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 71-Former Phillips 66
Vacant Lot SE Corner E. Cumberland St and I-95
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
71	Susan E. Tart	(Former Phillips 66), Vacant Lot SE Corner of E. Cumberland St and I-95 Dunn, NC

The property was previously developed with a gasoline/service station identified as Phillips 66. At the time of our field activities, the majority of the property was a grassy vacant lot. A small, open, metal shed, which is used for the sale of produce, is located on the property. The former gasoline/service station building had been razed. The petroleum underground storage tanks (USTs) that the Phillips 66 operated were previously removed. Information regarding the former UST system is provided in the following table:

UST Facility ID No. Not Provided

Number of Tanks	Contents	Capacity (gallons)	Date Installed	Date Removed
1	Gasoline	8,000	Not Provided	March 1988
2	Gasoline	8,000		
3	Gasoline	3,000		
4	Diesel	2,000		
5	Kerosene	1,000		
6	Heating Oil	1,000		

The property is listed with one North Carolina Department of Environmental Quality (NCDEQ) Incident (Incident #3626- Susan Tart Property-Former Phillips 66) associated with petroleum releases discovered during the removal of USTs in 1988. A groundwater treatment system was previously operated at the site. Numerous monitor wells, which have been abandoned, were located on the property. Groundwater at the site is reported to flow primarily to the south-southeast (*Fourth Quarter 1997 Groundwater Sampling Report* prepared by RUST dated January 27,1998 and *Site Closure Request* prepared by RUST dated March 1998). Copies of pertinent information obtained from the above referenced reports are included in **Appendix I.**

The PSA included a geophysical survey, subsequent limited soil sampling (18 soil borings up to 10 feet below ground surface (ft.-bgs)) and limited groundwater sampling (one groundwater sample), 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 and groundwater 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 71. 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 heavy vegetation within the survey area, however, prevented TDEM data collection north of an existing fence. 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 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. Four anomalous features unrelated to known surficial targets were identified in the geophysical data sets (Anomalies A through D; **Figures 6 and 7**). Each of the identified anomalies are characterized by high amplitude GPR responses located within the upper one ft.-bgs and may be related to relatively small, isolated buried metallic objects. Anomalies were marked in the field using white spray paint. Example GPR profiles are presented in **Figures 8 through 11.**

Soil Sampling

On October 17, 2019, Troxler Geologic, Inc. (Troxler's) drill crew utilized a track mounted Geoprobe® rig to advance 18 soil borings (B-1 through B-18) and to collect soil samples within accessible areas of the proposed ROW/easement at Parcel 71. 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 encountered at depths ranging from five to 6.7 ft.-bgs. 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 borings B-1, B-2, B-5, B-14, B-15 and B-16 starting at a depth of approximately three ft.-bgs at borings B-15 and B-16, four ft.-bgs at borings B-1, B-2 and B-5 and six ft.-bgs at boring B-14 and extending to boring termination at eight to 10 ft-bgs. Petroleum staining was noted at boring B-1. Groundwater was encountered within these borings at a depth of approximately six ft.-bgs. Groundwater was encountered across the site at depths ranging from five to 6.7 ft.-bgs. Therefore, a soil sample was selected from borings B-1, B-2, B-5 and B-14 at the four to six foot depth interval and the two to four foot depth interval at boings B-15 and B-16. 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 18 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.

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 in borings B-1, B-2 and B-15. TPH-GRO was reported at a concentration exceeding its North Carolina TPH Action Level in boring B-5. The highest concentrations were reported in boring B-2 at the four to six foot depth interval. TPH-GRO was reported in boring B-2 at a concentration of 212.2 milligrams per kilograms (mg/kg) which exceeds its North Carolina TPH Action Level of 50 mg/kg. TPH DRO was reported in boring B-2 at a concentration of 737.9 mg/kg which exceeds its North Carolina TPH Action Level of 100 mg/kg. TPH-DRO was also reported in each of the additional borings, at concentrations above the laboratory reporting limits but below its North Carolina TPH Action Level. TPH-GRO was also reported in borings B-3, B-4 and B-8 at concentrations above the laboratory reporting limits but below its North Carolina TPH Action Level. TPH-GRO was 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.**

♦ Groundwater Sampling

During the advancement of the soil borings, groundwater was encountered at depths ranging from approximately five to 6.7 ft.-bgs. On October 18, 2019, the Geoprobe® was used to advance one of the soil borings into the groundwater table for the collection of a groundwater sample. Based on the elevated PID readings and observed staining, soil boring B-1 was selected for collection of a groundwater sample. A temporary monitor well (TW-1) was installed at soil boring B-1 to a depth of approximately ten ft.-bgs using a ten foot section of one-inch diameter, Schedule 40 PVC, 0.01-inch slotted screen that intersected the groundwater table. Groundwater within the temporary monitor well at soil boring B-1 was measured at 6.7 ft.-bgs. Groundwater from the temporary well was purged until relatively clear using disposable tubing attached to a peristaltic pump. A petroleum odor was noted during purging. The flow rate was reduced and laboratory supplied containers were filled directly from the tubing, labeled as TW-1, and placed in an insulated cooler with ice for transport to Con-Test Laboratories (Con-Test) for analysis of VOCs by EPA Method 8260 and polycyclic aromatic compounds (PAHs) by EPA Method 8270.

Upon completion of the soil and groundwater sampling, the well materials were removed and the soil borings backfilled with bentonite pellets and soil cuttings. Investigative derived wastes (IDW), such as 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 and tubing were bagged and disposed off-site.

Groundwater Sampling Results

Based upon analytical results of the groundwater sample analyzed by Con-Test, several petroleum related target constituents were reported at concentrations exceeding their 15A NCAC 2L Groundwater Quality Standards (2L Standards). Benzene was the highest constituent reported above its 2L Standard at a concentration of 510 micrograms per liter (µg/L), which exceeds its 2L Standard of 1 µg/L. A summary of the groundwater analytical results is presented in **Table 2** and shown on **Figure 3.** A copy of the laboratory analytical report provided by Con-Test is presented in **Appendix IV.**

♦ Conclusion and Recommendations

The geophysical survey identified four anomalies (Anomalies A through D) which may be related to relatively small, 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 18 soil borings (B-1 through B-18) to a depth of up to approximately 10 ft.-bgs at the site. Petroleum odors and elevated PID readings were noted at borings B-1, B-2, B-5, B-14, B-15 and B-16 starting at a depth of approximately three ft.-bgs at borings B-15 and B-16, four ft.-bgs at borings B-1, B-2 and B-5 and six ft.-bgs at boring B-14 and extending to boring termination at eight to ten ft-bgs. Petroleum staining was noted at boring B-1. 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 concentrations exceeding their respective North Carolina TPH Action Levels in borings B-1, B-2 and B-15. TPH-GRO was reported at a concentration exceeding its North Carolina TPH Action Level in boring B-5. The highest concentrations were reported in boring B-2 at the four to six foot depth

interval. TPH-GRO was reported in boring B-2 at a concentration of 212.2 mg/kg which exceeds its North Carolina TPH Action Level of 50 mg/kg. TPH DRO was reported in boring B-2 at a concentration of 737.9 mg/kg which exceeds its North Carolina TPH Action Level of 100 mg/kg. TPH-DRO was also reported in each of the additional borings, at concentrations above the laboratory reporting limits but below its North Carolina TPH Action Level. TPH-GRO was also reported in borings B-3, B-4 and B-8 at concentrations above the laboratory reporting limits but below its North Carolina TPH Action Level. TPH-GRO was not reported at concentrations exceeding the laboratory method reporting limits at the remaining soil samples.

During the soil boring advancement, groundwater was encountered across the site at depth ranging from approximately five to 6.7 ft.-bgs. One temporary well (TW-1) was installed at soil boring B-1. Groundwater at TW-1 was measured at 6.7 ft.-bgs and analyzed by Con-Test for VOCs by EPA Method 8260 and PAHs by EPA Method 8270. Several petroleum related target constituents were reported at concentrations exceeding their 2L Standards.

Based on the findings of the geophysical survey and the analytical results of 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 borings B-1, B-2, B-5 and B-15. Assuming that a section of petroleum impacted soil approximately two feet thick, 30 feet in diameter at a depth of four to six ft.-bgs (groundwater was encountered at a depth of six ft.-bgs at boring B-5); up to 53 cubic yards of soil at boring B-5 may be impacted. Assuming that another section of petroleum impacted soil approximately three feet thick, 60 feet wide and 100 feet long at a depth of three to six ft.-bgs; up to 670 cubic yards of soil may be impacted within the vicinity of borings B-1, B-2 and B-15. Therefore, a total of approximately 725 cubic yards of petroleum impacted soil may be encountered during construction to depths of approximately three to six ft.-bgs.

It should also be assumed that saturated petroleum impacted soil will be encountered if construction excavations extend deeper than five to six ft.-bgs on the site. If construction dewatering is required, petroleum impacted groundwater must be properly disposed or treated at a licensed facility.

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., 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 7.5 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:
Jamie Honeycutt
4C890EAEC25F488...

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1/27/2020

Thomas P. Raymond, P.E., P.M.P.
Senior Consultant
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Attachments:

Table 1: Summary of Soil Sampling Results
Table 2: Summary of Groundwater Sampling Results

Figure 1: Vicinity Map
Figure 2: Site Map
Figure 3: Soil and Groundwater 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 5 and 6
Figure 9: Example GPR Data – Line 3
Figure 10: Example GPR Data – Lines 16 and 17
Figure 11: Example GPR Data – Lines 9 and 10

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 71 - (Former Phillips 66)
Vacant Lot SE Corner E. Cumberland St. and I-95
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→ / Sample Depth (ft.-bgs)	TPH-GRO	TPH-DRO
B-1	10/17/2019	4 to 6	**84.8**	**137.9**
B-2	10/17/2019	4 to 6	**212.2**	**737.9**
B-3	10/17/2019	4 to 6	**21**	**8.4**
B-4	10/17/2019	4 to 6	**6**	**21.6**
B-5	10/17/2019	4 to 6	**90.1**	**29.7**
B-6	10/17/2019	2 to 4	<0.48	**1.5**
B-7	10/17/2019	4 to 6	<0.52	**2.3**
B-8	10/17/2019	4 to 6	**2.7**	**0.71**
B-9	10/17/2019	4 to 6	<0.55	**0.69**
B-10	10/17/2019	4 to 6	<0.54	**1.4**
B-11	10/17/2019	2 to 4	<0.51	**5.8**
B-12	10/17/2019	2 to 4	<0.51	**3.1**
B-13	10/17/2019	4 to 6	<0.54	**4.5**
B-14	10/17/2019	4 to 6	**17.4**	**4.5**
B-15	10/17/2019	2 to 4	**156.1**	**544.9**
B-16	10/17/2019	2 to 4	**17.2**	**8**
B-17	10/17/2019	2 to 4	<0.25	**0.5**
B-18	10/17/2019	4 to 6	<0.52	**1.2**
North Carolina TPH Action Levels			**50**	**100**

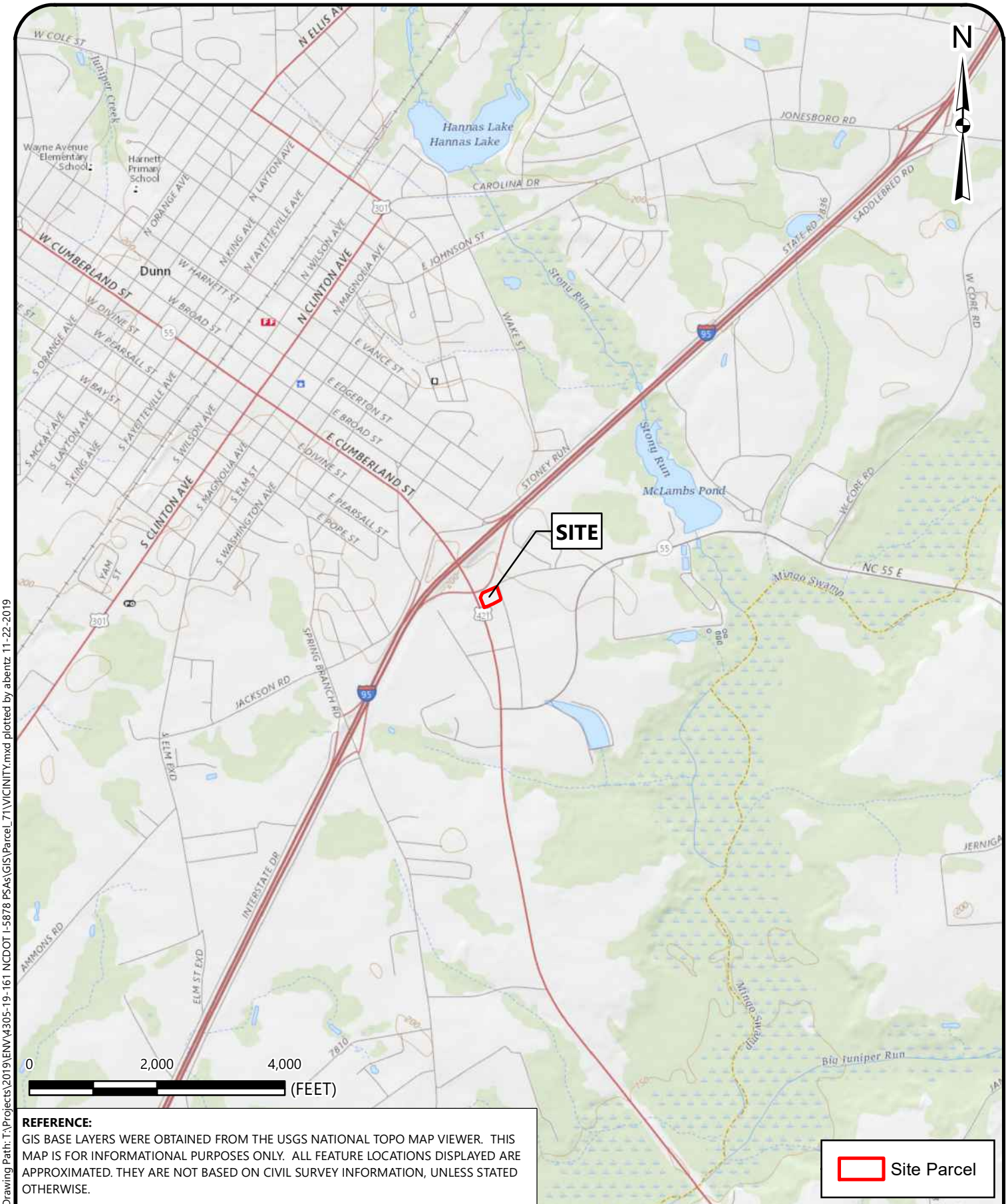
Notes:
1. UVF analysis performed by RED Lab, LLC
2. Concentrations are reported in milligrams per kilogram (mg/Kg).
3. ft.-bgs:- feet below ground surface.
4. Concentrations exceeding the laboratory's reporting limits are shown in **BOLD** fields.
5. Concentrations exceeding the North Carolina TPH Action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

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS
NCDOT Project I-5878
Parcel 71 - (Former Phillips 66)
Vacant Lot SE Corner E. Cumberland St. and I-95
Dunn, Harnett County, North Carolina
S&ME Project No. 4305-19-161

Analytical Method→		Volatile Organic Compounds by EPA Method 8260															Polycyclic Aromatic Compounds (PAHs) by EPA Method 8270						
Sample ID	Contaminant of Concern→ / Date	Benzene	Diisopropyl Ether	Ethylbenzene	Isopropylbenzene	MTBE	Naphthalene	n-Butylbenzene	sec-Butylbenzene	tert-Butyl Alcohol	n-Propylbenzene	p-Isopropyltoluene	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Total Xylenes	Acenaphthene	Anthracene	Acenaphthylene	Fluorene	Naphthalene	Phenanthrene	2-Methylnaphthalene
B-1/TW-1	10/18/2019	**510**	**6**	**360**	**38**	**100**	**110**	**12**	**6.8**	**3,200**	**94**	**7.9**	**140**	**470**	**150**	**1,150**	**0.50**	**0.036 J**	**0.12 J**	**0.93 J**	**120**	**0.57**	**64**
2L Standard (µg/L)		**1**	**70**	**600**	**70**	**20**	**6**	**70**	**70**	**10**	**70**	**25**	**600**	**400**	**400**	**500**	**80**	**2,000**	**200**	**300**	**6**	**200**	**30**
GCL (µg/L)		**5,000**	**70,000**	**84,500**	**25,000**	**20,000**	**6,000**	**6,900**	**8,500**	**10,000**	**30,000**	**11,700**	**260,000**	**28,500**	**25,000**	**85,500**	**2,120**	**2,000**	**1,965**	**990**	**6,000**	**410**	**12,500**

Notes:
1. Analytes that are not shown for the method were not detected.
2. Concentrations are reported in micrograms per liter (µg/L).
3. 2L Standard: North Carolina Groundwater Quality Standards: 15A NCAC 2L.0202
4. Concentrations exceeding the laboratory's reporting limits are shown in **BOLD** fields.
5. Concentrations exceeding the 2L Standards are shown in Shaded and **BOLD** fields.
6. GCL: Gross Contamination Level.
7. J: Estimated concentration detected below the reporting limit.

Figures



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.

Drawing Path: T:\Projects\2019\ENV\4305-19-161 NCDOT I-5878 PSAs\GIS\Parcel_71\VICINITY.mxd plotted by abentz 11-22-2019

VICINITY MAP

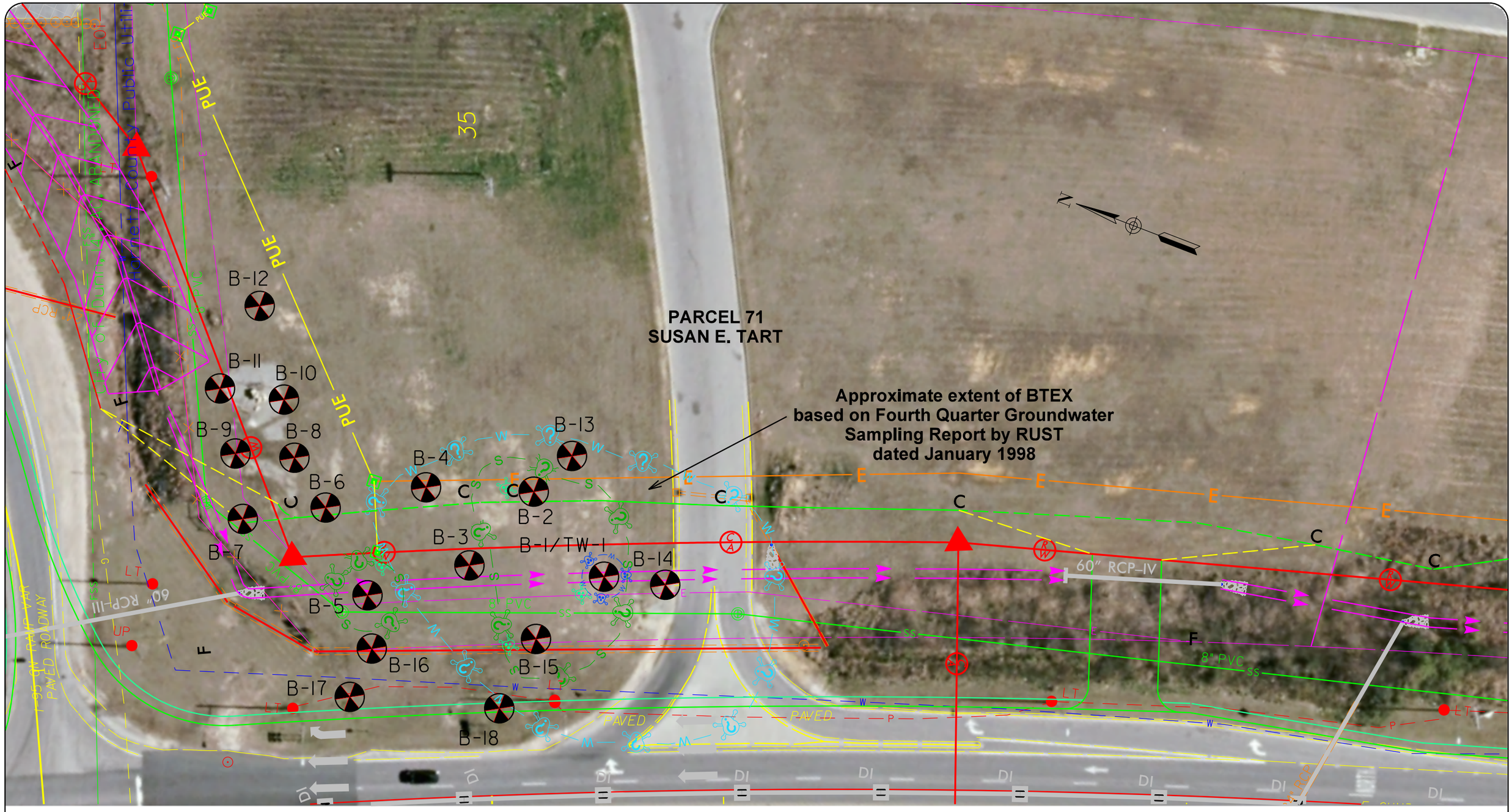
NCDOT PROJECT I-5878
PARCEL NO. 71 (FORMER PHILLIPS 66)
VACANT LOT SE CORNER E. CUMBERLAND ST AND I-95
DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE: 1 " = 2,000 '

DATE: 11-22-19

PROJECT NUMBER 4305-19-161

FIGURE NO. 1



LEGEND

Geoenvironmental Boring:

Underground Storage Tank (UST): UST

Map Source: NCDOT Project I-5986B
Image Source: NC ONEMAP, Dated 2016

Known Soil Contamination:

Possible Soil Contamination: — S —

Existing Contamination Known - Water: — W —

Possible Groundwater Contamination: — W —

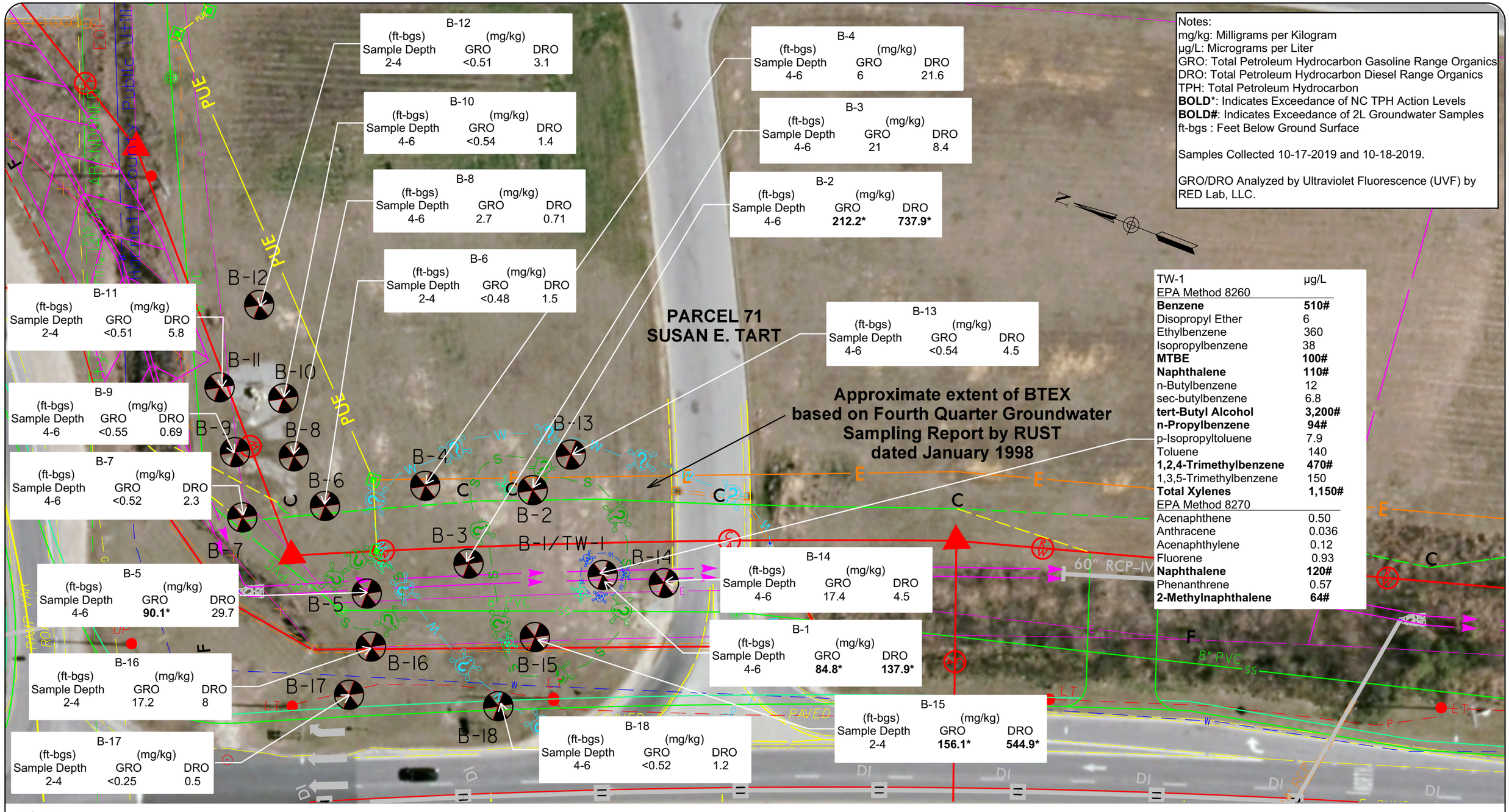
0 40 80

GRAPHIC SCALE (IN FEET)

SITE MAP

NCDOT Project: I-5878
PARCEL 71 - FORMER PHILLIPS 66
Vacant Lot SE Corner E. Cumberland St. & I-95, Dunn, Harnett County, North Carolina

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



Notes:
mg/kg: Milligrams per Kilogram
µg/L: Micrograms per Liter
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
BOLD#: Indicates Exceedance of 2L Groundwater Samples
ft-bgs : Feet Below Ground Surface

Samples Collected 10-17-2019 and 10-18-2019.

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

TW-1	µg/L
EPA Method 8260	
Benzene	**510#**
Disopropyl Ether	6
Ethylbenzene	360
Isopropylbenzene	38
MTBE	**100#**
Naphthalene	**110#**
n-Butylbenzene	12
sec-butylbenzene	6.8
tert-Butyl Alcohol	**3,200#**
n-Propylbenzene	**94#**
p-Isopropyltoluene	7.9
Toluene	140
1,2,4-Trimethylbenzene	**470#**
1,3,5-Trimethylbenzene	150
Total Xylenes	**1,150#**
EPA Method 8270	
Acenaphthene	0.50
Anthracene	0.036
Acenaphthylene	0.12
Fluorene	0.93
Naphthalene	**120#**
Phenanthrene	0.57
2-Methylnaphthalene	**64#**

LEGEND

Geoenvironmental Boring:
Underground Storage Tank (UST): UST

Known Soil Contamination:
Possible Soil Contamination: — S —
Existing Contamination Known - Water: — W —
Possible Groundwater Contamination: — W —

Map Source: NCDOT Project I-5986B
Image Source: NC ONEMAP, Dated 2016

0 40 80
GRAPHIC SCALE (IN FEET)

SOIL AND GROUNDWATER CONSTITUENT MAP

NCDOT Project: I-5878
PARCEL 71 - FORMER PHILLIPS 66
Vacant Lot SE Corner E. Cumberland St. & I-95, Dunn, Harnett County, North Carolina

SCALE:	FIGURE NO.
1" = 40'	3
DATE:	
JAN. 2020	
PROJECT NUMBER	
4305-19-161	

REFERENCE:
GOOGLE EARTH PRO AERIAL PHOTOGRAPH
(DATED MARCH 4, 2018)

LEGEND

Approximate TDEM Path

Approximate Requested Survey Area

TDEM PATH LOCATION PLAN

NCDOT PROJECT: I-5878
PARCEL #71 - (FORMER PHILLIPS 66)
VACANT LOT SE CORNER CUMBERLAND STREET AND I-95, DUNN, HARNETT COUNTY, NORTH CAROLINA

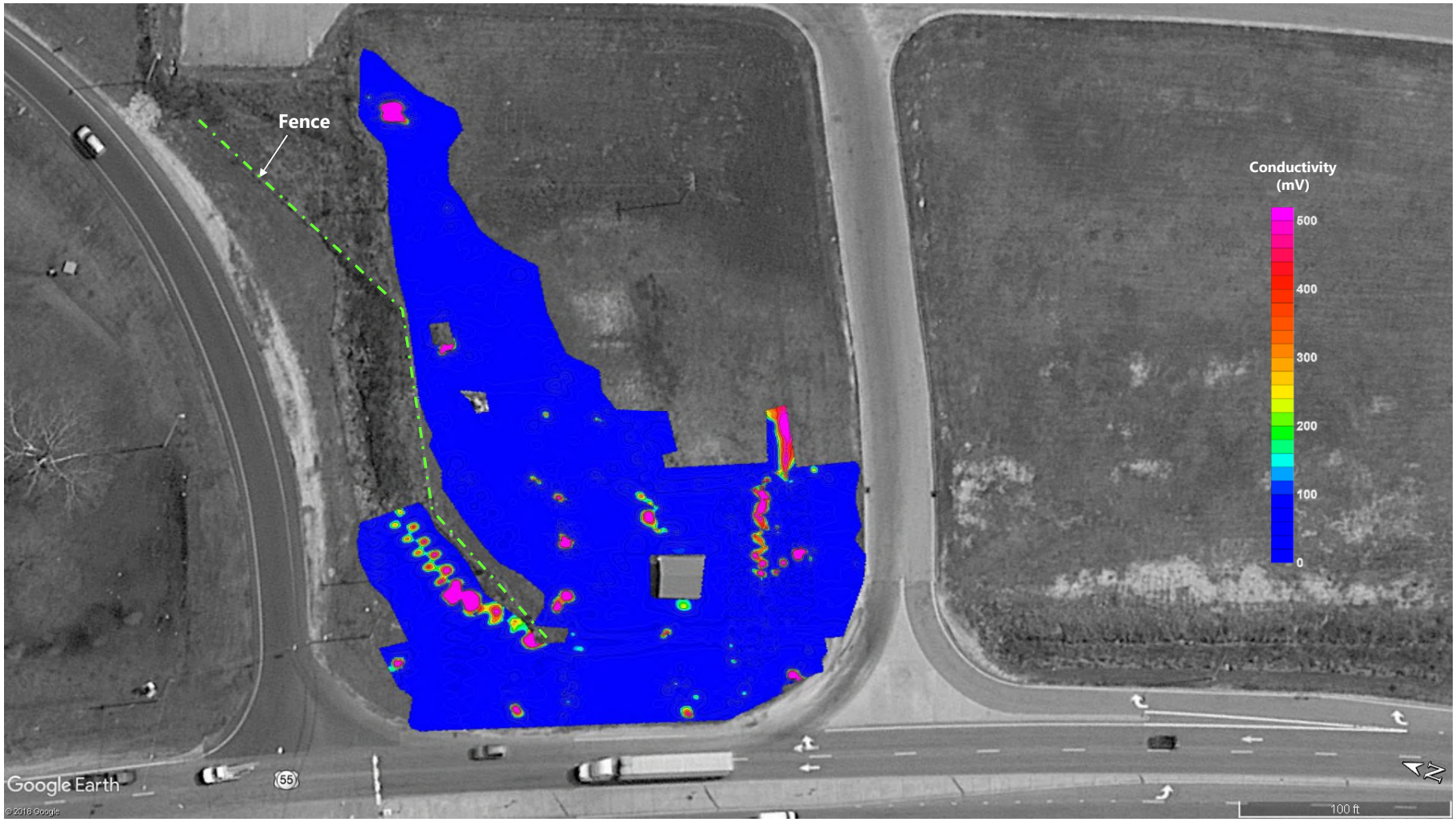
SCALE:
AS SHOWN

DATE:
1/7/2020

PROJECT NUMBER
4305-19-161

FIGURE NO.
4

REFERENCE:
GOOGLE EARTH PRO AERIAL PHOTOGRAPH
(DATED MARCH 4, 2018)



TDEM DATA PLOT A

NCDOT PROJECT: I-5878
PARCEL #71 - (FORMER PHILLIPS 66)
VACANT LOT SE CORNER CUMBERLAND STREET AND I-95, DUNN, HARNETT COUNTY, NORTH CAROLINA

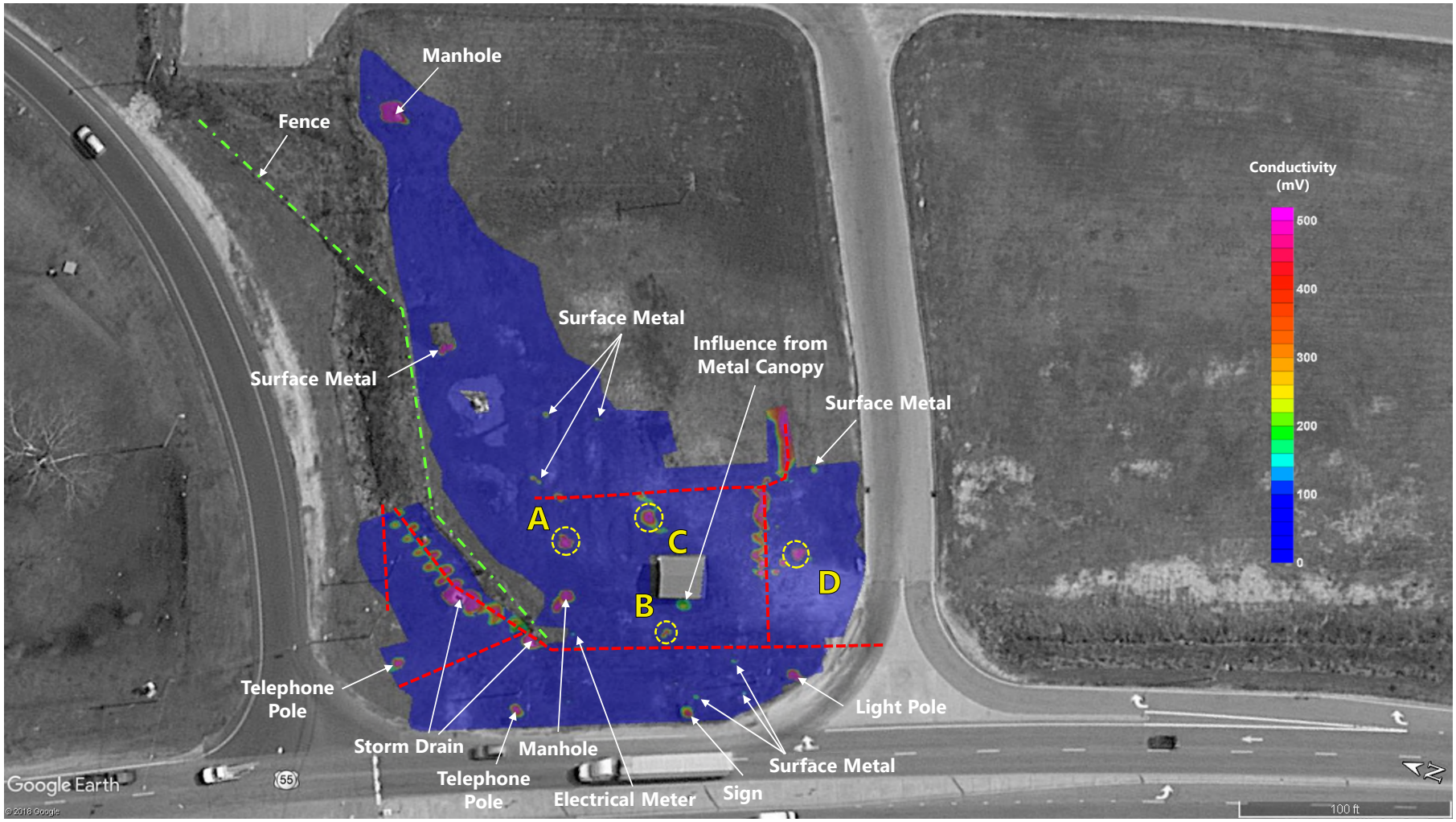
SCALE:
AS SHOWN

DATE:
1/7/2020

PROJECT NUMBER
4305-19-161

FIGURE NO.
5

REFERENCE:
GOOGLE EARTH PRO AERIAL PHOTOGRAPH
(DATED MARCH 4, 2018)



LEGEND

Approximate Location of Geophysical Anomaly

Approximate Location of Possible Utility

TDEM DATA PLOT B

NCDOT PROJECT: I-5878
PARCEL #71 - (FORMER PHILLIPS 66)
VACANT LOT SE CORNER CUMBERLAND STREET AND I-95, DUNN, HARNETT COUNTY, NORTH CAROLINA

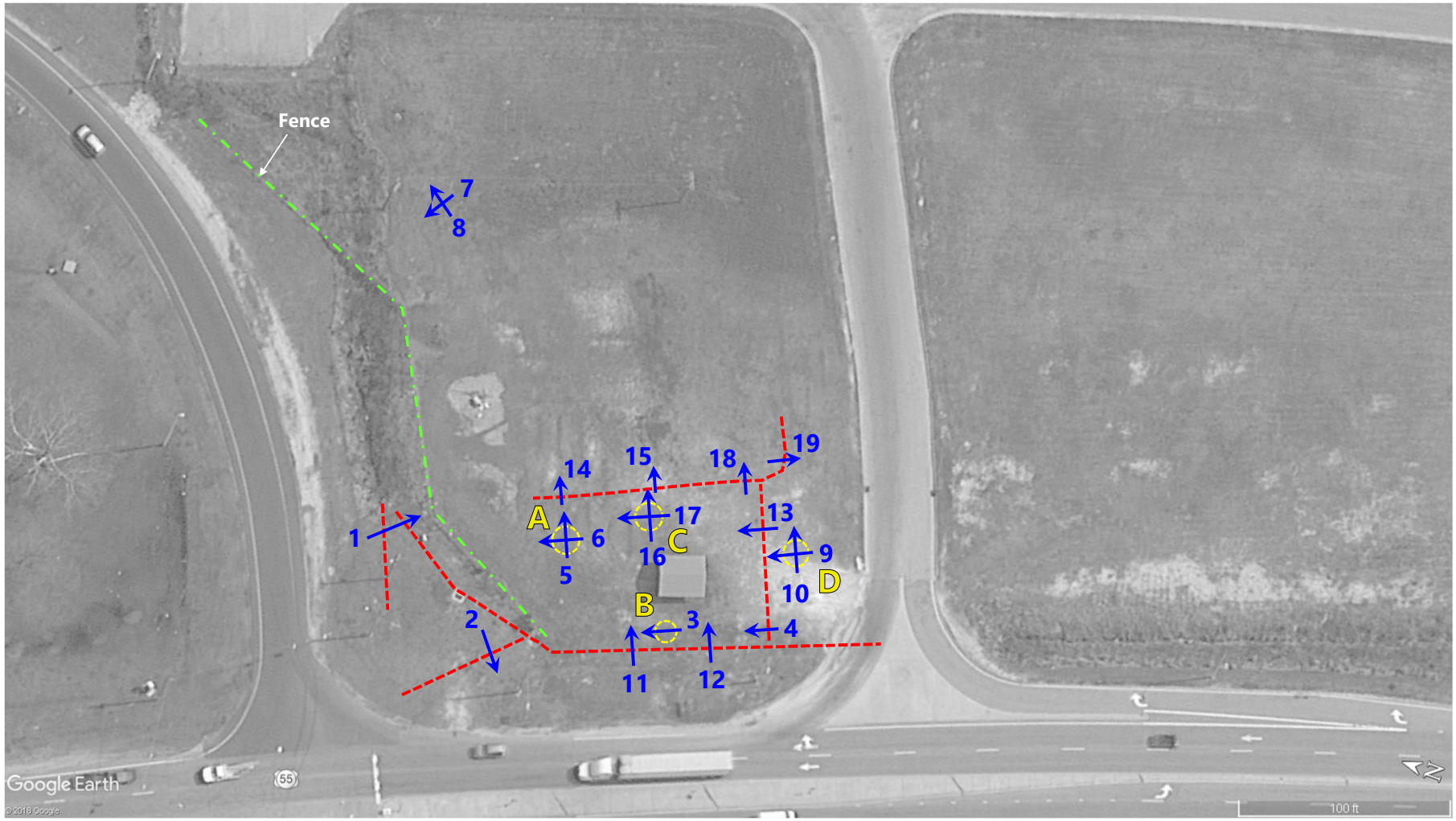
SCALE: AS SHOWN

DATE: 1/7/2020

PROJECT NUMBER 4305-19-161

FIGURE NO. 6

REFERENCE:
GOOGLE EARTH PRO AERIAL PHOTOGRAPH
(DATED MARCH 4, 2018)



LEGEND

Approximate Location of Geophysical Anomaly

Approximate Location of Possible Utility

Approximate Location of GPR Profile

GEOPHYSICAL ANOMALY LOCATION PLAN

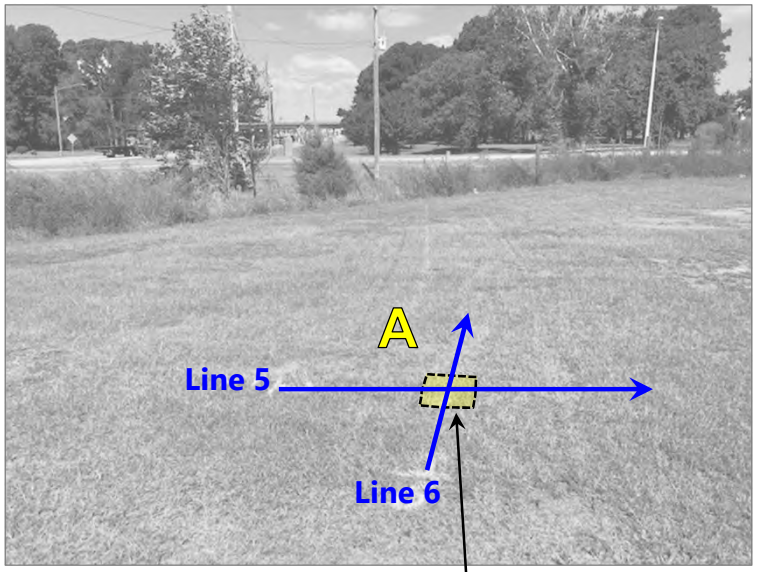
NCDOT PROJECT: I-5878
PARCEL #71 - (FORMER PHILLIPS 66)
VACANT LOT SE CORNER CUMBERLAND STREET AND I-95, DUNN, HARNETT COUNTY, NORTH CAROLINA

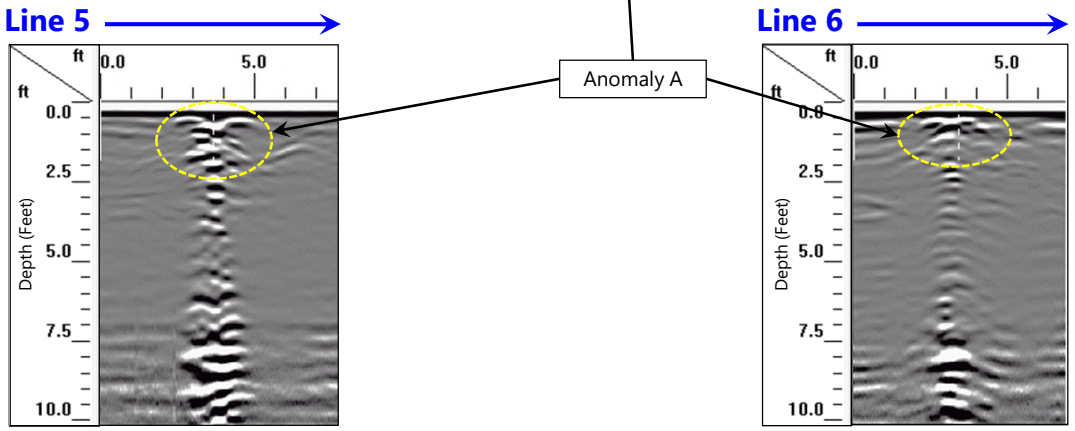
SCALE:
AS SHOWN

DATE:
1/7/2020

PROJECT NUMBER
4305-19-161

FIGURE NO.
7





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

EXAMPLE GPR DATA – LINES 5 AND 6

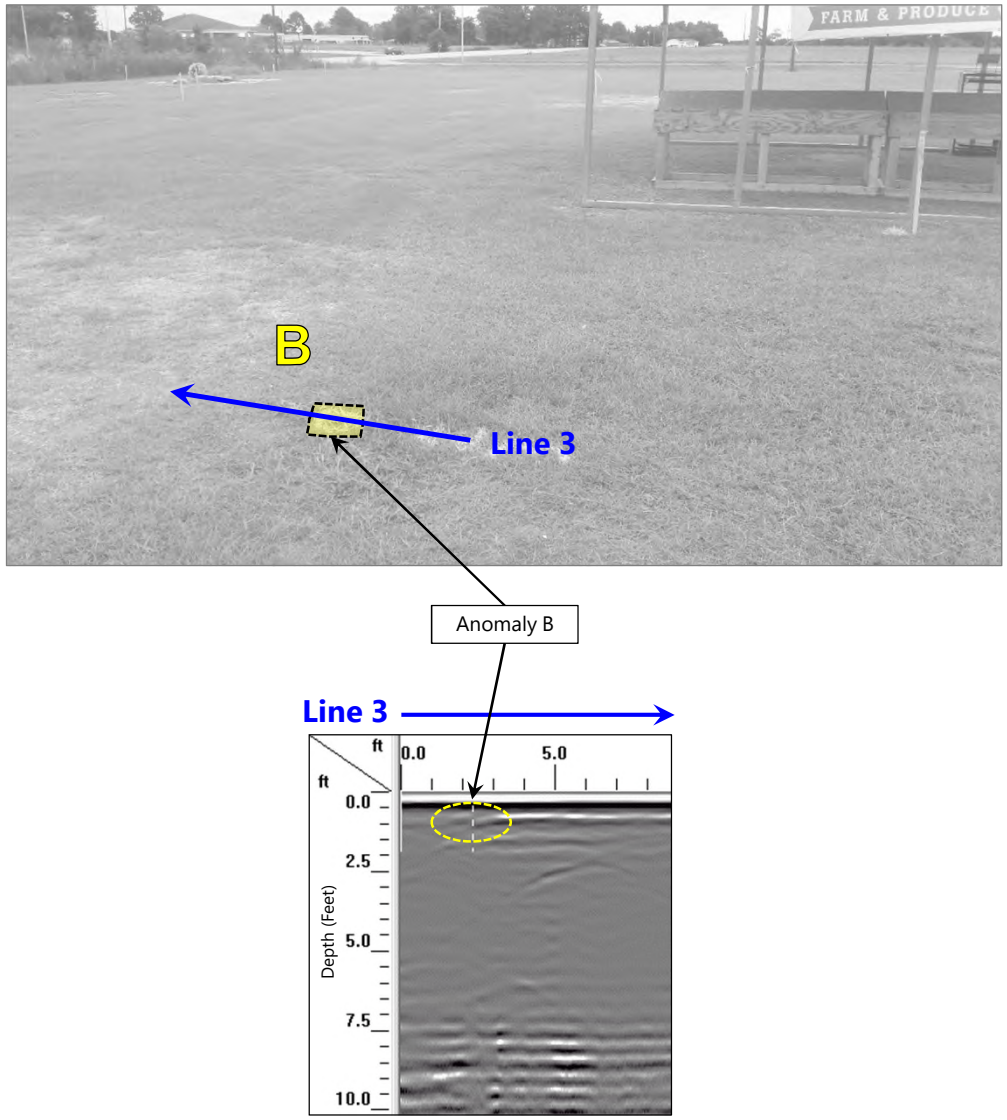
NCDOT PROJECT: I-5878
PARCEL #71 - (FORMER PHILLIPS 66)
VACANT LOT SE CORNER CUMBERLAND STREET AND I-95, DUNN, HARNETT COUNTY, NORTH CAROLINA

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 – LINE 3

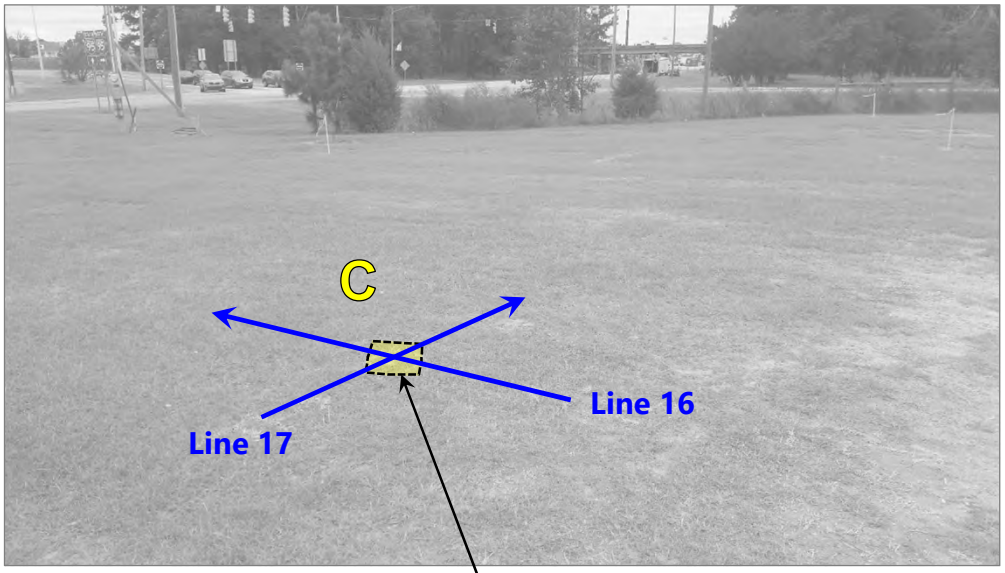
NCDOT PROJECT: I-5878
PARCEL #71 - (FORMER PHILLIPS 66)
VACANT LOT SE CORNER CUMBERLAND STREET AND I-95, DUNN, HARNETT COUNTY, NORTH CAROLINA

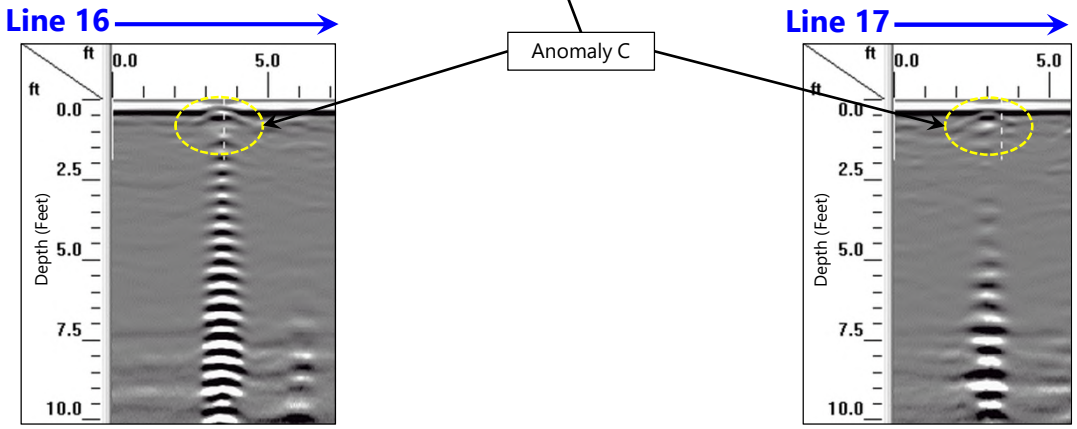
SCALE: AS SHOWN

DATE: 1/7/2020

PROJECT NUMBER 4305-19-161

FIGURE NO. **9**





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

EXAMPLE GPR DATA – LINES 16 AND 17

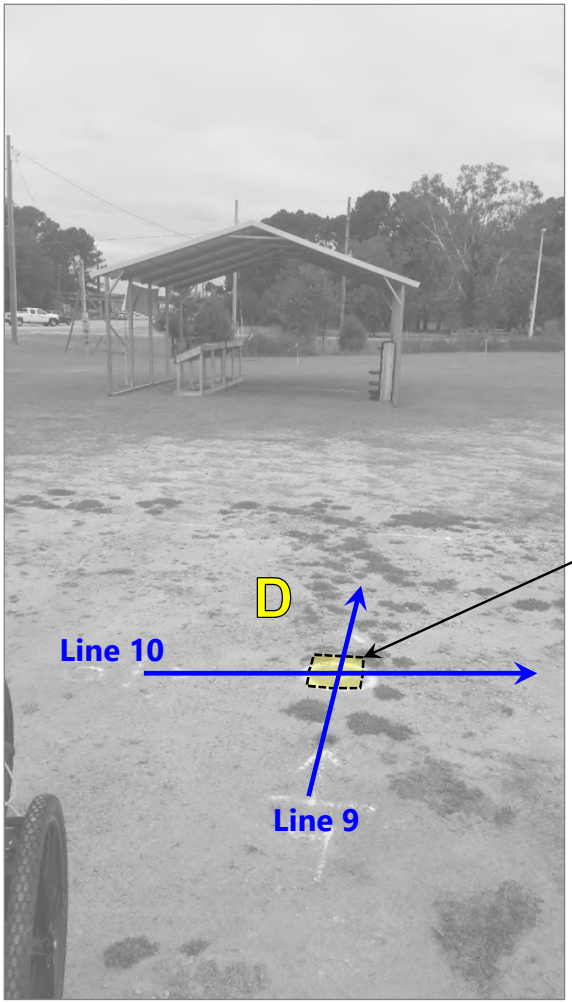
NCDOT PROJECT: I-5878
PARCEL #71 - (FORMER PHILLIPS 66)
VACANT LOT SE CORNER CUMBERLAND STREET AND I-95, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE: AS SHOWN

DATE: 1/7/2020

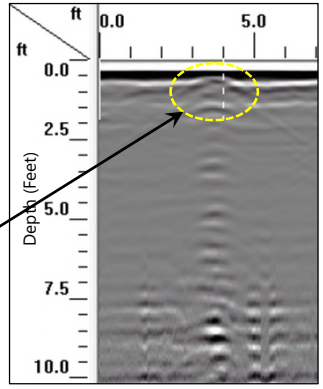
PROJECT NUMBER 4305-19-161

FIGURE NO. **10**

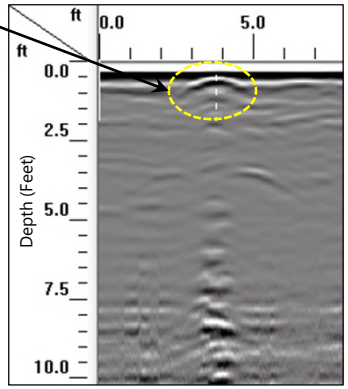


Anomaly D

Line 9



Line 10



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

EXAMPLE GPR DATA – LINES 9 AND 10

NCDOT PROJECT: I-5878
PARCEL #71 - (FORMER PHILLIPS 66)
VACANT LOT SE CORNER CUMBERLAND STREET AND I-95, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE:
AS SHOWN

DATE:
1/7/2020

PROJECT NUMBER
4305-19-161

FIGURE NO.
11

Appendix I – NCDEQ File Review

FOURTH QUARTER 1997
GROUNDWATER SAMPLING REPORT
FORMER PHILLIPS 66 STATION #25485
HIGHWAY 421 AND 55
DUNN, NORTH CAROLINA
INCIDENT NO. 3626
RUST PROJECT NO. 40599

Prepared for:

Phillips Petroleum Company
13 Phillips Building
Post Office Box 2400
Bartlesville, Oklahoma 74004

Prepared By:

Rust Environment & Infrastructure
5510 Six Forks Road, Suite 200
Raleigh, North Carolina 27609

Michael W. Branson

NORTH CAROLINA LICENSED SEAL 467 GEOLOGIST MICHAEL W. BRANSON

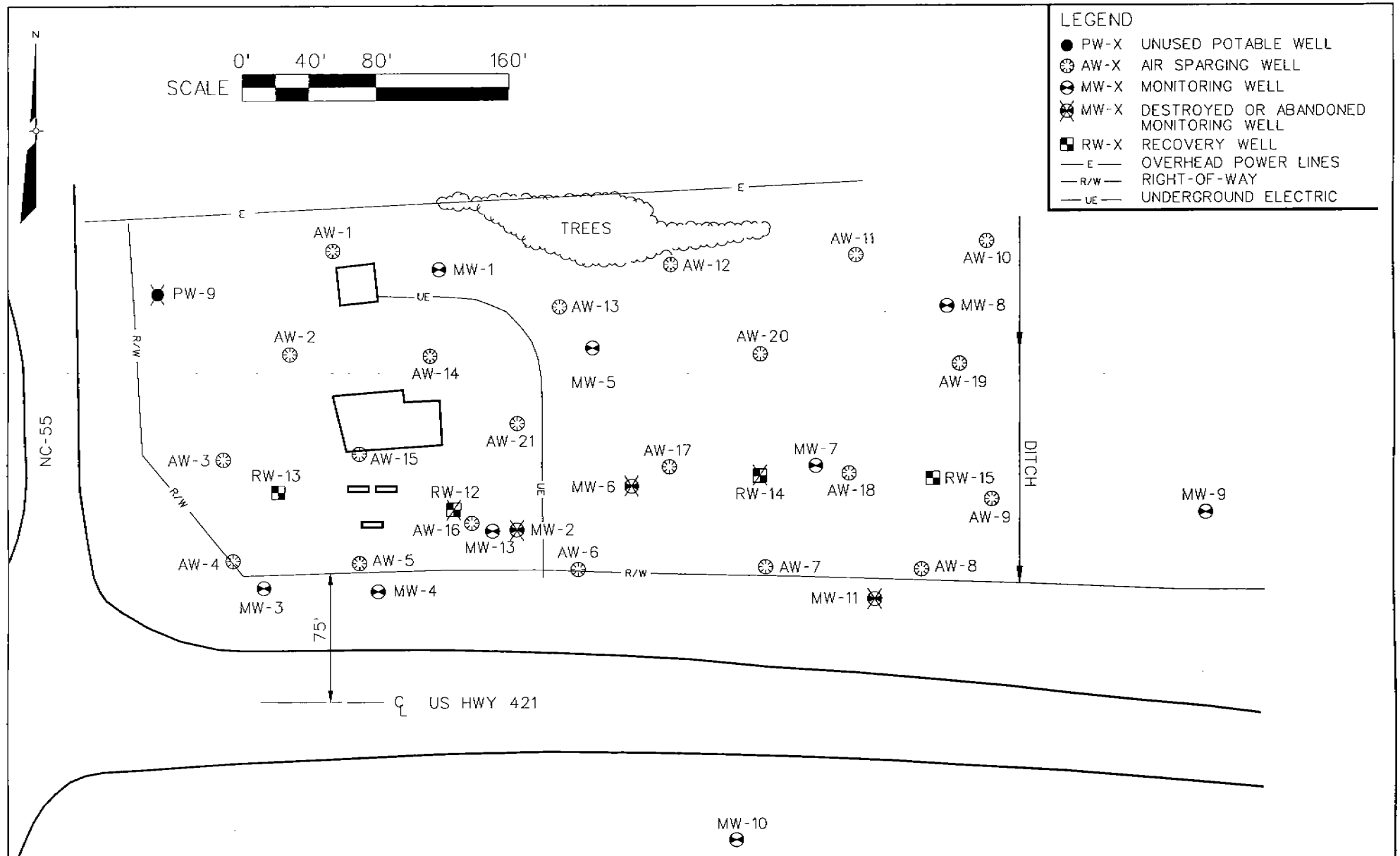
Michael W. Branson, L.G.

January 1998

TABLE 2
GROUNDWATER QUALITY DATA [1]
FORMER PHILLIPS 66 STATION # 25485
HIGHWAY 421 & HIGHWAY 55, DUNN, NORTH CAROLINA

PARAMETERS	NCAC 15A 2L GROUNDWATER STANDARD	Date	MW-1	MW-2	MW-3	MW-4	MW-5	MW-7	MW-8	MW-9	MW-10	MW-13	RW-12	RW-13	RW-14	RW-15
BENZENE	1	12/7/94	17.2	1160	<0.5	435	41.2	91.1	23.9	<0.5	<0.5	---	NS	110	703	237
		5/11/95	17.2	104	<0.5	472	86.4	591	10.2	<0.5	<0.5	----	3330	19.6	419	NS
		9/29/95	9.0	310	BDL	NS	3	21	9.0	BDL	BDL	----	NS	NS	NS	NS
		12/20/95	BDL	300	BDL	600	2	15	BDL	BDL	BDL	----	2	1800	630	72
		3/14/96	BDL	2	BDL	BDL	BDL	71	BDL	BDL	BDL	----	2	720	20	BDL
		6/27/96	BDL	BDL	BDL	NS	48	21	BDL	BDL	BDL	---	170	472	43	230
		10/16/96	BDL	9	BDL	315	18	8	BDL	BDL	BDL	855	90	390	10	57
		12/27/96	BQL	50	BQL	520	5	9	BQL	BQL	BQL	950	600	2	4	1
		3/21/97	BQL	NS	BQL	NS	NS	NS	BQL	BQL	BQL	NS	NS	NS	NS	NS
		6/12/97	BQL	NS	BQL	NS	NS	NS	BQL	BQL	BQL	NS	NS	NS	NS	NS
		9/4/97	BQL	NS	BQL	NS	NS	NS	BQL	BQL	BQL	NS	NS	NS	NS	NS
		12/23/97	BQL	NS	BQL	73	BQL	BQL	BQL	BQL	BQL	200	NS	11	NS	NS
TOLUENE	1000	12/7/94	<0.5	3340	<0.5	2.12	<0.5	2.84	<0.5	<0.5	<0.5	----	NS	153	41	1.75
		6/11/95	0.776	163	0.75	2.79	0.794	56.4	0.78	0.805	0.742	----	6310	11.5	44.3	NS
		9/29/95	BDL	450	BDL	NS	BDL	4	BDL	BDL	BDL	----	NS	NS	NS	NS
		12/20/95	BDL	450	BDL	10	BDL	1	BDL	BDL	BDL	---	5	5400	60	5
		3/14/96	BDL	3	BDL	BDL	BDL	21	BDL	BDL	BDL	----	3	1220	4	BDL
		6/27/96	BDL	BDL	BDL	NS	BDL	BDL	BDL	BDL	BDL	---	260	630	1	2
		10/16/96	BDL	11	BDL	10	BDL	BDL	BDL	BDL	BDL	1480	57	420	BDL	BDL
		12/27/96	BQL	90	BQL	14	BQL	BQL	BQL	BQL	BQL	2400	360	4	BQL	BQL
		3/21/97	BQL	NS	BQL	NS	NS	NS	BQL	BQL	BQL	NS	NS	NS	NS	NS
		6/12/97	BQL	NS	BQL	NS	NS	NS	BQL	BQL	BQL	NS	NS	NS	NS	NS
		9/4/97	BQL	NS	BQL	NS	NS	NS	BQL	BQL	BQL	NS	NS	NS	NS	NS
		12/23/97	BQL	NS	BQL	5	BQL	BQL	BQL	BQL	BQL	450	NS	4	NS	NS
ETHYLBENZENE	29	12/07//94	<0.5	387	<0.5	24.7	<0.5	23.8	<0.5	<0.5	<0.5	----	NS	26.2	111	1.77
		5/11/95	<0.5	21.2	<0.5	45.7	<0.5	128	<0.5	<0.5	<0.5	---	688	3.15	40.8	NS
		9/29/95	BDL	10	BDL	NS	BDL	4	BDL	BDL	BDL	----	NS	NS	NS	NS
		12/20/95	BDL	20	BDL	70	BDL	4	BDL	BDL	BDL	----	1	450	170	12
		3/14/96	BDL	BDL	BDL	BDL	BDL	66	BDL	BDL	BDL	----	BDL	90	5	BDL
		6/27/96	BDL	BDL	BDL	NS	BDL	4	BDL	BDL	BDL	----	10	158	14	15
		10/16/96	BDL	2	BDL	25	BDL	BDL	BDL	BDL	BDL	135	4	BDL	BDL	4
		12/27/96	BQL	12	BQL	130	BQL	BQL	BQL	BQL	BQL	260	50	BQL	BQL	BQL
		3/21/97	BQL	NS	BQL	NS	NS	NS	BQL	BQL	BQL	NS	NS	NS	NS	NS
		6/12/97	BQL	NS	BQL	NS	NS	NS	BQL	BQL	BQL	NS	NS	NS	NS	NS
		9/4/97	BQL	NS	BQL	NS	NS	NS	BQL	BQL	BQL	NS	NS	NS	NS	NS
		9/4/97	BQL	NS	BQL	BQL	BQL	BQL	BQL	BQL	BQL	80	NS	BQL	NS	NS
TOTAL XYLENE	530	12/7/94	<0.5	1850	<0.5	9.12	<0.5	6.28	<0.5	<0.5	<0.5	----	NS	202	69.9	19.2
		5/11/96	<0.5	144	<0.5	22.8	<0.5	269	<0.5	<0.5	<0.5	----	3980	29.8	258	NS
		9/29/95	BDL	110	BDL	NS	BDL	8	BDL	BDL	BDL	----	NS	NS	NS	NS
		12/20/95	BDL	250	BDL	90	BDL	3	BDL	BDL	BDL	----	16	11700	120	12
		3/14/96	BDL	15	BDL	BDL	BDL	74	BDL	BDL	BDL	---	3	2120	7	BDL
		6/27/96	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	----	490	765	6	4
		10/16/96	BDL	13	BDL	30	BDL	BDL	BDL	BDL	BDL	2160	123	240	BDL	BDL
		12/27/96	BQL	152	BQL	120	BQL	BQL	BQL	BQL	BQL	4100	298	5	BQL	BQL
		3/21/97	BQL	NS	BQL	NS	NS	NS	BQL	BQL	BQL	NS	NS	NS	NS	NS
		6/12/97	BQL	NS	BQL	NS	NS	NS	BQL	BQL	BQL	NS	NS	NS	NS	NS
		9/4/97	BQL	NS	BQL	NS	NS	NS	BQL	BQL	BQL	NS	NS	NS	NS	NS
		12/23/97	BQL	NS	BQL	10	BQL	BQL	BQL	BQL	BQL	900	NS	19	NS	NS
TOTAL BTEX		12/7/94	17.2	6730	<0.5	470	41.2	124	23.9	<0.5	<0.5	---	NS	492	925	260
		5/11/95	18	431	0.75	543	87.2	1050	10.9	0.805	0.742	----	14300	64.1	763	NS
		9/29/95	9	88	BDL	NS	3.0	37	9.0	BDL	BDL	---	NS	NS	NS	NS
		12/20/95	BDL	1020	BDL	770	2	23	BDL	BDL	BDL	----	24	19350	980	121
		3/14/96	BDL	20	BDL	BDL	BDL	232	BDL	BDL	BDL	---	8	4150	36	BDL
		6/27/96	BDL	BDL	BDL	NS	48	25	BDL	BDL	BDL	----	930	2025	64	251
		10/16/96	BDL	35	BDL	380	18	8	BDL	BDL	BDL	4630	214	1050	10	61
		12/27/96	BQL	304	BQL	784	5	9	BQL	BQL	BQL	7710	1308	11	4	1
		3/21/97	BQL	NS	BQL	NS	NS	NS	BQL	BQL	BQL	NS	NS	NS	NS	NS
		6/12/97	BQL	NS	BQL	NS	NS	NS	BQL	BQL	BQL	NS	NS	NS	NS	NS
		9/4/97	BQL	NS	BQL	NS	NS	NS	BQL	BQL	BQL	NS	NS	NS	NS	NS
		12/23/97	BQL	NS	BQL	88	BQL	BQL	BQL	BQL	BQL	1630	NS	36	NS	NS
MTBE	200	12/7/94	53.2	<.5.00	1.98	<0.5	69.5	101	252	11.2	1.61	----	NS	43.4	526	371
		5/11/95	50.6	3.41	<0.5	2.92	111	470	172	13.7	3.87	----	<5.00	35.6	514	NS
		9/29/95	65	BDL	BDL	NS	80	108	143	12	BDL	----	NS	NS	NS	NS
		12/20/95	61	BDL	BDL	BDL	85	420	49	BDL	BDL	----	BDL	BDL	860	136
		3/14/96	46	BDL	BDL	BDL	81	1000	46	BDL	BDL	----	BDL	585	44	11
		6/27/96	35	BDL	BDL	NS	243	450	42	2	BDL	----	200	BDL	270	240
		10/16/96	70	1	BDL	7	138	160	34	BDL	BDL	BDL	BDL	10	90	105
		12/27/96	29	BQL	BQL	BQL	57	260	20	3	BQL	BQL	BQL	12	100	36
		3/21/97	11	NS	BQL	NS	NS	NS	20	BQL	BQL	NS	NS	NS	NS	NS
		6/12/97	21	NS	BQL	NS	NS	NS	12	BQL	BQL	NS	NS	NS	NS	NS
		9/4/97	21	NS	BQL	NS	NS	NS	12	BQL	BQL	NS	NS	NS	NS	NS
		12/23/97	83	NS	BQL	BQL	17	32	19	BQL	BQL	BQL	NS	13	NS	NS

NS- Not Sampled
[redacted]L - Below Quantitation Limits
[redacted]L - Below Detection Limits
[redacted]aded areas denote concentration above NCAC 15A 2L groundwater quality standard
All concentrations reported in ug/L
(1) All data prior to 12/27/96 was obtained from Handex of the Carolinas Third Quarterly Report 1996



RUST

Rust Environment & Infrastructure Inc.

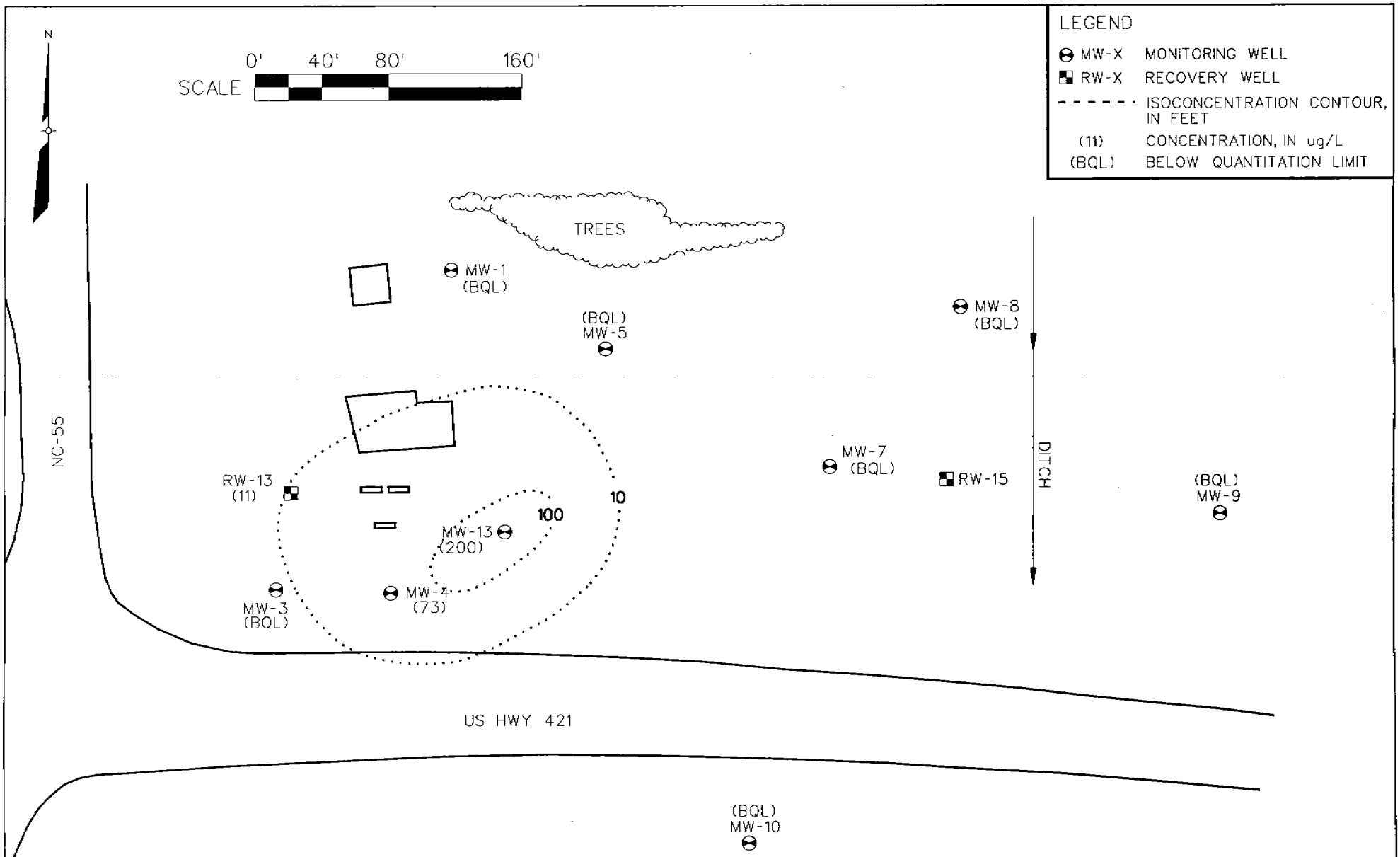
FIGURE 1
SITE MAP
FORMER PHILLIPS 66 #25485

US HWY 421 & SR55
DUNN, NORTH CAROLINA

DECEMBER 1997

40599

p:\40599.000\cadd\philwell.dgn Jan. 26, 1998 12:58:23



Rust Environment & Infrastructure Inc.

FIGURE 3
BENZENE ISOCONCENTRATION MAP
FORMER PHILLIPS 66 #25485

US HWY 421 & SR55
DUNN, NORTH CAROLINA

DECEMBER 23, 1997

40599

p:\40599.000\cadd\philwell.dgn Jan. 26, 1998 12:54:25

KV

PHILLIPS PETROLEUM COMPANY
BARTLESVILLE, OKLAHOMA 74004 918 661-6600

HEALTH, ENVIRONMENT AND SAFETY

March 31, 1998

Mr. Stephen A. Barnhardt
Fayetteville Regional Office
NC DEHNR
225 West Green Street
Fayetteville, NC 28301

RE: Soil Cleanup Report with Site Closure Request
Former Phillips 66 Station #25485
Highway 421 and 55
Dunn, Harnett County, North Carolina
Groundwater Incident No. 3626

0-017649

Dear Mr. Barnhardt:

We are submitting the above referenced report for your review.

The site specific criteria indicates that this is a low-risk site and we are requesting a letter of no further action.

At this time we are not scheduling any groundwater sampling; however, the remediation system will continue to operate until we hear from you.

If you have any questions, please feel free to call me at (918) 661-0185.

Sincerely,

Cindy L. Smith
Environmental Scientist
Property Risk Management Division
13 B1 PB
Bartlesville, OK 74004
Phone (918) 661-0185
Fax (918) 661-5664

Enclosure
CLS:ceh

cc: Michael Branson (w/o enclosure)
Gale Tart (w/enclosure)

EXECUTIVE SUMMARY

The former Phillips Petroleum Company Station #25485 is located at the intersection of Highway 421 and Highway 55 in Dunn, Harnett County, North Carolina. Six underground storage tanks were removed from the site. The tanks included two 8,000-gallon gasoline, one 3,000-gallon gasoline, one 2,000-gallon diesel, one 1,000-gallon kerosene, and one 1,000-gallon heating fuel tank. Contamination was confirmed by the presence of free product in the excavation and was reported to the on-site Division of Environmental Management representative. Only the gasoline tanks appear to have contributed to the release. No quantities of released product were estimated at the time of the discovery in 1988. Based on soil analyses performed from June 1992 to October 1993, an estimated 2,500 cubic yards of soil contained petroleum contamination above the State action level for gasoline range organics.

Two remediation systems have been in place for the site during the course of the soil and groundwater cleanup. From 1991 to 1995, the remediation consisted of groundwater removal, treatment, and disposal on-site through recharge trenches. The groundwater treatment also included addition of microorganisms to enhance degradation. The recharge trenches were placed such that the treated and enhanced water would be in contact with, and percolate through, the petroleum contaminated soil. Soil sampling and analysis in 1995, following a period of remediation, indicated that soil contamination ranged from less than 1 milligram per kilogram (mg/kg) to 8,200 mg/kg. The second remedial technology, implemented from 1995 to present, included air sparging the contaminated groundwater. No soil vapor extraction system was constructed in conjunction with this system. However, air injected into the groundwater was anticipated to provide enhanced microbial growth and assist with clean up the soil. No confirmatory soil samples were collected for the air sparging treatment to determine changes in the petroleum concentrations during the course of sparging.

Based on a review of site specific criteria, the site is a low-risk site with respect to groundwater and should be classified as commercial/industrial with respect to soil. As a low-risk site, no additional

groundwater cleanup is warranted. As a commercial/industrial site, the Maximum Soil Contaminant Concentration (MSCC) for total petroleum hydrocarbons is 12,264 mg/kg. None of the soil analyses performed on soil at the Phillips site contained concentrations above this maximum acceptable concentration. Although the last soil analyses were performed in 1993, the continued remediation effort would likely result in lower soil TPH concentrations. As a result, Phillips requests that the Division of Water Quality issue a No Further Action letter and close the site.

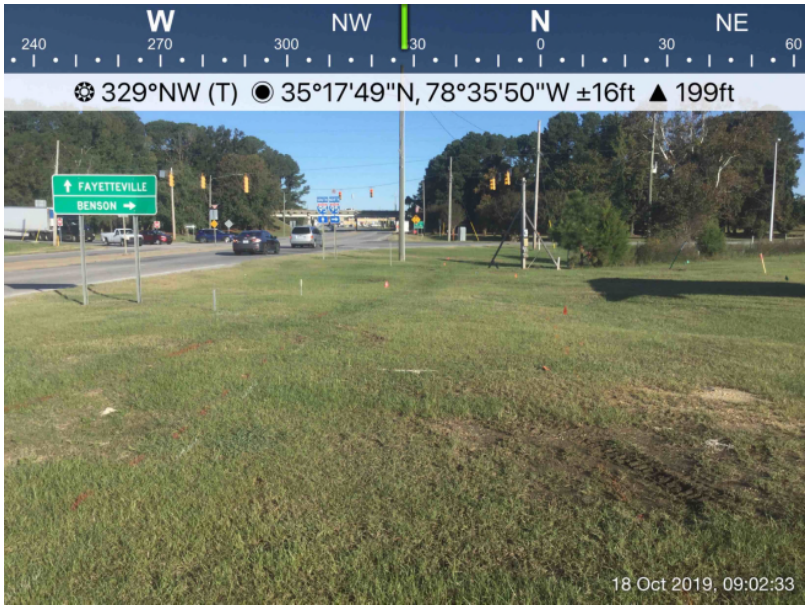
Because the soil concentrations are above the soil-to-groundwater MSCC and the residential MSCC, public notice will be issued. Public notice will be sent by certified mail within 30 days of receipt of the No Further Action Letter. Proof of notification will be submitted to the DWQ within 60 days of the receipt of the notice for no further action.

Appendix II – Photographs

Date: 10/18/2019

Photographer: JTH

1	**Location / Orientation**	Front view of site looking northeast.
	Remarks	Note metal shed used to sell produce.



Date: 10/18/2019

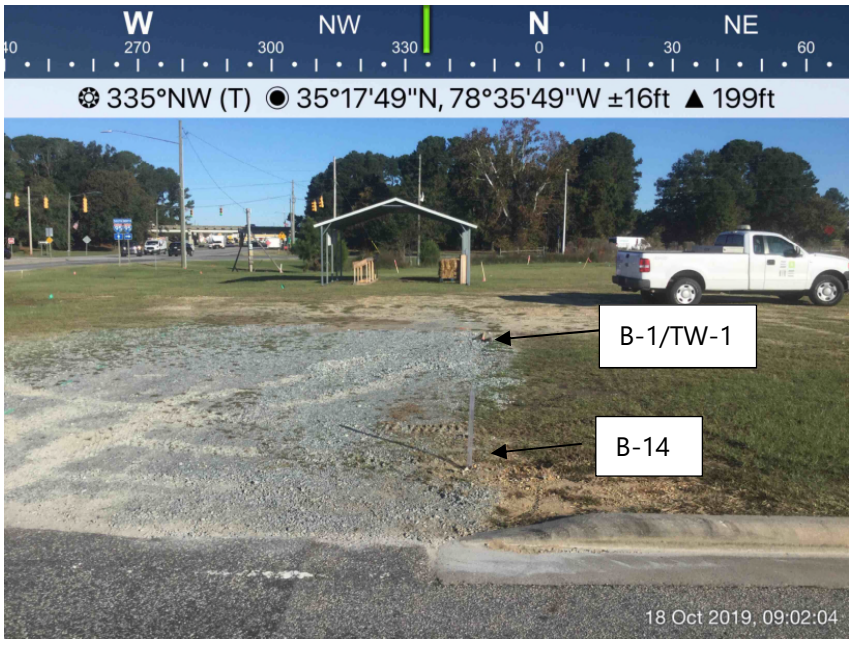
Photographer: JTH

2	**Location / Orientation**	View looking northwest across front of site.
	Remarks	None

Date: 10/18/2019

Photographer: JTH

3	Location / Orientation	View looking northeast along northern portion of site.
	Remarks	None



Date: 10/18/2019

Photographer: JTH

4	Location / Orientation	View looking northwest across site.
	Remarks	Note boings B-1/TW-1 and B-14.

Appendix III – Boring Logs

PROJECT:	**NCDOT I-5878** Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-1/TW-1**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	10
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	6.7
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
0		Silty Sand, Orange, Tan,			15.0	No				
					30.0	No				
5		Silty Sand, Tan, Gray, Stained with Petroleum Odors	▼		5743	Yes	1000			
10		Boring Terminated at 10 Ft-BGS								
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-2**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	6
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
0		Silty Sand, Orange, Tan,			9.0	No				
					13.0	No				
5		Silty Sand, Tan, Gray, Petroleum Odors	▼		573.0	Yes	1015			
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-3**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	6
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Silty Sand, Orange, Tan,			0.6	No				
					0.5	No				
5		Silty Sand, Tan, Gray,	▼		46.0	Yes	1030			
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-4**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	6
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
0		Silty Sand, Orange, Tan,			0.9	No				
					0.5	No				
5		Silty Sand, Tan, Gray,	▼		42.0	Yes	1045			
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-5**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	6
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Silty Sand, Orange, Tan,			45.0	No				
					1661	No				
5		Silty Sand, Tan, Gray, Petroleum Odors	▼		4485	Yes	1100			
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-6**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	6
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Silty Sand, Orange, Tan,			1.7	No				
					6.0	Yes	1145			
5		Silty Sand, Tan, Gray,	▼		4.9	No				
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-7**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	6
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Silty Sand, Orange, Tan,			0.0	No				
					0.0	No				
5		Silty Sand, Tan, Gray,	▼		0.9	Yes	1150			
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	NCDOT I-5878 Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-8**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	6
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
0		Silty Sand, Orange, Tan,			0.0	No				
					0.0	No				
5		Silty Sand, Tan, Gray,	▼		3.9	Yes	1155			
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-9**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	6
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Silty Sand, Orange, Tan,			0.0	No				
					0.0	No				
5		Silty Sand, Tan, Gray,	▼		0.2	Yes	1200			
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-10**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	6
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
0		Silty Sand, Orange, Tan,			0.0	No				
					0.0	No				
5		Silty Sand, Tan, Gray,	▼		0.5	Yes	1215			
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-11**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	5
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Silty Sand, Orange, Tan,			0.0	No				
					0.3	Yes	1230			
5		Silty Sand, Tan, Gray,	▼							
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	NCDOT I-5878 Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-12**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	5
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Silty Sand, Orange, Tan,			0.0	No				
					0.1	Yes	1240			
5		Silty Sand, Tan, Gray,	▼							
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-13**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	6
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Silty Sand, Orange, Tan,			21.0	No				
					2.2	No				
5		Silty Sand, Tan, Gray,	▼		3.0	Yes	1500			
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	NCDOT I-5878 Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-14**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	6
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Silty Sand, Orange, Tan,			4.6	No				
					10.4	No				
5		Silty Sand, Tan, Gray,								
		Silty Sand, Tan, Gray, Slight Petroleum Odors	▼		403.0	Yes	1515			
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-15**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	6
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Silty Sand, Orange, Tan,			17.9	No				
5		Silty Sand, Tan, Gray, Strong Petroleum Odors	▼		1452	Yes	1530			
					603.0	No				
10		Boring Terminated at 8 Ft-BGS								
15										
20										
25										
30										

PROJECT:	NCDOT I-5878 Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-16**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	6
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Silty Sand, Orange, Tan,			2.6	No				
5		Silty Sand, Tan, Gray, Strong Petroleum Odors	▼		908.0	Yes	1600			
					546.0	No				
10		Boring Terminated at 8 Ft-BGS								
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-17**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	5
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Silty Sand, Orange, Tan,			5.1	No				
					6.4	Yes	1615			
5		Silty Sand, Tan, Gray,	▼							
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 71-Vacant Lot SE Corner E.Cumberland St/I-95 (Former Phillips 66), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-18**
DATE DRILLED:	Thursday, October 17, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	6
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
0		Silty Sand, Orange, Tan,			4.3	No				
					5.3	No				
5		Silty Sand, Tan, Gray,	▼		5.4	No	1630			
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

Appendix IV – Laboratory Analytical Reports and Chain of Custody

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

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

Samples taken Thursday, October 17, 2019
Samples extracted Thursday, October 17, 2019
Samples analysed Wednesday, October 23, 2019

Contact: JAMIE HONEYCUTT

Operator CAROLINE STEVENS

Project: NCDOT I-5878 / PARCEL 71

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	B1 (4-6')	17.8	<0.45	84.8	137.9	222.7	15.8	0.62	<0.018	97.7	2	0.3	Deg.Fuel 80.4%,(FCM)
s	B2 (4-6')	19.4	<0.49	212.2	737.9	950.1	41.2	1.5	<0.019	98.9	1	0.1	Deg.Kerosene 71.1%,(FCM)
s	B3 (4-6')	20.6	<0.52	21	8.4	29.4	4.3	0.21	<0.021	90.2	8	1.8	No Match found
s	B4 (4-6')	19.8	<0.5	6	21.6	27.6	11	0.53	<0.02	40.6	49.7	9.7	Deg.PHC 79.1%,(FCM)
s	B5 (4-6')	18.2	<0.45	90.1	29.7	119.8	20.5	0.98	<0.018	86.2	12.6	1.1	No Match found
s	B6 (2-4')	19.3	<0.48	<0.48	1.5	1.5	1.3	<0.15	<0.019	0	80.1	19.9	Deg Fuel 77.6%,(FCM)
s	B7 (4-6')	20.8	<0.52	<0.52	2.3	2.3	2.2	<0.17	<0.021	0	81	19	Deg Fuel 77.1%,(FCM)
s	B8 (4-6')	21.0	<0.52	2.7	0.71	3.41	0.35	<0.17	<0.021	91	6.4	2.5	Deg.PHC 86.7%,(FCM)
s	B9 (4-6')	22.0	<0.55	<0.55	0.69	0.69	0.68	<0.18	<0.022	0	81.9	18.1	Residual HC
s	B10 (4-6')	21.7	<0.54	<0.54	1.4	1.4	1	<0.17	<0.022	3.3	75.5	21.2	Deg Fuel 74.4%,(FCM)

Initial Calibrator QC check OK Final FCM QC Check OK 107.8 %

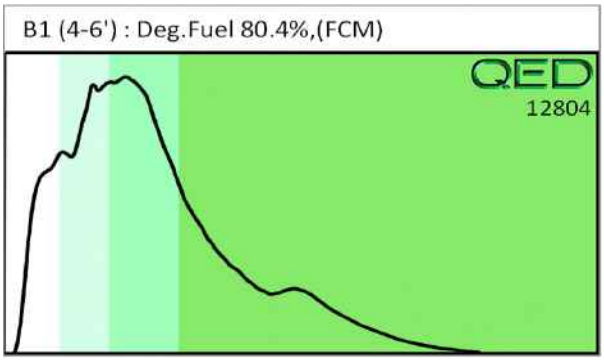
Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

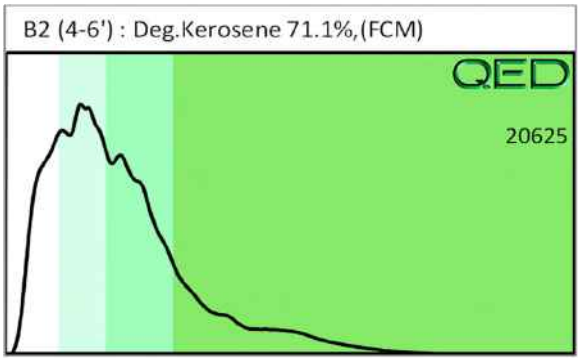
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

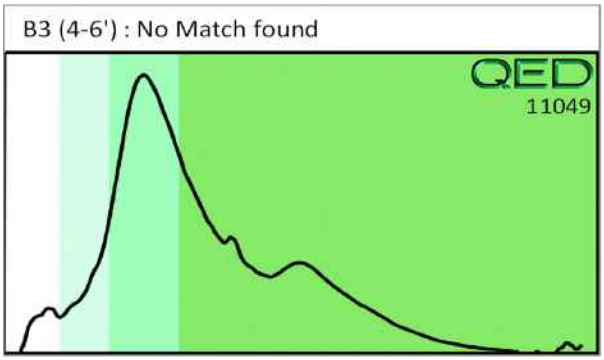
(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

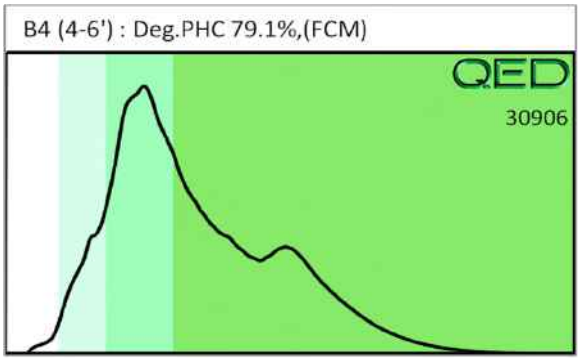
QED Hydrocarbon Fingerprints

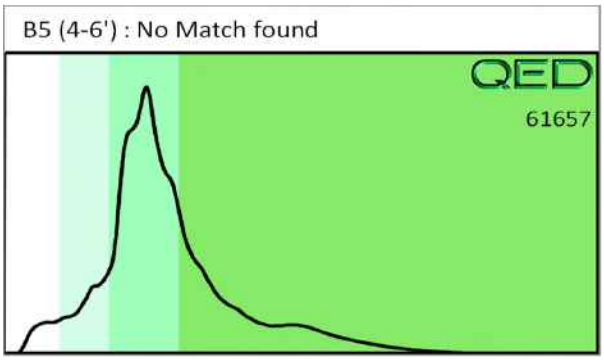
Project: NCDOT I-5878 / PARCEL 71 ##################

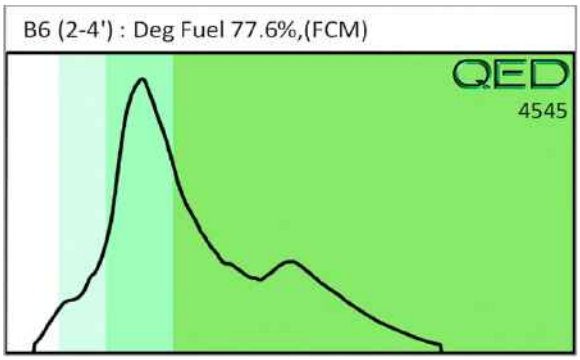


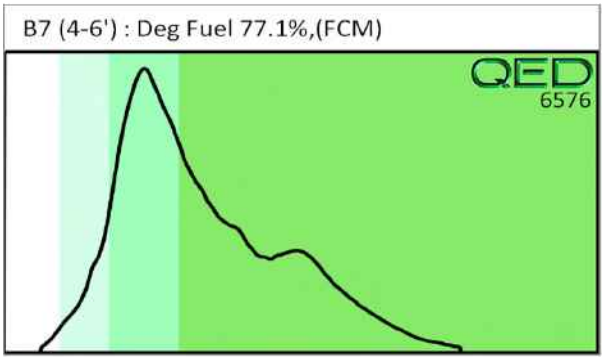


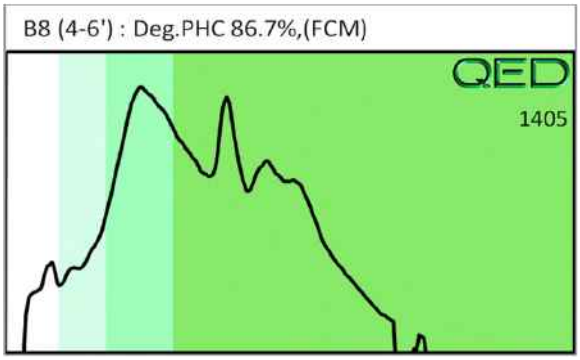


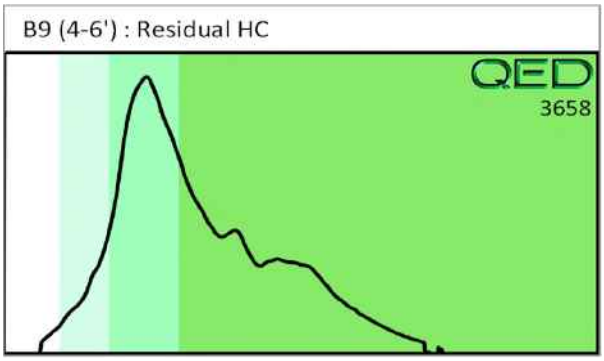


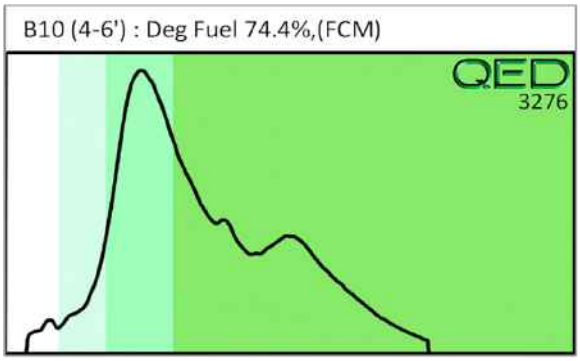












QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

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

Samples taken Thursday, October 17, 2019
Samples extracted Thursday, October 17, 2019
Samples analysed Wednesday, October 23, 2019

Contact: JAMIE HONEYCUTT

Operator CAROLINE STEVENS

Project: NCDOT I-5878 / PARCEL 71

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	B11 (2-4')	20.5	<0.51	<0.51	5.8	5.8	5.2	0.26	<0.02	0	86	14	Deg Fuel 91.1%,(FCM)
s	B12 (2-4')	20.3	<0.51	<0.51	3.1	3.1	1.3	<0.16	<0.02	29.1	55.1	15.9	V.Deg.PHC 83.6%,(FCM)
s	B13 (4-6')	21.7	<0.54	<0.54	4.5	4.5	2.2	<0.17	<0.022	0	75.9	24.1	V.Deg.PHC 93.1%,(FCM)
s	B14 (4-6')	11.7	<0.29	17.4	4.5	21.9	4.2	0.26	<0.012	81.3	17.6	1.1	Deg.Fuel 48.8%,(FCM)
s	B15 (2-4')	19.3	23.3	156.1	544.9	701	27.1	1	<0.019	99.5	0.5	0	Deg.Kerosene 72.9%,(FCM)
s	B16 (2-4')	18.8	<0.47	17.2	8	25.2	7	0.35	<0.019	80	17.5	2.5	Deg.Fuel 83.2%,(FCM)
s	B17 (2-4')	10.1	<0.25	<0.25	0.5	0.5	0.21	<0.08	<0.01	0	82.3	17.7	Deg Fuel 75.6%,(FCM)
s	B18 (4-6')	21.0	<0.52	<0.52	1.2	1.2	0.72	<0.17	<0.021	0	72.2	27.8	V.Deg.PHC 76%,(FCM)

Initial Calibrator QC check OK

Final FCM QC Check OK 99.6 %

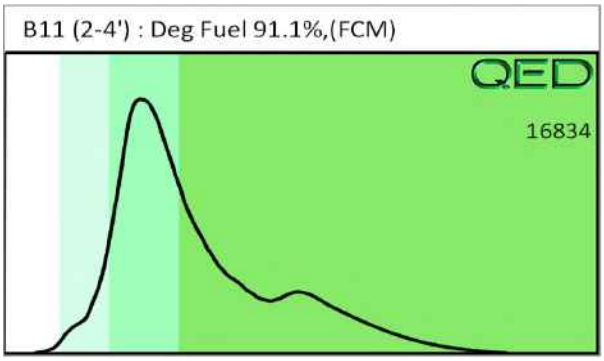
Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

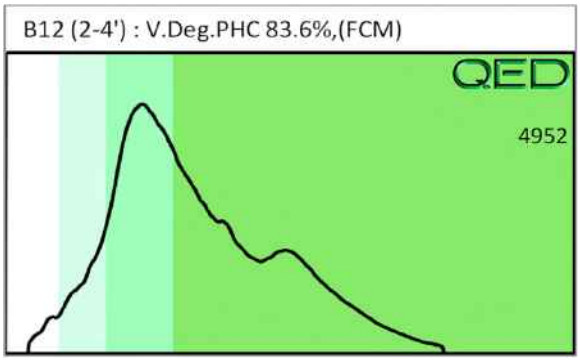
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

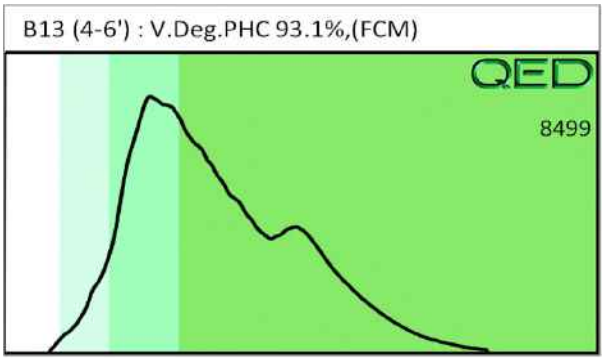
(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

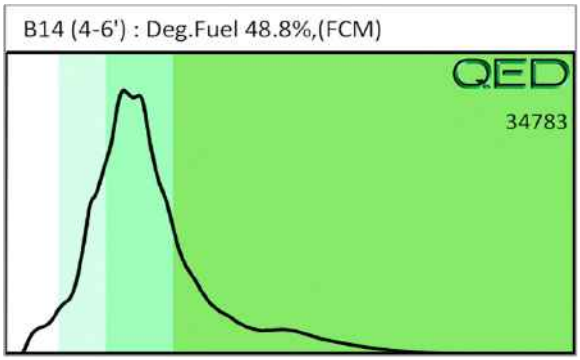
QED Hydrocarbon Fingerprints

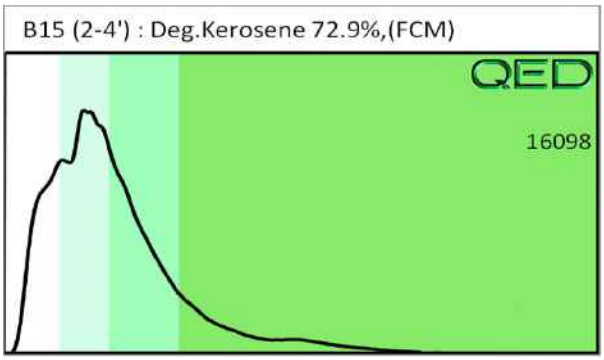
Project: NCDOT I-5878 / PARCEL 71 ##################

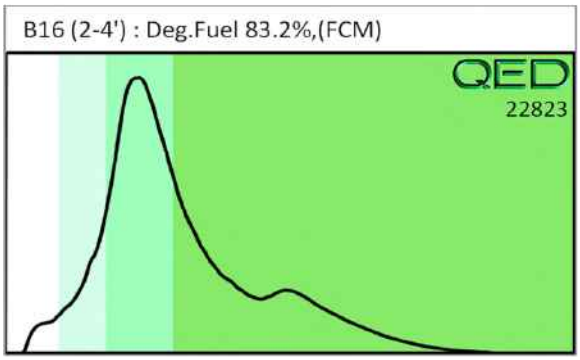


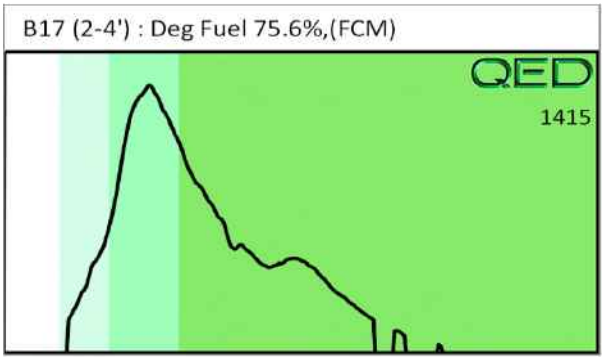


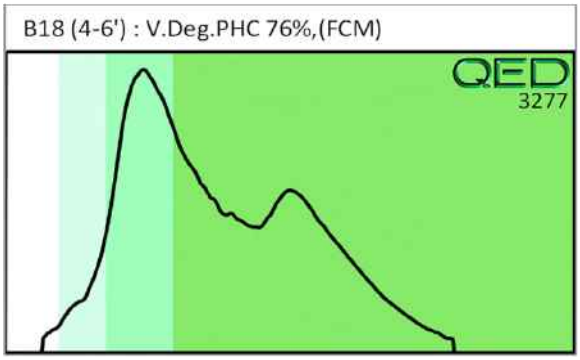












Client Name:	S&ME
Address:	3201 Spring Forest Rd Raleigh, NC
Contact:	Jamie Honeycutt
Project Ref.:	NCDOT- I-5878 - Parcel 71
Email:	jhoneycutt@smeinc.com
Phone #:	910 977-7614
Collected by:	Jamie Honeycutt

NCDOT - I 5878 Parcel 71
DUNN, NC

REDLAB™
RAPID ENVIRONMENTAL DIAGNOSTICS

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.

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

Sample Collection Date/Time	TAT Requested 24 Hour	TAT Requested 48 Hour	Analysis Type UVF	Analysis Type GC	Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
10-17-19/1000		✓	✓		JTH	[redacted] B1 4-6'	58.4	43.8	14.6
1015						B2 4-6'	57.9	44.5	13.4
1030						B3 4-6'	57.5	44.9	12.6
1045						B-4 4-6'	56.9	43.8	13.1
1100						B-5 4-6'	59.0	44.7	14.3
1145						B-6 2-4'	57.7	44.2	13.5
1150						B-7 4'-6'	57.5	45.0	12.5
1155						B-8 4'-6'	57.2	44.8	12.4
1200						B-9 4'-6'	56.7	44.9	11.8
1215						B-10 4'-6'	56.6	44.6	12.0
1230						B-11 2-4'	56.8	44.1	12.7
1240						B-12 2-4'	57.8	45.0	12.8
1500						B-13 4-6'	55.9	43.9	12.0
1515						B-14 4-6'	57.0	45.0	12.0
1530						B-15 2-4'	58.1	44.6	13.5
1600						B-16 2-4'	58.5	44.7	13.8
1615						B-17 2-4'	58.8	45.0	13.8
1630						B 18 4-6'	57.6	45.2	12.4

COMMENTS/REQUESTS:

TARGET GC/UVF ANALYTES: GRO/DRO

Relinquished by		Accepted by	Date/Time
Jamie Honeycutt	10-21-19/1900	MM 1220	10/22/19
Relinquished by		Accepted by	Date/Time

RED Lab USE ONLY

Ref. No 18 B140

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

October 30, 2019

Jamie Honeycutt
S&ME, Inc - Raleigh, NC
3201 Spring Forest Rd.
Raleigh, NC 27616

Project Location: Cumberland St/I-95; SE Corner
Client Job Number:
Project Number: 4305-19-161
Laboratory Work Order Number: 19J1316

Enclosed are results of analyses for samples received by the laboratory on October 21, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kerry K. McGee
Project Manager

Table of Contents

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

S&ME, Inc - Raleigh, NC
3201 Spring Forest Rd.
Raleigh, NC 27616
ATTN: Jamie Honeycutt

REPORT DATE: 10/30/2019

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 4305-19-161

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19J1316

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Cumberland St/I-95; SE Corner

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
TW-1	19J1316-01	Ground Water		SW-846 8260D SW-846 8270E	

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

EXECUTIVE SUMMARY

Client ID: **TW-1** Lab ID: **19J1316-01**

Analyte	Results/Qual		DL	RL	Units	Method
1,2,4-Trimethylbenzene	470		0.90	5.0	µg/L	SW-846 8260D
1,3,5-Trimethylbenzene	150		0.70	5.0	µg/L	SW-846 8260D
Benzene	510		0.90	5.0	µg/L	SW-846 8260D
Diisopropyl Ether (DIPE)	6.0	V-05	0.85	2.5	µg/L	SW-846 8260D
Ethylbenzene	360		0.65	5.0	µg/L	SW-846 8260D
Isopropylbenzene (Cumene)	38		0.85	5.0	µg/L	SW-846 8260D
m+p Xylene	870		1.5	10	µg/L	SW-846 8260D
Methyl tert-Butyl Ether (MTBE)	100		1.2	5.0	µg/L	SW-846 8260D
Naphthalene	110		1.6	25	µg/L	SW-846 8260D
n-Butylbenzene	12		1.0	5.0	µg/L	SW-846 8260D
n-Propylbenzene	94		0.65	5.0	µg/L	SW-846 8260D
o-Xylene	280		0.85	5.0	µg/L	SW-846 8260D
p-Isopropyltoluene (p-Cymene)	7.9		1.0	5.0	µg/L	SW-846 8260D
sec-Butylbenzene	6.8		0.80	5.0	µg/L	SW-846 8260D
tert-Butyl Alcohol (TBA)	3200		21	100	µg/L	SW-846 8260D
Toluene	140		0.70	5.0	µg/L	SW-846 8260D
2-Methylnaphthalene (SIM)	64		1.2	20	µg/L	SW-846 8270E
Acenaphthene (SIM)	0.50		0.032	0.29	µg/L	SW-846 8270E
Acenaphthylene (SIM)	0.12	J	0.034	0.20	µg/L	SW-846 8270E
Anthracene (SIM)	0.036	J	0.031	0.20	µg/L	SW-846 8270E
Fluorene (SIM)	0.93	J	0.033	0.98	µg/L	SW-846 8270E
Naphthalene (SIM)	120		5.0	20	µg/L	SW-846 8270E
Phenanthrene (SIM)	0.57		0.029	0.049	µg/L	SW-846 8270E

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

For method 8260D, Sample 19J1316-01 was run at a dilution as concentration of target compounds exceeded calibration curve limits.

For method 8270, only PAHs were requested and reported.

SW-846 8260D

Qualifications:

L-02

Laboratory fortified blank/laboratory control sample recovery and duplicate recoveries outside of control limits. Data validation is not affected since all results are "not detected" for associated samples in this batch and bias is on the high side.

Analyte & Samples(s) Qualified:

trans-1,4-Dichloro-2-butene
19J1316-01[TW-1], B244182-BS1, B244182-BSD1

Vinyl Chloride
19J1316-01[TW-1], B244182-BS1, B244182-BSD1

RL-11

Elevated reporting limit due to high concentration of target compounds.

Analyte & Samples(s) Qualified:

19J1316-01[TW-1]

V-05

Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

Analyte & Samples(s) Qualified:

2-Butanone (MEK)
19J1316-01[TW-1], B244182-BLK1, B244182-BS1, B244182-BSD1, S041864-CCV1

Diisopropyl Ether (DIPE)
19J1316-01[TW-1], B244182-BLK1, B244182-BS1, B244182-BSD1, S041864-CCV1

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:

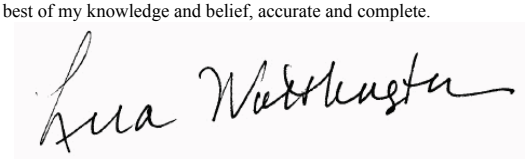
trans-1,4-Dichloro-2-butene
19J1316-01[TW-1], B244182-BS1, B244182-BSD1, S041864-CCV1

Trichlorofluoromethane (Freon 11)
19J1316-01[TW-1], B244182-BS1, B244182-BSD1, S041864-CCV1

Vinyl Chloride
19J1316-01[TW-1], B244182-BS1, B244182-BSD1, S041864-CCV1

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington
Technical Representative

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Cumberland St/I-95; SE Corner | Sample Description: | Work Order: 19J1316

Date Received: 10/21/2019

Field Sample #: TW-1 | Sampled: 10/18/2019 10:20

Sample ID: 19J1316-01

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	250	19	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Acrylonitrile	ND	25	2.6	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
tert-Amyl Methyl Ether (TAME)	ND	5.0	0.70	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Benzene	510	5.0	0.90	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Bromobenzene	ND	5.0	0.75	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Bromochloromethane	ND	5.0	1.6	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Bromodichloromethane	ND	2.5	0.80	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Bromoform	ND	5.0	2.3	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Bromomethane	ND	10	3.9	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
2-Butanone (MEK)	ND	100	9.7	µg/L	5	V-05	SW-846 8260D	10/25/19	10/25/19 19:50	EEH
tert-Butyl Alcohol (TBA)	3200	100	21	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
n-Butylbenzene	12	5.0	1.0	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
sec-Butylbenzene	6.8	5.0	0.80	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
tert-Butylbenzene	ND	5.0	0.85	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	2.5	0.80	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Carbon Disulfide	ND	25	22	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Carbon Tetrachloride	ND	5.0	0.55	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Chlorobenzene	ND	5.0	0.75	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Chlorodibromomethane	ND	2.5	1.0	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Chloroethane	ND	10	1.8	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Chloroform	ND	10	0.85	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Chloromethane	ND	10	2.2	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
2-Chlorotoluene	ND	5.0	0.60	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
4-Chlorotoluene	ND	5.0	0.70	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	25	2.6	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,2-Dibromoethane (EDB)	ND	2.5	0.95	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Dibromomethane	ND	5.0	1.8	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,2-Dichlorobenzene	ND	5.0	0.80	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,3-Dichlorobenzene	ND	5.0	0.60	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,4-Dichlorobenzene	ND	5.0	0.65	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
trans-1,4-Dichloro-2-butene	ND	10	1.6	µg/L	5	L-02, V-20	SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Dichlorodifluoromethane (Freon 12)	ND	10	1.3	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,1-Dichloroethane	ND	5.0	0.80	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,2-Dichloroethane	ND	5.0	2.0	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,1-Dichloroethylene	ND	5.0	1.6	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
cis-1,2-Dichloroethylene	ND	5.0	0.65	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
trans-1,2-Dichloroethylene	ND	5.0	1.6	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,2-Dichloropropane	ND	5.0	1.0	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,3-Dichloropropane	ND	2.5	0.55	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
2,2-Dichloropropane	ND	5.0	1.0	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,1-Dichloropropene	ND	10	0.80	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
cis-1,3-Dichloropropene	ND	2.5	0.65	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
trans-1,3-Dichloropropene	ND	2.5	1.2	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Diethyl Ether	ND	10	1.7	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Cumberland St/I-95; SE Corner | Sample Description: | Work Order: 19J1316

Date Received: 10/21/2019

Field Sample #: TW-1 | Sampled: 10/18/2019 10:20

Sample ID: 19J1316-01

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	6.0	2.5	0.85	µg/L	5	V-05	SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,4-Dioxane	ND	250	110	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Ethylbenzene	360	5.0	0.65	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Hexachlorobutadiene	ND	3.0	2.4	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
2-Hexanone (MBK)	ND	50	7.6	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Isopropylbenzene (Cumene)	38	5.0	0.85	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
p-Isopropyltoluene (p-Cymene)	7.9	5.0	1.0	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Methyl tert-Butyl Ether (MTBE)	100	5.0	1.2	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Methylene Chloride	ND	25	1.7	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
4-Methyl-2-pentanone (MIBK)	ND	50	8.4	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Naphthalene	110	25	1.6	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
n-Propylbenzene	94	5.0	0.65	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Styrene	ND	5.0	0.55	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,1,1,2-Tetrachloroethane	ND	5.0	1.4	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,1,2,2-Tetrachloroethane	ND	2.5	1.1	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Tetrachloroethylene	ND	5.0	0.90	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Tetrahydrofuran	ND	50	2.6	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Toluene	140	5.0	0.70	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,2,3-Trichlorobenzene	ND	25	2.8	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,2,4-Trichlorobenzene	ND	5.0	2.0	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,3,5-Trichlorobenzene	ND	5.0	1.5	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,1,1-Trichloroethane	ND	5.0	1.0	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,1,2-Trichloroethane	ND	5.0	0.80	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Trichloroethylene	ND	5.0	1.2	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Trichlorofluoromethane (Freon 11)	ND	10	1.6	µg/L	5	V-20	SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,2,3-Trichloropropane	ND	10	1.2	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	5.0	1.6	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,2,4-Trimethylbenzene	470	5.0	0.90	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
1,3,5-Trimethylbenzene	150	5.0	0.70	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
Vinyl Chloride	ND	10	2.2	µg/L	5	L-02, V-20	SW-846 8260D	10/25/19	10/25/19 19:50	EEH
m+p Xylene	870	10	1.5	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH
o-Xylene	280	5.0	0.85	µg/L	5		SW-846 8260D	10/25/19	10/25/19 19:50	EEH

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	90.3	70-130		10/25/19 19:50
Toluene-d8	96.9	70-130		10/25/19 19:50
4-Bromofluorobenzene	103	70-130		10/25/19 19:50

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Cumberland St/I-95; SE Corner | Sample Description: | Work Order: 19J1316

Date Received: 10/21/2019

Field Sample #: TW-1 | Sampled: 10/18/2019 10:20

Sample ID: 19J1316-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene (SIM)	0.50	0.29	0.032	µg/L	1		SW-846 8270E	10/24/19	10/28/19 21:26	CLA
Acenaphthylene (SIM)	0.12	0.20	0.034	µg/L	1	J	SW-846 8270E	10/24/19	10/28/19 21:26	CLA
Anthracene (SIM)	0.036	0.20	0.031	µg/L	1	J	SW-846 8270E	10/24/19	10/28/19 21:26	CLA
Benzo(a)anthracene (SIM)	ND	0.049	0.016	µg/L	1		SW-846 8270E	10/24/19	10/28/19 21:26	CLA
Benzo(a)pyrene (SIM)	ND	0.098	0.012	µg/L	1		SW-846 8270E	10/24/19	10/28/19 21:26	CLA
Benzo(b)fluoranthene (SIM)	ND	0.049	0.015	µg/L	1		SW-846 8270E	10/24/19	10/28/19 21:26	CLA
Benzo(g,h,i)perylene (SIM)	ND	0.49	0.018	µg/L	1		SW-846 8270E	10/24/19	10/28/19 21:26	CLA
Benzo(k)fluoranthene (SIM)	ND	0.20	0.012	µg/L	1		SW-846 8270E	10/24/19	10/28/19 21:26	CLA
Chrysene (SIM)	ND	0.20	0.015	µg/L	1		SW-846 8270E	10/24/19	10/28/19 21:26	CLA
Dibenz(a,h)anthracene (SIM)	ND	0.098	0.017	µg/L	1		SW-846 8270E	10/24/19	10/28/19 21:26	CLA
Fluoranthene (SIM)	ND	0.49	0.025	µg/L	1		SW-846 8270E	10/24/19	10/28/19 21:26	CLA
Fluorene (SIM)	0.93	0.98	0.033	µg/L	1	J	SW-846 8270E	10/24/19	10/28/19 21:26	CLA
Indeno(1,2,3-cd)pyrene (SIM)	ND	0.098	0.018	µg/L	1		SW-846 8270E	10/24/19	10/28/19 21:26	CLA
2-Methylnaphthalene (SIM)	64	20	1.2	µg/L	20		SW-846 8270E	10/24/19	10/29/19 10:27	CLA
Naphthalene (SIM)	120	20	5.0	µg/L	20		SW-846 8270E	10/24/19	10/29/19 10:27	CLA
Phenanthrene (SIM)	0.57	0.049	0.029	µg/L	1		SW-846 8270E	10/24/19	10/28/19 21:26	CLA
Pyrene (SIM)	ND	0.98	0.023	µg/L	1		SW-846 8270E	10/24/19	10/28/19 21:26	CLA

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Nitrobenzene-d5	75.6	30-130		10/28/19 21:26
Nitrobenzene-d5	74.6	30-130		10/29/19 10:27
2-Fluorobiphenyl	45.7	30-130		10/28/19 21:26
2-Fluorobiphenyl	56.1	30-130		10/29/19 10:27
p-Terphenyl-d14	62.1	30-130		10/28/19 21:26
p-Terphenyl-d14	56.8	30-130		10/29/19 10:27

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: SW-846 5030B-SW-846 8260D

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19J1316-01 [TW-1]	B244182	1	5.00	10/25/19

Prep Method: SW-846 3510C-SW-846 8270E

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19J1316-01 [TW-1]	B244108	1020	1.00	10/24/19
19J1316-01RE1 [TW-1]	B244108	1020	1.00	10/24/19

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B244182 - SW-846 5030B										
Blank (B244182-BLK1)				Prepared & Analyzed: 10/25/19						
Acetone	ND	50	µg/L							
Acrylonitrile	ND	5.0	µg/L							
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L							
Benzene	ND	1.0	µg/L							
Bromobenzene	ND	1.0	µg/L							
Bromochloromethane	ND	1.0	µg/L							
Bromodichloromethane	ND	0.50	µg/L							
Bromoform	ND	1.0	µg/L							
Bromomethane	ND	2.0	µg/L							
2-Butanone (MEK)	ND	20	µg/L							V-05
tert-Butyl Alcohol (TBA)	ND	20	µg/L							
n-Butylbenzene	ND	1.0	µg/L							
sec-Butylbenzene	ND	1.0	µg/L							
tert-Butylbenzene	ND	1.0	µg/L							
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L							
Carbon Disulfide	ND	5.0	µg/L							
Carbon Tetrachloride	ND	1.0	µg/L							
Chlorobenzene	ND	1.0	µg/L							
Chlorodibromomethane	ND	0.50	µg/L							
Chloroethane	ND	2.0	µg/L							
Chloroform	ND	2.0	µg/L							
Chloromethane	ND	2.0	µg/L							
2-Chlorotoluene	ND	1.0	µg/L							
4-Chlorotoluene	ND	1.0	µg/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L							
1,2-Dibromoethane (EDB)	ND	0.50	µg/L							
Dibromomethane	ND	1.0	µg/L							
1,2-Dichlorobenzene	ND	1.0	µg/L							
1,3-Dichlorobenzene	ND	1.0	µg/L							
1,4-Dichlorobenzene	ND	1.0	µg/L							
trans-1,4-Dichloro-2-butene	ND	2.0	µg/L							
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L							
1,1-Dichloroethane	ND	1.0	µg/L							
1,2-Dichloroethane	ND	1.0	µg/L							
1,1-Dichloroethylene	ND	1.0	µg/L							
cis-1,2-Dichloroethylene	ND	1.0	µg/L							
trans-1,2-Dichloroethylene	ND	1.0	µg/L							
1,2-Dichloropropane	ND	1.0	µg/L							
1,3-Dichloropropane	ND	0.50	µg/L							
2,2-Dichloropropane	ND	1.0	µg/L							
1,1-Dichloropropene	ND	2.0	µg/L							
cis-1,3-Dichloropropene	ND	0.50	µg/L							
trans-1,3-Dichloropropene	ND	0.50	µg/L							
Diethyl Ether	ND	2.0	µg/L							
Diisopropyl Ether (DIPE)	ND	0.50	µg/L							V-05
1,4-Dioxane	ND	50	µg/L							
Ethylbenzene	ND	1.0	µg/L							
Hexachlorobutadiene	ND	0.60	µg/L							
2-Hexanone (MBK)	ND	10	µg/L							
Isopropylbenzene (Cumene)	ND	1.0	µg/L							
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L							
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L							

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B244182 - SW-846 5030B											
Blank (B244182-BLK1)				Prepared & Analyzed: 10/25/19							
Methylene Chloride	ND	5.0	µg/L								
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L								
Naphthalene	ND	2.0	µg/L								
n-Propylbenzene	ND	1.0	µg/L								
Styrene	ND	1.0	µg/L								
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L								
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L								
Tetrachloroethylene	ND	1.0	µg/L								
Tetrahydrofuran	ND	10	µg/L								
Toluene	ND	1.0	µg/L								
1,2,3-Trichlorobenzene	ND	5.0	µg/L								
1,2,4-Trichlorobenzene	ND	1.0	µg/L								
1,3,5-Trichlorobenzene	ND	1.0	µg/L								
1,1,1-Trichloroethane	ND	1.0	µg/L								
1,1,2-Trichloroethane	ND	1.0	µg/L								
Trichloroethylene	ND	1.0	µg/L								
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L								
1,2,3-Trichloropropane	ND	2.0	µg/L								
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	µg/L								
1,2,4-Trimethylbenzene	ND	1.0	µg/L								
1,3,5-Trimethylbenzene	ND	1.0	µg/L								
Vinyl Chloride	ND	2.0	µg/L								
m+p Xylene	ND	2.0	µg/L								
o-Xylene	ND	1.0	µg/L								
Surrogate: 1,2-Dichloroethane-d4	*21.9*		µg/L	25.0		87.7	70-130				
Surrogate: Toluene-d8	*24.0*		µg/L	25.0		95.9	70-130				
Surrogate: 4-Bromofluorobenzene	*24.3*		µg/L	25.0		97.2	70-130				
LCS (B244182-BS1)				Prepared & Analyzed: 10/25/19							
Acetone	135	50	µg/L	100		135	70-160				†
Acrylonitrile	10.8	5.0	µg/L	10.0		108	70-130				
tert-Amyl Methyl Ether (TAME)	7.10	0.50	µg/L	10.0		71.0	70-130				
Benzene	7.21	1.0	µg/L	10.0		72.1	70-130				
Bromobenzene	9.60	1.0	µg/L	10.0		96.0	70-130				
Bromochloromethane	7.25	1.0	µg/L	10.0		72.5	70-130				
Bromodichloromethane	9.33	0.50	µg/L	10.0		93.3	70-130				
Bromoform	12.1	1.0	µg/L	10.0		121	70-130				
Bromomethane	6.47	2.0	µg/L	10.0		64.7	40-160				†
2-Butanone (MEK)	76.8	20	µg/L	100		76.8	40-160			V-05	†
tert-Butyl Alcohol (TBA)	86.2	20	µg/L	100		86.2	40-160				†
n-Butylbenzene	10.4	1.0	µg/L	10.0		104	70-130				
sec-Butylbenzene	10.5	1.0	µg/L	10.0		105	70-130				
tert-Butylbenzene	10.5	1.0	µg/L	10.0		105	70-130				
tert-Butyl Ethyl Ether (TBEE)	7.22	0.50	µg/L	10.0		72.2	70-130				
Carbon Disulfide	10.3	5.0	µg/L	10.0		103	70-130				
Carbon Tetrachloride	9.65	1.0	µg/L	10.0		96.5	70-130				
Chlorobenzene	10.4	1.0	µg/L	10.0		104	70-130				
Chlorodibromomethane	10.1	0.50	µg/L	10.0		101	70-130				
Chloroethane	9.64	2.0	µg/L	10.0		96.4	70-130				
Chloroform	7.80	2.0	µg/L	10.0		78.0	70-130				
Chloromethane	6.51	2.0	µg/L	10.0		65.1	40-160				†
2-Chlorotoluene	9.61	1.0	µg/L	10.0		96.1	70-130				

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes	
Batch B244182 - SW-846 5030B												
LCS (B244182-BS1)				Prepared & Analyzed: 10/25/19								
4-Chlorotoluene	10.7	1.0	µg/L	10.0		107		70-130				
1,2-Dibromo-3-chloropropane (DBCP)	9.89	5.0	µg/L	10.0		98.9		70-130				
1,2-Dibromoethane (EDB)	10.0	0.50	µg/L	10.0		100		70-130				
Dibromomethane	9.46	1.0	µg/L	10.0		94.6		70-130				
1,2-Dichlorobenzene	10.8	1.0	µg/L	10.0		108		70-130				
1,3-Dichlorobenzene	10.9	1.0	µg/L	10.0		109		70-130				
1,4-Dichlorobenzene	10.6	1.0	µg/L	10.0		106		70-130				
trans-1,4-Dichloro-2-butene	13.2	2.0	µg/L	10.0		**132**	*	70-130			L-02, V-20	
Dichlorodifluoromethane (Freon 12)	7.01	2.0	µg/L	10.0		70.1		40-160				†
1,1-Dichloroethane	7.80	1.0	µg/L	10.0		78.0		70-130				
1,2-Dichloroethane	9.64	1.0	µg/L	10.0		96.4		70-130				
1,1-Dichloroethylene	11.0	1.0	µg/L	10.0		110		70-130				
cis-1,2-Dichloroethylene	7.73	1.0	µg/L	10.0		77.3		70-130				
trans-1,2-Dichloroethylene	7.93	1.0	µg/L	10.0		79.3		70-130				
1,2-Dichloropropane	7.94	1.0	µg/L	10.0		79.4		70-130				
1,3-Dichloropropane	8.59	0.50	µg/L	10.0		85.9		70-130				
2,2-Dichloropropane	8.94	1.0	µg/L	10.0		89.4		40-130				†
1,1-Dichloropropene	8.09	2.0	µg/L	10.0		80.9		70-130				
cis-1,3-Dichloropropene	8.68	0.50	µg/L	10.0		86.8		70-130				
trans-1,3-Dichloropropene	9.09	0.50	µg/L	10.0		90.9		70-130				
Diethyl Ether	9.88	2.0	µg/L	10.0		98.8		70-130				
Diisopropyl Ether (DIPE)	7.51	0.50	µg/L	10.0		75.1		70-130			V-05	
1,4-Dioxane	103	50	µg/L	100		103		40-130				†
Ethylbenzene	10.4	1.0	µg/L	10.0		104		70-130				
Hexachlorobutadiene	11.1	0.60	µg/L	10.0		111		70-130				
2-Hexanone (MBK)	96.7	10	µg/L	100		96.7		70-160				†
Isopropylbenzene (Cumene)	11.2	1.0	µg/L	10.0		112		70-130				
p-Isopropyltoluene (p-Cymene)	10.6	1.0	µg/L	10.0		106		70-130				
Methyl tert-Butyl Ether (MTBE)	8.67	1.0	µg/L	10.0		86.7		70-130				
Methylene Chloride	9.78	5.0	µg/L	10.0		97.8		70-130				
4-Methyl-2-pentanone (MIBK)	97.6	10	µg/L	100		97.6		70-160				†
Naphthalene	10.0	2.0	µg/L	10.0		100		40-130				†
n-Propylbenzene	10.9	1.0	µg/L	10.0		109		70-130				
Styrene	10.3	1.0	µg/L	10.0		103		70-130				
1,1,1,2-Tetrachloroethane	11.8	1.0	µg/L	10.0		118		70-130				
1,1,2,2-Tetrachloroethane	10.9	0.50	µg/L	10.0		109		70-130				
Tetrachloroethylene	10.8	1.0	µg/L	10.0		108		70-130				
Tetrahydrofuran	8.01	10	µg/L	10.0		80.1		70-130			J	
Toluene	9.32	1.0	µg/L	10.0		93.2		70-130				
1,2,3-Trichlorobenzene	9.36	5.0	µg/L	10.0		93.6		70-130				
1,2,4-Trichlorobenzene	10.6	1.0	µg/L	10.0		106		70-130				
1,3,5-Trichlorobenzene	10.5	1.0	µg/L	10.0		105		70-130				
1,1,1-Trichloroethane	9.23	1.0	µg/L	10.0		92.3		70-130				
1,1,2-Trichloroethane	9.49	1.0	µg/L	10.0		94.9		70-130				
Trichloroethylene	9.17	1.0	µg/L	10.0		91.7		70-130				
Trichlorofluoromethane (Freon 11)	10.8	2.0	µg/L	10.0		108		70-130			V-20	
1,2,3-Trichloropropane	10.5	2.0	µg/L	10.0		105		70-130				
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	11.3	1.0	µg/L	10.0		113		70-130				
1,2,4-Trimethylbenzene	9.96	1.0	µg/L	10.0		99.6		70-130				
1,3,5-Trimethylbenzene	11.1	1.0	µg/L	10.0		111		70-130				
Vinyl Chloride	35.8	2.0	µg/L	10.0		**358**	*	40-160			V-20, L-02	†

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes	
Batch B244182 - SW-846 5030B												
LCS (B244182-BS1)				Prepared & Analyzed: 10/25/19								
m+p Xylene	21.5	2.0	µg/L	20.0		108		70-130				
o-Xylene	10.9	1.0	µg/L	10.0		109		70-130				
Surrogate: 1,2-Dichloroethane-d4	*22.1*		µg/L	25.0		88.4		70-130				
Surrogate: Toluene-d8	*23.8*		µg/L	25.0		95.3		70-130				
Surrogate: 4-Bromofluorobenzene	*25.0*		µg/L	25.0		100		70-130				
LCS Dup (B244182-BSD1)				Prepared & Analyzed: 10/25/19								
Acetone	126	50	µg/L	100		126		70-160	7.24	25		†
Acrylonitrile	10.6	5.0	µg/L	10.0		106		70-130	2.34	25		
tert-Amyl Methyl Ether (TAME)	7.05	0.50	µg/L	10.0		70.5		70-130	0.707	25		
Benzene	7.31	1.0	µg/L	10.0		73.1		70-130	1.38	25		
Bromobenzene	9.86	1.0	µg/L	10.0		98.6		70-130	2.67	25		
Bromochloromethane	7.34	1.0	µg/L	10.0		73.4		70-130	1.23	25		
Bromodichloromethane	9.91	0.50	µg/L	10.0		99.1		70-130	6.03	25		
Bromoform	12.3	1.0	µg/L	10.0		123		70-130	1.48	25		
Bromomethane	7.35	2.0	µg/L	10.0		73.5		40-160	12.7	25		†
2-Butanone (MEK)	72.8	20	µg/L	100		72.8		40-160	5.37	25	V-05	†
tert-Butyl Alcohol (TBA)	81.5	20	µg/L	100		81.5		40-160	5.54	25		†
n-Butylbenzene	10.1	1.0	µg/L	10.0		101		70-130	2.63	25		
sec-Butylbenzene	10.2	1.0	µg/L	10.0		102		70-130	3.47	25		
tert-Butylbenzene	10.1	1.0	µg/L	10.0		101		70-130	3.97	25		
tert-Butyl Ethyl Ether (TBEE)	7.04	0.50	µg/L	10.0		70.4		70-130	2.52	25		
Carbon Disulfide	9.70	5.0	µg/L	10.0		97.0		70-130	5.90	25		
Carbon Tetrachloride	9.23	1.0	µg/L	10.0		92.3		70-130	4.45	25		
Chlorobenzene	10.7	1.0	µg/L	10.0		107		70-130	2.93	25		
Chlorodibromomethane	10.2	0.50	µg/L	10.0		102		70-130	0.394	25		
Chloroethane	9.59	2.0	µg/L	10.0		95.9		70-130	0.520	25		
Chloroform	7.73	2.0	µg/L	10.0		77.3		70-130	0.901	25		
Chloromethane	6.18	2.0	µg/L	10.0		61.8		40-160	5.20	25		†
2-Chlorotoluene	9.90	1.0	µg/L	10.0		99.0		70-130	2.97	25		
4-Chlorotoluene	10.8	1.0	µg/L	10.0		108		70-130	0.838	25		
1,2-Dibromo-3-chloropropane (DBCP)	10.0	5.0	µg/L	10.0		100		70-130	1.21	25		
1,2-Dibromoethane (EDB)	10.0	0.50	µg/L	10.0		100		70-130	0.399	25		
Dibromomethane	9.13	1.0	µg/L	10.0		91.3		70-130	3.55	25		
1,2-Dichlorobenzene	10.6	1.0	µg/L	10.0		106		70-130	1.31	25		
1,3-Dichlorobenzene	10.9	1.0	µg/L	10.0		109		70-130	0.00	25		
1,4-Dichlorobenzene	10.4	1.0	µg/L	10.0		104		70-130	1.81	25		
trans-1,4-Dichloro-2-butene	13.3	2.0	µg/L	10.0		**133**	*	70-130	1.06	25	L-02, V-20	
Dichlorodifluoromethane (Freon 12)	6.72	2.0	µg/L	10.0		67.2		40-160	4.22	25		†
1,1-Dichloroethane	7.57	1.0	µg/L	10.0		75.7		70-130	2.99	25		
1,2-Dichloroethane	9.78	1.0	µg/L	10.0		97.8		70-130	1.44	25		
1,1-Dichloroethylene	10.7	1.0	µg/L	10.0		107		70-130	3.22	25		
cis-1,2-Dichloroethylene	7.73	1.0	µg/L	10.0		77.3		70-130	0.00	25		
trans-1,2-Dichloroethylene	7.77	1.0	µg/L	10.0		77.7		70-130	2.04	25		
1,2-Dichloropropane	7.81	1.0	µg/L	10.0		78.1		70-130	1.65	25		
1,3-Dichloropropane	8.59	0.50	µg/L	10.0		85.9		70-130	0.00	25		
2,2-Dichloropropane	8.89	1.0	µg/L	10.0		88.9		40-130	0.561	25		†
1,1-Dichloropropene	7.79	2.0	µg/L	10.0		77.9		70-130	3.78	25		
cis-1,3-Dichloropropene	8.97	0.50	µg/L	10.0		89.7		70-130	3.29	25		
trans-1,3-Dichloropropene	9.24	0.50	µg/L	10.0		92.4		70-130	1.64	25		
Diethyl Ether	9.56	2.0	µg/L	10.0		95.6		70-130	3.29	25		
Diisopropyl Ether (DIPE)	7.19	0.50	µg/L	10.0		71.9		70-130	4.35	25	V-05	

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes	
Batch B244182 - SW-846 5030B												
LCS Dup (B244182-BSD1)				Prepared & Analyzed: 10/25/19								
1,4-Dioxane	99.1	50	µg/L	100		99.1		40-130	3.74	50		† ‡
Ethylbenzene	10.4	1.0	µg/L	10.0		104		70-130	0.288	25		
Hexachlorobutadiene	10.4	0.60	µg/L	10.0		104		70-130	6.13	25		
2-Hexanone (MBK)	92.4	10	µg/L	100		92.4		70-160	4.50	25		†
Isopropylbenzene (Cumene)	11.0	1.0	µg/L	10.0		110		70-130	1.53	25		
p-Isopropyltoluene (p-Cymene)	10.2	1.0	µg/L	10.0		102		70-130	4.24	25		
Methyl tert-Butyl Ether (MTBE)	8.57	1.0	µg/L	10.0		85.7		70-130	1.16	25		
Methylene Chloride	9.48	5.0	µg/L	10.0		94.8		70-130	3.12	25		
4-Methyl-2-pentanone (MIBK)	96.5	10	µg/L	100		96.5		70-160	1.07	25		†
Naphthalene	9.94	2.0	µg/L	10.0		99.4		40-130	0.602	25		†
n-Propylbenzene	10.6	1.0	µg/L	10.0		106		70-130	2.79	25		
Styrene	10.3	1.0	µg/L	10.0		103		70-130	0.292	25		
1,1,1,2-Tetrachloroethane	11.7	1.0	µg/L	10.0		117		70-130	1.02	25		
1,1,2,2-Tetrachloroethane	11.0	0.50	µg/L	10.0		110		70-130	0.548	25		
Tetrachloroethylene	10.4	1.0	µg/L	10.0		104		70-130	2.83	25		
Tetrahydrofuran	8.09	10	µg/L	10.0		80.9		70-130	0.994	25	J	
Toluene	9.20	1.0	µg/L	10.0		92.0		70-130	1.30	25		
1,2,3-Trichlorobenzene	9.47	5.0	µg/L	10.0		94.7		70-130	1.17	25		
1,2,4-Trichlorobenzene	10.7	1.0	µg/L	10.0		107		70-130	0.846	25		
1,3,5-Trichlorobenzene	10.5	1.0	µg/L	10.0		105		70-130	0.477	25		
1,1,1-Trichloroethane	9.00	1.0	µg/L	10.0		90.0		70-130	2.52	25		
1,1,2-Trichloroethane	9.52	1.0	µg/L	10.0		95.2		70-130	0.316	25		
Trichloroethylene	9.36	1.0	µg/L	10.0		93.6		70-130	2.05	25		
Trichlorofluoromethane (Freon 11)	10.2	2.0	µg/L	10.0		102		70-130	6.39	25	V-20	
1,2,3-Trichloropropane	10.5	2.0	µg/L	10.0		105		70-130	0.191	25		
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	10.6	1.0	µg/L	10.0		106		70-130	6.66	25		
1,2,4-Trimethylbenzene	9.78	1.0	µg/L	10.0		97.8		70-130	1.82	25		
1,3,5-Trimethylbenzene	11.0	1.0	µg/L	10.0		110		70-130	0.994	25		
Vinyl Chloride	37.6	2.0	µg/L	10.0		**376**	*	40-160	4.82	25	L-02, V-20	†
m+p Xylene	21.5	2.0	µg/L	20.0		107		70-130	0.0931	25		
o-Xylene	10.9	1.0	µg/L	10.0		109		70-130	0.275	25		
Surrogate: 1,2-Dichloroethane-d4	*22.4*		µg/L	25.0		89.5		70-130				
Surrogate: Toluene-d8	*24.3*		µg/L	25.0		97.1		70-130				
Surrogate: 4-Bromofluorobenzene	*25.3*		µg/L	25.0		101		70-130				

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B244108 - SW-846 3510C										
Blank (B244108-BLK1)				Prepared: 10/24/19 Analyzed: 10/28/19						
Acenaphthene (SIM)	ND	0.30	µg/L							
Acenaphthylene (SIM)	ND	0.20	µg/L							
Anthracene (SIM)	ND	0.20	µg/L							
Benzo(a)anthracene (SIM)	ND	0.050	µg/L							
Benzo(a)pyrene (SIM)	ND	0.10	µg/L							
Benzo(b)fluoranthene (SIM)	ND	0.050	µg/L							
Benzo(g,h,i)perylene (SIM)	ND	0.50	µg/L							
Benzo(k)fluoranthene (SIM)	ND	0.20	µg/L							
Chrysene (SIM)	ND	0.20	µg/L							
Dibenz(a,h)anthracene (SIM)	ND	0.10	µg/L							
Fluoranthene (SIM)	ND	0.50	µg/L							
Fluorene (SIM)	ND	1.0	µg/L							
Indeno(1,2,3-cd)pyrene (SIM)	ND	0.10	µg/L							
2-Methylnaphthalene (SIM)	ND	1.0	µg/L							
Naphthalene (SIM)	ND	1.0	µg/L							
Phenanthrene (SIM)	ND	0.050	µg/L							
Pyrene (SIM)	ND	1.0	µg/L							
Surrogate: Nitrobenzene-d5	*77.3*		µg/L	100		77.3	30-130			
Surrogate: 2-Fluorobiphenyl	*46.9*		µg/L	100		46.9	30-130			
Surrogate: p-Terphenyl-d14	*64.5*		µg/L	100		64.5	30-130			
LCS (B244108-BS1)				Prepared: 10/24/19 Analyzed: 10/28/19						
Acenaphthene (SIM)	33.9	6.0	µg/L	50.0		67.8	40-140			
Acenaphthylene (SIM)	34.9	4.0	µg/L	50.0		69.7	40-140			
Anthracene (SIM)	38.0	4.0	µg/L	50.0		76.0	40-140			
Benzo(a)anthracene (SIM)	40.4	1.0	µg/L	50.0		80.8	40-140			
Benzo(a)pyrene (SIM)	37.1	2.0	µg/L	50.0		74.2	40-140			
Benzo(b)fluoranthene (SIM)	39.9	1.0	µg/L	50.0		79.8	40-140			
Benzo(g,h,i)perylene (SIM)	39.2	10	µg/L	50.0		78.3	40-140			
Benzo(k)fluoranthene (SIM)	40.1	4.0	µg/L	50.0		80.2	40-140			
Chrysene (SIM)	32.2	4.0	µg/L	50.0		64.3	40-140			
Dibenz(a,h)anthracene (SIM)	44.1	2.0	µg/L	50.0		88.2	40-140			
Fluoranthene (SIM)	35.1	10	µg/L	50.0		70.2	40-140			
Fluorene (SIM)	34.6	20	µg/L	50.0		69.3	40-140			
Indeno(1,2,3-cd)pyrene (SIM)	49.6	2.0	µg/L	50.0		99.2	40-140			
2-Methylnaphthalene (SIM)	34.7	20	µg/L	50.0		69.3	40-140			
Naphthalene (SIM)	32.5	20	µg/L	50.0		65.0	40-140			
Phenanthrene (SIM)	34.7	1.0	µg/L	50.0		69.4	40-140			
Pyrene (SIM)	34.2	20	µg/L	50.0		68.4	40-140			
Surrogate: Nitrobenzene-d5	*74.0*		µg/L	100		74.0	30-130			
Surrogate: 2-Fluorobiphenyl	*50.1*		µg/L	100		50.1	30-130			
Surrogate: p-Terphenyl-d14	*51.0*		µg/L	100		51.0	30-130			

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B244108 - SW-846 3510C										
LCS Dup (B244108-BSD1)				Prepared: 10/24/19 Analyzed: 10/28/19						
Acenaphthene (SIM)	34.2	6.0	µg/L	50.0		68.4	40-140	0.940	20	
Acenaphthylene (SIM)	35.2	4.0	µg/L	50.0		70.3	40-140	0.857	20	
Anthracene (SIM)	39.3	4.0	µg/L	50.0		78.7	40-140	3.47	20	
Benzo(a)anthracene (SIM)	41.2	1.0	µg/L	50.0		82.5	40-140	2.01	20	
Benzo(a)pyrene (SIM)	37.6	2.0	µg/L	50.0		75.2	40-140	1.34	20	
Benzo(b)fluoranthene (SIM)	41.8	1.0	µg/L	50.0		83.6	40-140	4.60	20	
Benzo(g,h,i)perylene (SIM)	39.3	10	µg/L	50.0		78.5	40-140	0.255	20	
Benzo(k)fluoranthene (SIM)	42.0	4.0	µg/L	50.0		84.0	40-140	4.63	20	
Chrysene (SIM)	32.8	4.0	µg/L	50.0		65.5	40-140	1.85	20	
Dibenz(a,h)anthracene (SIM)	44.4	2.0	µg/L	50.0		88.7	40-140	0.588	20	
Fluoranthene (SIM)	37.7	10	µg/L	50.0		75.5	40-140	7.25	20	
Fluorene (SIM)	35.7	20	µg/L	50.0		71.4	40-140	2.96	20	
Indeno(1,2,3-cd)pyrene (SIM)	49.9	2.0	µg/L	50.0		99.8	40-140	0.563	20	‡
2-Methylnaphthalene (SIM)	35.1	20	µg/L	50.0		70.3	40-140	1.38	20	
Naphthalene (SIM)	32.5	20	µg/L	50.0		65.0	40-140	0.123	20	
Phenanthrene (SIM)	36.0	1.0	µg/L	50.0		72.1	40-140	3.73	20	
Pyrene (SIM)	33.5	20	µg/L	50.0		67.0	40-140	2.01	20	
Surrogate: Nitrobenzene-d5	*73.2*		µg/L	100		73.2	30-130			
Surrogate: 2-Fluorobiphenyl	*51.8*		µg/L	100		51.8	30-130			
Surrogate: p-Terphenyl-d14	*51.2*		µg/L	100		51.2	30-130			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
L-02	Laboratory fortified blank/laboratory control sample recovery and duplicate recoveries outside of control limits. Data validation is not affected since all results are "not detected" for associated samples in this batch and bias is on the high side.
RL-11	Elevated reporting limit due to high concentration of target compounds.
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8260D in Water	
Acetone	NC
Acrylonitrile	NC
tert-Amyl Methyl Ether (TAME)	NC
Benzene	NC
Bromobenzene	NC
Bromochloromethane	NC
Bromodichloromethane	NC
Bromoform	NC
Bromomethane	NC
2-Butanone (MEK)	NC
tert-Butyl Alcohol (TBA)	NC
n-Butylbenzene	NC
sec-Butylbenzene	NC
tert-Butylbenzene	NC
tert-Butyl Ethyl Ether (TBEE)	NC
Carbon Disulfide	NC
Carbon Tetrachloride	NC
Chlorobenzene	NC
Chlorodibromomethane	NC
Chloroethane	NC
Chloroform	NC
Chloromethane	NC
2-Chlorotoluene	NC
4-Chlorotoluene	NC
1,2-Dibromo-3-chloropropane (DBCP)	NC
1,2-Dibromoethane (EDB)	NC
Dibromomethane	NC
1,2-Dichlorobenzene	NC
1,3-Dichlorobenzene	NC
1,4-Dichlorobenzene	NC
trans-1,4-Dichloro-2-butene	NC
Dichlorodifluoromethane (Freon 12)	NC
1,1-Dichloroethane	NC
1,2-Dichloroethane	NC
1,1-Dichloroethylene	NC
cis-1,2-Dichloroethylene	NC
trans-1,2-Dichloroethylene	NC
1,2-Dichloropropane	NC
1,3-Dichloropropane	NC
2,2-Dichloropropane	NC
1,1-Dichloropropene	NC
cis-1,3-Dichloropropene	NC
trans-1,3-Dichloropropene	NC
Diethyl Ether	NC
Diisopropyl Ether (DIPE)	NC
1,4-Dioxane	NC
Ethylbenzene	NC

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8260D in Water	
Hexachlorobutadiene	NC
2-Hexanone (MBK)	NC
Isopropylbenzene (Cumene)	NC
p-Isopropyltoluene (p-Cymene)	NC
Methyl tert-Butyl Ether (MTBE)	NC
Methylene Chloride	NC
4-Methyl-2-pentanone (MIBK)	NC
Naphthalene	NC
n-Propylbenzene	NC
Styrene	NC
1,1,1,2-Tetrachloroethane	NC
1,1,2,2-Tetrachloroethane	NC
Tetrachloroethylene	NC
Tetrahydrofuran	NC
Toluene	NC
1,2,3-Trichlorobenzene	NC
1,2,4-Trichlorobenzene	NC
1,3,5-Trichlorobenzene	NC
1,1,1-Trichloroethane	NC
1,1,2-Trichloroethane	NC
Trichloroethylene	NC
Trichlorofluoromethane (Freon 11)	NC
1,2,3-Trichloropropane	NC
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	NC
1,2,4-Trimethylbenzene	NC
1,3,5-Trimethylbenzene	NC
Vinyl Chloride	NC
m+p Xylene	NC
o-Xylene	NC

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2020
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2021
NY	New York State Department of Health	10899 NELAP	04/1/2020
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2020
RI	Rhode Island Department of Health	LAO00112	12/30/2019
NC	North Carolina Div. of Water Quality	652	12/31/2019
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2020
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2019
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020

con-test ANALYTICAL LABORATORY

19J1316

Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

http://www.contestlabs.com Doc # 379 Rev 1_03242017

CHAIN OF CUSTODY RECORD (North Carolina)

39 Spruce Street
East Longmeadow, MA 01028

Page 1 of 1

Company Name: SEME
Address: 3301 Spring Forest Rd Raleigh NC
Phone: 910 977-7614
Project Name: NCDOT - Dunn - Parcel 71
Project Location: Cumberland St / I-95, SE corner
Project Number: 4305-19-161
Project Manager: Jamie T Honeycutt
Con-Test Quote Name/Number:
Invoice Recipient: Jamie T Honeycutt
Sampled By: Jamie T Honeycutt

Requested Turnaround Time
7-Day ☐ 10-Day ☐
Due Date:

Rush Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: jhoneycutt@seme.com
Fax To #:

ANALYSIS REQUESTED

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	Matrix Code	Conc Code	8260 ✓	PAHs by 8270 ✓	# of Containers	Preservation Code	Container Code
1	[redacted] TW-1	10-18-19	1020		✓	GW	H	✓	✓			

Dissolved Metals Samples
☐ Field Filtered
☐ Lab to Filter

Orthophosphate Samples
☐ Field Filtered
☐ Lab to Filter

[1] **Matrix Codes:**
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] **Preservation Codes:**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

[3] **Container Codes:**
A = Amber Glass
G = Glass
P = Plastic
ST = Sterile
V = Vial
S = Summa Canister
T = Tedlar Bag
O = Other (please define)

Comments:

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

	Date/Time:
Relinquished by: (signature)	10-21-19 1900
Received by: (signature)	10/22/19 554
Relinquished by: (signature)	
Received by: (signature)	
Relinquished by: (signature)	
Received by: (signature)	

North Carolina Detection Limit Requirements
☑ 2L
☐ GWPC
☐ SWSL
☐ IHSB
☐ MSCC
Other:

Program Information
☐ DSCA ☐ UST/Trust Fund
☐ SWS Landfill ☐ REC
☐ IHSB Orphaned Landfill
☐ State Lead
☐ Other:

NELAC and AIHA-LAP, LLC Accredited

Project Entity
☐ Government ☐ Municipality
☐ Federal ☐ Brownfield
☐ City ☐ School

Other
☐ Chromatogram
☐ *AIHA-LAP,LLC*

PCB ONLY
☐ Soxhlet
☐ Non Soxhlet

Table of Contents

411359783335

Delivered
Tuesday 10/22/2019 at 8:54 am

DELIVERED

Signed for by: B.BECCA

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

FROM	TO
Autryville, NC US	East Longmeadow, MA US

Shipment Facts

TRACKING NUMBER 411359783335	**SERVICE** FedEx Priority Overnight	**WEIGHT** 30.1 lbs / 13.65 kgs
DIMENSIONS 23x14x14 in.	**DELIVERED TO** Shipping/Receiving	**TOTAL PIECES** 1
TOTAL SHIPMENT WEIGHT 30.1 lbs / 13.65 kgs	**RETURN REASON**	**TERMS** Third Party
PACKAGING Your Packaging	**SPECIAL HANDLING SECTION** Deliver Weekday, Additional Handling Surcharge	**STANDARD TRANSIT** 10/22/2019 by 10:30 am
SHIP DATE Mon 10/21/2019	**ACTUAL DELIVERY** Tue 10/22/2019 8:54 am	

Travel History

Local Scan Time

Tuesday , 10/22/2019

8:54 am	East Longmeadow, MA	Delivered
7:41 am	WINDSOR LOCKS, CT	On FedEx vehicle for delivery
7:31 am	WINDSOR LOCKS, CT	At local FedEx facility

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client S+ME

Received By MP Date 10/22/19 Time 855

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____
Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 5 Actual Temp - 2.9
By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? NA Were Samples Tampered with? NA
Was COC Relinquished ? T Does Chain Agree With Samples? T
Are there broken/leaking/loose caps on any samples? F
Is COC in ink/ Legible? T Were samples received within holding time? T
Did COC include all pertinent Information? Client T Analysis T Sampler Name T
Project T ID's T Collection Dates/Times T
Are Sample labels filled out and legible? T
Are there Lab to Filters? F Who was notified? _____
Are there Rushes? F Who was notified? _____
Are there Short Holds? F Who was notified? _____
Is there enough Volume? T
Is there Headspace where applicable? F MS/MSD? F
Proper Media/Containers Used? T Is splitting samples required? F
Were trip blanks received? F On COC? F
Do all samples have the proper pH? NA Acid _____ Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.	2	1 Liter Plastic		16 oz Amb.	
HCL-	3	500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

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 78 - BP I Mart
501-503 Spring Branch 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
78	I – Mart, LLC	(BP I-Mart) 501-503 Spring Branch (aka Pope Road), Dunn, NC

The property is developed with an active gasoline/convenience store identified as BP I-Mart. The petroleum underground storage tanks (USTs) that the BP I-Mart operate are located on the southern end of the property adjoining Parcel 200 (Former T-Mart). The western end of the USTs extend across the ROW. The BP I-Mart and the former T-Mart are both listed with the same UST Facility ID No. of 0-00-000017633. Information regarding the UST system listed for the BP I-Mart is provided in the following table:

UST Facility ID No. 0-00-000017633

Number of Tanks	Contents	Capacity (gallons)	Date Installed	Date Removed
1	Gasoline	10,000	8/15/1999	Active USTs
2	Gasoline	10,000	8/15/1999	Active USTs
3	Gasoline	8,000	8/15/1999	Active USTs

The BP I-Mart property is not listed with a North Carolina Department of Environmental Quality (NCDEQ) Incident associated with petroleum releases from USTs or aboveground storage tanks. However, the location of the existing USTs for the BP I-Mart are located near the former UST area for the adjoining Former T-Mart. In addition, a well identified as RW-2 (previously MW-4) associated with the Former T-Mart release is located on the BP I-Mart property within the ROW. The BP I-Mart site is located downgradient of the Former T-Mart. However, free product has previously been measured in RW-2. In 2017, several petroleum constituents were reported in RW-2 at concentrations exceeding their respective15A NCAC 2L Groundwater Quality Standards (2L Standards) *AFVR and Groundwater Monitoring Report* prepared by Geologic Resources, Inc dated May 25, 2017).

The PSA included a geophysical survey and subsequent limited soil sampling (11 soil borings up to 10 feet below ground surface (ft.-bgs)) and limited groundwater sampling (one groundwater sample), 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 and groundwater 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 78. 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 landscaping/vegetations within the survey area, however, prevented TDEM data collection in a small area at the northeastern corner 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 three GPR profiles (Lines 1 through 3) were collected for documentation (**Figure 7**). The data was post-processed using the GSSI Radan® 7 GPR software program for additional analysis.

Geophysical Findings

Anomalous features unrelated to known surficial targets were not identified in the geophysical data sets. However, the locations of the current three existing USTs, extending into the survey area, were confirmed by the GPR survey **(Figures 6 and 7).** The identified USTs are characterized by high amplitude GPR responses located about 2.5 ft.-bgs. An example GPR profile is presented in **Figure 8.**

♦ Soil Sampling

On October 28, 2019, Troxler Geologic, Inc. (Troxler's) drill crew utilized a track mounted Geoprobe® rig to advance 11 soil borings (B-1 through B-11) and to collect soil samples within accessible areas of the proposed ROW/easement at Parcel 78. The approximate location of the soil borings are shown in **Figure 2**. A photographic

log is included in **Appendix I.** 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 encountered at a depth of approximately seven ft.-bgs. 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.**

Petroleum odors and slightly elevated PID readings were noted at borings B-5 through B-10, which were located near the existing USTs and former UST basin areas. Petroleum odors were noted at borings B-5 and B-6 starting at a depth of approximately two ft.-bgs and extending to approximately four ft.-bgs. Petroleum odors were noted at a depth of approximately 0.5 ft.-bgs at borings B-7 and B-8 and extending to approximately four ft.-bgs and eight ft.-bgs, respectively. Petroleum odors were noted at borings B-9 from approximately two ft.-bgs to seven ft.-bgs. Petroleum odors were noted at boring B-10 from approximately 4 ft.-bgs to eight ft.-bgs. Groundwater was encountered at a depth of approximately seven ft.-bgs. Therefore, a soil sample was selected from these borings at the two to four foot depth interval or the four to six foot depth. 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 11 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.

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 their respective North Carolina TPH Action Levels. TPH-GRO and TPH-DRO were reported in borings B-2 and B-3 at the two to four foot depth interval at concentrations above the laboratory reporting limits but well below their North Carolina TPH Action Levels. TPH-DRO was also reported in borings B-1, B-4, B-5, and B-8 at the two to four foot depth interval and borings B-9 and B-11 at the four to six foot depth interval at concentrations 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 III.**

♦ Groundwater Sampling

During the advancement of the soil borings, groundwater was encountered at a depth of approximately seven ft.-bgs. The vault for the existing well identified as RW-2 located within the ROW on the property was filled with rain water and was not gauged or sampled. Therefore, the Geoprobe® was used to advance one of the soil borings into the groundwater table for the collection of a groundwater sample. Based on petroleum odors, apparent downgradient location from the existing USTs and location near the former USTs, boring B-7, was selected for

collection of a groundwater sample. A temporary monitor well (TW-1) was installed at boring B-7 to a depth of approximately 11.5 ft.-bgs using a ten foot section of one-inch diameter, Schedule 40 PVC well riser attached to a five foot section of 0.01-inch slotted screen that intersected the groundwater table. Groundwater within the temporary monitor well at boring B-7 was measured at 6.78 ft.-bgs. Groundwater was purged from the temporary well until relatively clear using disposable tubing attached to a peristaltic pump. The flow rate was reduced and laboratory supplied containers were filled directly from the tubing, labeled as TW-1 and placed in an insulated cooler with ice for transport to Con-Test Laboratories (Con-Test) for analysis of VOCs by EPA Method 8260 and polycyclic aromatic compounds (PAHs) by EPA Method 8270.

Upon completion of the soil and groundwater sampling, the well materials were removed and the soil borings backfilled with bentonite pellets and soil cuttings. Investigative derived wastes (IDW), such as 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 and tubing were bagged and disposed off-site.

Groundwater Analytical Results

Based upon analytical results of the groundwater sample analyzed by Con-Test, numerous petroleum related target constituents were reported at concentrations exceeding their 2L Standards. Benzene was the highest constituent reported above its 2L Standard at a concentration of 330 micrograms per liter (µg/L), which exceeds its 2L Standard of 1 µg/L. A summary of the groundwater analytical results is presented in **Table 2** and shown on **Figure 3.** A copy of the laboratory analytical report provided by Con-Test is presented in **Appendix III.**

♦ Conclusion and Recommendations

Existing groundwater monitoring well identified as RW-2 (previously MW-4) is located on the property within the ROW. The well is associated with a UST release from the Former T-Mart (NCDEQ Incident # 18955), which adjoins the property to the south. Free product has previously been measured in RW-2. In 2017, several petroleum constituents were reported in RW-2 at concentrations exceeding their respective 2L Standards.

The geophysical survey confirmed the locations of the current three existing, active, USTs associated with the BP I-Mart. The western ends of the two 10,000-gallon gasoline and one 8,000-gallon gasoline USTs extend across the ROW. The location of the existing USTs for the BP I-Mart are located near the former UST area for the adjoining Former T-Mart.

S&ME advanced 11 soil borings (B-1 through B-11) to a depth of up to approximately 10 ft.-bgs at the site. Petroleum odors and elevated PID readings were noted at borings B-5 through B-10, which were located near the existing USTs and former UST basin areas. Petroleum odors were noted starting at depths ranging from 0.5 ft.-bgs and extending to up to boring termination at eight ft.-bgs. Groundwater was encountered at a depth of approximately seven ft.-bgs. Selected soil samples from the soil borings were analyzed for TPH-GRO and TPH-DRO using UVF spectroscopy.

TPH-GRO and TPH-DRO were not reported at concentrations exceeding their respective North Carolina TPH Action Levels. TPH-GRO and TPH-DRO were reported in borings B-2 and B-3 at the two to four foot depth interval. TPH-DRO was also reported in borings B-1, B-4, B-5, and B-8 at the two to four foot depth interval.

However, TPH-GRO and TPH-DRO were reported in these borings at concentrations well below their North Carolina TPH Action Levels. 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 encountered at a depth of approximately seven ft.-bgs. One temporary well (TW-1) was installed at soil boring B-7 located at an apparent downgradient location from the existing USTs and near the former UST area. Groundwater at TW-1 was measured at 6.78 ft.-bgs and analyzed by Con-Test for VOCs by EPA Method 8260 and PAHs by EPA Method 8270. Several petroleum related target constituents were reported at concentrations exceeding their 2L Standards.

Based on the findings of the geophysical survey, the western end of three existing, active, USTs extend across the ROW. Based on the analytical results of soil and groundwater samples, it is likely that during construction, NCDOT may encounter marginally impacted soil (below TPH Action Levels) and groundwater impacted with petroleum at the site. Petroleum odors were noted in soil samples at depths ranging from 0.5 ft.-bgs to boring termination at eight ft.-bgs, which extends into the groundwater encountered at approximately seven ft.-bgs. However, TPH-GRO and TPH-DRO were not reported at concentration exceeding their TPH Action Levels.

It should also be assumed that saturated petroleum impacted soil will be encountered if construction excavations extend deeper than seven ft.-bgs on the site. If construction dewatering is required, petroleum impacted groundwater must be properly disposed or treated at a licensed facility. If petroleum stained or odorous soils are encountered during construction, these soils should be properly handled and disposed at a licensed facility.

S&ME recommends maintaining an awareness level for the presence of marginally impacted petroleum in the soil (below TPH Action Levels) 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., 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 six 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,

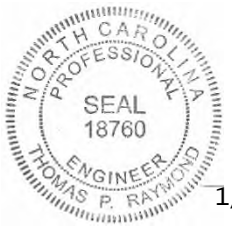
S&ME, Inc.

DocuSigned by:
Jamie Honeycutt
4C890EAEC25F488...

Jamie T Honeycutt
Environmental Professional
jhoneycutt@smeinc.com

DocuSigned by:
Michael Pfeifer
861E52DDEFAF4C7...

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



DocuSigned by:
Tom Raymond
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
Table 2: Summary of Groundwater Sampling Results

Figure 1: Vicinity Map
Figure 2: Site Map
Figure 3: Soil and Groundwater 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 – Line 3

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-5878
Parcel 78 - (BP I-Mart)
501 - 503 Spring Branch Road
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→ / Sample Depth (ft.-bgs)	TPH-GRO	TPH-DRO
B-1	10/28/2019	2 to 4	<0.52	**1.2**
B-2	10/28/2019	2 to 4	**2.6**	**25**
B-3	10/28/2019	2 to 4	**3.7**	**27.6**
B-4	10/28/2019	2 to 4	<0.49	**1.4**
B-5	10/28/2019	2 to 4	<0.53	**3.8**
B-6	10/28/2019	2 to 4	<0.27	<0.27
B-7	10/28/2019	2 to 4	<0.5	<0.5
B-8	10/28/2019	2 to 4	<0.26	**0.26**
B-9	10/28/2019	4 to 6	<0.29	**11**
B-10	10/28/2019	4 to 6	<0.29	<0.29
B-11	10/28/2019	4 to 6	<0.28	**5.7**
North Carolina TPH Action Levels			**50**	**100**

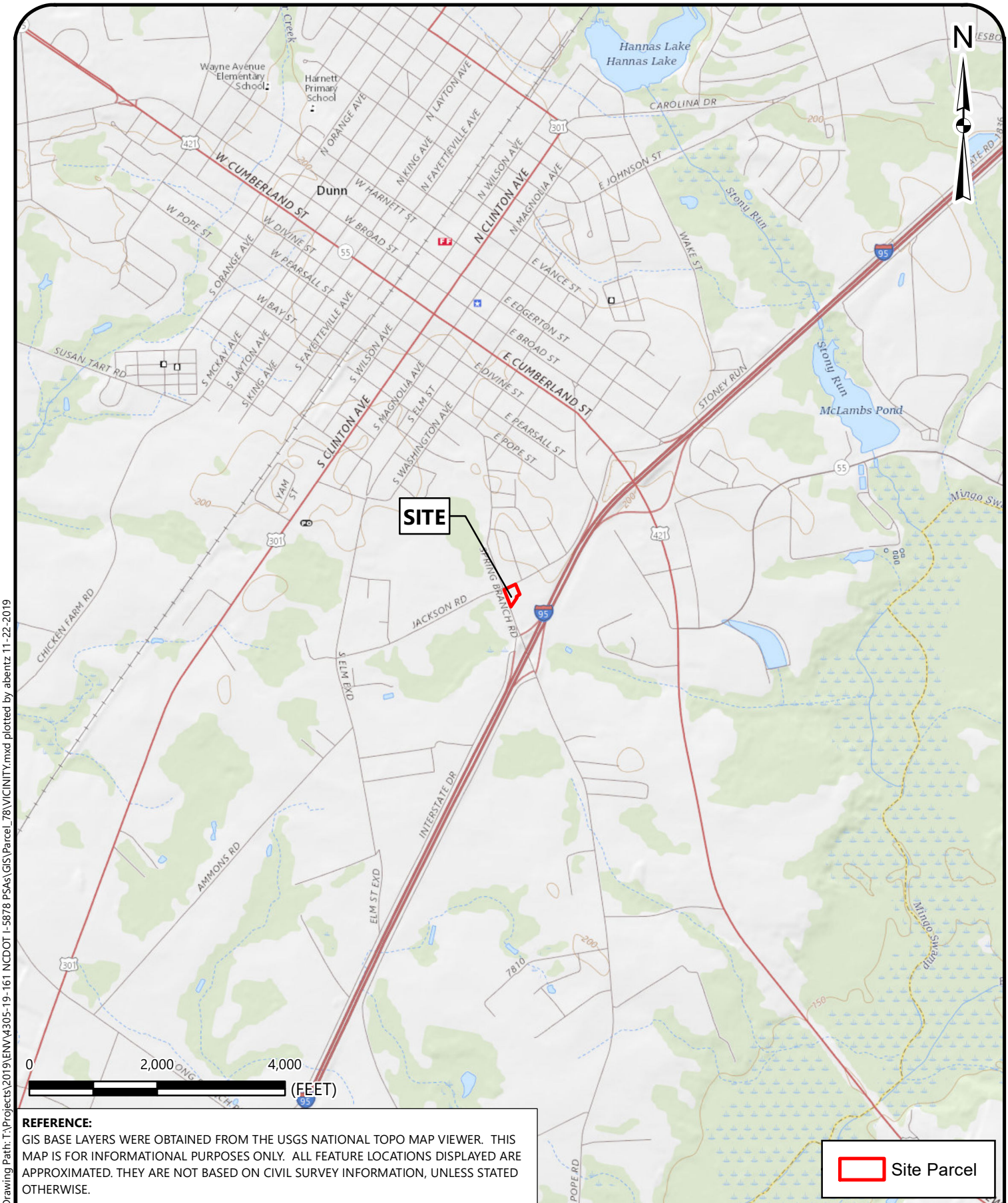
Notes:
1. UVF analysis performed by RED Lab, LLC
2. Concentrations are reported in milligrams per kilogram (mg/Kg).
3. ft.-bgs:- feet below ground surface.
4. Concentrations exceeding the laboratory's reporting limits are shown in **BOLD** fields.
5. Concentrations exceeding the North Carolina TPH Action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

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS
NCDOT Project I-5878
Parcel 78 - (BP I-Mart)
501 - 503 Spring Branch Road
Dunn, Harnett County, North Carolina
S&ME Project No. 4305-19-161

Analytical Method→		Volatile Organic Compounds by EPA Method 8260														Polycyclic Aromatic Compounds (PAHs) by EPA Method 8270							
Sample ID	Contaminant of Concern→ / Date	Benzene	Diisopropyl Ether	Ethylbenzene	Isopropylbenzene	MTBE	Naphthalene	n-Butylbenzene	sec-Butylbenzene	tert-Butyl Alcohol	n-Propylbenzene	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Total Xylenes	Acenaphthene	Acenaphthylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	2-Methylnaphthalene
B-7/TW-1	10/28/2019	**330**	**2.0 J**	**19**	**3.2 J**	**11**	**37**	**3.8 J**	**1.2 J**	**480**	**3.9 J**	**12**	**8.3**	**1.0 J**	**43**	**0.13 J**	**0.079 J**	**0.052 J**	**0.14 J**	**25**	**0.13**	**0.049 J**	**21**
2L Standard (µg/L)		**1**	**70**	**600**	**70**	**20**	**6**	**70**	**70**	**10**	**70**	**600**	**400**	**400**	**500**	**80**	**200**	**300**	**300**	**6**	**200**	**200**	**30**
GCL (µg/L)		**5,000**	**70,000**	**84,500**	**25,000**	**20,000**	**6,000**	**6,900**	**8,500**	**10,000**	**30,000**	**260,000**	**28,500**	**25,000**	**85,500**	**2,120**	**1,965**	**300**	**990**	**6,000**	**410**	**200**	**12,500**

Notes:
1. Analytes that are not shown for the method were not detected.
2. Concentrations are reported in micrograms per liter (µg/L).
3. 2L Standard: North Carolina Groundwater Quality Standards: 15A NCAC 2L.0202
4. Concentrations exceeding the laboratory's reporting limits are shown in **BOLD** fields.
5. Concentrations exceeding the 2L Standards are shown in Shaded and **BOLD** fields.
6. GCL: Gross Contamination Level.
7. J: Estimated concentration detected below the reporting limit.

Figures



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.

Drawing Path: T:\Projects\2019\ENV\4305-19-161 NCDOT I-5878 PSAs\GIS\Parcel_78\VICINITY.mxd plotted by abentz 11-22-2019

VICINITY MAP

NCDOT PROJECT I-5878
PARCEL NO. 78 (BP I-MART)
501-503 SPRING BRANCH RD
DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE: 1 " = 2,000 '
DATE: 11-22-19
PROJECT NUMBER 4305-19-161
FIGURE NO. 1

LEGEND

Geoenvironmental Boring:

Underground Storage Tank (UST): UST

Map Source: NCDOT Project I-5986B
Image Source: NC ONEMAP, Dated 2016

Known Soil Contamination:

Possible Soil Contamination: — S —

Existing Contamination Known - Water: — W —

Existing Monitoring Well:

0 40 80
GRAPHIC SCALE (IN FEET)

SITE MAP

NCDOT Project: I-5878
PARCEL 78 - BP I-MART
501-503 Spring Branch Road, Dunn, Harnett County, North Carolina

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

Notes:
mg/kg: Milligrams per Kilogram
µg/L: Micrograms per Liter
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
BOLD#: Indicates Exceedance of 2L Groundwater Samples
ft-bgs : Feet Below Ground Surface

Samples Collected 10-28-2019.

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

PARCEL 78
I-Mart, LLC

TW-1	µg/L
EPA Method 8260	
Benzene	**330#**
Disopropyl Ether	2.0
Ethylbenzene	19
Isopropylbenzene	3.2
MTBE	11
Naphthalene	**37#**
n-Butylbenzene	3.8
sec-butylbenzene	1.2
tert-Butyl Alcohol	**480#**
n-Propylbenzene	3.9
Toluene	12
1,2,4-Trimethylbenzene	8.3
1,3,5-Trimethylbenzene	1.0
Total Xylenes	43
EPA Method 8270	
Acenaphthene	0.13
Acenaphthylene	0.079
Fluoranthene	0.052
Fluorene	0.14
Naphthalene	**25#**
Phenanthrene	0.13
2-Methylnaphthalene	21

B-7

(ft-bgs) Sample Depth	(mg/kg) GRO	DRO
2-4	<0.5	<0.5

B-3

(ft-bgs) Sample Depth	(mg/kg) GRO	DRO
2-4	3.7	27.6

B-1

(ft-bgs) Sample Depth	(mg/kg) GRO	DRO
2-4	<0.52	1.2

B-8

(ft-bgs) Sample Depth	(mg/kg) GRO	DRO
2-4	<0.26	0.26

B-9

(ft-bgs) Sample Depth	(mg/kg) GRO	DRO
4-6	<0.29	11

B-11

(ft-bgs) Sample Depth	(mg/kg) GRO	DRO
4-6	<0.28	5.7

B-2

(ft-bgs) Sample Depth	(mg/kg) GRO	DRO
2-4	2.6	25

B-4

(ft-bgs) Sample Depth	(mg/kg) GRO	DRO
2-4	<0.49	1.4

B-10

(ft-bgs) Sample Depth	(mg/kg) GRO	DRO
4-6	<0.29	<0.29

B-5

(ft-bgs) Sample Depth	(mg/kg) GRO	DRO
2-4	<0.53	3.8

B-6

(ft-bgs) Sample Depth	(mg/kg) GRO	DRO
2-4	<0.27	<0.27

B-1 B-2 B-3 B-4 B-5 B-6 B-7/TW-1 B-8 B-9 B-10 B-11 RW-2

LEGEND

Geoenvironmental Boring:
Underground Storage Tank (UST): UST
Known Soil Contamination:
Possible Soil Contamination: — S —
Existing Contamination Known - Water: — W —
Existing Monitoring Well:

Map Source: NCDOT Project I-5986B
Image Source: NC ONEMAP, Dated 2016

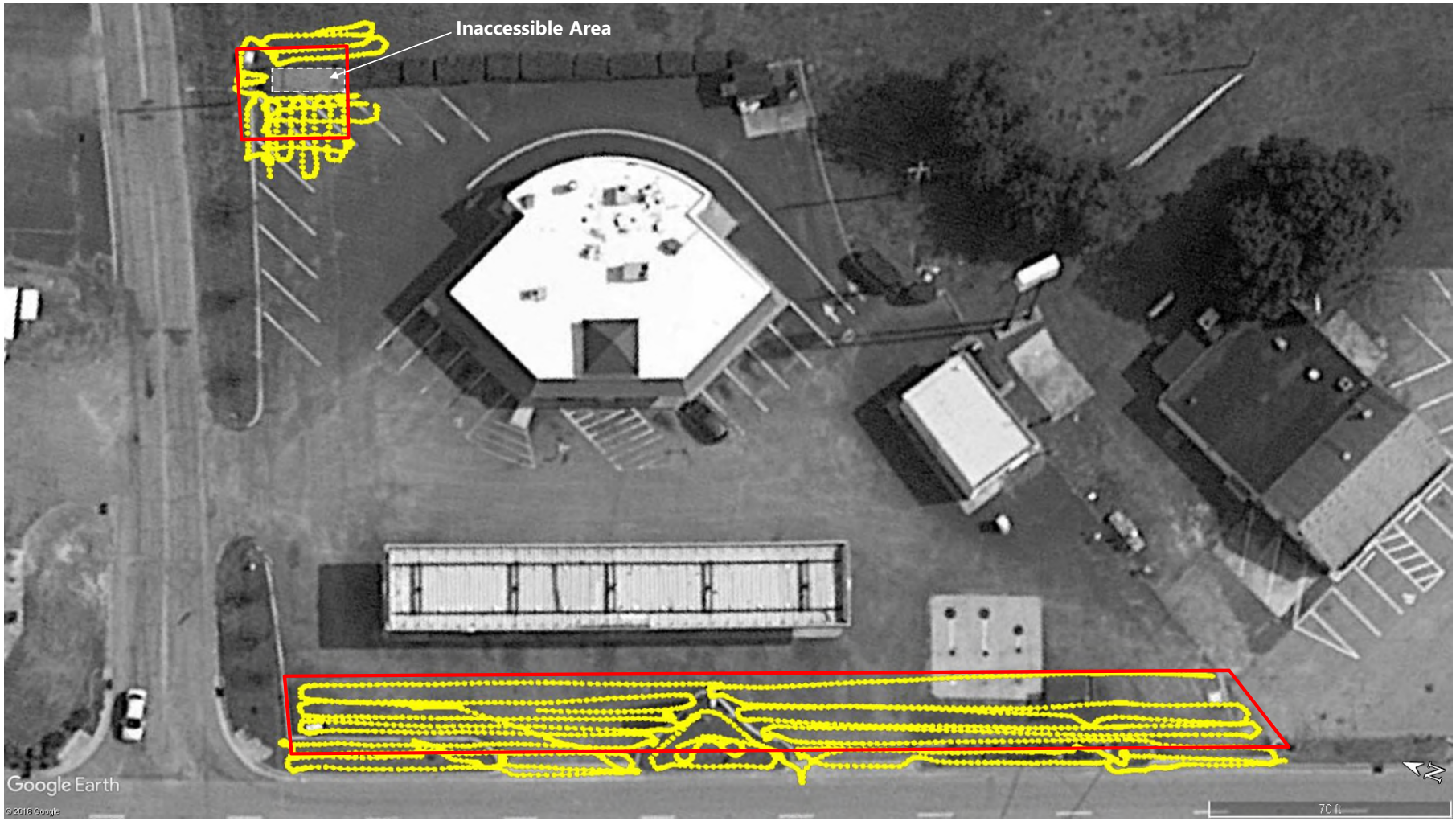
0 40 80
GRAPHIC SCALE (IN FEET)

SOIL AND GROUNDWATER CONSTITUENT MAP

NCDOT Project: I-5878
PARCEL 78 - BP I-MART
501-503 Spring Branch Road, 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 4, 2018)



LEGEND

Approximate TDEM Path

Approximate Requested Survey Area

TDEM PATH LOCATION PLAN

NCDOT PROJECT: I-5878
PARCEL #78 – (BP I-MART)
501-503 SPRING BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

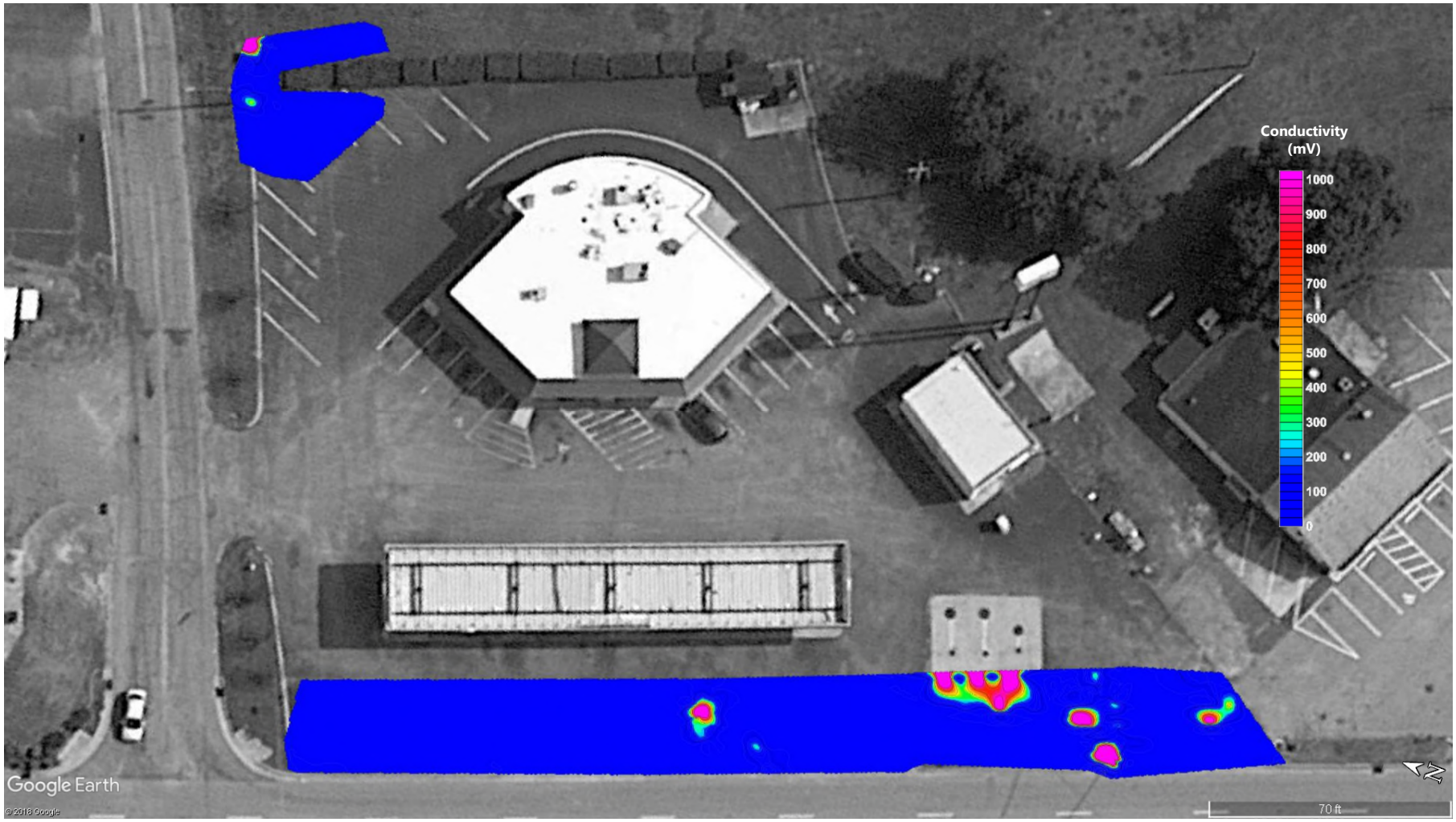
SCALE:
AS SHOWN

DATE:
11/26/2019

PROJECT NUMBER
4305-19-161

FIGURE NO.
4

REFERENCE:
GOOGLE EARTH PRO AERIAL PHOTOGRAPH
(DATED MARCH 4, 2018)



TDEM DATA PLOT A

NCDOT PROJECT: I-5878
PARCEL #78 – (BP I-MART)
501-503 SPRING BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

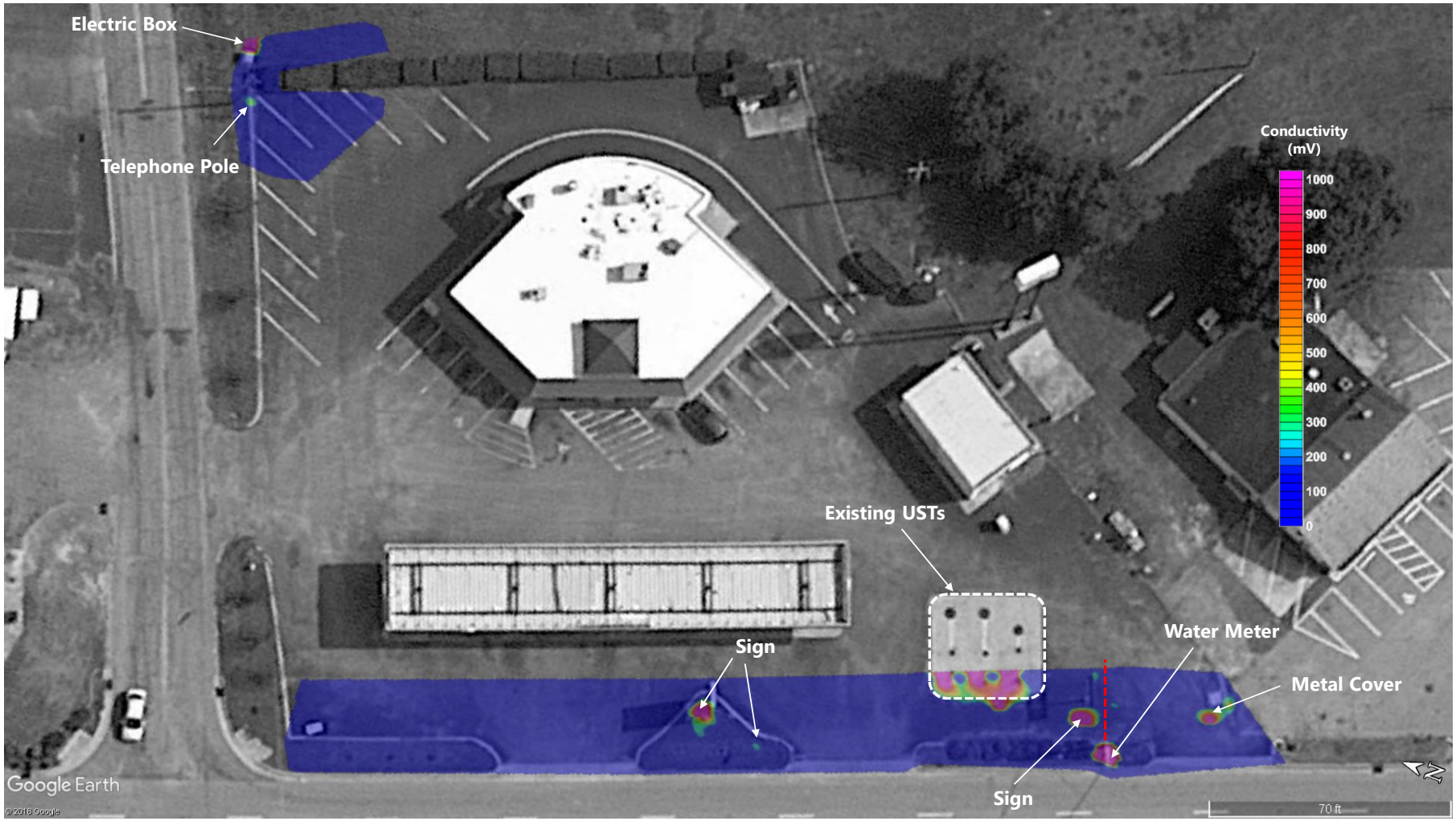
SCALE:
AS SHOWN

DATE:
11/26/2019

PROJECT NUMBER
4305-19-161

FIGURE NO.
5

REFERENCE:
GOOGLE EARTH PRO AERIAL PHOTOGRAPH
(DATED MARCH 4, 2018)



LEGEND

Approximate Location of Geophysical Anomaly

Approximate Location of Possible Utility

TDEM DATA PLOT B

NCDOT PROJECT: I-5878
PARCEL #78 – (BP I-MART)
501-503 SPRING BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

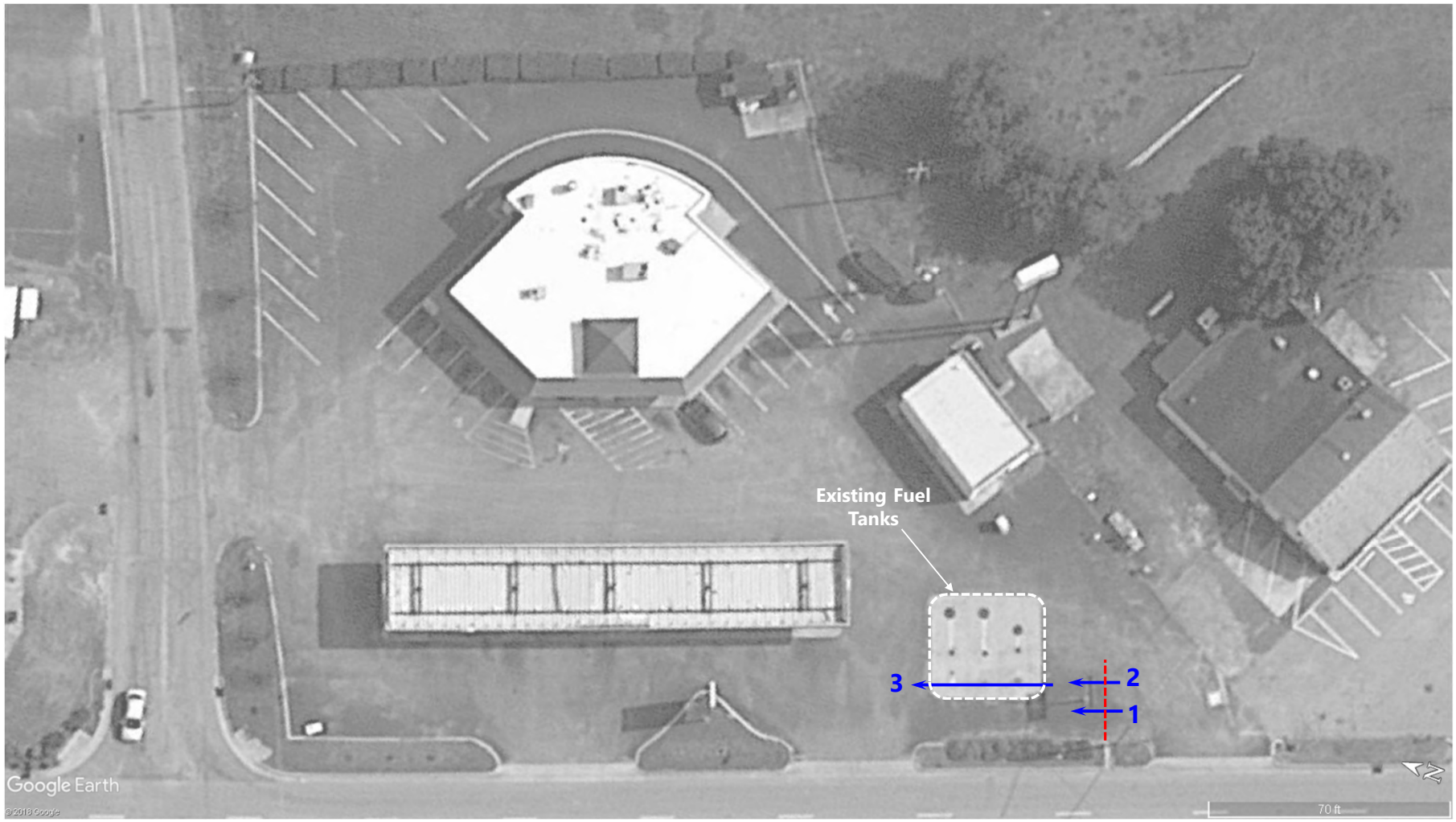
SCALE:
AS SHOWN

DATE:
11/26/2019

PROJECT NUMBER
4305-19-161

FIGURE NO.
6

REFERENCE:
GOOGLE EARTH PRO AERIAL PHOTOGRAPH
(DATED MARCH 4, 2018)



LEGEND

Approximate Location of Possible Utility

Approximate Location of GPR Profile

GEOPHYSICAL ANOMALY LOCATION PLAN

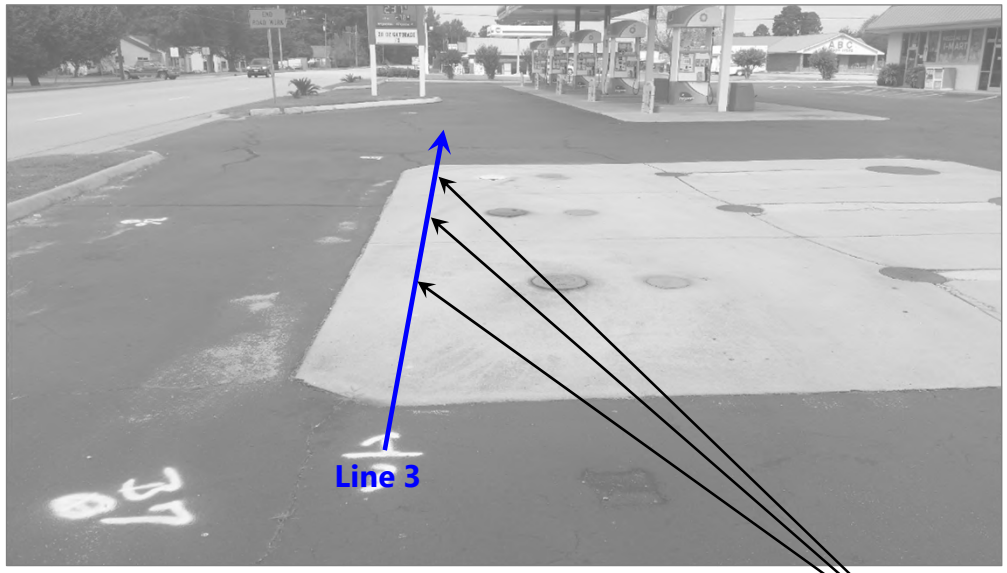
NCDOT PROJECT: I-5878
PARCEL #78 – (BP I-MART)
501-503 SPRING BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

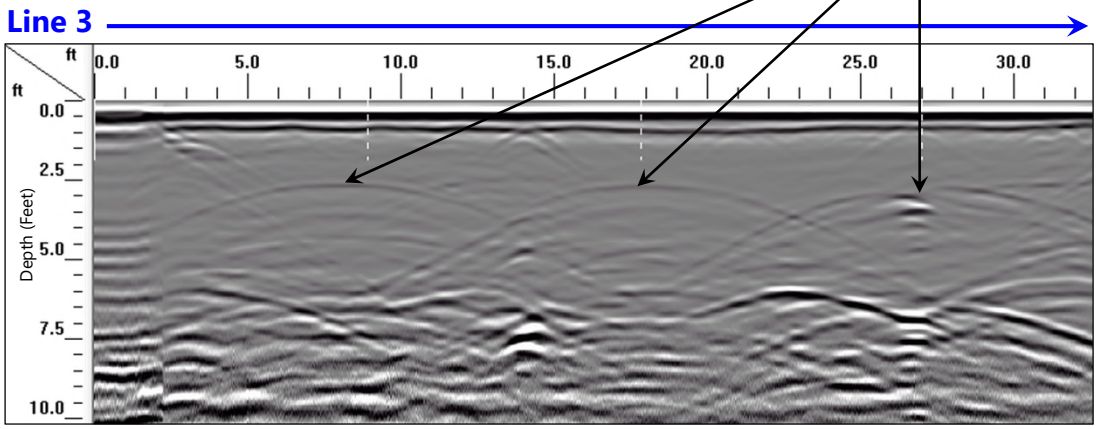
SCALE:
AS SHOWN

DATE:
11/26/2019

PROJECT NUMBER
4305-19-161

FIGURE NO.
7





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

EXAMPLE GPR DATA – LINE 3

NCDOT PROJECT: I-5878
PARCEL #78 – (BP I-MART)
501-503 SPRING BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE: AS SHOWN

DATE: 11/26/2019

PROJECT NUMBER 4305-19-161

FIGURE NO. **8**

Appendix I – Photographs

Date: 10/28/2019

Photographer: JTH

1		
	Location / Orientation	View of site looking north.
	Remarks	Note existing active USTs.

Date: 10/28/2019

Photographer: JTH

2		
	Location / Orientation	View looking south across UST area.
	Remarks	Note Parcel 200 in background.

Date: 10/28/2019

Photographer: JTH

3	**Location / Orientation**	View looking south. Note RW-2 located on the site.
	Remarks	Note Parcel 200 in background.

Date: 10/28/2019

Photographer: JTH

4	**Location / Orientation**	Sampling of B-7/TW-1
	Remarks	Note its location near the USTs.

Appendix II – Boring Logs

PROJECT:	**NCDOT I-5878** Parcel 78-501-503 Spring Branch Rd (BP - I-Mart), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-1**
DATE DRILLED:	Monday, October 28, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	7
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Asphalt, Gravel,								
		Sandy Clay, Orange,			0.0	No				
					0.2	Yes	1210			
5					0.5	No				
		Silty Sand, Orange, Red,	▼							
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 78-501-503 Spring Branch Rd (BP - I-Mart), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-2**
DATE DRILLED:	Monday, October 28, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	7
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Asphalt, Gravel,								
		Sandy Clay, Orange,			0.0	No				
					0.6	Yes	1220			
5					0.7	No				
		Silty Sand, Orange, Red,	▼							
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 78-501-503 Spring Branch Rd (BP - I-Mart), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-3**
DATE DRILLED:	Monday, October 28, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	7
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Asphalt, Gravel,								
		Sandy Clay, Orange,			1.3	No				
					1.5	Yes	1230			
5					0.6	No				
		Silty Sand, Orange, Red,	▼							
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 78-501-503 Spring Branch Rd (BP - I-Mart), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-4**
DATE DRILLED:	Monday, October 28, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	7
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Asphalt, Gravel,								
		Sandy Clay, Orange,			0.9	No				
					2.3	Yes	1245			
5		Sandy Clay, Red, Orange, Gray,	▼							
					3.4	No				
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 78-501-503 Spring Branch Rd (BP - I-Mart), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-5**
DATE DRILLED:	Monday, October 28, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	7
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Asphalt, Gravel,								
		Sandy Clay, Orange, Red, Gray,			39.7	No				
		Sandy Clay, Orange, Red, Gray, Slight Petroleum Odors			66.9	Yes	1430			
5		Sandy Clay, Orange, Red, Gray,			23.8	No				
		Silty Sand, Red, Orange,	▼							
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 78-501-503 Spring Branch Rd (BP - I-Mart), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-6**
DATE DRILLED:	Monday, October 28, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	7
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Topsoil,								
		Sandy Clay, Orange,			0.0	No				
		Sandy Clay, Orange, Slight Petroleum Odors			13.8	Yes	1445			
5		Sandy Clay, Orange, Red, Gray,								
		Silty Sand, Red, Orange,			13.1	No				
			▼							
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 78-501-503 Spring Branch Rd (BP - I-Mart), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-7/TW-1**
DATE DRILLED:	Monday, October 28, 2019	BORING DEPTH (FT):	12
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	6.78
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Asphalt, Gravel,								
		Sandy Clay, Orange, Slight Petroleum Odors			2.1	No				
					9.4	Yes	1500			
5		Sandy Clay, Orange,								
			▼		2.3	No				
		Sand, Tan, Orange,								
10										
		Boring Terminated at 12 Ft-BGS								
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 78-501-503 Spring Branch Rd (BP - I-Mart), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-8**
DATE DRILLED:	Monday, October 28, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	7
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Asphalt, Gravel,								
		Clayey Sand, Tan, Slight Petroleum Odors			21.5	No				
					10.3	Yes	1530			
5		Silty Sand, Orange, Red, Slight Petroleum Odors	▼		8.2	No				
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 78-501-503 Spring Branch Rd (BP - I-Mart), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-9**
DATE DRILLED:	Monday, October 28, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	7
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Asphalt, Gravel,								
		Clayey Sand, Tan, Red,								
					15.4	No				
		Clayey Sand, Tan, Red, Petroleum Odors								
					21.2	No				
5										
					28.4	Yes	1545			
		Silty Sand, Tan, Red,	▼							
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 78-501-503 Spring Branch Rd (BP - I-Mart), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-10**
DATE DRILLED:	Monday, October 28, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	7
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Asphalt, Gravel,								
		Clayey Sand, Tan, Red,			1.3	No				
		Clayey Sand, Tan, Red,			4.0	No				
5		Clayey Sand, Tan, Red, Petroleum Odors			6.2	Yes	1600			
		Silty Sand, Tan, Red, Petroleum Odors	▼							
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 78-501-503 Spring Branch Rd (BP - I-Mart), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-11**
DATE DRILLED:	Monday, October 28, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	7
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
0		Asphalt, Gravel,								
		Clayey Sand, Orange,			1.4	No				
					1.2	No				
5			▼		2.7	Yes	1615			
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

Appendix III – Laboratory Analytical Reports and Chain of Custody

QED

REDLAB™ RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

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

Samples taken Monday, October 28, 2019
Samples extracted Monday, October 28, 2019
Samples analysed Tuesday, October 29, 2019

Contact: JAMIE HONEYCUTT

Operator MAX MOYER

Project: NCDOT I-5878 PARCEL 78

U00902

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	B-1 (2-4')	20.6	<0.52	<0.52	1.2	1.2	0.83	<0.17	<0.021	0	62.8	37.2	V.Deg.PHC 76.3%,(FCM),(P)
s	B-2 (2-4')	22.8	<0.57	2.6	25	27.6	9.5	0.42	<0.023	31.5	45.9	22.7	Deg.PHC 78.4%,(FCM),(P)
s	B-3 (2-4')	19.5	<0.49	3.7	27.6	31.3	22.9	0.77	<0.02	30.1	52.8	17.1	Deg Fuel 76.7%,(FCM),(P)
s	B-4 (2-4')	19.4	<0.49	<0.49	1.4	1.4	0.66	<0.16	<0.019	89	8.3	2.7	Deg Fuel 89.1%,(FCM),(P)
s	B-5 (2-4')	21.1	<0.53	<0.53	3.8	3.8	1.7	<0.17	<0.021	0	73.9	26.1	Deg Fuel 89.2%,(FCM)
s	B-6 (2-4')	10.8	<0.27	<0.27	<0.27	0.2	0.2	<0.09	<0.011	0	67.3	32.7	Residual HC,(BO),(P)
s	B-7 (2-4')	20.0	<0.5	<0.5	<0.5	<0.5	<0.1	<0.16	<0.02	0	0	0	Residual HC,(P)
s	B-8 (2-4')	10.3	<0.26	<0.26	0.26	0.26	0.16	<0.08	<0.01	0	75.4	24.6	Deg Fuel 75.1%,(FCM),(P)
s	B-9 (4-6')	11.8	<0.29	<0.29	11	11	10.5	0.41	<0.012	0	80.9	19.1	Deg.Fuel 82.2%,(FCM)
s	B-10 (4-6')	11.8	<0.29	<0.29	<0.29	0.14	0.14	<0.09	<0.012	0	58.9	41.1	Residual HC

Initial Calibrator QC check OK Final FCM QC Check OK 100.8 %

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

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

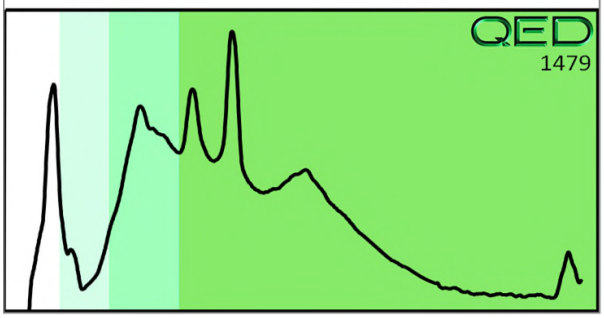
B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

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

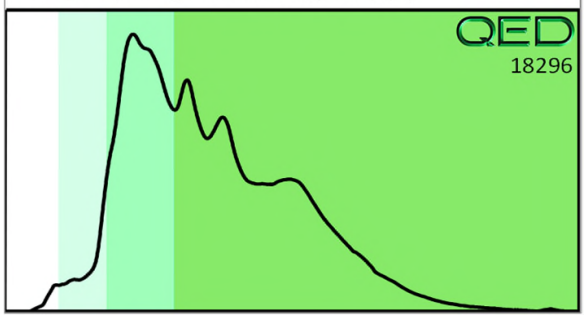
QED Hydrocarbon Fingerprints

Project: NCDOT I-5878 PARCEL 78 ##################

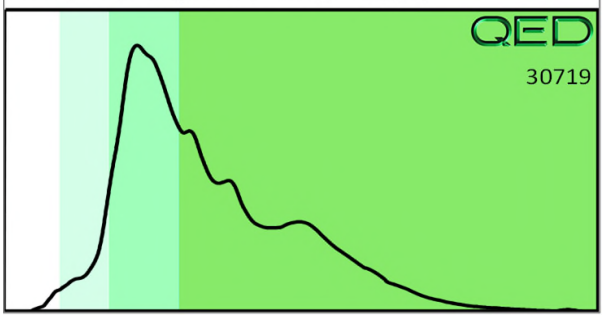
B-1 (2-4') : V.Deg.PHC 76.3%,(FCM),(P)



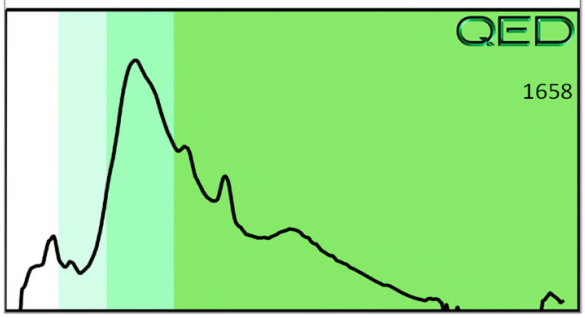
B-2 (2-4') : Deg.PHC 78.4%,(FCM),(P)



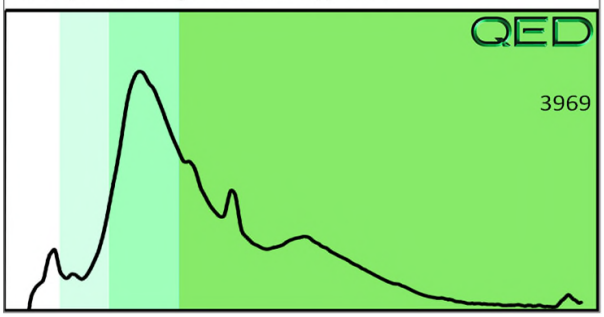
B-3 (2-4') : Deg Fuel 76.7%,(FCM),(P)



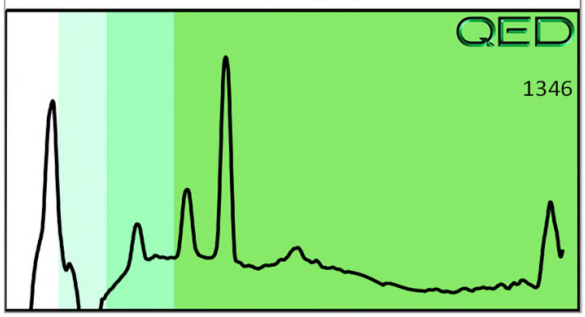
B-4 (2-4') : Deg Fuel 89.1%,(FCM),(P)



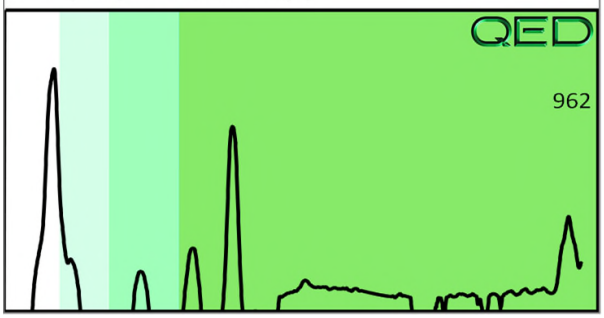
B-5 (2-4') : Deg Fuel 89.2%,(FCM)



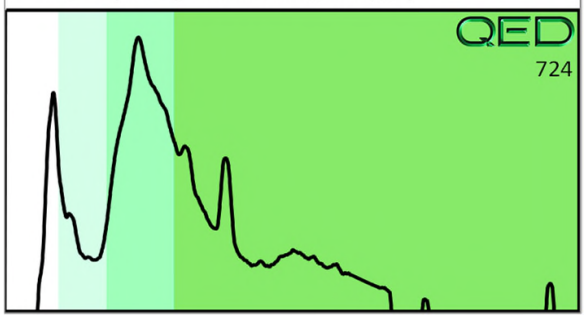
B-6 (2-4') : Residual HC,(BO),(P)



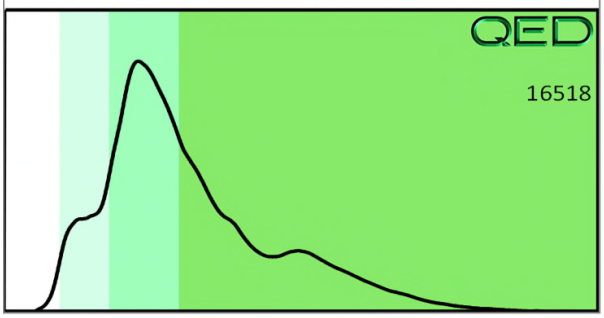
B-7 (2-4') : Residual HC,(P)



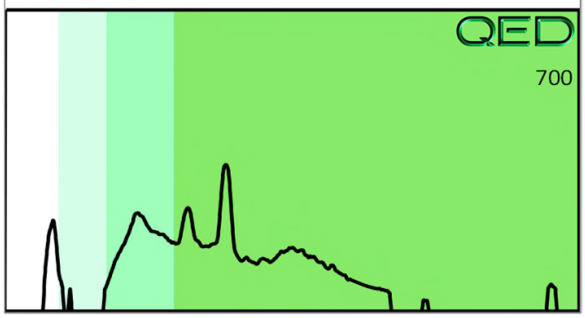
B-8 (2-4') : Deg Fuel 75.1%,(FCM),(P)



B-9 (4-6') : Deg.Fuel 82.2%,(FCM)



B-10 (4-6') : Residual HC



QED

REDLAB™ RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

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

Samples taken Monday, October 28, 2019
Samples extracted Monday, October 28, 2019
Samples analysed Tuesday, October 29, 2019

Contact: JAMIE HONEYCUTT

Operator MAX MOYER

Project: NCDOT I-5878 PARCEL 78

U00902

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
S	B-11 (4-6')	11.0	<0.28	<0.28	5.7	5.7	3.3	0.12	<0.011	0	78.3	21.7	Deg Fuel 92.2%,(FCM)

Initial Calibrator QC check OK

Final FCM QC Check OK 99.3 %

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

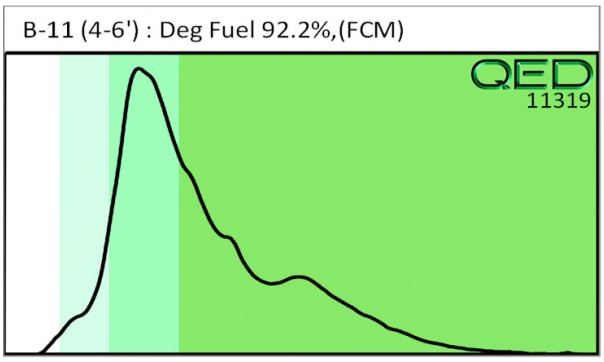
Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

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

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

QED Hydrocarbon Fingerprints

Project: NCDOT I-5878 PARCEL 78 ##################



NCDOT I-5878 Parcel 78

Client Name:	S+ME
Address:	3201 Spring Forest Rd Raleigh NC
Contact:	Jamie + Honeycutt
Project Ref.:	NCDOT - I-5878 Parcel 78
Email:	jhoneycutt@smeinc.com
Phone #:	910 977-7614
Collected by:	Jamie T Honeycutt

Dunn, NC

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

Sample Collection Date/Time	TAT Requested 24 Hour	TAT Requested 48 Hour	Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
10-28-19 1210		✓	JTH	B-1 2-4'	57.1	44.5	12.6
1220				B-2 2-4'	56.2	44.8	11.4
1230				B-3 2-4'	57.2	43.9	13.3
1245				B-4 2-4'	57.7	44.3	13.4
1430				B-5 2-4'	56.7	44.4	12.3
1445				B-6 2-4'	57.5	44.5	13.0
1500				B-7 2-4'	57.6	44.6	13.0
1530				B-8 2-4'	57.4	43.8	13.6
1545				B-9 4-6'	56.3	44.4	11.9
1600				B-10 4-6'	56.7	44.8	11.9
1615				B-11 4-6'	57.5	44.8	12.7

Comments:

Relinquished by	Date/Time	Accepted by	Date/Time
Jamie T Honeycutt 10/28/19	10/28/19 1900	MM 10/29/19	1000
Relinquished by	Date/Time	Accepted by	Date/Time

RED Lab USE ONLY

11

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

November 11, 2019

Jamie Honeycutt
S&ME, Inc - Raleigh, NC
3201 Spring Forest Rd.
Raleigh, NC 27616

Project Location: Dunn, NC
Client Job Number:
Project Number: 4305-19-161
Laboratory Work Order Number: 19J1775

Enclosed are results of analyses for samples received by the laboratory on October 28, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kerry K. McGee
Project Manager

Table of Contents

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

S&ME, Inc - Raleigh, NC
3201 Spring Forest Rd.
Raleigh, NC 27616
ATTN: Jamie Honeycutt

REPORT DATE: 11/11/2019

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 4305-19-161

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19J1775

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Dunn, NC

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
TW-1	19J1775-01	Ground Water		SW-846 8260D SW-846 8270E	

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

EXECUTIVE SUMMARY

Client ID: **TW-1** Lab ID: **19J1775-01**

Analyte	Results/Qual		DL	RL	Units	Method
1,2,4-Trimethylbenzene	8.3		0.90	5.0	µg/L	SW-846 8260D
1,3,5-Trimethylbenzene	1.0	J	0.70	5.0	µg/L	SW-846 8260D
Benzene	330		0.90	5.0	µg/L	SW-846 8260D
Diisopropyl Ether (DIPE)	2.0	J	0.85	2.5	µg/L	SW-846 8260D
Ethylbenzene	19		0.65	5.0	µg/L	SW-846 8260D
Isopropylbenzene (Cumene)	3.2	J	0.85	5.0	µg/L	SW-846 8260D
m+p Xylene	33		1.5	10	µg/L	SW-846 8260D
Methyl tert-Butyl Ether (MTBE)	11		1.2	5.0	µg/L	SW-846 8260D
Naphthalene	37		1.6	25	µg/L	SW-846 8260D
n-Butylbenzene	3.8	J	1.0	5.0	µg/L	SW-846 8260D
n-Propylbenzene	3.9	J	0.65	5.0	µg/L	SW-846 8260D
o-Xylene	10		0.85	5.0	µg/L	SW-846 8260D
sec-Butylbenzene	1.2	J	0.80	5.0	µg/L	SW-846 8260D
tert-Butyl Alcohol (TBA)	480		21	100	µg/L	SW-846 8260D
Toluene	12		0.70	5.0	µg/L	SW-846 8260D
2-Methylnaphthalene (SIM)	21		0.65	10	µg/L	SW-846 8270E
Acenaphthene (SIM)	0.13	J	0.034	0.31	µg/L	SW-846 8270E
Acenaphthylene (SIM)	0.079	J	0.036	0.21	µg/L	SW-846 8270E
Fluoranthene (SIM)	0.052	J	0.026	0.52	µg/L	SW-846 8270E
Fluorene (SIM)	0.14	J	0.035	1.0	µg/L	SW-846 8270E
Naphthalene (SIM)	25		2.7	10	µg/L	SW-846 8270E
Phenanthrene (SIM)	0.13		0.031	0.052	µg/L	SW-846 8270E
Pyrene (SIM)	0.049	J	0.024	1.0	µg/L	SW-846 8270E

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

For method 8270, only PAHs were requested and reported.

SW-846 8260D

Qualifications:

L-02

Laboratory fortified blank/laboratory control sample recovery and duplicate recoveries outside of control limits. Data validation is not affected since all results are "not detected" for associated samples in this batch and bias is on the high side.

Analyte & Samples(s) Qualified:

trans-1,4-Dichloro-2-butene
B244975-BS1, B244975-BSD1, S042201-CCV1

Vinyl Chloride
B244975-BS1, B244975-BSD1, S042201-CCV1

RL-11

Elevated reporting limit due to high concentration of target compounds.

Analyte & Samples(s) Qualified:

19J1775-01[TW-1]

V-05

Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

Analyte & Samples(s) Qualified:

tert-Amyl Methyl Ether (TAME)
19J1775-01[TW-1], B244975-BLK1, B244975-BS1, B244975-BSD1, S042201-CCV1

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:

2-Hexanone (MBK)
B244975-BS1, B244975-BSD1, S042201-CCV1

4-Methyl-2-pentanone (MIBK)
B244975-BS1, B244975-BSD1, S042201-CCV1

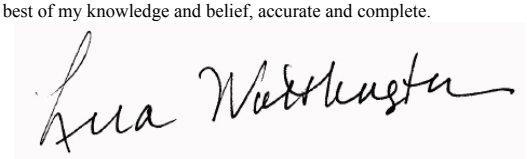
Acetone
B244975-BS1, B244975-BSD1, S042201-CCV1

trans-1,4-Dichloro-2-butene
B244975-BS1, B244975-BSD1, S042201-CCV1

Vinyl Chloride
B244975-BS1, B244975-BSD1, S042201-CCV1

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington
Technical Representative

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Dunn, NC | Sample Description: | Work Order: 19J1775

Date Received: 10/28/2019

Field Sample #: TW-1 | Sampled: 10/28/2019 17:00

Sample ID: 19J1775-01

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	250	19	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Acrylonitrile	ND	25	2.6	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
tert-Amyl Methyl Ether (TAME)	ND	5.0	0.70	µg/L	5	V-05	SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Benzene	330	5.0	0.90	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Bromobenzene	ND	5.0	0.75	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Bromochloromethane	ND	5.0	1.6	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Bromodichloromethane	ND	2.5	0.80	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Bromoform	ND	5.0	2.3	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Bromomethane	ND	10	3.9	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
2-Butanone (MEK)	ND	100	9.7	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
tert-Butyl Alcohol (TBA)	480	100	21	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
n-Butylbenzene	3.8	5.0	1.0	µg/L	5	J	SW-846 8260D	11/4/19	11/4/19 15:46	EEH
sec-Butylbenzene	1.2	5.0	0.80	µg/L	5	J	SW-846 8260D	11/4/19	11/4/19 15:46	EEH
tert-Butylbenzene	ND	5.0	0.85	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	2.5	0.80	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Carbon Disulfide	ND	25	22	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Carbon Tetrachloride	ND	5.0	0.55	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Chlorobenzene	ND	5.0	0.75	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Chlorodibromomethane	ND	2.5	1.0	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Chloroethane	ND	10	1.8	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Chloroform	ND	10	0.85	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Chloromethane	ND	10	2.2	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
2-Chlorotoluene	ND	5.0	0.60	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
4-Chlorotoluene	ND	5.0	0.70	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	25	2.6	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,2-Dibromoethane (EDB)	ND	2.5	0.95	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Dibromomethane	ND	5.0	1.8	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,2-Dichlorobenzene	ND	5.0	0.80	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,3-Dichlorobenzene	ND	5.0	0.60	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,4-Dichlorobenzene	ND	5.0	0.65	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
trans-1,4-Dichloro-2-butene	ND	10	1.6	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Dichlorodifluoromethane (Freon 12)	ND	10	1.3	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,1-Dichloroethane	ND	5.0	0.80	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,2-Dichloroethane	ND	5.0	2.0	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,1-Dichloroethylene	ND	5.0	1.6	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
cis-1,2-Dichloroethylene	ND	5.0	0.65	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
trans-1,2-Dichloroethylene	ND	5.0	1.6	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,2-Dichloropropane	ND	5.0	1.0	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,3-Dichloropropane	ND	2.5	0.55	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
2,2-Dichloropropane	ND	5.0	1.0	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,1-Dichloropropene	ND	10	0.80	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
cis-1,3-Dichloropropene	ND	2.5	0.65	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
trans-1,3-Dichloropropene	ND	2.5	1.2	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Diethyl Ether	ND	10	1.7	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Dunn, NC | Sample Description: | Work Order: 19J1775

Date Received: 10/28/2019

Field Sample #: TW-1 | Sampled: 10/28/2019 17:00

Sample ID: 19J1775-01

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	2.0	2.5	0.85	µg/L	5	J	SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,4-Dioxane	ND	250	110	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Ethylbenzene	19	5.0	0.65	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Hexachlorobutadiene	ND	3.0	2.4	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
2-Hexanone (MBK)	ND	50	7.6	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Isopropylbenzene (Cumene)	3.2	5.0	0.85	µg/L	5	J	SW-846 8260D	11/4/19	11/4/19 15:46	EEH
p-Isopropyltoluene (p-Cymene)	ND	5.0	1.0	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Methyl tert-Butyl Ether (MTBE)	11	5.0	1.2	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Methylene Chloride	ND	25	1.7	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
4-Methyl-2-pentanone (MIBK)	ND	50	8.4	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Naphthalene	37	25	1.6	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
n-Propylbenzene	3.9	5.0	0.65	µg/L	5	J	SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Styrene	ND	5.0	0.55	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,1,1,2-Tetrachloroethane	ND	5.0	1.4	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,1,2,2-Tetrachloroethane	ND	2.5	1.1	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Tetrachloroethylene	ND	5.0	0.90	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Tetrahydrofuran	ND	50	2.6	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Toluene	12	5.0	0.70	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,2,3-Trichlorobenzene	ND	25	2.8	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,2,4-Trichlorobenzene	ND	5.0	2.0	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,3,5-Trichlorobenzene	ND	5.0	1.5	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,1,1-Trichloroethane	ND	5.0	1.0	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,1,2-Trichloroethane	ND	5.0	0.80	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Trichloroethylene	ND	5.0	1.2	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Trichlorofluoromethane (Freon 11)	ND	10	1.6	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,2,3-Trichloropropane	ND	10	1.2	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	5.0	1.6	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,2,4-Trimethylbenzene	8.3	5.0	0.90	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
1,3,5-Trimethylbenzene	1.0	5.0	0.70	µg/L	5	J	SW-846 8260D	11/4/19	11/4/19 15:46	EEH
Vinyl Chloride	ND	10	2.2	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
m+p Xylene	33	10	1.5	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH
o-Xylene	10	5.0	0.85	µg/L	5		SW-846 8260D	11/4/19	11/4/19 15:46	EEH

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	104	70-130		11/4/19 15:46
Toluene-d8	100	70-130		11/4/19 15:46
4-Bromofluorobenzene	102	70-130		11/4/19 15:46

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Dunn, NC | Sample Description: | Work Order: 19J1775

Date Received: 10/28/2019

Field Sample #: TW-1 | Sampled: 10/28/2019 17:00

Sample ID: 19J1775-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene (SIM)	0.13	0.31	0.034	µg/L	1	J	SW-846 8270E	10/30/19	11/1/19 20:51	IMR
Acenaphthylene (SIM)	0.079	0.21	0.036	µg/L	1	J	SW-846 8270E	10/30/19	11/1/19 20:51	IMR
Anthracene (SIM)	ND	0.21	0.033	µg/L	1		SW-846 8270E	10/30/19	11/1/19 20:51	IMR
Benzo(a)anthracene (SIM)	ND	0.052	0.017	µg/L	1		SW-846 8270E	10/30/19	11/1/19 20:51	IMR
Benzo(a)pyrene (SIM)	ND	0.10	0.012	µg/L	1		SW-846 8270E	10/30/19	11/1/19 20:51	IMR
Benzo(b)fluoranthene (SIM)	ND	0.052	0.016	µg/L	1		SW-846 8270E	10/30/19	11/1/19 20:51	IMR
Benzo(g,h,i)perylene (SIM)	ND	0.52	0.019	µg/L	1		SW-846 8270E	10/30/19	11/1/19 20:51	IMR
Benzo(k)fluoranthene (SIM)	ND	0.21	0.012	µg/L	1		SW-846 8270E	10/30/19	11/1/19 20:51	IMR
Chrysene (SIM)	ND	0.21	0.016	µg/L	1		SW-846 8270E	10/30/19	11/1/19 20:51	IMR
Dibenz(a,h)anthracene (SIM)	ND	0.10	0.018	µg/L	1		SW-846 8270E	10/30/19	11/1/19 20:51	IMR
Fluoranthene (SIM)	0.052	0.52	0.026	µg/L	1	J	SW-846 8270E	10/30/19	11/1/19 20:51	IMR
Fluorene (SIM)	0.14	1.0	0.035	µg/L	1	J	SW-846 8270E	10/30/19	11/1/19 20:51	IMR
Indeno(1,2,3-cd)pyrene (SIM)	ND	0.10	0.019	µg/L	1		SW-846 8270E	10/30/19	11/1/19 20:51	IMR
2-Methylnaphthalene (SIM)	21	10	0.65	µg/L	10		SW-846 8270E	10/30/19	11/4/19 10:34	IMR
Naphthalene (SIM)	25	10	2.7	µg/L	10		SW-846 8270E	10/30/19	11/4/19 10:34	IMR
Phenanthrene (SIM)	0.13	0.052	0.031	µg/L	1		SW-846 8270E	10/30/19	11/1/19 20:51	IMR
Pyrene (SIM)	0.049	1.0	0.024	µg/L	1	J	SW-846 8270E	10/30/19	11/1/19 20:51	IMR

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Nitrobenzene-d5	72.6	30-130		11/1/19 20:51
Nitrobenzene-d5	73.1	30-130		11/4/19 10:34
2-Fluorobiphenyl	47.7	30-130		11/1/19 20:51
2-Fluorobiphenyl	53.5	30-130		11/4/19 10:34
p-Terphenyl-d14	54.6	30-130		11/1/19 20:51
p-Terphenyl-d14	49.6	30-130		11/4/19 10:34

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: SW-846 5030B-SW-846 8260D

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19J1775-01 [TW-1]	B244975	1	5.00	11/04/19

Prep Method: SW-846 3510C-SW-846 8270E

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19J1775-01 [TW-1]	B244837	960	1.00	10/30/19
19J1775-01RE1 [TW-1]	B244837	960	1.00	10/30/19

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B244975 - SW-846 5030B										
Blank (B244975-BLK1)				Prepared & Analyzed: 11/04/19						
Acetone	ND	50	µg/L							
Acrylonitrile	ND	5.0	µg/L							
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L							V-05
Benzene	ND	1.0	µg/L							
Bromobenzene	ND	1.0	µg/L							
Bromochloromethane	ND	1.0	µg/L							
Bromodichloromethane	ND	0.50	µg/L							
Bromoform	ND	1.0	µg/L							
Bromomethane	ND	2.0	µg/L							
2-Butanone (MEK)	ND	20	µg/L							
tert-Butyl Alcohol (TBA)	ND	20	µg/L							
n-Butylbenzene	ND	1.0	µg/L							
sec-Butylbenzene	ND	1.0	µg/L							
tert-Butylbenzene	ND	1.0	µg/L							
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L							
Carbon Disulfide	ND	5.0	µg/L							
Carbon Tetrachloride	ND	1.0	µg/L							
Chlorobenzene	ND	1.0	µg/L							
Chlorodibromomethane	ND	0.50	µg/L							
Chloroethane	ND	2.0	µg/L							
Chloroform	ND	2.0	µg/L							
Chloromethane	ND	2.0	µg/L							
2-Chlorotoluene	ND	1.0	µg/L							
4-Chlorotoluene	ND	1.0	µg/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L							
1,2-Dibromoethane (EDB)	ND	0.50	µg/L							
Dibromomethane	ND	1.0	µg/L							
1,2-Dichlorobenzene	ND	1.0	µg/L							
1,3-Dichlorobenzene	ND	1.0	µg/L							
1,4-Dichlorobenzene	ND	1.0	µg/L							
trans-1,4-Dichloro-2-butene	ND	2.0	µg/L							
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L							
1,1-Dichloroethane	ND	1.0	µg/L							
1,2-Dichloroethane	ND	1.0	µg/L							
1,1-Dichloroethylene	ND	1.0	µg/L							
cis-1,2-Dichloroethylene	ND	1.0	µg/L							
trans-1,2-Dichloroethylene	ND	1.0	µg/L							
1,2-Dichloropropane	ND	1.0	µg/L							
1,3-Dichloropropane	ND	0.50	µg/L							
2,2-Dichloropropane	ND	1.0	µg/L							
1,1-Dichloropropene	ND	2.0	µg/L							
cis-1,3-Dichloropropene	ND	0.50	µg/L							
trans-1,3-Dichloropropene	ND	0.50	µg/L							
Diethyl Ether	ND	2.0	µg/L							
Diisopropyl Ether (DIPE)	ND	0.50	µg/L							
1,4-Dioxane	ND	50	µg/L							
Ethylbenzene	ND	1.0	µg/L							
Hexachlorobutadiene	ND	0.60	µg/L							
2-Hexanone (MBK)	ND	10	µg/L							
Isopropylbenzene (Cumene)	ND	1.0	µg/L							
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L							
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L							

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B244975 - SW-846 5030B											
Blank (B244975-BLK1)				Prepared & Analyzed: 11/04/19							
Methylene Chloride	ND	5.0	µg/L								
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L								
Naphthalene	ND	2.0	µg/L								
n-Propylbenzene	ND	1.0	µg/L								
Styrene	ND	1.0	µg/L								
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L								
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L								
Tetrachloroethylene	ND	1.0	µg/L								
Tetrahydrofuran	ND	10	µg/L								
Toluene	ND	1.0	µg/L								
1,2,3-Trichlorobenzene	ND	5.0	µg/L								
1,2,4-Trichlorobenzene	ND	1.0	µg/L								
1,3,5-Trichlorobenzene	ND	1.0	µg/L								
1,1,1-Trichloroethane	ND	1.0	µg/L								
1,1,2-Trichloroethane	ND	1.0	µg/L								
Trichloroethylene	ND	1.0	µg/L								
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L								
1,2,3-Trichloropropane	ND	2.0	µg/L								
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	µg/L								
1,2,4-Trimethylbenzene	ND	1.0	µg/L								
1,3,5-Trimethylbenzene	ND	1.0	µg/L								
Vinyl Chloride	ND	2.0	µg/L								
m+p Xylene	ND	2.0	µg/L								
o-Xylene	ND	1.0	µg/L								
Surrogate: 1,2-Dichloroethane-d4	*25.8*		µg/L	25.0		103	70-130				
Surrogate: Toluene-d8	*25.2*		µg/L	25.0		101	70-130				
Surrogate: 4-Bromofluorobenzene	*24.3*		µg/L	25.0		97.4	70-130				
LCS (B244975-BS1)				Prepared & Analyzed: 11/04/19							
Acetone	140	50	µg/L	100		140	70-160			V-20	†
Acrylonitrile	12.3	5.0	µg/L	10.0		123	70-130				
tert-Amyl Methyl Ether (TAME)	7.90	0.50	µg/L	10.0		79.0	70-130			V-05	
Benzene	9.60	1.0	µg/L	10.0		96.0	70-130				
Bromobenzene	11.0	1.0	µg/L	10.0		110	70-130				
Bromochloromethane	11.3	1.0	µg/L	10.0		113	70-130				
Bromodichloromethane	11.2	0.50	µg/L	10.0		112	70-130				
Bromoform	10.0	1.0	µg/L	10.0		100	70-130				
Bromomethane	5.87	2.0	µg/L	10.0		58.7	40-160				†
2-Butanone (MEK)	114	20	µg/L	100		114	40-160				†
tert-Butyl Alcohol (TBA)	96.7	20	µg/L	100		96.7	40-160				†
n-Butylbenzene	11.6	1.0	µg/L	10.0		116	70-130				
sec-Butylbenzene	11.3	1.0	µg/L	10.0		113	70-130				
tert-Butylbenzene	10.8	1.0	µg/L	10.0		108	70-130				
tert-Butyl Ethyl Ether (TBEE)	7.42	0.50	µg/L	10.0		74.2	70-130				
Carbon Disulfide	11.2	5.0	µg/L	10.0		112	70-130				
Carbon Tetrachloride	11.2	1.0	µg/L	10.0		112	70-130				
Chlorobenzene	10.6	1.0	µg/L	10.0		106	70-130				
Chlorodibromomethane	10.8	0.50	µg/L	10.0		108	70-130				
Chloroethane	9.65	2.0	µg/L	10.0		96.5	70-130				
Chloroform	9.93	2.0	µg/L	10.0		99.3	70-130				
Chloromethane	7.98	2.0	µg/L	10.0		79.8	40-160				†
2-Chlorotoluene	10.4	1.0	µg/L	10.0		104	70-130				

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes	
Batch B244975 - SW-846 5030B												
LCS (B244975-BS1)				Prepared & Analyzed: 11/04/19								
4-Chlorotoluene	11.3	1.0	µg/L	10.0		113		70-130				
1,2-Dibromo-3-chloropropane (DBCP)	10.4	5.0	µg/L	10.0		104		70-130				
1,2-Dibromoethane (EDB)	10.7	0.50	µg/L	10.0		107		70-130				
Dibromomethane	10.5	1.0	µg/L	10.0		105		70-130				
1,2-Dichlorobenzene	10.8	1.0	µg/L	10.0		108		70-130				
1,3-Dichlorobenzene	11.0	1.0	µg/L	10.0		110		70-130				
1,4-Dichlorobenzene	10.7	1.0	µg/L	10.0		107		70-130				
trans-1,4-Dichloro-2-butene	13.2	2.0	µg/L	10.0		**132**	*	70-130			L-02, V-20	
Dichlorodifluoromethane (Freon 12)	6.19	2.0	µg/L	10.0		61.9		40-160				†
1,1-Dichloroethane	10.6	1.0	µg/L	10.0		106		70-130				
1,2-Dichloroethane	11.7	1.0	µg/L	10.0		117		70-130				
1,1-Dichloroethylene	11.7	1.0	µg/L	10.0		117		70-130				
cis-1,2-Dichloroethylene	10.8	1.0	µg/L	10.0		108		70-130				
trans-1,2-Dichloroethylene	11.4	1.0	µg/L	10.0		114		70-130				
1,2-Dichloropropane	10.9	1.0	µg/L	10.0		109		70-130				
1,3-Dichloropropane	10.5	0.50	µg/L	10.0		105		70-130				
2,2-Dichloropropane	11.8	1.0	µg/L	10.0		118		40-130				†
1,1-Dichloropropene	10.5	2.0	µg/L	10.0		105		70-130				
cis-1,3-Dichloropropene	11.3	0.50	µg/L	10.0		113		70-130				
trans-1,3-Dichloropropene	10.9	0.50	µg/L	10.0		109		70-130				
Diethyl Ether	10.8	2.0	µg/L	10.0		108		70-130				
Diisopropyl Ether (DIPE)	12.1	0.50	µg/L	10.0		121		70-130				
1,4-Dioxane	116	50	µg/L	100		116		40-130				†
Ethylbenzene	10.7	1.0	µg/L	10.0		107		70-130				
Hexachlorobutadiene	11.8	0.60	µg/L	10.0		118		70-130				
2-Hexanone (MBK)	132	10	µg/L	100		132		70-160			V-20	†
Isopropylbenzene (Cumene)	11.0	1.0	µg/L	10.0		110		70-130				
p-Isopropyltoluene (p-Cymene)	10.5	1.0	µg/L	10.0		105		70-130				
Methyl tert-Butyl Ether (MTBE)	9.41	1.0	µg/L	10.0		94.1		70-130				
Methylene Chloride	11.6	5.0	µg/L	10.0		116		70-130				
4-Methyl-2-pentanone (MIBK)	137	10	µg/L	100		137		70-160			V-20	†
Naphthalene	9.20	2.0	µg/L	10.0		92.0		40-130				†
n-Propylbenzene	11.3	1.0	µg/L	10.0		113		70-130				
Styrene	9.10	1.0	µg/L	10.0		91.0		70-130				
1,1,1,2-Tetrachloroethane	11.2	1.0	µg/L	10.0		112		70-130				
1,1,2,2-Tetrachloroethane	11.4	0.50	µg/L	10.0		114		70-130				
Tetrachloroethylene	11.4	1.0	µg/L	10.0		114		70-130				
Tetrahydrofuran	10.3	10	µg/L	10.0		103		70-130				
Toluene	10.7	1.0	µg/L	10.0		107		70-130				
1,2,3-Trichlorobenzene	8.52	5.0	µg/L	10.0		85.2		70-130				
1,2,4-Trichlorobenzene	10.4	1.0	µg/L	10.0		104		70-130				
1,3,5-Trichlorobenzene	10.5	1.0	µg/L	10.0		105		70-130				
1,1,1-Trichloroethane	11.1	1.0	µg/L	10.0		111		70-130				
1,1,2-Trichloroethane	10.6	1.0	µg/L	10.0		106		70-130				
Trichloroethylene	10.7	1.0	µg/L	10.0		107		70-130				
Trichlorofluoromethane (Freon 11)	10.0	2.0	µg/L	10.0		100		70-130				
1,2,3-Trichloropropane	11.1	2.0	µg/L	10.0		111		70-130				
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	10.9	1.0	µg/L	10.0		109		70-130				
1,2,4-Trimethylbenzene	9.65	1.0	µg/L	10.0		96.5		70-130				
1,3,5-Trimethylbenzene	10.7	1.0	µg/L	10.0		107		70-130				
Vinyl Chloride	26.4	2.0	µg/L	10.0		**264**	*	40-160			L-02, V-20	†

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes	
Batch B244975 - SW-846 5030B												
LCS (B244975-BS1)				Prepared & Analyzed: 11/04/19								
m+p Xylene	21.6	2.0	µg/L	20.0		108		70-130				
o-Xylene	11.1	1.0	µg/L	10.0		111		70-130				
Surrogate: 1,2-Dichloroethane-d4	*26.2*		µg/L	25.0		105		70-130				
Surrogate: Toluene-d8	*24.7*		µg/L	25.0		98.8		70-130				
Surrogate: 4-Bromofluorobenzene	*25.5*		µg/L	25.0		102		70-130				
LCS Dup (B244975-BSD1)				Prepared & Analyzed: 11/04/19								
Acetone	145	50	µg/L	100		145		70-160	3.73	25	V-20	†
Acrylonitrile	12.0	5.0	µg/L	10.0		120		70-130	3.21	25		
tert-Amyl Methyl Ether (TAME)	7.77	0.50	µg/L	10.0		77.7		70-130	1.66	25	V-05	
Benzene	9.68	1.0	µg/L	10.0		96.8		70-130	0.830	25		
Bromobenzene	10.6	1.0	µg/L	10.0		106		70-130	3.90	25		
Bromochloromethane	11.1	1.0	µg/L	10.0		111		70-130	1.43	25		
Bromodichloromethane	10.6	0.50	µg/L	10.0		106		70-130	4.86	25		
Bromoform	10.3	1.0	µg/L	10.0		103		70-130	2.46	25		
Bromomethane	6.68	2.0	µg/L	10.0		66.8		40-160	12.9	25		†
2-Butanone (MEK)	117	20	µg/L	100		117		40-160	2.32	25		†
tert-Butyl Alcohol (TBA)	90.2	20	µg/L	100		90.2		40-160	7.03	25		†
n-Butylbenzene	11.6	1.0	µg/L	10.0		116		70-130	0.172	25		
sec-Butylbenzene	11.4	1.0	µg/L	10.0		114		70-130	0.440	25		
tert-Butylbenzene	10.9	1.0	µg/L	10.0		109		70-130	0.368	25		
tert-Butyl Ethyl Ether (TBEE)	7.38	0.50	µg/L	10.0		73.8		70-130	0.541	25		
Carbon Disulfide	10.4	5.0	µg/L	10.0		104		70-130	6.66	25		
Carbon Tetrachloride	11.1	1.0	µg/L	10.0		111		70-130	0.809	25		
Chlorobenzene	10.1	1.0	µg/L	10.0		101		70-130	5.02	25		
Chlorodibromomethane	10.5	0.50	µg/L	10.0		105		70-130	2.73	25		
Chloroethane	9.87	2.0	µg/L	10.0		98.7		70-130	2.25	25		
Chloroform	9.64	2.0	µg/L	10.0		96.4		70-130	2.96	25		
Chloromethane	7.89	2.0	µg/L	10.0		78.9		40-160	1.13	25		†
2-Chlorotoluene	10.2	1.0	µg/L	10.0		102		70-130	1.17	25		
4-Chlorotoluene	10.8	1.0	µg/L	10.0		108		70-130	4.70	25		
1,2-Dibromo-3-chloropropane (DBCP)	10.5	5.0	µg/L	10.0		105		70-130	0.573	25		
1,2-Dibromoethane (EDB)	10.6	0.50	µg/L	10.0		106		70-130	1.31	25		
Dibromomethane	10.7	1.0	µg/L	10.0		107		70-130	1.60	25		
1,2-Dichlorobenzene	10.5	1.0	µg/L	10.0		105		70-130	2.54	25		
1,3-Dichlorobenzene	11.1	1.0	µg/L	10.0		111		70-130	0.542	25		
1,4-Dichlorobenzene	10.5	1.0	µg/L	10.0		105		70-130	1.60	25		
trans-1,4-Dichloro-2-butene	13.4	2.0	µg/L	10.0		**134**	*	70-130	1.13	25	L-02, V-20	
Dichlorodifluoromethane (Freon 12)	6.16	2.0	µg/L	10.0		61.6		40-160	0.486	25		†
1,1-Dichloroethane	10.6	1.0	µg/L	10.0		106		70-130	0.00	25		
1,2-Dichloroethane	11.7	1.0	µg/L	10.0		117		70-130	0.0856	25		
1,1-Dichloroethylene	11.7	1.0	µg/L	10.0		117		70-130	0.428	25		
cis-1,2-Dichloroethylene	10.6	1.0	µg/L	10.0		106		70-130	1.68	25		
trans-1,2-Dichloroethylene	11.2	1.0	µg/L	10.0		112		70-130	1.95	25		
1,2-Dichloropropane	11.0	1.0	µg/L	10.0		110		70-130	0.183	25		
1,3-Dichloropropane	10.7	0.50	µg/L	10.0		107		70-130	1.70	25		
2,2-Dichloropropane	11.3	1.0	µg/L	10.0		113		40-130	4.17	25		†
1,1-Dichloropropene	10.4	2.0	µg/L	10.0		104		70-130	1.24	25		
cis-1,3-Dichloropropene	10.8	0.50	µg/L	10.0		108		70-130	4.34	25		
trans-1,3-Dichloropropene	11.0	0.50	µg/L	10.0		110		70-130	0.915	25		
Diethyl Ether	10.7	2.0	µg/L	10.0		107		70-130	1.39	25		
Diisopropyl Ether (DIPE)	11.6	0.50	µg/L	10.0		116		70-130	3.96	25		

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes	
Batch B244975 - SW-846 5030B												
LCS Dup (B244975-BSD1)				Prepared & Analyzed: 11/04/19								
1,4-Dioxane	122	50	µg/L	100		122		40-130	4.65	50		† ‡
Ethylbenzene	10.7	1.0	µg/L	10.0		107		70-130	0.561	25		
Hexachlorobutadiene	11.8	0.60	µg/L	10.0		118		70-130	0.508	25		
2-Hexanone (MBK)	132	10	µg/L	100		132		70-160	0.137	25	V-20	†
Isopropylbenzene (Cumene)	10.8	1.0	µg/L	10.0		108		70-130	2.57	25		
p-Isopropyltoluene (p-Cymene)	10.6	1.0	µg/L	10.0		106		70-130	0.190	25		
Methyl tert-Butyl Ether (MTBE)	9.24	1.0	µg/L	10.0		92.4		70-130	1.82	25		
Methylene Chloride	11.1	5.0	µg/L	10.0		111		70-130	4.22	25		
4-Methyl-2-pentanone (MIBK)	140	10	µg/L	100		140		70-160	2.14	25	V-20	†
Naphthalene	9.12	2.0	µg/L	10.0		91.2		40-130	0.873	25		†
n-Propylbenzene	10.8	1.0	µg/L	10.0		108		70-130	4.24	25		
Styrene	9.13	1.0	µg/L	10.0		91.3		70-130	0.329	25		
1,1,1,2-Tetrachloroethane	11.2	1.0	µg/L	10.0		112		70-130	0.0890	25		
1,1,2,2-Tetrachloroethane	11.2	0.50	µg/L	10.0		112		70-130	1.41	25		
Tetrachloroethylene	10.9	1.0	µg/L	10.0		109		70-130	3.94	25		
Tetrahydrofuran	10.7	10	µg/L	10.0		107		70-130	4.28	25		
Toluene	10.5	1.0	µg/L	10.0		105		70-130	2.45	25		
1,2,3-Trichlorobenzene	8.47	5.0	µg/L	10.0		84.7		70-130	0.589	25		
1,2,4-Trichlorobenzene	10.1	1.0	µg/L	10.0		101		70-130	3.42	25		
1,3,5-Trichlorobenzene	10.5	1.0	µg/L	10.0		105		70-130	0.0954	25		
1,1,1-Trichloroethane	11.0	1.0	µg/L	10.0		110		70-130	1.63	25		
1,1,2-Trichloroethane	10.6	1.0	µg/L	10.0		106		70-130	0.661	25		
Trichloroethylene	10.3	1.0	µg/L	10.0		103		70-130	4.29	25		
Trichlorofluoromethane (Freon 11)	10.0	2.0	µg/L	10.0		100		70-130	0.399	25		
1,2,3-Trichloropropane	11.3	2.0	µg/L	10.0		113		70-130	1.16	25		
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	10.7	1.0	µg/L	10.0		107		70-130	1.86	25		
1,2,4-Trimethylbenzene	9.50	1.0	µg/L	10.0		95.0		70-130	1.57	25		
1,3,5-Trimethylbenzene	10.4	1.0	µg/L	10.0		104		70-130	2.93	25		
Vinyl Chloride	25.0	2.0	µg/L	10.0		**250**	*	40-160	5.64	25	L-02, V-20	†
m+p Xylene	21.3	2.0	µg/L	20.0		107		70-130	1.44	25		
o-Xylene	10.9	1.0	µg/L	10.0		109		70-130	1.82	25		
Surrogate: 1,2-Dichloroethane-d4	*25.2*		µg/L	25.0		101		70-130				
Surrogate: Toluene-d8	*25.1*		µg/L	25.0		100		70-130				
Surrogate: 4-Bromofluorobenzene	*25.1*		µg/L	25.0		100		70-130				

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B244837 - SW-846 3510C										
Blank (B244837-BLK1)				Prepared: 10/30/19 Analyzed: 11/01/19						
Acenaphthene (SIM)	ND	0.30	µg/L							
Acenaphthylene (SIM)	ND	0.20	µg/L							
Anthracene (SIM)	ND	0.20	µg/L							
Benzo(a)anthracene (SIM)	ND	0.050	µg/L							
Benzo(a)pyrene (SIM)	ND	0.10	µg/L							
Benzo(b)fluoranthene (SIM)	ND	0.050	µg/L							
Benzo(g,h,i)perylene (SIM)	ND	0.50	µg/L							
Benzo(k)fluoranthene (SIM)	ND	0.20	µg/L							
Chrysene (SIM)	ND	0.20	µg/L							
Dibenz(a,h)anthracene (SIM)	ND	0.10	µg/L							
Fluoranthene (SIM)	ND	0.50	µg/L							
Fluorene (SIM)	ND	1.0	µg/L							
Indeno(1,2,3-cd)pyrene (SIM)	ND	0.10	µg/L							
2-Methylnaphthalene (SIM)	ND	1.0	µg/L							
Naphthalene (SIM)	ND	1.0	µg/L							
Phenanthrene (SIM)	ND	0.050	µg/L							
Pyrene (SIM)	ND	1.0	µg/L							
Surrogate: Nitrobenzene-d5	*83.8*		µg/L	100		83.8	30-130			
Surrogate: 2-Fluorobiphenyl	*54.8*		µg/L	100		54.8	30-130			
Surrogate: p-Terphenyl-d14	*73.4*		µg/L	100		73.4	30-130			
LCS (B244837-BS1)				Prepared: 10/30/19 Analyzed: 11/01/19						
Acenaphthene (SIM)	37.1	6.0	µg/L	50.0		74.1	40-140			
Acenaphthylene (SIM)	38.1	4.0	µg/L	50.0		76.2	40-140			
Anthracene (SIM)	41.5	4.0	µg/L	50.0		83.1	40-140			
Benzo(a)anthracene (SIM)	42.4	1.0	µg/L	50.0		84.9	40-140			
Benzo(a)pyrene (SIM)	40.2	2.0	µg/L	50.0		80.4	40-140			
Benzo(b)fluoranthene (SIM)	44.2	1.0	µg/L	50.0		88.4	40-140			
Benzo(g,h,i)perylene (SIM)	41.9	10	µg/L	50.0		83.9	40-140			
Benzo(k)fluoranthene (SIM)	43.5	4.0	µg/L	50.0		87.0	40-140			
Chrysene (SIM)	32.8	4.0	µg/L	50.0		65.5	40-140			
Dibenz(a,h)anthracene (SIM)	46.1	2.0	µg/L	50.0		92.1	40-140			
Fluoranthene (SIM)	40.0	10	µg/L	50.0		80.0	40-140			
Fluorene (SIM)	38.6	20	µg/L	50.0		77.3	40-140			
Indeno(1,2,3-cd)pyrene (SIM)	52.7	2.0	µg/L	50.0		105	40-140			
2-Methylnaphthalene (SIM)	37.6	20	µg/L	50.0		75.2	40-140			
Naphthalene (SIM)	34.8	20	µg/L	50.0		69.6	40-140			
Phenanthrene (SIM)	38.1	1.0	µg/L	50.0		76.2	40-140			
Pyrene (SIM)	35.8	20	µg/L	50.0		71.6	40-140			
Surrogate: Nitrobenzene-d5	*84.0*		µg/L	100		84.0	30-130			
Surrogate: 2-Fluorobiphenyl	*58.3*		µg/L	100		58.3	30-130			
Surrogate: p-Terphenyl-d14	*56.1*		µg/L	100		56.1	30-130			

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B244837 - SW-846 3510C										
LCS Dup (B244837-BSD1)				Prepared: 10/30/19 Analyzed: 11/01/19						
Acenaphthene (SIM)	36.6	6.0	µg/L	50.0		73.3	40-140	1.14	20	
Acenaphthylene (SIM)	37.7	4.0	µg/L	50.0		75.4	40-140	1.16	20	
Anthracene (SIM)	40.8	4.0	µg/L	50.0		81.6	40-140	1.85	20	
Benzo(a)anthracene (SIM)	41.9	1.0	µg/L	50.0		83.7	40-140	1.38	20	
Benzo(a)pyrene (SIM)	38.8	2.0	µg/L	50.0		77.5	40-140	3.65	20	
Benzo(b)fluoranthene (SIM)	43.3	1.0	µg/L	50.0		86.5	40-140	2.15	20	
Benzo(g,h,i)perylene (SIM)	41.4	10	µg/L	50.0		82.8	40-140	1.34	20	
Benzo(k)fluoranthene (SIM)	43.9	4.0	µg/L	50.0		87.9	40-140	1.05	20	
Chrysene (SIM)	32.3	4.0	µg/L	50.0		64.5	40-140	1.54	20	
Dibenz(a,h)anthracene (SIM)	45.7	2.0	µg/L	50.0		91.3	40-140	0.872	20	
Fluoranthene (SIM)	38.8	10	µg/L	50.0		77.6	40-140	3.04	20	
Fluorene (SIM)	38.3	20	µg/L	50.0		76.6	40-140	0.884	20	
Indeno(1,2,3-cd)pyrene (SIM)	51.0	2.0	µg/L	50.0		102	40-140	3.28	20	‡
2-Methylnaphthalene (SIM)	37.3	20	µg/L	50.0		74.6	40-140	0.854	20	
Naphthalene (SIM)	34.4	20	µg/L	50.0		68.8	40-140	1.21	20	
Phenanthrene (SIM)	37.5	1.0	µg/L	50.0		74.9	40-140	1.69	20	
Pyrene (SIM)	34.9	20	µg/L	50.0		69.8	40-140	2.55	20	
Surrogate: Nitrobenzene-d5	*78.5*		µg/L	100		78.5	30-130			
Surrogate: 2-Fluorobiphenyl	*55.7*		µg/L	100		55.7	30-130			
Surrogate: p-Terphenyl-d14	*58.0*		µg/L	100		58.0	30-130			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
L-02	Laboratory fortified blank/laboratory control sample recovery and duplicate recoveries outside of control limits. Data validation is not affected since all results are "not detected" for associated samples in this batch and bias is on the high side.
RL-11	Elevated reporting limit due to high concentration of target compounds.
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8260D in Water	
Acetone	NC
Acrylonitrile	NC
tert-Amyl Methyl Ether (TAME)	NC
Benzene	NC
Bromobenzene	NC
Bromochloromethane	NC
Bromodichloromethane	NC
Bromoform	NC
Bromomethane	NC
2-Butanone (MEK)	NC
tert-Butyl Alcohol (TBA)	NC
n-Butylbenzene	NC
sec-Butylbenzene	NC
tert-Butylbenzene	NC
tert-Butyl Ethyl Ether (TBEE)	NC
Carbon Disulfide	NC
Carbon Tetrachloride	NC
Chlorobenzene	NC
Chlorodibromomethane	NC
Chloroethane	NC
Chloroform	NC
Chloromethane	NC
2-Chlorotoluene	NC
4-Chlorotoluene	NC
1,2-Dibromo-3-chloropropane (DBCP)	NC
1,2-Dibromoethane (EDB)	NC
Dibromomethane	NC
1,2-Dichlorobenzene	NC
1,3-Dichlorobenzene	NC
1,4-Dichlorobenzene	NC
trans-1,4-Dichloro-2-butene	NC
Dichlorodifluoromethane (Freon 12)	NC
1,1-Dichloroethane	NC
1,2-Dichloroethane	NC
1,1-Dichloroethylene	NC
cis-1,2-Dichloroethylene	NC
trans-1,2-Dichloroethylene	NC
1,2-Dichloropropane	NC
1,3-Dichloropropane	NC
2,2-Dichloropropane	NC
1,1-Dichloropropene	NC
cis-1,3-Dichloropropene	NC
trans-1,3-Dichloropropene	NC
Diethyl Ether	NC
Diisopropyl Ether (DIPE)	NC
1,4-Dioxane	NC
Ethylbenzene	NC

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8260D in Water	
Hexachlorobutadiene	NC
2-Hexanone (MBK)	NC
Isopropylbenzene (Cumene)	NC
p-Isopropyltoluene (p-Cymene)	NC
Methyl tert-Butyl Ether (MTBE)	NC
Methylene Chloride	NC
4-Methyl-2-pentanone (MIBK)	NC
Naphthalene	NC
n-Propylbenzene	NC
Styrene	NC
1,1,1,2-Tetrachloroethane	NC
1,1,2,2-Tetrachloroethane	NC
Tetrachloroethylene	NC
Tetrahydrofuran	NC
Toluene	NC
1,2,3-Trichlorobenzene	NC
1,2,4-Trichlorobenzene	NC
1,3,5-Trichlorobenzene	NC
1,1,1-Trichloroethane	NC
1,1,2-Trichloroethane	NC
Trichloroethylene	NC
Trichlorofluoromethane (Freon 11)	NC
1,2,3-Trichloropropane	NC
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	NC
1,2,4-Trimethylbenzene	NC
1,3,5-Trimethylbenzene	NC
Vinyl Chloride	NC
m+p Xylene	NC
o-Xylene	NC

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The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2020
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2021
NY	New York State Department of Health	10899 NELAP	04/1/2020
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2020
RI	Rhode Island Department of Health	LAO00112	12/30/2019
NC	North Carolina Div. of Water Quality	652	12/31/2019
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2020
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2019
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020

con-test ANALYTICAL LABORATORY

19J1775

Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

http://www.contestlabs.com Doc # 379 Rev 1_03242017

CHAIN OF CUSTODY RECORD (North Carolina)

39 Spruce Street
East Longmeadow, MA 01028

Page 1 of 1

Company Name: SMS

Address: 3201 Spring Forest Rd Raleigh NC

Phone: 910 977-7614

Project Name: NCDOT I-5878 Dunn Pond T78

Project Location: Dunn, NC

Project Number: 4305-19-161

Project Manager: Jamie T Honeycutt

Con-Test Quote Name/Number:

Invoice Recipient: Jamie T Honeycutt

Sampled By: Jamie T Honeycutt

Requested Turnaround Time
7-Day ☐ 10-Day ☐
Due Date:

Rush Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☐ EXCEL ☐
Other:
CLP Like Data Pkg Required: ☐
Email To:
Fax To #:

ANALYSIS REQUESTED

8260 PAHs by 8270

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	Matrix Code	Conc Code	# of Containers	Preservation Code	Container Code
1	TW-1	10/28/19	1700		/	GW	H	11		

Dissolved Metals Samples
☐ Field Filtered
☐ Lab to Filter

Orthophosphate Samples
☐ Field Filtered
☐ Lab to Filter

[1] **Matrix Codes:**
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] **Preservation Codes:**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

[3] **Container Codes:**
A = Amber Glass
G = Glass
P = Plastic
ST = Sterile
V = Vial
S = Summa Canister
T = Tedlar Bag
O = Other (please define)

Comments:

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time: 10/28/19 1500	
Received by: (signature) 3.4	Date/Time: 10/29 1647 906	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

North Carolina Detection Limit Requirements
☐ 2L
☐ GWPC
☐ SWSL
☐ IHSB
☐ MSCC
Other:

Program Information
☐ DSCA ☐ UST/Trust Fund
☐ SWS Landfill ☐ REC
☐ IHSB Orphaned Landfill
☐ State Lead
☐ Other:

NELAC and AIHA-LAP, LLC Accredited

Project Entity
☐ Government ☐ Municipality
☐ Federal ☐ Brownfield
☐ City ☐ School

Other
☐ Chromatogram
☐ *AIHA-LAP, LLC*

PCB ONLY
☐ Soxhlet
☐ Non Soxhlet

Table of Contents

IMPORTANT!
The wildfires are causing hazardous conditions in California. Learn More

411359783313

Delivered
Tuesday 10/29/2019 at 9:06 am

DELIVERED

Signed for by: B.BECCA

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

TO

EAST LONGMEADOW, MA US

Shipment Facts

TRACKING NUMBER
411359783313

SERVICE
FedEx Priority Overnight

WEIGHT
34.8 lbs / 15.79 kgs

DELIVERED TO
Shipping/Receiving

TOTAL PIECES
1

TOTAL SHIPMENT WEIGHT
34.8 lbs / 15.79 kgs

PACKAGING
Your Packaging

SPECIAL HANDLING SECTION
Deliver Weekday

STANDARD TRANSIT
10/29/2019 by 10:30 am

SHIP DATE
Mon 10/28/2019

ACTUAL DELIVERY
Tue 10/29/2019 9:06 am

Travel History

Local Scan Time

Tuesday , 10/29/2019

9:06 am		Delivered
7:46 am	WINDSOR LOCKS, CT	On FedEx vehicle for delivery
7:35 am	WINDSOR LOCKS, CT	At local FedEx facility
6:23 am	EAST GRANBY, CT	At destination sort facility

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client S+ME

Received By MP Date 10/29/19 Time 906

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____

Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 2 Actual Temp - 3.4

By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? NA Were Samples Tampered with? NA

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Analysis T Sampler Name T

Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? F MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? NA Acid _____ Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.	2	1 Liter Plastic		16 oz Amb.	
HCL-	3	500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

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 83-Throw Back Thursday
608 Spring Branch 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
83	Randy Emanuel Sr	(Throw Back Thursday) 608 Spring Branch (aka Pope Road), Dunn, NC

The property is developed with a commercial building that is currently occupied by a bar named Throw Back Thursday. The building is reported to have previously been occupied by a gasoline/convenience store. According to a 1993 aerial photograph of the site, what appears to be a pump island canopy is shown in front of the building. Information regarding the location of USTs were not provided or observed from the aerial photograph. The property is not listed with registered petroleum underground storage tanks (USTs) (active or closed). The property is not listed with North Carolina Department of Environmental Quality (NCDEQ) Incidents associated with petroleum releases from USTs or aboveground storage tanks.

The PSA included a geophysical survey, subsequent limited soil sampling (five soil borings up to 10 feet below ground surface (ft.-bgs)) and limited groundwater sampling (one groundwater sample), 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 and groundwater 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 83. 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 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 seven GPR profiles (Lines 1 through 7) 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. Two anomalous features unrelated to known surficial targets were identified in the geophysical data sets (Anomalies A and B; **Figures 6 and 7**). Anomaly A is characterized by high amplitude GPR responses located within the upper one foot below ground surface (bgs) and may be related to an isolated buried metallic object **(Figure 8).** Anomaly B was characterized by a low TDEM response that was unable to be identified in the GPR data sets, which suggests the potential metallic target is either relatively small or deeper than the maximum penetration depth of the GPR signal. The anomalies were marked in the field using white spray paint. Example GPR profiles are presented in **Figures 8 and 9.**

♦ Soil Sampling

On October 29, 2019, Troxler Geologic, Inc. (Troxler's) drill crew utilized a track mounted Geoprobe® rig to advance five soil borings (B-1 through B-5) and to collect soil samples within accessible areas of the proposed ROW/easement at Parcel 83. The approximate location of the soil borings are shown in **Figure 2**. A photographic log is included in **Appendix I.** 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 encountered at depths ranging from approximately six to 9.3 ft.-bgs. 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.**

Petroleum odors and elevated PID readings were not noted in the collected soil samples. Therefore, a soil sample was selected from each boring at varying depth intervals. 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 five 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.

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 their respective North Carolina TPH Action Levels. TPH-DRO was reported in borings B-1, B-3 and B-4 at the six to eight foot depth interval, at concentrations ranging from one milligram per kilograms (mg/kg) to 1.3 mg/kg, which is slightly above the laboratory method reporting limits but well below its North Carolina TPH Action Level of 100 mg/kg. 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 III.**

♦ Groundwater Sampling

During the advancement of the soil borings, groundwater was encountered at depths ranging from approximately six to 9.3 ft.-bgs. Therefore, the Geoprobe® was used to advance one of the soil borings into the groundwater table for the collection of a groundwater sample. Due to the lack of petroleum odors or elevated PID readings, boring B-2 was selected for collection of a groundwater sample, due to its reported location at the former pump island. A temporary monitor well (TW-1) was installed at boring B-2 to a depth of approximately 10.5 ft.-bgs using a five foot section of one-inch diameter, Schedule 40 PVC well riser attached to a ten foot section of 0.01-inch slotted screen that intersected the groundwater table. Groundwater within the temporary monitor well at boring B-2 was measured at six ft.-bgs. Groundwater was purged from the temporary well until relatively clear using disposable tubing attached to a peristaltic pump. The flow rate was reduced and laboratory supplied containers were filled directly from the tubing, labeled as TW-1 and placed in an insulated cooler with ice for transport to Con-Test Laboratories (Con-Test) for analysis of VOCs by EPA Method 8260 and polycyclic aromatic compounds (PAHs) by EPA Method 8270.

Upon completion of the soil and groundwater sampling, the well materials were removed and the soil borings backfilled with bentonite pellets and soil cuttings. Investigative derived wastes (IDW), such as 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 and tubing were bagged and disposed off-site.

Groundwater Analytical Results

Based upon analytical results of the groundwater sample analyzed by Con-Test, several petroleum related target constituents were reported at concentrations above the laboratory method reporting limits but below their 15A NCAC 2L Groundwater Quality Standards (2L Standards). A summary of the groundwater analytical results is presented in **Table 2** and shown on **Figure 3.** A copy of the laboratory analytical report provided by Con-Test is presented in **Appendix III.**

♦ Conclusion and Recommendations

The geophysical survey identified two anomalies (Anomalies A and B) 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 five soil borings (B-1 through B-5) to a depth of up to approximately 10 ft.-bgs at the site. Petroleum odors and elevated PID readings were not noted in soil samples collected at the borings. Selected soil samples from the soil borings were analyzed for TPH-GRO and TPH-DRO using UVF spectroscopy.

TPH-GRO and TPH-DRO were not reported at concentrations exceeding their respective North Carolina TPH Action Levels. TPH-DRO was reported in borings B-1, B-3 and B-4 at the six to eight foot depth interval at concentrations slightly above the laboratory method 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 encountered at depths ranging from six to 9.3 ft.-bgs. One temporary well (TW-1) was installed at soil boring B-2 located at the former pump island. Groundwater at TW-1 was measured at six ft.-bgs and analyzed by Con-Test for VOCs by EPA Method 8260 and PAHs by EPA Method 8270. Several petroleum related target constituents were reported at concentrations above the laboratory reporting limits but below their respective 2L Standards.

Based on the findings of the geophysical survey and analytical results of soil and groundwater samples, it is likely that during construction, NCDOT may encounter marginally impacted soil (below TPH Action Levels) and groundwater marginally impacted with petroleum (below 2L Standards) at the site.

It should also be assumed that saturated petroleum impacted soil will be encountered if construction excavations extend deeper than six ft.-bgs on the site. If construction dewatering is required, petroleum impacted groundwater must be properly disposed or treated at a licensed facility. If petroleum stained or odorous soils are encountered during construction, these soils should be properly handled and disposed at a licensed facility.

S&ME recommends maintaining an awareness level for the presence of marginally impacted petroleum in the soil (below TPH Action Levels) and marginally impacted groundwater (below 2L Standards) 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:
Jamie Honeycutt
4C890EAEC25F488...

Jamie T Honeycutt
Environmental Professional
jhoneycutt@smeinc.com

DocuSigned by:
Michael Pfeifer
861E52DDEFAF4C7...

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

DocuSigned by:
Tom Raymond
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
Table 2: Summary of Groundwater Sampling Results

Figure 1: Vicinity Map
Figure 2: Site Map
Figure 3: Soil and Groundwater 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 2 and 3
Figure 9: Example GPR Data – Lines 4 and 7

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-5878
Parcel 83 - (Throw Back Thursday)
608 Spring Branch Road
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→ / Sample Depth (ft.-bgs)	TPH-GRO	TPH-DRO
B-1	10/29/2019	6 to 8	<0.45	**1.1**
B-2	10/29/2019	2 to 4	<0.29	<0.29
B-3	10/29/2019	6 to 8	<0.5	**1**
B-4	10/29/2019	6 to 8	<0.51	**1.3**
B-5	10/29/2019	6 to 8	<0.52	<0.52
North Carolina TPH Action Levels			**50**	**100**

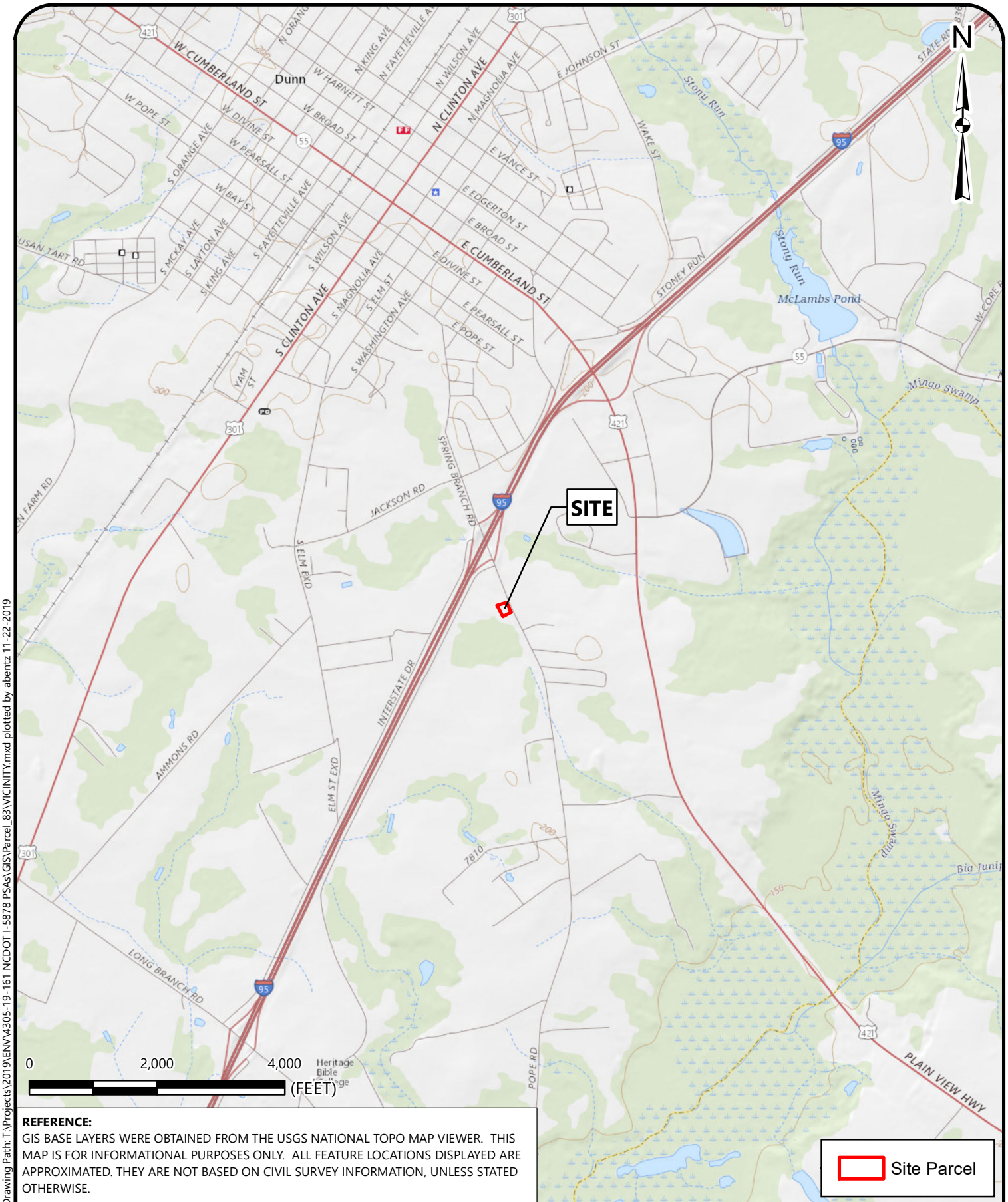
Notes:
1. UVF analysis performed by RED Lab, LLC
2. Concentrations are reported in milligrams per kilogram (mg/Kg).
3. ft.-bgs:- feet below ground surface.
4. Concentrations exceeding the laboratory's reporting limits are shown in **BOLD** fields.
5. Concentrations exceeding the North Carolina TPH Action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

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS
NCDOT Project I-5878
Parcel 83 - (Throw Back Thursday)
608 Spring Branch Road
Dunn, Harnett County, North Carolina
S&ME Project No. 4305-19-161

Analytical Method→		Volatile Organic Compounds by EPA Method 8260														Polycyclic Aromatic Compounds (PAHs) by EPA Method 8270							
Sample ID	Contaminant of Concern→ / Date	Benzene	Ethylbenzene	Isopropylbenzene	Naphthalene	n-Butylbenzene	sec-Butylbenzene	Styrene	tert-Butyl Alcohol	n-Propylbenzene	p-Isopropyltoluene	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Total Xylenes	Acenaphthene	Acenaphthylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	2-Methylnaphthalene
B-2/TW-1	10/29/2019	**0.66 J**	**4.9**	**43**	**3.9**	**3.5**	**15**	**0.28 J**	**0.24 J**	**1.8**	**0.92 J**	**0.25 J**	**4.4**	**2.2**	**1.9**	**0.30**	**0.095 J**	**0.027 J**	**0.38 J**	**3.2**	**0.42**	**0.025J**	**4.9**
2L Standard (µg/L)		**1**	**600**	**70**	**6**	**70**	**70**	**70**	**10**	**70**	**25**	**600**	**400**	**400**	**500**	**80**	**200**	**300**	**300**	**6**	**200**	**200**	**30**
GCL (µg/L)		**5,000**	**84,500**	**25,000**	**6,000**	**6,900**	**8,500**	**70,000**	**10,000**	**30,000**	**11,700**	**260,000**	**28,500**	**25,000**	**85,500**	**2,120**	**1,965**	**300**	**990**	**6,000**	**410**	**200**	**12,500**

Notes:
1. Analytes that are not shown for the method were not detected.
2. Concentrations are reported in micrograms per liter (µg/L).
3. 2L Standard: North Carolina Groundwater Quality Standards: 15A NCAC 2L.0202
4. Concentrations exceeding the laboratory's reporting limits are shown in **BOLD** fields.
5. Concentrations exceeding the 2L Standards are shown in Shaded and **BOLD** fields.
6. GCL: Gross Contamination Level.
7. J: Estimated concentration detected below the reporting limit.

Figures



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.

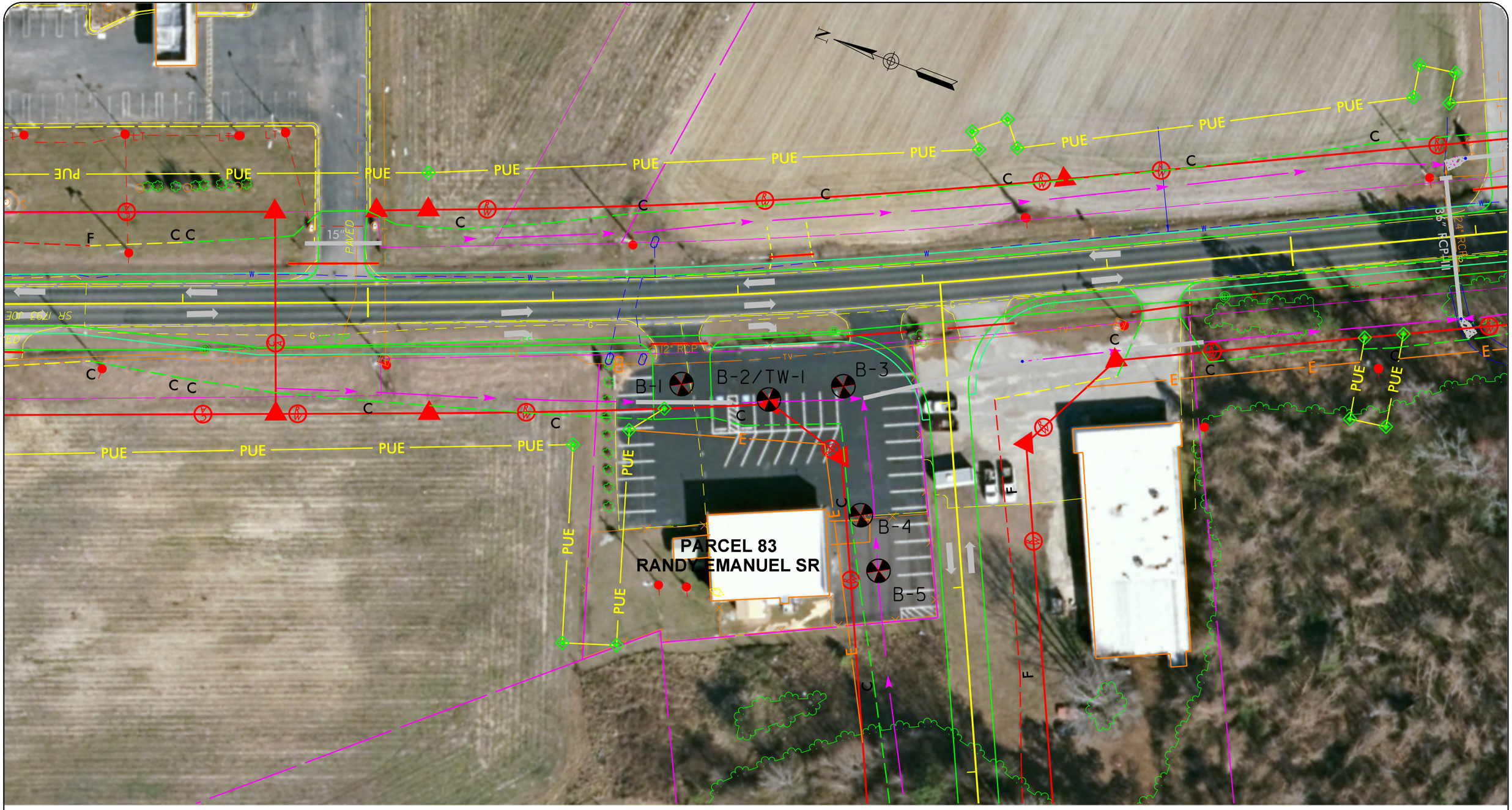
Drawing Path: T:\Projects\2019\ENV\4305-19-161 NCDOT I-5878 PSAs\GIS\Parcel_83\VICINITY.mxd plotted by abentz 11-22-2019

VICINITY MAP

NCDOT PROJECT I-5878
PARCEL NO. 83 (THROW BACK THURSDAY)
608 SPRING BRANCH RD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE: 1 " = 2,000 '
DATE: 11-22-19
PROJECT NUMBER 4305-19-161

FIGURE NO. 1



LEGEND

Geoenvironmental Boring:

Underground Storage Tank (UST): UST

Known Soil Contamination:

Possible Soil Contamination: — S —

Existing Contamination Known - Water: — W —

Map Source: NCDOT Project I-5986B
Image Source: NC ONEMAP, Dated 2016

0 50 100

GRAPHIC SCALE (IN FEET)

SITE MAP

NCDOT Project: I-5878
PARCEL 83 - THROW BACK THURSDAY
608 Spring Branch Rd., Dunn, Harnett County, North Carolina

SCALE:	FIGURE NO.
1" = 50'	2
DATE:	
JAN. 2020	
PROJECT NUMBER	
4305-19-161	

Notes:
mg/kg: Milligrams per Kilogram
µg/L: Micrograms per Liter
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
BOLD#: Indicates Exceedance of 2L Groundwater Samples
ft-bgs : Feet Below Ground Surface

Samples Collected 10-29-2019.

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

B-1

(ft-bgs) Sample Depth	(mg/kg) GRO	DRO
6-8	<0.45	1.1

B-2

(ft-bgs) Sample Depth	(mg/kg) GRO	DRO
2-4	<0.29	<0.29

B-3

(ft-bgs) Sample Depth	(mg/kg) GRO	DRO
6-8	<0.5	1

B-4

(ft-bgs) Sample Depth	(mg/kg) GRO	DRO
6-8	<0.51	1.3

B-5

(ft-bgs) Sample Depth	(mg/kg) GRO	DRO
6-8	<0.52	<0.52

TW-1 EPA Method 8260	µg/L
Benzene	0.66
Ethylbenzene	4.9
Isopropylbenzene	43
Naphthalene	3.9
n-Butylbenzene	3.5
sec-butylbenzene	15
Styrene	0.28
tert-Butyl Alcohol	0.24
n-Propylbenzene	1.8
p-Isopropyltoluene	0.92
Toluene	0.25
1,2,4-Trimethylbenzene	4.4
1,3,5-Trimethylbenzene	2.2
Total Xylenes	1.9
EPA Method 8270	
Acenaphthene	0.30
Acenaphthylene	0.095
Fluoranthene	0.027
Fluorene	0.38
Naphthalene	3.2
Phenanthrene	0.42
Pyrene	0.025
2-Methylnaphthalene	4.9

PARCEL 83

RANDY EMANUEL SR

LEGEND

Geoenvironmental Boring:

Underground Storage Tank (UST): UST

Known Soil Contamination:

Possible Soil Contamination: — S —

Existing Contamination Known - Water: — W —

Map Source: NCDOT Project I-5986B
Image Source: NC ONEMAP, Dated 2016

0 50 100
GRAPHIC SCALE (IN FEET)

SOIL AND GROUNDWATER CONSTITUENT MAP

NCDOT Project: I-5878
PARCEL 83 - THROW BACK THURSDAY
608 Spring Branch Rd., Dunn, Harnett County, North Carolina

SCALE:	FIGURE NO.
1" = 50'	3
DATE:	
NOV. 2019	
PROJECT NUMBER	
4305-19-161	

REFERENCE:
GOOGLE EARTH PRO AERIAL PHOTOGRAPH
(DATED, MARCH 4, 2018)

LEGEND

Approximate TDEM Path

Approximate Requested Survey Area

TDEM PATH LOCATION PLAN

NCDOT PROJECT: I-5878
PARCEL #83 - (THROW BACK THURSDAY)
608 SPRING BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

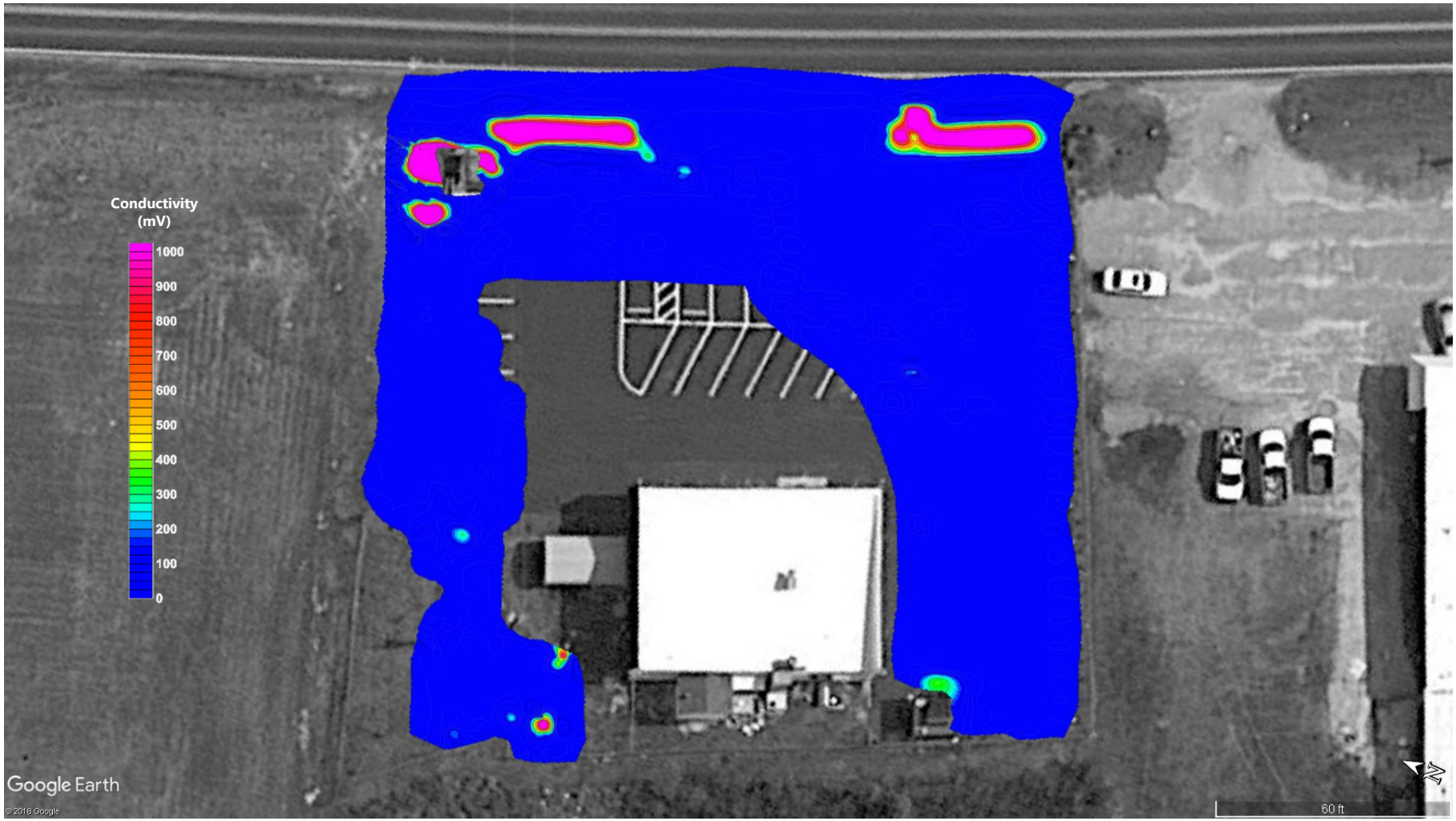
SCALE:
AS SHOWN

DATE:
11/26/2019

PROJECT NUMBER
4305-19-161

FIGURE NO.
4

REFERENCE:
GOOGLE EARTH PRO AERIAL PHOTOGRAPH
(DATED, MARCH 4, 2018)



TDEM DATA PLOT A

NCDOT PROJECT: I-5878
PARCEL #83 - (THROW BACK THURSDAY)
608 SPRING BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

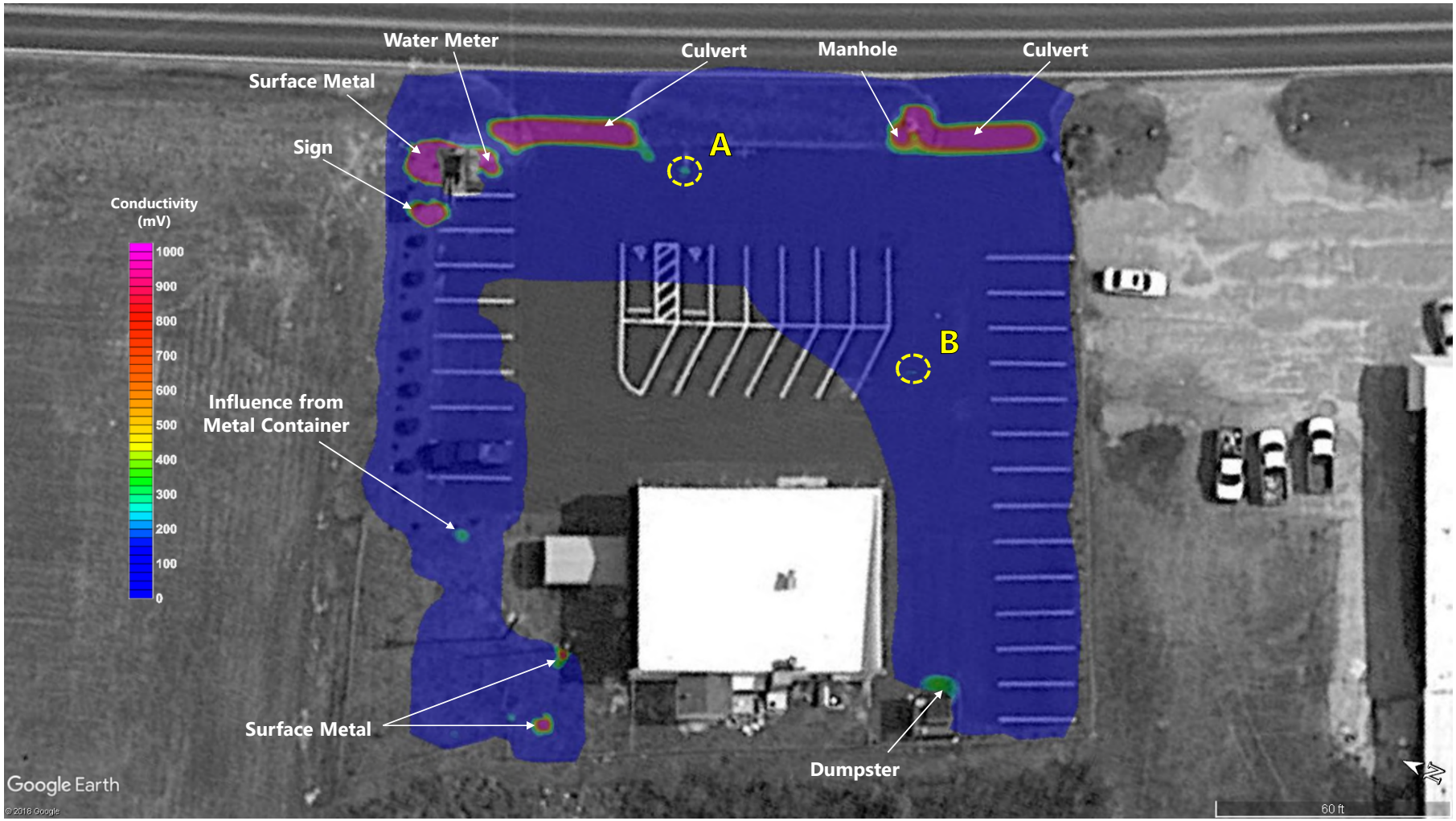
SCALE:
AS SHOWN

DATE:
11/26/2019

PROJECT NUMBER
4305-19-161

FIGURE NO.
5

REFERENCE:
GOOGLE EARTH PRO AERIAL PHOTOGRAPH
(DATED, MARCH 4, 2018)



LEGEND

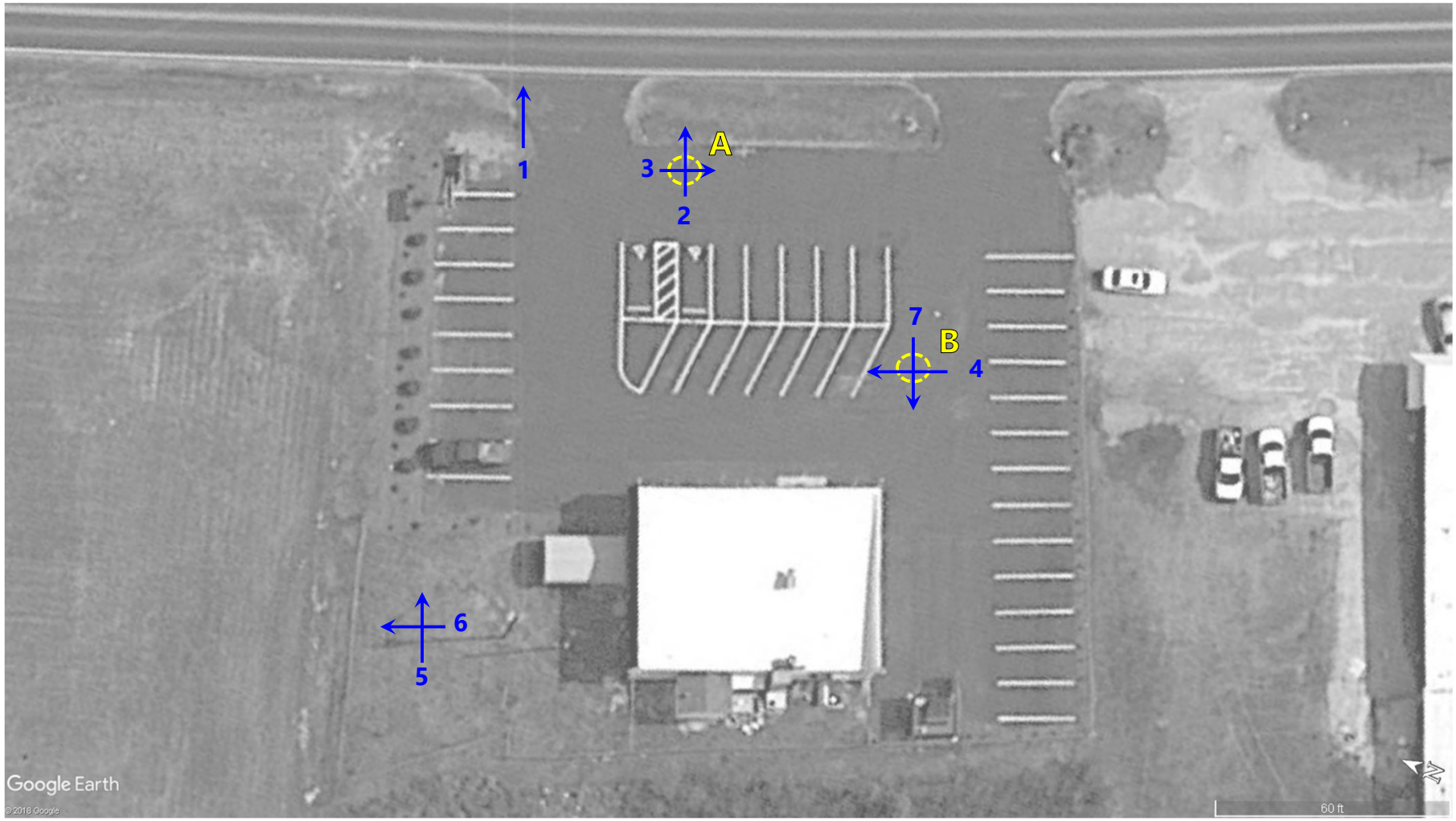
Approximate Location of Geophysical Anomaly

TDEM DATA PLOT B

NCDOT PROJECT: I-5878
PARCEL #83 - (THROW BACK THURSDAY)
608 SPRING BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE: AS SHOWN
DATE: 11/26/2019
PROJECT NUMBER 4305-19-161
FIGURE NO. **6**

REFERENCE:
GOOGLE EARTH PRO AERIAL PHOTOGRAPH
(DATED, MARCH 4, 2018)



LEGEND

Approximate Location of Geophysical Anomaly

Approximate Location of GPR Profile

GEOPHYSICAL ANOMALY LOCATION PLAN

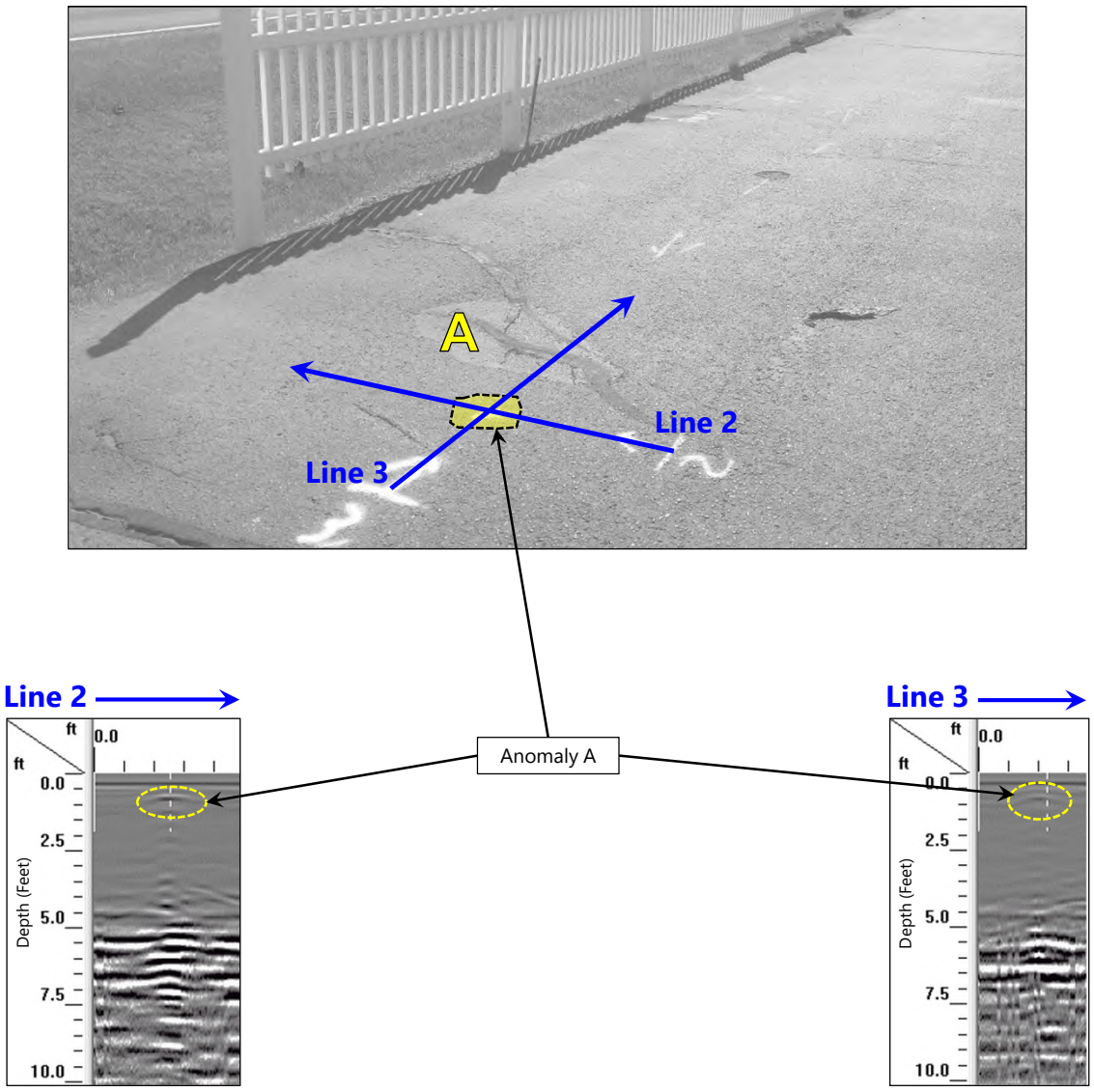
NCDOT PROJECT: I-5878
PARCEL #83 - (THROW BACK THURSDAY)
608 SPRING BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE:
AS SHOWN

DATE:
11/26/2019

PROJECT NUMBER
4305-19-161

FIGURE NO.
7



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

EXAMPLE GPR DATA – LINES 2 AND 3

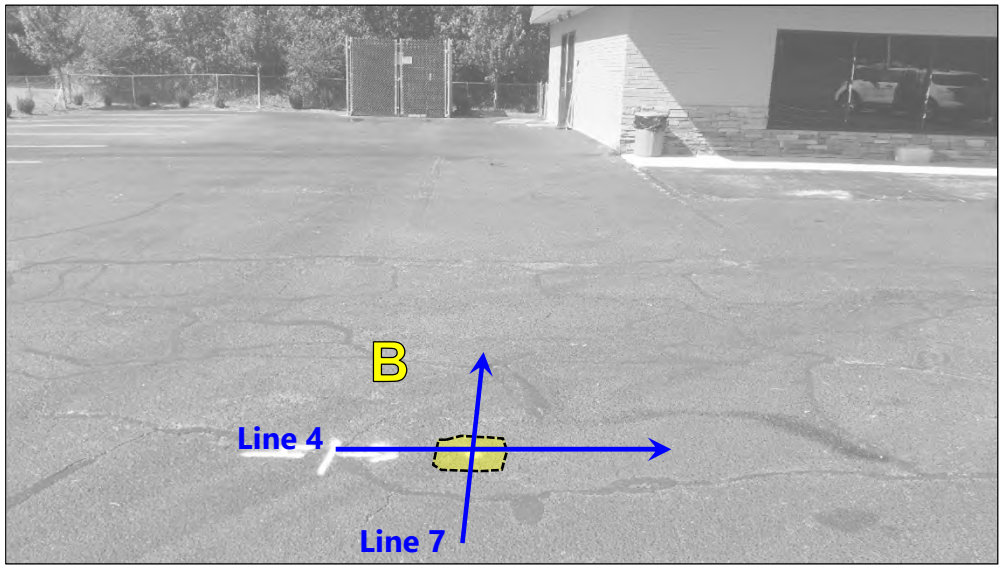
NCDOT PROJECT: I-5878
PARCEL #83 - (THROW BACK THURSDAY)
608 SPRING BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE: AS SHOWN

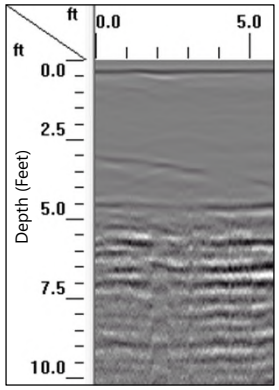
DATE: 11/26/2019

PROJECT NUMBER 4305-19-161

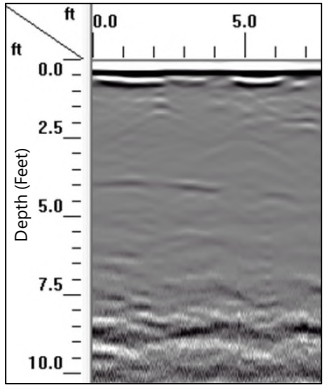
FIGURE NO. **8**



Line 4 →



Line 7 →



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

EXAMPLE GPR DATA – LINES 4 AND 7

NCDOT PROJECT: I-5878
PARCEL #83 - (THROW BACK THURSDAY)
608 SPRING BRANCH ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE: AS SHOWN

DATE: 11/26/2019

PROJECT NUMBER 4305-19-161

FIGURE NO. 9

Appendix I – Photographs

Date: 10/29/2019

Photographer: JTH

1	**Location / Orientation**	Front view of site looking south at boring B-2/TW-1.
	Remarks	B-2/TW-1 is location of former pump island.

Date: 10/29/2019

Photographer: JTH

2	**Location / Orientation**	View looking southeast across front of site.
	Remarks	Sampling of TW-1 at B-2. Note Parcel 84 in background.

Appendix II – Boring Logs

PROJECT:	**NCDOT I-5878** Parcel 83-608 Spring Branch Rd (Throw Back Thursday), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-1**
DATE DRILLED:	Tuesday, October 29, 2019	BORING DEPTH (FT):	10
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
0		Asphalt, Gravel,								
		Sandy Clay, Tan, Orange, Red,			2.3	No				
					2.0	No				
5					1.3	No				
					4.2	Yes	1000			
		Clayey Sand, Tan, White,			3.5	No				
10		Boring Terminated at 10 Ft-BGS								
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 83-608 Spring Branch Rd (Throw Back Thursday), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-2/TW-1**
DATE DRILLED:	Tuesday, October 29, 2019	BORING DEPTH (FT):	13
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	6
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Concrete, Gravel,								
		Sandy Clay, Tan, Orange, Red,			2.9	No				
					3.5	Yes	1020			
5			▼		4.2	No				
					5.2	No				
		Clayey Sand, Tan, White,			11.5	No				
10		Silty Sand, Red,								
		Boring Terminated at 13 Ft-BGS								
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 83-608 Spring Branch Rd (Throw Back Thursday), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-3**
DATE DRILLED:	Tuesday, October 29, 2019	BORING DEPTH (FT):	10
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	9.3
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
0		Asphalt, Gravel,								
		Sandy Clay, Tan, Orange, Red,			1.5	No				
					4.5	No				
5		Clayey Sand, Tan, Orange, Red,			4.9	No				
					4.7	Yes	1020			
10		Boring Terminated at 10 Ft-BGS	▼		4.1	No				
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 83-608 Spring Branch Rd (Throw Back Thursday), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-4**
DATE DRILLED:	Tuesday, October 29, 2019	BORING DEPTH (FT):	10
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	9
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
0		Asphalt, Gravel,								
		Sandy Clay, Tan, Orange, Red,			2.8	No				
					4.3	No				
5					4.1	No				
					5.2	Yes	1130			
			▼		3.2	No				
10		Boring Terminated at 10 Ft-BGS								
15										
20										
25										
30										

PROJECT:	**NCDOT I-5878** Parcel 83-608 Spring Branch Rd (Throw Back Thursday), Dunn, NC S&ME Project No. 4305-19-161		**BORING LOG: B-5**
DATE DRILLED:	Tuesday, October 29, 2019	BORING DEPTH (FT):	10
DRILL RIG:	Geoprobe 54DT	WATER LEVEL:	9
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Asphalt, Gravel,								
		Sandy Clay, Tan, Orange, Red,			1.7	No				
					1.9	No				
5					1.8	No				
					3.0	Yes	1150			
			▼							
10					4.2	No				
		Boring Terminated at 10 Ft-BGS								
15										
20										
25										
30										

Appendix III – Laboratory Analytical Reports and Chain of Custody

QED

REDLAB™ RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: S&ME
Address: 3201 SPRING FOREST ROAD

Samples taken Tuesday, October 29, 2019
Samples extracted Tuesday, October 29, 2019
Samples analysed Friday, November 1, 2019

Contact: JAMIE HONEYCUTT

Operator MAX MOYER

Project: NCDOT I-5878 PARCEL 83

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')	18.2	<0.45	<0.45	1.1	1.1	0.75	<0.15	<0.018	0	84.9	15.1	Deg Fuel 93.9%,(FCM)
s	B-2 (2-4')	11.8	<0.29	<0.29	<0.29	<0.29	<0.06	<0.09	<0.012	0	100	0	,(FCM)
s	B-3 (6-8')	20.2	<0.5	<0.5	1	1	0.44	<0.16	<0.02	0	89	11	Deg Fuel 76.3%,(FCM)
s	B-4 (6-8')	20.5	<0.51	<0.51	1.3	1.3	0.82	<0.16	<0.02	0	81.3	18.7	Deg Fuel 76.7%,(FCM)
s	B-5 (6-8')	20.6	<0.52	<0.52	<0.52	<0.52	<0.1	<0.17	<0.021	0	0	0	PHC not detected,(BO)

Initial Calibrator QC check OK

Final FCM QC Check OK 99.5 %

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

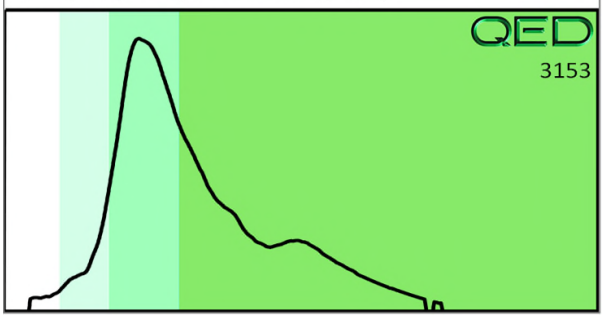
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

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

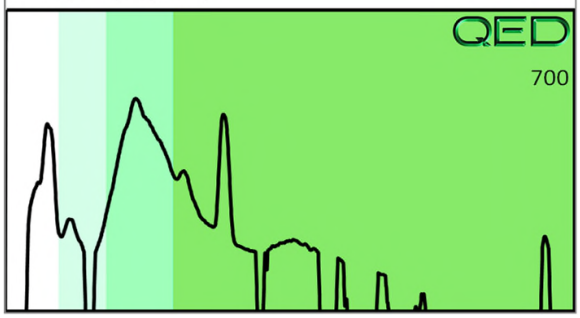
QED Hydrocarbon Fingerprints

Project: NCDOT I-5878 PARCEL 83 ##################

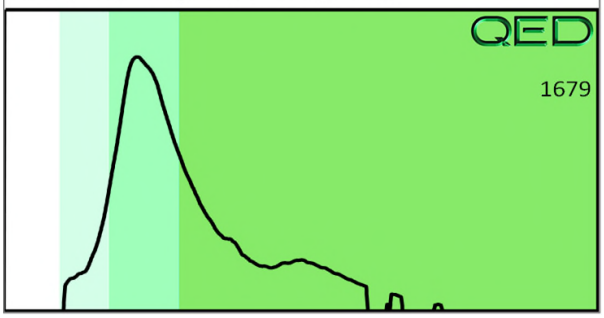
B-1 (6-8') : Deg Fuel 93.9%,(FCM)



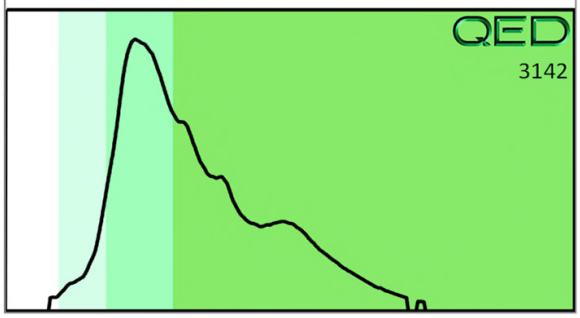
B-2 (2-4') : ,(FCM)



B-3 (6-8') : Deg Fuel 76.3%,(FCM)



B-4 (6-8') : Deg Fuel 76.7%,(FCM)



B-5 (6-8') : PHC not detected,(BO)

NCDOT I-5878 Project 83 Dunn, NC

B143

Client Name:	S+ME
Address:	3201 Spring Forest Rd Raleigh, NC
Contact:	Jamie T Honeycutt
Project Ref.:	NCDOT I-5878 Dunn Project 83
Email:	jhoneycutt@smeinc.com
Phone #:	910 977-7614
Collected by:	Jamie T Honeycutt

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

Sample Collection Date/Time	TAT Requested 24 Hour	TAT Requested 48 Hour	Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
10-29-19 1000			JTH	B-1 6-8'	59.0	44.7	14.3
1020				B-2 6-8'	56.3	44.4	11.9
1040				B-3 6-8'	57.8	44.9	12.9
1130				B-4 6-8'	57.7	45.0	12.7
1150				B-5 6-8'	57.2	44.6	12.6

Comments:

Relinquished by	Date/Time	Accepted by	Date/Time
Jamie T Honeycutt	10/31/19 1500		
Relinquished by	Date/Time	Accepted by	Date/Time
		MM 11/1/19	1150

RED Lab USE ONLY

5

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

November 7, 2019

Jamie Honeycutt
S&ME, Inc - Raleigh, NC
3201 Spring Forest Rd.
Raleigh, NC 27616

Project Location: Dunn, NC
Client Job Number:
Project Number: 4305-19-161
Laboratory Work Order Number: 19K0021

Enclosed are results of analyses for samples received by the laboratory on October 31, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kerry K. McGee
Project Manager

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

S&ME, Inc - Raleigh, NC
3201 Spring Forest Rd.
Raleigh, NC 27616
ATTN: Jamie Honeycutt

REPORT DATE: 11/7/2019

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 4305-19-161

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19K0021

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Dunn, NC

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
TW-1	19K0021-01	Ground Water		SW-846 8260D SW-846 8270E	

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EXECUTIVE SUMMARY

Client ID: **TW-1** Lab ID: **19K0021-01**

Analyte	Results/Qual		DL	RL	Units	Method
1,2,4-Trimethylbenzene	4.4		0.18	1.0	µg/L	SW-846 8260D
1,3,5-Trimethylbenzene	2.2		0.14	1.0	µg/L	SW-846 8260D
Benzene	0.66	J	0.18	1.0	µg/L	SW-846 8260D
Ethylbenzene	4.9		0.13	1.0	µg/L	SW-846 8260D
Isopropylbenzene (Cumene)	43		0.17	1.0	µg/L	SW-846 8260D
m+p Xylene	1.5	J	0.30	2.0	µg/L	SW-846 8260D
Naphthalene	3.9		0.31	2.0	µg/L	SW-846 8260D
n-Butylbenzene	3.5		0.21	1.0	µg/L	SW-846 8260D
n-Propylbenzene	1.8		0.13	1.0	µg/L	SW-846 8260D
o-Xylene	0.40	J	0.17	1.0	µg/L	SW-846 8260D
p-Isopropyltoluene (p-Cymene)	0.92	J	0.20	1.0	µg/L	SW-846 8260D
sec-Butylbenzene	15		0.16	1.0	µg/L	SW-846 8260D
Styrene	0.28	J	0.11	1.0	µg/L	SW-846 8260D
tert-Butylbenzene	0.24	J	0.17	1.0	µg/L	SW-846 8260D
Toluene	0.25	J	0.14	1.0	µg/L	SW-846 8260D
2-Methylnaphthalene (SIM)	4.9		0.062	1.0	µg/L	SW-846 8270E
Acenaphthene (SIM)	0.30		0.033	0.30	µg/L	SW-846 8270E
Acenaphthylene (SIM)	0.095	J	0.035	0.20	µg/L	SW-846 8270E
Fluoranthene (SIM)	0.027	J	0.025	0.50	µg/L	SW-846 8270E
Fluorene (SIM)	0.38	J	0.034	1.0	µg/L	SW-846 8270E
Naphthalene (SIM)	3.2		0.26	1.0	µg/L	SW-846 8270E
Phenanthrene (SIM)	0.42		0.030	0.050	µg/L	SW-846 8270E
Pyrene (SIM)	0.025	J	0.023	1.0	µg/L	SW-846 8270E

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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

For method 8270, only PAHs were requested and reported.

SW-846 8260D

Qualifications:

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:

Bromomethane

B245122-BS1, B245122-BSD1, S042311-CCV1

Chloromethane

B245122-BS1, B245122-BSD1, S042311-CCV1

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa A. Worthington
Technical Representative

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Dunn, NC | Sample Description: | Work Order: 19K0021

Date Received: 10/31/2019

Field Sample #: TW-1 | Sampled: 10/29/2019 12:30

Sample ID: 19K0021-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	3.8	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Acrylonitrile	ND	5.0	0.52	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.14	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Benzene	0.66	1.0	0.18	µg/L	1	J	SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Bromochloromethane	ND	1.0	0.32	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Bromodichloromethane	ND	0.50	0.16	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Bromoform	ND	1.0	0.46	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Bromomethane	ND	2.0	0.78	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
2-Butanone (MEK)	ND	20	1.9	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
tert-Butyl Alcohol (TBA)	ND	20	4.2	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
n-Butylbenzene	3.5	1.0	0.21	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
sec-Butylbenzene	15	1.0	0.16	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
tert-Butylbenzene	0.24	1.0	0.17	µg/L	1	J	SW-846 8260D	11/5/19	11/6/19 10:45	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.16	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Carbon Disulfide	ND	5.0	4.4	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Carbon Tetrachloride	ND	1.0	0.11	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Chlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Chlorodibromomethane	ND	0.50	0.21	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Chloroethane	ND	2.0	0.35	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Chloroform	ND	2.0	0.17	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Chloromethane	ND	2.0	0.45	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.53	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,2-Dibromoethane (EDB)	ND	0.50	0.19	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Dibromomethane	ND	1.0	0.37	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,2-Dichlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,3-Dichlorobenzene	ND	1.0	0.12	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,4-Dichlorobenzene	ND	1.0	0.13	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Dichlorodifluoromethane (Freon 12)	ND	2.0	0.26	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,2-Dichloroethane	ND	1.0	0.41	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,1-Dichloroethylene	ND	1.0	0.32	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
cis-1,2-Dichloroethylene	ND	1.0	0.13	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
trans-1,2-Dichloroethylene	ND	1.0	0.31	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,3-Dichloropropane	ND	0.50	0.11	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
2,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,1-Dichloropropene	ND	2.0	0.16	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
cis-1,3-Dichloropropene	ND	0.50	0.13	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
trans-1,3-Dichloropropene	ND	0.50	0.23	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Diethyl Ether	ND	2.0	0.34	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Dunn, NC | Sample Description: | Work Order: 19K0021

Date Received: 10/31/2019

Field Sample #: TW-1 | Sampled: 10/29/2019 12:30

Sample ID: 19K0021-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.17	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,4-Dioxane	ND	50	22	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Ethylbenzene	4.9	1.0	0.13	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Hexachlorobutadiene	ND	0.60	0.47	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Isopropylbenzene (Cumene)	43	1.0	0.17	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
p-Isopropyltoluene (p-Cymene)	0.92	1.0	0.20	µg/L	1	J	SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.25	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Methylene Chloride	ND	5.0	0.34	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
4-Methyl-2-pentanone (MIBK)	ND	10	1.7	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Naphthalene	3.9	2.0	0.31	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
n-Propylbenzene	1.8	1.0	0.13	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Styrene	0.28	1.0	0.11	µg/L	1	J	SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,1,1,2-Tetrachloroethane	ND	1.0	0.27	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,1,2,2-Tetrachloroethane	ND	0.50	0.22	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Tetrachloroethylene	ND	1.0	0.18	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Tetrahydrofuran	ND	10	0.51	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Toluene	0.25	1.0	0.14	µg/L	1	J	SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,2,3-Trichlorobenzene	ND	5.0	0.57	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,2,4-Trichlorobenzene	ND	1.0	0.40	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,3,5-Trichlorobenzene	ND	1.0	0.30	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,1,1-Trichloroethane	ND	1.0	0.20	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,1,2-Trichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Trichloroethylene	ND	1.0	0.24	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Trichlorofluoromethane (Freon 11)	ND	2.0	0.33	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,2,3-Trichloropropane	ND	2.0	0.25	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.32	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,2,4-Trimethylbenzene	4.4	1.0	0.18	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
1,3,5-Trimethylbenzene	2.2	1.0	0.14	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
Vinyl Chloride	ND	2.0	0.45	µg/L	1		SW-846 8260D	11/5/19	11/6/19 10:45	EEH
m+p Xylene	1.5	2.0	0.30	µg/L	1	J	SW-846 8260D	11/5/19	11/6/19 10:45	EEH
o-Xylene	0.40	1.0	0.17	µg/L	1	J	SW-846 8260D	11/5/19	11/6/19 10:45	EEH

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	94.7	70-130		11/6/19 10:45
Toluene-d8	99.0	70-130		11/6/19 10:45
4-Bromofluorobenzene	102	70-130		11/6/19 10:45

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Dunn, NC | Sample Description: | Work Order: 19K0021

Date Received: 10/31/2019

Field Sample #: TW-1 | Sampled: 10/29/2019 12:30

Sample ID: 19K0021-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene (SIM)	0.30	0.30	0.033	µg/L	1		SW-846 8270E	11/5/19	11/6/19 18:18	CLA
Acenaphthylene (SIM)	0.095	0.20	0.035	µg/L	1	J	SW-846 8270E	11/5/19	11/6/19 18:18	CLA
Anthracene (SIM)	ND	0.20	0.032	µg/L	1		SW-846 8270E	11/5/19	11/6/19 18:18	CLA
Benzo(a)anthracene (SIM)	ND	0.050	0.016	µg/L	1		SW-846 8270E	11/5/19	11/6/19 18:18	CLA
Benzo(a)pyrene (SIM)	ND	0.10	0.012	µg/L	1		SW-846 8270E	11/5/19	11/6/19 18:18	CLA
Benzo(b)fluoranthene (SIM)	ND	0.050	0.015	µg/L	1		SW-846 8270E	11/5/19	11/6/19 18:18	CLA
Benzo(g,h,i)perylene (SIM)	ND	0.50	0.018	µg/L	1		SW-846 8270E	11/5/19	11/6/19 18:18	CLA
Benzo(k)fluoranthene (SIM)	ND	0.20	0.012	µg/L	1		SW-846 8270E	11/5/19	11/6/19 18:18	CLA
Chrysene (SIM)	ND	0.20	0.015	µg/L	1		SW-846 8270E	11/5/19	11/6/19 18:18	CLA
Dibenz(a,h)anthracene (SIM)	ND	0.10	0.017	µg/L	1		SW-846 8270E	11/5/19	11/6/19 18:18	CLA
Fluoranthene (SIM)	0.027	0.50	0.025	µg/L	1	J	SW-846 8270E	11/5/19	11/6/19 18:18	CLA
Fluorene (SIM)	0.38	1.0	0.034	µg/L	1	J	SW-846 8270E	11/5/19	11/6/19 18:18	CLA
Indeno(1,2,3-cd)pyrene (SIM)	ND	0.10	0.018	µg/L	1		SW-846 8270E	11/5/19	11/6/19 18:18	CLA
2-Methylnaphthalene (SIM)	4.9	1.0	0.062	µg/L	1		SW-846 8270E	11/5/19	11/6/19 18:18	CLA
Naphthalene (SIM)	3.2	1.0	0.26	µg/L	1		SW-846 8270E	11/5/19	11/6/19 18:18	CLA
Phenanthrene (SIM)	0.42	0.050	0.030	µg/L	1		SW-846 8270E	11/5/19	11/6/19 18:18	CLA
Pyrene (SIM)	0.025	1.0	0.023	µg/L	1	J	SW-846 8270E	11/5/19	11/6/19 18:18	CLA

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Nitrobenzene-d5	65.4	30-130		11/6/19 18:18
2-Fluorobiphenyl	48.5	30-130		11/6/19 18:18
p-Terphenyl-d14	63.0	30-130		11/6/19 18:18

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Sample Extraction Data

Prep Method: SW-846 5030B-SW-846 8260D

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0021-01 [TW-1]	B245122	5	5.00	11/05/19

Prep Method: SW-846 3510C-SW-846 8270E

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19K0021-01 [TW-1]	B245268	1000	1.00	11/05/19

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B245122 - SW-846 5030B										
Blank (B245122-BLK1)				Prepared: 11/05/19 Analyzed: 11/06/19						
Acetone	ND	50	µg/L							
Acrylonitrile	ND	5.0	µg/L							
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L							
Benzene	ND	1.0	µg/L							
Bromobenzene	ND	1.0	µg/L							
Bromochloromethane	ND	1.0	µg/L							
Bromodichloromethane	ND	0.50	µg/L							
Bromoform	ND	1.0	µg/L							
Bromomethane	ND	2.0	µg/L							
2-Butanone (MEK)	ND	20	µg/L							
tert-Butyl Alcohol (TBA)	ND	20	µg/L							
n-Butylbenzene	ND	1.0	µg/L							
sec-Butylbenzene	ND	1.0	µg/L							
tert-Butylbenzene	ND	1.0	µg/L							
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L							
Carbon Disulfide	ND	5.0	µg/L							
Carbon Tetrachloride	ND	1.0	µg/L							
Chlorobenzene	ND	1.0	µg/L							
Chlorodibromomethane	ND	0.50	µg/L							
Chloroethane	ND	2.0	µg/L							
Chloroform	ND	2.0	µg/L							
Chloromethane	ND	2.0	µg/L							
2-Chlorotoluene	ND	1.0	µg/L							
4-Chlorotoluene	ND	1.0	µg/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L							
1,2-Dibromoethane (EDB)	ND	0.50	µg/L							
Dibromomethane	ND	1.0	µg/L							
1,2-Dichlorobenzene	ND	1.0	µg/L							
1,3-Dichlorobenzene	ND	1.0	µg/L							
1,4-Dichlorobenzene	ND	1.0	µg/L							
trans-1,4-Dichloro-2-butene	ND	2.0	µg/L							
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L							
1,1-Dichloroethane	ND	1.0	µg/L							
1,2-Dichloroethane	ND	1.0	µg/L							
1,1-Dichloroethylene	ND	1.0	µg/L							
cis-1,2-Dichloroethylene	ND	1.0	µg/L							
trans-1,2-Dichloroethylene	ND	1.0	µg/L							
1,2-Dichloropropane	ND	1.0	µg/L							
1,3-Dichloropropane	ND	0.50	µg/L							
2,2-Dichloropropane	ND	1.0	µg/L							
1,1-Dichloropropene	ND	2.0	µg/L							
cis-1,3-Dichloropropene	ND	0.50	µg/L							
trans-1,3-Dichloropropene	ND	0.50	µg/L							
Diethyl Ether	ND	2.0	µg/L							
Diisopropyl Ether (DIPE)	ND	0.50	µg/L							
1,4-Dioxane	ND	50	µg/L							
Ethylbenzene	ND	1.0	µg/L							
Hexachlorobutadiene	ND	0.60	µg/L							
2-Hexanone (MBK)	ND	10	µg/L							
Isopropylbenzene (Cumene)	ND	1.0	µg/L							
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L							
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L							

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B245122 - SW-846 5030B											
Blank (B245122-BLK1)				Prepared: 11/05/19 Analyzed: 11/06/19							
Methylene Chloride	ND	5.0	µg/L								
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L								
Naphthalene	ND	2.0	µg/L								
n-Propylbenzene	ND	1.0	µg/L								
Styrene	ND	1.0	µg/L								
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L								
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L								
Tetrachloroethylene	ND	1.0	µg/L								
Tetrahydrofuran	ND	10	µg/L								
Toluene	ND	1.0	µg/L								
1,2,3-Trichlorobenzene	ND	5.0	µg/L								
1,2,4-Trichlorobenzene	ND	1.0	µg/L								
1,3,5-Trichlorobenzene	ND	1.0	µg/L								
1,1,1-Trichloroethane	ND	1.0	µg/L								
1,1,2-Trichloroethane	ND	1.0	µg/L								
Trichloroethylene	ND	1.0	µg/L								
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L								
1,2,3-Trichloropropane	ND	2.0	µg/L								
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	µg/L								
1,2,4-Trimethylbenzene	ND	1.0	µg/L								
1,3,5-Trimethylbenzene	ND	1.0	µg/L								
Vinyl Chloride	ND	2.0	µg/L								
m+p Xylene	ND	2.0	µg/L								
o-Xylene	ND	1.0	µg/L								
Surrogate: 1,2-Dichloroethane-d4	*23.6*		µg/L	25.0		94.4	70-130				
Surrogate: Toluene-d8	*24.4*		µg/L	25.0		97.4	70-130				
Surrogate: 4-Bromofluorobenzene	*24.4*		µg/L	25.0		97.4	70-130				
LCS (B245122-BS1)				Prepared: 11/05/19 Analyzed: 11/06/19							
Acetone	88.7	50	µg/L	100		88.7	70-160				†
Acrylonitrile	8.30	5.0	µg/L	10.0		83.0	70-130				
tert-Amyl Methyl Ether (TAME)	9.48	0.50	µg/L	10.0		94.8	70-130				
Benzene	10.7	1.0	µg/L	10.0		107	70-130				
Bromobenzene	10.4	1.0	µg/L	10.0		104	70-130				
Bromochloromethane	10.4	1.0	µg/L	10.0		104	70-130				
Bromodichloromethane	10.5	0.50	µg/L	10.0		105	70-130				
Bromoform	9.77	1.0	µg/L	10.0		97.7	70-130				
Bromomethane	9.88	2.0	µg/L	10.0		98.8	40-160			V-20	†
2-Butanone (MEK)	87.5	20	µg/L	100		87.5	40-160				†
tert-Butyl Alcohol (TBA)	80.3	20	µg/L	100		80.3	40-160				†
n-Butylbenzene	9.81	1.0	µg/L	10.0		98.1	70-130				
sec-Butylbenzene	11.1	1.0	µg/L	10.0		111	70-130				
tert-Butylbenzene	10.9	1.0	µg/L	10.0		109	70-130				
tert-Butyl Ethyl Ether (TBEE)	9.24	0.50	µg/L	10.0		92.4	70-130				
Carbon Disulfide	11.8	5.0	µg/L	10.0		118	70-130				
Carbon Tetrachloride	10.3	1.0	µg/L	10.0		103	70-130				
Chlorobenzene	11.4	1.0	µg/L	10.0		114	70-130				
Chlorodibromomethane	10.0	0.50	µg/L	10.0		100	70-130				
Chloroethane	11.6	2.0	µg/L	10.0		116	70-130				
Chloroform	10.4	2.0	µg/L	10.0		104	70-130				
Chloromethane	9.02	2.0	µg/L	10.0		90.2	40-160			V-20	†
2-Chlorotoluene	10.6	1.0	µg/L	10.0		106	70-130				

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B245122 - SW-846 5030B										
LCS (B245122-BS1)				Prepared: 11/05/19 Analyzed: 11/06/19						
4-Chlorotoluene	10.5	1.0	µg/L	10.0		105	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	9.08	5.0	µg/L	10.0		90.8	70-130			
1,2-Dibromoethane (EDB)	10.8	0.50	µg/L	10.0		108	70-130			
Dibromomethane	10.4	1.0	µg/L	10.0		104	70-130			
1,2-Dichlorobenzene	11.0	1.0	µg/L	10.0		110	70-130			
1,3-Dichlorobenzene	11.5	1.0	µg/L	10.0		115	70-130			
1,4-Dichlorobenzene	11.2	1.0	µg/L	10.0		112	70-130			
trans-1,4-Dichloro-2-butene	7.67	2.0	µg/L	10.0		76.7	70-130			
Dichlorodifluoromethane (Freon 12)	8.34	2.0	µg/L	10.0		83.4	40-160			†
1,1-Dichloroethane	10.7	1.0	µg/L	10.0		107	70-130			
1,2-Dichloroethane	9.98	1.0	µg/L	10.0		99.8	70-130			
1,1-Dichloroethylene	11.0	1.0	µg/L	10.0		110	70-130			
cis-1,2-Dichloroethylene	10.6	1.0	µg/L	10.0		106	70-130			
trans-1,2-Dichloroethylene	10.5	1.0	µg/L	10.0		105	70-130			
1,2-Dichloropropane	10.8	1.0	µg/L	10.0		108	70-130			
1,3-Dichloropropane	10.3	0.50	µg/L	10.0		103	70-130			
2,2-Dichloropropane	8.49	1.0	µg/L	10.0		84.9	40-130			†
1,1-Dichloropropene	10.5	2.0	µg/L	10.0		105	70-130			
cis-1,3-Dichloropropene	10.0	0.50	µg/L	10.0		100	70-130			
trans-1,3-Dichloropropene	9.41	0.50	µg/L	10.0		94.1	70-130			
Diethyl Ether	10.8	2.0	µg/L	10.0		108	70-130			
Diisopropyl Ether (DIPE)	10.1	0.50	µg/L	10.0		101	70-130			
1,4-Dioxane	86.6	50	µg/L	100		86.6	40-130			†
Ethylbenzene	11.0	1.0	µg/L	10.0		110	70-130			
Hexachlorobutadiene	9.83	0.60	µg/L	10.0		98.3	70-130			
2-Hexanone (MBK)	84.3	10	µg/L	100		84.3	70-160			†
Isopropylbenzene (Cumene)	11.1	1.0	µg/L	10.0		111	70-130			
p-Isopropyltoluene (p-Cymene)	10.7	1.0	µg/L	10.0		107	70-130			
Methyl tert-Butyl Ether (MTBE)	10.3	1.0	µg/L	10.0		103	70-130			
Methylene Chloride	11.0	5.0	µg/L	10.0		110	70-130			
4-Methyl-2-pentanone (MIBK)	86.6	10	µg/L	100		86.6	70-160			†
Naphthalene	7.64	2.0	µg/L	10.0		76.4	40-130			†
n-Propylbenzene	10.6	1.0	µg/L	10.0		106	70-130			
Styrene	10.9	1.0	µg/L	10.0		109	70-130			
1,1,1,2-Tetrachloroethane	11.3	1.0	µg/L	10.0		113	70-130			
1,1,2,2-Tetrachloroethane	10.8	0.50	µg/L	10.0		108	70-130			
Tetrachloroethylene	11.5	1.0	µg/L	10.0		115	70-130			
Tetrahydrofuran	9.60	10	µg/L	10.0		96.0	70-130			J
Toluene	10.9	1.0	µg/L	10.0		109	70-130			
1,2,3-Trichlorobenzene	8.06	5.0	µg/L	10.0		80.6	70-130			
1,2,4-Trichlorobenzene	8.70	1.0	µg/L	10.0		87.0	70-130			
1,3,5-Trichlorobenzene	9.18	1.0	µg/L	10.0		91.8	70-130			
1,1,1-Trichloroethane	10.4	1.0	µg/L	10.0		104	70-130			
1,1,2-Trichloroethane	11.0	1.0	µg/L	10.0		110	70-130			
Trichloroethylene	11.1	1.0	µg/L	10.0		111	70-130			
Trichlorofluoromethane (Freon 11)	9.61	2.0	µg/L	10.0		96.1	70-130			
1,2,3-Trichloropropane	10.3	2.0	µg/L	10.0		103	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	11.5	1.0	µg/L	10.0		115	70-130			
1,2,4-Trimethylbenzene	10.8	1.0	µg/L	10.0		108	70-130			
1,3,5-Trimethylbenzene	10.4	1.0	µg/L	10.0		104	70-130			
Vinyl Chloride	9.58	2.0	µg/L	10.0		95.8	40-160			†

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B245122 - SW-846 5030B											
LCS (B245122-BS1)				Prepared: 11/05/19 Analyzed: 11/06/19							
m+p Xylene	21.3	2.0	µg/L	20.0		106	70-130				
o-Xylene	11.1	1.0	µg/L	10.0		111	70-130				
Surrogate: 1,2-Dichloroethane-d4	*23.4*		µg/L	25.0		93.6	70-130				
Surrogate: Toluene-d8	*25.0*		µg/L	25.0		99.9	70-130				
Surrogate: 4-Bromofluorobenzene	*24.6*		µg/L	25.0		98.4	70-130				
LCS Dup (B245122-BSD1)				Prepared: 11/05/19 Analyzed: 11/06/19							
Acetone	91.2	50	µg/L	100		91.2	70-160	2.72	25		†
Acrylonitrile	9.01	5.0	µg/L	10.0		90.1	70-130	8.20	25		
tert-Amyl Methyl Ether (TAME)	9.41	0.50	µg/L	10.0		94.1	70-130	0.741	25		
Benzene	10.4	1.0	µg/L	10.0		104	70-130	3.23	25		
Bromobenzene	10.0	1.0	µg/L	10.0		100	70-130	4.00	25		
Bromochloromethane	10.4	1.0	µg/L	10.0		104	70-130	0.865	25		
Bromodichloromethane	10.2	0.50	µg/L	10.0		102	70-130	3.68	25		
Bromoform	10.2	1.0	µg/L	10.0		102	70-130	3.91	25		
Bromomethane	9.76	2.0	µg/L	10.0		97.6	40-160	1.22	25	V-20	†
2-Butanone (MEK)	89.8	20	µg/L	100		89.8	40-160	2.63	25		†
tert-Butyl Alcohol (TBA)	83.6	20	µg/L	100		83.6	40-160	4.00	25		†
n-Butylbenzene	9.65	1.0	µg/L	10.0		96.5	70-130	1.64	25		
sec-Butylbenzene	11.0	1.0	µg/L	10.0		110	70-130	1.18	25		
tert-Butylbenzene	10.8	1.0	µg/L	10.0		108	70-130	1.11	25		
tert-Butyl Ethyl Ether (TBEE)	9.17	0.50	µg/L	10.0		91.7	70-130	0.760	25		
Carbon Disulfide	10.8	5.0	µg/L	10.0		108	70-130	8.59	25		
Carbon Tetrachloride	10.2	1.0	µg/L	10.0		102	70-130	1.46	25		
Chlorobenzene	11.5	1.0	µg/L	10.0		115	70-130	0.610	25		
Chlorodibromomethane	9.73	0.50	µg/L	10.0		97.3	70-130	2.84	25		
Chloroethane	10.8	2.0	µg/L	10.0		108	70-130	7.24	25		
Chloroform	10.1	2.0	µg/L	10.0		101	70-130	2.53	25		
Chloromethane	8.77	2.0	µg/L	10.0		87.7	40-160	2.81	25	V-20	†
2-Chlorotoluene	10.7	1.0	µg/L	10.0		107	70-130	0.845	25		
4-Chlorotoluene	10.4	1.0	µg/L	10.0		104	70-130	1.34	25		
1,2-Dibromo-3-chloropropane (DBCP)	8.90	5.0	µg/L	10.0		89.0	70-130	2.00	25		
1,2-Dibromoethane (EDB)	10.7	0.50	µg/L	10.0		107	70-130	1.58	25		
Dibromomethane	10.2	1.0	µg/L	10.0		102	70-130	2.33	25		
1,2-Dichlorobenzene	11.0	1.0	µg/L	10.0		110	70-130	0.181	25		
1,3-Dichlorobenzene	11.4	1.0	µg/L	10.0		114	70-130	0.872	25		
1,4-Dichlorobenzene	10.9	1.0	µg/L	10.0		109	70-130	3.07	25		
trans-1,4-Dichloro-2-butene	8.71	2.0	µg/L	10.0		87.1	70-130	12.7	25		
Dichlorodifluoromethane (Freon 12)	8.23	2.0	µg/L	10.0		82.3	40-160	1.33	25		†
1,1-Dichloroethane	10.2	1.0	µg/L	10.0		102	70-130	4.40	25		
1,2-Dichloroethane	9.91	1.0	µg/L	10.0		99.1	70-130	0.704	25		
1,1-Dichloroethylene	10.6	1.0	µg/L	10.0		106	70-130	3.90	25		
cis-1,2-Dichloroethylene	10.1	1.0	µg/L	10.0		101	70-130	5.01	25		
trans-1,2-Dichloroethylene	10.3	1.0	µg/L	10.0		103	70-130	2.50	25		
1,2-Dichloropropane	10.8	1.0	µg/L	10.0		108	70-130	0.649	25		
1,3-Dichloropropane	10.4	0.50	µg/L	10.0		104	70-130	0.870	25		
2,2-Dichloropropane	8.15	1.0	µg/L	10.0		81.5	40-130	4.09	25		†
1,1-Dichloropropene	10.4	2.0	µg/L	10.0		104	70-130	1.06	25		
cis-1,3-Dichloropropene	9.73	0.50	µg/L	10.0		97.3	70-130	3.14	25		
trans-1,3-Dichloropropene	9.66	0.50	µg/L	10.0		96.6	70-130	2.62	25		
Diethyl Ether	10.3	2.0	µg/L	10.0		103	70-130	4.65	25		
Diisopropyl Ether (DIPE)	9.94	0.50	µg/L	10.0		99.4	70-130	1.99	25		

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B245122 - SW-846 5030B										
LCS Dup (B245122-BSD1)				Prepared: 11/05/19 Analyzed: 11/06/19						
1,4-Dioxane	92.6	50	µg/L	100		92.6	40-130	6.72	50	† ‡
Ethylbenzene	10.7	1.0	µg/L	10.0		107	70-130	2.12	25	
Hexachlorobutadiene	10.1	0.60	µg/L	10.0		101	70-130	2.41	25	
2-Hexanone (MBK)	84.4	10	µg/L	100		84.4	70-160	0.0712	25	†
Isopropylbenzene (Cumene)	10.6	1.0	µg/L	10.0		106	70-130	3.96	25	
p-Isopropyltoluene (p-Cymene)	10.5	1.0	µg/L	10.0		105	70-130	2.36	25	
Methyl tert-Butyl Ether (MTBE)	10.2	1.0	µg/L	10.0		102	70-130	0.585	25	
Methylene Chloride	10.6	5.0	µg/L	10.0		106	70-130	3.60	25	
4-Methyl-2-pentanone (MIBK)	90.1	10	µg/L	100		90.1	70-160	4.02	25	†
Naphthalene	8.02	2.0	µg/L	10.0		80.2	40-130	4.85	25	†
n-Propylbenzene	10.3	1.0	µg/L	10.0		103	70-130	2.11	25	
Styrene	10.4	1.0	µg/L	10.0		104	70-130	4.90	25	
1,1,1,2-Tetrachloroethane	11.3	1.0	µg/L	10.0		113	70-130	0.265	25	
1,1,2,2-Tetrachloroethane	11.1	0.50	µg/L	10.0		111	70-130	3.01	25	
Tetrachloroethylene	11.5	1.0	µg/L	10.0		115	70-130	0.348	25	
Tetrahydrofuran	10.0	10	µg/L	10.0		100	70-130	4.28	25	
Toluene	10.5	1.0	µg/L	10.0		105	70-130	3.82	25	
1,2,3-Trichlorobenzene	7.86	5.0	µg/L	10.0		78.6	70-130	2.51	25	
1,2,4-Trichlorobenzene	8.34	1.0	µg/L	10.0		83.4	70-130	4.23	25	
1,3,5-Trichlorobenzene	8.42	1.0	µg/L	10.0		84.2	70-130	8.64	25	
1,1,1-Trichloroethane	9.84	1.0	µg/L	10.0		98.4	70-130	5.24	25	
1,1,2-Trichloroethane	11.0	1.0	µg/L	10.0		110	70-130	0.364	25	
Trichloroethylene	11.1	1.0	µg/L	10.0		111	70-130	0.180	25	
Trichlorofluoromethane (Freon 11)	9.30	2.0	µg/L	10.0		93.0	70-130	3.28	25	
1,2,3-Trichloropropane	10.0	2.0	µg/L	10.0		100	70-130	2.85	25	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	11.1	1.0	µg/L	10.0		111	70-130	4.07	25	
1,2,4-Trimethylbenzene	10.7	1.0	µg/L	10.0		107	70-130	0.650	25	
1,3,5-Trimethylbenzene	9.97	1.0	µg/L	10.0		99.7	70-130	3.93	25	
Vinyl Chloride	9.25	2.0	µg/L	10.0		92.5	40-160	3.51	25	†
m+p Xylene	21.3	2.0	µg/L	20.0		106	70-130	0.0470	25	
o-Xylene	11.1	1.0	µg/L	10.0		111	70-130	0.541	25	
Surrogate: 1,2-Dichloroethane-d4	*22.9*		µg/L	25.0		91.5	70-130			
Surrogate: Toluene-d8	*25.2*		µg/L	25.0		101	70-130			
Surrogate: 4-Bromofluorobenzene	*24.6*		µg/L	25.0		98.5	70-130			

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B245268 - SW-846 3510C										
Blank (B245268-BLK1)				Prepared & Analyzed: 11/06/19						
Acenaphthene (SIM)	ND	0.30	µg/L							
Acenaphthylene (SIM)	ND	0.20	µg/L							
Anthracene (SIM)	ND	0.20	µg/L							
Benzo(a)anthracene (SIM)	ND	0.050	µg/L							
Benzo(a)pyrene (SIM)	ND	0.10	µg/L							
Benzo(b)fluoranthene (SIM)	ND	0.050	µg/L							
Benzo(g,h,i)perylene (SIM)	ND	0.50	µg/L							
Benzo(k)fluoranthene (SIM)	ND	0.20	µg/L							
Chrysene (SIM)	ND	0.20	µg/L							
Dibenz(a,h)anthracene (SIM)	ND	0.10	µg/L							
Fluoranthene (SIM)	ND	0.50	µg/L							
Fluorene (SIM)	ND	1.0	µg/L							
Indeno(1,2,3-cd)pyrene (SIM)	ND	0.10	µg/L							
2-Methylnaphthalene (SIM)	ND	1.0	µg/L							
Naphthalene (SIM)	ND	1.0	µg/L							
Phenanthrene (SIM)	ND	0.050	µg/L							
Pyrene (SIM)	ND	1.0	µg/L							
Surrogate: Nitrobenzene-d5	*73.7*		µg/L	100		73.7	30-130			
Surrogate: 2-Fluorobiphenyl	*51.1*		µg/L	100		51.1	30-130			
Surrogate: p-Terphenyl-d14	*65.3*		µg/L	100		65.3	30-130			
LCS (B245268-BS1)				Prepared & Analyzed: 11/06/19						
Acenaphthene (SIM)	35.2	6.0	µg/L	50.0		70.4	40-140			
Acenaphthylene (SIM)	35.7	4.0	µg/L	50.0		71.4	40-140			
Anthracene (SIM)	38.2	4.0	µg/L	50.0		76.3	40-140			
Benzo(a)anthracene (SIM)	37.0	1.0	µg/L	50.0		74.1	40-140			
Benzo(a)pyrene (SIM)	37.4	2.0	µg/L	50.0		74.8	40-140			
Benzo(b)fluoranthene (SIM)	39.6	1.0	µg/L	50.0		79.2	40-140			
Benzo(g,h,i)perylene (SIM)	40.1	10	µg/L	50.0		80.2	40-140			
Benzo(k)fluoranthene (SIM)	39.8	4.0	µg/L	50.0		79.6	40-140			
Chrysene (SIM)	35.8	4.0	µg/L	50.0		71.7	40-140			
Dibenz(a,h)anthracene (SIM)	42.6	2.0	µg/L	50.0		85.2	40-140			
Fluoranthene (SIM)	37.3	10	µg/L	50.0		74.7	40-140			
Fluorene (SIM)	36.3	20	µg/L	50.0		72.6	40-140			
Indeno(1,2,3-cd)pyrene (SIM)	42.8	2.0	µg/L	50.0		85.6	40-140			
2-Methylnaphthalene (SIM)	34.3	20	µg/L	50.0		68.7	40-140			
Naphthalene (SIM)	32.7	20	µg/L	50.0		65.4	40-140			
Phenanthrene (SIM)	35.9	1.0	µg/L	50.0		71.8	40-140			
Pyrene (SIM)	36.4	20	µg/L	50.0		72.7	40-140			
Surrogate: Nitrobenzene-d5	*74.9*		µg/L	100		74.9	30-130			
Surrogate: 2-Fluorobiphenyl	*56.8*		µg/L	100		56.8	30-130			
Surrogate: p-Terphenyl-d14	*59.6*		µg/L	100		59.6	30-130			

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B245268 - SW-846 3510C										
LCS Dup (B245268-BSD1)				Prepared & Analyzed: 11/06/19						
Acenaphthene (SIM)	36.1	6.0	µg/L	50.0		72.2	40-140	2.47	20	
Acenaphthylene (SIM)	36.5	4.0	µg/L	50.0		73.0	40-140	2.22	20	
Anthracene (SIM)	39.5	4.0	µg/L	50.0		79.0	40-140	3.40	20	
Benzo(a)anthracene (SIM)	38.1	1.0	µg/L	50.0		76.2	40-140	2.82	20	
Benzo(a)pyrene (SIM)	38.7	2.0	µg/L	50.0		77.4	40-140	3.47	20	
Benzo(b)fluoranthene (SIM)	41.0	1.0	µg/L	50.0		82.0	40-140	3.43	20	
Benzo(g,h,i)perylene (SIM)	41.6	10	µg/L	50.0		83.3	40-140	3.82	20	
Benzo(k)fluoranthene (SIM)	41.8	4.0	µg/L	50.0		83.6	40-140	4.80	20	
Chrysene (SIM)	37.1	4.0	µg/L	50.0		74.1	40-140	3.35	20	
Dibenz(a,h)anthracene (SIM)	44.3	2.0	µg/L	50.0		88.5	40-140	3.78	20	
Fluoranthene (SIM)	38.4	10	µg/L	50.0		76.8	40-140	2.80	20	
Fluorene (SIM)	37.1	20	µg/L	50.0		74.2	40-140	2.23	20	
Indeno(1,2,3-cd)pyrene (SIM)	44.5	2.0	µg/L	50.0		88.9	40-140	3.76	20	‡
2-Methylnaphthalene (SIM)	35.8	20	µg/L	50.0		71.7	40-140	4.27	20	
Naphthalene (SIM)	33.0	20	µg/L	50.0		66.0	40-140	1.04	20	
Phenanthrene (SIM)	37.1	1.0	µg/L	50.0		74.2	40-140	3.18	20	
Pyrene (SIM)	37.4	20	µg/L	50.0		74.7	40-140	2.71	20	
Surrogate: Nitrobenzene-d5	*77.8*		µg/L	100		77.8	30-130			
Surrogate: 2-Fluorobiphenyl	*59.4*		µg/L	100		59.4	30-130			
Surrogate: p-Terphenyl-d14	*60.7*		µg/L	100		60.7	30-130			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8260D in Water	
Acetone	NC
Acrylonitrile	NC
tert-Amyl Methyl Ether (TAME)	NC
Benzene	NC
Bromobenzene	NC
Bromochloromethane	NC
Bromodichloromethane	NC
Bromoform	NC
Bromomethane	NC
2-Butanone (MEK)	NC
tert-Butyl Alcohol (TBA)	NC
n-Butylbenzene	NC
sec-Butylbenzene	NC
tert-Butylbenzene	NC
tert-Butyl Ethyl Ether (TBEE)	NC
Carbon Disulfide	NC
Carbon Tetrachloride	NC
Chlorobenzene	NC
Chlorodibromomethane	NC
Chloroethane	NC
Chloroform	NC
Chloromethane	NC
2-Chlorotoluene	NC
4-Chlorotoluene	NC
1,2-Dibromo-3-chloropropane (DBCP)	NC
1,2-Dibromoethane (EDB)	NC
Dibromomethane	NC
1,2-Dichlorobenzene	NC
1,3-Dichlorobenzene	NC
1,4-Dichlorobenzene	NC
trans-1,4-Dichloro-2-butene	NC
Dichlorodifluoromethane (Freon 12)	NC
1,1-Dichloroethane	NC
1,2-Dichloroethane	NC
1,1-Dichloroethylene	NC
cis-1,2-Dichloroethylene	NC
trans-1,2-Dichloroethylene	NC
1,2-Dichloropropane	NC
1,3-Dichloropropane	NC
2,2-Dichloropropane	NC
1,1-Dichloropropene	NC
cis-1,3-Dichloropropene	NC
trans-1,3-Dichloropropene	NC
Diethyl Ether	NC
Diisopropyl Ether (DIPE)	NC
1,4-Dioxane	NC
Ethylbenzene	NC

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8260D in Water	
Hexachlorobutadiene	NC
2-Hexanone (MBK)	NC
Isopropylbenzene (Cumene)	NC
p-Isopropyltoluene (p-Cymene)	NC
Methyl tert-Butyl Ether (MTBE)	NC
Methylene Chloride	NC
4-Methyl-2-pentanone (MIBK)	NC
Naphthalene	NC
n-Propylbenzene	NC
Styrene	NC
1,1,1,2-Tetrachloroethane	NC
1,1,2,2-Tetrachloroethane	NC
Tetrachloroethylene	NC
Tetrahydrofuran	NC
Toluene	NC
1,2,3-Trichlorobenzene	NC
1,2,4-Trichlorobenzene	NC
1,3,5-Trichlorobenzene	NC
1,1,1-Trichloroethane	NC
1,1,2-Trichloroethane	NC
Trichloroethylene	NC
Trichlorofluoromethane (Freon 11)	NC
1,2,3-Trichloropropane	NC
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	NC
1,2,4-Trimethylbenzene	NC
1,3,5-Trimethylbenzene	NC
Vinyl Chloride	NC
m+p Xylene	NC
o-Xylene	NC

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The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2020
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2021
NY	New York State Department of Health	10899 NELAP	04/1/2020
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2020
RI	Rhode Island Department of Health	LAO00112	12/30/2019
NC	North Carolina Div. of Water Quality	652	12/31/2019
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2020
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2019
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2020
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020

con-test ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

19K0021

http://www.contestlabs.com Doc # 379 Rev 1_03242017

CHAIN OF CUSTODY RECORD (North Carolina)

39 Spruce Street
East Longmeadow, MA 01028

Company Name: S+ME

Address: 3201 Spring Forest Rd Raleigh NC

Phone: 919 877-7614

Project Name: NCDOT I-5878 Parcel 83

Project Location: DUNN, NC

Project Number: 4305-19-101

Project Manager: Jamie T Honeycutt

Con-Test Quote Name/Number:

Invoice Recipient: Jamie T Honeycutt

Sampled By: Jamie T Honeycutt

Requested Turnaround Time
7-Day ☐ 10-Day ☐
Due Date:

Rush Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☑ EXCEL ☑
Other:
CLP Like Data Pkg Required: ☐
Email To: jhoneycutt@smeinc.com
Fax To #:

ANALYSIS REQUESTED

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	Matrix Code	Conc Code	8260	PAHs by 8270	# of Containers	Preservation Code	Container Code
1	TW-1	10-29-19	1230		✓	GW	L	✓	✓			

Dissolved Metals Samples
☐ Field Filtered
☐ Lab to Filter

Orthophosphate Samples
☐ Field Filtered
☐ Lab to Filter

[1] **Matrix Codes:**
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] **Preservation Codes:**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

[3] **Container Codes:**
A = Amber Glass
G = Glass
P = Plastic
ST = Sterile
V = Vial
S = Summa Canister
T = Tedlar Bag
O = Other (please define)

Comments:

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time: 10/31/19 1500	
Received by: (signature)	Date/Time: 11/1/19 0902	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

North Carolina Detection Limit Requirements
☐ 2L
☐ GWPC
☐ SWSL
☐ IHSB
☐ MSCC
Other:

Program Information
☐ DSCA ☐ UST/Trust Fund
☐ SWS Landfill ☐ REC
☐ IHSB Orphaned Landfill
☐ State Lead
☐ Other:

NELAC and AIHA-LAP, LLC Accredited

Project Entity
☐ Government ☐ Municipality
☐ Federal ☐ Brownfield
☐ City ☐ School

Other
☐ Chromatogram
☐ *AIHA-LAP, LLC*

PCB ONLY
☐ Soxhlet
☐ Non Soxhlet

Table of Contents

IMPORTANT!
The wildfires are causing hazardous conditions in California. Learn More

FedEx

411359783302

Delivered
Friday 11/01/2019 at 9:02 am

DELIVERED

Signed for by: R.PETRIAS

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

FROM	TO
Autryville, NC US	East Longmeadow, MA US

Shipment Facts

TRACKING NUMBER 411359783302	**SERVICE** FedEx Priority Overnight	**WEIGHT** 53.4 lbs / 24.22 kgs
DELIVERED TO Shipping/Receiving	**TOTAL PIECES** 1	**TOTAL SHIPMENT WEIGHT** 53.4 lbs / 24.22 kgs
RETURN REASON	**TERMS** Third Party	**PACKAGING** Your Packaging
SPECIAL HANDLING SECTION Deliver Weekday	**STANDARD TRANSIT** 11/01/2019 by 10:30 am	**SHIP DATE** Thu 10/31/2019
ACTUAL DELIVERY Fri 11/01/2019 9:02 am		

Travel History

Local Scan Time

Friday , 11/01/2019

9:02 am	East Longmeadow, MA	Delivered
7:45 am	WINDSOR LOCKS, CT	On FedEx vehicle for delivery
6:27 am	EAST GRANBY, CT	At destination sort facility

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client S+ME

Received By MP Date 11/1/19 Time 902

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____ Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 2 Actual Temp - 4.1 By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? NA Were Samples Tampered with? NA

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Analysis T Sampler Name T Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? F MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? NA Acid _____ Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.	2	1 Liter Plastic		16 oz Amb.	
HCL-	3	500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments: