

# LIMITED PRELIMINARY SITE ASSESSMENT



Parcel #002 Brenda Myers Kelly Property (Dick Kelly Truck Sales) 2801 North Liberty Street Winston-Salem, NC 27105

WBS Element # 34871.1.1 TIP # U-2826A FI Project No. ENMO050015.00

Prepared For:

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October 18, 2005

#### LIMITED PRELIMINARY SITE ASSESSMENT

#### Conducted on

Parcel #002
Brenda Myers Kelly Property
(Dick Kelly Truck Sales)
2801 North Liberty Street
Winston-Salem, NC 27105
NCDOT TIP #U-2826A
WBS Element # 34871.1.1
EI Project No. ENMO050015.00

For

Mr. Gregory A. Smith State of North Carolina Department of Transportation Geotechnical Engineering Unit GeoEnvironmental Section 1589 Mail Service Center Raleigh, NC 27699-1589

Issue Date: October 18, 2005

Robert M. Shaut Project Geologist/Manager

David C. Brewster, P.G. Principal Geologist

Signature

Signature

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#### 1.0 INTRODUCTION

Environmental Investigations, Inc. (EI) conducted a *Limited Preliminary Site Assessment* (PSA) on a parcel identified by the North Carolina Department of Transportation (NCDOT) as *Parcel # 002* that includes the *proposed* and *existing right-of-way* (ROW). The subject parcel is located northeast of the intersection of North Liberty Street and Indiana Avenue, Winston-Salem, North Carolina.

A business (truck sales) known as "Dick Kelly Truck Sales" is currently located on the subject parcel (adjacent to ROW). A report presented herein documents the findings of the PSA that was conducted within the prescribed area of study. For purposes of this report, the terms "subject property" and/or "site" include the *existing* NCDOT ROW and the *proposed* ROW, and/or the abutting property/parcel.

#### 1.1 Report Organization

Mr. Robert Michael Shaut an Environmental Geologist with EI conducted field activities on August 22, 2005. The report presented herein summarizes the scope of work conducted, discusses sampling activities, and presents findings, conclusions and our recommendations. Two (2) tables entitled "Summary of Soil Analytical Results" and "Summary of Groundwater Analytical Results" are presented in "Table 1" and "Table 2", respectively. A "Site Location Map", an "Aerial Photograph", and a "Site Map" are presented in Figures 1, 2, and 3, respectively. A compilation of "Site Photographs" are presented in Appendix A, a "Geophysical Report" is presented in Appendix B, "Soil Boring Logs" are included in Appendix C, while an "Analytical Laboratory Report" is presented in Appendix D, respectively.

#### 1.2 Background

EI received a "Request for Technical and Cost Proposal" (RFP), dated July 7, 2005 signed by Cyrus F. Parker, LG, GeoEnvironmental Project Manager with the NCDOT GeoTechnical Engineering Unit. The RFP solicited a technical and cost proposal to perform PSAs on a total of 10 parcels located within a NCDOT Highway Project, identified as WBS Element 34871.1.1, TIP # U-2826A, located in Winston-Salem, NC. The RFP outlined site information on each of the 10 parcels and NCDOT figures (Plan Sheets) were attached to the RFP. Mr. Gregory A. Smith, LG, PE, GeoEnvironmental Supervisor with the NCDOT, GeoTechnical Engineering Unit, GeoEnvironmental Section authorized EI to perform the PSAs, as documented in a "Notice to Proceed" dated July 28, 2005.

#### 1.3 Objectives

The objective of performing the PSAs was to investigate parcel histories, locate potential underground storage tanks (USTs), and determine if these systems or sources have impacted the subsurface within the area of study.

The study (PSA) conducted on the referenced parcel (Parcel #002 – Brenda Myers Kelly Property) was performed with a reasonable effort to investigate and quantify potentially petroleum-hydrocarbon residual impacted subsurface soils. However, findings documented in the report do not constitute a guarantee that all potential sources of environmental contamination have been assessed and subsequently analyzed.

This report is provided for the sole use of the NCDOT on the project for which it was prepared. All materials and information used for this project were obtained or provided to EI, Inc. Use of this report by any third parties other than the NCDOT will be at such party's sole risk. EI Inc. disclaims liability for any use of or reliance on this report by third parties.

# 1.4 Site History

The North Carolina Department of Environmental Health and Natural Resources (NCDENR), Division of Waste Management (DWM), Underground Storage Tank Section and the Aquifer Protection Division maintains environmental records of known and reported subsurface environmental incidents throughout the state of North Carolina. Based on research conducted by EI personnel, no known environmental incidents were filed with the aforementioned environmental agencies regarding the subject parcel with the current listed address. However, although no incident was reported for this parcel with the corresponding address, an UST petroleum release incident was reported on an adjacent parcel (2821 North Liberty Street), known as "Flynn's Amoco". For more details concerning this incident, see EI's Limited Site Assessment Report – Parcel # 003: Claudia Kelly Salisbury Property, dated October 12, 2005.

# 2.0 SCOPE OF WORK & ENVIRONMENTAL SERVICES

# 2.1 Requested Scope of Work

Documented in the *RFP*, the NCDOT requested the following scope of work:

- Investigate site histories.
- Locate USTs and determine approximate size and contents, if any.
- Determine if contaminated soils are present.
- Investigate all proposed drainage areas on the project.
- If contamination is evident, estimate the quantity of impacted soils and indicate the approximate area of soil contamination on a site map.
- If groundwater is encountered and the project manager suspects the possibility of groundwater contamination, obtain a sample for analysis by converting one of the soil borings to a temporary monitoring well.
- Prepare a set of NCDOT plansheets (11" x 17") as a separate deliverable showing a summary of suspected impacted areas of contamination.
- Prepare a report including field activities, findings, and recommendations for each site and submit to this office in triplicate.

#### 2.2 Scope of Services

To perform the requested scope-of-services, a geophysical survey was performed to identify potential UST systems, a field reconnaissance was performed to identify general site conditions, and Direct Push Technology (DPT) was utilized to collect soil samples and install a temporary groundwater well (piezometer) and collect subsequent groundwater samples on the subject property.

To complete the study on the subject parcel, EI performed the following scope of services:

 Limited oversight and supervision of a geophysical survey conducted within the area of study.

- Supervision, direction and oversight of the advancement of eight (8) soil test borings utilizing DPT methods to a total depth ranging between 20.0 and 35.0 feet below the land surface (bls) across the site in spatially measured targeted locations.
- Collection and submittal of eight (8) soil samples for laboratory analyses of total petroleum hydrocarbons (TPH) in the gasoline and diesel ranges.
- Supervised and directed the installation of one (1) temporary monitoring well (piezometer) on the subject site.
- Collected a groundwater sample from the temporary monitoring well for laboratory analyses of volatile organic compounds (VOCs).
- Photo documentation of pertinent site features.
- Preparation of this report in triplicate format, presenting our findings and conclusions along with our recommendations.

#### 3.0 SITE CHARACTERIZATION

#### 3.1 Site Location

A truck sales business known as "Dick Kelly Truck Sales" is currently located at 2801 North Liberty Street (northeast of the intersection of North Liberty Street and Indiana Avenue), Winston-Salem, (Forsyth County), North Carolina (Figures 1 and 2). The subject property is currently located immediately adjacent to the DOT ROW as identified in DOT's U-2826A Plan Sheet 4 and 5. Digital site photographs that depict the location of the subject property and pertinent site features are presented in Appendix A.

# 3.2 Property Ownership

According to the Forsyth County, North Carolina Tax Office Geo-Data Explorer web site, and the NCDOT, the subject property is currently owned by Brenda Myers Kelly. The property owners' address is 723 Polo Oaks Drive, Winston Salem, North Carolina, 27106-0. The parcel ID was listed on the web site as #6836-56-9500. The size of the parcel was listed as 0.95 acres.

# 3.3 Physical Setting

The subject site parcel has been improved to operate a truck sales business. The parcel consists of parking areas partially bounded by steel mesh fencing. Existing trucks, trailers, and a mobile home trailer are currently located within the parking areas. The surface of the parking areas are covered by either paved/broken asphalt, concrete and/or gravel, while the remaining portions of the parcel consists of landscaped and/or grassy areas. A grassy ditch is located along both the southern and western property boundaries between the subject parcel and 28<sup>th</sup> (Indiana) and Liberty Streets, respectively. See **Figure 3** for pertinent site features.

#### 3.3.1 Number and Capacities of USTs

Based on a geophysical investigation, which is discussed in further detail in Sections 4.1 and 4.2, indications of USTs were not observed within the *existing*, or *proposed* NCDOT ROW (See **Appendix B**) or the abutting parcel (Parcel 002).

# 3.4 Site Topography

Site observations and review of the Walkertown, NC United States Geological Survey (USGS) Topographic Quadrangle Map (1980) revealed that the subject site elevation ranges between approximately 950 feet and 958 feet above mean sea level (msl) (**Figure 1**). Topographically, the site is located on a topographic high, while depending on the location, surface water runoff appears to flow either southwest in the direction of an unidentified creek located approximately 625 feet from the parcel and north/northeast in the direction of Brushy Fork Creek located approximately 2,340 feet (780 yards) from the parcel.

October 18, 2005

# 3.5 Land Use & Surrounding Properties

The subject property is located inside the city limits of Winston-Salem, NC. Land use in the immediate vicinity of the site is characterized by commercial and industrial properties. The site is bounded on the north by Parcel #003 ("Dick Kelly Truck Sales"), to the south by 28<sup>th</sup> Street, to the east by US 52, and to the west by Liberty Street.

#### 4.0 SUBSURFACE INVESTIAGTION

# 4.1 Geophysical Survey

Schnabel Engineering South, based in Greensboro, North Carolina, was subcontracted to provide geophysical services on the subject site. The purpose of the geophysical survey was to locate potential metal UST systems on Parcel #002 including the *existing* and *proposed* ROW.

The contractor conducted an electromagnetic (EM) induction survey utilizing a Geonics EM61-MK2 instrument. Ground penetrating radar (GPR) investigations of selected EM61 anomalies were conducted using a Geophysical Surveys System SIR-2000 system equipped with a 400 MHz antenna. The geophysical contractor surveyed approximately 0.95 acres in total area.

# 4.2 Geophysical Survey Results

The geophysical results indicated several linear anomalies probably caused by buried utilities, anomalies caused by known above-ground metal features, and several smaller anomalies probably caused by relatively small, insignificant buried metal objects. Most of the observed anomalies not attributed to known cultural features were removed in the differential data set and were re-surveyed utilizing the GPR devices. The GPR data indicated the presence of several buried utilities, reinforced concrete, and buried metal. The GPR data **did not** indicate the presence of USTs in the chosen areas surveyed.

A detailed report documenting the geophysical survey activities and results of the study is included in **Appendix B**.

#### 4.3 Subsurface Soils Investigation

Subsurface Environmental Investigations, Inc., based in Statesville, North Carolina, was selected and subcontracted to provide Direct Push Technology (DPT) services. An EI Geologist directed and supervised the advancement of eight soil test borings (GP-1 through GP-8) across the property (for potential former UST system leaks, etc.).

The borings were advanced in order to evaluate the absence/presence of potential subsurface soil (vadose zone) impact and/or potential subsurface groundwater (petroleum smearing) impact associated with potential former petroleum releases. The soil borings were advanced to investigative total depths ranging from 20.0 feet to a depth of 35.0 feet bls.

Based on the absence of known former USTs or present USTs, EI selected to investigate the subsurface for the possible presence of subsurface petroleum contaminants by conducting a series of targeted soil locations in a symmetrical pattern in the area of proposed piping, and the balance

of the site parcel. These soil borings were advanced to investigate for potential migration of offsite residual petroleum hydrocarbon impact.

# 4.3.1 Soil Sample Collection

Based on the site conditions (i.e., absence of UST system, proposed drainage, etc.), one (1) soil sample each was collected for laboratory retention from all eight (8) of eight (8) soil test borings. Soil samples retained for laboratory analyses were shipped, via overnight courier service (Federal Express) to Paradigm Analytical Laboratory, for laboratory analytical testing. Dates and times of sample shipment may be referenced in the analytical Chain-of Custodies (COC) presented in **Appendix D**.

#### 4.3.2 Backfill Activities

At the completion of the exploratory subsurface advancement activities, the test borings were backfilled to surface grade and capped with either asphalt patch or concrete.

#### 4.3.3 Subsurface Soil Lithology

During boring advancement activities, soil samples were classified in the field by an EI geologist utilizing the Unified Soil Classification System (USCS). Subsurface soils encountered in the area of study were fairly consistent. A surface layer of asphalt or gravel was encountered overlying a gravel sub-base underlain by reddish brown silty CLAY (CL-CH) to a layer of approximately 4.0 to 6.0 feet bls, underlain by a layer of gold, tan fine to medium SILT (ML), which became saprolitic at depths ranging from 18.0 to the investigated depth of 35.0 feet bls. Detailed descriptions are presented in Soil Boring Logs included in **Appendix C**. The boring logs include an interpretation of subsurface conditions based on field samples.

### 4.4 Groundwater Investigation

# 4.4.1 Temporary Monitoring Well Installation

On August 22, 2005, soil test boring GP-2 was converted into a Type I (temporary) 1.0-inch diameter groundwater monitoring well (piezometer). The approximate location of the groundwater monitoring well is depicted in **Figure 3**. The well location was selected in the field based on site conditions and field indicators noted from adjacent soil borings and/or site conditions, and/or probable potentially suspect locations (ie., topographic location). The piezometer was advanced to the approximate investigated depth of 24.0 feet bls. Groundwater was measured after a period of at least 24 hours at 23.57 feet below the top of casing of GP-2 (flush-mount with ground surface) (9-2-05).

#### 4.4.2 Groundwater Sampling Activities

EI personnel collected a series of groundwater samples from the temporary well (piezometer) (GP-2) on September 2, 2005 for purposes of analytical testing. On September 6, 2005, the samples were submitted via overnight courier service to Paradigm Analytical Laboratories, for analytical laboratory testing.

# 4.4.3 Groundwater Laboratory Analyses

A groundwater sample "P2TW-1" (boring GP-2) was submitted for VOCs analysis by EPA Method 6230D + IPE & MTBE.

# 4.4.4 Monitoring Well Abandonment Activities

On September 8, 2005, a DPT subcontractor, (EnviroProbing, Inc.) abandoned the aforementioned temporary monitoring well (piezometer).

-1=GWS

# 5.0 LABORATORY TESTING AND RESULTS

# 5.1 Subsurface Soil Analytical Methods

A total of eight (8) soil samples ("P2GP1-20", "P2GP2-15", "P2GP3-15", "P2GP4-15", "P2GP5-15", "P2GP6-20", "P2GP7-20", and "P2GP8-20") were submitted for total petroleum hydrocarbons (TPH) analyses by GC/FID 8015 analyzing for the analytes: Gasoline Range Organics (GRO), and Diesel Range Organics (DRO). The analytes in the GRO range are utilized to extract volatile fuels such as gasoline, while the DRO range is utilized to extract less volatile petroleum products such as diesel fuel, #2 fuel oil, kerosene, and varsol.

# 5.2 Soil Laboratory Analyses Results

Diesel range organics were detected at 25.0 mg/kg in soil sample identified as "P2GP6-20". All of the remaining seven (7) soil samples did not detect concentrations of diesel or gasoline range organics at or above the method laboratory detection limits. The results of the analytical testing of the soil samples are tabulated and presented in **Table 1**. The complete laboratory results and COC Records are presented in **Appendix D**.

# 5.3 Groundwater Laboratory Analyses Results

The analyte benzene (a petroleum hydrocarbon constituent) was detected in the groundwater sample identified as "P2TW1" at concentrations of 0.738 ug/L (micrograms per liter or parts per billion). None of the remaining analytes showed concentrations at or above the method laboratory detection limits. Specific results are tabulated in **Table 2** and the complete laboratory report along with COC records is presented in **Appendix D**.

#### **6.0 SUMMARY OF FINDINGS**

EI has reviewed information gathered for the Limited PSA study including site reconnaissance activities, review of DOT plan sheets, review of site investigations including soil and groundwater collection activities, review of the geophysical investigation report, and review of the laboratory analyses report. Compiled below is a summarized list of the significant findings.

- The geophysical data **did not** indicate the presence of any potential suspected USTs located on the parcel or within the *proposed* or *existing* ROW.
- Petroleum product dispensers, parts or neither portions of UST systems, nor remnants of concrete pump islands were observed on the property.
- Analysis of one (1) subsurface soil sample ("P2GP6-15") collected in the central portion
  of the subject parcel situated outside of the existing ROW showed concentrations (25.0
  mg/kg) of DRO which are above the NCDENR action (reportable) limits (10.0 mg/kg).
  The remaining soil samples collected for analysis did not detect concentrations at or
  above the method laboratory detection limits.
- Groundwater beneath the site in the piezometer "GP-2" was measured at 23.57 feet below the top of casing (flush-mount with ground surface).
- Review of the groundwater analytical data indicated that the one (1) sample collected from piezometer GP-2 installed between the *proposed* and *existing* ROW **did not** detect concentrations of VOCs at or above the 15A NCAC 2L .0202 (g) Groundwater Quality Standards (Class GA).

#### 7.0 CONCLUSIONS AND RECOMMENDATIONS

EI personnel have reviewed information obtained during the Limited PSA conducted at the site and present the following conclusions and recommendations.

### **CONCLUSIONS**

#### Presence and Source of Contaminants

Minor residual petroleum hydrocarbon impact has been discovered within the vadose zone (unsaturated zone) beneath the subject property. The impact is situated between the DOT existing and proposed ROW located in the northwestern portion of Parcel #002. Based on the apparent absence of UST systems currently located on site, the exact source of contaminants is unknown. Likely sources of contamination may have been attributed to former USTs, former aboveground storage tanks (ASTs), aboveground spills from trucks (property is currently used for truck sales business).

# Quantity or Volume of Contaminants

It appears that the extent of residual petroleum hydrocarbon impact has affected a limited isolated area. Due to the isolation of contaminants, we estimate that the projected area would be confined to an areal extent of approximately 15.0 feet by 15.0 feet or less and the contaminants likely could potentially be present at depths from approximately 10.0 feet to 25.0 feet bls. Based on these projections, EI estimates that a volume of approximately 25 to 200 cubic yards of soil impacted by low levels of petroleum residuals may be present.

#### Groundwater Impact

Although a groundwater sample obtained from the property revealed very minor dissolved concentrations of petroleum constituents, since residual hydrocarbons were detected in close proximity to the shallow aquifer, the groundwater impact could potentially be more significant in various parts of the property. A delineation of groundwater impact was beyond the scope of study for this project.

#### Proposed Piping

Since proposed piping has not been planed for this property, no investigation was warranted.

Note: This report does not constitute a guarantee that all potential sources of environmental contamination have been assessed and subsequently analyzed.

# **RECOMMENDATIONS**

Based on the results of this study, EI recommends the following:

- Based on the detection of TPH concentrations above regulatory (DENR) reportable levels (10.0 mg/kg), the property owner should be notified and the detection of TPH concentrations is reportable.
- Removal of the secondary source contaminants (residual petroleum hydrocarbon impacted soils).

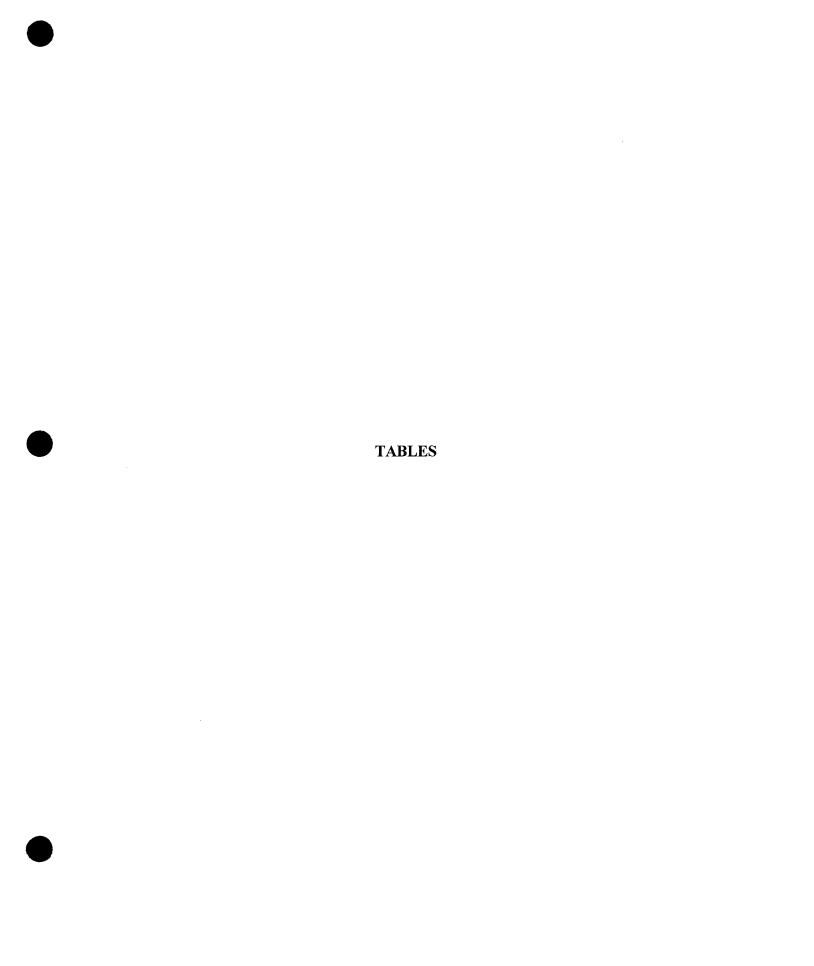


TABLE 1
Summary of Soil Analytical Results
Parcel #002 - Brenda Kelly Property
(Dick Kelly Truck Sales)
NCDOT - Forsyth
TIP#: U-2826A
WBS #34871.1.1
Winston-Salem, North Carolina
EI Project No. ENMO050015.00

					WWW.	Control of the Contro		-	The state of the s
Sample Point Identif	int identification	P2GP1-20	P2GP2-15	P2GP3-15	P2GP4-15	P2GP5-15	P2GP6-20	P2GP7-20	P2GP8-20
Sample	Sample Depth - Feet	18-20	13-15	13-15	13-15	13-15	18-20	18-20	18-20
San	Sample Date				8/22/	8/22/2005			
Field Screening Results	g Results-PID (ppm)	0.0	0.0	0.0	0.0	0:0	0.0	0:0	0:0
Laboratory Analysis	NCDENR (Volume II) Reportable Concentration (mg/kg)			Labor	atory Analyti	Laboratory Analytical Results (mg/kg)	ıg/kg)		
Prep Method 5035 - Gasoline Range Organics	10.0	BOL	BQL	BOL	BQL	BQL	BQL	BQL	BQL
Prep Method 3545 - Diesel Range Organics	10.0	BQL	BOL	BOL	BQL	BQL	25	BQL	BQL

LEGEND:

Bold & Italics Font = In Excess of NCDENR Reportable Concentrations

# TABLE 2 SUMMARY OF GROUNDWATER ANALYTICAL RESULTS Parcel # 002 - Brenda Kelly Property TIP #U-2826A WBS# 34871.1.1

Sample Identifica	P2TW1	
Sample Date	9/2/2005	
Groundwater De	23.57	
Compounds EPA Hothed (SMID)	2L Groundwater Standards (ug/L)	LABORATORY RESULTS (ug/L)
Benzene	1	0.738
Diisopropyl ether (DIPE)	NS	BQL
Ethylbenzene	550	BQL
Naphthalene	21	BQL
MTBE	200	BQL
Toluene	1000	BQL
Xylenes	530	BQL
All Remaining Analytes	NA	BQL

#### Legend:

Italics/Bold Font = In Excess of 15A NCAC 02L .0202 Groundwater Quality Standards

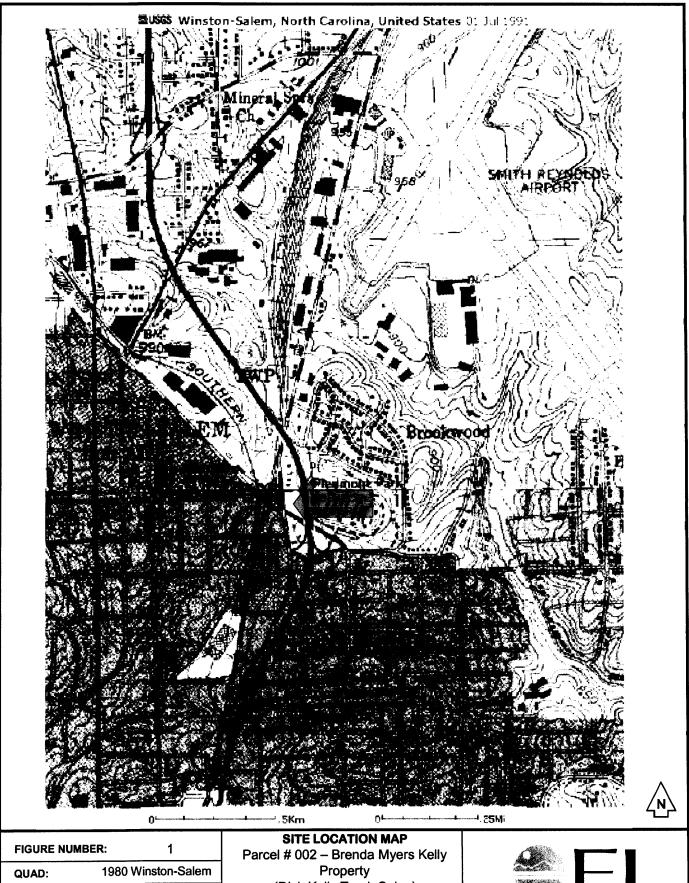
**BQL** = Below Quantitation Limits

NA = Not Applicable

NS = No Standard

Groundwater Depth measured from top of casing (flush-mount temporary well)

**FIGURES** 



PROJECT NUMBER: ENMO050015.00

SCALE:

As Shown

(Dick Kelly Truck Sales) 2801 North Liberty Street Winston-Salem, North Carolina



ENVIRONMENTAL INVESTIGATIONS, INC

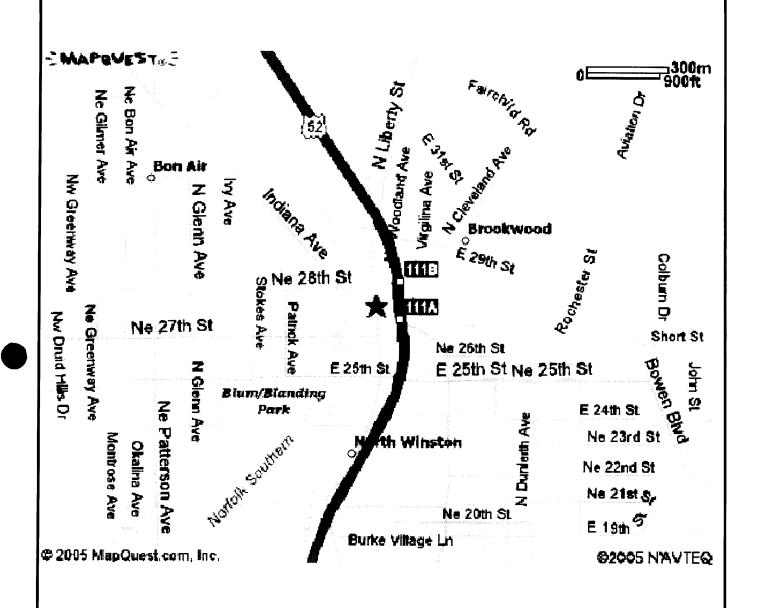




FIGURE NUM	IBER:	1A	
QUAD:	1980 W	/inston-Salem	

PROJECT NUMBER: ENMO050015.00

SCALE: As Shown

SITE LOCATION MAP
Parcel # 002 – Brenda Myers Kelly
Property
(Dick Kelly Truck Sales)
2801 North Liberty Street
Winston-Salem, North Carolina



**ENVIRONMENTAL INVESTIGATIONS, INC** 



0 Feet 261 SCALE 1:3141



FIGURE NUMBER: 2

QUAD: 1991 Winston-Salem

PROJECT NUMBER: ENMO050015.00

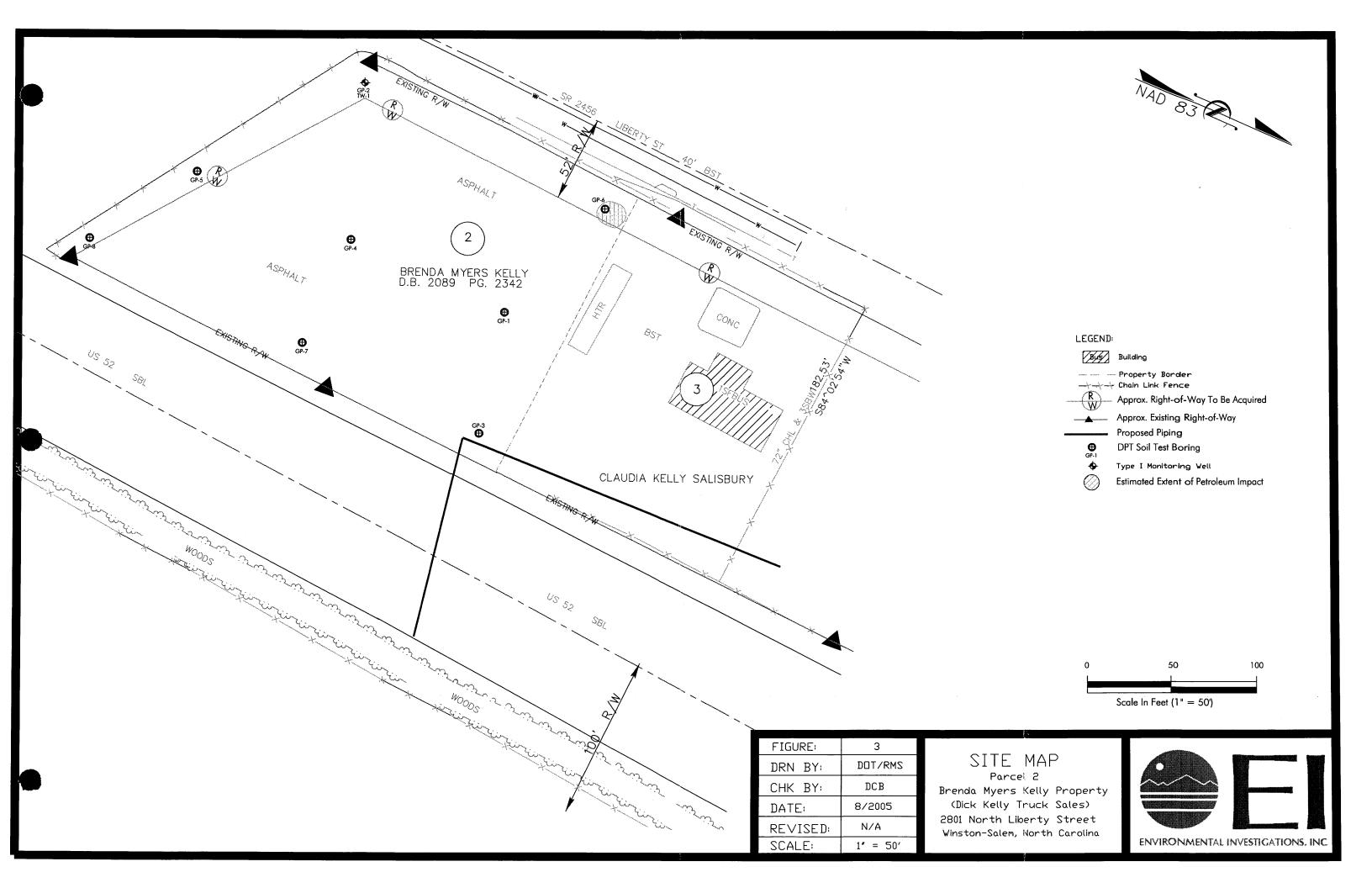
SCALE: AS SHOWN

**AERIAL PHOTOGRAPH** 

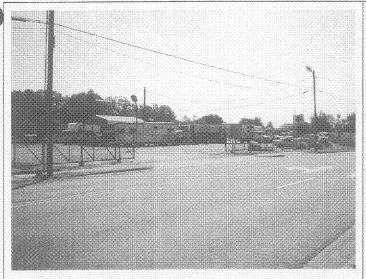
Parcel # 002 – Brenda Myers Kelly Property 2801 North Liberty Street Winston-Salem, North Carolina



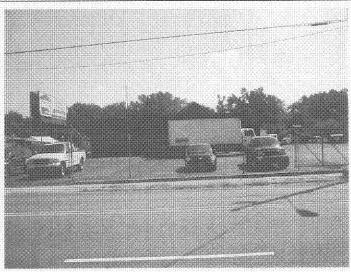
ENVIRONMENTAL INVESTIGATIONS, INC



# APPENDIX A SITE PHOTOGRAPHS



Photograph 1: View of Subject property.



Photograph 2: Subject Property from the west.



Photograph 3: View of subject property looking south.



Photograph 4: Looking west from the subject parcel.



Photograph 5: View of subject property (center of photo) looking southeast.



Photograph 6: View from subject property looking west across Liberty street.

# APPENDIX B GEOPHYSICAL REPORT



Phone (336) 274-9456 Fax (336) 274-9486 www.schnabel-eng.com

September 19, 2005

Mr. Darren Lockhart EI, Inc. 2101 Gateway Centre Boulevard, Suite 200 Morrisville, NC 27560

Via email (pdf)

RE:

WBS Element 34871.1.1, TIP U-2826A, Forsyth County

Replacement of Bridges 256 and 257 on US 52

Parcels 2, 3, 4, 5, and 6

SUBJECT:

Report on Geophysical Surveys for Locating Possible UST's on 5 Parcels

Schnabel Engineering Project No. 05211014.01-01

Dear Mr. Lockhart:

This letter contains our report on the geophysical surveys we conducted on the subject properties. We understand this letter report will be included as an appendix in your report to the NCDOT. The report includes 6 color figures.

# 1.0 INTRODUCTION

The work described in this report was conducted by Schnabel Engineering under our contract with the NCDOT. The work was conducted at the locations indicated by EI to support their environmental assessment of the subject parcels. The purpose of the geophysical surveys was to locate possible metal underground storage tanks (UST's) and associated product lines in the accessible areas of the sites.

Schnabel Engineering conducted geophysical surveys on August 10-13, 17, 19, 20, and 26, 2005, in the accessible areas of Parcels 2 and 3 (Dick Kelly), Parcel 4 (Sports Bar), Parcel 5 (Butcher Shop) and Parcel 6 (Vacant). Photographs of these parcels are included on Figure 1.

The geophysical investigation consisted of electromagnetic (EM) induction surveys using a Geonics EM61-MK2 instrument. The EM61 metal detector is used to locate metal objects buried up to about eight feet below ground surface. Ground-penetrating radar (GPR) investigations of selected EM61 anomalies were conducted using a Geophysical Survey Systems SIR-2000 system equipped with a 400 MHz antenna.

# 2.0 FIELD METHODOLOGY

#### 2.1 Location Control

Locations of geophysical data points were obtained using a sub-meter Trimble Pro-XRS DGPS system on Parcels 4, 5, and 6. An X-Y survey grid was set up on Parcels 2 and 3. References to direction and location in this report for Parcels 2 and 3 are based on this local site grid. References to direction and location in this report for Parcels 4, 5, and 6 are based on the US State Plane System, North Carolina Zone 3200, using the NAD 83 datum, with units in feet. The locations of existing site features (building, curbs, signs, etc.) were recorded for later correlation with the geophysical data and for location references to the NCDOT drawings.

# 2.2 Data Collection

The EM61 data were collected along parallel survey lines spaced approximately 2.5 feet apart. The EM61 and DGPS data were recorded digitally using a field computer and later transferred to a desktop computer for data processing. The GPR data were collected along survey lines spaced one to two feet apart in orthogonal directions over areas of reinforced concrete and over anomalous EM readings not attributed to cultural features. The GPR data were reviewed in the field to evaluate the

possible presence of UST's. The GPR data also were recorded digitally and later transferred to a desktop computer for further review.

Preliminary results were mailed overnight to EI on August 30, 2005.

# 3.0 DISCUSSION OF RESULTS

The contoured EM61 data are shown on Figures 2 through 6. The EM61 early time gate results are plotted on Figures 2 and 4. The early time gate data provide the most sensitive detection of metal object targets, regardless of size. Figures 3 and 5 show the difference between the response of the top and bottom coils of the EM61 instrument (differential response). The difference is taken to remove the effect of surface and very shallowly buried metallic objects. Typically, the differential response emphasizes anomalies from deeper and larger objects such as UST's. The EM61 early time gate and differential results are also shown at a scale of 1 inch = 100 feet on Figure65.

#### 3.1 Parcels 2 and 3

Parcels 2 and 3 are located at the northeast corner of the intersection of North Liberty Street and Indiana Avenue in Winston-Salem, NC. The combined site contains Dick Kelly's Trucks business. The EM61 results for Parcels 2 and 3 are shown on Figure 2 (early time gate) and Figure 3 (differential). The areas occupied by buildings, trailers, or other obstructions could not be surveyed. The early time gate results indicate several linear anomalies probably caused by buried utilities, anomalies caused by known above-ground metal features, and several smaller anomalies probably caused by relatively small, insignificant buried metal objects (Figure 2). Most of the observed anomalies not attributed to known cultural features are removed in the differential data set (Figure 3). GPR surveys were conducted in six areas to investigate significant EM61 differential anomalies not attributed to known cultural features. The GPR data indicated the presence of several buried utilities, reinforced concrete, and buried metal. The GPR data did not indicate the presence of UST's in the areas surveyed.

#### 3.2 Parcels 4, 5, and 6

Parcels 4, 5, and 6 are located immediately north of Parcels 2 and 3, along North Liberty Street in Winston-Salem, NC. Parcel 4 is currently occupied by a sports bar, Parcel 5 is currently occupied by a butcher shop, and Parcel 6 contains a vacant building. The EM61 results for Parcels 4, 5, and 6 are shown on Figure 4 (early time gate) and Figure 5 (differential). The areas occupied by buildings could not be surveyed. The early time gate results show a number of small, isolated anomalies probably caused by relatively small, insignificant buried metal objects, several linear anomalies apparently caused by buried utilities, and a number of anomalies caused by known site features (Figure 4). Most of the observed anomalies not attributed to known cultural features are removed in the differential data set (Figure 5). GPR surveys were conducted in five areas to investigate significant EM61 differential anomalies not attributed to known cultural features. The GPR data indicated the presence of buried metal and reinforced concrete. The GPR data did not indicate the presence of UST's in the areas surveyed. Two possible vent pipes were observed behind the building on Parcel 6; however, the GPR data did not indicate the presence of UST's at these locations.

# 4.0 CONCLUSIONS

Our evaluation of the geophysical data collected on Parcels 2 through 6 on Project U-2826A in Winston-Salem, NC indicate the following:

- The geophysical data indicate the presence of several buried utilities, buried metal objects, and reinforced concrete in the areas surveyed.
- The geophysical data do not indicate the presence UST's in the areas surveyed.

# 5.0 LIMITATIONS

These services have been performed and this report prepared for the North Carolina Department of Transportation and EI in accordance with generally accepted guidelines for conducting geophysical surveys. It is generally recognized that the results of geophysical surveys are non-unique and may not represent actual subsurface conditions.

Thank you for the opportunity to serve you on this project. Please call if you need additional information or have any questions.

Sincerely,

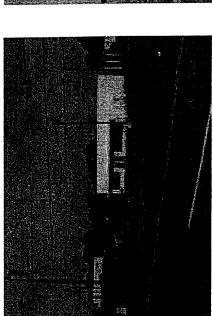
Edward (Ned) D. Billington, P.G.

Project Manager

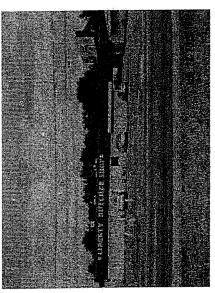


JS/NB

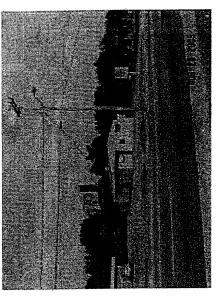
Attachment: Figures (6)
FILE: G:PROJECTS103211019 (NCDOT GEOPHYSICS 2003)/CORRESPONDENCE/CROUCH H&H LTR 2A - REPORT ON TASK 16 (1-2304AA, ROWAN) WITH FIGS DOC



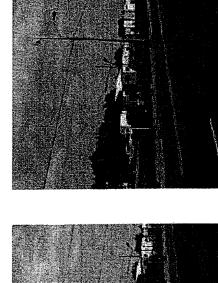
Parcel 6 - Vacant, looking northeast



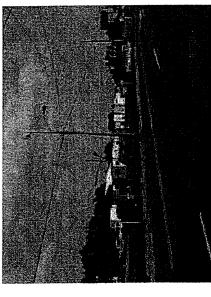
Percel 5 - Liberty Butcher Shop, looking east



Parcel 4 - Liberty Street Sports Bar, looking southeast.



Parcel 4 - Dick Kelly's Tracks, looking southeast



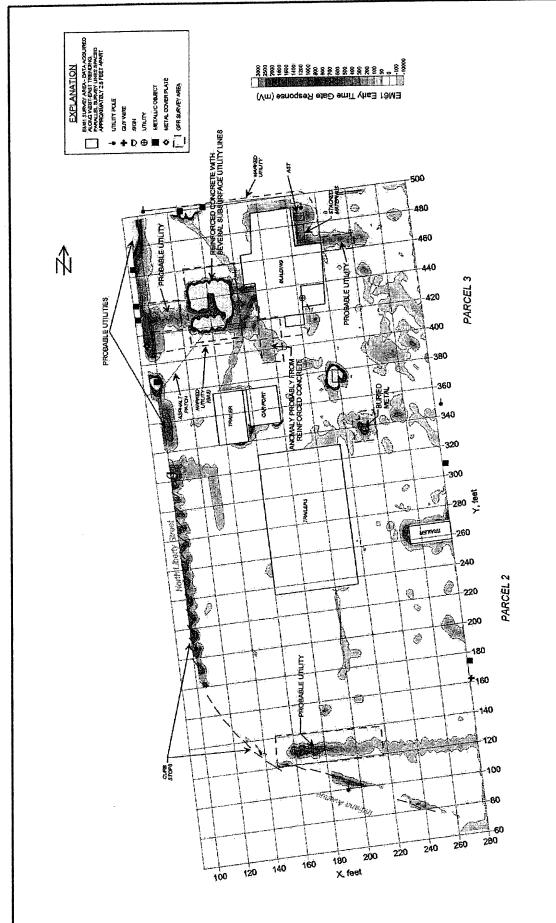
Parcel 4 - parking for Dick Kelly's Trucks, looking southeast



NC Department of Transportation Geotechnical Engineering Unit

WBS Element 34871.1.1 , TIP U-2826A Forsyth County

FIGURE 1 SITE PHOTOS



Note: The contour plot shows the earliest and most sensitive time gate of the EM61 bottom coil/channel in millivolts (mV). The EM data/were collected on August 10 through 13, 2006, using a Geonics EM61-MNQ. Insturment, Coffs data were sequired on August 17, 13, 20, and 26, 2005, using a Geophysical Survey Systems SIR 2000 insturment equipped with a 400 MHz antenna. Positioning for EM61 survey was provided using local site grid, as shown. Site features located using a submeter Trimble ProXRS DGPS system.

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NC Department of Transportation Geotechnical Engineering Unit

WBS Element 34871 1.1, TIP U-2826A Forsyth County

PARCELS 2 AND 3 EM61 EARLY TIME GATE RESPONSE

FIGURE 2

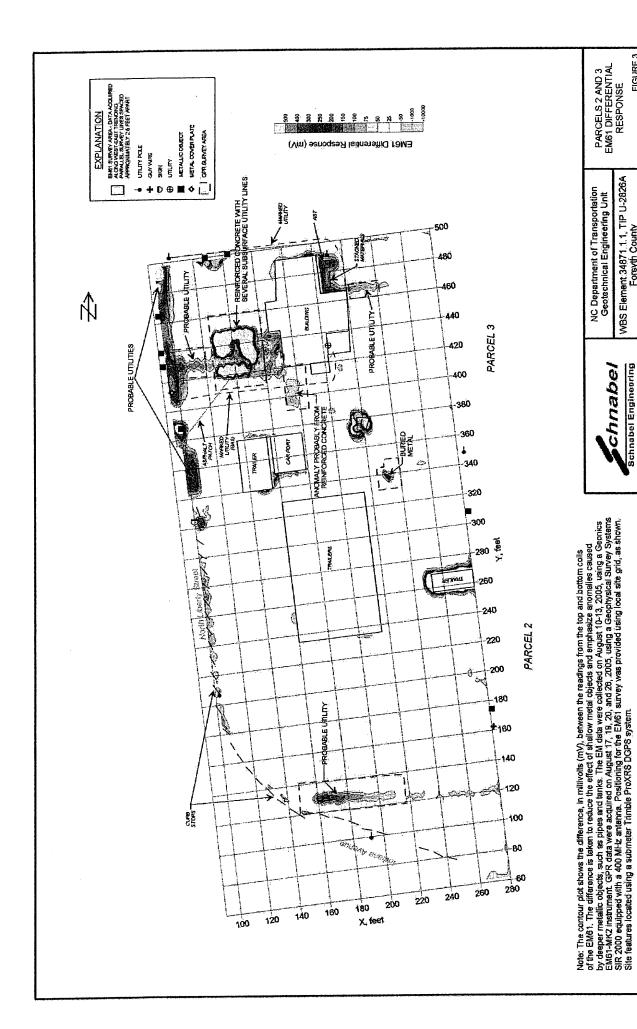
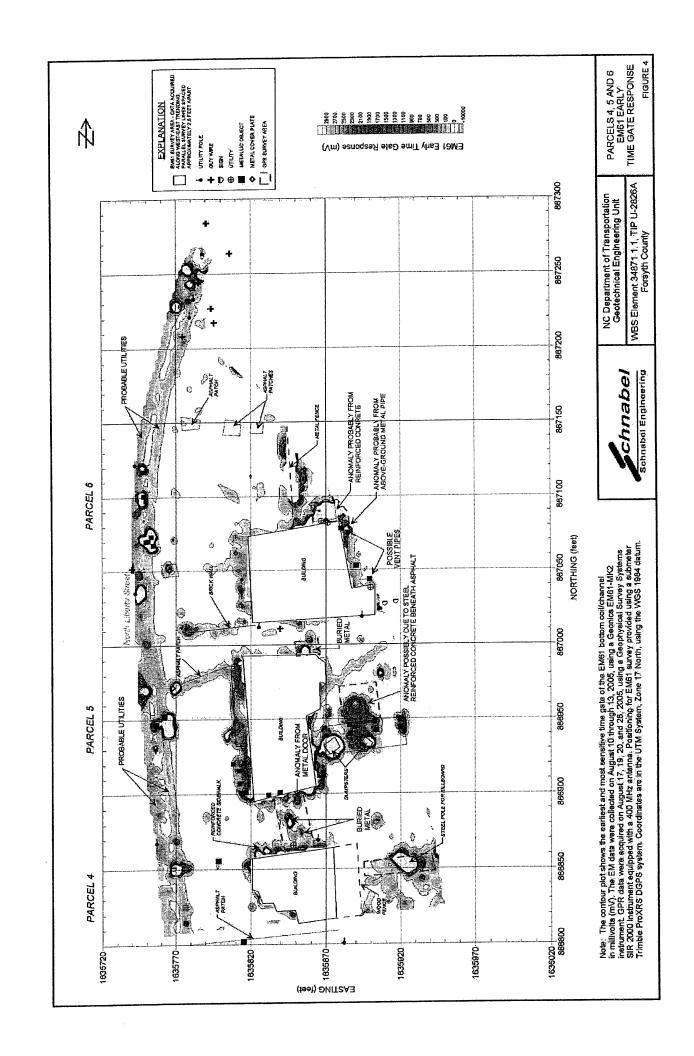
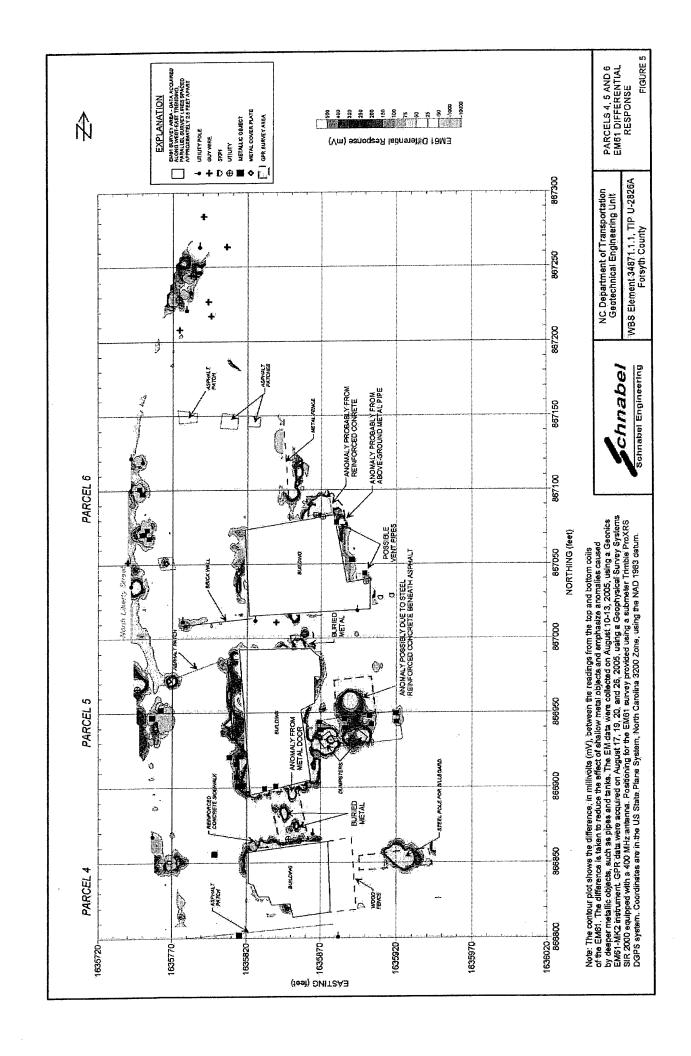


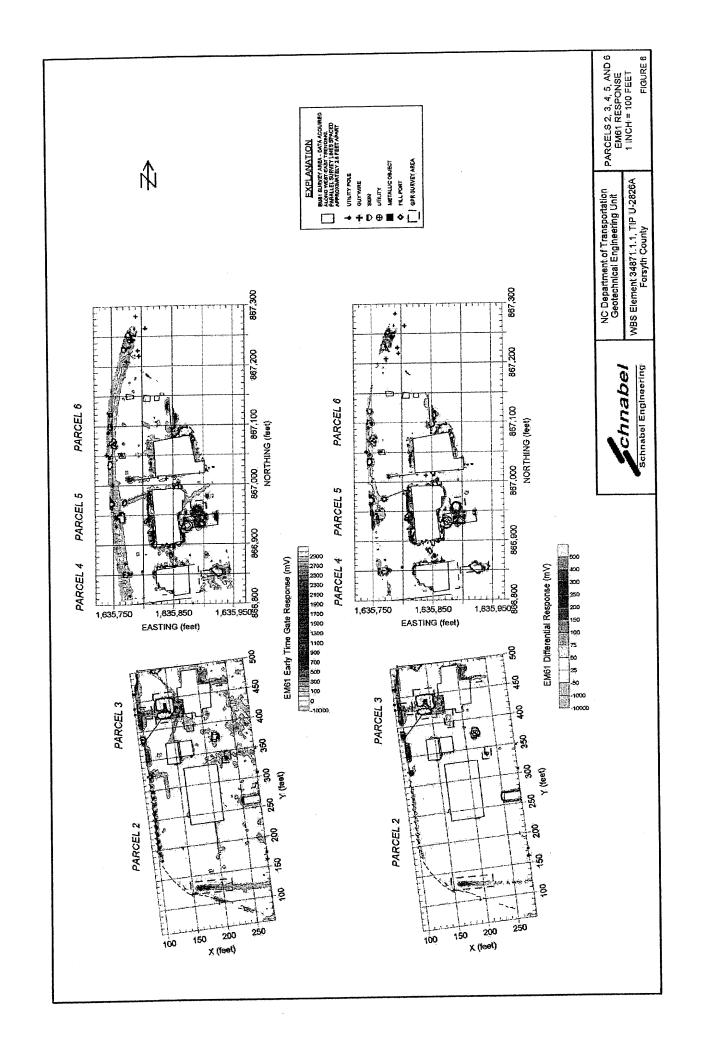
FIGURE 3

WBS Element 34871.1.1, TIP U-2826A Foreyth County

Schnabel Enginearing chnabel







APPENDIX C
SOIL BORING LOGS



### 2101 Gateway Centre Boulevard, Suite 200 Morrisville, North Carolina

Weather Conditions: Very Hot

Boring No.

GP-1 08/22/05

919-544-7500

Date Drilled:

Client:

NCDOT

Logged By:

RMS

**SOIL BORING LOG** 

Project Name: Project/Site Location: Parcel #002 - Brenda Myers Kelly Property

Drilling Company: Drill Device:

SEI GeoProbe® 5400

Project Number:

2801 North Liberty Street, Winston-Salem, NC ENMO050015.00

Drill Method:

**DPT** Surface Elevation:

Total Boring Depth: Boring Diameter:

20.0'

Boring Location: Northcentral portion of parcel

			Boring	Diameter:	4.0"		Boring Location: Northcentral portion of parcel			
Γ		epth	Time		Recovery		Lithological Description	Sample		
L	(Feet)	(Meters)		Analyzed		Profile		PID (ppm)		
	2.00	0.61			100%		Reddish brown, silty CLAY (CL), dry.	0.0		
T	4.00	1.22								
	6.00	1.83					Gold, tan fine to medium SILT (ML), with trace or some find sand, dry, micaeous.			
ļ	8.00	2.44			100%			0.0		
	10.00	3.05				(ML)				
	12.00	3.66			100%	(2)		0.0		
ŀ	14.00	4.27 4.88		х						
	18.00	5.49			100%			0.0		
F	20.00	6.10				(SAP)	(SAPROLITE) desribed as reddish brown, dark gray, and black, sandy silt			
	- - -						Boring terminated at 20.0' bls. X denotes interval collected for laboratory testing.			
	- - -									



### 2101 Gateway Centre Boulevard, Suite 200

Morrisville, North Carolina 919-544-7500 **SOIL BORING LOG** 

Boring No.

GP-2

Date Drilled:

Boring Location: Southwest corner of parcel (lowest elevation on parcel)

08/22/05

CIAAIK	CINMEIA	IALI	IA A E 2	HOAT	10143,	IIIC

Boring Diameter: 4.0"

Client:	NCDOT	Logged By:	RMS	
Project Name:	Parcel #002 - Brenda Myers Kelly Property	Drilling Company:	SEI	
Project/Site Location:	2801 North Liberty Street, Winston-Salem, NC	Drill Device:	GeoProbe® 5400	
Project Number:	ENMO050015.00	Drill Method:	DPT	
Total I	Boring Depth: 35.0' Weather Conditions:	Very Hot	Surface Elevation:	

П		epth	Time		Recovery		Lithological Description	Sample
Ц	(Feet)	(Meters)		Analyzed		Profile	Reddish brown, silty CLAY (CL), dry.	PID (ppm)
					100%		Gold, tan fine to medium SILT (ML), with trace or some find sand,	0.0
	10.00	3.05		x	100%		dry, micaeous.	0.0
	20.00	6.10			100%	(ML)		0.0
	30.00	9.15			100%	(SAP)	(SAPROLITE) desribed as gold, tan, light brown sandy silty	0.0
							Boring terminated at 35.0' bls, Probe Refusal. x denotes interval collected for laboratory testing.	



### 2101 Gateway Centre Boulevard, Suite 200 Morrisville, North Carolina

Boring No.

GP-3

919-544-7500

08/22/05 Date Drilled:

Client:

NCDOT

Logged By: Drilling Company:

Drill Device:

RMS

**SOIL BORING LOG** 

Project Name:

Parcel #002 - Brenda Myers Kelly Property

SEI

Project/Site Location:

2801 North Liberty Street, Winston-Salem, NC

Project Number:

ENMO050015.00

DPT Drill Method:

GeoProbe® 5400

Surface Elevation:

Total Boring Depth: Boring Diameter:

20.0'

Weather Conditions: Very Hot

			Diameter:	4.0"	Boring Location: Southeastern portion of parcel					
	epth	Time		Recovery		Lithological Description	Sample			
2.00	(Meters) 0.61		Analyzed	100%	Profile	Reddish brown, silty CLAY (CL), dry.	<b>PID (ppm)</b> 0.0			
4.00	1.22					Gold, tan fine to medium SILT (ML), with trace or some find sand, dry, micaeous.				
6.00	1.83 2.44			100%			0.0			
10.00	3.05									
12.00	3.66			100%	(ML)		0.0			
14.00	4.27 4.88		x							
18.00	5.49			100%			0.0			
20.00	6.10				(SAP)	(SAPROLITE) desribed as gold, tan, light brown sandy silt				
						Boring terminated at 20.0' bls. X denotes interval collected for laboratory testing.				
•										



## 2101 Gateway Centre Boulevard, Suite 200

### Morrisville, North Carolina 919-544-7500

**SOIL BORING LOG** 

Boring No.

GP-4

Date Drilled:

08/22/05

ENVIRONMENTAL INVESTIGATIONS, INC.

NCDOT

Drilling Company:

RMS

Project Name: Project/Site Location:

Client:

Parcel #002 - Brenda Myers Kelly Property

SEI

2801 North Liberty Street, Winston-Salem, NC

Drill Device:

GeoProbe® 5400

Surface Elevation:

Project Number:

ENMO050015.00

Drill Method:

Logged By:

DPT

Total Boring Depth: Boring Diameter:

20.0' 4.0"

Weather Conditions: Very Hot

Boring Location: Central portion of parcel

H	n	Depth Time Sample		Sample	Recovery Soil		Lithological Description	Sample
		(Meters)	1 11110	Analyzed		Profile		PID (ppm)
	2.00	0.61		•	100%		Reddish brown, silty CLAY (CL), dry.	0.0
E	4.00	1.22					Gold, tan fine to medium SILT (ML), with trace or some find sand,	
	6.00	1.83					dry, micaeous.	
	8.00	2.44			100%			0.0
E	10.00	3.05				7		
E	12.00	3.66			100%	(ML)		0.0
E	14.00	4.27					·	
	16.00	4.88		х				
L	18.00	5.49			100%			0.0
	20.00	6.10				(SAP)	(SAPROLITE) desribed as gold, tan, light brown sandy silt	
	•						Boring terminated at 20.0' bls. X denotes interval collected for laboratory testing.	
	•							
	•							



### 2101 Gateway Centre Boulevard, Suite 200

Morrisville, North Carolina 919-544-7500

**SOIL BORING LOG** 

Boring No.

GP-5

Date Drilled:

08/22/05

Client: Project Name: Project/Site Location:

Project Number:

NCDOT

Parcel #002 - Brenda Myers Kelly Property

RMS SEI

2801 North Liberty Street, Winston-Salem, NC

Drilling Company: Drill Device:

GeoProbe® 5400

ENMO050015.00

Drill Method:

Logged By:

DPT

Total Boring Depth:

20.0'

Weather Conditions: Very Hot

Surface Elevation:

Boring Diameter: 4.0" Boring Location: Central portion of parcel

/T ()		Time Sample				Lithological Description	Sample
(Feet)	(Meters)		Analyzed		Profile		PID (ppm)
2.00	0.61					Reddish brown, silty CLAY (CL), dry.	
4.00	1.22			100%		Gold, tan fine to medium SILT (ML), with trace or some find sand.	0.0
6.00	1.83					dry, micaeous.	
8.00	2.44			100%			0.0
10.00	3.05						
12.00	3.66			100%	(ML)		0.0
14.00	4.27						
16.00	4.88		-				
18.00	5.49		x	100%		(SAPROLITE) desribed as gold, tan, light brown sandy silt	0.0
20.00	6.10				(SAP)		
						Boring terminated at 20.0' bls. X denotes interval collected for laboratory testing.	
	4.00 6.00 8.00 10.00 12.00 14.00 16.00	4.00     1.22       6.00     1.83       8.00     2.44       10.00     3.05       12.00     3.66       14.00     4.27       16.00     4.88       18.00     5.49	4.00       1.22         6.00       1.83         8.00       2.44         10.00       3.05         12.00       3.66         14.00       4.27         16.00       4.88         18.00       5.49	4.00 1.22 6.00 1.83 8.00 2.44 10.00 3.05 12.00 3.66 14.00 4.27 16.00 4.88 18.00 5.49	4.00 1.22 6.00 1.83 8.00 2.44 10.00 3.05 12.00 3.66 14.00 4.27 16.00 4.88 18.00 5.49  100%	4.00 1.22 6.00 1.83 8.00 2.44 10.00 3.05 12.00 3.66 14.00 4.27 16.00 4.88 18.00 5.49  x (SAR)	2.00



### 2101 Gateway Centre Boulevard, Suite 200 Morrisville, North Carolina

Boring No.

GP-6

919-544-7500

08/22/05 Date Drilled:

**SOIL BORING LOG** 

Client: Project Name: NCDOT

Logged By: **RMS** Drilling Company:

SEI

**DPT** 

Project/Site Location:

Parcel #002 - Brenda Myers Kelly Property 2801 North Liberty Street, Winston-Salem, NC

Drill Device:

Drill Method:

GeoProbe® 5400

Project Number:

ENMO050015.00 Total Boring Depth: 20.0'

Weather Conditions: Very Hot

Surface Elevation:

**Boring Diameter:** 

4.0"

Boring Location: Central portion of parcel

**Lithological Description** Depth Time Sample Recovery Soil Sample Analyzed **Profile** PID (ppm) (Feet) (Meters) Reddish brown, silty CLAY (CL), dry. 2.00 0.61 100% 0.0 4.00 1.22 Gold, tan fine to medium SILT (ML), with trace or some find sand, dry, micaeous. 6.00 1.83 100% 0.0 8.00 2.44 10.00 3.05 (ML) 12.00 3.66 100% 0.0 14.00 4.27 Х 16.00 4.88 0.0 100% 18.00 5.49 (SAP) (SAPROLITE) desribed as gold, tan, light brown sandy silt 20.00 6.10 Boring terminated at 20.0' bls. X denotes interval collected for laboratory testing.



### 2101 Gateway Centre Boulevard, Suite 200 Morrisville, North Carolina

Boring No. Date Drilled: 08/22/05

919-544-7500

ENVIRONMENTAL INVESTIGATIONS, INC.

NCDOT

Logged By: Drilling Company:

SEI

RMS

**SOIL BORING LOG** 

Project Name: Project/Site Location:

Client:

Parcel #002 - Brenda Myers Kelly Property 2801 North Liberty Street, Winston-Salem, NC

Drill Device: Drill Method:

GeoProbe® 5400 DPT

Project Number:

ENMO050015.00

Weather Conditions: Very Hot

Surface Elevation:

Boring Diameter:

Total Boring Depth: 20.0' 4.0"

Boring Location: Southeastern portion of parcel

D	epth	Time	Sample	Recovery	Soil	Lithological Description	Sample
(Feet)	(Meters)		Analyzed		Profile	-	PID (ppm)
 2.00 	0.61			100%		Reddish brown, silty CLAY (CL), dry.	0.0
4.00	1.22					Gold, tan fine to medium SILT (ML), with trace or some find sand,	
6.00	1.83					dry, micaeous.	
8.00	2.44			100%		·	0.0
10.00	3.05						
12.00	3.66			100%	(ML)		0.0
14.00	4.27			100%			0.0
16.00	4.88						
18.00	5.49			100%			0.0
20.00	6.10		х		(SAP)	(SAPROLITE) desribed as gold, tan, light brown sandy silt	
_ _ _						Boring terminated at 20.0' bls. X denotes interval collected for laboratory testing.	
_							
<u> </u>							



### 2101 Gateway Centre Boulevard, Suite 200

Morrisville, North Carolina 919-544-7500

**SOIL BORING LOG** 

Boring No.

GP-8

Date Drilled:

08/22/05

Client: Project Name: NCDOT

Parcel #002 - Brenda Myers Kelly Property

Logged By: Drilling Company:

RMS SEI

DPT

Project/Site Location:

2801 North Liberty Street, Winston-Salem, NC

Drill Device: Drill Method: GeoProbe® 5400

Project Number:

Total Boring Depth: 20.0'

ENMO050015.00

Weather Conditions: Very Hot

Surface Elevation:

Boring Diameter:

4.0"

Boring Location: Southeastern portion of parcel

Γ	Depth		Time Sample		Recovery Soil		Lithological Description	Sample
ı	(Feet)	(Meters)		Analyzed		Profile		PID (ppm)
	2.00	0.61			100%		Reddish brown, silty CLAY (CL), dry.	0.0
-	4.00	1.22			10078		Gold, tan fine to medium SILT (ML), with trace or some find sand,	0.0
ŀ	6.00	1.83					dry, micaeous.	
	- 8.00 -	2.44			100%			0.0
F	10.00	3.05				(ML)		
F	12.00 - 14.00	3.66 4.27			100%	•		0.0
	- - 16.00	4.88		x				
	- _ 18.00	5.49			100%			0.0
-	20.00	6.10				(SAP)	(SAPROLITE) desribed as gold, tan, light brown sandy silt	
	- - - -						Boring terminated at 20.0' bls. X denotes interval collected for laboratory testing.	
	- - -							
H	-							

# APPENDIX D LABORATORY ANALYTICAL REPORT

5500 Business Drive Wilmington, North Carolina 28405 (910) 350-1903 Fax (910) 350-1557

Mr. Darren Lockhart Environmental Investigations 2101 Gateway Centre Boulevard Suite 200 Morrisville NC 27560

Report Number: G106-539

Client Project: NCDOT-Parcel 2/Tip#U-2826A

#### Dear Mr. Lockhart:

Sincerely,

Enclosed are the results of the analytical services performed under the referenced project. 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 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 the services performed during this project, please call Paradigm at (910) 350-1903. We will be happy to answer any questions or concerns which you may have.

Thank you for using Paradigm Analytical Labs for your analytical services. We look forward to working with you again on any additional analytical needs which you may have.

Paradigm Analytical Laboratories, Inc.

Laboratory Director Date

J. Patrick Weaver

# Results for Total Petroleum Hydrocarbons by GC/FID 8015

Client Sample ID: P2GP1-20

Analyzed By: DCS

Client Project ID: NCDOT-Parcel 2/Tip#U-2826A

Date Collected: 8/22/2005 15:55

Lab Sample ID: G106-539-1

Date Received: 8/26/2005

Lab Project ID: G106-539

Matrix: Soil

Report Basis: Dry Weight

Solids 91.96

Analyte	Result MG/KG	Report Limit MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.78	5035	1	08/29/05
Diesel Range Organics	BQL	6.73	3545	1	08/31/05

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

Client Sample ID: P2GP2-15

Analyzed By: DCS

Client Project ID: NCDOT-Parcel 2/Tip#U-2826A

Date Collected: 8/22/05 16:30

Lab Sample ID: G106-539-2

Date Received: 8/26/05

Lab Project ID: G106-539

Matrix: Soil

Report Basis: Dry Weight

Solids 79.33

Analyte	Result MG/KG	Report Limit MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	9.72	5035	1	08/29/05
Diesel Range Organics	BQL	7.81	3545	1	08/31/05

Comments:

Reviewed By: TPH\_LIMS\_v1 82 XLS 3 of 11

# Results for Total Petroleum Hydrocarbons by GC/FID 8015

Client Sample ID: P2GP3-15 Analyzed By: DCS

Client Project ID: NCDOT-Parcel 2/Tip#U-2826A Date Collected: 8/22/05 14:30

Lab Sample ID: G106-539-3 Date Received: 8/26/05
Lab Project ID: G106-539 Matrix: Soil

Report Basis: Dry Weight Solids 83.23

Analyte	Result	Report Limit	Prep	Dilution	Date
	MG/KG	MG/KG	Method	Factor	Analyzed
Gasoline Range Organics	BQL	6.81	5035	1	08/29/05
Diesel Range Organics	BQL	7.11	3545	1	08/31/05

Comments:

Reviewed By: \_\_\_\_\_\_ TPH\_LIMS\_v1 82.XLS 4 of 11

# Results for Total Petroleum Hydrocarbons by GC/FID 8015

Client Sample ID: P2GP4-15

Analyzed By: DCS

Client Project ID: NCDOT-Parcel 2/Tip#U-2826A

Date Collected: 8/22/2005 15:40

Lab Sample ID: G106-539-4

Date Received: 8/26/2005

Lab Project ID: G106-539

Matrix: Soil

Report Basis: Dry Weight

Solids 75.65

Analyte	Result	Report Limit	Prep	Dilution	Date
	MG/KG	MG/KG	Method	Factor	Analyzed
Gasoline Range Organics	BQL	10	5035	1	08/29/05
Diesel Range Organics	BQL	7.88	3545		08/31/05

# Results for Total Petroleum Hydrocarbons by GC/FID 8015

Client Sample ID: P2GP5-15 Analyzed By: DCS

Client Project ID: NCDOT-Parcel 2/Tip#U-2826A Date Collected: 8/22/2005 15:30

Lab Sample ID: G106-539-5 Date Received: 8/26/2005

Lab Project ID: G106-539

Report Basis: Dry Weight

Matrix: Soil
Solids 69.47

Analyte	Result MG/KG	Report Limit MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.92	5035	1	08/30/05
Diesel Range Organics	BQL	8.91	3545	1	08/31/05

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

Client Sample ID: P2GP6-20

Analyzed By: DCS

Client Project ID: NCDOT-Parcel 2/Tip#U-2826A

Date Collected: 8/22/05 16:55

Lab Sample ID: G106-539-6

Date Received: 8/26/05

Lab Project ID: G106-539

Matrix: Soil

Report Basis: Dry Weight

Solids 90.17

Analyte	Result	Report Limit	Prep	Dilution	Date
	MG/KG	MG/KG	Method	Factor	Analyzed
Gasoline Range Organics	BQL	8.71	5035	1	08/30/05
Diesel Range Organics	<b>25.1</b>	6.87	3545	1	08/31/05

Comments:

# Results for Total Petroleum Hydrocarbons by GC/FID 8015

Client Sample ID: P2GP7-20 Analyzed By: DCS

Client Project ID: NCDOT-Parcel 2/Tip#U-2826A Date Collected: 8/22/05 14:50

Lab Sample ID: G106-539-7 Date Received: 8/26/05
Lab Project ID: G106-539 Matrix: Soil
Report Basis: Dry Weight Solids 76.37

Analyte	Result MG/KG	Report Limit MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	8.67	5035	1	08/30/05
Diesel Range Organics	BQL	8.12	3545	1	08/31/05

Comments:

# Results for Total Petroleum Hydrocarbons by GC/FID 8015

Client Sample ID: P2GP8-20 Analyzed By: DCS

Client Project ID: NCDOT-Parcel 2/Tip#U-2826A Date Collected: 8/22/2005 15:00
Lab Sample ID: G106-539-8 Date Received: 8/26/2005

Lab Project ID: G106-539 Matrix: Soil
Report Basis: Dry Weight Solids 76.14

Analyte	Result MG/KG	Report Limit MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	9.38	5035	1	08/30/05
Diesel Range Organics	BQL	7.63	3545	1	08/31/05

# List of Reporting Abbreviations and Data Qualifiers

B = Compound also detected in batch blank

**BQL** = Below Quantitation Limit

DF = Dilution Factor

Dup = Duplicate

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 = Reporting Limit

RPD = Relative Percent Difference

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

% soilds = 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.

MI34.011404.1

Please specify any special reporting requirements State Certification Requested TERMS AND CONDITIONS SEE REVERSE FOR Comments: Other\_ Page #202 Invoice To:\_\_ Report To: SC $\mathbb{N}^{\mathbb{N}}$ Chain-of Custody Record & Analytical Request Job Number: ENDLISSING Temperature Turnaround: Analyses Time Post Date: P.O. Number: CLIENT COPY Date ione: (910)-350-1903 FAX: (910)-350-1557 (\$\text{Q}\_1\text{C}\_2\text{C}\_0\text{RS} \cdot \frac{2}{3}\text{S} \text{C}\_1\text{C}\_2\text{C}\_0\text{RS} \cdot \frac{2}{3}\text{S} \text{C}\_1\text{C}\_2\text{C}\_2\text{C}\_2\text{RS} \cdot \frac{2}{3}\text{C}\_2\tex 34 Phone: 916 - 546 - 356 Project ID: ACCOUNTY Received By SAN SAN SAN Contact: POBLING Preservatives YTICAL LABORATORIES, INC. Fax: Time 00 Business Drive, Wilmington, NC 28405 Time Matrix 18 22 283 Date (A) (A) Sales Co SHOPPING SOFT Date Relinquished By ARADIGM AT Sample ID dress: dress: 10te #: ient:

PARCEL 2/WE act: BOB 3/HM/s one: 9/19-5/4/4-one: 9/19-5/4/4-one: 9/17-5/4/4-one: 9/17-5/4/4-on	COC# 40556 5		STRUMU (CCCHAPA STRUMU (CCCHAPA STRUMU)	EVMO 050 045.00	Invoice To: NC 007		Please specify any special reporting requirements	(104-539							,	e Temperature State Certification Requested	0 on ice NC
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IGM ANAL Siness Drive, 910)-350-190, 10)-360-190, 10)-360	PARADIGM ANALYTICAL LABORATORI 5500 Business Drive, Wilmington, NC 28405 Phone: (910)-350-1903 FAX: (910)-350-1557			Methody N. Ph				820 1555 SOL	1630	<i>E31</i>	15%	1530	1655	+ 1450 +	-t 631 -t	<b>-</b>	6-26-05