STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

December 3, 2013

MEMORANDUM TO: James F. Bridges
Rail Project Development Engineer
Rail Division

FROM: Craig Haden
GeoEnvironmental Project Manager
GeoEnvironmental Section
Geotechnical Engineering Unit

TIP NO: Y-4810K
WBS: 40325
COUNTY: Cabarrus
DIVISION 10
DESCRIPTION: Proposed Grade Separation crossing on Universal Street/Rogers Lake Road in Kannapolis.

SUBJECT: **GeoEnvironmental Report for Planning**

The GeoEnvironmental Section has completed the GeoEnvironmental Report for Planning. This report has the following components and is transmitted as:

__X_ Hazardous Materials Report (20) pages

Please contact me if you have any questions concerning this project.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
1589 MAIL SERVICE CENTER
RALEIGH NC 27699-1589

TELEPHONE: 919-707-6850
FAX: 919-250-4237
www.ncdot.gov/doh/preconstruct/highway/geotech

LOCATION:
CENTURY CENTER COMPLEX
BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

Hazardous Materials Report

The GeoEnvironmental Section of the Geotechnical Engineering Unit has investigated the above referenced project to identify hazardous material sites for inclusion in the environmental document.

HAZARDOUS MATERIALS EVALUATION

Purpose

This section presents the results of a hazardous material evaluation conducted along the above referenced project. The main purpose of this investigation is to identify properties within the project study area that are or may be contaminated and therefore result in increased project costs and future liability if acquired by the Department. Hazardous material impacts may include, but are not limited to, active and abandoned underground storage tank (UST) sites, hazardous waste sites, regulated landfills and unregulated dumpsites.

Techniques/Methodologies

The Geographical Information System (GIS) was consulted to identify known sites of concern in relation to the above mentioned project. GeoEnvironmental Section personnel conducted a field reconnaissance along the above mentioned project on November 25, 2013. A search of appropriate environmental agencies' databases and Sanborn Maps was performed to assist in evaluating sites identified during this study.

Findings

UST Facilities

Based on our study, fourteen (14) sites may contain petroleum USTs within the project limits.

Hazardous Waste Sites

No Hazardous Waste Site was identified within the project limits.

Landfills

No apparent landfills were identified within the project limits.

Other GeoEnvironmental Concerns

Three other geoenvironmental concerns were identified within the project limits. Two auto repair shops and one equipment storage lot.

Anticipated Impacts

Fourteen (14) possible UST facilities, two auto repair shops, and one facility used to store tree trimming equipment were identified within the proposed project limits. We anticipate low monetary and scheduling impacts resulting from these sites. (See the following table and appendices for details)

Known and Potential Hazardous Material Sites

1) **Property Name**
Morgan's Garage
1300 Todd Avenue
Kannapolis, NC 28081

Facility ID #: N/A
Incident #:N/A

Property Owner:
Tommy Wayne Weatherford
Daniel Ray Rosenbalm
5308 Randolph Road
Kannapolis, NC 28081

UST Owner: N/A

Alternative # 1

This facility operates as an auto repair shop. It is located on the west side of Todd Avenue approximately 125 feet south of Rogers Lake Road. This facility sits behind the residents at 405 Rogers Lake Road. This facility does not appear on the UST Section Registry. There is no evidence of any UST system and there are no ground water incident's associated with this facility. **This site is anticipated to present low geoenvironmental impacts to the project.**

2) **Property Name**
Out to Pasture
307 Triece Street
Kannapolis, NC 28081

Property Owner:
Paul M. Poteat
1450 N. Main Street
China Grove, NC 28023

Alternative # 1

Facility ID #: N/A
Incident #: N/A

UST Owner: N/A

This facility appears to be an out of business used auto part store/repair shop. It is the former location of Kannapolis Engine Service. It is located in the southwest quadrant of Triece Street and Sexton Street. The age and design of the building suggest it may have operated as a service station at one time. The facility does not appear on the UST Section Registry. There is no evidence of any UST system and there are no ground water incident's associated with this facility. **This site is anticipated to present low geoenvironmental impacts to the project.**

3) **Property Name**
Gio's Tire & Wheel Service
1404 S. Main Street
Kannapolis, NC 28081

Property Owner: Alternative # 1
Harry L. Smith
810 Rogers Lake Road
Kannapolis, NC 28081

Facility ID #: 0-001912
Incident# -UST #: MO-1949, MO-1950

UST Owner: Harry L. Smith
1402 S. Main Street
Kannapolis, NC 28081

This facility currently operates as auto tire and repair shop. It is the former location of Reds Oil Company. It is located in the northwest quadrant of S. Main Street and Triece Street. There is one AST located on the south side of the building. According to the UST Section Registry two tanks were removed in 1993. This facility does appear in the ground water incident database by the UST # but there is no ground water incident # associated with this facility. No monitoring wells were noted on site. The ASTs for the former Oil Company were located in the northwestern corner of the property. **This site is anticipated to present low geoenvironmental impacts to the project.**

4)	**Property Name** Gio's Tire & Wheel Warehouse 1402 S. Main Street Kannapolis, NC 28081 **Facility ID #:** 0-001913 **Incident #:** N/A	**Property Owner:** Harry L. Smith 810 Rogers Lake Road Kannapolis, NC 28081 **UST Owner**: Harry L. Smith 1402 S. Main Street Kannapolis, NC 28081	**Alternative # 1**

This facility currently operates as the warehouse for Gio's Tire & Wheel Service. It is the former location of Reds Service Station. It is located on the west side of S. Main Street approximately 170 feet north of Triece Street. The pump island is located approximately 20 feet from the edge of pavement on S. Main St. Two ASTs are located in the northwestern corner of the building. According to the UST Section Registry three tanks were removed in 1989. There is no ground water incident associated with this facility and no monitoring wells were noted on site. **This site is anticipated to present low geoenvironmental impacts to the project**

5) **Property Name**
Sales Office (Former Atomic Oil Co)
129 Rogers Lake Road
Kannapolis, NC 28081

Facility ID #: 0-007143
Incident # - UST #: MO-0157

Property Owner:
Lance & Frances Middleton
1132 Windsor Drive
Kannapolis, NC 28081

UST Owner: Atomic Oil Co
103 W. Universal Street (129 Rogers Lake Rd)
Kannapolis, NC 28081

Alternative # 1

The building on this property is currently used as a sales office. The type of business is unknown. It is the former location of Atomic Oil Company. It is located on the south side of Rogers Lake Road approximately 260 feet west of S. Main Street. According to the UST Section Registry two tanks were removed in 1989. The facility does appear in the ground water incident database by the UST # but there is no ground water incident # associated with this facility. No monitoring wells were noted on site. The ASTs for the former Oil Company were located on the southern portion of the property. **This site is anticipated to present low geoenvironmental impacts to the project**

6)	**Property Name** Hobbs Mixed Martial Arts 1400 S. Main Street. 101 Rogers Lake Rd Kannapolis, NC 28081 **Facility ID #:** N/A **Incident #:** N/A	**Property Owner:** Adam Cantero Juan Preciada 6506 S. Kimball Street Hodgkins, Il, 60525 **UST Owner:** N/A	**Alternative # 1**

There are two address associated with this parcel. The parcel is located in the south west quadrant of S. Main Street and Rogers Lake Road. The main building operates as Hobbs Martial Arts, the second building appears to be a vacant shop/garage. Neither facility appears on the UST Section Registry. There is no evidence of any UST system and there is no ground water incident associated with this facility. No Monitoring wells were noted on site. **This site is anticipated to present low geoenvironmental impacts to the project**

7) **Property Name** | **Property Owner:** | **Alternative # 1**

CJ Moss Real Estate
1401 S. Main Street
Kannapolis, NC 28081

Claude J. Moss Trustee
Montine M. Moss Trustee
1281 Madison Avenue
Kannapolis, NC 28081

Facility ID #: 0-007932
Incident #: N/A

UST Owner: C.J. Moss Real Estate. Inc.
1401 S. Main Street
Kannapolis, NC 28081

This facility currently operates as a Real Estate office. It is located in the south east quadrant of S. Main Street and Rogers Lake Road. According to the UST Section Registry one tank was removed in 1991. There appears to be a UST located near the south east corner of the building. No monitoring wells were noted on site and there is no ground water incident associated with this facility. **This site is anticipated to present low geoenvironmental impacts to the project**

8) **Property Name**
Paws & Claws
1403 S. Main Street
Kannapolis, NC 28081

Property Owner:
Joe & Ava Plott
32052 Rowland Road
Albemarle, NC 28001

Alternative # 1

Facility ID #: N/A
Incident #: N/A

UST Owner: N/A

This facility currently operates as pet grooming salon. It once operated as Childress Used Car .It is located on the east side of S. Main Street approximately 250 feet south of Rogers Lake Road. The facility does not appear on the UST Section Registry. There is no evidence of any UST system and there is no ground water incident associated with this facility. No monitoring wells were noted on site. **This site is anticipated to present low geoenvironmental impacts to the project**

9) **Property Name**
Full Detail Car Wash
1416-1414 S. Ridge Avenue
Kannapolis, NC 28083

Property Owner:
Mrs. W.D. Middleton
1132 Windsor Drive
Kannapolis, NC 28081

Alternative # 1

Facility ID #: 0-004162, 0-027579
Incident # - UST #: MO-1427

UST Owner: Wilhelimenia J. Middleton
1000 Pols Avenue
Kannapolis, NC 28081

This facility currently operates as a full service car wash. It previously operated as a service station and an automatic coin operated car wash. It is located on the west side of S. Ridge Avenue approximately 480 feet south of Rogers Lake Road. There are three pump islands located in front of the former service station and one in ground hydraulic car lift located on the south side of the former service station. According to the UST Section Registry three tanks were closed in 1983, one in 1984 and four in 1989. The facility does appear in the ground water incident database by the UST # but there is no ground water incident # associated with this facility. No Monitoring wells were noted on site. **This site is anticipated to present low geoenvironmental impacts to the project**

10) **Property Name**
Le Bleu's Towing
1412 S. Ridge Avenue
Kannapolis, NC 28083

Facility ID #: 0-007666
Incident #-UST #: 20355, MO-5762

Property Owner:
Troy & Pauline Day
PO Box 6
1912 S. Ridge Avenue
Kannapolis, NC 28082

UST Owner: Troy Day
1620 Eastwood Drive
Kannapolis, NC 28081

Alternative # 1

This facility currently operates as a storage lot for Le Bleu's Towing. The facility previously operated as Patriot Auto Service and as European Import Classics. It is located on the west side of S. Ridge Avenue approximately 200 feet south of Rogers Lake Road. According to the UST Section Registry three tanks were registered to European Import Classics and were closed in 1991. Ground water incident # 20355 is assigned to this facility. No monitoring wells were noted on site. **This site is anticipated to present low geoenvironmental impacts to the project**

11) **Property Name**
A-Team Wireless
1400 S. Ridge Avenue
Kannapolis, NC 28083

Facility ID #: N/A
Incident #: N/A

Property Owner:
John R. Triece Trustee
Phillip T. Triece Trustee
827 Evergreen Avenue
Kannapolis, NC 28081
UST Owner: N/A

Alternative # 1

This facility currently operates as cell phone retail store. It is the former location of Plain or Fancy Catering. It is located in the south west quadrant of S. Ridge Ave. and Rogers Lake Rd. There is no evidence of any UST system but the age and the design of portion of the building that has not been remodeled suggest it could have operated as an old service station. The facility does not appear on the UST Section Registry. There is no ground water incident associated with this facility. No Monitoring wells were noted on site. **This site is anticipated to present low geoenvironmental impacts to the project**

12) **Property Name**
Kleen Cut Tree Service
1309 S. Ridge Ave.
Kannapolis, NC 28083

Property Owner:
Patricia Cook
1069 Canoby Ct
Woodleaf, NC 27054

Alternative # 2

Facility ID #: N/A
Incident #: N/A

UST Owner: N/A

This facility is used by Kleen Cut tree service for equipment storage. It is located in the north east quadrant of S. Ridge Avenue and Rogers Lake Road. The facility does not appear on the UST Section Registry. There is no ground water incident associated with this facility. No Monitoring wells were noted on site. **This site is anticipated to present low geoenvironmental impacts to the project**

13) **Property Name**
Mutt Hut
1311 S. Ridge Avenue
Kannapolis, NC 28083

Property Owner:
Teresa Hamilton
112 Dunsmere Lane
Mooresville, NC 28115

Alternative # 2,3

Facility ID #: N/A
Incident #: N/A

UST Owner: N/A

This facility currently operates as a pet grooming salon. It is located on the east side of S. Ridge Avenue approximately 180 north of Rogers Lake Rd. There was one UST identified in the front lawn approximately 15 feet from the edge of pavement. The facility does not appear on the UST Section Registry. There is no ground water incident associated with this facility. No Monitoring wells were noted on site. **This site is anticipated to present low geoenvironmental impacts to the project**

14) **Property Name**
Former Triece Block Company
1310-1306 S. Ridge Avenue
Kannapolis, NC 28083

Facility ID #: N/A
Incident #: N/A

Property Owner:
John R. Triece Trustee
Phillip T. Triece Trustee
827 Evergreen Avenue
Kannapolis, NC 28081
UST Owner: N/A

Alternative # 2,3

This vacant lot is the former location of Triece Block Company. It is located in the north west quadrant of S. Ridge Avenue and Rogers Lake Road. The vacant lot was recently used as a construction staging area for the recent upgrade to S. Ridge Avenue and Rogers Lake Road Intersection and rail crossing. The facility does not appear on the UST Section Registry. There is no ground water incident associated with this facility. No monitoring wells were noted on site. **This site is anticipated to present low geoenvironmental impacts to the project**

15) **Property Name**
Moss & Moore Inc.
1307 S. Main Street
Kannapolis, NC 28081

Property Owner:
Carl & Betty Moore
1307 S. Main Street
Kannapolis, NC 28081

Alternative # 2,3

Facility ID #: 0-019485
Incident# - UST #: MO-1608

UST Owner: Widenhouse Services Inc.
PO Box 10
Concord, NC 28025

This facility currently operates as a Heating & Air conditioning business. It is located on the east side of S. Main Street approximately 350 feet north of Rogers Lake Road. According to the UST Section Registry one tank was closed in 1992. The facility does appear in the ground water incident database by the UST # but there is no ground water incident # associated with this facility. No Monitoring wells were noted on site. **This site is anticipated to present low geoenvironmental impacts to the project**

16) **Property Name**
Vacant Lot
S. Main Street (No Address)
Kannapolis, NC 28081

Property Owner:
GFS Properties LLC
C/O James H. Slaughter
PO Box 41027
Greensboro, NC 27404

Alternative # 3

Facility ID #: N/A
UST Owner: N/A
Incident #: N/A

This vacant lot is the former location of a car wash. It is located in the south west quadrant of S. Main Street and Lowrance Avenue. The facility does not appear on the UST Section Registry. There is no evidence of any UST system and there is no ground water incident associated with this facility. No monitoring wells were noted on site. **This site is anticipated to present low geoenvironmental impacts to the project**

17) **Property Name**
The Shooters Edge
1227 S. Main Street
Kannapolis, NC 28081

Property Owner:
Eddie & Connie Durham
1311 Lowrance Avenue
Kannapolis, NC 28081

Alternative 3

Facility ID #: N/A
Incident #: N/A

UST Owner: N/A

This facility currently operates as a gun shop. It is located on the east side of S. Main Street approximately 130 feet north of Lowrance Avenue. The facility does not appear on the UST Section Registry. There is no evidence of any UST system and there is no ground water incident associated with this facility. No monitoring wells were noted on site. **This site is anticipated to present low geoenvironmental impacts to the project**

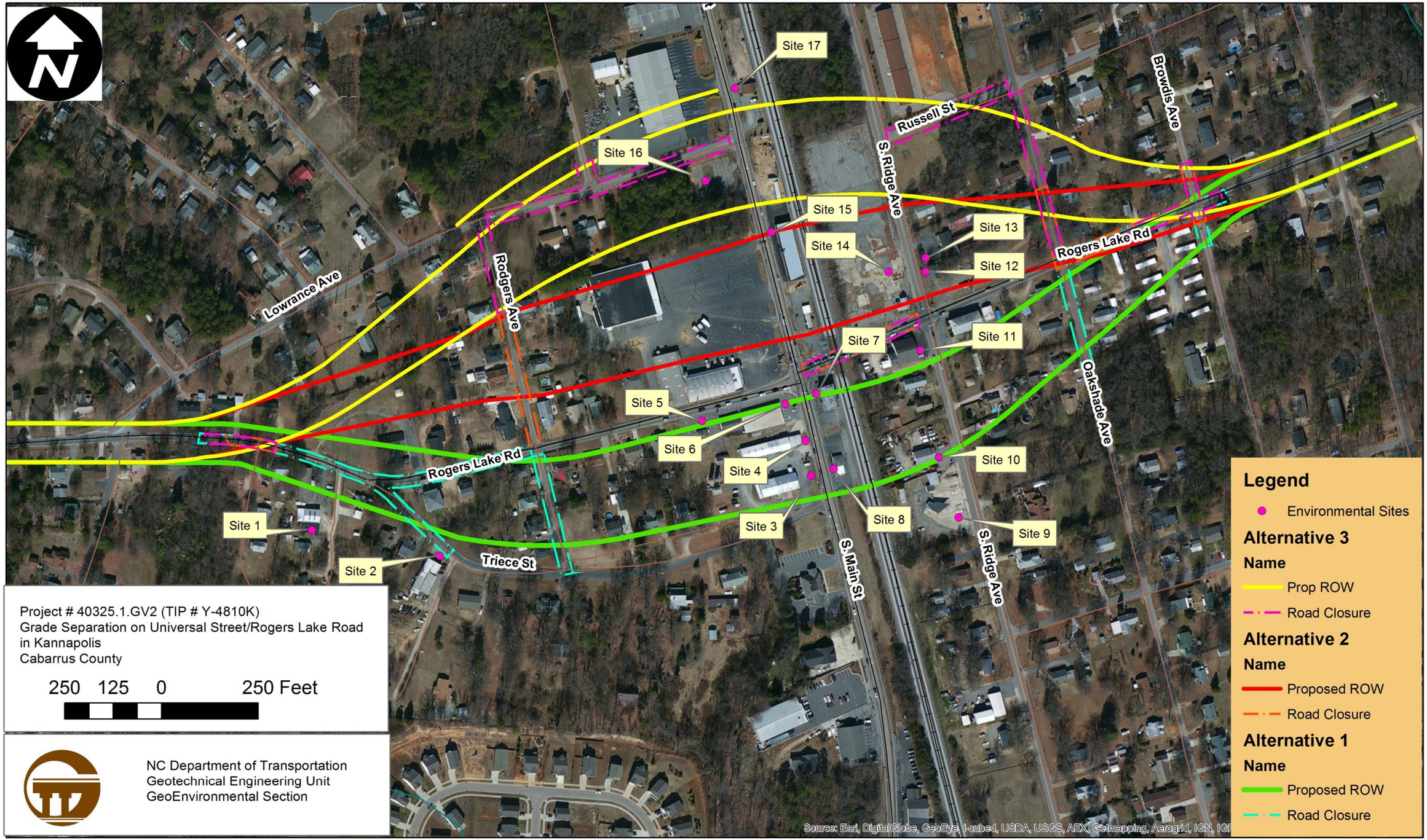
Please note that discovery of additional sites not recorded by regulatory agencies and not reasonably discernible during the project reconnaissance may occur. The GeoEnvironmental Section should be notified immediately after discovery of such sites so their potential impact(s) may be assessed.

If there are questions regarding the geoenvironmental issues, please contact me, at 919-707-6871.

Craig Haden
GeoEnvironmental Project Manager
GeoEnvironmental Section
Geotechnical Engineering Unit

cc:
John Pilipchuk, LG, PE, State Geotechnical Engineer
David Chang, Ph.D, PE, State Hydraulics Engineer
Charles Brown, PE, PLS, State Locations and Surveys Engineer
Tom Koch, PE, Assistant State Structures Engineer
Jay Bennett, PE, State Roadway Design Engineer
Brian Skeens, PE, Area Roadway Construction Engineer
Larry Carpenter, Jr, PE, Area Bridge Construction Engineer
Kenneth Hill, Division Right of Way Agent
Eric Williams, PE, Geotechnical Regional Manager
Clint Little, LG, Regional Geological Engineer
Dennis Li, Ph. D, LG, Production Support Supervisor
File

Appendix A
Location of USTs, Landfills, & Other Potentially Contaminated Site



Project # 40325.1.GV2 (TIP # Y-4810K)
Grade Separation on Universal Street/Rogers Lake Road in Kannapolis
Cabarrus County

250 125 0 250 Feet

NC Department of Transportation
Geotechnical Engineering Unit
GeoEnvironmental Section

Legend

- Environmental Sites

Alternative 3
Name
- Prop ROW
- Road Closure

Alternative 2
Name
- Proposed ROW
- Road Closure

Alternative 1
Name
- Proposed ROW
- Road Closure

September 7, 2018

North Carolina Department of Transportation
GeoEnvironmental Engineering Unit
Century Center Complex
Building B
1020 Birch Ridge Road
Raleigh, North Carolina 27610

Re: Preliminary Site Assessment (PSA)
Norfolk Southern Mainline Grade Crossing Separation at Rogers Road Crossing in Kannapolis
Parcel 48 - John, Phillip, Douglas Triece Trustee Property
1306-1310 S. Ridge Avenue, Kannapolis, North Carolina
TIP No. Y-4810K
WBS Element: 40325.1.46

Dear Mr. Haden

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. P70187265) dated May 14, 2018. 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: DocuSigned by: 9/19/2018
BFAD0E85DCED418...

David W. Hawkins, PG
Staff Geologist

Reviewed by: DocuSigned by: 9/19/2018
8E4FE90F5C944D5...

Michael B. Dail, PG
Senior Geologist

NORTH CAROLINA LICENSED SEAL 2187 GEOLOGIST MICHAEL BRYANT DAIL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Preliminary Site Assessment

Norfolk Southern Mainline Grade Crossing Separation at Rogers Road in Kannapolis

Parcel 48 – John, Phillip, Douglas Triece Trustee Property

1306-1310 S. Ridge Avenue, Kannapolis, North Carolina

TIP No. Y-4810K

WBS Element: 40325.1.46

September 7, 2018

Terracon Project No. 70187265

Prepared for:

North Carolina Department of Transportation
Raleigh, North Carolina

Prepared by:

Terracon Consultants, Inc.
Raleigh, North Carolina

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PRELIMINARY SITE ASSESSMENT

NORFOLK SOUTHERN MAINLINE GRADE CROSSING SEPARATION AT ROGERS ROAD CROSSING IN KANNAPOLIS
TIP NO. Y-4810K
WBS ELEMENT: 40325.1.46
PARCEL 48 – JOHN, PHILLIP, DOUGLAS TRIECE TRUSTEE PROPERTY
1306-1310 S. RIDGE AVENUE, KANNAPOLIS, NORTH CAROLINA

1.0 INTRODUCTION

1.1 Site Description

Site Name	Norfolk Southern Mainline Grade Crossing Separation at Rogers Road Crossing in Kannapolis
Site Location/Address	1306 S. Ridge Avenue, Kannapolis, North Carolina 28083 (Cabarrus County Tax PIN: 56136253980000); 1308 S. Ridge Avenue, Kannapolis, North Carolina 28083 (Cabarrus County Tax PIN: 56136262190000); 1310 S. Ridge Avenue, Kannapolis, North Carolina 28083 (Cabarrus County Tax PIN: 56136261390000); and Portion of Tax PIN No. 56136255110000 (no address).
General Site Description	The site currently consists of a paved/concrete lot leased for truck parking and a small vacant former office structure.

1.2 Site History

The site is located at 1306-1310 S. Ridge Avenue in Kannapolis, Cabarrus County, North Carolina. At the time of the Preliminary Site Assessment (PSA), the site consisted of a paved/concrete lot and small vacant former office building. The site is apparently leased for truck parking. The site address does not appear on the North Carolina Department of Environmental Quality (NCDEQ) – Division of Waste Management UST Section Registered Tank Database. According to a review of available historical records, the site operated as Triece Block Company. The site was also utilized as storage and staging for road improvements associated with S Ridge Avenue and S Main Street in the early 2010s (NCDOT, 2013).

1.3 Scope of Work

Terracon conducted the following PSA scope of work (SOW) in accordance with Terracon's Proposal for PSA (Proposal No. P70187265) dated May 14, 2018. This PSA is being completed prior to planned bridge addition over the Norfolk Southern Railroad in the vicinity of Rogers Lake Road and S. Ridge Avenue in Kannapolis, North Carolina (site). The scope of work included a geophysical investigation, collection of soil and 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 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. P70187265) dated May 14, 2018 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 Concord, NC (1987). **Exhibits 2A and 2B** depict a site layout plan that includes the approximate locations of the site features, soil boring locations, and analytical results.

2.1 Geophysical Survey

Between June 19 and 21, 2018, 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 and provide utility clearance prior to drilling activities. 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 identify probable USTs on the surveyed portion of parcel (i.e. outside of the Railroad ROW). In addition to metal detection and GPR scans, the NC One Call public utility locator service was used to identify underground utility lines and to clear boring locations. 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 oversaw the advancement of ten (10) soil borings (B-9 through B-18) along the central portions of the parcel oriented northwest-southeast, adjacent to the on-site structure, and within the NCDOT ROW. The borings were completed by a North Carolina Certified Well Contractor (Innovative Environmental Technologies, Inc.) using a track-mounted 9520-VTR PowerProbe™ 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 assist in selection of sample intervals for laboratory analysis.

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, one soil sample from each boring, was collected from depths between approximately 1 feet and 10 feet bls. Soil samples were collected in the depth interval

that was most likely to be impacted or from variable depths to provide spatial coverage with depth across the site.

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. Investigation derived waste (IDW) from the three (3) parcels associated with TIP No. Y-4810K was containerized in one 55-gallon drum staged on parcel 48 pending disposal.

Soil generally consisted of silty clay to depths of approximately 4 to 6 feet bls underlain by silty sand. Fill (sand) was also observed in some of the borings B-12, B-13, and B-14 within the first four feet. Groundwater was not encountered in these borings. The soil boring logs are included in **Appendix B**. Sample locations were measured using a Trimble Geo7x GPS and are depicted on **Exhibits 2A and 2B**.

3.0 LABORATORY ANALYSES

Soil samples were placed in laboratory provided sample containers and shipped to REDLAB/QROS, LLC – Environmental Testing for analysis by Ultraviolet Fluorescence (UVF) for 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).

Soil samples were also submitted to Shealy Environmental Services, Inc. for analysis of the following:

- RCRA 8 metals and mercury via EPA Method 6010/7471.

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

4.0 DATA EVALUATION

4.1 Soil Analytical Results

Table 1 summarizes the results of the analyses of the soil samples. **Exhibit 2B** depicts the boring locations and analytical data.

Constituents from the UVF analysis were not detected at concentrations above applicable standards in the soil samples.

Metals by EPA RCRA 8 metals were not detected above applicable industrial/commercial maximum soil contaminant concentrations (MSCC). Arsenic and chromium were detected above their respective industrial/commercial preliminary soil remediation goals (PSRG). Terracon utilized the NCDEQ Risk Calculator to evaluate potential risk associated with the metal exceedances. The maximum detection value for arsenic and chromium was used from the site, and the carcinogenic risk and hazard index were not exceeded. Terracon does not consider the PSRG exceedances applicable for these metals based on the risk calculator output. Terracon has included the risk calculator output as **Appendix D**.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The findings of this investigation are discussed below.

- The geophysical investigation did not identify a probable UST within the surveyed portion of the parcel and NCDOT ROW.
- Laboratory analysis did not report concentrations above applicable standards in the soil samples.
- 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 in soil, construction workers should be alert for potential soil and/or groundwater impacts in other locations at the site.

6.0 REFERENCES

NCDOT, 2013. GeoEnvironmental Report for Planning Y-4810K. “Hazardous Materials Report.” December 2, 2013

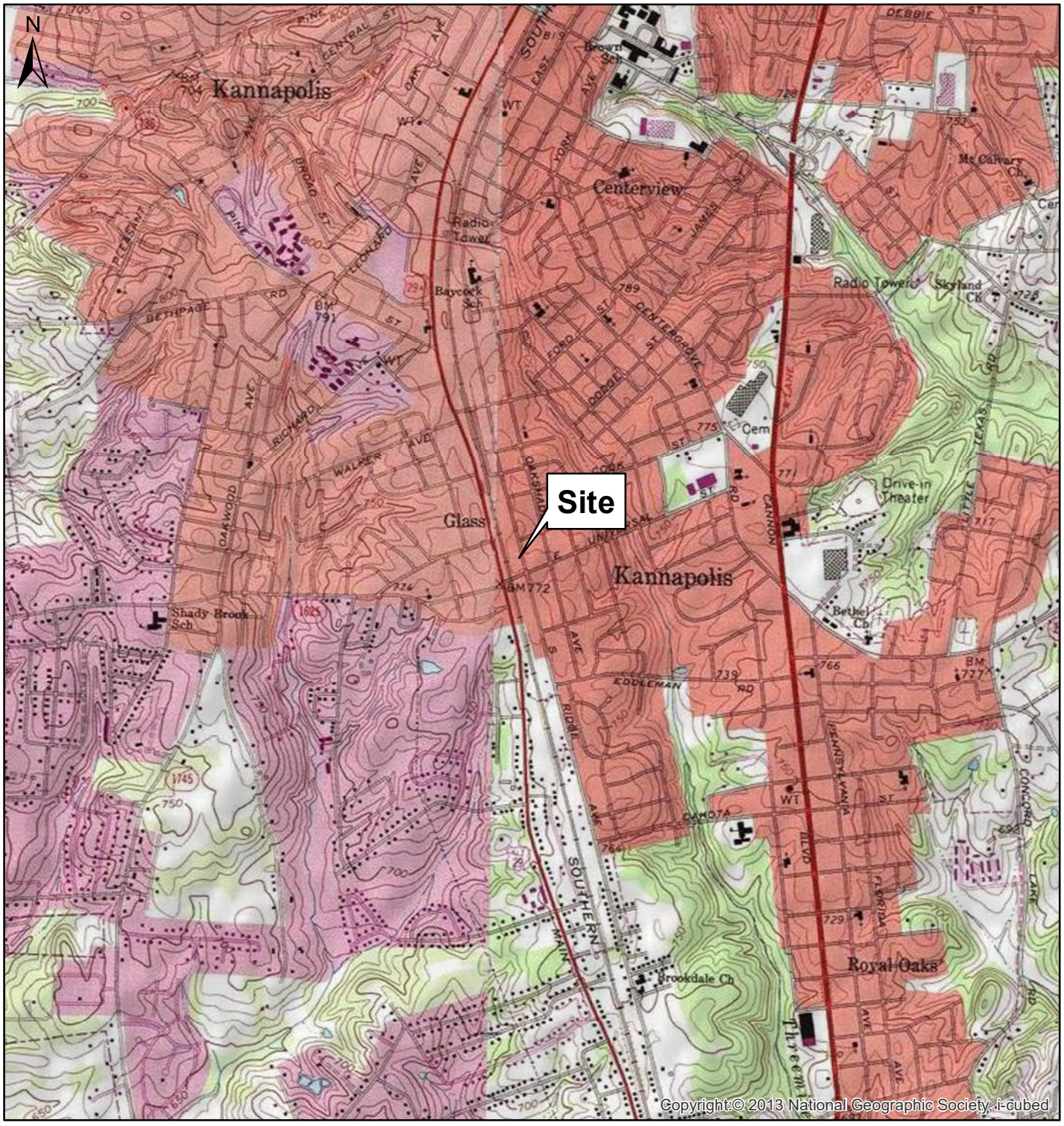
TABLES

Table 1
Summary of Soil Analytical Results
Preliminary Site Assessment
Parcel 48 - John, Phillip, Douglas Triece Trustee Property
Kannapolis, Cabarrus County, North Carolina
Terracon Project No. 70187265

Sample ID:	B-9	B-10	B-11	B-12	B-13	B-14	B-15	B-16	B-17	B-18	NCDEQ Action Level	MSCC Industrial/ Commercial	PSRG Industrial/ Commercial
Sample Depth (ft bls):	2-4	4-6	1-3	2-4	4-6	6-8	2-4	3-5	2-4	8-10			
BTEX (C6 - C9)	<0.33	<0.33	<0.68	<0.60	<0.59	<0.71	<0.62	<0.68	<0.57	<0.63	NE	NE	NE
GRO (C5 - C10)	<0.33	<0.33	<0.68	<0.60	<0.59	<0.71	<0.62	<0.68	<0.57	<0.63	50	NE	NE
DRO (C10 - C35)	8.7	4.1	32.5	1.2	<0.05	<0.06	1.2	<0.05	0.95	<0.05	100	NE	NE
TPH (C5 - C35)	8.7	4.1	32.5	1.2	<0.59	<0.71	1.2	<0.68	0.95	<0.63	NE	NE	NE
Total Aromatics (C10-C35)	6.0	2.1	25	1.2	<0.12	<0.14	0.38	<0.14	0.94	<0.13	NE	NE	NE
16 EPA PAHs	0.32	0.12	1.2	0.06	<0.02	<0.03	<0.02	<0.03	0.05	<0.03	NE	NE	NE
BaP	<0.007	<0.007	<0.014	<0.012	<0.012	<0.014	<0.012	<0.014	<0.011	<0.013	NE	0.78	2.1
Metals by EPA Method 6010/7471													
Arsenic	2.8	3.2	3.7	1.3	2.6	2.9	4.1	3.2	3.4	2.6	--	NE	3.0
Barium	83	160	99	50	220	190	81	35	140	150	--	81,000	47,000
Cadmium	<0.32	<0.33	0.11 J	<0.21	<0.32	<0.26	<0.33	<0.34	<0.29	<0.34	--	NE	200
Chromium	9.0	7.7	11	4.8	7.2	5.8	16	7.6	12	7.3	--	1,226	6.5
Lead	56	46	30	10	34	37	30	35	28	31	--	400	NE
Mercury	<0.12	<0.11	<0.087	<0.09	<0.11	<0.1	0.027 J	<0.1	<0.1	<0.1	--	NE	9.7
Selenium	<1.3	<1.3	0.46 J	<0.82	<1.3	<1.1	<1.3	<1.3	<1.1	<1.4	--	NE	1,200

Notes:
Soil samples were collected on July 9, 2018.
Concentrations are reported in milligrams per kilogram (mg/kg).
ft bls - feet below land surface.
BTEX - Benzene, Toluene, Ethylbenzene, and Xylenes.
GRO - Gasoline Range Organics.
DRO - Diesel Range Organics.
TPH - Total Petroleum Hydrocarbons.
16 EPA PAHs - Environmental Protection Agency Polycyclic Aromatic Hydrocarbons (acenaphthene, acenaphthylene, anthracene, benz[a]anthracene, 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.
Bold: Constituent concentration reported above the method detection limit.
North Carolina Department of Environmental Quality (NCDEQ) State Action Level for Total Petroleum Hydrocarbons (GRO/DRO) (July 2016).
MSCC Industrial/Commercial - Maximum Soil Contaminant Concentration Levels Industrial/Commercial soil cleanup levels (April 2012).
Detections shaded in gray exceed the NCDEQ Industrial/Commercial Preliminary Soil Remediation Goals (PSRGs) (February 2018).
Arsenic and chromium were input into the NCDEQ Risk Calculator and did not exceed carcinogenic or hazard risk; therefore these are not considered an applicable exceedance.

FIGURES



CONTOUR INTERVAL 10 FEET

USGS TOPOGRAPHIC MAP
SITE: CONCORD, NC QUADRANGLE (1987)
NORTH: KANNAPOLIS, NC QUADRANLE (1993)

PM: SJK	Project No. 70187265	Terracon	**Topographic Vicinity Map**	EXHIBIT NO.
Drawn By: DWH	Scale: 1:24,000		**Preliminary Site Assessment** **Parcel 48 - John, Phillip, Douglas Triece Trustee Property** **Kannapolis, Cabarrus County, North Carolina**	1
Checked By: SJK	File Path:			
Approved By: MTJ	Date: 8/27/2018	2401 Brentwood Drive, Suite 107 Raleigh, NC 27604 Phone: (919) 873-2211 Fax: (919) 873-9555		

PROJECT REFERENCE NO.	EXHIBIT
40325.1.46 (Y-4810K)	2A

SITE DIAGRAM WITH BORING LOCATIONS

PARCEL 48
TRIECE TRUSTEE PROPERTY
1306–1310 SOUTH RIDGE AVENUE
KANNAPOLIS, CABARRUS COUNTY, NORTH CAROLINA

LEGEND

- PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- NEW RIGHT OF WAY LINE WITH PIN AND CAP
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF TRAVEL
- F / C — PROPOSED CUT / FILL LINE
- PROPOSED CATCH BASIN
- PROPOSED DRAINAGE PIPING
- TDE — PROPOSED TEMPORARY DRAINAGE EASEMENT
- BORING LOCATION

B-9, B-10, B-11, B-12, B-13, B-14, B-15, B-16, B-17

0 30 60 120
FEET

PROJECT REFERENCE NO.	EXHIBIT
40325.1.46 (Y-4810K)	2B

SITE DIAGRAM WITH BORING LOCATIONS AND ANALYTICAL DATA

PARCEL 48
TRIECE TRUSTEE PROPERTY
1306–1310 SOUTH RIDGE AVENUE
KANNAPOLIS, CABARRUS COUNTY, NORTH CAROLINA

B-9 (2-4 ft bls)	(mg/kg)
DRO (C10-C35)	8.7
TPH (C5-C35)	8.7
Total Aromatics (C10-C35)	6.0
16 EPA PAHs	0.32
Arsenic	2.8
Barium	83.0
Chromium	9.0
Lead	56.0

B-10 (4-6 ft bls)	(mg/kg)
DRO (C10-C35)	4.1
TPH (C5-C35)	4.1
Total Aromatics (C10-C35)	2.1
16 EPA PAHs	0.12
Arsenic	3.2
Barium	160.0
Chromium	7.7
Lead	46.0

B-11 (1-3 ft bls)	(mg/kg)
DRO (C10-C35)	32.5
TPH (C5-C35)	32.5
Total Aromatics (C10-C35)	25.0
16 EPA PAHs	1.2
Arsenic	3.7
Barium	99.0
Cadmium	0.11 J
Chromium	11.0
Lead	30.0
Selenium	0.46 J

B-12 (2-4 ft bls)	(mg/kg)
DRO (C10-C35)	1.2
TPH (C5-C35)	1.2
Total Aromatics (C10-C35)	1.2
16 EPA PAHs	0.06
Arsenic	1.3
Barium	50.0
Chromium	4.8
Lead	10.0

B-13 (4-6 ft bls)	(mg/kg)
Arsenic	2.6
Barium	220.0
Chromium	7.2
Lead	34.0

B-14 (6-8 ft bls)	(mg/kg)
Arsenic	2.9
Barium	190.0
Chromium	5.8
Lead	37.0

B-17 (2-4 ft bls)	(mg/kg)
DRO (C10-C35)	0.95
TPH (C5-C35)	0.95
Total Aromatics (C10-C35)	0.94
16 EPA PAHs	0.05
Arsenic	3.4
Barium	140.0
Chromium	12.0
Lead	28.0

B-15 (2-4 ft bls)	(mg/kg)
DRO (C10-C35)	1.2
TPH (C5-C35)	1.2
Total Aromatics (C10-C35)	0.38
Arsenic	4.1
Barium	81.0
Chromium	16.0
Lead	30.0
Mercury	0.027 J

B-18 (8-10 ft bls)	(mg/kg)
Arsenic	2.6
Barium	150.0
Chromium	7.3
Lead	31.0

B-16 (3-5 ft bls)	(mg/kg)
Arsenic	3.2
Barium	35.0
Chromium	7.6
Lead	35.0

LEGEND

- PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- NEW RIGHT OF WAY LINE WITH PIN AND CAP
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF TRAVEL
- F — C — PROPOSED CUT / FILL LINE
- PROPOSED CATCH BASIN
- PROPOSED DRAINAGE PIPING
- TDE — PROPOSED TEMPORARY DRAINAGE EASEMENT
- BORING LOCATION

NOTES

mg/kg - MILLIGRAMS PER KILOGRAM

J - ESTIMATED CONCENTRATION ABOVE METHOD DETECTION LIMIT AND BELOW LABORATORY REPORTING LIMIT

ft bls - FEET BELOW LAND SURFACE

DRO - DIESEL RANGE ORGANICS
GRO - GASOLINE RANGE ORGANICS
PAH - POLYCYCLIC AROMATIC HYDROCARBON

N

0 30 60 120
FEET

APPENDIX A

GEOPHYSICAL SURVEY REPORT

TERRACON CONSULTANTS, INC.

GEOPHYSICAL INVESTIGATION TO LOCATE METALLIC USTS

John, Phillip, Douglas Triece Trustee (Parcel 48) Property
1306-1310 South Ridge Avenue
Kannapolis, North Carolina

June 27, 2018
Geophysical Survey Investigations, PLLC
Project No. 2018-28

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

TERRACON CONSULTANTS, INC.
GEOPHYSICAL INVESTIGATION
TO LOCATE METALLIC USTS
John, Phillip, Douglas Triece Trustee (Parcel 48) Property
1306-1310 South Ridge Avenue
Kannapolis, North Carolina

TABLE OF CONTENTS

FIGURES

Prepared by: Mark J. Denil

Mark J. Denil, P.G.

1.0 INTRODUCTION

Geophysical Survey Investigations, PLLC (GSI) conducted an electromagnetic (EM) metal detection survey, ground penetrating radar (GPR) scanning and buried, utility line clearance search for Terracon Consultants, Inc. on June 19-21, 2018 across the John, Phillip, Douglas Triece Trustee (Parcel 48) property located at 1306-1310 South Ridge Avenue in Kannapolis, North Carolina. The property is the former Triece Block Company facility. The geophysical work was conducted as part of the North Carolina Department of Transportation (NCDOT) site assessment for TIP Project Y-4810K (Norfolk Southern Mainline grade crossing separation at Rogers Road Crossing).

The geophysical investigation was conducted to determine if metallic, underground, storage tanks (USTs) are present on the Triece Trustee property. Terracon Consultants representatives Mr. Stephen Kerlin and Mr. David Hawkins, PG provided site information and guidance to Geophysical Survey Investigations, PLLC personnel prior and during data acquisition. The geophysical survey area has a maximum length and width of 500 feet and 125 feet, (1.43 acres) respectively. Presently, the property primarily consists of open, asphalt and concrete-covered terrain with an abandoned building located in the southeast corner of the site.

2.0 FIELD METHODOLOGY

The EM investigation was performed across the survey area using a Geonics EM61-MK2A metal detection instrument with a Hemisphere A101 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 scanning was conducted across selected EM61 differential metal detection anomalies and across areas containing steel reinforced concrete. GPR scans were performed along northerly-southerly and easterly-westerly directions spaced primarily 3 to 5 feet apart across the selected EM61 differential anomalies 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 6.0 feet based on an estimated two-way travel time of 8.0 nanoseconds per foot.

Following the UST investigation, the areas around proposed boring locations were scanned with the GPR unit and a DitchWitch 910 utility locator for buried utility line clearance purposes. Detected buried lines/conduits were marked in the field with orange marking paint and pin flags. 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 and debris.

The linear, EM61 early time gate anomalies intersecting UTM coordinates 1752419-E 12880323-N,

1752437-E 12880357-N, 1752436-E 12880373-N, and 1752473-E 12880473-N are probably in response to buried lines and/or conduits. Similarly, GPR scanning suggests the linear, EM61 anomalies intersecting coordinates 1752444-E 12880309-N, 1752403-E 12880356-N and 1752388-E 12880447-N are in response to buried lines or conduits. GPR scanning suggests the linear, EM61 anomalies intersecting coordinates 1752461-E 12880345-N, 1752480-E 12880402-N, 1752466-E 12880412-N, 1752361-E 12880456-N, and 1752442-E 12880474-N are in response to steel reinforced concrete.

GPR scanning suggests the EM61 anomalies intersecting coordinates 1752505-E 12880336-N and 1752434-E 12880533-N are in response to the building and a vehicle that was parked on the site during the EM61 data acquisition, respectively. The remaining EM61 anomalies not discussed in this summary are probably in response to known surface objects, buried utility lines, steel reinforced concrete, or to buried, miscellaneous, metal debris. The geophysical investigation suggests that the surveyed portion of Parcel 48 does not contain metallic USTs.

As previously mentioned, scanning for utility line clearance purposes was conducted across the proposed boring locations. Detected lines or conduits were marked in the field with orange marking paint and pin flags.

4.0 SUMMARY & CONCLUSIONS

Our evaluation of the EM61 and GPR data collected across the geophysical survey area at the John, Phillip, Douglas Triece Trustee (Parcel 48) property located at 1306-1310 South Ridge Avenue in Kannapolis, 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.

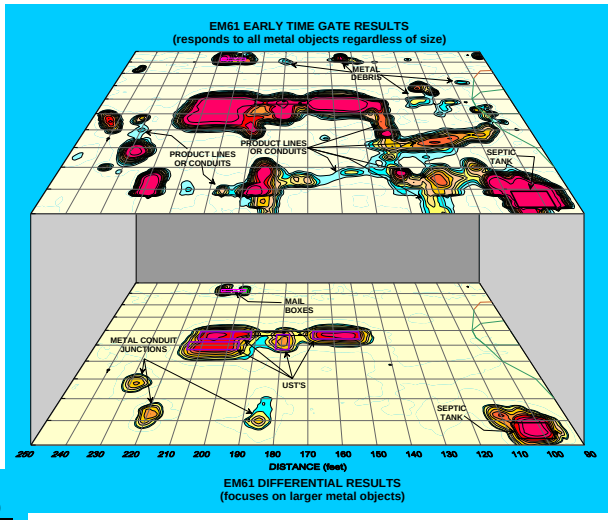
- The majority of linear, EM61 early time gate anomalies are probably in response to buried, metallic, utility lines or conduits.

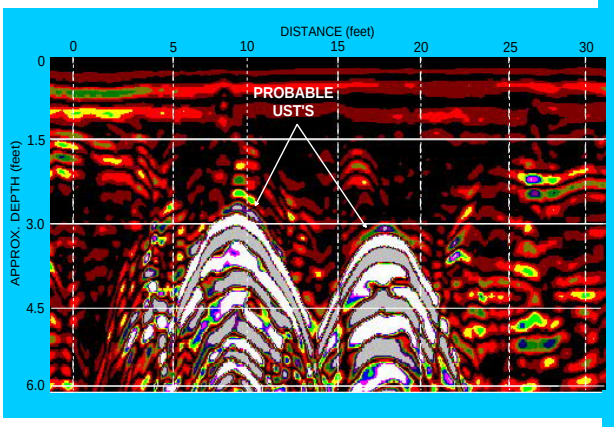
- GPR scanning suggests the linear, EM61 anomalies intersecting coordinates 1752461-E 12880345-N, 1752480-E 12880402-N, 1752466-E 12880412-N, 1752361-E 12880456-N, and 1752442-E 12880474-N are in response to steel reinforced concrete.

- The geophysical investigation suggests that the surveyed portion of Parcel 48 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.

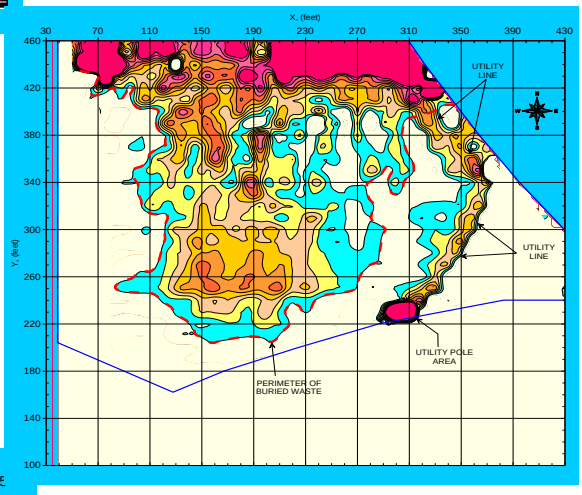


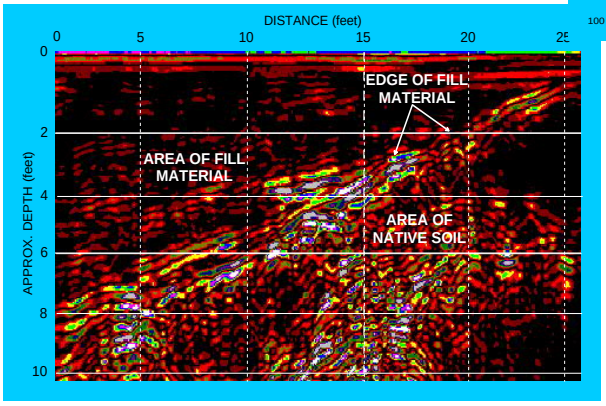


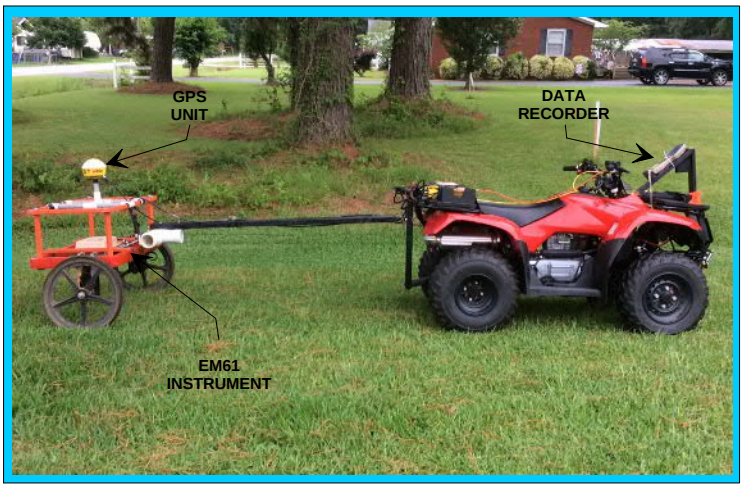
REPORT FIGURES

(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







EM61 METAL DETECTOR

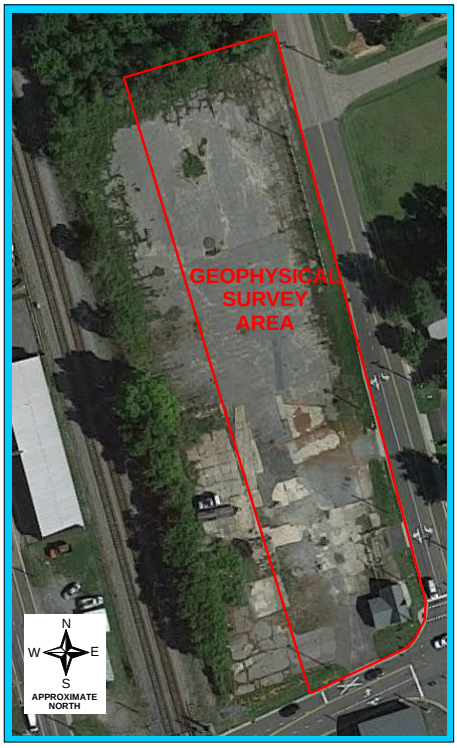
The photograph shows the Geonics EM61-MK2A metal detector, a Hemisphere A101 GPS unit, a Juniper data recorder, and a Honda Recon ATV which were used to conduct the metal detection survey across the proposed ROW & easement areas of Parcel 48.

GROUND PENETRATING RADAR UNIT

The photograph shows the Geophysical Survey Systems SIR-3000 ground penetrating radar (GPR) unit equiped with a 400 MHz antenna that were used to conduct the GPR scanning across selected areas.

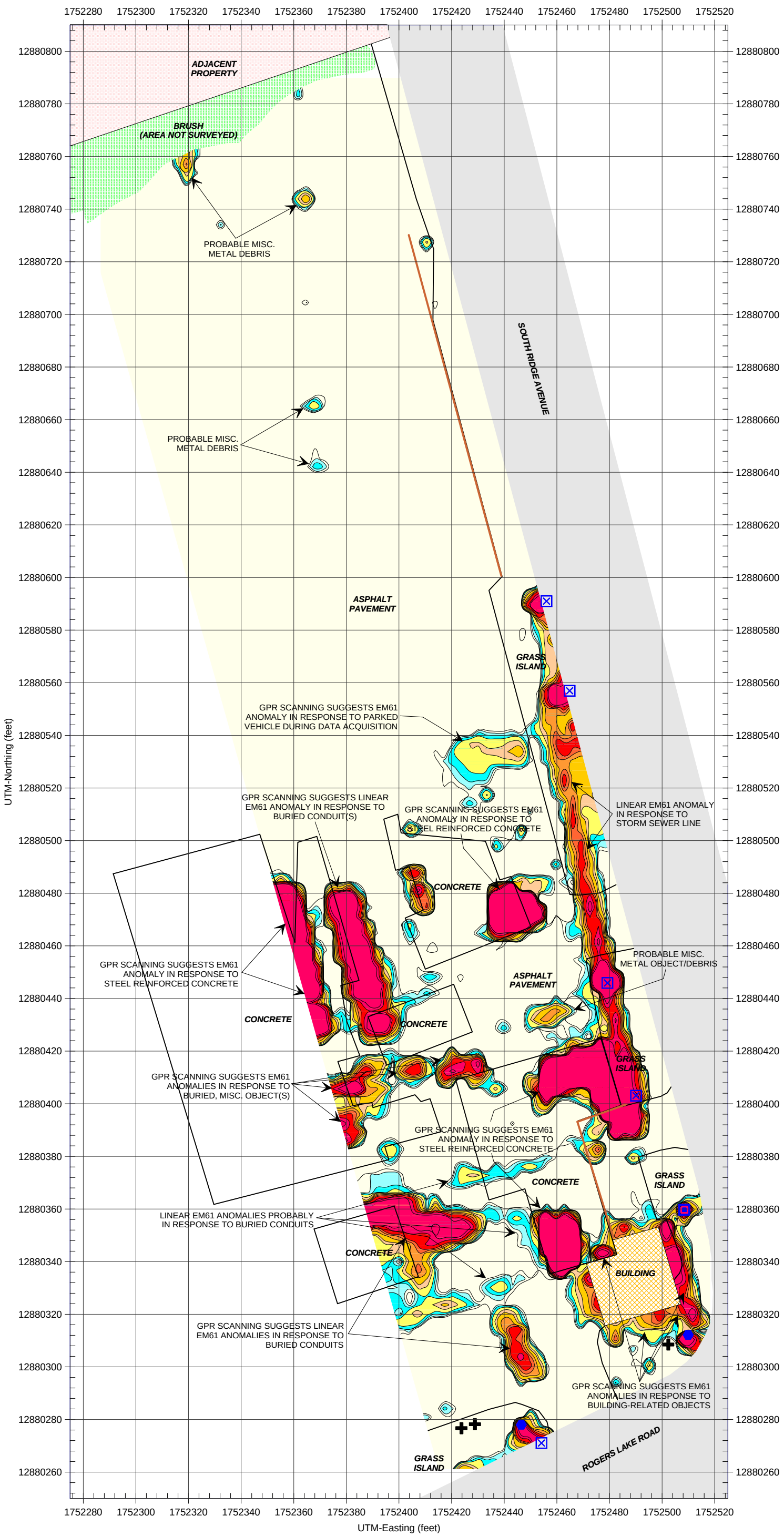
DITCHWITCH UTILITY LOCATOR

The photograph shows the DitchWitch 910 utility locator which was used to detect buried lines across the proposed boring locations.



GEOPHYSICAL SURVEY AREA

The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at Parcel 48. The geophysical investigation was conducted on June 19-21, 2018.



The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at the Triece Trustee (Parcel 48) property.

Note: 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, lines and conduits regardless of size. GPR scans were conducted across selected EM61 anomalies and steel reinforced concrete using a Geophysical Survey Systems SIR 3000 instrument with a 400 MHz antenna. The geophysical investigation was conducted on June 19-21, 2018.

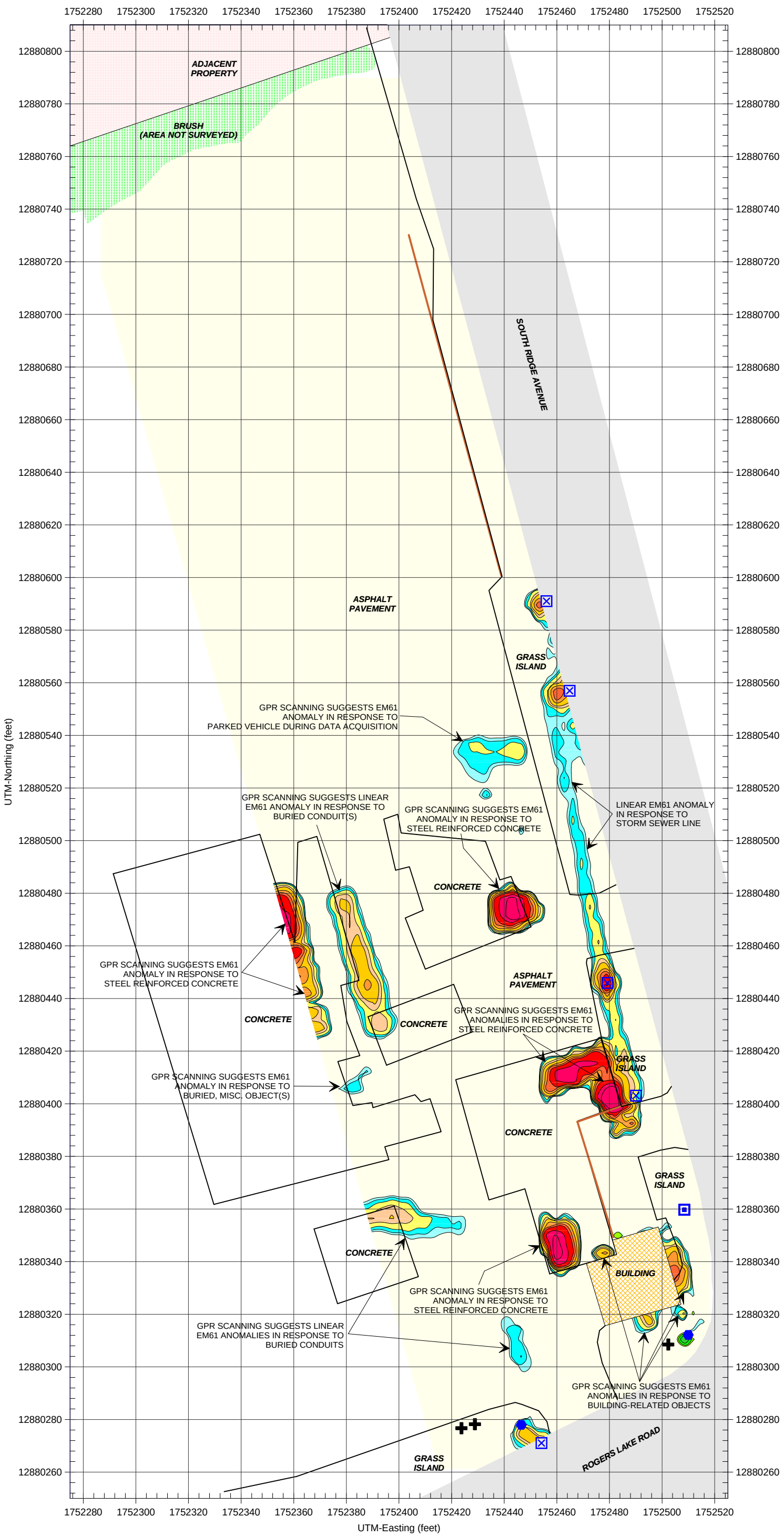
GEOPHYSICAL SURVEY INVESTIGATIONS
336-286-9718 www.geo-survey.com

Terracon Consultants, Inc.

Triece Trustee (Parcel 48) Property
1306-1310 South Ridge Avenue
Kannapolis, North Carolina

EM61-MK2A METAL DETECTION (EARLY TIME GATE RESULTS)

06/27/18 FIGURE 2



The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at the Triece Trustee (Parcel 48) property.

Note: The contour plot shows the differential response between the early time gate and the late time gate channels 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, metal debris. Ground penetrating radar (GPR) scans were conducted across selected EM61 anomalies and areas containing reinforced concrete using a Geophysical Survey Systems SIR 3000 unit with a 400 MHz antenna. The geophysical investigation was conducted on June 19-21, 2018.

GEOPHYSICAL SURVEY INVESTIGATIONS
336-286-9718 www.geo-survey.com

Terracon Consultants, Inc.

Triece Trustee (Parcel 48) Property
1306-1310 South Ridge Avenue
Kannapolis, North Carolina

EM61-MK2A METAL DETECTION (DIFFERENTIAL RESULTS)

06/27/18

FIGURE 3

APPENDIX B

SOIL BORING LOGS

Lithology Log

Boring ID: **B-9**

				Sample Method	Drilling Method
Project Number:	70187265	Start Date/Time:	7/9/2018 / 1040	☐ Hand Auger	X DPT
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1045	X Macro-Core	☐ HSA
Weather:	Sunny 80s	Boring Diameter:	2-inch	☐ Split Spoon	☐ Mud Rotary
Logged By:	D. Hawkins	Total Depth:	10'	☐ Shelby Tube	☐ Air Rotary
Drilling Sub:	IET	Water Level:	NA		☐ Rock Core
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	58	<0.1	GW	0'-0.5': asphalt	B-9 (2-4), 1045 metals VOCs	NA- Well Not Installed
		<0.1	CL	0.5'-4': light brown, stiff, silty CLAY, dry		
5-10	36	<0.1	SM	4'-10': tan, silty SAND, dry, micaceous, dry, odor not observed		
		<0.1				
		<0.1				
				boring terminated at 10' bls per scope		

Notes:

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

Lithology Log

Boring ID: B-10

				Sample Method	Drilling Method
Project Number:	70187265	Start Date/Time:	7/9/2018 / 1050	☐ Hand Auger	X DPT
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1055	X Macro-Core	☐ HSA
Weather:	Sunny 80s	Boring Diameter:	2-inch	☐ Split Spoon	☐ Mud Rotary
Logged By:	D. Hawkins	Total Depth:	10'	☐ Shelby Tube	☐ Air Rotary
Drilling Sub:	IET	Water Level:	NA		☐ Rock Core
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	60	<0.1	GW	0'-0.5': asphalt	B-10 (4-6), 1055 metals VOCs	NA- Well Not Installed
		<0.1	CL	0'-5': light brown, silty clay, stiff, dry		
		<0.1				
5-10	56	<0.1	SM	5'-10': tan, silty SAND, dry, odor not observed		
		<0.1				
				boring terminated at 10' bls per scope.		

Notes:

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

Lithology Log

Boring ID: B-11

				Sample Method	Drilling Method
Project Number:	70187265	Start Date/Time:	7/9/2018 / 1055	☐ Hand Auger	X DPT
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1100	X Macro-Core	☐ HSA
Weather:	Sunny 80s	Boring Diameter:	2-inch	☐ Split Spoon	☐ Mud Rotary
Logged By:	D. Hawkins	Total Depth:	10'	☐ Shelby Tube	☐ Air Rotary
Drilling Sub:	IET	Water Level:	NA		☐ Rock Core
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	38	<0.1	SW	0'-3': gray-brown, SAND, apparent fill material, some asphalt, dry	B-11 (1-3), 1105 metals VOCs	NA- Well Not Installed
		<0.1				
			CL	3'-6': brown, silty CLAY, stiff-hard, dry		
		<0.1				
5-10	48	<0.1	SM	6'-10': tan, silty SAND, micaceous		
		<0.1		odor not observed		
				boring terminated at 10' bls per scope.		

Notes:

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

Lithology Log

Boring ID: B-12

				Sample Method	Drilling Method
Project Number:	70187265	Start Date/Time:	7/9/2018 / 1100	☐ Hand Auger	X DPT
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1105	X Macro-Core	☐ HSA
Weather:	Sunny 80s	Boring Diameter:	2-inch	☐ Split Spoon	☐ Mud Rotary
Logged By:	D. Hawkins	Total Depth:	10'	☐ Shelby Tube	☐ Air Rotary
Drilling Sub:	IET	Water Level:	NA		☐ Rock Core
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	36	<0.1	SP	0'-1': concrete fill, dry	B-12 (2-4), 1110 metals VOCs	NA- Well Not Installed
				1'-3': brown, SAND (fill), dry		
		<0.1				
			CL	3'-8': brown, silty CLAY, dry		
		<0.1				
5-10	28	<0.1				
		<0.1	ML	8'-10': brown-tan, clayey SILT, w/ method mineral grains, dry		
				boring terminated at 10' bls per scope		

Notes:

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

Lithology Log

Boring ID: B-13

				Sample Method	Drilling Method
Project Number:	70187265	Start Date/Time:	7/9/2018 / 1110	☐ Hand Auger	X DPT
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1115	X Macro-Core	☐ HSA
Weather:	Sunny 80s	Boring Diameter:	2-inch	☐ Split Spoon	☐ Mud Rotary
Logged By:	D. Hawkins	Total Depth:	10'	☐ Shelby Tube	☐ Air Rotary
Drilling Sub:	IET	Water Level:	NA		☐ Rock Core
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	48	<0.1	SP	0'-1': concrete, fill, dry 1'-3': brown, SAND, moist (fill)	B-13 (4-6), 1115 metals VOCs	NA- Well Not Installed
		<0.1				
		<0.1	CL	3'-5': brown, reddish brown, silty CLAY, dry		
5-10	60	<0.1	ML	5'-8': light brown, clayey SILT, dry, micaceous		
		<0.1				
		<0.1	SM	8'-10': tan, silty SAND, dry odor not observed		
				boring terminated at 10' bls per scope		

Notes:

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

Lithology Log

Boring ID: **B-14**

				Sample Method	Drilling Method
Project Number:	70187265	Start Date/Time:	7/9/2018 / 1115	☐ Hand Auger	X DPT
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1120	X Macro-Core	☐ HSA
Weather:	Sunny 80s	Boring Diameter:	2-inch	☐ Split Spoon	☐ Mud Rotary
Logged By:	D. Hawkins	Total Depth:	10'	☐ Shelby Tube	☐ Air Rotary
Drilling Sub:	IET	Water Level:	NA		☐ Rock Core
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	60	<0.1	SP	0'-0.5": concrete 0.5'-4': brown, SAND (fill), dry	B-14 (6-8), 1120	NA- Well Not Installed
		<0.1				
		<0.1	SM	4'-7': brown-light brown, silty SAND, dry		
5-10	60	<0.1		7'-10': tan, silty SAND, dry		
		<0.1		odor not observed		
				boring terminated at 10' bls per scope		

Notes:

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

Lithology Log

Boring ID: B-15

				Sample Method	Drilling Method
Project Number:	70187265	Start Date/Time:	7/9/2018 / 1120	☐ Hand Auger	X DPT
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1125	X Macro-Core	☐ HSA
Weather:	Sunny 80s	Boring Diameter:	2-inch	☐ Split Spoon	☐ Mud Rotary
Logged By:	D. Hawkins	Total Depth:	10'	☐ Shelby Tube	☐ Air Rotary
Drilling Sub:	IET	Water Level:	NA		☐ Rock Core
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	60	<0.1	CL	0'-1': asphalt 1'-5': brown, silty CLAY, dry	B-15 (2-4), 1125	NA- Well Not Installed
		<0.1				
		<0.1				
5-10	60	<0.1	SM	5'-10': tan, silty SAND, dry		
		<0.1		odor not observed		
				boring terminated at 10' bls per scope		

Notes:

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

Lithology Log

Boring ID: **B-16**

				Sample Method	Drilling Method
Project Number:	70187265	Start Date/Time:	7/9/2018 / 1120	☐ Hand Auger	X DPT
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1125	X Macro-Core	☐ HSA
Weather:	Sunny 80s	Boring Diameter:	2-inch	☐ Split Spoon	☐ Mud Rotary
Logged By:	D. Hawkins	Total Depth:	10'	☐ Shelby Tube	☐ Air Rotary
Drilling Sub:	IET	Water Level:	NA		☐ Rock Core
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	60	<0.1	SP	0'-0.5': brown, SAND with organics, dry	B-16 (3-5), 1140 metals VOCs	NA- Well Not Installed
		<0.1	CL	0.5'-5': brown, silty CLAY, dry		
		<0.1				
5-10	60	<0.1	ML	5'-7': light brown, clayey SILT, dry		
		<0.1	SM	7'-10': tan, silty SAND, dry odors not observed		
				boring terminated at 10' bls per scope		

Notes:

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

Lithology Log

Boring ID: **B-17**

				Sample Method	Drilling Method
Project Number:	70187265	Start Date/Time:	7/9/2018 / 1135	☐ Hand Auger	X DPT
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1140	X Macro-Core	☐ HSA
Weather:	Sunny 80s	Boring Diameter:	2-inch	☐ Split Spoon	☐ Mud Rotary
Logged By:	D. Hawkins	Total Depth:	10'	☐ Shelby Tube	☐ Air Rotary
Drilling Sub:	IET	Water Level:	NA		☐ Rock Core
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	52	<0.1	CL	0'-0.5': asphalt, organics 0.5'-6': brown, silty CLAY, dry	B-17 (2-4), 1140	NA- Well Not Installed
		<0.1				
		<0.1				
5-10	56	<0.1	ML	6'-8': brown, clayey SILT, dry, micaceous		
		<0.1	SM	8'-10': tan, micaceous, silty SAND, dry odors not observed		
				boring terminated at 10' bls per scope		

Notes:

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

Lithology Log

Boring ID: B-18

				Sample Method	Drilling Method
Project Number:	70187265	Start Date/Time:	7/9/2018 / 1145	☐ Hand Auger	X DPT
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1150	X Macro-Core	☐ HSA
Weather:	Sunny 80s	Boring Diameter:	2-inch	☐ Split Spoon	☐ Mud Rotary
Logged By:	D. Hawkins	Total Depth:	10'	☐ Shelby Tube	☐ Air Rotary
Drilling Sub:	IET	Water Level:	NA		☐ Rock Core
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	0	NM	ML	0'-5': no recovery, hit hard bottom ~3', concrete/fill above, also perched water. 3'-5': black organic clayey SILT (3'-5')	B-18 (8-10), 1200	NA- Well Not Installed
		NM				
		<0.1				
5-10	30	<0.1	ML	5'-10': brown, clayey SILT, micaceous		
		<0.1		odor not observed		
				boring terminated at 10' bls per scope.		

Notes:

NM: not measured

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 BRENTWOOD RD.
SUITE 107
RALEIGH NC 27604

Contact: DAVID HAWKINS
COLLECTED BY DAVID HAWKINS
Project: #70187265

Samples taken Monday, July 9, 2018
Samples extracted Monday, July 9, 2018
Samples analysed Wednesday, July 11, 2018

Operator NICK HENDRIX

F03640

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	B-1 (2-4)	22.0	<0.55	<0.55	<0.04	<0.55	<0.11	<0.02	<0.011	0	0	0	PHC not detected,(OCR)
s	B-2 (4-6)	26.0	<0.65	<0.65	11	11	8.3	0.45	<0.013	0	95.4	4.3	Deg Fuel 88.6%,(FCM)
s	B-3 (3-5)	31.7	<0.79	<0.79	<0.06	<0.79	<0.16	<0.03	<0.016	0	0	0	Residual HC
s	B-4 (2-4)	28.3	<0.71	<0.71	<0.06	<0.71	<0.14	<0.03	<0.014	0	0	0	PHC not detected,(OCR)
s	B-5 (3-5)	25.2	<0.63	<0.63	5.4	5.4	5.3	0.28	<0.013	0	94.5	5.1	Deg Fuel 73.9%,(FCM)
s	B-7 (8-10)	29.9	<0.75	<0.75	<0.06	<0.75	<0.15	<0.03	<0.015	0	0	0	PHC not detected,(OCR)
s	B-8 (8-10)	11.9	<0.3	<0.3	<0.02	<0.3	<0.06	<0.01	<0.006	0	0	0	PHC not detected
s	B-9 (2-4)	13.3	<0.33	<0.33	8.7	8.7	6	0.32	<0.007	0	95.2	4.5	Deg Fuel 74%,(FCM)
s	B-10 (4-6)	13.3	<0.33	<0.33	4.1	4.1	2.1	0.12	<0.007	0	95.3	4.4	Deg Fuel 75.5%,(FCM)

Initial Calibrator QC check OK

Final FCM QC Check OK 91

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

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

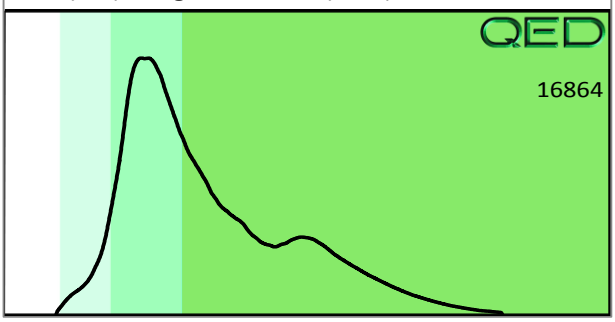
(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

QED Hydrocarbon Fingerprints

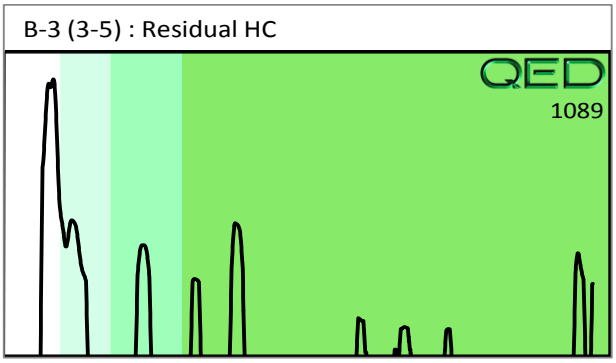
Project: #70187265 ##################

B-1 (2-4) : PHC not detected,(OCR)

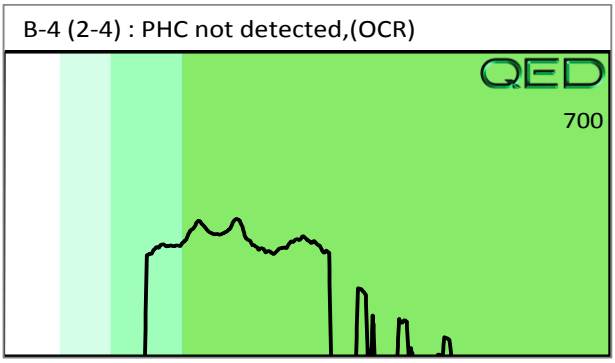
B-2 (4-6) : Deg Fuel 88.6%,(FCM)



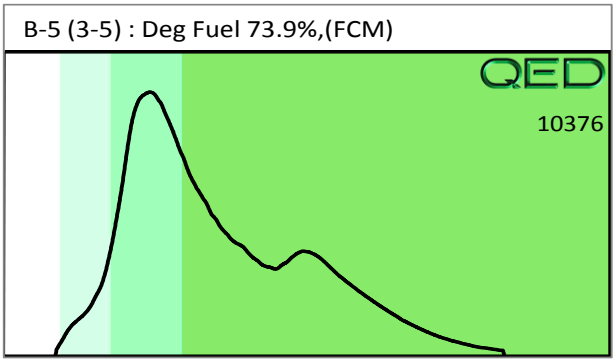
B-3 (3-5) : Residual HC



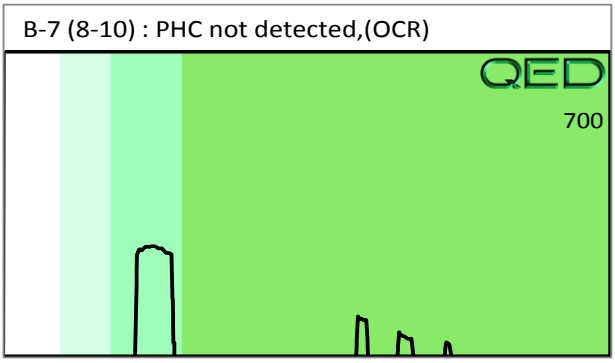
B-4 (2-4) : PHC not detected,(OCR)



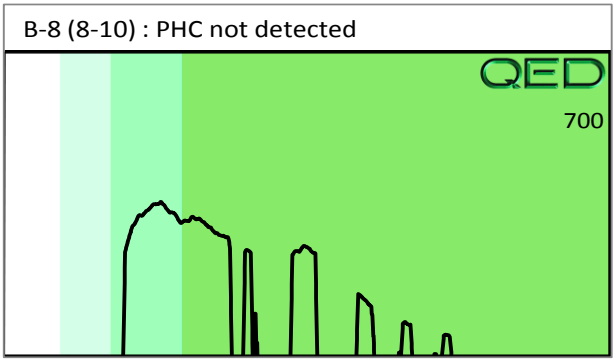
B-5 (3-5) : Deg Fuel 73.9%,(FCM)



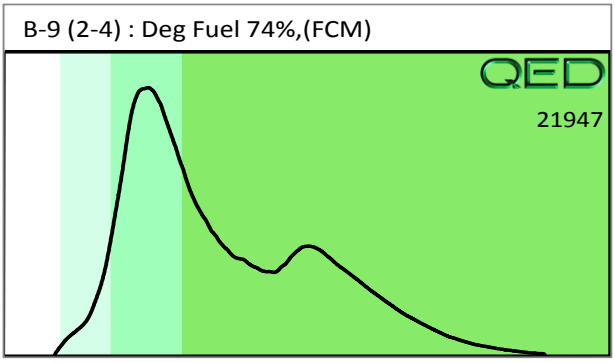
B-7 (8-10) : PHC not detected,(OCR)



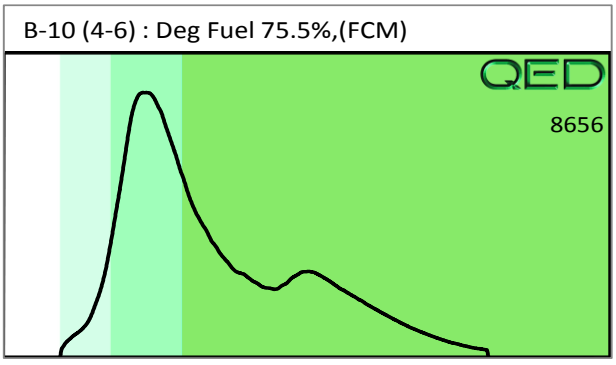
B-8 (8-10) : PHC not detected



B-9 (2-4) : Deg Fuel 74%,(FCM)



B-10 (4-6) : Deg Fuel 75.5%,(FCM)



QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: TERRACON
Address: 2401 BRENTWOOD RD.
SUITE 107
RALEIGH NC 27604

Contact: DAVID HAWKINS
COLLECTED BY DAVID HAWKINS
Project: #70187265

Samples taken Monday, July 9, 2018
Samples extracted Monday, July 9, 2018
Samples analysed Wednesday, July 11, 2018

Operator NICK HENDRIX

F03640

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	B-11 (1-3)	27.4	<0.68	<0.68	32.5	32.5	25	1.2	<0.014	0	98	1.9	Deg Fuel 90.6%,(FCM)
s	B-12 (2-4)	23.9	<0.6	<0.6	1.2	1.2	1.2	0.06	<0.012	0	96.3	3.4	V.Deg.PHC 89.4%,(FCM)
s	B-13 (4-6)	23.6	<0.59	<0.59	<0.05	<0.59	<0.12	<0.02	<0.012	0	0	0	PHC not detected,(OCR)
s	B-14 (6-8)	28.5	<0.71	<0.71	<0.06	<0.71	<0.14	<0.03	<0.014	0	0	0	PHC not detected,(OCR)
s	B-15 (2-4)	24.8	<0.62	<0.62	1.2	1.2	0.38	<0.02	<0.012	0	94.4	5.2	Deg Fuel 91.9%,(FCM),(OCR)
s	B-16 (3-5)	27.4	<0.68	<0.68	<0.05	<0.68	<0.14	<0.03	<0.014	0	0	0	PHC not detected,(OCR)
s	B-17 (2-4)	22.6	<0.57	<0.57	0.95	0.95	0.94	0.05	<0.011	0	89.9	9.2	V.Deg.PHC 91.7%,(FCM)
s	B-18 (8-10)	25.2	<0.63	<0.63	<0.05	<0.63	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(OCR)
s	B-19 (2-4)	26.3	<0.66	<0.66	<0.05	<0.66	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(OCR)
s	B-20 (4-6)	25.5	<0.64	<0.64	<0.05	<0.64	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(OCR)

Initial Calibrator QC check OK Final FCM QC Check OK 105

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

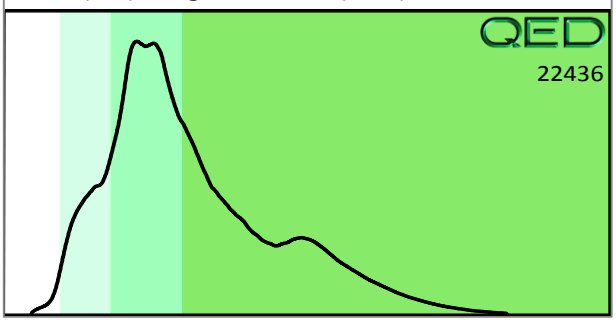
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

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

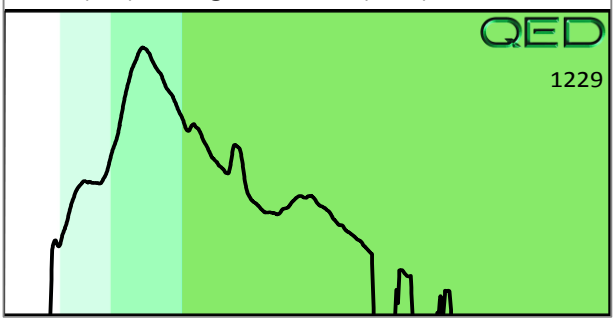
QED Hydrocarbon Fingerprints

Project: #70187265 ##################

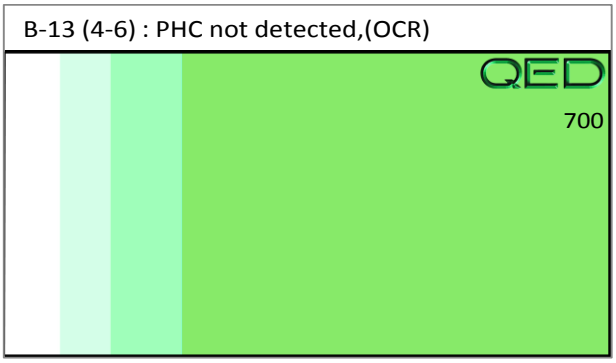
B-11 (1-3) : Deg Fuel 90.6%,(FCM)



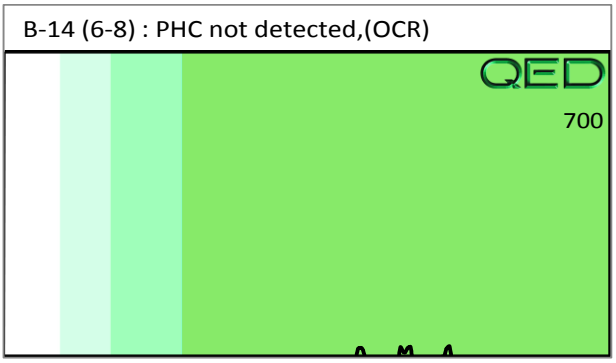
B-12 (2-4) : V.Deg.PHC 89.4%,(FCM)



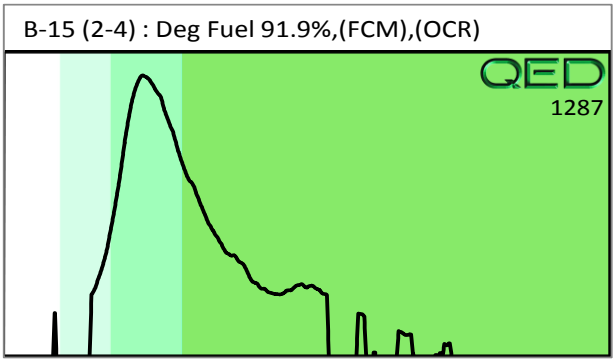
B-13 (4-6) : PHC not detected,(OCR)



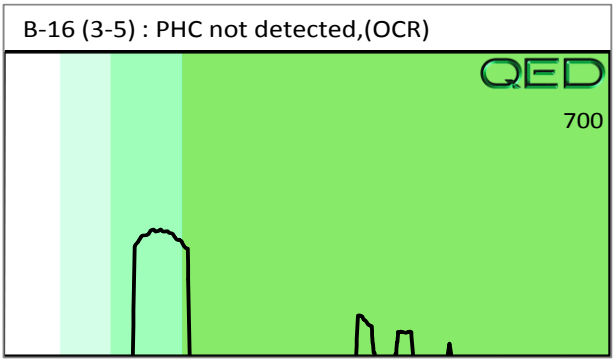
B-14 (6-8) : PHC not detected,(OCR)



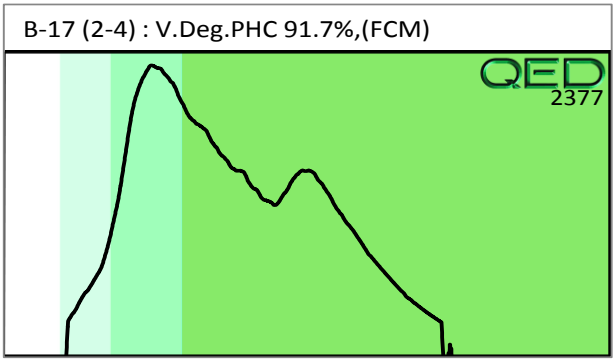
B-15 (2-4) : Deg Fuel 91.9%,(FCM),(OCR)



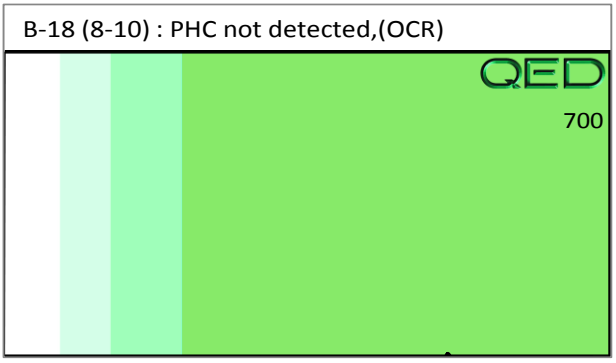
B-16 (3-5) : PHC not detected,(OCR)



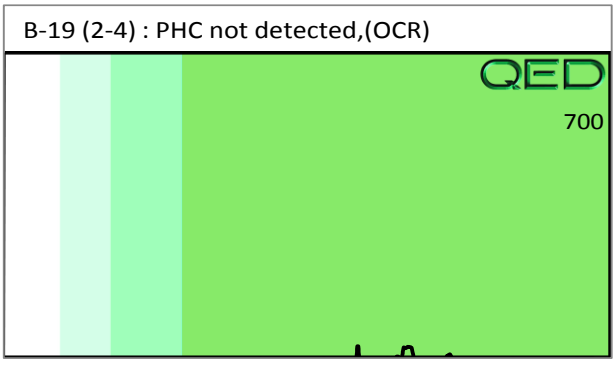
B-17 (2-4) : V.Deg.PHC 91.7%,(FCM)



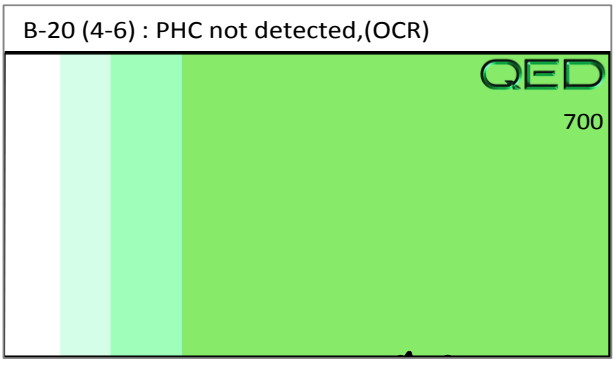
B-18 (8-10) : PHC not detected,(OCR)



B-19 (2-4) : PHC not detected,(OCR)



B-20 (4-6) : PHC not detected,(OCR)



QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: TERRACON
Address: 2401 BRENTWOOD RD.
SUITE 107
RALEIGH NC 27604

Contact: DAVID HAWKINS
COLLECTED BY DAVID HAWKINS
Project: #70187265

Samples taken Monday, July 9, 2018
Samples extracted Monday, July 9, 2018
Samples analysed Wednesday, July 11, 2018

Operator NICK HENDRIX

F03640

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	B-21 (0-2)	28.0	<0.7	<0.7	0.57	0.57	0.56	<0.03	<0.014	0	88.7	10.4	V.Deg.PHC 90.6%,(FCM)
s	B-22 (3-5)	24.1	<0.6	<0.6	<0.05	<0.6	<0.12	<0.02	<0.012	0	0	0	PHC not detected,(OCR)
s	B-23 (2-4)	25.0	<0.63	<0.63	<0.05	<0.63	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(OCR)
s	B-24 (6-8)	25.7	<0.64	<0.64	<0.05	<0.64	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(OCR)
s	B-25 (2-4)	16.1	<0.4	<0.4	<0.03	<0.4	<0.08	<0.02	<0.008	0	0	0	PHC not detected,(OCR)
s	B-26 (3-5)	29.2	<0.73	<0.73	<0.06	<0.73	<0.15	<0.03	<0.015	0	0	0	PHC not detected,(OCR)
s	B-27 (4-6)	27.4	<0.68	<0.68	<0.05	<0.68	<0.14	<0.03	<0.014	0	0	0	PHC not detected,(OCR)
s	B-28 (3-5)	24.8	<0.62	<0.62	<0.05	<0.62	<0.12	<0.02	<0.012	0	0	0	PHC not detected,(OCR)
s	B-29 (2-4)	13.6	<0.34	<0.34	<0.03	<0.34	<0.07	<0.01	<0.007	0	0	0	PHC not detected
s	B-30 (3-5)	16.1	<0.4	<0.4	<0.03	<0.4	<0.08	<0.02	<0.008	0	0	0	PHC not detected,(OCR)

Initial Calibrator QC check OK Final FCM QC Check OK 108

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

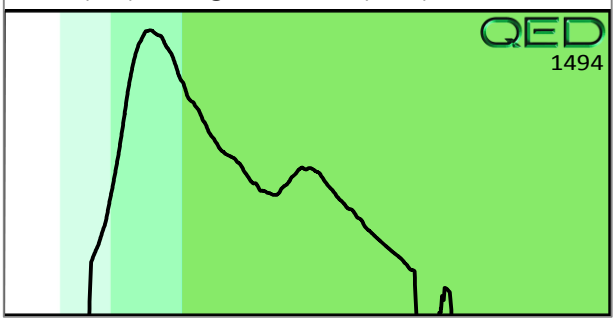
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

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

QED Hydrocarbon Fingerprints

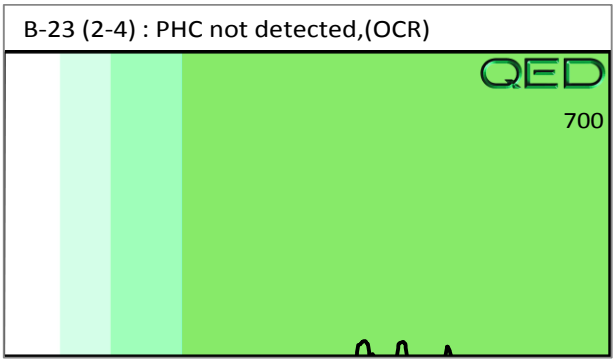
Project: #70187265 ##################

B-21 (0-2) : V.Deg.PHC 90.6%,(FCM)

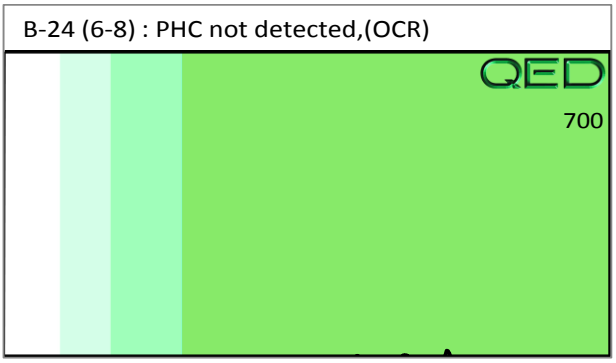


B-22 (3-5) : PHC not detected,(OCR)

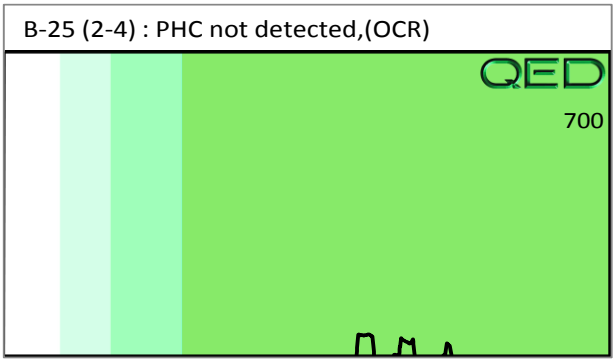
B-23 (2-4) : PHC not detected,(OCR)



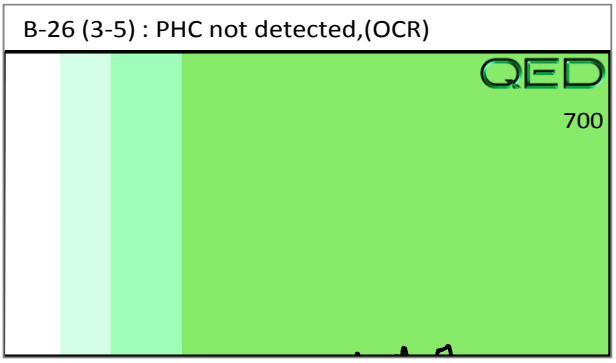
B-24 (6-8) : PHC not detected,(OCR)



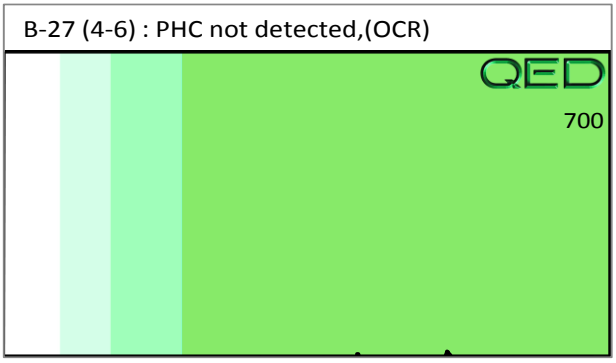
B-25 (2-4) : PHC not detected,(OCR)



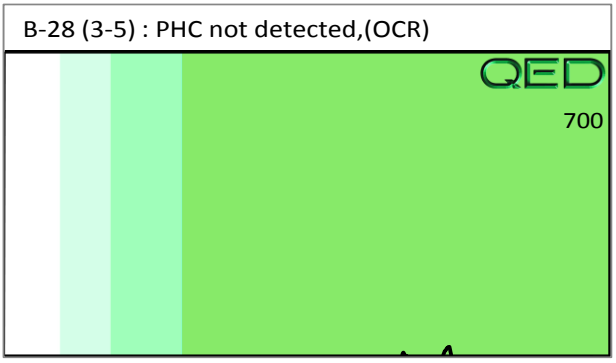
B-26 (3-5) : PHC not detected,(OCR)



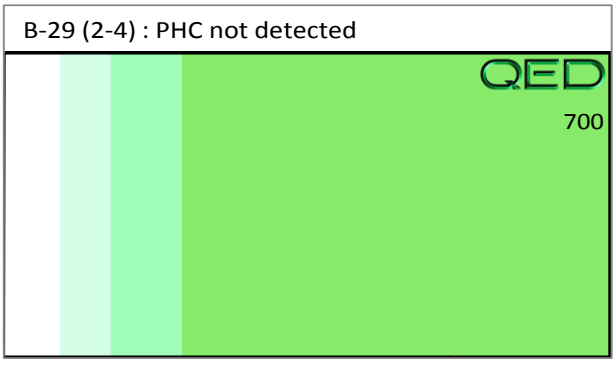
B-27 (4-6) : PHC not detected,(OCR)



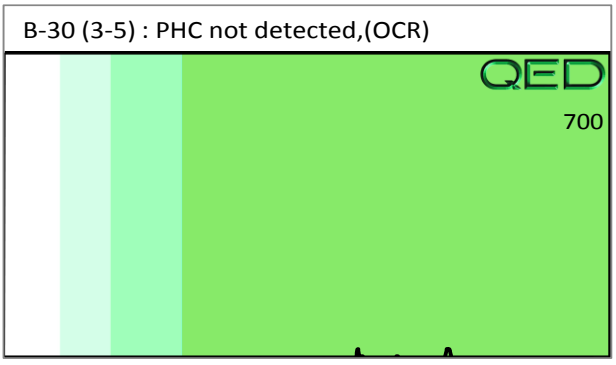
B-28 (3-5) : PHC not detected,(OCR)



B-29 (2-4) : PHC not detected



B-30 (3-5) : PHC not detected,(OCR)



QED

REDLAB™ RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: TERRACON
Address: 2401 BRENTWOOD RD.
SUITE 107
RALEIGH, NC 27604

Contact: DAVID HAWKINS
COLLECTED BY DAVID HAWKINS
Project: #70187265

Samples taken Monday, July 9, 2018
Samples extracted Monday, July 9, 2018
Samples analysed Wednesday, July 11, 2018

Operator MAX MOYER

H0

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	B-8 (13-15)	10.2	<0.26	<0.26	0.49	0.49	0.33	<0.08	<0.01	0	70.9	29.1	Deg.Fuel 81.5%,(FCM),(P)

Initial Calibrator QC check OK

Final FCM QC Check OK 99

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.

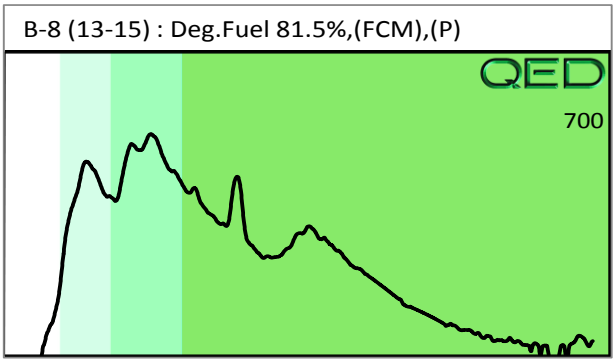
Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

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: #70187265 ##################



887

Client Name:	Terracon
Address:	2401 Brentwood Rd. Suite 107, Raleigh NC 27604
Contact:	David Hawkins
Project Ref.:	70187265
Email:	David.hawkins@terracon.com
Phone #:	540-905-2544
Collected by:	David Hawkins

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.
7/9/18, 920		X	S	B-1 (2-4)	X		55.5	43.7	11.8
7/9/18, 930		X	S	B-2 (4-6)	X		54.0	44.0	10.0
7-9-18, 940		X	S	B-3 (3-5)	X		52.3	43.4	8.2
7-9-18, 945		X	S	B-4 (2-4)	X		53.3	44.1	9.2
7-9-18, 1000		X	S	B-5 (3-5)	X		54.5	44.2	10.3
7-9-18, 1005		X	S	B-7 (8-10)	X		52.5	43.8	8.7
7-9-18, 1025		X	S	B-8 (8-10)	X		52.5	44.1	8.4
7-9-18, 1030		X	S	B-8 (13-15) HOLD	X		53.6	43.8	9.8
7-9-18, 1045		X	S	B-9 (2-4)	X		54.4	43.9	10.5
7-9-18, 1055		X	S	B-10 (4-6)	X		54.3	43.8	10.5
7-9-18, 1105		X	S	B-11 (1-3)	X		54.0	44.5	9.5
7-9-18, 1110		X	S	B-12 (2-4)	X		54.5	43.6	10.9
7-9-18, 1115		X	S	B-13 (4-6)	X		55.7	44.7	11.0
7-9-18, 1120		X	S	B-14 (6-8)	X		53.3	44.2	9.1
7-9-18, 1125		X	S	B-15 (2-4)	X		54.2	43.7	10.5
7-9-18, 1140		X	S	B-16 (3-5)	X		54.1	44.6	9.5
7-9-18, 1140		X	S	B-17 (2-4)	X		55.7	44.2	11.5
7-9-18, 1200		X	S	B-18 (8-10)	X		54.5	44.2	10.3
7-9-18, 1305		X	S	B-19 (2-4)	X		54.2	44.3	9.9
7-9-18, 1315		X	S	B-20 (4-6)	X		54.6	44.4	10.2

Comments: Place B-8 (13-15) on HOLD, will confirm if want to run.

Relinquished by	Date/Time	Accepted by	Date/Time
	7/10/18, 0900	DH 7/11/18 11:30	
Relinquished by	Date/Time	Accepted by	Date/Time

RED Lab USE ONLY

ZW

B87

Client Name:	Terracon
Address:	2401 Brownwood Rd. Suite 107, Raleigh NC 27604
Contact:	David Hawkins
Project Ref.:	70187205
Email:	David.hawkins@terracon.com
Phone #:	540-905-2544
Collected by:	David Hawkins

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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.
7-9-18 1320		X		B-21 (0-2)	X		53.4	44.1	9.3
7-9-18, 1330		X		B-22 (3-5)	X		54.8	44.0	10.8
7-9-18, 1335		X		B-23 (2-4)	X		54.7	44.3	10.4
7-9-18, 1340		X		B-24 (6-8)	X		54.1	44.0	10.1
7-9-18, 1350		X		B-25 (2-4)	X		52.5	43.8	8.7
7-9-18, 1355		X		B-26 (3-5)	X		53.2	44.3	8.9
7-9-18, 1400		X		B-27 (4-6)	X		53.1	43.6	9.5
7-9-18, 1405		X		B-28 (3-5)	X		54.8	44.3	10.5
7-9-18, 1415		X		B-29 (2-4)	X		54.7	44.4	10.3
7-9-18, 1420		X		B-30 (3-5)	X		53.3	44.6	8.7

Comments:

Relinquished by	Date/Time	Accepted by	Date/Time
	7/10/18, 0900	NH 7/11/18 1:5	
Relinquished by	Date/Time	Accepted by	Date/Time

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10

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

Terracon Consultants, Inc.
2401 Brentwood Road
Suite 107 I
Raleigh, NC 27604
Attention: David Hawkins

Project Name: Y-4810K PSA NCDOT Kannapolis

Project Number: 70187265

Lot Number:**TG11026**

Date Completed:07/24/2018

07/25/2018 8:25 AM
Approved and released by:
Project Manager: Cathy S. Dover

The electronic signature above is the equivalent of a handwritten signature.

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Case Narrative
Terracon Consultants, Inc.
Lot Number: TG11026

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W" qualifier

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary

Terracon Consultants, Inc.

Lot Number: TG11026

Project Name: Y-4810K PSA NCDOT Kannapolis

Project Number: 70187265

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	B-9 (2-4)	Solid	07/09/2018 1045	07/11/2018
002	B-10 (4-6)	Solid	07/09/2018 1055	07/11/2018
003	B-11 (1-3)	Solid	07/09/2018 1105	07/11/2018
004	B-12 (2-4)	Solid	07/09/2018 1110	07/11/2018
005	B-13 (4-6)	Solid	07/09/2018 1115	07/11/2018
006	B-14 (6-8)	Solid	07/09/2018 1120	07/11/2018
007	B-15 (2-4)	Solid	07/09/2018 1125	07/11/2018
008	B-16 (3-5)	Solid	07/09/2018 1140	07/11/2018
009	B-17 (2-4)	Solid	07/09/2018 1140	07/11/2018
010	B-18 (8-10)	Solid	07/09/2018 1200	07/11/2018

(10 samples)

Detection Summary

Terracon Consultants, Inc.

Lot Number: TG11026

Project Name: Y-4810K PSA NCDOT Kannapolis

Project Number: 70187265

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	B-9 (2-4)	Solid	Arsenic	6010D	2.8		mg/kg	6
001	B-9 (2-4)	Solid	Barium	6010D	83		mg/kg	6
001	B-9 (2-4)	Solid	Chromium	6010D	9.0		mg/kg	6
001	B-9 (2-4)	Solid	Lead	6010D	56		mg/kg	6
002	B-10 (4-6)	Solid	Arsenic	6010D	3.2		mg/kg	7
002	B-10 (4-6)	Solid	Barium	6010D	160		mg/kg	7
002	B-10 (4-6)	Solid	Chromium	6010D	7.7		mg/kg	7
002	B-10 (4-6)	Solid	Lead	6010D	46		mg/kg	7
003	B-11 (1-3)	Solid	Arsenic	6010D	3.7		mg/kg	8
003	B-11 (1-3)	Solid	Barium	6010D	99		mg/kg	8
003	B-11 (1-3)	Solid	Cadmium	6010D	0.11	J	mg/kg	8
003	B-11 (1-3)	Solid	Chromium	6010D	11		mg/kg	8
003	B-11 (1-3)	Solid	Lead	6010D	30		mg/kg	8
003	B-11 (1-3)	Solid	Selenium	6010D	0.46	J	mg/kg	8
004	B-12 (2-4)	Solid	Arsenic	6010D	1.3		mg/kg	9
004	B-12 (2-4)	Solid	Barium	6010D	50		mg/kg	9
004	B-12 (2-4)	Solid	Chromium	6010D	4.8		mg/kg	9
004	B-12 (2-4)	Solid	Lead	6010D	10		mg/kg	9
005	B-13 (4-6)	Solid	Arsenic	6010D	2.6		mg/kg	10
005	B-13 (4-6)	Solid	Barium	6010D	220		mg/kg	10
005	B-13 (4-6)	Solid	Chromium	6010D	7.2		mg/kg	10
005	B-13 (4-6)	Solid	Lead	6010D	34		mg/kg	10
006	B-14 (6-8)	Solid	Arsenic	6010D	2.9		mg/kg	11
006	B-14 (6-8)	Solid	Barium	6010D	190		mg/kg	11
006	B-14 (6-8)	Solid	Chromium	6010D	5.8		mg/kg	11
006	B-14 (6-8)	Solid	Lead	6010D	37		mg/kg	11
007	B-15 (2-4)	Solid	Arsenic	6010D	4.1		mg/kg	12
007	B-15 (2-4)	Solid	Barium	6010D	81		mg/kg	12
007	B-15 (2-4)	Solid	Chromium	6010D	16		mg/kg	12
007	B-15 (2-4)	Solid	Lead	6010D	30		mg/kg	12
007	B-15 (2-4)	Solid	Mercury	7471B	0.027	J	mg/kg	12
008	B-16 (3-5)	Solid	Arsenic	6010D	3.2		mg/kg	13
008	B-16 (3-5)	Solid	Barium	6010D	35		mg/kg	13
008	B-16 (3-5)	Solid	Chromium	6010D	7.6		mg/kg	13
008	B-16 (3-5)	Solid	Lead	6010D	35		mg/kg	13
009	B-17 (2-4)	Solid	Arsenic	6010D	3.4		mg/kg	14
009	B-17 (2-4)	Solid	Barium	6010D	140		mg/kg	14
009	B-17 (2-4)	Solid	Chromium	6010D	12		mg/kg	14
009	B-17 (2-4)	Solid	Lead	6010D	28		mg/kg	14
010	B-18 (8-10)	Solid	Arsenic	6010D	2.6		mg/kg	15
010	B-18 (8-10)	Solid	Barium	6010D	150		mg/kg	15
010	B-18 (8-10)	Solid	Chromium	6010D	7.3		mg/kg	15
010	B-18 (8-10)	Solid	Lead	6010D	31		mg/kg	15

Detection Summary (Continued)

Lot Number: TG11026

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page

(43 detections)

RCRA Metals

Client: **Terracon Consultants, Inc.** Laboratory ID: **TG11026-001**

Description: **B-9 (2-4)** Matrix: **Solid**

Date Sampled: **07/09/2018 1045** Project Name: **Y-4810K PSA NCDOT** % Solids: **69.8 07/14/2018 0251**

Date Received: **07/11/2018** Project Number: **70187265**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010D	1	07/19/2018 0137	CJZ	07/15/2018 1310	77679
1	7471B	7471B	1	07/16/2018 1848	SLS	07/16/2018 1137	77764
2	3050B	6010D	2	07/19/2018 0251	CJZ	07/15/2018 1310	77679

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Arsenic	**7440-38-2**	**6010D**	**2.8**		**0.95**	**0.32**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010D**	**83**		**1.6**	**0.41**	**mg/kg**	**1**
Cadmium	7440-43-9	6010D	ND		0.32	0.079	mg/kg	1
Chromium	**7440-47-3**	**6010D**	**9.0**		**0.63**	**0.16**	**mg/kg**	**1**
Lead	**7439-92-1**	**6010D**	**56**		**1.3**	**0.57**	**mg/kg**	**2**
Mercury	7439-97-6	7471B	ND		0.12	0.028	mg/kg	1
Selenium	7782-49-2	6010D	ND		1.3	0.51	mg/kg	1
Silver	7440-22-4	6010D	ND		0.63	0.16	mg/kg	1

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

RCRA Metals

Client: **Terracon Consultants, Inc.** Laboratory ID: **TG11026-002**

Description: **B-10 (4-6)** Matrix: **Solid**

Date Sampled: **07/09/2018 1055** Project Name: **Y-4810K PSA NCDOT** % Solids: **68.6** **07/14/2018 0251**

Date Received: **07/11/2018** Project Number: **70187265**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010D	1	07/19/2018 0141	CJZ	07/15/2018 1310	77679
1	7471B	7471B	1	07/16/2018 1855	SLS	07/16/2018 1137	77764
2	3050B	6010D	2	07/19/2018 0256	CJZ	07/15/2018 1310	77679

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Arsenic	**7440-38-2**	**6010D**	**3.2**		**1.0**	**0.33**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010D**	**160**		**1.7**	**0.43**	**mg/kg**	**1**
Cadmium	7440-43-9	6010D	ND		0.33	0.084	mg/kg	1
Chromium	**7440-47-3**	**6010D**	**7.7**		**0.67**	**0.17**	**mg/kg**	**1**
Lead	**7439-92-1**	**6010D**	**46**		**1.3**	**0.60**	**mg/kg**	**2**
Mercury	7439-97-6	7471B	ND		0.11	0.025	mg/kg	1
Selenium	7782-49-2	6010D	ND		1.3	0.54	mg/kg	1
Silver	7440-22-4	6010D	ND		0.67	0.17	mg/kg	1

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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RCRA Metals

Client: **Terracon Consultants, Inc.** Laboratory ID: **TG11026-003**

Description: **B-11 (1-3)** Matrix: **Solid**

Date Sampled: **07/09/2018 1105** Project Name: **Y-4810K PSA NCDOT** % Solids: **82.9** **07/14/2018 0251**

Date Received: **07/11/2018** Project Number: **70187265**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010D	1	07/19/2018 0146	CJZ	07/15/2018 1310	77679
1	7471B	7471B	1	07/16/2018 1903	SLS	07/16/2018 1137	77764
2	3050B	6010D	5	07/19/2018 0301	CJZ	07/15/2018 1310	77679

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Arsenic	**7440-38-2**	**6010D**	**3.7**		**0.60**	**0.20**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010D**	**99**		**1.0**	**0.26**	**mg/kg**	**1**
Cadmium	**7440-43-9**	**6010D**	**0.11**	**J**	**0.20**	**0.050**	**mg/kg**	**1**
Chromium	**7440-47-3**	**6010D**	**11**		**0.40**	**0.099**	**mg/kg**	**1**
Lead	**7439-92-1**	**6010D**	**30**		**2.0**	**0.89**	**mg/kg**	**2**
Mercury	7439-97-6	7471B	ND		0.087	0.021	mg/kg	1
Selenium	**7782-49-2**	**6010D**	**0.46**	**J**	**0.79**	**0.32**	**mg/kg**	**1**
Silver	7440-22-4	6010D	ND		0.40	0.099	mg/kg	1

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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RCRA Metals

Client: **Terracon Consultants, Inc.** Laboratory ID: **TG11026-004**

Description: **B-12 (2-4)** Matrix: **Solid**

Date Sampled: **07/09/2018 1110** Project Name: **Y-4810K PSA NCDOT** % Solids: **84.0** **07/14/2018 0251**

Date Received: **07/11/2018** Project Number: **70187265**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010D	1	07/19/2018 0151	CJZ	07/15/2018 1310	77679
1	7471B	7471B	1	07/16/2018 1905	SLS	07/16/2018 1137	77764

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Arsenic	**7440-38-2**	**6010D**	**1.3**		**0.62**	**0.21**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010D**	**50**		**1.1**	**0.27**	**mg/kg**	**1**
Cadmium	7440-43-9	6010D	ND		0.21	0.052	mg/kg	1
Chromium	**7440-47-3**	**6010D**	**4.8**		**0.41**	**0.10**	**mg/kg**	**1**
Lead	**7439-92-1**	**6010D**	**10**		**0.41**	**0.19**	**mg/kg**	**1**
Mercury	7439-97-6	7471B	ND		0.090	0.022	mg/kg	1
Selenium	7782-49-2	6010D	ND		0.82	0.33	mg/kg	1
Silver	7440-22-4	6010D	ND		0.41	0.10	mg/kg	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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RCRA Metals

Client: **Terracon Consultants, Inc.** Laboratory ID: **TG11026-005**

Description: **B-13 (4-6)** Matrix: **Solid**

Date Sampled: **07/09/2018 1115** Project Name: **Y-4810K PSA NCDOT** % Solids: **68.5** **07/14/2018 0251**

Date Received: **07/11/2018** Project Number: **70187265**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010D	1	07/19/2018 0156	CJZ	07/15/2018 1310	77679
1	7471B	7471B	1	07/16/2018 1907	SLS	07/16/2018 1137	77764
2	3050B	6010D	5	07/19/2018 0306	CJZ	07/15/2018 1310	77679

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Arsenic	**7440-38-2**	**6010D**	**2.6**		**0.95**	**0.32**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010D**	**220**		**1.6**	**0.41**	**mg/kg**	**1**
Cadmium	7440-43-9	6010D	ND		0.32	0.079	mg/kg	1
Chromium	**7440-47-3**	**6010D**	**7.2**		**0.63**	**0.16**	**mg/kg**	**1**
Lead	**7439-92-1**	**6010D**	**34**		**3.2**	**1.4**	**mg/kg**	**2**
Mercury	7439-97-6	7471B	ND		0.11	0.028	mg/kg	1
Selenium	7782-49-2	6010D	ND		1.3	0.51	mg/kg	1
Silver	7440-22-4	6010D	ND		0.63	0.16	mg/kg	1

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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RCRA Metals

Client: **Terracon Consultants, Inc.** Laboratory ID: **TG11026-006**

Description: **B-14 (6-8)** Matrix: **Solid**

Date Sampled: **07/09/2018 1120** Project Name: **Y-4810K PSA NCDOT** % Solids: **73.7** **07/14/2018 0251**

Date Received: **07/11/2018** Project Number: **70187265**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010D	1	07/19/2018 0201	CJZ	07/15/2018 1310	77679
1	7471B	7471B	1	07/16/2018 1910	SLS	07/16/2018 1137	77764
2	3050B	6010D	5	07/19/2018 0321	CJZ	07/15/2018 1310	77679

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Arsenic	**7440-38-2**	**6010D**	**2.9**		**0.79**	**0.26**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010D**	**190**		**1.4**	**0.34**	**mg/kg**	**1**
Cadmium	7440-43-9	6010D	ND		0.26	0.067	mg/kg	1
Chromium	**7440-47-3**	**6010D**	**5.8**		**0.53**	**0.13**	**mg/kg**	**1**
Lead	**7439-92-1**	**6010D**	**37**		**2.6**	**1.2**	**mg/kg**	**2**
Mercury	7439-97-6	7471B	ND		0.10	0.025	mg/kg	1
Selenium	7782-49-2	6010D	ND		1.1	0.43	mg/kg	1
Silver	7440-22-4	6010D	ND		0.53	0.13	mg/kg	1

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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RCRA Metals

Client: **Terracon Consultants, Inc.** Laboratory ID: **TG11026-007**

Description: **B-15 (2-4)** Matrix: **Solid**

Date Sampled: **07/09/2018 1125** Project Name: **Y-4810K PSA NCDOT** % Solids: **72.8** **07/14/2018 0251**

Date Received: **07/11/2018** Project Number: **70187265**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010D	1	07/19/2018 0206	CJZ	07/15/2018 1310	77679
1	7471B	7471B	1	07/16/2018 1912	SLS	07/16/2018 1137	77764
2	3050B	6010D	2	07/19/2018 0326	CJZ	07/15/2018 1310	77679

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Arsenic	**7440-38-2**	**6010D**	**4.1**		**0.98**	**0.33**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010D**	**81**		**1.7**	**0.42**	**mg/kg**	**1**
Cadmium	7440-43-9	6010D	ND		0.33	0.082	mg/kg	1
Chromium	**7440-47-3**	**6010D**	**16**		**0.65**	**0.16**	**mg/kg**	**1**
Lead	**7439-92-1**	**6010D**	**30**		**1.3**	**0.59**	**mg/kg**	**2**
Mercury	**7439-97-6**	**7471B**	**0.027**	**J**	**0.11**	**0.026**	**mg/kg**	**1**
Selenium	7782-49-2	6010D	ND		1.3	0.53	mg/kg	1
Silver	7440-22-4	6010D	ND		0.65	0.16	mg/kg	1

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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RCRA Metals

Client: **Terracon Consultants, Inc.** Laboratory ID: **TG11026-008**

Description: **B-16 (3-5)** Matrix: **Solid**

Date Sampled: **07/09/2018 1140** Project Name: **Y-4810K PSA NCDOT** % Solids: **71.9** **07/14/2018 0251**

Date Received: **07/11/2018** Project Number: **70187265**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010D	1	07/19/2018 0221	CJZ	07/15/2018 1310	77679
1	7471B	7471B	1	07/16/2018 1914	SLS	07/16/2018 1137	77764

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Arsenic	**7440-38-2**	**6010D**	**3.2**		**1.0**	**0.34**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010D**	**35**		**1.8**	**0.44**	**mg/kg**	**1**
Cadmium	7440-43-9	6010D	ND		0.34	0.085	mg/kg	1
Chromium	**7440-47-3**	**6010D**	**7.6**		**0.67**	**0.17**	**mg/kg**	**1**
Lead	**7439-92-1**	**6010D**	**35**		**0.67**	**0.30**	**mg/kg**	**1**
Mercury	7439-97-6	7471B	ND		0.10	0.025	mg/kg	1
Selenium	7782-49-2	6010D	ND		1.3	0.55	mg/kg	1
Silver	7440-22-4	6010D	ND		0.67	0.17	mg/kg	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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RCRA Metals

Client: **Terracon Consultants, Inc.** Laboratory ID: **TG11026-009**

Description: **B-17 (2-4)** Matrix: **Solid**

Date Sampled: **07/09/2018 1140** Project Name: **Y-4810K PSA NCDOT** % Solids: **77.0** **07/14/2018 0251**

Date Received: **07/11/2018** Project Number: **70187265**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010D	1	07/19/2018 0226	CJZ	07/15/2018 1310	77679
1	7471B	7471B	1	07/16/2018 1917	SLS	07/16/2018 1137	77764
2	3050B	6010D	5	07/19/2018 0331	CJZ	07/15/2018 1310	77679

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Arsenic	**7440-38-2**	**6010D**	**3.4**		**0.86**	**0.29**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010D**	**140**		**1.5**	**0.37**	**mg/kg**	**1**
Cadmium	7440-43-9	6010D	ND		0.29	0.072	mg/kg	1
Chromium	**7440-47-3**	**6010D**	**12**		**0.57**	**0.14**	**mg/kg**	**1**
Lead	**7439-92-1**	**6010D**	**28**		**2.9**	**1.3**	**mg/kg**	**2**
Mercury	7439-97-6	7471B	ND		0.10	0.025	mg/kg	1
Selenium	7782-49-2	6010D	ND		1.1	0.47	mg/kg	1
Silver	7440-22-4	6010D	ND		0.57	0.14	mg/kg	1

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
H = Out of holding time
W = Reported on wet weight basis

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RCRA Metals

Client: **Terracon Consultants, Inc.** Laboratory ID: **TG11026-010**

Description: **B-18 (8-10)** Matrix: **Solid**

Date Sampled: **07/09/2018 1200** Project Name: **Y-4810K PSA NCDOT** % Solids: **71.7** **07/14/2018 0251**

Date Received: **07/11/2018** Project Number: **70187265**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	3050B	6010D	1	07/19/2018 0231	CJZ	07/15/2018 1310	77679
1	7471B	7471B	1	07/16/2018 1919	SLS	07/16/2018 1137	77764
3	3050B	6010D	3	07/23/2018 1744	CJZ	07/19/2018 1743	78211

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Arsenic	**7440-38-2**	**6010D**	**2.6**		**1.0**	**0.34**	**mg/kg**	**1**
Barium	**7440-39-3**	**6010D**	**150**		**1.8**	**0.45**	**mg/kg**	**1**
Cadmium	7440-43-9	6010D	ND		0.34	0.086	mg/kg	1
Chromium	**7440-47-3**	**6010D**	**7.3**		**0.68**	**0.17**	**mg/kg**	**1**
Lead	**7439-92-1**	**6010D**	**31**		**2.0**	**0.92**	**mg/kg**	**3**
Mercury	7439-97-6	7471B	ND		0.10	0.025	mg/kg	1
Selenium	7782-49-2	6010D	ND		1.4	0.56	mg/kg	1
Silver	7440-22-4	6010D	ND		0.68	0.17	mg/kg	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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QC Summary

RCRA Metals - MB

Sample ID: TQ77679-001
Batch: 77679
Analytical Method: 6010D
Matrix: Solid
Prep Method: 3050B
Prep Date: 07/15/2018 1310

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Arsenic	ND		1	0.75	0.25	mg/kg	07/19/2018 0127
Barium	ND		1	1.3	0.33	mg/kg	07/19/2018 0127
Cadmium	ND		1	0.25	0.063	mg/kg	07/19/2018 0127
Chromium	ND		1	0.50	0.13	mg/kg	07/19/2018 0127
Lead	ND		1	0.50	0.23	mg/kg	07/19/2018 0127
Selenium	ND		1	1.0	0.41	mg/kg	07/19/2018 0127
Silver	ND		1	0.50	0.13	mg/kg	07/19/2018 0127

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

RCRA Metals - LCS

Sample ID: TQ77679-002
Batch: 77679
Analytical Method: 6010D
Matrix: Solid
Prep Method: 3050B
Prep Date: 07/15/2018 1310

Parameter	Spike Amount (mg/kg)	Result (mg/kg)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Arsenic	250	250		1	98	80-120	07/19/2018 0132
Barium	500	500		1	100	80-120	07/19/2018 0132
Cadmium	50	49		1	99	80-120	07/19/2018 0132
Chromium	250	240		1	94	80-120	07/19/2018 0132
Lead	250	250		1	100	80-120	07/19/2018 0132
Selenium	50	48		1	95	80-120	07/19/2018 0132
Silver	50	49		1	98	80-120	07/19/2018 0132

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

RCRA Metals - MS

Sample ID: TG11026-010MS
Batch: 77679
Analytical Method: 6010D

Matrix: Solid
Prep Method: 3050B
Prep Date: 07/15/2018 1310

Parameter	Sample Amount (mg/kg)	Spike Amount (mg/kg)	Result (mg/kg)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Arsenic	2.6	330	260		1	79	75-125	07/19/2018 0236
Barium	150	660	760		1	92	75-125	07/19/2018 0236
Cadmium	ND	66	58		1	87	75-125	07/19/2018 0236
Chromium	7.3	330	290		1	84	75-125	07/19/2018 0236
Selenium	ND	66	52		1	79	75-125	07/19/2018 0236
Silver	ND	66	61		1	93	75-125	07/19/2018 0236

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

RCRA Metals - MSD

Sample ID: TG11026-010MD
Batch: 77679
Analytical Method: 6010D
Matrix: Solid
Prep Method: 3050B
Prep Date: 07/15/2018 1310

Parameter	Sample Amount (mg/kg)	Spike Amount (mg/kg)	Result (mg/kg)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Arsenic	2.6	260	210	+	1	80	21	75-125	20	07/19/2018 0241
Barium	150	530	690		1	102	9.2	75-125	20	07/19/2018 0241
Cadmium	ND	53	47		1	89	20	75-125	20	07/19/2018 0241
Chromium	7.3	260	240		1	88	18	75-125	20	07/19/2018 0241
Selenium	ND	53	42	+	1	80	22	75-125	20	07/19/2018 0241
Silver	ND	53	50		1	95	20	75-125	20	07/19/2018 0241

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

RCRA Metals - MB

Sample ID: TQ78211-001
Batch: 78211
Analytical Method: 6010D
Matrix: Solid
Prep Method: 3050B
Prep Date: 07/19/2018 1743

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Lead	ND		1	0.50	0.23	mg/kg	07/23/2018 1734

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

RCRA Metals - LCS

Sample ID: TQ78211-002
Batch: 78211
Analytical Method: 6010D
Matrix: Solid
Prep Method: 3050B
Prep Date: 07/19/2018 1743

Parameter	Spike Amount (mg/kg)	Result (mg/kg)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Lead	250	220		1	90	80-120	07/23/2018 1739

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

RCRA Metals - MS

Sample ID: TG11026-010MS
Batch: 78211
Analytical Method: 6010D
Matrix: Solid
Prep Method: 3050B
Prep Date: 07/19/2018 1743

Parameter	Sample Amount (mg/kg)	Spike Amount (mg/kg)	Result (mg/kg)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Lead	31	330	290		3	79	75-125	07/23/2018 1749

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

RCRA Metals - MSD

Sample ID: TG11026-010MD
Batch: 78211
Analytical Method: 6010D
Matrix: Solid
Prep Method: 3050B
Prep Date: 07/19/2018 1743

Parameter	Sample Amount (mg/kg)	Spike Amount (mg/kg)	Result (mg/kg)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Lead	31	350	330		3	87	14	75-125	20	07/23/2018 1754

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

RCRA Metals - MB

Sample ID: TQ77764-001
Batch: 77764
Analytical Method: 7471B

Matrix: Solid
Prep Method: 7471B
Prep Date: 07/16/2018 1137

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Mercury	ND		1	0.083	0.020	mg/kg	07/16/2018 1844

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

RCRA Metals - LCS

Sample ID: TQ77764-002
Batch: 77764
Analytical Method: 7471B
Matrix: Solid
Prep Method: 7471B
Prep Date: 07/16/2018 1137

Parameter	Spike Amount (mg/kg)	Result (mg/kg)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Mercury	0.83	0.89		1	107	80-120	07/16/2018 1846

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

RCRA Metals - MS

Sample ID: TG11026-001MS
Batch: 77764
Analytical Method: 7471B
Matrix: Solid
Prep Method: 7471B
Prep Date: 07/16/2018 1137

Parameter	Sample Amount (mg/kg)	Spike Amount (mg/kg)	Result (mg/kg)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Mercury	ND	1.1	1.2		1	112	80-120	07/16/2018 1851

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

RCRA Metals - MSD

Sample ID: TG11026-001MD
Batch: 77764
Analytical Method: 7471B
Matrix: Solid
Prep Method: 7471B
Prep Date: 07/16/2018 1137

Parameter	Sample Amount (mg/kg)	Spike Amount (mg/kg)	Result (mg/kg)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Mercury	ND	1.2	1.4		1	115	9.1	80-120	20	07/16/2018 1853

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

SHEALY

Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 83889

TG11026

CSD

Client: Terracon

Report to Contact: Steve Kerlin, David Hawkins

Telephone No. / E-mail: Steve.Kerlin@terracon.com, david.hawkins@terracon.com

Quote No.:

Address: 2401 Brentwood Rd. Suite 107

City: Raleigh State: NC Zip Code: 27604

Sampler's Signature: x [signature]

Printed Name: David W. Hawkins

Project Name: Y-4810E PSA NCDOT Kannapolis

Project No.: 70187205

P.O. No.:

Analysis (Attach list if more space is needed)

Page 1 of 1

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	G=Grab C=Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	Unpres.	H_2SO_4	HNO_3	HCl	NaOH	5035 kit	RCRA 8 metals + Hg (6010/7471)	Remarks / Cooler I.D.
B-9 (2-4)	7/9/18	1045	G		X		1						X	
B-10 (4-6)	↓	1055	G		X		1						X	
B-11 (1-3)		1105	G		X		1						X	
B-12 (2-4)		1110	G		X		1						X	
B-13 (4-6)		1115	G		X		1						X	
B-14 (6-8)		1120	G		X		1						X	
B-15 (2-4)		1125	G		X		1						X	
B-16 (3-5)		1140	G		X		1						X	
B-17 (2-4)		1140	G		X		1						X	
B-18 (8-10)	↓	1200	G		X		1						X	

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☑ Standard ☐ Rush (Specify)

Sample Disposal ☐ Return to Client ☑ Disposal by Lab

Possible Hazard Identification ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

Relinquished by	Date	Time	Received by	Date	Time
1. Relinquished by [signature]	7/10/18	0900	1. Received by		
2. Relinquished by			2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by Fed Ex	7-11-18	0940	4. Laboratory received by L Hile	7-11-18	0940

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) (Yes) No Ice Pack Receipt Temp. 1.7 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 05-01-2014

Shealy Environmental Services, Inc.
Document Number: ME0018C-13

Page 1 of 1
Effective Date: 4/5/2018

Sample Receipt Checklist (SRC)

Client: Terracon Cooler Inspected by/date: LKH / 7-11-18 Lot #: G11026

Means of receipt: ☐ SESI ☐ Client ☐ UPS ☑ FedEx ☐ Other: ___

☑ Yes	☐ No		1. Were custody seals present on the cooler?
☑ Yes	☐ No	☐ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: _____ Chlorine Strip ID: _____

Cooler ID / Original temperature upon receipt / Derived (Corrected) temperature upon receipt:

/ 1.7 / 1.7 °C / / °C / / °C / / °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)? _____
☑ Yes	☐ No		13. Was adequate sample volume available?
☑ Yes	☐ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number used taken from the container label?

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H2SO4, HNO3, HCl, NaOH) using SR # _____.
Time of preservation _____.

Sample(s) _____ were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC > 0.5 mg/L (If #19 is ***no***) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____.

SR barcode labels applied by: LKH Date: 7-11-18

Comments:

APPENDIX D

NCDEQ Risk Calculator Output

North Carolina Department of Environmental Quality
Risk Calculator

Version Date:	February 2018
Basis:	November 2017 EPA RSL Table
Site Name:	Parcel 48 - John, Phillip, Douglas Triece Trustee Property
Site Address:	
DEQ Section:	
Site ID:	
Exposure Unit ID:	
Submittal Date:	9/5/2018
Prepared By:	D. Hawkins
Reviewed By:	

Exposure Point Concentrations **Input Form 2A**

Version Date: February 2018

Basis: November 2017 EPA RSL Table

Site ID:

Exposure Unit ID:

Surface Soil Exposure Point Concentration Table

Exposure Point Concentration (mg/kg)	Justification for Exposure Point Concentration	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value	Screening Toxicity Value (Screening Level) (n/c)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
4.1	Maximum Concentration	7440-38-2	Arsenic, Inorganic			mg/kg										
16	Maximum Concentration	7440-47-3	Chromium, Total			mg/kg										

Exposure Point Concentrations **Input Form 2B**

Version Date: February 2018

Basis: November 2017 EPA RSL Table

Site ID:

Exposure Unit ID:

Subsurface Soil Exposure Point Concentration Table

Exposure Point Concentration (mg/kg)	Justification for Exposure Point Concentration	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value	Screening Toxicity Value (Screening Level) (n/c)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
4.1	Maximum Detection	7440-38-2	Arsenic, Inorganic			mg/kg										
16	Maximum Detection	7440-47-3	Chromium, Total			mg/kg										

Summary of Risk Assessment Output **Output Form 1A**

Version Date: February 2018

Basis: November 2017 EPA RSL Table

Site ID:

Exposure Unit ID:

PRIMARY CALCULATORS

Receptor	Pathway	Carcinogenic Risk	Hazard Index	Risk exceeded?
Resident	Soil Combined Pathways	NC	NC	NC
	Groundwater Combined Pathways*	NC	NC	NC
Non-Residential Worker	Soil Combined Pathways	3.8E-06	1.3E-02	NO
	Groundwater Combined Pathways*	NC	NC	NC
Construction Worker	Soil Combined Pathways	4.7E-06	1.1E-01	NO
User Defined	Soil Combined Pathways	NC	NC	NC
	Surface Water Combined Pathways*	NC	NC	NC

VAPOR INTRUSION CALCULATORS

Receptor	Pathway	Carcinogenic Risk	Hazard Index	Risk exceeded?
Resident	Groundwater to Indoor Air	NC	NC	NC
	Soil Gas to Indoor Air	NC	NC	NC
	Indoor Air	NC	NC	NC
Non-Residential Worker	Groundwater to Indoor Air	NC	NC	NC
	Soil Gas to Indoor Air	NC	NC	NC
	Indoor Air	NC	NC	NC

CONTAMINANT MIGRATION CALCULATORS

Pathway	Source	Target POE Concentrations Exceeded?	
Protection of Groundwater Use	Source Soil	Exceedence of 2L at POE?	NC
	Source Groundwater	Exceedence of 2L at POE?	NC
Protection of Surface Water	Source Soil	Exceedence of 2B at POE?	NC
	Source Groundwater	Exceedence of 2B at POE?	NC

Notes:

1. If lead concentrations were entered in the exposure point concentration tables, see the individual calculator sheets for lead concentrations in comparison to screening levels. Note that lead is not included in cumulative risk calculations.

2. * = If concentrations in groundwater exceed the NC 2L Standards or IMAC, or concentrations in surface water exceed the NC 2B Standards, appropriate remediation and/or institutional control measures will be necessary to be eligible for a risk-based closure.

UST Closure Assessment Report

Parcel 51 – Teresa Whittington Property

1311 South Ridge Avenue

Kannapolis, Cabarrus County, North Carolina

TIP No. Y-4810K

WBS Element: 40325.1.46

May 15, 2020

Terracon Project No. 70197185

Prepared for:

North Carolina Department of Transportation
Raleigh, North Carolina

Prepared by:

Terracon Consultants, Inc.
Raleigh, North Carolina

North Carolina Department of Transportation
GeoEnvironmental Engineering Unit
Century Center Complex
Building B
1020 Birch Ridge Road
Raleigh, North Carolina 27610

Attn: Mr. Ashley Cox
Telephone: (919) 707-6872
Email: abcox@ncdot.gov

Re: UST Closure Assessment Report
Parcel 51 – Teresa Wittington
1311 South Ridge Avenue
Kannapolis, Cabarrus County, North Carolina
Terracon Project No. 70197185

Dear Mr. Cox:

Terracon Consultants, Inc. is pleased to submit this Underground Storage Tank (UST) Closure Report for the above referenced property. The attached report has been prepared in accordance with North Carolina Department of Environmental Quality, UST Section *Guidelines for Site Checks, Tank Closure, and Initial Response and Abatement for UST Releases,* dated March 1, 2007, revised February 1, 2019. If you have any questions regarding this report or the assessment activities, please contact us at (919) 873-2211.

Sincerely,
Terracon Consultants, Inc.

John W. Wells
Field Geologist

Donald R. Malone, PE, RSM
Senior Engineer\Project Manager

Table of contents

A. SITE INFORMATION

Date of Report:	May 15, 2020
NCDEQ Incident No:	N/A
Facility ID:	N/A
Site Name:	Parcel 51 – Teresa Wittington
Site Location:	1311 South Ridge Avenue Kannapolis, North Carolina 28083
UST Owner/Operator:	Unknown
Current Property Owner:	Roxanne W. Reed 1311 South Ridge Avenue Kannapolis, North Carolina 28083
Consultant:	Terracon Consultants, Inc. (Terracon) 2401 Brentwood Road Raleigh, North Carolina 27604 (919) 873-2211 Contact: Donald R. Malone, PE
Laboratory:	REDLAB/QROS, LLC 5598 Marvin Moss Lane, MARBIONC Building Wilmington, North Carolina 28409 844-384-7815
Excavation Contractor:	CCI Environmental, Inc. 281 Lane Parkway Salisbury, NC 28146 704-273-1500 Contact: Keith Burch
Release Information:	Release Discovery Date: Not Applicable Estimated Quantity: Not Applicable Cause of Release: Not Applicable Source of Release: Not Applicable

I, Donald R. Malone, a Licensed Engineer for Terracon Consultants, Inc., do certify that the information contained in this report is correct and accurate to the best of my knowledge.

Donald R. Malone, PE, RSM
NC License No. 20195

Terracon Consultants, Inc. is licensed to practice geology and engineering in North Carolina. The certification numbers of the corporation are C-367 and F-0869, respectively.

B. SITE HISTORY AND CHARACTERIZATION

B.1 Site Description

The site is located at 1311 South Ridge Avenue in Cabarrus County, North Carolina (**Exhibit 1**). According to the Cabarrus County GIS website, the site consists of one parcel totaling approximately 0.38 acres (Cabarrus County Parcel ID 56136273880000). The site currently consists of an active pet care and grooming facility, parking lot, and associated landscaping.

B.2 Site Background

During a 2018 Preliminary Site Assessment (PSA) conducted by Terracon, two probable metallic USTs were identified on the parcel (Terracon, 2018). The probable USTs were observed as two differential anomalies, oriented northwest-southeast parallel to South Ridge Avenue. “UST-1” was identified as an approximate 7.5-foot by 5-foot geophysical anomaly at a depth of approximately 3 feet below land surface (bls). “UST-2” was identified as an approximate 12-foot by 5-foot geophysical anomaly at a depth of approximately 2.8 feet bls. The probable metallic USTs were identified in the front portion of the parcel, maintained as mowed grass and wooded land, and appeared to be situated end to end.

During the PSA, saturated soil was encountered within soil borings adjacent to the USTs at approximately 11 feet bls. One soil sample was collected from a soil boring advanced adjacent to the USTs and analyzed by REDLAB/QROS, LLC for analysis by Ultraviolet Fluorescence (UVF) for 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).

The analytical results did not indicate evidence of petroleum impacts the UST system (Terracon, 2018). Details regarding the prior operation and ownership of the on-site UST system at the site are not known with certainty.

C. UST REMOVAL ACTIVITIES

Terracon mobilized to the site on May 6, 2020 to conduct the permanent closure by removal of the UST system. Prior to the excavation activities, Terracon submitted a public utility locator request to the NC One Call (811) system. In addition, Terracon utilized ground penetrating radar (GPR) at the site to re-mark the location and extents of the UST basin and identify underground utility locations.

Terracon hired CCI Environmental, Inc. (CCI) to perform the UST removal activities. CCI removed the soil overlying the UST basin and stockpiled the material on the site. Terracon screened the soil with a photo-ionization detector (PID). PID field readings ranged from 1.0 ppm to 35.6 ppm. After the UST was uncovered and prior to UST removal, Terracon screened the vapors in the UST with a multi-gas meter to evaluate the combustible vapors within the tank.

The interior of the UST was observed to be dry. After inspection by the Kannapolis Fire Marshal, the UST was removed from the ground and taken off the site for disposal. A copy of the Transportation Manifest for the UST is provided in **Appendix B**. The UST measured 15.8-feet long by 8-feet wide (approximately 6,000 gallons). Visual evidence of corrosion and/or holes in the UST was not observed.

Immediately following removal of the UST, Terracon screened grab soil samples from within the excavation with a PID and PetroFlag Soil Analyzer System. PID and PetroFlag field readings ranged from 1.2 to 12.4 parts per million (ppm). Terracon collected six soil samples (SS-3 through SS-8) from the sidewalls of the excavation and two soil samples (SS-1 and SS-2) from directly beneath the UST. Terracon also screened grab soil samples from beneath an identified product line. The PID and PetroFlag field readings from these samples ranged from 31 ppm to 45 ppm. One soil sample (SS-7) was collected from beneath the product line. Sample locations are depicted on **Exhibit 2**. Soil samples were packed in ice and shipped via FedEx with chain-of-custody documentation to REDLAB/QROS, LLC for analysis of:

- 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).

A summary of analytical results for the samples is in **Table 1**. The laboratory analytical report is in **Appendix C**.

Based on the results of the field screening, Terracon instructed CCI that over excavation of soils was not required. The final extent of the UST excavation was approximately 22 feet long by 11 feet wide by 12 feet deep. Groundwater or bedrock were not encountered in the UST excavation. The approximate location and extents of the excavation are depicted on **Exhibit 2**. The excavation was backfilled with overburden soils and imported backfill.

D. LABORATORY RESULTS

Concentrations of TPH-GRO and TPH-DRO were not identified above their respective NCDEQ Action Levels of 50 parts per million (ppm) and 100 ppm, respectively.

E. CONCLUSIONS AND RECOMMENDATIONS

One approximate 6,000-gallon UST and the associated product line were removed from the site on May 6, 2020. The interior of the UST was observed to be dry. Based on field screening results, soil was not removed from the excavation nor disposed of off the site. Laboratory analyses of the soil samples collected following UST excavation activities did not identify concentrations of TPH-GRO or TPH-DRO above NCDEQ Action Levels.

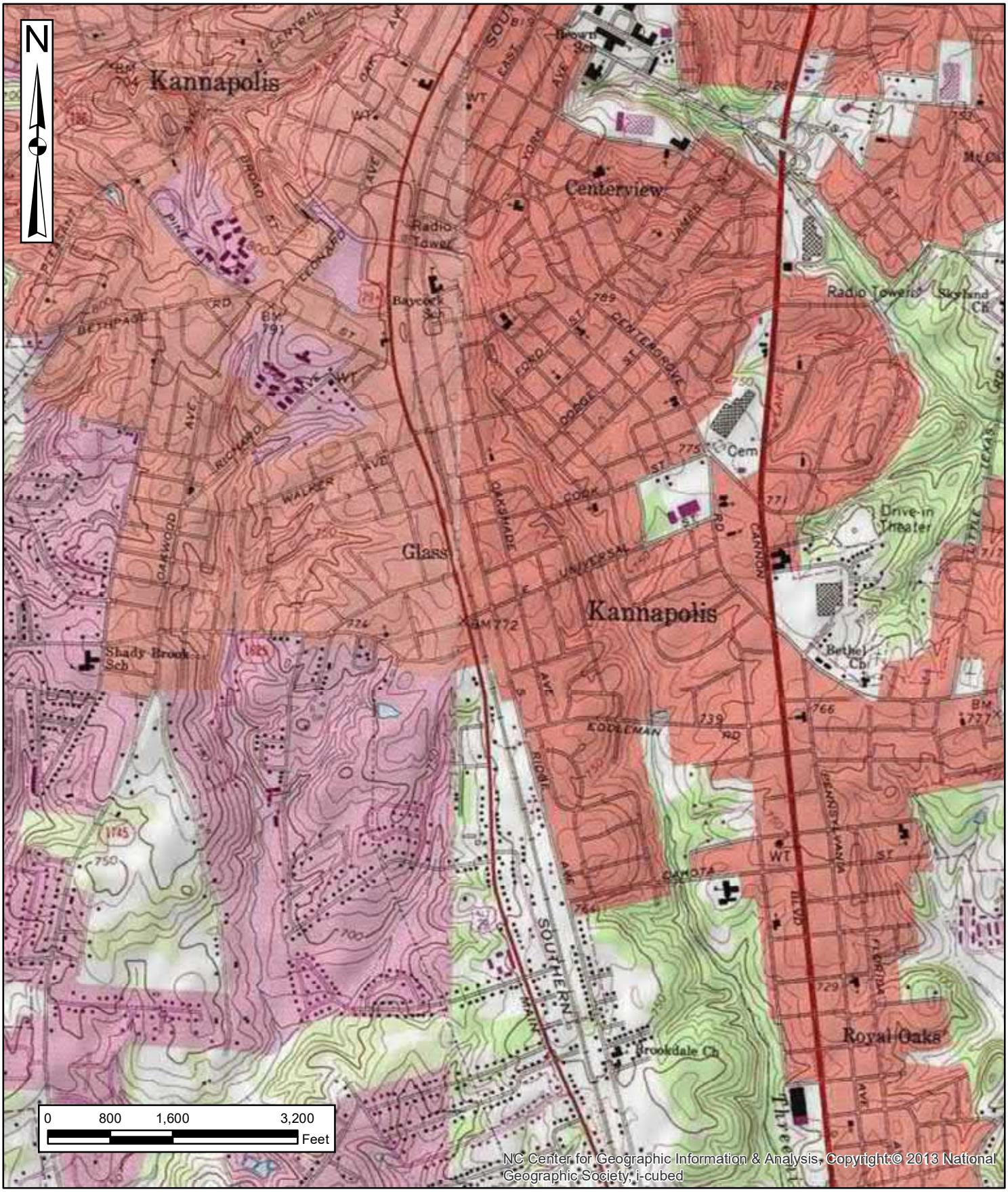
Based on the results of the removal and sampling activities, a release does not appear to have occurred in association with the former on-site UST. As such, additional investigation or actions are not warranted at this time.

F. REFERENCES

- NCDEQ, 2019. UST Section Guidelines for Site Checks, Tank Closure, and Initial Response and Abatement for UST Releases. February 1.

- Terracon, 2018. Preliminary Site Assessment, Norfolk Southern Mainline Grade Crossing Separation at Rogers Road in Kannapolis, Parcel 51 – Teresa Whittington Property, 1311 S. Ridge Avenue, Kannapolis, North Carolina, Terracon Project No. 70187265, September 7.

EXHIBITS



PM: DRM	Project No. 70197185	Terracon	**Topographic Vicinity Map**	**EXHIBIT NO.**
Drawn By: JWW	Scale: 1 in = 1,667 ft		Underground Storage Tank Removal NCDOT - Kannapolis UST Removal (Y-4810K) 1311 South Ridge Avenue Kannapolis, Cabarrus County, North Carolina	1
Checked By: DRM	Filename: Topographic Vicinity Map			
Approved By: DRM	Date: May 2020			

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

Project Mngr: D. R. MALONE Drawn By: W. D. FIELDS Checked By: D. R. MALONE Approved By: D. R. MALONE	Project No. 70197185 Scale: 1 in. = 10 ft. File No. SAMPLE LOCATION MAP Date: 05/15/2020	Terracon Consulting Engineers and Scientists 2401 BRENTWOOD ROAD, STE. 107 RALEIGH, NC 27604 PH. (919) 873-2211 FAX. (919) 873-9555	SAMPLE LOCATION MAP UNDERGROUND STORAGE TANK REMOVAL NCDOT – KANNAPOLIS UST REMOVAL (Y–4810K) 1311 SOUTH RIDGE AVENUE KANNAPOLIS, CABARRUS COUNTY, NORTH CAROLINA	EXHIBIT NO. 2

TABLES

Table 1
Summary of Soil Analytical Results
NCDOT Project Y-4810K - Kannapolis UST Pull
1311 South Ridge Road, Kannapolis, Cabarrus County, North Carolina
Terracon Project No. 70197185

Sample ID:	**SS-1**	**SS-2**	**SS-3**	**SS-4**	**SS-5**	**SS-6**	**SS-7**	**SS-8**	**NCDEQ Action Level**	**MSCC Industrial / Commercial**
Sample Location:	**Floor of UST basin - southern end**	**Floor of UST basin - northern end**	**Southern wall of UST basin**	**Western wall of UST basin - southern end**	**Western wall of UST basin - northern end**	**Eastern wall of UST basin - southern end**	**Eastern wall of UST basin - northern end**	**Northern wall of UST basin**		
Sample Depth (ft bls):	**12**	**12**	**8**	**8**	**8**	**8**	**9**	**8**		
BTEX (C6 - C9)	<0.45	<0.35	<0.37	<0.52	<0.5	<0.55	<0.48	<0.43	**NE**	**NE**
GRO (C5 - C10)	**7.5**	**1.8**	**0.99**	<0.52	<0.5	**9.7**	**11.2**	<0.43	**50**	**NE**
DRO (C10 - C35)	**22.8**	**0.46**	**0.54**	<0.52	<0.5	**67.2**	**22.4**	<0.43	**100**	**NE**
TPH (C5 - C35)	**30.3**	**2.26**	**1.53**	<0.52	<0.5	**76.9**	**33.6**	<0.43	**NE**	**NE**
Total Aromatics (C10-C35)	**8.8**	**0.21**	**0.26**	<0.1	<0.1	**14.4**	**8.7**	<0.09	**NE**	**NE**
16 EPA PAHs	**0.38**	<0.11	<0.12	<0.17	<0.16	**0.58**	**0.38**	<0.14	**NE**	**NE**
BaP	<0.018	<0.014	<0.015	<0.021	<0.02	<0.022	<0.019	<0.017	**NE**	**0.78**

Notes:
Soil samples were collected on May 6, 2020.
SS-7 was collected beneath product line.
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.

APPENDIX A
NOTICE OF INTENT FORM

UST-3 Notice of Intent: UST Permanent Closure or Change-in-Service

Return completed form to:
The DWM Regional Office located in the area where the facility is located. Also send a copy to the Central Office in Raleigh. SEE MAP ON THE BACK OF THIS FORM FOR THE CENTRAL AND REGIONAL OFFICE ADDRESSES.

STATE USE ONLY

I.D. #_____

Date Received_____

INSTRUCTIONS (READ THIS FIRST)

Complete and return a UST-3 form at least **thirty (30) days** prior to closure or change-in-service activities. If a Professional Engineer (P.E.) or a Licensed Geologist (L.G.) provides supervision for closure or change-in-service site assessment activities and signs and seals all closure reports then at least a **five (5) working days**' notice is acceptable.

Completed UST closure or change-in-service site assessment reports, along with a copy of the UST-2A and/or 2B forms, should be submitted to the appropriate Division of Waste Management (DWM) Regional Office within thirty (30) days following closure activities. The UST-2 form should also be submitted to the Central Office in Raleigh so that the status of the tanks may be changed to permanently closed and your tank fee account can be closed out. Note: Tank fees may be due for unregistered tanks.

UST closure and change-in-service site assessments must be completed in accordance with the latest version of the *Guidelines for Site Checks, Tank Closure and Initial Response*. The guidelines can be obtained at https://deq.nc.gov/about/divisions/waste-management/ust. Note: To close tanks in place you must obtain prior approval from the DWM Regional office located in the region where the facility is located.

You must make sure that USTs removed from your property are disposed of properly. When choosing a closure contractor, ask where the tank(s) will be taken for disposal. Usually, USTs are cleaned and cut up for scrap metal. This is dangerous work and must be performed by a qualified company. Tanks disposed of illegally in fields or other dumpsites can leak petroleum products and sludge into the environment. If your tanks are disposed of improperly, you could be held responsible for the cleanup of any environmental damage that occurs.

I. OWNERSHIP OF TANKS

Owner Name (Corporation, Individual, Public Agency, or Other Entity)	
Street Address	
City / County	
State / Zip Code	
Phone Number / Email	

II. LOCATION

Facility Name or Company		
Facility ID # (If known)		
Street Address		
City	County	Zip Code
Phone Number		

III. CONTACT PERSONNEL

Name:	Company Name:	Job Title:	Phone Number:

IV. TANK REMOVAL, CLOSURE IN PLACE, CHANGE-IN SERVICE

1. Contact local fire marshal.
2. Plan entire closure event.
3. Conduct Site Soil Assessment.
4. If removing tanks or closing in place, refer to API Publication 2015 *Cleaning Petroleum Storage Tanks* and 1604 *Removal and Disposal of Used Underground Petroleum Storage Tanks.*
5. Provide a sketch locating piping, tanks and soil sampling locations.
6. Submit a closure report in the format of UST-12 (including the form UST-2) within thirty (30) days following the site investigation.
7. If a release from the tanks has occurred, the site assessment portion of the tank closure must be conducted under the supervision of a P.E. or L.G., with all closure site assessment reports bearing the signature and seal of the P.E. or L.G. If a release has not occurred, the supervision, signature or seal of a P.E. or L.G. is not required.
8. Keep closure records for three (3) years.

V. WORK TO BE PERFORMED BY

Contractor Name:	Contractor Company Name:		
Address:	State:	Zip Code:	Phone No:
Primary Consultant Name:	Primary Consultant Company Name:		Consultant Phone No:

VI. TANKS SCHEDULED FOR CLOSURE OR CHANGE-IN-SERVICE

Tank ID No.	Size in Gallons	Last Contents	Proposed Activity: Closure – Removal	Proposed Activity: Closure – Abandonment in Place *	Proposed Activity: Change-In-Service – New Contents Stored
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	

* Prior written approval to abandon a tank in place must be received from a DWM Regional Office.

VII. OWNER OR OWNER'S AUTHORIZED REPRESENTATIVE

Has a release from a UST system occurred at this location? ☐ Yes ☐ No ☐ Unknown

I understand that I can be held responsible for environmental damage resulting from the improper disposal of my USTs.

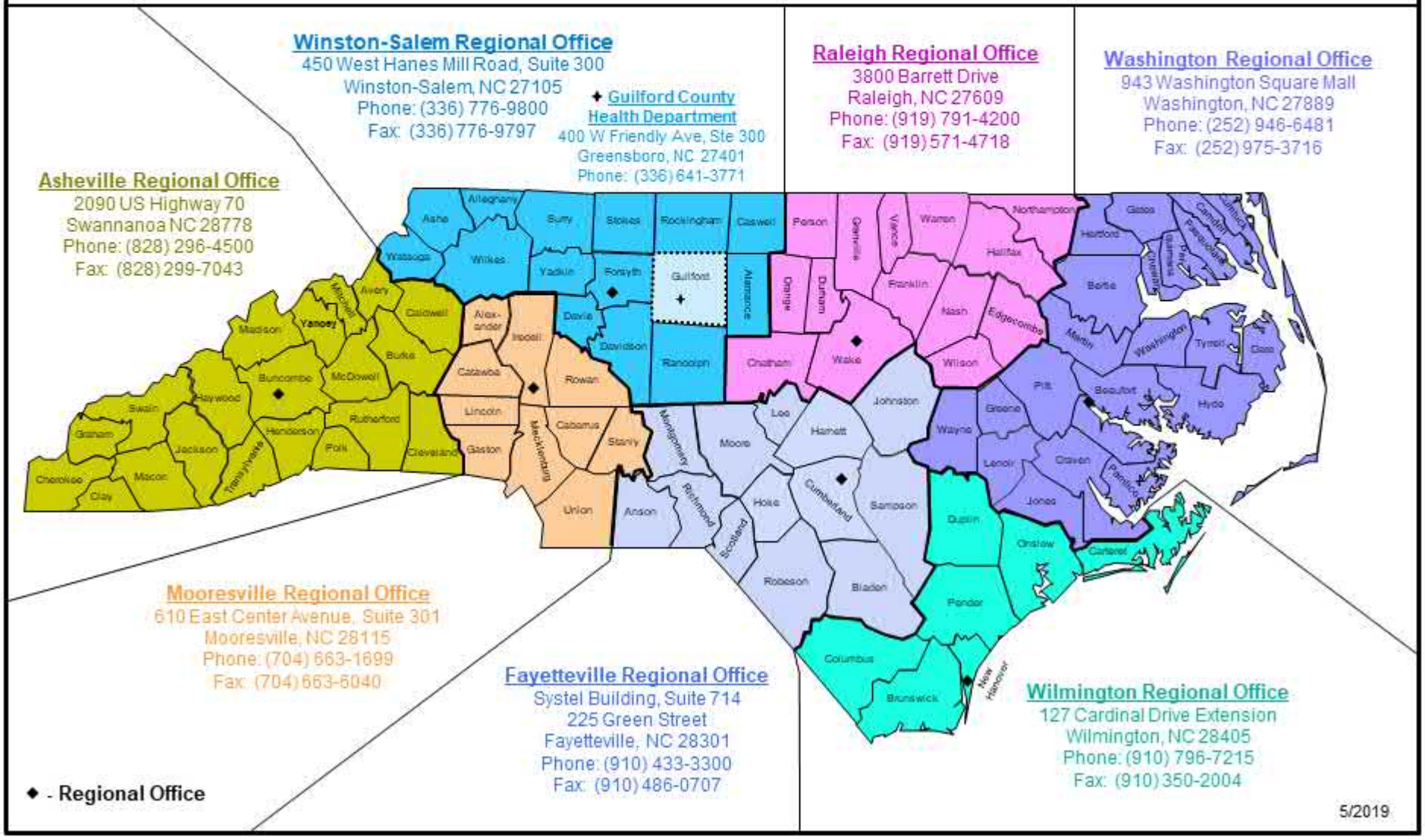
Print name and official title:

Signature	Date Signed	SCHEDULED REMOVAL DATE	**Notify your DWM Regional Office 48 hours before this date if scheduled removal date changes**

North Carolina Department of Environmental Quality

Division of Waste Management – Underground Storage Tank Section

1646 Mail Service Center
Raleigh, NC 27699-1646
Phone: (919) 707-8171 / Fax: (919) 715-1117



APPENDIX B
TRANSPORTATION MANIFEST

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number

2. Page 1 of 1

3. Emergency Response Phone: 704-213-1500

4. Waste Tracking Number: 050620

GENERATOR

5. Generator's Name and Mailing Address
Mutt Hut Pet Hotel & Grooming
1311 S. Ridge Ave.
Kannapolis, NC, 28083
Generator's Phone:

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: CCI Environmental — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
CCI Environmental
281 Lane Parkway
Salisbury, NC 28146
Facility's Phone: — U.S. EPA ID Number

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	NON Hazardous Material (Empty 6,000 UST for Recycling)	01	Tank	6,000		
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name — Signature — Month — Day — Year

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Lamont Evens — Signature: Lamont Evens — Month — Day — Year: 05 06 20

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Tim Parker — Signature — Month: 5 — Day: 6 — Year: 20

APPENDIX C
LABORATORY ANALYTICAL REPORTS and CHAINS-OF-CUSTODY

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: Terracon
Address: 2401 Brentwood Rd
Ste 107
Raleigh, NC 27604

Contact: Don Malone, John Wells

Project: #70197185

Samples taken Wednesday, May 6, 2020
Samples extracted Wednesday, May 6, 2020
Samples analysed Wednesday, May 6, 2020

Operator Harry Wooten

F03640

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	SS-1	18.2	<0.45	7.5	22.8	30.3	8.8	0.38	<0.018	62.9	33.4	3.7	Deg.Fuel 83.9%,(FCM)
s	SS-2	14.2	<0.35	1.8	0.46	2.26	0.21	<0.11	<0.014	91.7	6.7	1.6	Deg.PHC 83.6%,(FCM)
s	SS-3	14.9	<0.37	0.99	0.54	1.53	0.26	<0.12	<0.015	81.2	15.7	3.1	Deg.PHC 84.2%,(FCM)
s	SS-4	20.8	<0.52	<0.52	<0.52	<0.52	<0.1	<0.17	<0.021	0	100	0	Residual HC
s	SS-5	20.2	<0.5	<0.5	<0.5	<0.5	<0.1	<0.16	<0.02	0	89.6	10.4	Residual HC
s	SS-6	22.0	<0.55	9.7	67.2	76.9	14.4	0.58	<0.022	69	27.6	3.4	Deg.Diesel 66.4%,(FCM)
s	SS-7	19.1	<0.48	11.2	22.4	33.6	8.7	0.38	<0.019	72.3	24.7	3	Deg.Fuel 84.3%,(FCM)
s	SS-8	17.1	<0.43	<0.43	<0.43	<0.43	<0.09	<0.14	<0.017	0	100	0	Residual HC

Initial Calibrator QC check OK

Final FCM QC Check OK 103.2 %

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

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

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

Client Name:	Terracon
Address:	2401 Brentwood Rd, STE 107 Raleigh, NC 27604
Contact:	Don Malone, John Wells
Project Ref.:	70197185
Email:	don.malone@terracon.com john.wells@terracon.com
Phone #:	919-873-2211
Collected by:	John Wells

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 UVF sample will be analyzed for total BTEX, GRO, DRO, TPH, PAH total aromatics and BaP. Standard GC Analyses are for BTEX and Chlorinated Solvents: VC, 1,1 DCE, 1,2 cis DCE, 1,2 trans DCE, TCE, and PCE. Specify target analytes in the space provided below.

Sample Collection	TAT Requested		Analysis Type						
Date/Time	24 Hour	48 Hour	UVF	GC	Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
5/6/20 11:02		✓	✓		JW	SS-1	52.8	40.7	12.1
11:04		✓	✓		JW	SS-2	51.5	40.7	10.8
11:06		✓	✓		JW	SS-3	50.9	40.6	10.3
11:08		✓	✓		JW	SS-4	51.2	40.6	10.6
11:10		✓	✓		JW	SS-5	51.4	40.5	10.9
11:12		✓	✓		JW	SS-6	50.7	40.7	10.0
11:14		✓	✓		JW	SS-7	52.1	40.6	11.5
11:16		✓	✓		JW	SS-8	53.7	40.8	12.9

COMMENTS/REQUESTS:

TARGET GC/UVF ANALYTES:

Relinquished by		Accepted by	Date/Time
John Wells	15:00	[illegible] 12 30	5/7/20 1230
Relinquished by		Accepted by	Date/Time

RED Lab USE ONLY
8
Ref. No 101

APPENDIX D
FIELD NOTES and PHOTO LOG

CONTENTS

AGE	REFERENCE	DATE

Site - Kannapolis UST Pull

Staff - John Wells - Terracon
CCI
- Jason
- Alan
- Kurt
- Richard

Weather - Sunny, 10s

0830 - JW & CCI on site, tailgate safety & objective meeting

0850 - Prepping equipment to begin work

0900 - Excavation begins,
PID Calibration
PID # 12611
100 ppm isobutylene → 100.0 ppm calibration

0910 - Gas line at southeastern end of tank is 2-3' from tank edge. Will tie off to tree if needed & limit excavation on that end

Location Kannapolis, NC Date 5/6/20

Project / Client 70197185

0915 - JW screens excavated (above tank) soil with PID. Readings from western side of tank: 4.1 ppm, 1.0 ppm, 3.2 ppm, 2.9 ppm

↳ readings from eastern side of tank: 4.6 ppm, 5.1 ppm, 3.9 ppm

↳ no odor or staining observed in soil overlying tank

0925 - Additional PID readings from eastern side of tank: 7.4 ppm, 3.7 ppm, 4.6 ppm

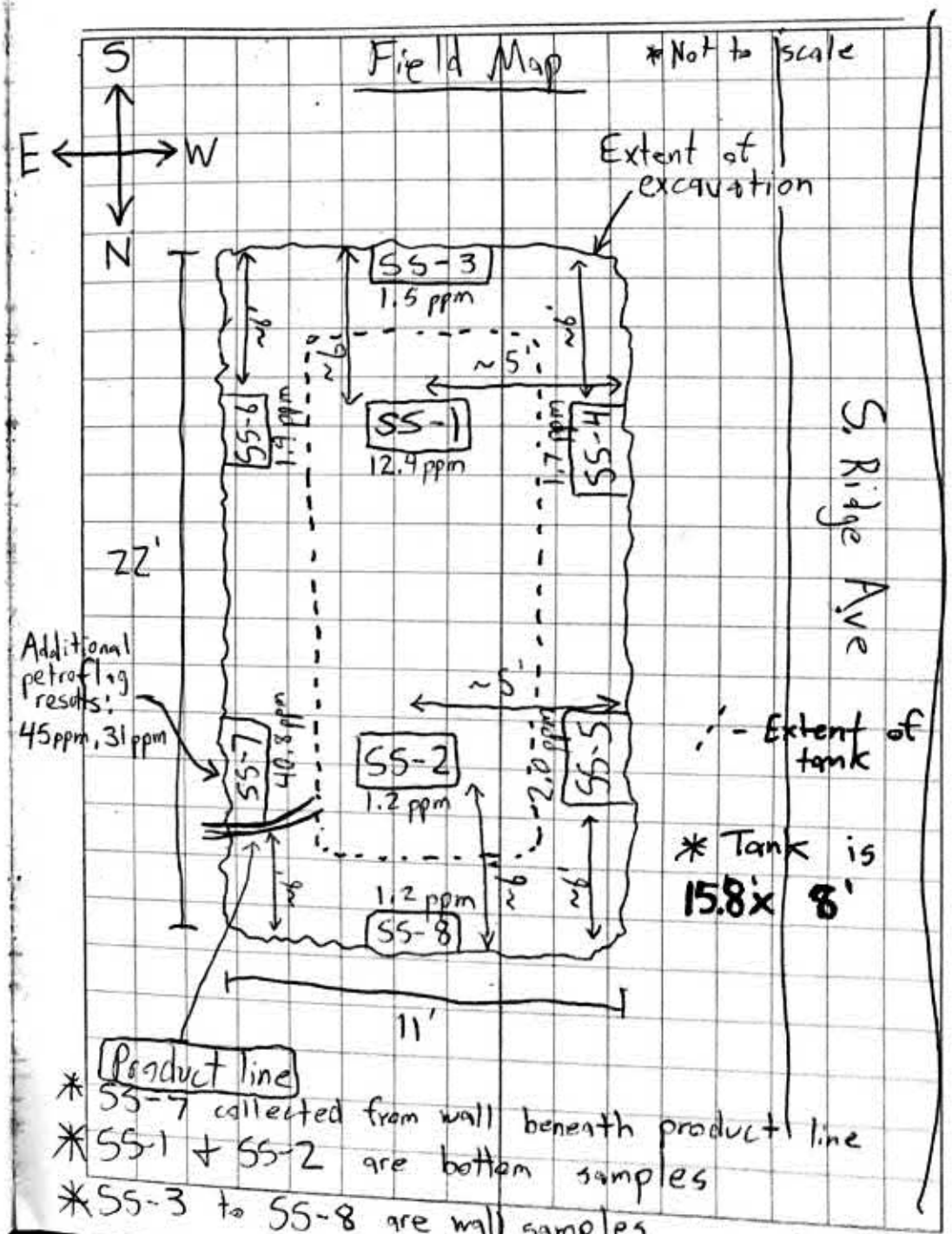
0930 - Tank is now exposed, excavating soil adjacent to the sides of the tank

↳ only 1 tank, rather than 2 that was previously suspected

0945 - Soil on eastern side of tank has been excavated. Eastern side of tank now exposed. Begin excavating soil from western side

Location Kannapolis, NC Date 5/6/20

Project / Client 70197185



Location Kannapolis, NC Date 5/6/20

Project / Client 70197185

0950 - PID readings from eastern side of tank (directly adjacent to side of tank:
1.7 ppm, 3.7 ppm, 4.4 ppm

↳ slight gasoline odor during excavation, may be coming from inside tank

1000 - Tank fully exposed & dislodged from side walls. ~~WW~~ Getting excess soil off of tank.

1005 - PID readings from western adjacent soil: 7.9 ppm, 35.6 ppm, 14.8 ppm
↳ noticable odor in 35.6 ppm sample

1015 - Preparing to rinse & vac truck
↳ Roxanne Reed (Mutt Hut) on site to provide CCI access to water

Location Kannapolis, NC Date 5/6/20

Project / Client 70197185

1020 - Tank looks to be 3000 - 4000 gallons. CCI may need to get larger truck/trailer to haul off.
↳ CCI takes reading for combustible vapors inside tank → 0% LEL. Little to no product inside tank, minor sludge on bottom
↳ CCI tells JW the "sludge" is stiff/sediment

1035 - Fire marshal on site. CCI takes another reading for combustible vapors inside tank → 0 % LEL

1100 - Tank has been removed from excavation, JW prepping to collect samples
↳ JW speaks w/ Don Malone on phone. Will collect 2 samples from bottom, 2 samples from each sidewall, 1 from each end wall
↓
one beneath product line

Location Kannapolis, NC Date 5/6/20

Project / Client 70197185

1115- JW collects samples & screens w/ PID. Results are listed on field map (page 5)

1120- JW speaks w/ Don Malone again. Don gives the okay to begin backfilling based on visual, olfactory, & PID readings.

↳ JW petroflags additional samples beneath product line to confirm no contamination (results on field map)

1140- CCI tells JW it is a 5000 gallon tank - after calculating, closer to 6000 gallons

1145- Backfilling begins. CCI has 1 dumptruck of import soil, will need at least 1 more load of dirt. They are getting some from a nearby stockyard.

Sample Log (Corresponding locations on field map, pg. 5)

ID	Date	Time	Media	Analysis
SS-1	5/6/20	1102	Soil	UVF
SS-2		1104		
SS-3		1106		
SS-4		1108		
SS-5		1110		
SS-6		1112		
SS-7		1114		
SS-8		1116		

ID	Location
SS-1	Southern bottom
SS-2	Northern bottom
SS-3	Southern wall
SS-4	Southern end of western wall
SS-5	Northern end of western wall
SS-6	Southern end of eastern wall
SS-7	Northern end of eastern wall
SS-8	Northern wall

* Depth of samples on next page

Location Kannapolis, NC Date 5/6/20

Project / Client 70197185

ID	Sample Depths Depth
SS-1	~12'
SS-2	~12'
SS-3	~8'
SS-4	~8'
SS-5	~8'
SS-6	~8'
SS-7	~9'
SS-8	~8'

1230- 2nd load of import soil on site to backfill

1250- Larger tractor trailer on site to load tank

1300- JW doublechecks tank measurements: 15.8' length, 8' diameter

↳ ~5,940 gallons

Location Kannapolis, NC Date 5/6/20

Project / Client 70197185

1310- Tank is off site via CCI, CCI taking lunch while waiting for last load of import soil to arrive

1320- Last load of import soil on site to backfill

1330- JW packing 'cooler while CCI continues backfilling

1350- Seed & straw has been laid in disturbed area. Asphalt has also been chipped in southwestern portion of parking lot. JW sends photos to Don Malone to see if okay w/ property owner

1415- Roxanne Reed (owner) is fine w/ site restoration.
JW / CCI off site

JW
5/6/20

Photo 1 - View of excavation facing south-southeast

Photo 2 - Additional view of excavation facing east-southeast

Photo 3 - View of UST being pulled from excavation

Photo 4 - View of interior of UST basin facing south

Photo 5 - View of interior of UST basin facing west

Photo 6 - View of 6,000-gallon UST after excavation

Photo 7 - Additional view of 6,000-gallon UST after excavation

Photo 8 - View of backfilling of UST basin facing west

Photo 9 - View of UST being loaded onto tractor trailer for off-site disposal

Photo 10 - View of former UST basin after site restoration

September 7, 2018

North Carolina Department of Transportation
GeoEnvironmental Engineering Unit
Century Center Complex
Building B
1020 Birch Ridge Road
Raleigh, North Carolina 27610

Re: Preliminary Site Assessment (PSA)
Norfolk Southern Mainline Grade Crossing Separation at Rogers Road Crossing in Kannapolis
Parcel 51- Teresa Whittington Property
1311 S. Ridge Avenue, Kannapolis, North Carolina
TIP No. Y-4810K
WBS Element: 40325.1.46

Dear Mr. Haden

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. P70187265) dated May 14, 2018. 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.

DocuSigned by: 9/19/2018
Prepared by:
BFAD0E85DCED418...

David W. Hawkins, PG
Staff Geologist

9/19/2018
DocuSigned by:
Reviewed by:
8E4FE90F5C944D5...

Michael B. Dail, PG
Senior Geologist

NORTH CAROLINA LICENSED SEAL 2187 GEOLOGIST MICHAEL BRYANT DAIL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Preliminary Site Assessment

Norfolk Southern Mainline Grade Crossing Separation at Rogers Road in Kannapolis

Parcel 51 – Teresa Whittington Property

1311 S. Ridge Avenue, Kannapolis, North Carolina

TIP No. Y-4810K

WBS Element: 40325.1.46

September 7, 2018

Terracon Project No. 70187265

Prepared for:

North Carolina Department of Transportation
Raleigh, North Carolina

Prepared by:

Terracon Consultants, Inc.
Raleigh, North Carolina

TABLE OF CONTENTS

Page No.

PRELIMINARY SITE ASSESSMENT

NORFOLK SOUTHERN MAINLINE GRADE CROSSING SEPARATION AT ROGERS ROAD CROSSING IN KANNAPOLIS
TIP NO. Y-4810K
WBS ELEMENT: 40325.1.46
PARCEL 51 – TERESA WHITTINGTON PROPERTY
1311 S. RIDGE AVENUE, KANNAPOLIS, NORTH CAROLINA

1.0 INTRODUCTION

1.1 Site Description

Site Name	Norfolk Southern Mainline Grade Crossing Separation at Rogers Road Crossing in Kannapolis
Site Location/Address	1311 S. Ridge Avenue, Kannapolis, North Carolina 28083 (Cabarrus County Tax PIN: 56136273880000)
General Site Description	The site currently consists of an active pet care/grooming facility (Mutt Hut).

1.2 Site History

The site is located at 1311 S. Ridge Avenue in Kannapolis, Cabarrus County, North Carolina. At the time of the Preliminary Site Assessment (PSA), the site consisted of an active pet care and grooming facility, parking lot, and associated landscaping. The site address does not appear on the North Carolina Department of Environmental Quality (NCDEQ) – Division of Waste Management UST Section Registered Tank Database; however, a suspect UST was identified on the western portion of the site approximately 15 feet from S Ridge Avenue (NCDOT, 2013). Terracon confirmed the presence of two (2) probable USTs during this preliminary site assessment.

1.3 Scope of Work

Terracon conducted the following PSA scope of work (SOW) in accordance with Terracon's Proposal for PSA (Proposal No. P70187265) dated May 14, 2018. This PSA is being completed prior to planned bridge addition over the Norfolk Southern Railroad in the vicinity of Rogers Lake Road and S. Ridge Avenue in Kannapolis, North Carolina (site). The scope of work included a geophysical investigation, collection of soil and 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 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. P70187265) dated May 14, 2018 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 Concord, NC (1987). **Exhibits 2A and 2B** depict a site layout plan that includes the approximate locations of the site features, soil boring locations, and analytical results.

2.1 Geophysical Survey

Between June 19 and 21, 2018, 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 and provide utility clearance prior to drilling activities. 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 identified two (2) probable metallic USTs on the parcel. The probable USTs were observed as two differential anomalies oriented northwest-southeast parallel to S Ridge Avenue. “UST-1” was identified as an approximate 7.5-foot by 5-foot geophysical anomaly at a depth of approximately 3 feet below land surface (bls). “UST-2” was identified as an approximate 12-foot by 5-foot geophysical anomaly at a depth of approximately 2.8 feet below land surface (bls). The approximate location of the probable USTs are shown on **Exhibit 2A**.

In addition to metal detection and GPR scans, the NC One Call public utility locator service was used to identify underground utility lines and to clear boring locations. 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 oversaw the advancement of eight (8) soil borings (B-1 through B-8) throughout the parcel parking area, adjacent to the on-site building, and adjacent to the probable USTs. The borings were completed by a North Carolina Certified Well Contractor (Innovative Environmental Technologies, Inc.) using a track-mounted 9520-VTR PowerProbe™ 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 assist in selection of sample intervals for laboratory analysis.

Based on the proposed disturbance depths and discussion with the NCDOT, six (6) of the soil borings were advanced to a depth of approximately 10 feet below land surface (bls). Soil boring B-4 was advanced to refusal on shallow rock at 3 feet bls, and soil boring B-8 was advanced to 15 feet bls to assess conditions in the area of the probable USTs. Based on the results of the field screening, one soil sample from each boring, was collected from depths between approximately 2 feet and 15 feet bls. Soil samples were collected in the depth interval that was most likely to be impacted or from variable depths to provide spatial coverage with depth across the site.

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. Investigation derived waste (IDW) from the three (3) parcels associated with TIP No. Y-4810K was containerized in one 55-gallon drum staged on parcel 48 pending disposal.

Soil generally consisted of silty clay to depths of approximately 2 to 5 feet bls underlain by silt and silty sand. Boring B-5 was placed in a location of apparent fill in the south-central portion of the parcel parking area and consisted of gravelly sand with apparent asphalt and rip rap. Saturated soil was encountered at approximately 11 feet bls in boring B-8, where abundant minerals and a granitic texture was observed (i.e. partially weathered rock).

The soil boring logs are included in **Appendix B**. Sample locations were measured using a Trimble Geo7x GPS and are depicted on **Exhibits 2A and 2B**.

3.0 LABORATORY ANALYSES

Soil samples were placed in laboratory provided sample containers and shipped to REDLAB/QROS, LLC – Environmental Testing for analysis by Ultraviolet Fluorescence (UVF) for 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

Table 1 summarizes the results of the analyses of the soil samples. **Exhibit 2B** depicts the boring locations and analytical data.

Constituents from the UVF analysis were not detected at concentrations above applicable standards in the soil samples.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The findings of this investigation are discussed below.

- The geophysical investigation identified two (2) probable USTs ("UST-1" and "UST-2") at a depth of approximately 3 feet bls, located along the western portion on the parcel parallel to S Ridge Avenue (**Exhibit 2A**).

- Laboratory analysis did not report concentrations above applicable standards in the soil samples.

- 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, Terracon recommends that the two probable USTs are removed in accordance with applicable state regulatory guidelines. Based on detections of petroleum compounds in soil, construction workers should be alert for potential soil and/or groundwater impacts in other locations at the site.

6.0 REFERENCES

NCDOT, 2013. GeoEnvironmental Report for Planning Y-4810K. "Hazardous Materials Report." December 2, 2013

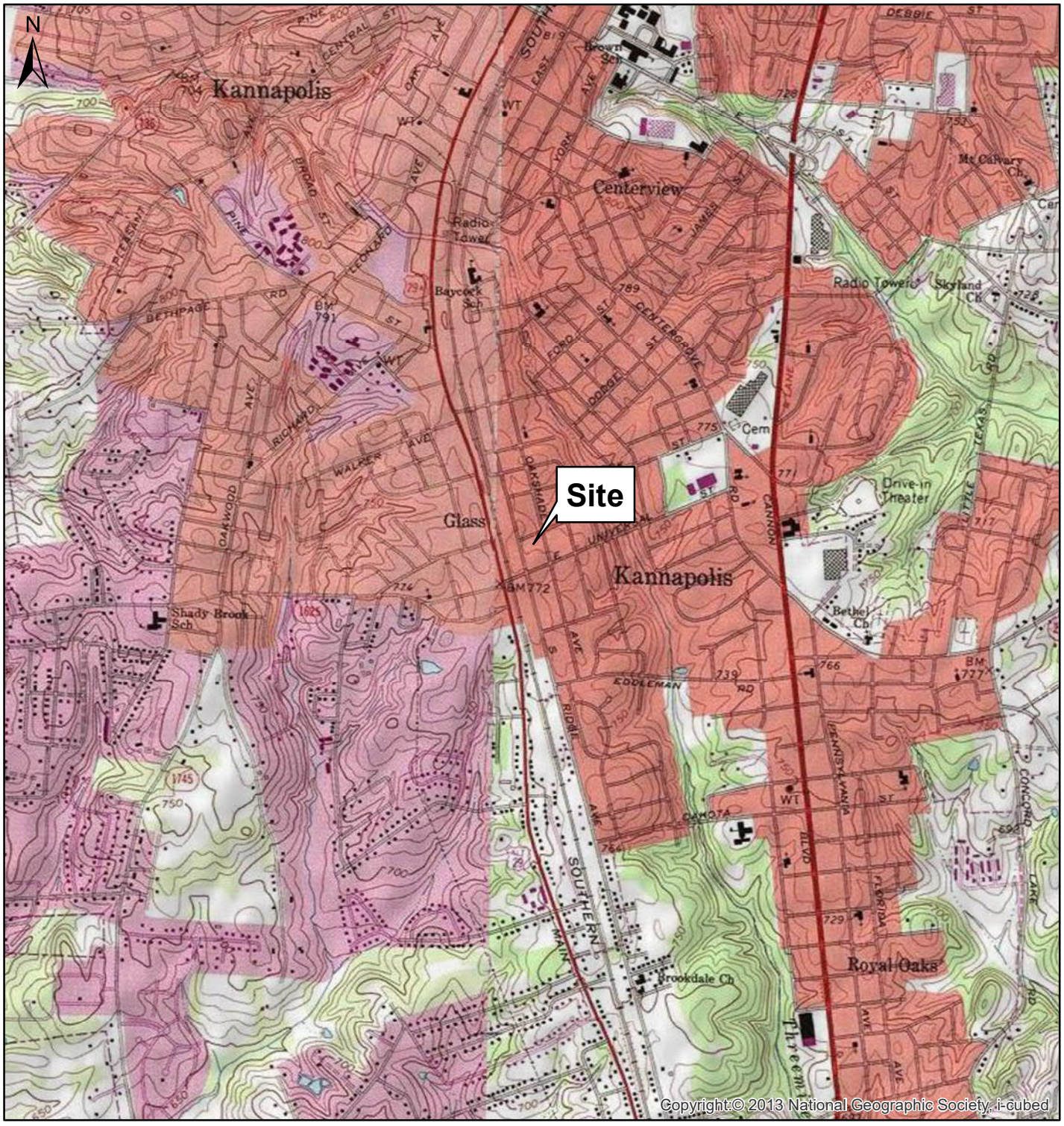
TABLES

Table 1
Summary of Soil Analytical Results
Preliminary Site Assessment
Parcel 51 - Teresa Whittington Property
Kannapolis, Cabarrus County, North Carolina
Terracon Project No. 70187265

Sample ID: / Sample Depth (ft bls):	B-1 2-4	B-2 4-6	B-3 3-5	B-4 2-4	B-5 3-5	B-7 8-10	B-8 8-10	B-8 13-15	NCDEQ Action Level	MSCC Industrial/ Commercial	PSRG Industrial/ Commercial
BTEX (C6 - C9)	<0.55	<0.65	<0.79	<0.71	<0.63	<0.75	<0.3	<0.26	NE	NE	NE
GRO (C5 - C10)	<0.55	<0.65	<0.79	<0.71	<0.63	<0.75	<0.3	<0.26	50	NE	NE
DRO (C10 - C35)	<0.04	11	<0.06	<0.06	5.4	<0.06	<0.02	0.49	100	NE	NE
TPH (C5 - C35)	<0.55	11	<0.79	<0.71	5.4	<0.75	<0.3	0.49	NE	NE	NE
Total Aromatics (C10-C35)	<0.11	8.3	<0.16	<0.14	5.3	<0.15	<0.06	0.33	NE	NE	NE
16 EPA PAHs	<0.02	0.45	<0.03	<0.03	0.28	<0.03	<0.01	<0.08	NE	NE	NE
BaP	<0.011	<0.013	<0.016	<0.014	<0.013	<0.015	<0.006	<0.01	NE	0.78	2.1

Notes:
Soil samples were collected on July 9, 2018.
Concentrations are reported in milligrams per kilogram (mg/kg).
ft bls - feet below land surface.
BTEX - Benzene, Toluene, Ethylbenzene, and Xylenes.
GRO - Gasoline Range Organics.
DRO - Diesel Range Organics.
TPH - Total Petroleum Hydrocarbons.
16 EPA PAHs - Environmental Protection Agency Polycyclic Aromatic Hydrocarbons (acenaphthene, acenaphthylene, anthracene, benz[a]anthracene, 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.
Bold: Constituent concentration reported above the method detection limit.
North Carolina Department of Environmental Quality (NCDEQ) State Action Level for Total Petroleum Hydrocarbons (GRO/DRO) (July 2016).
MSCC Industrial/Commercial - Maximum Soil Contaminant Concentration Levels Industrial/Commercial soil cleanup levels (April 2012).
NCDEQ Industrial/Commercial Preliminary Soil Remediation Goals (PSRGs) (February 2018).

FIGURES



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

CONTOUR INTERVAL 10 FEET

USGS TOPOGRAPHIC MAP
SITE: CONCORD, NC QUADRANGLE (1987)
NORTH: KANNAPOLIS, NC QUADRANLE (1993)

PM: SJK	Project No. 70187265	Terracon	**Topographic Vicinity Map**	EXHIBIT NO.
Drawn By: DWH	Scale: 1:24,000		**Preliminary Site Assessment** **Parcel 51 - Teresa Whittington Property** **Kannapolis, Cabarrus County, North Carolina**	1
Checked By: SJK	File Path:			
Approved By: MTJ	Date: 8/27/2018			

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

PROJECT REFERENCE NO.	EXHIBIT
40325.1.46 (Y-4810K)	2A

SITE DIAGRAM WITH BORING LOCATIONS

PARCEL 51
TERESA WHITTINGTON PROPERTY
1311 SOUTH RIDGE AVENUE
KANNAPOLIS, CABARRUS COUNTY,
NORTH CAROLINA

LEGEND

- PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- NEW RIGHT OF WAY LINE WITH PIN AND CAP
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF TRAVEL
- PROPOSED CUT / FILL LINE
- PROPOSED CATCH BASIN
- PROPOSED DRAINAGE PIPING
- TDE — NEW TEMPORARY DRAINAGE EASEMENT
- BORING LOCATION
- APPROXIMATE UST LOCATION

B-1 B-2 B-3 B-4 B-5 B-6 B-7 B-8 B-9 B-10

UST-1
7.5' L X 5' W X 3' D

UST-2
12+' L X 5' W X 2.8' D

N

0 30 60 120
FEET

PROJECT REFERENCE NO.	EXHIBIT
40325.1.46 (Y-4810K)	2B

SITE DIAGRAM WITH BORING LOCATIONS AND ANALYTICAL DATA

PARCEL 51
TERESA WHITTINGTON PROPERTY
1311 SOUTH RIDGE AVENUE
KANNAPOLIS, CABARRUS COUNTY,
NORTH CAROLINA

B-2 (4-6 ft bls)	(mg/kg)
DRO (C10-C35)	11.0
TPH (C5-C35)	11.0
Total Aromatics (C10-C35)	8.3
16 EPA PAHs	0.45

B-3 (3-5 ft bls)
COMPOUNDS NOT DETECTED ABOVE LABORATORY REPORTING LIMITS

B-1 (2-4 ft bls)
COMPOUNDS NOT DETECTED ABOVE LABORATORY REPORTING LIMITS

B-8 (8-10 ft bls)
COMPOUNDS NOT DETECTED ABOVE LABORATORY REPORTING LIMITS

B-8 (13-15 ft bls)	(mg/kg)
DRO (C10-C35)	0.49
TPH (C5-C35)	0.49
Total Aromatics (C10-C35)	0.33

UST-1
7.5' L X 5' W X 3' D

B-7 (8-10 ft bls)
COMPOUNDS NOT DETECTED ABOVE LABORATORY REPORTING LIMITS

UST-2
12+' L X 5' W X 2.8' D

B-4 (2-4 ft bls)
COMPOUNDS NOT DETECTED ABOVE LABORATORY REPORTING LIMITS

B-5 (3-5 ft bls)	(mg/kg)
DRO (C10-C35)	5.4
TPH (C5-C35)	5.4
Total Aromatics (C10-C35)	5.3
16 EPA PAHs	0.28

B-6
NO SAMPLES COLLECTED, BORING ADVANCED FOR SCREENING AND LITHOLOGY PURPOSES

LEGEND

- PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- NEW RIGHT OF WAY LINE WITH PIN AND CAP
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF TRAVEL
- PROPOSED CUT / FILL LINE
- PROPOSED CATCH BASIN
- PROPOSED DRAINAGE PIPING
- TDE — NEW TEMPORARY DRAINAGE EASEMENT
- BORING LOCATION
- APPROXIMATE UST LOCATION

NOTES

mg/kg - MILLIGRAMS PER KILOGRAM

ft bls - FEET BELOW LAND SURFACE

DRO - DIESEL RANGE ORGANICS
GRO - GASOLINE RANGE ORGANICS
PAH - POLYCYCLIC AROMATIC HYDROCARBON

N

0 30 60 120
FEET

APPENDIX A

GEOPHYSICAL SURVEY REPORT

TERRACON CONSULTANTS, INC.

GEOPHYSICAL INVESTIGATION TO LOCATE METALLIC USTS

Teresa Whittington (Parcel 51) Property
1311 South Ridge Avenue
Kannapolis, North Carolina

July 2, 2018
Geophysical Survey Investigations, PLLC
Project No. 2018-28

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

TERRACON CONSULTANTS, INC.
GEOPHYSICAL INVESTIGATION
TO LOCATE METALLIC USTS
Teresa Whittington (Parcel 51) Property
1311 South Ridge Avenue
Kannapolis, North Carolina

TABLE OF CONTENTS

FIGURES

Prepared by: _____

Mark J. Denil, P.G.

1.0 INTRODUCTION

Geophysical Survey Investigations, PLLC (GSI) conducted an electromagnetic (EM) metal detection survey, ground penetrating radar (GPR) scanning and buried, utility line clearance search for Terracon Consultants, Inc. on June 19-21, 2018 across the accessible portion of the Teresa Whittington (Parcel 51) property located at 1311 South Ridge Avenue in Kannapolis, North Carolina. The geophysical work was conducted as part of the North Carolina Department of Transportation (NCDOT) site assessment for TIP Project Y-4810K (Norfolk Southern Mainline grade crossing separation at Rogers Road Crossing).

The geophysical investigation was conducted to determine if metallic, underground, storage tanks (USTs) are present on the accessible portion of the Teresa Whittington property. Terracon Consultants representatives Mr. Stephen Kerlin and Mr. David Hawkins, PG provided site information and guidance to Geophysical Survey Investigations, PLLC personnel prior and during data acquisition. The geophysical survey area has a maximum length and width of 100 feet and 90 feet, respectively. The geophysical survey area of the property (westerly portion of the site) consists of open, asphalt and grass-covered terrain. The Mutt Hutt dog kennel facility operates on this property in which the easterly portion of the site consists of buildings and thick wooded terrain. A UST valve cover is located near the southwesterly edge of the survey area adjacent to South Ridge Avenue.

2.0 FIELD METHODOLOGY

The EM investigation was performed across the survey area using a Geonics EM61-MK2A metal detection instrument with a Hemisphere A101 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 scanning was conducted across selected EM61 differential metal detection anomalies. GPR scans were performed along northerly-southerly and easterly-westerly directions spaced primarily 3 to 5 feet apart across the selected EM61 differential anomalies 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 6.0 feet based on an estimated two-way travel time of 8.0 nanoseconds per foot.

Following the UST investigation, the areas around proposed boring locations were scanned with the GPR unit and a DitchWitch 910 utility locator for buried utility line clearance purposes. Detected buried lines/conduits were marked in the field with orange marking paint and pin flags. 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 and debris.

The linear, EM61 early time gate anomalies intersecting UTM coordinates 1752575-E 12880502-N and 1752596-E 12880469-N are probably in response to metal spikes in the landscaping border and to the metal fence line, respectively. GPR scanning suggests the EM61 anomalies centered near UTM coordinates 1752538-E 12880467-N are in response to a mailbox, business sign and a metal fence post. GPR scanning suggests the EM61 anomalies centered near coordinates 1752600-E 12880532-N are in response to the metal shed, fence lines, office building and buried, miscellaneous metal debris. GPR scanning detected a possible area containing shallow fill material centered near coordinates1752569-E 12880455-N. The EM61 early time gate anomalies recorded within the possible fill material area are probably in response to buried, miscellaneous debris and small objects.

GPR scanning across the EM61 differential anomalies centered near coordinates 1752546-E 12880450-N and 1752549-E 12880444-N suggests the presence of two probable, metallic USTs. Probable "UST-1" is approximately 7.5 feet long, 5.0 feet wide and 3.0 feet below present grade. A valve cover is located in the center of probable UST-1. Probable "UST-2" is at least 12 feet long, 5.0 feet wide and 2.8 below present grade. The southern end of UST-2 extends into the dense foliage which prevented GPR scanning from delineating the end of the tank. Please note that an active natural gas line runs very close to the southerly end of UST-2.

The axes of the probable USTs are oriented in a northwesterly-southeasterly direction and parallel to South Ridge Avenue. GPR images acquired across the probable USTs and a photograph showing the location of the probable, buried tanks are presented in Figure 4. The approximate foot prints of the probable USTs were marked in the field with orange marking paint and pin flags.

As previously mentioned, scanning for utility line clearance purposes was conducted across the proposed boring locations. Detected lines or conduits were marked in the field with orange marking paint and pin flags.

4.0 SUMMARY & CONCLUSIONS

Our evaluation of the EM61 and GPR data collected across the geophysical survey area at the Teresa Whittington (Parcel 51) property located at 1311 South Ridge Avenue in Kannapolis, 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.

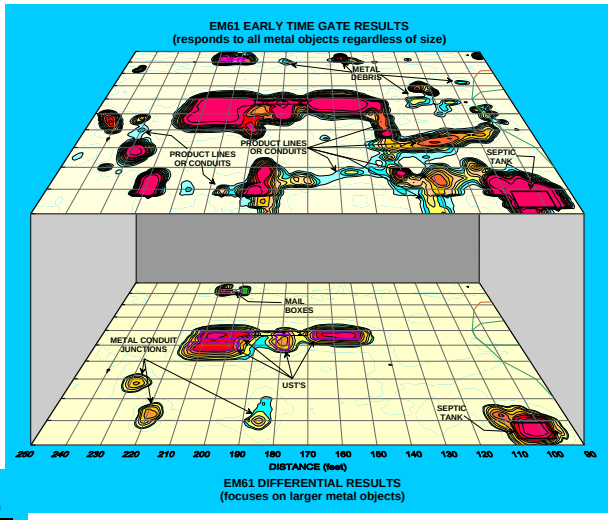
- The linear, EM61 early time gate anomalies intersecting UTM coordinates 1752575-E 12880502-N and 1752596-E 12880469-N are probably in response to metal spikes in the landscaping border and to the metal fence line, respectively.

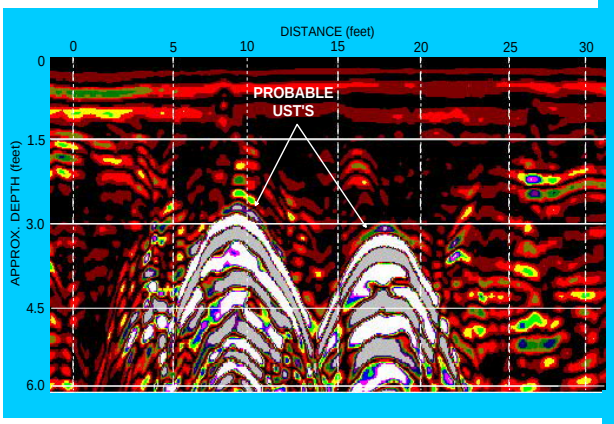
- GPR scanning suggests the EM61 anomalies centered near UTM coordinates 1752538-E 12880467-N are in response to a mailbox, business sign and a metal fence post.

- GPR scanning across the EM61 differential anomalies centered near coordinates 1752546-E 12880450-N and 1752549-E 12880444-N suggests the presence of two probable, metallic USTs. Probable "UST-1" is approximately 7.5 feet long, 5.0 feet wide and 3.0 feet below present grade. Probable "UST-2" is at least 12 feet long, 5.0 feet wide and 2.8 below present grade.

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.

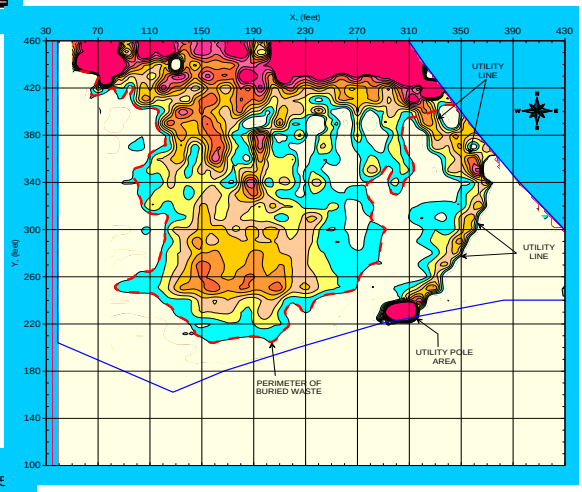


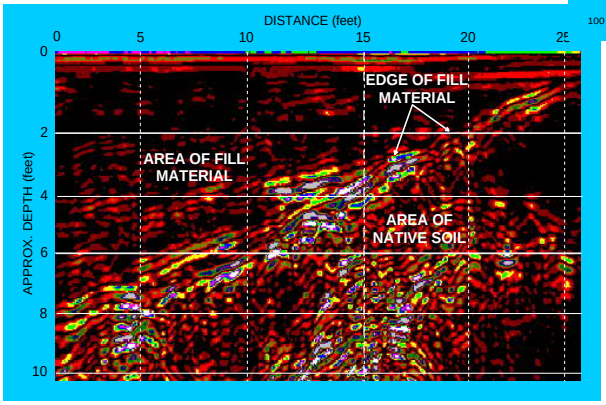


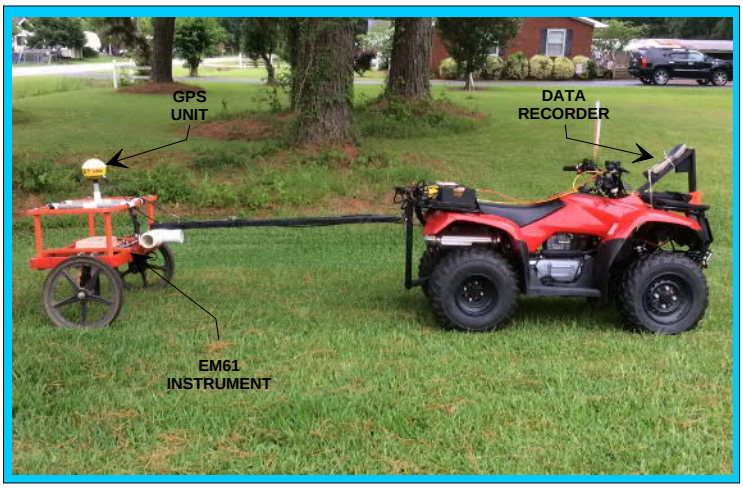
REPORT FIGURES

(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







EM61 METAL DETECTOR

The photograph shows the Geonics EM61-MK2A metal detector, a Hemisphere A101 GPS unit, a Juniper data recorder, and a Honda Recon ATV which were used to conduct the metal detection survey across the proposed ROW & easement areas of Parcel 51.

GROUND PENETRATING RADAR UNIT

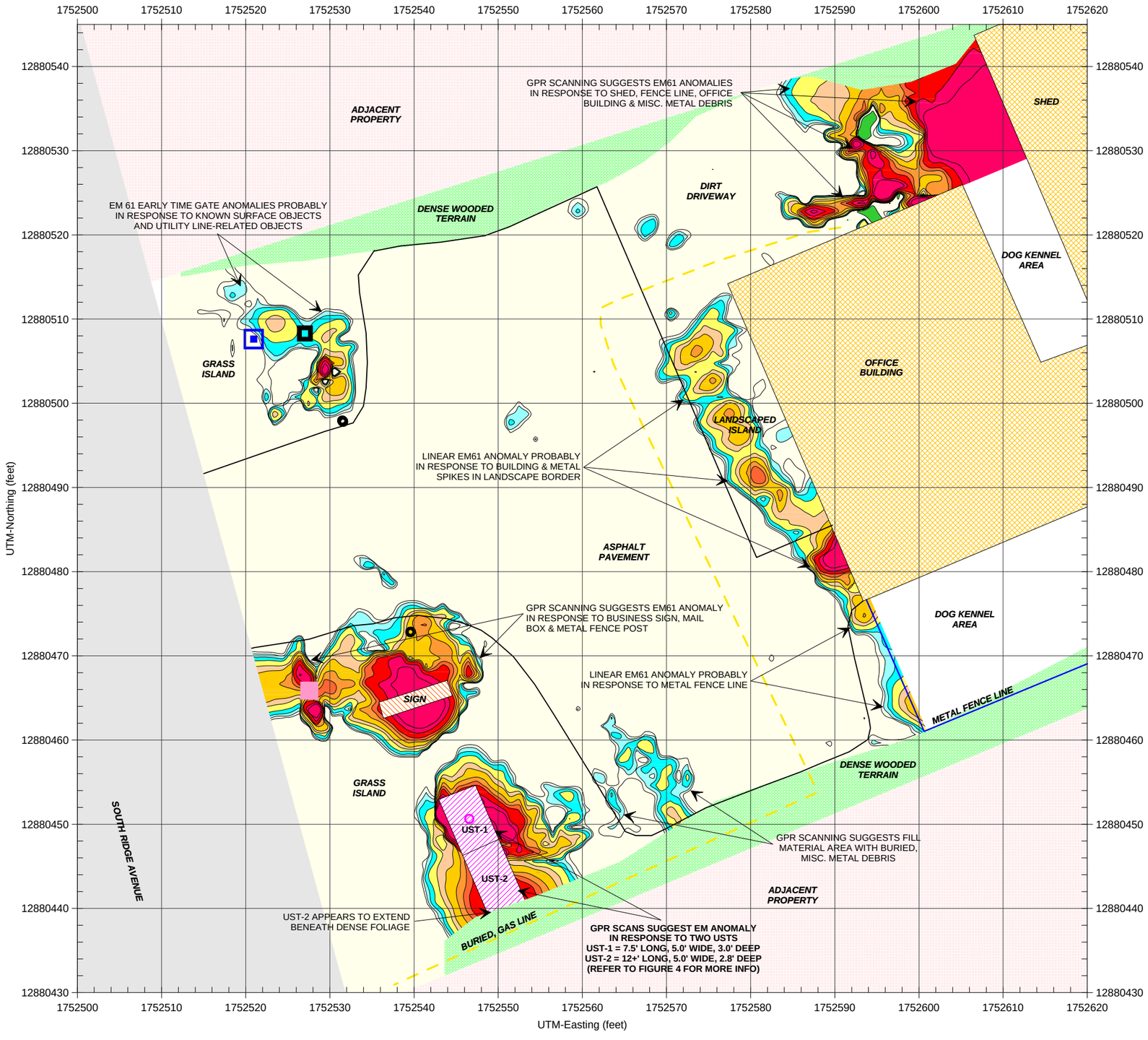
The photograph shows the Geophysical Survey Systems SIR-3000 ground penetrating radar (GPR) unit equiped with a 400 MHz antenna that were used to conduct the GPR scanning across selected areas.

DITCHWITCH UTILITY LOCATOR

The photograph shows the DitchWitch 910 utility locator which was used to detect buried lines across the proposed boring locations.

GEOPHYSICAL SURVEY AREA

The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at Parcel 51. The geophysical investigation was conducted on June 19-21, 2018.



The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at Parcel 51.

LEGEND

- SURVEY AREA: EM61 ACQUIRED ALONG LINES SPACED APPROX. 5 FEET APART
- MAILBOX
- METAL FENCE POST
- WATER METER COVER
- UTILITY LINE BOX
- PROBABLE UST VALVE COVER
- PROBABLE METALLIC UST, AS SUGGESTED BY GEOPHYSICAL SURVEYS

EM61 EARLY TIME GATE RESPONSE
(in millivolts/meter)

-5000 -100 -90 -50 -80 -75 100 150 200 300 400 500 750 1000

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, lines and conduits regardless of size. GPR scans were conducted across selected EM61 anomalies and steel reinforced concrete using a Geophysical Survey Systems SIR 3000 instrument with a 400 MHz antenna. The geophysical investigation was conducted on June 19-21, 2018.

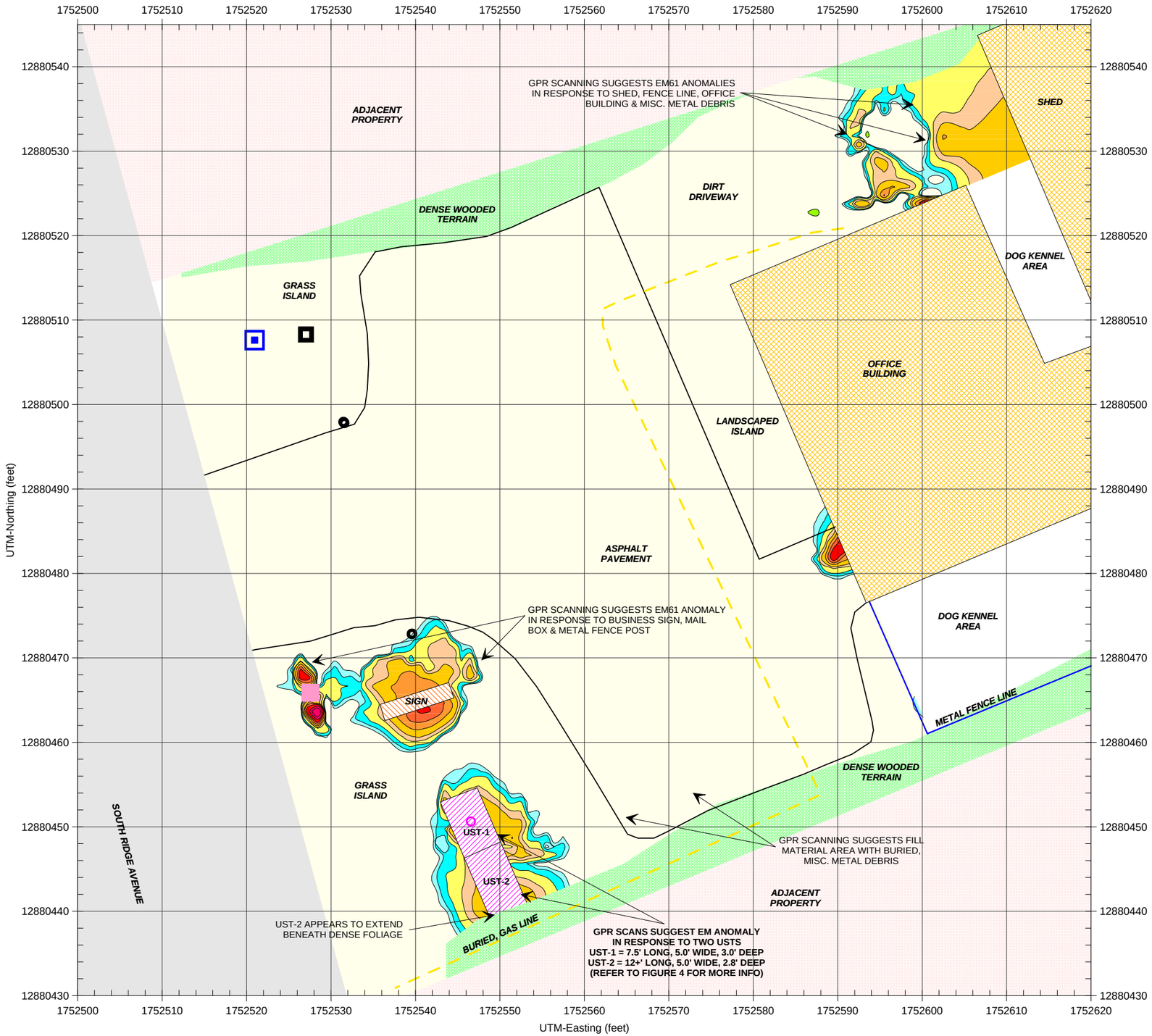
N
W E
S
APPROXIMATE NORTH

EM61-MK2A METAL DETECTION
(EARLY TIME GATE RESULTS)

Terracon Consultants, Inc.
Teresa Whittington (Parcel 51) Property
1311 South Ridge Avenue
Kannapolis, North Carolina

GEOPHYSICAL SURVEY INVESTIGATIONS

07/02/18 336-286-9718 FIGURE 2



The red polygon in the aerial photograph represents the approximate perimeter of the geophysical survey area at Parcel 51.

LEGEND

- SURVEY AREA: EM61 ACQUIRED ALONG LINES SPACED APPROX. 5 FEET APART
- MAILBOX
- METAL FENCE POST
- WATER METER COVER
- UTILITY LINE BOX
- PROBABLE UST VALVE COVER
- PROBABLE METALLIC UST, AS SUGGESTED BY GEOPHYSICAL SURVEYS

EM61 DIFFERENTIAL RESPONSE
(in millivolts/meter)

-5000 -100 -50 -30 -15 -10 -5 5 10 15 20 30 40 50 75 100 1000

Note: The contour plot shows the differential response between the early time gate and the late time gate channels 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, metal debris. Ground penetrating radar (GPR) scans were conducted across selected EM61 anomalies using a Geophysical Survey Systems SIR 3000 unit with a 400 MHz antenna. The geophysical investigation was conducted on June 19-21, 2018.

N
W E
S
APPROXIMATE NORTH

EM61-MK2A METAL DETECTION
(DIFFERENTIAL RESULTS)

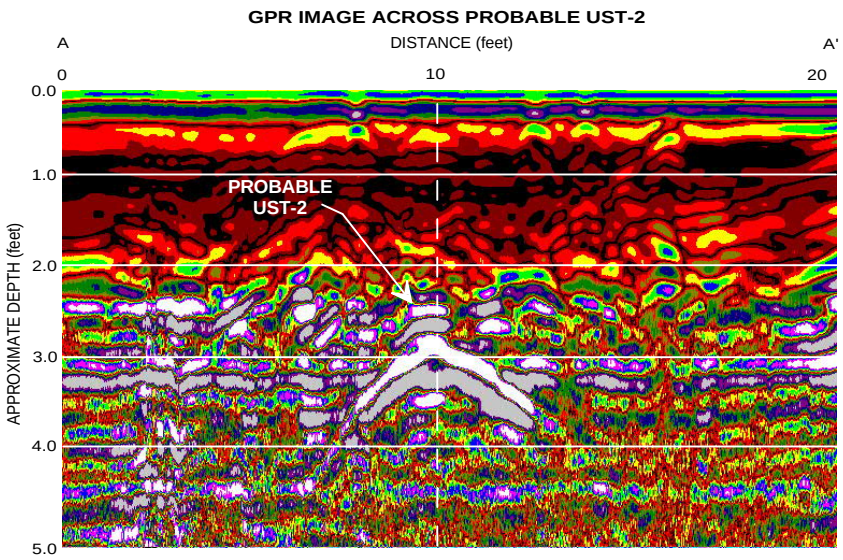
Terracon Consultants, Inc.
Teresa Whittington (Parcel 51) Property
1311 South Ridge Avenue
Kannapolis, North Carolina

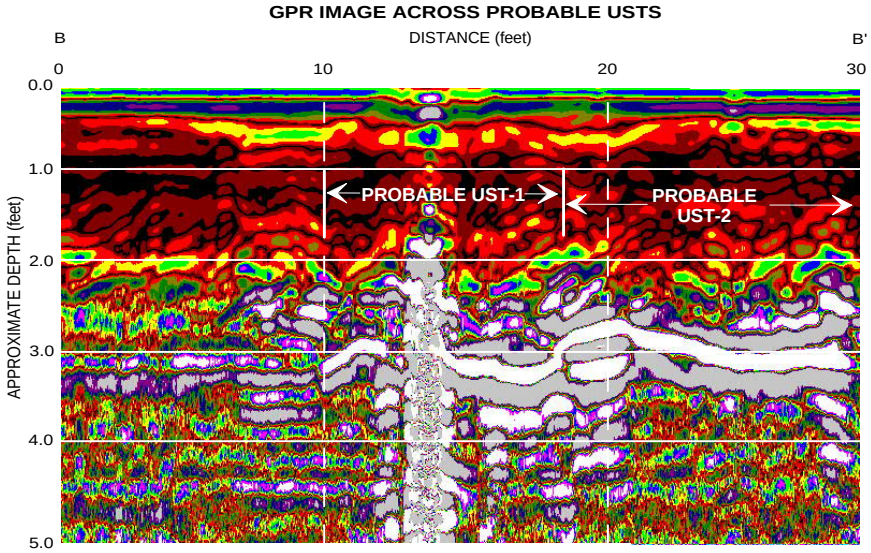
GEOPHYSICAL SURVEY INVESTIGATIONS

336-286-9718

07/02/18

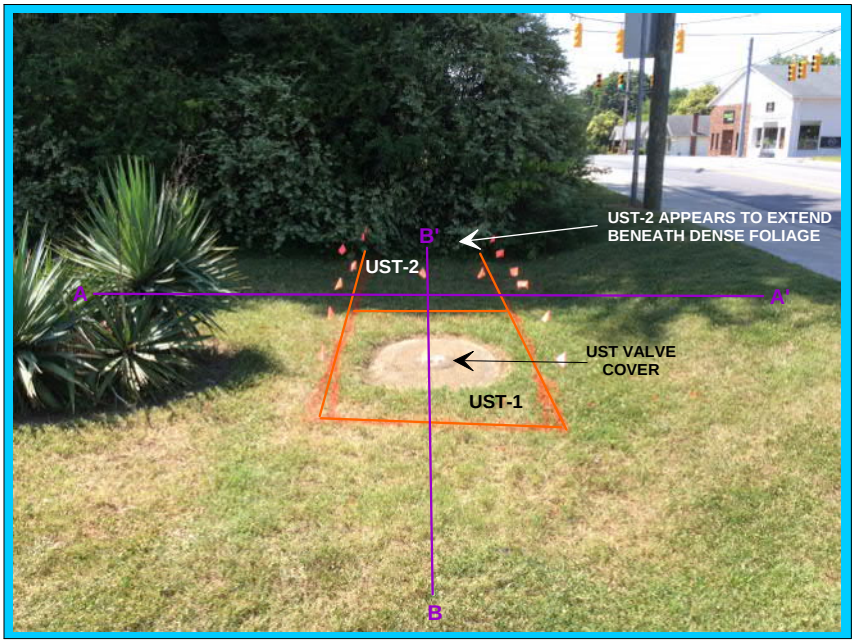
FIGURE 3





GPR scanning across the EM61 differential anomalies centered near UTM coordinates 1752546-E 12880450-N and 1752549-E, 12880444-N yielded high amplitude, hyperbolic reflections in GPR images AA' and BB'. The GPR anomalies are probably in response to metallic UST-1 and UST-2 buried approximately 3.0 and 2.8 feet below present grade, respectively.

The purple lines labeled AA' and BB' in the photograph shown below represent the approximate locations of the two GPR images.



The orange rectangles in the photograph represent the approximate foot prints of two probable USTs that were detected by the geophysical investigation. Based on the GPR data, UST-1 is approximately 7.5 feet long, 5.0 feet wide and buried 3.0 feet below present grade. UST-2 is more than 12.0 feet long, 5.0 feet wide and 2.8 feet deep.

The solid purple lines labeled AA' and BB' in the photograph represent the approximate locations of GPR images AA' and BB' shown above. The photograph is viewed in a southerly direction.

APPENDIX B

SOIL BORING LOGS

Lithology Log

Boring ID: B-1

Project Number:	70187265	Start Date/Time:	7/9/2018 / 0915	**Sample Method**	**Drilling Method**
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 0920	☐ Hand Auger	X DPT
Weather:	Sunny 80s	Boring Diameter:	2-inch	X Macro-Core	☐ HSA
Logged By:	D. Hawkins	Total Depth:	10'	☐ Split Spoon	☐ Mud Rotary
Drilling Sub:	IET	Water Level:	NA	☐ Shelby Tube	☐ Air Rotary
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		☐ Rock Core

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	58	<0.1	ML	0'-5': light brown, clayey, SILT, stiff, dry, odor not observed, micaeous	B-1 (2-4), 0920	NA- Well Not Installed
		<0.1				
		<0.1				
5-10	56	<0.1	SM	5'-10': beige, tan, sandy SILT-SILT, dry 5'-9', moist 9'-10', feldspar texture-grains observed, odor not observed		
		<0.1				
				boring terminated at 10' bls per scope.		

Notes:

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

Lithology Log

Boring ID: **B-2**

				Sample Method	Drilling Method
Project Number:	70187265	Start Date/Time:	7/9/2018 / 0920	☐ Hand Auger	X DPT
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 0930	X Macro-Core	☐ HSA
Weather:	Sunny 80s	Boring Diameter:	2-inch	☐ Split Spoon	☐ Mud Rotary
Logged By:	D. Hawkins	Total Depth:	10'	☐ Shelby Tube	☐ Air Rotary
Drilling Sub:	IET	Water Level:	NA		☐ Rock Core
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	60	<0.1	GW	0'-0.5': asphalt, black, dry	B-2 (4-6), 0930	NA- Well Not Installed
		<0.1	CL	0.5'-4': brown-reddish brown, silty CLAY, dry		
		<0.1	ML	4'-6': brown, SILT, dry, micaceous		
5-10	29	<0.1	SM	6'-10': beige, tan, sandy SILT, dry, odor not observed throughout		
		<0.1				
				boring terminated at 10' bls per scope		

Notes:

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

Lithology Log

Boring ID: B-3

				Sample Method	Drilling Method
Project Number:	70187265	Start Date/Time:	7/9/2018 / 0935	☐ Hand Auger	X DPT
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 0945	X Macro-Core	☐ HSA
Weather:	Sunny 80s	Boring Diameter:	2-inch	☐ Split Spoon	☐ Mud Rotary
Logged By:	D. Hawkins	Total Depth:	10'	☐ Shelby Tube	☐ Air Rotary
Drilling Sub:	IET	Water Level:	NA		☐ Rock Core
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	60	<0.1	CL	0'-3': brown, silty CLAY, dry	B-3 (3-5), 0940	NA- Well Not Installed
		<0.1				
		<0.1	SM	3'-10': beige - light brown, silty SAND, observed weathered minerals (quartz, feldspar, hornblede). Dry, some interlayered silty lenses (micaceous)		
5-10	60	<0.1				
		<0.1				
				boring terminated at 10' bls per scope.		

Notes:

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

Lithology Log

Boring ID: B-4

Project Number:	70187265	Start Date/Time:	7/9/2018 / 0935	**Sample Method**	**Drilling Method**
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 0945	☐ Hand Auger	X DPT
Weather:	Sunny 80s	Boring Diameter:	2-inch	X Macro-Core	☐ HSA
Logged By:	D. Hawkins	Total Depth:	3'	☐ Split Spoon	☐ Mud Rotary
Drilling Sub:	IET	Water Level:	NA	☐ Shelby Tube	☐ Air Rotary
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		☐ Rock Core

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-3	36	<0.1	SP	0'-2': reddish brown, silty clay, dry 2-3': beige, weathered rock, SAND, evident feldspar and other minerals, dry, odor not observed	B-4 (2-4), 0945	NA- Well Not Installed
				refusal at 3' bls on apparent weathered rock		

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

Lithology Log

Boring ID: **B-5a/B-5**

				Sample Method	Drilling Method
Project Number:	70187265	Start Date/Time:	7/9/2018 / 0950	☐ Hand Auger	X DPT
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1000	X Macro-Core	☐ HSA
Weather:	Sunny 80s	Boring Diameter:	2-inch	☐ Split Spoon	☐ Mud Rotary
Logged By:	D. Hawkins	Total Depth:	10'	☐ Shelby Tube	☐ Air Rotary
Drilling Sub:	IET	Water Level:	NA		☐ Rock Core
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	18	<0.1 <0.1 <0.1	SW	B-5a 0'-5': first attempt, recover <1', offset 5' to north for B-5 B-5 0'-5': brown, dark grey, gravelly SAND, dry, "fill", odor not observed, asphalt pieces	B-5 (3-5), 1000	NA- Well Not Installed
5-10				B-5a 5'-10': random fill, asphalt, other lightweight fragments, odor not observed (<0.1 ppm) B-5 5'-10': no recovery, able to get down, had loose fill		
				boring terminated at 10' bls per scope.		

Notes:

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

Lithology Log

Boring ID: B-6

				Sample Method	Drilling Method
Project Number:	70187265	Start Date/Time:	7/9/2018 / 1000	☐ Hand Auger	X DPT
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1005	X Macro-Core	☐ HSA
Weather:	Sunny 80s	Boring Diameter:	2-inch	☐ Split Spoon	☐ Mud Rotary
Logged By:	D. Hawkins	Total Depth:	10'	☐ Shelby Tube	☐ Air Rotary
Drilling Sub:	IET	Water Level:	NA		☐ Rock Core
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	30	<0.1	CL	0'-5': brown-light brown, silty CLAY, dry, stiff, firm	no soil sample. Boring for additional lithology	NA- Well Not Installed
		<0.1				
		<0.1				
5-10	30	<0.1	SM	5'-10': light brown, dry, sandy SILT, odor not observed		
		<0.1				
				boring terminated at 10' bls per scope.		

Notes:

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

Lithology Log

Boring ID: **B-7**

				Sample Method	Drilling Method
Project Number:	70187265	Start Date/Time:	7/9/2018 / 1010	☐ Hand Auger	X DPT
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1015	X Macro-Core	☐ HSA
Weather:	Sunny 80s	Boring Diameter:	2-inch	☐ Split Spoon	☐ Mud Rotary
Logged By:	D. Hawkins	Total Depth:	10'	☐ Shelby Tube	☐ Air Rotary
Drilling Sub:	IET	Water Level:	NA		☐ Rock Core
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	29	<0.1	SW	0'-0.5': organic, grass, gravel	B-7 (8-10), 1005	NA- Well Not Installed
		<0.1	ML	0.5'-4': brown, clayey SILT, dry		
		<0.1		4'-10': light brown, sandy SILT, dry, odor not observed		
5-10	24	<0.1				
		<0.1				
				boring terminated at 10' bls per scope		

Notes:

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

Lithology Log

Terracon

Boring ID: B-8

				Sample Method	Drilling Method
Project Number:	70187265	Start Date/Time:	7/9/2018 / 1010	• Hand Auger	X DPT
Site Location:	Kannapolis, NC	End Date/Time:	7/9/2018 / 1020	X Macro-Core	• HSA
Weather:	Sunny 80s	Boring Diameter:	2-inch	• Split Spoon	• Mud Rotary
Logged By:	D. Hawkins	Total Depth:	10'	• Shelby Tube	• Air Rotary
Drilling Sub:	IET	Water Level:	NA		• Rock Core
Drill Rig:	9520-VTR PowerProbe™	Well Installed:	No		

Depth (ft bls)	Recovery (inches)	PID (ppm)	U.S.C.S	(Depth interval) Color, MAIN COMPONENT, minor component(s), structure, moisture, angularity, odor, staining	Lab Sample: ID, time	Well Construction
0-5	38	<0.1	ML	0'-1': dark grey, organic, SILT, dry	B-8 (8-10), 1025	NA- Well Not Installed
		<0.1	CL	1'-3': brown, silty CLAY, dry		
		<0.1	SP-SM	3'-9': light brown, silty SAND, dry, odor not observed		
5-10	38	<0.1				
		<0.1				
		<0.1		9'-15': beige-brown, SAND or silty SAND, heavy abundance of minerals, weathered granitic fabric (partially weathered rock), moist-wet, ~11-15', slight petroleum odor in saturated zone		
10-15	56	<0.1			B-8 (13-15), 1030 HOLD	
		<0.1				
		<0.1				
				boring terminated at 15' per scope to evaluate UST area		

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 BRENTWOOD RD.
SUITE 107
RALEIGH NC 27604

Contact: DAVID HAWKINS
COLLECTED BY DAVID HAWKINS
Project: #70187265

Samples taken Monday, July 9, 2018
Samples extracted Monday, July 9, 2018
Samples analysed Wednesday, July 11, 2018

Operator NICK HENDRIX

F03640

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	B-1 (2-4)	22.0	<0.55	<0.55	<0.04	<0.55	<0.11	<0.02	<0.011	0	0	0	PHC not detected,(OCR)
s	B-2 (4-6)	26.0	<0.65	<0.65	11	11	8.3	0.45	<0.013	0	95.4	4.3	Deg Fuel 88.6%,(FCM)
s	B-3 (3-5)	31.7	<0.79	<0.79	<0.06	<0.79	<0.16	<0.03	<0.016	0	0	0	Residual HC
s	B-4 (2-4)	28.3	<0.71	<0.71	<0.06	<0.71	<0.14	<0.03	<0.014	0	0	0	PHC not detected,(OCR)
s	B-5 (3-5)	25.2	<0.63	<0.63	5.4	5.4	5.3	0.28	<0.013	0	94.5	5.1	Deg Fuel 73.9%,(FCM)
s	B-7 (8-10)	29.9	<0.75	<0.75	<0.06	<0.75	<0.15	<0.03	<0.015	0	0	0	PHC not detected,(OCR)
s	B-8 (8-10)	11.9	<0.3	<0.3	<0.02	<0.3	<0.06	<0.01	<0.006	0	0	0	PHC not detected
s	B-9 (2-4)	13.3	<0.33	<0.33	8.7	8.7	6	0.32	<0.007	0	95.2	4.5	Deg Fuel 74%,(FCM)
s	B-10 (4-6)	13.3	<0.33	<0.33	4.1	4.1	2.1	0.12	<0.007	0	95.3	4.4	Deg Fuel 75.5%,(FCM)

Initial Calibrator QC check OK

Final FCM QC Check OK 91

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

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

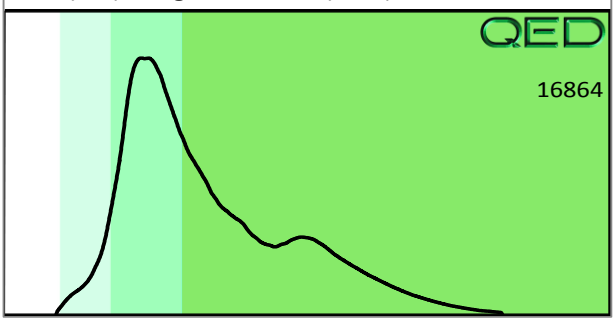
(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

QED Hydrocarbon Fingerprints

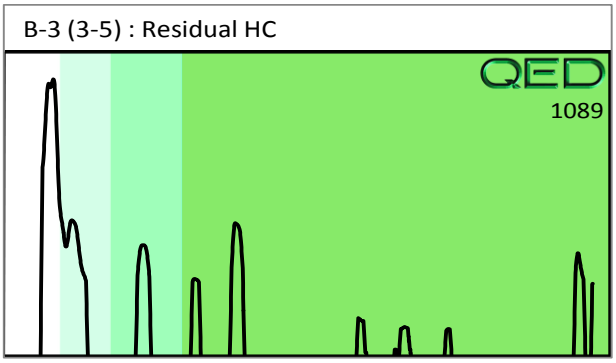
Project: #70187265 ##################

B-1 (2-4) : PHC not detected,(OCR)

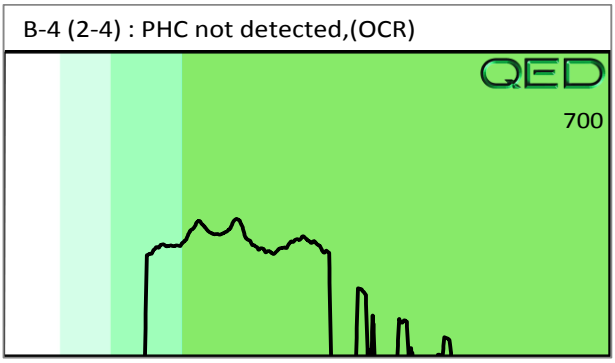
B-2 (4-6) : Deg Fuel 88.6%,(FCM)



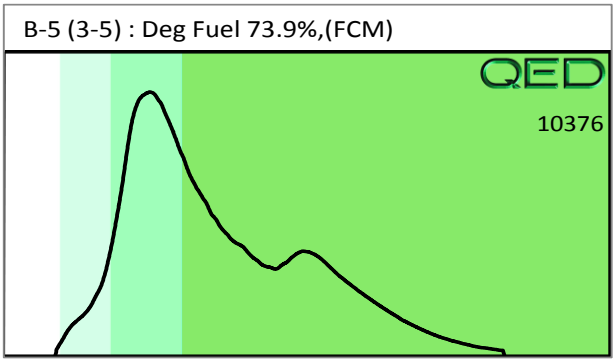
B-3 (3-5) : Residual HC



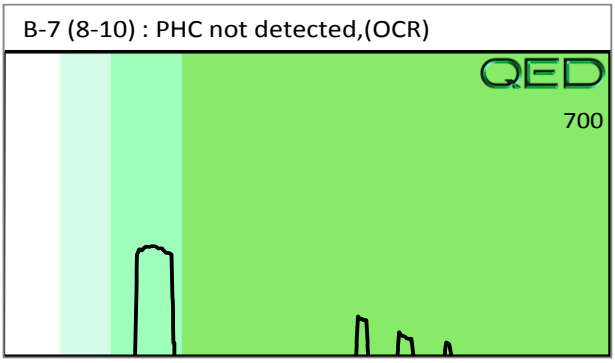
B-4 (2-4) : PHC not detected,(OCR)



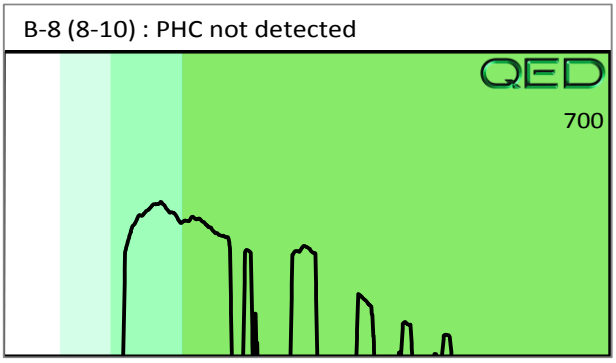
B-5 (3-5) : Deg Fuel 73.9%,(FCM)



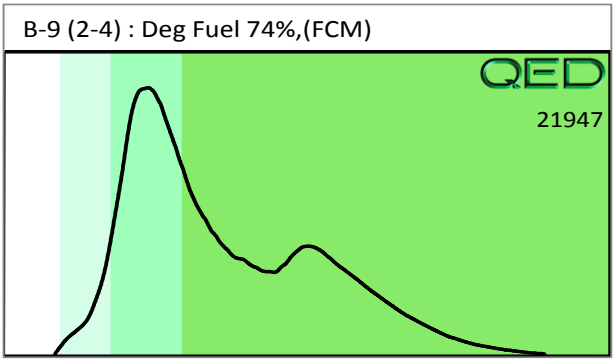
B-7 (8-10) : PHC not detected,(OCR)



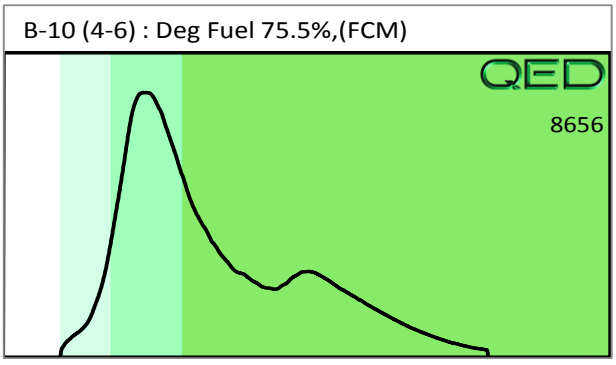
B-8 (8-10) : PHC not detected



B-9 (2-4) : Deg Fuel 74%,(FCM)



B-10 (4-6) : Deg Fuel 75.5%,(FCM)



QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: TERRACON
Address: 2401 BRENTWOOD RD.
SUITE 107
RALEIGH NC 27604

Contact: DAVID HAWKINS
COLLECTED BY DAVID HAWKINS
Project: #70187265

Samples taken Monday, July 9, 2018
Samples extracted Monday, July 9, 2018
Samples analysed Wednesday, July 11, 2018

Operator NICK HENDRIX

F03640

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	B-11 (1-3)	27.4	<0.68	<0.68	32.5	32.5	25	1.2	<0.014	0	98	1.9	Deg Fuel 90.6%,(FCM)
s	B-12 (2-4)	23.9	<0.6	<0.6	1.2	1.2	1.2	0.06	<0.012	0	96.3	3.4	V.Deg.PHC 89.4%,(FCM)
s	B-13 (4-6)	23.6	<0.59	<0.59	<0.05	<0.59	<0.12	<0.02	<0.012	0	0	0	PHC not detected,(OCR)
s	B-14 (6-8)	28.5	<0.71	<0.71	<0.06	<0.71	<0.14	<0.03	<0.014	0	0	0	PHC not detected,(OCR)
s	B-15 (2-4)	24.8	<0.62	<0.62	1.2	1.2	0.38	<0.02	<0.012	0	94.4	5.2	Deg Fuel 91.9%,(FCM),(OCR)
s	B-16 (3-5)	27.4	<0.68	<0.68	<0.05	<0.68	<0.14	<0.03	<0.014	0	0	0	PHC not detected,(OCR)
s	B-17 (2-4)	22.6	<0.57	<0.57	0.95	0.95	0.94	0.05	<0.011	0	89.9	9.2	V.Deg.PHC 91.7%,(FCM)
s	B-18 (8-10)	25.2	<0.63	<0.63	<0.05	<0.63	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(OCR)
s	B-19 (2-4)	26.3	<0.66	<0.66	<0.05	<0.66	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(OCR)
s	B-20 (4-6)	25.5	<0.64	<0.64	<0.05	<0.64	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(OCR)

Initial Calibrator QC check OK Final FCM QC Check OK 105

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

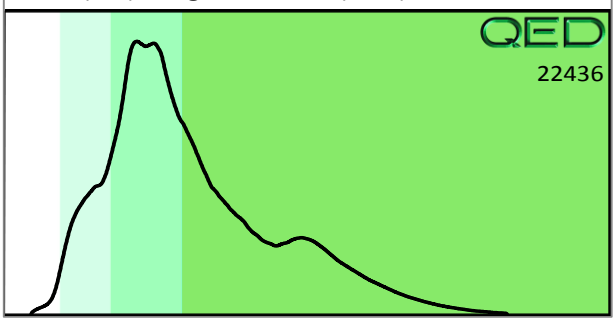
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

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

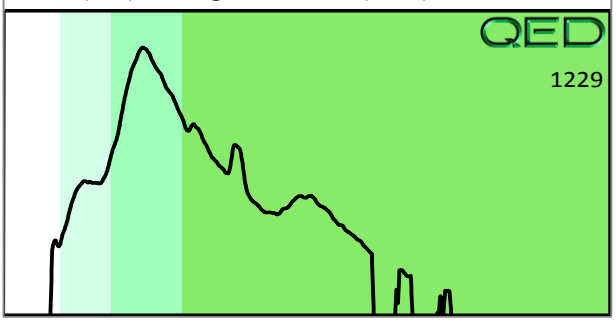
QED Hydrocarbon Fingerprints

Project: #70187265 ##################

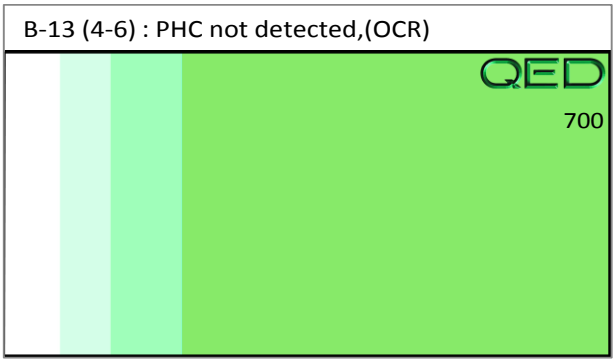
B-11 (1-3) : Deg Fuel 90.6%,(FCM)



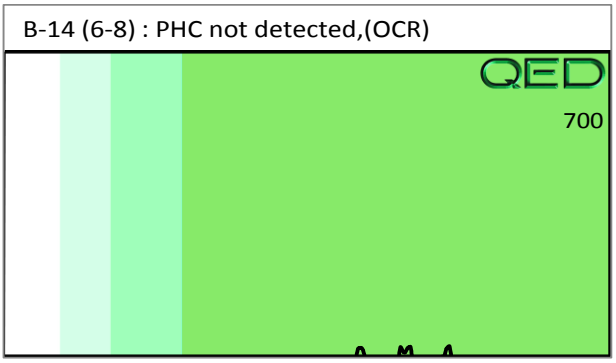
B-12 (2-4) : V.Deg.PHC 89.4%,(FCM)



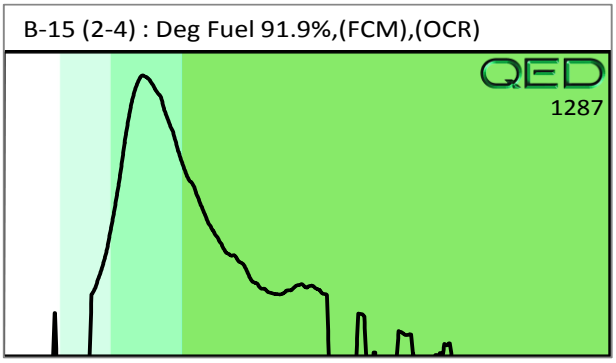
B-13 (4-6) : PHC not detected,(OCR)



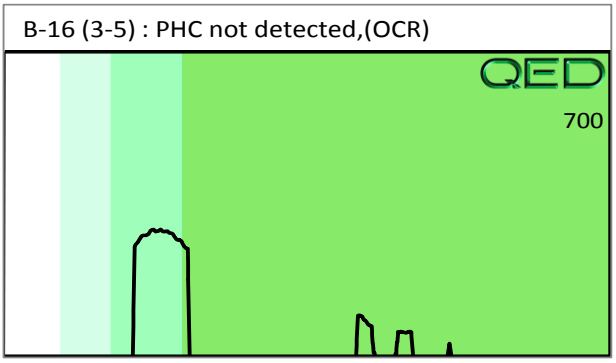
B-14 (6-8) : PHC not detected,(OCR)



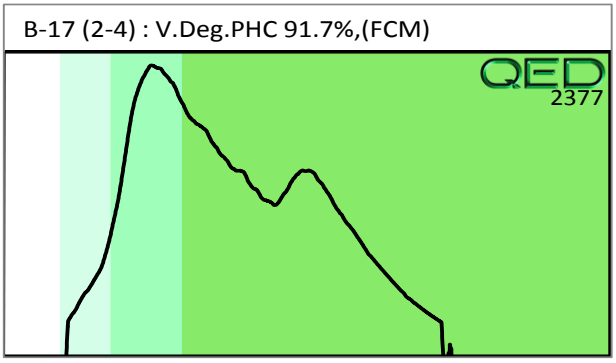
B-15 (2-4) : Deg Fuel 91.9%,(FCM),(OCR)



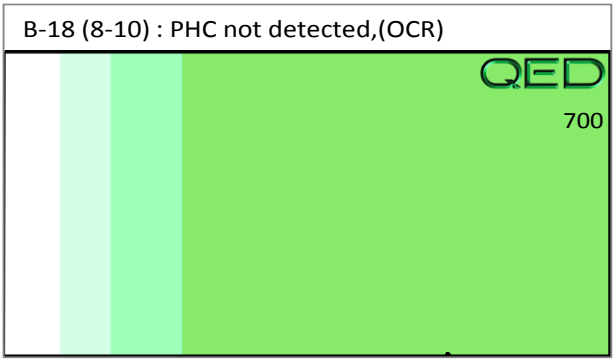
B-16 (3-5) : PHC not detected,(OCR)



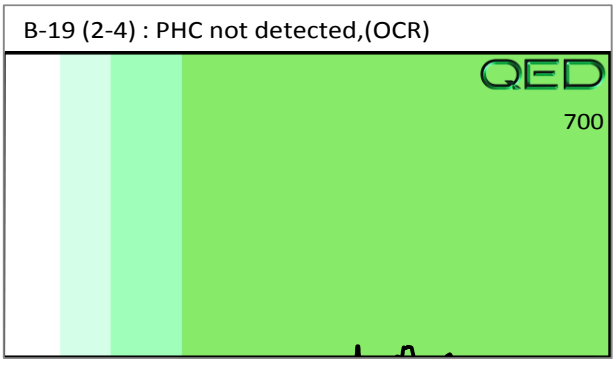
B-17 (2-4) : V.Deg.PHC 91.7%,(FCM)



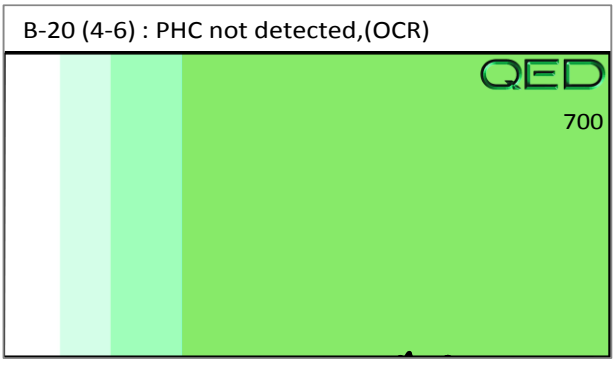
B-18 (8-10) : PHC not detected,(OCR)



B-19 (2-4) : PHC not detected,(OCR)



B-20 (4-6) : PHC not detected,(OCR)



QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: TERRACON
Address: 2401 BRENTWOOD RD.
SUITE 107
RALEIGH NC 27604

Contact: DAVID HAWKINS
COLLECTED BY DAVID HAWKINS
Project: #70187265

Samples taken Monday, July 9, 2018
Samples extracted Monday, July 9, 2018
Samples analysed Wednesday, July 11, 2018

Operator NICK HENDRIX

F03640

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	B-21 (0-2)	28.0	<0.7	<0.7	0.57	0.57	0.56	<0.03	<0.014	0	88.7	10.4	V.Deg.PHC 90.6%,(FCM)
s	B-22 (3-5)	24.1	<0.6	<0.6	<0.05	<0.6	<0.12	<0.02	<0.012	0	0	0	PHC not detected,(OCR)
s	B-23 (2-4)	25.0	<0.63	<0.63	<0.05	<0.63	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(OCR)
s	B-24 (6-8)	25.7	<0.64	<0.64	<0.05	<0.64	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(OCR)
s	B-25 (2-4)	16.1	<0.4	<0.4	<0.03	<0.4	<0.08	<0.02	<0.008	0	0	0	PHC not detected,(OCR)
s	B-26 (3-5)	29.2	<0.73	<0.73	<0.06	<0.73	<0.15	<0.03	<0.015	0	0	0	PHC not detected,(OCR)
s	B-27 (4-6)	27.4	<0.68	<0.68	<0.05	<0.68	<0.14	<0.03	<0.014	0	0	0	PHC not detected,(OCR)
s	B-28 (3-5)	24.8	<0.62	<0.62	<0.05	<0.62	<0.12	<0.02	<0.012	0	0	0	PHC not detected,(OCR)
s	B-29 (2-4)	13.6	<0.34	<0.34	<0.03	<0.34	<0.07	<0.01	<0.007	0	0	0	PHC not detected
s	B-30 (3-5)	16.1	<0.4	<0.4	<0.03	<0.4	<0.08	<0.02	<0.008	0	0	0	PHC not detected,(OCR)

Initial Calibrator QC check OK Final FCM QC Check OK 108

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

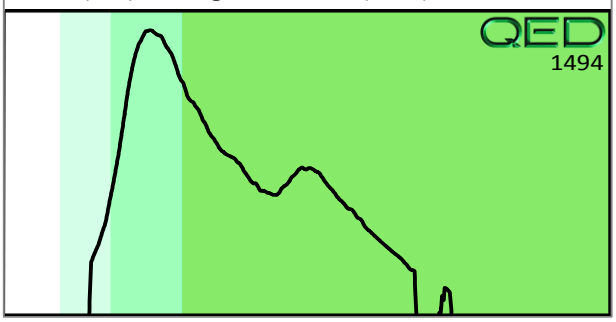
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

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

QED Hydrocarbon Fingerprints

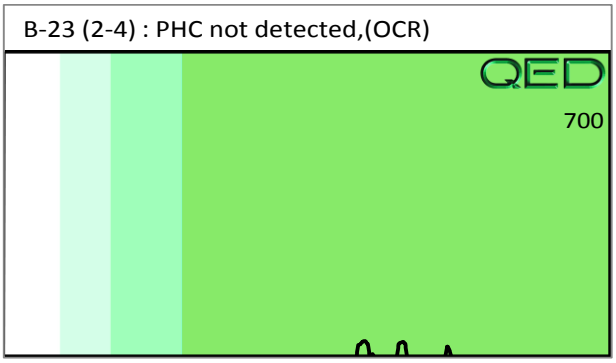
Project: #70187265 ##################

B-21 (0-2) : V.Deg.PHC 90.6%,(FCM)

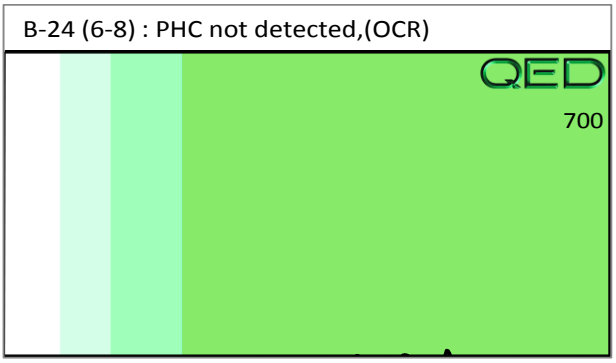


B-22 (3-5) : PHC not detected,(OCR)

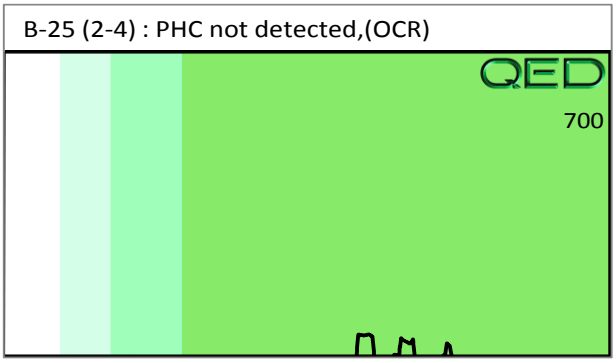
B-23 (2-4) : PHC not detected,(OCR)



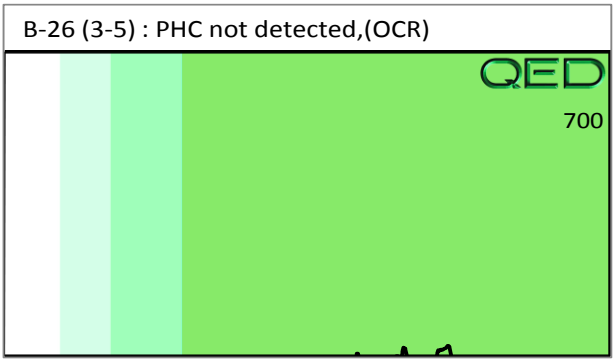
B-24 (6-8) : PHC not detected,(OCR)



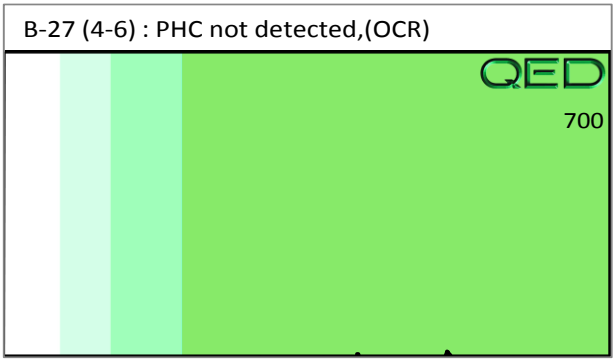
B-25 (2-4) : PHC not detected,(OCR)



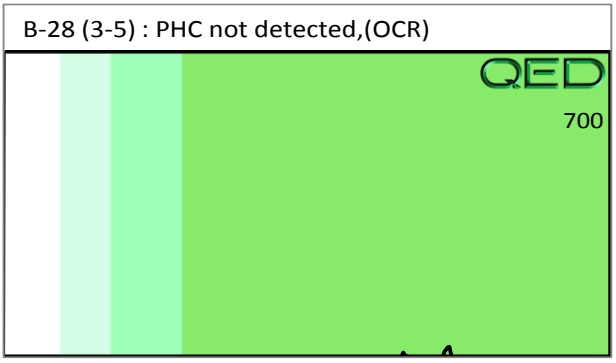
B-26 (3-5) : PHC not detected,(OCR)



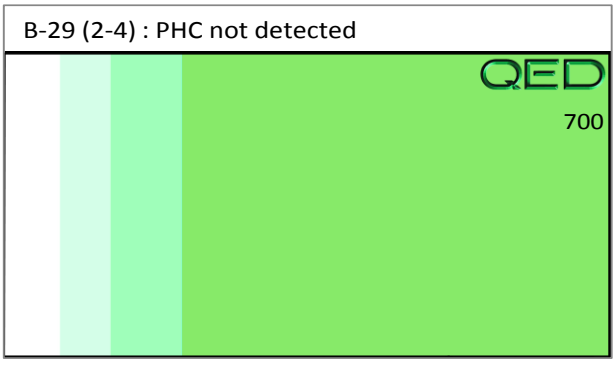
B-27 (4-6) : PHC not detected,(OCR)



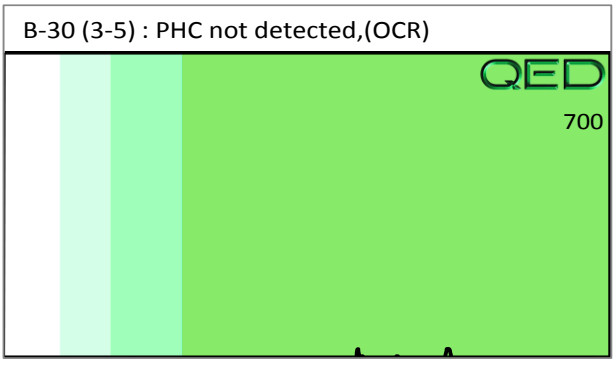
B-28 (3-5) : PHC not detected,(OCR)



B-29 (2-4) : PHC not detected



B-30 (3-5) : PHC not detected,(OCR)



QED

REDLAB™ RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: TERRACON
Address: 2401 BRENTWOOD RD.
SUITE 107
RALEIGH, NC 27604

Contact: DAVID HAWKINS
COLLECTED BY DAVID HAWKINS
Project: #70187265

Samples taken Monday, July 9, 2018
Samples extracted Monday, July 9, 2018
Samples analysed Wednesday, July 11, 2018

Operator MAX MOYER

H0

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	B-8 (13-15)	10.2	<0.26	<0.26	0.49	0.49	0.33	<0.08	<0.01	0	70.9	29.1	Deg.Fuel 81.5%,(FCM),(P)

Initial Calibrator QC check OK

Final FCM QC Check OK 99

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.

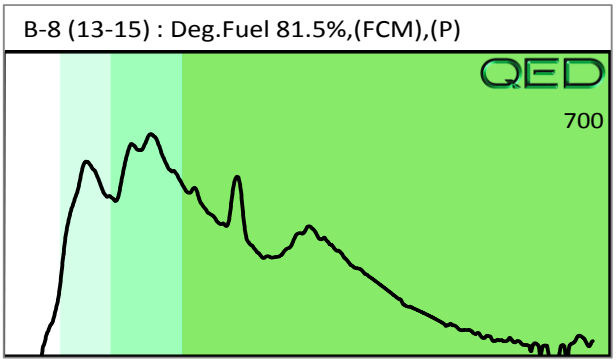
Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

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: #70187265 ##################



887

Client Name:	Terracon
Address:	2401 Brentwood Rd. Suite 107, Raleigh NC 27604
Contact:	David Hawkins
Project Ref.:	70187265
Email:	David.hawkins@terracon.com
Phone #:	540-905-2544
Collected by:	David Hawkins

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.
7/9/18, 920		X	S	B-1 (2-4)	X		55.5	43.7	11.8
7/9/18, 930		X	S	B-2 (4-6)	X		54.0	44.0	10.0
7-9-18, 940		X	S	B-3 (3-5)	X		52.3	43.4	8.2
7-9-18, 945		X	S	B-4 (2-4)	X		53.3	44.1	9.2
7-9-18, 1000		X	S	B-5 (3-5)	X		54.5	44.2	10.3
7-9-18, 1005		X	S	B-7 (8-10)	X		52.5	43.8	8.7
7-9-18, 1025		X	S	B-8 (8-10)	X		52.5	44.1	8.4
7-9-18, 1030		X	S	B-8 (13-15) HOLD	X		53.6	43.8	9.8
7-9-18, 1045		X	S	B-9 (2-4)	X		54.4	43.9	10.5
7-9-18, 1055		X	S	B-10 (4-6)	X		54.3	43.8	10.5
7-9-18, 1105		X	S	B-11 (1-3)	X		54.0	44.5	9.5
7-9-18, 1110		X	S	B-12 (2-4)	X		54.5	43.6	10.9
7-9-18, 1115		X	S	B-13 (4-6)	X		55.7	44.7	11.0
7-9-18, 1120		X	S	B-14 (6-8)	X		53.3	44.2	9.1
7-9-18, 1125		X	S	B-15 (2-4)	X		54.2	43.7	10.5
7-9-18, 1140		X	S	B-16 (3-5)	X		54.1	44.6	9.5
7-9-18, 1140		X	S	B-17 (2-4)	X		55.7	44.2	11.5
7-9-18, 1200		X	S	B-18 (8-10)	X		54.5	44.2	10.3
7-9-18, 1305		X	S	B-19 (2-4)	X		54.2	44.3	9.9
7-9-18, 1315		X	S	B-20 (4-6)	X		54.6	44.4	10.2

Comments: Place B-8 (13-15) on HOLD, will confirm if want to run.

Relinquished by	Date/Time	Accepted by	Date/Time
	7/10/18, 0900	DH 7/11/18 11:30	
Relinquished by	Date/Time	Accepted by	Date/Time

RED Lab USE ONLY

ZW

B87

Client Name:	Terracon
Address:	2401 Brownwood Rd. Suite 107, Raleigh NC 27604
Contact:	David Hawkins
Project Ref.:	70187205
Email:	David.hawkins@terracon.com
Phone #:	540-905-2544
Collected by:	David Hawkins

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.
7-9-18 1320		X		B-21 (0-2)	X		53.4	44.1	9.3
7-9-18, 1330		X		B-22 (3-5)	X		54.8	44.0	10.8
7-9-18, 1335		X		B-23 (2-4)	X		54.7	44.3	10.4
7-9-18, 1340		X		B-24 (6-8)	X		54.1	44.0	10.1
7-9-18, 1350		X		B-25 (2-4)	X		52.5	43.8	8.7
7-9-18, 1355		X		B-26 (3-5)	X		53.2	44.3	8.9
7-9-18, 1400		X		B-27 (4-6)	X		53.1	43.6	9.5
7-9-18, 1405		X		B-28 (3-5)	X		54.8	44.3	10.5
7-9-18, 1415		X		B-29 (2-4)	X		54.7	44.4	10.3
7-9-18, 1420		X		B-30 (3-5)	X		53.3	44.6	8.7

Comments:

Relinquished by	Date/Time	Accepted by	Date/Time
	7/10/18, 0900	NH 7/11/18 1:5	
Relinquished by	Date/Time	Accepted by	Date/Time

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