

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
Matthews Oil Co., Inc., Property (Parcel #51)
107 S. 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 Matthews Oil Co., Inc., Property (Parcel #51) is located at 107 S. Bragg Boulevard in Spring Lake, Cumberland County, North Carolina. The property is situated on the east side of Bragg Boulevard and in the southeast 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 former gas station that, as of the date of this report, is being used as a check-cashing establishment. No information was available regarding former or existing underground storage tanks (USTs). No evidence of fill ports or vent pipes were observed during the site visit. The structure on the site consists of a block building with an asphalt parking lot (Figure 2). The NCDOT has advised that only the existing right-of-way/easement is the subject of this investigation (Figure 2). Because of the property's use as a former gas station, 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 Groundwater Incident Number 6476 has been assigned to the property (The address in the database is 113 S. Bragg Boulevard whereas the site address is 107 S. Bragg Boulevard. The NCDOT has advised that street numbers 107, 113, and 115 S. Bragg Boulevard are associated with Parcel 51). According to the database, “waste oil contam[ination is present]. The subsurface and city storm drain system [was affected] when surface runoff entered the on site waste oil storage tank.” No additional information was available. 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 several anomalies were detected with the geophysical survey. All of these anomalies were attributed to buried metallic debris, utility lines or conduits. A detailed report of findings and interpretations is presented in Attachment A.

Site Assessment Activities

On August 10, 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 (MO-1 through MO-4) were advanced within the right-of-way to a depth of 10 feet as shown in Figure 2 and Attachment B. All the borings were located to evaluate the conditions within the existing right-of-way along Bragg Boulevard and Spring Avenue (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 8 to 10 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. All the borings were terminated at a depth of 10 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, no petroleum hydrocarbon compounds identified as DRO and/or GRO were detected in any of the six soil samples collected from the site on August 10, 2010. Consequently, no concentrations are present above applicable action levels.

Conclusions and Recommendations

A Preliminary Site Assessment was conducted to evaluate the Matthews Oil Co., Inc., Property (Parcel #51) located at 107 S. Bragg Boulevard in Spring Lake, Cumberland County, North Carolina. A geophysical investigation was conducted to evaluate the site for unknown USTs. The investigation indicated that no metallic USTs were present within the existing right-of-way. Four soil borings were advanced to evaluate the soil conditions throughout the right-of-way. The laboratory reports of the soil samples from these borings suggest that no DRO and/or GRO concentrations were present above the action level in any of the four soil samples analyzed.

Mr. Ethan Caldwell
September 14, 2010
Page 4

AECOM appreciates the opportunity to work with the NCDOT on this project. Because no compounds were detected above the method detection limits in the soil samples, no notification is required to the NCDENR. If you have any questions, please contact me at (919) 854-6238.

Sincerely,



Michael W. Branson, P.G.
Project Manager

Attachments

c: Project File

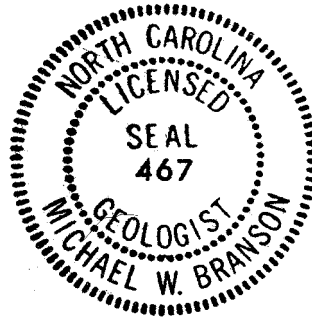


TABLE 1

SOIL FIELD SCREENING AND ANALYTICAL RESULTS
 MATTHEWS OIL CO., INC., PROPERTY (PARCEL #51)
 SPRING LAKE, CUMBERLAND COUNTY, NORTH CAROLINA
 NCDOT PROJECT NO. U-4444B
 WBS ELEMENT 36492.1.2
 AECOM PROJECT NO. 60158550

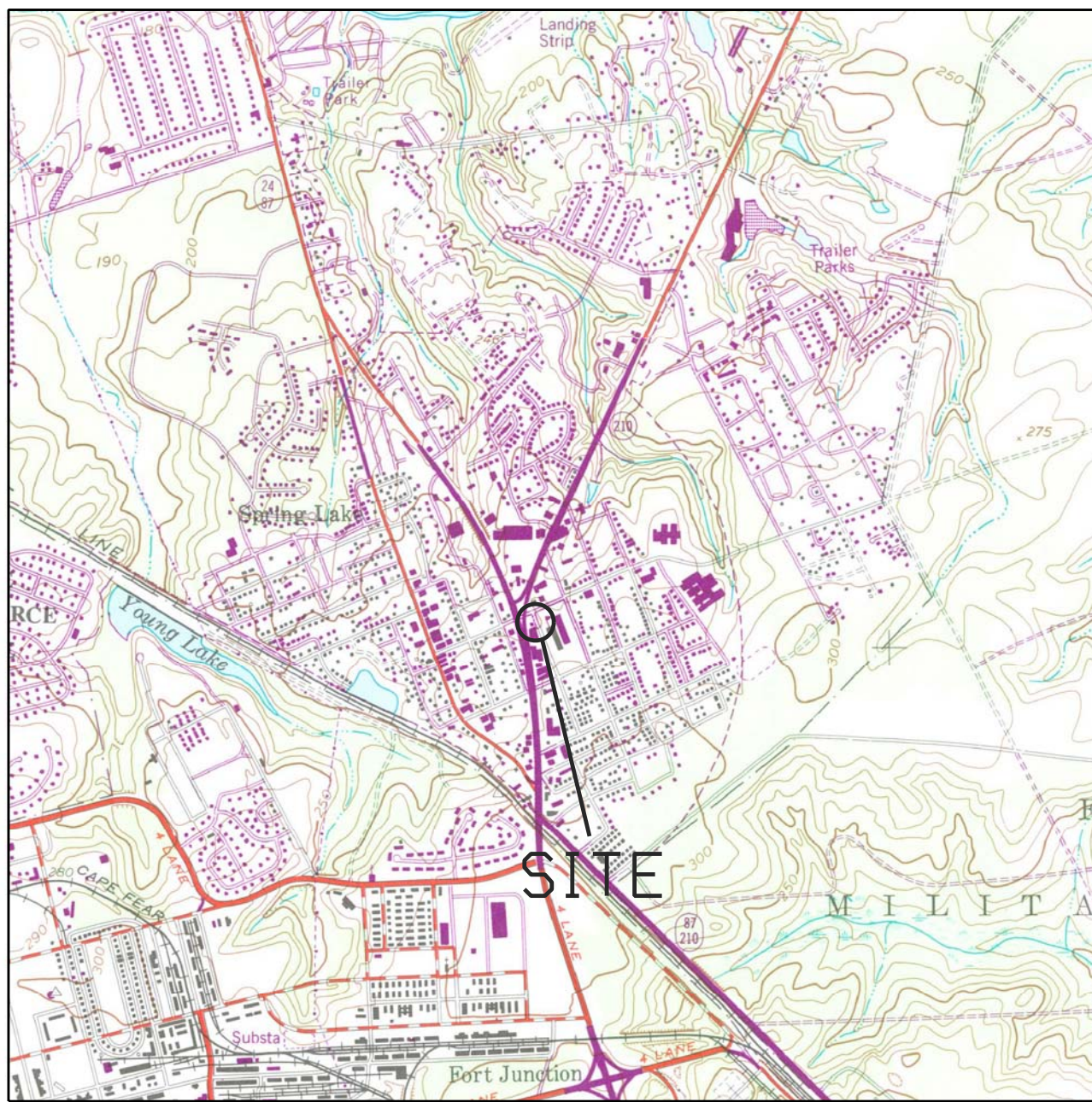
LOCATION	DEPTH (ft)	FID READING (ppm)	SAMPLE ID	ANALYTICAL RESULTS (mg/kg)	ASSUMED ACTION LEVEL (mg/kg)
MO-1	0 - 2	2.35			
	2 - 4	3.20			
	4 - 6	3.61			
	6 - 8	4.57	MO-1	DRO (BQL) GRO (BQL)	10 10
	8 - 10	3.74			
MO-2	0 - 2	3.60			
	2 - 4	4.77	MO-2	DRO (BQL) GRO (BQL)	10 10
	4 - 6	4.03			
	6 - 8	4.48			
	8 - 10	3.71			
MO-3	0 - 2	2.03			
	2 - 4	3.48			
	4 - 6	2.51			
	6 - 8	3.60	MO-3	DRO (BQL) GRO (BQL)	10 10
	8 - 10	2.18			
MO-4	0 - 2	4.32			
	2 - 4	5.18			
	4 - 6	4.02			
	6 - 8	5.86	MO-4	DRO (BQL) GRO (BQL)	10 10
	8 - 10	4.45			

Soil samples were collected on August 10, 2010.

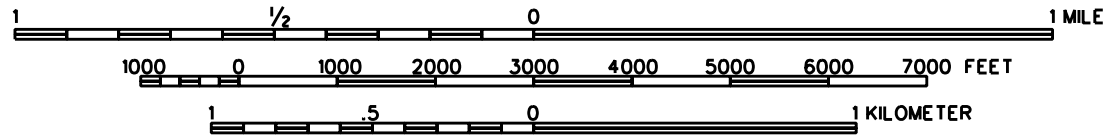
DRO - Diesel range organics.
 GRO - Gasoline range organics.
 BQL - Below quantitation limit.
 ppm - parts per million.
 mg/kg - milligrams per kilogram.



FIGURES



SCALE 1:24,000

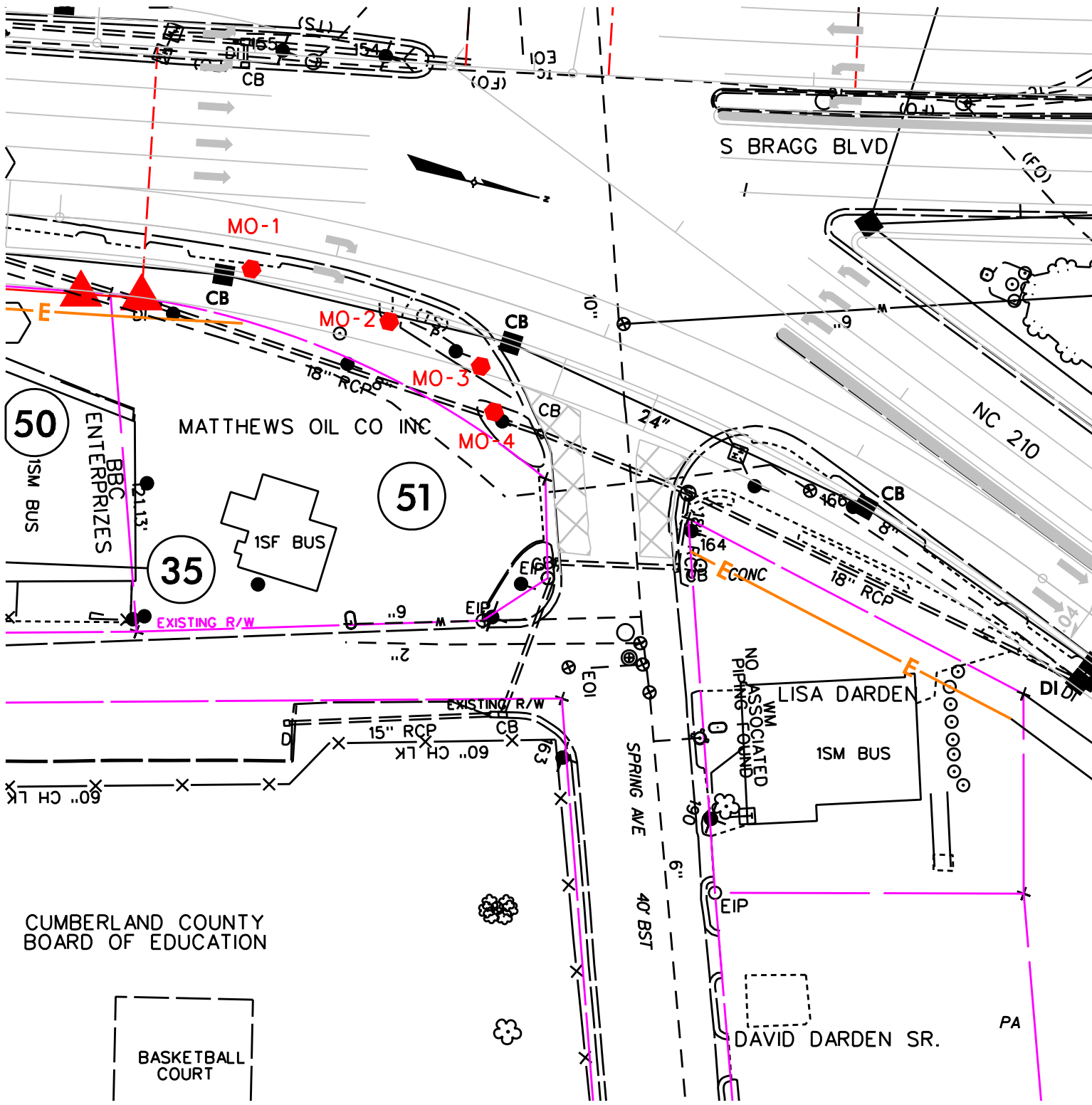


SOURCE: U.S. GEOLOGICAL SURVEY 7.5 MIN QUADRANGLE: MANCHESTER, NC (REV 1987)

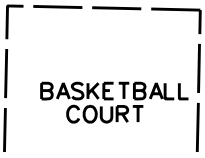


FIGURE 1
VICINITY MAP
MATTHEWS OIL CO., INC., PROPERTY (PARCEL #51)
SPRING LAKE, CUMBERLAND COUNTY NORTH CAROLINA
AUGUST 2010

60158550



CUMBERLAND COUNTY BOARD OF EDUCATION



LEGEND

MO-1 SOIL SAMPLE LOCATION AND IDENTIFICATION

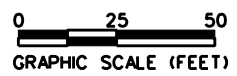


FIGURE 2
SITE MAP

MATTHEWS OIL CO., INC., PROPERTY (PARCEL #51)
SPRING LAKE, CUMBERLAND COUNTY, NORTH CAROLINA

AUGUST 2010

60158550

ATTACHMENT A

GEOPHYSICAL INVESTIGATION REPORT

EM61 SURVEYS


MATTHEWS OIL COMPANY INC. SITE (PARCEL 51)

**Lillington Highway
Spring Lake, North Carolina**

September 6, 2010

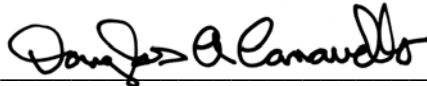
**Report prepared for: Michael W. Branson, PG
AECOM Environment
701 Corporate Center Drive, Suite 475
Raleigh, North Carolina 27607**

Prepared by:



Mark J. Denil, P.G.

Reviewed by:



Douglas Canavello, P.G.

**PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.
P.O. Box 16265
GREENSBORO, NC 27416-0265
(336) 335-3174**

AECOM Environment
GEOPHYSICAL INVESTIGATION REPORT
MATTHEWS OIL COMPANY INC. SITE (PARCEL 51)
Spring Lake, North Carolina

<u>TABLE OF CONTENTS</u>		<u>PAGE</u>
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2.0 FIELD METHODOLOGY		1
3.0 DISCUSSION OF RESULTS		2
4.0 SUMMARY & CONCLUSIONS		3
5.0 LIMITATIONS		3

FIGURES

Figure 1	Geophysical Equipment & Site Photographs
Figure 2	EM61 Metal Detection Results

1.0 INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for AECOM Environmental across the proposed Right-of-Way (ROW) area at the Matthews Oil Company Inc. site (Parcel 51) located along the easterly side of Lillington Highway at the intersection of Lillington Highway and Bragg Boulevard in Spring Lake, North Carolina. Conducted on July 22, 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 Matthews Oil Company Inc. site consists of a small vacant office building surrounded by asphalt pavement and the proposed ROW area encompasses the asphalt pavement between the building and Lillington Highway. The proposed ROW area (geophysical survey area) has a maximum length and width of 160 feet and 60 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 Parcel 51 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 performed on July 22, 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.

Due to an absence of metal detection anomalies that may be in response to potential metallic USTs, ground penetrating radar (GPR) surveys were not conducted at this site. Contour plots of the EM61 bottom coil and differential results are presented in **Figure 2**. 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=30 Y=145, X=55 Y=161, X=60 Y=28, and X=70 Y=179 are probably in response to a buried utility lines or conduits. The series of bottom coil anomalies recorded along grid line X=40 from Y=65 to Y=120 are possibly in response to portions of a buried line or conduit.

The EM61 differential anomalies centered near grid coordinates X=20 Y=105, X=27 Y=133 and X=35 Y=95 are probably in response to road signs, large business sign poles and utility poles. The differential anomalies centered near grid coordinates X=40 Y=27 and X=48 Y=167 are probably in response to storm sewer grates. The low amplitude differential anomaly centered near grid

coordinates X=70 Y=140 is probably in response to a small, miscellaneous metal object. The geophysical investigation suggests the proposed ROW area at Parcel 51 does not contain unknown, metallic USTs.

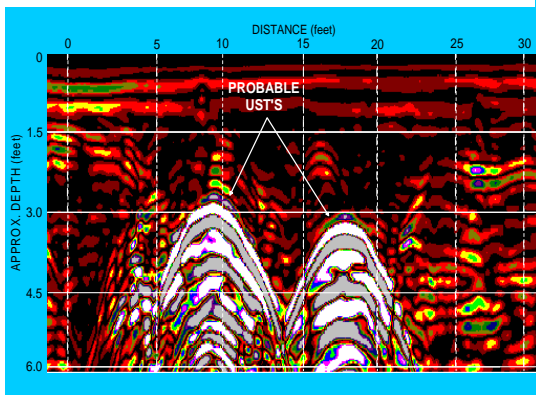
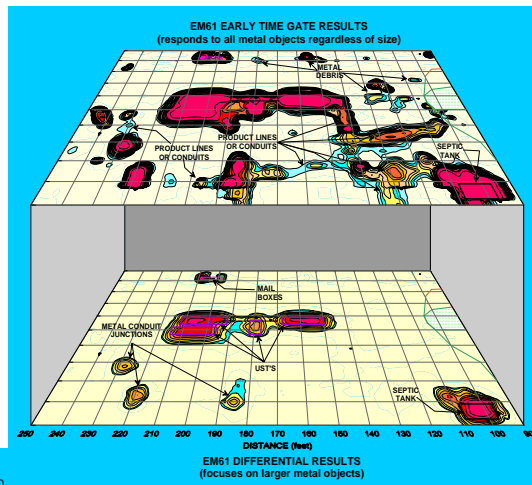
4.0 SUMMARY & CONCLUSIONS

Our evaluation of the EM61 data collected across the proposed ROW area at the Matthews Oil Company Inc. site (Parcel 51) located along the east side of Lillington Highway in Spring Lake, North Carolina, provides the following summary and conclusions:

- The EM61 investigation provided reliable results for the detection of metallic USTs within the surveyed portion of the site.
- The linear EM61 bottom coil anomalies intersecting grid coordinates X=30 Y=145, X=55 Y=161, X=60 Y=28, and X=70 Y=179 are probably in response to buried utility lines or conduits.
- The EM61 differential anomalies centered near grid coordinates X=20 Y=105, X=27 Y=133 and X=35 Y=95 are probably in response to road signs, large business sign poles and utility poles.
- The geophysical investigation suggests the proposed ROW area at Parcel 51 does not contain unknown, metallic USTs.

5.0 LIMITATIONS

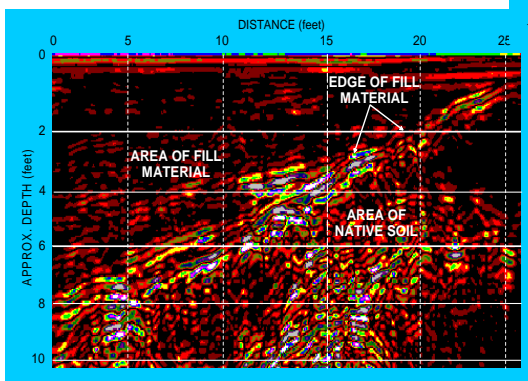
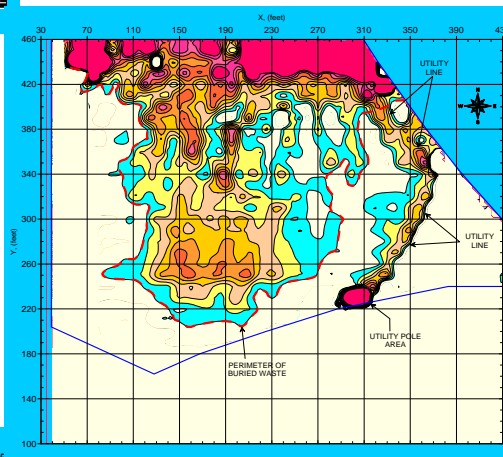
The EM61 investigation has been performed and this report prepared for AECOM Environmental in accordance with generally accepted guidelines for EM61 surveys. It is generally recognized that the results of the EM61 survey are non-unique and may not represent actual subsurface conditions. The EM61 results 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.



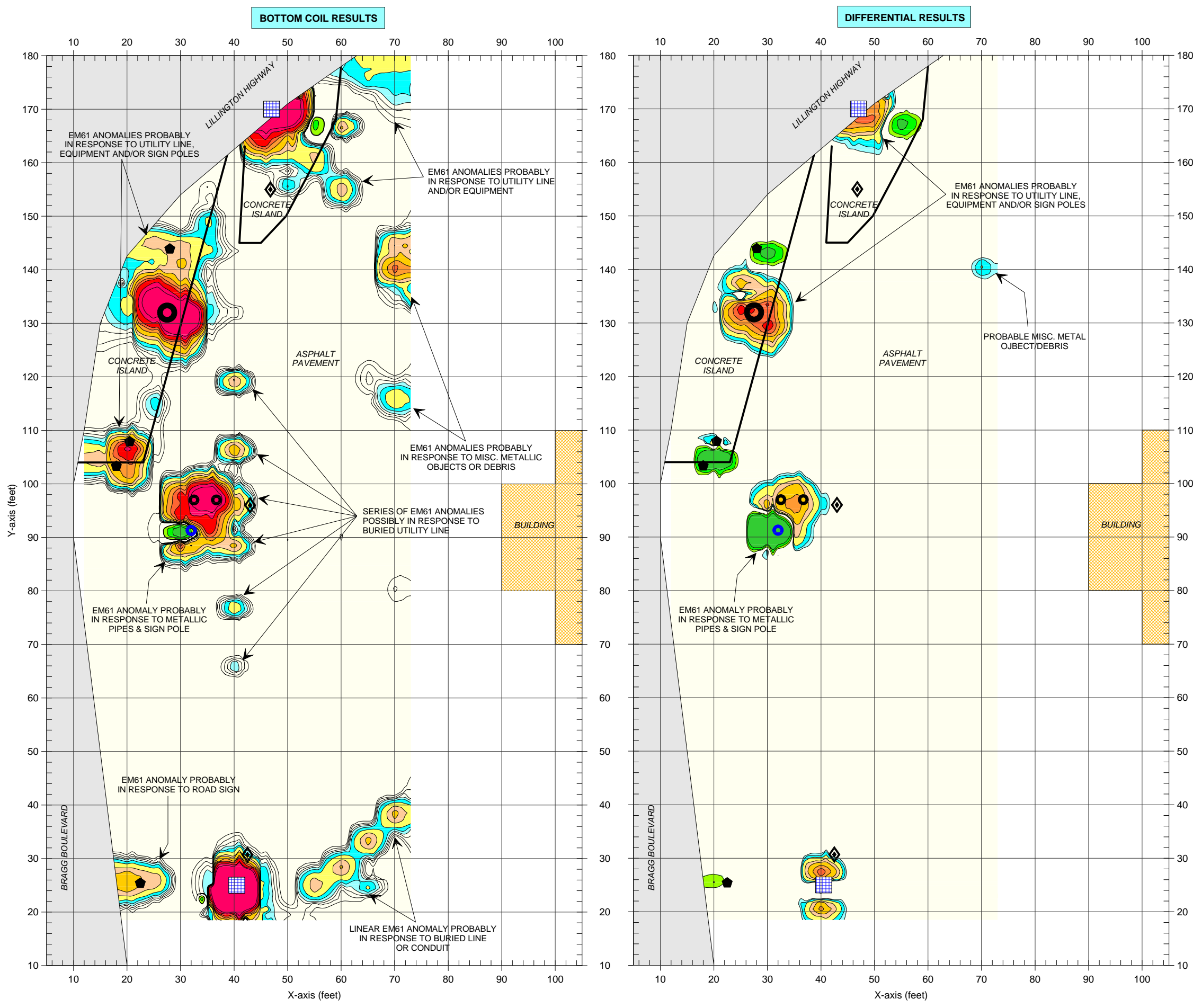


The photograph shows the Geonics EM61 metal detector that was used to conduct the metal detection survey across the proposed ROW area at the Matthews Oil Company Inc. property on July 22, 2010.



The photograph shows the proposed ROW area at the Matthews Oil Company Inc. property located at the intersection of South Bragg Boulevard and Lillington Highway in Spring Lake, North Carolina. The photograph is viewed in a northerly direction.

CLIENT	AECOM ENVIRONMENT		DATE	09/01/10	BY	MJD
SITE	MATTHEWS OIL CO. INC. PROPERTY (PARCEL 51)		LAY		CHKD	
CITY	SPRING LAKE	STATE	NORTH CAROLINA	ENG		
TITLE	GEOPHYSICAL RESULTS		PLAC	2010-176	PROJ	



LEGEND

- SURVEY AREA: EM61 DATA ACQUIRED ALONG X-AXIS OR Y-AXIS TRENDING SPACED 5 FEET APART
- BUILDING
- METAL BUSINESS SIGN POLE
- LARGE METAL POLE OR PIPE
- ROAD SIGN
- STORM SEWER GRATE

EM61 METAL DETECTION RESPONSE (MILLIVOLTS)

The contour plots show the bottom coil (most sensitive) response and the differential response of the EM61 instrument in millivolts (mV). The bottom coil response shows buried metallic objects regardless of size. The differential response focuses on larger, buried metallic objects such as drums and USTs and ignores smaller miscellaneous, buried, metal debris. The EM61 survey was collected on July 22, 2010 using a Geonics EM61 instrument.

Due to an absence of EM61 differential anomalies that could represent potential metallic UST locations, ground penetrating radar (GPR) surveys were not conducted at this site. The geophysical investigation suggests the proposed ROW area of the site does not contain metallic USTs.

EM61 METAL DETECTION RESULTS

FIGURE 2

CLIENT	MJD	DATE	LNO.	FIGURE	LNO.
ACOM ENVIRONMENT	MJD	09/02/10	2010-176	FIGURE	2010-176
MATTHEWS OIL CO. INC. PROPERTY (PARCEL 51)	DRWN	LAY	DWG	FIGURE	2010-176
SPRING LAKE	CHKO				
NORTH CAROLINA					
STATE					
GEOPHYSICAL RESULTS					

PYRAMID
ENVIRONMENTAL & ENGINEERING, P.C.

ATTACHMENT B

TEST BORING REPORT

PROJECT MATTHEWS OIL CO., INC., PROPERTY (PARCEL 51)

BORING NUMBER MO-1

CLIENT NCDOT

PAGE 1

PROJECT NUMBER 60158550 (WBS 36492.1.2)

ELEVATION _____

CONTRACTOR REGIONAL PROBING

DATE 8/10/2010

EQUIPMENT GEOPROBE

DRILLER OPPER

PREPARED BY BRANSON

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0			2.35		2" ASPHALT/GRAVEL, MEDIUM BROWN, LOOSE, COARSE-GRAINED SAND, DRY, NO ODOR.
			3.20		AS ABOVE, DRY, NO ODOR.
			3.61		AS ABOVE, DRY, NO ODOR.
10.0			4.57		AS ABOVE, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
			3.74		AS ABOVE, DRY, NO ODOR.
15.0					
20.0					



TEST BORING REPORT

PROJECT MATTHEWS OIL CO., INC., PROPERTY (PARCEL 51)

CLIENT NCDOT

PROJECT NUMBER 60158550 (WBS 36492.1.2)

CONTRACTOR REGIONAL PROBING

EQUIPMENT GEOPROBE

BORING NUMBER MO-2

PAGE 1

ELEVATION _____

DATE 8/10/2010

DRILLER OPPER

PREPARED BY BRANSON

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0			3.60		2" ASPHALT/GRAVEL, MEDIUM BROWN, LOOSE, COARSE-GRAINED SAND, DRY, NO ODOR.
			4.77		AS ABOVE, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
			4.03		AS ABOVE, DRY, NO ODOR.
10.0					
			4.48		AS ABOVE, DRY, NO ODOR.
			3.71		AS ABOVE, DRY, NO ODOR.
15.0					
20.0					



TEST BORING REPORT

PROJECT MATTHEWS OIL CO., INC., PROPERTY (PARCEL 51)
CLIENT NCDOT
PROJECT NUMBER 60158550 (WBS 36492.1.2)
CONTRACTOR REGIONAL PROBING
EQUIPMENT GEOPROBE

BORING NUMBER MO-3
PAGE 1
ELEVATION _____
DATE 8/10/2010
DRILLER OPPER
PREPARED BY BRANSON

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
5.0			2.03		MEDIUM BROWN, LOOSE, COARSE-GRAINED SAND, DRY, NO ODOR.
			3.48		AS ABOVE, DRY, NO ODOR.
			2.51		AS ABOVE, DRY, NO ODOR.
10.0			3.60		AS ABOVE, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
			2.18		MEDIUM BROWN SAND/CLAY, STIFF, DRY, NO ODOR.
					BORING TERMINATED AT 10 FEET. NO GROUNDWATER ENCOUNTERED
15.0					
20.0					



TEST BORING REPORT

PROJECT MATTHEWS OIL CO., INC., PROPERTY (PARCEL 51)

BORING NUMBER MO-4

CLIENT NCDOT

PAGE 1

PROJECT NUMBER 60158550 (WBS 36492.1.2)

ELEVATION _____

CONTRACTOR REGIONAL PROBING

DATE 8/10/2010

EQUIPMENT GEOPROBE

DRILLER OPPER

PREPARED BY BRANSON

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS	
5.0			4.32		MEDIUM BROWN, LOOSE, COARSE-GRAINED SAND, DRY, NO ODOR.	
				5.18		AS ABOVE, DRY, NO ODOR.
				4.02		AS ABOVE, DRY, NO ODOR.
				5.86		AS ABOVE, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
				4.45		MEDIUM BROWN SAND/CLAY, STIFF, DRY, NO ODOR.
10.0						
15.0						
20.0						



ATTACHMENT C



PHOTO 1 - BORING IN PROPOSED R/W LOOKING NORTHEAST



PHOTO 2 - BORINGS IN PROPOSED R/W LOOKING SOUTH



PHOTO 3 - BORINGS WITHIN PROPOSED R/W LOOKING EAST

ATTACHMENT D



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

Report Number: G1037-94

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.

A handwritten signature in cursive that reads "Barbara Hager" followed by "Aug. 18. 2010". The signature is written over a horizontal line.

Project Manager
Barbara Hager

Date

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: MO-1
 Client Project ID: NCDOT
 Lab Sample ID: G1037-94-1B
 Lab Project ID: G1037-94
 Report Basis: Dry Weight

Analyzed By: LMC
 Date Collected: 8/10/2010 13:30
 Date Received: 8/11/2010
 Matrix: Soil
 Solids 94.43

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.84	mg/Kg	1	08/17/10 13:29

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	96.0	96.0		70-130

Comments:

Batch Information

Analytical Batch: VP081710
 Analytical Method: 8015
 Instrument ID: GC4
 Analyst: LMC

Prep Method: 5035
 Initial Wt/Vol: 5.44 g
 Final Volume: 5 mL

Analyst: LMC

NC Certification #481

Reviewed By: LMC
GRO.XLS

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: MO-2
 Client Project ID: NCDOT
 Lab Sample ID: G1037-94-2B
 Lab Project ID: G1037-94
 Report Basis: Dry Weight

Analyzed By: LMC
 Date Collected: 8/10/2010 13:45
 Date Received: 8/11/2010
 Matrix: Soil
 Solids 94.37

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.73	mg/Kg	1	08/17/10 13:56

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	95.8	95.8		70-130

Comments:

Batch Information

Analytical Batch: VP081710
 Analytical Method: 8015
 Instrument ID: GC4
 Analyst: LMC

Prep Method: 5035
 Initial Wt/Vol: 5.55 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: MO-3
 Client Project ID: NCDOT
 Lab Sample ID: G1037-94-3B
 Lab Project ID: G1037-94
 Report Basis: Dry Weight

Analyzed By: LMC
 Date Collected: 8/10/2010 14:00
 Date Received: 8/11/2010
 Matrix: Soil
 Solids 96.37

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.58	mg/Kg	1	08/17/10 14:23

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	96.1	96.1		70-130

Comments:

Batch Information

Analytical Batch: VP081710
 Analytical Method: 8015
 Instrument ID: GC4
 Analyst: LMC

Prep Method: 5035
 Initial Wt/Vol: 5.58 g
 Final Volume: 5 mL

Analyst: LMC

NC Certification #481

Reviewed By: LMC
GRO.XLS

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: MO-4
 Client Project ID: NCDOT
 Lab Sample ID: G1037-94-4B
 Lab Project ID: G1037-94
 Report Basis: Dry Weight

Analyzed By: LMC
 Date Collected: 8/10/2010 14:10
 Date Received: 8/11/2010
 Matrix: Soil
 Solids 96.62

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.60	mg/Kg	1	08/17/10 14:51

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	97.4	97.4		70-130

Comments:

Batch Information

Analytical Batch: VP081710
 Analytical Method: 8015
 Instrument ID: GC4
 Analyst: LMC

Prep Method: 5035
 Initial Wt/Vol: 5.54 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: MO-1
Client Project ID: NCDOT
Lab Sample ID: G1037-94-1D
Lab Project ID: G1037-94

Date Collected: 8/10/2010 13:30
Date Received: 8/11/2010
Matrix: Soil
Solids 94.43
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.57	mg/Kg	1	08/17/10 04:22
Surrogate Spike Results		Spike Added	Control Limits	Spike Result	Percent Recovery
OTP		40	40-140	32.2	80.4

Comments:


Batch Information

Analytical Batch: EP081610
Analytical Method: 8015
Instrument: GC6
Analyst: DTF

Prep batch: 17205
Prep Method: 3541
Prep Date: 08/13/10
Initial Prep Wt/Vol: 32.23 G
Prep Final Vol: 10 mL

Analyst: FX

NC Certification #481

Reviewed By: 
DRO.XLS

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: MO-2
 Client Project ID: NCDOT
 Lab Sample ID: G1037-94-2D
 Lab Project ID: G1037-94

Date Collected: 8/10/2010 13:45
 Date Received: 8/11/2010
 Matrix: Soil
 Solids 94.37
 Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.44	mg/Kg	1	08/17/10 04:50
Surrogate Spike Results		Spike Added	Control Limits	Spike Result	Percent Recovery
OTP		40	40-140	34.4	86

Comments:

Batch Information


Analytical Batch: EP081610
 Analytical Method: 8015
 Instrument: GC6
 Analyst: DTF

Prep batch: 17205
 Prep Method: 3541
 Prep Date: 08/13/10
 Initial Prep Wt/Vol: 32.92 G
 Prep Final Vol: 10 mL

Analyst: FX

NC Certification #481

N.C. Certification #481

Reviewed By: 
 DRO.XLS

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: MO-3
 Client Project ID: NCDOT
 Lab Sample ID: G1037-94-3D
 Lab Project ID: G1037-94

Date Collected: 8/10/2010 14:00
 Date Received: 8/11/2010
 Matrix: Soil
 Solids 96.37
 Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.08	mg/Kg	1	08/17/10 05:17
Surrogate Spike Results		Spike Added	Control Limits	Spike Result	Percent Recovery
OTP		40	40-140	29.9	74.7

Comments:

Batch Information

Analytical Batch: EP081610
 Analytical Method: 8015
 Instrument: GC6
 Analyst: DTF

Prep batch: 17205
 Prep Method: 3541
 Prep Date: 08/13/10
 Initial Prep Wt/Vol: 34.12 G
 Prep Final Vol: 10 mL

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

Client Sample ID: MO-4
 Client Project ID: NCDOT
 Lab Sample ID: G1037-94-4D
 Lab Project ID: G1037-94

Date Collected: 8/10/2010 14:10
 Date Received: 8/11/2010
 Matrix: Soil
 Solids 96.62
 Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.30	mg/Kg	1	08/17/10 05:45
Surrogate Spike Results		Spike Added	Control Limits	Spike Result	Percent Recovery
OTP		40	40-140	30.5	76.3

Comments:


Batch Information

Analytical Batch: EP081610
 Analytical Method: 8015
 Instrument: GC6
 Analyst: DTF

Prep batch: 17205
 Prep Method: 3541
 Prep Date: 08/13/10
 Initial Prep Wt/Vol: 32.86 G
 Prep Final Vol: 10 mL

Analyst: FX

NC Certification #481

Reviewed By: 
 DRO.XLS



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1 CLIENT: <u>AECOM</u> CONTACT: <u>MIKE BRANSON</u> PHONE NO.: <u>(919) 854 6238</u> PROJECT: <u>NEDOT</u> SITE/PWSID#: <u>MATTHEWS OIL</u> REPORTS TO: <u>ABOVE</u> FAX NO.: <u>(919) 854 6259</u> INVOICE TO: <u>NECRET</u> QUOTE #: _____ P.O. NUMBER: <u>WBS #36492.1.2</u>		SGS Reference: <u>G103794</u>		PAGE <u>1</u> OF <u>1</u>		
2		No CONTAINERS		Preservatives Used: <u>Meck</u> Analysis Required: <u>(3)</u> <u>GR0</u> <u>DR0</u>		
LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	SAMPLE TYPE	REMARKS
	<u>MO-1</u>	<u>8/10/10</u>	<u>1330</u>	<u>SOIL</u>	<u>C</u>	
	<u>MO-2</u>	<u>8/10/10</u>	<u>1345</u>	<u>SOIL</u>	<u>C</u>	
	<u>MO-3</u>	<u>8/10/10</u>	<u>1400</u>	<u>SOIL</u>	<u>C</u>	
	<u>MO-4</u>	<u>8/10/10</u>	<u>1410</u>	<u>SOIL</u>	<u>C</u>	
5 Collected/Relinquished By: (1) <u>MBranson</u>		Date	Time	Received By:	Shipping Carrier: <u>Fed Ex</u>	Samples Received Cold? (Circle) YES <u>(NO)</u>
Relinquished By: (2)		Date	Time	Received By:	Shipping Ticket No:	Temperature °C: <u>70.0c</u>
Relinquished By: (3)		Date	Time	Received By:	Special Deliverable Requirements:	Chain of Custody Seal: (Circle) <u>INTACT</u> <u>ABSENT</u>
Relinquished By: (4)		Date	Time	Received By:	Special Instructions:	
		Date	Time	Received By:	Requested Turnaround Time:	
		Date	Time	Received By:	<input type="checkbox"/> RUSH <input checked="" type="checkbox"/> <u>STD</u>	Date Needed

White - Retained by Lab
Pink - Retained by Client

200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
8500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557