P S A R E P O R T

PRELIMINARY SITE ASSESSMENT
PARCEL #151
ROYAL MINI MART, LLC PROPERTY
3819 US 401 S
YOUNGSVILLE, FRANKLIN COUNTY, NC
STATE PROJECT R-2814C
WBS ELEMENT 34506.1.4

Prepared for

North Carolina Department of Transportation
Geotechnical Engineering Unit
Geoenvironmental Section
Century Center Complex, Building B
1020 Birch Ridge Drive
Raleigh, NC 27610
Tel. (919) 250-4088

23 March 2015

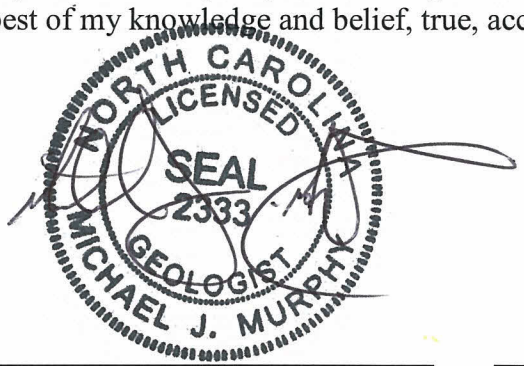
URS Corporation – North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, North Carolina 27560
Tel. (919) 461-1100
Fax. (919) 461-1415

URS Job No. 3182 9895

TABLE OF CONTENTS

Certification

This Report was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my thorough inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.



Michael J. Murphy, L.G.	2333	3/23/15
Project Manager	NC License No.	Date
URS Corporation – North Carolina		

1.1 INTRODUCTION

This report documents a Preliminary Site Assessment (PSA) conducted by URS Corporation – North Carolina (URS) on behalf of the North Carolina Department of Transportation (NCDOT). This PSA was conducted at 3819 US 401 South, Louisburg, Wake County, North Carolina (**Figure 1**), owned by Royal Mini Mart, LLC (the Site). The assessment area is located on the east quadrant of the US 401 (Louisburg Road) and SR 1103 (Clifton Pond Road) intersection. The PSA was performed within the proposed right-of-way and/or easement for this parcel. Currently, an active gas station, convenience store, and used car lot are operating at the Site. This PSA was performed in general accordance with:

- NCDOT's 1 December 2014 Request for Technical and Cost Proposal (RFP) for the Site. The RFP established the following scope of work (SOW) for the project:
  - Locate USTs and estimate approximate size and contents (if any).
  - Evaluate whether contaminated soils are present with emphasis along planned drainage lines and ditches.
  - If contamination is evident, estimate the quantity of impacted soils and indicate the approximate area of soil contamination on a Site map.
  - Prepare a report including field activities, findings, and recommendations for each Site and submit to this office in triplicate and one electronic copy.
- URS's 17 December 2014 Technical and Cost Proposal for the Site.
- NCDOT's 10 January 2015 Notice to Proceed for the Site.

The scope of work included a geophysical survey, soil sampling using a direct push technology (DPT) rig, and onsite soil testing services for Total Petroleum Hydrocarbons (TPH) using Ultra Violet Florescence Spectroscopy (UVF) technology. URS conducted the geophysical survey first in order to identify potential UST and/or anomaly locations within the Site. Based on the results of the geophysical survey and anecdotal evidence, boring locations were identified and completed by a drilling subcontractor (Regional Probing Services of Wake Forest, North Carolina) under the supervision of a URS geologist. Soil borings were located in areas that were cleared of underground utilities by NC One-Call. Onsite analysis of soil samples was performed by QROS of Wilmington, NC.

1.2 BACKGROUND

The objective for this PSA is to assess the Site for USTs, impacted soil, and to delineate potential impacts found in soils. The major Site features and the surrounding area are shown on **Figures 1** and **2**. The parcel is bounded by Louisburg Road to the west, Clifton Pond Road to the south, and residential parcels to the north and east.

According to information supplied by NCDOT, five (5) USTs are currently in use at the site. Three (3) tanks owned by Warren Oil Co., Inc. were removed in 1988. Ground Water Incident 26473 was assigned to this facility in 2003 when an orphan tank was found by NCDOT. The UST was removed in 2004.

2.1 GEOPHYSICAL SURVEY

The primary objective of the geophysical survey was to locate potential USTs or anomalies within the property, and a secondary objective was to identify the general locations of underground utilities at the property in advance of the planned subsurface investigation. The geophysical survey for the property was conducted by URS during the week of January 5, 2015. Ground surface conditions consisted primarily of concrete and asphalt.

The geophysical investigation was conducted using the electromagnetic (EM) method augmented by ground-penetrating radar (GPR). The EM survey was completed using a Geonics, Ltd. EM-61 MK2A (EM-61). The GPR survey was completed using a Sensors & Software, Inc. Noggin PLUS Smart Cart System with a 250 MHz scanning antenna.

EM-61 data were collected along parallel profiles with a nominal spacing of 5 feet where accessible. EM-61 data were recorded at a rate of 8 readings per second, which equates to an along-profile data point spacing of less than 1 foot. In areas inaccessible to the EM-61 (e.g. between trees, man-made obstructions, etc.), data were interpolated to provide a continuous electromagnetic surface.

A Hemisphere A100 global positioning system (GPS) was used to record positional data coincident with the EM-61 data. The A100 system provided real-time differential corrections via an Omnistar subscription service. The horizontal accuracy of the differential GPS (DGPS) data is generally 3 feet or less. URS also used the GPS system to record the locations of relevant site features within the survey area (e.g. utility poles, parked cars, etc.).

URS performed in-field analysis of the EM-61 data to identify anomalies indicative of potential USTs. Preliminary interpretations were based on an evaluation of the magnitude of the EM response as well as the dimensions of the anomaly in plan view.

In areas where the EM-61 encountered heavy surficial interference or where EM anomalies could not be readily attributed to site features, GPR was used to conduct a search for potential USTs. GPR surveying consisted of in-field analysis of real-time data. As a result, no post-processing of the GPR data was completed. Relevant GPR profiles were saved to a data file. GPR was selected to augment the EM-61 data due to its effectiveness at characterizing large subsurface metallic objects such as USTs.

The EM-61 data were pre-processed utilizing the accompanying software package, DAT61 MK2 (Geonics, Ltd), which is required before the data can be contoured and graphically displayed via Surfer (Golden Software, Inc.). The presented contoured data represent the Channel 3 response. The Channel 3 response represents the amplitude recorded at the third time interval along the EM-61 response decay curve. These data are applicable to detection of subsurface objects including USTs and other underground obstructions while simultaneously reducing the near-surface component. Common USTs are of sufficient size to resonate the induced magnetic field for long enough to be recorded in this time gate.

2.2 SOIL BORING INSTALLATION AND MEDIA SAMPLING

Fifteen direct-push soil borings were completed from January 20 and January 22, 2015, to assess the Site for impacted soil, as shown on **Figure 2**. Soil samples were collected and logged continuously at each soil boring location. Soil sample aliquots were field screened for organic vapors with a MiniRae® brand photo-ionization detection (PID) instrument calibrated daily with 100 parts per million (ppm) isobutylene.

Based on field screening results or other evidence of contamination (e.g., visual, olfactory, etc.), soil samples from select intervals were collected from each boring for on-site soil analysis of TPH using UVF technology.

2.3 QUALITY CONTROL/QUALITY ASSURANCE PROCEDURES

While in the field, pertinent observations were recorded in a logbook maintained by the URS field representative. This included pertinent field data collection activities and other observations, as appropriate. Each sample collected was assigned a unique sample identification number and placed in a discrete container for UVF analyses.

Quality Assurance/Quality Control (QA/QC) of field analyzed data was done by and in accordance with QROS Basic QED QA/QC Components. The QA/QC process includes a five point standard PAH curve, initial calibration, and final calibration after the analyses of each 10 sample set. If any QA/QC measures failed, the QED did not produce data.

3.1 GEOPHYSICAL SURVEY RESULTS

The results of the geophysical survey are presented in accordance with the NCDOT guidelines, dated May 19, 2009, for identifying and ranking potential USTs on NCDOT projects.

The EM-61 Channel 3 response results are provided as a plan view, color-enhanced contour map in **Figure 3**. The results presented in **Figure 3** are superimposed on the parcel base drawing provided by NCDOT. The interpreted background response is represented by the light blue to light green contours and generally corresponds to the range of -40 to 40 milliVolts (mV).

The Channel 3 results indicate an excited response (red) where known surface or near-surface metallic features exist. Observable surface features at the site include utility poles, signs, a traffic box, active USTs, and fuel dispensers. These features are responsible for higher than background near surface response over the site, as evident in **Figure 3**.

EM response across the site was attributable to observable surface features. Therefore, no areas were selected for a GPR sweep. The active USTs at the site are located southwest of the convenience store and are outside the requested survey bounds.

3.2 SOIL SAMPLING RESULTS

A total of fifteen soil borings were advanced to 8 feet below ground surface (ft bgs) during the PSA investigation at the Site as shown on **Figure 2**. Encountered soils consisted predominantly of brown silty clays and yellowish-orange sandy silts. The boring logs are included as **Appendix A**.

As shown in **Appendix A**, soil headspace screening in the field detected organic vapors at levels ranging from 0.5 to 454 parts per million (ppm). The hydrocarbon analyses results for the thirty-one (31) samples submitted to QROS are summarized in **Appendix B**. Results indicate no detections of gasoline range organics (GRO). Twelve (12) of the samples submitted for TPH analysis exceeded the NCDENR TPH Action Level of 10 milligrams per kilogram (mg/kg) for diesel range organics (DRO). Exceedances ranged from 12.97 mg/kg in P151 SB-10-8 to 94.5 mg/kg in P151 SB-10-6.

The approximate extent of potential soil impacts are depicted on **Figure 2** as a conservative approach. The first area shown is approximately 1,280 square feet, and surrounds boring P151-SB1 and its associated offset borings (SB-1B through SB-1E) based on DRO exceedances of the NCDENR TPH Action Level. Using a uniform depth of 8 feet (from 0 to 8 ft bgs), the estimated volume of impacted soil that may be encountered in the upper 8 ft is approximately 380 cubic yards.

The second area shown is approximately 800 square feet and surrounds borings P151-SB2 and P151-SB3. Using a uniform depth of 8 feet (from 0 to 8 ft bgs), the estimated volume of impacted soil that may be encountered in the upper 8 ft. is approximately 240 cubic yards.

The third area shown is also approximately 800 square feet and surrounds borings P151-SB6 and P151-SB10. Using a uniform depth of 8 feet (from 0 to 8 ft bgs), the estimated volume of impacted soil that may be encountered in the upper 8 ft.is approximately 240 cubic yards.

3.3 SUMMARY

The following summarizes the findings of NCDOT Parcel 151, located at 3819 US 401 South:

- No geophysical anomalies outside of observable surface features were detected at the site. Geophysical survey results are included in **Figure 3**. The active UST system lies outside the proposed right-of-way southwest of the convenience store building and is less than 20 ft. from the right-of-way.
- Field screening detected the presence of organic vapors above background concentrations in at least four of the primary soil borings at the Site.
- Thirteen of the samples submitted for TPH analysis exceeded the NCDENR TPH Action Level of 10 mg/kg for DRO.
- Based on QROS results, approximately 860 cubic yards of impacted soil may be encountered within the upper 8 ft. in three areas noted on **Figure 2**.

Based on the Site investigation, future Site workers are likely to encounter impacted soil. If encountered, all impacted soil should be properly handled and disposed of in accordance with NCDENR regulations.

SECTION FOUR Limitations

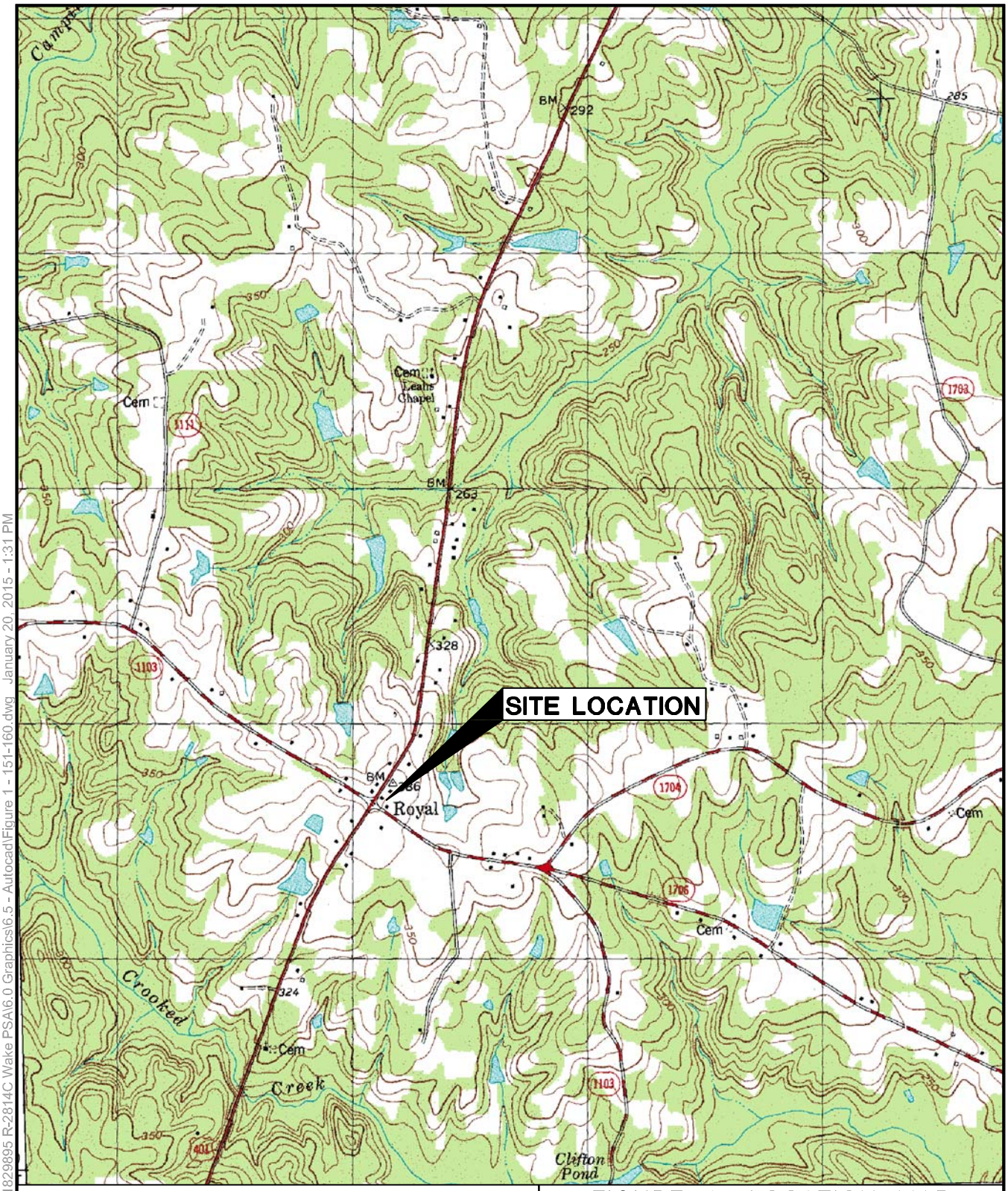
Opinions relating to environmental, geologic, and geotechnical conditions at this parcel are based on limited data, and actual conditions may vary from those encountered at the times and locations where the data was obtained, despite the use of due professional care. The geophysical investigation was conducted in accordance with reasonable and accepted engineering geophysics practices, and the interpretations and conclusions are rendered in a manner consistent with other consultants in our profession. All geophysical techniques have some level of uncertainty and limitations. No other representations of the reported information is expressed or implied, and no warranty or guarantee is included or intended. The results of the geophysical survey are presented in accordance with the NCDOT guidelines, dated May 19, 2009, for identifying and ranking potential USTs on NCDOT projects.

North Carolina Department of Transportation, Request for Technical and Cost Proposal, Preliminary Site Assessment, R-2814C, December 1, 2014.

North Carolina Department of Transportation, Notice to Proceed - Preliminary Site Assessment, R-2814C, January 10, 2015.

URS Corporation, Technical and Cost Proposal, Preliminary Site Assessment, R-2814, December 17, 2014.

Figures



SCALE IN FEET
0 2000

N.C.
QUADRANGLE LOCATION

N

SOURCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE
LOUISBURG, NC – DATED 1978, PHOTOREVISED 1984

FIGURE 1. LOCATION MAP

PARCEL 151, 3819 US 401 S
STATE PROJECT R-2814
LOUISBURG, NC

Prepared for: NC DOT	URS RDU, NORTH CAROLINA 27560
DRAWN BY: TSH	
DATE: 1/19/15	Fig. 1
PROJECT NO. 31829895	

P:\Jobs4_Projects\NCDOT\31829895 R-2814C Wake PSA\6.0 Graphics\6.5 - Autocad\Figure 1 - 151-160.dwg January 20, 2015 - 1:31 PM

Hydrocarbon Analysis Results		
Sample ID	GRO (C5 - C10)	DRO (C10 - C35)
P151 SB-1-6	<1.2	**26.1**
P151 SB-1-8	<1.2	**51.84**
P151 SB-2-6	<0.5	**19.09**
P151 SB-3-8	<0.5	**26.74**
P151 SB-6-6	<1.2	**13.65**
P151 SB-6-8	<1.4	**37.75**
P151 SB-10-6	<1.3	**94.5**
P151 SB-10-8	<0.8	**12.97**
P151 SB1-C-6	<0.6	**26.99**
P151 SB1-C-8	<0.4	**64.65**
P151 SB1-D-6	<0.4	**21.44**
P151 SB1-D-8	<0.5	**28.14**
P151 SB1-E-8	<0.6	**17.98**

Results generated by a QED HC-1 analyzer.
Concentration values in mg/kg for soil samples.
For clarity purposes, only those wells with exceedances are presented in the above table.
Bold data above the NCDENR Action Level
GRO = gasoline range organics
DRO = diesel range organics

PROJECT REFERENCE NO.	SHEET
R-2814C	

GeoEnvironmental

0 40 80
FEET

LEGEND

- P2-SB6 — SOIL BORING LOCATION
- PROPOSED RIGHT-OF-WAY
- PROPOSED EASEMENT
- PROPOSED DRAINAGE STRUCTURE
- KNOWN SOIL CONTAMINATION
- EXISTING MONITORING WELL
- UST — UNDERGROUND STORAGE TANK
- P2-SBI-I0 — ID - DEPTH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

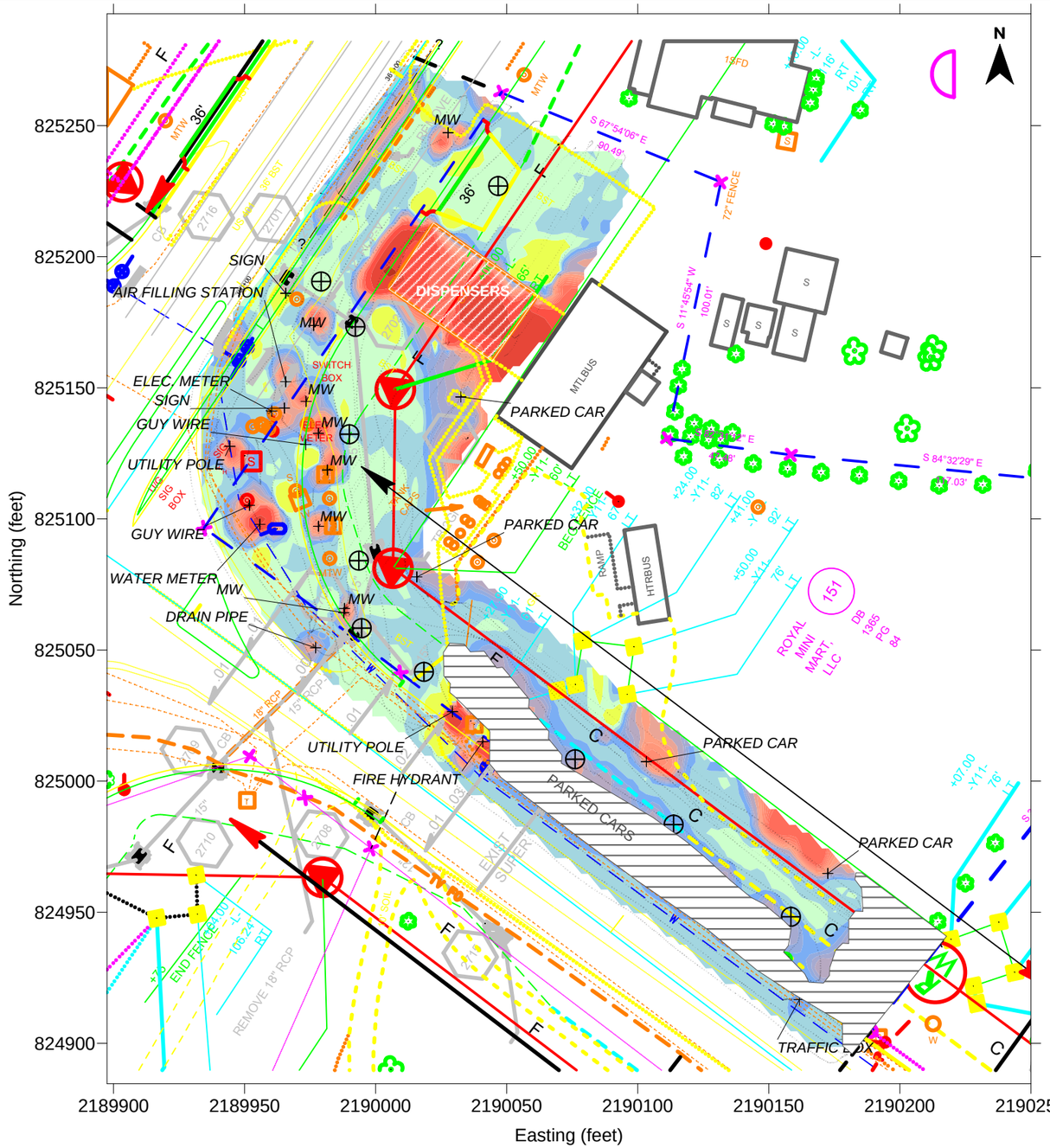
N

FIGURE 2 SOIL SAMPLING LOCATIONS
PARCEL 151 - ROYAL MINIMART, LLC PROPERTY
STATE PROJECT R-2814C, WAKE COUNTY, NC

URS Corporation - North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
NC LIC # C-2243
TELEPHONE (919) 461-1100 FAX (919) 461-1415

DRN BY: LHM	DATE: 12-11-14	STATE PROJECT: R-2814C
CHECKED BY: VK	DATE: 12-12-14	

PARCEL LOCATION MAP — FIGURE 2



Legend

- Soil Boring Location
- Interpreted Subsurface Utility Center Line
- ? Utility Termination Point not Known
- Property Boundary
- Inaccessible Area
- EM Anomalies selected for GPR survey
- Proposed Right-of-Way

EM-61 MKII Channel 3 Response (milliVolts)

Interpreted Increasing Response from Subsurface Metal: 10000, 2800, 2300, 1800, 1300

Interpreted Background Response: 800, 300, -200

Interpreted Increasing Response from Subsurface Metal: -10000

Notes:

1. Coordinates in NC State Plane NAD 83 (US Feet).
2. Data from Geonics, Ltd. EM-61 MKII instrument.
3. Base drawing after file "Parcel 151.dxf" provided by NCDOT.
4. Location control from DGPS survey by URS.
5. No EM anomalies selected for GPR survey.

Map Scale
(1 inch = 60 feet)

0' 60' 120'

URS Geophysical Services
1600 Perimeter Park Drive, Suite 400
Raleigh, NC 27560
(919) 461-1387

EM-61 MKII Channel 3 Response Contours
Royal Mini-Mart, LLC Property
(Parcel #151; Tax PIN: 1892-05-0169)

NCDOT WBS 34506.1.4, Wake-Franklin County

Louisburg, Franklin County, North Carolina

DESIGNED BY		DRAWN BY		CHECKED BY		JOB NUMBER	Figure
MJM	02/05/15	CMS	02/05/15	MJM	02/05/15	31829895	3

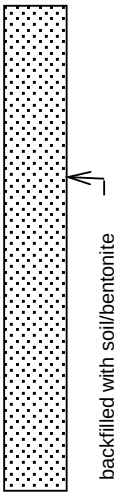
Appendix A
Boring Logs

BORING LOG: P151-SB1

Permit #		Drill Date	*01/20/15*	Site	***Parcel #151***
Client	***NCDOT***	Use		URS Corporation	
Address	***3819 US 401 S, Louisburg, NC 27549***			Total Depth (ft)	***8'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***8'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P151-SB1-2	0-2'		2.7	ASPHALT
2	P151-SB1-4	2-4'		3.5	Stiff, light brown silty CLAY
4	P151-SB1-6	4-6'		3.6	Yellowish-orange sandy SILT with mica with a 0.5" thick seam of black m-f SAND at 7.75' (WEATHERED GRANITE)
6	P151-SB1-8	6-8'		3.3	
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

Notes: P151-SB1-6 and P151-SB1-8 submitted to QROS for analysis

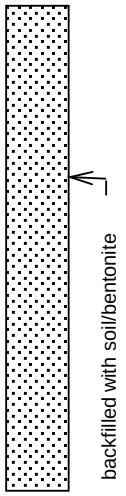
Geologist: ***Joseph Kiker*** Driller: ***RPS***

BORING LOG: P151-SB1B

Permit #		Drill Date	*01/22/15*	Site	*Parcel #151*
Client	*NCDOT*	Use		URS Corporation	
Address	*3819 US 401 S, Louisburg, NC 27549*			Total Depth (ft)	*8'*
Drilling Method	*Geoprobe Direct Push*	Boring Depth (ft)	*8'*	Boring Diam. (in)	*1.5*
Backfill Material	*Soil/Bentonite*			Static Water Level	*unknown*
Remarks:		TOC Elevation	**NA**	Sample Method	*Acetate Liner (4 ft)*

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P151-SB1B-2	0-2'		2.2	ASPHALT
2	P151-SB1B-4	2-4'		1.7	Stiff, light brown silty CLAY
4	P151-SB1B-6	4-6'		2.2	Yellowish-orange sandy SILT with mica
6	P151-SB1B-8	6-8'		2.6	
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

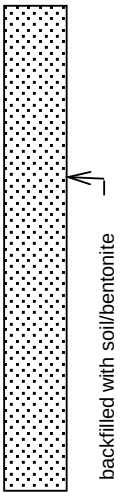
Notes:	P151-SB1B-6 and P151-SB1B-8 submitted to QROS for analysis		
Geologist:	*Joseph Kiker*	Driller:	*RPS*

BORING LOG: P151-SB1C

Permit #		Drill Date	*01/22/15*	Site	***Parcel #151***
Client	***NCDOT***	Use		URS Corporation	
Address	***3819 US 401 S, Louisburg, NC 27549***			Total Depth (ft)	***8'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***8'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0					
	P151-SB1C-2	0-2'		1.2	ASPHALT
2					Stiff, light brown silty CLAY
	P151-SB1C-4	2-4'		1.3	
4					
	P151-SB1C-6	4-6'		1.6	Yellowish-orange sandy SILT with mica with a 0.5" thick seam of black m-f SAND at 7' (WEATHERED GRANITE)
6					
	P151-SB1C-8	6-8'		1.6	
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

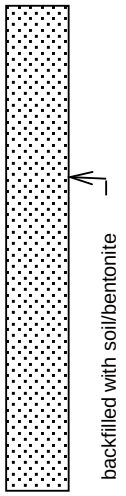
Notes:	P151-SB1C-6 and P151-SB1C-8 submitted to QROS for analysis		
Geologist:	***Joseph Kiker***	Driller:	***RPS***

BORING LOG: P151-SB1D

Permit #		Drill Date	*01/22/15*	Site	***Parcel #151***
Client	***NCDOT***	Use		URS Corporation	
Address	***3819 US 401 S, Louisburg, NC 27549***			Total Depth (ft)	***8'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***8'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0					
	P151-SB1D-2	0-2'		1.1	ASPHALT
2					Stiff, light brown silty CLAY
	P151-SB1D-4	2-4'		1.5	
4					
	P151-SB1D-6	4-6'		1.2	Yellowish-orange sandy SILT with mica (WEATHERED GRANITE)
6					
	P151-SB1D-8	6-8'		0.6	
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

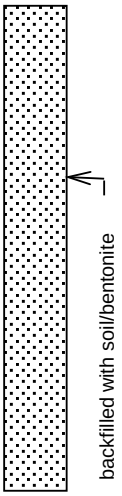
Notes:	P151-SB1D-6 and P151-SB1D-8 submitted to QROS for analysis
Geologist: ***Joseph Kiker***	Driller: ***RPS***

BORING LOG: P151-SB1E

Permit #		Drill Date	*01/22/15*	Site	***Parcel #151***
Client	***NCDOT***	Use		URS Corporation	
Address	***3819 US 401 S, Louisburg, NC 27549***			Total Depth (ft)	***8'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***8'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0					
	P151-SB1E-2	0-2'		1.0	ASPHALT
2	P151-SB1E-4	2-4'		1.3	Stiff, light brown silty CLAY
4	P151-SB1E-6	4-6'		1.1	Yellowish-orange sandy SILT with mica (WEATHERED GRANITE)
6	P151-SB1E-8	6-8'		1.0	
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

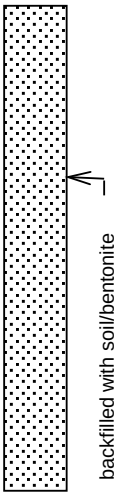
Notes:	P151-SB1E-6 and P151-SB1E-8 submitted to QROS for analysis		
Geologist:	***Joseph Kiker***	Driller:	***RPS***

BORING LOG: P151-SB2

Permit #		Drill Date	*01/20/15*	Site	***Parcel #151***
Client	***NCDOT***	Use		URS Corporation	
Address	***3819 US 401 S, Louisburg, NC 27549***			Total Depth (ft)	***8'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***8'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0					
	P151-SB2-2	0-2'		13.0	ASPHALT
2					Stiff, light brown silty CLAY
	P151-SB2-4	2-4'		77.1	Yellowish-orange SILT with mica
4					
	P151-SB2-6	4-6'		51.0	Light brown to white SILT with mica (WEATHERED GRANITE)
6					
	P151-SB2-8	6-8'		151.5	
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

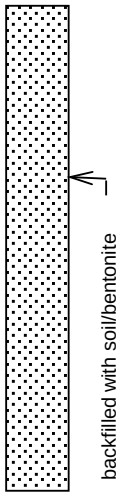
Notes:	P151-SB2-6 and P151-SB2-8 submitted to QROS for analysis		
Geologist:	***Joseph Kiker***	Driller:	***RPS***

BORING LOG: P151-SB3

Permit #		Drill Date	*01/20/15*	Site	*Parcel #151*
Client	*NCDOT*	Use		URS Corporation	
Address	*3819 US 401 S, Louisburg, NC 27549*			Total Depth (ft)	*8'*
Drilling Method	*Geoprobe Direct Push*	Boring Depth (ft)	*8'*	Boring Diam. (in)	*1.5*
Backfill Material	*Soil/Bentonite*			Static Water Level	*unknown*
Remarks:		TOC Elevation	**NA**	Sample Method	*Acetate Liner (4 ft)*

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P151-SB3-2	0-2'		140.1	ASPHALT
2	P151-SB3-4	2-4'		454.4	Stiff, light brown silty CLAY
4	P151-SB3-6	4-6'		199.1	Yellowish-orange SILT with mica (WEATHERED GRANITE) trace sand
6	P151-SB3-8	6-8'		321.8	
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

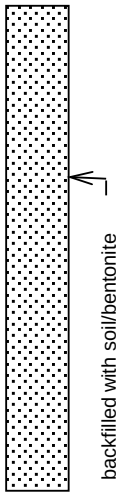
Notes:	P151-SB3-4, P151-SB3-6, and P151-SB3-8 submitted to QROS for analysis; petroleum odor
Geologist: *Joseph Kiker*	Driller: *RPS*

BORING LOG: P151-SB4

Permit #		Drill Date	*01/20/15*	Site	***Parcel #151***
Client	***NCDOT***	Use		URS Corporation	
Address	***3819 US 401 S, Louisburg, NC 27549***			Total Depth (ft)	***8'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***8'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P151-SB4-2	0-2'		4.1	ASPHALT
2	P151-SB4-4	2-4'		142.0	Stiff, light brown silty CLAY
4	P151-SB4-6	4-6'		184.5	Yellowish-orange SILT with trace m-f SAND with mica (WEATHERED GRANITE)
6	P151-SB4-8	6-8'		208.8	
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

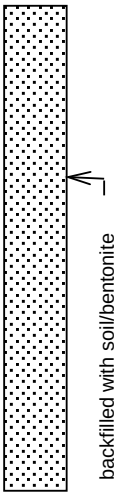
Notes:	P151-SB4-6 and P151-SB4-8 submitted to QROS for analysis
Geologist: ***Joseph Kiker***	Driller: ***RPS***

BORING LOG: P151-SB5

Permit #		Drill Date	*01/20/15*	Site	***Parcel #151***
Client	***NCDOT***	Use		URS Corporation	
Address	***3819 US 401 S, Louisburg, NC 27549***			Total Depth (ft)	***8'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***8'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P151-SB5-2	0-2'		2.9	ASPHALT and FILL
2	P151-SB5-4	2-4'		4.6	Stiff, light brown silty CLAY
4	P151-SB5-6	4-6'		4.8	Yellowish-orange SILT with mica (WEATHERED GRANITE)
6	P151-SB5-8	6-8'		15.6	
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

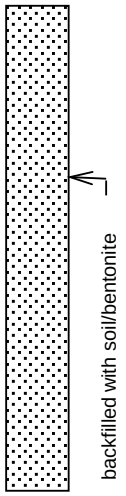
Notes:	P151-SB5-6 and P151-SB5-8 submitted to QROS for analysis		
Geologist:	***Joseph Kiker***	Driller:	***RPS***

BORING LOG: P151-SB5B

Permit #		Drill Date	***01/22/15***	Site	***Parcel #151***
Client	***NCDOT***	Use		URS Corporation	
Address	***3819 US 401 S, Louisburg, NC 27549***			Total Depth (ft)	***8'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***8'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P151-SB5B-2	0-2'		1.1	ASPHALT and FILL
2	P151-SB5B-4	2-4'		1.6	Stiff, light brown silty CLAY
4	P151-SB5B-6	4-6'		1.3	
6	P151-SB5B-8	6-8'		1.0	Yellowish-orange SILT with mica (WEATHERED GRANITE)
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

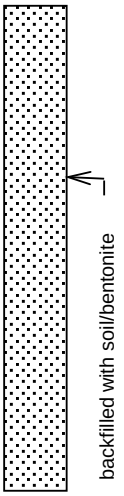
Notes:	P151-SB5B-6 and P151-SB5B-8 submitted to QROS for analysis
Geologist: ***Joseph Kiker***	Driller: ***RPS***

BORING LOG: P151-SB6

Permit #		Drill Date	***01/20/15***	Site	***Parcel #151***
Client	***NCDOT***	Use		URS Corporation	
Address	***3819 US 401 S, Louisburg, NC 27549***			Total Depth (ft)	***8'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***8'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P151-SB6-2	0-2'		2.1	ASPHALT and FILL
2	P151-SB6-4	2-4'		2.1	Stiff, light brown silty CLAY
4	P151-SB6-6	4-6'		2.4	Yellowish-orange SILT with mica (WEATHERED GRANITE)
6	P151-SB6-8	6-8'		1.8	with some m-f SAND
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

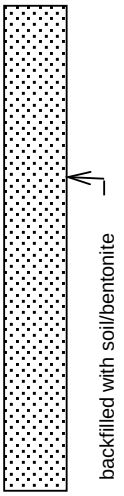
Notes:	P151-SB6-6 and P151-SB6-8 submitted to QROS for analysis		
Geologist:	***Joseph Kiker***	Driller:	***RPS***

BORING LOG: P151-SB7

Permit #		Drill Date	***01/20/15***	Site	***Parcel #151***
Client	***NCDOT***	Use		URS Corporation	
Address	***3819 US 401 S, Louisburg, NC 27549***			Total Depth (ft)	***8'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***8'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P151-SB7-2	0-2'		2.2	GRAVEL
2	P151-SB7-4	2-4'		2.2	Yellowish-orange to olive gray SILT
4	P151-SB7-6	4-6'		2.2	Stiff, yellowish-orange silt CLAY with trace m-f SAND with mica (WEATHERED GRANITE)
6	P151-SB7-8	6-8'		2.7	Yellowish-orange silty SAND with mica
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

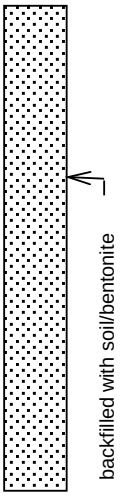
Notes:	P151-SB7-6 and P151-SB7-8 submitted to QROS for analysis
Geologist: ***Joseph Kiker***	Driller: ***RPS***

BORING LOG: P151-SB8

Permit #		Drill Date	*01/20/15*	Site	*Parcel #151*
Client	*NCDOT*	Use		URS Corporation	
Address	*3819 US 401 S, Louisburg, NC 27549*			Total Depth (ft)	*8'*
Drilling Method	*Geoprobe Direct Push*	Boring Depth (ft)	*8'*	Boring Diam. (in)	*1.5*
Backfill Material	*Soil/Bentonite*			Static Water Level	*unknown*
Remarks:		TOC Elevation	**NA**	Sample Method	*Acetate Liner (4 ft)*

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P151-SB8-2	0-2'		2.4	Yellowish-orange SILT
2	P151-SB8-4	2-4'		2.2	Stiff, yellowish-orange silty CLAY with mica; 1" seam of dark gray SILT to f. SAND at 3.90'
4	P151-SB8-6	4-6'		0.5	Yellowish-orange sandy SILT with mica (WEATHERED GRANITE)
6	P151-SB8-8	6-8'		2.5	Light brown to white sandy SILT (WEATHERED GRANITE)
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

Notes: P151-SB8-6 and P151-SB8-8 submitted to QROS for analysis

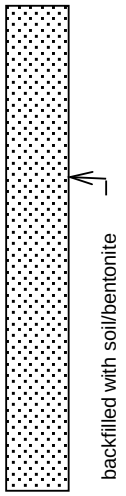
Geologist: ***Joseph Kiker*** Driller: ***RPS***

BORING LOG: P151-SB9

Permit #		Drill Date	*01/20/15*	Site	***Parcel #151***
Client	***NCDOT***	Use		URS Corporation	
Address	***3819 US 401 S, Louisburg, NC 27549***			Total Depth (ft)	***8'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***8'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P151-SB9-2	0-2'		1.7	Olive gray SILT
2	P151-SB9-4	2-4'		1.7	Stiff, yellowish-orange silty CLAY
4	P151-SB9-6	4-6'		2.0	Yellowish-orange to light brown clayey SILT with mica (WEATHERED GRANITE)
6	P151-SB9-8	6-8'		1.8	Yellowish-orange to white to pink SILT, SAND, and CLAY (WEATHERED GRANITE)
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

Notes: P151-SB9-6 and P151-SB9-8 submitted to QROS for analysis

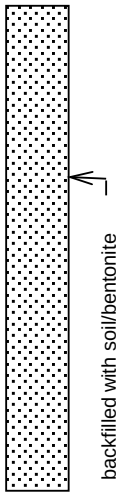
Geologist: ***Joseph Kiker*** Driller: ***RPS***

BORING LOG: P151-SB10

Permit #		Drill Date	*01/20/15*	Site	***Parcel #151***
Client	***NCDOT***	Use		URS Corporation	
Address	***3819 US 401 S, Louisburg, NC 27549***			Total Depth (ft)	***8'***
Drilling Method	***Geoprobe Direct Push***	Boring Depth (ft)	***8'***	Boring Diam. (in)	***1.5***
Backfill Material	***Soil/Bentonite***			Static Water Level	***unknown***
Remarks:		TOC Elevation	**NA**	Sample Method	***Acetate Liner (4 ft)***

Depth (ft.)	Sample ID	Sample Depth (ft)	Blows/ 6"	OVA (ppm)	Geologic Description
0	P151-SB10-2	0-2'		2.1	Yellowish-orange to olive gray SILT
2	P151-SB10-4	2-4'		1.7	Stiff, yellowish-orange silty CLAY with mica
4	P151-SB10-6	4-6'		2.6	Yellowish-orange to light brown clayey SILT with mica (WEATHERED GRANITE)
6	P151-SB10-8	6-8'		2.5	
8					Boring Terminated at 8' bgs
10					

Typical Diagram



Not to Scale

Notes:	P151-SB10-6 and P151-SB10-8 submitted to QROS for analysis		
Geologist:	***Joseph Kiker***	Driller:	***RPS***

Appendix B
QED Hydrocarbon Analysis Results

QED

AQROS

Hydrocarbon Analysis Results

Client: AECOM
Address:

Samples taken Tuesday, January 20, 2015
Samples extracted Wednesday, January 21, 2015
Samples analysed Wednesday, January 21, 2015

Contact: MIKE MURPHY

Operator RACHEL MENOHER

Project: P151

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	P151 SB-1-6	24.5	<1.2	<1.2	26.1	26.1	9.39	0.32	<0.025	54.5	38.1	7.4	Deg Fuel (FCM) 87.7%
s	P151 SB-1-8	24.8	<1.2	<1.2	51.84	51.84	17.56	0.61	<0.025	52.6	41.4	6	Deg Fuel (FCM) 84.7%
s	P151 SB-2-6	10.2	<0.5	<0.5	19.09	19.09	2.66	0.09	<0.01	75.7	16.2	8.1	Deg.Fuel 78.3%
s	P151 SB-2-8	9.5	<0.5	<0.5	5.81	5.81	1.59	0.05	<0.009	89.2	5.3	5.5	Deg.Fuel (PFM) 75.2%
s	P151 SB-3-4	10.4	<0.5	<0.5	0.63	0.63	0.16	<0.01	<0.01	64.1	11.5	24.4	Deg Fuel (PFM) (FCM) 57.5%
s	P151 SB-3-6	12.1	<0.6	<0.6	7.61	7.61	2.82	0.1	<0.012	58	34.3	7.7	Deg Fuel (FCM) 83%
s	P151 SB-3-8	10.1	<0.5	<0.5	26.74	26.74	9.28	0.32	<0.01	54	40.6	5.4	Deg Fuel (FCM) 85.8%
s	P151 SB-4-6	28.0	<1.4	<1.4	6.14	6.14	2.36	0.1	<0.028	57.9	31.5	10.7	Deg Fuel (FCM) 83.6%
s	P151 SB-4-8	19.0	<0.9	<0.9	10.17	10.17	3.94	0.14	<0.019	55.4	35.7	9	Deg Fuel (FCM) 88.2%

Initial Calibrator QC check OK

Final FCM QC Check OK 98.2%

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

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

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

QED

AQROS

Hydrocarbon Analysis Results

Client: AECOM
Address:

Samples taken Tuesday, January 20, 2015
Samples extracted Wednesday, January 21, 2015
Samples analysed Wednesday, January 21, 2015

Contact: MIKE MURPHY

Operator RACHEL MENOHER

Project: P151

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	P151 SB-5-6	24.8	<1.2	<1.2	5.85	5.85	2.23	0.09	<0.025	55.1	31.9	12.9	Deg Fuel (FCM) 87.5%
s	P151 SB-5-8	16.6	<0.8	<0.8	9.87	9.87	3.67	0.13	<0.017	54.5	36.5	9	Deg Fuel (FCM) 87.8%
s	P151 SB-6-6	24.1	<1.2	<1.2	13.65	13.65	4.96	0.19	<0.024	53.8	36.8	9.4	Deg Fuel (FCM) 90.6%
s	P151 SB-6-8	28.6	<1.4	<1.4	37.75	37.75	13.2	0.46	<0.029	52.5	40.2	7.3	Deg Fuel (FCM) 89.5%
s	P151 SB-7-6	14.6	<0.7	<0.7	<0.15	<0.15	<0.15	<0.01	<0.015	0	0	100	Match not possible
s	P151 SB-7-8	19.8	<1	<1	<0.2	<0.2	<0.2	<0.02	<0.02	0	0	100	Pet.Hyd not Detected
s	P151 SB-8-6	10.4	<0.5	<0.5	<0.1	<0.1	<0.1	<0.01	<0.01	0	20.8	79.2	PAH
s	P151 SB-8-8	21.5	<1.1	<1.1	<0.21	<0.21	<0.21	<0.02	<0.021	0	0	100	Pet.Hyd not Detected
s	P151 SB-9-6	10.1	<0.5	<0.5	<0.1	<0.1	<0.1	<0.01	<0.01	0	0	100	Pet.Hyd not Detected
s	P151 SB-9-8	13.6	<0.7	<0.7	0.92	0.92	0.46	<0.01	<0.014	57.9	16.2	25.8	Deg Fuel (FCM) 90.7%
	Initial Calibrator QC check			OK					Final FCM QC Check			OK	101.8%

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

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

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

QED

AQROS

Hydrocarbon Analysis Results

Client: AECOM
Address:

Samples taken Tuesday, January 20, 2015
Samples extracted Wednesday, January 21, 2015
Samples analysed Wednesday, January 21, 2015

Contact: MIKE MURPHY

Operator RACHEL MENOHER

Project: P151

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	P151 SB-10-6	25.7	<1.3	<1.3	94.5	94.5	31.44	1.15	<0.026	46.7	47.5	5.8	Deg Fuel (FCM) 99.2%
s	P151 SB-10-8	16.9	<0.8	<0.8	12.97	12.97	4.87	0.18	<0.017	54.5	37.5	8	Deg Fuel (FCM) 98.5%

Initial Calibrator QC check OK Final FCM QC Check OK 98.4%

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

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

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

QED

AQROS

Hydrocarbon Analysis Results

Client: AECOM
Address:

Samples taken Thursday, January 22, 2015
Samples extracted Thursday, January 22, 2015
Samples analysed Thursday, January 22, 2015

Contact: MIKE MURPHY

Operator RACHEL MENOHER

Project: P151 DAY 2

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	P151 SB1-B-6	8.4	<0.4	0.43	0.5	0.93	0.39	0.02	<0.008	71.9	14	14.1	V.Deg.PHC (FCM) 66.5%
s	P151 SB1-B-8	8.6	<0.4	<0.4	<0.09	<0.09	<0.09	<0.01	<0.009	0	20.5	79.5	Pet.Hyd not Detected
s	P151 SB1-C-6	11.4	<0.6	<0.6	26.99	26.99	9.17	0.32	<0.011	52.2	41.8	6	Deg Fuel (FCM) 86.6%
s	P151 SB1-C-8	8.6	<0.4	<0.4	64.65	64.65	21.22	0.76	<0.009	44.5	50.6	4.9	Deg Fuel (FCM) 88.4%
s	P151 SB1-D-6	9.0	<0.4	<0.4	21.44	21.44	7.31	0.28	<0.009	51.6	43.3	5.1	Deg Fuel (FCM) 97.7%
s	P151 SB1-D-8	10.8	<0.5	<0.5	28.14	28.14	8.32	0.29	<0.011	51.8	42.8	5.4	Deg Fuel (FCM) 74.8%
s	P151 SB1-E-6	10.3	<0.5	<0.5	6.21	6.21	2.17	0.08	<0.01	54.9	36.7	8.4	Deg Fuel (FCM) 82.3%
s	P151 SB1-E-8	11.3	<0.6	<0.6	17.98	17.98	5.93	0.21	<0.011	52.7	40.9	6.4	Deg Fuel (FCM) 82.9%
s	P151 SB5-B-6	11.3	<0.6	<0.6	1.76	1.76	1.61	0.08	<0.011	51.4	32.4	16.2	V.Deg.PHC (FCM) 86.2%
s	P151 SB5-B-8	9.6	<0.5	<0.5	<0.1	<0.1	<0.1	<0.01	<0.01	0	0	100	Pet.Hyd not Detected
	Initial Calibrator QC check			OK					Final FCM QC Check			OK	92.4%

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