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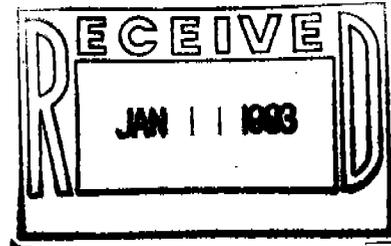
STREET ADDRESS  
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RALEIGH, N. C. 27603

TELEPHONE 919/828-8207  
TELECOPIER 919/828-7938

January 8, 1993

919/378-5314

Ms. Kelly Gage  
Guilford County Emergency Services  
Post Office Box 18807  
Greensboro, NC 27419

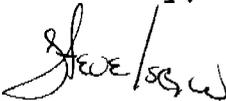


Re: Mrs. Louise Falk  
609 Woodland Drive, Greensboro, NC

Dear Kelly:

Enclosed is ENSCI's report on its soil investigation.  
Please let me know if you have any questions.

Sincerely,

  
Stephen W. Earp

SWE/sgw

cc: Herbert S. Falk, Jr., Esq.

# Underground Storage Tank Closure Report Addendum

Falk Estate  
Greensboro, North Carolina  
ENSCI Job #SS21-002

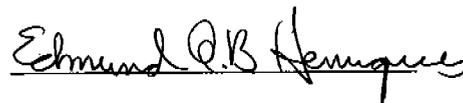
Prepared for

Mr. Steve Earp  
Smith Helms Mulliss & Moore

December 23, 1992



Tom Lennon  
Environmental Scientist



Edmund Q.B. Henriques  
Project Manager

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ENSCI Corporation  
1108 Old Thomasville Road  
High Point, North Carolina 27260  
(919) 883-7505

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## 1. Introduction

ENSCI Corporation was contracted by Mr. Steve Earp of Smith Helms Mulliss & Moore to conduct an initial soil assessment at the Falk Estate, located at 609 Woodland Drive, Greensboro, North Carolina (see **Figure 1**). This action was implemented following the detection of petroleum hydrocarbons in a soil sample collected subsequent to removal of a heating oil Underground Storage Tank (UST). Site work was performed November 24, 1992.

This Underground Storage Tank Closure Report Addendum discusses the results of the initial soil assessment. It will satisfy state and federal UST requirements under 40 CFR 280 and 15A NCAC 2N. It is submitted in continued response to a notice of violation issued by the North Carolina Department of Environment, Health & Natural Resources (DEHNR) on March 26, 1992 (see Appendix A).

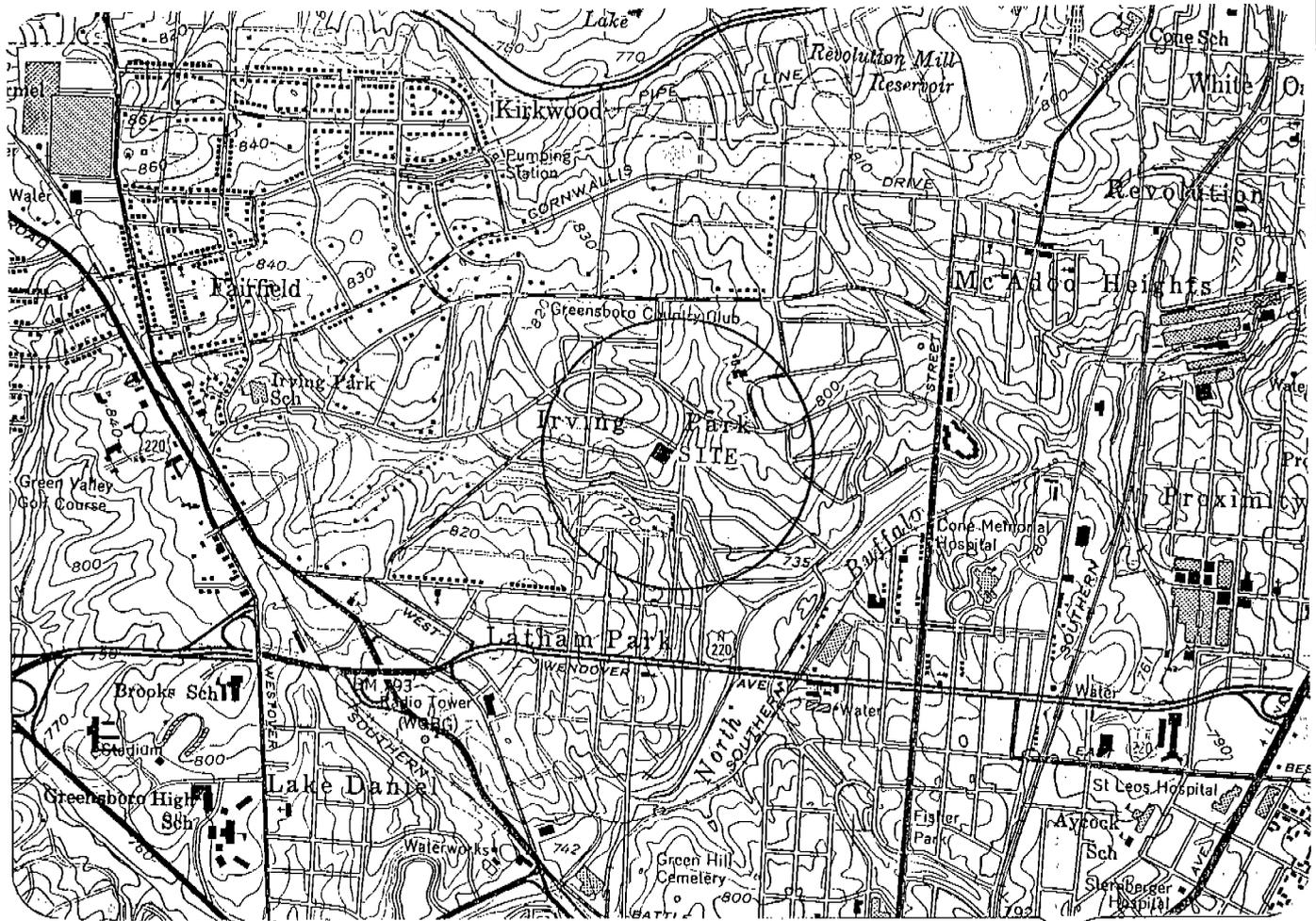
### 1.1 Site History

Law Environmental, Inc. was contracted to install a single soil boring adjacent to a 550-gallon heating oil UST at the subject site (see **Figure 2**). The boring was installed on February 14, 1992. A soil sample from this boring was analyzed using EPA Method 3550, and results indicated 3,200 parts per million total petroleum hydrocarbons. These results were submitted to the DEHNR, and the above-referenced notice of violation was issued.

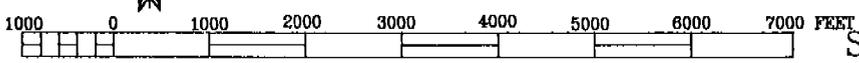
In order to comply with the requirements of the notice, Berico Fuels, Inc. was contracted to remove the UST. This action took place on April 27, 1992. A soil sample was collected from beneath the bottom of the UST (approximately 10 feet below grade) and analyzed using EPA Method 3550. Subsequent to sample collection, Berico extended the depth of the excavation by approximately 2 feet (reference Appendix B). The excavation was backfilled with clean fill in order to maintain the integrity of the adjacent building. Laboratory results for the sample indicated 17,900 parts per million total petroleum hydrocarbons. These results indicate that petroleum hydrocarbon-contaminated soil (soil containing petroleum hydrocarbons under EPA Method 3550 in excess of the DEHNR's 40 parts per million action limit) was present at the sample depth. Berico's investigation did not attempt to confirm whether or not all contaminated soil was removed subsequent to sample collection.

# TOPOGRAPHICAL MAP

FALK ESTATE  
Greensboro, North Carolina



USGS GREENSBORO, N.C. 7.5 MINUTE QUADRANGLE  
DATE OF MAP: 1951 PHOTOREVISION DATE: 1968  
PHOTOREVISION DENOTED IN PURPLE (COLOR MAPS ONLY)



SCALE 1:24000



## ROAD CLASSIFICATION

- |                  |       |                  |   |
|------------------|-------|------------------|---|
| HEAVY-DUTY       | ===== | U.S. ROUTE       | □ |
| MEDIUM-DUTY      | ----- | STATE ROUTE      | ○ |
| LIGHT-DUTY       | ----- | INTERSTATE ROUTE | ◡ |
| FOOT TRAIL       | ----- |                  |   |
| WGN & JEEP TRACK | ----- |                  |   |
| UNIMPROVED ROAD  | ----- |                  |   |

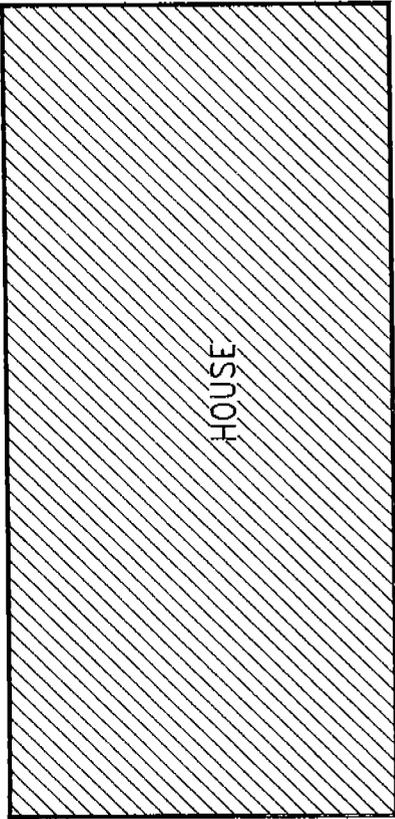


FOR: FALK ESTATE		CITY: GREENSBORO
TITLE: TOPOGRAPHIC MAP		STATE: NORTH CAROLINA
SCALE: 1" = 2000'	DWN BY: DJ	FIGURE: 1
DATE: 12/2/92	DWG NAME: USGS-1	CK BY: TL
		JOB #: SS21-002

WOODLAND AVENUE

DRIVEWAY

HOUSE

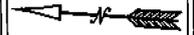


GARAGE

ESTIMATED GROUND-  
WATER FLOW DIRECTION

**LEGEND**

- SAMPLE LOCATION
- ▨ FORMER UST LOCATION
- ▩ RESIDENTIAL STRUCTURE LOCATION



SCALE: NOT TO SCALE	DATE: 12/2/92	DRIVEN BY: DJ
CITY: GREENSBORO	STATE: NORTH CAROLINA	CHECK BY: TL
TITLE: FALK ESTATE	PROJECT NO: SS21-002	TYPE: SAMPLING
	NO. OF SAMPLES: FAULK-1	NO. OF PAGES: 2
		OTHER: NONE



SAMPLE LOCATION MAP

## 1.2 Scope of Work

In order to assess the existence and potential extent of remaining petroleum hydrocarbon-contaminated soil and to complete fulfillment of the requirements of the March 26 notice, ENSCI Corporation was contracted to conduct additional investigation. Site activities, which were performed on November 24, 1992, consisted of the following:

- Installation of four soil borings to a depth of 15 feet
- Collection and screening of soil samples using a photoionization detector (PID)
- Selection of four soil samples for laboratory analysis using EPA Methods 3550 and 5030.

The following sections detail ENSCI's activities and findings.

## 2. Soil Investigation

### 2.1 Soil Boring Installation and Sample Collection

A total of four 2-inch soil borings (SB-1 through SB-4, see **Figure 2**) were installed using a Minuteman drill rig. As illustrated in the figure, one of the borings (SB-1) was installed in the heart of the backfilled excavation, and the remaining three borings were installed around the excavation. Based on surface topography, SB-2 and SB-4 appeared to be downgradient of the excavation, and SB-3 appeared to be upgradient.

During soil boring installation, samples were collected at 5-foot intervals using a stainless steel hand auger. An additional sample was collected at a depth of 12 feet due to its proximity to the depth of the contaminated sample collected by Berico Fuels. When sampling equipment was reused, ENSCI personnel used the following procedure in order to prevent cross contamination:

- 1) Wash with nonphosphate detergent and tap water; brush to remove particulate matter.
- 2) Rinse with tap water.
- 3) Rinse with 10% nitric acid solution.
- 4) Rinse with deionized water.
- 5) Rinse with pesticide-grade isopropyl alcohol.
- 6) Rinse with deionized water.

7) Air dry as long as possible.

As an additional measure in preventing cross contamination, latex gloves were worn by the sampling technician during these activities. Gloves were changed between samples.

## 2.2 Field Screening and Observations

All hand-augered soil samples, as well as select drill cuttings, were logged by an onsite geologist and field screened using a PID. The samples and cuttings generally consisted of a dense, orange, clay-rich soil. Sandy backfill material was encountered in the backfilled excavation. Orange-tan, clay-rich saprolite was encountered in each boring beginning at a depth of approximately 12 feet below grade.

Groundwater was not encountered during ENSCI's site activities. As a result, it is assumed that groundwater is greater than 17 feet below grade, the approximate depth of the bottom of each soil boring. As a precaution against any transmission of surface contaminants, all soil borings were plugged using a 4 foot bentonite plug.

The PID detects airborne photoionizable gases and vapors on a scale from 0 to 2,500 parts per million, relative to the standard calibration gas. Based on past experience, soil containing petroleum hydrocarbons in excess of the DEHNR action limit (10 parts per million) generally registers greater than 100 parts per million on the PID. Table 1 illustrates the PID screening results.

**Table 1: PID Field Screening Results**  
(All Results in Parts per Million)

Sample Depth	SB-1	SB-2	SB-3	SB-4
5 feet	0	0	12	0
10 feet	0	25	5	16.7
12 feet	0	10	15	3.4
15 feet	0	2.5	8.3	1

As illustrated in Table 1, none of the soil samples exhibited PID screening levels which would indicate probable petroleum hydrocarbon contamination. No petroleum hydrocarbon odor was encountered in any of the soil samples.

### 3. Analytical Methods and Results

The 15-foot sample from each boring was packed in ice for cooling to 4°C and shipped to a laboratory for analysis using EPA Methods 3550 and 5030. These methods were chosen in accordance with DEHNR guidelines specified in the document *Guidelines for the Remediation of Soil Contaminated by Petroleum*. They are intended to detect petroleum hydrocarbons associated with relatively high boiling point fuels such as fuel oil.

Laboratory results indicate no detection of petroleum hydrocarbons in any of the collected samples using either analytical method. The chain of custody form and a copy of the original analytical report are included in Appendix C.

### 4. Summary and Conclusions

ENSCI Corporation installed four soil borings in and around the backfilled UST excavation at the Falk Estate. No observable evidence of petroleum hydrocarbon contamination was encountered. Field screening using a PID did not indicate levels which would indicate probable petroleum hydrocarbon contamination.

One sample was collected from each soil boring at a depth of approximately 15 feet below grade. Analysis of these samples using EPA Methods 3550 and 5030 indicated no detectable quantities of petroleum hydrocarbons.

ENSCI's results indicate that there is no significant remaining soil contamination in the vicinity of the removed heating oil UST at the Falk Estate. These results suggest that the excavation which was performed by Berico subsequent to sample collection removed most or all contaminated soil.

Although no soil contamination was identified during ENSCI's site activities, a site sensitivity evaluation (see Appendix D) was completed in order to assess the vulnerability of groundwater to any existing petroleum hydrocarbon-contaminated soil. Results indicate that the subject site is among the least vulnerable for transmission of soil contamination into groundwater.

Based on ENSCI's field observations and analytical results, any residual soil contamination which may exist in the vicinity of the excavated UST at the Falk Estate is of limited extent and is not a threat to groundwater.

Appendix A

Notice of Violation, March 26, 1992



State of North Carolina  
Department of Environment, Health, and Natural Resources  
Winston-Salem Regional Office

James C. Martin, Governor  
William W. Cobey, Jr., Secretary

Margaret Plemmons Foster  
Regional Manager

DIVISION OF ENVIRONMENTAL MANAGEMENT  
GROUNDWATER SECTION

NOTICE OF VIOLATION OF THE OIL POLLUTION AND  
HAZARDOUS SUBSTANCES CONTROL ACT

March 26, 1992

CERTIFIED MAIL NUMBER P-074 019 310  
RETURN RECEIPT REQUESTED

Louise Falk  
609 Woodland Drive  
Greensboro, NC 27408

Subject: Heating Oil Storage Tank at 609 Woodland Drive

Dear Mrs. Falk:

Chapter 143, North Carolina General Statutes, authorizes and directs the Environmental Management Commission of the Department of Environment, Health, and Natural Resources to protect and preserve the water and air resources of the State. The Division of Environmental Management has the delegated authority to enforce adopted pollution control rules and regulations.

The purpose of the Oil Pollution and Hazardous Substances Control Act is to promote the health, safety and welfare of the citizens of this State by protecting the land and the waters over which this State has jurisdiction from pollution by oil, oil products, oil by-products and other hazardous substances.

On February 28, 1992 this office was notified of a leaking underground storage tank at 609 Woodland Drive, Greensboro, NC. The leak was discovered after a soil sample was collected from a heating oil tank at the subject location.

Such a discharge is in violation of G.S. 143-215.75 et. seq. Oil Pollution and Hazardous Substances Control Act of 1978. Please reference the following excerpts from the Act:

143-215.83. Discharges.--(a) Unlawful Discharges. --It shall be unlawful, except as otherwise provided in this Part, for any person to discharge, or cause to be discharged, oil or other hazardous substances into or upon any waters, tidal flats, beaches, or lands within this state, or into any sewer, surface water drain or other waters that drain into the waters of this State, regardless of the fault of the person having control over the oil or other hazardous substances, or regardless of whether the discharge was the result of intentional or negligent conduct, accident or other cause.

143-215.84. Removal of prohibited discharges. -- (a) Person Discharging. -- Any person having control over all oil or other hazardous substances discharged in violation of this Article shall immediately undertake to collect and remove the discharge and to restore the are affected by the discharge as nearly as may be to the condition existing prior to the discharge.

It is our understanding that you firm are responsible for violation of the Oil Pollution and Hazardous Substances Control Act. Therefore, you are considered as the party responsible for immediately undertaking clean-up of contamination and restoring the affected area.

You are required to submit a technical and field data report which describes the full vertical and horizontal extent of the contamination. The requirements of this report may be fulfilled if reports are submitted under specifications of the Federal Underground Storage Tank Rules 40 CFR 280.62, 280.63, 280.64 and 280.65. An adequate report must be received by this office on or before May 26, 1992. If the investigation indicates that a corrective action plan (remedial action plan) is required, it should be submitted to P.O. Box 18807, Greensboro, NC 27419 within sixty (60) days after submitting a complete technical and field data report. the plan should be implemented in accordance with a Special Order by Consent (SOC) or a Special Order of the Commission.

It is requested that within fifteen (15) days, you submit a written response describing your plans to achieve compliance with the Act. Should you dispute our assessment of responsibility, please include documentation of your position in your response.

Failure to submit the report or failure to promptly undertake clean-up and restoration of the affected area may result in the recommendation of enforcement action including: (1) the issuance of a special order against you under the authority of G.S. 143-215.2, (2) a request to the Attorney

General to institute an action for injunctive relief, (3) a civil penalty of up to \$5,000 in accordance with G.S. 143-215.91 and (4) referral of your site to the Federal Trust Fund Group. Please note that should the Federal Trust Fund take charge of your site, they will seek cost recovery, from responsible parties, for any and all expenses incurred.

Please do not hesitate to contact Kelly C. Gage at (919) 373-7565 regarding any questions you may have about this matter.

Sincerely,

*Larry D. Coble*

Larry D. Coble  
Regional Supervisor

LDC/ahl

Enclosure

cc: Incident Management Unit  
WSRO Files  
County Health Department

Harold Bynum  
Smith Helms Mulliss & Moore  
P.O. Box 21927  
Greensboro, NC 27420

Appendix B

Documentation of Berico UST Removal Activities

# SMITH HELMS MULLISS & MOORE

ATTORNEYS AT LAW

GREENSBORO, NORTH CAROLINA

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TELECOPIER 919/378-9558

December 18, 1992

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1615 L STREET, N.W.  
WASHINGTON, D. C. 20036-5601

TELEPHONE 202/778-0550  
TELECOPIER 202/429-9418

Ms. Kelly Gage  
Guilford County Emergency Services  
Post Office Box 18807  
Greensboro, NC 27419

Re: Mrs. Louise Falk  
609 Woodland Drive, Greensboro, NC

Dear Kelly:

Following up on our telephone conversation, I talked with Mr. Tom Berry of Berico Fuels, Inc., which removed Mrs. Falk's underground storage tank. Mr. Berry reported that when his crew removed the tank, they first scraped off and set aside the clean soil above and beside the tank. After the tank had been removed, they obtained a sample of the soil beneath the tank. Because the soil was obviously contaminated, they dug down another two feet and set the contaminated soil to the side. Next they filled the hole using the clean soil from above and beside the tank, along with some fill dirt. After this work had been completed, they spread the contaminated soil a few inches thick over the filled area. Mr. Berry said that no soil was taken off the site, and all contaminated soil was spread in the same area.

I am still awaiting ENSCI's report on its soil investigation. As soon as I receive the report, I will send it to you. Meanwhile, if you have any questions or comments, please let me know.

Sincerely,



Stephen W. Earp

SWE/sgw

cc: Herbert S. Falk, Jr., Esq.  
Mr. William C. Farabow  
Mr. Tom Berry

Appendix C

Laboratory Report for Soil Samples



# RESEARCH & ANALYTICAL LABORATORIES, INC.

Analytical/Process Consultations

01 December 1992

Ensci Corporation  
1108 Old Thomasville Road  
High Point, North Carolina 27260

Attention: Mr. Tom Lennon

---

<u>Sample Number</u>	<u>Date Taken</u>	<u>Time hrs</u>	<u>Station Location</u>	<u>RAL Sample#</u>	<u>EPA Method*</u>	<u>Results (PPM)</u>
SB1-15	11/24/92	1130	Falk	152728	5030	<10
SB1-15	11/24/92	1130	Falk	152728	3550	<10
SB2-15	11/24/92	1316	Falk	152729	5030	<10
SB2-15	11/24/92	1316	Falk	152729	3550	<10
SB3-15	11/24/92	1431	Falk	152730	5030	<10
SB3-15	11/24/92	1431	Falk	152730	3550	<10
SB4-15	11/24/92	1515	Falk	152731	5030	<10
SB4-15	11/24/92	1515	Falk	152731	3550	<10

\*EPA 5030 = Total Petroleum Hydrocarbons as Gasoline  
3550 = Total Petroleum Hydrocarbons as Diesel  
PPM = Parts per million  
< = Less than



Appendix D  
Site Sensitivity Evaluation

Table 1  
**Site Sensitivity Evaluation (SSE)**  
 Site Characteristics Evaluation (Step 1)

Characteristic	Condition	Rating	
Grain Size*	Gravel	150	
	Sand	100	
	Silt	50	
	Clay	0	
			0
Are relict structures, sedimentary structures, and/or textures present in the zone of contamination and underlying "soils".	Present and intersecting the water table.	10	
	Present but <u>not</u> intersecting the water table.	5	
	None present.	0	
			0
Distance from location of deepest contaminated soil** to water table.	5 - 10 feet	20	
	>10 - 40 feet	10	
	>40 feet	0	
			20
Is the top of bedrock or transmissive indurated sediments located above the water table?	Yes	20	
	No	0	
			0
Artificial conduits present within the zone of contamination.	Present and intersecting the water table.	10	
	Present but <u>not</u> intersecting the water table.	5	
	Not present.	0	
			0
<b>Total Site Characteristics Score:</b>			<b>20</b>

\* Predominant grain size based on Unified Soil Classification System or U.S. Dept. of Agriculture's Soil Classification Method.  
 \*\* (>10 ppm TPH by Method 5030; >40 ppm TPH by Method 3550; >250 ppm O&G by Method 9071)

Table 2

**Site Sensitivity Evaluation (SSE)**  
 Initial Cleanup Level (Step 2)                      Final Cleanup Level (Step 3)

Low Boiling Point Hydrocarbons			
Total Site Characteristics Score	Initial Cleanup Level TPFH (ppm) EPA Method 5030	Select Site Category*	Final Cleanup Level
>150	≤10		Select Site Category* →
121-150	20	Category C & D (Multiply initial cleanup level by 2)      2 x _____ = _____ ppm	
91-120	40	Category E (Multiply initial cleanup level by 3)      3 x _____ = _____ ppm	
61-90	60	_____	
31-60	80	_____	
0-30	100	_____	

Medium Boiling Point Hydrocarbons			
Total Site Characteristics Score	Initial Cleanup Level TPFH (ppm) EPA Method 3550	Select Site Category*	Final Cleanup Level
>150	≤40		Select Site Category* →
121-150	80	Category C & D (Multiply initial cleanup level by 2)      2 x _____ = _____ ppm	
91-120	160	Category E (Multiply initial cleanup level by 3)      3 x <u>400</u> = <u>1200</u> ppm	
61-90	240	_____	
31-60	320	_____	
0-30	400	_____	

Oil & Grease (O&G)			
Total Site Characteristics Score	Initial Cleanup Level O&G (ppm) EPA Method 9071	Select Site Category*	Final Cleanup Level
>150	≤250		Select Site Category* →
121-150	400	Category C & D (Multiply initial cleanup level by 2)      2 x _____ = _____ ppm	
91-120	550	Category E (Multiply initial cleanup level by 3)      3 x _____ = _____ ppm	
61-90	700	_____	
31-60	850	_____	
0-30	1000	_____	

\* See Site Category Descriptions

### Site Sensitivity Evaluation Comment

In order to complete the Site Sensitivity Evaluation, ENSCI considered the deepest contaminated soil to be present at a depth of approximately 10 feet below grade. This is the approximate depth of the contaminated sample collected by Berico. The composition (grain size) of soil encountered at this depth is clay.

Groundwater was not encountered during ENSCI's field activities. Because groundwater was not present at the terminal depths of the borings (approximately 17 feet below grade), groundwater is believed to be at least 7 feet beneath the depth of the bottom of the previously removed UST.

Finally, ENSCI assumed that the site falls into Category E. This category requires that no known water supply wells are contaminated, that no water supply wells exist within a 1,500-foot radius of the site, and that the area is served by an accessible public water supply. Although it was established that the surrounding area is supplied with water by the City of Greensboro, no reconnaissance of the surrounding area was performed. Therefore, it is possible that non-drinking water wells exist within a 1,500-foot radius of the site. This would place the site in Category D. Regardless, the site is among the least vulnerable for transmission of soil contamination into groundwater.