November 5, 2012

North Carolina Department of Transportation
Geotechnical Engineering Unit
GeoEnvironmental Section
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Attention: Mr. Gordon Box, L.G.

Reference: **Preliminary Site Assessment Report**
NCDOT No. U-2519CB, WBS Element: 34817.1.2
Fayetteville Outer Loop from South of SR 1400 to East of SR 1415
Parcel 006 Fort Bragg Military Reservation
Fayetteville, Cumberland County, North Carolina
S&ME Project No. 1054-12-341

Dear Mr. Box,

S&ME, Inc. (S&ME) is submitting this Preliminary Site Assessment (PSA) Report to the North Carolina Department of Transportation (NCDOT). This report presents the background information, field activities, findings, conclusions, and recommendations. These services were performed in general accordance with S&ME Proposal No. P156-12V, dated September 7, 2012, and Contract Number 7000012210 dated June 2, 2012, between NCDOT and S&ME. S&ME also performed a PSA for an additional property along the corridor (Parcel #021). As requested by NCDOT, S&ME prepared a separate report for Parcel #021.

1.0 INTRODUCTION

1.1 Background Information

Based on the NCDOT's August 27, 2012, *Request for Technical and Cost Proposal*, and additional information from the NCDOT's file transfer site, the PSA was conducted within the NCDOT right-of-way (ROW) and/or up to the permanent utility easement at the following property:

Parcel #006 Fort Bragg Military Reservation

Additional information provided from the NCDOT's file transfer site and additional e-mails, included:

- CADD and PDF files which were used as a base map for preparation of this PSA.The PSA included a preliminary geophysical site assessment, subsequent limited soil sampling (ten borings up to twenty feet below ground surface (ft. bgs.)), and the installation and sampling of one temporary monitor well within

the designated ROW/Easement assessment area. **Figure 1** shows the vicinity and site location, and **Figure 2** shows the site and boring locations. Soil sampling results are shown on **Figure 3**. Groundwater was not encountered at the adjacent parcel (Parcel #021) at a depth of 45 ft. bgs; therefore, NCDOT directed S&ME not to install a temporary monitor well at Parcel #006.

Project Information

A site specific Health and Safety Plan was prepared prior to field activities. Underground utilities were located and marked by the North Carolina One-Call Service. A private utility locator, Bateman Civil Survey of Raleigh, North Carolina, was also used to mark on site buried utilities and the potential locations of underground storage tanks (USTs) and associated utilities.

Parcel #006, Fort Bragg Military Reservation, Pines Shopette (**Figure 2**) historically operated as a gas station. According to the March 2012 *Final Construction Report* by Aerostar, two above ground storage tanks (ASTs) were reportedly removed from the site. During S&ME's field activities on September 19, 2012, it was confirmed that the ASTs were no longer present on the site. A CADD file provided by NCDOT indicated that four USTs remain on site. The former pump islands are still present at the site. S&ME was requested to investigate the existing NCDOT right-of-way (ROW) and/or up to the permanent utility easement in preparation for construction of the Fayetteville Outer Loop across the subject property.

S&ME also performed a PSA for an additional property along the corridor (Parcel #021). As requested by NCDOT, S&ME prepared a separate report for Parcel #021.

2.0 GEOPHYSICAL SITE ASSESSMENT

2.1 Methods and Field Testing

On September 19, 2012 S&ME personnel performed time domain electromagnetic (TDEM) and ground penetrating radar (GPR) surveys within the proposed right-of-way and/or easement of the accessible areas of Parcel #006. These technologies were used in conjunction with each other in order to detect the presence of potential USTs at the site. A brief description of each technology is presented in Section 2.2 and 2.3.

2.2 Time Domain Electromagnetic Methodology

TDEM methods measure the electrical conductivity of shallow subsurface materials. The conductivity is determined by transmitting a time-varying magnetic pulse into the ground and measuring the amplitude and phase shift of the secondary magnetic field. The secondary magnetic field is created as the conductive materials become an inductor as the primary magnetic field is passed through them.

The TDEM survey was performed with a Geonics EM-61 MKII system, which has a 1.0-meter by 0.5-meter coil system. The EM-61 TDEM system allows discrimination between moderately conductive subsurface materials and very conductive metallic targets as the secondary electromagnetic response from metallic targets are of longer duration than those created by moderately conductive subsurface materials. Accordingly, only the later EM arrivals are recorded so that only the very conductive metallic features are targeted. The survey was designed to locate metallic tanks within depths of about 5 feet, the assumed maximum depth at which we anticipated the top of a UST to be present. These data can be acquired with GPS support so the results can be used in Surfer Version 8.0 to geostatistically grid and plot the data. **Figure 4** shows the TDEM location plan.

TDEM data were collected along a grid spaced at approximate 5-foot intervals. **Figure 5** provides the TDEM dataset collected at the subject Parcel.

2.3 Ground Penetrating Radar

GPR is an electromagnetic method that detects interfaces between subsurface materials with differing dielectric constants. The transmitter radiates electromagnetic waves into the earth from an antenna moving across the ground surface. Electromagnetic waves are reflected back to the receiver by interfaces between materials with differing dielectric constants. The intensity of the reflected signal is a function of the contrast in the dielectric constant at the interface, the conductivity of the material that the wave is traveling through, and the frequency of the signal.

GPR data were collected over and in the vicinity of each identified TDEM anomaly with a GSSI SIRS-3000 unit equipped with a 400 MHz shielded antenna. The depth of GPR wave penetration at the site is a function of the conductivity of the subsurface materials and signal frequency. The GPR survey settings provided a maximum depth of penetration of approximately 8 feet below ground surface. **Figure 6** shows the GPR test locations. **Figures 7** and **8** present the GPR profiles of the anomalies.

3.0 SOIL ASSESSMENT

3.1 Soil Sampling

On September 28 and October 1, 2012, S&ME advanced 11 soil borings on the subject property within the specified NCDOT ROW/Easement. The soil boring locations were selected based upon the location of the former UST and AST systems, as well as near anomalies identified during the geophysical survey (**Figures 7** and **8**). S&ME personnel observed new asphalt paving overlying the area of suspected USTs, suggesting that the UST system had been removed. S&ME utilized a track mounted Geoprobe® rig to perform the borings and to collect soil samples. S&ME's drill crew advanced the Geoprobe® borings up to approximately 20 ft.-bgs, except boring B-14 which hit refusal at 10 ft. bgs. A photographic log is included in **Appendix I**. Soil samples were continuously collected in five foot long disposable acetate-plastic sleeves that line the hollow stainless-steel sample probes. Soil recovered from the sleeves was classified on-site by S&ME personnel and screened with a Photoionization Detector (PID) at approximately two foot intervals to measure relative headspace concentrations of volatile organic compounds (VOCs).

VOC headspace readings were obtained from an aliquot of each soil sample that was placed in a re-sealable bag. Another portion of the sample was placed in a separate re-sealable bag and stored in an insulated container with ice for possible laboratory analyses. After waiting approximately 15 minutes to allow the sample to reach ambient temperature and headspace equilibrium, the PID probe was inserted into the bag to obtain a headspace reading. A summary of the PID readings is shown in **Table 1,** and logs of the soil borings and the temporary monitor well are included in **Appendix II.**

The soil samples with the highest level of VOCs detected with the PID for each soil boring were selected for laboratory analysis. Soil samples were placed directly into laboratory supplies containers and shipped to SGS, a North Carolina certified laboratory, under standard chain-of-custody procedure. Soil samples were analyzed for total petroleum hydrocarbons for gasoline range organics (TPH-GRO) EPA Method 8015B/5030B and diesel range organics (TPH-DRO) by EPA Method 8015B/3546.

Borings were backfilled with bentonite pellets and soil. Used gloves were bagged and disposed off-site.

3.2 Soil Sample Analytical Results

Approximate soil boring locations are shown in **Figure 2.** The soil sampling laboratory results are summarized in **Table 2** and shown on **Figure 3,** and a copy of the laboratory analytical report is included as an **Appendix III**.

The laboratory analytical results indicated that TPH-DRO was reported at concentrations above the North Carolina Action Level in soil samples collected from borings B-11and B-14, and TPH-GRO was reported above the North Carolina Action Level in the soil sample collected from boring B-14.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Geophysical Assessment

Eight TDEM anomalies (Anomalies 1 through 8) not corresponding to site surface features were identified in the TDEM dataset (**Figure 5**); the anomalies were also marked in the field.

GPR data were then collected along perpendicular profiles over the eight identified TDEM anomalies; a total of twenty-seven GPR profiles were collected at the site (**Figure 6**). GPR reflections associated with Anomaly 1 indicate a linear feature approximately 8 feet in length and about 2 feet below ground surface (bgs). Anomalies 2, 4, 5, 6, 7 and 8 are characterized by high amplitude reflectors within the upper 4 feet and are most likely associated to metallic buried debris. Anomaly 3 consists of a high amplitude linear feature approximately 25 feet in length and about 3 feet bgs, and may be related to an abandoned utility or storm pipe. Example GPR profiles are located in **Figures 7 and 8**.

Anomaly 1 exhibits both TDEM and GPR responses indicative of a UST suggesting

characterization as a "Probable UST" approximately 1,000 to 2,000 gallons on site. Anomalies 2 through 8 do not exhibit TDEM response and/or GPR reflections indicative of UST's.

4.2 Soil Assessment

S&ME advanced eleven soil borings (B-11 through B-21) to approximately twenty ft. bgs, with the exception of boring B-14 which hit refusal at 10 ft. bgs, at the subject property at the designated locations illustrated on **Figure 2** on September 28 and October 1, 2012. The laboratory analytical results of soil samples collected from the borings B-11 and B-14 indicated that TPH-DRO was reported at concentrations above the the NCDENR Action Level. Laboratory analytical results of the soil sample collected from boring B-14 indicated that TPH-GRO was reported at a concentration above the NCDENR Action Level. Laboratory analytical results of the soil sample collected near the suspected UST identified in the geophysical survey indicated no detection of TPH-GRO or DRO.

The detections of TPH-DRO in the soil sample collected from boring B-11 and TPH-GRO and DRO in the soil sample collected from boring B-15 indicate a release of petroleum from an AST and/or UST system. Based on PID field measurements, petroleum odors observed in the field, and laboratory results, it appears that TPH-GRO and DRO contamination extends to a depth of at least 10 ft. bgs in the vicinity of boring B-14, and that TPH-DRO contamination extends to a depth of at least 20 ft. bgs in the vicinity of boring B-11.

4.3 Recommendations

It is possible that during construction, NCDOT may encounter soil impacted with petroleum in the vicinity of sample locations B-11 and B-14. Boring B-11 is located in the area of the former UST pit; therefore, the likelihood of encountering additional impacted soil related to a UST release was considered in estimating the area of impacted soil. The release adjacent to the fuel pumps is likely more localized due to the small source area, which is supported by the lack of impacts reported in the laboratory analytical results of soils collected from boring B-16. The approximate area of impacted soil is shown on **Figure 2**. There is a "Probably UST" (approximately 1,000 to 2,000 gallons) located at Anomaly 1. While the actual dimensions of the impacted soil area cannot be measured until the area is excavated, S&ME estimates that up to 200 cubic yards of petroleum impacted soil may be encountered in the ROW and easement area on Parcel #006. S&ME recommends closure by removal of the "Probable UST," and maintaining an awareness level for the presence of petroleum in the soil in the project area.

5.0 LIMITATIONS

The estimated volumes of petroleum impacted soil stated in Section 4.3 above are based on the limited data points and soil samples collected by S&ME for this preliminary investigation. The actual amount of petroleum impacted soil encountered during roadway expansion activities may vary depending on the actual grading plan for the project within the affected ROW/Easement.

The results of this preliminary investigation are limited to the boring locations presented herein. The results of this Preliminary Site Assessment are not all inclusive and may not represent existing conditions across the entire property. These results only reflect the current conditions at the locations sampled on the date this Preliminary Site Assessment was performed.

This report has been prepared in accordance with generally accepted environmental engineering and geophysical practice for specific application to this project. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other warranty, expressed or implied, is made.

The conclusions for the geophysical assessment submitted herein are based upon the data obtained from the non-invasive testing. As such, even within the surveyed area, the survey cannot be considered 100 percent accurate due to inherent method limitations, survey limitations, site features, and/or unforeseen site-specific conditions. Accordingly, the possibility exists that not all subsurface, man-made features have been located.

TDEM and GPR are commonly used to locate buried debris and subsurface targets, however certain limitations exist. Nearby, metallic objects such as vehicles, metal buildings/storage units, heating/air conditioning units, utilities, etc. will interfere with the TDEM survey. As for GPR, properties of the subsurface materials (e.g., clay content, moisture, etc.) can have a significant impact on the effective depth of penetration of the survey. Accordingly, non-metallic tanks, tanks at depths below about 5 feet, and tanks outside of the survey area may not have been detected using the GPR technique. In addition, due to interference, there may be areas within the proposed survey area where an interpretation of subsurface features was not feasible.

The location and/or determination of the lack thereof of USTs are based on our review of provided information and of the FDEM and GPR data. Under no circumstances does S&ME assume any responsibility for damages resulting from the presence of or damage to USTs that may exist but were not identified by our survey.

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

CLOSING

S&ME welcomes the opportunity to assist you with your environmental needs. Should you have any questions regarding this report, please call Tom Raymond at (919) 954-6229.

Sincerely,

S&ME, Inc.

Candy E. Elliott
Staff Scientist

Michael W. Pfeifer
Project Manager

NORTH CAROLINA PROFESSIONAL SEAL 18760 ENGINEER THOMAS P. RAYMOND 11/5/2012

Kevin Hon
Project Geophysicist

Tom Raymond, P. E.
Environmental Services Leader

Attachments: Table 1 – Soil Field Screening Results
Table 2 – Soil Laboratory Analytical Results
Figure 1 –Vicinity Map
Figure 2 – Site Map with Boring Locations
Figure 3 – Soil Sample Results Map
Figure 4 – TDEM Test Location Plan
Figure 5 – TDEM Data Plot
Figure 6 – GPR Test Location Plan
Figure 7 – GPR Profile Lines 046, 047, 045, and 062
Figure 8 – GPR Profile Lines 066, 056, 048, 050, and 058
Appendix I – Photographic Log
Appendix II – Boring Logs
Appendix III – Laboratory Analytical Report

TABLES

Table 1
PID Field Soil Screening Results
NCDOT Project U2519CB Fayetteville Outer Loop
Fayetteville, Cumberland County, North Carolina
S&ME Project No. 1054-12-341

Boring Number	Date Measured	Depth (feet bgs)	PID Reading (PPM)
B-11	9/28/2012	1.5-2.0	1.2
B-11	9/28/2012	4.5-5.0	1.4
B-11	9/28/2012	6.5-7.0	1.9
B-11	9/28/2012	9.5-10.0	1.6
B-11	9/28/2012	11.5-12.0	1.5
B-11	9/28/2012	14.5-15.0	1.6
B-11	9/28/2012	16.5-17.0	1.0
B-11	9/28/2012	19.5-20.0	1.4
B-12	9/28/2012	1.5-2.0	1.3
B-12	9/28/2012	4.5-5.0	3.9
B-12	9/28/2012	6.5-7.0	1.3
B-12	9/28/2012	9.5-10.0	1.6
B-12	9/28/2012	11.5-12.0	1.4
B-12	9/28/2012	14.5-15.0	2.0
B-12	9/28/2012	16.5-17.0	1.0
B-12	9/28/2012	19.5-20.0	2.0
B-13	9/28/2012	1.5-2.0	1.6
B-13	9/28/2012	4.5-5.0	1.1
B-13	9/28/2012	6.5-7.0	1.3
B-13	9/28/2012	9.5-10.0	1.2
B-13	9/28/2012	11.5-12.0	1.0
B-13	9/28/2012	14.5-15.0	2.2
B-13	9/28/2012	16.5-17.0	3.6
B-13	9/28/2012	19.5-20.0	5.3
B-14	9/28/2012	5.5-6.0	5,522
B-14	9/28/2012	9.5-10.0	2,907
B-15	9/28/2012	1.5-2.0	4.5
B-15	9/28/2012	4.5-5.0	3.2
B-15	9/28/2012	6.5-7.0	1.8
B-15	9/28/2012	9.5-10.0	2.1
B-15	9/28/2012	11.5-12.0	1.8
B-15	9/28/2012	14.5-15.0	2.4
B-15	9/28/2012	16.5-17.0	1.7
B-15	9/28/2012	19.5-20.0	2.3
B-16	9/28/2012	1.5-2.0	2.6
B-16	9/28/2012	4.5-5.0	11.4
B-16	9/28/2012	6.5-7.0	1.5
B-16	9/28/2012	9.5-10.0	2.5
B-16	9/28/2012	11.5-12.0	2.4
B-16	9/28/2012	14.5-15.0	2.6
B-16	9/28/2012	16.5-17.0	1.8
B-16	9/28/2012	19.5-20.0	3.5

Note:
PID: Photoionization Detector
ppm: parts per million volume in air
bgs: below ground surface
Shaded cells indicate the sample interval selected for laboratory analysis

Table 1
PID Field Soil Screening Results
NCDOT Project U2519CB Fayetteville Outer Loop
Fayetteville, Cumberland County, North Carolina
S&ME Project No. 1054-12-341

Boring Number	Date Measured	Depth (feet bgs)	PID Reading (PPM)
B-17	9/28/2012	1.5-2.0	2.0
B-17	9/28/2012	4.5-5.0	3.2
B-17	9/28/2012	6.5-7.0	3.4
B-17	9/28/2012	9.5-10.0	2.5
B-17	9/28/2012	11.5-12.0	1.8
B-17	9/28/2012	14.5-15.0	2.4
B-17	9/28/2012	16.5-17.0	2.2
B-17	9/28/2012	19.5-20.0	NM
B-18	9/28/2012	1.5-2.0	1.7
B-18	9/28/2012	4.5-5.0	2.2
B-18	9/28/2012	6.5-7.0	2.0
B-18	9/28/2012	9.5-10.0	1.6
B-18	9/28/2012	11.5-12.0	3.9
B-18	9/28/2012	14.5-15.0	2.8
B-18	9/28/2012	16.5-17.0	3.7
B-18	9/28/2012	19.5-20.0	4.7
B-19	10/1/2012	1.5-2.0	0.4
B-19	10/1/2012	4.5-5.0	1.8
B-19	10/1/2012	6.5-7.0	0.9
B-19	10/1/2012	9.5-10.0	2.4
B-19	10/1/2012	11.5-12.0	1.7
B-19	10/1/2012	14.5-15.0	1.6
B-19	10/1/2012	16.5-17.0	0.9
B-19	10/1/2012	19.5-20.0	2.6
B-20	10/1/2012	1.5-2.0	1.3
B-20	10/1/2012	4.5-5.0	1.1
B-20	10/1/2012	6.5-7.0	2.1
B-20	10/1/2012	9.5-10.0	0.7
B-20	10/1/2012	11.5-12.0	2.7
B-20	10/1/2012	14.5-15.0	2.1
B-20	10/1/2012	16.5-17.0	2.1
B-20	10/1/2012	19.5-20.0	1.3
B-21	10/1/2012	1.5-2.0	2.0
B-21	10/1/2012	4.5-5.0	2.8
B-21	10/1/2012	6.5-7.0	2.5
B-21	10/1/2012	9.5-10.0	2.9
B-21	10/1/2012	11.5-12.0	0.9
B-21	10/1/2012	14.5-15.0	2.8
B-21	10/1/2012	16.5-17.0	1.2
B-21	10/1/202	19.5-20.0	2.0

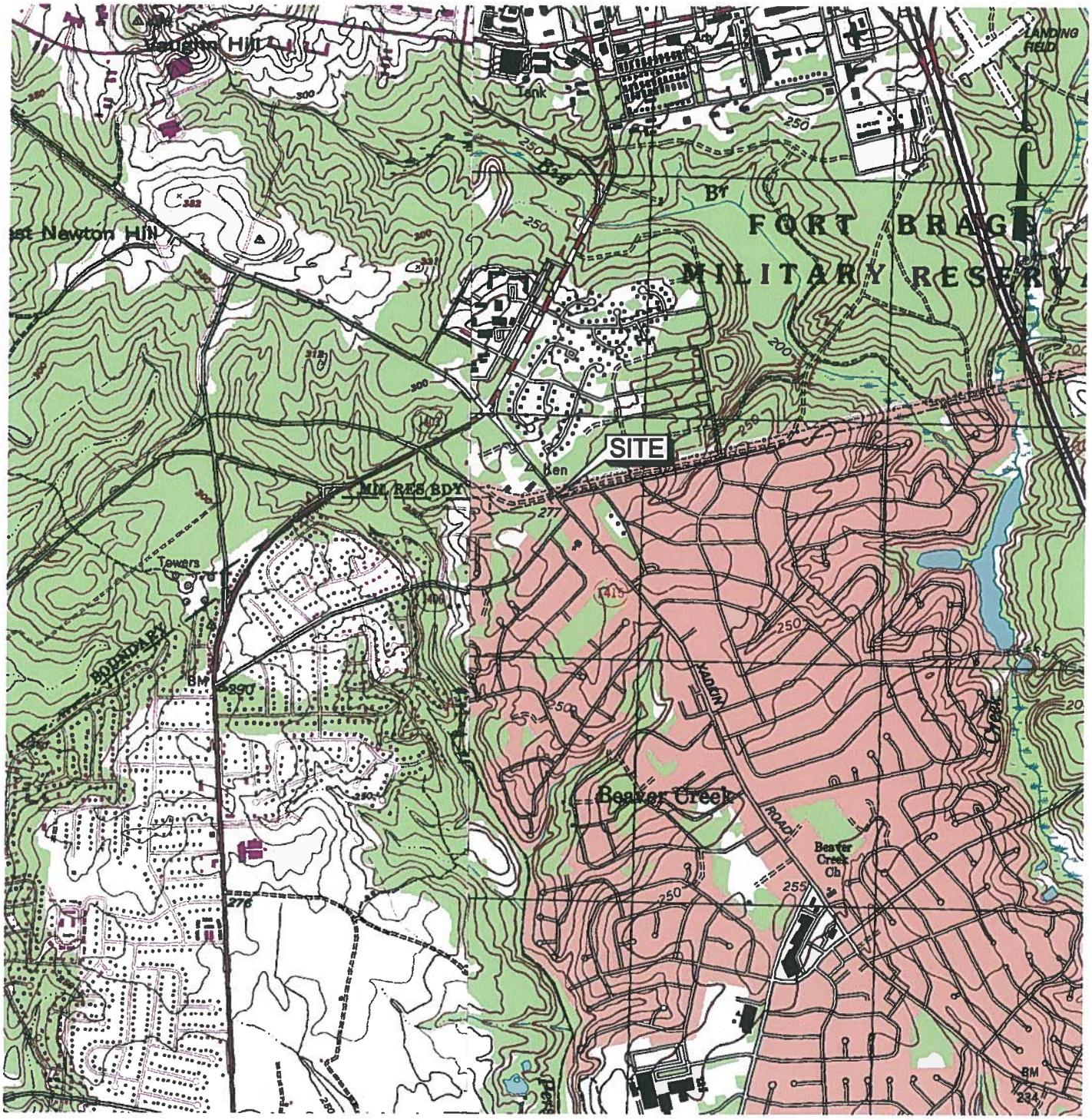
Note:
PID: Photoionization Detector
ppm: parts per million volume in air
bgs: below ground surface
Shaded cells indicate the sample interval selected for laboratory analysis
NM: not measured

Table 2
Soil Analytical Results
NCDOT Project U2519CB Fayetteville Outer Loop
Fayetteville, Cumberland County, North Carolina
S&ME Project No. 1054-12-341

			Total Petroleum Hydrocarbons by EPA Method 8015C	
Sample ID	**Date Collected**	**Sample Depth (ft. bgs.)**	**Gasoline Range Organics (mg/Kg)**	**Diesel Range Organics (mg/Kg)**
B-11	9/28/2012	6.5	BDL	**14.5**
B-12	9/28/2012	4.5	BDL	BDL
B-13	9/28/2012	19.5	BDL	BDL
B-14	9/28/2012	6.0	**1,050**	**1,800**
B-15	9/28/2012	1.5	BDL	BDL
B-16	9/28/2012	4.5	BDL	BDL
B-17	9/28/2012	6.5	BDL	BDL
B-18	9/28/2012	11.5	BDL	BDL
B-19	10/1/2012	19.5	BDL	BDL
B-20	10/1/2012	11.5	BDL	BDL
B-21	10/1/2012	9.5	BDL	BDL
NCDWM-UST Action Limit			**10**	**10**

Notes:
1. All results are listed in milligrams per kilograms (mg/kg) = parts per million.
2. ft-bgs = feet below ground surface.
3. TPH: Total Petroleum Hydrocarbons
4. GRO: Gasoline Range Organics
5. DRO: Diesel Range Organics
6. NCDWM: North Carolina Division of Waste Management
7. UST: Underground Storage Tank
8. BDL: Below laboratory method detection limit

FIGURES



GRAPHIC SCALE

1000 0 500 1000 2000

(IN FEET)

TOPO SOURCE: NCGS DRG
FAYETTEVILLE, DATED 1997
CLIFDALE, DATED 1948, PHOTOREVISED 1982
CONTOUR INTERVAL 10 FEET

A-3376

SCALE:	1" = 2000'
DATE:	OCT. 2012
DRAWN BY:	BTR
PROJECT NO:	1054-12-341

S&ME
WWW.SMEINC.COM
NC ENGINEER LICENSE #F-0176
3201 SPRING FOREST RD, RALEIGH, NC 27616

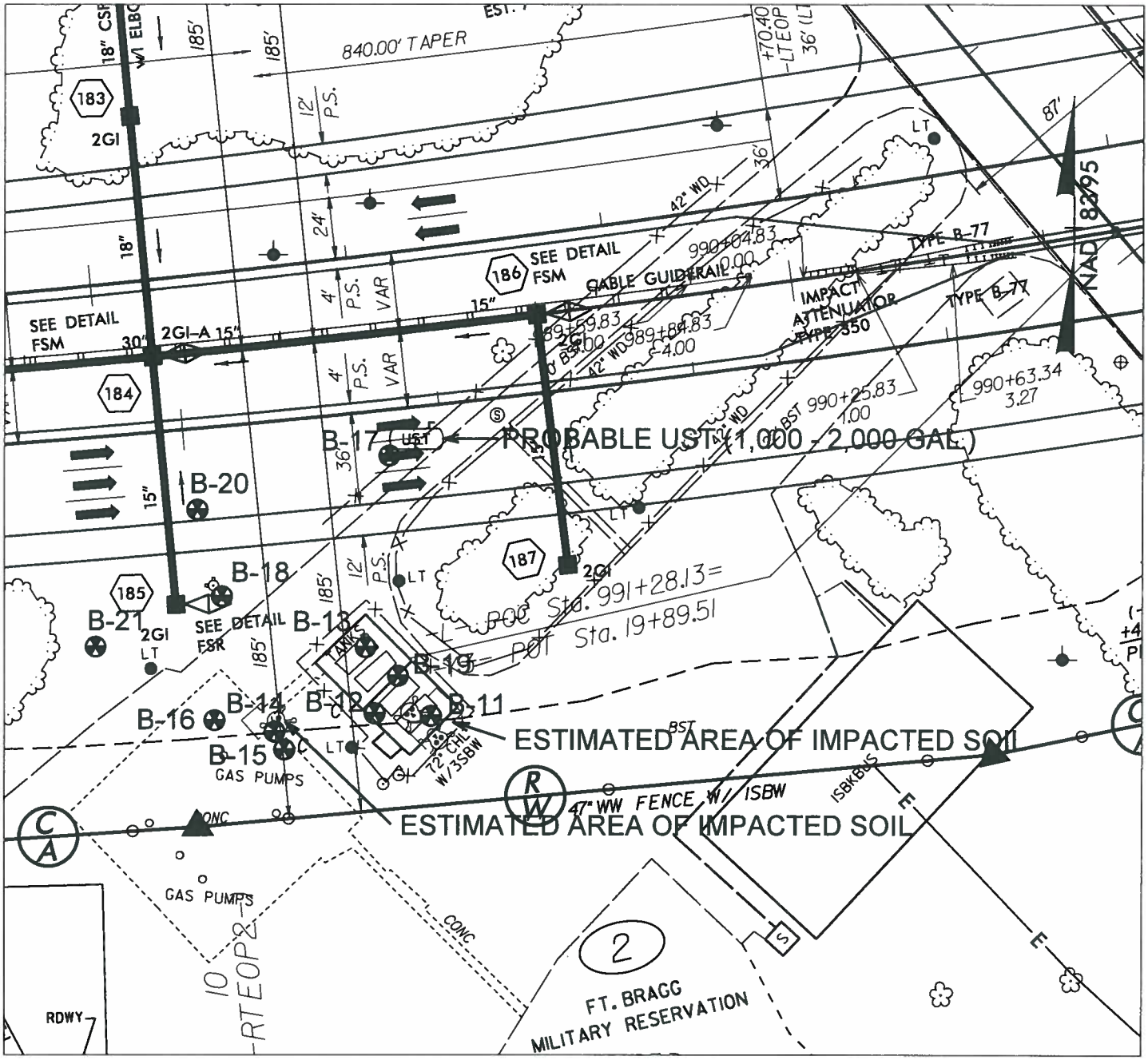
VICINITY MAP

NCDOT U-2519CB - FAYETTEVILLE UST REMOVAL
FAYETTEVILLE, NORTH CAROLINA

FIGURE NO.

1

S:\PROJECTS\2012\12-341 NCDOT U2519CB Fayetteville PSAs\CADIA3376.dwg, FIG1, 11/1/2012 9:24:59 AM, 1:1



LEGEND

Geoenvironmental Boring	
Existing Right of Way Line	
Existing Easement Line	EXIST R/W
Property Line	
Existing Fence Line	
Proposed Right of Way Line with Iron Pin and Cap Marker	
Known Soil Contamination: Area or Site	
Proposed Slope Stakes Cut	C
Proposed Slope Stakes Fill	F
Proposed Temporary Construction Easement	E
Proposed Permanent Drainage Easement	PDE
Proposed Permanent Utility Easement	PUE
Underground Storage Tank (UST)	UST

0 60 120

FEET

A-3377

SCALE:	1" = 60'
DATE:	OCT. 2012
DRAWN BY:	BTR
PROJECT NO:	1054-12-341

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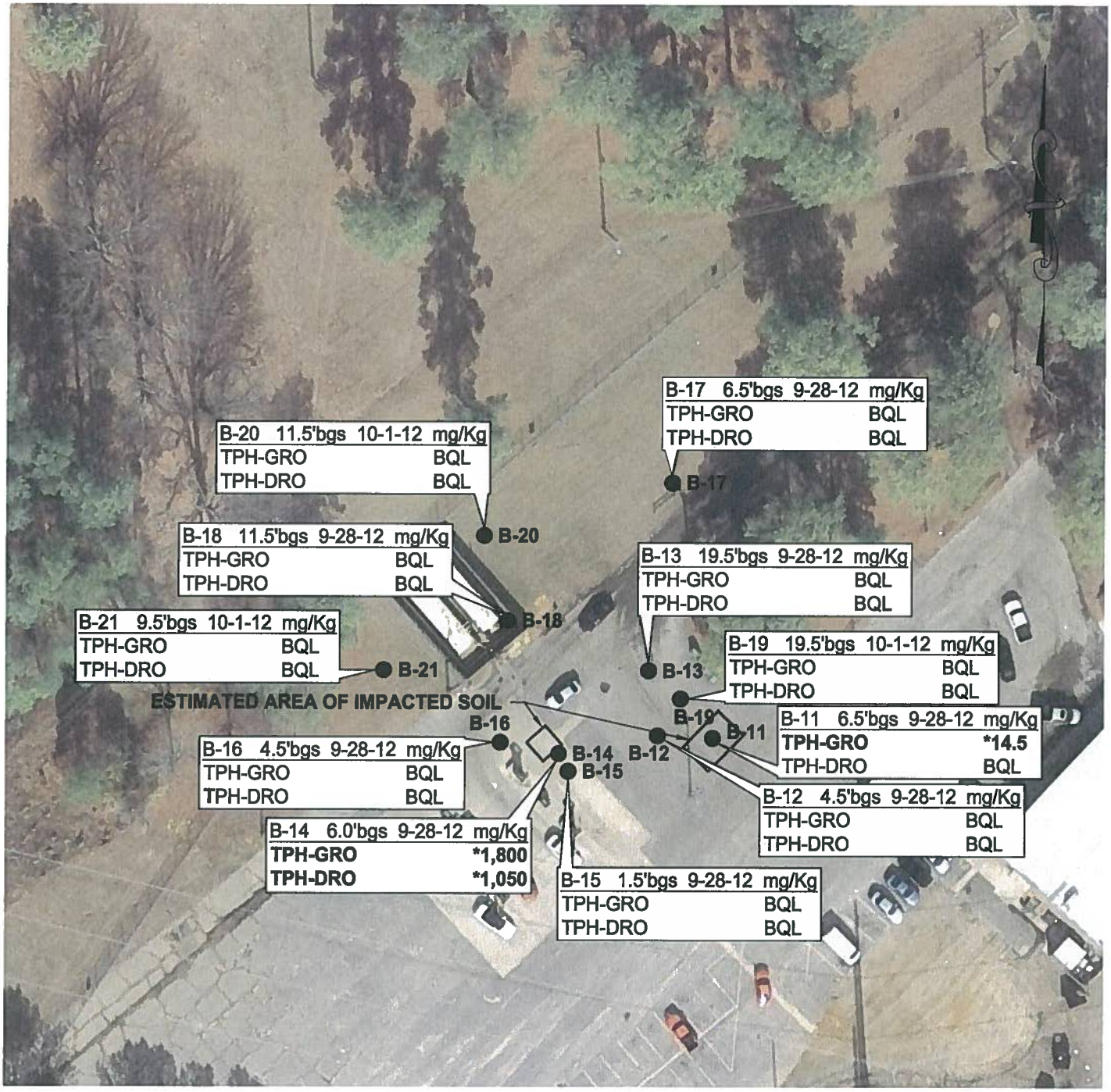
3201 SPRING FOREST RD, RALEIGH, NC 27616

SITE MAP

NCDOT U-2519CB - FAYETTEVILLE UST REMOVAL
FAYETTEVILLE, NORTH CAROLINA

SHEET NO.
2



LEGEND

- ● APPROXIMATE CONFIRMATORY SAMPLE LOCATION
- BQL - BELOW QUANTIFIABLE LIMIT
- mg/Kg - MILLIGRAMS PER KILOGRAM
- TPH - TOTAL PETROLEUM HYDROCARBONS
- GRO - GASOLINE RANGE ORGANICS
- DRO - DIESEL RANGE ORGANICS
- bgs - BELOW GROUND SURFACE (FEET)
- * INDICATES EXCEEDENCE OF STATE ACTION LEVEL OF 10 mg/Kg

GRAPHIC SCALE

30 0 15 30 60

(IN FEET)

IMAGE SOURCE: NC ONEMAP, DATED 2010

A-3378

SCALE:	1" = 60'
DATE:	OCT. 2012
DRAWN BY:	BTR
PROJECT NO:	1054-12-341

S&ME
WWW.SMEINC.COM
NC ENGINEER LICENSE #F-0176
3201 SPRING FOREST RD, RALEIGH, NC 27616

SOIL SAMPLE RESULTS MAP

NCDOT U-2519CB - FAYETTEVILLE UST REMOVAL
FAYETTEVILLE, NORTH CAROLINA

FIGURE NO. 3

NORTH

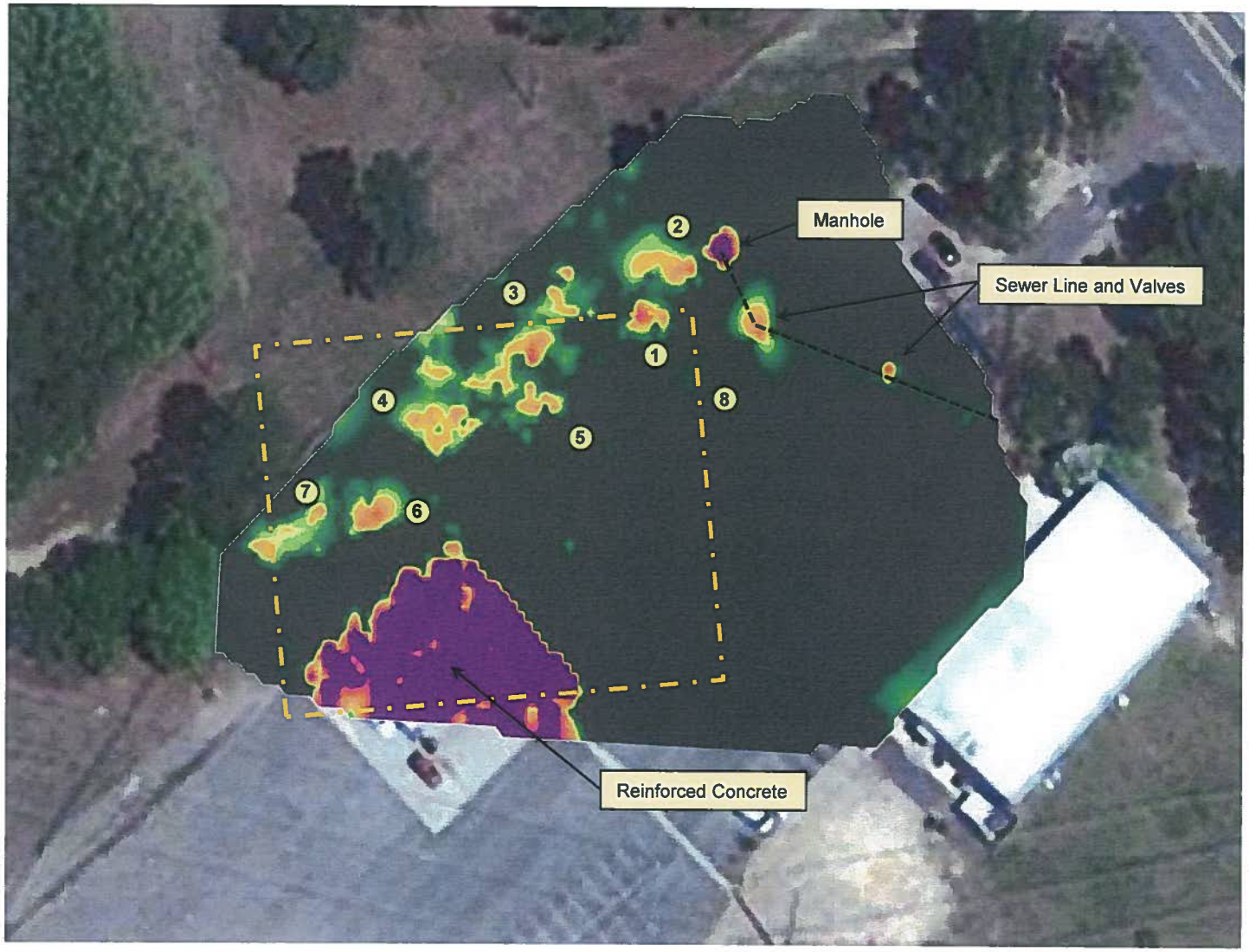
LEGEND

- Requested Study Area Limits
- TDEM Path

REFERENCE:

- Google Earth Aerial Photograph
- Dated April 11, 2010

SCALE: NTS	S&ME ENGINEERING • TESTING ENVIRONMENTAL SERVICES	**TDEM TEST LOCATION PLAN** **NCDOT U-2519 CB Fayetteville UST Parcel 6** Fayetteville, North Carolina	FIGURE NO. 4
DRAWN BY: JBC			
CHECKED BY: DDB			
DATE: 9-24-12		JOB NO.: 1054-12-341	



NORTH

Conductivity (mV)

1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0

LEGEND

Requested Study Area Limits

REFERENCE:

- Google Earth Aerial Photograph
- Dated April 11, 2010

SCALE:	NTS
DRAWN BY:	JBC
CHECKED BY:	DDB
DATE:	9-24-12

S&ME
ENGINEERING • TESTING
ENVIRONMENTAL SERVICES

TDEM DATA PLOT

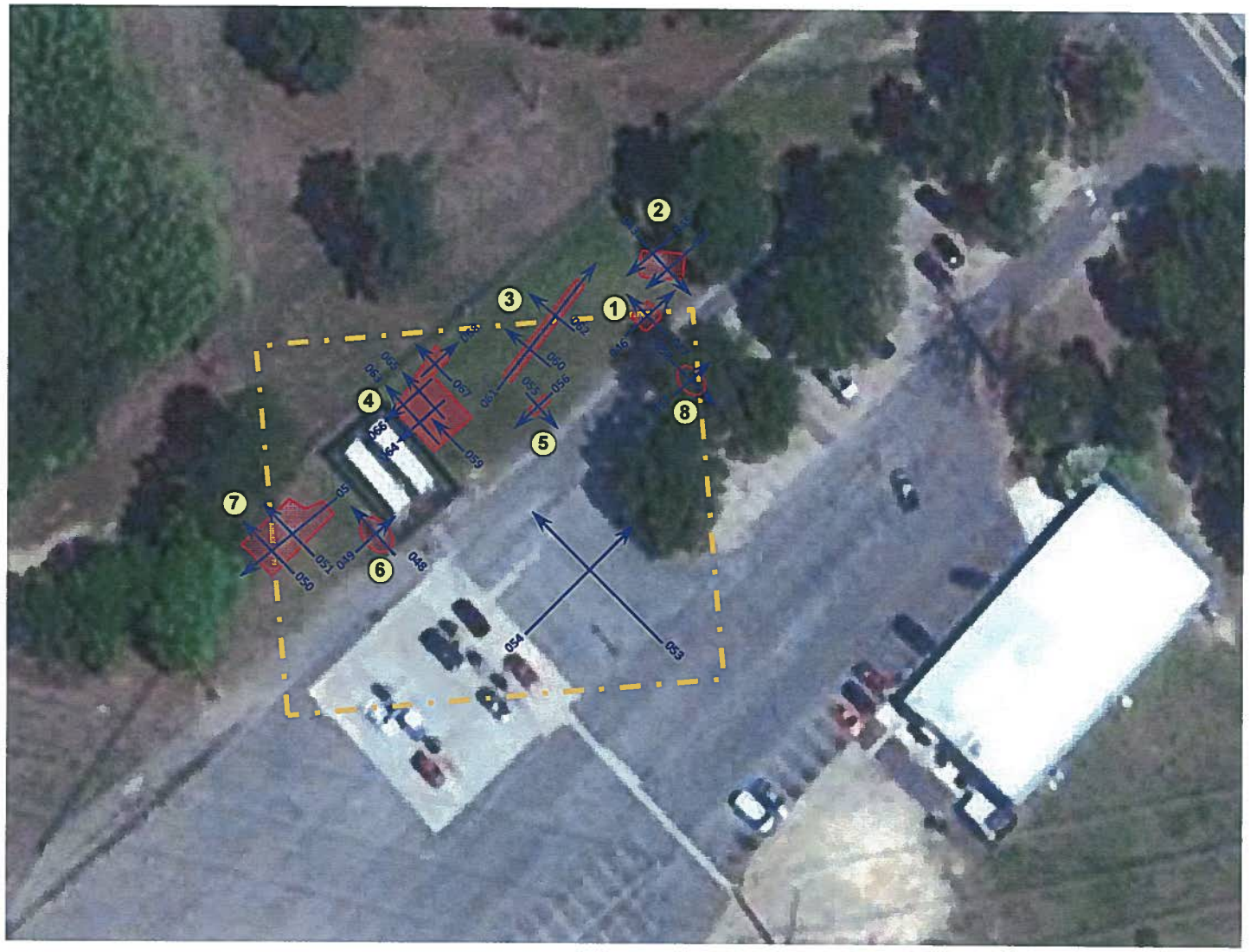
NCDOT U-2519 CB Fayetteville UST Parcel 6

Fayetteville, North Carolina

JOB NO.: 1054-12-341

FIGURE NO.

5



REFERENCE:
- Google Earth Aerial Photograph
- Dated April 11, 2010

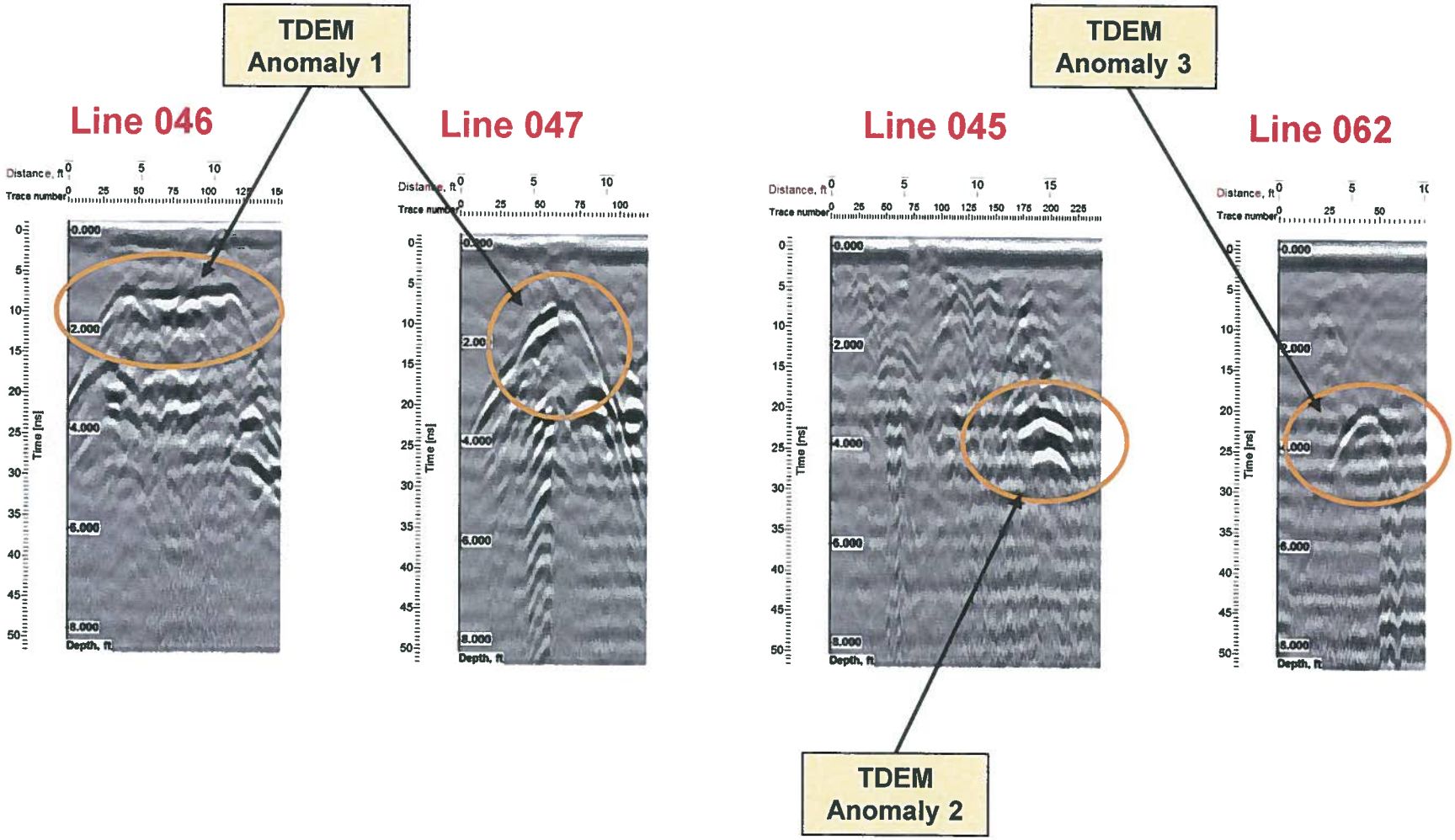
SCALE:	NTS
DRAWN BY:	JBC
CHECKED BY:	DDB
DATE:	9-24-12

S&ME
ENGINEERING • TESTING
ENVIRONMENTAL SERVICES

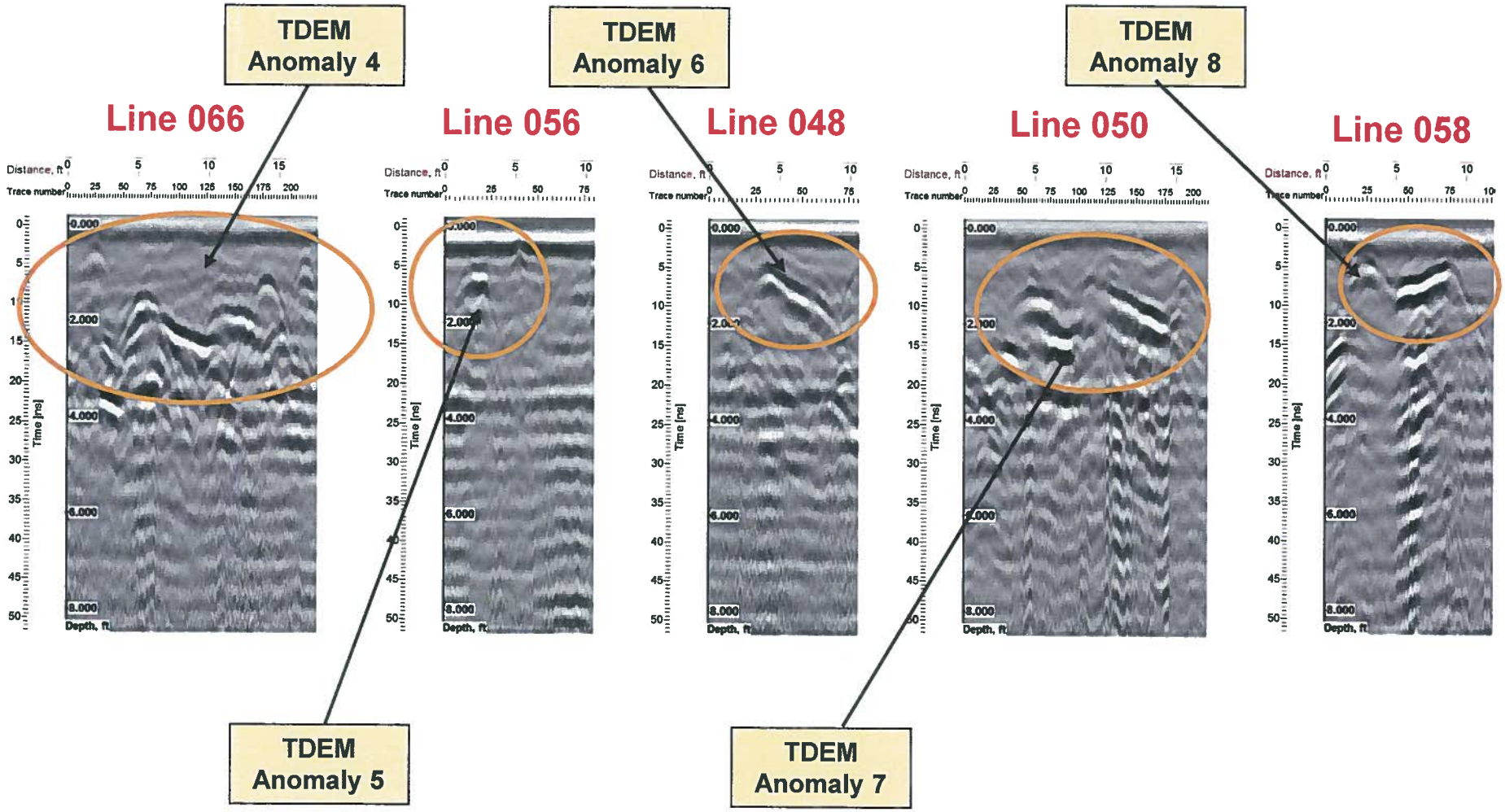
GPR TEST LOCATION PLAN
NCDOT U-2519 CB Fayetteville UST Parcel 6
Fayetteville, North Carolina

JOB NO.: 1054-12-341

FIGURE NO.
6



SCALE: AS SHOWN	S&ME ENGINEERING • TESTING ENVIRONMENTAL SERVICES	GPR PROFILE EXAMPLES – LINES 046, 047, 045 AND 062 NCDOT U-2519 CB Fayetteville UST Parcel 6 Fayetteville, North Carolina	FIGURE NO. 7
DRAWN BY: JBC			
CHECKED BY: DDB			
DATE: 9-24-12		JOB NO.: 1054-12-341	



SCALE: AS SHOWN	S&ME ENGINEERING • TESTING ENVIRONMENTAL SERVICES	GPR PROFILE EXAMPLES – LINES 066, 056, 048, 050 AND 058 NCDOT U-2519 CB Fayetteville UST Parcel 6 Fayetteville, North Carolina	FIGURE NO. 8
DRAWN BY: JBC			
CHECKED BY: DDB			
DATE: 9-24-12		JOB NO.: 1054-12-341	

APPENDIX I

Photographic Log

1	Parcel #006 looking northeast.

2	Parcel #006 looking east toward Yadkin Road.

3	Former dispenser islands.

4	Parcel #006 looking west.

S&ME	**NCDOT U2519CB Fayetteville Outer Loop Parcel 021 – Phase I ESA** **Fayetteville, Cumberland County, North Carolina**	S&ME Project No. 1054-12-341
		Taken by: CEE / Date Taken: 10/19-10/27/12

5 GPR unit adjacent to former AST enclosure.

6 Anomalies identified by geophysical survey.

7 Advancing boring near former dispenser island.

8 Boring B-12 in suspected UST basin. Note the newer asphalt covering the suspected UST basin.

APPENDIX II

Boring Logs

BORING LOG

S&ME

Project Name: NCDOT Fayetteville
Job No. 1054-12-341

Boring Number: B-11
Sampling Personnel: C. Elliott
Date Drilled: 9/27/2012
Depth to Groundwater: Not encountered
Total Depth: 20 ft. bgs.

Drilling method: Geoprobe® Direct Push

STRATIFICATION

Depth (Feet)			PID Reading (ppm)	Sample No. and Depth	
From	To	Soil Description		Sample No.	Depth (Ft-BGS)
0	1.0	Asphalt			
1.0	2.0	Poorly graded sand (SP), light yellowish brown, moist, loose			
2.0	3.0	Silt with sand (ML), yellowish brown, moist, hard	1.2		
3.0	4.0	Color change to reddish brown			
4.0	5.0		1.4		
5.0	6.0				
6.0	7.0		1.9	B-11	6.5
7.0	8.0				
8.0	9.0				
9.0	10.0		1.6		
10.0	11.0				
11.0	12.0		1.5		
12.0	13.0				
13.0	14.0				
14.0	15.0		1.6		
15.0	16.0	Silty sand (SM), dark reddish brown, moist, soft			
16.0	17.0		1.0		
17.0	18.0				
18.0	19.0	Sandy silt/ silty sand (ML/SM), dark reddish brown, moist, hard			
19.0	20.0	Silty sand (SM), dark reddish brown, moist, soft	1.4		
		Boring terminated at 20 ft. bgs.			

Notes:

1. Ft-BGS: Feet Below Ground Surface
2. PID: Photo-Ionization Detector
3. PPM: parts per million (volume/volume)

BORING LOG S&ME **Project Name:** NCDOT Fayetteville
Job No. 1054-12-341

Boring Number: B-12 **Drilling method:** Geoprobe® Direct Push
Sampling Personnel: C. Elliott
Date Drilled: 9/27/2012
Depth to Groundwater: Not encountered
Total Depth: 20 ft. bgs

STRATIFICATION

Depth (Feet)		Soil Description	PID Reading (ppm)	Sample No. and Depth	
From	To			Sample No.	Depth (Ft-BGS)
0	1.0	Asphalt, gravel/fill sand			
1.0	2.0	Sandy silt (ML), dark reddish brown, moist, hard, white streaks	1.3		
2.0	3.0				
3.0	4.0				
4.0	5.0		3.9	B-12	4.5
5.0	6.0				
6.0	7.0	Silty sand/ sandy silt (SM/ML), dark reddish brown, hard	1.3		
7.0	8.0				
8.0	9.0				
9.0	10.0		1.6		
10.0	11.0				
11.0	12.0		1.4		
12.0	13.0				
13.0	14.0	Silty sand (ML), dark reddish brown, moist, soft			
14.0	15.0		2.0		
15.0	16.0				
16.0	17.0		1.0		
17.0	18.0				
18.0	19.0				
19.0	20.0		2.0		
		Boring terminated at 20 ft bgs			

Notes:

1. Ft-BGS: Feet Below Ground Surface
2. PID: Photo-Ionization Detector
3. PPM: parts per million (volume/volume)

BORING LOG

S&ME

Project Name: NCDOT Fayetteville
Job No. 1054-12-341

Boring Number: B-13
Sampling Personnel: C. Elliott
Date Drilled: 9/27/2012
Depth to Groundwater: Not encountered
Total Depth: 20 ft. bgs

Drilling method: Geoprobe® Direct Push

STRATIFICATION

Depth (Feet)			PID Reading (ppm)	Sample No. and Depth	
From	To	Soil Description		Sample No.	Depth (Ft-BGS)
0	1.0	Asphalt			
1.0	2.0	Poorly graded sand (SP), light yellowish brown, moist, loose	1.6		
2.0	3.0	Sandy silt/silty sand (ML/SM), yellowish brown, moist, firm			
3.0	4.0				
4.0	5.0	Color change to reddish brown	1.1		
5.0	6.0				
6.0	7.0	~8" sand lens	1.3		
7.0	8.0	Sandy silt (ML), dark reddish brown, moist, hard, highly weathered rock			
8.0	9.0				
9.0	10.0		1.2		
10.0	11.0				
11.0	12.0		1		
12.0	13.0				
13.0	14.0				
14.0	15.0		2.2		
15.0	16.0				
16.0	17.0		3.6		
17.0	18.0				
18.0	19.0	Firm			
19.0	20.0	Soft	5.3	B-13	19.5
		Boring terminated at 20 ft bgs			

Notes:

1. Ft-BGS: Feet Below Ground Surface
2. PID: Photo-Ionization Detector
3. PPM: parts per million (volume/volume)

BORING LOG

Project Name: NCDOT Fayetteville
Job No. 1054-12-341

Boring Number: B-14
Sampling Personnel: C. Elliott
Date Drilled: 9/27/2012
Depth to Groundwater: Not encountered
Total Depth: 10 ft. bgs.

Drilling method: Geoprobe® Direct Push

STRATIFICATION

Depth (Feet)		Soil Description	PID Reading (ppm)	Sample No. and Depth	
From	To			Sample No.	Depth (Ft-BGS)
0	1.0	Concrete and pea gravel			
1.0	2.0	No recovery			
2.0	3.0				
3.0	4.0				
4.0	5.0				
5.0	6.0	Sandy silt (ML), dark reddish brown, moist, firm, strong odor	5,522	B-14	6.0
6.0	7.0				
7.0	8.0				
8.0	9.0	Hard	2,907		
9.0	10.0				
		Boring terminated at 10 ft bgs			

Notes:

1. Ft-BGS: Feet Below Ground Surface
2. PID: Photo-Ionization Detector
3. PPM: parts per million (volume/volume)

BORING LOG

S&ME

Project Name: NCDOT Fayetteville
Job No. 1054-12-341

Boring Number: B-15
Sampling Personnel: C. Elliott
Date Drilled: 9/27/2012
Depth to Groundwater: Not encountered
Total Depth: 20 ft. bgs.

Drilling method: Geoprobe® Direct Push

STRATIFICATION

Depth (Feet)		Soil Description	PID Reading (ppm)	Sample No. and Depth	
From	To			Sample No.	Depth (Ft-BGS)
0	1.0	Concrete			
1.0	2.0	Poorly graded sand (SP), light yellowish brown, loose	4.5	B-15	1.5
2.0	3.0	Sandy silt (ML), reddish brown, moist, firm			
3.0	4.0	Soft			
4.0	5.0		3.2		
5.0	6.0	Color change to dark reddish brown			
6.0	7.0		1.8		
7.0	8.0	Hard			
8.0	9.0				
9.0	10.0		2.1		
10.0	11.0				
11.0	12.0		1.8		
12.0	13.0	Soft			
13.0	14.0				
14.0	15.0		2.4		
15.0	16.0				
16.0	17.0	Silty sand (SM), dark ressich brown, moist, soft	1.7		
17.0	18.0				
18.0	19.0	Color change to light yellowish brown			
19.0	20.0		2.3		
		Boring terminated at 20 ft bgs			

Notes:

1. Ft-BGS: Feet Below Ground Surface
2. PID: Photo-Ionization Detector
3. PPM: parts per million (volume/volume)

BORING LOG

S&ME

Project Name: NCDOT Fayetteville
Job No. 1054-12-341

Boring Number: B-16
Sampling Personnel: C. Elliott
Date Drilled: 9/27/2012
Depth to Groundwater: Not encountered
Total Depth: 20 ft. bgs.

Drilling method: Geoprobe® Direct Push

STRATIFICATION

Depth (Feet)			PID Reading (ppm)	Sample No. and Depth	
From	To	Soil Description		Sample No.	Depth (Ft-BGS)
0	1.0	Concrete			
1.0	2.0	Poorly graded sand (SP), light yellowish brown, moist, loose	2.6		
2.0	3.0	Sandy silt (ML), reddish brown, moist, firm			
3.0	4.0				
4.0	5.0		11.4	B-16	4.5
5.0	6.0	Hard			
6.0	7.0		1.5		
7.0	8.0				
8.0	9.0				
9.0	10.0		2.5		
10.0	11.0				
11.0	12.0	Sandy silt (ML), reddish brown, moist, firm	2.4		
12.0	13.0				
13.0	14.0				
14.0	15.0		2.6		
15.0	16.0				
16.0	17.0		1.8		
17.0	18.0				
18.0	19.0				
19.0	20.0		3.5		
		Boring terminated at 20 ft bgs			

Notes:

1. Ft-BGS: Feet Below Ground Surface
2. PID: Photo-Ionization Detector
3. PPM: parts per million (volume/volume)

BORING LOG

Project Name: NCDOT Fayetteville
Job No. 1054-12-341

Boring Number: B-17
Sampling Personnel: C. Elliott
Date Drilled: 9/27/2012
Depth to Groundwater: Not encountered
Total Depth: 20 ft. bgs.

Drilling method: Geoprobe® Direct Push

STRATIFICATION

Depth (Feet)		Soil Description	PID Reading (ppm)	Sample No. and Depth	
From	To			Sample No.	Depth (Ft-BGS)
0	1.0	Fill sand			
1.0	2.0		2		
2.0	3.0				
3.0	4.0	Gravel- non-native			
4.0	5.0		3.2		
5.0	6.0	Silty sand (SM), medium reddish brown, moist, soft			
6.0	7.0	Sandy silt (ML), reddish brown, moist, firm	3.4	B-17	6.5
7.0	8.0				
8.0	9.0				
9.0	10.0		2.5		
10.0	11.0				
11.0	12.0		1.8		
12.0	13.0				
13.0	14.0				
14.0	15.0	Silty sand/ sandy silt (SM/ML), dark reddish brown, moist, soft	2.4		
15.0	16.0				
16.0	17.0	Very hard			
17.0	18.0	Seams of white clay	2.2		
18.0	19.0				
19.0	20.0				
		Boring terminated at 20 ft bgs			

Notes:

1. Ft-BGS: Feet Below Ground Surface
2. PID: Photo-Ionization Detector
3. PPM: parts per million (volume/volume)

BORING LOG

S&ME

Project Name: NCDOT Fayetteville
Job No. 1054-12-341

Boring Number: B-18
Sampling Personnel: C. Elliott
Date Drilled: 9/27/2012
Depth to Groundwater: Not encountered
Total Depth: 20 ft. bgs.

Drilling method: Geoprobe® Direct Push

STRATIFICATION

Depth (Feet)			PID Reading (ppm)	Sample No. and Depth	
From	To	Soil Description		Sample No.	Depth (Ft-BGS)
0	1.0	Organic soil (OH)			
1.0	2.0	Silty sand (SM), light reddish brown, moist, soft	1.7		
2.0	3.0				
3.0	4.0				
4.0	5.0	Sandy silt (ML), light reddish brown, moist, firm	2.2		
5.0	6.0				
6.0	7.0	Hard	2		
7.0	8.0				
8.0	9.0				
9.0	10.0		1.6		
10.0	11.0				
11.0	12.0		3.9		
12.0	13.0				
13.0	14.0				
14.0	15.0	Color change to light yellowish brown, very hard	2.8		
15.0	16.0				
16.0	17.0		3.7		
17.0	18.0				
18.0	19.0				
19.0	20.0		4.7		
		Boring terminated at 20 ft. bgs.			

Notes:

1. Ft-BGS: Feet Below Ground Surface
2. PID: Photo-Ionization Detector
3. PPM: parts per million (volume/volume)

BORING LOG

Project Name: NCDOT Fayetteville
Job No. 1054-12-341

Boring Number: B-19
Sampling Personnel: C. Elliott
Date Drilled: 10/1/2012

Drilling method: Geoprobe® Direct Push

Total Depth: 20 ft. bgs.

STRATIFICATION

Depth (Feet)		Soil Description	PID Reading (ppm)	Sample No. and Depth	
From	To			Sample No.	Depth (Ft-BGS)
0	1.0	Asphalt			
1.0	2.0	Silty sand (SM), light reddish brown, moist, soft	0.4		
2.0	3.0	Color change to light yellowish brown, loose			
3.0	4.0	Sandy silt (ML), yellowish brown, moist, hard			
4.0	5.0	Color change to reddish brown	1.8		
5.0	6.0				
6.0	7.0	Color change to dark reddish brown	0.9		
7.0	8.0				
8.0	9.0				
9.0	10.0		2.4	B-19	9.5
10.0	11.0				
11.0	12.0		1.7		
12.0	13.0				
13.0	14.0	Sandy silt/silty sand (ML/SM), dark reddish brown, moist, soft			
14.0	15.0		1.6		
15.0	16.0				
16.0	17.0	Hard	0.9		
17.0	18.0				
18.0	19.0				
19.0	20.0		2.6		
		Boring terminated at 20 ft bgs			

Notes:

1. Ft-BGS: Feet Below Ground Surface
2. PID: Photo-Ionization Detector
3. PPM: parts per million (volume/volume)

BORING LOG

Project Name: NCDOT Fayetteville
Job No. 1054-12-341

Boring Number: B-20
Sampling Personnel: C. Elliott
Date Drilled: 10/1/2012
Depth to Groundwater: Not encountered
Total Depth: 20 ft. bgs.

Drilling method: Geoprobe® Direct Push

STRATIFICATION

Depth (Feet)		Soil Description	PID Reading (ppm)	Sample No. and Depth	
From	To			Sample No.	Depth (Ft-BGS)
0	1.0	Organic soil (OH			
1.0	2.0	Sandy silt (ML), dark reddish brown, firm, moist	1.3		
2.0	3.0				
3.0	4.0	Well graded sand with gravel (SW), loose, light yellowish brown, moist			
4.0	5.0		1.1		
5.0	6.0	Silty sand (SM), dark reddish brown, moist, loose			
6.0	7.0		2.1		
7.0	8.0				
8.0	9.0				
9.0	10.0		0.7		
10.0	11.0	Sandy silt (ML), reddish brown, moist, firm			
11.0	12.0		2.7	B-20	11.5
12.0	13.0	Very hard			
13.0	14.0				
14.0	15.0		2.1		
15.0	16.0				
16.0	17.0		2.1		
17.0	18.0				
18.0	19.0				
19.0	20.0		1.3		
		Boring terminated at 20 ft bgs			

Notes:

1. Ft-BGS: Feet Below Ground Surface
2. PID: Photo-Ionization Detector
3. PPM: parts per million (volume/volume)

BORING LOG

Project Name: NCDOT Fayetteville
Job No. 1054-12-341

Boring Number: B-21
Sampling Personnel: C. Elliott, J. Waters
Date Drilled: 10/1/2012
Depth to Groundwater: Not encountered
Total Depth: 20 ft. bgs.

Drilling method: Geoprobe® Direct Push

STRATIFICATION

Depth (Feet)		Soil Description	PID Reading (ppm)	Sample No. and Depth	
From	To			Sample No.	Depth (Ft-BGS)
0	1.0	Organic soil (OH)			
1.0	2.0	Silty sand (SM), reddish brown, moist, soft	2.0		
2.0	3.0				
3.0	4.0				
4.0	5.0		2.8		
5.0	6.0				
6.0	7.0	Sandy silt (ML), reddish brown, moist, firm	2.5		
7.0	8.0				
8.0	9.0				
9.0	10.0		2.9	B-21	9.5
10.0	11.0				
11.0	12.0		0.9		
12.0	13.0				
13.0	14.0				
14.0	15.0		2.8		
15.0	16.0	Very hard			
16.0	17.0		1.2		
17.0	18.0				
18.0	19.0				
19.0	20.0		2.0		
		Boring terminated at 20 ft bgs			

Notes:

1. Ft-BGS: Feet Below Ground Surface
2. PID: Photo-Ionization Detector
3. PPM: parts per million (volume/volume)

APPENDIX III

Laboratory Analytical Report

Laboratory Report of Analysis

To: Scott Young
S&ME
3006 Hall Waters Drive
Suite 100
Wilmington, NC 28405

Report Number: **31203183**

Client Project: **NCDOT Fayetteville**

Dear Scott Young,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of thirty (30) days from the date of this report unless other arrangements are requested.

If there are any questions about the report or services performed during this project, please call Barbara A. Hager at (910) 350-1903. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Barbara A. Hager
2012.10.16 11:23:59 -05'00'

Barbara A. Hager
Project Manager
barbara.hager@sgs.com

Date

Print Date: 10/16/2012

N.C. Certification # 481

ANALYTICAL PERSPECTIVES IS NOW PART OF SGS, THE WORLD'S LEADING INSPECTION, VERIFICATION, TESTING AND CERTIFICATION COMPANY.

Laboratory Qualifiers

Report Definitions

DL	Method, Instrument, or Estimated Detection Limit per Analytical Method
CL	Control Limits for the recovery result of a parameter
LOQ	Reporting Limit
DF	Dilution Factor
RPD	Relative Percent Difference
LCS(D)	Laboratory Control Spike (Duplicate)
MS(D)	Matrix Spike (Duplicate)
MB	Method Blank

Qualifier Definitions

*	Recovery or RPD outside of control limits
B	Analyte was detected in the Lab Method Blank at a level above the LOQ
U	Undetected (Reported as ND or < DL)
V	Recovery is below quality control limit. The data has been validated based on a favorable signal-to-noise and detection limit
A	Amount detected is less than the Lower Method Calibration Limit
J	Estimated Concentration.
O	The recovery of this analyte in the OPR is above the Method QC Limits and the reported concentration in the sample may be biased high
E	Amount detected is greater than the Upper Calibration Limit
S	The amount of analyte present has saturated the detector. This situation results in an underestimation of the affected analyte(s)
Q	Indicates the presence of a quantitative interference. This situation may result in an underestimation of the affected analyte(s)
I	Indicates the presence of a qualitative interference that could cause a false positive or an overestimation of the affected analyte(s)
DPE	Indicates the presence of a peak in the polychlorinated diphenylether channel that could cause a false positive or an overestimation of the affected analyte(s)
TIC	Tentatively Identified Compound
EMPC	Estimated Maximum possible Concentration due to ion ratio failure
ND	Not Detected
K	Result is estimated due to ion ratio failure in High Resolution PCB Analysis
P	RPD > 40% between results of dual columns
D	Spike or surrogate was diluted out in order to achieve a parameter result within instrument calibration range

Samples requiring manual integrations for various congeners and/or standards are marked and dated by the analyst. A code definition is provided below:

M1	Mis-identified peak

Note Results pages that include a value for "Solids (%)" have been adjusted for moisture content.

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
B-11	31203183001	09/28/2012 10:05	10/03/2012 14:00	Soil-Solid as dry weight
B-12	31203183002	09/28/2012 10:25	10/03/2012 14:00	Soil-Solid as dry weight
B-13	31203183003	09/28/2012 11:00	10/03/2012 14:00	Soil-Solid as dry weight
B-14	31203183004	09/28/2012 11:40	10/03/2012 14:00	Soil-Solid as dry weight
B-15	31203183005	09/28/2012 12:05	10/03/2012 14:00	Soil-Solid as dry weight
B-16	31203183006	09/28/2012 13:30	10/03/2012 14:00	Soil-Solid as dry weight
B-17	31203183007	09/28/2012 14:10	10/03/2012 14:00	Soil-Solid as dry weight
B-18	31203183008	09/28/2012 15:00	10/03/2012 14:00	Soil-Solid as dry weight
B-19	31203183009	10/01/2012 11:00	10/03/2012 14:00	Soil-Solid as dry weight
B-20	31203183010	10/01/2012 11:30	10/03/2012 14:00	Soil-Solid as dry weight
B-21	31203183011	10/01/2012 12:00	10/03/2012 14:00	Soil-Solid as dry weight

Detectable Results Summary

Client Sample ID: **B-11**
Lab Sample ID: 31203183001-C

SW-846 8015C DRO

Parameter	Result	Units
Diesel Range Organics (DRO)	14.5	mg/kg

Client Sample ID: **B-14**
Lab Sample ID: 31203183004-C

SW-846 8015C DRO
SW-846 8015C GRO

Parameter	Result	Units
Diesel Range Organics (DRO)	1800	mg/kg
Gasoline Range Organics (GRO)	1050	mg/kg

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-11**

Client Sample ID: **B-11**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183001-A
Lab Project ID: 31203183

Collection Date: 09/28/2012 10:05
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 81.70

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	ND	U	4.96	4.96	mg/kg	1	10/11/2012 23:49
Surrogates							
4-Bromofluorobenzene	113			70.0-130	%	1	10/11/2012 23:49

Batch Information

Analytical Batch: **VGC2182**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC7**
Analyst: **MDY**

Prep Batch: **VXX4139**
Prep Method: **SW-846 5035**
Prep Date/Time: **10/03/2012 16:12**
Prep Initial Wt./Vol.: **4.93 g**
Prep Extract Vol: **5 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-11**

Client Sample ID: **B-11**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183001-C
Lab Project ID: 31203183

Collection Date: 09/28/2012 10:05
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 81.70

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	**14.5**		7.84	7.84	mg/kg	1	10/6/2012 9:43
Surrogates							
o-Terphenyl	76.4			40.0-140	%	1	10/6/2012 9:43

Batch Information

Analytical Batch: **XGC2585**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**

Prep Batch: **XXX3145**
Prep Method: **SW-846 3541**
Prep Date/Time: **10/04/2012 09:48**
Prep Initial Wt./Vol.: **31.23 g**
Prep Extract Vol: **10 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-12**

Client Sample ID: **B-12**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183002-A
Lab Project ID: 31203183

Collection Date: 09/28/2012 10:25
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 85.70

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	ND	U	5.12	5.12	mg/kg	1	10/12/2012 0:14
Surrogates							
4-Bromofluorobenzene	112			70.0-130	%	1	10/12/2012 0:14

Batch Information

Analytical Batch: **VGC2182**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC7**
Analyst: **MDY**

Prep Batch: **VXX4139**
Prep Method: **SW-846 5035**
Prep Date/Time: **10/03/2012 16:13**
Prep Initial Wt./Vol.: **4.56 g**
Prep Extract Vol: **5 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-12**

Client Sample ID: **B-12**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183002-C
Lab Project ID: 31203183

Collection Date: 09/28/2012 10:25
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 85.70

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	ND	U	7.48	7.48	mg/kg	1	10/6/2012 10:11
Surrogates							
o-Terphenyl	76.5			40.0-140	%	1	10/6/2012 10:11

Batch Information

Analytical Batch: **XGC2585**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**

Prep Batch: **XXX3145**
Prep Method: **SW-846 3541**
Prep Date/Time: **10/04/2012 09:48**
Prep Initial Wt./Vol.: **31.21 g**
Prep Extract Vol: **10 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-13**

Client Sample ID: **B-13**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183003-A
Lab Project ID: 31203183

Collection Date: 09/28/2012 11:00
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 80.90

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	ND	U	3.90	3.90	mg/kg	1	10/12/2012 0:39
Surrogates							
4-Bromofluorobenzene	111			70.0-130	%	1	10/12/2012 0:39

Batch Information

Analytical Batch: **VGC2182**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC7**
Analyst: **MDY**

Prep Batch: **VXX4139**
Prep Method: **SW-846 5035**
Prep Date/Time: **10/03/2012 16:14**
Prep Initial Wt./Vol.: **6.34 g**
Prep Extract Vol: **5 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-13**

Client Sample ID: **B-13**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183003-C
Lab Project ID: 31203183

Collection Date: 09/28/2012 11:00
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 80.90

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	ND	U	7.92	7.92	mg/kg	1	10/6/2012 10:39
Surrogates							
o-Terphenyl	75.8			40.0-140	%	1	10/6/2012 10:39

Batch Information

Analytical Batch: **XGC2585**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**

Prep Batch: **XXX3145**
Prep Method: **SW-846 3541**
Prep Date/Time: **10/04/2012 09:48**
Prep Initial Wt./Vol.: **31.19 g**
Prep Extract Vol: **10 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-14**

Client Sample ID: **B-14**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183004-A
Lab Project ID: 31203183

Collection Date: 09/28/2012 11:40
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 80.80

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	**1050**		152	152	mg/kg	40	10/12/2012 13:51
Surrogates							
4-Bromofluorobenzene	106			70.0-130	%	40	10/12/2012 13:51

Batch Information

Analytical Batch: **VGC2184**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC7**
Analyst: **MDY**

Prep Batch: **VXX4143**
Prep Method: **SW-846 5035**
Prep Date/Time: **10/03/2012 16:15**
Prep Initial Wt./Vol.: **6.5 g**
Prep Extract Vol: **5 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-14**

Client Sample ID: **B-14**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183004-C
Lab Project ID: 31203183

Collection Date: 09/28/2012 11:40
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 80.80

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	**1800**		159	159	mg/kg	20	10/8/2012 23:11
Surrogates							
o-Terphenyl	NA	D		40.0-140	%	20	10/8/2012 23:11

Batch Information

Analytical Batch: **XGC2589**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**

Prep Batch: **XXX3145**
Prep Method: **SW-846 3541**
Prep Date/Time: **10/04/2012 09:48**
Prep Initial Wt./Vol.: **31.14 g**
Prep Extract Vol: **10 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-15**

Client Sample ID: **B-15**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183005-A
Lab Project ID: 31203183

Collection Date: 09/28/2012 12:05
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 79.70

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	ND	U	4.72	4.72	mg/kg	1	10/12/2012 1:04
Surrogates							
4-Bromofluorobenzene	114			70.0-130	%	1	10/12/2012 1:04

Batch Information

Analytical Batch: **VGC2182**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC7**
Analyst: **MDY**

Prep Batch: **VXX4139**
Prep Method: **SW-846 5035**
Prep Date/Time: **10/03/2012 16:17**
Prep Initial Wt./Vol.: **5.32 g**
Prep Extract Vol: **5 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-15**

Client Sample ID: **B-15**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183005-C
Lab Project ID: 31203183

Collection Date: 09/28/2012 12:05
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 79.70

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	ND	U	8.04	8.04	mg/kg	1	10/6/2012 11:36
Surrogates							
o-Terphenyl	82.1			40.0-140	%	1	10/6/2012 11:36

Batch Information

Analytical Batch: **XGC2585**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**

Prep Batch: **XXX3145**
Prep Method: **SW-846 3541**
Prep Date/Time: **10/04/2012 09:48**
Prep Initial Wt./Vol.: **31.21 g**
Prep Extract Vol: **10 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-16**

Client Sample ID: **B-16**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183006-A
Lab Project ID: 31203183

Collection Date: 09/28/2012 13:30
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 83.40

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	ND	U	4.59	4.59	mg/kg	1	10/12/2012 1:29
Surrogates							
4-Bromofluorobenzene	110			70.0-130	%	1	10/12/2012 1:29

Batch Information

Analytical Batch: **VGC2182**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC7**
Analyst: **MDY**

Prep Batch: **VXX4139**
Prep Method: **SW-846 5035**
Prep Date/Time: **10/03/2012 16:18**
Prep Initial Wt./Vol.: **5.22 g**
Prep Extract Vol: **5 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-16**

Client Sample ID: **B-16**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183006-C
Lab Project ID: 31203183

Collection Date: 09/28/2012 13:30
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 83.40

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	ND	U	7.30	7.30	mg/kg	1	10/6/2012 12:05
Surrogates							
o-Terphenyl	73.2			40.0-140	%	1	10/6/2012 12:05

Batch Information

Analytical Batch: **XGC2585**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**

Prep Batch: **XXX3145**
Prep Method: **SW-846 3541**
Prep Date/Time: **10/04/2012 09:48**
Prep Initial Wt./Vol.: **32.85 g**
Prep Extract Vol: **10 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-17**

Client Sample ID: **B-17**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183007-A
Lab Project ID: 31203183

Collection Date: 09/28/2012 14:10
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 84.00

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	ND	U	3.54	3.54	mg/kg	1	10/12/2012 1:54
Surrogates							
4-Bromofluorobenzene	111			70.0-130	%	1	10/12/2012 1:54

Batch Information

Analytical Batch: **VGC2182**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC7**
Analyst: **MDY**

Prep Batch: **VXX4139**
Prep Method: **SW-846 5035**
Prep Date/Time: **10/03/2012 16:19**
Prep Initial Wt./Vol.: **6.72 g**
Prep Extract Vol: **5 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-17**

Client Sample ID: **B-17**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183007-C
Lab Project ID: 31203183

Collection Date: 09/28/2012 14:10
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 84.00

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	ND	U	7.11	7.11	mg/kg	1	10/6/2012 12:33
Surrogates							
o-Terphenyl	74.7			40.0-140	%	1	10/6/2012 12:33

Batch Information

Analytical Batch: **XGC2585**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**

Prep Batch: **XXX3145**
Prep Method: **SW-846 3541**
Prep Date/Time: **10/04/2012 09:48**
Prep Initial Wt./Vol.: **33.49 g**
Prep Extract Vol: **10 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-18**

Client Sample ID: **B-18**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183008-A
Lab Project ID: 31203183

Collection Date: 09/28/2012 15:00
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 85.00

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	ND	U	3.40	3.40	mg/kg	1	10/12/2012 2:20
Surrogates							
4-Bromofluorobenzene	113			70.0-130	%	1	10/12/2012 2:20

Batch Information

Analytical Batch: **VGC2182**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC7**
Analyst: **MDY**

Prep Batch: **VXX4139**
Prep Method: **SW-846 5035**
Prep Date/Time: **10/03/2012 16:20**
Prep Initial Wt./Vol.: **6.91 g**
Prep Extract Vol: **5 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-18**

Client Sample ID: **B-18**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183008-C
Lab Project ID: 31203183

Collection Date: 09/28/2012 15:00
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 85.00

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	ND	U	7.55	7.55	mg/kg	1	10/6/2012 13:01
Surrogates							
o-Terphenyl	75.7			40.0-140	%	1	10/6/2012 13:01

Batch Information

Analytical Batch: **XGC2585**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**

Prep Batch: **XXX3145**
Prep Method: **SW-846 3541**
Prep Date/Time: **10/04/2012 09:48**
Prep Initial Wt./Vol.: **31.16 g**
Prep Extract Vol: **10 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-19**

Client Sample ID: **B-19**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183009-A
Lab Project ID: 31203183

Collection Date: 10/01/2012 11:00
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 88.20

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	ND	U	3.30	3.30	mg/kg	1	10/12/2012 2:45
Surrogates							
4-Bromofluorobenzene	112			70.0-130	%	1	10/12/2012 2:45

Batch Information

Analytical Batch: **VGC2182**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC7**
Analyst: **MDY**

Prep Batch: **VXX4139**
Prep Method: **SW-846 5035**
Prep Date/Time: **10/03/2012 16:21**
Prep Initial Wt./Vol.: **6.87 g**
Prep Extract Vol: **5 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-19**

Client Sample ID: **B-19**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183009-C
Lab Project ID: 31203183

Collection Date: 10/01/2012 11:00
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 88.20

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	ND	U	6.56	6.56	mg/kg	1	10/6/2012 14:25
Surrogates							
o-Terphenyl	76.0			40.0-140	%	1	10/6/2012 14:25

Batch Information

Analytical Batch: **XGC2585**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**

Prep Batch: **XXX3145**
Prep Method: **SW-846 3541**
Prep Date/Time: **10/04/2012 09:48**
Prep Initial Wt./Vol.: **34.55 g**
Prep Extract Vol: **10 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-20**

Client Sample ID: **B-20**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183010-A
Lab Project ID: 31203183

Collection Date: 10/01/2012 11:30
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 86.70

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	ND	U	3.50	3.50	mg/kg	1	10/12/2012 3:10
Surrogates							
4-Bromofluorobenzene	112			70.0-130	%	1	10/12/2012 3:10

Batch Information

Analytical Batch: **VGC2182**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC7**
Analyst: **MDY**

Prep Batch: **VXX4139**
Prep Method: **SW-846 5035**
Prep Date/Time: **10/03/2012 16:22**
Prep Initial Wt./Vol.: **6.59 g**
Prep Extract Vol: **5 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-20**

Client Sample ID: **B-20**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183010-C
Lab Project ID: 31203183

Collection Date: 10/01/2012 11:30
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 86.70

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	ND	U	7.26	7.26	mg/kg	1	10/6/2012 14:53
Surrogates							
o-Terphenyl	77.5			40.0-140	%	1	10/6/2012 14:53

Batch Information

Analytical Batch: **XGC2585**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**

Prep Batch: **XXX3145**
Prep Method: **SW-846 3541**
Prep Date/Time: **10/04/2012 09:48**
Prep Initial Wt./Vol.: **31.78 g**
Prep Extract Vol: **10 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-21**

Client Sample ID: **B-21**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183011-A
Lab Project ID: 31203183

Collection Date: 10/01/2012 12:00
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 91.80

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	ND	U	3.25	3.25	mg/kg	1	10/12/2012 3:35
Surrogates							
4-Bromofluorobenzene	113			70.0-130	%	1	10/12/2012 3:35

Batch Information

Analytical Batch: **VGC2182**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC7**
Analyst: **MDY**

Prep Batch: **VXX4139**
Prep Method: **SW-846 5035**
Prep Date/Time: **10/03/2012 16:22**
Prep Initial Wt./Vol.: **6.71 g**
Prep Extract Vol: **5 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Results of **B-21**

Client Sample ID: **B-21**
Client Project ID: **NCDOT Fayetteville**
Lab Sample ID: 31203183011-C
Lab Project ID: 31203183

Collection Date: 10/01/2012 12:00
Received Date: 10/03/2012 14:00
Matrix: Soil-Solid as dry weight
Solids (%): 91.80

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	ND	U	6.71	6.71	mg/kg	1	10/6/2012 15:22
Surrogates							
o-Terphenyl	76.3			40.0-140	%	1	10/6/2012 15:22

Batch Information

Analytical Batch: **XGC2585**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**

Prep Batch: **XXX3145**
Prep Method: **SW-846 3541**
Prep Date/Time: **10/04/2012 09:48**
Prep Initial Wt./Vol.: **32.46 g**
Prep Extract Vol: **10 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Batch Summary

Analytical Method: SW-846 8015C GRO

Prep Method: SW-846 5035
Prep Batch: VXX4139
Prep Date: 10/11/2012 16:54

Client Sample ID	Lab Sample ID	Analysis Date	Analytical Batch	Instrument	Analyst
LCS for HBN 30391 [VXX/4139]	94272	10/11/2012 18:45	VGC2182	GC7	MDY
LCSD for HBN 30391 [VXX/4139]	94273	10/11/2012 19:10	VGC2182	GC7	MDY
MB for HBN 30391 [VXX/4139]	94274	10/11/2012 19:35	VGC2182	GC7	MDY
B-11 7-8ft(93385MS)	94421	10/11/2012 22:58	VGC2182	GC7	MDY
B-11 7-8ft(93385MSD)	94422	10/11/2012 23:23	VGC2182	GC7	MDY
B-11	31203183001	10/11/2012 23:49	VGC2182	GC7	MDY
B-12	31203183002	10/12/2012 00:14	VGC2182	GC7	MDY
B-13	31203183003	10/12/2012 00:39	VGC2182	GC7	MDY
B-15	31203183005	10/12/2012 01:04	VGC2182	GC7	MDY
B-16	31203183006	10/12/2012 01:29	VGC2182	GC7	MDY
B-17	31203183007	10/12/2012 01:54	VGC2182	GC7	MDY
B-18	31203183008	10/12/2012 02:20	VGC2182	GC7	MDY
B-19	31203183009	10/12/2012 02:45	VGC2182	GC7	MDY
B-20	31203183010	10/12/2012 03:10	VGC2182	GC7	MDY
B-21	31203183011	10/12/2012 03:35	VGC2182	GC7	MDY

Method Blank

Blank ID: MB for HBN 30391 [VXX/4139]
Matrix: Soil-Solid as dry weight
Blank Lab ID: 94274
QC for Samples:
31203183001, 31203183002, 31203183003, 31203183005, 31203183006, 31203183007, 31203183008, 31203183009, 31203183010, 31203183011

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF
Gasoline Range Organics (GRO)	ND	U	4.00	4.00	mg/kg	1
Surrogates						
4-Bromofluorobenzene	107			70.0-130	%	1

Batch Information

Analytical Batch: VGC2182
Analytical Method: SW-846 8015C GRO
Instrument: GC7
Analyst: MDY

Prep Batch: VXX4139
Prep Method: SW-846 5035
Prep Date/Time: 10/11/2012 4:54:30PM
Prep Initial Wt./Vol.: 5 g
Prep Extract Vol: 5 mL

Print Date: 10/16/2012
N.C. Certification # 481

Blank Spike Summary

Blank Spike ID: LCS for HBN 30391 [VXX/4139]
Blank Spike Lab ID: 94272
Date Analyzed: 10/11/2012 18:45

Spike Duplicate ID: LCSD for HBN 30391 [VXX/4139]
Spike Duplicate Lab ID: 94273
Date Analyzed: 10/11/2012 19:10
Matrix: Soil-Solid as dry weight

QC for Samples: 31203183001, 31203183002, 31203183003, 31203183005, 31203183006, 31203183007, 31203183008, 31203183009, 31203183010, 31203183011

Results by **SW-846 8015C GRO**

	Blank Spike (mg/kg)			Spike Duplicate (mg/kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics (GRO)	16.0	15.9	100	16.0	16.6	104	70.0-130	4.3	30.00
Surrogates									
4-Bromofluorobenzene			106			106	70.0-130		

Batch Information

Analytical Batch: **VGC2182**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC7**
Analyst: **MDY**

Prep Batch: **VXX4139**
Prep Method: **SW-846 5035**
Prep Date/Time: **10/11/2012 16:54**
Spike Init Wt./Vol.: **5 g** Extract Vol: **5 mL**
Dupe Init Wt./Vol.: **5 g** Extract Vol: **5 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Batch Summary

Analytical Method: SW-846 8015C GRO

Prep Method: SW-846 5035
Prep Batch: VXX4143
Prep Date: 10/12/2012 08:59

Client Sample ID	Lab Sample ID	Analysis Date	Analytical Batch	Instrument	Analyst
LCS for HBN 30402 [VXX/4143]	94294	10/12/2012 11:16	VGC2184	GC7	MDY
LCSD for HBN 30402 [VXX/4143]	94295	10/12/2012 11:42	VGC2184	GC7	MDY
MB for HBN 30402 [VXX/4143]	94296	10/12/2012 12:07	VGC2184	GC7	MDY
B-14	31203183004	10/12/2012 13:51	VGC2184	GC7	MDY
SS #1(94153MS)	94600	10/12/2012 21:02	VGC2184	GC7	MDY
SS #1(94153MSD)	94601	10/12/2012 21:28	VGC2184	GC7	MDY

Method Blank

Blank ID: MB for HBN 30402 [VXX/4143]
Blank Lab ID: 94296
QC for Samples:
31203183004

Matrix: Soil-Solid as dry weight

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF
Gasoline Range Organics (GRO)	ND	U	4.00	4.00	mg/kg	1
Surrogates						
4-Bromofluorobenzene	103			70.0-130	%	1

Batch Information

Analytical Batch: VGC2184
Analytical Method: SW-846 8015C GRO
Instrument: GC7
Analyst: MDY

Prep Batch: VXX4143
Prep Method: SW-846 5035
Prep Date/Time: 10/12/2012 8:59:04AM
Prep Initial Wt./Vol.: 5 g
Prep Extract Vol: 5 mL

Print Date: 10/16/2012

N.C. Certification # 481

Blank Spike Summary

Blank Spike ID: LCS for HBN 30402 [VXX/4143]
Blank Spike Lab ID: 94294
Date Analyzed: 10/12/2012 11:16

Spike Duplicate ID: LCSD for HBN 30402 [VXX/4143]
Spike Duplicate Lab ID: 94295
Date Analyzed: 10/12/2012 11:42
Matrix: Soil-Solid as dry weight

QC for Samples: 31203183004

Results by **SW-846 8015C GRO**

	Blank Spike (mg/kg)			Spike Duplicate (mg/kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics (GRO)	16.0	16.4	103	16.0	16.8	105	70.0-130	2.4	30.00
Surrogates									
4-Bromofluorobenzene			103			105	70.0-130		

Batch Information

Analytical Batch: **VGC2184**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC7**
Analyst: **MDY**

Prep Batch: **VXX4143**
Prep Method: **SW-846 5035**
Prep Date/Time: **10/12/2012 08:59**
Spike Init Wt./Vol.: **5 g** Extract Vol: **5 mL**
Dupe Init Wt./Vol.: **5 g** Extract Vol: **5 mL**

Print Date: 10/16/2012

N.C. Certification # 481

Batch Summary

Analytical Method: SW-846 8015C DRO

Prep Method: SW-846 3541
Prep Batch: XXX3145
Prep Date: 10/04/2012 09:48

Client Sample ID	Lab Sample ID	Analysis Date	Analytical Batch	Instrument	Analyst
MB for HBN 30064 [XXX/3145]	92826	10/05/2012 18:45	XGC2585	GC6	DTF
LCS for HBN 30064 [XXX/3145]	92827	10/05/2012 19:13	XGC2585	GC6	DTF
B-11	31203183001	10/06/2012 09:43	XGC2585	GC6	DTF
B-12	31203183002	10/06/2012 10:11	XGC2585	GC6	DTF
B-13	31203183003	10/06/2012 10:39	XGC2585	GC6	DTF
B-15	31203183005	10/06/2012 11:36	XGC2585	GC6	DTF
B-16	31203183006	10/06/2012 12:05	XGC2585	GC6	DTF
B-17	31203183007	10/06/2012 12:33	XGC2585	GC6	DTF
B-18	31203183008	10/06/2012 13:01	XGC2585	GC6	DTF
B-19	31203183009	10/06/2012 14:25	XGC2585	GC6	DTF
B-20	31203183010	10/06/2012 14:53	XGC2585	GC6	DTF
B-21	31203183011	10/06/2012 15:22	XGC2585	GC6	DTF
D-1(92586MS)	92828	10/08/2012 21:45	XGC2589	GC6	DTF
D-1(92586MSD)	92829	10/08/2012 22:13	XGC2589	GC6	DTF
B-14	31203183004	10/08/2012 23:11	XGC2589	GC6	DTF

Method Blank

Blank ID: MB for HBN 30064 [XXX/3145]
Matrix: Soil-Solid as dry weight
Blank Lab ID: 92826
QC for Samples:
31203183001, 31203183002, 31203183003, 31203183004, 31203183005, 31203183006, 31203183007, 31203183008, 31203183009, 31203183010, 31203183011

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF
Diesel Range Organics (DRO)	ND	U	6.25	6.25	mg/kg	1
Surrogates						
o-Terphenyl	70.4			40.0-140	%	1

Batch Information

Analytical Batch: XGC2585
Analytical Method: SW-846 8015C DRO
Instrument: GC6
Analyst: DTF

Prep Batch: XXX3145
Prep Method: SW-846 3541
Prep Date/Time: 10/4/2012 9:48:01AM
Prep Initial Wt./Vol.: 32 g
Prep Extract Vol: 10 mL

Print Date: 10/16/2012
N.C. Certification # 481

Blank Spike Summary

Blank Spike ID: LCS for HBN 30064 [XXX/3145]
Blank Spike Lab ID: 92827
Date Analyzed: 10/05/2012 19:13

Matrix: Soil-Solid as dry weight

QC for Samples: 31203183001, 31203183002, 31203183003, 31203183004, 31203183005, 31203183006, 31203183007, 31203183008, 31203183009, 31203183010, 31203183011

Results by **SW-846 8015C DRO**

Blank Spike (mg/kg)

Parameter	Spike	Result	Rec (%)	CL
Diesel Range Organics (DRO)	62.5	46.9	75	55.0-137
Surrogates				
o-Terphenyl			81.1	40.0-140

Batch Information

Analytical Batch: **XGC2585**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**

Prep Batch: **XXX3145**
Prep Method: **SW-846 3541**
Prep Date/Time: **10/04/2012 09:48**
Spike Init Wt./Vol.: **32 g** Extract Vol: **10 mL**
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 10/16/2012

N.C. Certification # 481

CHAIN OF CUSTODY

SGS ANALYTICAL PERSPECTIVES
5500 Business Drive
Wilmington, NC 28405
+1 910 350 1903
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SGS ANALYTICAL PERSPECTIVES

CLIENT: S&ME
CONTACT: Candy Elliott PHONE NO: (919) 876-2660
PROJECT: NCDOT Fayetteville SITE / PWSID / WBS #:
REPORTS TO: Candy Elliott Mike Peifer
EMAIL: celliott@smeinc.com mpeifer@smeinc.com
INVOICE TO: NCDOT QUOTE #
P.O. NUMBER

SGS Reference #: 31203183

PAGE 1 OF 2

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	# CONTAINERS	SAMPLE TYPE (C=COMP, G=GRAB)	PRESERVATIVES USED	ANALYSIS REQUIRED: TPH GRO/DRO	REMARKS
1	B-11	9/28/12	10:05	S	3	G		X	
2	B-12		10:25						
3	B-13		11:00						
4	B-14		11:40						
5	B-15		12:05						
6	B-16		13:30						
7	B-17		14:10						
8	B-18		15:00						
9	B-19	10/1/12	11:00						
10	B-20		11:30						

	DATE	TIME		
COLLECTED/RELINQUISHED BY: (1) Candy Elliott	10/2/12	1150	RECEIVED BY:	REPORT LEVEL: ☐ Level I ☐ Level II ☐ Level IV — REQUESTED TURNAROUND TIME: ☐ Rush:_____ ☑ Standard
Relinquished By: (2)	Date 10/3/12	Time 1400	Received By:	SPECIAL DELIVERABLES: State of Origin:_____ ☐ Trust Fund ☐ DoD ☐ EDD:_____ Other:_____
Relinquished By: (3)	Date	Time	Received By:	SPECIAL INSTRUCTIONS:
Received For Laboratory By:	Date	Time	CoC Seal: INTACT BROKEN (ABSENT) Sample Receipt Temp: C 4.8	Shipping Carrier: Shipping Ticket No: — Notes:

White - Retained by Lab
Yellow - Retained by Client

SGS

CHAIN OF CUSTODY RECORD
SGS North America Inc.

Locations Nationwide
- Alaska
- Maryland
- New Jersey
- New York
- North Carolina
- Ohio

www.us.sgs.com

105523

(1)

CLIENT: S&ME, Inc.

CONTACT: Candy Elliott PHONE NO: (919) 872-2660

PROJECT: NCDOT Fayetteville SITE/PWSID#:

REPORTS TO: Candy Elliott celliott@smeinc.com
MikePfeifer mpfeifer@smeinc.com
FAX NO.:( )

INVOICE TO: NCDOT QUOTE #:

P.O. NUMBER:

SGS Reference: 3120318 3

PAGE 2 OF 2

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE (C=COMP G=GRAB)	Preservatives Used	Analysis Required (3) TPH GRO/DRO	REMARKS
11	B-21	10/1/12	1200	S	3			X	

(5)

Collected/Relinquished By: (1)	Date	Time	Received By:
Candy Elliott	10/2/12	1150	
Relinquished By: (2)	Date	Time	Received By:
	10/3/12	1406	Jeanne Mitchell
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

Shipping Carrier:

Shipping Ticket No:

Samples Received Cold? (Circle) (YES) NO

Temperature°C: 4.8

Special Deliverable Requirements:

Chain of Custody Seal: (Circle)

INTACT BROKEN (ABSENT)

Special Instructions:

Requested Turnaround Time:

☐ RUSH _____ Date Needed ☒ STD

☐ 200 W. Potter Drive **Anchorage, AK 99518** Tel: (907) 562-2343 Fax: (907) 561-5301
☐ 5500 Business Drive **Wilmington, NC 28405** Tel: (910) 350-1903 Fax: (910) 350-1557

White - Retained by Lab
Pink - Retained by Client

SGS North America Inc.

Sample Receipt Checklist (SRC)

Client: **NCDOT-S&ME** Work Order No.: **31203183**

1. ___ Shipped
   X Hand Delivered
2. X COC Present on Receipt
   ___ No COC
   ___ Additional Transmittal Forms
3. ___ Custody Tape on Container
   X No Custody Tape
4. X Samples Intact
   ___ Samples Broken / Leaking
5. X Chilled on Receipt Actual Temp.(s) in °C: 4.8
   ___ Ambient on Receipt
   ___ Walk-in on Ice; Coming down to temp.
   ___ Received Outside of Temperature Specifications
6. X Sufficient Sample Submitted
   ___ Insufficient Sample Submitted
7. ___ Chlorine absent
   ___ HNO3 < 2
   ___ HCL < 2
   ___ Additional Preservatives verified (see notes)
8. X Received Within Holding Time
   ___ Not Received Within Holding Time
9. X No Discrepancies Noted
   ___ Discrepancies Noted
   ___ NCDENR notified of Discrepancies*
10. ___ No Headspace present in VOC vials
    ___ Headspace present in VOC vials >6mm

Notes:

Comments:

Inspected and Logged in by: JM

Date: Wed-10/3/12 00:00

*NCDENR must be notified when collection, holding time or preservation requirements are not met. MI_11.6