



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 borings 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 ($\mu\text{g/L}$), which exceeds its 2L Standard of 1 $\mu\text{g/L}$. 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.



Preliminary Site Assessment Report
NCDOT Project I-5878, WBS Element 53078.1.1
Parcel 71-Former Phillips 66
Dunn, Harnett County, North Carolina
S&ME Project No. 4305-19-161

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:


4C890EAEC25F488...

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Environmental Professional
jhoneycutt@smeinc.com

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Michael W. Pfeifer
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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 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→	TPH-GRO	TPH-DRO
		Sample Depth (ft.-bgs)		
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

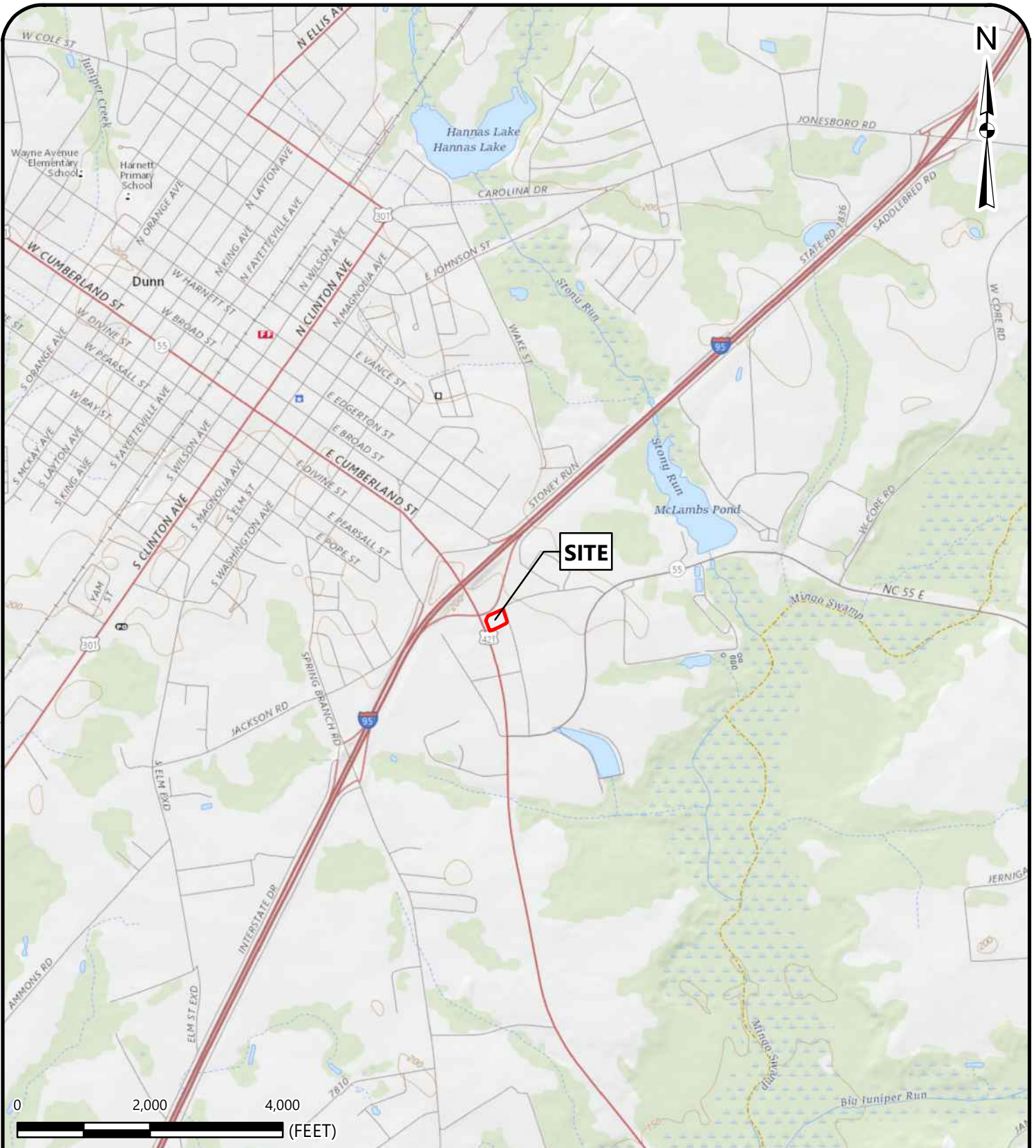
Analytical Method→		Volatile Organic Compounds by EPA Method 8260															Polycyclic Aromatic Compounds (PAHs) by EPA Method 8270						
Sample ID	Contaminant of Concern→	Benzene	Diisopropyl Ether	Ethylbenzene	Isopropylbenzene	MTBE	Naphthalene	n-Butylbenzene	sec-Butylbenzene	tert-Butyl Alcohol	n-Propylbenzene	p-Isopropyltoluene	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Total Xylenes	Acenaphthene	Anthracene	Acenaphthylene	Fluorene	Naphthalene	Phenanthrene	2-Methylnaphthalene
	Date																						
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

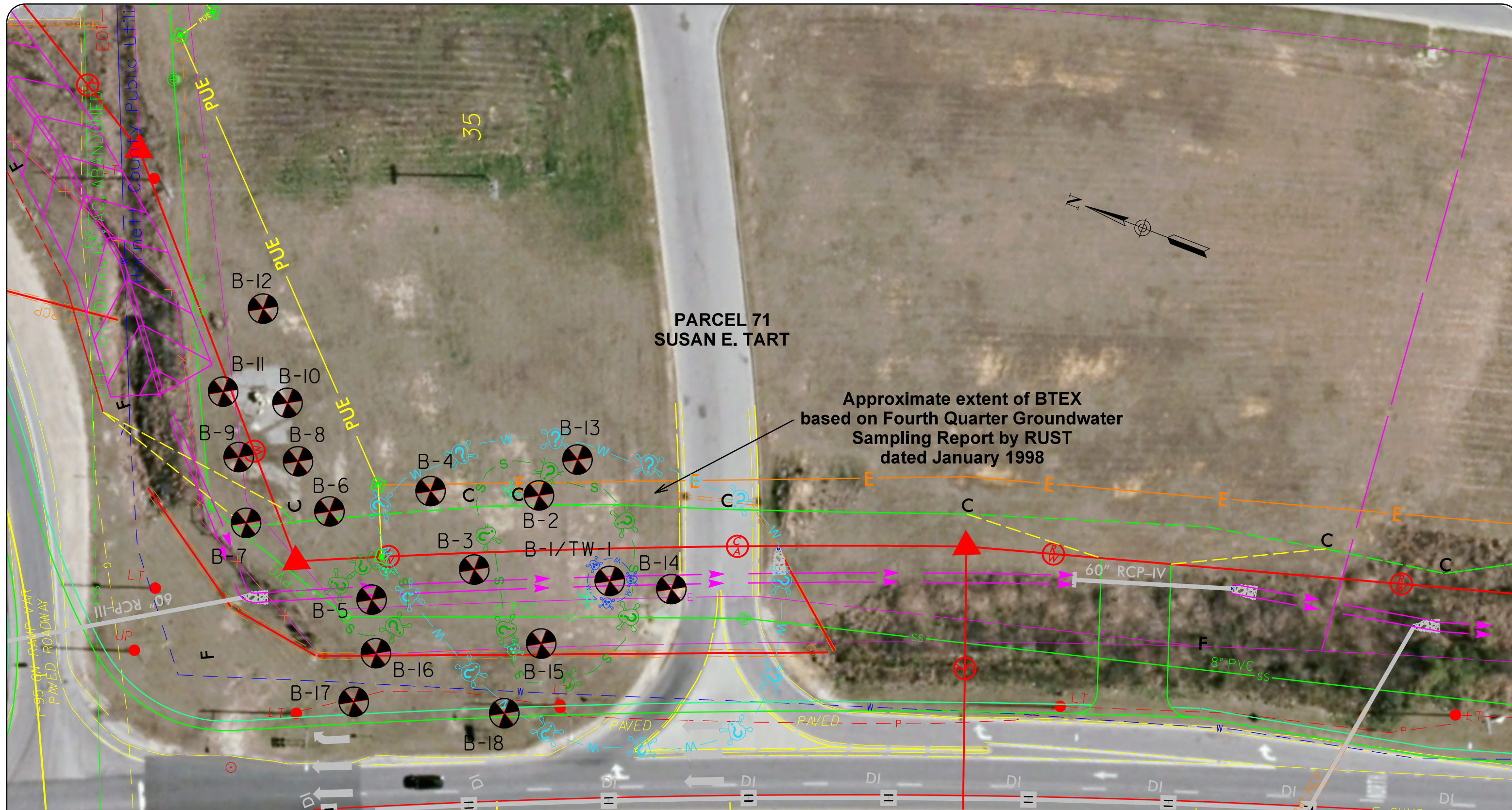
Drawing Path: T:\Projects\2019\ENV\4305-19-161 NCDOT I-5878 PSAs\GIS\Parcel_71\VICINITY.mxd plotted by abentz 11-22-2019



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

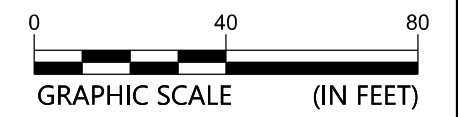
 Site Parcel

	VICINITY MAP NCDOT PROJECT I-5878 PARCEL NO. 71 (FORMER PHILLIPS 66) VACANT LOT SE CORNER E. CUMBERLAND ST AND I-95 DUNN, HARNETT COUNTY, NORTH CAROLINA		SCALE: 1" = 2,000'	FIGURE NO. 1
			DATE: 11-22-19 PROJECT NUMBER 4305-19-161	



LEGEND

Geoenvironmental Boring:	Known Soil Contamination:
Underground Storage Tank (UST):	Possible Soil Contamination:
Map Source: NCDOT Project I-59868	Existing Contamination Known - Water:
Image Source: NC ONEMAP, Dated 2016	Possible Groundwater Contamination:

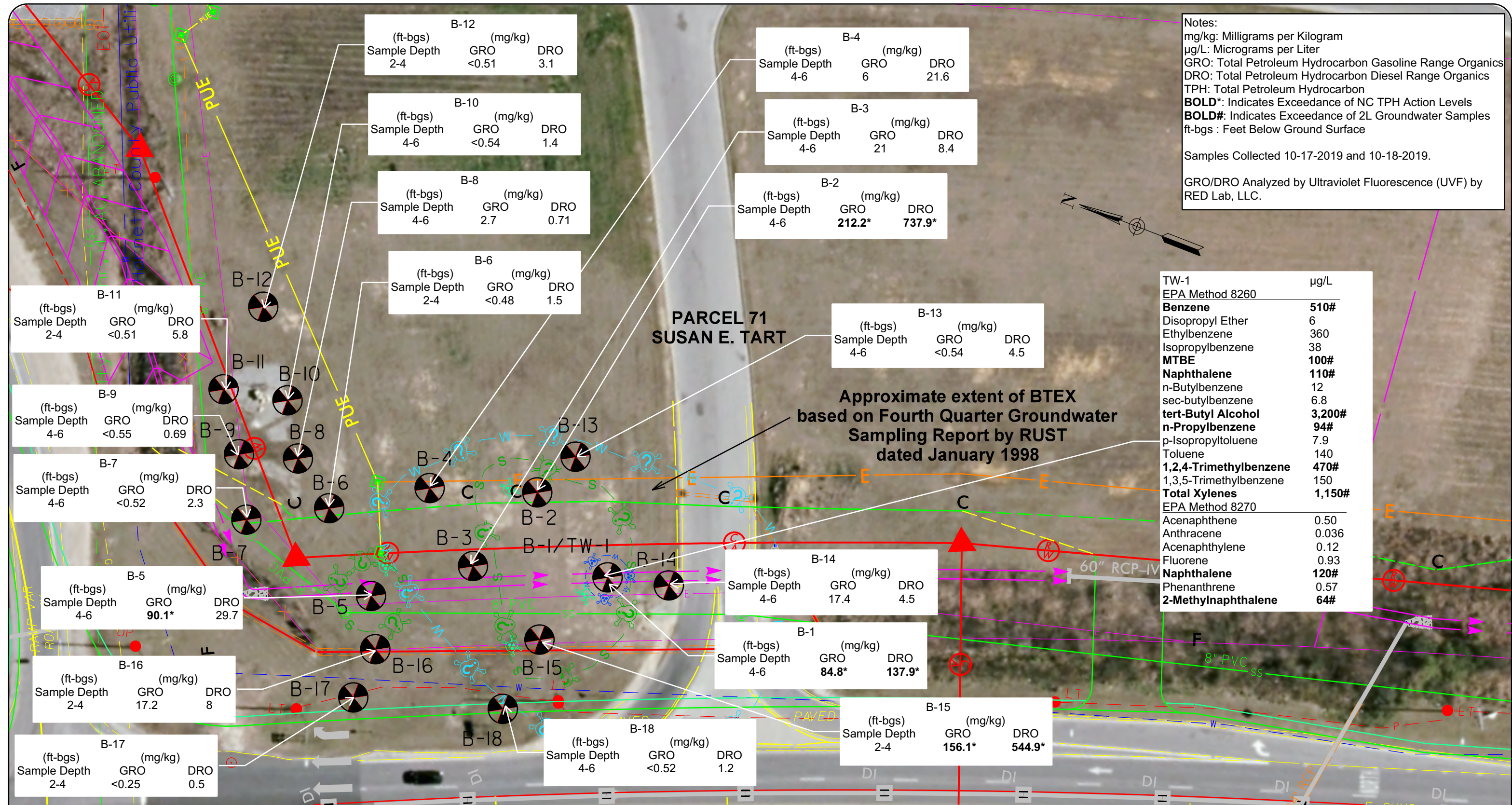


SITE MAP

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.

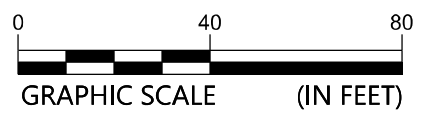
TW-1	µg/L
EPA Method 8260	
Benzene	510#
Disopropyl Ether	6
Ethylbenzene	360
Isopropylbenzene	38
MTBE	100#
Naphthalene	110#
n-Butylbenzene	12
sec-butylbenzene	6.8
tert-Butyl Alcohol	3,200#
n-Propylbenzene	94#
p-Isopropyltoluene	7.9
Toluene	140
1,2,4-Trimethylbenzene	470#
1,3,5-Trimethylbenzene	150
Total 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#

(ft-bgs)	(mg/kg)
B-11	
Sample Depth 2-4	GRO <0.51 DRO 5.8
B-9	
Sample Depth 4-6	GRO <0.55 DRO 0.69
B-7	
Sample Depth 4-6	GRO <0.52 DRO 2.3
B-5	
Sample Depth 4-6	GRO 90.1* DRO 29.7
B-16	
Sample Depth 2-4	GRO 17.2 DRO 8
B-17	
Sample Depth 2-4	GRO <0.25 DRO 0.5

(ft-bgs)	(mg/kg)
B-12	
Sample Depth 2-4	GRO <0.51 DRO 3.1
B-10	
Sample Depth 4-6	GRO <0.54 DRO 1.4
B-8	
Sample Depth 4-6	GRO 2.7 DRO 0.71
B-6	
Sample Depth 2-4	GRO <0.48 DRO 1.5

(ft-bgs)	(mg/kg)
B-4	
Sample Depth 4-6	GRO 6 DRO 21.6
B-3	
Sample Depth 4-6	GRO 21 DRO 8.4
B-2	
Sample Depth 4-6	GRO 212.2* DRO 737.9*
B-13	
Sample Depth 4-6	GRO <0.54 DRO 4.5
B-14	
Sample Depth 4-6	GRO 17.4 DRO 4.5
B-1	
Sample Depth 4-6	GRO 84.8* DRO 137.9*
B-15	
Sample Depth 2-4	GRO 156.1* DRO 544.9*

LEGEND
 Geoenvironmental Boring:
 Under Storage Tank (UST):
 Map Source: NCDOT Project I-59868
 Image Source: NC ONEMAP, Dated 2016
 Known Soil Contamination:
 Possible Soil Contamination:
 Existing Contamination Known - Water:
 Possible Groundwater Contamination:





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



Google Earth
 © 2018 Google

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

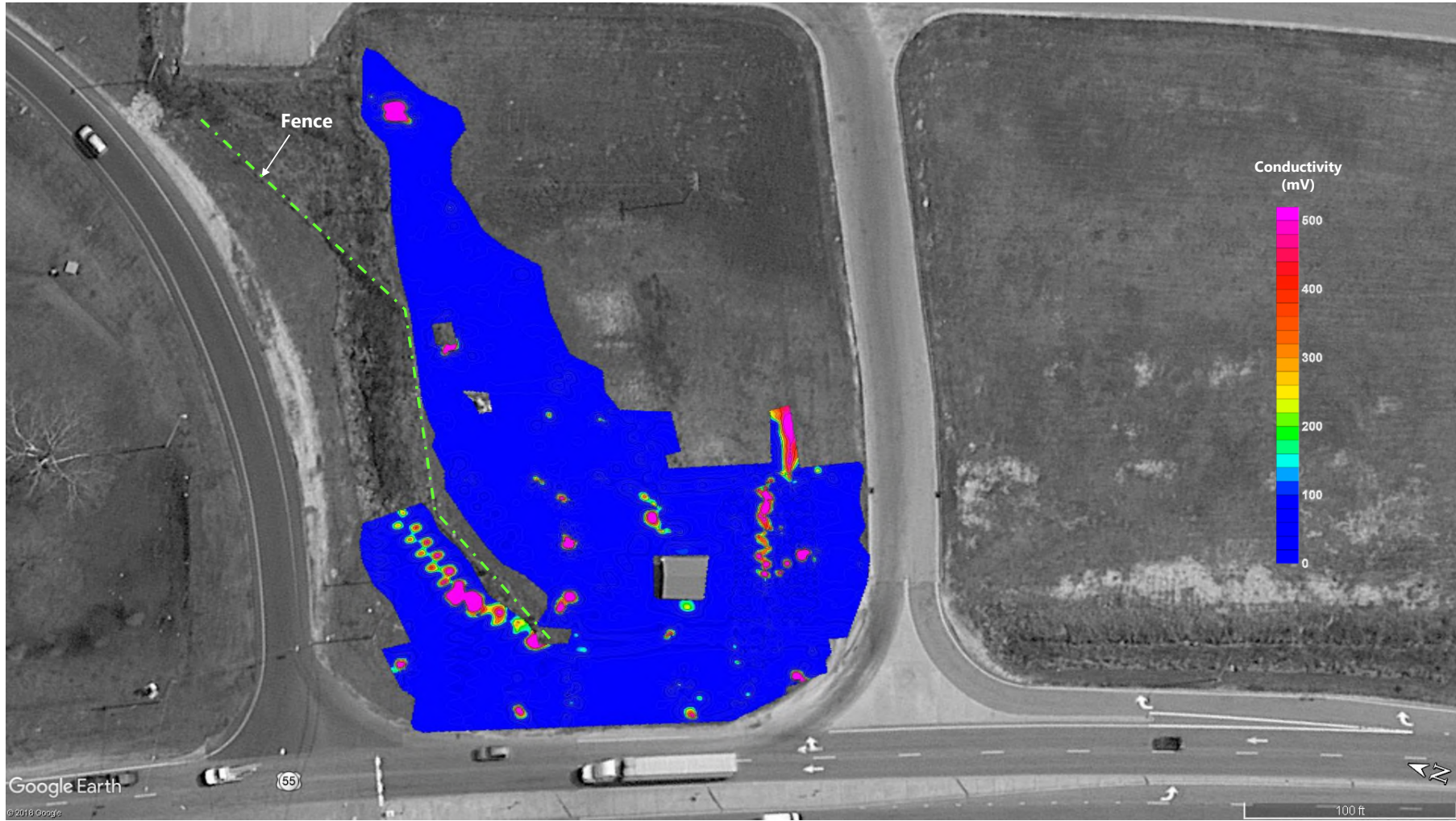
PROJECT NUMBER
 4305-19-161

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

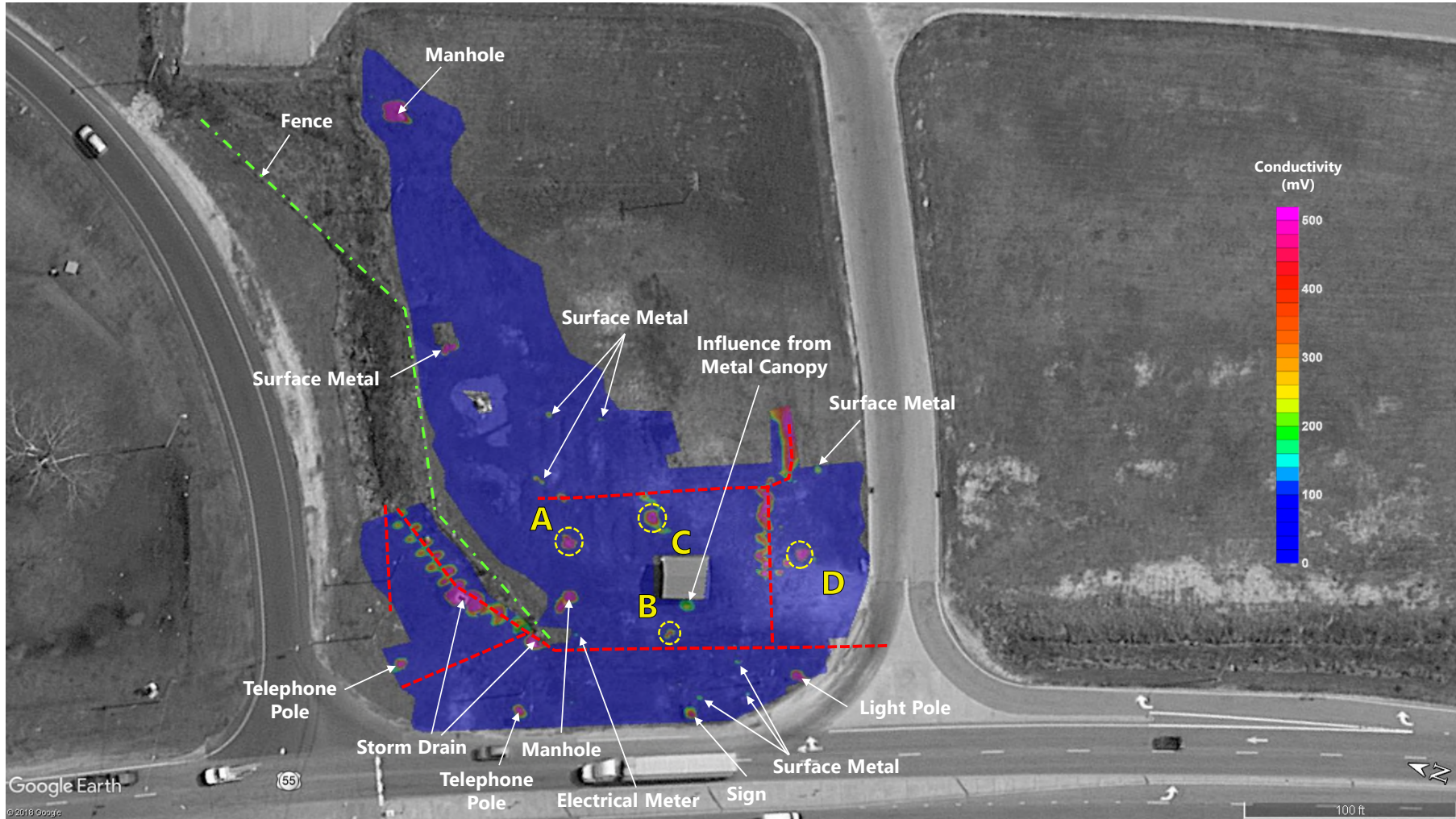
PROJECT NUMBER
 4305-19-161

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

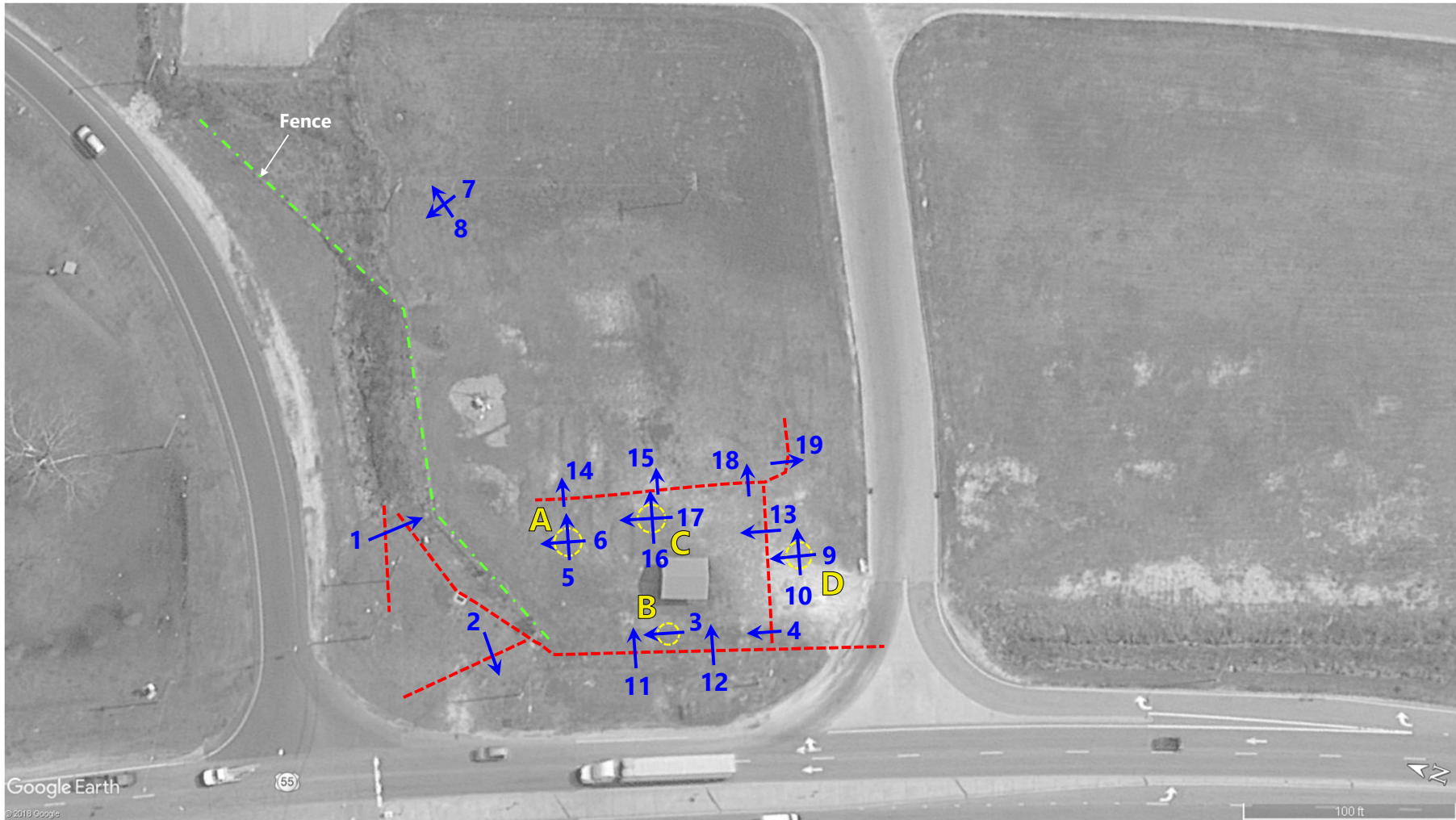
PROJECT NUMBER
4305-19-161

FIGURE NO.

6



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



Google Earth
 © 2018 Google

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

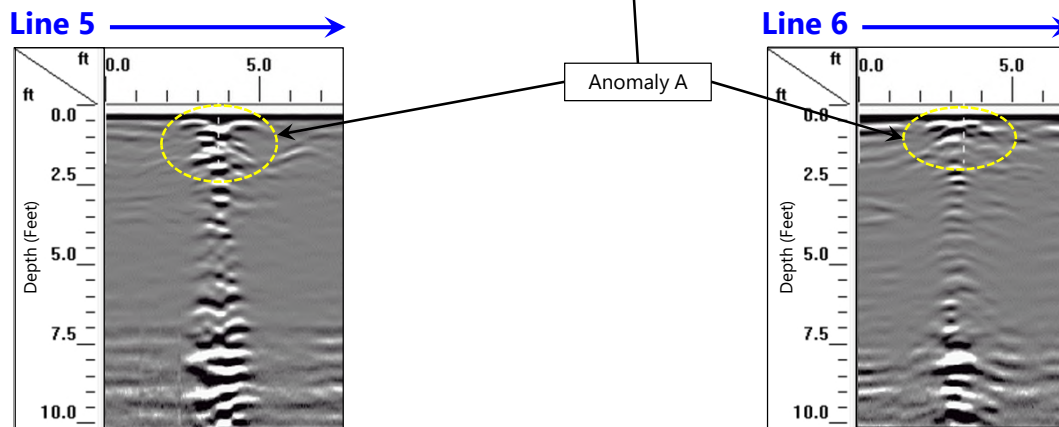
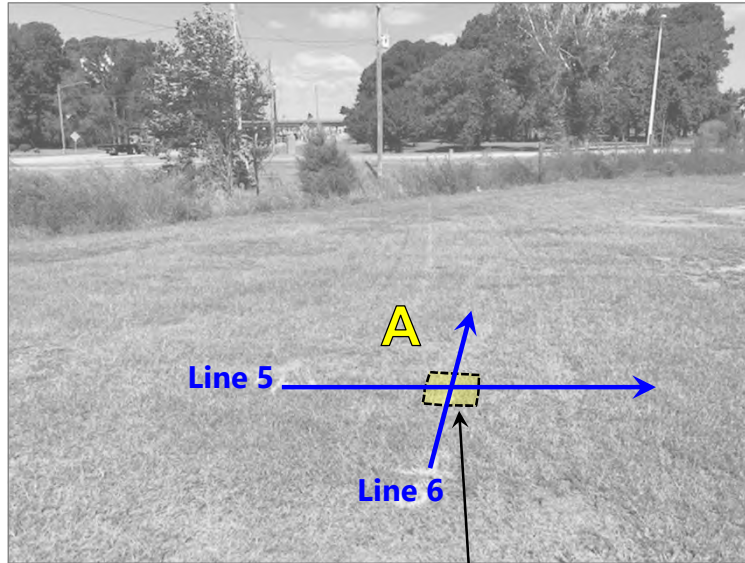
SCALE:
 AS SHOWN

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

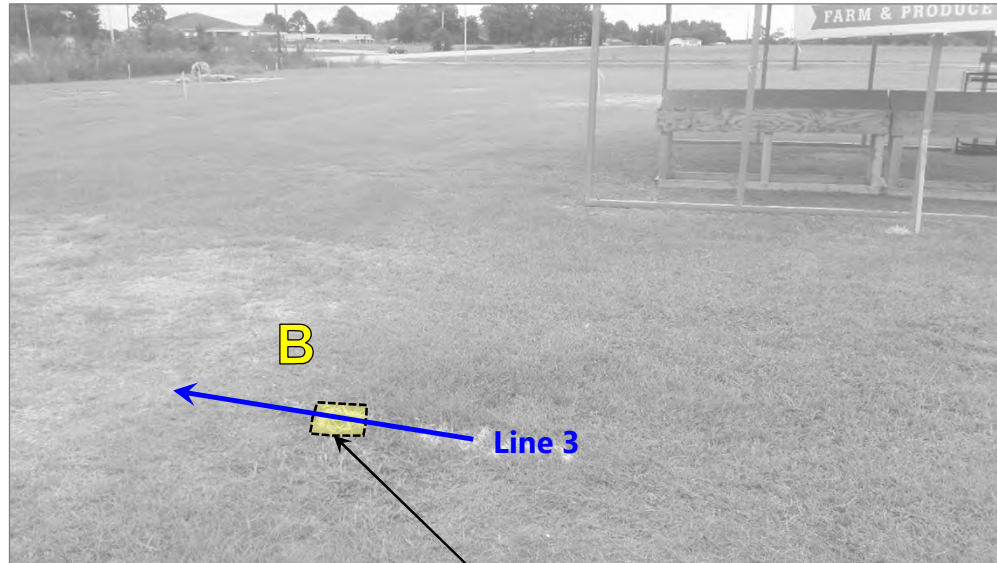
NCDOT PROJECT: I-5878
 PARCEL #71 - (FORMER PHILLIPS 66)
 VACANT LOT SE CORNER CUMBERLAND STREET AND I-95, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE:
 AS SHOWN

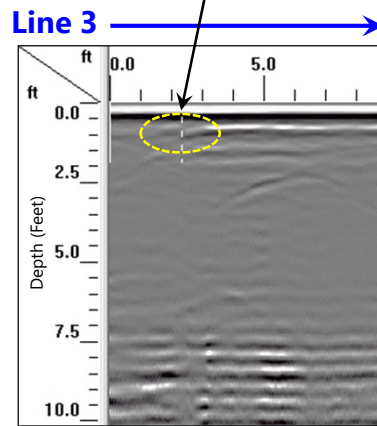
DATE:
 1/7/2020

PROJECT NUMBER
 4305-19-161

FIGURE NO.



Anomaly B



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

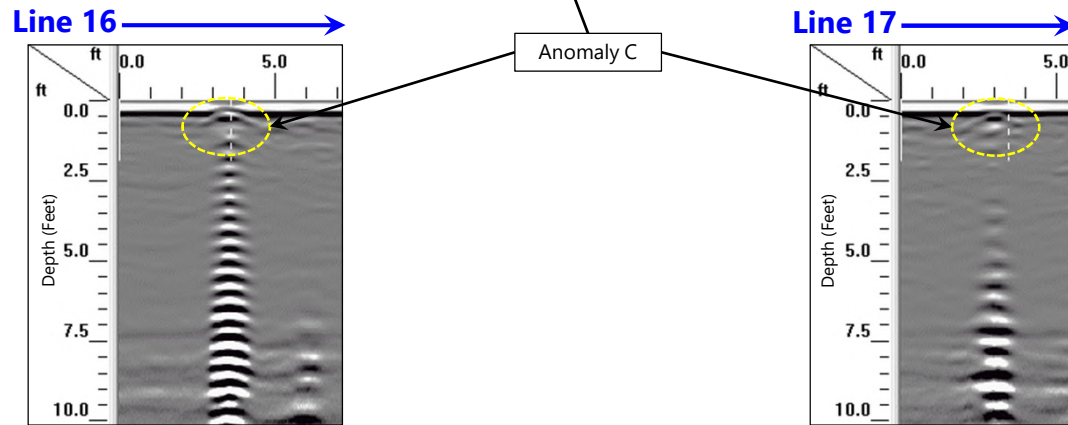
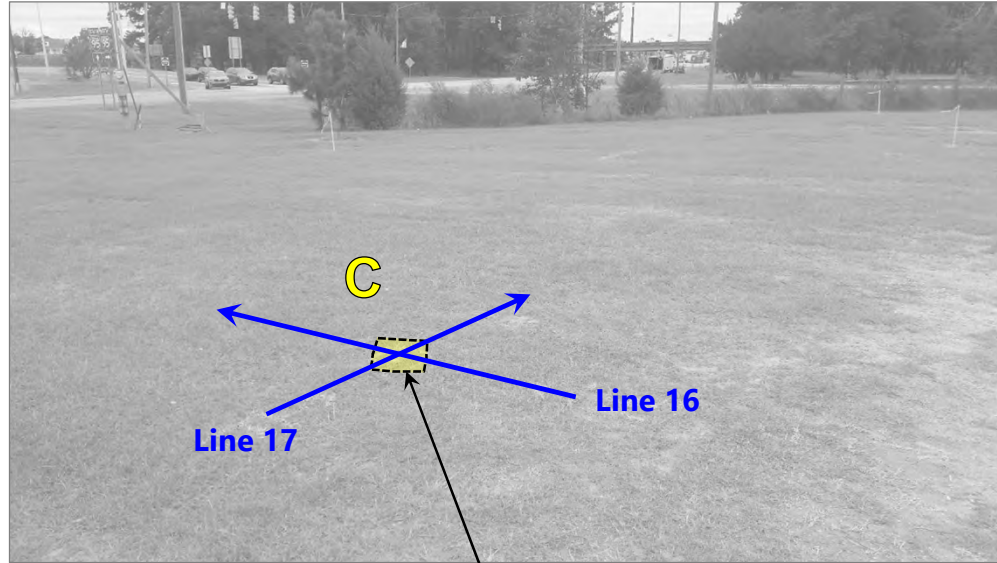
SCALE:
 AS SHOWN

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

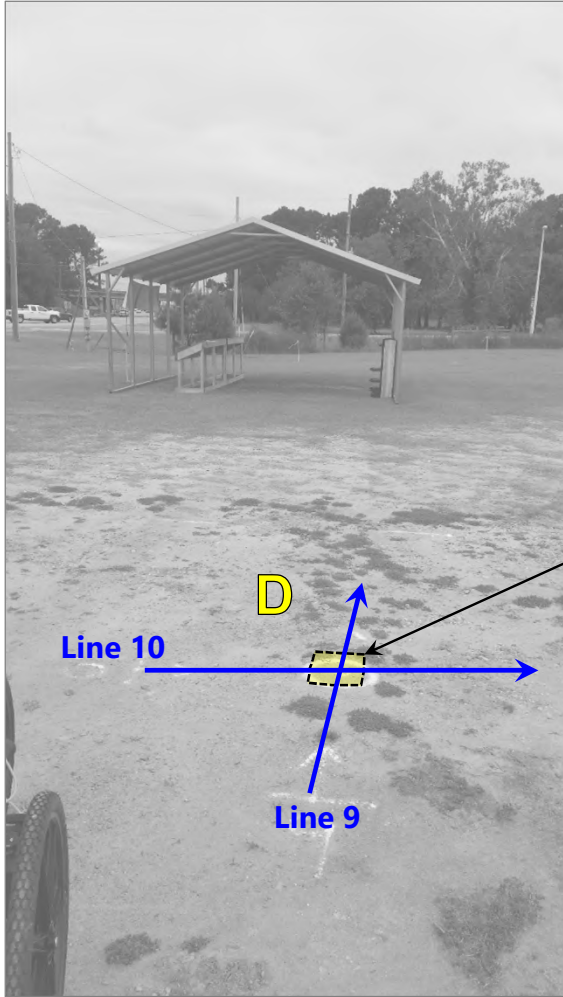
SCALE:
 AS SHOWN

DATE:
 1/7/2020

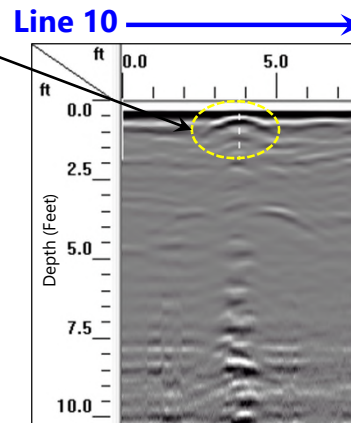
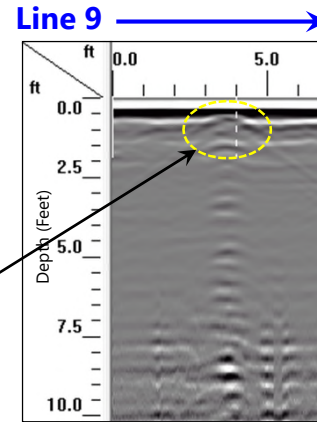
PROJECT NUMBER
 4305-19-161

FIGURE NO.

10



Anomaly D



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

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

Appendix I – NCDEQ File Review

RECEIVED

JAN 30 1998

**FAYETTEVILLE
REG. OFFICE**

**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:

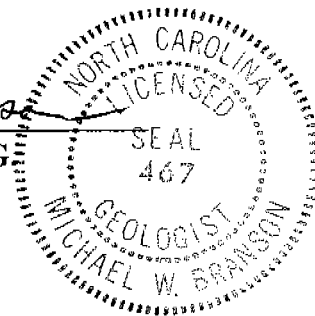
**Phillips Petroleum Company
13 Phillips Building
Post Office Box 2400
Bartlesville, Oklahoma 74004**

Prepared By:

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

Michael W. Branson

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	495	412	91.1	23.9	<0.5	<0.5	---	NS	110	709	237	
		5/11/95	17.2	104	<0.5	472	86.4	691	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	NS	2	15	BDL	BDL	BDL	---	2	1800	530	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	NS	315	18	8	BDL	BDL	---	885	90	390	10	57
		12/27/96	BQL	50	BQL	NS	520	5	9	BQL	BQL	---	950	500	2	4	1
		3/21/97	BQL	NS	BQL	NS	NS	NS	NS	BQL	BQL	---	NS	NS	NS	NS	NS
		6/12/97	BQL	NS	BQL	NS	NS	NS	NS	BQL	BQL	---	NS	NS	NS	NS	NS
		9/4/97	BQL	NS	BQL	NS	NS	NS	NS	BQL	BQL	---	NS	NS	NS	NS	NS
		12/23/97	BQL	NS	BQL	NS	73	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
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	
12/27/96	BQL			90	BQL	14	BQL	BQL	BQL	BQL	BQL	---	2400	360	4	BQL	
3/21/97	BQL			NS	BQL	NS	NS	NS	NS	BQL	BQL	---	NS	NS	NS	NS	
6/12/97	BQL			NS	BQL	NS	NS	NS	NS	BQL	BQL	---	NS	NS	NS	NS	
9/4/97	BQL			NS	BQL	NS	NS	NS	NS	BQL	BQL	---	NS	NS	NS	NS	
12/23/97	BQL			NS	BQL	5	BQL	BQL	BQL	BQL	BQL	---	450	NS	4	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
		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		
		12/27/96	BQL	12	BQL	130	BQL	BQL	BQL	BQL	BQL	---	260	50	BQL		
		3/21/97	BQL	NS	BQL	NS	NS	NS	NS	BQL	BQL	---	NS	NS	NS		
		6/12/97	BQL	NS	BQL	NS	NS	NS	NS	BQL	BQL	---	NS	NS	NS		
		9/4/97	BQL	NS	BQL	NS	NS	NS	NS	BQL	BQL	---	NS	NS	NS		
		12/23/97	BQL	NS	BQL	BQL	BQL	BQL	BQL	BQL	BQL	---	80	NS	BQL		
		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
5/11/95	<0.5			144	<0.5	22.8	<0.5	289	<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	
12/27/96	BQL			152	BQL	120	BQL	BQL	BQL	BQL	BQL	---	4100	298	5	BQL	
3/21/97	BQL			NS	BQL	NS	NS	NS	NS	BQL	BQL	---	NS	NS	NS	NS	
6/12/97	BQL			NS	BQL	NS	NS	NS	NS	BQL	BQL	---	NS	NS	NS	NS	
9/4/97	BQL			NS	BQL	NS	NS	NS	NS	BQL	BQL	---	NS	NS	NS	NS	
12/23/97	BQL			NS	BQL	10	BQL	BQL	BQL	BQL	BQL	---	900	NS	19	NS	
TOTAL BTEX				12/7/94	17.2	6730	<0.5	470	41.2	124	23.9	<0.5	<0.5	---	NS	492	925
		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	
		12/27/96	BQL	304	BQL	784	5	9	BQL	BQL	BQL	---	7710	1308	11	4	
		3/21/97	BQL	NS	BQL	NS	NS	NS	NS	BQL	BQL	---	NS	NS	NS	NS	
		6/12/97	BQL	NS	BQL	NS	NS	NS	NS	BQL	BQL	---	NS	NS	NS	NS	
		9/4/97	BQL	NS	BQL	NS	NS	NS	NS	BQL	BQL	---	NS	NS	NS	NS	
		12/23/97	BQL	NS	BQL	88	BQL	BQL	BQL	BQL	BQL	---	1630	NS	36	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
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	81			BDL	BDL	BDL	85	420	49	BDL	BDL	---	BDL	BDL	880	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	
12/27/96	29			BQL	BQL	BQL	57	260	20	3	BQL	---	BQL	BQL	12	100	
3/21/97	11			NS	BQL	NS	NS	NS	20	BQL	BQL	---	NS	NS	NS	NS	
6/12/97	21			NS	BQL	NS	NS	NS	12	BQL	BQL	---	NS	NS	NS	NS	
9/4/97	21			NS	BQL	NS	NS	NS	12	BQL	BQL	---	NS	NS	NS	NS	
12/23/97	83			NS	BQL	BQL	17	32	19	BQL	BQL	---	BQL	NS	13	NS	

NS- Not Sampled

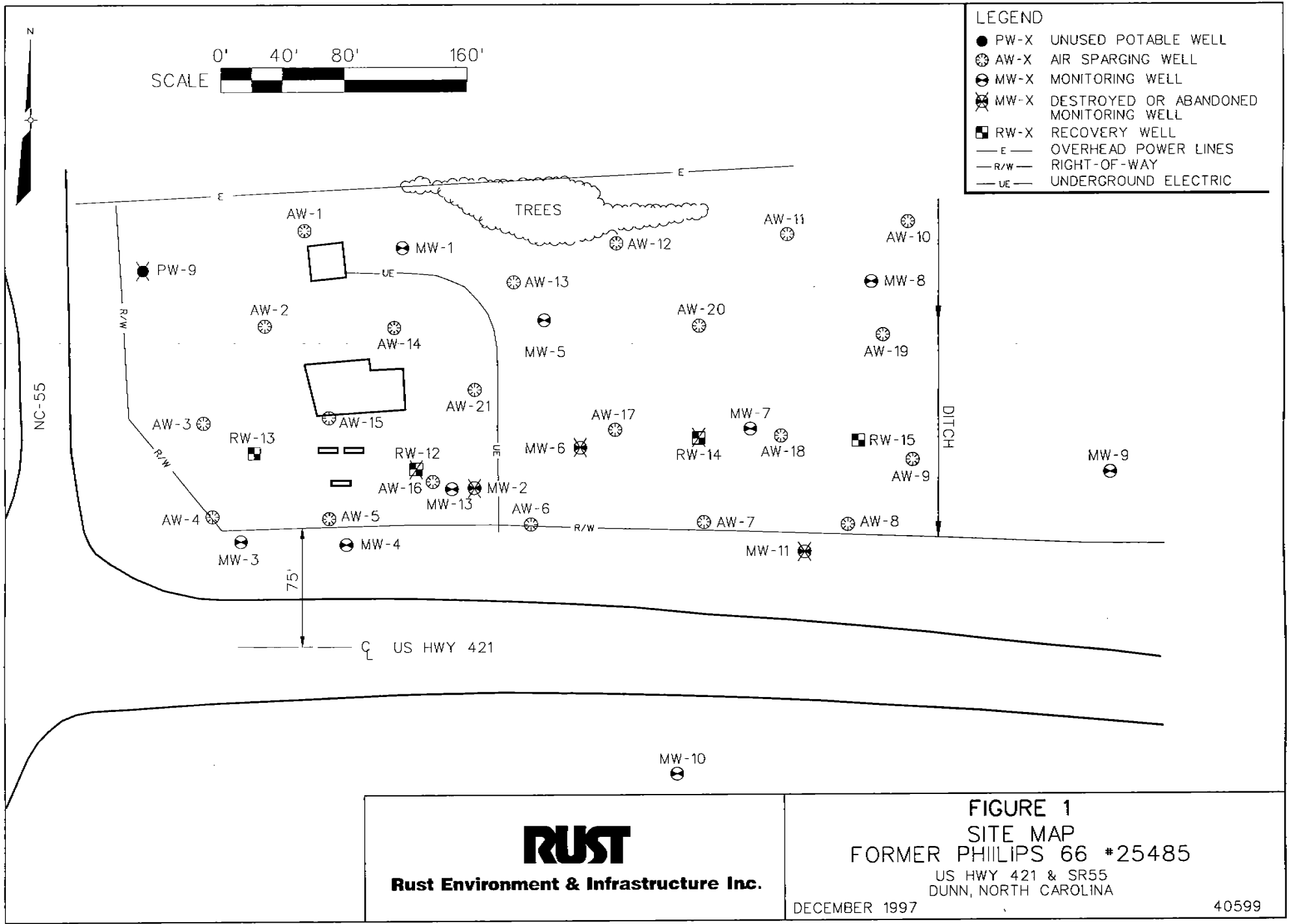
L - Below Quantitation Limits

DL - Below Detection Limits

Shaded areas denote concentration above NCAC 15A 2L groundwater quality standard

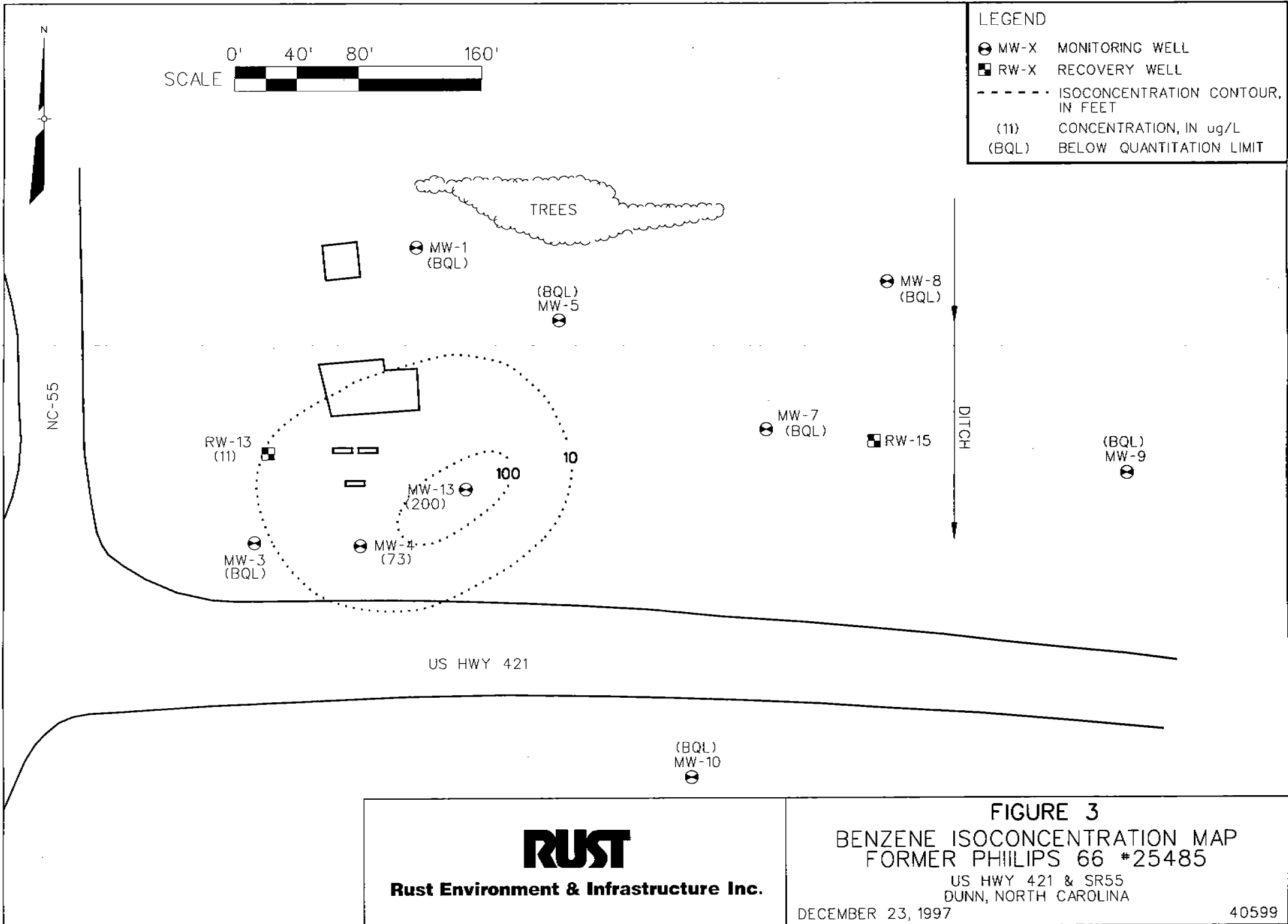
All concentrations reported in ug/L

(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 PHILIPS 66 #25485
US HWY 421 & SR55
DUNN, NORTH CAROLINA
DECEMBER 1997**



RUST
Rust Environment & Infrastructure Inc.

KL



PHILLIPS PETROLEUM COMPANY
BARTLESVILLE, OKLAHOMA 74004 918 661-6600

HEALTH, ENVIRONMENT AND SAFETY

March 31, 1998

RECEIVED

APR 8 1998

FAYETTEVILLE
REG. OFFICE

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

*Soil Cleanup Report with Site Closure Request
Former Phillips 66 Station #25485
Dunn, North Carolina*

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



Preliminary Site Assessment Report
NCDOT Project I-5878, WBS Element 53078.1.1
Parcel 71-Former Phillips 66
Dunn, Harnett County, North Carolina
S&ME Project No. 4305-19-161


		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



Preliminary Site Assessment Report
NCDOT Project I-5878, WBS Element 53078.1.1
Parcel 71-Former Phillips 66
Dunn, Harnett County, North Carolina
S&ME Project No. 4305-19-161

3	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; font-size: small;"> NW 330 N 0 NE 30 60 E 90 SE 120 </p> <p style="text-align: center; font-size: x-small;"> ⊗ 48°NE (T) ● 35°17'50"N, 78°35'50"W ±16ft ▲ 191ft </p> </div> 	Date: 10/18/2019	Photographer: JTH				
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 35%; padding: 5px;">Location / Orientation</td> <td style="padding: 5px;">View looking northeast along northern portion of site.</td> </tr> <tr> <td style="padding: 5px;">Remarks</td> <td style="padding: 5px;">None</td> </tr> </table>		Location / Orientation	View looking northeast along northern portion of site.	Remarks	None		
Location / Orientation	View looking northeast along northern portion of site.						
Remarks	None						

4	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; font-size: small;"> W 270 NW 300 N 330 NE 0 30 60 </p> <p style="text-align: center; font-size: x-small;"> ⊗ 335°NW (T) ● 35°17'49"N, 78°35'49"W ±16ft ▲ 199ft </p> </div> 	Date: 10/18/2019	Photographer: JTH				
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 35%; padding: 5px;">Location / Orientation</td> <td style="padding: 5px;">View looking northwest across site.</td> </tr> <tr> <td style="padding: 5px;">Remarks</td> <td style="padding: 5px;">Note boings B-1/TW-1 and B-14.</td> </tr> </table>		Location / Orientation	View looking northwest across site.	Remarks	Note boings B-1/TW-1 and B-14.		
Location / Orientation	View looking northwest across site.						
Remarks	Note boings B-1/TW-1 and B-14.						

Appendix III – Boring Logs

Appendix IV – Laboratory Analytical Reports and Chain of Custody



Hydrocarbon Analysis Results

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

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

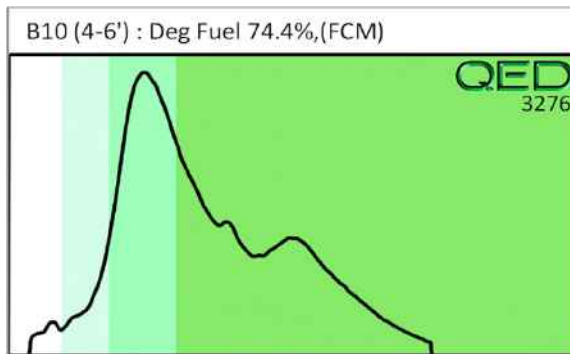
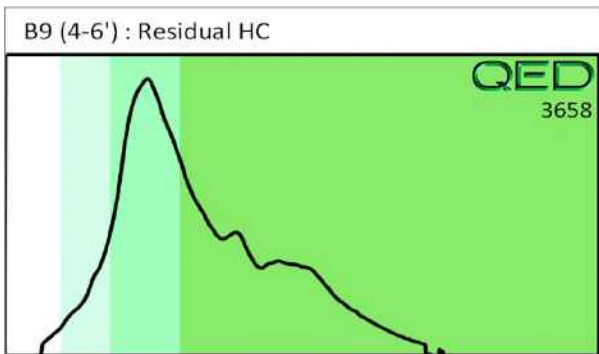
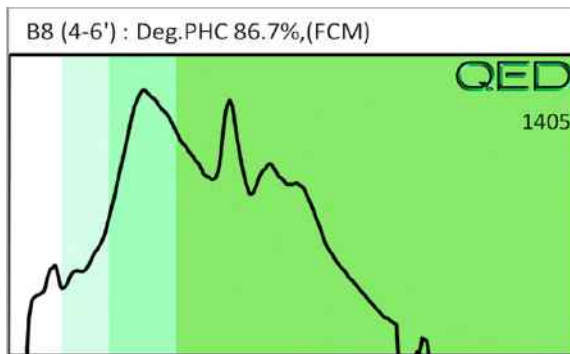
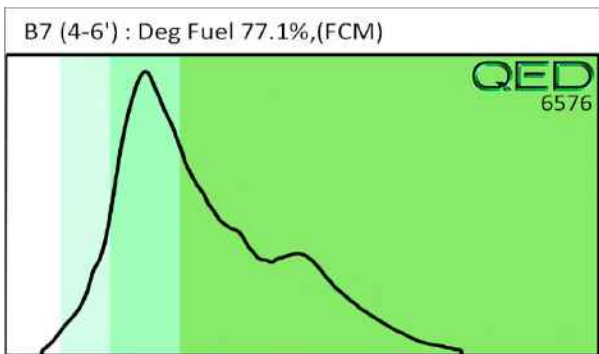
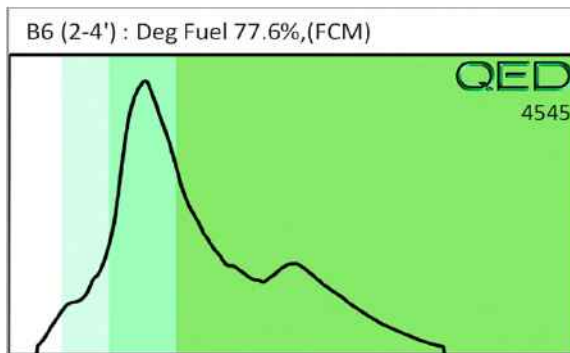
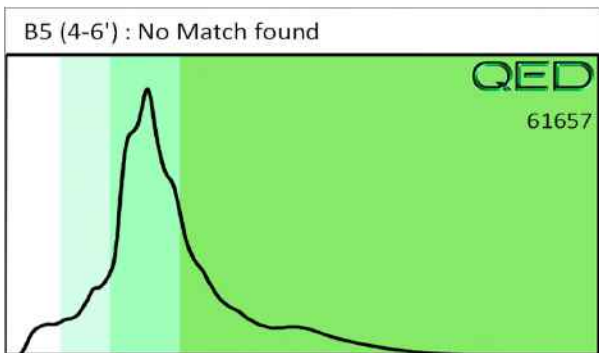
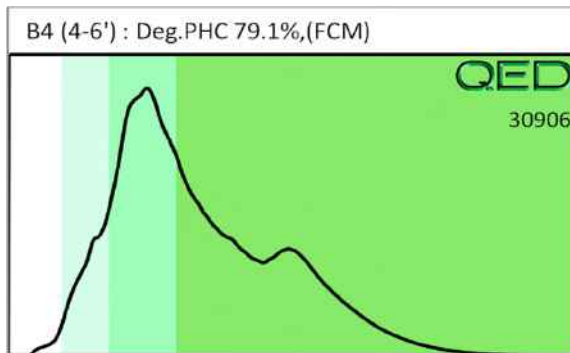
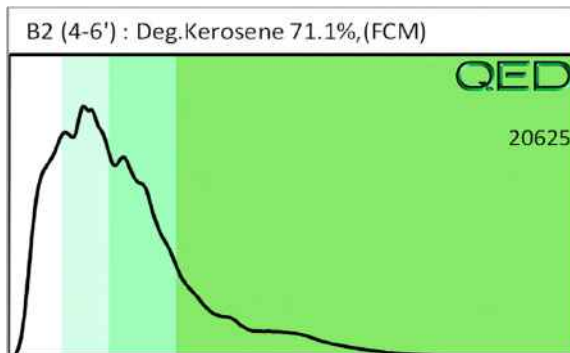
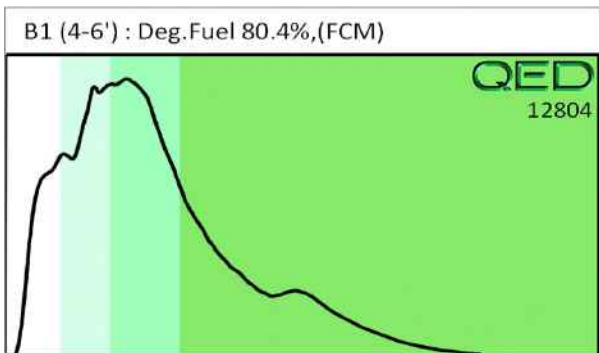
Contact: JAMIE HONEYCUTT

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





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

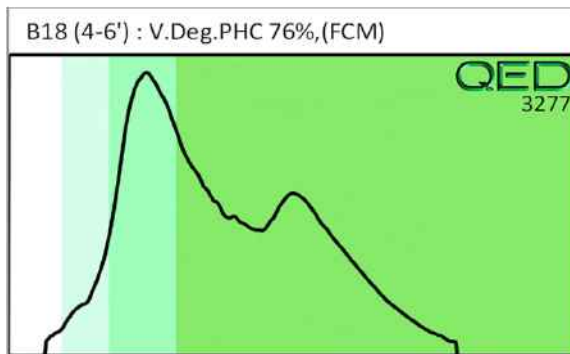
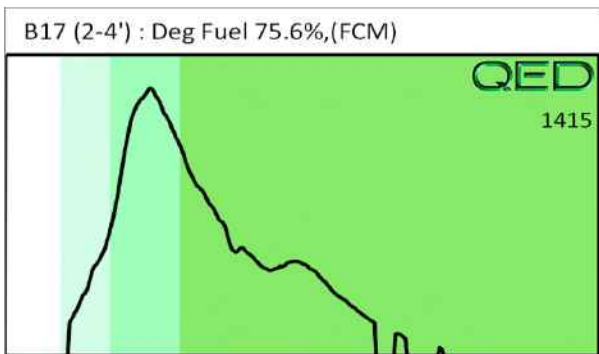
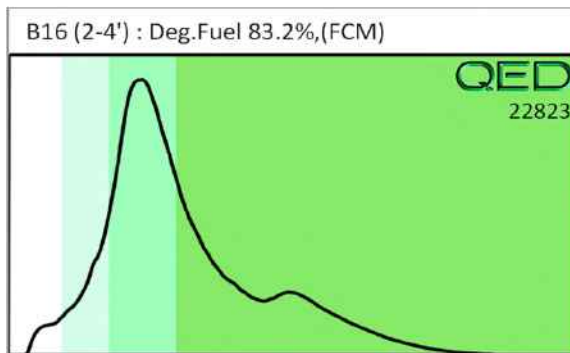
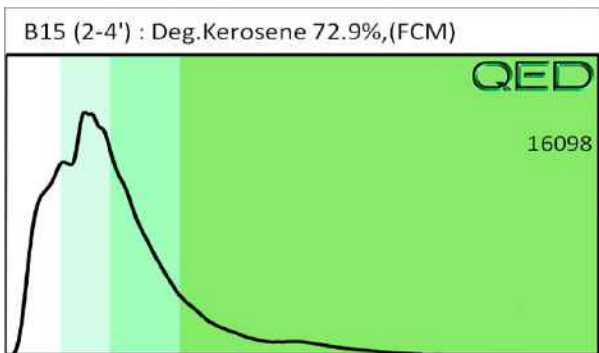
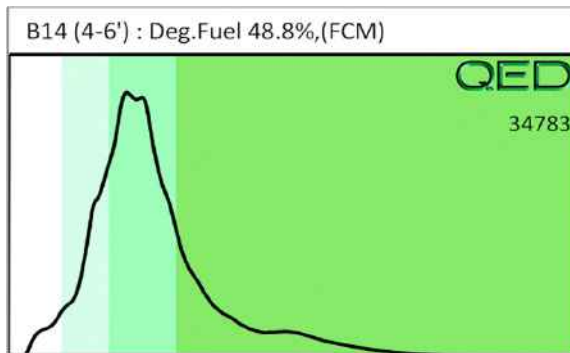
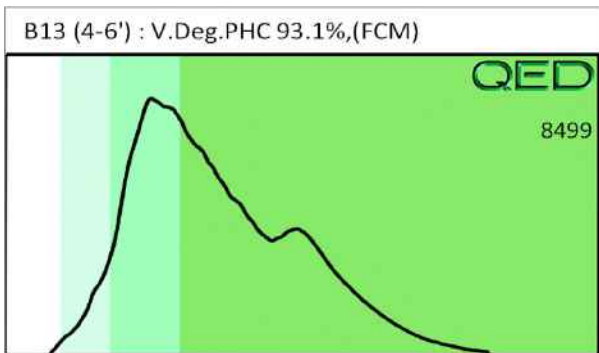
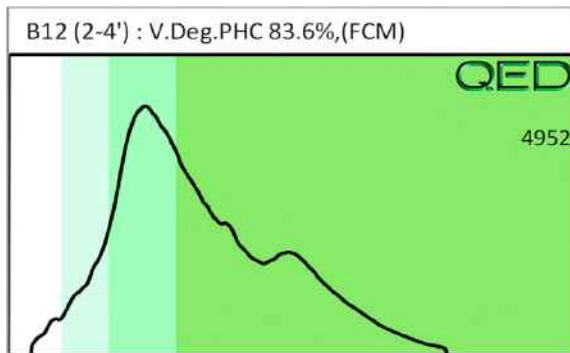
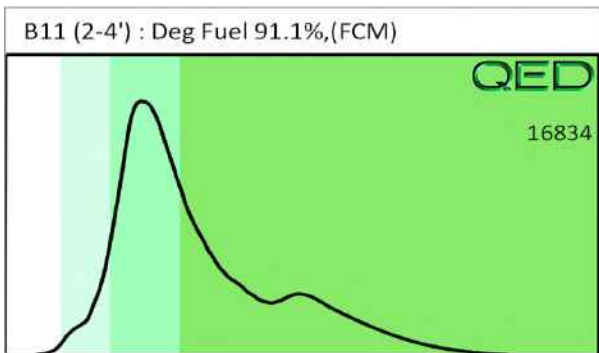
Contact: JAMIE HONEYCUTT

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



Client Name: SIME
 Address: 3201 Spring Forest Rd
 Raleigh, NC
 Contact: Jamie Honeycutt
 Project Ref.: NCDOT-I-5878 - Parcel 71
 Email: jhoneycutt@simeinc.com
 Phone #: 410 977-7614
 Collected by: Jamie Honeycutt

NCDOT-I-5878
 DUNN, NC
 Parcel 71



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		Analysis Type		Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
	24 Hour	48 Hour	UVF	GC					
10-17-19/1000		✓	✓		JTH	B-1 B-1 4-6'	58.4	43.8	14.6
1015						B-2 4-6'	57.9	44.5	13.4
1030						B-3 4-6'	57.5	44.9	12.6
1045 1075						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 <i>Jamie Honeycutt</i>	Accepted by MM 1220	Date/Time 10/22/19	RED Lab USE ONLY 18 B/40
Relinquished by	Accepted by	Date/Time	
			Ref. No

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,

A handwritten signature in black ink that reads "Kerry K. McGee".

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: 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	

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 does not accept liability for the consequences of any actions taken solely on the basis of the information provided in the Executive Summary section of this report. Users must review this report in its entirety to determine data usability and assessment.

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

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.

A handwritten signature in black ink, appearing to read "Lisa A. Worthington", is written over a light gray rectangular background.

Lisa A. Worthington
Technical Representative

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

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

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

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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
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

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
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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							

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										
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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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	22.7		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
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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
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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			

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.

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8260D in Water</i>	
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

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8260D in Water</i>	
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:

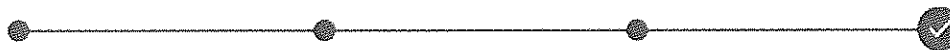
Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2020
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Public Health	PH-0567	09/30/2021
NY	New York State Department of Health	10899 NELAP	04/1/2020
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2020
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



411359783335



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



DELIVERED

Signed for by: B.BECCA

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

FROM
Autryville, NC US

TO
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 _____



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 Map Date 10/22/19 Time 854
 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 - 29
 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: