North Carolina Department of Transportation
Preliminary Site Assessment
State Project: U-5114
WBS Element: 42376.1.FR1
PIN: 01712128
Mecklenburg County

J.C.FAW Property (Shell Gas Station)
502 Gilead Road
Huntersville, North Carolina 28078
October 10, 2014

AMEC Environment and Infrastructure, Inc.
AMEC Project: 153055114

Troy L. Holzschuh
Science Professional

Helen Corley, LG
Senior Associate

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1.0 INTRODUCTION

In accordance with the North Carolina Department of Transportation (NCDOT) Request for Proposal, dated July 29, 2014, AMEC Environment and Infrastructure, Inc. (AMEC) has performed a Preliminary Site Assessment (PSA) for the J.C.FAW Property (the Site) to be effected by the realignment of the intersection of US 21 (Statesville Road) and Gilead Road. The Site, which is located on 502 Gilead Road, currently operates as a convenience store and gas station called Fast Track Convenience Store. It is identified as Shell Gas Station within the NCDOT U-5114 design project. The property is located on the north side of Gilead Road approximately 300 feet west of Commerce Center Drive, which is in Huntersville of Mecklenburg County, North Carolina. The investigation was conducted in accordance with AMEC's Technical and Cost proposal dated August 21, 2014.

NCDOT contracted AMEC to perform the PSA within the identified area of investigation due to the potential presence of hydrocarbons at the site. The PSA was performed to determine if soils have been impacted as a result of present and past uses of the property and if any buried underground storage tanks (USTs) still are present in the area of investigation.

The following report summarizes a geophysics survey, presents location and capacities of any USTs in the investigation area, and describes our subsurface field investigation at the site. The report includes the evaluation of field screening, as well as field analyses with regards to the presence or absence of soil contamination within the area of investigation in the southern portion of the site. **Appendix A** includes a Photographic log for the site activities.

1.1 Site Location and History

The site is located at 502 Gilead Road, Huntersville, Mecklenburg County, North Carolina and is located approximately 300 feet west of Commerce Center Drive. The site operates as a convenience store and gas station. There are four dispenser island located under a canopy which is directly in front of a one story cinderblock building that houses the convenience store. The site does appear in the UST Section Registry, with facility ID 0-032366. The site currently operates three USTs. There are two 8,000 gallon capacity tanks and one 10,000 gallon capacity tank. All three were installed April 19, 1991. There is a ground water incident (GWI# 40063) associated with this facility. During the site reconnaissance AMEC personnel gauged one monitoring well on the north eastern side of the site. The depth to water was 21.95 feet.

1.2 Site Description

The site is located in a commercial area of Huntersville in Mecklenburg County and the general vicinity is commercial with all adjacent properties zoned and used as commercial. The geophysical surveyor, ESP Associates, P.A., did not identify any possible underground storage tank (UST) or tanks on the southern edge of the property within the area of investigation. Three monitoring wells were observed on the east side of the service station building out of the area of investigation.

2.0 GEOLOGY

2.1 Regional Geology

The Shell Gas Station Property is located within the Metamorphic type rocks of the Charlotte and Milton Belt Physiographic Province of western North Carolina. The Metavolcanic rock is interbedded felsic to mafic tuffs and flowrock.

2.2 Site Geology

Site geology was observed through the drilling and sampling of 5 shallow direct push probe soil borings (SB) onsite. **Figure 2** presents the boring locations. Borings did not exceed a total depth of ten feet below ground surface (BGS). Fill material consisting predominantly of red clayey silt to reddish-brown clayey silt was observed in each of the five borings. Boring logs are presented in **Appendix B**.

3.0 FIELD ACTIVITIES

3.1 Preliminary Activities

Prior to commencing field sampling activities at the site, several tasks were accomplished in preparation for the subsurface investigation. The Health and Safety Plan (HASP) was modified to include the site-specific health and safety information necessary for the field activities. North Carolina-1-Call was contacted to report the proposed drilling activities and subsequently notify all affected utilities for the parcel. ESP Associates of Greensboro, North Carolina was scheduled to conduct a geophysical survey prior to drilling. Geologic Exploration Inc. of Statesville, North Carolina was retained by AMEC to perform the direct push sampling for soil borings. QROS was contacted for acquisition of a rented UVF Hydrocarbon Analyzer and Enviro Equipment, Inc. was contacted for acquisition of a Photoionization Detector. Boring locations were strategically placed in a pattern within the proposed right of way to maximize the opportunity to encounter potentially contaminated soil.

3.2 Site Reconnaissance

AMEC personnel performed a site reconnaissance on August 8, 2014. During the site reconnaissance, the area was visually examined for the presence of any UST or areas/obstructions that could potentially affect the subsurface investigation and the number of boring locations were discussed. AMEC personnel also used the site visit as an opportunity to contact the property manager and owner to inform the store of upcoming field activities.

3.3 Geophysics Survey Results

The geophysical survey of the site occurred on the 20th and 21st of August, 2014. The geophysical subcontractor, ESP Associates, P.A., performed electromagnetic followed by a ground penetrating radar (GPR) survey. A few geophysical anomalies were noted in the southwest corner of the area of investigation but were concluded to be caused by surface objects or buried utilities. No possible USTs were identified. The complete geophysics report is included as **Appendix C**.

3.4 Well Survey

A well survey was not performed as part of this PSA.

3.5 Soil Sampling

AMEC conducted drilling activities at the site on August 28th, 2014. AMEC's drilling subcontractor Geologic Exploration Inc. advanced five direct push soil borings within the proposed expanded NCDOT ROW. Boring locations were strategically placed in a pattern to maximize the likelihood of intercepting potential soil contamination. Figure 2 presents the Site Map with boring locations and identifications.

The purpose of soil sampling was to determine if a petroleum release had occurred within the area of investigation, and if so, to estimate the volume of impacted soil that might require special handling during construction activities. Soil sampling was performed utilizing direct push methods accompanied by field screening and onsite quantitative analyses. AMEC conducted field screening of the soil borings utilizing a PID that was used to screen recovered soil at approximate one-foot intervals. Any interval of the soil boring exhibiting elevated PID readings was selected for onsite quantitative analysis of total petroleum hydrocarbons (TPH) and polycyclic aromatic hydrocarbons (PAH) soil via ultraviolet fluorescence (UVF) utilizing a QROS-QED Hydrocarbon Analyzer. When no PID readings were measurable in a boring then one shallow and one deeper soil sample was retained from each boring for UVF onsite analysis. The analysis was performed onsite by Troy Holzschuh, a certified QED UVF technician with AMEC. The UVF results were generated concurrent with soil boring activities so that real-time decision making could be utilized for boring placement.

4.0 SOIL SAMPLING RESULTS

Based on PID field screening and onsite UVF hydrocarbon analysis there is no evidence of a petroleum hydrocarbon release onsite, within the area of investigation.

Onsite Soil Screening and UVF Analysis

Elevated PID readings, above ten parts per million, were not detected in any of the 5 borings conducted at the site. The PID field screening results are summarized in **Table 1** and are provided on the boring logs in Appendix B.

Results from UVF onsite hydrocarbon analyses are presented in **Table 2**, with instrument generated tables in **Appendix D**. Several categories of analyses were measured onsite such as: gasoline range organics (GRO); diesel range organics (DRO); benzene, ethylbenzene, toluene, xylenes (BETX); total aromatics; and polycyclic aromatics (PAHs). **Figure 3** presents the GRO and DRO results at each boring.

Onsite UVF hydrocarbon analysis results for GRO and DRO as well as, toluene, ethylbenzene and xylenes (BTEX), and/or PAHs were below quantitative reporting limits. The NCDENR Action Limit is 10 mg/kg. The hydrocarbon analysis results from the QED QROS Hydrocarbon Analyzer are provided in **Appendix D**.

5.0 CONCLUSIONS

Based on site observations and onsite UVF analysis, petroleum-impacted soil contamination was not identified above the NCDENR Action level of 10 mg/kg during the field activities.

The following bulleted summary is based upon AMEC's evaluation of field observations and onsite quantitative analyses of samples collected from the Site on August 28, 2014.

- The property operates as a convenience store and gas station and contains four dispenser islands and three USTs.

- Results of the geophysical survey did not produce any evidence of possible USTs.

- Five soil borings were performed and two soil samples were collected from each boring. Since the PID did not indicate elevated readings the samples were collected at the 3 to 4 foot and the 9 to 10 foot interval. Each sample was analyzed via UVF in the field utilizing a QROS QED Hydrocarbon Analyzer.

- Values of TPH, BETX and PAHs were below their detection limits thus the NCDENR Action level of 10 mg/kg was not exceeded.

6.0 RECOMMENDATIONS

Based on these PSA results, AMEC does not recommend further assessment or soil sampling in the area of investigation.

TABLES

Table 1
PID Field Screening Results
U-5114, Shell Site-Mecklenburg County
Huntersville, North Carolina

SAMPLE ID	Sample Date	Comments	Sample Depth (feet bgs)	Field Screening (ppm)
S-SB-1	8/28/2014	Western Side of Proposed ROW	3 to 4	0
		Western Side of Proposed ROW	9 to 10	0
S-SB-2	8/28/2014	West Driveway Entrance	3 to 4	0
		West Driveway Entrance	9 to 10	0
S-SB-3	8/28/2014	East Driveway Entrance	3 to 4	0
		East Driveway Entrance	9 to 10	0
S-SB-4	8/28/2014	South of Shell Sign	3 to 4	0
		South of Shell Sign	9 to 10	0
S-SB-5	8/28/2014	Eastern Side of Proposed ROW	3 to 4	0
		Eastern Side of Proposed ROW	9 to 10	0

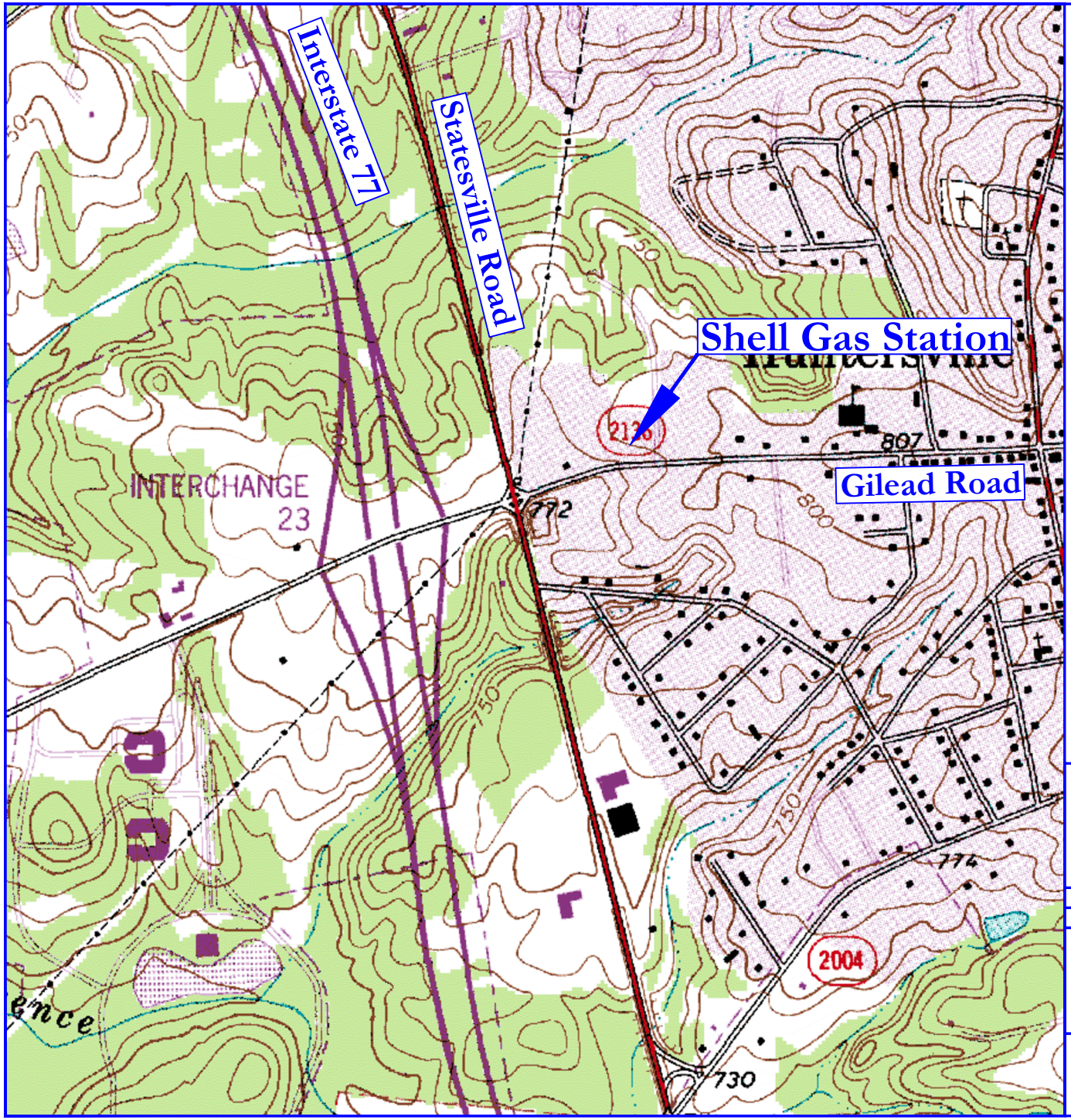
Notes: PPM = Parts Per Million

Table 2
UVF Onsite Hydrocarbon Analytical Soil Data from 8/28/14
U-5114, Shell Site-Mecklenburg County
Huntersville, North Carolina

Sample ID Number	Sample Depth (ft bgs)	BTEX (mg/kg)	GRO (mg/kg)	DRO(mg/kg)	PAHs (mg/kg)
S-SB-1	3 to 4	<1.2	<1.2	<0.25	<0.02
S-SB-1	9 to 10	<0.9	<0.9	<0.19	<0.02
S-SB-2	3 to 4	<1.1	<1.1	<0.23	<0.02
S-SB-2	9 to 10	<1.0	<1.0	<0.20	<0.02
S-SB-3	3 to 4	<1.2	<1.2	<0.24	<0.02
S-SB-3	9 to 10	<0.8	<0.8	<0.17	<0.02
S-SB-4	3 to 4	<1.1	<1.1	<0.22	<0.02
S-SB-4	9 to 10	<1.0	<1.0	<0.19	<0.02
S-SB-5	3 to 4	<1.2	<1.2	<0.24	<0.02
S-SB-5	9 to 10	<1.0	<1.0	<0.20	<0.02

NOTES:
(mg/kg) = Millograms per kilogram
GRO = Gasoline Organic Compounds
DRO = Diesel Organic Compounds
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
PAHs = Polycyclic Aromatic Hydrocarbon
ft bgs = feet below ground surface

FIGURES



0' 500' 1000' 1500'

1" = 1000'

7.5 Minute Quadrangle
North Carolina, 1983
Photorevised 1993

VICINITY MAP

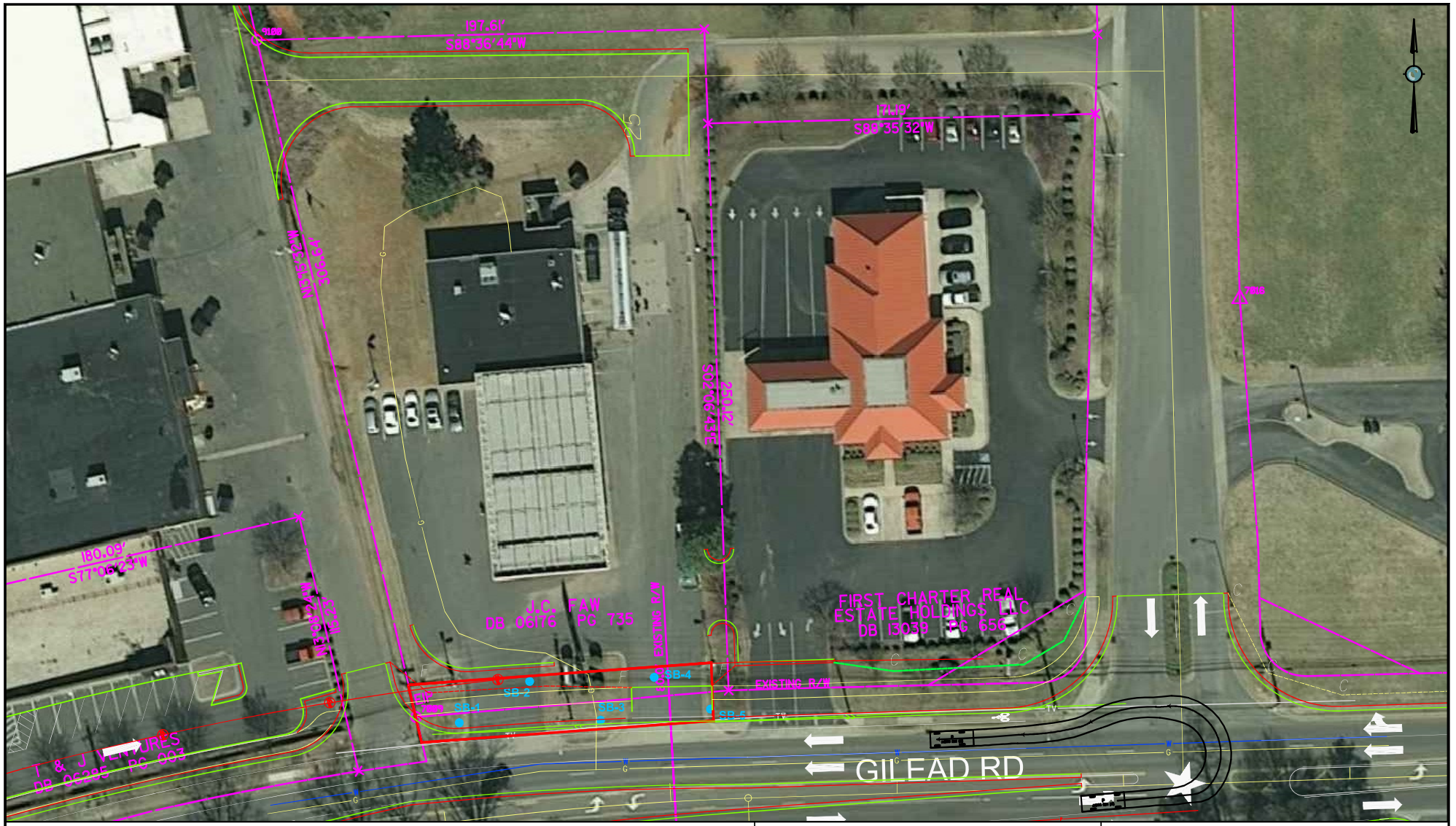
J.C.Faw Property (Shell Gas Station)
502 Gilead Rd. Huntersville, NC

DRAWING NAME: P:\NCDOT\Huntersville\FIG1			DATE: 10/6/14	
SCALE: 1 INCH = 1,000 FEET	DR TLH	CHK HPC	REV	

PREPARED FOR:
NC Department Of Transportation
Geotechnical Unit
WBS Element: 42376.1.FR
TIP# U-5114

Prepared By:
amec
2801 Yorkmont Rd.
Suite 100
Charlotte, NC 28208
(704) 357-5616

Figure:
Figure 1



Legend:

- SB-2 — Approximate Soil Boring Location
- P — Existing Power Line
- W — Existing Water Line
- G — Existing Gas Line
- T FO — Existing Telephone Fiber Optic
- Area of Investigation from NCDOT

NOTE:
ALL UTILITIES ARE AN APPROXIMATE LOCATION.

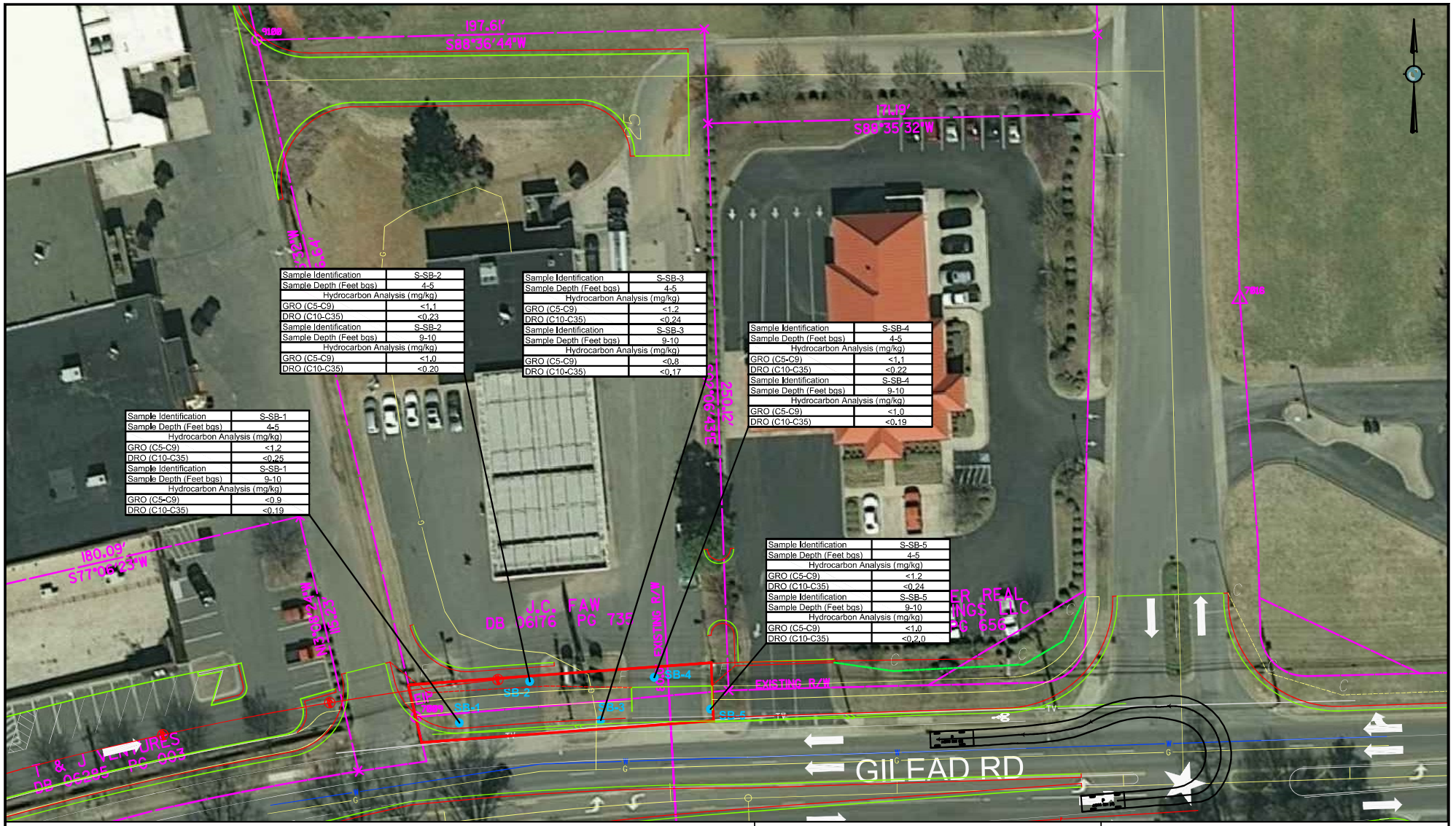
0 40' 80'

amec

SITE MAP WITH BORING LOCATIONS
J.C. Faw Property (Shell Gas Station)
502 Gilead Rd. Huntersville, NC 28078

PREPARED BY:	DATE:	CHECKED BY:	DATE:	JOB NUMBER:	FIGURE:
LDD/TLH	10/1/2014	HPC	10/1/2014	153055114.0003	2

Path: P:\6228 Environmental\jobs\2014\15305-XXXX NCDOT GeoEnvironmental\U-5114, Huntersville PSAs\MicroStation Drawing\U5114 Figures.dwg [Shell Figure 2]
Date: October 21, 2014 - 4:01pm By: dewayne.dunn



Legend:

- SB-2 — Approximate Soil Boring Location
- P — Existing Power Line
- W — Existing Water Line
- G — Existing Gas Line
- T FO — Existing Telephone Fiber Optic
- Area of Investigation from NCDOT

NOTE:
ALL UTILITIES ARE AN APPROXIMATE LOCATION.

0 40' 80'

amec

ONSITE UVF HYDROCARBON ANALYSIS (8/28/14)
J.C. Faw Property (Shell Gas Station)
502 Gilead Rd. Huntersville, NC 28078

PREPARED BY:	DATE:	CHECKED BY:	DATE:	JOB NUMBER:	FIGURE:
LDD/TLH	10/1/2014	HPC	10/1/2014	153055114.0003	3

Path: P:\6228 Environmental\jobs\2014\15305-XXXX NCDOT GeoEnvironmental\U-5114, Huntersville PSAs\MicroStation Drawing\U5114 Figures.dwg [Shell Figure 3]
Date: October 21, 2014 - 4:01pm By: dewayne.dunn

APPENDIX A

PHOTOGRAPH LOG

Photo 1

Site prior to PSA activities .

Photo 2

Area of investigation and utilities.

Photo 3

Geologic Exploration getting in position to drill.

Photo 4

Geologic Exploration using a hand auger for the upper 5 feet prior to using the direct push drill rig

APPENDIX B

BORING LOGS

AMEC of NC, Inc.
BORING LOG

Boring/Well No.: S-SB-1	**Site Name: Shell**
Date: 8-28-14	**Location: Huntersville, Mecklenburg Co., NC**
Job No.: 153055114	**Sample Method: Direct Push**
AMEC Rep: Shane Sisco	**Drilling Method: Direct Push**
Drilling Company: Geologic Exploration	**Driller Name/Cert #: Jacob Messick/B4252**
Remarks:	

Depth (ft BLS)	PID/OVA Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0.5-5			Red, Clayey Silt
0.5-1	1.7		
1-2	0		
2-3	0		
3-4	1.6		
4-5	0		
5-10			Reddish Brown, Sandy Clayey Silt
5-6	0		
6-7	0		
7-8	0		
8-9	0		
9-10	0.6		

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

AMEC Earth & Environmental, Inc.

BORING LOG

Boring/Well No.: S-SB-2	**Site Name: Shell**
Date: 8-28-14	**Location: Huntersville, Mecklenburg Co., NC**
Job No.: 153055114	**Sample Method: Direct Push**
AMEC Rep: Shane Sisco	**Drilling Method: Direct Push**
Drilling Company: Geologic Exploration	**Driller Name/Cert #: Jacob Messick/B4252**
Remarks:	

Depth (ft BLS)	PID/OVA Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0.5-4.5			Red, Clayey Silt
0.5-1	0.2		
1-2	0		
2-3	0		
3-4	1.5		
4-4.5	0		
4.5-9			Reddish Brown, Sandy Clayey Silt
4.5-5	0		
5-6	0		
6-7	0		
7-8	0		
8-9	0		
9-10			Tan/White/Brown, Silty Sand
9-10	0.9		

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

AMEC Earth & Environmental, Inc.

BORING LOG

Boring/Well No.: S-SB-3	**Site Name: Shell**
Date: 8-28-14	**Location: Huntersville, Mecklenburg Co., NC**
Job No.: 153055114	**Sample Method: Direct Push**
AMEC Rep: Shane Sisco	**Drilling Method: Direct Push**
Drilling Company: Geologic Exploration	**Driller Name/Cert #: Jacob Messick/B4252**
Remarks:	

Depth (ft BLS)	PID/OVA Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0.5-6.5			Red, Clayey Silt
0.5-1	1.1		
1-2	0		
2-3	0		
3-4	1.5		
4-5	0		
5-7.5			Orangish Red, Clayey Silt
5-6	0		
6-7	0		
7-7.5	0		
7.5-10			Light Brown, Clayey Silt
7.5-8	0		
8-9	0		
9-10	0.9		

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

AMEC Earth & Environmental, Inc.

BORING LOG

Boring/Well No.: S-SB-4	**Site Name: Shell**
Date: 8-28-14	**Location: Huntersville, Mecklenburg Co., NC**
Job No.: 153055114	**Sample Method: Direct Push**
AMEC Rep: Shane Sisco	**Drilling Method: Direct Push**
Drilling Company: Geologic Exploration	**Driller Name/Cert #: Jacob Messick/B4252**
Remarks:	

Depth (ft BLS)	PID/OVA Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0.5-4			Red, Clayey Silt
0.5-1	0		
1-2	0		
2-3	0		
3-4	0.2		
4-9			Reddish Orange, Clayey Silt
5-6	0		
6-7	0		
7-8	0		
8-9	0		
9-10			Light Brown, Clayey Silt
9-10	0.5		

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

AMEC Earth & Environmental, Inc.

BORING LOG

Boring/Well No.: S-SB-5	**Site Name: Shell**
Date: 8-28-14	**Location: Huntersville, Mecklenburg Co., NC**
Job No.: 153055114	**Sample Method: Direct Push**
AMEC Rep: Shane Sisco	**Drilling Method: Direct Push**
Drilling Company: Geologic Exploration	**Driller Name/Cert #: Jacob Messick/B4252**
Remarks:	

Depth (ft BLS)	PID/OVA Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0.5-4			Red, Clay
0.5-1	0.1		
1-2	0		
2-3	0		
3-4	0		
4-9			Reddish Orange, Clayey Silt
5-6	0		
6-7	0		
7-8	0		
8-9	0		
9-10			Light Brown, Clayey Silt
9-10	0.9		

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

APPENDIX C

GEOPHYSICAL REPORT

ESP Associates, P.A.

September 2, 2014

Ms. Helen Corley, LG, Project Manager
AMEC Earth and Environmental of North Carolina, Inc.
2801 Yorkmont Road, Suite 100
Charlotte, NC 28208

Subject: Report on Geophysical Services for J.C.FAW (Shell Gas Station) Property
ESP Project No. CS34.302.000

State Project:	U-5114
WBS Element	42376.1.FR1
County:	Mecklenburg
Description:	Huntersville- Intersection of US 21 (Statesville Road) and Gilead Road, construct intersection improvements including bicycle and pedestrian accommodations

Dear Ms. Corley:

ESP Associates, P.A. (ESP) is pleased to present this report on the geophysical services we provided for the referenced project. We sent preliminary results to you and Mr. Troy Holzschuh via email on August 26, 2014. This work was performed in accordance with the NCDOT's Request for Proposal to AMEC dated July 29, 2014 and our cost proposal sent to the NCDOT on August 15, 2014. We received a verbal notice to proceed from Mr. Craig Haden on August 18, 2014.

1.0 GEOPHYSICAL DATA COLLECTION

On August 20 and 21, ESP performed geophysical studies within the planned right-of-way and/or easements at the Shell Station property. The work consisted of metal detection using a Geonics EM61 MK2 instrument connected to an Archer Field PC, followed by subsurface imaging of selected EM61 anomalies using a Sensors and Software Noggin 250 Ground-Penetrating Radar (GPR) instrument. Representative photographs of the geophysical study area are provided on Figure 1.

The EM61 data were collected over the accessible areas using a line spacing of approximately 2.5 feet. We used a sub-meter differential GPS instrument (Hemisphere XF101) connected to the Archer Field PC to provide approximate locations of the EM61 data in real time. We collected GPR data using a line

spacing of one to two feet in the vicinity of EM61 anomalies in the grassy area on the southwest corner of the site.

2.0 DATA ANALYSIS AND PRESENTATION

The EM61 data were gridded and contoured to produce plan view contour maps of the early time gate response (Figure 2) and the differential response (Figure 3). The differential response is calculated by subtracting the response of the bottom coil from the response of the top coil of the EM61. Typically, the differential response diminishes the response from smaller, near-surface metallic objects, thus emphasizing the response from deeper and larger metallic objects. The approximate locations of observed site features, such as utilities and signs, were superimposed on the contour maps.

The GPR data were reviewed in the field and were processed later for further review.

3.0 DISCUSSION OF RESULTS

The EM61 early time gate contour plot shows the response from known site features in addition to inferred buried utilities, as noted (Figure 2). The EM61 differential contour plot indicates anomalies that correspond to known features, such as signs, manholes, drop inlets, poles, and guy wire anchors (Figure 3).

The EM61 differential response indicated some buried metal objects in the grassy area at the southwest corner of the site. We collected a grid of GPR data over this area. Our field review and later processing and review did not indicate the presence of possible USTs in this area.

4.0 SUMMARY AND CONCLUSIONS

Our review of the geophysical data collected for this project did not indicate the presence of abandoned USTs within the geophysical study areas. The EM61 anomalies in the grassy area at the southwest corner of the site appear to be caused by surface objects and buried utilities.

5.0 LIMITATIONS

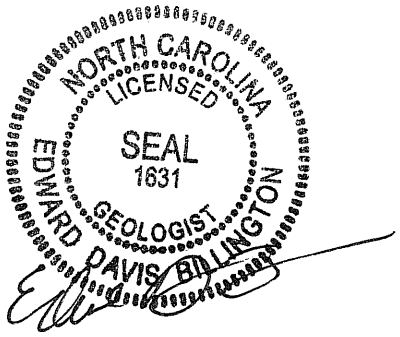
These services have been provided for AMEC and the North Carolina Department of Transportation in accordance with generally accepted guidelines for performing geophysical surveys. It is recognized that the results of geophysical surveys are non-unique and subject to interpretation. Further, the locations of data and features included in this report are approximate and were collected using a sub-meter DGPS instrument. ESP makes no guarantee as to the accuracy of these locations.

Thank you for the opportunity to be of service to AMEC and the NCDOT Geotechnical Engineering Unit on this project. Please contact us if you have any questions or need further information.

Sincerely,

ESP ASSOCIATES, P.A.

Edward D. Billington, P.G.



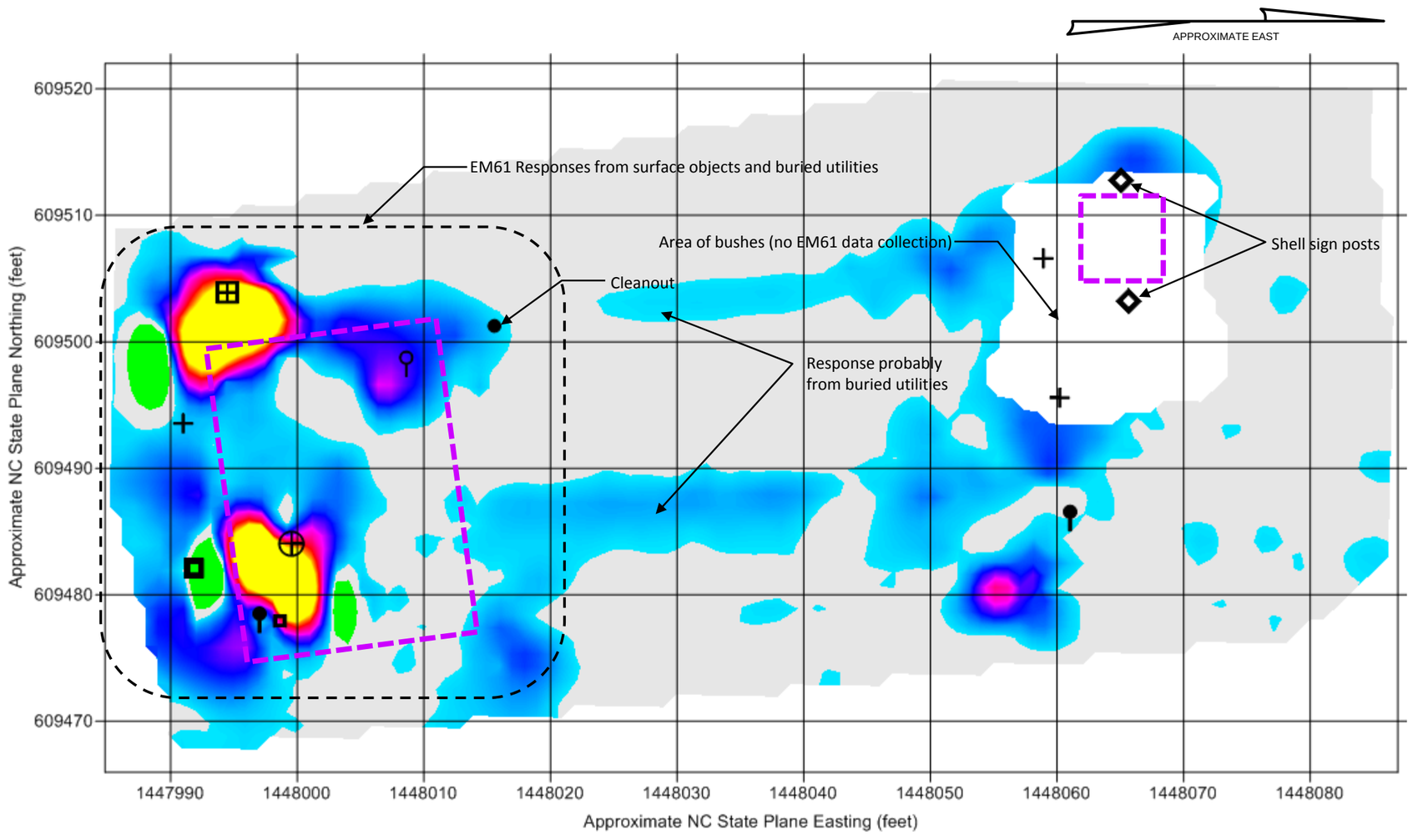
EDB/PMW

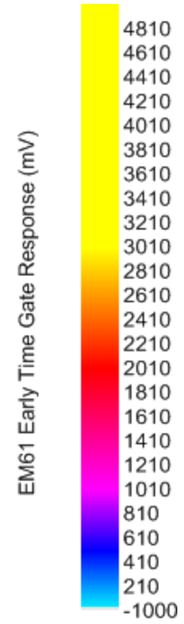
Attachments: Figures 1 – 3

A. Photo of Shell site from west side of property, looking east.

B. Photo of Shell site from east side of property, looking west.

PROJECT NO. CS34.302.000	***FIGURE 1 – SHELL PROPERTY PHOTOS OF SITE***	ESP Associates, P.A. 7204 W. Friendly Ave. Greensboro, NC 27410 336.334.7724 www.espassociates.com
SCALE NTS		
DATE 9/2/14	***U-5114, INTERSECTION OF US21 AND GILEAD ROAD MECKLENBURG COUNTY, NORTH CAROLINA***	
BY EDB		





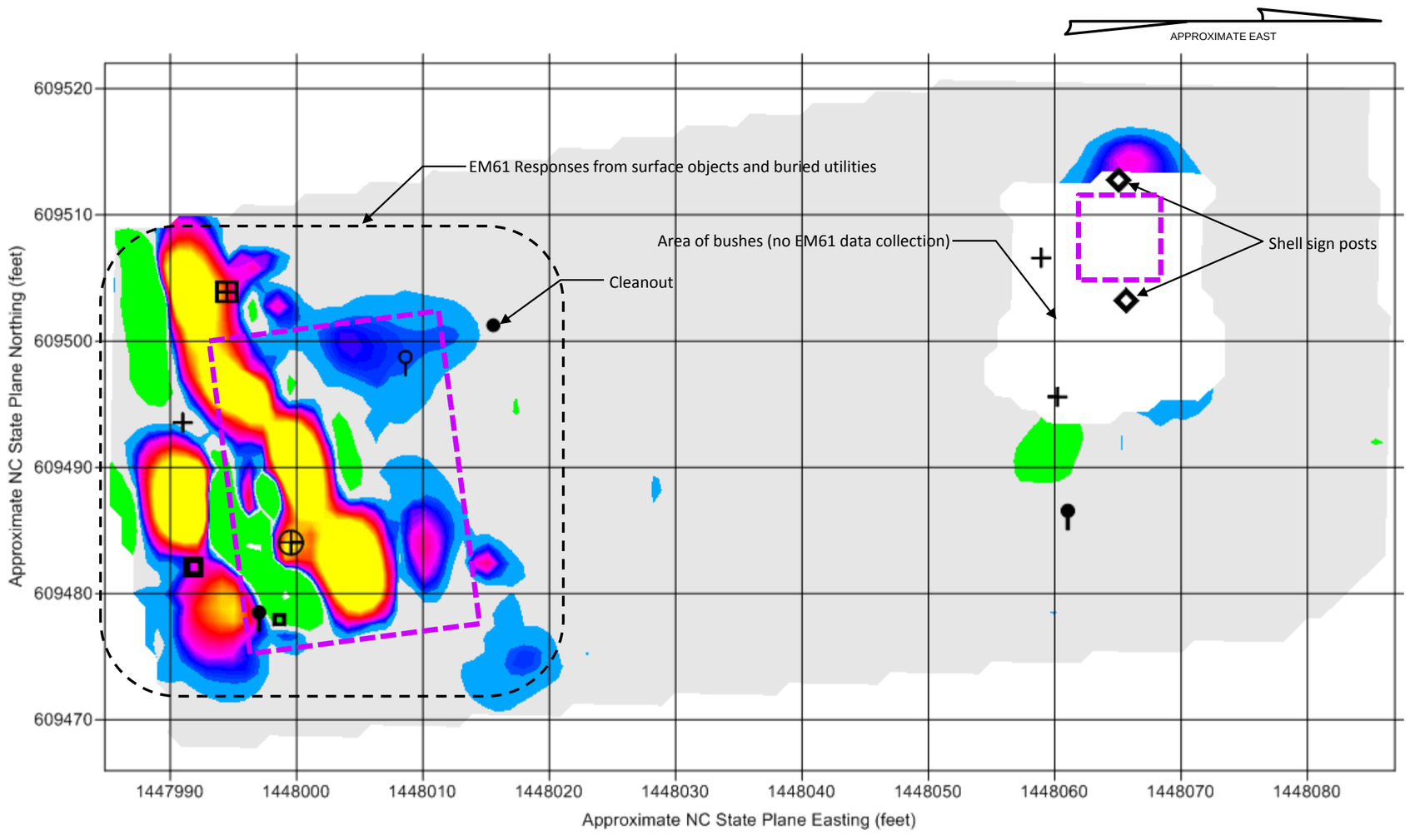
EXPLANATION

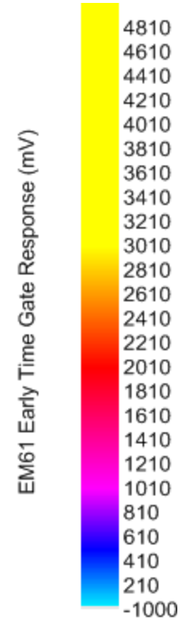
- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
- Drop Inlet or Catch Basin
- Manhole
- Power pole
- Guy wire anchor
- Light pole
- Sign
- EM61 Data Collection Areas
- GPR Data Collection Areas

Note: Locations of data and features are approximate and were collected using a sub-meter DGPS instrument. ESP make no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO. CS34.302.000	***FIGURE 2 – SHELL 3PROPERTY EM61 EARLY TIME GATE RESPONSE***
SCALE AS SHOWN	
DATE 9/2/14	***U-5114, INTERSECTION OF US21 AND GILEAD ROAD MECKLENBURG COUNTY, NORTH CAROLINA***
BY EDB	

ESP Associates, P.A.
7204 W. Friendly Ave.
Greensboro, NC 27410
336.334.7724
www.espassociates.com





EXPLANATION

- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
- Drop Inlet or Catch Basin
- Manhole
- Power pole
- Guy wire anchor
- Light pole
- Sign
- EM61 Data Collection Areas
- GPR Data Collection Areas

Note: Locations of data and features are approximate and were collected using a sub-meter DGPS instrument. ESP make no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO. CS34.302.000	***FIGURE 3 – SHELL 3PROPERTY EM61 DIFFERENTIAL RESPONSE***
SCALE AS SHOWN	
DATE 9/2/14	***U-5114, INTERSECTION OF US21 AND GILEAD ROAD MECKLENBURG COUNTY, NORTH CAROLINA***
BY EDB	

ESP Associates, P.A.
7204 W. Friendly Ave.
Greensboro, NC 27410
336.334.7724
www.espassociates.com

A. Photo of Shell site from west side of property, looking east.

B. Photo of Shell site from east side of property, looking west.

PRELIMINARY

PROJECT NO. CS34.302.000	***FIGURE 1 – SHELL PROPERTY PHOTOS OF SITE***
SCALE NTS	
DATE 8/25/14	***U-5114, INTERSECTION OF US21 AND GILEAD ROAD MECKLENBURG COUNTY, NORTH CAROLINA***
BY EDB	

ESP Associates, P.A.
7204 W. Friendly Ave.
Greensboro, NC 27410
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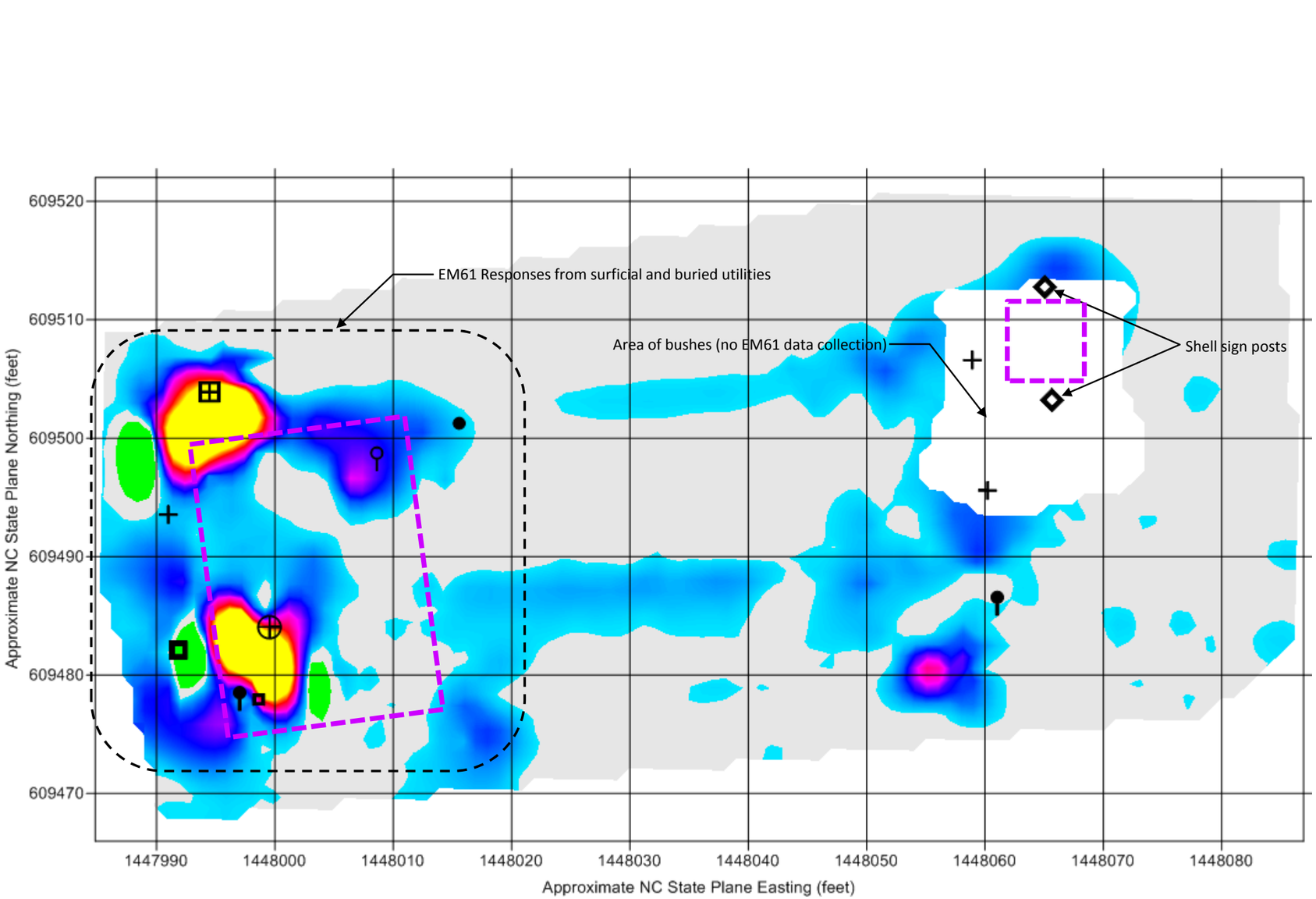

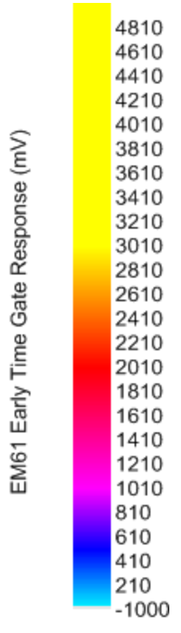

EXPLANATION

- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
- Drop Inlet or Catch Basin
- Power pole
- Guy wire anchor
- Light pole
- Sign
- EM61 Data Collection Areas
- GPR Data Collection Areas

PRELIMINARY

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PROJECT NO. CS34.302.000	***FIGURE 2 – SHELL 3PROPERTY EM61 EARLY TIME GATE RESPONSE***
SCALE AS SHOWN	
DATE 8/25/14	***U-5114, INTERSECTION OF US21 AND GILEAD ROAD MECKLENBURG COUNTY, NORTH CAROLINA***
BY EDB	

ESP Associates, P.A.
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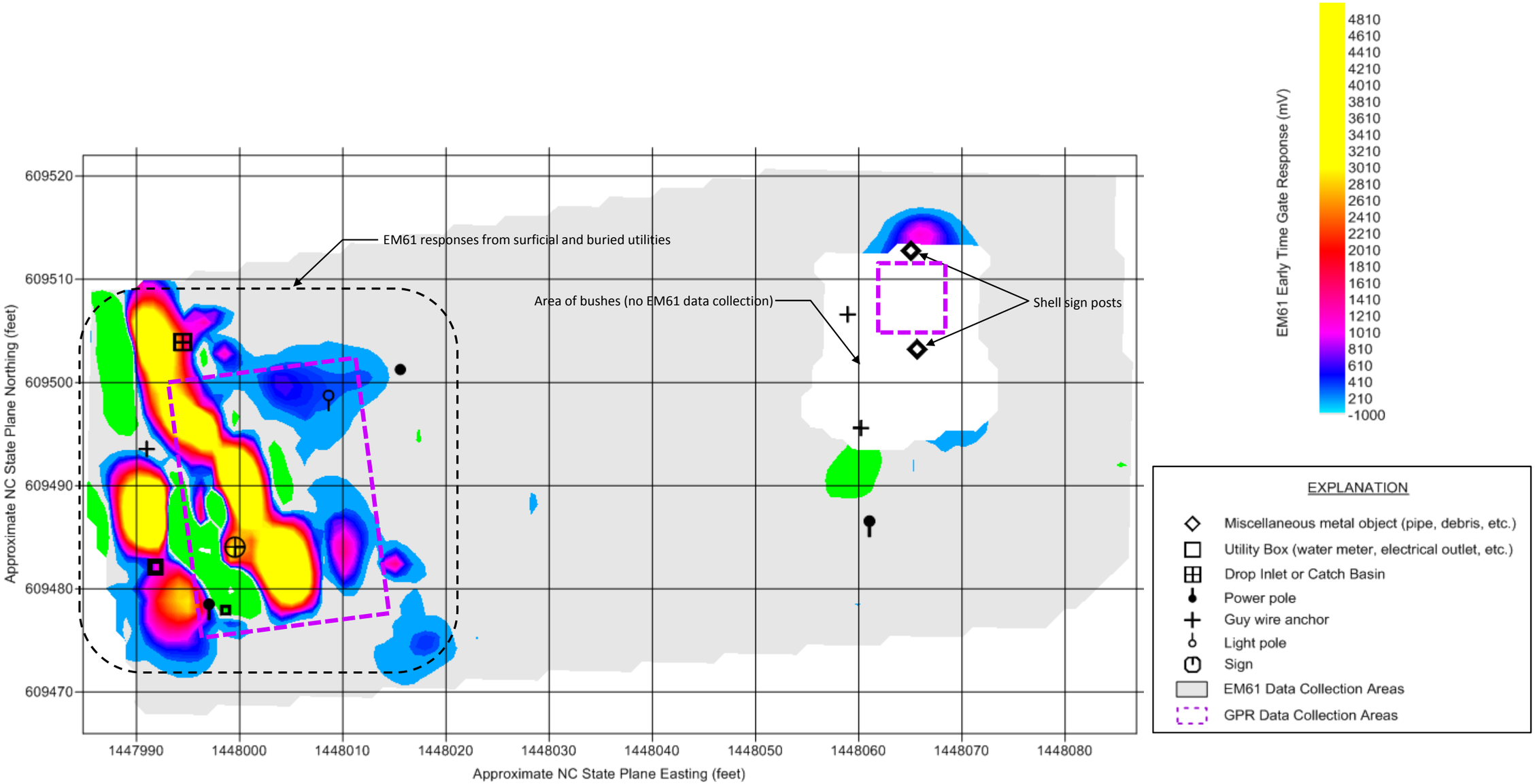

PRELIMINARY

Note: Locations of data and features are approximate and were collected using a sub-meter DGPS instrument. ESP make no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO. CS34.302.000	***FIGURE 3 – SHELL 3PROPERTY EM61 DIFFERENTIAL RESPONSE***
SCALE AS SHOWN	
DATE 8/25/14	***U-5114, INTERSECTION OF US21 AND GILEAD ROAD MECKLENBURG COUNTY, NORTH CAROLINA***
BY EDB	

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Greensboro, NC 27410
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APPENDIX D

HYDROCARBON ANALYSIS RESULTS

QED

AQROS

Hydrocarbon Analysis Results

Client: NCDOT
Address: 502 Gilead Rd
Huntersville, NC
Shell

Contact: Craig Haden

Project: U-5114

Samples taken Thursday, August 28, 2014
Samples extracted Thursday, August 28, 2014
Samples analysed Thursday, August 28, 2014

Operator Troy L. Holzschuh

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	S-SB-1 (3-4)	25.0	<1.2	<1.2	<0.25	<0.25	<0.25	<0.02	<0.025	0	0	100	Background Organics
s	S-SB-1 (9-10)	19.0	<0.9	<0.9	<0.19	<1	<0.19	<0.02	<0.019	0	0	0	Background Organics
s	S-SB-2 (3-4)	23.0	<1.1	<1.1	<0.23	<1.2	<0.23	<0.02	<0.023	0	100	0	Background Organics (P)
s	S-SB-2 (9-10)	20.0	<1	<1	<0.2	<0.2	<0.2	<0.02	<0.02	0	29.4	70.6	Background Organics
s	S-SB-3 (3-4)	24.0	<1.2	<1.2	<0.24	<0.24	<0.24	<0.02	<0.024	0	29.4	70.6	Background Organics
s	S-SB-3 (9-10)	17.0	<0.8	<0.8	<0.17	<0.9	<0.17	<0.02	<0.017	0	0	0	Background Organics
s	S-SB-4 (3-4)	22.0	<1.1	<1.1	<0.22	<0.22	<0.22	<0.02	<0.022	0	0	100	Background Organics
s	S-SB-4 (9-10)	19.0	<1	<1	<0.19	<1	<0.19	<0.02	<0.019	0	0	100	Background Organics
s	S-SB-5 (3-4)	24.0	<1.2	<1.2	<0.24	<0.24	<0.24	<0.02	<0.024	0	0	100	Background Organics
s	S-SB-5 (9-10)	20.0	<1	<1	<0.2	<0.2	<0.2	<0.02	<0.02	0	0	100	Background Organics

Initial Calibrator QC check OK Final FCM QC Check OK 90.7%

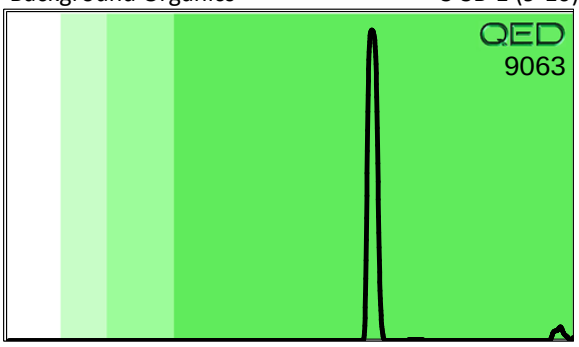
Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

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

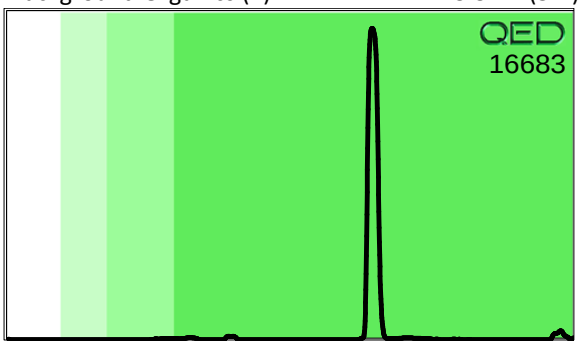
(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

Background Organics S-SB-1 (3-4)

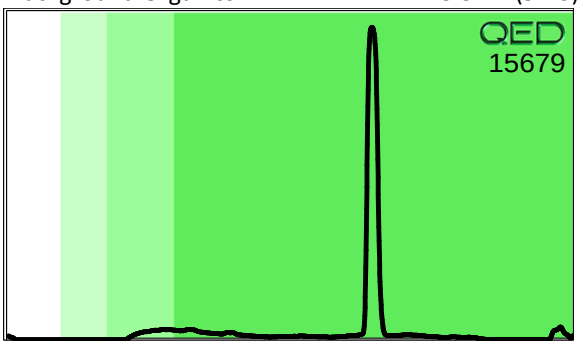
Background Organics S-SB-1 (9-10)



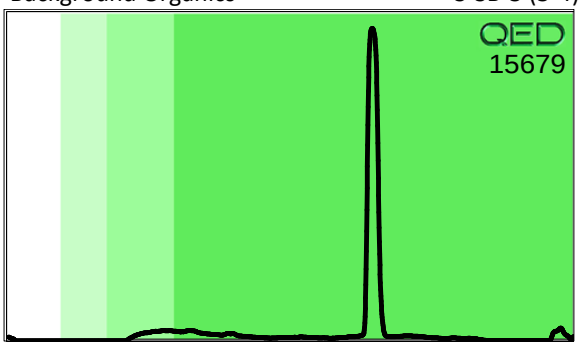
Background Organics (P) S-SB-2 (3-4)



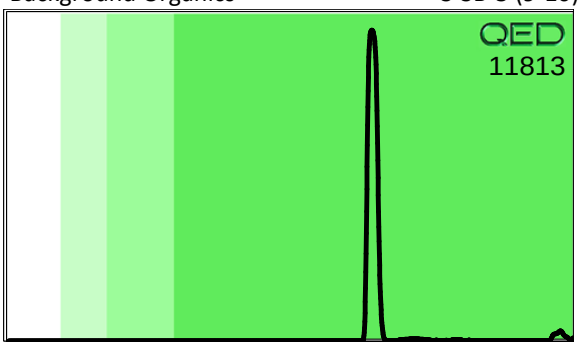
Background Organics S-SB-2 (9-10)



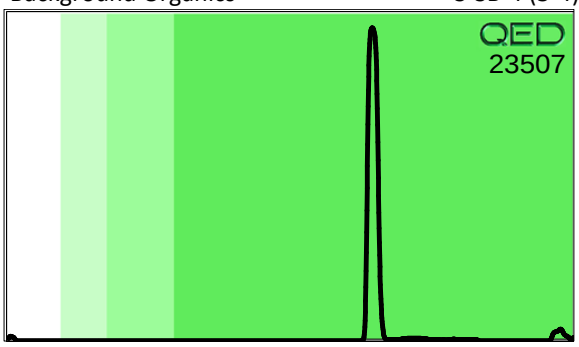
Background Organics S-SB-3 (3-4)



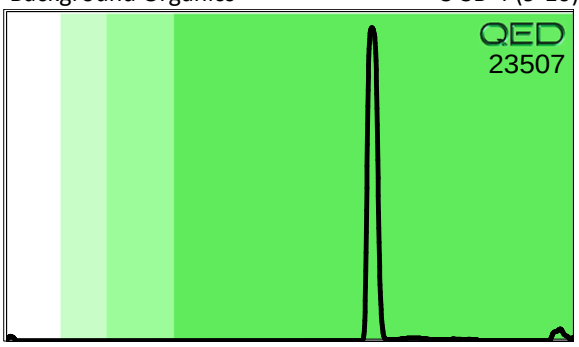
Background Organics S-SB-3 (9-10)



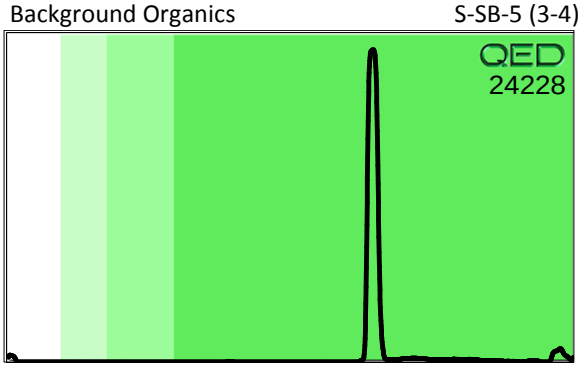
Background Organics S-SB-4 (3-4)



Background Organics S-SB-4 (9-10)



Background Organics S-SB-5 (3-4)



Background Organics S-SB-5 (9-10)