

September 14, 2010

Mr. Ethan Caldwell, LG
North Carolina Department of Transportation
Geotechnical Engineering Unit
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Reference: Preliminary Site Assessment
John Darden Heirs Property
108 N. Bragg Blvd.
Spring Lake, Cumberland County, North Carolina
NCDOT Tip No. U-4444B
WBS Element 36492.1.2
AECOM Project No. 60158550

Dear Mr. Caldwell:

AECOM Technical Services of North Carolina, Inc., (AECOM) has completed the Preliminary Site Assessment conducted at the above-referenced property. The work was performed in accordance with the Technical and Cost proposal dated July 6, 2010, and the North Carolina Department of Transportation's (NCDOT's) Notice to Proceed dated July 7, 2010. Activities associated with the assessment consisted of conducting a geophysical investigation, collecting soil samples for laboratory analysis, and reviewing applicable North Carolina Department of Environment and Natural Resources (NCDENR) records. The purpose of this report is to document the field activities, present the laboratory analyses, and provide recommendations regarding the property.

Location and Description

The John Darden Heirs Property is located at 108 N. Bragg Boulevard in Spring Lake, Cumberland County, North Carolina. The property is situated on the west side of Bragg Boulevard and in the northeast quadrant of the intersection of Bragg Boulevard and Spring Avenue (Figure 1). Based on information supplied by the NCDOT and the site visit, AECOM understands that the site is a possible former gas station where possible underground storage tanks (USTs) may be present. The structure on the site consists of a block building with an asphalt parking lot in front (Figure 2). The NCDOT has advised that the proposed right-of-way/easement will affect the parking lot and the possible UST area (Figure 2). Because of the location of the possible tanks, the NCDOT requested a Preliminary Site Assessment. The scope of work as defined in the Request for Technical and Cost Proposal was to evaluate the proposed right-of-way with respect to the presence of known and unknown USTs and assess where

contamination may exist on the right-of-way. If present, an estimate of the quantity of impacted soil was to be provided.

AECOM reviewed the on-line NCDENR Incident Management database and no Incident Number has been assigned to the property. AECOM also examined the UST registration database to obtain UST ownership information. No USTs are registered to the site address.

Geophysical Survey

Prior to AECOM's mobilization to the site, Pyramid Environmental conducted a geophysical survey as part of this project to evaluate if USTs were present on the right-of-way/easement. The geophysical survey consisted of an electromagnetic survey using a Geonics EM61 time-domain electromagnetic induction meter to locate buried metallic objects, specifically USTs. A survey grid was laid out at the property with the X-axis oriented approximately perpendicular to Bragg Boulevard and the Y-axis oriented approximately parallel to Bragg Boulevard. The grid was located to cover the accessible portions of the proposed right-of-way. The survey lines were spaced 5 feet apart. Magnetic data was collected continuously along each survey line with a data logger. After collection, the data was reviewed in the field with graphical computer software. Following the electromagnetic survey, a ground penetrating radar (GPR) survey was conducted where needed to further evaluate any significant metallic anomalies.

Access was available to all areas of the right-of-way and the survey detected several anomalies. Most of these anomalies were attributed to buried utility lines or conduits. One anomaly on the south side of the property indicated a possible UST, but this anomaly was associated with an adjacent property and was not considered part of the John Darden site. Attachment A presents a detailed report of findings and interpretations.

Site Assessment Activities

On August 11, 2010, AECOM mobilized to the site to conduct a Geoprobe[®] direct push investigation to evaluate soil conditions within the proposed right-of-way/easement. Continuous sampling using direct push technology (Regional Probing of Wake Forest, North Carolina) resulted in generally good recovery of soil samples from the direct-push holes. Soil samples were collected and contained in acetate sleeves inside the direct push sampler. Each of these sleeves was divided into 2-foot long sections for soil sample screening. Each 2-foot interval was placed in a resealable plastic bag and the bag was set aside for a sufficient amount of time to allow volatilization of organic compounds from the soil to the bag headspace. The probe of a flame ionization detector/photo ionization detector (FID/PID) was inserted into the bag and the reading was recorded. After terminating the sample hole, the soil sample from the depth interval with the highest FID/PID reading was submitted for analysis to SGS North America in Wilmington, North Carolina, using standard chain-of-custody procedures. The laboratory analyzed the soil samples for total petroleum hydrocarbons (TPH) in the diesel range organics (DRO) and gasoline range organics (GRO).

Four direct-push holes (JD-1 through JD-4) were advanced within the right-of-way to a depth of 10 to 12 feet as shown in Figure 2 and Attachment B. Boring JD-1 was located to evaluate the conditions at the probable UST located at the property boundary on an adjacent site and borings JD-2 through JD-4 were placed to assess the soil conditions along the proposed right-of-way (Attachment C). The lithology encountered by the direct-push samples generally was consistent throughout the site. The ground surface was covered with about 2 to 3 inches of asphalt. Below the surface to a depth of 7 to 9 feet was a medium brown, loose, coarse-grained sand. Underlying this material was a medium brown sand/clay. No bedrock was encountered in any of the borings. The "Geologic Map of North Carolina" dated 1985 indicates that the site is underlain by the Middendorf and Cape Fear Formations, each of which consists predominantly of sand and mudstone. The soil observed at the site is consistent with this parent rock. The borings along the right-of-way were terminated at a depth of 10 feet and the boring at the probable USTs was terminated at a depth of 12 feet.. No groundwater was observed in any of the borings. Based on field screening, soil samples were submitted for laboratory analyses, which are summarized in Table 1. Following completion, each boring was backfilled in accordance with 15A NCAC 2C.

Analytical Results

Based on the laboratory reports, summarized in Table 1 and presented in Attachment D, petroleum hydrocarbon compounds identified as DRO were detected in one of the four soil samples collected from the site. The soil sample from boring JD-4 contained a DRO concentration of 116 mg/kg. According to the North Carolina Underground Storage Tank Section's Underground Storage Tank Closure Policy dated August 24, 1998, the action level for TPH analyses is 10 milligrams per kilogram (mg/kg) for both gasoline and diesel fuel. However, that agency's "Guidelines for Assessment and Corrective Action," dated December 2008, does not allow for use of TPH analyses for confirmation of the extent of petroleum contamination or its cleanup. As a result, while TPH concentrations are no longer applicable in determining if soil contamination is present, this analysis is a legitimate screening tool. Based on the TPH action level for UST closures, the assumed action level for this report is 10 mg/kg. The DRO concentration detected in soil sample JD-4 was present at a concentration above the 10 mg/kg assumed action level.

Conclusions and Recommendations

A Preliminary Site Assessment was conducted to evaluate the John Darden Heirs Property located at 108 N. Bragg Boulevard in Spring Lake, Cumberland County, North Carolina. A geophysical investigation was conducted to evaluate the site for unknown USTs. The investigation found no evidence of metallic USTs within the proposed right-of-way. Four soil borings were advanced to evaluate the soil conditions throughout the proposed right-of-way. The laboratory reports of the soil samples from these borings suggest that a DRO concentration in one boring at 116 mg/kg was present. This concentration is above the assumed action level.

To evaluate the volume of soil requiring possible remediation, the soil samples with TPH concentrations above 10 mg/kg were considered. The analytical results of the soil samples suggest that the soil from boring JD-4 (116 mg/kg) contained a TPH concentration identified as DRO above the assumed action level (Figure 3). A review of the field screening readings (Table 1) suggests that the thickness of the potentially contaminated soil is about 4 feet. After estimating the potential contamination geometry using field observations and experience with similar sites and geology, AECOM measured the affected section by using CADD software, which indicated an area of about 912 ft². Based on a 4-foot contamination thickness, the area calculates to a volume of 135 cubic yards. This volume is estimated from TPH analytical data, which are no longer valid for remediation of sites reported after January 2, 1998. After this date, MADEP EPH/VPH and EPA Method 8260/8270 analyses will likely be required to confirm cleanup. However, these analyses do not correlate exactly with TPH data and, as a result, the actual volume of contaminated soil may be higher or lower.

According to the NCDOT plan sheets, the potential contamination does not appear to be within an area where a major disturbance to the surface or subsurface will be conducted. However, the potential contamination at boring JD-4 is at a depth less than 10 feet and installation of drainage features or utilities may result in contact with potential contamination.

AECOM appreciates the opportunity to work with the NCDOT on this project. Because compounds were detected above the applicable action levels in the soil samples, AECOM recommends that a copy of this report be submitted to the Fayetteville Regional Office UST Section. If you have any questions, please contact me at (919) 854-6238.

Sincerely,



Michael W. Branson, P.G.
Project Manager

Attachments

c: Project File

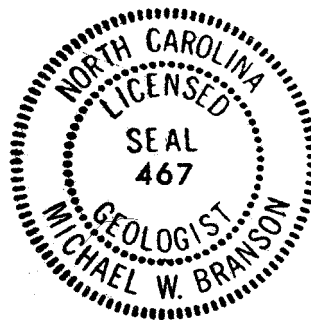


TABLE 1
SOIL FIELD SCREENING AND ANALYTICAL RESULTS
JOHN DARDEN PROPERTY
SPRING LAKE, CUMBERLAND COUNTY, NORTH CAROLINA
NCDOT PROJECT NO. U-4444B
WBS ELEMENT 36492.1.2
AECOM PROJECT NO. 60158550

LOCATION	DEPTH (ft)	FID READING (ppm)	SAMPLE ID	ANALYTICAL RESULTS (mg/kg)	ASSUMED ACTION LEVEL (mg/kg)
JD-1	0 - 2	3.44			
	2 - 4	4.37	JD-1	DRO (BQL) GRO (BQL)	10 10
	4 - 6	3.30			
	6 - 8	3.93			
	8 - 10	4.17			
	10 - 12	3.05			
JD-2	0 - 2	2.26			
	2 - 4	3.76	JD-2	DRO (BQL) GRO (BQL)	10 10
	4 - 6	3.10			
	6 - 8	2.53			
	8 - 10	1.38			
JD-3	0 - 2	1.87	JD-3	DRO (BQL) GRO (BQL)	10 10
	2 - 4	1.81			
	4 - 6	1.82			
	6 - 8	1.12			
	8 - 10	0.98			
JD-4	0 - 2	2.31			
	2 - 4	1.77			
	4 - 6	2.79			
	6 - 8	3.01	JD-4	DRO (116) GRO (BQL)	10 10
	8 - 10	2.10			

Soil samples were collected on August 11, 2010.

DRO - Diesel range organics.

GRO - Gasoline range organics.

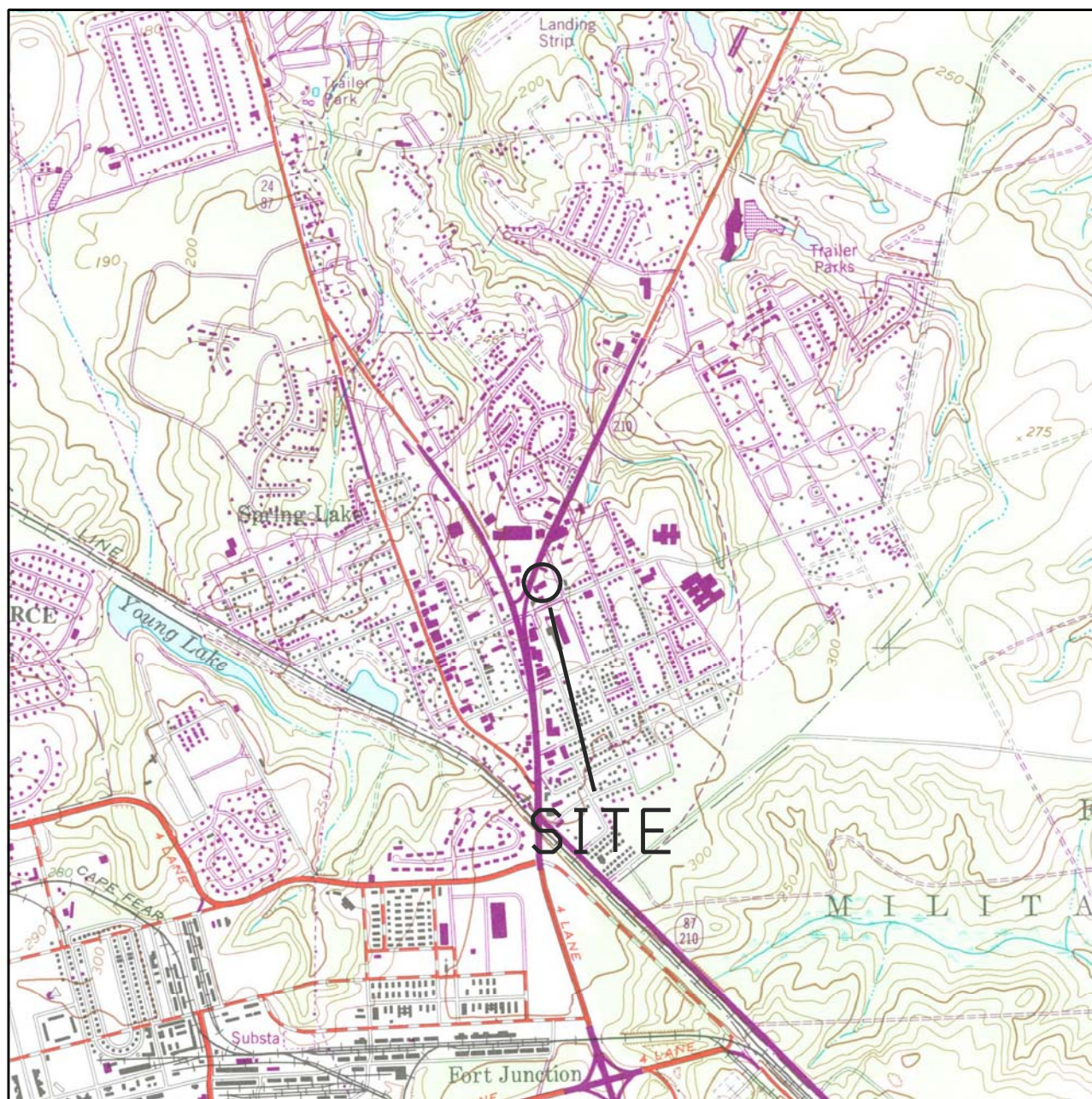
BQL - Below quantitation limit.

ppm - parts per million.

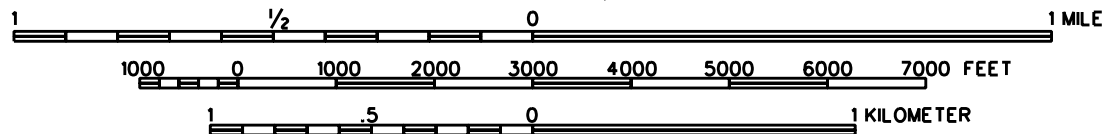
mg/kg - milligrams per kilogram.

BOLD values are present above the assumed action level.

FIGURES



SCALE 1:24,000

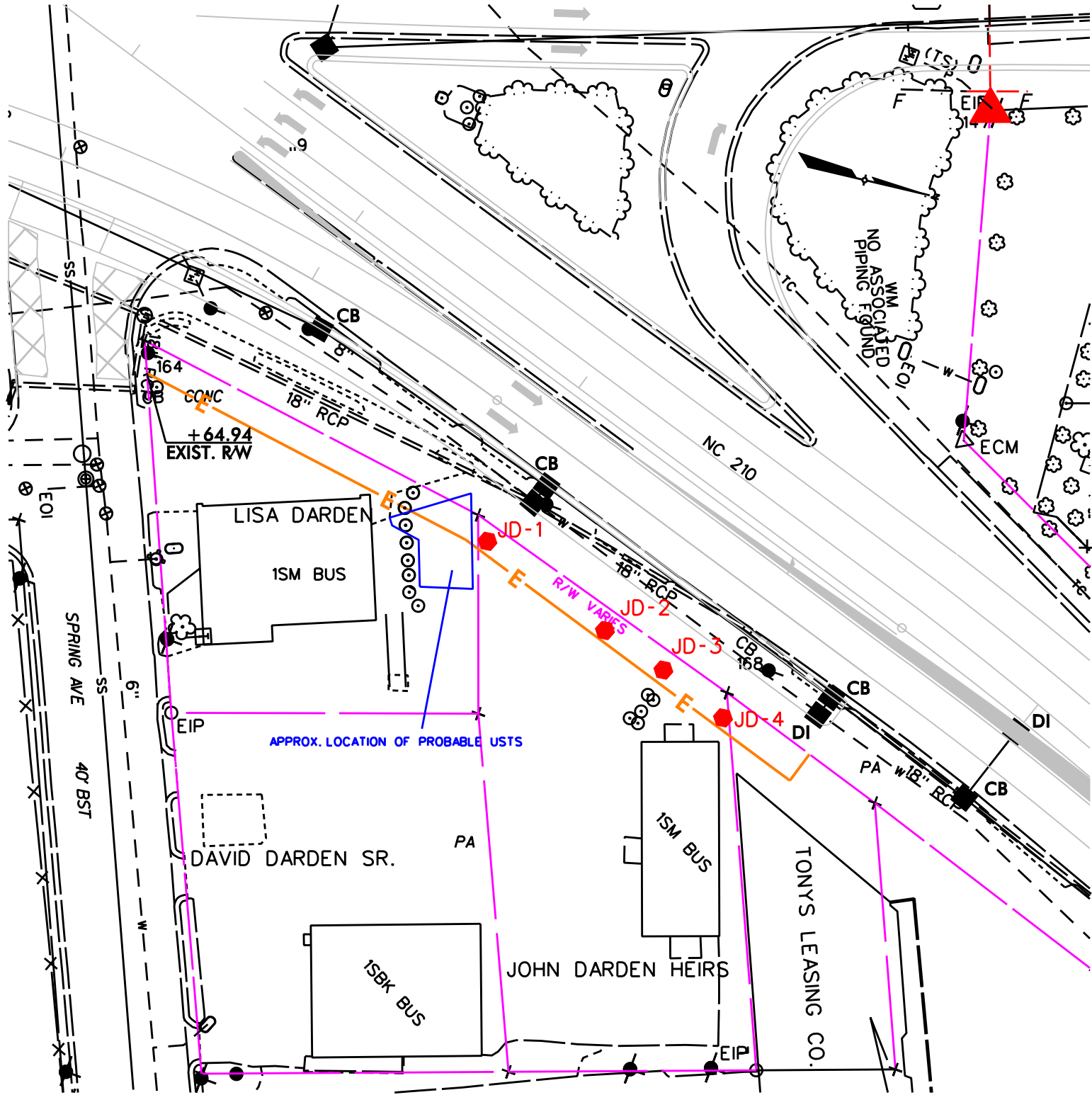


SOURCE: U.S. GEOLOGICAL SURVEY 7.5 MIN QUADRANGLE: MANCHESTER, NC (REV 1987)



FIGURE 1
VICINITY MAP
JOHN DARDEN PROPERTY
SPRING LAKE, CUMBERLAND COUNTY NORTH CAROLINA
AUGUST 2010

60158550



LEGEND

JD-1



SOIL SAMPLE LOCATION AND IDENTIFICATION

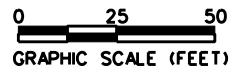


FIGURE 2

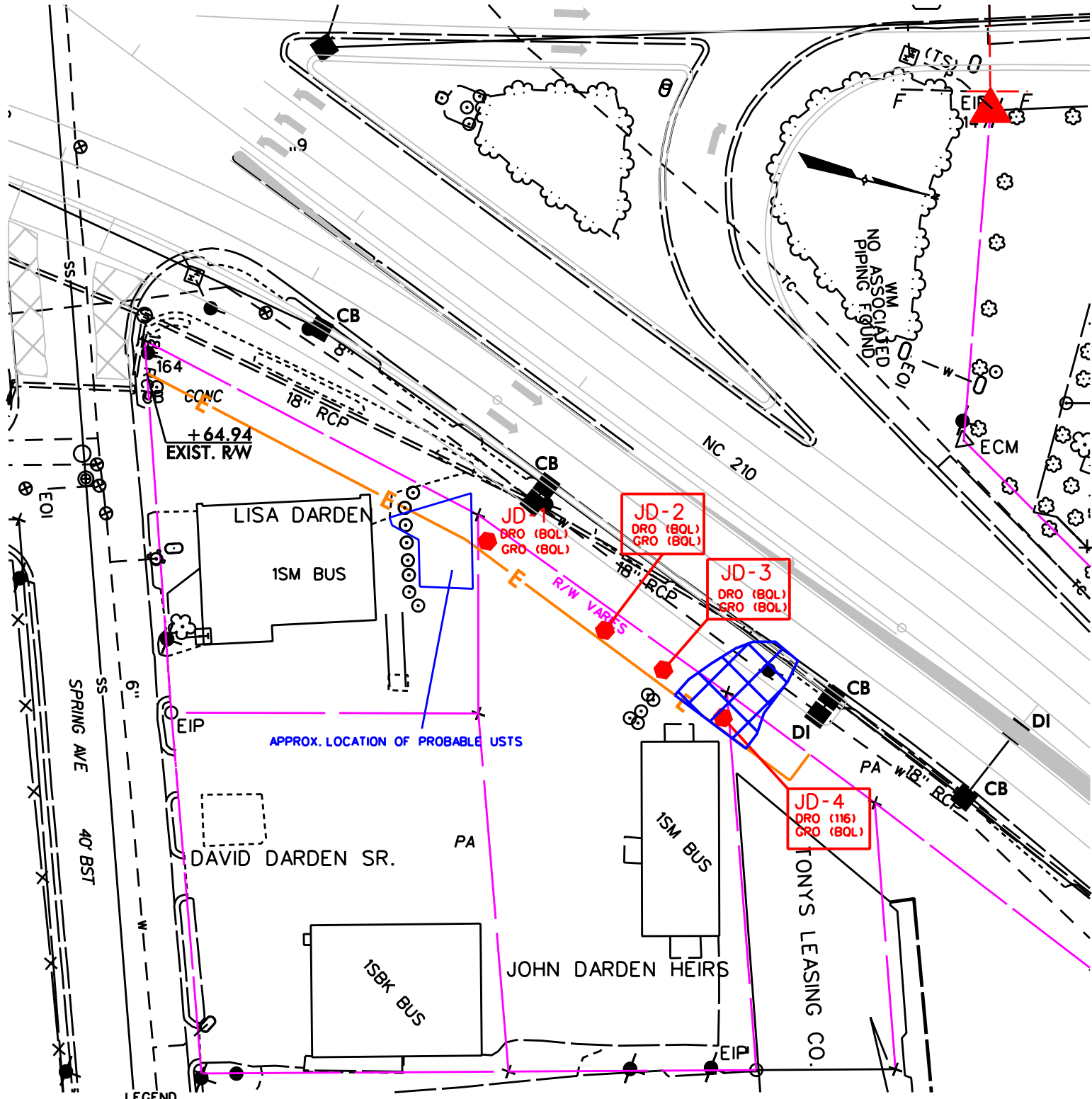
SITE MAP

JOHN DARDEN PROPERTY


SPRING LAKE, CUMBERLAND COUNTY, NORTH CAROLINA

AUGUST 2010

60158550




LEGEND

JD-1  **SOIL SAMPLE LOCATION AND IDENTIFICATION**

DRO (123) TPH AS DIESEL FUEL IN MG/KG

GRO (123) TPH AS GASOLINE IN MG/KG

BQL BELOW QUANTITATION LIMIT

 **ESTIMATED CONTAMINATION AREA**

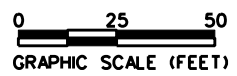


FIGURE 3
SOIL ANALYTICAL RESULTS MAP
JOHN DARDEN PROPERTY

SPRING LAKE, CUMBERLAND COUNTY, NORTH CAROLINA

AUGUST 2010

60158550



ATTACHMENT A

GEOPHYSICAL INVESTIGATION REPORT

EM61 & GPR SURVEYS


JOHN DARDEN HEIRS PROPERTY

**Lillington Highway
Spring Lake, North Carolina**

September 5, 2010

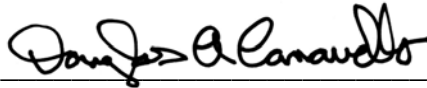
**Report prepared for: Michael W. Branson, PG
AECOM Environment
701 Corporate Center Drive, Suite 475
Raleigh, North Carolina 27607**

Prepared by:



Mark J. Denil, P.G.

Reviewed by:



Douglas Canavello, P.G.

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GREENSBORO, NC 27416-0265
(336) 335-3174**

AECOM Environment
GEOPHYSICAL INVESTIGATION REPORT
JOHN DARDEN HEIRS PROPERTY
Spring Lake, North Carolina

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Figure 1	Geophysical Equipment & Site Photographs
Figure 2	EM61 Metal Detection – Bottom Coil Results
Figure 3	EM61 Metal Detection – Differential Results

1.0 INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for AECOM Environmental across the proposed Right-of-Way (ROW) area at the John Darden Heirs property located along the easterly side of Lillington Highway at the intersection of Lillington Highway and Spring Avenue in Spring Lake, North Carolina. Conducted on July 27 and August 3, 2010, the geophysical investigation was performed as part of the North Carolina Department of Transportation (NCDOT) preliminary site assessment project to determine if unknown, metallic underground storage tanks (USTs) are present beneath the proposed ROW area of the site.

The John Darden Heirs property consists of an occupied office building surrounded by an asphalt-covered parking area. The proposed ROW area (geophysical survey area) encompassed the property located between the building and Lillington Highway and has a maximum length and width of 95 feet and 72 feet, respectively.

AECOM Environment representative Mr. Michael Branson, PG identified the geophysical survey area to Pyramid Environmental personnel and provided site maps showing the boundaries of the proposed survey area prior to conducting the investigation. Photographs of the geophysical equipment used in this investigation and a portion of the John Darden Heirs property are shown in **Figure 1**.

2.0 FIELD METHODOLOGY

Prior to conducting the geophysical investigation, a 10-foot by 10-foot survey grid was established across the geophysical survey area (property) using measuring tapes and water-based marking paint. These grid marks were used as X-Y coordinates for location control when collecting the geophysical data and establishing base maps for the geophysical results.

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection surveys and ground penetrating radar (GPR) surveys. The EM survey was performed on July 27, 2010 using

a Geonics EM61-MK1 metal detection instrument. According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size) can be detected to a maximum depth of 4 to 5 feet. All of the EM61 data were digitally collected at approximately 0.8 foot intervals along northerly-southerly, or easterly-westerly, parallel survey lines spaced five feet apart. All of the data were downloaded to a computer and reviewed in the field and office using the Geonics DAT61W and Surfer for Windows Version 7.0 software programs.

GPR surveys were conducted on August 3, 2010 across selected EM61 differential anomalies using a GSSI SIR-2000 unit equipped with a 400 MHz antenna. Data were digitally collected in a continuous mode along X-axis and/or Y-axis survey lines, spaced 2.5 to 5.0 feet apart using a vertical scan of 512 samples, at a rate of 48 scans per second. A 70 MHz high pass filter and an 800 MHz low pass filter were used during data acquisition with the 400 MHz antenna. GPR data were collected down to a maximum depth of approximately 5 feet, based on an estimated two-way travel time of 8 nanoseconds per foot. All of the GPR data were downloaded to a field computer and reviewed in the field and office using Radprint software.

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

Preliminary contour plots of the EM61 bottom coil and EM61 differential results obtained from the survey area were emailed to Mr. Branson during the week of August 9, 2010.

3.0 DISCUSSION OF RESULTS

The linear EM61 bottom coil anomalies intersecting grid coordinates X=24 Y=260, X=55 Y=200, X=80 Y=188, and X=80 Y=227 are probably in response to buried utility lines or conduits. GPR data suggest the EM61 anomalies centered near grid coordinates X=55 Y=273 and X=70 Y=248 are probably in response to bollards, sign poles, the building, and a possible conduit.

GPR data suggest the EM61 bottom coil anomalies centered near grid coordinates X=40 Y=188 and X=80 Y=201 are in response to buried, miscellaneous metal objects. GPR data suggest the large differential anomaly centered near grid coordinates X=55 Y=180 is in response to a possible metallic UST buried approximately 2.3 feet below surface and located on the adjacent Lisa Darden property.

The geophysical investigation suggests the proposed ROW area at the John Darden Heirs property does not contain unknown, metallic USTs. However, the John Darden property is located adjacent to the Lisa Darden property in which a geophysical investigation conducted in July and August 2010 suggests four probable USTs and two possible USTs are present along the northern half of the Lisa Darden property.

4.0 SUMMARY & CONCLUSIONS

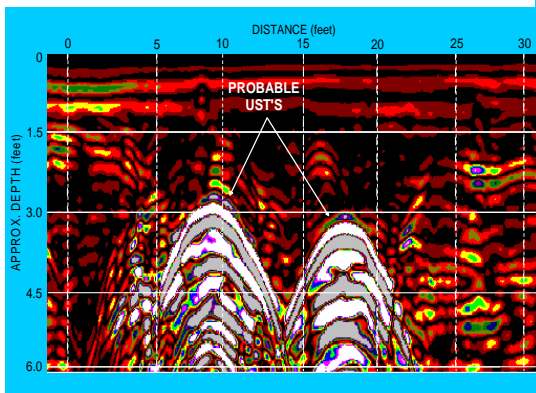
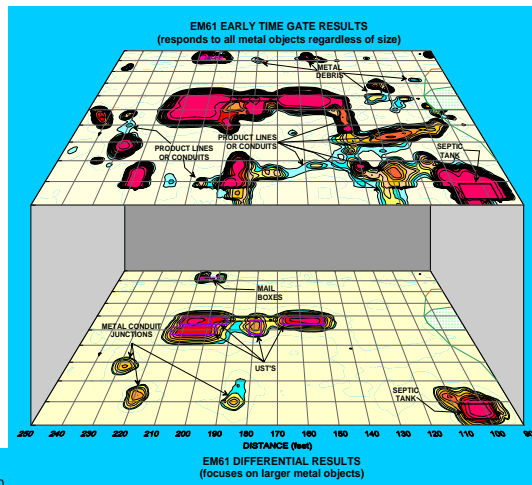
Our evaluation of the EM61 and GPR data collected across the proposed ROW area at the John Darden Heirs property located along the east side of Lillington Highway in Spring Lake, North Carolina, provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the surveyed portions of the site.
- The linear EM61 bottom coil anomalies intersecting grid coordinates X=24 Y=260, X=55 Y=200, X=80 Y=188, and X=80 Y=227 are probably in response to buried utility lines or conduits.

- GPR data suggest the large differential X=55 Y=180 is in response to a possible metallic UST buried approximately 2.3 feet below surface and located on the adjacent Lisa Darden property.
- The geophysical investigation suggests the proposed ROW area at the John Darden Heirs property does not contain unknown, metallic USTs. However, the John Darden property is located adjacent to the Lisa Darden property in which a geophysical investigation conducted in July and August 2010 suggests four probable USTs and two possible USTs are present along the northern half of the Lisa Darden property.

5.0 LIMITATIONS

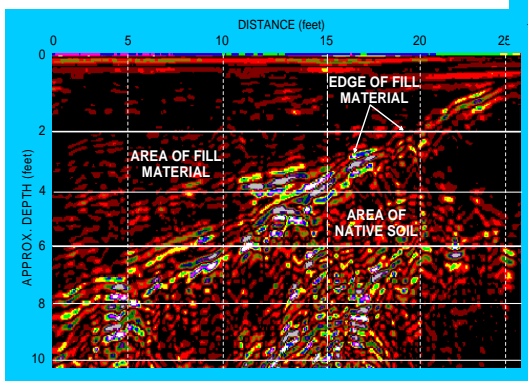
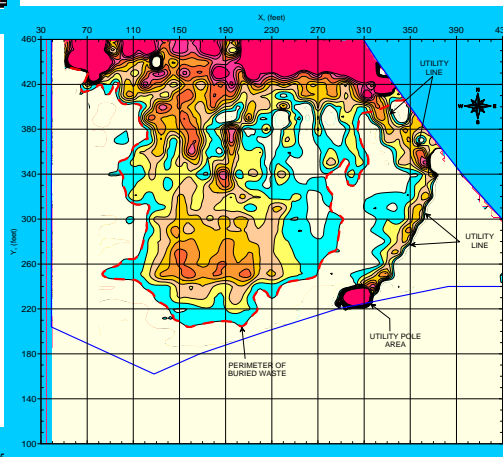
EM61 and GPR surveys have been performed and this report prepared for AECOM Environmental in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the EM61 and GPR are non-unique and may not represent actual subsurface conditions. The geophysical results obtained for this project have not conclusively determined that the surveyed portion of the site does not contain unknown, metallic USTs but that none were detected.



FIGURES

(on the following pages)

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



The photograph shows the Geonics EM61 metal detector that was used to conduct the metal detection survey across the proposed ROW area at the John Darden property on July 27, 2010.



The photographs show the SIR-2000 GPR system equipped with a 400 MHz antenna that were used to conduct the ground penetrating radar investigation at the John Darden property on August 3, 2010.



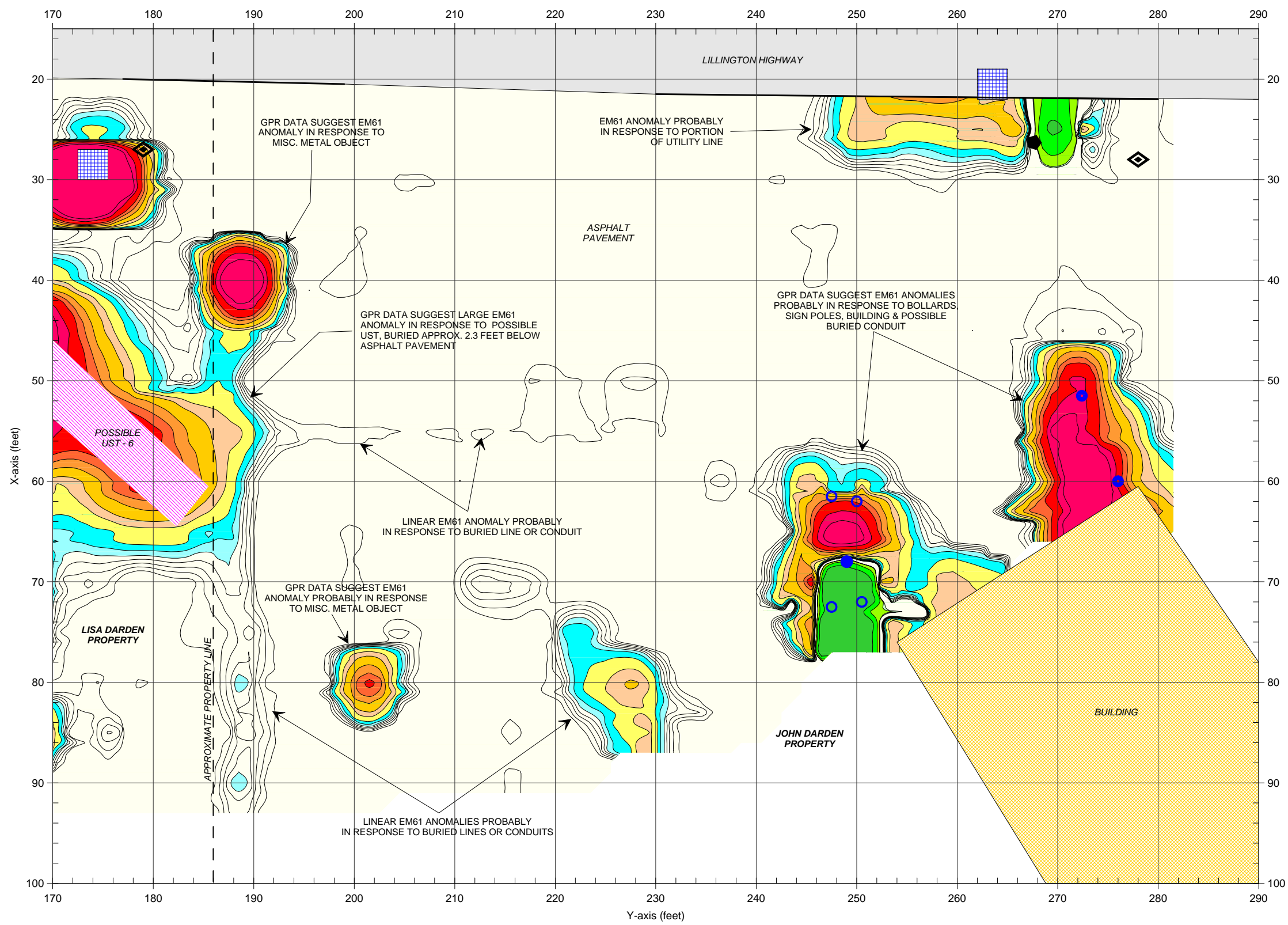
The photograph shows the proposed ROW area at the John Darden property located immediately north of the South Bragg Boulevard and Spring Avenue intersection in Spring Lake, North Carolina. The photograph is viewed in a northerly direction.



CLIENT	AECOM ENVIRONMENT		DATE	09/05/10	BY	MJD
SITE	JOHN DARDEN HEIRS PROPERTY		LAY		OPND	
CITY	SPRING LAKE	STATE	NORTH CAROLINA	ENIG		
TITLE	GEOPHYSICAL RESULTS		PLNG	2010-176	PROJ#	

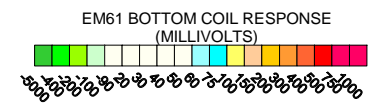
GEOPHYSICAL EQUIPMENT
& SITE PHOTOGRAPHS

FIGURE 1



LEGEND

- SURVEY AREA: EM61 DATA ACQUIRED ALONG X-AXIS OR Y-AXIS TRENDING LINES SPACED 5 FEET APART
- BUILDING OR STRUCTURE
- BOLLARD
- GUY WIRE
- STORE SIGN POLE
- X MANHOLE COVER
- ▲ ROAD SIGN
- ◆ UTILITY OR LAMP POLE
- WATER METER COVER
- CUT-OFF METAL PIPE
- STORM SEWER GRATE
- POSSIBLE UST, AS SUGGESTED BY GPR DATA



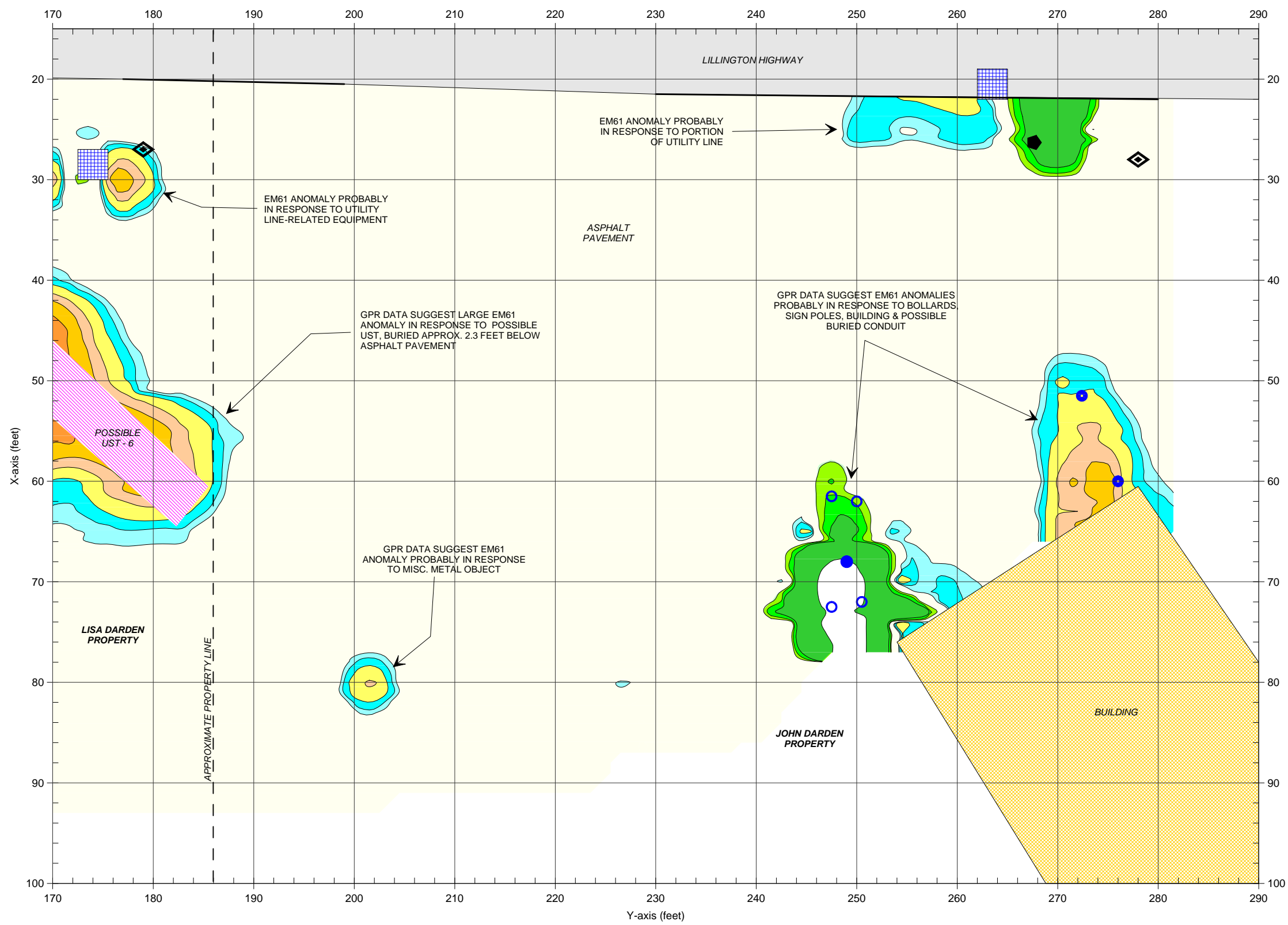
The contour plot shows the bottom coil (most sensitive) response of the EM61 instrument in millivolts (mV). The bottom coil response shows buried metallic objects regardless of size. The EM metal detection data were collected on July 27, 2010 using a Geonics EM61 instrument. Ground penetrating radar (GPR) data were acquired on August 3, 2010 using a Geophysical Survey Systems SIR 2000 instrument with a 400 MHz antenna.

The geophysical investigation suggests the surveyed portion of the site does not contain unknown, metallic USTs.

EM61 METAL DETECTION (BOTTOM COIL RESULTS) FIGURE 2

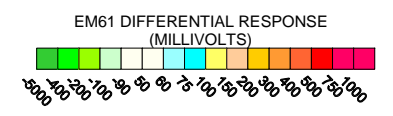
DATE	09/5/10	DRAWN	MJD	FIGURE	2010-176
CLIENT	AECOM ENVIRONMENT	SITE	JOHN DARDEN HEIRS PROPERTY	CITY	NORTH CAROLINA
TITLE	GEOPHYSICAL RESULTS				

PYRAMID
ENVIRONMENTAL & ENGINEERING, P.C.



LEGEND

- SURVEY AREA: EM61 DATA ACQUIRED ALONG X-AXIS OR Y-AXIS TRENDING LINES SPACED 5 FEET APART
- BUILDING OR STRUCTURE
- BOLLARD
- + GUY WIRE
- STORE SIGN POLE
- ⊗ MANHOLE COVER
- ⬛ ROAD SIGN
- ◊ UTILITY OR LAMP POLE
- ⊠ WATER METER COVER
- CUT-OFF METAL PIPE
- ⊠ STORM SEWER GRATE
- POSSIBLE UST, AS SUGGESTED BY GPR DATA



Note: The contour plot shows the differential response between the bottom and top coils of the EM61 instrument in millivolts (mV). The differential response focuses on larger, buried metallic objects such as drums and USTs and ignores smaller miscellaneous, buried, metal debris. The EM61 data were collected on July 27, 2010 using a Geonics EM61 instrument. Ground penetrating radar (GPR) data were acquired on August 3, 2010 using a Geophysical Survey Systems SIR 2000 instrument with a 400 MHz antenna.

The geophysical investigation suggests the surveyed portion of the site does not contain unknown, metallic USTs.

EM61 METAL DETECTION (DIFFERENTIAL RESULTS)

FIGURE 3

GRAPHIC SCALE IN FEET	
MJD	DRWN
09/5/10	09/5/10
DATE	DATE
LAY	DWG
	2010-176
FIGURE	
2010-176	
L.N.O.	
2010-176	
CLIENT	
AECOM ENVIRONMENT	
SITE	
JOHN DARDEN HEIRS PROPERTY	
CITY	
SPRING LAKE	
STATE	
NORTH CAROLINA	
TITLE	
GEOPHYSICAL RESULTS	

PYRAMID
ENVIRONMENTAL & ENGINEERING, P.C.

ATTACHMENT B

TEST BORING REPORT

PROJECT <u>JOHN DARDEN PROPERTY</u> CLIENT <u>NCDOT</u> PROJECT NUMBER <u>60158550 (WBS 36492.1.2)</u> CONTRACTOR <u>REGIONAL PROBING</u> EQUIPMENT <u>GEOPROBE</u>	BORING NUMBER <u>JD-1</u> PAGE <u>1</u> ELEVATION _____ DATE <u>8/11/2010</u> DRILLER <u>OPPER</u> PREPARED BY <u>BRANSON</u>
--	--

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS	
5.0			3.44		2" ASPHALT/GRAVEL, MEDIUM BROWN, LOOSE, COARSE-GRAINED SAND, DRY, NO ODOR.	
				4.37		AS ABOVE, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
				3.30		AS ABOVE, DRY, NO ODOR.
10.0						
				3.93		AS ABOVE, DRY, NO ODOR.
				4.17		AS ABOVE TO 9 FEET, BECOMES MEDIUM BROWN STIFF, SAND/CLAY, DRY, NO ODOR.
				3.05		AS ABOVE, DRY, NO ODOR.
15.0						
20.0						



TEST BORING REPORT

PROJECT <u>JOHN DARDEN PROPERTY</u> CLIENT <u>NCDOT</u> PROJECT NUMBER <u>60158550 (WBS 36492.1.2)</u> CONTRACTOR <u>REGIONAL PROBING</u> EQUIPMENT <u>GEOPROBE</u>	BORING NUMBER <u>JD-2</u> PAGE <u>1</u> ELEVATION _____ DATE <u>8/11/2010</u> DRILLER <u>OPPER</u> PREPARED BY <u>BRANSON</u>
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DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS	
5.0			2.26		2" ASPHALT/GRAVEL, MEDIUM BROWN, LOOSE, COARSE-GRAINED SAND, DRY, NO ODOR.	
				3.76		AS ABOVE, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
				3.10		AS ABOVE, DRY, NO ODOR.
				2.53		AS ABOVE, DRY, NO ODOR.
				1.38		MEDIUM BROWN SAND/CLAY, STIFF, DRY, NO ODOR.
10.0					BORING TERMINATED AT 10 FEET. NO GROUNDWATER ENCOUNTERED	
15.0						
20.0						



TEST BORING REPORT

PROJECT <u>JOHN DARDEN PROPERTY</u> CLIENT <u>NCDOT</u> PROJECT NUMBER <u>60158550 (WBS 36492.1.2)</u> CONTRACTOR <u>REGIONAL PROBING</u> EQUIPMENT <u>GEOPROBE</u>	BORING NUMBER <u>JD-3</u> PAGE <u>1</u> ELEVATION _____ DATE <u>8/11/2010</u> DRILLER <u>OPPER</u> PREPARED BY <u>BRANSON</u>
--	--

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS	
5.0			1.87		2" ASPHALT/GRAVEL, MEDIUM BROWN, LOOSE, COARSE-GRAINED SAND, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.	
			1.81		AS ABOVE, DRY, NO ODOR.	
			1.82		AS ABOVE, DRY, NO ODOR.	
			1.12		AS ABOVE TO 7 FEET, BECOMES MEDIUM BROWN SAND/CLAY, STIFF, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.	
			0.98		AS ABOVE, DRY, NO ODOR.	
	10.0					BORING TERMINATED AT 10 FEET. NO GROUNDWATER ENCOUNTERED
15.0						
20.0						



TEST BORING REPORT

PROJECT <u>JOHN DARDEN PROPERTY</u> CLIENT <u>NCDOT</u> PROJECT NUMBER <u>60158550 (WBS 36492.1.2)</u> CONTRACTOR <u>REGIONAL PROBING</u> EQUIPMENT <u>GEOPROBE</u>	BORING NUMBER <u>JD-4</u> PAGE <u>1</u> ELEVATION _____ DATE <u>8/11/2010</u> DRILLER <u>OPPER</u> PREPARED BY <u>BRANSON</u>
--	--

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0			2.31		2" ASPHALT/GRAVEL, MEDIUM BROWN, LOOSE, COARSE-GRAINED SAND, DRY, NO ODOR.
			1.77		AS ABOVE, DRY, NO ODOR.
			2.79		AS ABOVE, DRY, NO ODOR.
10.0			3.01		AS ABOVE TO 7 FEET, BECOMES MEDIUM BROWN SAND/CLAY, STIFF, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
			2.10		AS ABOVE, DRY, NO ODOR.
					BORING TERMINATED AT 10 FEET. NO GROUNDWATER ENCOUNTERED
15.0					
20.0					



ATTACHMENT C



PHOTO 1 - BORING IN PROPOSED R/W LOOKING SOUTH



PHOTO 2 - BORING IN PROPOSED R/W LOOKING NORTHEAST



PHOTO 3 - BORING WITHIN PROPOSED R/W LOOKING EAST



PHOTO 4 - BORING WITHIN PROPOSED R/W LOOKING EAST

ATTACHMENT D



Mike Branson
AECOM
701 Corporate Center Drive
Suite 475
Raleigh, NC 27607

Report Number: G1037-99

Client Project: NCDOT

Dear Mike Branson,

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. 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 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 Hager Aug. 19. 2010
Project Manager Date
Barbara Hager

SGS North America, Inc.
List of Reporting Abbreviations
And Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantification Limit (RL or MDL)

DF = Dilution Factor

Dup = Duplicate

D = Detected, but RPD is > 40% between results in dual column method.

E = Estimated concentration, exceeds calibration range.

J = Estimated concentration, below calibration range and above MDL

LCS(D) = Laboratory Control Spike (Duplicate)

MDL = Method Detection Limit

MS(D) = Matrix Spike (Duplicate)

PQL = Practical Quantitation Limit

RL/CL = Reporting Limit / Control Limit

RPD = Relative Percent Difference

UJ = Target analytes with recoveries that are $10\% < \%R < LCL$; # of MEs are allowable and compounds are not detected in the sample.

mg/kg = milligram per kilogram, ppm, parts per million

ug/kg = micrograms per kilogram, ppb, parts per billion

mg/L = milligram per liter, ppm, parts per million

ug/L = micrograms per liter, ppb, parts per billion

% Rec = Percent Recovery

% solids = Percent Solids

Special Notes:

- 1) Metals and mercury samples are digested with a hot block; see the standard operating procedure document for details.
- 2) Uncertainty for all reported data is less than or equal to 30 percent.

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: JD-1
 Client Project ID: NCDOT
 Lab Sample ID: G1037-99-1A
 Lab Project ID: G1037-99
 Report Basis: Dry Weight

Analyzed By: LMC
 Date Collected: 8/11/2010 10:10
 Date Received: 8/12/2010
 Matrix: Soil
 Solids 94.11

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.29	mg/Kg	1	08/19/10 07:16

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	98.9	98.9		70-130

Comments:

Batch Information

Analytical Batch: VP081810
 Analytical Method: 8015
 Instrument ID: GC4
 Analyst: LMC

Prep Method: 5035
 Initial Wt/Vol: 6.03 g
 Final Volume: 5 mL

Analyst: LMC

NC Certification #481

Reviewed By: MA
GRO.XLS

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: JD-2
 Client Project ID: NCDOT
 Lab Sample ID: G1037-99-2A
 Lab Project ID: G1037-99
 Report Basis: Dry Weight

Analyzed By: LMC
 Date Collected: 8/11/2010 10:30
 Date Received: 8/12/2010
 Matrix: Soil
 Solids 93.79

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.45	mg/Kg	1	08/19/10 07:43

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	94.5	94.5		70-130

Comments:

Batch Information

Analytical Batch: VP081810
 Analytical Method: 8015
 Instrument ID: GC4
 Analyst: LMC

Prep Method: 5035
 Initial Wt/Vol: 5.87 g
 Final Volume: 5 mL

Analyst: LMC

NC Certification #481

Reviewed By: [Signature]
GRO.XLS

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: JD-3
 Client Project ID: NCDOT
 Lab Sample ID: G1037-99-3A
 Lab Project ID: G1037-99
 Report Basis: Dry Weight

Analyzed By: LMC
 Date Collected: 8/11/2010 10:45
 Date Received: 8/12/2010
 Matrix: Soil
 Solids 95.90

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.76	mg/Kg	1	08/19/10 08:10

Surrogate Spike Results

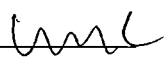
	Added	Result	Recovery	Flag	Limits
BFB	100	95.0	95.0		70-130

Comments:


Batch Information

Analytical Batch: VP081810
 Analytical Method: 8015
 Instrument ID: GC4
 Analyst: LMC

Prep Method: 5035
 Initial Wt/Vol: 5.43 g
 Final Volume: 5 mL

Analyst: 

NC Certification #481

Reviewed By: 
GRO.XLS

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: JD-4
 Client Project ID: NCDOT
 Lab Sample ID: G1037-99-4A
 Lab Project ID: G1037-99
 Report Basis: Dry Weight

Analyzed By: LMC
 Date Collected: 8/11/2010 11:00
 Date Received: 8/12/2010
 Matrix: Soil
 Solids 90.35

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.18	mg/Kg	1	08/19/10 08:37

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	95.7	95.7		70-130

Comments:

Batch Information

Analytical Batch: VP081810
 Analytical Method: 8015
 Instrument ID: GC4
 Analyst: LMC

Prep Method: 5035
 Initial Wt/Vol: 6.41 g
 Final Volume: 5 mL

Analyst: LMC

NC Certification #481

Reviewed By: RA
GRO.XLS

**Results for Total Petroleum Hydrocarbons
by GC/FID 8015**

Client Sample ID: JD-1
 Client Project ID: NCDOT
 Lab Sample ID: G1037-99-1D
 Lab Project ID: G1037-99

Date Collected: 8/11/2010 10:10
 Date Received: 8/12/2010
 Matrix: Soil
 Solids 94.11
 Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.39	mg/Kg	1	08/17/10 18:56
Surrogate Spike Results		Spike Added	Control Limits	Spike Result	Percent Recovery
OTP		40	40-140	35.4	88.6

Comments:

Batch Information


Analytical Batch: EP081710
 Analytical Method: 8015
 Instrument: GC6
 Analyst: DTF

Prep batch: 17206
 Prep Method: 3541
 Prep Date: 08/13/10
 Initial Prep Wt/Vol: 33.24 G
 Prep Final Vol: 10 mL

Analyst: FA

NC Certification #481

N.C. Certification #481

Reviewed By: 
 DRO.XLS

**Results for Total Petroleum Hydrocarbons
by GC/FID 8015**

Client Sample ID: JD-2
 Client Project ID: NCDOT
 Lab Sample ID: G1037-99-2D
 Lab Project ID: G1037-99

Date Collected: 8/11/2010 10:30
 Date Received: 8/12/2010
 Matrix: Soil
 Solids 93.79
 Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.32	mg/Kg	1	08/17/10 19:24
Surrogate Spike Results		Spike Added	Control Limits	Spike Result	Percent Recovery
OTP		40	40-140	33.9	84.9

Comments:

Batch Information


Analytical Batch: EP081710
 Analytical Method: 8015
 Instrument: GC6
 Analyst: DTF

Prep batch: 17206
 Prep Method: 3541
 Prep Date: 08/13/10
 Initial Prep Wt/Vol: 33.73 G
 Prep Final Vol: 10 mL

Analyst: FX

NC Certification #481

N.C. Certification #481

Reviewed By: 
 DRO.XLS
 Page 8 of 11

**Results for Total Petroleum Hydrocarbons
by GC/FID 8015**

Client Sample ID: JD-3
 Client Project ID: NCDOT
 Lab Sample ID: G1037-99-3D
 Lab Project ID: G1037-99

Date Collected: 8/11/2010 10:45
 Date Received: 8/12/2010
 Matrix: Soil
 Solids 95.90
 Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.15	mg/Kg	1	08/17/10 19:52
Surrogate Spike Results		Spike Added	Control Limits	Spike Result	Percent Recovery
OTP		40	40-140	32.9	82.2

Comments:

Batch Information

Analytical Batch: EP081710
 Analytical Method: 8015
 Instrument: GC6
 Analyst: DTF

Prep batch: 17206
 Prep Method: 3541
 Prep Date: 08/13/10
 Initial Prep Wt/Vol: 33.89 G
 Prep Final Vol: 10 mL

Analyst: FD

NC Certification #481

Reviewed By: [Signature]
 DRO.XLS

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: JD-4
 Client Project ID: NCDOT
 Lab Sample ID: G1037-99-4D
 Lab Project ID: G1037-99

Date Collected: 8/11/2010 11:00
 Date Received: 8/12/2010
 Matrix: Soil
 Solids 90.35
 Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	116	6.61	mg/Kg	1	08/17/10 22:12
Surrogate Spike Results		Spike Added	Control Limits	Spike Result	Percent Recovery
OTP		40	40-140	31.1	77.7

Comments:

Batch Information

Analytical Batch: EP081710
 Analytical Method: 8015
 Instrument: GC6
 Analyst: DTF

Prep batch: 17210
 Prep Method: 3541
 Prep Date: 08/16/10
 Initial Prep Wt/Vol: 33.5 G
 Prep Final Vol: 10 mL

Analyst: FA

NC Certification #481

Reviewed By: [Signature]
DRO.XLS



CHAIN OF CUSTODY RECORD
SGS North America Inc.

Locations Nationwide
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• New Jersey
• North Carolina
• Maryland
• New York
• Ohio
www.us.sgs.com

100614

1 CLIENT: AFCOM PHONE NO.: (919) 854 6238 SITE/PSID#: John DARDEN

CONTACT: Mike BRANSEN

PROJECT: NCDOT REPORTS TO: ABOVE

INVOICE TO: NCDOT FAX NO.: (919) 854 6259 QUOTE #: _____

2 P.O. NUMBER: W05 3649A.1.2

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE	Preservatives Used	Analysis Required	REMARKS
	JD-1	8/11/10	1010	501L	3	C	✓	✓	
	JD-2	8/11/10	1030	501L	3	C	✓	✓	
	JD-3	8/11/10	1045	501L	3	C	✓	✓	
	JD-4	8/11/10	1100	501L	3	C	✓	✓	

3

SGS Reference: G1037-99 PAGE 1 OF 1

4

Shipping Carrier: FedEx Samples Received Cold? (Circle) YES NO

Shipping Ticket No.: _____ Temperature °C: 6.3 5.9 APP

Special Deliverable Requirements: _____ Chain of Custody Seal: (Circle) INTACT BROKEN

Special Instructions: _____

Requested Turnaround Time: RUSH STD Date Needed _____

5

Collected/Relinquished By: (1) MB Bransen Date 8/11/10 Time 1730 Received By: _____

Relinquished By: (2) _____ Date _____ Time _____ Received By: _____

Relinquished By: (3) _____ Date _____ Time _____ Received By: _____

Relinquished By: (4) _____ Date 8/12/10 Time 9:45 Received By: [Signature]