

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

terracon.com

Terracon

Environmental



Facilities



Geotechnical



Materials

Preliminary Site Assessment

I-95 Interchange Improvement
Parcel 298 PSH 42 - Arsenal Properties, LLC
904 East Main Street, Benson, Johnston County, North Carolina

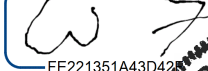
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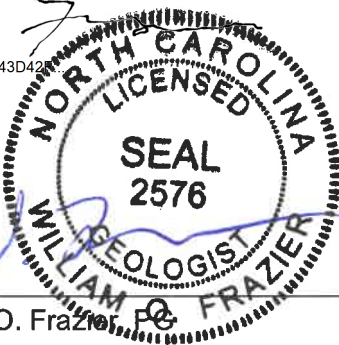
Terracon Project No. 70197584

DocuSigned by:



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11/26/2019



William O. Frazier, PE
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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Environmental Facilities Geotechnical Materials

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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 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,

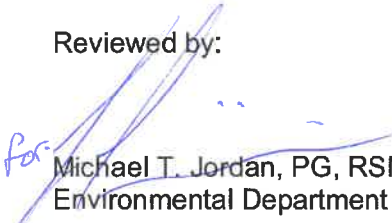
Terracon Consultants, Inc.

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

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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

Preliminary Site Assessment – I-5986B

Parcel 298 PSH 42 – Arsenal Properties, LLC

904 East Main Street, Benson, NC

November 20, 2019 ■ Terracon Project No. 70197584



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 ($\mu\text{g/L}$), 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 constituents 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 (C₅-C₁₀) (TPH-GRO);
- TPH-diesel range organics (C₁₀-C₃₅) (TPH-DRO);
- Total petroleum hydrocarbons (C₅-C₃₅) (TPH);
- Benzene, toluene, ethylbenzene, and xylenes (BTEX);
- Total aromatics (C₁₀-C₃₅);
- 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).

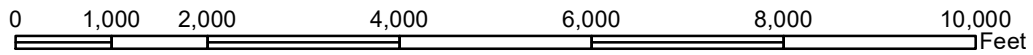
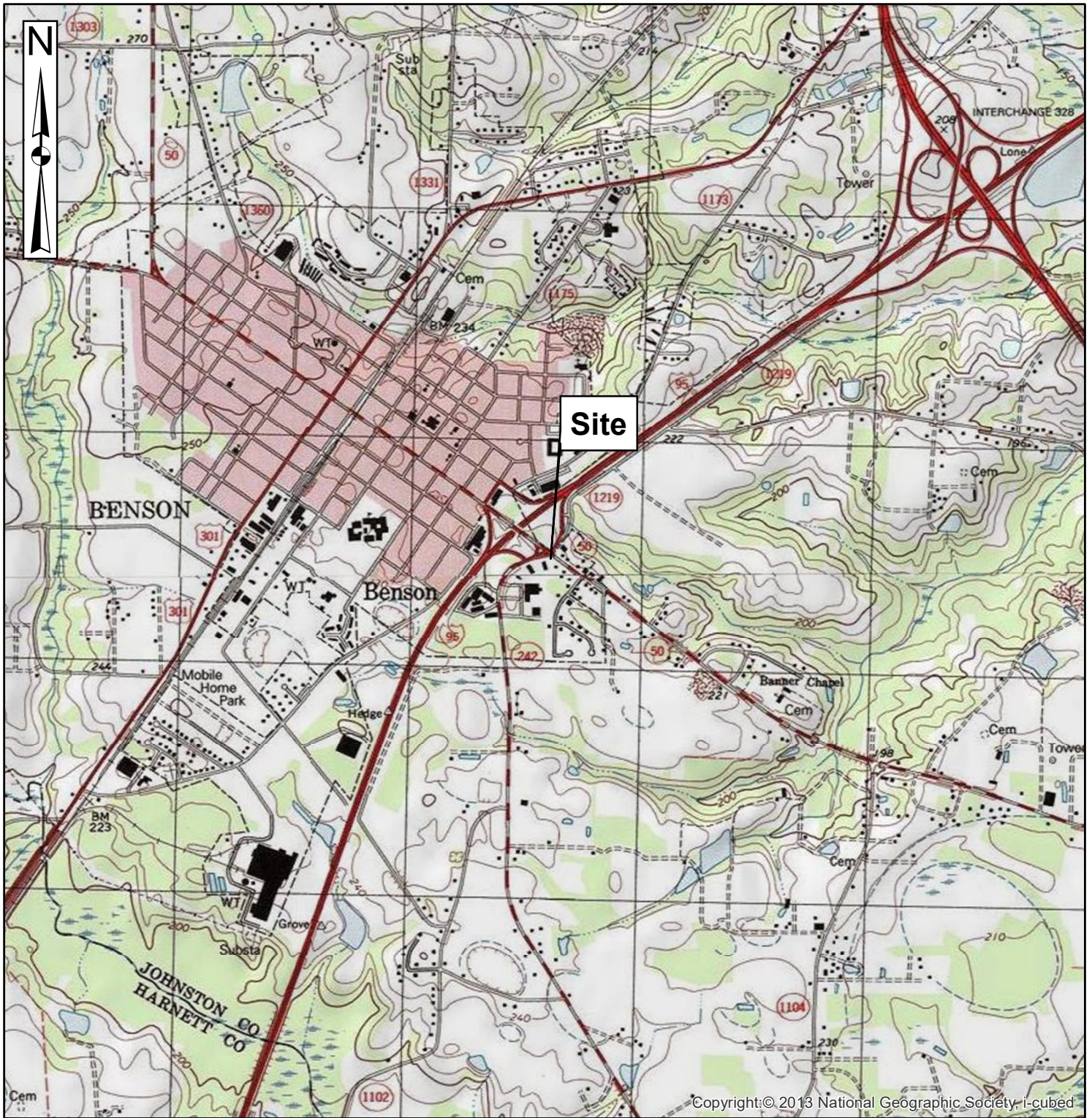
NE - Standard not established.

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



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

1 inch = 2,000 feet

PM:	WOF	Project No.	70197584
Drawn By:	WOF	Scale:	1:24,000
Checked By:	MTJ	Filename:	Exhibit 1 - Topo_904
Approved By:	MTJ	Date:	Nov. 2019

Terracon

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

Topographic Vicinity Map

Preliminary Site Assessment
 Arsenal Properties, LLC
 904 East Main Street
 Benson, North Carolina

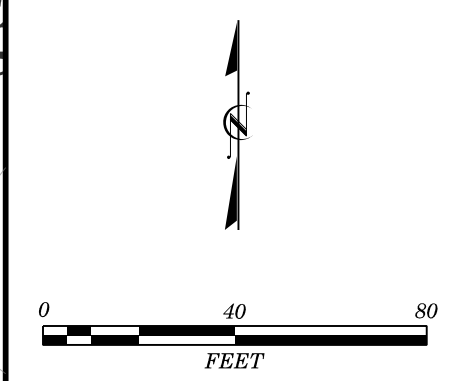
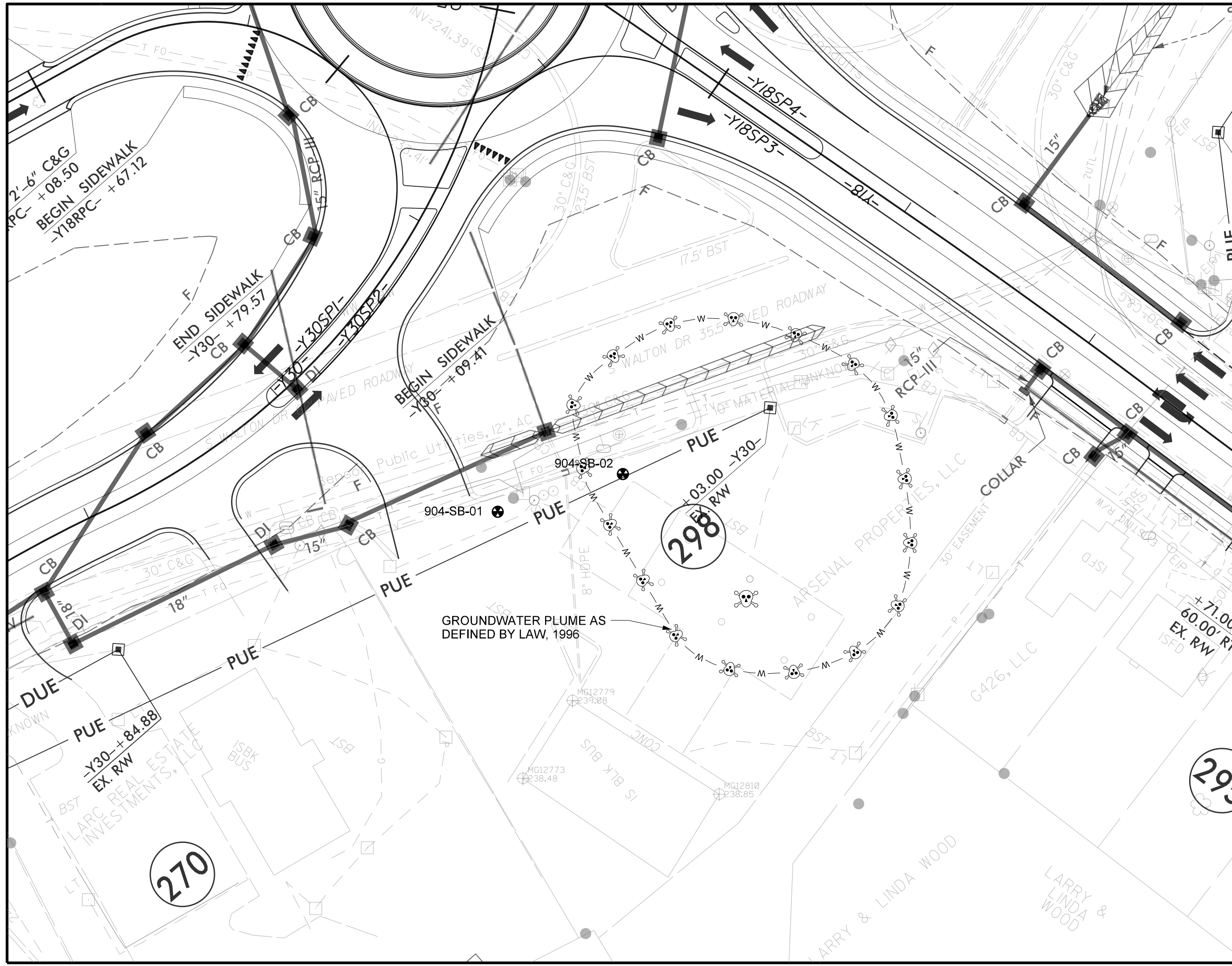
EXHIBIT NO.
1

SITE DIAGRAM WITH BORING LOCATIONS

PARCEL 298
ARESNAI PROPERTIES, LLC
904 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
- KNOWN WATER CONTAMINATION AREA (APPROXIMATE EXTENT, AS DETERMINED BY LAW, 1996)



SITE DIAGRAM WITH BORING LOCATIONS AND ANALYTICAL DATA

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

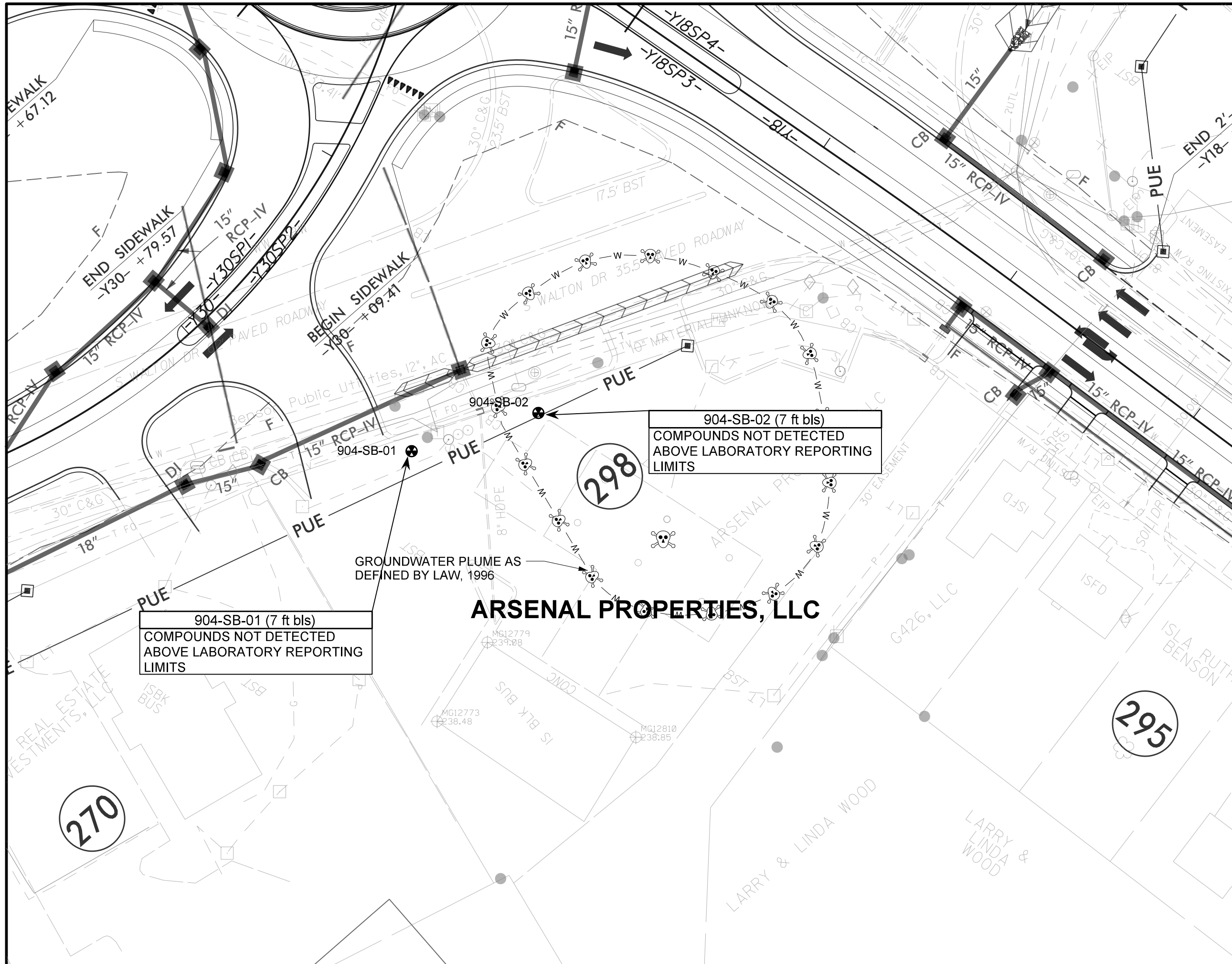
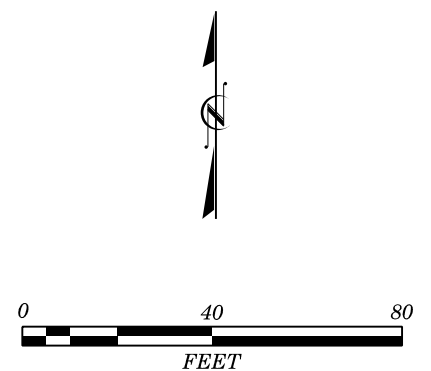
LEGEND

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

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

GROUNDWATER PLUME AS
DEFINED BY LAW, 1996

ARSENAL PROPERTIES, LLC

270

298

295

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 interference 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 susceptibility 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.

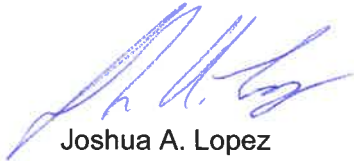
4.0 LIMITATIONS

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.

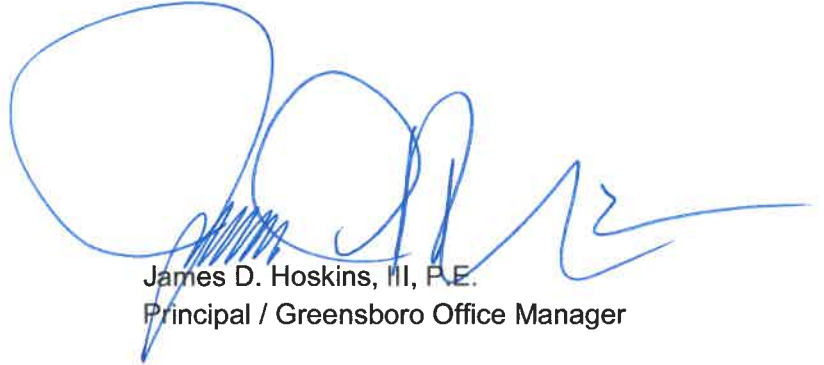
4.0 CLOSURE

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

SITE LOCATION

NCDOT Project I-5986B – Arsenal Properties, LLC ■ Benson, NC
November 8, 2019 ■ Terracon Project No. 70197584

SITE LOCATION DIAGRAM



Google Earth

© 2018 Google

E Singh Plaza

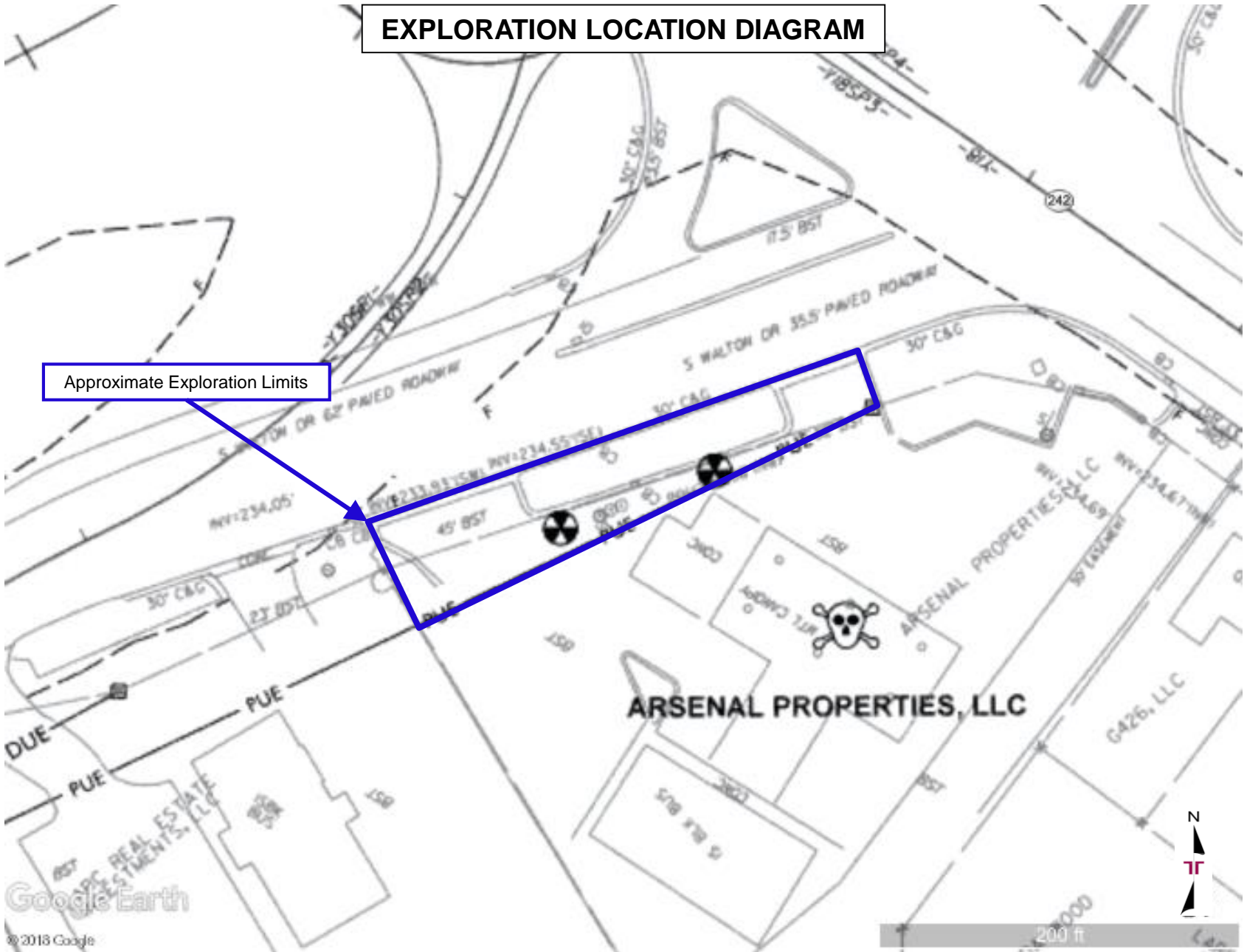
800 ft

EXPLORATION LOCATION

NCDOT Project I-5986B – Arsenal Properties, LLC ■ Benson, NC
November 8, 2019 ■ Terracon Project No. 70197584

EXPLORATION LOCATION DIAGRAM

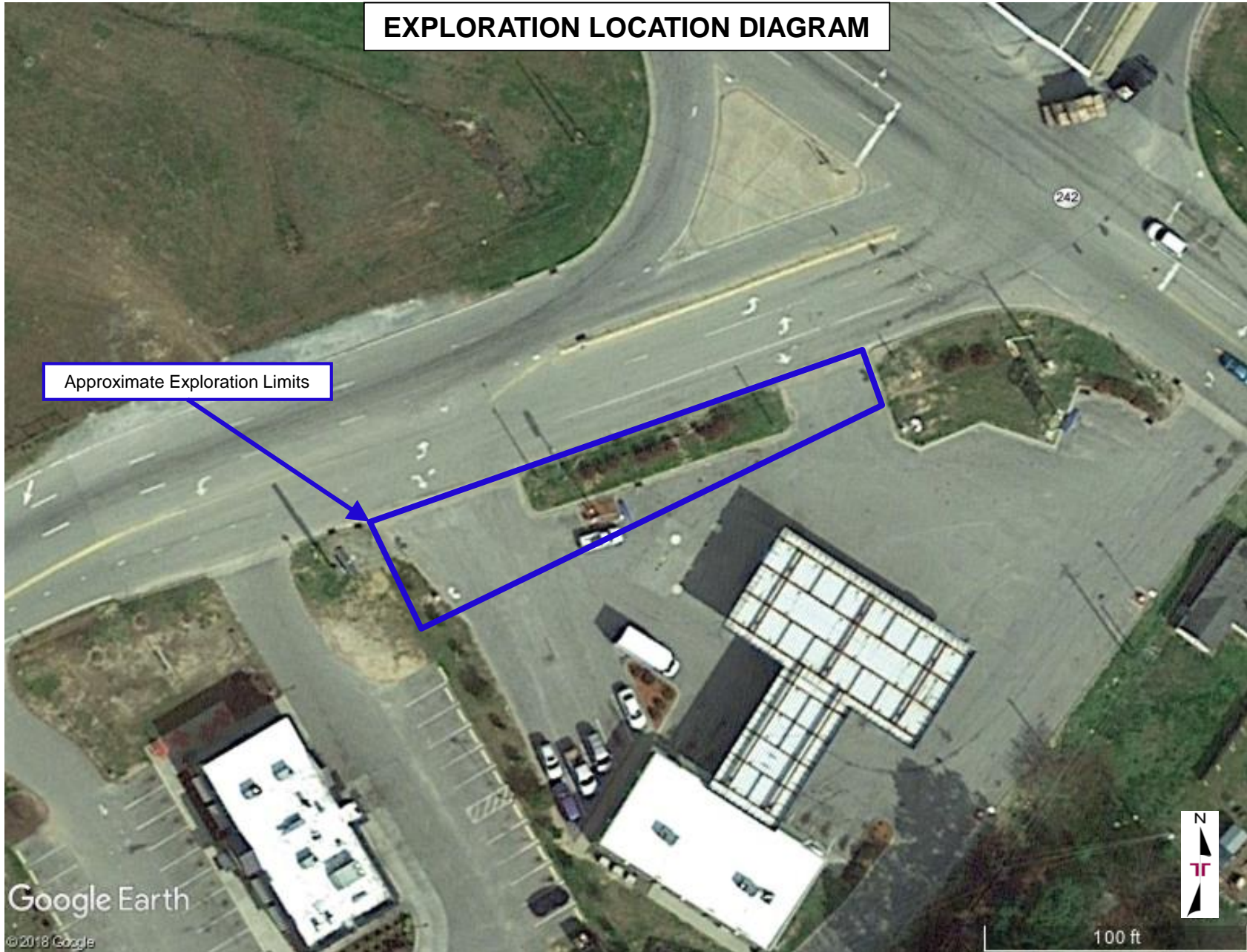
Approximate Exploration Limits



EXPLORATION LOCATION

NCDOT Project I-5986B – Arsenal Properties, LLC ■ Benson, NC
November 8, 2019 ■ Terracon Project No. 70197584

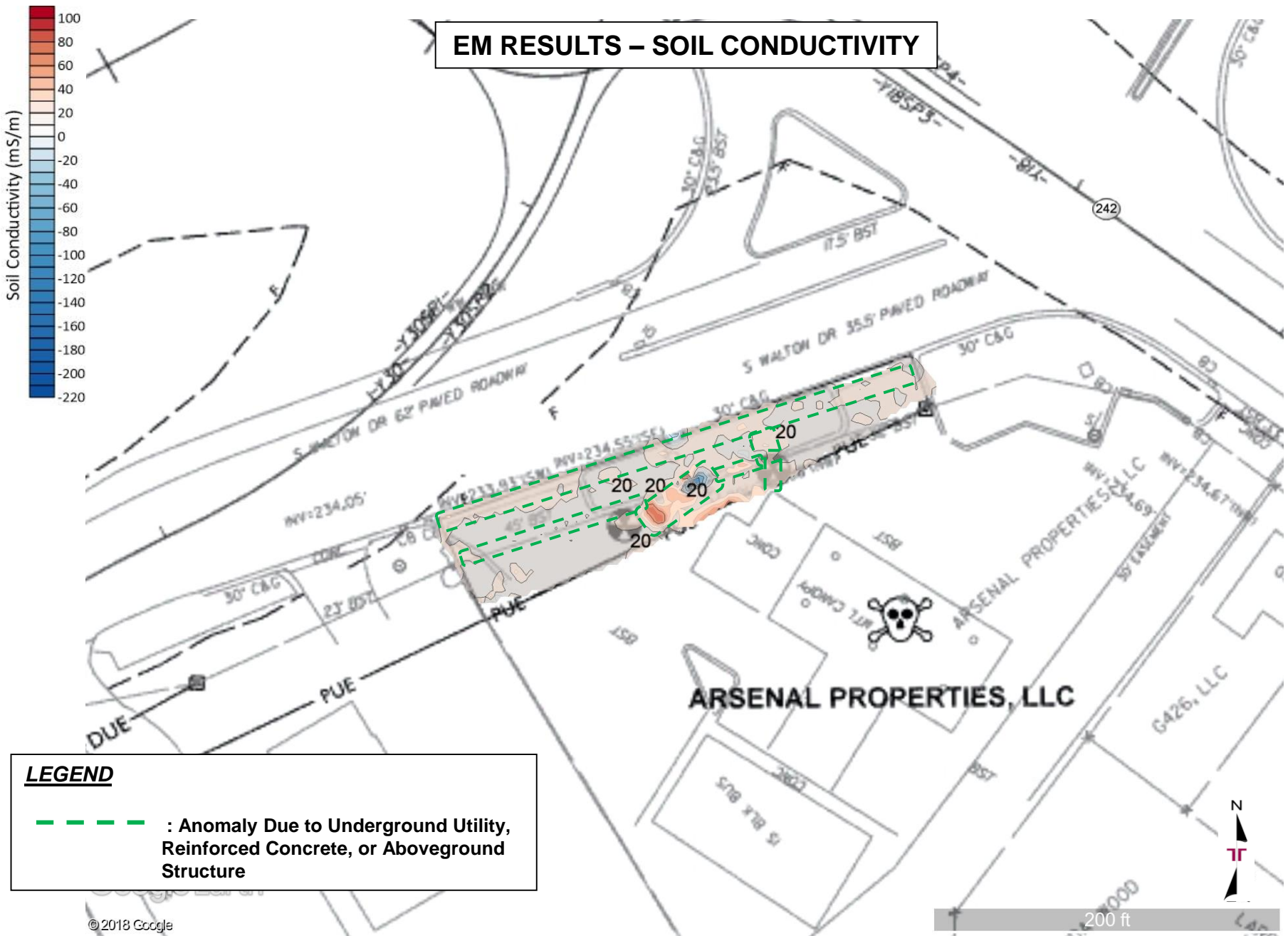
EXPLORATION LOCATION DIAGRAM



EXPLORATION RESULTS

NCDOT Project I-5986B – Arsenal Properties, LLC ■ Benson, NC
November 8, 2019 ■ Terracon Project No. 70197584

EM RESULTS – SOIL CONDUCTIVITY

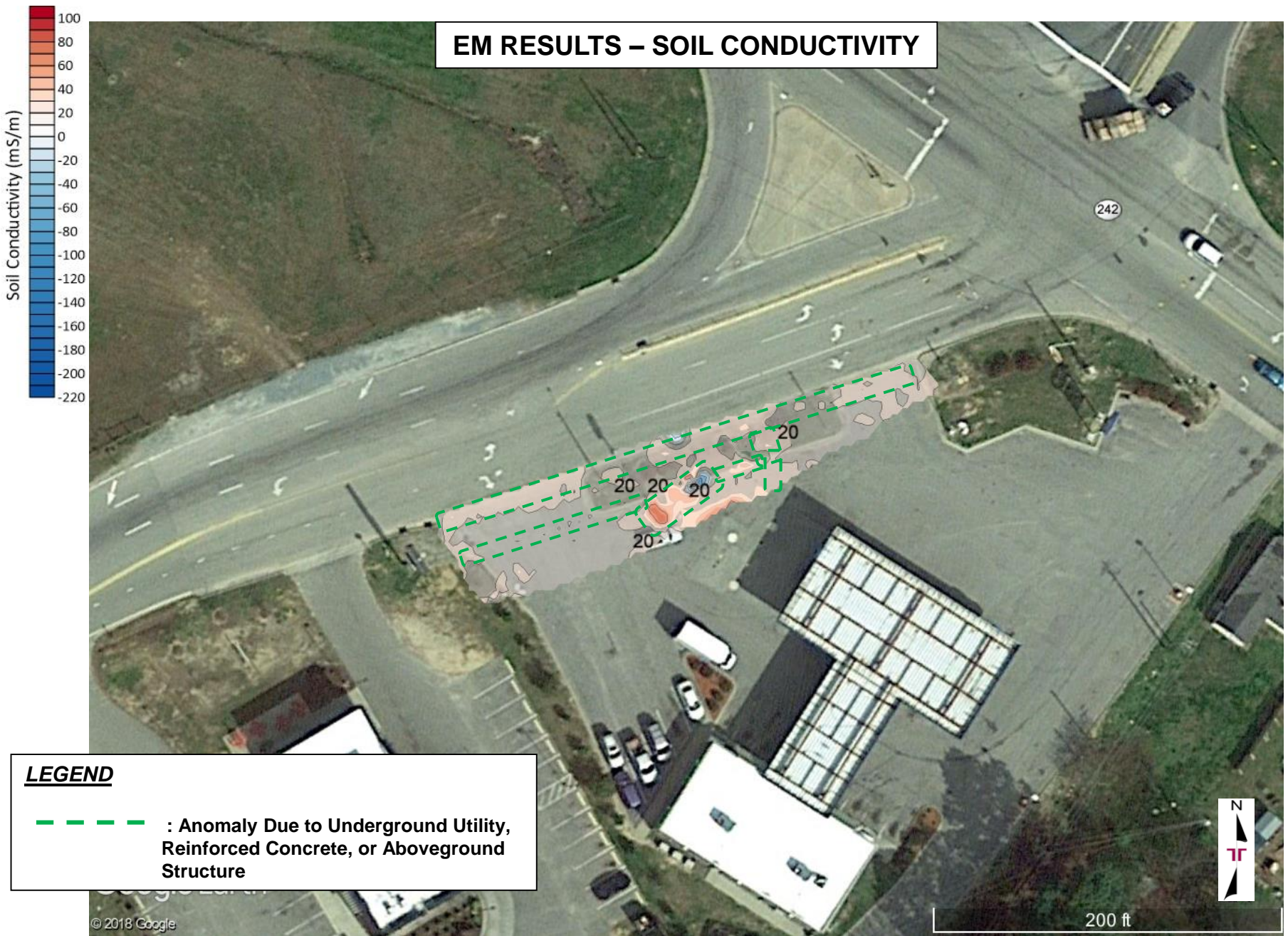


LEGEND

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

EXPLORATION RESULTS

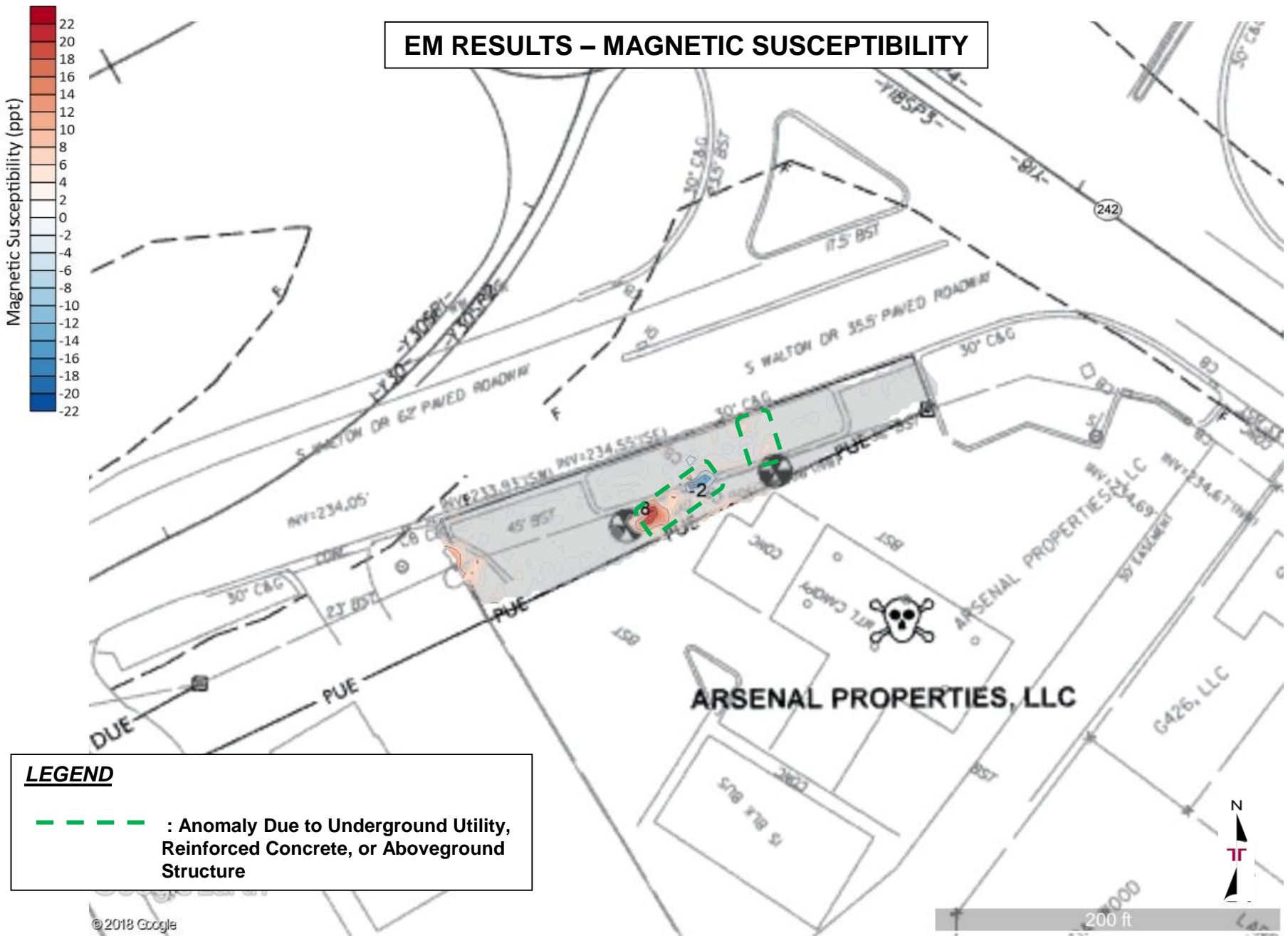
NCDOT Project I-5986B – Arsenal Properties, LLC ■ Benson, NC
November 8, 2019 ■ Terracon Project No. 70197584



EXPLORATION RESULTS

NCDOT Project I-5986B – Arsenal Properties, LLC ■ Benson, NC
November 8, 2019 ■ Terracon Project No. 70197584

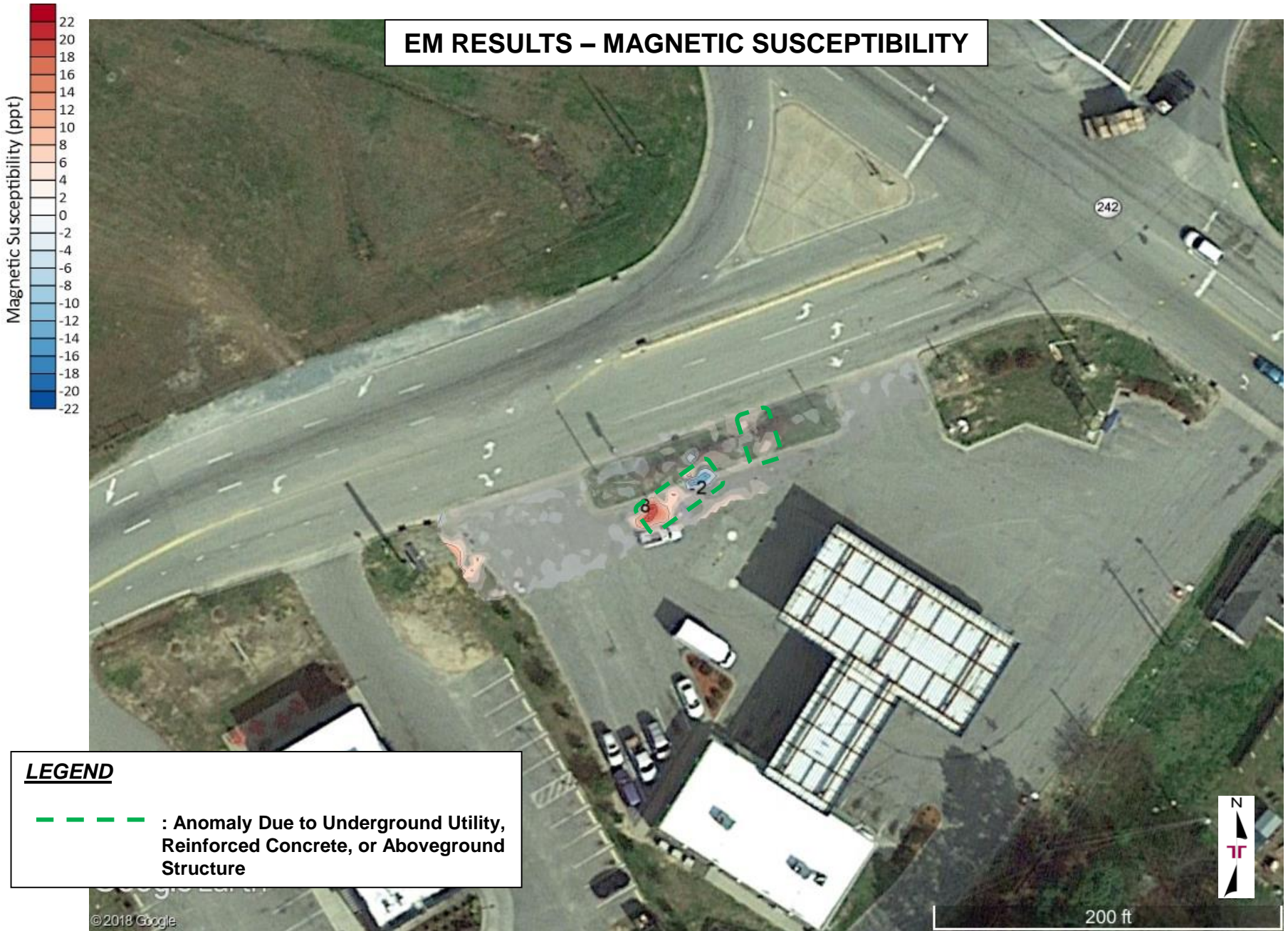
EM RESULTS – MAGNETIC SUSCEPTIBILITY



EXPLORATION RESULTS

NCDOT Project I-5986B – Arsenal Properties, LLC ■ Benson, NC
November 8, 2019 ■ Terracon Project No. 70197584

EM RESULTS – MAGNETIC SUSCEPTIBILITY



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

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ENVIRONMENTAL SMART LOG ARSENAL PROPERTIES. GINT LOGS.GPJ TERRACON_DATATEMPLATE.GDT 11/12/19

GRAPHIC LOG	LOCATION See Exhibit 2A	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	DEPTH MATERIAL DESCRIPTION						
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.

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

Notes:
UVF: Ultraviolet fluorescence

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

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ENVIRONMENTAL SMART LOG ARSENAL PROPERTIES_GINT LOGS.GPJ TERRACON_DATATEMPLATE.GDT 11/12/19

GRAPHIC LOG	LOCATION See Exhibit 2A	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	DEPTH MATERIAL DESCRIPTION						
1.0	AGGREGATE BASE COURSE , odors not observed, dry					<0.1	904-SB-02 (7 feet) UVF 09:10
5.5	FINE SAND (SP) , brown, odors not observed, moist				60	<0.1	
6.5	LEAN CLAY (CL) , light brown, odors not observed, moist					<0.1	
8.5	LEAN CLAY WITH SILT (CL) , brown and orange, odors not observed, moist to wet				60	<0.1	
10.0	CLAYEY SAND (SC) , orangish brown, odors not observed, wet		▽			<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.

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

Notes:
UVF: Ultraviolet fluorescence

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

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

Contact: WILL FRAZIER

Operator MAX MOYER

Project: #70197584

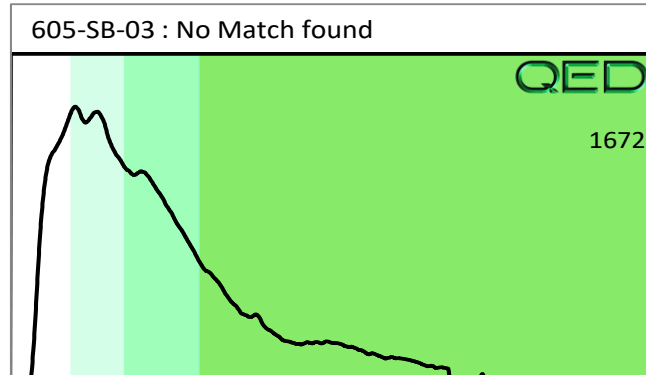
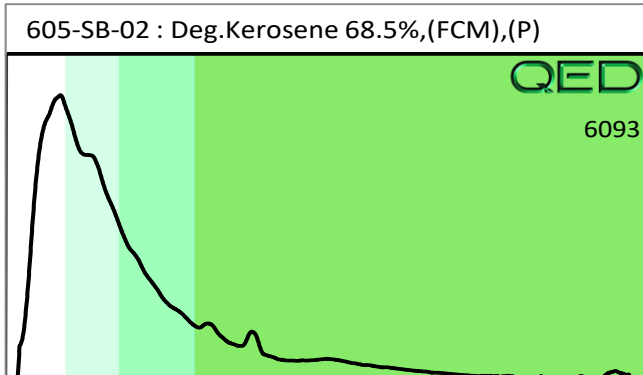
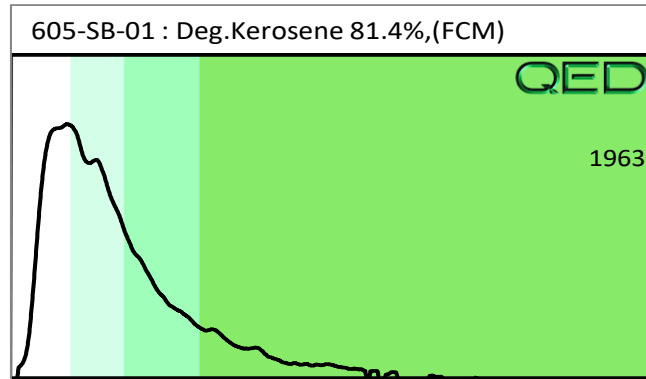
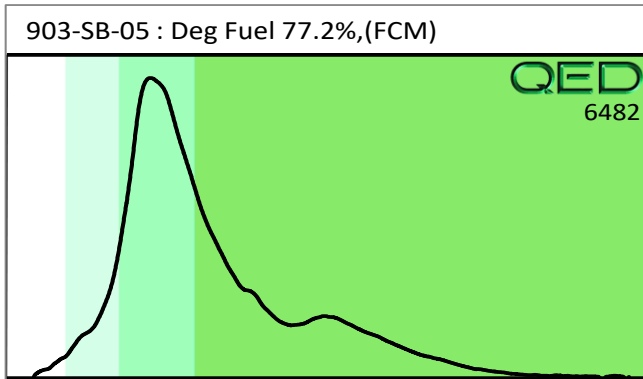
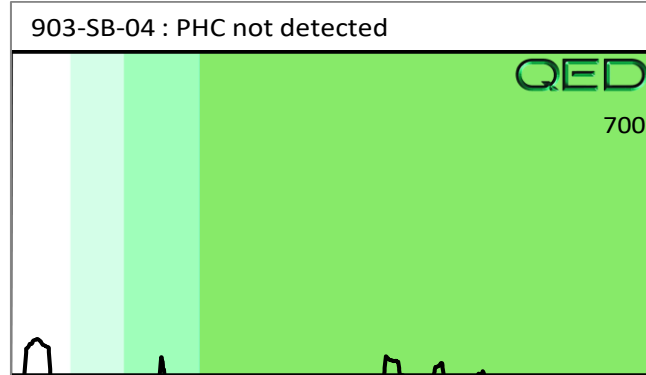
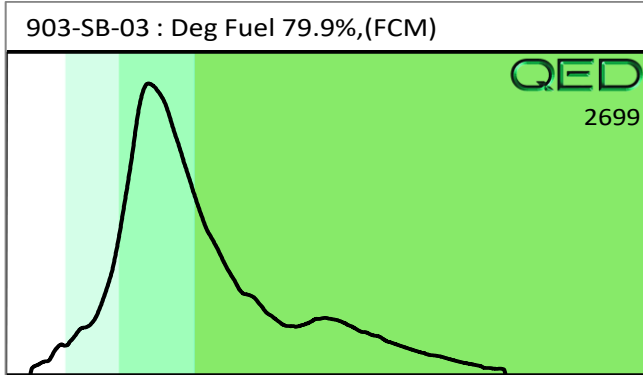
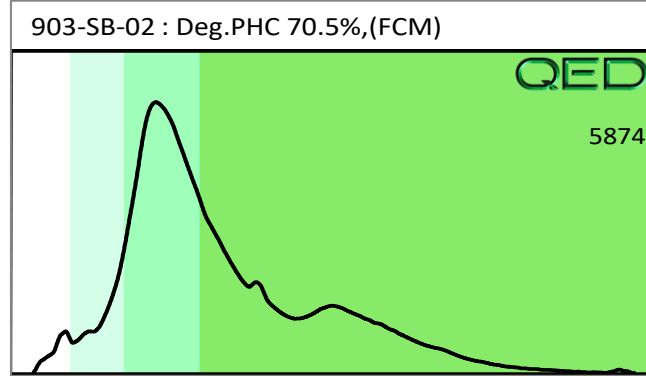
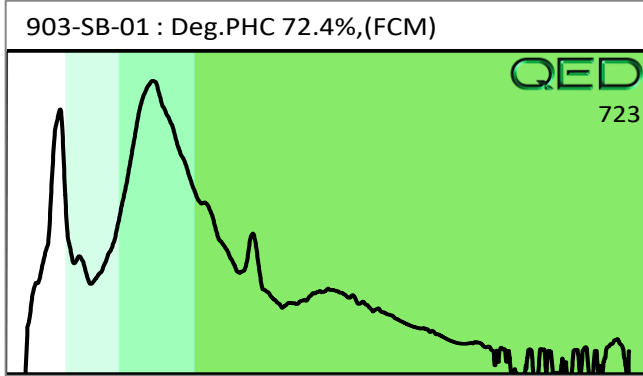
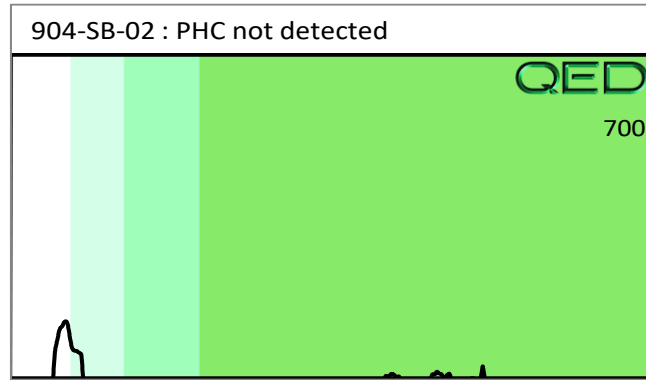
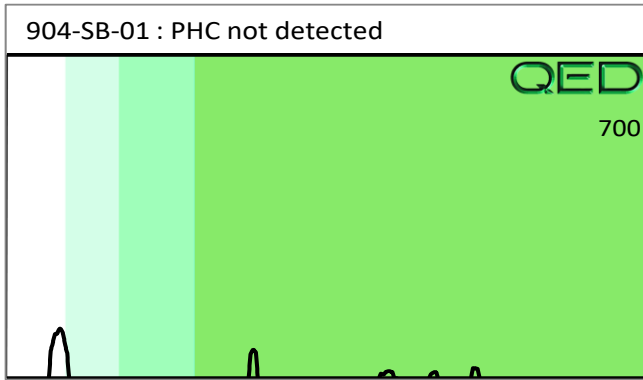
													U00902
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	904-SB-01	21.0	<0.52	<0.52	<0.52	<0.52	<0.1	<0.17	<0.021	0	0	0	PHC not detected
s	904-SB-02	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) = Modified Result.

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





Hydrocarbon Analysis Results

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

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

Contact: WILL FRAZIER

Operator MAX MOYER

Project: #70197584

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

