Preliminary Site Assessment

I-95 Interchange Improvement

Parcel 287 PSH 42 - HQ Corporation of Benson, Inc.

903 East Main Street, Benson, Johnston County, North Carolina

TIP No. I-5986B

WBS Element: 47532.1.3

November 21, 2019

Terracon Project No. 70197584

Prepared for:

North Carolina Department of Transportation
Raleigh, North Carolina

Prepared by:

Terracon Consultants, Inc.
Raleigh, North Carolina

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DocuSigned by:
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11/26/2019

NORTH CAROLINA LICENSED SEAL 2576 GEOLOGIST WILLIAM O. FRAZIER

William O. Frazier
Staff Geologist

for

Michael T. Jordan, PG, RSM
Department Manager

Donald R. Malone, PE, RSM
Senior Engineer

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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P (919) 873-2211 F (919) 873 9555 terracon.com

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November 21, 2019

North Carolina Department of Transportation
Attention: Mr. John Pilipchuk, LG
GeoEnvironmental Engineering Unit
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Re: Preliminary Site Assessment (PSA)
I-95 Interchange Improvement
Parcel 287 PSH 42 - HQ Corporation of Benson, Inc.
903 East Main Street, Benson, Johnston County, North Carolina
TIP No. I-5986B
WBS Element: 47532.1.3

Dear Mr. Pilipchuk:

Terracon Consultants, Inc. (Terracon) is pleased to submit a Preliminary Site Assessment (PSA) report for the above referenced site. This assessment was performed in accordance with our Proposal for Preliminary Site Assessment (Terracon Proposal No. P70197584) dated October 1, 2019. This report includes the findings of the investigation and provides our conclusions and recommendations. Terracon appreciates the opportunity to provide these services to the North Carolina Department of Transportation. If you have any questions concerning this report or need additional information, please contact us at 919-873-2211.

Sincerely,

Terracon Consultants, Inc.

Prepared by:

William O. Frazier, PG
Staff Geologist

Donald R. Malone, PE, RSM
Senior Engineer

Reviewed by:

for Michael T. Jordan, PG, RSM
Environmental Department Manager

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PRELIMINARY SITE ASSESSMENT

I-95 INTERCHANGE IMPROVEMENT
TIP NO. I-5986B
WBS ELEMENT: 47532.1.3
PARCEL 287 PSH 42 - HQ CORPORATION OF BENSON, INC.
903 EAST MAIN STREET, BENSON, NORTH CAROLINA

1.0 INTRODUCTION

1.1 Site Description

Site Name	Parcel 287 PSH 42 – HQ Corporation of Benson, Inc.
Site Location/Address	903 East Main Street, Benson, North Carolina 27532 (Johnston County Tax PIN: 153920-72-8228)
General Site Description	The site consists of an approximate 1.56-acre parcel developed with a one-story commercial building currently operating as convenience store and Citgo gas station. The gas station currently operates four underground storage tanks (USTs). The site is also improved with the associated fueling islands, pump canopy, paved parking areas, and landscaped grounds.

1.2 Site History

The site is located at 903 East Main Street in Benson, Johnston County, North Carolina. At the time of the Preliminary Site Assessment (PSA), the site was operating as a Citgo gas station (Facility ID: 00-0-0000033186; UST No. FA-2961). According to the North Carolina Department of Environmental Quality (NCDEQ) – Division of Waste Management UST Section Registered Tank Database, the facility currently operates two 8,000-gallon gasoline USTs, one 4,000-gallon gasoline UST, and one 10,000-gallon gasoline UST that were reportedly installed in 1990.

Available NCDEQ regulatory records indicate that a site check was conducted in 2005 after the automatic tank gauging system and a subsequent tank tightness test for the 10,000-gallon UST indicated a possible release (CEC, 2005). In addition, visible staining on the broken asphalt and concrete ground surface near the diesel dispenser was observed during a compliance evaluation. The site check assessment consisted of two soil borings, from which four soil samples were collected and analyzed for total petroleum hydrocarbons (TPH) and/or Massachusetts Department of Environmental Protection (MADEP) volatile petroleum hydrocarbons (VPH) and

extractable petroleum hydrocarbons (VPH). TPH Diesel Range Organics (DRO) exceeding the NCDEQ Action Level of 10 parts per million (ppm; note: the NCDEQ Action Level for TPH-DRO has since been raised to 100 ppm) was identified in one of the samples; however, the VPH and EPH concentrations for this sample did not exceed the soil-to-groundwater maximum soil contaminant concentrations (MSCCs). Incident No. 29189 was opened for the release. Groundwater was not encountered during the site check. Based on the results of the site check sampling, NCDEQ issued a No Further Action (NFA) letter to the facility on June 6, 2005.

1.3 Scope of Work

Terracon conducted the following PSA scope of work (SOW) in accordance with Terracon's Proposal No. P70197584 dated October 1, 2019. This PSA is being completed prior to a planned upgrade of the I-95 interchange and widening of the interstate in Benson, North Carolina (site). The scope of work included a geophysical investigation, the collection of soil samples, and preparation of a report documenting our investigation activities. The PSA is not intended to delineate potential impacts. The PSA was performed within the proposed rights-of-way (ROW) as indicated by NCDOT provided plan sheets.

1.4 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. Terracon makes no warranties, either expressed or implied, regarding the findings, conclusions or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third parties supplying information used in the preparation of the report. These services were performed in accordance with our Proposal for Preliminary Site Assessment (Terracon Proposal No. P70197584) dated October 1, 2019 and were not conducted in accordance with ASTM E1903-11.

1.5 Additional Scope Limitations

Findings, conclusions and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, undetectable or not present during these services; thus, we cannot represent that the site is free of hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this PSA. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations or exploratory services; the data, interpretations, findings, and our

recommendations are based solely upon data obtained at the time and within the scope of these services.

1.6 Reliance

This report has been prepared for the exclusive use of the NCDOT. Authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the expressed written authorization of the client and Terracon.

2.0 FIELD ACTIVITIES

The following PSA activities are presented in the order that they were conducted in the field. **Exhibit 1** presents the topography of the site on a portion of the USGS topographic quadrangle map of Benson, North Carolina, 1997. **Exhibits 2A and 2B** depict the site layout and indicate the approximate locations of the site features, soil boring locations, and analytical results.

2.1 Geophysical Survey

On October 28 and 29, 2019, Terracon conducted a geophysical investigation at the site in an effort to determine if unknown, metallic USTs were present beneath the proposed ROW area. The geophysical investigation included an electromagnetic (EM) induction survey using a Geonics EM31-SH metal detection instrument and a ground penetrating radar (GPR) survey using a Geophysical Survey Systems SIR-4000 unit.

The geophysical investigation did not identify possible or probable metallic UST within the proposed ROW area. In addition to metal detection and GPR scans, NC One Call public utility locator was used to identify several underground utility lines and to clear boring locations. A copy of the geophysical report is in **Appendix A**.

2.2 Soil Sampling

Based on the findings of the geophysical investigation and Terracon's site observations, Terracon oversaw the advancement of five soil borings (903-SB-01 through 903-SB-05) along the western portion of the parcel and within the proposed NCDOT ROW. The borings were completed by a North Carolina Certified Well Contractor (Quantex, Inc.) using a truck-mount Geoprobe® 7822DT direct-push drill rig.

Soil samples were collected in 5-foot, disposable, Macro-Core® sampler tubes to document soil lithology, color, moisture content, and sensory evidence of impacts. Each soil sample was screened for organic vapors using an 11.7 eV photoionization detector (PID). The PID data were

collected in order to corroborate laboratory data and assist in selection of sample intervals for laboratory analysis. PID readings from the borings did not exceed the instrument detection limit of 0.1 part per million (ppm). The PID screening values are summarized in **Table 1**.

Based on the proposed disturbance depths and discussion with the NCDOT, each of the soil borings was advanced to a depth of approximately 10 feet below land surface (bls). Based on the results of the field screening, five soil samples, one from each boring, were collected from depths between approximately 3 feet and 9 feet bls. Soil samples were collected in the depth interval that was most likely to be impacted. Samples were placed in laboratory provided sample containers and shipped to REDLAB/QROS, LLC – Environmental Testing for analysis by Ultraviolet Fluorescence (UVF).

The drilling equipment used at the site was decontaminated prior to use and between the advancement of each boring. Non-dedicated sampling equipment was decontaminated using a Liquinox®-water wash followed by a distilled water rinse. Each of the boreholes was backfilled with soil cuttings and bentonite pellets. Surface completion was achieved with either dirt or asphalt cold patch. Remaining investigation derived waste (IDW) was spread on the site.

Soil generally consisted of fine- to coarse-grained sand to a depth of approximately 2.5 feet bls on average, underlain predominantly by clayey sand to approximately 10 feet bls. Wet to saturated soils were observed at depths below approximately 8 feet bls in the majority of the soil borings. The soil boring logs are included in **Appendix B**. Sample locations were measured using a sub-foot Trimble Geo7X GPS unit and are depicted on **Exhibits 2A** and **2B**.

3.0 LABORATORY ANALYSES

Soil samples were submitted to QROS for analysis of the following:

- TPH-gasoline range organics (C_5-C_{10}) (TPH-GRO);
- TPH-diesel range organics (C_{10}-C_{35}) (TPH-DRO);
- Total petroleum hydrocarbons (C_5-C_{35}) (TPH);
- Benzene, toluene, ethylbenzene, and xylenes (BTEX);
- Total aromatics (C_{10}-C_{35});
- 16 EPA Polycyclic Aromatic Hydrocarbons (16 EPA PAHs); and
- Benzo(a)pyrene (BaP).

Please refer to **Appendix C** for the laboratory analytical reports.

4.0 DATA EVALUATION

4.1 Soil Analytical Results

Laboratory analysis identified the following detections above the laboratory reporting limits in soil samples 903-SB-01 through 903-SB-05:

- BTEX was not detected above laboratory reporting limits within the soil samples collected;
- TPH-GRO was reported within each sample except for 903-SB-04 at concentrations ranging from 0.97 to 8.3 milligrams per kilogram (mg/kg);
- TPH-DRO was reported within each sample except for 903-SB-04 at concentrations ranging from 0.27 to 5.7 mg/kg;
- TPH was reported within each sample except for 903-SB-04 at concentrations ranging from 3.4 to 11.8 mg/kg;
- Total aromatics (C_{10}-C_{35}) was reported within each sample except for 903-SB-04 at concentrations ranging from 0.2 to 3.6 mg/kg;
- 16 EPA PAHs was not detected above laboratory reporting limits within the samples collected;
- BaP was not detected above laboratory reporting limits within the samples collected.

The concentrations of TPH-GRO and TPH-DRO detected do not exceed NCDEQ Action Levels (50 mg/kg and 100 mg/kg, respectively).

Table 2 summarizes the results of the analyses of the soil samples. **Exhibit 2B** depicts the boring locations and detected compounds.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The findings of this investigation are discussed below.

- The geophysical investigation did not identify possible or probable metallic USTs within the proposed NCDOT ROW.

- Laboratory analysis reported concentrations of BTEX, TPH-GRO, TPH-DRO, TPH, Total Aromatics, and 16 EPA PAHs in multiple soil borings at the site; however, the concentrations of TPH-GRO and TPH-DRO detected do not exceed NCDEQ Action Levels.

- Terracon does not recommend further assessment of the ROW at this site. However, based on detections of petroleum compounds, impacted soil and groundwater encountered during NCDOT's project should be managed and/or disposed of in accordance with applicable local and State requirements. In addition, construction workers should be alert for potential soil and/or groundwater impacts at the site.

6.0 REFERENCES

CEC, 2005. Site Check Report, Citgo #95 (formerly) Short Stop #28, 903 East Main Street, Benson, NC. Cary Environmental Consultants. Inc. May 27, 2005.

NCDOT, 2016. Revised GeoEnvironmental Report for Preliminary Site Assessments. "Hazardous Material Report." August 30, 2016.

TABLES

Table 1
Summary of PID Field Screening Values
Preliminary Site Assessment
Parcel# 287 PSH 42 - HQ Corporation of Benson, Inc.
903 East Main Street, Benson, Johnston County, North Carolina
Terracon Project No. 70197584

Boring Depth (feet bls)	903-SB-01	903-SB-02	903-SB-03	903-SB-04	903-SB-05
(0 - 2)	<0.1	<0.1	<0.1	<0.1	<0.1
(2 - 4)	<0.1	<0.1	<0.1	<0.1	<0.1
(4 - 6)	<0.1	<0.1	<0.1	<0.1	<0.1
(6 - 8)	<0.1	<0.1	<0.1	<0.1	<0.1
(8 - 10)	<0.1	<0.1	<0.1	<0.1	<0.1

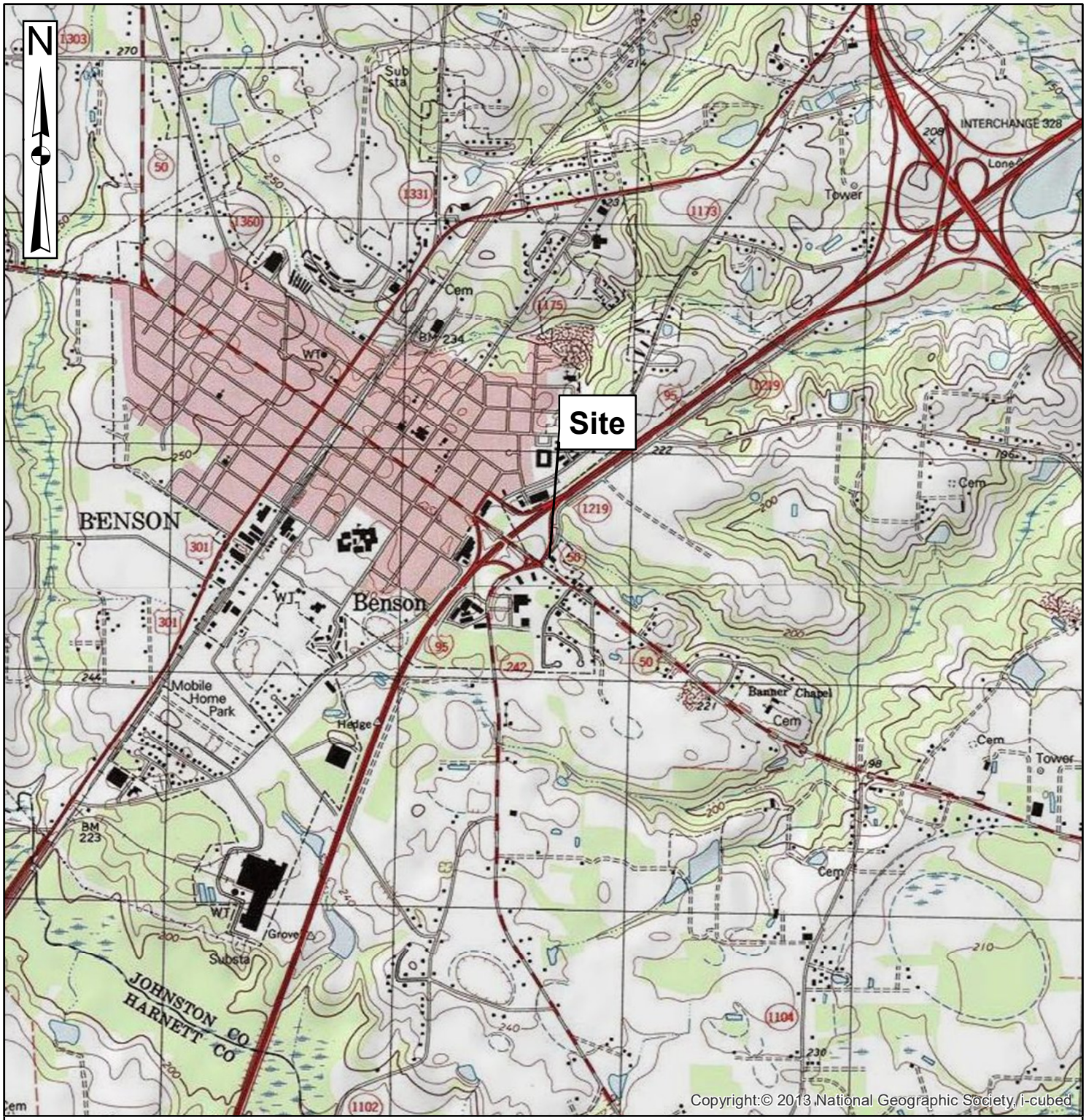
Notes:
Field screening was conducted on October 31, 2019
Values shown are given in parts per million (ppm)
PID - Photo-ionization detector
PID was calibrated using 100 ppm isobutylene gas
ft bls - feet below land surface.

Table 2
Summary of Soil Analytical Results
Preliminary Site Assessment
Parcel# 287 PSH 42 - HQ Corporation of Benson, Inc.
903 East Main Street, Benson, Johnston County, North Carolina
Terracon Project No. 70197584

Sample ID: / Sample Depth (ft bls):	903-SB-01 9	903-SB-02 7	903-SB-03 7	903-SB-04 7	903-SB-05 3	NCDEQ Action Level	MSCC Industrial / Commercial
BTEX (C6 - C9)	<0.27	<0.57	<0.55	<0.55	<0.56	**NE**	**NE**
GRO (C5 - C10)	**1.7**	**8.3**	**0.97**	<0.55	**1.7**	**50**	**NE**
DRO (C10 - C35)	**0.27**	**3.5**	**2.4**	<0.55	**5.7**	**100**	**NE**
TPH (C5 - C35)	**1.97**	**11.8**	**3.4**	<0.55	**7.4**	**NE**	**NE**
Total Aromatics (C10-C35)	**0.2**	**1.7**	**1.4**	<0.11	**3.6**	**NE**	**NE**
16 EPA PAHs	<0.09	<0.18	<0.17	<0.18	<0.18	**NE**	**NE**
BaP	<0.011	<0.023	<0.022	<0.022	<0.022	**NE**	**0.78**

Notes:
Soil samples were collected on October 31, 2019.
Detected compounds are shown in the table.
Concentrations are reported in milligrams per kilogram (mg/kg).
ft bls - feet below land surface.
GRO - Gasoline Range Organics.
DRO - Diesel Range Organics.
TPH - Total Petroleum Hydrocarbons.
BTEX - Benzene, Toluene, Ethylbenzene, and Xylenes.
16 EPA PAHs - Environmental Protection Agency Polycyclic Aromatic Hydrocarbons (acenaphthene, acenaphthylene, anthracene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[g,h,i]perylene, benzo[a]pyrene, chrysene, dibenzo[a,h]anthracene, fluoranthene, fluorene, indeno[1,2,3-c,d]pyrene, naphthalene, phenanthrene, pyrene).
NE - Standard not established.
Detections shaded in gray exceed the North Carolina Department of Environmental Quality (NCDEQ) Action Level.
MSCC Industrial/Commercial - Maximum Soil Contaminant Concentration Levels Industrial/Commercial soil cleanup levels.
Bold: Constituent concentration reported above the method detection limit.

FIGURES



0 1,000 2,000 4,000 6,000 8,000 10,000 Feet

USGS TOPOGRAPHIC MAP
SITE: BENSON, NC QUADRANGLE (1997)
SOUTH: DUNN, NC QUADRANGLE (1997)

1 inch = 2,000 feet

PM: WOF	Project No. 70197584	Terracon	**Topographic Vicinity Map**	**EXHIBIT NO.**
Drawn By: WOF	Scale: 1:24,000		Preliminary Site Assessment HQ Corporation of Benson, Inc. 903 East Main Street Benson, North Carolina	**1**
Checked By: MTJ	Filename: Exhibit 1 - Topo_903			
Approved By: MTJ	Date: Nov. 2019			

2401 Brentwood Drive, Suite 107 Raleigh, NC 27604
Phone: (919) 873-2211 Fax: (919) 873-9555

PROJECT REFERENCE NO.	EXHIBIT
47532.1.3 (I–5986B)	2A

SITE DIAGRAM WITH BORING LOCATIONS

PARCEL 287
HQ CORPORATION OF BENSON, INC.
903 EAST MAIN STREET
BENSON, JOHNSTON COUNTY, NC

LEGEND

- PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- EXISTING EDGE OF PAVEMENT
- NEW TEMPORARY CONSTRUCTION EASEMENT
- KNOWN CONTAMINATION SITE
- BORING LOCATION

0 40 80
FEET

PROJECT REFERENCE NO.	EXHIBIT
47532.1.3 (I–5986B)	2B

SITE DIAGRAM WITH BORING LOCATIONS AND ANALYTICAL DATA

PARCEL 287
HQ CORPORATION OF BENSON, INC.
903 EAST MAIN STREET
BENSON, JOHNSTON COUNTY, NC

LEGEND

- PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- EXISTING EDGE OF PAVEMENT
- NEW TEMPORARY CONSTRUCTION EASEMENT
- KNOWN CONTAMINATION SITE
- BORING LOCATION

* 903-SB-05 (3 ft bls)	(mg/kg)
GRO (C5-C10)	1.7
DRO (C10-C35)	5.7
TPH (C5-C35)	7.4
Total Aromatics (C10-C35)	3.6

903-SB-05

* 903-SB-04 (7 ft bls)
COMPOUNDS NOT DETECTED ABOVE LABORATORY REPORTING LIMITS

903-SB-04

* 903-SB-03 (7 ft bls)	(mg/kg)
GRO (C5-C10)	0.97
DRO (C10-C35)	2.4
TPH (C5-C35)	3.4
Total Aromatics (C10-C35)	1.4

903-SB-03

* 903-SB-02 (7 ft bls)	(mg/kg)
GRO (C5-C10)	8.3
DRO (C10-C35)	3.5
TPH (C5-C35)	11.8
Total Aromatics (C10-C35)	1.7

903-SB-02

* 903-SB-01 (9 ft bls)	(mg/kg)
GRO (C5-C10)	1.7
DRO (C10-C35)	0.27
TPH (C5-C35)	1.97
Total Aromatics (C10-C35)	0.2

903-SB-01

HQ CORPORATION OF BENSON, INC

287

289

WAFFLE HOUSE, INC.

DOROTHY C. ALLEN

PUE

TDE

NOTES

* COMPOUNDS DETECTED ABOVE LABORATORY REPORTING LIMITS ARE SUMMARIZED IN THE ANALYTICAL DATA TABLES

CONCENTRATIONS SHOWN IN ITALICS EXCEED THEIR NCDEQ ACTION LEVEL

mg/kg = MILLIGRAMS PER KILOGRAM

ft bls = FEET BELOW LAND SURFACE

0 40 80
FEET

APPENDIX A

GEOPHYSICAL SURVEY REPORT

November 8, 2019

John Pilipchuk, L.G., P.E.
North Carolina Department of Transportation
GeoEnvironmental Engineering Unit
1589 Mail Service Center
Raleigh, NC 27699-1589

Re: Report for GeoEnvironmental Phase II Site Investigations
Locate USTs and Utilities using Geophysical Methods
HQ Corporation of Benson, Inc.
903 East Main Street
Benson, Johnston County, North Carolina
ID: 35976; TIP: I-5986B; WBS Element No. 47532.1.3
Terracon Project No. 70197584

Dear Mr. Pilipchuk:

On October 28 and 29, 2019, a representative of Terracon Consultants, Inc. (Terracon) performed geophysical exploration services at the above referenced site in general accordance with Terracon Proposal No. P70197584 dated October 1, 2019. This report is presented as a summary of those geophysical services.

1.0 PROJECT DESCRIPTION

Based on the RFP from the NCDOT, PSAs are requested for the HQ Corporation of Benson, Inc. site, located at 903 East Main Street in Benson, North Carolina. The project consisted of the exploration of an approximately 14,400 square-foot area of the existing right-of-way (ROW) of the existing gas station. The purpose of the geophysical exploration was to aid in identifying anomalies consistent with Underground Storage Tanks (USTs) utilizing non-intrusive geophysical methods.

2.0 EXPLORATION METHODS

Terracon used a frequency domain electromagnetic profiler (EM) consisting of a Geonics EM-31-SH system with data logger to collect EM data. In general, field data collection followed the procedures referenced in ASTM D6639-18. More information on both the general method and collection procedures can be found in the referenced standard. EM collects soil conductivity in millisiemens per meter (mS/m) and magnetic susceptibility in parts per trillion (ppt).

Data was collected on a bi-directional grid at approximately 5-foot spacings in both directions. Data was post-processed utilizing trackmaker 31 software engineered by Geomar and Surfer software developed by Golden software.

Additionally, a Ground Penetrating System (GPR) consisting of a 350 MHz antenna and SIR-4000 system made by Geophysical Survey Systems Inc. (GSSI), was utilized to collect GPR data. Due to multiple above ground obstructions, data was collected utilizing a free-scan method with data collected with a sub-meter GPS device. Following the completion of field data collection, data was post-processed utilizing RADAN software engineered by GSSI.

3.0 FINDINGS AND CONCLUSIONS

Terracon reviewed the EM and GPR data collected. Due to interreference from multiple buried utilities and above-ground structures, anomalies consistent with USTs could not be isolated from the EM data. In general, soil conductivity measurements between -50 to 50 mS/m and magnetic susceptibly measurements between -5 to 5 ppt were considered “background”. Measurements outside of these ranges were interpreted to be caused by above or below ground anomalies. The depth of EM signal penetration is approximately 8-feet below the existing grade, however, the actual depth is not produced from the data collected. Upon review of the GPR data, anomalies consistent with USTs were not identified. Depth of GPR signal penetration across the site was approximately 8 feet below the existing grade.

4.0 LIMITATIONS

It should be noted that the process relies on instrument signals to indicate physical conditions in the field. Signal information can be affected by on-site conditions beyond the control of the operator, such as, but not limited to, cultural features, concrete/soil types, concrete/soil moisture, groundwater table depth, and/or reinforcing steel spacing. Interpretation of those signals is based on a combination of known factors combined with the experience of the operator and geophysical scientist evaluating the results. Utilizing conventional observation, sampling, and testing of select areas are recommended to confirm the results from the geophysical surveys. As with all geophysical methods, the geophysical results provide a level of confidence, but should not be considered absolute. We cannot be responsible for the interpretation of geophysical results by others.

4.0 CLOSURE

We appreciate the opportunity to work with you on this project. Please do not hesitate to contact the undersigned if you have any questions regarding this information or if we can be of further service to you.

Sincerely,
Terracon Consultants, Inc.

Joshua A. Lopez
Geophysicist

James D. Hoskins, III, P.E.
Principal / Greensboro Office Manager

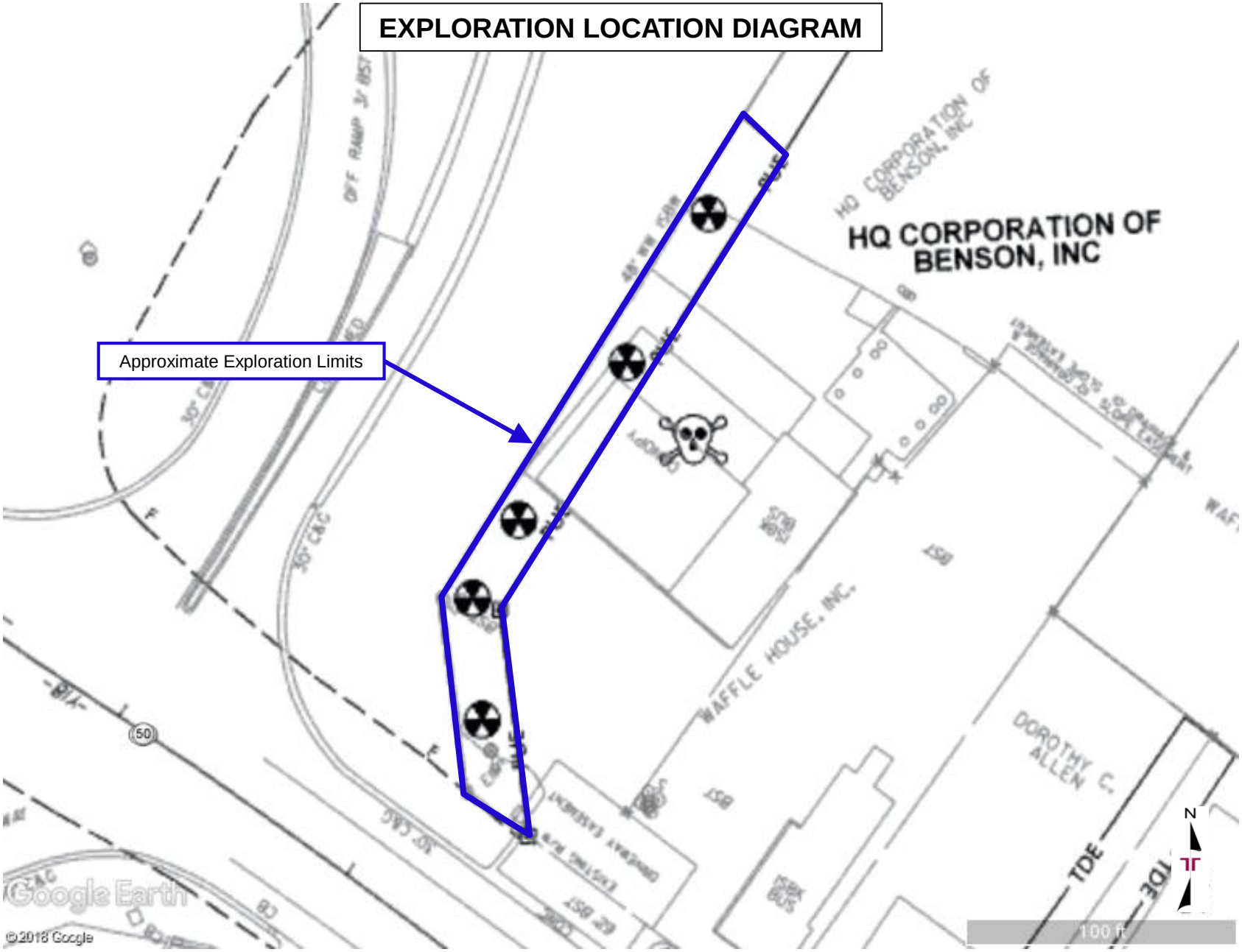
Attachments: Appendix A – Geophysical Exploration Results

Terracon GeoReport

SITE LOCATION DIAGRAM

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

EXPLORATION LOCATION DIAGRAM



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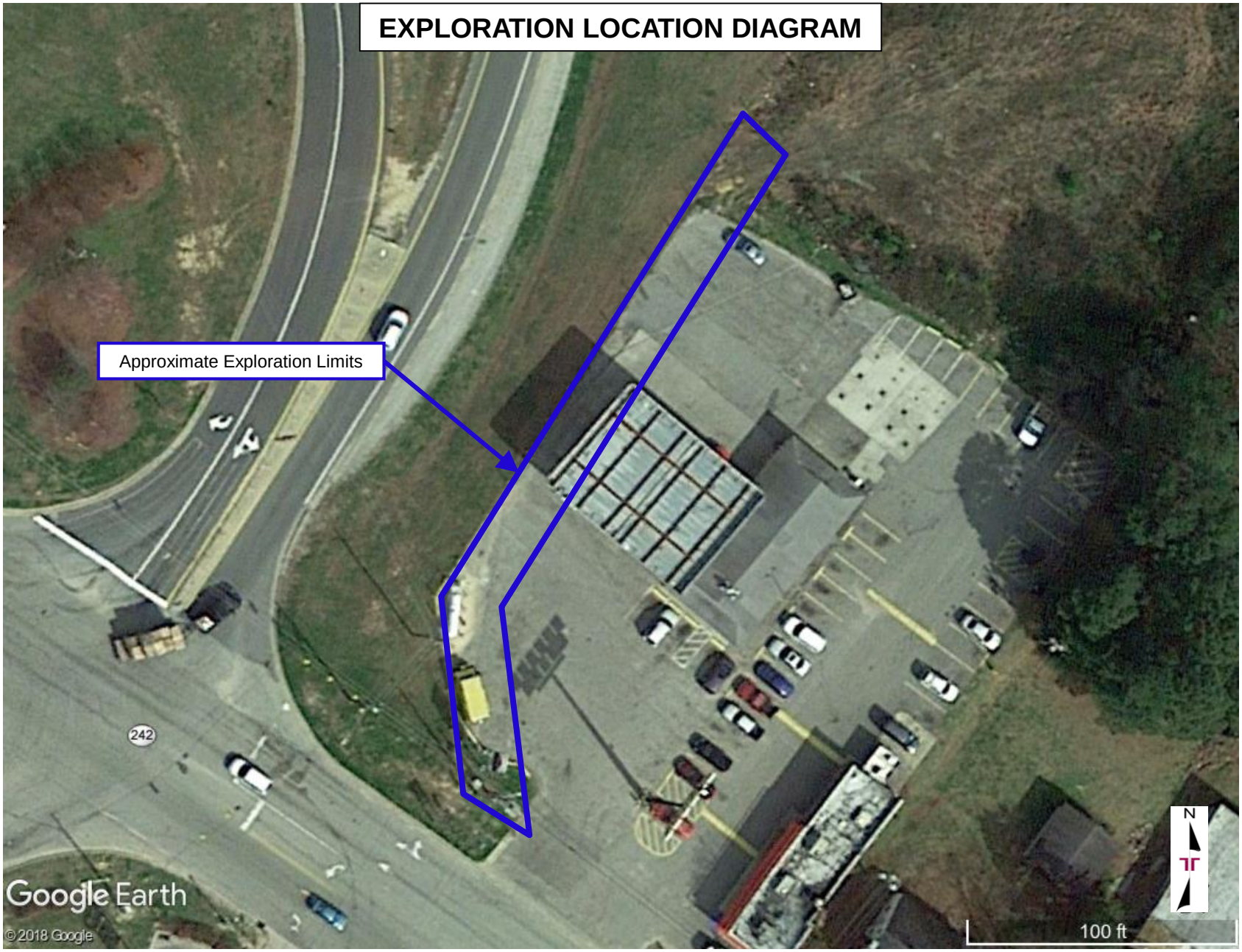
EXPLORATION LOCATION DIAGRAM



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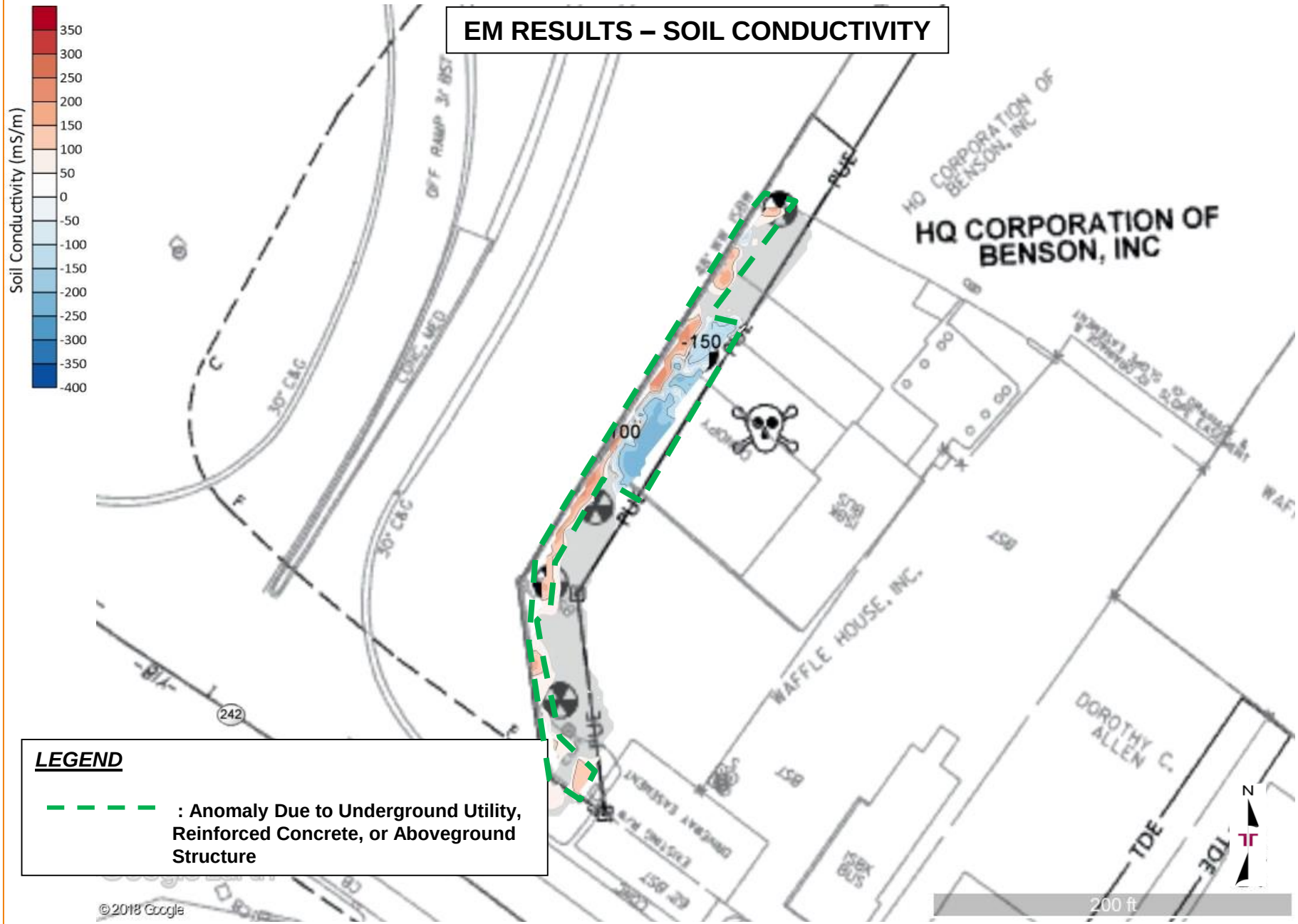
Terracon GeoReport

EM RESULTS – SOIL CONDUCTIVITY



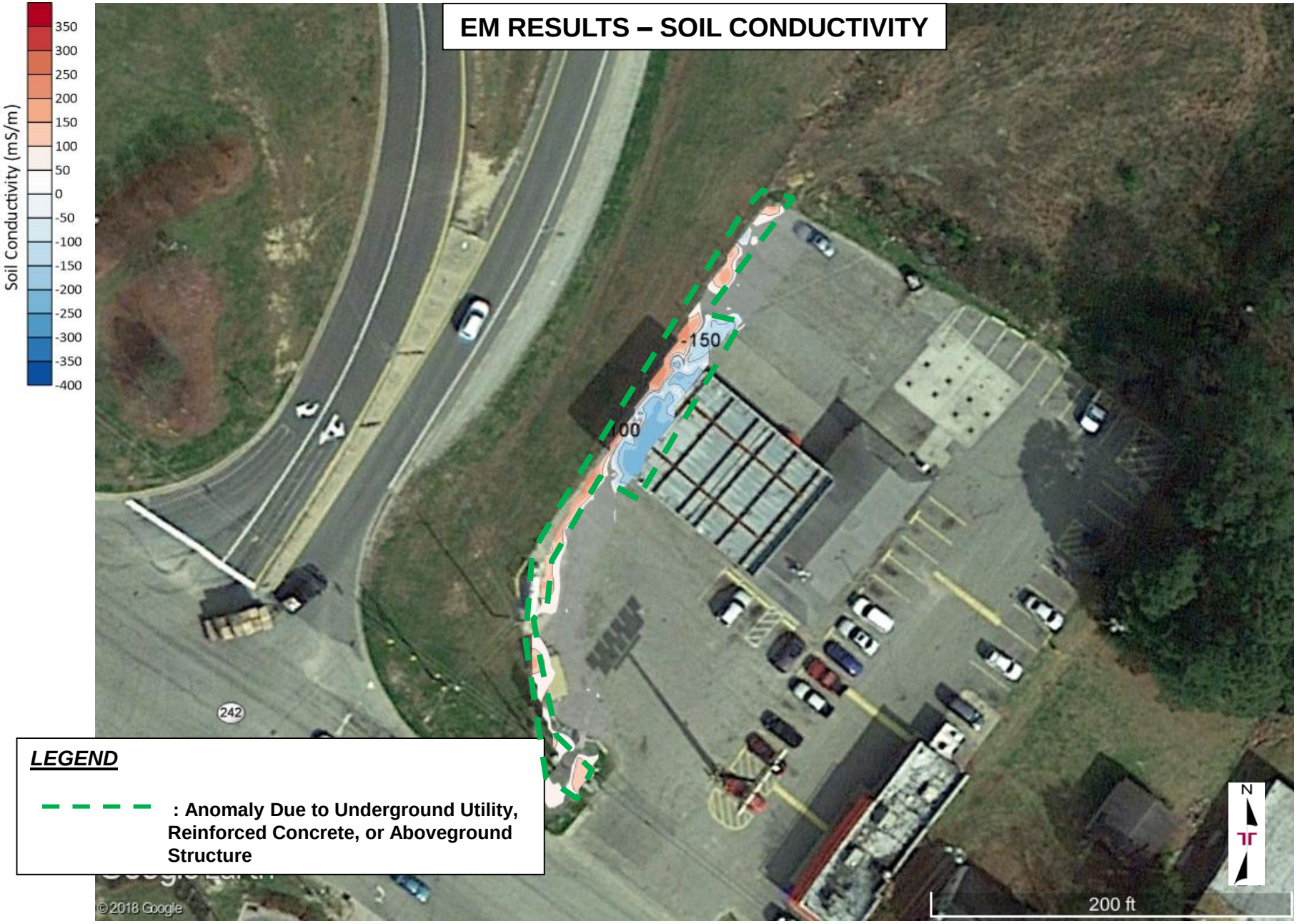
LEGEND

: Anomaly Due to Underground Utility, Reinforced Concrete, or Aboveground Structure

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Terracon GeoReport

EM RESULTS – SOIL CONDUCTIVITY



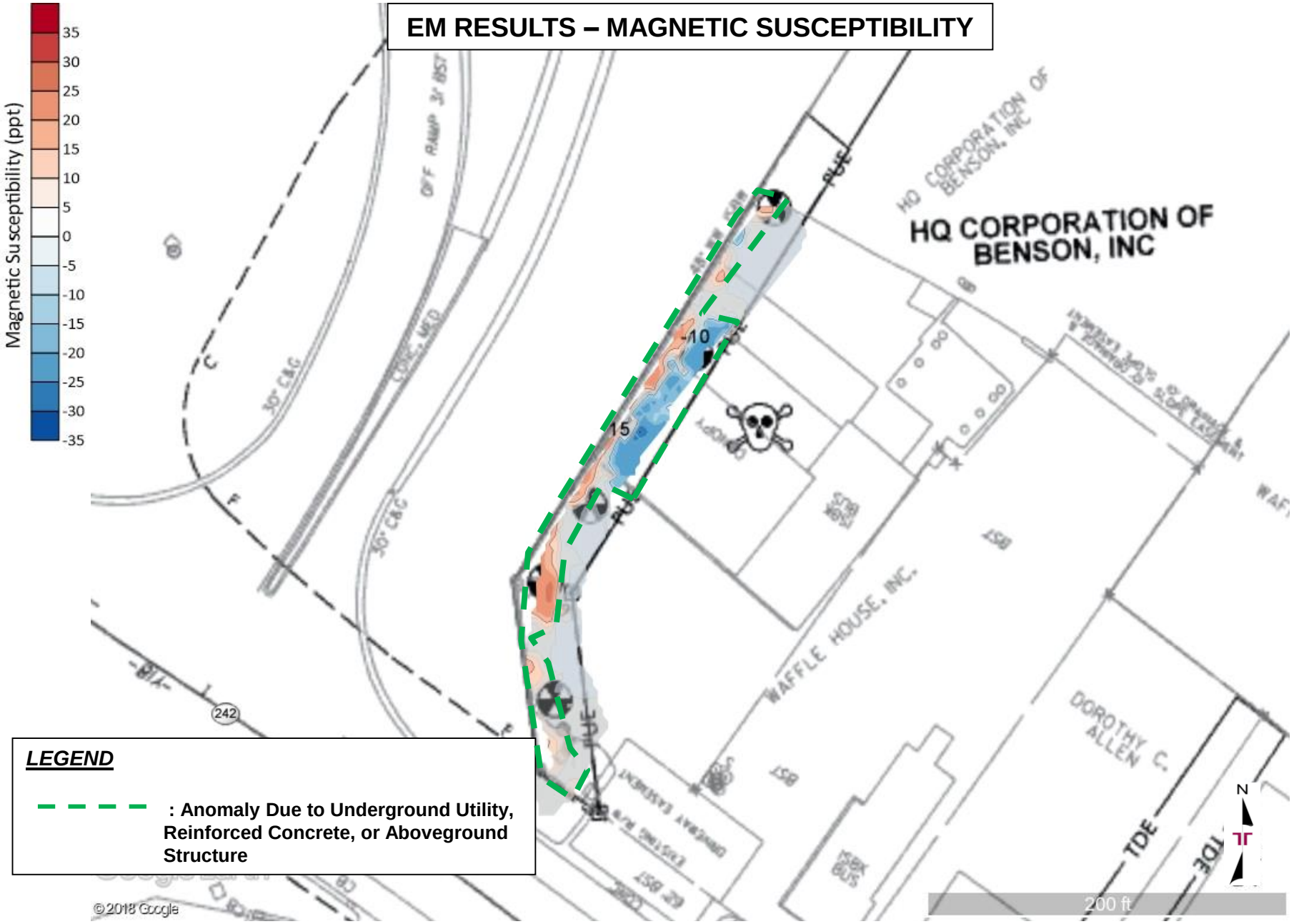
LEGEND

– – – – : **Anomaly Due to Underground Utility, Reinforced Concrete, or Aboveground Structure**

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Terracon GeoReport

EM RESULTS – MAGNETIC SUSCEPTIBILITY

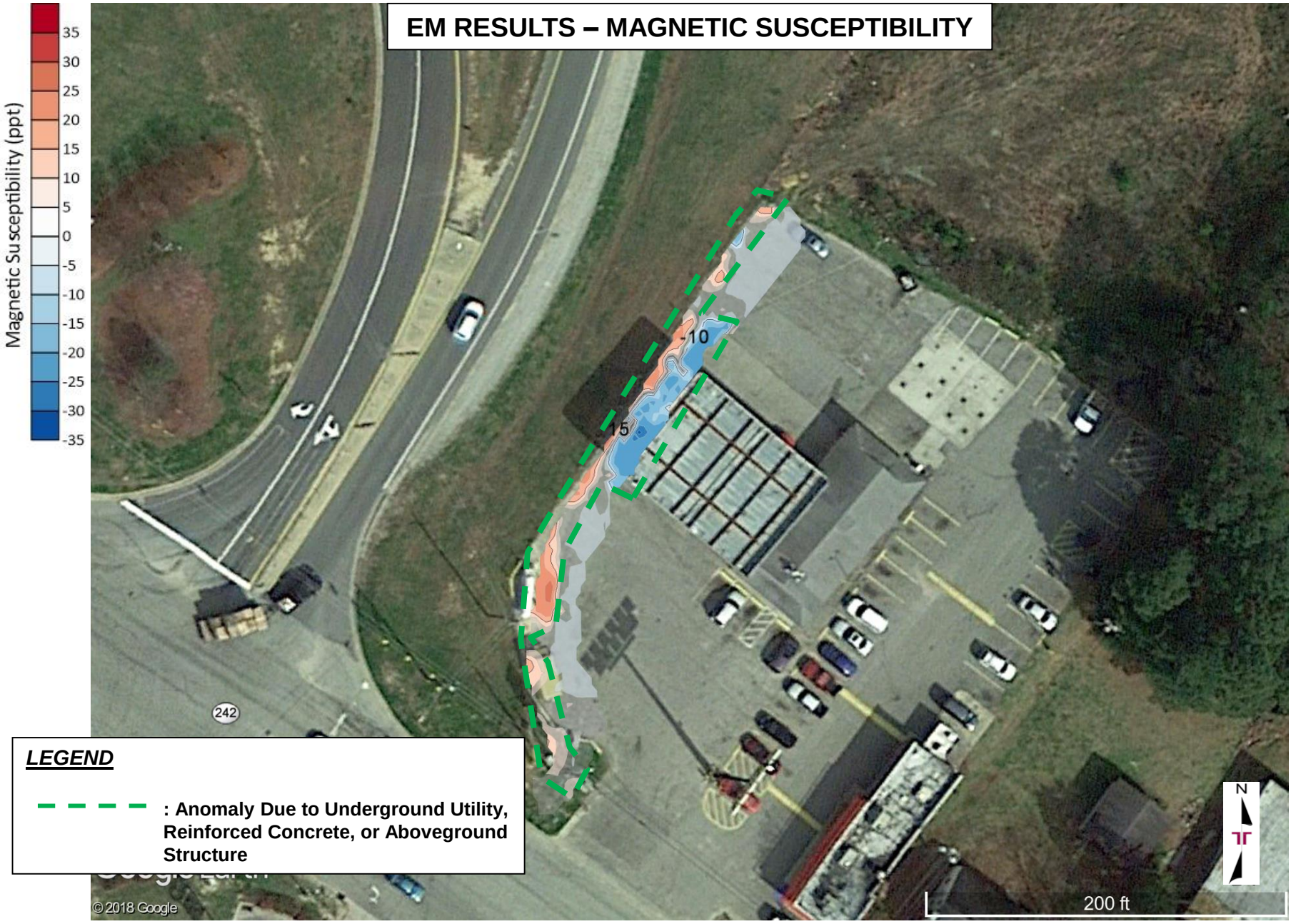


LEGEND

– – – : **Anomaly Due to Underground Utility, Reinforced Concrete, or Aboveground Structure**

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

EM RESULTS – MAGNETIC SUSCEPTIBILITY



LEGEND

: Anomaly Due to Underground Utility, Reinforced Concrete, or Aboveground Structure

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APPENDIX B

SOIL BORING LOGS

BORING LOG NO. 903-SB-01

PROJECT: I-95 Interchange Improvement
Parcel 87 PSH 42 - HQ Corporation of Benson, Inc.

CLIENT: NCDOT
Raleigh, North Carolina

SITE: 903 East Main Street
Benson, Johnston County, North Carolina

LOCATION See Exhibit 2A

DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
0.5	**AGGREGATE BASE COURSE**						
1.5	**FINE SAND (SP)**, tan, odors not observed, dry					<0.1	
3.0	**SILTY CLAY (CL)**, light brown and orange, odors not observed, dry				60	<0.1	
7.0	**CLAYEY SAND (SC)**, tan and orange, odors not observed, dry to moist	5				<0.1	903-SB-01 (9 feet) UVF 09:45
10.0	**SANDY LEAN CLAY (CL)**, tan and gray with red and orange streaks, odors not observed, dry, medium stiff to stiff				60	<0.1	
	Boring Terminated at 10 Feet	10				<0.1	

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:
2-inch DPT

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

Notes:
UVF: Ultraviolet fluorescence

WATER LEVEL OBSERVATIONS

Terracon
2401 Brentwood Rd, Ste 107
Raleigh, NC

Boring Started: 10-31-2019 | Boring Completed: 10-31-2019
Drill Rig: GeoProbe 7822DT | Driller: Quantex, Inc.
Project No.: 70197584 | Appendix B

BORING LOG NO. 903-SB-02

PROJECT: I-95 Interchange Improvement
Parcel 87 PSH 42 - HQ Corporation of Benson, Inc.

CLIENT: NCDOT
Raleigh, North Carolina

SITE: 903 East Main Street
Benson, Johnston County, North Carolina

LOCATION See Exhibit 2A

DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
0.5	**AGGREGATE BASE COURSE**						
	FINE SAND (SP), tan, odors not observed, dry					<0.1	
1.5	**CLAYEY SAND (SC)**, tan, orange, and brown, odors not observed, moist, medium stiff, (wet below 8 feet)				36	<0.1	
		5				<0.1	903-SB-02 (7 feet) UVF 10:00
			▽		60	<0.1	
						<0.1	
10.0	***Boring Terminated at 10 Feet***	10					

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:
2-inch DPT

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

Notes:
UVF: Ultraviolet fluorescence

WATER LEVEL OBSERVATIONS

▽ *Possible groundwater table encountered at approximately 8 feet bls, based on soil cutting observations.*

Terracon
2401 Brentwood Rd, Ste 107
Raleigh, NC

Boring Started: 10-31-2019	Boring Completed: 10-31-2019
Drill Rig: GeoProbe 7822DT	Driller: Quantex, Inc.
Project No.: 70197584	Appendix B

BORING LOG NO. 903-SB-03

PROJECT: I-95 Interchange Improvement
Parcel 87 PSH 42 - HQ Corporation of Benson, Inc.

CLIENT: NCDOT
Raleigh, North Carolina

SITE: 903 East Main Street
Benson, Johnston County, North Carolina

LOCATION See Exhibit 2A

DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
0.5	**AGGREGATE BASE COURSE**						
1.5	**FINE SAND (SP)**, tan, odors not observed, dry					<0.1	
	SANDY LEAN CLAY (CL), tan and brown with red streaks, odors not observed, dry to moist, medium stiff				60	<0.1	
		5				<0.1	903-SB-03 (7 feet) UVF 10:10
6.0	**FINE TO MEDIUM SAND (SP)**, tan and orange, odors not observed, moist, (wet to saturated below 8 feet)		▽		60	<0.1	
10.0						<0.1	
	Boring Terminated at 10 Feet	10					

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:
2-inch DPT

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

Notes:
UVF: Ultraviolet fluorescence

WATER LEVEL OBSERVATIONS

▽ *Possible groundwater table encountered at approximately 8 feet bls, based on soil cutting observations.*

Terracon
2401 Brentwood Rd, Ste 107
Raleigh, NC

Boring Started: 10-31-2019	Boring Completed: 10-31-2019
Drill Rig: GeoProbe 7822DT	Driller: Quantex, Inc.
Project No.: 70197584	Appendix B

BORING LOG NO. 903-SB-04

PROJECT: I-95 Interchange Improvement
Parcel 87 PSH 42 - HQ Corporation of Benson, Inc.

CLIENT: NCDOT
Raleigh, North Carolina

SITE: 903 East Main Street
Benson, Johnston County, North Carolina

LOCATION See Exhibit 2A

DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
0.2	**AGGREGATE BASE COURSE**						
	FINE TO COARSE SAND (SW), orange, odors not observed, dry					<0.1	
					60	<0.1	
5.5		5				<0.1	903-SB-04 (7 feet) UVF 10:25
	SANDY LEAN CLAY (CL), tan and orange, odors not observed, moist, medium stiff					<0.1	
8.0					60		
	SILT (ML), tan and orange, odors not observed, moist					<0.1	
9.5			▽				
10.0	**CLAYEY SAND (SC)**, orange and brown, odors not observed, wet	10					
	Boring Terminated at 10 Feet						

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:
2-inch DPT

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

Notes:
UVF: Ultraviolet fluorescence

WATER LEVEL OBSERVATIONS

▽ *Possible groundwater table encountered at approximately 9.5 feet bls, based on soil cutting observations.*

Terracon
2401 Brentwood Rd, Ste 107
Raleigh, NC

Boring Started: 10-31-2019	Boring Completed: 10-31-2019
Drill Rig: GeoProbe 7822DT	Driller: Quantex, Inc.
Project No.: 70197584	Appendix B

BORING LOG NO. 903-SB-05

PROJECT: I-95 Interchange Improvement
Parcel 87 PSH 42 - HQ Corporation of Benson, Inc.

CLIENT: NCDOT
Raleigh, North Carolina

SITE: 903 East Main Street
Benson, Johnston County, North Carolina

LOCATION See Exhibit 2A

DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
0.3	**AGGREGATE BASE COURSE**						
	FINE TO COARSE SAND (SW), trace gravel, orange, odors not observed, dry					<0.1	
2.5			▽		60		
	SANDY LEAN CLAY (CL), dark brown and tan, odors not observed, wet, soft					<0.1	
		5				<0.1	903-SB-05 (3 feet) UVF 10:40
7.0							
	CLAYEY SAND (SC), tan and gray, odors not observed, moist to wet				60	<0.1	
10.0		10					
	Boring Terminated at 10 Feet						

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:
2-inch DPT

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

Notes:
UVF: Ultraviolet fluorescence

WATER LEVEL OBSERVATIONS

▽ *Possible groundwater table encountered at approximately 2.5 feet bls, based on soil cutting observations.*

Terracon
2401 Brentwood Rd, Ste 107
Raleigh, NC

Boring Started: 10-31-2019 | Boring Completed: 10-31-2019
Drill Rig: GeoProbe 7822DT | Driller: Quantex, Inc.
Project No.: 70197584 | Appendix B

APPENDIX C

LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORMS

Hydrocarbon Analysis Results

Client: TERRACON
Address: 2401 BRENTWOOD ROAD #107
RALEIGH NC

Contact: WILL FRAZIER

Project: #70197584

Samples taken Thursday, October 31, 2019
Samples extracted Thursday, October 31, 2019
Samples analysed Friday, November 1, 2019

Operator MAX MOYER

U00902

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	904-SB-01	21.0	<0.52	<0.52	<0.52	<0.52	<0.1	<0.17	<0.021	0	0	0	PHC not detected
s	904-SB-02	20.5	<0.51	<0.51	<0.51	<0.51	<0.1	<0.16	<0.02	0	0	0	PHC not detected
s	903-SB-01	10.7	<0.27	1.7	0.27	1.97	0.2	<0.09	<0.011	96.5	2.4	1.1	Deg.PHC 72.4%,(FCM)
s	903-SB-02	22.8	<0.57	8.3	3.5	11.8	1.7	<0.18	<0.023	87.5	9.5	3	Deg.PHC 70.5%,(FCM)
s	903-SB-03	21.8	<0.55	0.97	2.4	3.4	1.4	<0.17	<0.022	66.7	26.9	6.5	Deg Fuel 79.9%,(FCM)
s	903-SB-04	22.0	<0.55	<0.55	<0.55	<0.55	<0.11	<0.18	<0.022	0	0	0	PHC not detected
s	903-SB-05	22.4	<0.56	1.7	5.7	7.4	3.6	<0.18	<0.022	57	34	9	Deg Fuel 77.2%,(FCM)
s	605-SB-01	58.6	<1.5	69.9	215.6	285.5	11.9	<0.47	<0.059	99.7	0.3	0	Deg.Kerosene 81.4%,(FCM)
s	605-SB-02	21.0	41.1	117.9	188.9	306.8	18.5	0.71	<0.021	99.7	0.2	0.1	Deg.Kerosene 68.5%,(FCM),(P)
s	605-SB-03	19.5	<0.49	14.9	2.4	17.3	3.7	<0.16	<0.02	98.7	1.1	0.2	No Match found

Initial Calibrator QC check OK

Final FCM QC Check OK 101.2 %

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

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

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

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

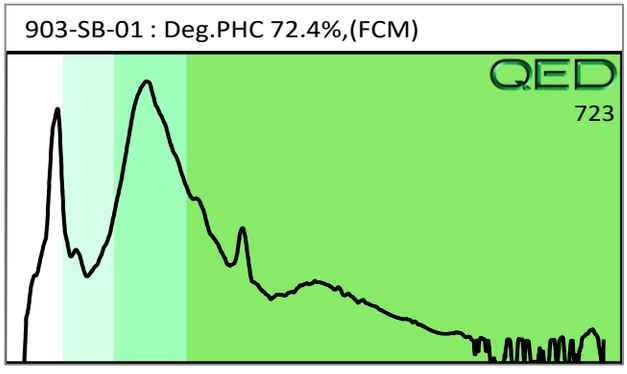
QED Hydrocarbon Fingerprints

Project: #70197584 ##################

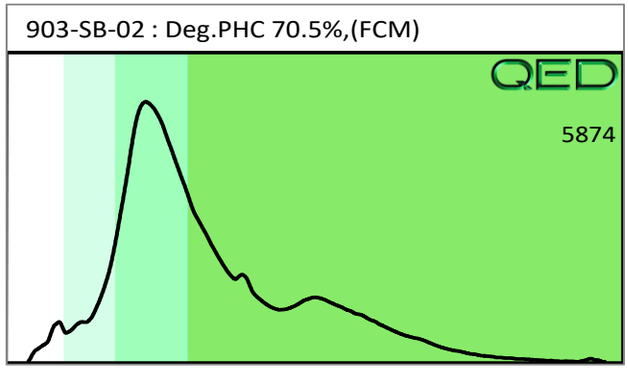
904-SB-01 : PHC not detected

904-SB-02 : PHC not detected

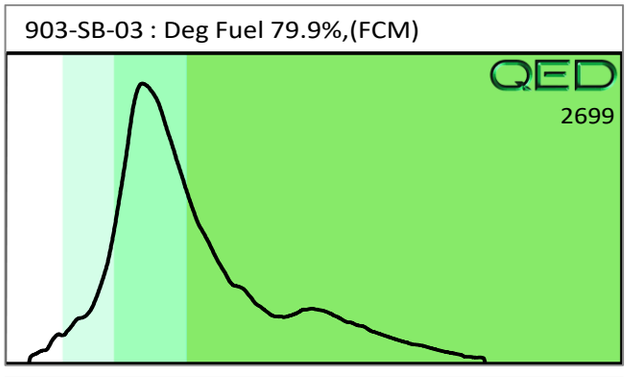
903-SB-01 : Deg.PHC 72.4%,(FCM)



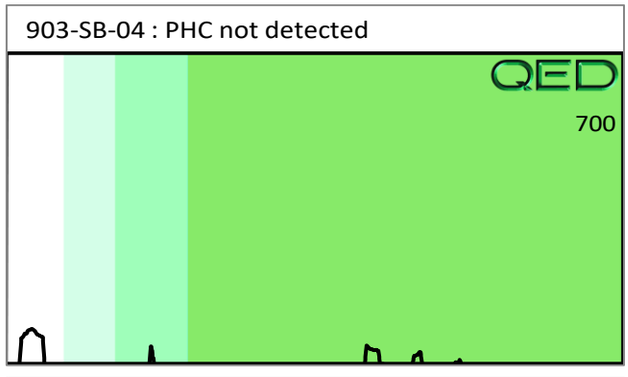
903-SB-02 : Deg.PHC 70.5%,(FCM)



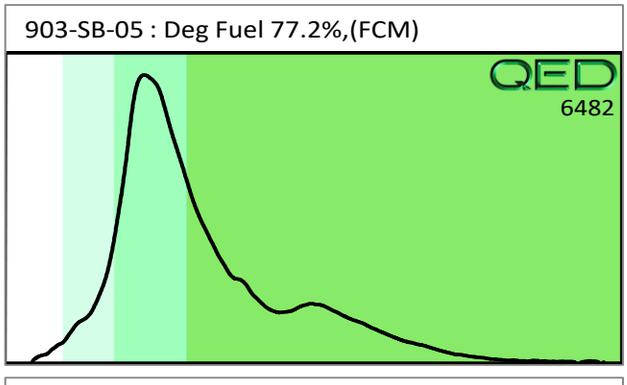
903-SB-03 : Deg Fuel 79.9%,(FCM)



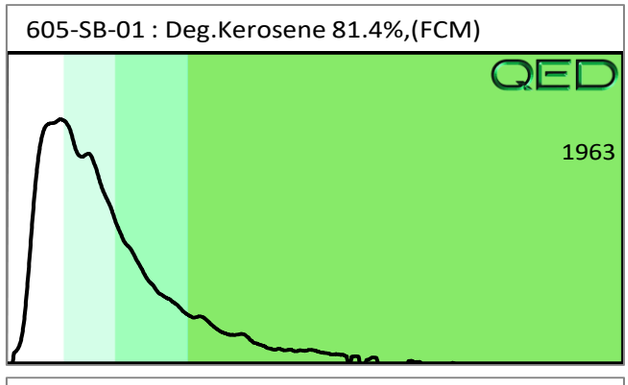
903-SB-04 : PHC not detected



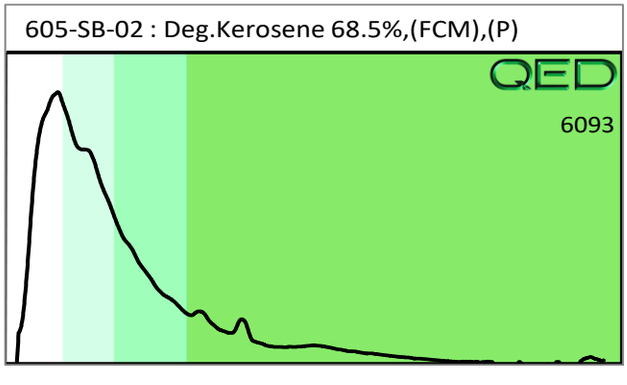
903-SB-05 : Deg Fuel 77.2%,(FCM)



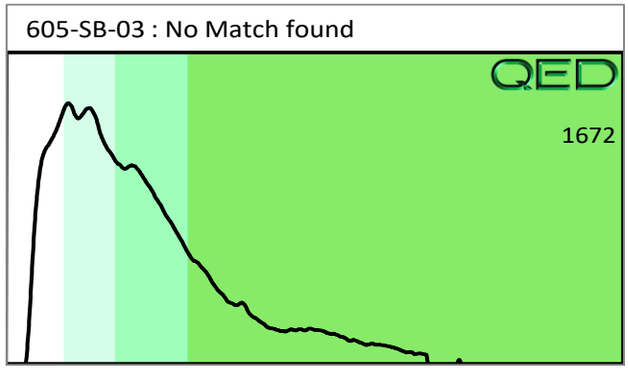
605-SB-01 : Deg.Kerosene 81.4%,(FCM)



605-SB-02 : Deg.Kerosene 68.5%,(FCM),(P)



605-SB-03 : No Match found



Hydrocarbon Analysis Results

Client: TERRACON
Address: 2401 BRENTWOOD ROAD #107
RALEIGH NC

Contact: WILL FRAZIER

Project: #70197584

Samples taken Thursday, October 31, 2019
Samples extracted Thursday, October 31, 2019
Samples analysed Friday, November 1, 2019

Operator MAX MOYER

U00902

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	605-SB-04	70.1	<1.8	17.8	74.2	92	138.7	5.3	<0.07	58.5	32.5	9	Deg.Fuel 85.3%,(FCM)
s	605-SB-05	65.6	<1.6	<1.6	68.4	68.4	128.1	4.9	<0.066	0	77.8	22.2	Deg.Fuel 86%,(FCM)

Initial Calibrator QC check OK

Final FCM QC Check OK 98.9 %

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

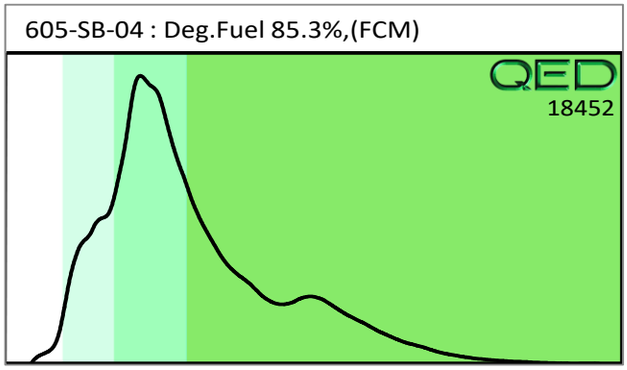
Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

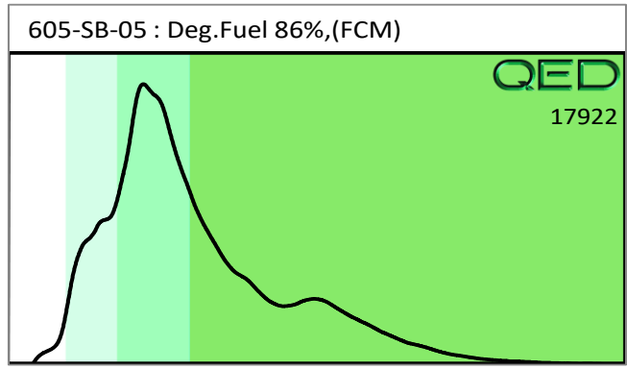
B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

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

QED Hydrocarbon Fingerprints

Project: #70197584 ##################





B143

Client Name:	Terracon Consultants
Address:	2401 Brentwood Rd #107 Raleigh NC
Contact:	Will Frazier
Project Ref.:	70197584
Email:	wofrazier@terracon.com
Phone #:	984-202-4059
Collected by:	W. Frazier

REDLAB™

RAPID ENVIRONMENTAL DIAGNOSTICS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

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

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

Sample Collection Date/Time	TAT Requested 24 Hour	TAT Requested 48 Hour	Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
10/31/19 0920		✓	WOF	904-SB-01	57.4	45.0	12.4
0940		✓	WOF	904-SB-02	57.7	45.0	12.7
0945		✓	WOF	903-SB-01	58.2	45.1	13.1
1000		✓	WOF	903-SB-02	56.6	45.2	11.4
1010		✓	WOF	903-SB-03	56.9	45.0	11.9
1025		✓	WOF	903-SB-04	56.8	45.0	11.8
1040		✓	WOF	903-SB-05	56.6	45.0	11.6
1245		✓	WOF	605-SB-01	59.1	45.1	14.0
1150		✓	WOF	605-SB-02	57.5	45.1	12.4
1200		✓	WOF	605-SB-03	58.4	45.1	13.3
1215		✓	WOF	605-SB-04	56.9	45.2	11.7
1230		✓	WOF	605-SB-05	57.3	44.8	12.5

Comments:

Relinquished by	Date/Time	Accepted by	Date/Time
W. Frazier	10/31/19 1500	MM 11/1/19	1150
Relinquished by	Date/Time	Accepted by	Date/Time

RED Lab USE ONLY

12

Preliminary Site Assessment

I-95 Interchange Improvement

Parcel 298 PSH 42 - Arsenal Properties, LLC

904 East Main Street, Benson, Johnston County, North Carolina

TIP No. I-5986B

WBS Element: 47532.1.3

November 21, 2019

Terracon Project No. 70197584

Prepared for:

North Carolina Department of Transportation
Raleigh, North Carolina

Prepared by:

Terracon Consultants, Inc.
Raleigh, North Carolina

Preliminary Site Assessment

I-95 Interchange Improvement

Parcel 298 PSH 42 - Arsenal Properties, LLC

904 East Main Street, Benson, Johnston County, North Carolina

TIP No. I-5986B

WBS Element: 47532.1.3

November 21, 2019

Terracon Project No. 70197584

DocuSigned by:
FE221351A43D42F...

11/26/2019

NORTH CAROLINA LICENSED SEAL 2576 GEOLOGIST WILLIAM O. FRAZIER

William O. Frazier, PG
Staff Geologist

For:

Michael T. Jordan, PG, RSM
Department Manager

Donald R. Malone, PE, RSM
Senior Engineer

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Terracon Consultants, Inc. 2401 Brentwood Road, Suite 107 Raleigh, North Carolina 27615
P (919) 873-2211 F (919) 873 9555 terracon.com

TABLE OF CONTENTS

November 21, 2019

North Carolina Department of Transportation
Attention: Mr. John Pilipchuk, LG
GeoEnvironmental Engineering Unit
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Re: Preliminary Site Assessment (PSA)
I-95 Interchange Improvement
Parcel 298 PSH 42 - Arsenal Properties, LLC
904 East Main Street, Benson, Johnston County, North Carolina
TIP No. I-5986B
WBS Element: 47532.1.3

Dear Mr. Pilipchuk:

Terracon Consultants, Inc. (Terracon) is pleased to submit a Preliminary Site Assessment (PSA) report for the above referenced site. This assessment was performed in accordance with our Proposal for Preliminary Site Assessment (Terracon Proposal No. P70197584) dated October 1, 2019. This report includes the findings of the investigation and provides our conclusions and recommendations. Terracon appreciates the opportunity to provide these services to the North Carolina Department of Transportation. If you have any questions concerning this report or need additional information, please contact us at 919-873-2211.

Sincerely,

Terracon Consultants, Inc.

Prepared by:

William O. Frazier, PG
Staff Geologist

Donald R. Malone, PE, RSM
Senior Engineer

Reviewed by:

for Michael T. Jordan, PG, RSM
Environmental Department Manager

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PRELIMINARY SITE ASSESSMENT

I-95 INTERCHANGE IMPROVEMENT
TIP NO. I-5986B
WBS ELEMENT: 47532.1.3
PARCEL 298 PSH 42 - ARSENAL PROPERTIES, LLC
904 EAST MAIN STREET, BENSON, NORTH CAROLINA

1.0 INTRODUCTION

1.1 Site Description

Site Name	Parcel 298 PSH 42 – Arsenal Properties, LLC
Site Location/Address	904 East Main Street, Benson, North Carolina 27532 (Johnston County Tax PIN: 153919-71-4830)
General Site Description	The site consists of an approximate 1.2-acre parcel developed with a one-story commercial building currently operating as a Short Stop convenience store and gas station. The gas station currently operates five underground storage tanks (USTs). The site is also improved with the associated fueling islands, pump canopy, paved parking areas, and landscaped grounds.

1.2 Site History

The site is located at 904 East Main Street in Benson, Johnston County, North Carolina. At the time of the Preliminary Site Assessment (PSA), the site was operating as the Short Stop #22 gas station (Facility ID: 00-0-0000017203; UST No. FA-3933). According to the North Carolina Department of Environmental Quality (NCDEQ) – Division of Waste Management UST Section Registered Tank Database, the facility currently operates one dual compartment 20,000-gallon gasoline/diesel UST, one 15,000-gallon gasoline UST, one 5,000-gallon gasoline UST, one 6,000-gallon gasoline UST, and one 6,000-gallon diesel UST, each of which were installed in 2013. Six former on-site gasoline, diesel, and kerosene USTs were also listed in the Registered Tank Database, which reportedly operated between 1982 and 2013. The site reportedly operated as a Gulf Service Station from the 1940s until 1982, when Texaco purchased the site and installed the above-referenced former tanks (Catlin, 2013).

A petroleum release (Incident #14674) was identified at the site in 1995 during an investigation associated with a real estate transaction. At the time the facility was operating as Cub Mart #1 BP Station (UST No: FA-784). A soil sample collected from adjacent to a fuel dispenser from

approximately 13 to 15 feet below land surface (bls) contained total petroleum hydrocarbons (TPH) above the NCDEQ Action Level. Benzene concentrations ranging from 100 to 2,300 micrograms per liter (µg/L), above its NCDEQ 2L Groundwater Quality Standard (2L Standard), were also identified in three temporary monitoring wells (Law, 1995). Subsequent groundwater sampling delineated a contaminant plume within groundwater extending from the former pump island northward beneath NC Highway 242 (currently South Walton Drive) (Law, 1996). The site was assigned a Low Risk ranking and additional work was not conducted at the property until 2010, when groundwater sampling identified remnant contamination above 2L Standards (Catlin, 2013). The former UST system was replaced in 2013. Approximately 701 tons of petroleum-impacted soils were removed from the site during closure activities. Confirmation sampling conducted after overexcavation did not identify petroleum consituents at concentrations above their lowest corresponding maximum soil contaminant concentrations (MSCCs) (Catlin, 2013). The facility was granted a No Further Action (NFA) letter for Incident 29855 (which had replaced Incident #14674) on April 22, 2014 with the recordation of a Notice of Residual Petroleum (NORP) restricting the use of groundwater at the site.

1.3 Scope of Work

Terracon conducted the following PSA scope of work (SOW) in accordance with Terracon's Proposal No. P70197584 dated October 1, 2019. This PSA is being completed prior to a planned upgrade of the I-95 interchange and widening of the interstate in Benson, North Carolina (site). The scope of work included a geophysical investigation, the collection of soil samples, and preparation of a report documenting our investigation activities. The PSA is not intended to delineate potential impacts. The PSA was performed within the proposed rights-of-way (ROW) as indicated by NCDOT provided plan sheets.

1.4 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. Terracon makes no warranties, either expressed or implied, regarding the findings, conclusions or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third parties supplying information used in the preparation of the report. These services were performed in accordance with our Proposal for Preliminary Site Assessment (Terracon Proposal No. P70197584) dated October 1, 2019 and were not conducted in accordance with ASTM E1903-11.

1.5 Additional Scope Limitations

Findings, conclusions and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, undetectable or not present during these services; thus, we cannot represent that the site is free of hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this PSA. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations or exploratory services; the data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

1.6 Reliance

This report has been prepared for the exclusive use of the NCDOT. Authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the expressed written authorization of the client and Terracon.

2.0 FIELD ACTIVITIES

The following PSA activities are presented in the order that they were conducted in the field. **Exhibit 1** presents the topography of the site on a portion of the USGS topographic quadrangle map of Benson, North Carolina, 1997. **Exhibits 2A and 2B** depict the site layout and indicate the approximate locations of the site features, soil boring locations, and analytical results.

2.1 Geophysical Survey

On October 28 and 29, 2019, Terracon conducted a geophysical investigation at the site in an effort to determine if unknown, metallic USTs were present beneath the proposed ROW area. The geophysical investigation included an electromagnetic (EM) induction survey using a Geonics EM31-SH metal detection instrument and a ground penetrating radar (GPR) survey using a Geophysical Survey Systems SIR-4000 unit.

The geophysical investigation did not identify possible or probable metallic UST within the proposed ROW area. In addition to metal detection and GPR scans, NC One Call public utility locator was used to identify several underground utility lines and to clear boring locations. A copy of the geophysical report is in **Appendix A**.

2.2 Soil Sampling

Based on the findings of the geophysical investigation and Terracon's site observations, Terracon oversaw the advancement of two soil borings (904-SB-01 and 904-SB-02) along the northwestern portion of the parcel and within the proposed NCDOT ROW. The borings were completed by a North Carolina Certified Well Contractor (Quantex, Inc.) using a truck-mount Geoprobe® 7822DT direct-push drill rig.

Soil samples were collected in 5-foot, disposable, Macro-Core® sampler tubes to document soil lithology, color, moisture content, and sensory evidence of impacts. Each soil sample was screened for organic vapors using an 11.7 eV photoionization detector (PID). The PID data were collected in order to corroborate laboratory data and assist in selection of sample intervals for laboratory analysis. PID readings from the borings did not exceed the instrument detection limit of 1 part per million (ppm). The PID screening values are summarized in **Table 1**.

Based on the proposed disturbance depths and discussion with the NCDOT, each of the soil borings was advanced to a depth of approximately 10 feet below land surface (bls). Based on the results of the field screening, two soil samples, one from each boring, were collected from depths between approximately 7 feet bls. Soil samples were collected in the depth interval that was most likely to be impacted. Samples were placed in laboratory provided sample containers and shipped to REDLAB/QROS, LLC – Environmental Testing for analysis by Ultraviolet Fluorescence (UVF).

The drilling equipment used at the site was decontaminated prior to use and between the advancement of each boring. Non-dedicated sampling equipment was decontaminated using a Liquinox®-water wash followed by a distilled water rinse. Each of the boreholes was backfilled with soil cuttings and bentonite pellets. Surface completion was achieved with asphalt cold patch. Remaining investigation derived waste (IDW) was spread on the site.

Soil generally consisted of fine-grained sand to a depth of approximately 3.5 feet bls on average underlain by lean clay to approximately 6 feet bls, sandy or silty clay to approximately 8 feet bls, and clayey sand to depths of approximately 10 feet bls. Saturated soils were observed at approximately 8.5 ft bls. The soil boring logs are included in **Appendix B**. Sample locations were measured using a sub-foot Trimble Geo7X GPS unit and are depicted on **Exhibits 2A** and **2B**.

3.0 LABORATORY ANALYSES

Soil samples were submitted to QROS for analysis of the following:

- TPH-gasoline range organics (C_5-C_{10}) (TPH-GRO);
- TPH-diesel range organics (C_{10}-C_{35}) (TPH-DRO);
- Total petroleum hydrocarbons (C_5-C_{35}) (TPH);
- Benzene, toluene, ethylbenzene, and xylenes (BTEX);
- Total aromatics (C_{10}-C_{35});
- 16 EPA Polycyclic Aromatic Hydrocarbons (16 EPA PAHs); and
- Benzo(a)pyrene (BaP).

Please refer to **Appendix C** for the laboratory analytical reports.

4.0 DATA EVALUATION

4.1 Soil Analytical Results

Laboratory analysis did not identify concentrations of petroleum constituents above laboratory reporting limits in soil samples 904-SB-01 and 904-SB-02 (**Table 2**).

5.0 CONCLUSIONS AND RECOMMENDATIONS

The findings of this investigation are discussed below.

- The geophysical investigation did not identify possible or probable metallic USTs within the proposed NCDOT ROW.

- Laboratory analysis did not identify concentrations of BTEX, TPH-GRO, TPH-DRO, TPH, Total Aromatics, and 16 EPA PAHs above laboratory reporting limits.

- While soil contamination was not identified within the soil samples collected, a NORP restricting groundwater use is in place at the site property.

- Terracon does not recommend further assessment of the ROW at this site. However, based on detections of petroleum compounds, impacted soil and groundwater encountered during NCDOT's project should be managed and/or disposed of in accordance with applicable local and State requirements. In addition, construction workers should be alert for potential soil and/or groundwater impacts at the site.

6.0 REFERENCES

Catlin, 2013. Initial Abatement Action Report. Short Stop #22, 904 East Main Street, Benson NC. April 25, 2013.

Law, 1995. Initial Site Assessment, BP Station, Highways 50 and I-90, Benson NC. August 15, 1995.

Law, 1996. Comprehensive Site Assessment, BP Gasoline Station, Highway 50 and I-95, Benson NC, March 15, 1996.

NCDOT, 2016. Revised GeoEnvironmental Report for Preliminary Site Assessments. “Hazardous Material Report.” August 30, 2016.

TABLES

Table 1
Summary of PID Field Screening Values
Preliminary Site Assessment
Parcel# 298 PSH 42 - Arsenal Properties, LLC
904 East Main Street, Benson, Johnston County, North Carolina
Terracon Project No. 70197584

Boring Depth (feet bls)	904-SB-01	904-SB-02
(0 - 2)	<0.1	<0.1
(2 - 4)	<0.1	<0.1
(4 - 6)	<0.1	<0.1
(6 - 8)	<0.1	<0.1
(8 - 10)	<0.1	<0.1

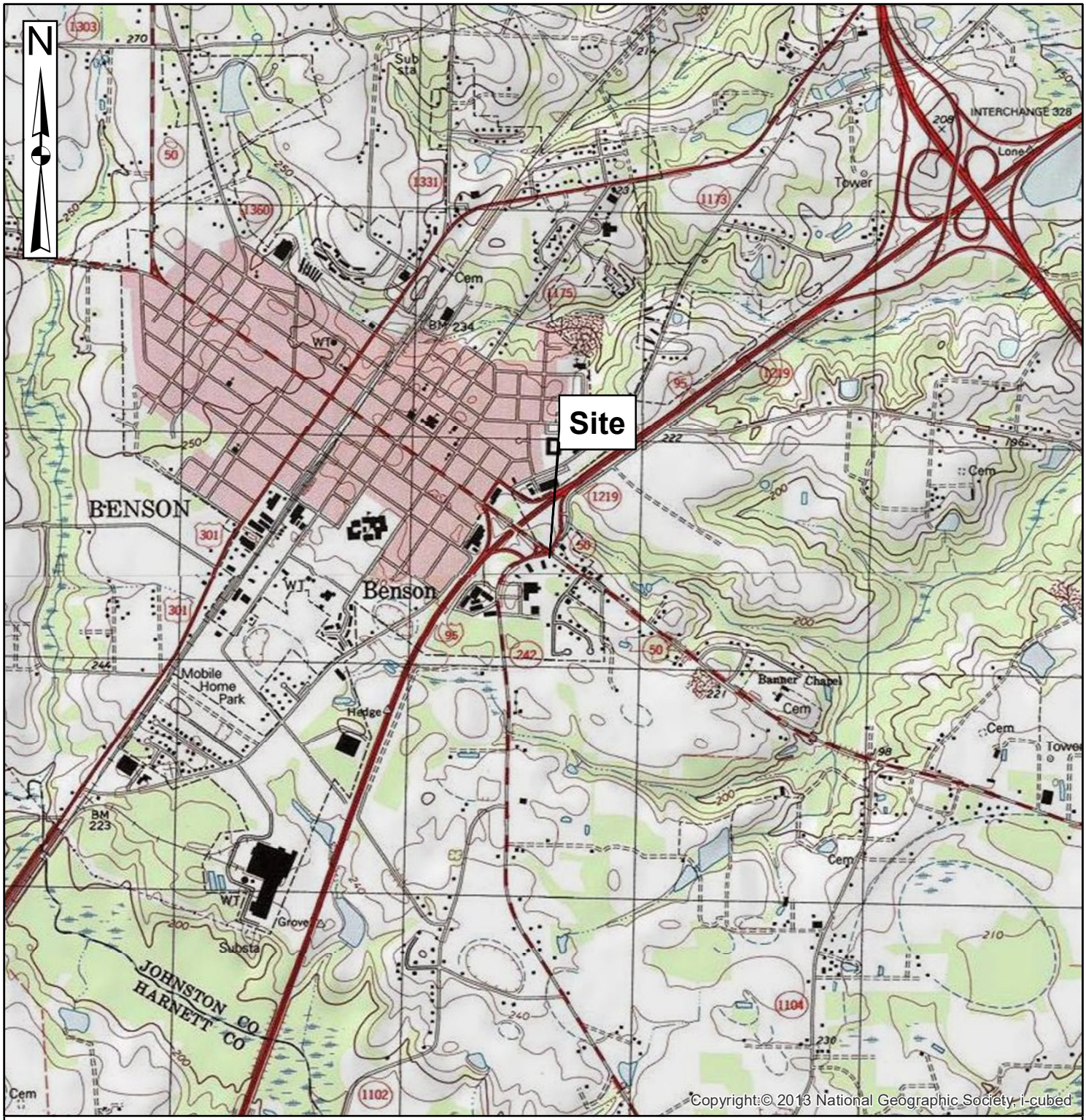
Notes:
Field screening was conducted on October 31, 2019
Values shown are given in parts per million (ppm)
PID - Photo-ionization detector
PID was calibrated using 100 ppm isobutylene gas
ft bls - feet below land surface.

Table 2
Summary of Soil Analytical Results
Preliminary Site Assessment
Parcel# 298 PSH 42 - Arsenal Properties, LLC
904 East Main Street, Benson, Johnston County, North Carolina
Terracon Project No. 70197584

Sample ID: / Sample Depth (ft bls):	904-SB-01 / 7	904-SB-02 / 7	NCDEQ Action Level	MSCC Industrial / Commercial
BTEX (C6 - C9)	<0.52	<0.51	**NE**	**NE**
GRO (C5 - C10)	<0.52	<0.51	**50**	**NE**
DRO (C10 - C35)	<0.52	<0.51	**100**	**NE**
TPH (C5 - C35)	<0.52	<0.51	**NE**	**NE**
Total Aromatics (C10-C35)	<0.1	<0.1	**NE**	**NE**
16 EPA PAHs	<0.17	<0.16	**NE**	**NE**
BaP	<0.021	<0.02	**NE**	**0.78**

Notes:
Soil samples were collected on October 31, 2019.
Detected compounds are shown in the table.
Concentrations are reported in milligrams per kilogram (mg/kg).
ft bls - feet below land surface.
GRO - Gasoline Range Organics.
DRO - Diesel Range Organics.
TPH - Total Petroleum Hydrocarbons.
BTEX - Benzene, Toluene, Ethylbenzene, and Xylenes.
16 EPA PAHs - Environmental Protection Agency Polycyclic Aromatic Hydrocarbons (acenaphthene, acenaphthylene, anthracene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[g,h,i]perylene, benzo[a]pyrene, chrysene, dibenzo[a,h]anthracene, fluoranthene, fluorene, indeno[1,2,3-c,d]pyrene, naphthalene, phenanthrene, pyrene).
NE - Standard not established.
Detections shaded in gray exceed the North Carolina Department of Environmental Quality (NCDEQ) Action Level.
MSCC Industrial/Commercial - Maximum Soil Contaminant Concentration Levels Industrial/Commercial soil cleanup levels.
Bold: Constituent concentration reported above the method detection limit.

FIGURES



0 1,000 2,000 4,000 6,000 8,000 10,000 Feet

USGS TOPOGRAPHIC MAP
SITE: BENSON, NC QUADRANGLE (1997)
SOUTH: DUNN, NC QUADRANGLE (1997)

1 inch = 2,000 feet

PM: WOF	Project No. 70197584	Terracon	**Topographic Vicinity Map**	**EXHIBIT NO.**
Drawn By: WOF	Scale: 1:24,000		Preliminary Site Assessment Arsenal Properties, LLC 904 East Main Street Benson, North Carolina	1
Checked By: MTJ	Filename: Exhibit 1 - Topo_904			
Approved By: MTJ	Date: Nov. 2019			

2401 Brentwood Drive, Suite 107 Raleigh, NC 27604
Phone: (919) 873-2211 Fax: (919) 873-9555

PROJECT REFERENCE NO.	EXHIBIT
47532.1.3 (I–5986B)	2A

SITE DIAGRAM WITH BORING LOCATIONS

PARCEL 298
ARESNAL PROPERTIES, LLC
904 EAST MAIN STREET
BENSON, JOHNSTON COUNTY, NC

LEGEND

- PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- EXISTING EDGE OF PAVEMENT
- E — NEW TEMPORARY CONSTRUCTION EASEMENT
- KNOWN CONTAMINATION SITE
- BORING LOCATION
- W — KNOWN WATER CONTAMINATION AREA (APPROXIMATE EXTENT, AS DETERMINED BY LAW, 1996)

904-SB-01

904-SB-02

GROUNDWATER PLUME AS DEFINED BY LAW, 1996

0 40 80
FEET

PROJECT REFERENCE NO.	EXHIBIT
47532.1.3 (I–5986B)	2B

SITE DIAGRAM WITH BORING LOCATIONS AND ANALYTICAL DATA

PARCEL 298
ARSENAL PROPERTIES, LLC
904 EAST MAIN STREET
BENSON, JOHNSTON COUNTY, NC

LEGEND

- PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- EXISTING EDGE OF PAVEMENT
- E — NEW TEMPORARY CONSTRUCTION EASEMENT
- KNOWN CONTAMINATION SITE
- BORING LOCATION
- W — KNOWN WATER CONTAMINATION AREA (APPROXIMATE EXTENT, AS DETERMINED BY LAW, 1996)

NOTES

* COMPOUNDS DETECTED ABOVE LABORATORY REPORTING LIMITS ARE SUMMARIZED IN THE ANALYTICAL DATA TABLES

CONCENTRATIONS SHOWN IN ITALICS EXCEED THEIR NCDEQ ACTION LEVEL

mg/kg = MILLIGRAMS PER KILOGRAM

ft bls = FEET BELOW LAND SURFACE

904-SB-02 (7 ft bls)
COMPOUNDS NOT DETECTED ABOVE LABORATORY REPORTING LIMITS

904-SB-01 (7 ft bls)
COMPOUNDS NOT DETECTED ABOVE LABORATORY REPORTING LIMITS

GROUNDWATER PLUME AS DEFINED BY LAW, 1996

ARSENAL PROPERTIES, LLC

0 40 80
FEET

APPENDIX A

GEOPHYSICAL SURVEY REPORT

November 8, 2019

John Pilipchuk, L.G., P.E.
North Carolina Department of Transportation
GeoEnvironmental Engineering Unit
1589 Mail Service Center
Raleigh, NC 27699-1589

Re: Report for GeoEnvironmental Phase II Site Investigations
Locate USTs and Utilities using Geophysical Methods
Arsenal Properties, LLC
904 East Main Street
Benson, Johnston County, North Carolina
ID: 35976; TIP: I-5986B; WBS Element No. 47532.1.3
Terracon Project No. 70197584

Dear Mr. Pilipchuk:

On October 28 and 29, 2019, a representative of Terracon Consultants, Inc. (Terracon) performed geophysical exploration services at the above referenced site in general accordance with Terracon Proposal No. P70197584 dated October 1, 2019. This report is presented as a summary of those geophysical services.

1.0 PROJECT DESCRIPTION

Based on the RFP from the NCDOT, PSAs are requested for the Arsenal Properties, LLC site, located at 904 East Main Street in Benson, North Carolina. The project consisted of the exploration of an approximately 8,000 square-foot area of the existing right-of-way (ROW) of the existing gas station. The purpose of the geophysical exploration was to aid in identifying anomalies consistent with Underground Storage Tanks (USTs) utilizing non-intrusive geophysical methods.

2.0 EXPLORATION METHODS

Terracon used a frequency domain electromagnetic profiler (EM) consisting of a Geonics EM-31-SH system with data logger to collect EM data. In general, field data collection followed the procedures referenced in ASTM D6639-18. More information on both the general method and collection procedures can be found in the referenced standard. EM collects soil conductivity in millisiemens per meter (mS/m) and magnetic susceptibility in parts per trillion (ppt).

Data was collected on a bi-directional grid at approximately 5-foot spacings in both directions. Data was post-processed utilizing trackmaker 31 software engineered by Geomar and Surfer software developed by Golden software.

Additionally, a Ground Penetrating System (GPR) consisting of a 350 MHz antenna and SIR-4000 system made by Geophysical Survey Systems Inc. (GSSI), was utilized to collect GPR data. Due to multiple above ground obstructions, data was collected utilizing a free-scan method with data collected with a sub-meter GPS device. Following the completion of field data collection, data was post-processed utilizing RADAN software engineered by GSSI.

3.0 FINDINGS AND CONCLUSIONS

Terracon reviewed the EM and GPR data collected. Due to interreference from multiple buried utilities and above-ground structures, anomalies consistent with USTs could not be isolated from the EM data. In general, soil conductivity measurements between -10 to 20 mS/m and magnetic susceptibly measurements between -2 to 2 ppt were considered “background”. Measurements outside of these ranges were interpreted to be caused by above or below ground anomalies. The depth of EM signal penetration is approximately 9-feet below the existing grade, however, the actual depth is not produced from the data collected. Upon review of the GPR data, anomalies consistent with USTs were not identified. Depth of GPR signal penetration across the site was approximately 8 feet below the existing grade.

4.0 LIMITATIONS

It should be noted that the process relies on instrument signals to indicate physical conditions in the field. Signal information can be affected by on-site conditions beyond the control of the operator, such as, but not limited to, cultural features, concrete/soil types, concrete/soil moisture, groundwater table depth, and/or reinforcing steel spacing. Interpretation of those signals is based on a combination of known factors combined with the experience of the operator and geophysical scientist evaluating the results. Utilizing conventional observation, sampling, and testing of select areas are recommended to confirm the results from the geophysical surveys. As with all geophysical methods, the geophysical results provide a level of confidence, but should not be considered absolute. We cannot be responsible for the interpretation of geophysical results by others.

4.0 CLOSURE

We appreciate the opportunity to work with you on this project. Please do not hesitate to contact the undersigned if you have any questions regarding this information or if we can be of further service to you.

Sincerely,
Terracon Consultants, Inc.

Joshua A. Lopez
Geophysicist

James D. Hoskins, III, P.E.
Principal / Greensboro Office Manager

Attachments: Appendix A – Geophysical Exploration Results

Terracon GeoReport

SITE LOCATION DIAGRAM

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

EXPLORATION LOCATION DIAGRAM

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

EXPLORATION LOCATION DIAGRAM

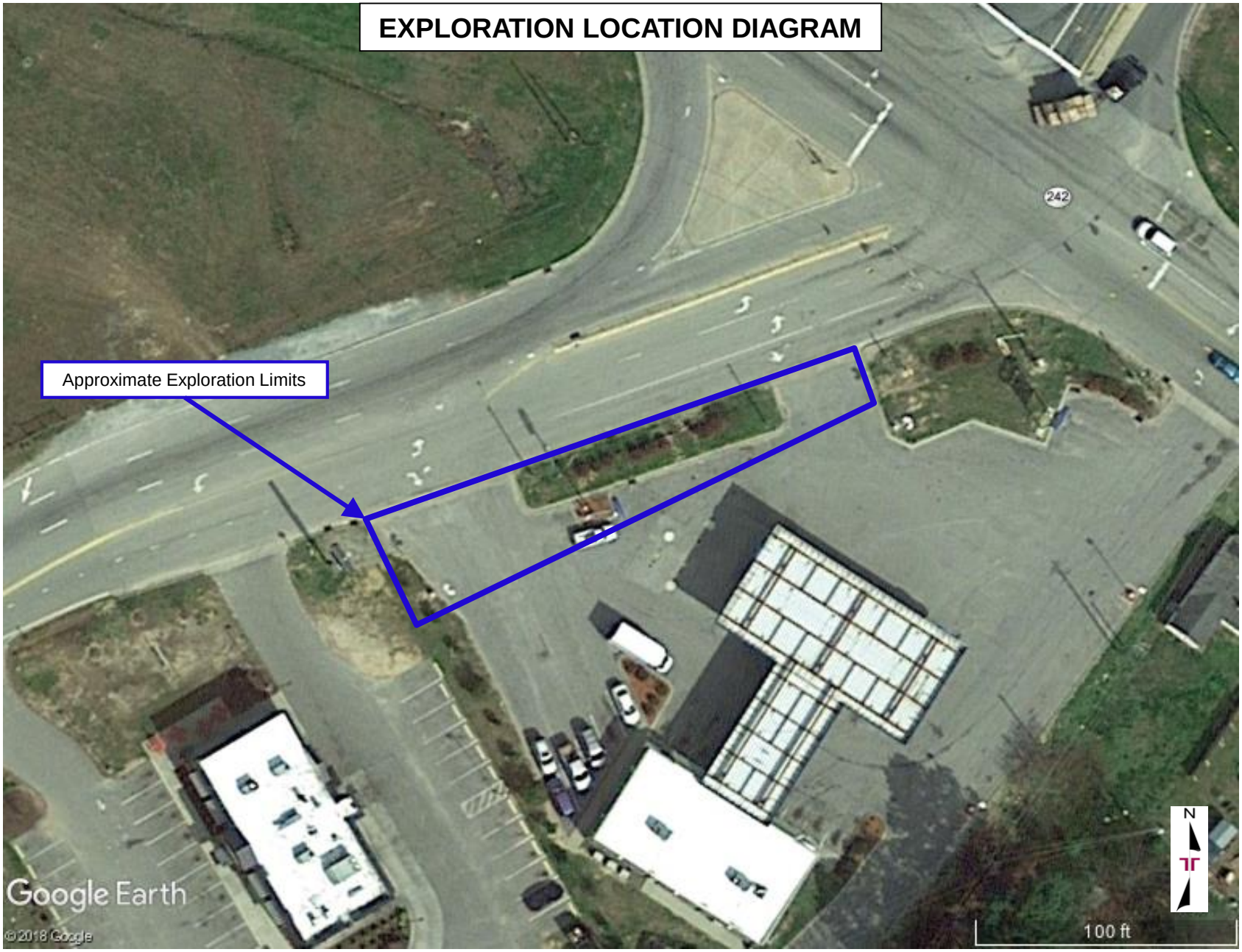
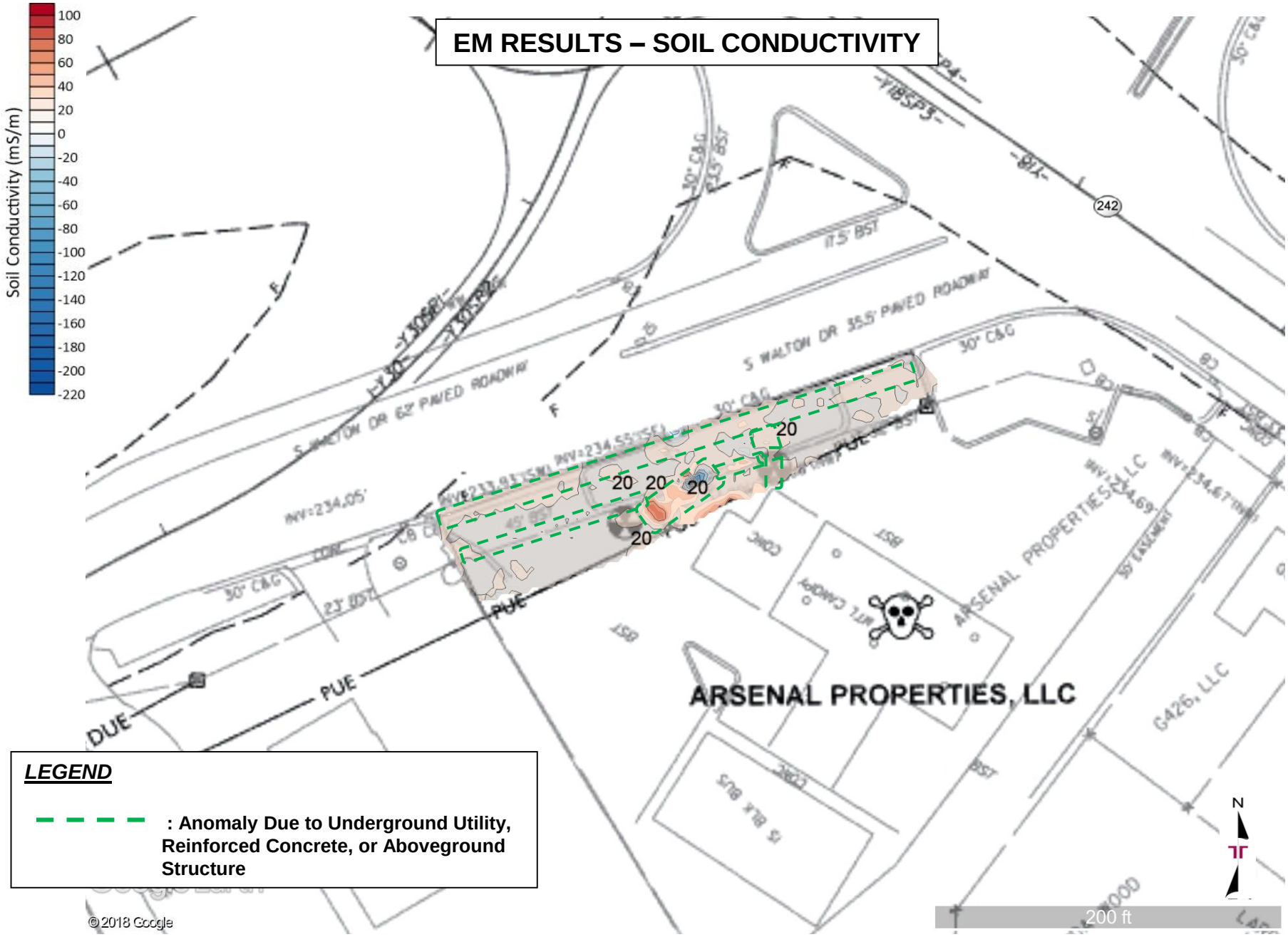


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Terracon GeoReport

EM RESULTS – SOIL CONDUCTIVITY



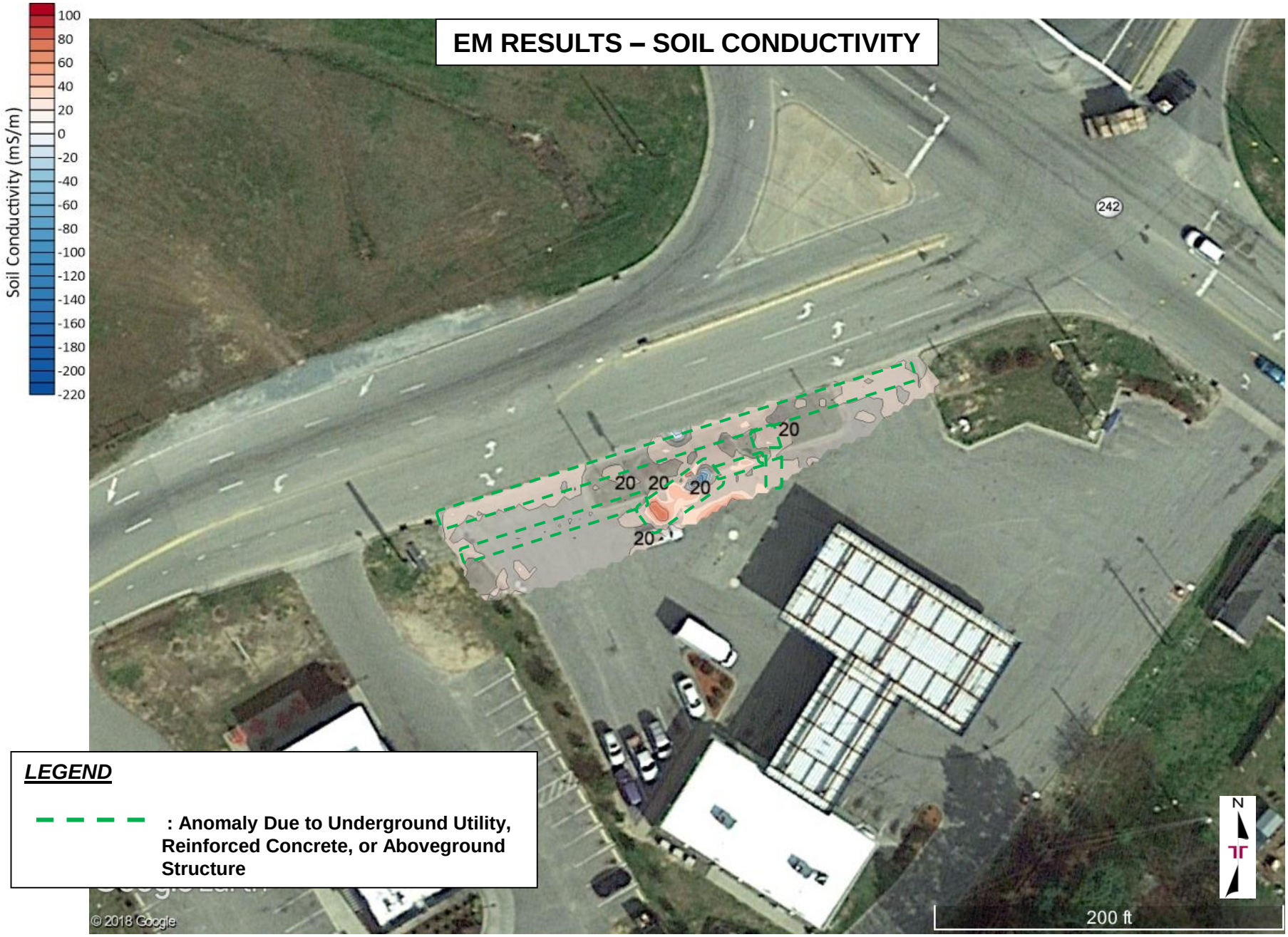
LEGEND

– – – : Anomaly Due to Underground Utility, Reinforced Concrete, or Aboveground Structure

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Terracon GeoReport

EM RESULTS – SOIL CONDUCTIVITY

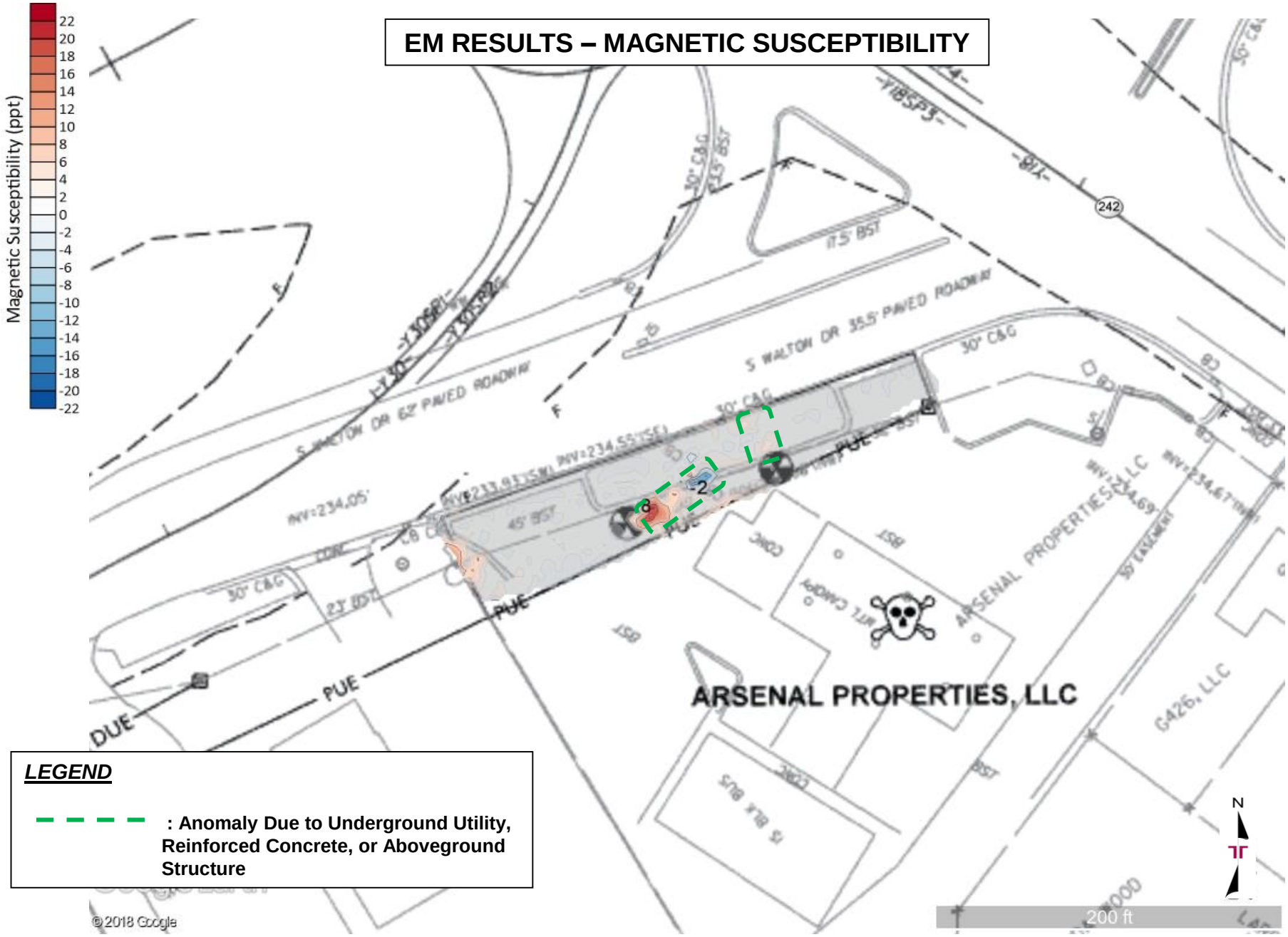


LEGEND

– – – – : **Anomaly Due to Underground Utility, Reinforced Concrete, or Aboveground Structure**

Terracon GeoReport

EM RESULTS – MAGNETIC SUSCEPTIBILITY



LEGEND

– – – – : **Anomaly Due to Underground Utility, Reinforced Concrete, or Aboveground Structure**

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

EM RESULTS – MAGNETIC SUSCEPTIBILITY

LEGEND

– – – – : **Anomaly Due to Underground Utility, Reinforced Concrete, or Aboveground Structure**

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

APPENDIX B

SOIL BORING LOGS

BORING LOG NO. 904-SB-01

PROJECT: I-95 Interchange Improvement
Parcel 298 PSH 42 - Arsenal Properties, LLC

CLIENT: NCDOT
Raleigh, North Carolina

SITE: 904 East Main Street
Benson, Johnston County, North Carolina

LOCATION See Exhibit 2A

DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
0.5	**AGGREGATE BASE COURSE**						
1.5	**FINE SAND WITH SILT (SP)**, gray and brown, odors not observed, dry					<0.1	
5.0	**LEAN CLAY (CL)**, trace silt, light brown and orange, odors not observed, moist, medium stiff				31	<0.1	
7.0	**LEAN CLAY WITH SILT (CL)**, light brown and orange, odors not observed, moist	5				<0.1	904-SB-01 (7 feet) UVF 09:20
8.5	**LEAN CLAY (CL)**, light brown and orange, odors not observed, moist, medium stiff				31	<0.1	
10.0	**CLAYEY SAND (SC)**, light brown, odors not observed, saturated		▽			<0.1	
	Boring Terminated at 10 Feet	10					

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:
2-inch DPT

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

Notes:
UVF: Ultraviolet fluorescence

WATER LEVEL OBSERVATIONS

▽ *Possible groundwater table encountered at approximately 8.5 feet bls, based on soil cutting observations.*

Terracon
2401 Brentwood Rd, Ste 107
Raleigh, NC

Boring Started: 10-31-2019	Boring Completed: 10-31-2019
Drill Rig: GeoProbe 7822DT	Driller: Quantex, Inc.
Project No.: 70197584	Appendix B

BORING LOG NO. 904-SB-02

PROJECT: I-95 Interchange Improvement
Parcel 298 PSH 42 - Arsenal Properties, LLC

CLIENT: NCDOT
Raleigh, North Carolina

SITE: 904 East Main Street
Benson, Johnston County, North Carolina

LOCATION See Exhibit 2A

DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	AGGREGATE BASE COURSE, odors not observed, dry						
1.0	**FINE SAND (SP)**, brown, odors not observed, moist					<0.1	
					60	<0.1	
		5				<0.1	904-SB-02 (7 feet) UVF 09:10
5.5	**LEAN CLAY (CL)**, light brown, odors not observed, moist						
6.5	**LEAN CLAY WITH SILT (CL)**, brown and orange, odors not observed, moist to wet					<0.1	
			▽		60		
8.5	**CLAYEY SAND (SC)**, orangish brown, odors not observed, wet					<0.1	
10.0	***Boring Terminated at 10 Feet***	10					

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:
2-inch DPT

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

Notes:
UVF: Ultraviolet fluorescence

WATER LEVEL OBSERVATIONS

▽ *Possible groundwater table encountered at approximately 8.5 feet bls, based on soil cutting observations.*

Terracon
2401 Brentwood Rd, Ste 107
Raleigh, NC

Boring Started: 10-31-2019 | Boring Completed: 10-31-2019
Drill Rig: GeoProbe 7822DT | Driller: Quantex, Inc.
Project No.: 70197584 | Appendix B

APPENDIX C

LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORMS

Hydrocarbon Analysis Results

Client: TERRACON
Address: 2401 BRENTWOOD ROAD #107
RALEIGH NC

Contact: WILL FRAZIER

Project: #70197584

Samples taken Thursday, October 31, 2019
Samples extracted Thursday, October 31, 2019
Samples analysed Friday, November 1, 2019

Operator MAX MOYER

U00902

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	904-SB-01	21.0	<0.52	<0.52	<0.52	<0.52	<0.1	<0.17	<0.021	0	0	0	PHC not detected
s	904-SB-02	20.5	<0.51	<0.51	<0.51	<0.51	<0.1	<0.16	<0.02	0	0	0	PHC not detected
s	903-SB-01	10.7	<0.27	1.7	0.27	1.97	0.2	<0.09	<0.011	96.5	2.4	1.1	Deg.PHC 72.4%,(FCM)
s	903-SB-02	22.8	<0.57	8.3	3.5	11.8	1.7	<0.18	<0.023	87.5	9.5	3	Deg.PHC 70.5%,(FCM)
s	903-SB-03	21.8	<0.55	0.97	2.4	3.4	1.4	<0.17	<0.022	66.7	26.9	6.5	Deg Fuel 79.9%,(FCM)
s	903-SB-04	22.0	<0.55	<0.55	<0.55	<0.55	<0.11	<0.18	<0.022	0	0	0	PHC not detected
s	903-SB-05	22.4	<0.56	1.7	5.7	7.4	3.6	<0.18	<0.022	57	34	9	Deg Fuel 77.2%,(FCM)
s	605-SB-01	58.6	<1.5	69.9	215.6	285.5	11.9	<0.47	<0.059	99.7	0.3	0	Deg.Kerosene 81.4%,(FCM)
s	605-SB-02	21.0	41.1	117.9	188.9	306.8	18.5	0.71	<0.021	99.7	0.2	0.1	Deg.Kerosene 68.5%,(FCM),(P)
s	605-SB-03	19.5	<0.49	14.9	2.4	17.3	3.7	<0.16	<0.02	98.7	1.1	0.2	No Match found

Initial Calibrator QC check OK

Final FCM QC Check OK 101.2 %

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

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

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

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

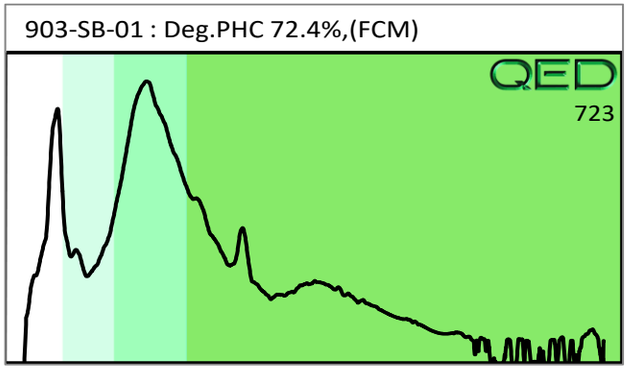
QED Hydrocarbon Fingerprints

Project: #70197584 ##################

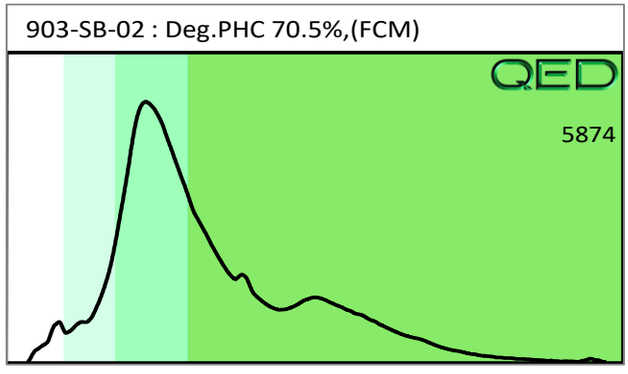
904-SB-01 : PHC not detected

904-SB-02 : PHC not detected

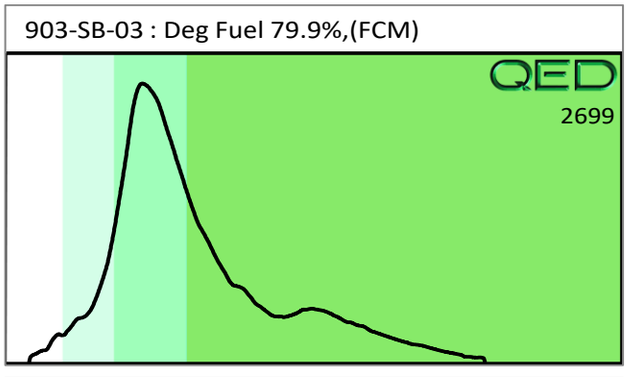
903-SB-01 : Deg.PHC 72.4%,(FCM)



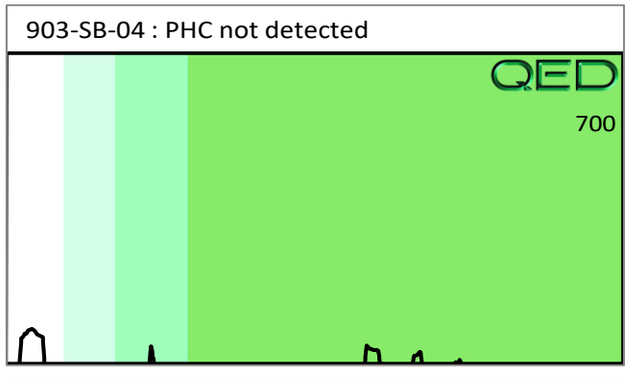
903-SB-02 : Deg.PHC 70.5%,(FCM)



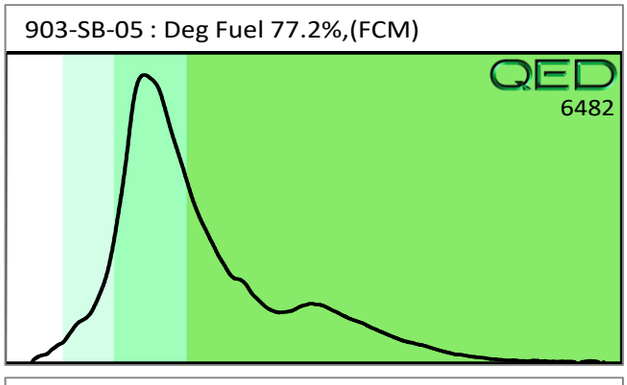
903-SB-03 : Deg Fuel 79.9%,(FCM)



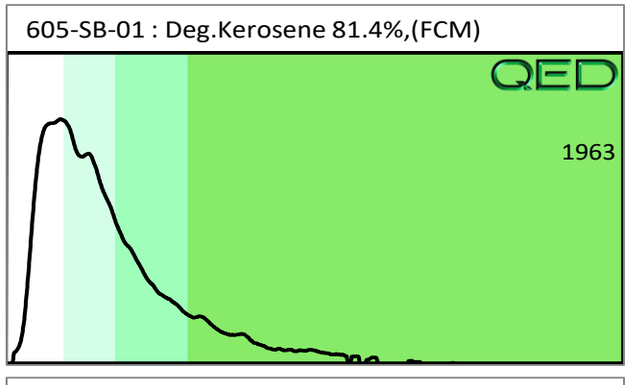
903-SB-04 : PHC not detected



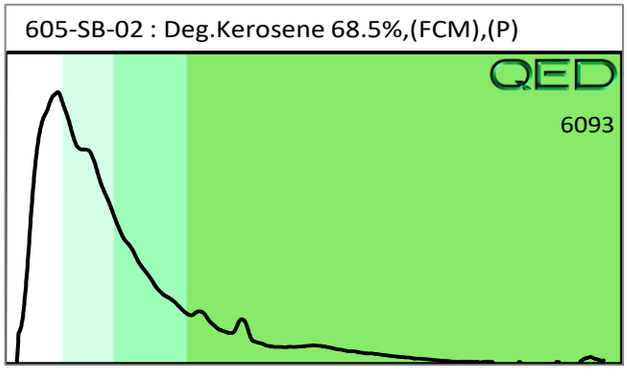
903-SB-05 : Deg Fuel 77.2%,(FCM)



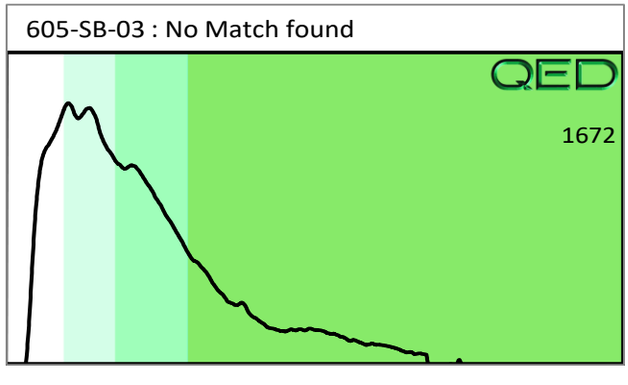
605-SB-01 : Deg.Kerosene 81.4%,(FCM)



605-SB-02 : Deg.Kerosene 68.5%,(FCM),(P)



605-SB-03 : No Match found



Hydrocarbon Analysis Results

Client: TERRACON
Address: 2401 BRENTWOOD ROAD #107
RALEIGH NC

Contact: WILL FRAZIER

Project: #70197584

Samples taken Thursday, October 31, 2019
Samples extracted Thursday, October 31, 2019
Samples analysed Friday, November 1, 2019

Operator MAX MOYER

U00902

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	605-SB-04	70.1	<1.8	17.8	74.2	92	138.7	5.3	<0.07	58.5	32.5	9	Deg.Fuel 85.3%,(FCM)
s	605-SB-05	65.6	<1.6	<1.6	68.4	68.4	128.1	4.9	<0.066	0	77.8	22.2	Deg.Fuel 86%,(FCM)

Initial Calibrator QC check OK

Final FCM QC Check OK 98.9 %

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

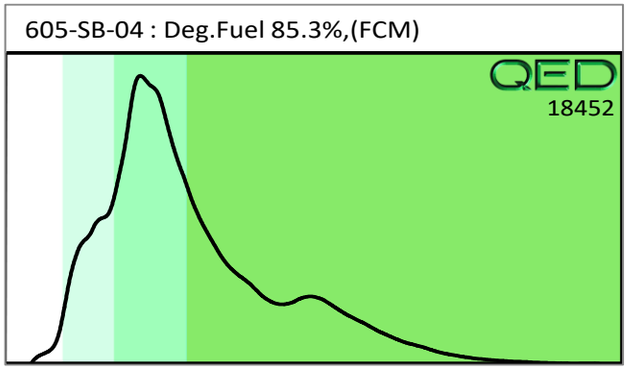
Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

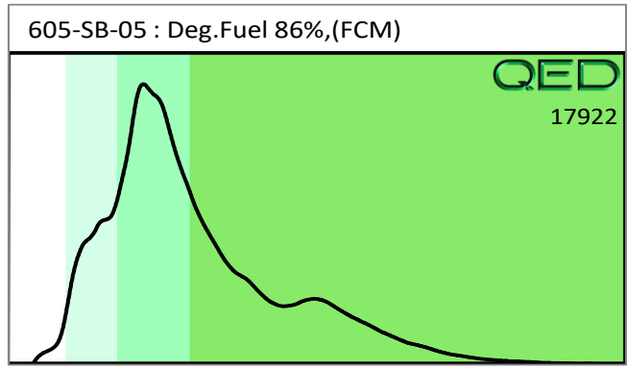
B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

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

QED Hydrocarbon Fingerprints

Project: #70197584 ##################





B143

Client Name:	Terracon Consultants
Address:	2401 Brentwood Rd #107 Raleigh NC
Contact:	Will Frazier
Project Ref.:	70197584
Email:	wofrazier@terracon.com
Phone #:	984-202-4059
Collected by:	W. Frazier

REDLAB™

RAPID ENVIRONMENTAL DIAGNOSTICS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

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

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

Sample Collection Date/Time	TAT Requested 24 Hour	TAT Requested 48 Hour	Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
10/31/19 0920		✓	WOF	904-SB-01	57.4	45.0	12.4
0940		✓	WOF	904-SB-02	57.7	45.0	12.7
0945		✓	WOF	903-SB-01	58.2	45.1	13.1
1000		✓	WOF	903-SB-02	56.6	45.2	11.4
1010		✓	WOF	903-SB-03	56.9	45.0	11.9
1025		✓	WOF	903-SB-04	56.8	45.0	11.8
1040		✓	WOF	903-SB-05	56.6	45.0	11.6
1245		✓	WOF	605-SB-01	59.1	45.1	14.0
1150		✓	WOF	605-SB-02	57.5	45.1	12.4
1200		✓	WOF	605-SB-03	58.4	45.1	13.3
1215		✓	WOF	605-SB-04	56.9	45.2	11.7
1230		✓	WOF	605-SB-05	57.3	44.8	12.5

Comments:

Relinquished by	Date/Time	Accepted by	Date/Time
W. Frazier	10/31/19 1500	MM 11/1/19	1150
Relinquished by	Date/Time	Accepted by	Date/Time

RED Lab USE ONLY

12

March 29, 2019

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

Attention: Mr. Craig Haden email: cehaden@ncdot.gov

Reference: **Preliminary Site Assessment Report**
NCDOT Project I-5986B, WBS Element 47532.1.3
Parcel 160-PJ's Truck Storage Lot
George Perry Lee Road
Dunn, Harnett County, North Carolina
S&ME Project 4305-18-175A

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. 4305-18-175 CO-01 REV-01 dated January 2, 2019, and Contract Number 7000018853 dated April 12, 2018 between NCDOT and S&ME, Inc., authorized by NCDOT in its January 8, 2019 Notice to Proceed Letter.

♦ Background/Project Information

Based on NCDOT's November 2, 2018, Request for Technical and Cost Proposal, the PSA was conducted within the NCDOT right-of-way (ROW) and/or easement as indicated on the preliminary plan sheets provided by NCDOT at the following property:

NCDOT Parcel No.	Property Owner	Site Address
160	Benton and Sons Dunn Properties, LLC	(PJ's Truck Storage Lot) George Perry Lee Road, Dunn, NC

The property is a vacant lot used for the storage of trucks by the adjoining PJ's Truck Bodies facility. The property is not listed with registered petroleum underground storage tanks (USTs) (active or closed). The property is also not listed with North Carolina Department of Environmental Quality (NCDEQ) Incidents associated with petroleum releases from USTs or aboveground storage tanks.

The PSA included a geophysical survey, subsequent limited soil sampling (three 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 (Troxler Geologic, Inc.) was also used to locate and mark underground utilities.

♦ Geophysical Survey

On February 6, 2019, S&ME personnel performed a geophysical survey within accessible areas of the proposed ROW/easement at Parcel 160. S&ME used a combination of the Time Domain Electromagnetic (TDEM) and Ground Penetrating Radar (GPR) methods to explore for buried subsurface features at the site such as underground storage tanks (USTs) and other possible buried obstructions. Brief descriptions of 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 D6820-02 (2007) "*Standard Guide for Use of the Time Domain Electromagnetic Method for Subsurface Investigation.*" Data was collected along lines spaced at approximately five feet using a Juniper® Systems Geode™ sub-meter GPS as positioning support. The presence of vehicles, thick vegetation, and other surficial obstructions within the requested survey area however prevented TDEM data collection in several locations. The approximate TDEM data collection paths are presented in **Figure 4**. Golden Software's Surfer® program was used to grid and plot the data (**Figures 5 and 6**). The TDEM data has been presented as Plots A and B in order to provide both opaque and transparent views, respectively.

Ground Penetrating Radar (GPR)

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

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

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

Geophysical Findings

Responses indicative of a potential UST were not identified in the geophysical data sets collected at the site. However, one anomalous feature (Anomaly A; **Figures 5 through 7**) was identified in the geophysical data sets. Anomaly A is characterized by high amplitude GPR responses located in the upper one ft.-bgs and likely related to an isolated buried metallic target/debris. The identified anomaly was also marked in the field using white spray paint. Example GPR profiles are presented in **Figure 8.**

♦ Soil Sampling

On February 25, 2019, Troxler Geologic, Inc. (Troxler's) drill crew utilized a track mounted Geoprobe® rig to advance three soil borings (B-1 through B-3) and to collect soil samples within accessible areas of the proposed ROW/easement at Parcel 160. The approximate location of the soil borings are shown in **Figure 2**. A photographic log is included in **Appendix I.** Troxler's drill crew advanced the Geoprobe® borings up to a depth of approximately 10 ft.-bgs. During the advancement of the soil borings, groundwater was encountered at depths ranging from approximately four ft.-bgs to greater than 10 ft.-bgs. Soil samples were continuously collected in four-foot long disposable acetate-plastic sleeves that line the hollow stainless-steel sample probes. Soil recovered from the sleeves was classified on-site by S&ME personnel and screened with a Photoionization Detector (PID) at approximately two foot depth intervals to measure relative headspace concentrations of volatile organic compounds (VOCs).

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

No petroleum odors, staining or elevated PID readings were noted within the collected soil samples. Two soil samples were selected from boring B-1 and one soil sample was selected from borings B-2 and B-3. The soil sample from the two to four foot depth interval was selected from borings B-1, B-2 and B-3 and the soil sample from the eight to ten foot depth interval was selected from boring B-1. The soil samples were provided to RED Lab, LLC (Red Lab) for on-site analysis. A total of four soil samples were analyzed by RED Lab for Total Petroleum Hydrocarbons (TPH)-Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) using ultra-violet fluorescence (UVF) spectroscopy with product (fuel) identification.

Soil Analytical Results

TPH-GRO and TPH-DRO were not reported at concentrations exceeding the North Carolina TPH Action Levels. TPH-DRO was reported at borings B-2 and B-3 at the two to four foot depth intervals at concentrations of 0.07 milligrams per kilograms (mg/kg) and 0.06 mg/kg, respectively, which are below its North Carolina TPH Action Level of 100 mg/kg. TPH-GRO and TPH-DRO were not reported at concentrations exceeding the laboratory method reporting limits at the remaining soil samples. A summary of the soil analytical results is presented in **Table 1** and shown on **Figure 3.** A copy of the laboratory analytical report provided by RED Lab is presented in **Appendix III.**

♦ Groundwater Sampling

During the advancement of the soil borings, groundwater was encountered within approximately 10 ft.-bgs. Therefore, the Geoprobe® was used to advance one of the soil borings into the groundwater table for the collection of a groundwater sample. Based on analytical results of soil samples, soil boring B-2 was selected for the collection of a groundwater sample. A temporary monitor well (TW-1) was installed at soil boring B-2 to a depth of approximately eight 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-2 was measured at four ft.-bgs. Groundwater from the temporary well was purged until relatively clear using disposable tubing attached to a peristaltic pump. The flow rate was reduced and laboratory supplied containers were filled directly from the tubing, labeled as B-2/TW-1 and placed in an insulated cooler with ice for transport to Con-Test Laboratories 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 additional soil cuttings generated during the soil boring advancement, purge water and decontamination water, were spread on the ground in accordance with the procedures specified by North Carolina Department of Environmental Quality (NCDEQ). Used gloves, tubing, re-sealable bags and acetate sleeves were bagged and disposed off-site.

Groundwater Analytical Results

Based upon analytical results of groundwater samples analyzed by Con-Test Laboratories, no target constituents were reported at concentrations exceeding the laboratory method reporting limits. 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 Laboratories is presented in **Appendix III.**

♦ Conclusion and Recommendations

The geophysical survey identified one anomaly (Anomaly A) which is likely related to an isolated buried metallic target/debris. Responses indicative of a potential UST were not identified in the geophysical data sets collected at the site.

S&ME advanced three soil borings (B-1 through B-3) to a depth of up to approximately 10 ft.-bgs at the site. No petroleum odors, staining or elevated PID readings were noted within soil samples collected from the soil borings.

Selected soil samples from the soil borings were analyzed onsite for TPH-GRO and TPH-DRO using UVF spectroscopy. TPH-DRO was reported in the two to four foot depth interval at two soil borings at concentrations slightly above the laboratory method reporting limits, but well below the North Carolina TPH Action Level. During the soil boring advancement, groundwater was encountered at depths ranging from approximately four ft-bgs to greater than ten ft.-bgs. One temporary well (TW-1) was installed at soil boring B-2. Groundwater at TW-1 was measured at four ft.-bgs and analyzed by Con-Test Laboratories for VOCs by EPA Method 8260 and PAHs by EPA Method 8270. No target constituents were reported in the groundwater sample at concentrations exceeding the laboratory method reporting limits.

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

♦ Limitations

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

The geophysical methods used for this survey have inherent limitations. Site metallic features (e.g., buildings, reinforced concrete, vehicles, etc.) and overhead transmission lines can produce a false electromagnetic response and may mask subsurface features. The depth of exploration of the GPR signal is highly site specific, and is greatly limited by signal attenuation (absorption) of the subsurface materials. Signal attenuation is dependent upon the electrical conductivity of the subsurface materials. Signal attenuation is greatest in materials with relatively high electrical conductivities such as clay soils, and lowest in relatively low conductivity materials such as unsaturated sand. For this project location, the GPR data sets appear to have a maximum depth of penetration of approximately about five ft.-bgs.

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

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

Closing

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

Sincerely,

S&ME, Inc.

DocuSigned by:
Jamie Honeycutt
4C890EAEC25F488...

Jamie T Honeycutt
Environmental Professional
jhoneycutt@smeinc.com

DocuSigned by:
Michael Pfeifer
861E52DDEFAF4C7...

Michael W. Pfeifer
Senior Project Manager
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Tom Raymond
D459FB5F636P4BB...

NORTH CAROLINA PROFESSIONAL SEAL 18760 ENGINEER THOMAS P. RAYMOND

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

5/6/2019

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

Tables

TABLE 1
SUMMARY OF SOIL SAMPLING RESULTS
NCDOT Project I-5986B
Parcel 160 - (PJ's Truck Storage Lot)
George Perry Lee Road
Dunn, Harnett County, North Carolina
S&ME Project No. 4305-18-175A

Analytical Method→			Total Petroleum Hydrocarbons (TPH) Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) by Ultraviolet Fluorescence (UVF) Spectrometry	
Sample ID	Date	Contaminant of Concern→ / Sample Depth (ft.-bgs)	TPH-GRO	TPH-DRO
B-1	2/25/2019	2 to 4	<0.6	<0.24
		8 to 10	<0.57	<0.23
B-2	2/25/2019	2 to 4	<0.63	**0.07**
B-3	2/25/2019	2 to 4	<0.5	**0.06**
North Carolina TPH Action Levels			**50**	**100**

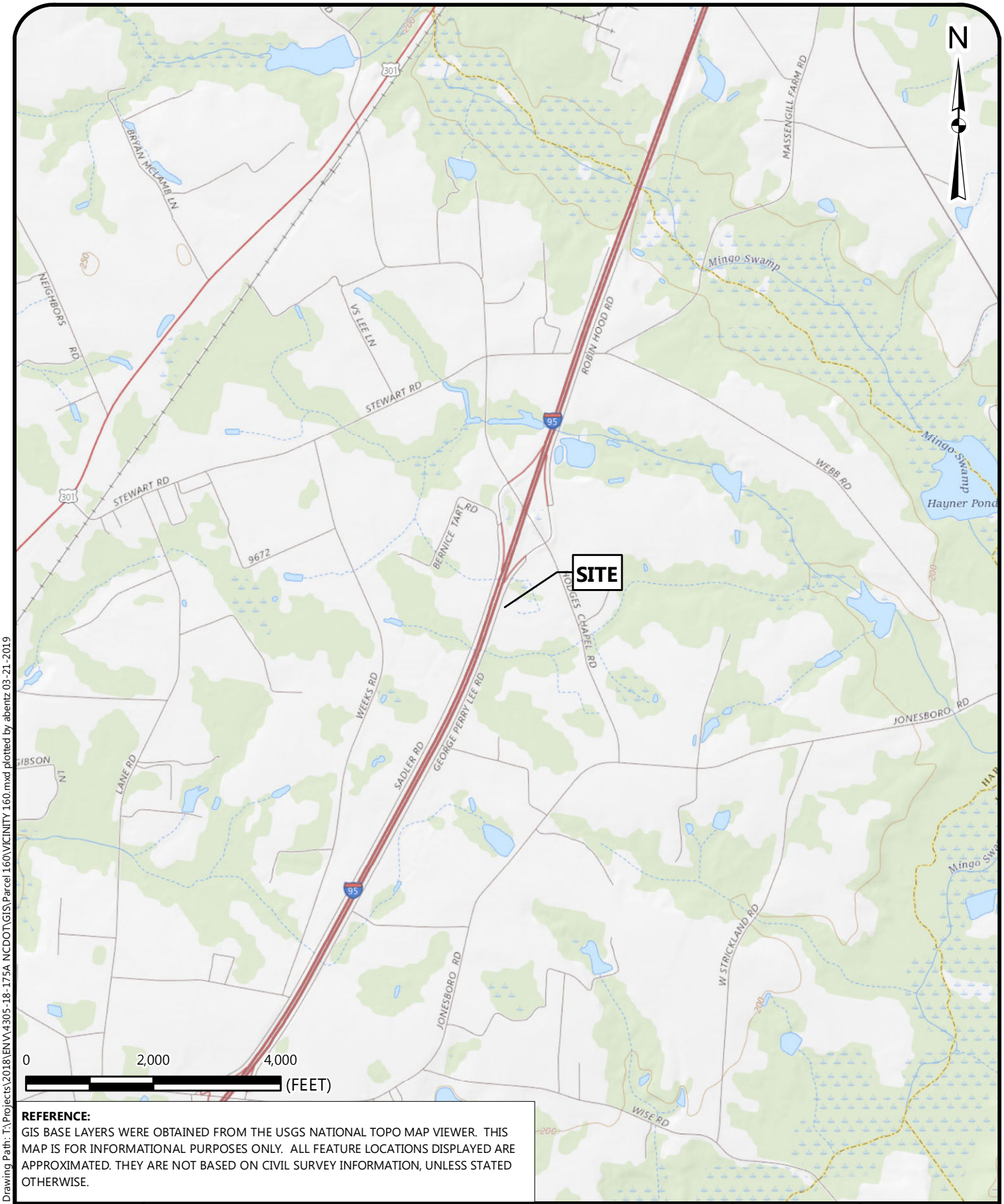
Notes:
1. UVF analysis performed by RED Lab, LLC
2. Concentrations are reported in milligrams per kilogram (mg/Kg).
3. ft.-bgs:- feet below ground surface.
4. Concentrations exceeding the laboratory's reporting limits are shown in **BOLD** fields.
5. Concentrations exceeding the North Carolina TPH Action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

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS
NCDOT Project I-5986B
Parcel 160 - (PJ's Truck Storage Lot)
George Perry Lee Road
Dunn, Harnett County, North Carolina
S&ME Project No. 4305-18-175A

Analytical Method→		Volatile Organic Compounds by EPA Method 8260	Polycyclic Aromatic Compounds (PAHs) by EPA Method 8270
Sample ID	Contaminant of Concern→	Constituent Specific	Constituent Specific
	Date		
B-2/TW-1	2/25/2019	Below laboratory method reporting limits	Below laboratory method reporting limits
2L Standard (µg/L)		**Not Applicable**	**Not Applicable**

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.

Figures



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

Drawing Path: T:\Projects\2018\ENV\4305-18-175A NCDOT\GIS\Parcel 160\VICINITY 160.mxd plotted by abentz 03-21-2019

VICINITY MAP

NCDOT I-5986B
PARCEL NO. 160 (PJ'S TRUCK STORAGE LOT)
GEORGE PERRY LEE RD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE:	FIGURE NO.
1 " = 2,000 '	1
DATE: 3-21-19	
PROJECT NUMBER 4305-18-175A	

LEGEND

Geoenvironmental Boring:

Underground Storage Tank (UST): UST

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

Known Soil Contamination:

Possible Soil Contamination: — s —

Existing Contamination Known - Water: — w —

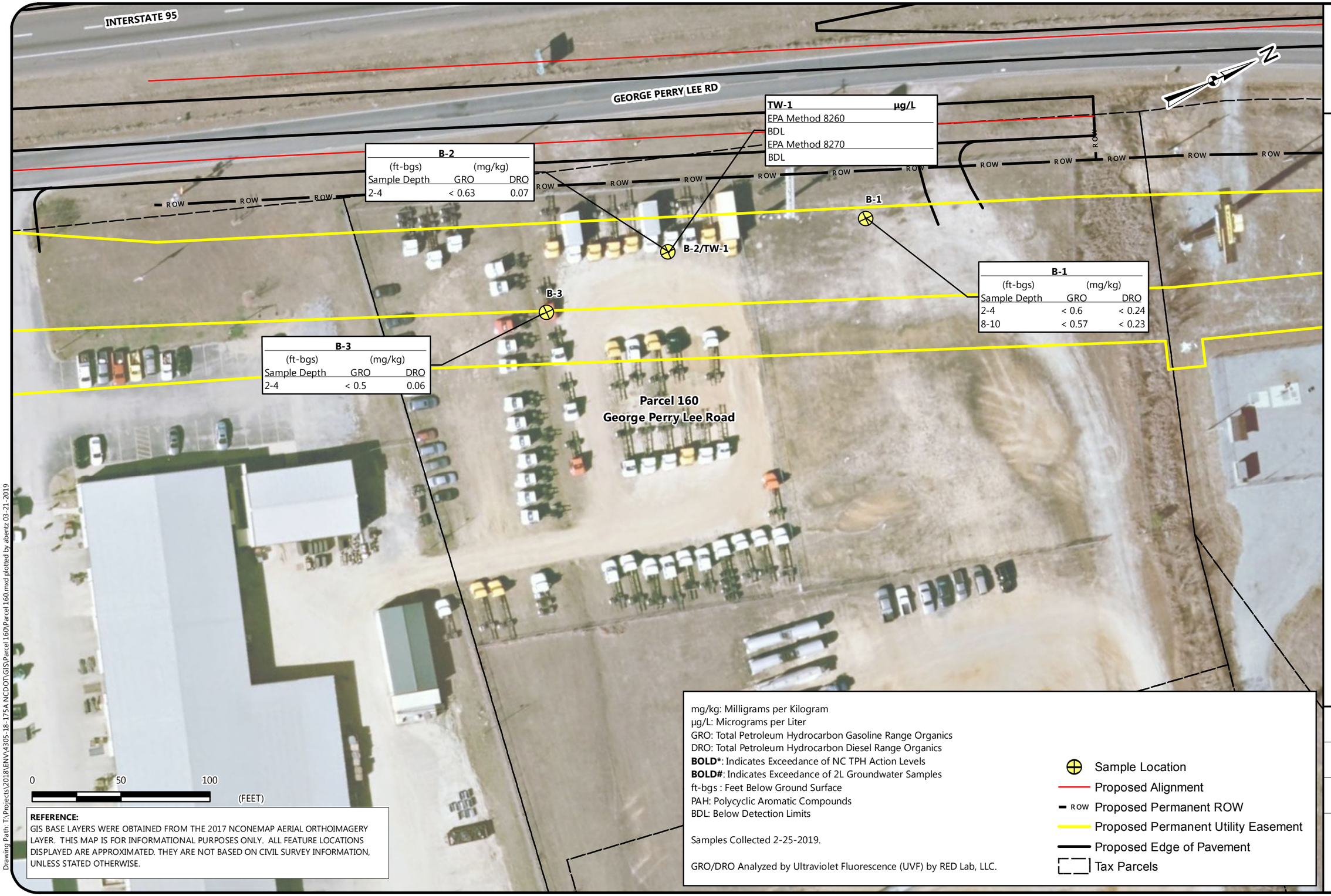
0 100 200

GRAPHIC SCALE (IN FEET)

SITE MAP

NCDOT Project: I-5986B
PARCEL 160 - (PJ'S TRUCK STORAGE LOT)
George Perry Lee Road, Dunn, Harnett County, North Carolina

SCALE:	FIGURE NO.
1" = 100'	2
DATE:	
MARCH 2019	
PROJECT NUMBER	
4305-18-175A	



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

mg/kg: Milligrams per Kilogram
µg/L: Micrograms per Liter
GRO: Total Petroleum Hydrocarbon Gasoline Range Organics
DRO: Total Petroleum Hydrocarbon Diesel Range Organics
BOLD*: Indicates Exceedance of NC TPH Action Levels
BOLD#: Indicates Exceedance of 2L Groundwater Samples
ft-bgs : Feet Below Ground Surface
PAH: Polycyclic Aromatic Compounds
BDL: Below Detection Limits

Samples Collected 2-25-2019.

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

- Sample Location
- Proposed Alignment
- ROW Proposed Permanent ROW
- Proposed Permanent Utility Easement
- Proposed Edge of Pavement
- Tax Parcels

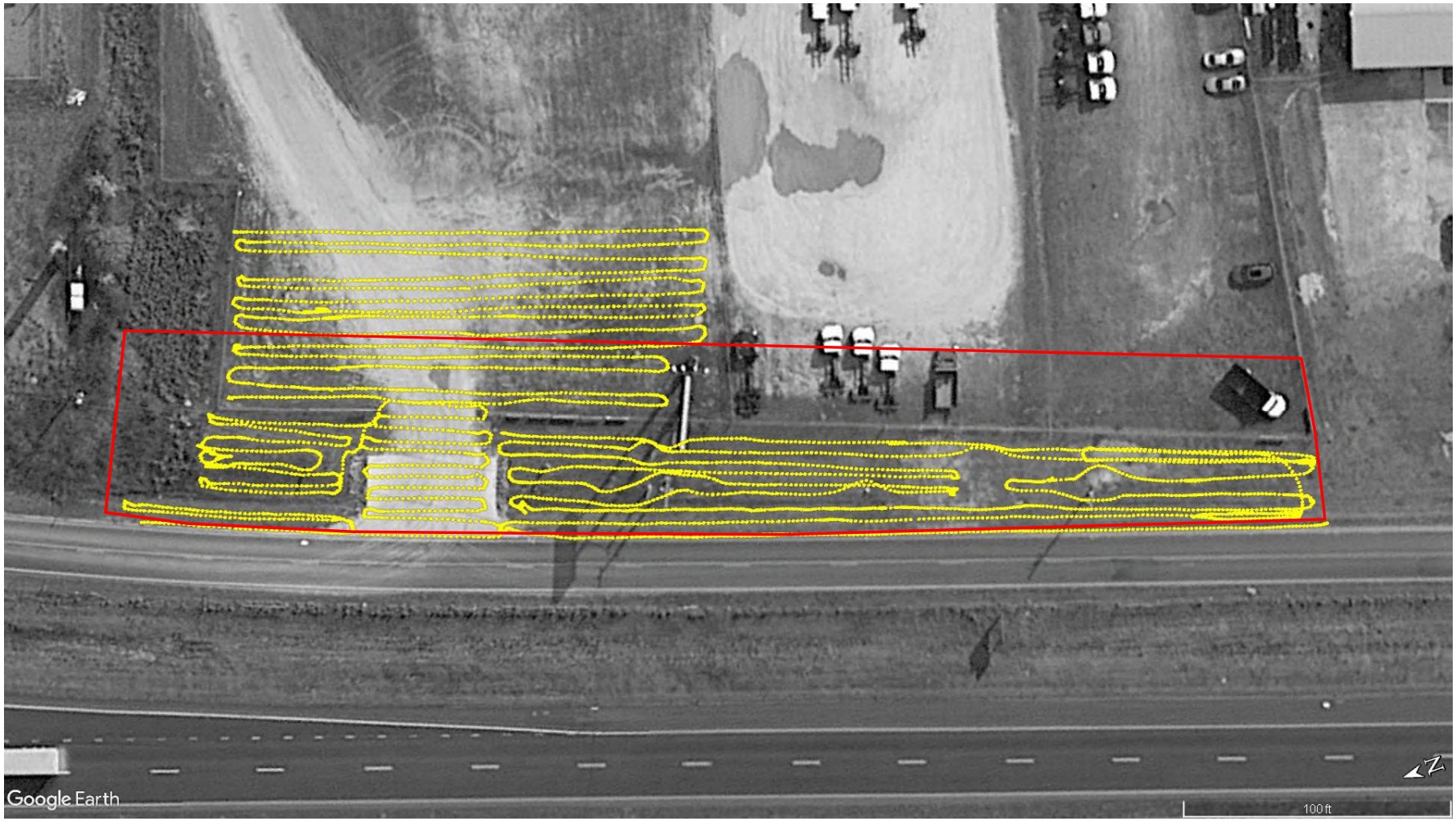
SOIL AND GROUNDWATER CONSTITUENT MAP

NCDOT I-5986B
PARCEL NO. 160 (PJ'S TRUCK STORAGE LOT)
GEORGE PERRY LEE RD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE: 1 " = 50 '
DATE: 3-21-19
PROJECT NUMBER 4305-18-175
FIGURE NO. 3

Drawing Path: T:\Projects\2018\ENV\4305-18-175A NCDOT\GIS\Parcel 160\Parcel 160.mxd plotted by abentz 03-21-2019

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



LEGEND

Approximate TDEM Path

Approximate Requested Survey Area

TDEM PATH LOCATION PLAN

NCDOT PROJECT: I-5986B
PARCEL 160 – (PJ'S TRUCK STORAGE LOT)
GEORGE PERRY LEE ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

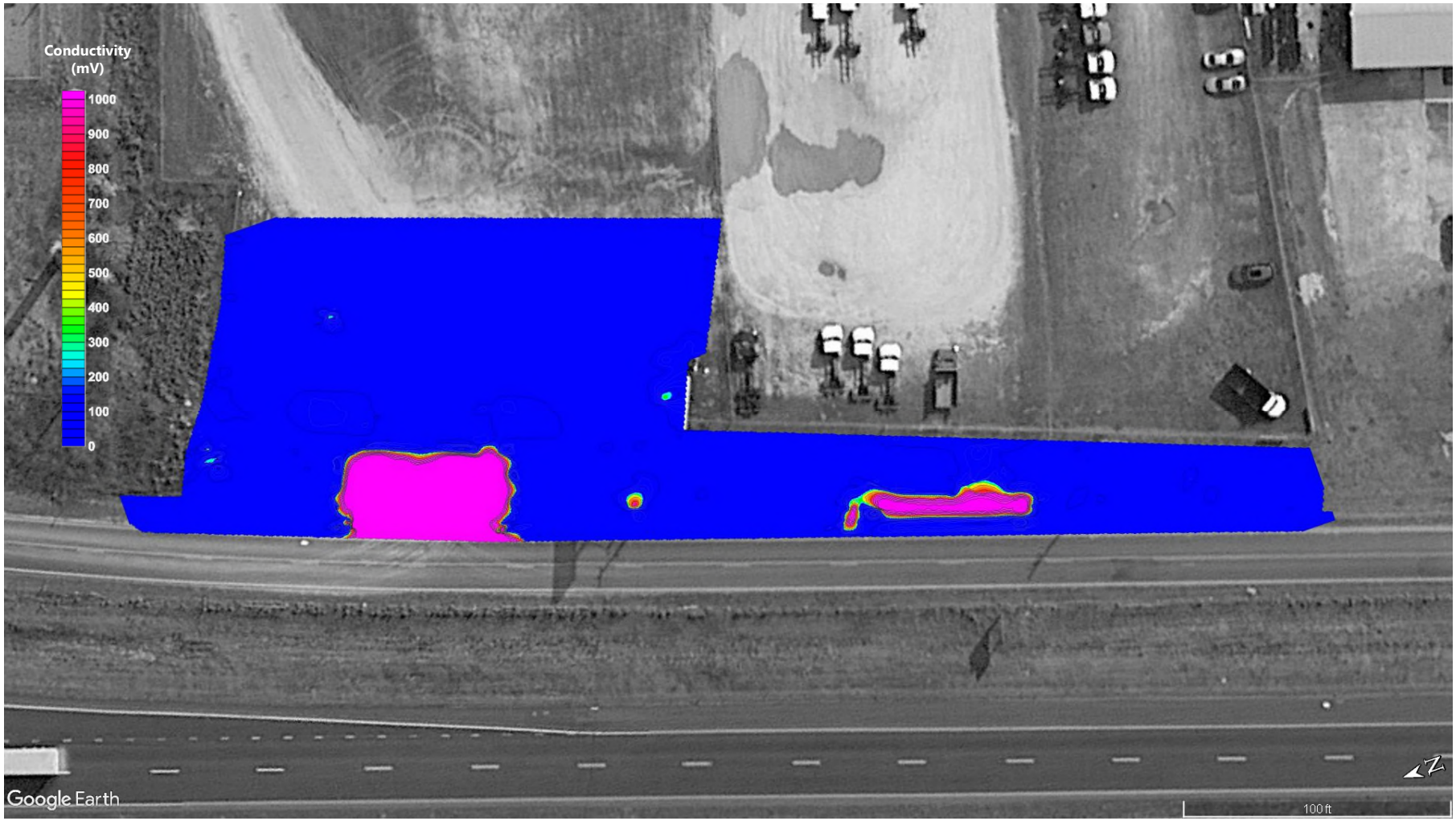
SCALE:
AS SHOWN

DATE:
3/22/2019

PROJECT NUMBER
4305-18-175A

FIGURE NO.
4

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



TDEM DATA PLOT A

NCDOT PROJECT: I-5986B
PARCEL 160 – (PJ'S TRUCK STORAGE LOT)
GEORGE PERRY LEE ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

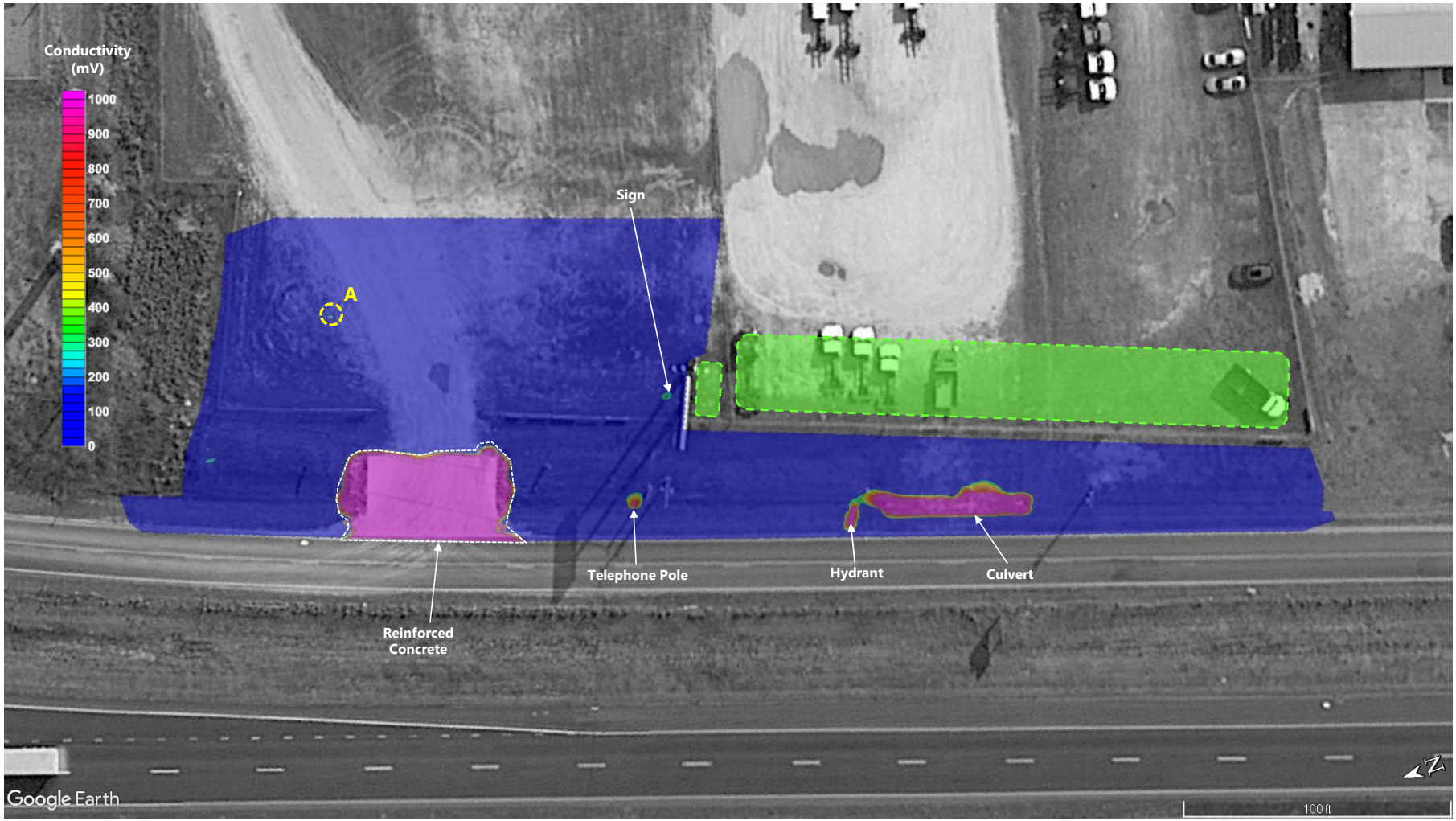
SCALE:
AS SHOWN

DATE:
3/22/2019

PROJECT NUMBER
4305-18-175A

FIGURE NO.
5

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



LEGEND

Approximate Location of TDEM Anomaly

Approximate Location of Vehicles

TDEM DATA PLOT B

NCDOT PROJECT: I-5986B
PARCEL 160 – (PJ'S TRUCK STORAGE LOT)
GEORGE PERRY LEE ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

SCALE: AS SHOWN

DATE: 3/22/2019

PROJECT NUMBER 4305-18-175A

FIGURE NO. **6**

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

LEGEND

Approximate Location of TDEM Anomaly

Approximate Location of Vehicles

Approximate Location of Possible Utility

Approximate Location of GPR Profile

GEOPHYSICAL ANOMALY LOCATION PLAN

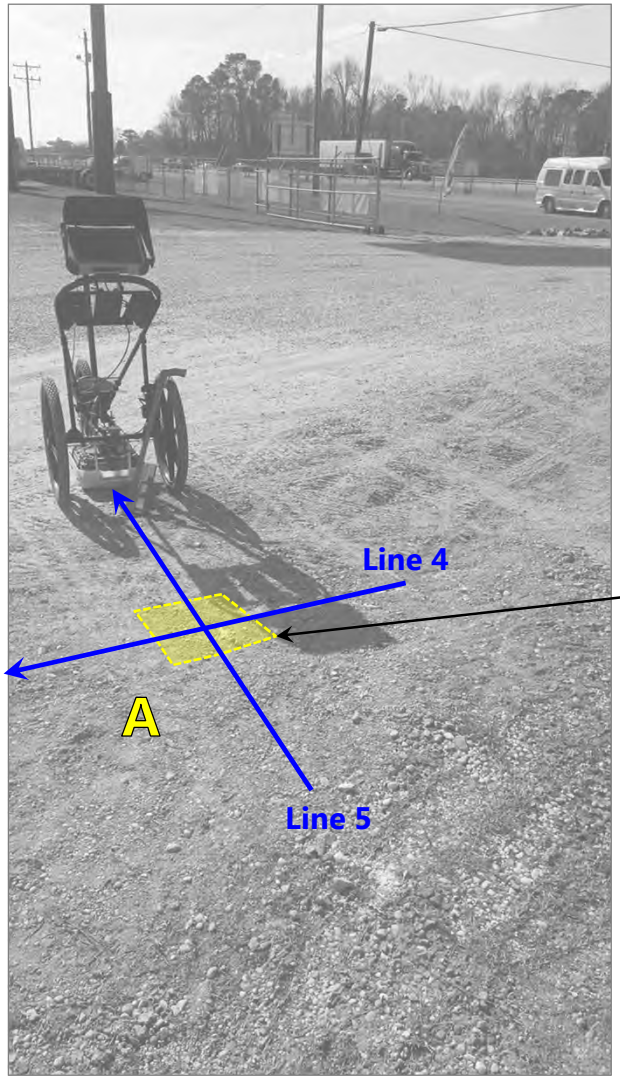
NCDOT PROJECT: I-5986B
PARCEL 160 – (PJ'S TRUCK STORAGE LOT)
GEORGE PERRY LEE ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

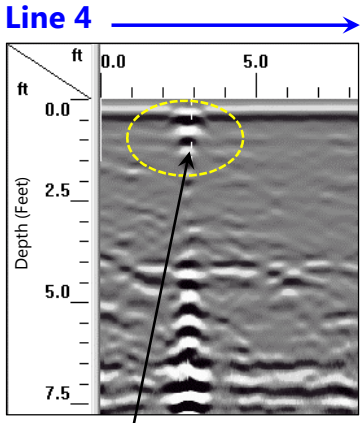
SCALE:
AS SHOWN

DATE:
3/22/2019

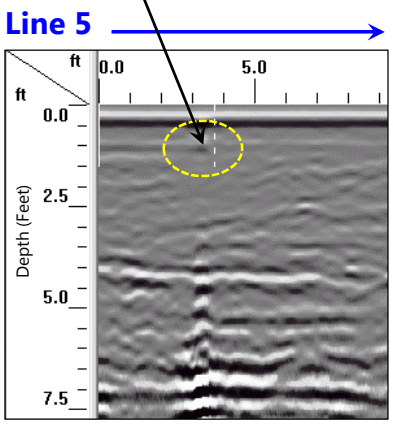
PROJECT NUMBER
4305-18-175A

FIGURE NO.
7





TDEM
Anomaly A



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

EXAMPLE GPR DATA – LINES 4 AND 5

NCDOT PROJECT: I-5986B
PARCEL 160 – (PJ'S TRUCK STORAGE LOT)
GEORGE PERRY LEE ROAD, DUNN, HARNETT COUNTY, NORTH CAROLINA

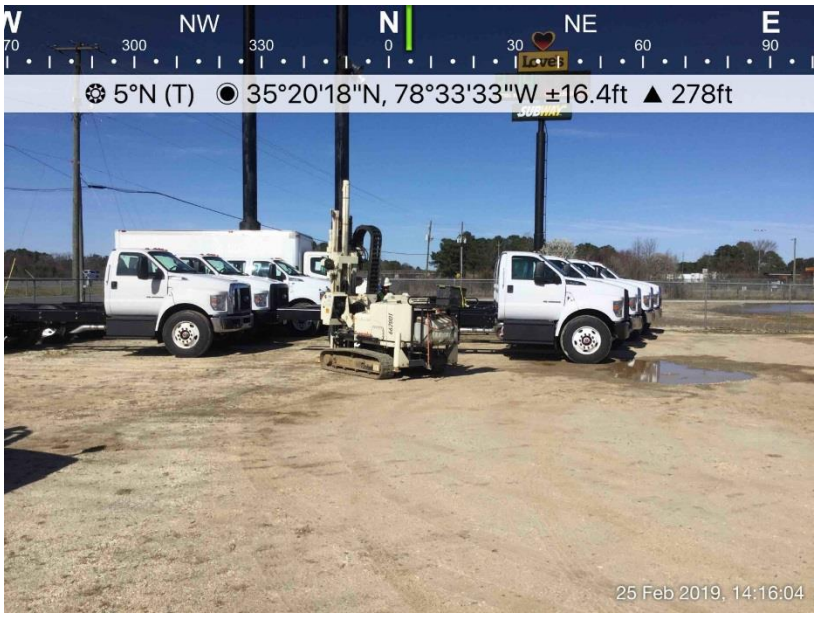
SCALE:
AS SHOWN

DATE:
3/22/2019

PROJECT NUMBER
4305-18-175A

FIGURE NO.
8

Appendix I – Photographs



Date: 2/25/2019

Photographer: JTH

1	**Location / Orientation**	View looking North at soil boring B-2.
	Remarks	Also location of TW-1.

Date: 2/25/2019

Photographer: JTH

2	**Location / Orientation**	View of TW-1installed at soil boring B-2.
	Remarks	None

Appendix II – Boring Logs

PROJECT:	**NCDOT I-5986B** Parcel 160-Next to 1560 George Perry Lee Road, Dunn, NC S&ME Project No. 4305-18-175A		**BORING LOG: B-1**
DATE DRILLED:	Monday, February 25, 2019	BORING DEPTH (FT):	10
DRILL RIG:	Geoprobe 6620 DT	WATER LEVEL:	
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Gravel,								
		Clayey Sand, Red,			0.1	No				
					0.2	Yes				
5		Clay, Gray,			0.2	No				
		Clayey Sand, Gray, Coarse,			0.0	No				
		Silty Sand, Gray,			0.0	Yes				
10		Boring Terminated at 10 Ft-BGS								
15										
20										
25										
30										

PROJECT:	**NCDOT I-5986B** Parcel 160-Next to 1560 George Perry Lee Road, Dunn, NC S&ME Project No. 4305-18-175A		**BORING LOG: B-2/TW-1**
DATE DRILLED:	Monday, February 25, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 6620 DT	WATER LEVEL:	4
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE	PID READING (PPM)	LABORATORY ANALYSES	Sample Time / 1st 6in	2nd 6in	3rd 6in	N VALUE
		Gravel,								
		Clayey Sand, Red,			0.1	No				
		Clayey Sand, Gray,	▼		0.7	Yes				
5		Clayey Sand, Red, Orange,								
		Boring Terminated at 8 Ft-BGS								
10										
15										
20										
25										
30										

PROJECT:	**NCDOT I-5986B** Parcel 160-Next to 1560 George Perry Lee Road, Dunn, NC S&ME Project No. 4305-18-175A		**BORING LOG: B-3**
DATE DRILLED:	Monday, February 25, 2019	BORING DEPTH (FT):	8
DRILL RIG:	Geoprobe 6620 DT	WATER LEVEL:	4
DRILLER:	Troxler Geologic, Inc.	CAVE-IN DEPTH:	Not Applicable
HAMMER TYPE:	Not Applicable	LOGGED BY:	J. Honeycutt
SAMPLING METHOD:	Macro-Core Sampler	NORTHING:	
DRILLING METHOD:	Macro-Core Sampler (3-in. OD)	EASTING:	

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

Appendix III – Laboratory Analytical Reports and Chain of Custody

Hydrocarbon Analysis Results

Client: S&ME
Address:

Samples taken Monday, February 25, 2019
Samples extracted Monday, February 25, 2019
Samples analysed Monday, February 25, 2019

Contact: JAMIE HONEYCUTT

Operator JENN RYAN

Project: 4305-18-175A; PARCEL 160

H09382

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
Soil	B - 1 (2-4')	23.9	<0.6	<0.6	<0.24	<0.6	<0.01	<0.01	<0.007	0	0	0	PHC ND,(FCM)
Soil	B - 1 (8-10')	22.6	<0.57	<0.57	<0.23	<0.57	<0.01	<0.01	<0.007	0	0	0	PHC ND,(FCM)

Initial Calibrator QC check OK Final FCM QC Check OK 0.996

Analysis by QED HC-1 Analyser

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

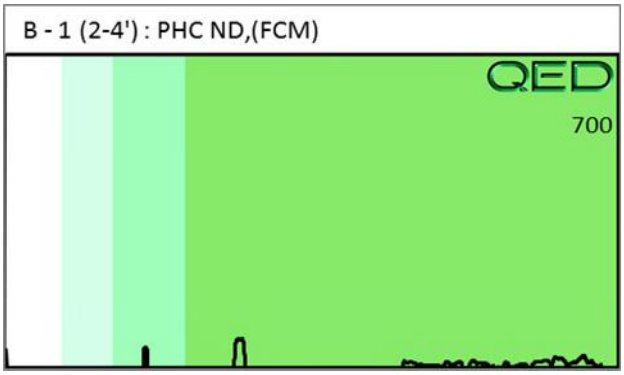
Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

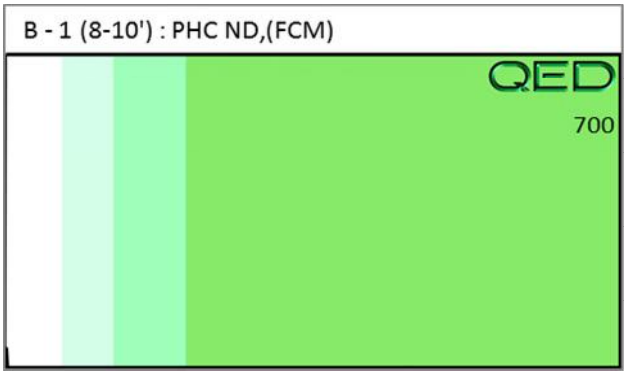
HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only : % Ratios estimated carbon number proportions : (OCR)/(Q) = Outside cal range, values and HC match estimates : ND = Not Detected

(B) = Blank Drift : (M) = Adjusted value : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : SB = sample selected as site background

QED Hydrocarbon Fingerprints

Project: 4305-18-175A; PARCEL 160 ##################





QED

REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: S&ME
Address:

Samples taken Monday, February 25, 2019
Samples extracted Monday, February 25, 2019
Samples analysed Monday, February 25, 2019

Contact: JAMIE HONEYCUTT

Operator JENN RYAN

Project: 4305-18-175A; PARCEL 160

H09382

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
Soil	B - 2 (2-4')	25.2	<0.63	<0.63	0.07	0.07	0.07	0.007	<0.008	0	52.4	47.6	Residual HC
Soil	B - 3 (2-4')	19.8	<0.5	<0.5	0.06	0.06	0.05	0.02	0.012	0	20.3	79.7	Residual HC

Initial Calibrator QC check OK

Final FCM QC Check OK 99.9%

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

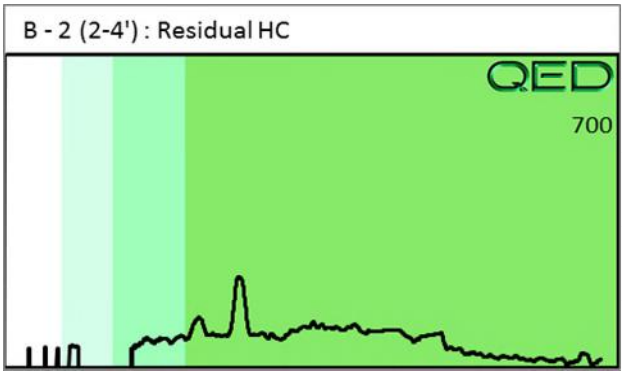
Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

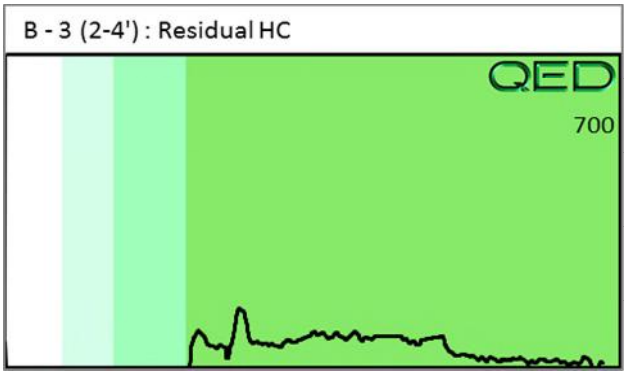
B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

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

QED Hydrocarbon Fingerprints

Project: 4305-18-175A; PARCEL 160 ##################





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

March 6, 2019

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

Project Location: Parcel 160 DOT-Dunn
Client Job Number:
Project Number: 4305-18-175A
Laboratory Work Order Number: 19B1123

Enclosed are results of analyses for samples received by the laboratory on February 25, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kerry K. McGee
Project Manager

Table of Contents

con-test® ANALYTICAL LABORATORY
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: 3/6/2019

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 4305-18-175A

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19B1123

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

PROJECT LOCATION: Parcel 160 DOT-Dunn

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
B-2/ TW-1	19B1123-01	Ground Water		SW-846 8260D SW-846 8270D	

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

EXECUTIVE SUMMARY

Client ID: **B-2/ TW-1**

Lab ID: **19B1123-01**

No Results Detected

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

CASE NARRATIVE SUMMARY

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

For method 8270, only PAHs were requested and reported.

SW-846 8260D

Qualifications:

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:

1,4-Dioxane
19B1123-01[B-2/ TW-1], B224742-BLK1, B224742-BS1, B224742-BSD1, S033138-CCV1

2-Butanone (MEK)
19B1123-01[B-2/ TW-1], B224742-BLK1, B224742-BS1, B224742-BSD1, S033138-CCV1

Acetone
19B1123-01[B-2/ TW-1], B224742-BLK1, B224742-BS1, B224742-BSD1, S033138-CCV1

Bromomethane
19B1123-01[B-2/ TW-1], B224742-BLK1, B224742-BS1, B224742-BSD1, S033138-CCV1

Chloromethane
19B1123-01[B-2/ TW-1], B224742-BLK1, B224742-BS1, B224742-BSD1, S033138-CCV1

Methylene Chloride
19B1123-01[B-2/ TW-1], B224742-BLK1, B224742-BS1, B224742-BSD1, S033138-CCV1

tert-Butyl Alcohol (TBA)
19B1123-01[B-2/ TW-1], B224742-BLK1, B224742-BS1, B224742-BSD1, S033138-CCV1

Tetrahydrofuran
19B1123-01[B-2/ TW-1], B224742-BLK1, B224742-BS1, B224742-BSD1, S033138-CCV1

V-36

Initial calibration verification (ICV) 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:

Carbon Disulfide
B224742-BS1, B224742-BSD1, S033138-CCV1

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

Lisa A. Worthington
Project Manager

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

Project Location: Parcel 160 DOT-Dunn | Sample Description: | Work Order: 19B1123

Date Received: 2/25/2019

Field Sample #: B-2/ TW-1 | Sampled: 2/25/2019 14:45

Sample ID: 19B1123-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	9.7	µg/L	1	V-05	SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Acrylonitrile	ND	5.0	0.58	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.11	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Benzene	ND	1.0	0.12	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Bromochloromethane	ND	1.0	0.22	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Bromodichloromethane	ND	0.50	0.30	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Bromoform	ND	1.0	0.21	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Bromomethane	ND	2.0	0.94	µg/L	1	V-05	SW-846 8260D	3/1/19	3/4/19 12:58	LBD
2-Butanone (MEK)	ND	20	2.4	µg/L	1	V-05	SW-846 8260D	3/1/19	3/4/19 12:58	LBD
tert-Butyl Alcohol (TBA)	ND	20	2.2	µg/L	1	V-05	SW-846 8260D	3/1/19	3/4/19 12:58	LBD
n-Butylbenzene	ND	1.0	0.15	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
sec-Butylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
tert-Butylbenzene	ND	1.0	0.12	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.095	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Carbon Disulfide	ND	4.0	1.0	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Carbon Tetrachloride	ND	5.0	0.25	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Chlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Chlorodibromomethane	ND	0.50	0.10	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Chloroethane	ND	2.0	0.28	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Chloroform	ND	2.0	0.22	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Chloromethane	ND	2.0	0.55	µg/L	1	V-05	SW-846 8260D	3/1/19	3/4/19 12:58	LBD
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.37	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,2-Dibromoethane (EDB)	ND	0.50	0.15	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Dibromomethane	ND	1.0	0.16	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,2-Dichlorobenzene	ND	1.0	0.17	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,3-Dichlorobenzene	ND	1.0	0.17	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,4-Dichlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Dichlorodifluoromethane (Freon 12)	ND	2.0	0.28	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,2-Dichloroethane	ND	1.0	0.19	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,1-Dichloroethylene	ND	1.0	0.21	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
cis-1,2-Dichloroethylene	ND	1.0	0.15	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
trans-1,2-Dichloroethylene	ND	1.0	0.15	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,2-Dichloropropane	ND	1.0	0.13	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,3-Dichloropropane	ND	0.50	0.13	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
2,2-Dichloropropane	ND	1.0	0.21	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,1-Dichloropropene	ND	2.0	0.13	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
cis-1,3-Dichloropropene	ND	0.50	0.12	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
trans-1,3-Dichloropropene	ND	0.50	0.11	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Diethyl Ether	ND	2.0	0.22	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD

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

Project Location: Parcel 160 DOT-Dunn | Sample Description: | Work Order: 19B1123

Date Received: 2/25/2019

Field Sample #: B-2/ TW-1 | Sampled: 2/25/2019 14:45

Sample ID: 19B1123-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.18	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,4-Dioxane	ND	50	26	µg/L	1	V-05	SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Ethylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Hexachlorobutadiene	ND	1.0	0.59	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Isopropylbenzene (Cumene)	ND	1.0	0.12	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
p-Isopropyltoluene (p-Cymene)	ND	1.0	0.15	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.090	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Methylene Chloride	ND	5.0	3.2	µg/L	1	V-05	SW-846 8260D	3/1/19	3/4/19 12:58	LBD
4-Methyl-2-pentanone (MIBK)	ND	10	1.5	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Naphthalene	ND	5.0	0.12	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
n-Propylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Styrene	ND	1.0	0.15	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,1,1,2-Tetrachloroethane	ND	1.0	0.12	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,1,2,2-Tetrachloroethane	ND	0.50	0.16	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Tetrachloroethylene	ND	1.0	0.27	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Tetrahydrofuran	ND	10	1.1	µg/L	1	V-05	SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Toluene	ND	1.0	0.17	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,2,3-Trichlorobenzene	ND	5.0	0.14	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,2,4-Trichlorobenzene	ND	1.0	0.19	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,3,5-Trichlorobenzene	ND	1.0	0.17	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,1,1-Trichloroethane	ND	1.0	0.13	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,1,2-Trichloroethane	ND	1.0	0.24	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Trichloroethylene	ND	1.0	0.20	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Trichlorofluoromethane (Freon 11)	ND	2.0	0.15	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,2,3-Trichloropropane	ND	2.0	0.22	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.20	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,2,4-Trimethylbenzene	ND	1.0	0.18	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
1,3,5-Trimethylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
Vinyl Chloride	ND	2.0	0.13	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
m+p Xylene	ND	2.0	0.26	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD
o-Xylene	ND	1.0	0.13	µg/L	1		SW-846 8260D	3/1/19	3/4/19 12:58	LBD

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	92.8	70-130		3/4/19 12:58
Toluene-d8	97.0	70-130		3/4/19 12:58
4-Bromofluorobenzene	102	70-130		3/4/19 12:58

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

Project Location: Parcel 160 DOT-Dunn | Sample Description: | Work Order: 19B1123

Date Received: 2/25/2019

Field Sample #: B-2/ TW-1 | Sampled: 2/25/2019 14:45

Sample ID: 19B1123-01

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)	ND	0.30	0.033	µg/L	1		SW-846 8270D	3/4/19	3/5/19 11:25	CLA
Acenaphthylene (SIM)	ND	0.20	0.035	µg/L	1		SW-846 8270D	3/4/19	3/5/19 11:25	CLA
Anthracene (SIM)	ND	0.20	0.032	µg/L	1		SW-846 8270D	3/4/19	3/5/19 11:25	CLA
Benzo(a)anthracene (SIM)	ND	0.050	0.016	µg/L	1		SW-846 8270D	3/4/19	3/5/19 11:25	CLA
Benzo(a)pyrene (SIM)	ND	0.10	0.012	µg/L	1		SW-846 8270D	3/4/19	3/5/19 11:25	CLA
Benzo(b)fluoranthene (SIM)	ND	0.050	0.015	µg/L	1		SW-846 8270D	3/4/19	3/5/19 11:25	CLA
Benzo(g,h,i)perylene (SIM)	ND	0.50	0.018	µg/L	1		SW-846 8270D	3/4/19	3/5/19 11:25	CLA
Benzo(k)fluoranthene (SIM)	ND	0.20	0.012	µg/L	1		SW-846 8270D	3/4/19	3/5/19 11:25	CLA
Chrysene (SIM)	ND	0.20	0.015	µg/L	1		SW-846 8270D	3/4/19	3/5/19 11:25	CLA
Dibenz(a,h)anthracene (SIM)	ND	0.10	0.017	µg/L	1		SW-846 8270D	3/4/19	3/5/19 11:25	CLA
Fluoranthene (SIM)	ND	0.50	0.025	µg/L	1		SW-846 8270D	3/4/19	3/5/19 11:25	CLA
Fluorene (SIM)	ND	1.0	0.034	µg/L	1		SW-846 8270D	3/4/19	3/5/19 11:25	CLA
Indeno(1,2,3-cd)pyrene (SIM)	ND	0.10	0.018	µg/L	1		SW-846 8270D	3/4/19	3/5/19 11:25	CLA
2-Methylnaphthalene (SIM)	ND	1.0	0.062	µg/L	1		SW-846 8270D	3/4/19	3/5/19 11:25	CLA
Naphthalene (SIM)	ND	1.0	0.26	µg/L	1		SW-846 8270D	3/4/19	3/5/19 11:25	CLA
Phenanthrene (SIM)	ND	0.050	0.030	µg/L	1		SW-846 8270D	3/4/19	3/5/19 11:25	CLA
Pyrene (SIM)	ND	1.0	0.023	µg/L	1		SW-846 8270D	3/4/19	3/5/19 11:25	CLA

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Nitrobenzene-d5 (SIM)	75.6	30-130		3/5/19 11:25
2-Fluorobiphenyl	51.6	30-130		3/5/19 11:25
p-Terphenyl-d14	54.4	30-130		3/5/19 11:25

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

Sample Extraction Data

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

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19B1123-01 [B-2/ TW-1]	B224742	5	5.00	03/01/19

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

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19B1123-01 [B-2/ TW-1]	B224945	1000	1.00	03/04/19

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

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B224742 - SW-846 5030B										
Blank (B224742-BLK1)				Prepared: 03/01/19 Analyzed: 03/04/19						
Acetone	ND	50	µg/L							V-05
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							V-05
2-Butanone (MEK)	ND	20	µg/L							V-05
tert-Butyl Alcohol (TBA)	ND	20	µg/L							V-05
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	4.0	µg/L							
Carbon Tetrachloride	ND	5.0	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							V-05
2-Chlorotoluene	ND	1.0	µg/L							
4-Chlorotoluene	ND	1.0	µg/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L							
1,2-Dibromoethane (EDB)	ND	0.50	µg/L							
Dibromomethane	ND	1.0	µg/L							
1,2-Dichlorobenzene	ND	1.0	µg/L							
1,3-Dichlorobenzene	ND	1.0	µg/L							
1,4-Dichlorobenzene	ND	1.0	µg/L							
trans-1,4-Dichloro-2-butene	ND	2.0	µg/L							
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L							
1,1-Dichloroethane	ND	1.0	µg/L							
1,2-Dichloroethane	ND	1.0	µg/L							
1,1-Dichloroethylene	ND	1.0	µg/L							
cis-1,2-Dichloroethylene	ND	1.0	µg/L							
trans-1,2-Dichloroethylene	ND	1.0	µg/L							
1,2-Dichloropropane	ND	1.0	µg/L							
1,3-Dichloropropane	ND	0.50	µg/L							
2,2-Dichloropropane	ND	1.0	µg/L							
1,1-Dichloropropene	ND	2.0	µg/L							
cis-1,3-Dichloropropene	ND	0.50	µg/L							
trans-1,3-Dichloropropene	ND	0.50	µg/L							
Diethyl Ether	ND	2.0	µg/L							
Diisopropyl Ether (DIPE)	ND	0.50	µg/L							
1,4-Dioxane	ND	50	µg/L							V-05
Ethylbenzene	ND	1.0	µg/L							
Hexachlorobutadiene	ND	0.60	µg/L							
2-Hexanone (MBK)	ND	10	µg/L							
Isopropylbenzene (Cumene)	ND	1.0	µg/L							
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L							
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L							

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

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B224742 - SW-846 5030B											
Blank (B224742-BLK1)				Prepared: 03/01/19 Analyzed: 03/04/19							
Methylene Chloride	ND	5.0	µg/L							V-05	
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L								
Naphthalene	0.22	2.0	µg/L							J	
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							V-05	
Toluene	ND	1.0	µg/L								
1,2,3-Trichlorobenzene	0.18	5.0	µg/L							J	
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 Acetate	ND	20	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	*22.9*		µg/L	25.0		91.4	70-130				
Surrogate: Toluene-d8	*24.1*		µg/L	25.0		96.5	70-130				
Surrogate: 4-Bromofluorobenzene	*25.2*		µg/L	25.0		101	70-130				
LCS (B224742-BS1)				Prepared: 03/01/19 Analyzed: 03/04/19							
Acetone	144	50	µg/L	100		144	70-160			V-05	†
Acrylonitrile	8.22	5.0	µg/L	10.0		82.2	70-130				
tert-Amyl Methyl Ether (TAME)	9.45	0.50	µg/L	10.0		94.5	70-130				
Benzene	8.77	1.0	µg/L	10.0		87.7	70-130				
Bromobenzene	9.76	1.0	µg/L	10.0		97.6	70-130				
Bromochloromethane	10.1	1.0	µg/L	10.0		101	70-130				
Bromodichloromethane	9.78	0.50	µg/L	10.0		97.8	70-130				
Bromoform	10.0	1.0	µg/L	10.0		100	70-130				
Bromomethane	4.60	2.0	µg/L	10.0		46.0	40-160			V-05	†
2-Butanone (MEK)	95.9	20	µg/L	100		95.9	40-160			V-05	†
tert-Butyl Alcohol (TBA)	74.8	20	µg/L	100		74.8	40-160			V-05	†
n-Butylbenzene	8.94	1.0	µg/L	10.0		89.4	70-130				
sec-Butylbenzene	9.27	1.0	µg/L	10.0		92.7	70-130				
tert-Butylbenzene	9.12	1.0	µg/L	10.0		91.2	70-130				
tert-Butyl Ethyl Ether (TBEE)	8.64	0.50	µg/L	10.0		86.4	70-130				
Carbon Disulfide	9.02	4.0	µg/L	10.0		90.2	70-130			V-36	
Carbon Tetrachloride	9.73	5.0	µg/L	10.0		97.3	70-130				
Chlorobenzene	9.87	1.0	µg/L	10.0		98.7	70-130				
Chlorodibromomethane	10.2	0.50	µg/L	10.0		102	70-130				
Chloroethane	8.42	2.0	µg/L	10.0		84.2	70-130				
Chloroform	8.84	2.0	µg/L	10.0		88.4	70-130				
Chloromethane	6.58	2.0	µg/L	10.0		65.8	40-160			V-05	†

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

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B224742 - SW-846 5030B											
LCS (B224742-BS1)				Prepared: 03/01/19 Analyzed: 03/04/19							
2-Chlorotoluene	10.1	1.0	µg/L	10.0		101	70-130				
4-Chlorotoluene	10.1	1.0	µg/L	10.0		101	70-130				
1,2-Dibromo-3-chloropropane (DBCP)	9.23	5.0	µg/L	10.0		92.3	70-130				
1,2-Dibromoethane (EDB)	9.95	0.50	µg/L	10.0		99.5	70-130				
Dibromomethane	9.97	1.0	µg/L	10.0		99.7	70-130				
1,2-Dichlorobenzene	9.82	1.0	µg/L	10.0		98.2	70-130				
1,3-Dichlorobenzene	9.78	1.0	µg/L	10.0		97.8	70-130				
1,4-Dichlorobenzene	9.82	1.0	µg/L	10.0		98.2	70-130				
trans-1,4-Dichloro-2-butene	9.99	2.0	µg/L	10.0		99.9	70-130				
Dichlorodifluoromethane (Freon 12)	8.62	2.0	µg/L	10.0		86.2	40-160				†
1,1-Dichloroethane	8.96	1.0	µg/L	10.0		89.6	70-130				
1,2-Dichloroethane	8.93	1.0	µg/L	10.0		89.3	70-130				
1,1-Dichloroethylene	9.27	1.0	µg/L	10.0		92.7	70-130				
cis-1,2-Dichloroethylene	9.02	1.0	µg/L	10.0		90.2	70-130				
trans-1,2-Dichloroethylene	9.44	1.0	µg/L	10.0		94.4	70-130				
1,2-Dichloropropane	9.03	1.0	µg/L	10.0		90.3	70-130				
1,3-Dichloropropane	9.16	0.50	µg/L	10.0		91.6	70-130				
2,2-Dichloropropane	11.3	1.0	µg/L	10.0		113	40-130				†
1,1-Dichloropropene	9.26	2.0	µg/L	10.0		92.6	70-130				
cis-1,3-Dichloropropene	9.53	0.50	µg/L	10.0		95.3	70-130				
trans-1,3-Dichloropropene	9.61	0.50	µg/L	10.0		96.1	70-130				
Diethyl Ether	8.93	2.0	µg/L	10.0		89.3	70-130				
Diisopropyl Ether (DIPE)	8.03	0.50	µg/L	10.0		80.3	70-130				
1,4-Dioxane	75.4	50	µg/L	100		75.4	40-130			V-05	†
Ethylbenzene	9.70	1.0	µg/L	10.0		97.0	70-130				
Hexachlorobutadiene	9.96	0.60	µg/L	10.0		99.6	70-130				
2-Hexanone (MBK)	96.8	10	µg/L	100		96.8	70-160				†
Isopropylbenzene (Cumene)	10.1	1.0	µg/L	10.0		101	70-130				
p-Isopropyltoluene (p-Cymene)	9.19	1.0	µg/L	10.0		91.9	70-130				
Methyl tert-Butyl Ether (MTBE)	9.32	1.0	µg/L	10.0		93.2	70-130				
Methylene Chloride	7.95	5.0	µg/L	10.0		79.5	70-130			V-05	
4-Methyl-2-pentanone (MIBK)	83.0	10	µg/L	100		83.0	70-160				†
Naphthalene	10.8	2.0	µg/L	10.0		108	40-130				†
n-Propylbenzene	10.1	1.0	µg/L	10.0		101	70-130				
Styrene	9.96	1.0	µg/L	10.0		99.6	70-130				
1,1,1,2-Tetrachloroethane	10.2	1.0	µg/L	10.0		102	70-130				
1,1,2,2-Tetrachloroethane	10.6	0.50	µg/L	10.0		106	70-130				
Tetrachloroethylene	10.8	1.0	µg/L	10.0		108	70-130				
Tetrahydrofuran	7.74	10	µg/L	10.0		77.4	70-130			V-05, J	
Toluene	9.49	1.0	µg/L	10.0		94.9	70-130				
1,2,3-Trichlorobenzene	11.1	5.0	µg/L	10.0		111	70-130				
1,2,4-Trichlorobenzene	10.7	1.0	µg/L	10.0		107	70-130				
1,3,5-Trichlorobenzene	10.2	1.0	µg/L	10.0		102	70-130				
1,1,1-Trichloroethane	9.32	1.0	µg/L	10.0		93.2	70-130				
1,1,2-Trichloroethane	9.87	1.0	µg/L	10.0		98.7	70-130				
Trichloroethylene	9.58	1.0	µg/L	10.0		95.8	70-130				
Trichlorofluoromethane (Freon 11)	8.82	2.0	µg/L	10.0		88.2	70-130				
1,2,3-Trichloropropane	9.91	2.0	µg/L	10.0		99.1	70-130				
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	9.73	1.0	µg/L	10.0		97.3	70-130				
1,2,4-Trimethylbenzene	8.78	1.0	µg/L	10.0		87.8	70-130				
1,3,5-Trimethylbenzene	9.92	1.0	µg/L	10.0		99.2	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 B224742 - SW-846 5030B											
LCS (B224742-BS1)				Prepared: 03/01/19 Analyzed: 03/04/19							
Vinyl Acetate	81.5	20	µg/L	100		81.5	70-130				
Vinyl Chloride	7.95	2.0	µg/L	10.0		79.5	40-160				†
m+p Xylene	19.7	2.0	µg/L	20.0		98.5	70-130				
o-Xylene	9.90	1.0	µg/L	10.0		99.0	70-130				
Surrogate: 1,2-Dichloroethane-d4	*23.0*		µg/L	25.0		92.1	70-130				
Surrogate: Toluene-d8	*24.4*		µg/L	25.0		97.6	70-130				
Surrogate: 4-Bromofluorobenzene	*25.2*		µg/L	25.0		101	70-130				
LCS Dup (B224742-BSD1)				Prepared: 03/01/19 Analyzed: 03/04/19							
Acetone	139	50	µg/L	100		139	70-160	3.31	25	V-05	†
Acrylonitrile	8.08	5.0	µg/L	10.0		80.8	70-130	1.72	25		
tert-Amyl Methyl Ether (TAME)	9.17	0.50	µg/L	10.0		91.7	70-130	3.01	25		
Benzene	8.52	1.0	µg/L	10.0		85.2	70-130	2.89	25		
Bromobenzene	9.73	1.0	µg/L	10.0		97.3	70-130	0.308	25		
Bromochloromethane	10.3	1.0	µg/L	10.0		103	70-130	2.75	25		
Bromodichloromethane	9.70	0.50	µg/L	10.0		97.0	70-130	0.821	25		
Bromoform	9.99	1.0	µg/L	10.0		99.9	70-130	0.200	25		
Bromomethane	5.67	2.0	µg/L	10.0		56.7	40-160	20.8	25	V-05	†
2-Butanone (MEK)	93.3	20	µg/L	100		93.3	40-160	2.75	25	V-05	†
tert-Butyl Alcohol (TBA)	75.6	20	µg/L	100		75.6	40-160	1.06	25	V-05	†
n-Butylbenzene	9.00	1.0	µg/L	10.0		90.0	70-130	0.669	25		
sec-Butylbenzene	9.00	1.0	µg/L	10.0		90.0	70-130	2.96	25		
tert-Butylbenzene	8.99	1.0	µg/L	10.0		89.9	70-130	1.44	25		
tert-Butyl Ethyl Ether (TBEE)	8.29	0.50	µg/L	10.0		82.9	70-130	4.13	25		
Carbon Disulfide	8.50	4.0	µg/L	10.0		85.0	70-130	5.94	25	V-36	
Carbon Tetrachloride	9.16	5.0	µg/L	10.0		91.6	70-130	6.03	25		
Chlorobenzene	9.88	1.0	µg/L	10.0		98.8	70-130	0.101	25		
Chlorodibromomethane	9.88	0.50	µg/L	10.0		98.8	70-130	3.48	25		
Chloroethane	8.09	2.0	µg/L	10.0		80.9	70-130	4.00	25		
Chloroform	8.75	2.0	µg/L	10.0		87.5	70-130	1.02	25		
Chloromethane	6.52	2.0	µg/L	10.0		65.2	40-160	0.916	25	V-05	†
2-Chlorotoluene	9.92	1.0	µg/L	10.0		99.2	70-130	2.00	25		
4-Chlorotoluene	9.85	1.0	µg/L	10.0		98.5	70-130	2.90	25		
1,2-Dibromo-3-chloropropane (DBCP)	9.54	5.0	µg/L	10.0		95.4	70-130	3.30	25		
1,2-Dibromoethane (EDB)	9.88	0.50	µg/L	10.0		98.8	70-130	0.706	25		
Dibromomethane	9.64	1.0	µg/L	10.0		96.4	70-130	3.37	25		
1,2-Dichlorobenzene	9.68	1.0	µg/L	10.0		96.8	70-130	1.44	25		
1,3-Dichlorobenzene	9.82	1.0	µg/L	10.0		98.2	70-130	0.408	25		
1,4-Dichlorobenzene	9.71	1.0	µg/L	10.0		97.1	70-130	1.13	25		
trans-1,4-Dichloro-2-butene	10.1	2.0	µg/L	10.0		101	70-130	1.29	25		
Dichlorodifluoromethane (Freon 12)	8.18	2.0	µg/L	10.0		81.8	40-160	5.24	25		†
1,1-Dichloroethane	8.70	1.0	µg/L	10.0		87.0	70-130	2.94	25		
1,2-Dichloroethane	8.83	1.0	µg/L	10.0		88.3	70-130	1.13	25		
1,1-Dichloroethylene	9.08	1.0	µg/L	10.0		90.8	70-130	2.07	25		
cis-1,2-Dichloroethylene	8.62	1.0	µg/L	10.0		86.2	70-130	4.54	25		
trans-1,2-Dichloroethylene	8.88	1.0	µg/L	10.0		88.8	70-130	6.11	25		
1,2-Dichloropropane	8.78	1.0	µg/L	10.0		87.8	70-130	2.81	25		
1,3-Dichloropropane	9.21	0.50	µg/L	10.0		92.1	70-130	0.544	25		
2,2-Dichloropropane	10.7	1.0	µg/L	10.0		107	40-130	5.44	25		†
1,1-Dichloropropene	8.98	2.0	µg/L	10.0		89.8	70-130	3.07	25		
cis-1,3-Dichloropropene	9.29	0.50	µg/L	10.0		92.9	70-130	2.55	25		
trans-1,3-Dichloropropene	9.51	0.50	µg/L	10.0		95.1	70-130	1.05	25		

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B224742 - SW-846 5030B											
LCS Dup (B224742-BSD1)				Prepared: 03/01/19 Analyzed: 03/04/19							
Diethyl Ether	8.81	2.0	µg/L	10.0		88.1	70-130	1.35	25		
Diisopropyl Ether (DIPE)	7.86	0.50	µg/L	10.0		78.6	70-130	2.14	25		
1,4-Dioxane	76.5	50	µg/L	100		76.5	40-130	1.47	50	V-05	† ‡
Ethylbenzene	9.39	1.0	µg/L	10.0		93.9	70-130	3.25	25		
Hexachlorobutadiene	9.96	0.60	µg/L	10.0		99.6	70-130	0.00	25		
2-Hexanone (MBK)	94.9	10	µg/L	100		94.9	70-160	1.98	25		†
Isopropylbenzene (Cumene)	9.75	1.0	µg/L	10.0		97.5	70-130	3.53	25		
p-Isopropyltoluene (p-Cymene)	9.17	1.0	µg/L	10.0		91.7	70-130	0.218	25		
Methyl tert-Butyl Ether (MTBE)	9.09	1.0	µg/L	10.0		90.9	70-130	2.50	25		
Methylene Chloride	7.70	5.0	µg/L	10.0		77.0	70-130	3.19	25	V-05	
4-Methyl-2-pentanone (MIBK)	81.8	10	µg/L	100		81.8	70-160	1.49	25		†
Naphthalene	11.0	2.0	µg/L	10.0		110	40-130	1.10	25		†
n-Propylbenzene	9.73	1.0	µg/L	10.0		97.3	70-130	4.13	25		
Styrene	9.86	1.0	µg/L	10.0		98.6	70-130	1.01	25		
1,1,1,2-Tetrachloroethane	10.3	1.0	µg/L	10.0		103	70-130	1.27	25		
1,1,2,2-Tetrachloroethane	10.7	0.50	µg/L	10.0		107	70-130	0.564	25		
Tetrachloroethylene	10.3	1.0	µg/L	10.0		103	70-130	5.41	25		
Tetrahydrofuran	7.30	10	µg/L	10.0		73.0	70-130	5.85	25	V-05, J	
Toluene	9.20	1.0	µg/L	10.0		92.0	70-130	3.10	25		
1,2,3-Trichlorobenzene	11.0	5.0	µg/L	10.0		110	70-130	1.36	25		
1,2,4-Trichlorobenzene	10.6	1.0	µg/L	10.0		106	70-130	0.376	25		
1,3,5-Trichlorobenzene	10.1	1.0	µg/L	10.0		101	70-130	1.08	25		
1,1,1-Trichloroethane	9.32	1.0	µg/L	10.0		93.2	70-130	0.00	25		
1,1,2-Trichloroethane	9.61	1.0	µg/L	10.0		96.1	70-130	2.67	25		
Trichloroethylene	9.24	1.0	µg/L	10.0		92.4	70-130	3.61	25		
Trichlorofluoromethane (Freon 11)	8.42	2.0	µg/L	10.0		84.2	70-130	4.64	25		
1,2,3-Trichloropropane	10.0	2.0	µg/L	10.0		100	70-130	1.10	25		
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	9.25	1.0	µg/L	10.0		92.5	70-130	5.06	25		
1,2,4-Trimethylbenzene	8.72	1.0	µg/L	10.0		87.2	70-130	0.686	25		
1,3,5-Trimethylbenzene	9.65	1.0	µg/L	10.0		96.5	70-130	2.76	25		
Vinyl Acetate	80.4	20	µg/L	100		80.4	70-130	1.33	25		
Vinyl Chloride	7.55	2.0	µg/L	10.0		75.5	40-160	5.16	25		†
m+p Xylene	19.3	2.0	µg/L	20.0		96.3	70-130	2.26	25		
o-Xylene	9.64	1.0	µg/L	10.0		96.4	70-130	2.66	25		
Surrogate: 1,2-Dichloroethane-d4	*22.8*		µg/L	25.0		91.4	70-130				
Surrogate: Toluene-d8	*24.2*		µg/L	25.0		96.8	70-130				
Surrogate: 4-Bromofluorobenzene	*25.0*		µg/L	25.0		99.9	70-130				

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B224945 - SW-846 3510C										
Blank (B224945-BLK1)				Prepared: 03/04/19 Analyzed: 03/05/19						
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)	0.023	1.0	µg/L							J
Surrogate: Nitrobenzene-d5 (SIM)	*76.7*		µg/L	100		76.7	30-130			
Surrogate: 2-Fluorobiphenyl	*55.4*		µg/L	100		55.4	30-130			
Surrogate: p-Terphenyl-d14	*72.2*		µg/L	100		72.2	30-130			
LCS (B224945-BS1)				Prepared: 03/04/19 Analyzed: 03/05/19						
Acenaphthene (SIM)	35.8	7.5	µg/L	50.0		71.6	40-140			
Acenaphthylene (SIM)	35.1	5.0	µg/L	50.0		70.2	40-140			
Anthracene (SIM)	38.6	5.0	µg/L	50.0		77.1	40-140			
Benzo(a)anthracene (SIM)	35.0	1.2	µg/L	50.0		70.0	40-140			
Benzo(a)pyrene (SIM)	39.5	2.5	µg/L	50.0		79.0	40-140			
Benzo(b)fluoranthene (SIM)	40.0	1.2	µg/L	50.0		80.1	40-140			
Benzo(g,h,i)perylene (SIM)	37.3	12	µg/L	50.0		74.6	40-140			
Benzo(k)fluoranthene (SIM)	38.7	5.0	µg/L	50.0		77.4	40-140			
Chrysene (SIM)	34.9	5.0	µg/L	50.0		69.8	40-140			
Dibenz(a,h)anthracene (SIM)	38.6	2.5	µg/L	50.0		77.3	40-140			
Fluoranthene (SIM)	37.4	12	µg/L	50.0		74.8	40-140			
Fluorene (SIM)	36.2	25	µg/L	50.0		72.4	40-140			
Indeno(1,2,3-cd)pyrene (SIM)	39.6	2.5	µg/L	50.0		79.1	40-140			
2-Methylnaphthalene (SIM)	37.7	25	µg/L	50.0		75.4	40-140			
Naphthalene (SIM)	34.6	25	µg/L	50.0		69.2	40-140			
Phenanthrene (SIM)	37.5	1.2	µg/L	50.0		75.0	40-140			
Pyrene (SIM)	33.6	25	µg/L	50.0		67.2	40-140			
Surrogate: Nitrobenzene-d5 (SIM)	*72.2*		µg/L	100		72.2	30-130			
Surrogate: 2-Fluorobiphenyl	*54.2*		µg/L	100		54.2	30-130			
Surrogate: p-Terphenyl-d14	*49.0*		µg/L	100		49.0	30-130			

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B224945 - SW-846 3510C										
LCS Dup (B224945-BSD1)				Prepared: 03/04/19 Analyzed: 03/05/19						
Acenaphthene (SIM)	31.9	7.5	µg/L	50.0		63.8	40-140	11.5	20	
Acenaphthylene (SIM)	31.9	5.0	µg/L	50.0		63.8	40-140	9.55	20	
Anthracene (SIM)	34.1	5.0	µg/L	50.0		68.2	40-140	12.3	20	
Benzo(a)anthracene (SIM)	31.8	1.2	µg/L	50.0		63.6	40-140	9.65	20	
Benzo(a)pyrene (SIM)	35.8	2.5	µg/L	50.0		71.5	40-140	9.97	20	
Benzo(b)fluoranthene (SIM)	36.3	1.2	µg/L	50.0		72.6	40-140	9.89	20	
Benzo(g,h,i)perylene (SIM)	34.0	12	µg/L	50.0		68.0	40-140	9.33	20	
Benzo(k)fluoranthene (SIM)	35.4	5.0	µg/L	50.0		70.8	40-140	8.77	20	
Chrysene (SIM)	31.6	5.0	µg/L	50.0		63.3	40-140	9.70	20	
Dibenz(a,h)anthracene (SIM)	36.1	2.5	µg/L	50.0		72.2	40-140	6.82	20	
Fluoranthene (SIM)	31.9	12	µg/L	50.0		63.8	40-140	16.0	20	
Fluorene (SIM)	30.6	25	µg/L	50.0		61.3	40-140	16.6	20	
Indeno(1,2,3-cd)pyrene (SIM)	36.5	2.5	µg/L	50.0		73.0	40-140	8.09	20	‡
2-Methylnaphthalene (SIM)	33.4	25	µg/L	50.0		66.8	40-140	12.1	20	
Naphthalene (SIM)	31.3	25	µg/L	50.0		62.6	40-140	10.0	20	
Phenanthrene (SIM)	33.9	1.2	µg/L	50.0		67.8	40-140	10.2	20	
Pyrene (SIM)	31.0	25	µg/L	50.0		62.0	40-140	8.13	20	
Surrogate: Nitrobenzene-d5 (SIM)	*64.2*		µg/L	100		64.2	30-130			
Surrogate: 2-Fluorobiphenyl	*50.4*		µg/L	100		50.4	30-130			
Surrogate: p-Terphenyl-d14	*44.0*		µg/L	100		44.0	30-130			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.
V-36	Initial calibration verification (ICV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

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CERTIFICATIONS

Certified Analyses included in this Report

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

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CERTIFICATIONS

Certified Analyses included in this Report

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

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 - ISO17025:2005	100033	03/1/2020
MA	Massachusetts DEP	M-MA100	06/30/2019
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2019
NY	New York State Department of Health	10899 NELAP	04/1/2019
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	06/30/2019
FL	Florida Department of Health	E871027 NELAP	06/30/2019
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2019
ME	State of Maine	2011028	06/9/2019
VA	Commonwealth of Virginia	460217	12/14/2019
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2019
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2019
NC-DW	North Carolina Department of Health	25703	07/31/2019

19B1123

con-test ANALYTICAL LABORATORY

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

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

CHAIN OF CUSTODY RECORD (North Carolina)

39 Spruce Street
East Longmeadow, MA 01028

Page 1 of 1

Company Name: SAME
Address: 3201 Spring Forest Rd Raleigh, NC
Phone: 910 977-7614
Project Name: Parcel 160 DOT-DMW
Project Location:
Project Number: 4305-18 175A
Project Manager: Jamie Honeycutt
Con-Test Quote Name/Number:
Invoice Recipient:
Sampled By: Jamie Honeycutt

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

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

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

ANALYSIS REQUESTED

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	[1]Matrix Code	Conc Code	8260	8270 (PAH)	# of Containers	[2] Preservation Code	[3] Container Code
1	B-2/TW-1	2-25-19	2:45pm		/	GW	L	/	/			

Dissolved Metals Samples
☐ Field Filtered
☐ Lab to Filter

Orthophosphate Samples
☐ Field Filtered
☐ Lab to Filter

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

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

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

Comments:

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

	Relinquished by: (signature)	Date/Time:
	Jamie Honeycutt	2-25-19 / 5:00pm
	Received by: (signature)	Date/Time:
	4.0	2/26/19 1002
	Relinquished by: (signature)	Date/Time:
	Received by: (signature)	Date/Time:
	Relinquished by: (signature)	Date/Time:
	Received by: (signature)	Date/Time:

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

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

NELAC and AIHA-LAP, LLC Accredited

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

Other
☐ Chromatogram
☐ *AIHA-LAP,LLC*

PCB ONLY
☐ Soxhlet
☐ Non Soxhlet

Table of Contents

785691220555

Delivered
Tuesday 2/26/2019 at 10:02 am

DELIVERED

Signed for by: B.BECCA

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

FROM	TO
RALEIGH, NC US	EAST LONGMEADOW, MA US

Shipment Facts

TRACKING NUMBER 785691220555	**SERVICE** FedEx Priority Overnight	**WEIGHT** 51 lbs / 23.13 kgs
DIMENSIONS 24x14x14 in.	**DELIVERED TO** Shipping/Receiving	**TOTAL PIECES** 1
TOTAL SHIPMENT WEIGHT 51 lbs / 23.13 kgs	**TERMS** Third Party	**PACKAGING** Your Packaging
SPECIAL HANDLING SECTION Deliver Weekday	**STANDARD TRANSIT** 2/26/2019 by 10:30 am	**SHIP DATE** Mon 2/25/2019
ACTUAL DELIVERY Tue 2/26/2019 10:02 am		

Travel History

Local Scan Time

Tuesday , 2/26/2019

10:02 am	EAST LONGMEADOW, MA	Delivered
7:56 am	WINDSOR LOCKS, CT	On FedEx vehicle for delivery
7:46 am	WINDSOR LOCKS, CT	At local FedEx facility
6:16 am	EAST GRANBY, CT	At destination sort facility

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

con-test® ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

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

Client S+ME

Received By RAP Date 2/26/19 Time 10:02

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

By Gun # 5 Actual Temp - 4.0

Were samples within Temperature? 2-6°C T 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: