Existing Contamination Known - Water:



SITE MAP

NCDOT Project: I-5878
 PARCEL 49B - (ALLEN WALKER FORMER TEXACO)
 Vacant Lot SE Corner Pope Rd. & Bud Hawkins Rd., Dunn, Harnett County, North Carolina

SCALE: 1" = 40'	FIGURE NO. 2
DATE: JAN. 2020	
PROJECT NUMBER 4305-19-161	

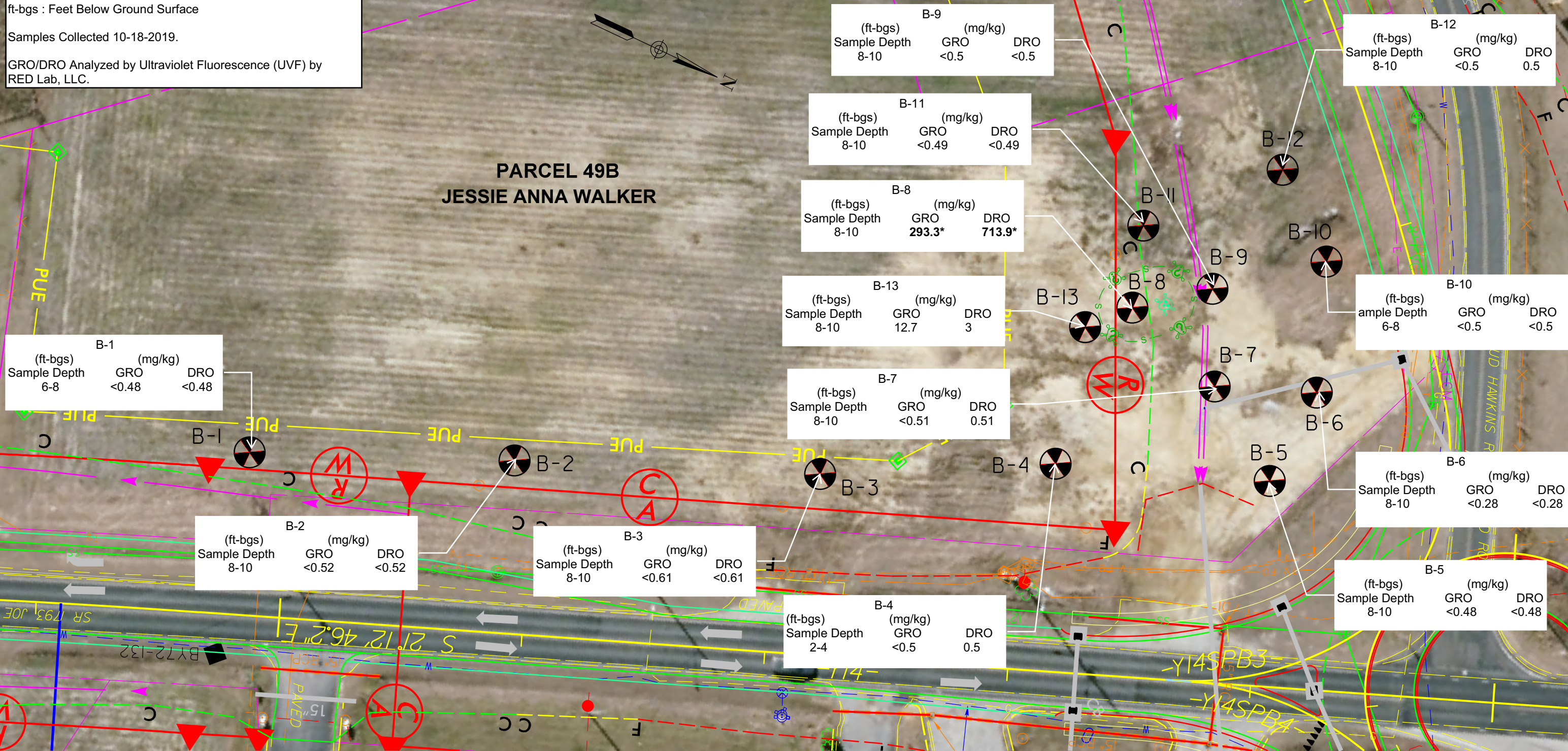


Notes:
 mg/kg: Milligrams per Kilogram
 GRO: Total Petroleum Hydrocarbon Gasoline Range Organics
 DRO: Total Petroleum Hydrocarbon Diesel Range Organics
 TPH: Total Petroleum Hydrocarbon
BOLD*: Indicates Exceedance of NC TPH Action Levels
 ft-bgs : Feet Below Ground Surface

Samples Collected 10-18-2019.

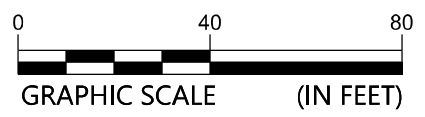
GRO/DRO Analyzed by Ultraviolet Fluorescence (UVF) by RED Lab, LLC.

**PARCEL 49B
 JESSIE ANNA WALKER**



LEGEND
 Geoenvironmental Boring:
 Underground Storage Tank (UST):
 Map Source: NCDOT Project I-59868
 Image Source: NC ONEMAP, Dated 2016

Known Soil Contamination:
 Possible Soil Contamination:
 Existing Contamination Known - Water:



SOIL CONSTITUENT MAP

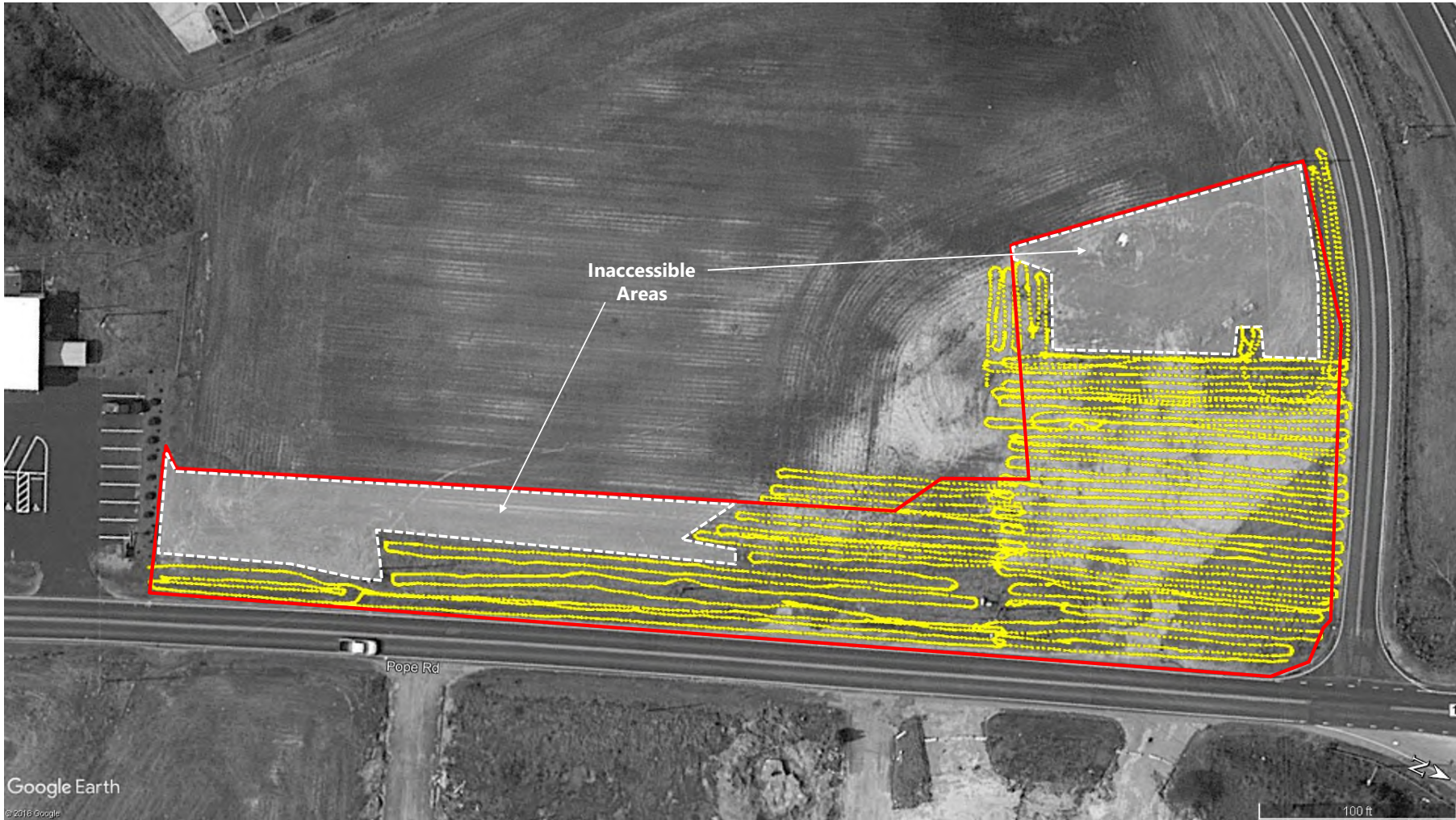
NCDOT Project: I-5878
 PARCEL 49B - (ALLEN WALKER FORMER TEXACO)
 Vacant Lot SE Corner Pope Rd. & Bud Hawkins Rd., Dunn, Harnett County, North Carolina

SCALE:	FIGURE NO.
1" = 40'	3
DATE:	
NOV. 2019	
PROJECT NUMBER	
4305-19-161	





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



LEGEND

- - - - - Approximate TDEM Path
- Approximate Requested Survey Area

TDEM PATH LOCATION PLAN

NCDOT PROJECT: I-5878
PARCEL #49B - (ALLEN WALKER FORMER TEXACO)
VACANT LOT SE CORNER POPE ROAD & BUD HAWKINS ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE:
AS SHOWN

DATE:
1/7/2020

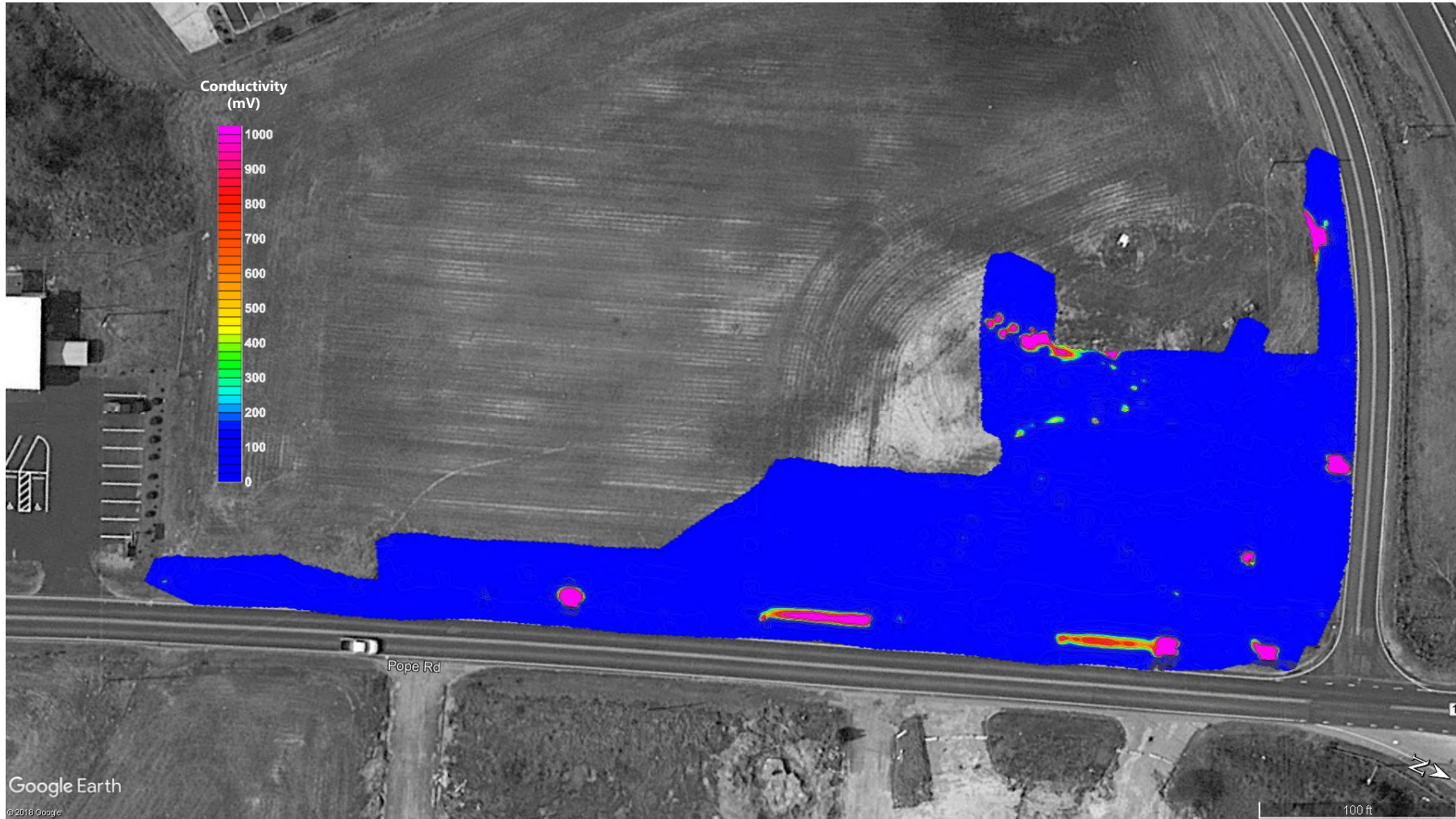
PROJECT NUMBER
4305-19-161

FIGURE NO.

4



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



TDEM DATA PLOT A

NC DOT PROJECT: I-5878
PARCEL #49B - (ALLEN WALKER FORMER TEXACO)
VACANT LOT SE CORNER POPE ROAD & BUD HAWKINS ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE:
AS SHOWN

DATE:
1/7/2020

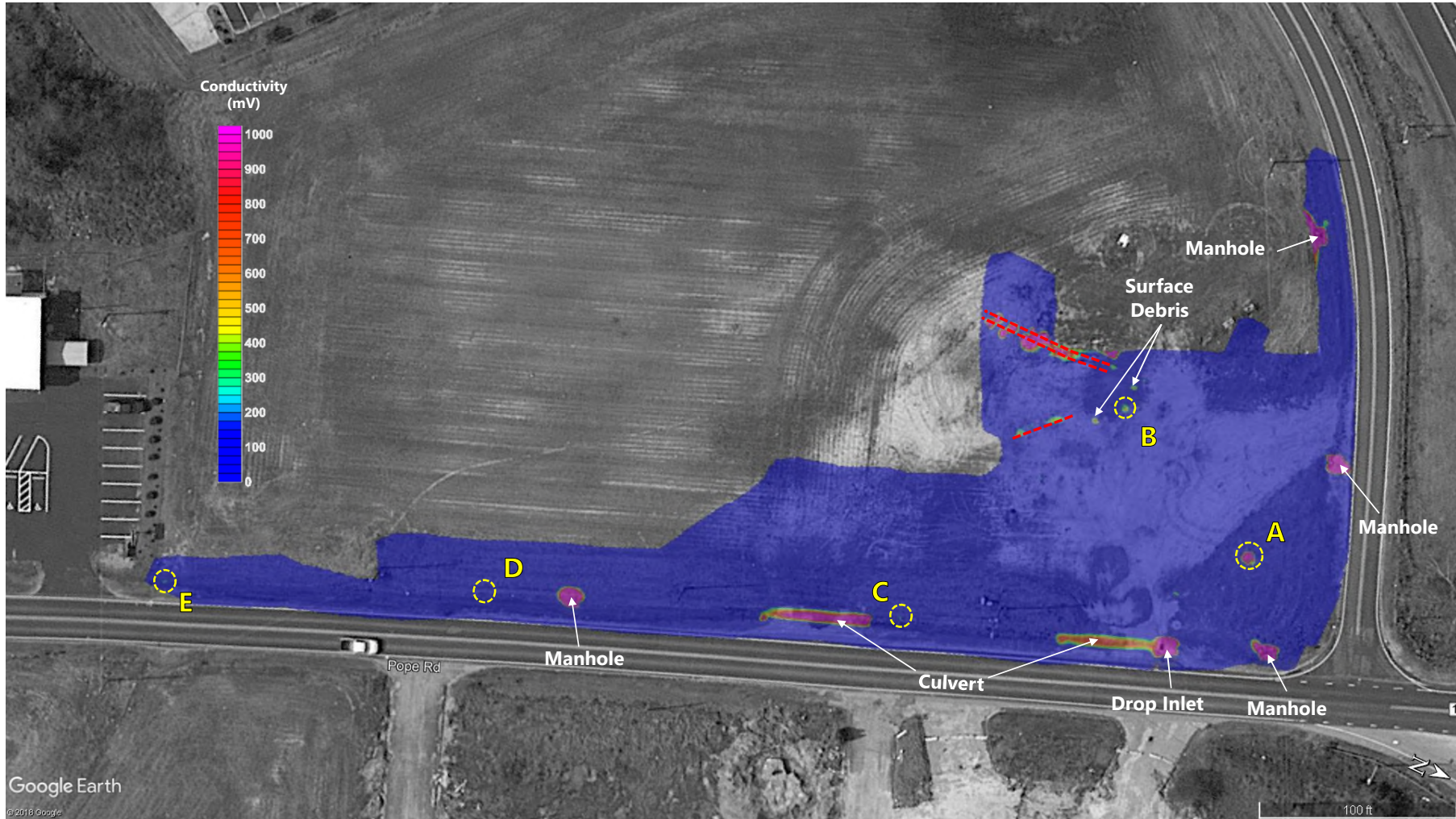
PROJECT NUMBER
4305-19-161

FIGURE NO.

5



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



Google Earth
 © 2018 Google

LEGEND

- Approximate Location of Geophysical Anomaly
- Approximate Location of Possible Utility

TDEM DATA PLOT B

NC DOT PROJECT: I-5878
 PARCEL #49B - (ALLEN WALKER FORMER TEXACO)
 VACANT LOT SE CORNER POPE ROAD & BUD HAWKINS ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE:
 AS SHOWN

DATE:
 1/7/2020

PROJECT NUMBER
 4305-19-161

FIGURE NO.



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



LEGEND

- Approximate Location of Geophysical Anomaly
- Approximate Location of GPR Profile
- Approximate Location of Possible Utility

GEOPHYSICAL ANOMALY LOCATION PLAN

NC DOT PROJECT: I-5878
 PARCEL #49B - (ALLEN WALKER FORMER TEXACO)
 VACANT LOT SE CORNER POPE ROAD & BUD HAWKINS ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

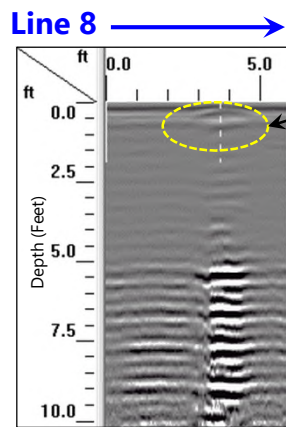
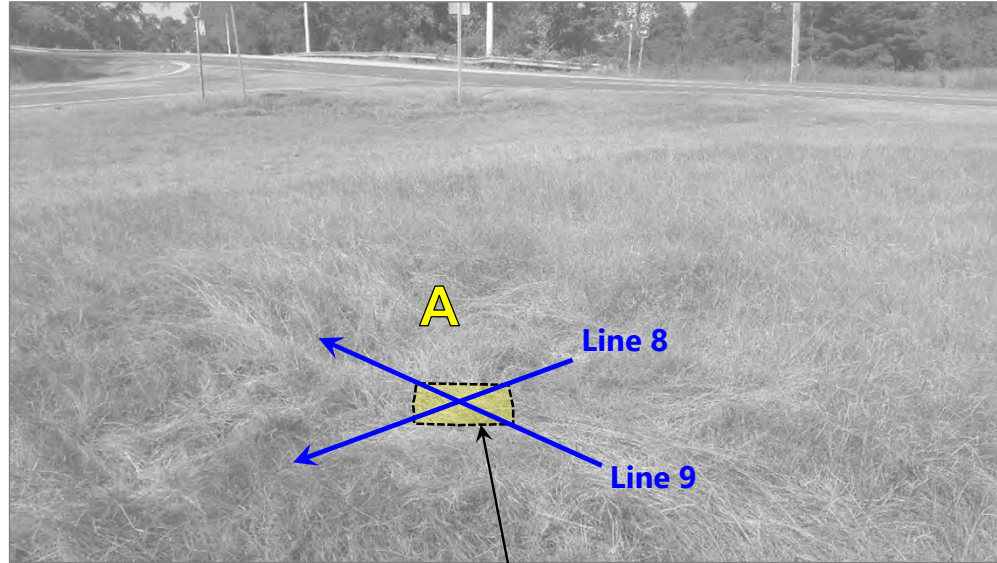
SCALE:
 AS SHOWN

DATE:
 1/7/2020

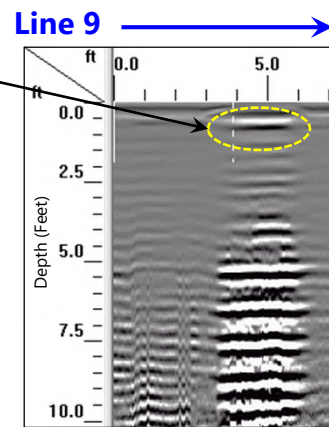
PROJECT NUMBER
 4305-19-161

FIGURE NO.

7



Anomaly A



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



EXAMPLE GPR DATA – LINES 8 AND 9

NCDOT PROJECT: I-5878
 PARCEL #49B - (ALLEN WALKER FORMER TEXACO)
 VACANT LOT SE CORNER POPE ROAD & BUD HAWKINS ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

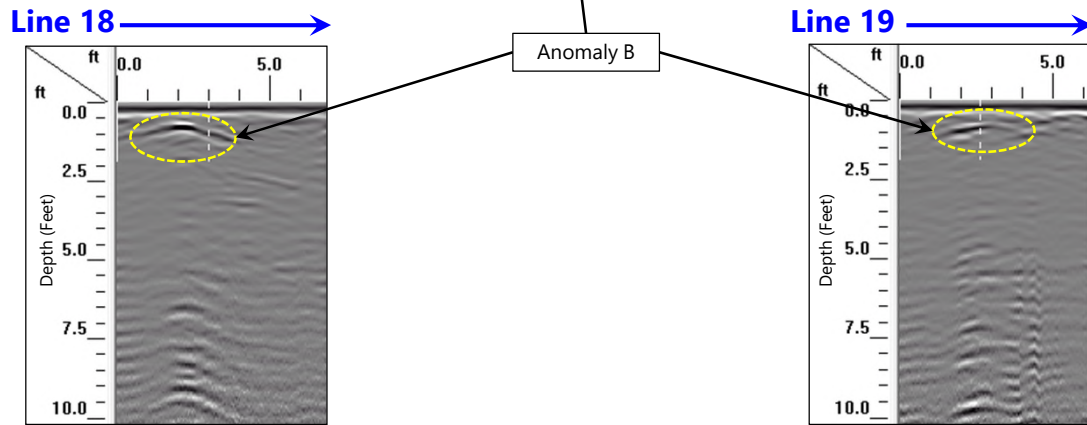
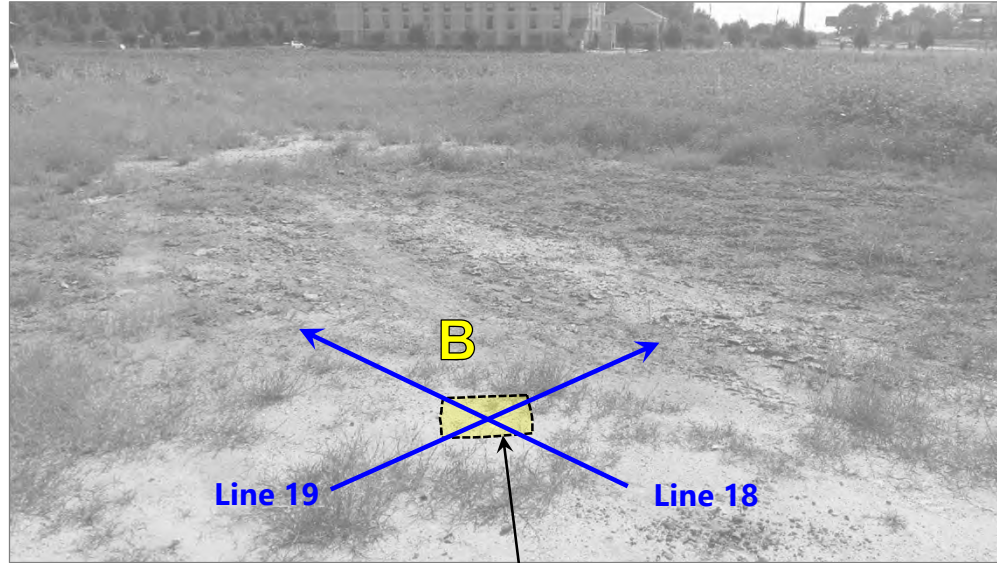
SCALE:
AS SHOWN

DATE:
1/7/2020

PROJECT NUMBER
4305-19-161

FIGURE NO.

8



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



EXAMPLE GPR DATA – LINES 18 AND 19

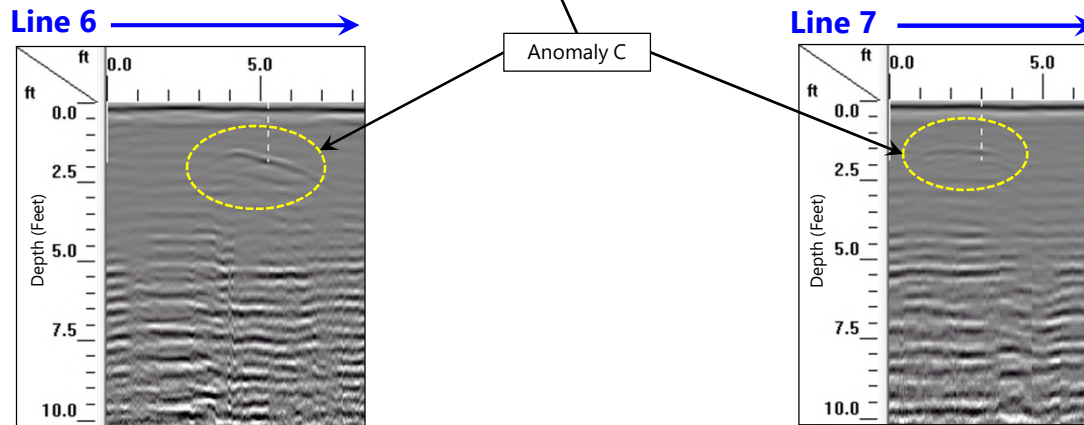
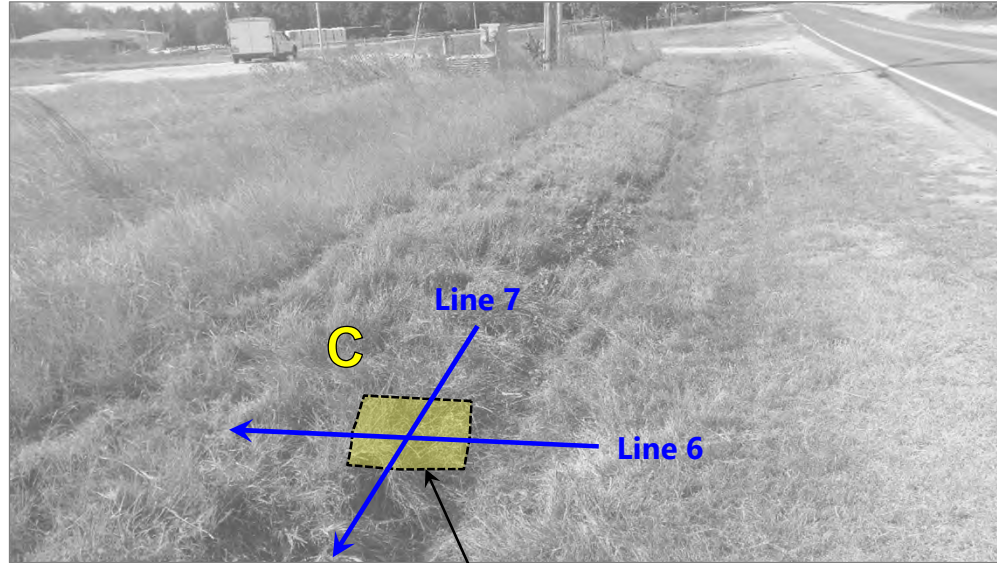
NCDOT PROJECT: I-5878
 PARCEL #49B - (ALLEN WALKER FORMER TEXACO)
 VACANT LOT SE CORNER POPE ROAD & BUD HAWKINS ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE:
 AS SHOWN

DATE:
 1/7/2020

PROJECT NUMBER
 4305-19-161

FIGURE NO.



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



EXAMPLE GPR DATA – LINES 6 AND 7

NCDOT PROJECT: I-5878
 PARCEL #49B - (ALLEN WALKER FORMER TEXACO)
 VACANT LOT SE CORNER POPE ROAD & BUD HAWKINS ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

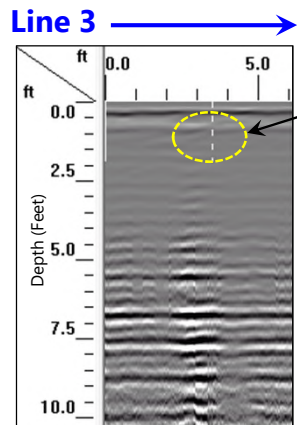
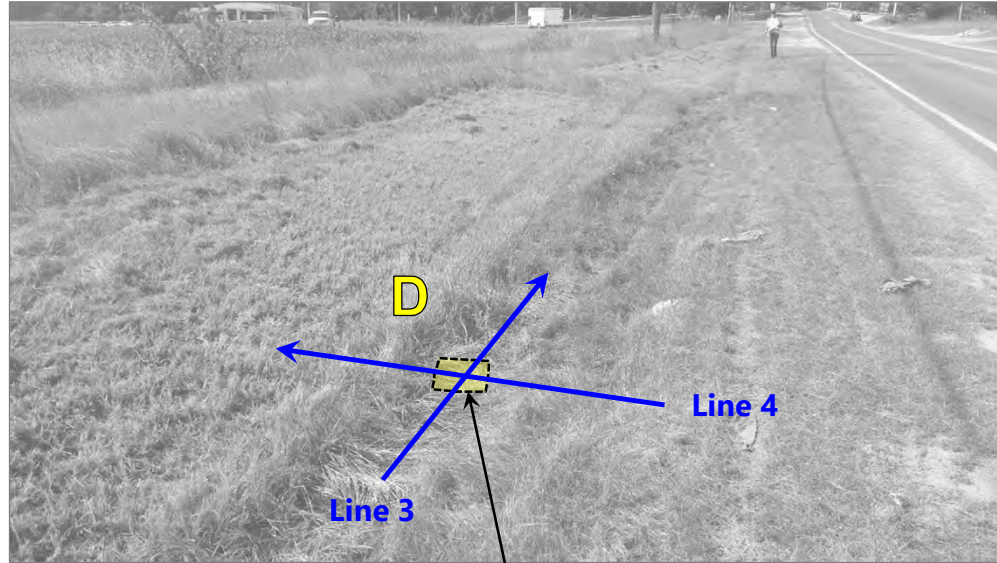
SCALE:
 AS SHOWN

DATE:
 1/7/2020

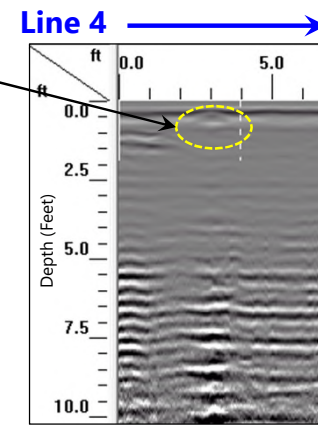
PROJECT NUMBER
 4305-19-161

FIGURE NO.

10



Anomaly D



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



EXAMPLE GPR DATA – LINES 3 AND 4

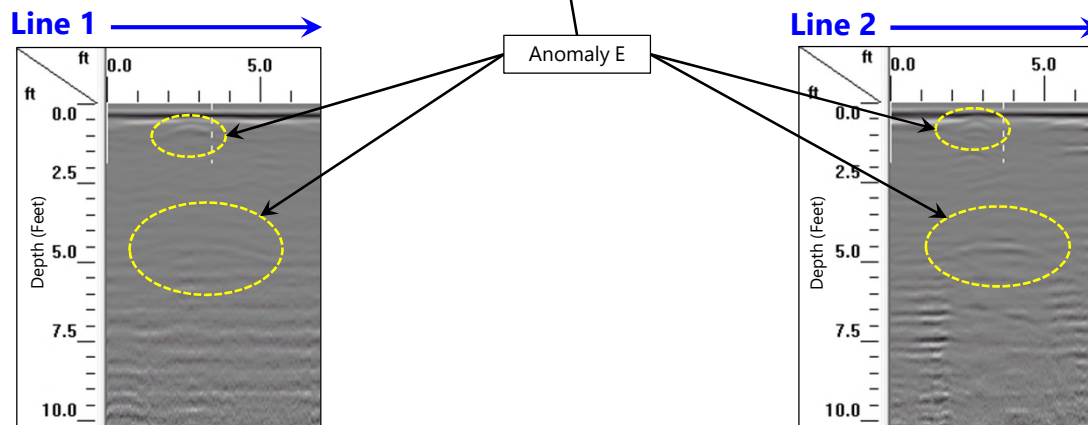
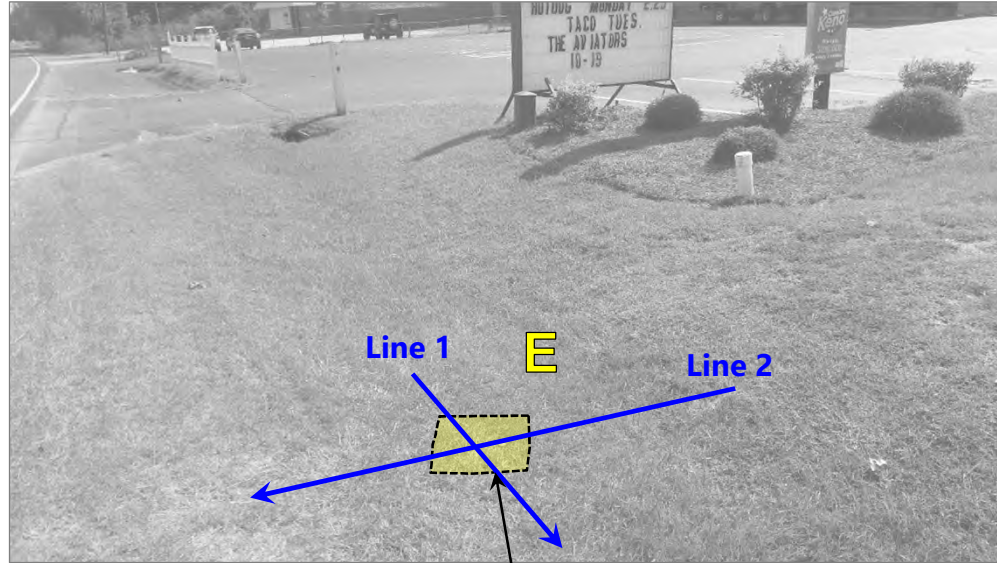
NCDOT PROJECT: I-5878
 PARCEL #49B - (ALLEN WALKER FORMER TEXACO)
 VACANT LOT SE CORNER POPE ROAD & BUD HAWKINS ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE:
 AS SHOWN

DATE:
 1/7/2020

PROJECT NUMBER
 4305-19-161

FIGURE NO.



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



EXAMPLE GPR DATA – LINES 1 AND 2

NCDOT PROJECT: I-5878
 PARCEL #49B - (ALLEN WALKER FORMER TEXACO)
 VACANT LOT SE CORNER POPE ROAD & BUD HAWKINS ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE:
 AS SHOWN

DATE:
 1/7/2020

PROJECT NUMBER
 4305-19-161

FIGURE NO.

Appendix I – NCDEQ File Review

RECEIVED

OCT 24 2000

FAYETTEVILLE
REG. OFFICE

SUBSURFACE INVESTIGATION REPORT

Allen Walker
Former Texaco
Pope Road and Bud Hawkins Road
Dunn, Harnett County, North Carolina 28334

April 27, 2000

Prepared For:

ALLEN WALKER
PO Box 102
Leesburg, Virginia 20178-0102
(703) 771-4259

Prepared By:

MARSHALL MILLER & ASSOCIATES, INC.
5900 Triangle Drive
Raleigh, North Carolina 27613
(919) 786-1414
MM&A Project No. E70100

Prepared By:

Jim George for

Robert Marble
Staff Scientist

Reviewed By:

LM

Lawrence M. George, P.G.
Technical Director/Senior Scientist



TABLE 1

SOIL ANALYTICAL DATA
FORMER TEXACO

Constituent	B2 0-4'	B4 0-4'	Reportable Concentration (parts per million)
TPH 3550	283	16	10 ppm
TPH 5030	190	9	10 ppm

Results reported in milligrams per kilogram ($\mu\text{g}/\text{kg}$).
BOLD: Exceeds reportable concentration.

TABLE 2
GROUNDWATER ANALYTICAL DATA
FORMER TEXACO

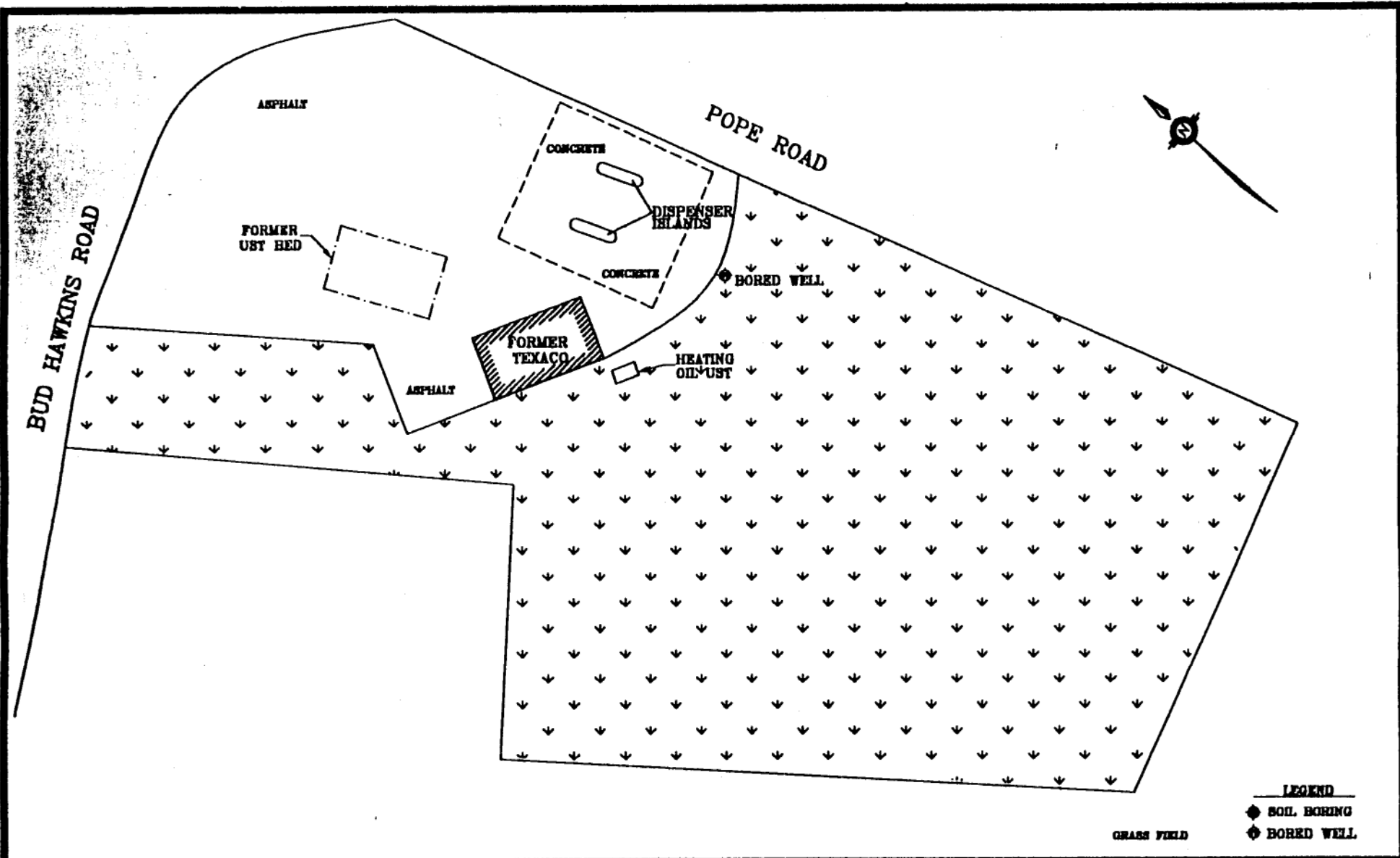
Constituent	B2	B5	2L Standard	GCL
Volatile Organic Compounds (VOCs)				
Ethylbenzene	19	BQL ^(0.5)	29	29,000
Isopropylbenzene	7	BQL ^(0.5)	70	25,000
Naphthalene	110	BQL ^(0.5)	21	15,500
n-Propylbenzene	22	BQL ^(0.5)	70	30,000
1,2,4-Trimethylbenzene	26	0.6	350	28,500
1,3,5-Trimethylbenzene	8	BQL ^(0.5)	350	25,000
Xylenes	11	BQL ^(1.5)	530	87,500
Polynuclear Aromatic Hydrocarbons (PAHs)				
1-Methylnaphthalene	30	BQL ⁽¹⁰⁾	NA	NA
2-Methylnaphthalene	48	BQL ⁽¹⁰⁾	NA	12,500
Naphthalene	44	BQL ⁽¹⁰⁾	21	15,500

Results reported in micrograms per liter (µg/L).

BOLD: Exceeds 2L standards.

NA: Not Applicable

Note: Only detected parameters are shown in this table.

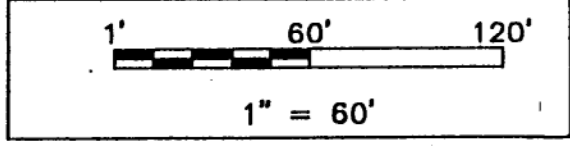


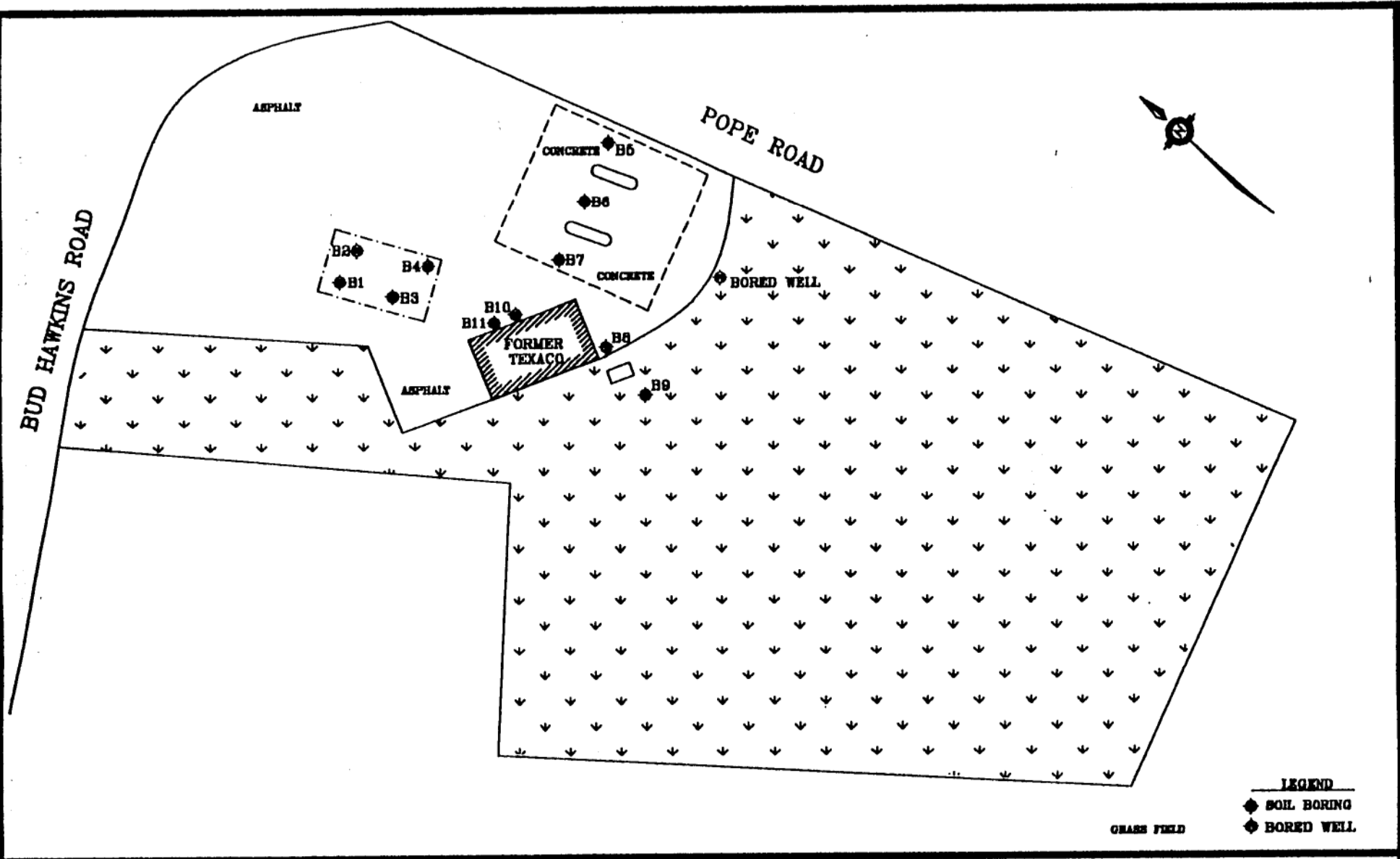
SITE MAP

ALLEN WALKER
FORMER TEXACO
DUNN, NORTH CAROLINA

DATE: 04/18/00
SCALE: 1" = 60'
FIGURE NO: 2
DRAWN: TEC

Prepared by
INTEGRATION
FRMRTEXACO.DWG





SOIL BORING
LOCATIONS

ALLEN WALKER
FORMER TEXACO
DUNN, NORTH CAROLINA

DATE: 04/19/00
SCALE: 1" = 60'
FIGURE NO: 3
DRAWN: TEC

Prepared by
U.S. GEOLOGICAL SURVEY
FRMRTEXACO.DWG

1' 60' 120'
1" = 60'

February 26, 2001

North Carolina Department of Environment and Natural Resources
Division of Waste Management - UST Section
Fayetteville Regional Office
System Building, Suite 714
Fayetteville, NC 28301

Re: 1-1000 Gallon Heating Oil Underground Storage Tank Removal
Former Allen Walker Texaco
Interstate 95 and Pope Road, Dunn^{on} Harnett County, North Carolina

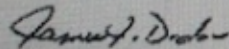
Dear Sir/Madam:

On behalf of Equiva Services, LLC, EMS Environmental, Inc., (EMS) has prepared the attached Underground Storage Tank Closure Report. This report documents the removal of a 1000 gallon UST used for non-commercial purposes.

The UST was removed on January 8, 2001.

Please review this report and contact the undersigned if you have any questions or comments.

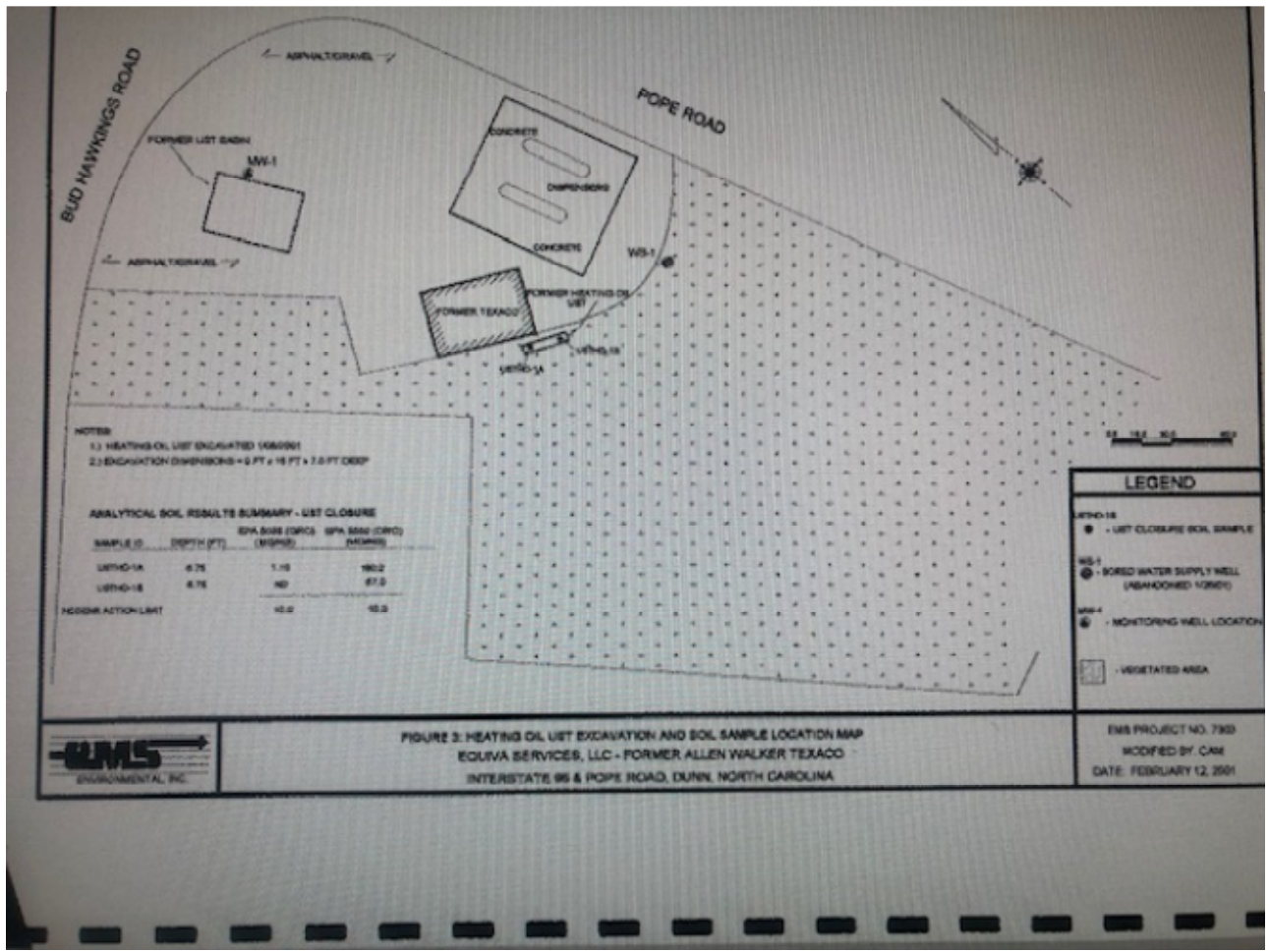
Sincerely,
EMS Environmental, Inc.



James J. Dodson, L.G.
Project Manager

Cc: Ms. Anna Tillman, Equiva Services, 1691 Arrowhead Trail NE, Atlanta, GA 30345
Ms. Cindy Split, ESS

File: c:\7200-7300\jobs\7303\wp\7303ustres.doc



Appendix II – Photographs



Preliminary Site Assessment Report
NCDOT Project I-5878, WBS Element 53078.1.1
Parcel 49B-Allen Walker Former Texaco
Dunn, Harnett County, North Carolina
S&ME Project No. 4305-19-161

		Date: 10/18/2019				
	<p style="text-align: right; font-size: small;">18 Oct 2019, 16:59:34</p>	Photographer: JTH				
1	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Location / Orientation</td> <td>View of site looking west from Spring Branch Road.</td> </tr> <tr> <td>Remarks</td> <td>View is of former gasoline/service station area.</td> </tr> </table>	Location / Orientation	View of site looking west from Spring Branch Road.	Remarks	View is of former gasoline/service station area.	
Location / Orientation	View of site looking west from Spring Branch Road.					
Remarks	View is of former gasoline/service station area.					

		Date: 10/18/2019				
	<p style="text-align: right; font-size: small;">18 Oct 2019, 16:01:03</p>	Photographer: JTH				
2	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Location / Orientation</td> <td>View looking south. Standing water is within former UST basin area.</td> </tr> <tr> <td>Remarks</td> <td>None</td> </tr> </table>	Location / Orientation	View looking south. Standing water is within former UST basin area.	Remarks	None	
Location / Orientation	View looking south. Standing water is within former UST basin area.					
Remarks	None					

Appendix III – Boring Logs

Appendix IV – Laboratory Analytical Reports and Chain of Custody



Hydrocarbon Analysis Results

Client: S&ME
Address: 3201 SPRING FOREST RD
 RALEIGH NC

Samples taken Monday, October 21, 2019
Samples extracted Monday, October 21, 2019
Samples analysed Wednesday, October 23, 2019

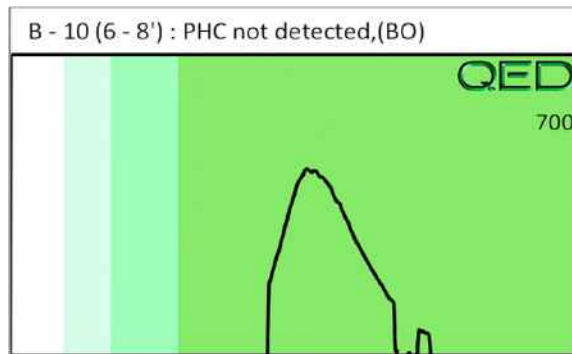
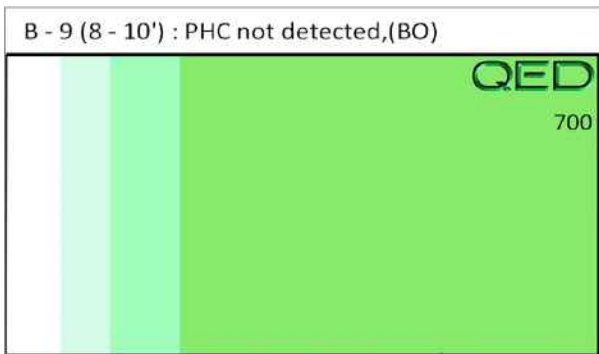
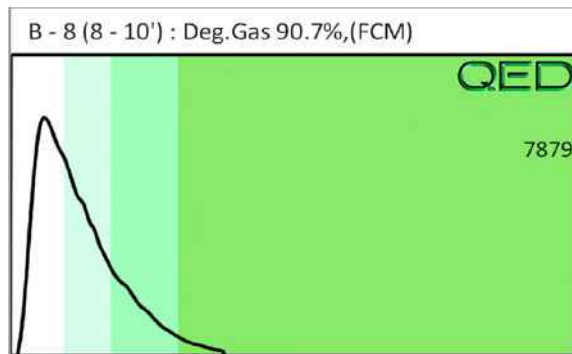
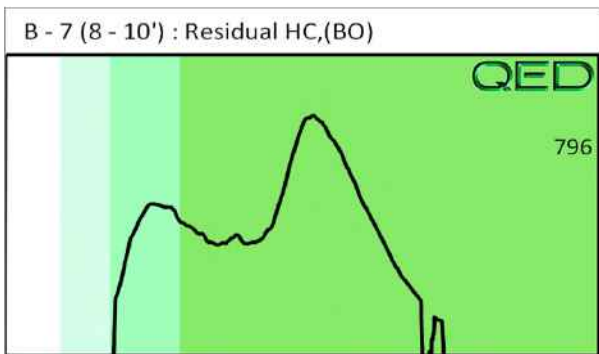
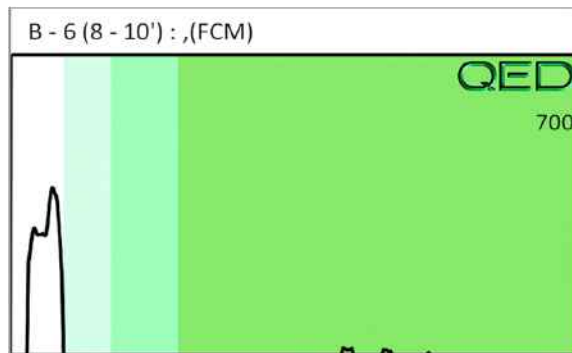
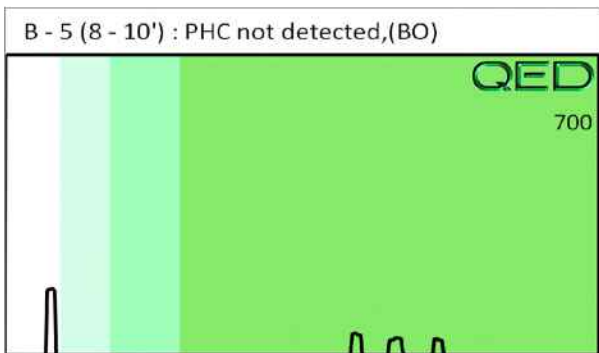
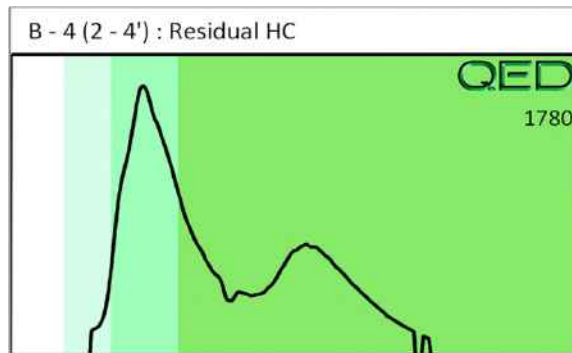
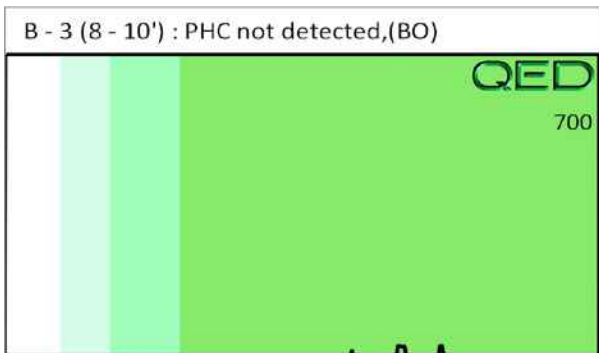
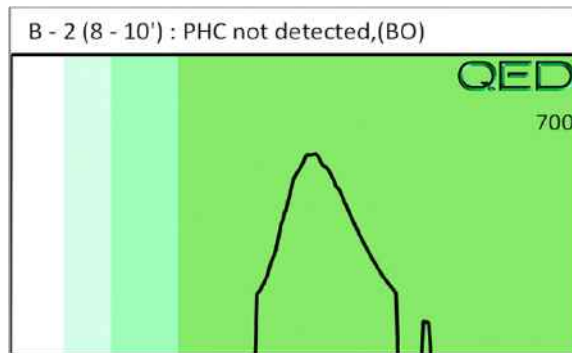
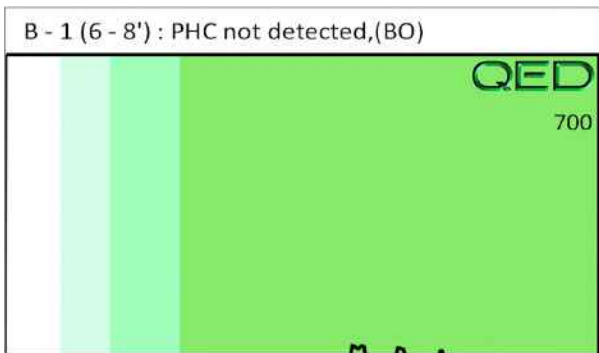
Contact: JAMIE HONEYCUTT

Operator JENN RYAN

Project: NCDOT I-5878 PARCEL 49B

											F03640															
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	B - 1 (6 - 8')	19.1	<0.48	<0.48	<0.48	<0.48	<0.1	<0.15	<0.019	0	0	0	PHC not detected,(BO)													
s	B - 2 (8 - 10')	20.6	<0.52	<0.52	<0.52	<0.52	<0.1	<0.17	<0.021	0	0	100	PHC not detected,(BO)													
s	B - 3 (8 - 10')	24.5	<0.61	<0.61	<0.61	<0.61	<0.12	<0.2	<0.025	0	0	0	PHC not detected,(BO)													
s	B - 4 (2 - 4')	19.8	<0.5	<0.5	0.5	0.5	0.25	<0.16	<0.02	0	81.1	18.9	Residual HC													
s	B - 5 (8 - 10')	19.3	<0.48	<0.48	<0.48	<0.48	<0.1	<0.15	<0.019	0	0	0	PHC not detected,(BO)													
s	B - 6 (8 - 10')	11.2	<0.28	<0.28	<0.28	<0.28	<0.06	<0.09	<0.011	0	0	0	,(FCM)													
s	B - 7 (8 - 10')	20.3	<0.51	<0.51	0.51	0.51	0.26	<0.16	<0.02	0	40.9	59.1	Residual HC,(BO)													
s	B - 8 (8 - 10')	61.2	135.3	293.3	713.9	1007.2	12.6	<0.49	<0.061	99.8	0.2	0	Deg.Gas 90.7%,(FCM)													
s	B - 9 (8 - 10')	20.0	<0.5	<0.5	<0.5	<0.5	<0.1	<0.16	<0.02	0	0	0	PHC not detected,(BO)													
s	B - 10 (6 - 8')	20.0	<0.5	<0.5	<0.5	<0.5	<0.1	<0.16	<0.02	0	0	100	PHC not detected,(BO)													
Initial Calibrator QC check											OK		Final FCM QC Check											OK		95.1 %

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





Hydrocarbon Analysis Results

Client: S&ME
Address: 3201 SPRING FOREST RD
 RALEIGH NC

Samples taken Monday, October 21, 2019
Samples extracted Monday, October 21, 2019
Samples analysed Wednesday, October 23, 2019

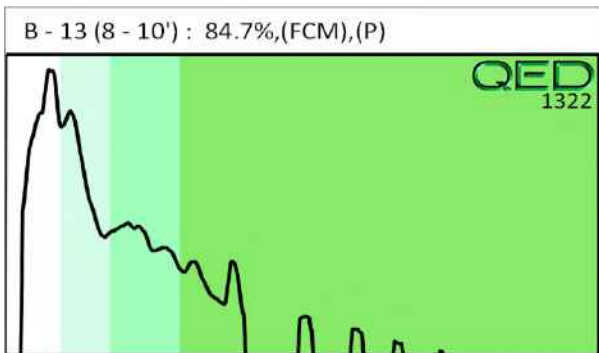
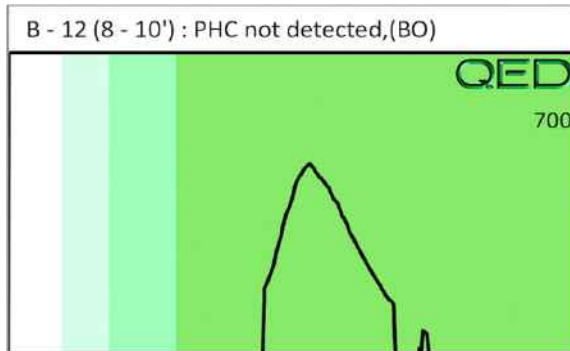
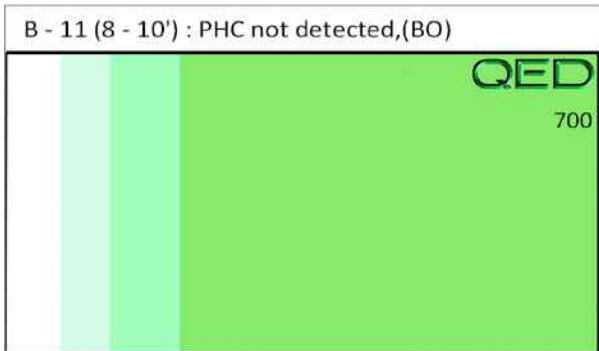
Contact: JAMIE HONEYCUTT

Operator JENN RYAN

Project: NCDOT I-5878 PARCEL 49B

											F03640															
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	B - 11 (8 - 10')	19.7	<0.49	<0.49	<0.49	<0.49	<0.1	<0.16	<0.02	0	0	0	PHC not detected,(BO)													
s	B - 12 (8 - 10')	20.0	<0.5	<0.5	<0.5	<0.5	<0.1	<0.16	<0.02	0	0	100	PHC not detected,(BO)													
s	B - 13 (8 - 10')	20.2	<0.5	12.7	3	15.7	<0.1	<0.16	<0.02	99.5	0.4	0.1	84.7%,(FCM),(P)													
Initial Calibrator QC check											OK		Final FCM QC Check											OK		98 %

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



3140

NCDOT - I 5878

Parcel 49B

Client Name: S+ME
 Address: 3201 Spring Forest Rd
 Raleigh, NC
 Contact: Jamie T. Honeycutt
 Project Ref.: NCDOT - I 5878 Parcel 49B
 Email: jhoneycutt@smeinc.com
 Phone #: 910 977-7644
 Collected by: Jamie T. Honeycutt



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 sample will be analyzed for
 BTEX, GRO, DRO, TPH, PAH total
 aromatics and BaP

Sample Collection Date/Time	TAT Requested		Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
	24 Hour	48 Hour					
10-18-19 / 1145		✓	JTH	B-1 6-8'	58.1	44.5	13.6
1200				B-2 8-10'	56.7	44.1	12.6
1215				B-3 8-10'	56.7	46.1	10.6
1230				B-4 2-4'	57.0	43.9	13.1
1415				B-5 8-10'	57.7	44.2	13.5
1430				B-6 8-10'	56.8	44.3	12.5
1445				B-7 8-10'	57.2	44.4	12.8
1500				B-8 8-10'	58.0	44.6	13.4
1515				B-9 8-10'	57.4	44.4	13.0
1530				B-10 6-8'	57.9	44.9	13.0
1545				B-12 8-10'	57.4	44.4	13.0
1600				B-11 8-10'	57.9	44.7	13.2
1630				B-13 8-10'	57.6	44.7	12.9

Comments:

GRO/DRO - UVF

RED Lab USE ONLY

Relinquished by <i>Jam T Honeycutt</i>	Date/Time 10-21-19 / 1900	Accepted by MM 1220	Date/Time 10/22/19
Relinquished by	Date/Time	Accepted by	Date/Time

13