Preliminary Site Assessment

US 401 (Raeford Road) from West Hampton Oaks Drive to East of Fairway Drive in Fayetteville

Parcel 378 – Treva Ann Owen Property

3412 Raeford Road, Fayetteville, North Carolina

State Project No. U-4405

WBS Element: 39049.1.1

December 16, 2016

Terracon Project No. 70167490

Prepared for:

North Carolina Department of Transportation
Raleigh, North Carolina

Prepared by:

Terracon Consultants, Inc.
Raleigh, North Carolina

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December 16, 2016

North Carolina Department of Transportation
Attention: Mr. Terry W. Fox, LG,
GeoEnvironmental Engineering Unit
Century Center Complex
Building B
1020 Birch Ridge Road
Raleigh, North Carolina 27610

Re: Preliminary Site Assessment (PSA)
US 401 (Raeford Road) from West Hampton Oaks Drive to East of Fairway Drive in Fayetteville
Parcel 378 – Treva Ann Owen Property
3412 Raeford Road, Fayetteville, North Carolina
State Project No. U-4405
WBS Element: 39049.1.1

Dear Mr. Fox:

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. P70167490) dated September 27, 2016. 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:

Ethan H. Smith
Field Geologist

Reviewed by:

Michael T. Jordan, P.G.
Environmental Department Manager

PRELIMINARY SITE ASSESSMENT

US 401 (RAEFORD ROAD) FROM WEST HAMPTON OAKS DRIVE TO EAST OF FAIRWAY DRIVE IN FAYETTEVILLE, CUMBERLAND COUNTY, NORTH CAROLINA
STATE PROJECT NO. U-4405
WBS ELEMENT: 39049.1.1
PARCEL 378 – TREVA ANN OWEN PROPERTY
3412 RAEFORD ROAD, FAYETTEVILLE, NORTH CAROLINA

1.0 INTRODUCTION

1.1 Site Description

Site Name	US 401 (Raeford Road) from West Hampton Oaks Drive to East of Fairway Drive in Fayetteville
Site Location/Address	3412 Raeford Road, Fayetteville, NC 28304 (Cumberland County Tax PIN: 0417-81-5176)
General Site Description	The site consists of a one-story commercial building and a one-story garage building that is currently operated as a Meineke Car Care Center. The site is further improved with a paved access drive and parking areas.

1.2 Site History

The site is located at 3412 Raeford Road in Fayetteville, Cumberland County, North Carolina. At the time of the Preliminary Site Assessment (PSA), the site was operating as a Meineke Car Care Center. According to the North Carolina Department of Environmental Quality (NCDEQ) – Division of Waste Management Underground Storage Tank (UST) Section Registered Tank Database, this location had three 10,000-gallon gasoline USTs and one 500-gallon UST that were installed in May 1966 and were removed in December 1976. Additional details for the USTs were not provided. The property does not appear on the Groundwater Incident database, but the conduits, piping, and concrete pads remain in place (NCDOT, 2016).

1.3 Scope of Work

Terracon conducted the following PSA scope of work (SOW) in accordance with Terracon's proposal for PSA (Proposal No. P70167490) dated September 27, 2016. This PSA is being completed prior to planned median improvements and lane widening along US 401 (Raeford Road) in Fayetteville, North Carolina (site). The scope of work included a geophysical investigation, collection of five 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 right-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 PSA (Terracon Proposal No. P70167490) dated September 27, 2016 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 Fayetteville, NC 1997. **Exhibit 2** is a site layout plan that indicates the approximate locations of the site features, soil boring locations, and analytical results.

2.1 Geophysical Survey

On October 18, October 28, and November 8, 2016, Geophysical Survey Investigations, PLLC 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 EM61-MK2A metal detection instrument and a ground penetrating radar (GPR) survey using a Geophysical Survey Systems SIR-3000 unit.

The geophysical investigation did not reveal possible or probable metallic USTs. However, anomalies were detected that are probably in response to buried lines, conduits, utility line-related objects, known surface objects, or buried miscellaneous objects. In addition to metal detection and GPR scans, NC One Call public utility locator identified several underground utility lines. A copy of the geophysical report is included in **Appendix A**.

2.2 Soil Sampling

Based on the findings of the geophysical investigation and Terracon's site observations, Terracon provided oversight for the advancement of five soil borings (SB-50 through SB-54) along the south and southwestern portion of Parcel 378 and within the NCDOT ROW. The borings were completed by a North Carolina Certified Well Contractor (Regional Probing Services) using a truck-mount Geoprobe® 5410 direct-push drill rig.

Soil samples were collected in 4-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 ranged from less than 0.1 to 0.2 parts per million (ppm).

Based on the proposed disturbance depths and discussion with the NCDOT, each of the soil borings was advanced to a depth of approximately 15 feet below land surface (bls). Five soil samples, one from each boring, were collected from depths ranging between 1 to 15 feet bls and

placed in laboratory provided sample containers and shipped to REDLAB/QROS, LLC – Environmental Testing for analysis by UVF. Soil samples were collected in the depth interval that was most likely to be impacted.

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 hydrated bentonite pellets and investigation derived waste (IDW) was containerized in a 55-gallon DOT approved drum. The drum was staged beside the dumpster north of the Dunkin Donuts located at 2628 Raeford Road, Fayetteville, NC 28303 (Dunkin Donuts contact - Matt Ellsworth [910-920-1992] for subsequent disposal by the NCDOT).

Soil generally consisted of sand and sandy clay. Groundwater was not encountered in the five borings. The soil boring logs are included in **Appendix B**. Sample locations were measured relative to site features and the locations depicted on **Exhibit 2** are approximate.

3.0 LABORATORY ANALYSES

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

- TPH-gasoline range organics (C_5-C_{10}) (GRO);
- TPH-diesel range organics (C_{10}-C_{35}) (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 reported the following detections above the laboratory reporting limits in soil borings SB-50 through SB-54:

- TPH-GRO (C_5-C_{10}) was not detected above laboratory reporting limits;
- TPH-DRO (C_{10}-C_{35}) was reported between less than 0.2 to 0.32 milligrams per kilogram (mg/kg);
- TPH (C_5-C_{35}) was reported from less than 0.2 to 3.3 mg/kg;

- BTEX was not detected above laboratory reporting limits;
- Total aromatics (C_{10}-C_{35}) was reported from less than 0.05 to 0.28 mg/kg;
- 16 EPA PAHs was reported from less than 0.004 to 0.03 mg/kg; and
- BaP was not detected above laboratory reporting limits.

Laboratory analysis revealed that concentrations were not detected above the NCDEQ Action Levels for TPH in soil borings SB-50 through SB-54.

Table 1 summarizes the results of the analyses of the soil samples. **Exhibit 2** 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 reveal possible or probable metallic USTs. However, anomalies were detected that are probably in response to buried lines, conduits, utility line-related objects, known surface objects, or buried miscellaneous objects.

- Laboratory analysis reported that concentrations were not detected above the NCDEQ Action Levels for TPH in soil borings SB-50 through SB-54.

- Terracon recommends NCDOT provide a copy of the results to the owner and/or operator of the site.

- Terracon does not recommend further assessment of the ROW at this site. However, based on detections of petroleum compounds, construction workers should be alert for potential soil and/or groundwater impacts in other locations at the site.

6.0 REFERENCES

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

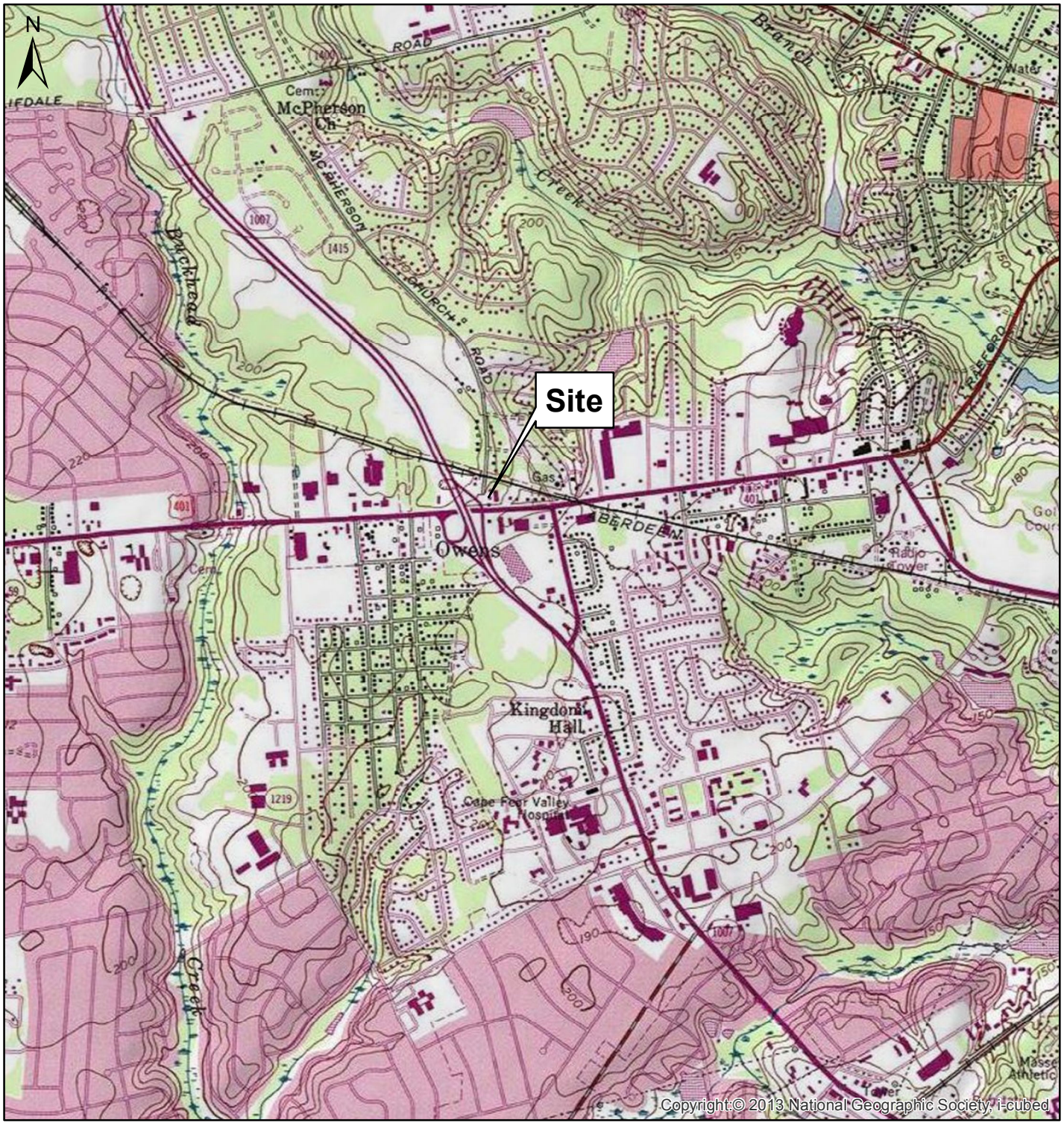
TABLES

Table 1
Summary of Soil Analytical Results
Preliminary Site Assessment
Parcel 378 - Treva Ann Owen Property
Fayetteville, Cumberland County, Virginia
Terracon Project No. 70167490

Sample ID: / Sample Depth (ft bls):	SB-50 11-13	SB-51 1-3	SB-52 13-15	SB-53 9-11	SB-54 7-9	NCDEQ Action Level	MSCC Industrial/ Commercial
GRO (C_5-C_{10})	<0.24	<1.2	<0.18	<0.21	<0.2	**100**	**NE**
DRO (C_{10}-C_{35})	<0.24	<1.2	**0.32**	<0.21	<0.2	**100**	**NE**
TPH (C_5-C_{35})	<0.24	<1.2	**0.32**	<0.21	<0.2	**NE**	**NE**
BTEX	<0.48	<1.2	<0.18	<0.21	<0.2	**NE**	**NE**
Total Aromatics (C_{10}-C_{35})	<0.05	<0.24	**0.28**	<0.04	<0.04	**NE**	**NE**
16 EPA PAHs	<.008	<0.04	**0.03**	<0.007	<0.006	**NE**	**NE**
Benzo(a)pyrene	<.0.001	<0.005	<0.001	<0.001	<0.001	**NE**	**0.78**

Notes:
Soil samples were collected on November 11, 2016.
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 Petroleuem Hydrocarbons.
BTEX - Benzene, Toluene, Ethylbenzene, and Xylenes.
16 EPA PAHs - Environmental Protection Agency Polycyclic Aromatic Hydrocarbons (acenaphthene, acenaphthylene, antrancene, benz[a]anthrancene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[g,h,i]perylene, benzo[a]pyrene, chrysene, dibenz[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.

EXHIBITS



1,000 500 0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000 10,000 Feet

CONTOUR INTERVAL 10 FEET

USGS TOPOGRAPHIC MAP
FAYETTEVILLE, NC QUADRANGLE
1997

Project Number: 70167490	Terracon	Topographic Vicinity Map	EXHIBIT NO.
Scale: 1:24,000		U-4405 Parcel 378 - Treva Ann Owen Property 3412 Raeford Road Fayetteville, Cumberland County, NC	1
Drawn By: EHS			
Checked By: MTJ			
Date Drawn: 11/21/16	2401 Brentwood Road, Suite 107 Raleigh, NC 27604 Phone: (919) 873-2211 Fax: (919) 873-9555		

PROJECT REFERENCE NO.	EXHIBIT
39049.1.1 (U-4405)	2

SITE DIAGRAM WITH BORING LOCATIONS AND ANALYTICAL DATA

PARCEL 378 – TREVA ANN OWEN PROPERTY
3412 RAEFORD ROAD
FAYETTEVILLE, CUMBERLAND COUNTY

LEGEND

- PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- PROPOSED RIGHT OF WAY LINE WITH IRON PIN AND CAP MARKER
- PROPOSED EDGE OF TRAVEL
- E — PROPOSED CONSTRUCTION EASEMENT
- PUE — PROPOSED PERMANENT UTILITY EASEMENT
- PROPOSED DRAINAGE PIPING
- PROPOSED CATCH BASIN
- F / C — PROPOSED CUT / FILL LINE
- BORING LOCATION

MTL BUS

STARR RAY
DB 9162 PG 37

EXISTING R/W

OLD MCPHERSON CHURCH RD 26' BST

WILLARD L. DOCKERY
DB 2866 PG 819

SHARON M. FERRELL
DB 3868 PG 772

ISBK BUS

BST

CONC

G

EIP

-L- 256+00

-L- 260+00

PEDROS MEXICAN FOOD INC
DB 2499 PG 683

ISBLK BUS

8" CURB

378

TREVA A. OWEN
DB 2905 PG 169

ISBK BUS

ECM

EXISTING R/W

TIES TO NEXT PROJECT

15"

2GI

15" RCP

18" RCP–IV

CB

FILL WITH FLOWABLE FILL

REMOVE SYSTEM

REMOVE

DI

18" RCP–IV

15" RCP–IV

72" CONC

DIR ONLY

SB-54 (7-9 ft bls)
COMPOUNDS NOT DETECTED ABOVE LABORATORY REPORTING LIMITS

SB-53 (9-11 ft bls)
COMPOUNDS NOT DETECTED ABOVE LABORATORY REPORTING LIMITS

SB-52 (13-15 ft bls)

	(mg/kg)
DRO (C10-C35)	0.32
TPH (C5-C35)	0.32
Total Aromatics (C10-C35)	0.28
16 EPA PAHs	0.03

SB-51 (1-3 ft bls)
COMPOUNDS NOT DETECTED ABOVE LABORATORY REPORTING LIMITS

SB-50 (11-13 ft bls)
COMPOUNDS NOT DETECTED ABOVE LABORATORY REPORTING LIMITS

NOTES:

SOIL SAMPLES WERE COLLECTED ON NOVEMBER 11, 2016

DETECTED COMPOUNDS ARE SHOWN IN TABLE

SOIL CONCENTRATIONS ARE REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)

ft bls - FEET BELOW LAND SURFACE

GRO - (C5-C10) GASOLINE RANGE ORGANICS

DRO - (C10-C35) DIESEL RANGE ORGANICS

TPH - (C5-C35) TOTAL PETROLEUM HYDROCARBONS

16 EPA PAHs - ENVIRONMENTAL PROTECTION AGENCY POLYCYCLIC AROMATIC HYDROCARBONS

N

0 20 40 80
FEET

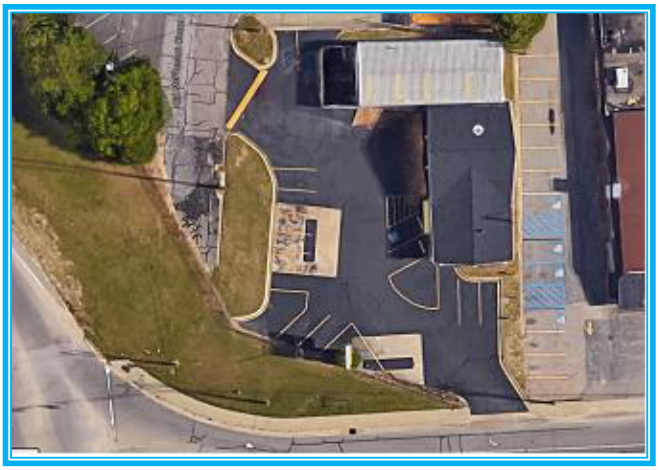
APPENDIX A

GEOPHYSICAL SURVEY REPORT

Terracon Consultants, Inc.

GEOPHYSICAL INVESTIGATION TO LOCATE METALLIC USTS

Treva Ann Owen Property
(Parcel 378) 3412 Raeford Road
Fayetteville, North Carolina



November 11, 2016
Geophysical Survey Investigations, PLLC Project No. 2016-37

4 Willimantic Drive, Greensboro, NC 27455
Office Tel: (336) 286-9718
denilm@bellsouth.net

Terracon Consultants, Inc.
GEOPHYSICAL INVESTIGATION
TO LOCATE METALLIC USTS
Treva Ann Owen Property
(Parcel 378) 3412 Raeford Road
Fayetteville, North Carolina

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FIGURES

Report prepared for: Stephen J. Kerlin, PG
Terracon Consultants, Inc.
2401 Brentwood Road, Suite 107
Raleigh, North Carolina 27604

Prepared by: _____
Mark J. Denil, P.G.
Geophysical Survey Investigations, PLLC

1.0 INTRODUCTION

Geophysical Survey Investigations, PLLC (GSI) conducted an electromagnetic (EM) metal detection survey, ground penetrating radar (GPR) scanning and utility line clearance search for Terracon Consultants, Inc. on October 18, October 28 and November 8, 2016 across a portion of the Treva Ann Owen property (Parcel 378) located at 3412 Raeford Road in Fayetteville, North Carolina. The geophysical investigation was performed as part of the North Carolina Department of Transportation (NCDOT) preliminary site assessment for State Project U-4405 (WBS Element 39049.1.1) US 401 (Raeford Road) from West of SR-1409 to US 401 Business (Robeson Street).

The geophysical investigation was conducted to determine if buried, metallic, underground, storage tanks (USTs) are present beneath the proposed Right-of-Way (ROW) and PUE areas of the site. The perimeter of the ROW/PUE area is shown as a red polygon in the aerial photograph presented in **Figure 1**. Presently, a Meineke Car Care facility operates on this property.

Terracon representative Mr. Stephen Kerlin, PG provided guidance and site maps to Geophysical Survey Investigations, PLLC personnel prior to conducting the geophysical field work. The geophysical survey area at Parcel 378 has a maximum length and width of 190 feet and 70 feet, respectively. Please note that the ROW and PUE areas at this site were not marked or the survey markers were not visible at the time the geophysical investigation was conducted.

2.0 FIELD METHODOLOGY

The EM investigation was performed across the geophysical survey area (proposed ROW and PUE areas) using a Geonics EM61-MK2A metal detection instrument with a Trimble AG-114 GPS unit. EM61 metal detection data and GPS coordinates were digitally collected in latitude and longitude geodetic format (NAD83) using a Juniper data recorder at approximately 1.0 foot intervals along survey lines spaced approximately five feet apart. The Trackmaker NAV61MK2 software program was used with the data recorder to view the relative positions of the survey lines in real time during data acquisition.

According to the instrument specifications, the EM61-MK2A can detect a metal drum down to a maximum depth of approximately 8 to 10 feet. Objects less than one foot in size can be detected to a maximum depth of 4 or 5 feet. The EM61 and GPS data were downloaded to a computer and processed in the field using the Trackmaker61MK2 and Surfer for Windows software programs. GPS coordinates were converted during data processing to Universal Transverse Mercator (UTM) coordinates (in feet) which are used as location control in this report.

GPR scans were performed along northerly-southerly and easterly-westerly directions spaced primarily 3 to 5 feet apart across selected EM61differential anomalies and areas containing steel reinforced concrete using the Geophysical Survey Systems SIR-3000 unit equipped with a 400 MHz antenna. GPR data were viewed in real time in a continuous mode using a vertical scan of 512 samples, at a sampling rate of 48 scans per second. A 70 MHz high pass filter and an 800 MHz low pass filter were used during data acquisition with the 400 MHz antenna. GPR data were viewed to a maximum investigating depth of approximately 5.0 feet based on an estimated two-way travel time of 8.0 nanoseconds per foot.

Following the UST investigation, areas around the proposed Terracon soil borings were scanned with the GPR unit and a DitchWitch 910 utility locator for buried utility line clearance and no further discussion regarding the utility clearance work will be made in this report. Photographs of the geophysical equipment used for the investigation and of the site are presented in Figure 1.

3.0 DISCUSSION OF RESULTS

Contour plots of the EM61 early time gate results and the EM61 differential results are presented in **Figures 2 and 3**, respectively. The early time gate results represent the most sensitive component of the EM61 instrument and detect metal objects regardless of size. The early time gate response can be used to delineate metallic conduits or utility lines, small, isolated, metal objects and areas containing insignificant metal debris. The differential results are obtained from the difference between the early time gate channel and late time gate channel of the EM61 instrument. The differential results focus on the larger metal objects such as drums and UST-size objects and ignore the smaller, insignificant, metal objects or debris.

The linear, EM61 early time gate anomalies intersecting UTM coordinates 2257412-E 12729352-N, 2257460-E 12729357-N, 2257482-E 12729348-N, and 2257530-E 12729365-N are probably in response to buried lines or conduits. The linear, EM61 anomaly intersecting coordinates 2257424-E 12729381-N is probably in response to the metal fence line. GPR data suggest the large, high amplitude, EM61 anomaly centered near coordinates 2257476-E 12729373-N is in response to steel reinforced concrete (former pump island area) and buried conduits. GPR data suggest the EM61 differential anomaly centered near coordinates 2257529-E 12729374-N is in response to a portion of a buried utility line or conduit.

The remaining EM61 anomalies are probably in response to utility line-related objects, known surface objects, or buried miscellaneous objects. The EM61 and GPR investigation suggests the proposed ROW/PUE area does not contain metallic USTs. Please refer to Figures 2 and 3 for additional (detailed) information regarding the geophysical findings at this site.

4.0 SUMMARY & CONCLUSIONS

Our evaluation of the EM61 and GPR data collected across the geophysical survey area at the Treva Ann Owen property (Parcel 378) located at 3412 Raeford Road in Fayetteville, North Carolina provides the following summary and conclusions:

- The combination of EM61 and GPR surveys provided reliable results for the detection of metallic USTs across the survey area within the depth interval of 0 to 6 feet.

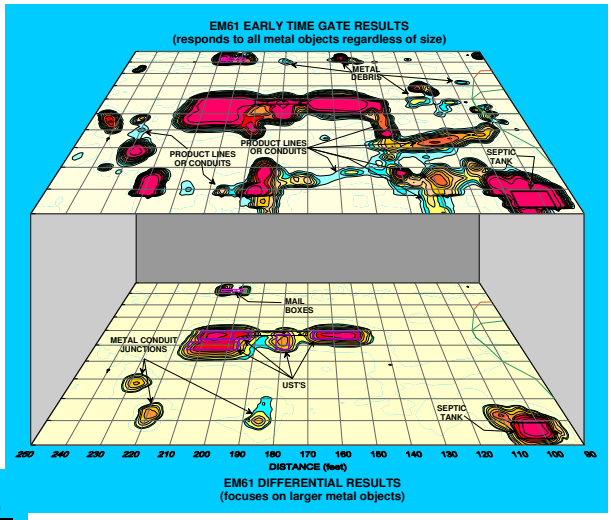
- The linear, EM61 early time gate anomalies intersecting UTM coordinates 2257412-E 12729352-N, 2257460-E 12729357-N, 2257482-E 12729348-N, and 2257530.306, 12729365.214 are probably in response to buried lines or conduits.

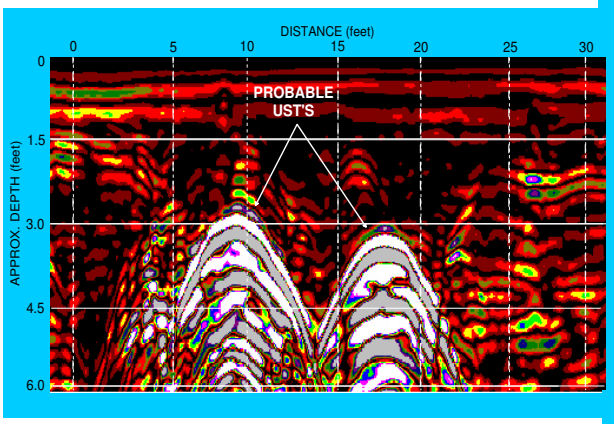
- The remaining EM61 anomalies are probably in response to utility line-related objects, known surface objects, or buried miscellaneous objects.

- The EM61 and GPR investigation suggests the proposed ROW/PUE area does not contain metallic USTs.

5.0 LIMITATIONS

EM61 and GPR surveys have been performed and this report prepared for Terracon Consultants, Inc. in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the geophysical surveys are non-unique and may not represent actual subsurface conditions. Some of the EM61 and GPR anomalies interpreted as possible/probable USTs, utility lines, conduits, steel reinforced concrete, or miscellaneous, metal debris may be attributed to other surface or subsurface features and/or interference from cultural features.

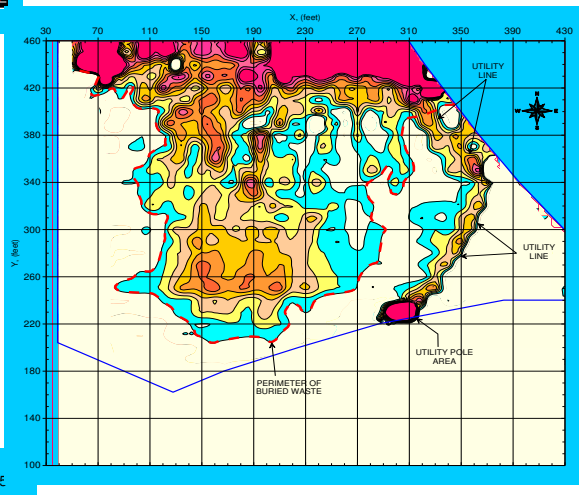


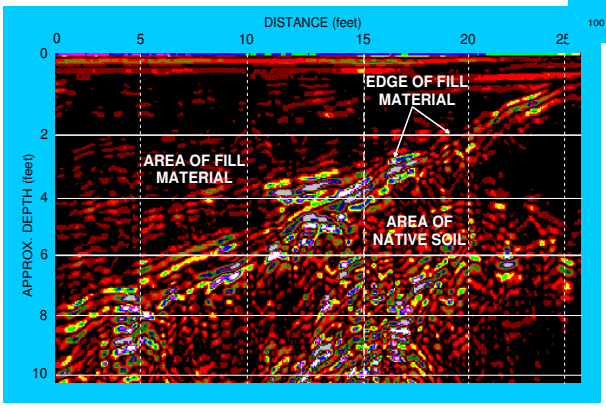


REPORT FIGURES

(on the following pages)

Figures shown on this page are for esthetic purposes only and are not related to the site discussed in this report





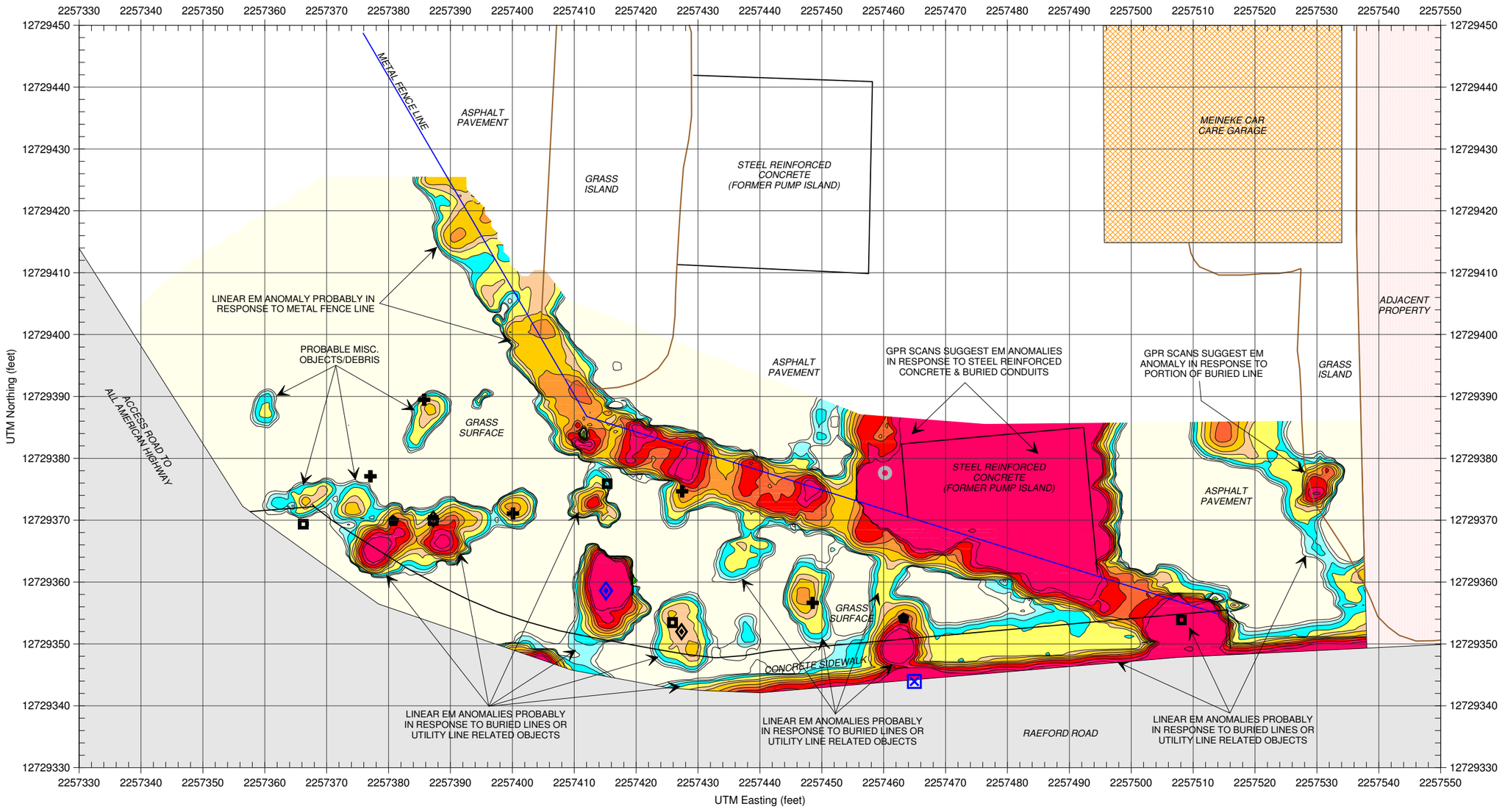
DITCHWITCH UTILITY LOCATOR

EM61 METAL DETECTOR

GROUND PENETRATING RADAR UNIT

The photographs show the DitchWitch 910 utility line locator, the Geonics EM61-MK2A metal detector and the GSSI SIR-3000 ground penetrating radar (GPR) unit that were used to conduct the geophysical investigation across the area of interest at Parcel 378.

The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at the Treva Ann Owen property (Parcel 378) located along Raeford Road in Fayetteville, North Carolina.



The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at Parcel 378.

LEGEND

- SURVEY AREA: EM61 ACQUIRED ALONG LINES SPACED APPROX. 5 FEET APART
- RAEFORD ROAD OR ACCESS ROAD
- UTILITY LINE BOX
- GUY WIRE
- UTILITY LINE RELATED BOXES
- METAL POLES
- STORM SEWER GRATE
- FIRE HYDRANT
- METAL SIGN
- UTILITY POLE
- CONCRETE CURBING

EM61 EARLY TIME GATE RESPONSE (in millivolts/meter)

1000 750 500 400 300 200 150 100 75 60 50 -90 -100 -200 -400 -5000

The contour plot shows the early time gate (most sensitive) response of the Geonics EM61-MK2A metal detection instrument in millivolts (mV). The early time gate response shows buried, metallic objects regardless of size. The EM61 survey was conducted on October 21, 2016. Ground penetrating radar (GPR) scans were conducted across selected EM61 anomalies and areas containing reinforced concrete on October 27, 2016 using a Geophysical Survey Systems SIR 3000 instrument with a 400 MHz antenna.

N W E S

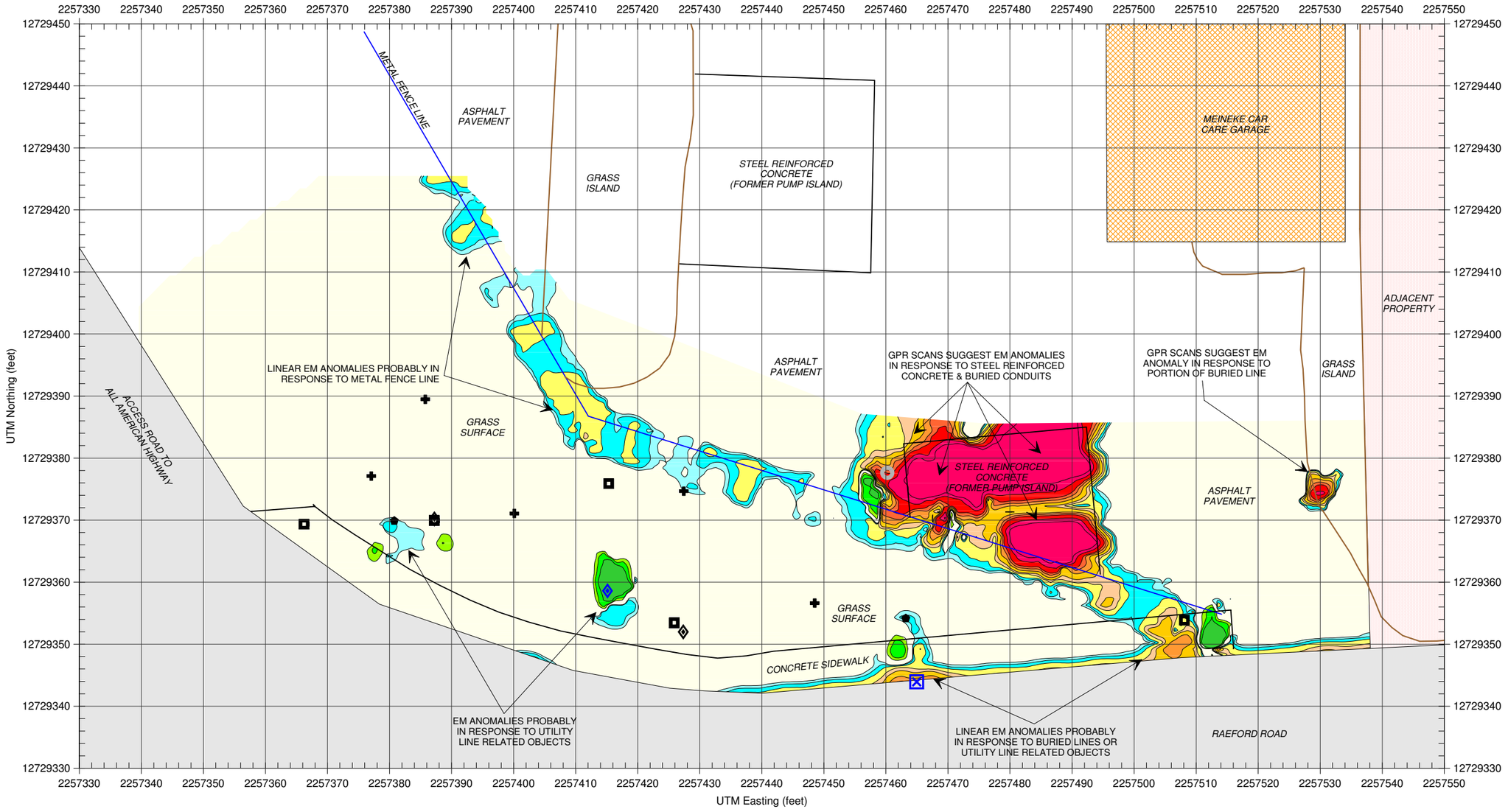
APPROXIMATE NORTH

EM61-MK2A METAL DETECTION
(EARLY TIME GATE RESULTS)

Terracon Consultants, Inc.
Treva Ann Owen Property
Parcel 378
Fayetteville, North Carolina

GEOPHYSICAL SURVEY INVESTIGATIONS

11/11/16 336-286-9718 FIGURE 2



The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at Parcel 378.

LEGEND

- SURVEY AREA: EM61 ACQUIRED ALONG LINES SPACED APPROX. 5 FEET APART
- RAEFORD ROAD OR ACCESS ROAD
- UTILITY LINE BOX
- GUY WIRE
- UTILITY LINE RELATED BOXES
- METAL POLES
- STORM SEWER GRATE
- FIRE HYDRANT
- METAL SIGN
- UTILITY POLE
- CONCRETE CURBING

EM61 DIFFERENTIAL RESPONSE (in millivolts/meter)

1000 750 500 400 300 200 150 100 75 60 50 -90 -100 -200 -400 -5000

Note: The contour plot shows the differential response between the top coil and the late time gate channel of the Geonics EM61-MK2A metal detection instrument in millivolts (mV). The differential response focuses on larger, buried,metallic objects such as drums and USTs and ignores smaller miscellaneous, buried, metal debris. The EM61 survey was conducted on October 21, 2016. Ground penetrating radar (GPR) scans were conducted across selected EM61 anomalies and areas containing reinforced concrete on October 27, 2016 using a Geophysical Survey Systems SIR 3000 unit with a 400 MHz antenna.

N W E S

APPROXIMATE NORTH

EM61-MK2A METAL DETECTION (DIFFERENTIAL RESULTS)

Terracon Consultants, Inc.
Treva Ann Owen Property
Parcel 378
Fayetteville, North Carolina

GEOPHYSICAL SURVEY INVESTIGATIONS

11/11/16 336-286-9718

FIGURE 3

APPENDIX B

SOIL BORING LOGS

Lithology Log

Boring ID: SB-50

Terracon

Project Number:	70167490	Start Date/Time:	11/1/16 0820
Site Location:	Fayetteville, NC	End Date/Time:	11/1/16 0830
Weather:	60, Sunny	Boring Diameter:	2"
Logged By:	EHS	Total Depth:	15 FtBls
Drilling Sub:	Regional Probing Services	Water Level:	Na
Drill Rig:	Truck Mount Geoprobe 5410	Well Installed:	No

Sample Method	Drilling Method
☐ Hand Auger	X DPT
X Macro-Core	☐ HSA
☐ Split Spoon	☐ Mud Rotary
☐ Shelby Tube	☐ Air Rotary
	☐ Rock Core

Depth (ft bls)	Recovery (inches)	Blow Counts (n)	PID ppm / ppb	CH_4	CO_2	O_2	H_2S	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, analysis, time	Drilling method, tooling, depth
0-1	12/12	-	<0.1					SM	(0-1) SAND. tan/orange. fine. moist		
1-3	24/24	-	<0.1					SM	(1-3) SAA		
3-5	24/24	-	<0.1					SM	(3-5) SAA		
5-7	24/24	-	<0.1					SM	(5-7) SAND. white/orange. medium grained. moist		
7-9	24/24	-	<0.1					SM	(7-9) SAA		
9-11	24/24	-	<0.1					SM	(9-11) SAA		
11-13	24/24	-	<0.1					SM/SC	(11-12) SAA (12-13) SANDY CLAY. orange. moist	Sample @ QROS at 0835	
13-15	24/24	-	<0.1					SC	(13-15) SAA		
									Boring terminated at 15 ftBls		

Notes:

ppm: parts per million ppb: parts per billion NA= Not applicable bls = below land surface

Lithology Log

Boring ID: SB-51

Terracon

Project Number:	70167490	Start Date/Time:	11/11/16 0845
Site Location:	Fayetteville, NC	End Date/Time:	11/11/16 0855
Weather:	60, sunny	Boring Diameter:	2"
Logged By:	EHS	Total Depth:	15 ftbls
Drilling Sub:	Regional Probing Services	Water Level:	Na
Drill Rig:	Truck Mant Geoprobe 5410	Well Installed:	No

Sample Method	Drilling Method
☐ Hand Auger	X DPT
X Macro-Core	☐ HSA
☐ Split Spoon	☐ Mud Rotary
☐ Shelby Tube	☐ Air Rotary
	☐ Rock Core

Depth (ft bls)	Recovery (inches)	Blow Counts (n)	PID ppm / ppb	CH_4	CO_2	O_2	H_2S	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, analysis, time	Drilling method, tooling, depth
0-1	12/12	-	0.1					SM	(0-1) SAND. tan/white. moist.		
1-3	24/24	-	0.2					SM	(1-3) SAA	Sample dros at 0900	
3-5	24/24	-	<0.1					SM	(3-5) SAND. orang/tan. moist		
5-7	24/24	-	<0.1					SM	(5-7) SAA		
7-9	24/24	-	<0.1					SM	(7-9) SAA		
9-11	24/24	-	<0.1					SM	(9-11) SAA		
11-13	24/24	-	<0.1					SM	(11-13) SAA		
13-15	24/24	-	<0.1					SC	(13-15) SANDY CLAY tan. moist		
									Boring terminated at 15 ftbls		

Notes:

ppm: parts per million ppb: parts per billion NA= Not applicable bls = below land surface

Lithology Log

Boring ID: SB-52

Terracon

Project Number:	70167490	Start Date/Time:	1/11/16 0915
Site Location:	Fayetteville, NC	End Date/Time:	1/11/16 0925
Weather:	60, sunny	Boring Diameter:	2"
Logged By:	EHS	Total Depth:	15 ftbls
Drilling Sub:	Regional Probing Services	Water Level:	Na
Drill Rig:	Truck Mount Geoprobe 5410	Well Installed:	No

Sample Method	Drilling Method
☐ Hand Auger	X DPT
X Macro-Core	☐ HSA
☐ Split Spoon	☐ Mud Rotary
☐ Shelby Tube	☐ Air Rotary
	☐ Rock Core

Depth (ft bls)	Recovery (inches)	Blow Counts (n)	PID ppm / ppb	CH_4	CO_2	O_2	H_2S	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, analysis, time	Drilling method, tooling, depth
0-1	12/12	-	<0.1					SM	(0-1) SAND. brwhite. moist		
1-3	24/24	-	<0.1					SM	(1-3) SAND. orange. moist		
3-5	24/24	-	<0.1					SM	(3-5) SAA		
5-7	24/24	-	<0.1					SM	(5-7) SAA		
7-9	24/24	-	<0.1					SM	(7-9) SAA		
9-11	24/24	-	<0.1					SM	(9-11) SAA		
11-13	24/24	-	<0.1					SM	(11-13) SAA		
13-15	24/24	-	<0.1					SM	(13-15) SAA	Sample QRUS at 0930	
									Boring terminated at 15 ftbls		

Notes:

ppm: parts per million ppb: parts per billion NA= Not applicable bls = below land surface

Lithology Log

Boring ID: SB-53

Terracon

Project Number:	70167490	Start Date/Time:	11/1/16 0930
Site Location:	Fayetteville, NC	End Date/Time:	11/1/16 0935
Weather:	50, sunny	Boring Diameter:	2"
Logged By:	EMS	Total Depth:	15 ftbls
Drilling Sub:	Regional Probing Services	Water Level:	Na
Drill Rig:	Truck Mount Geoprobe 5410	Well Installed:	No

Sample Method	Drilling Method
☐ Hand Auger	X DPT
X Macro-Core	☐ HSA
☐ Split Spoon	☐ Mud Rotary
☐ Shelby Tube	☐ Air Rotary
	☐ Rock Core

Depth (ft bls)	Recovery (inches)	Blow Counts (n)	PID ppm / ppb	CH_4	CO_2	O_2	H_2S	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, analysis, time	Drilling method, tooling, depth
0-1	12/12	-	<0.1					SM	(0-1) SAND. tan/white. moist		
1-3	24/24	-	<0.1					SM	(1-3) SAA		
3-5	24/24	-	<0.1					SM	(3-5) SAND. orange. fine. moist		
5-7	24/24	-	<0.1					SM	(5-7) SAA		
7-9	24/24	-	<0.1					SM	(7-9) SAA		
9-11	24/24	-	<0.1					SM	(9-11) SAA	Sample QROS at 0940	
11-13	24/24	-	<0.1					SM	(11-13) SAA		
13-15	24/24	-	<0.1					SC	(13-15) SANDY CLAY. orange. moist		
									Boring terminated at 15 ftbls		

Notes:

ppm: parts per million ppb: parts per billion NA= Not applicable bls = below land surface

Lithology Log

Boring ID: SB-54

Terracon

Project Number:	70167490	Start Date/Time:	11/1/16 0940
Site Location:	Fayetteville, NC	End Date/Time:	11/1/16 0950
Weather:	60°, Sunny	Boring Diameter:	2"
Logged By:	EHS	Total Depth:	15 ftbls
Drilling Sub:	Regional Probing Services	Water Level:	NA
Drill Rig:	Truck Mount Geoprobe 5410	Well Installed:	No

Sample Method	Drilling Method
☐ Hand Auger	X DPT
X Macro-Core	☐ HSA
☐ Split Spoon	☐ Mud Rotary
☐ Shelby Tube	☐ Air Rotary
	☐ Rock Core

Depth (ft bls)	Recovery (inches)	Blow Counts (n)	PID ppm / ppb	CH_4	CO_2	O_2	H_2S	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, analysis, time	Drilling method, tooling, depth
0-1	12/12	-	<0.1					SM	(0-1) SAND. tan/white. moist		
1-3	24/24	-	<0.1					SM	(1-3) SAA		
3-5	24/24	-	<0.1					SM	(3-5) SAND. orange/tan. fine moist		
5-7	24/24	-	<0.1					SM	(5-7) SAA		
7-9	24/24	-	<0.1					SM	(7-9) SAA	Sample ARO5 at 0955	
9-11	24/24	-	<0.1					SM	(9-11) SAA		
11-13	24/24	-	<0.1					SM	(11-13) SAA		
13-15	24/24	-	<0.1					SC	(13-15) SANDY CLAY. orange. moist		
									Boring terminated at 15 ftbls		

Notes:

ppm: parts per million ppb: parts per billion NA= Not applicable bls = below land surface

APPENDIX C

LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORMS

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: TERRACON
Address: 2401 BRENTWOOOD ROAD
RALEIGH NC

Contact: STEVE KERLIN

Project: #70167490

Samples taken Tuesday, November 8, 2016
Samples extracted Tuesday, November 8, 2016
Samples analysed Monday, November 14, 2016

Operator HENDRIX

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
										% light	% mid	% heavy	
s	SB-43	38.8	<0.97	<0.97	1.9	1.9	1.6	0.18	<0.004	0	65.1	34.9	Residual.PHC (FCM) (P) 55.5%
s	SB-44	49.1	<1.2	<1.2	2.8	2.8	1.3	0.07	<0.005	0	68.7	31.3	Residual.PHC (FCM) 48.9%
s	SB-45	6.2	<0.16	<0.16	<0.16	<0.16	<0.03	<0.005	<0.001	0	0	0	Residual.PHC
s	SB-46	39.4	<0.98	<0.98	1.5	1.5	0.93	0.05	0.004	0	33	67	Deg.PHC (FCM) (P) 55.5%
s	SB-47	8.0	<0.2	<0.2	0.2	0.2	<0.04	<0.006	<0.001	0	10	90	Residual.PHC (FCM) (P) (BO) 39.3%
s	SB-48	7.1	<0.18	<0.18	0.32	0.32	<0.04	<0.006	<0.001	0	0	100	Residual.PHC (FCM) (P) 50.5%
s	SB-49	8.5	<0.21	<0.21	<0.21	<0.21	<0.04	<0.007	<0.001	0	0	0	Residual.PHC
s	SB-50	9.5	<0.48	<0.24	<0.24	<0.24	<0.05	<0.008	<0.001	0	0	0	Residual.PHC
s	SB-51	47.3	<1.2	<1.2	<1.2	<1.2	<0.24	<0.04	<0.005	0	15	85	Residual.PHC (P) (BO)
s	SB-52	7.3	<0.18	<0.18	0.32	0.32	0.28	0.03	<0.001	0	51.9	48.1	Residual.PHC (FCM) (P) 39.6%

Initial Calibrator QC check OK Final FCM QC Check OK 93.9 %

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

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

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

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: TERRACON
Address: 2401 BRENTWOOOD ROAD
RALEIGH NC

Samples taken Friday, November 11, 2016
Samples extracted Friday, November 11, 2016
Samples analysed Monday, November 14, 2016

Contact: STEVE KERLIN

Operator PANTESCO

Project: #70167490

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
										% light	% mid	% heavy	
s	SB-53	8.3	<0.21	<0.21	<0.21	<0.21	<0.04	<0.007	<0.001	0	0	0	PHC not detected
s	SB-54	8.0	<0.2	<0.2	<0.2	<0.2	<0.04	<0.006	<0.001	0	0	0	Residual.PHC (P)
s	SB-55	7.3	<0.18	<0.18	4.7	4.7	3	0.15	0.003	0	83.4	16.6	Deg Fuel (FCM) 90.9%
s	SB-56	7.3	<0.18	<0.18	0.36	0.36	<0.04	<0.006	<0.001	0	42	58	Residual.PHC (FCM) (P) 48.3%
s	SB-57	8.5	<0.42	0.66	0.21	0.87	<0.04	<0.007	<0.001	94.8	1.9	3.3	V.Deg.Gas (FCM) (P) (BO) 51.8%
s	SB-58	7.2	<0.18	<0.18	<0.18	<0.18	<0.04	<0.006	<0.001	0	0	0	Residual.PHC
s	SB-59	8.2	<0.2	<0.2	5.6	5.6	4.7	0.23	0.003	0	70.7	29.3	Deg.PHC (FCM) 90.8%
s	SB-60	8.5	<0.21	0.21	2.8	3	2.3	0.24	0.004	6.4	60.5	33.1	Deg.PHC (FCM) 56.8%
s	SB-61	6.8	<0.17	<0.17	2.7	2.7	1.4	0.07	0.005	0	60.2	39.8	V.Deg.PHC (FCM) (P) 62.7%
s	SB-62	7.3	<0.18	<0.18	1	1	0.55	0.03	0.001	0	62.9	37.1	V.Deg.PHC (FCM) (P) 70.2%
	Initial Calibrator QC check			OK					Final FCM QC Check		OK		99.6 %

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

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

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

Batch 22

Client Name:	Tetra Tech
Address:	2401 Brentwood Road Raleigh, NC
Contact:	Steve Kerlin
Project Ref.:	70167490
Email:	Steve.Kerlin@TetraTech.com
Phone #:	(919) 802-5091
Collected by:	Ethan Smith

RED LAB™

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	Matrix (S/W)	Sample ID	UVF	GC BTEX	Total Wt.	Tare Wt.	Sample Wt.
11/10 0855		✓	S	SB-33	✓		49.9	44.6	5.3
11/10 0915				SB-34			52.0	45.5	6.5
11/10 0940				SB-35			49.2	44.6	4.6
11/10 1025				SB-36			51.1	45.1	6.0
11/10 1045				SB-37			51.7	45.5	6.2
11/10 1115				SB-38			49.9	44.6	5.3
11/10 1135				SB-39			50.1	44.6	5.5
11/10 1210				SB-40			50.5	44.8	5.7
11/10 1235				SB-41			51.5	45.5	6.0
11/10 1415				SB-42			51.6	45.1	6.5
11/10 1445				SB-43			51.4	44.7	6.7
11/10 1505				SB-44			50.5	45.2	5.3
11/10 1530				SB-45			52.3	44.8	7.5
11/10 1620				SB-46			51.4	44.8	6.6
11/10 1645				SB-47			51.9	46.1	5.8
11/10 1710				SB-48			52.0	45.4	6.6
11/10 1730				SB-49			50.8	45.3	5.5
11/11 0835				SB-50			51.0	44.7	6.3
11/11 0900				SB-51			50.2	44.7	5.5
11/11 0930		✓	✓	SB-52	✓		51.4	45.0	6.4

Comments:

Relinquished by	Date/Time	Accepted by	Date/Time
[signature]	11/11/16 1615	[signature]	11.14.16 0900
Relinquished by	Date/Time	Accepted by	Date/Time

RED Lab USE ONLY

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Batch 22

Client Name:	Tetracon
Address:	2401 Brentwood Road Raleigh, NC
Contact:	Steve Kerlin
Project Ref.:	70167490
Email:	Steve.Kerlin@Tetracon.com
Phone #:	(919) 802-5091
Collected by:	Ethan Smith

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	Matrix (S/W)	Sample ID	UVF	GC BTEX	Total Wt.	Tare Wt.	Sample Wt.
11/11 0940		✓	S	SB-53	✓		50.1	44.5	5.6
11/11 0955				SB-54			50.3	44.5	5.8
11/11 1040				SB-55			51.1	44.7	6.4
11/11 1100				SB-56			51.0	44.6	6.4
11/11 1125				SB-57			50.9	45.4	5.5
11/11 1145				SB-58			50.7	44.2	6.5
11/11 1200				SB-59			50.9	45.2	5.7
11/11 1320				SB-100			50.6	45.1	5.5
11/11 1335				SB-101			51.5	44.6	6.9
11/11 1350				SB-102			51.7	45.3	6.4
11/11 1415				SB-103			51.5	44.7	6.8
11/11 1430				SB-64			51.2	45.4	5.8
11/11 1445		✓	✓	SB-65	✓		51.2	44.9	6.3
		11/11/16							

Comments:

Relinquished by	Date/Time	Accepted by	Date/Time
Ethan Smith	11/11/16 1615	[signature]	11-14-16 09:00
Relinquished by	Date/Time	Accepted by	Date/Time

RED Lab USE ONLY

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