
**Preliminary Site Assessment Report
For Highway 221 Widening Project, Ashe County,
State Project: R-2915C
WBS Element: 34518.1.4**

at

**Parcel 037, Travis and Marie Hamby Property
8864 Highway 221 South
Fleetwood, NC 28626**

Prepared For:

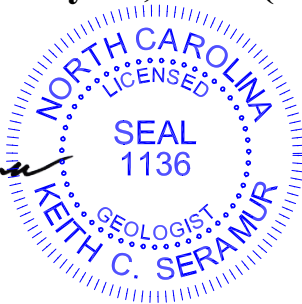
**Mr. Gordon Box
NC DOT, Geotechnical Engineering Unit
GeoEnvironmental Section
1589 Mail Service Center
Raleigh, NC 27699-1589**

Prepared By:

**Seramur & Associates, PC
165 Knoll Drive
Boone, NC 28607**

May 22, 2015 (Revised 6-2-15)

Keith C. Seramur



Keith C. Seramur, P.G.

TABLE OF CONTENTS

SECTION	PAGE
1.0 INTRODUCTION.....	3
1.1 General Site Background Information.....	3
2.0 SCOPE OF WORK.....	3
2.1 Geophysical Surveys.....	3
2.2 Soil Sampling and Analyses	4
3.0 RESULTS OF INVESTIGATION	4
3.1 Geophysical Surveys.....	5
3.2 Soil Borings, Sampling and Laboratory Results.....	5
3.3 Conclusions.....	5
3.4 Recommendations.....	6
Appendix A – Tables and Figures	
Table 1 – Soil Boring Data	
Table B-3 – Summary of Soil Sampling Results	
Figure 1 – Site Location Map	
Figure 2 – Site Map with Soil Boring Locations	
Figure 3 – Magnetometer Contour Map	
Figure 4a – 2 Foot GPR Time Slice	
Figure 4b – 3 Foot GPR Time Slice	
Figure 5 – Soil Sampling Analytical Results	
Appendix B – Laboratory Reports and Chain of Custody Records	

1.0 Introduction

1.1 General Site Background Information

Seramur & Associates, PC was contracted to complete a Preliminary Site Assessment (PSA) at the Hamby Property in Fleetwood, North Carolina (Figure 1). The property is:

Parcel 037, Travis and Marie Hamby Property
8864 Highway 221 South
Fleetwood, NC 28626

The PSA scope of work included completing geophysical surveys at the property to investigate the potential for underground storage tanks followed by soil sampling to assess soil quality and estimate the volume of potentially contaminated soil at the site.

2.0 Scope of Work

2.1 Geophysical Surveys

Seramur & Associates set up 6 grids for geophysical surveys at the Hamby Property. Geophysical data was collected along transects with a 2-foot spacing. Magnetometer surveys were completed with a MF-1 Fluxgate magnetometer. The MF-1 Fluxgate magnetometer is designed to measure changes in the earth's magnetic field associated with larger objects. It does not respond to smaller objects such as nails or wire, but responds well to manholes, steel pipe, buried drums and tanks. The sensitivity level is well suited for detecting buried USTs at commercial and industrial facilities. Magnetometer data was compiled in an Excel spreadsheet and a contour map of the data was drafted using Golden Software's Surfer® modeling program.

A Ground Penetrating Radar (GPR) survey was completed across each grid using Geophysical Survey Systems, Inc. 400 MHz antenna and a SIR-3000 Single Channel Data Acquisition System with a calibrated survey wheel. The GPR data was downloaded and saved onto a computer. The GPR grid data has been processed and modeled using GSSI's Radan® software. The GPR data processing included adjusting time zero, completing a background removal and adjusting the time variable gain to enhance deep reflections.

Three-dimensional models of the GPR grid data were produced with the Radan software. Two time slices (or depth slices) were imaged in each grid at depths of 2 and 3 feet. These depth slices are horizontal slices or plan views of the GPR grid data at selected depths. The thickness of the horizontal slices can be adjusted to show reflections across a particular depth range. We used a 0.5-foot thickness for these time slices. For example, Figure 4a is a 2-foot depth slice with a thickness of 0.5 feet. This image shows GPR reflections in the radar data between depths of 1.75 and 2.25 feet (0.25 feet above and below the slice depth of 2 feet).

2.2 Soil Sampling and Analyses

On May 5th and 6th, 2015, Geonetics Corporation, Dba: Techdrill mobilized to the site to drill soil test borings and collect soil samples. Our project design called for collecting a shallow and deep soil sample from each boring (Figure 2). Soil borings were drilled as close as possible to the former tank pit and dispenser island. Our access was limited to the proposed right of way and temporary easements.

A track-mounted rotary drilling rig with hollow-stem augers was used to drill the soil borings. Drilling tools were decontaminated between each soil boring. The drilling tools were cleaned with a hot-water pressure wash. Split spoons and the cutter head were decontaminated by washing with non-phosphate detergent, rinsed with de-ionized water, rinsed with isopropyl alcohol and a final rinse with de-ionized water. Soil samples were collected from depths of 2-4 feet and 8-10 feet.

A new pair of Nitrile gloves was worn while collecting each soil sample. A representative portion of each soil sample was placed in a zip lock bag and allowed to sit for a period of time. A calibrated Photoionization detector was used to screen the headspace in each bag and the concentration of volatile petroleum vapors measured by the PID was recorded. The texture and type of soil material for each sample was recorded. Table 1 lists the soil boring data including sample depth, PID reading, soil texture and type for each sample.

A 5-gram terra core soil sampler was used to place the soil samples in containers prepared and supplied by QROS Laboratory. The containers were labeled and immediately placed on ice in a cooler. Chain of Custody (COC) records were completed to document site information and sample collection data. COC records accompanied the samples from the time they were collected until they were delivered to QROS Laboratories in Wilmington, North Carolina. The samples were shipped overnight to the laboratory via FedEx. QROS Laboratory analyzed the soil samples for petroleum constituents by Ultra-Violet Fluorescence using a QED HC-1 analyzer. The laboratory reports and chain of custody records are included in Appendix B.

3.0 Results of Investigation

The request for proposal indicated that this property was a NCDENR groundwater incident with the name "Fleetwood Falls and a Facility I.D. #: 0-023991 and Incident #7192. Seramur & Associates personnel made a visit to the Winston-Salem Regional office of NCDENR to complete a file review. The Fleetwood Falls incident is a UST release at a residential development several miles west of the Hamby property. NCDENR has no record of a release at the Hamby Property. We were not able to identify a UST facility in the NCDENR UST database with the same address as the Hamby property.

Mr. Hamby is familiar with the former gas station at the Hamby property. He confirmed that the UST tank pit was located on the north side of the canopy. He did not recall when the tanks were

removed. The tanks at this former gas station may have been removed prior to 1988 when tank registration was initiated.

3.1 Geophysical Surveys

Only one magnetometer anomaly was detected within the 6 grids surveyed at the site. The magnetic anomaly in Grid 5 is associated with the footing for a sign. The magnetometer was also used to scan areas around the front of the store. A second magnetic anomaly was located under the northeast corner of a carport. The carport frame is aluminum. The magnetic anomaly is attributed to a ferrous object below the pavement. This magnetic anomaly is outside of the proposed right of way and easements areas.

GPR survey was completed for all six grids. It appears that the GPR cable was not properly secured to the antenna when the data was collected for Grid 6. The GPR data in Grid 6 was discontinuous and not useful in interpreting subsurface features.

The 2-foot GPR depth slice shows primarily background reflections. There is a rectangular reflection-free area in Grid 5, north of the canopy where the reported tank pit was located (Figure 4a). The 3-foot GPR depth slice shows a couple of linear reflections in Grids 1 and 2. These are attributed to underground utilities. A rectangular set of low-density reflections is visible in Grid 5, north of the canopy. This is interpreted as the location of the former tank pit (dashed red line).

The geophysical survey did not detect evidence of buried USTs at the Hamby property. The magnetic anomaly detected in the northeast corner of the carport appears to be too small to be a UST. This magnetic anomaly is not within the proposed right of way or temporary easements.

3.2 Soil Borings, Sampling and Laboratory Results

Soil material at the Hamby property is primarily a sandy silt saprolite or residuum. Soil borings B-1 and B-5 were drilled east of the dispenser island along the edge of the proposed right of way (Figure 5). Soil boring B-2 was drilled east of the former tank pit along the edge of the proposed right of way. Soil borings B-3 and B-4 were drilled north and east of the former tank pit within the temporary easement (Figure 5).

Petroleum constituents were not detected in any of the ten soil samples collected from the five borings drilled at the site. Seramur & Associates did not find any evidence of soil contamination within the proposed right of way or the temporary easement closest to the former UST system.

3.3 Conclusions

Seramur & Associates did not find any evidence of USTs on the property. Our sampling and laboratory analysis did not identify soil contamination within the proposed right of way or the temporary easement closest to the former UST system.

3.4 Recommendations

Seramur & Associates does not recommend any additional assessment at the Hamby Property.

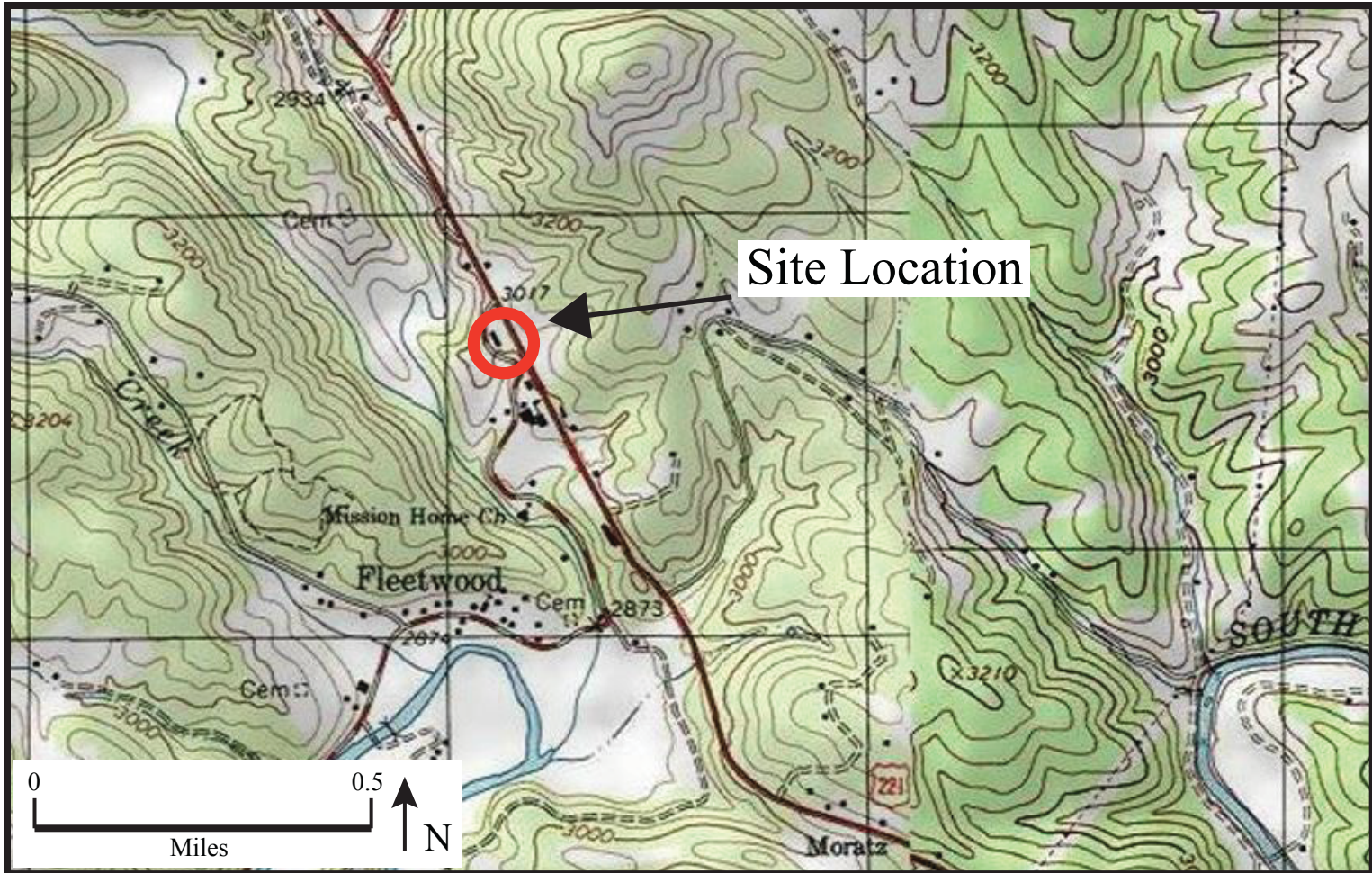
Appendix A

Tables and Figures

Boring No.	Depth (ft)	Lithology	Soil type	Soil Sample	PID ppm
B-1	2.0 to 4.0	Sandy Silt	Residuum	S-41	0.4
B-1	8.0 to 10.0	Sandy Silt	Residuum	S-42	0.8
B-2	2.0 to 4.0	Sandy Silt	Residuum	S-43	0.1
B-2	8.0 to 10.0	Sandy Silt	Residuum	S-44	0.7
B-3	2.0 to 4.0	Sandy Silt	Residuum	S-45	1.1
B-3	8.0 to 10.0	Silty Sand	Residuum	S-46	1.5
B-4	2.0 to 4.0	Silty Sand	Residuum	S-47	1.3
B-4	8.0 to 10.0	Silty Sand	Residuum	S-48	1.1
B-5	2.0 to 4.0	Silty Sand	Residuum	S-49	137
B-5	8.0 to 10.0	Silty Sand	Residuum	S-50	142

Table B-3: Summary of Soil Sampling Results - 8864 Highway 221 South
Revision Date: 5-11-2015 Name: Parcel #037 Hamby Property

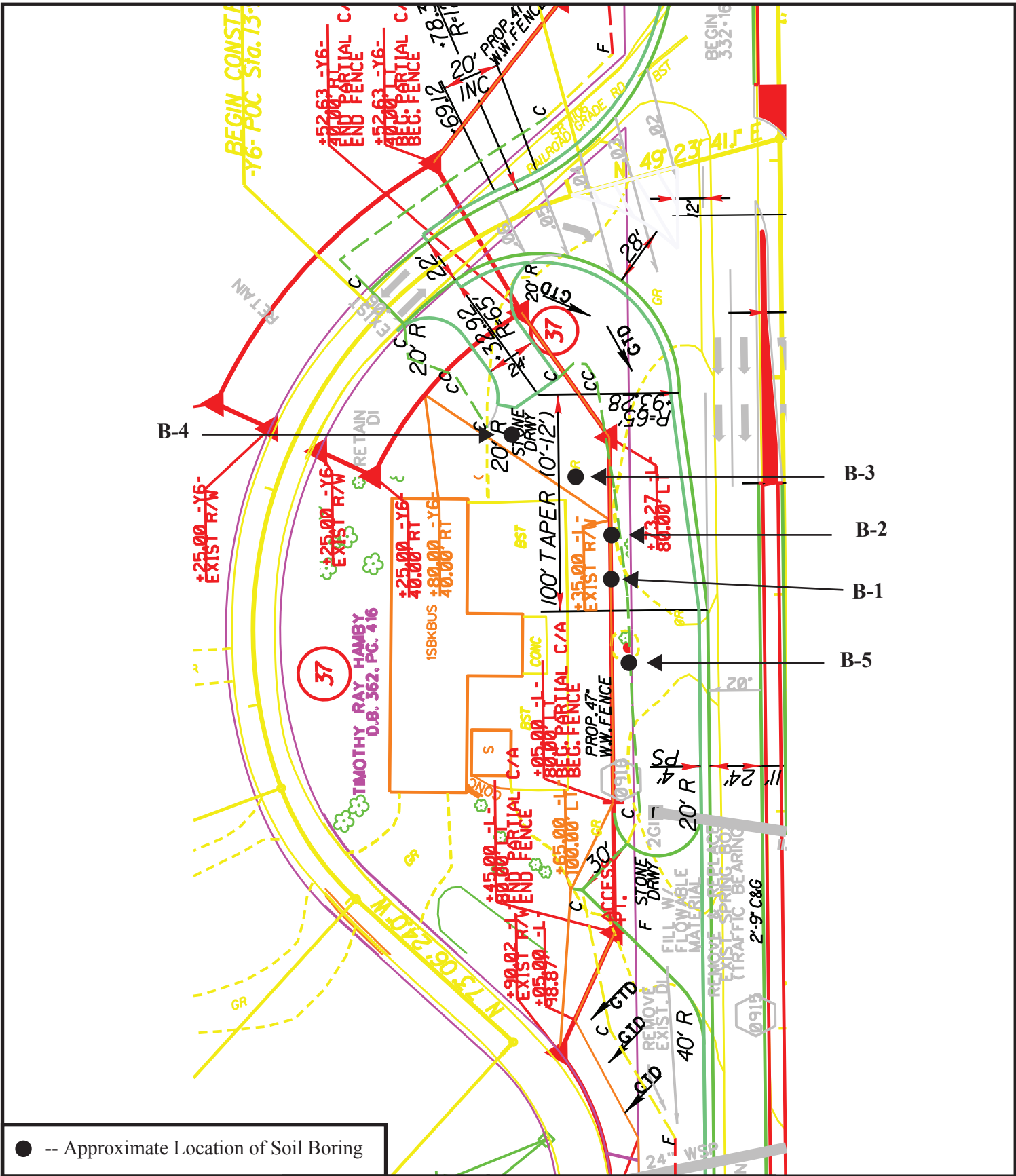
Analytical Method (e.g., VOC by EPA 8260) →					8015C	8015C	
Contaminant of Concern →					TPH GRO (ppm)	TPH DRO (ppm)	Hydro-carbon Fingerprint
Sample ID	Date Collected (m/dd/yy)	Source Area (eg. Tank pit 1)	Sample Depth (ft BGS)	Incident Phase (Closure, 20Day, LSA, etc.)			
S-41	5/05/15	B-1	2.0-4.0 ft	PSA	<0.34	<0.14	--
S-42	5/05/15	B-1	8.0-10.0 ft	PSA	<0.37	<0.15	--
S-43	5/05/15	B-2	2.0-4.0 ft	PSA	<0.35	<0.14	--
S-44	5/05/15	B-2	8.0-10.0 ft	PSA	<0.34	<0.14	--
S-45	5/05/15	B-3	2.0-4.0 ft	PSA	<0.36	<0.14	V. Deg. PHC
S-46	5/05/15	B-3	8.0-10.0 ft	PSA	<0.38	<0.14	V. Deg. PHC
S-47	5/05/15	B-4	2.0-4.0 ft	PSA	<0.36	<0.14	V. Deg. PHC
S-48	5/05/15	B-4	8.0-10.0 ft	PSA	<0.37	<0.15	--
S-49	5/06/15	B-5	2.0-4.0 ft	PSA	<0.36	<0.14	--
S-50	5/06/15	B-5	8.0-10.0 ft	PSA	<0.34	<0.14	--
NCDENR Action Level					10	10	



8864 Highway 221
U.S. Geological Survey,
The National Map

Figure 1
Site Location Map

Seramur & Associates, PC
Boone, NC



● -- Approximate Location of Soil Boring

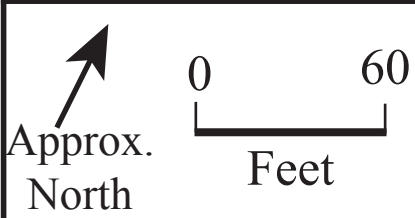


Figure 2
Site Map with
Soil Boring
Locations

Hamby Property
8864 Highway 221 South
Fleetwood, NC

Seramur & Associates, PC
165 Knoll Drive
Boone, NC

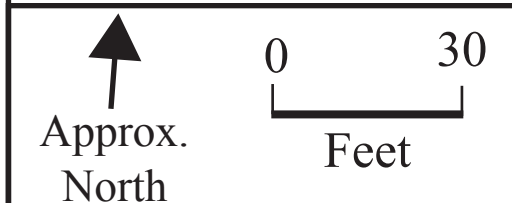
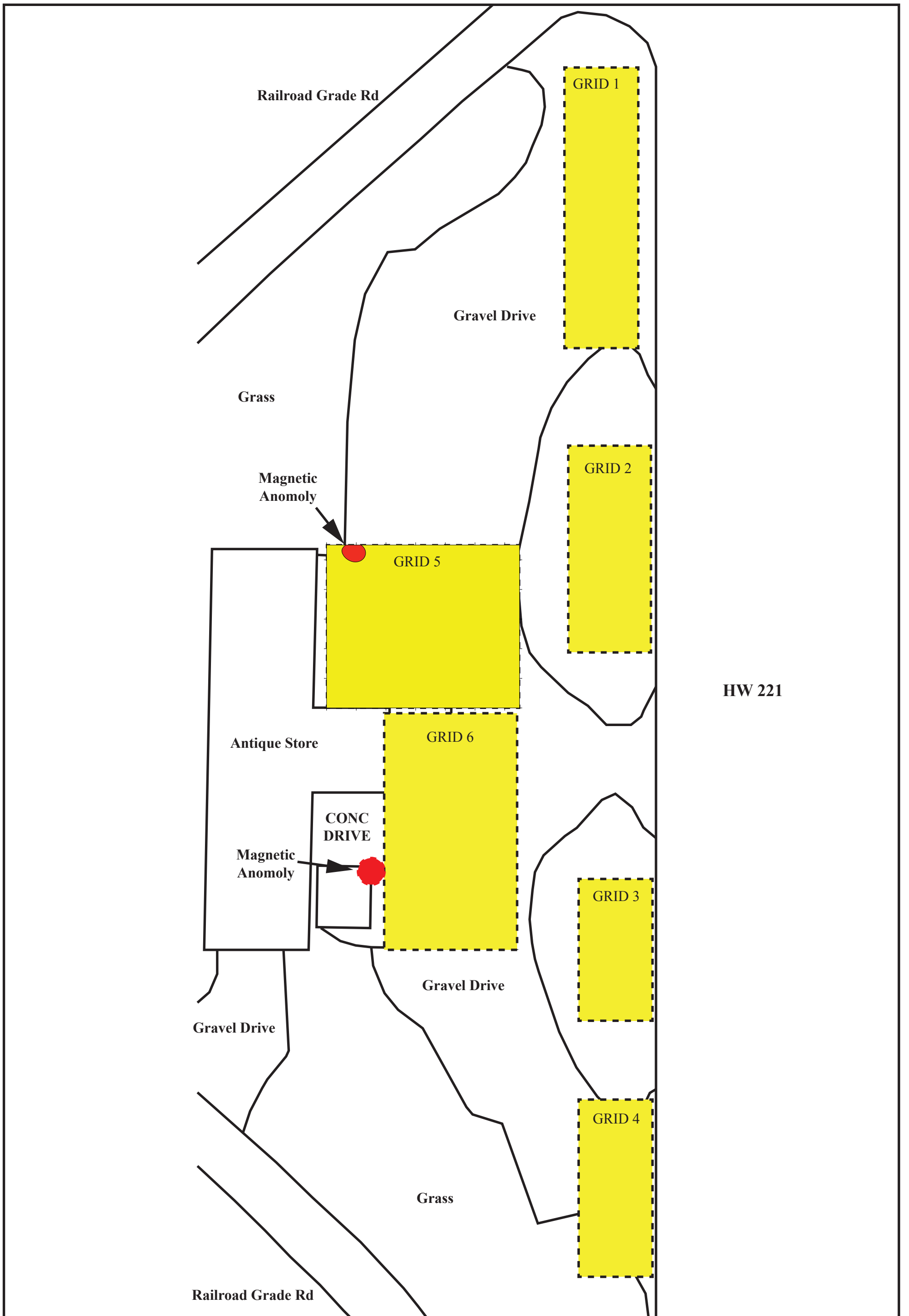


Figure 3
Magnetometer
Contour Map

Hamby Property
8864 Highway 221 South
Fleetwood, NC

Seramur & Associates, PC
165 Knoll Drive
Boone, NC

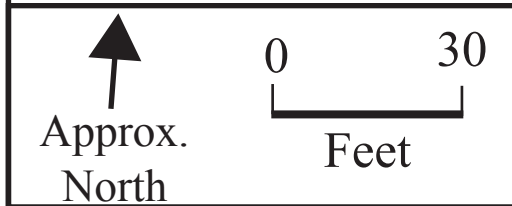
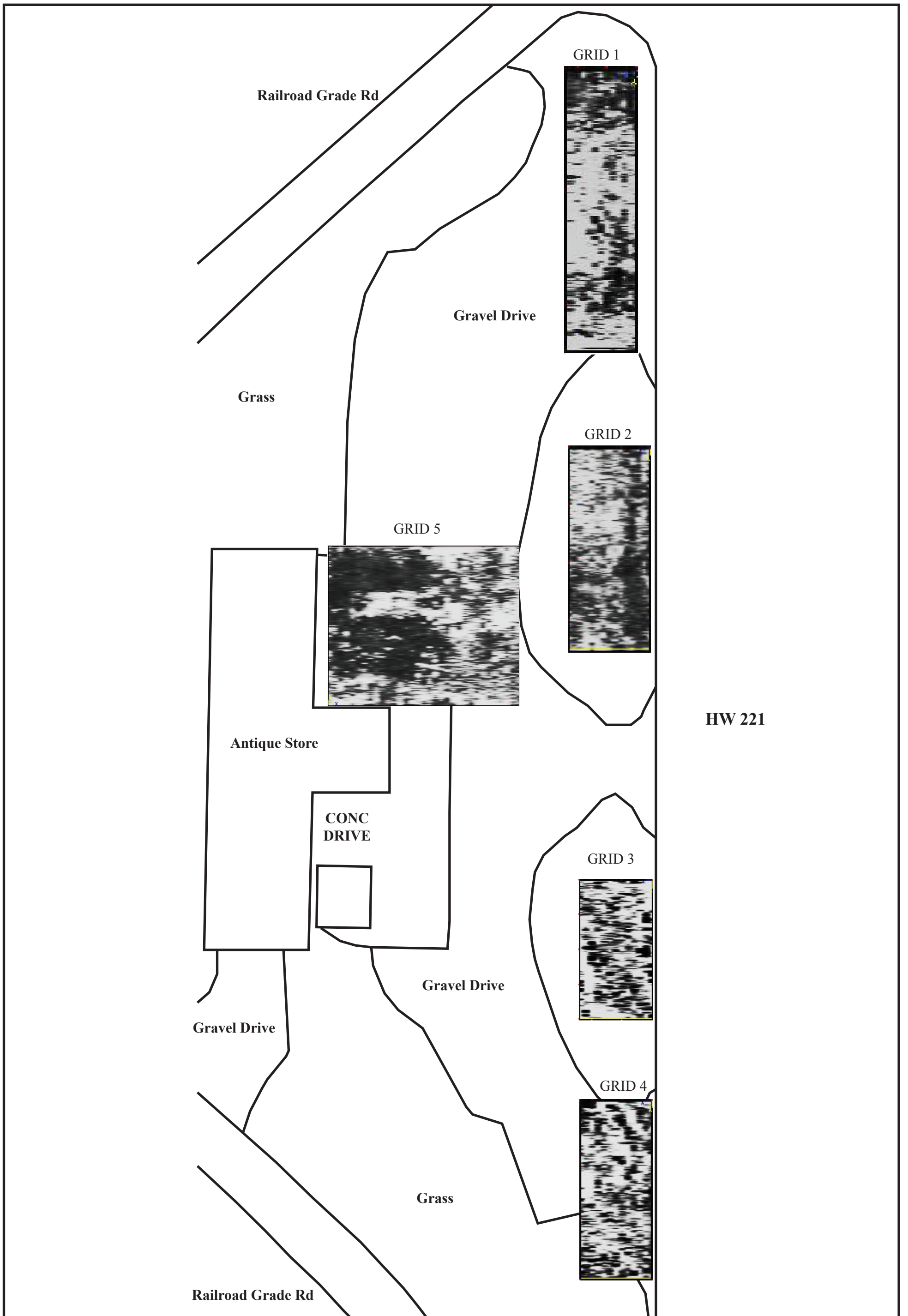
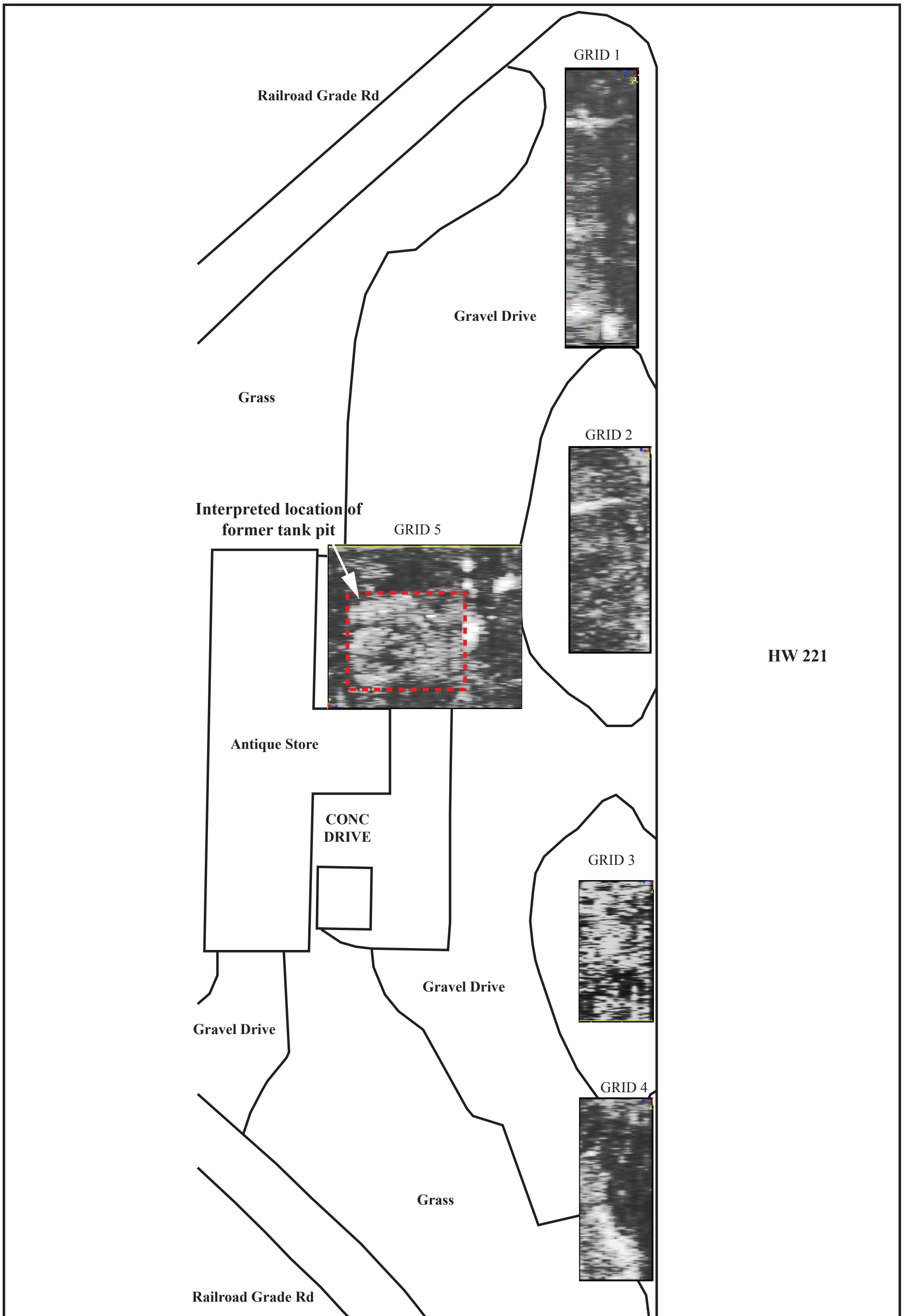


Figure 4a
2-Foot GPR
Time Slice

Hamby Property
8864 Highway 221 South
Fleetwood, NC

Seramur & Associates, PC
165 Knoll Drive
Boone, NC



HW 221

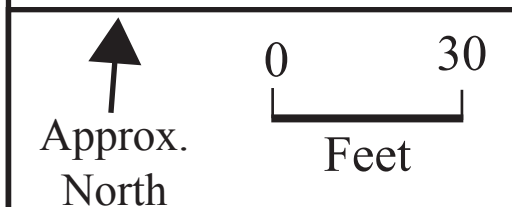


Figure 4b
3-Foot GPR
Time Slice

Hamby Property
8864 Highway 221 South
Fleetwood, NC

Seramur & Associates, PC
165 Knoll Drive
Boone, NC

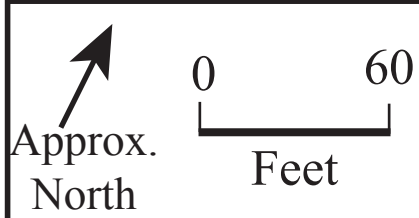
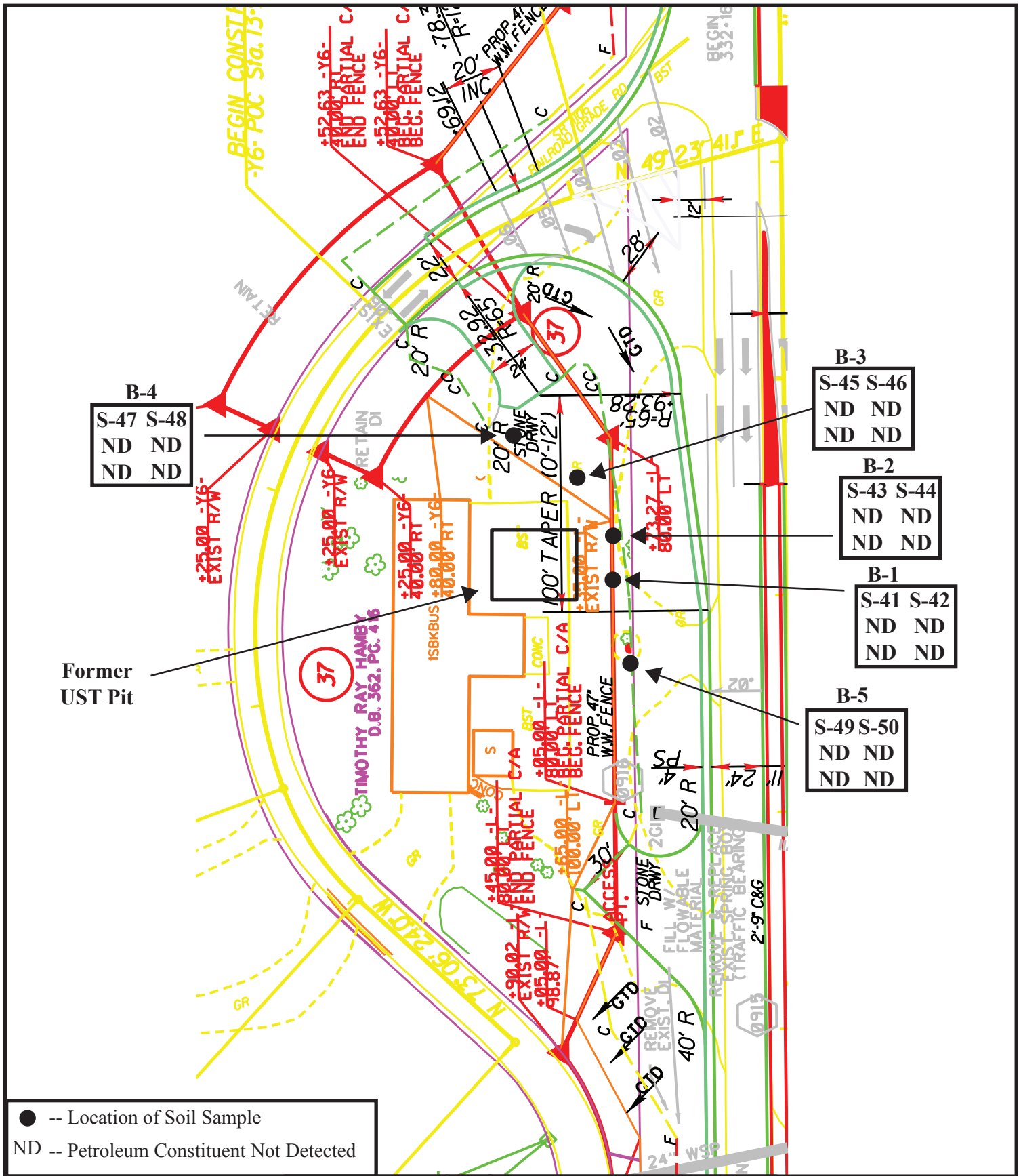


Figure 5
 Soil Sampling
 Analytical Results

Hamby Property
 8864 Highway 221 South
 Fleetwood, NC

Seramur & Associates, PC
 165 Knoll Drive
 Boone, NC

Appendix B

Laboratory Reports and Chain of Custody Records



Hydrocarbon Analysis Results

Client: Seramur and Associates
Address: Boone, NC

Samples taken
Samples extracted
Samples analysed

Wednesday, May 6, 15
 Wednesday, May 6, 15
 Friday, May 8, 15

Contact: Keith Seramur

Operator

F. Owen

Project: NC DOT R-2915C

Fingerprints Only														
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match	
										% light	% mid	% heavy		
s	S37	14.9	<0.75	<0.37	1.5	1.5	<0.12	<0.01	<0.007	0	54.9	45.1	Deg.Fuel (FCM) 19.3%	
s	S38	14.7	<0.73	<0.37	<0.15	<0.37	<0.07	<0.01	<0.007	0	25.3	74.7	V.Deg.PHC (FCM)	
s	S39	15.6	<0.78	4.1	<0.16	4.1	<0.08	<0.02	<0.008	98.5	1	0.4	Deg Gas (FCM) (P) 42.8%	
s	S40	15.4	1.5	1.5	0.15	1.65	<0.08	<0.02	<0.008	95.1	3.3	1.6	Deg Gas (FCM) (P) 54.1%	
s	S41	13.8	<0.69	<0.34	<0.14	<0.34	<0.07	<0.01	<0.007	0	0	0	Pet.Hyd not Detected	
s	S42	14.8	<0.74	<0.37	<0.15	<0.37	<0.07	<0.01	<0.007	0	0	0	Pet.Hyd not Detected (FCM)	
s	S43	14.1	<0.71	<0.35	<0.14	<0.35	<0.07	<0.01	<0.007	0	0	100	Match not possible (FCM)	
s	S44	13.6	<0.68	<0.34	<0.14	<0.34	<0.07	<0.01	<0.007	0	0	0	Pet.Hyd not Detected	
s	S45	14.4	<0.72	<0.36	<0.14	<0.36	<0.07	<0.01	<0.007	0	100	0	V.Deg.PHC (FCM)	
s	S46	14.3	<0.71	<0.36	<0.14	<0.36	<0.07	<0.01	<0.007	0	100	0	V.Deg.PHC (FCM)	
Initial Calibrator QC check			OK		Final FCM QC Check			OK		109.5%				

Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content
 Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library
 (SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present



Hydrocarbon Analysis Results

Client: Seramur and Associates
Address: Boone, NC

Samples taken
Samples extracted
Samples analysed

Wednesday, May 6, 15
 Wednesday, May 6, 15
 Friday, May 8, 15

Contact: Keith Seramur

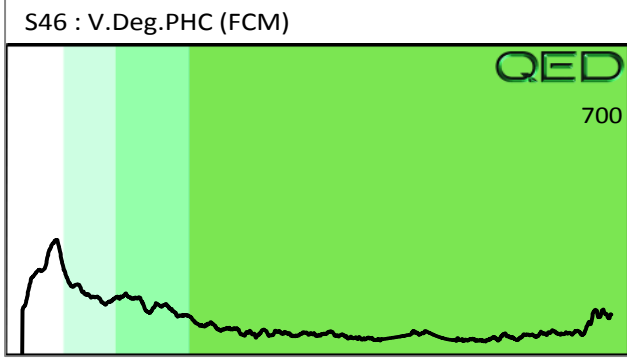
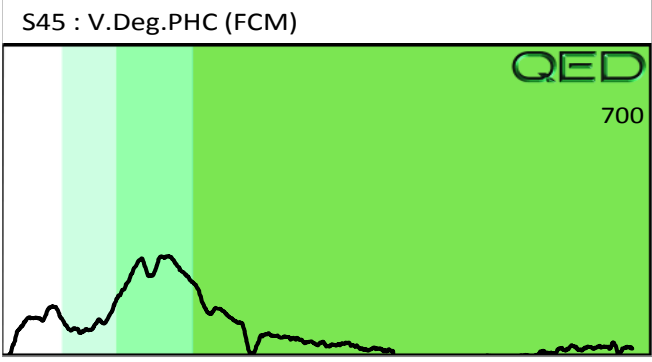
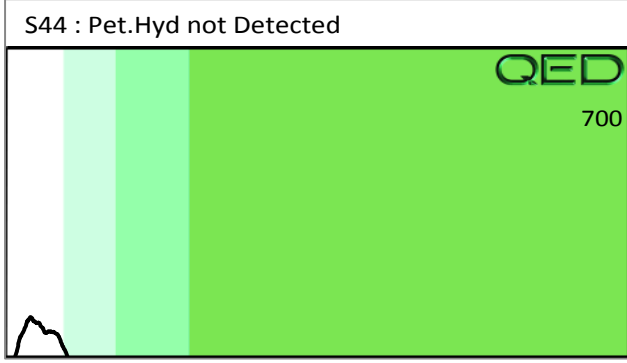
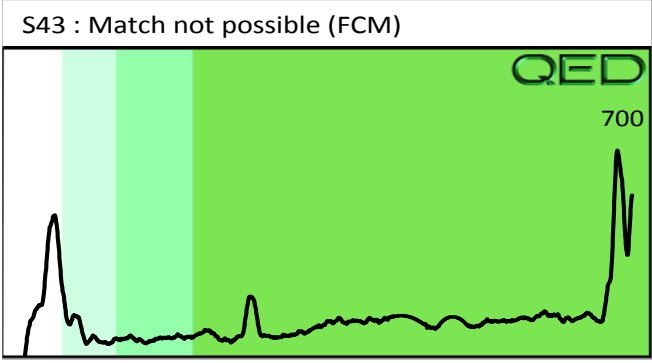
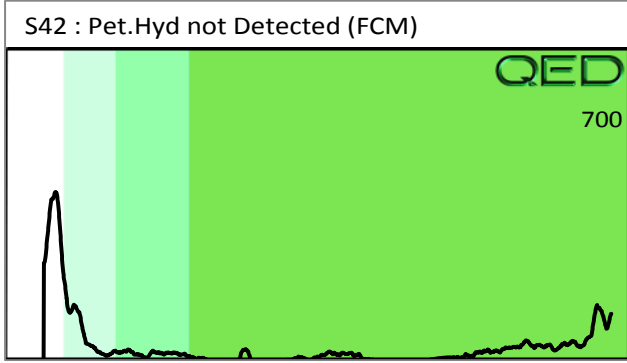
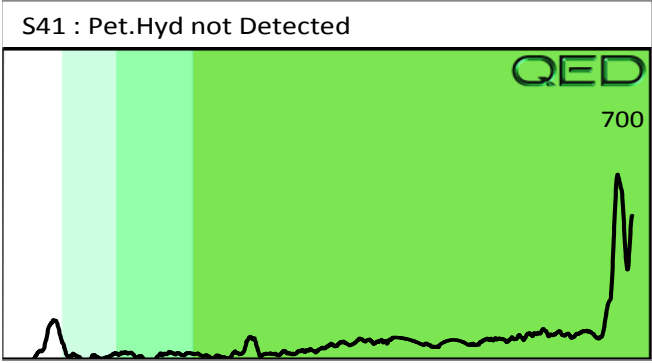
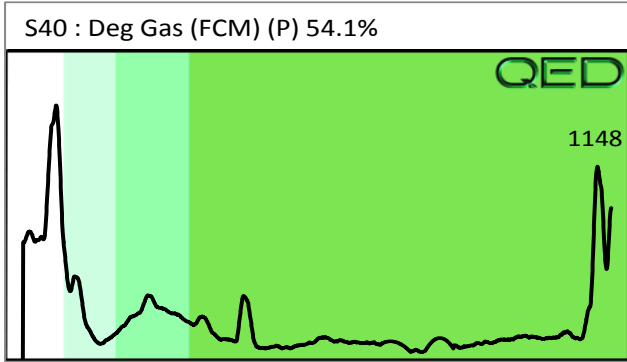
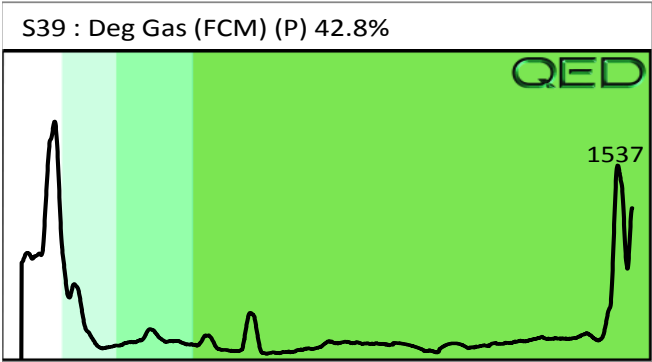
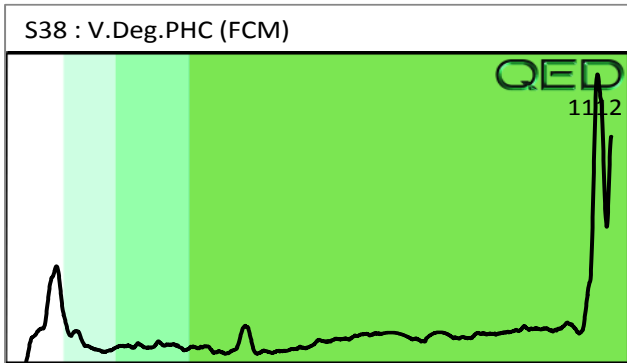
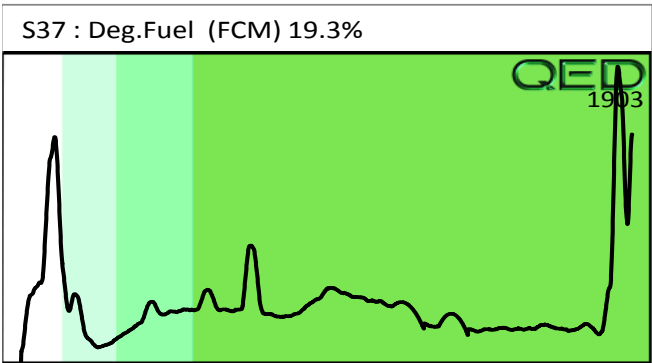
Operator

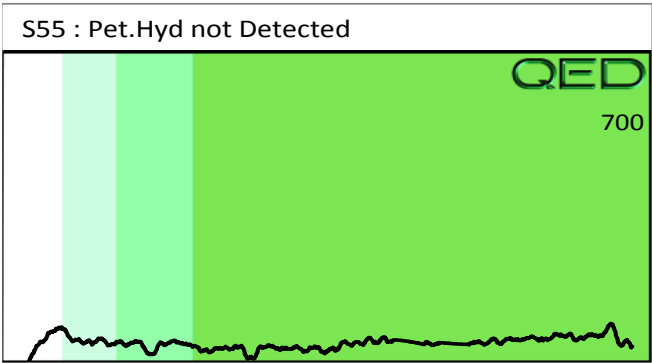
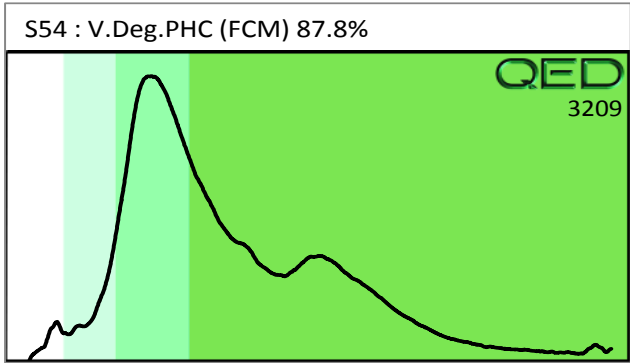
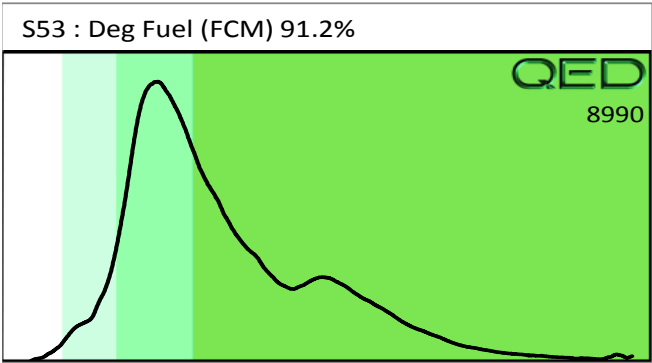
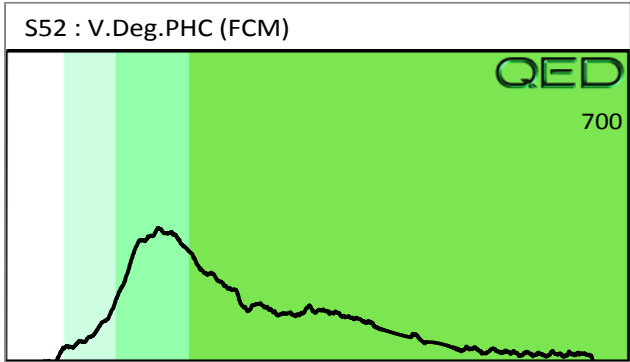
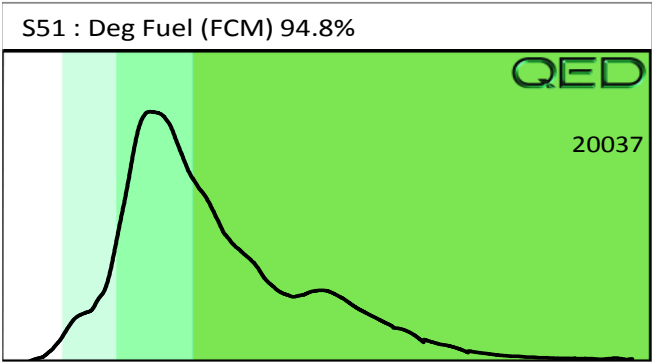
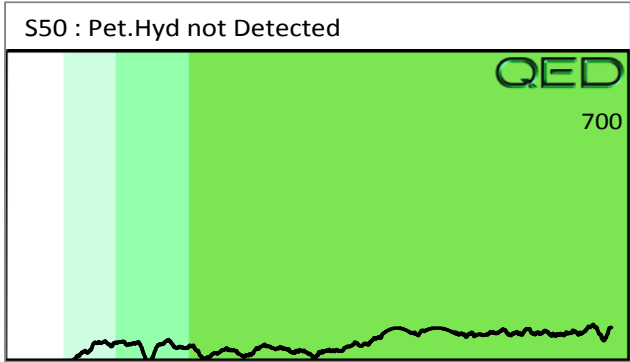
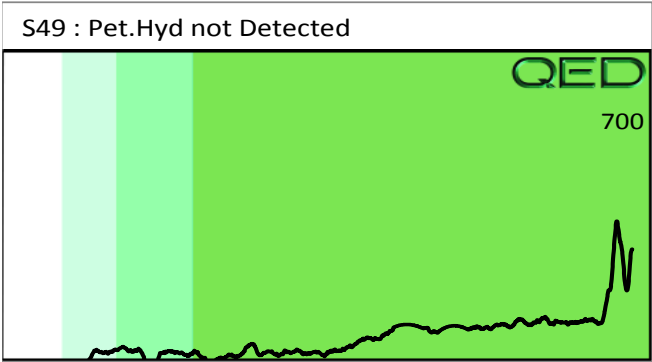
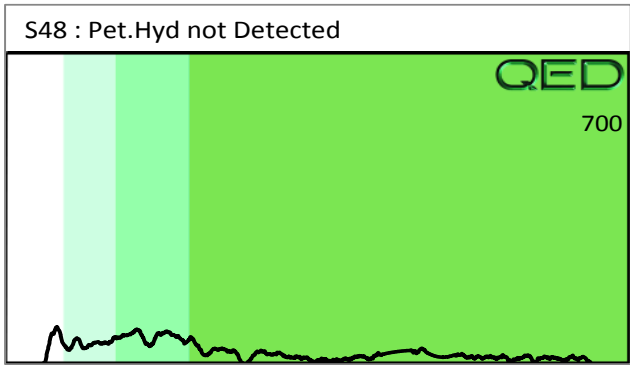
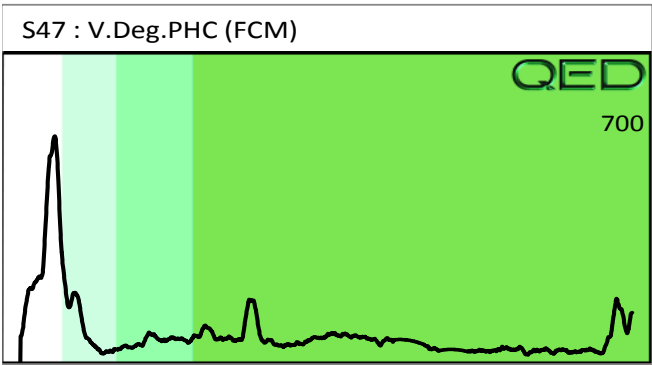
F. Owen

Project: NC DOT R-2915C

Fingerprints Only													
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	S47	14.3	<0.71	<0.36	<0.14	<0.36	<0.07	<0.01	<0.007	0	100	0	V.Deg.PHC (FCM)
s	S48	14.9	<0.75	<0.37	<0.15	<0.37	<0.07	<0.01	<0.007	0	0	0	Pet.Hyd not Detected
s	S49	14.4	<0.36	<0.36	<0.14	<0.36	<0.07	<0.01	<0.007	0	0	0	Pet.Hyd not Detected
s	S50	13.8	<0.34	<0.34	<0.14	<0.34	<0.07	<0.01	<0.007	0	0	0	Pet.Hyd not Detected
s	S51	13.0	<0.65	<0.33	22	22	7.2	0.28	0.004	0	93.7	6.3	Deg Fuel (FCM) 94.8%
s	S52	13.0	<0.65	<0.33	<0.13	<0.33	<0.07	<0.01	<0.007	0	71	29	V.Deg.PHC (FCM)
s	S53	12.7	<0.63	<0.32	8.7	8.7	2.7	0.11	0.001	0	91.6	8.4	Deg Fuel (FCM) 91.2%
s	S54	14.1	<0.71	<0.35	1.2	1.2	1.1	0.06	<0.007	0	91.1	8.9	V.Deg.PHC (FCM) 87.8%
s	S55	14.5	<0.73	<0.36	<0.15	<0.36	<0.07	<0.01	<0.007	0	0	0	Pet.Hyd not Detected
Initial Calibrator QC check			OK			Final FCM QC Check			OK			103.0%	

Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content
 Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library
 (SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present







Chain of Custody Record and Analytical Request Form

Sample ID	Sample Collection		Initials	TAT Requested	
	Date	Time		24 Hour	48 Hour
S-35	5/5/15	11:33	KCS		X
S-36	5/5/15	11:54	KCS		X
S-37	5/5/15	12:08	KCS		X
S-38	5/5/15	12:20	KCS		X
S-39	5/5/15	13:17	KCS		X
S-40	5/5/15	13:31	KCS		X
S-41	5/5/15	14:57	KCS		X
S-42	5/5/15	15:04	KCS		X
S-43	5/5/15	15:30	KCS		X
S-44	5/5/15	15:52	KCS		X
S-45	5/5/15	16:10	KCS		X
S-46	5/5/15	16:27	KCS		X
S-47	5/5/15	16:37	KCS		X
S-48	5/5/15	16:45	KCS		X
S-49	5/6/15	9:13	KCS		X
S-50	5/6/15	9:29	KCS		X
S-51	5/6/15	10:36	KCS		X

Client: ~~QROS~~ Seraun & Associates

Contact: Keith Seraun

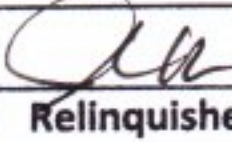
Phone: 828 723 0499

Email: seraun@icloud.com

Project Reference: NC DOT R-2915-C

Each Sample will be analyzed for total
BTEX, GRO, DRO, TPH, and PAH

Each Sample will generate a fingerprint
representative of the petroleum product
within the sample. Electronic Data will be
submitted to the email above.

	5/6/15	Fed Ex	5/6/15 1500
Relinquished by	Date/time	Accepted by	Date/time
Relinquished by	Date/time	Accepted by	Date/time
Relinquished by	Date/time	Accepted by	Date/time

SHIP TO: QROS

420 Raleigh Street Suite E

Wilmington, NC 28412

Contact: Leila Tabatabai

leilat@qrosllc.com

910-508-1940