PRELIMINARY SITE ASSESSMENT

NC 268 FROM MULTI-LANES EAST OF NC 18
TO SR 1966 (AIRPORT ROAD)
PARCEL 51 HAYES PRINT-STAMP CO, INC.
HAYES PRINTING
613 ELKIN HIGHWAY
WILKESBORO, WILKES COUNTY, NORTH CAROLINA

NCDOT WBS ELEMENT 36001.1.2
STATE PROJECT R-2603

July 12, 2013

Prepared for:

Gordon H. Box, L.G.
North Carolina Department of Transportation
Geotechnical Engineering Unit
GeoEnvironmental Section
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Prepared by:

Kleinfelder Southeast, Inc.
6200 Harris Technology Blvd.
Charlotte, North Carolina 28269

Kleinfelder Project No. 134245

KLEINFELDER
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July 12, 2013
134245 | CLT13R0321

Gordon H. Box, L.G.
North Carolina Department of Transportation
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Subject: **Preliminary Site Assessment**
WBS Element No. 36001.1.2, State Project R-2603
Parcel 51 Hayes Print-Stamp Co, Inc.
Hayes Printing
613 Elkin Highway
Wilkesboro, North Carolina

Dear Mr. Box:

Please find the enclosed report summarizing the sampling activities for the preliminary site assessment conducted at the referenced site. Field analysis of one of the two soil samples collected at the site detected contaminant at concentrations exceeding the state action level. This report summarizes our field activities, field analytical report, conclusions, and recommendations.

Should questions arise or additional information be required, please contact the undersigned.

Sincerely,

KLEINFELDER SOUTHEAST, INC.

Travis L. O'Quinn
Staff Professional I

Craig D. Neil, P.G.
Senior Professional

Based on the results of the QED analysis, Kleinfelder selected soil sample SS-2 for laboratory analysis for TPH-DRO and TPH-GRO using EPA Method 8015B following 3546 and 5035 preparation. All soil samples were placed into laboratory provided jars, labeled, and maintained on ice until delivered to Pace Analytical, a NCDOT contract laboratory, for chemical analysis.

3.0 RESULTS

3.1 Geophysical Investigation

Pyramid concluded that the GPR and EM investigation did not detect metallic USTs or unidentified anomalies within the survey area. Pyramid's report is included in Appendix B.

3.2 Soil Sampling

The QED results detected TPH-DRO in SS-2 (11.2 milligrams per kilogram (mg/kg)) at 4 to 5 feet below ground surface (bgs) at concentrations above the North Carolina action level (10 mg/kg). The laboratory results detected TPH-GRO in SS-2 (11.9 mg/kg) at 4 to 5 feet bgs at concentrations above the North Carolina action level (10 mg/kg). The analytical results are summarized in Table 2. The field analytical report is included in Appendix D. The laboratory analytical report is included in Appendix E.

Based on field analytical results and PID readings, petroleum impacted soils were identified in the vicinity of SS-2. Kleinfelder was unable to identify a source for the impacted soils identified during the investigation. The estimated extent of contaminated soil was extrapolated based on the limited soil borings and the concentrations of the impacts. Kleinfelder estimates that the contaminated soil in the vicinity SS-2 covers an area approximately 600 square feet in size. Based on the future construction plans, the maximum depth of proposed onsite structures is approximately seven feet bgs. Based on these dimensions Kleinfelder, estimates that there are approximately 155 cubic yards of impacted soil at the site. The approximate area of soil contamination is depicted on Figure 4.

4.0 CONCLUSIONS AND RECOMMENDATION

Based on results of the laboratory analysis and field observations, Kleinfelder has the following conclusions:

- The GPR and EM investigation did not detect metallic USTs or unidentified anomalies within the proposed right-of-way.
- Groundwater was not encountered in the soil borings.
- TPH-DRO (QED analysis) and TPH-GRO (laboratory analysis) were detected above the North Carolina action level in boring SS-2.
- Based upon the analytical results, petroleum impacted soil is located in the vicinity of SS-2 between the surface and seven feet bgs. Based on the future construction plans, the maximum depth of proposed onsite structures is approximately seven feet bgs.
- Approximately 155 cubic yards of contaminated soil was identified at the site.
- No existing groundwater monitoring wells were observed within the survey area

Based on results of the laboratory analysis and field observations, Kleinfelder has the following recommendations:

- Kleinfelder recommends that the petroleum impacted soil in the vicinity of SS-2 be removed and disposed of at an approved disposal facility prior to the start of construction activities.

5.0 LIMITATIONS

Our work has been performed in a manner consistent with that level of care and skill ordinarily exercised by other members of Kleinfelder's profession practicing in the same locality, under similar conditions and at the date the services were provided. Our conclusions, opinions and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no guarantee or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

1.0 INTRODUCTION

Kleinfelder Southeast, Inc. (Kleinfelder) has prepared this Preliminary Site Assessment (PSA) report documenting assessment activities performed at the Parcel 51 Hayes Print-Stamp Co, Inc. located at 613 Elkin Highway in Wilkesboro, Wilkes County, North Carolina (Figure 1). The site is currently developed with Hayes Printing which is a print shop. This assessment was conducted on behalf of the North Carolina Department of Transportation (NCDOT) in accordance with Kleinfelder's May 3, 2013 proposal.

NCDOT is proposing to widen NC 268 (Elkin Highway) east of NC 18 to SR 1966 (Airport Road). The proposed right-of-way includes a portion of Parcel 51 (Figure 2). Based on information provided by NCDOT, the site was historically operated as a print shop (Hayes Printing) with no known underground storage tanks (USTs). However, there is concern that contaminated soils could be encountered during the construction activities at this site.

The purpose of this assessment was to determine the presence or absence of impacted soil at the subject property in proposed right-of-way construction areas related to the widening of Elkin Highway east of NC 18 to SR 1966 (Airport Road).

1.1 Site Description

The proposed right-of-way includes the construction areas related to the widening of Elkin Highway east of NC 18 to SR 1966. At the time of our site reconnaissance, the site contained a vacant structure that historically operated as a print shop named Hayes Printing. Based on information provided by NCDOT, the site was a print shop with no known USTs at the site. The geophysical survey did not identify suspected USTs or other unidentified anomalies within the proposed right-of-way. Site photographs are shown in Appendix A.

1.2 Site Location

The facility is located at 613 Elkin Highway in Wilkesboro, North Carolina. The property is bound to the north and east by wooded land, to the south by Elkin Highway, and to the west by a commercial building.

2.0 SITE ASSESSMENT

2.1 Geophysical Investigation

Pyramid Environmental & Engineering, P.C (Pyramid) conducted a geophysical investigation of the property on May 17, 2013. Pyramid utilized ground penetrating radar (GPR) and electromagnetic (EM) induction technology to locate potential geophysical anomalies and potential USTs at the site. Pyramid did not identify suspected USTs or other unidentified anomalies within the proposed right-of-way. A copy of the Pyramid Geophysical Investigation Report is included in Appendix B.

2.2 Soil Sampling

To determine if contaminated soil may be encountered during the proposed construction activities, two soil samples were collected along the NCDOT proposed easement. Prior to conducting soil borings, utilities were marked by NC One Call and Taylor Wiseman & Taylor (TWT). Kleinfelder met Probe Technology at the site on May 29, 2013. Probe Technology advanced two soil borings (SS-1 and SS-2) by direct push technology (DPT). The approximate location of the borings is shown on Figure 3.

Soil borings were advanced to a depth of ten feet below the ground surface (bgs) at each location. Soil borings SS-1 and SS-2 were located on the southern portion of the property and along the proposed easement. Soil samples were collected by driving a macrocore sampler in five foot intervals in each boring. Each five foot sample sleeve was divided in half and screened for volatile organic compounds in the field using a MiniRae 2000 photo-ionization detector (PID). In each boring, the soil interval with the highest PID reading was collected for field analysis. The PID readings are summarized in Table 1. Copies of the boring logs are included in Appendix C.

Prior to the initial boring and after each subsequent boring, the sampling equipment was decontaminated with a pressure washer. The soil samples collected for analysis were analyzed in the field by a QED for total benzene, toluene, ethyl benzene, and xylenes (BTEX); total petroleum hydrocarbons (TPH); TPH diesel range organics (DRO); TPH gasoline range organics (GRO); total Aromatics (C10-C35); 16 EPA PAHs; and benzo(a)pyrene. The soil samples were placed into laboratory provided containers, labeled, and were analyzed by the QED for chemical analysis.

Based on the results of the QED analysis, Kleinfelder selected soil sample SS-2 for laboratory analysis for TPH-DRO and TPH-GRO using EPA Method 8015B following 3546 and 5035 preparation. All soil samples were placed into laboratory provided jars, labeled, and maintained on ice until delivered to Pace Analytical, a NCDOT contract laboratory, for chemical analysis.

3.0 RESULTS

3.1 Geophysical Investigation

Pyramid concluded that the GPR and EM investigation did not detect metallic USTs or unidentified anomalies within the survey area. Pyramid's report is included in Appendix B.

3.2 Soil Sampling

The QED results detected TPH-DRO in SS-2 (11.2 milligrams per kilogram (mg/kg)) at 4 to 5 feet below ground surface (bgs) at concentrations above the North Carolina action level (10 mg/kg). The laboratory results detected TPH-GRO in SS-2 (11.9 mg/kg) at 4 to 5 feet bgs at concentrations above the North Carolina action level (10 mg/kg). The analytical results are summarized in Table 2. The field analytical report is included in Appendix D. The laboratory analytical report is included in Appendix E.

Based on field analytical results and PID readings, petroleum impacted soils were identified in the vicinity of SS-2. Based on the analytical results and PID readings, SS-2 contain petroleum impacted soil from the surface to approximate five feet bgs. Kleinfelder estimates that the contaminated soil in the vicinity SS-2 covers an area approximately 113 square feet in size. Based on the future construction plans, the maximum depth of proposed onsite structures is approximately four to five feet bgs. Based on these dimensions Kleinfelder, estimates that there are approximately 21 cubic yards of impacted soil at the site. The approximate area of soil contamination is depicted on Figure 4.

4.0 CONCLUSIONS AND RECOMMENDATION

Based on results of the laboratory analysis and field observations, Kleinfelder has the following conclusions:

- The GPR and EM investigation did not detect metallic USTs or unidentified anomalies within the proposed right-of-way.
- Groundwater was not encountered in the soil borings.
- TPH-DRO (QED analysis) and TPH-GRO (laboratory analysis) were detected above the North Carolina action level in boring SS-2.
- Based upon the analytical results, petroleum impacted soil is located in the vicinity of SS-2 between the surface and five feet bgs. Based on the future construction plans, the maximum depth of proposed onsite structures is approximately four to five feet bgs.
- Approximately 21 cubic yards of contaminated soil was identified at the site.
- No existing groundwater monitoring wells were observed within the survey area

Based on results of the laboratory analysis and field observations, Kleinfelder has the following recommendations:

- Kleinfelder recommends that the petroleum impacted soil in the vicinity of SS-2 be removed and disposed of at an approved disposal facility prior to the start of construction activities.

5.0 LIMITATIONS

Our work has been performed in a manner consistent with that level of care and skill ordinarily exercised by other members of Kleinfelder's profession practicing in the same locality, under similar conditions and at the date the services were provided. Our conclusions, opinions and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no guarantee or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

The information included on graphic representations in the report has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. These documents are not intended for use as a land survey product, nor are they designed or intended as a construction design document. The use or misuse of the information contained on these graphic representations is at the sole risk of the party using or misusing the information.

TABLES

TABLE 1: SOIL SAMPLE PID RESULTS

SAMPLE LOCATION	DEPTH (feet bgs)	PID READINGS
SS-1	2.0-3.0	4.9
	4.0-5.0	2.7
	7.0-8.0	4.2
	9.0-10.0	3.7
SS-2	2.0-3.0	3.9
	4.0-5.0	**4.0**
	7.0-8.0	0.1
	9.0-10.0	1.1

Notes:

Samples were collected on May 29, 2013.
Readings reported in parts per million
feet bgs = feet below ground surface
Shaded = Selected for field analysis
Bold and Shaded = Selected for laboratory analysis

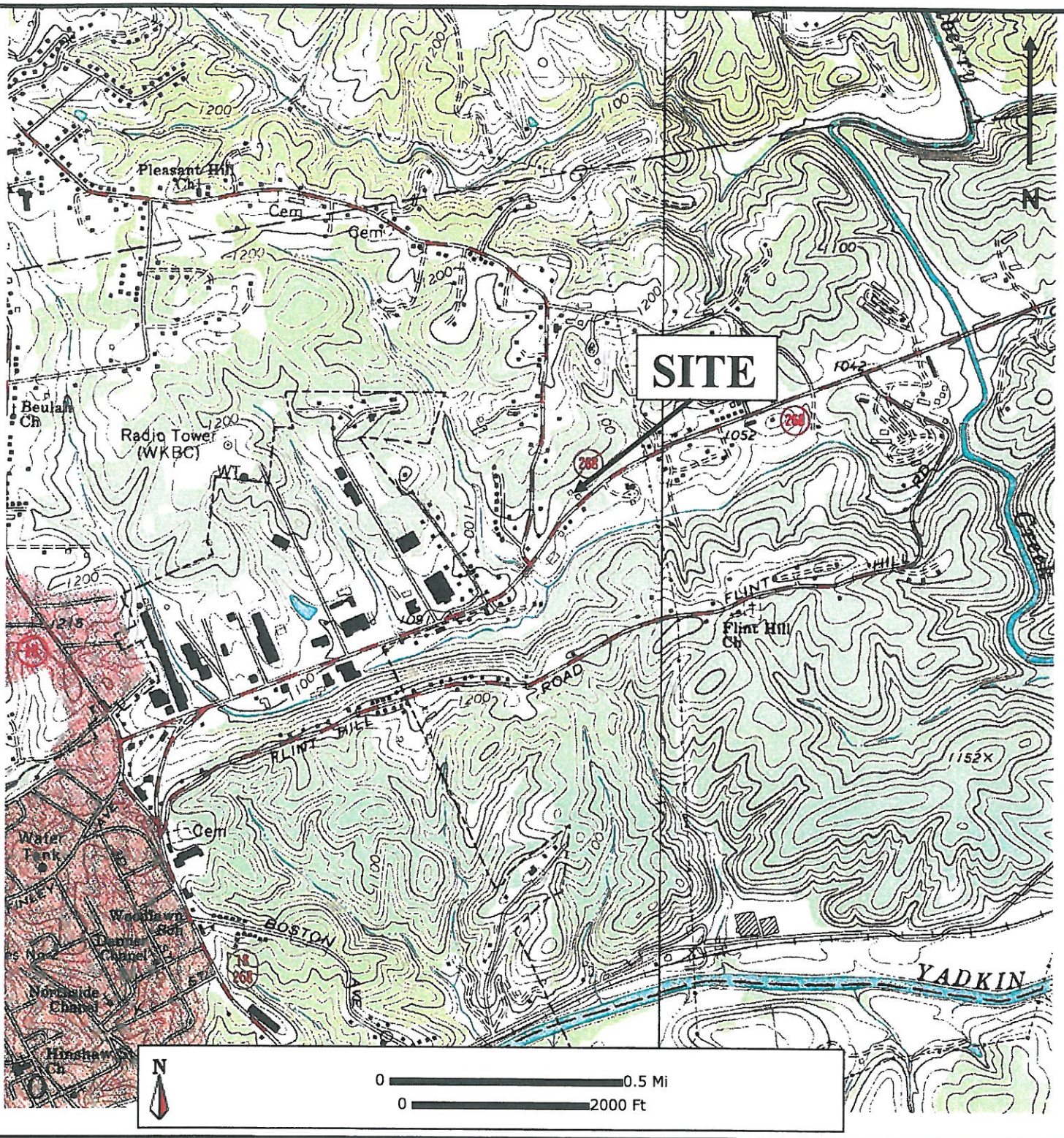
TABLE 2: SOIL SAMPLE FIELD ANALYTICAL SUMMARY

SAMPLE ID	DEPTH	COLLECTION DATE	BTEX	GRO (C5-C10)	DRO (C10-C35)	TPH (C5-C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Laboratory Analysis	
										GRO	DRO
SS-1	2.0-3.0	5/29/2013	<1.1	<1.1	8.9	8.9	2.05	<0.11	<0.056	NA	NA
SS-2	4.0-5.0	5/29/2013	<0.9	<0.9	**11.2**	11.2	3.01	<0.09	<0.044	**11.9**	8.1
State Action Level (Petroleum UST)			NA	10	10	NA	NA	NA	NA	10	10

Notes:

Results presented in milligrams per kilogram, analogous to parts per million
BTEX = Benzene, Toluene, Ethylbenzene, and xylenes
GRO = Gasoline Range Organics
DRO = Diesel Range Organics
TPH = Total Petroleum Hydrocarbons
PAH = Polycyclic Aromatic Hydrocarbons
BaP = Benzo(a)pyrene
Bold denotes concentration exceeds the State Action Level for Petroleum USTs

FIGURES



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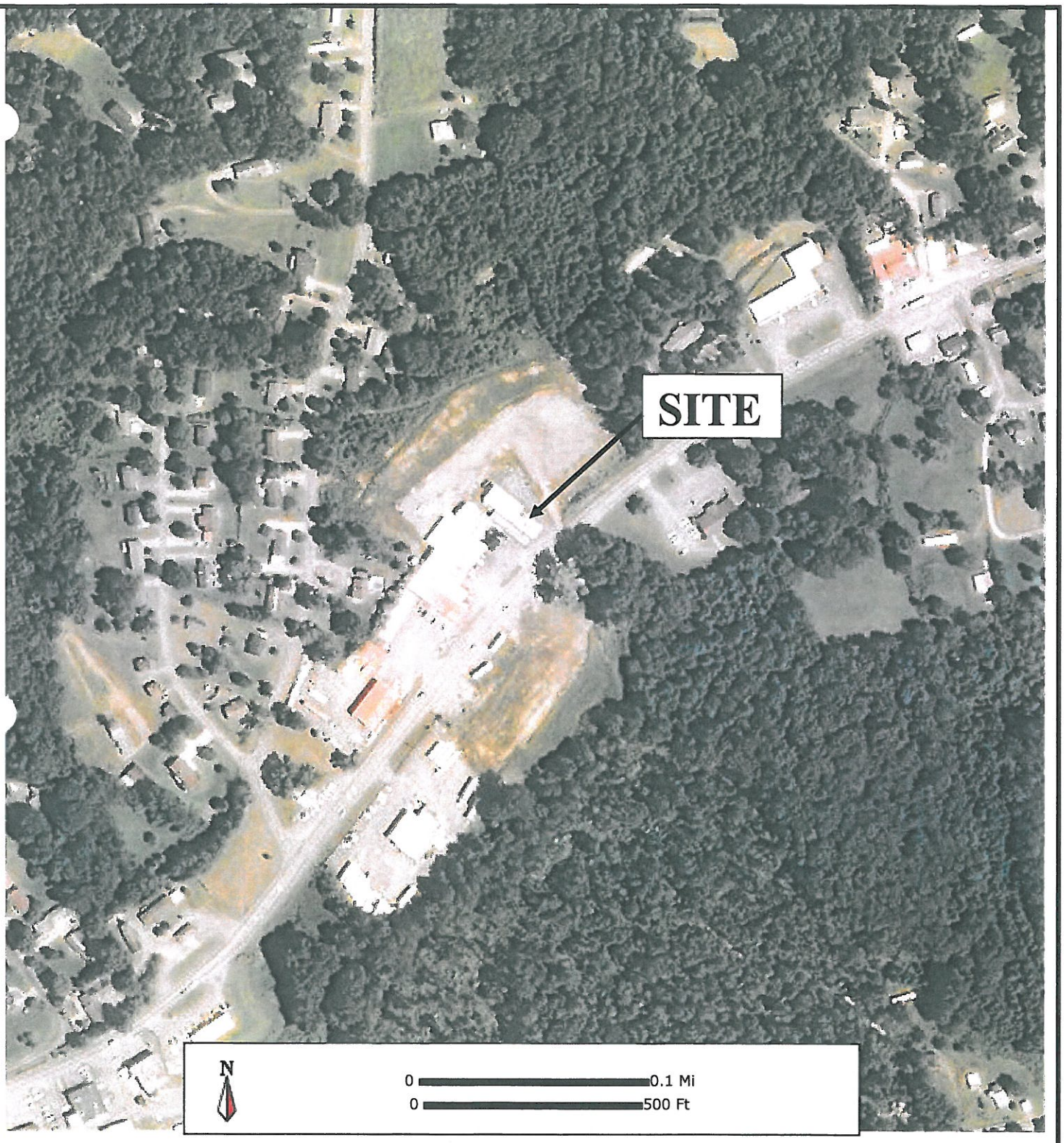
6200 HARRIS TECHNOLOGY BOULEVARD
CHARLOTTE, NORTH CAROLINA
PHONE: 704.598.1049

FIGURE 1
SITE LOCATION MAP

PARCEL 51 HAYES PRINTING
HAYES PRINTING
613 ELKIN HIGHWAY
WILKESBORO, NORTH CAROLINA

DATE: 6/4/2013	APPROVED BY: CDN	SCALE: As Shown
SOURCE: USGS Topographic Orthophoto Map, Wilkesboro, NC 1966		PROJECT NO: 134245



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CHARLOTTE, NORTH CAROLINA
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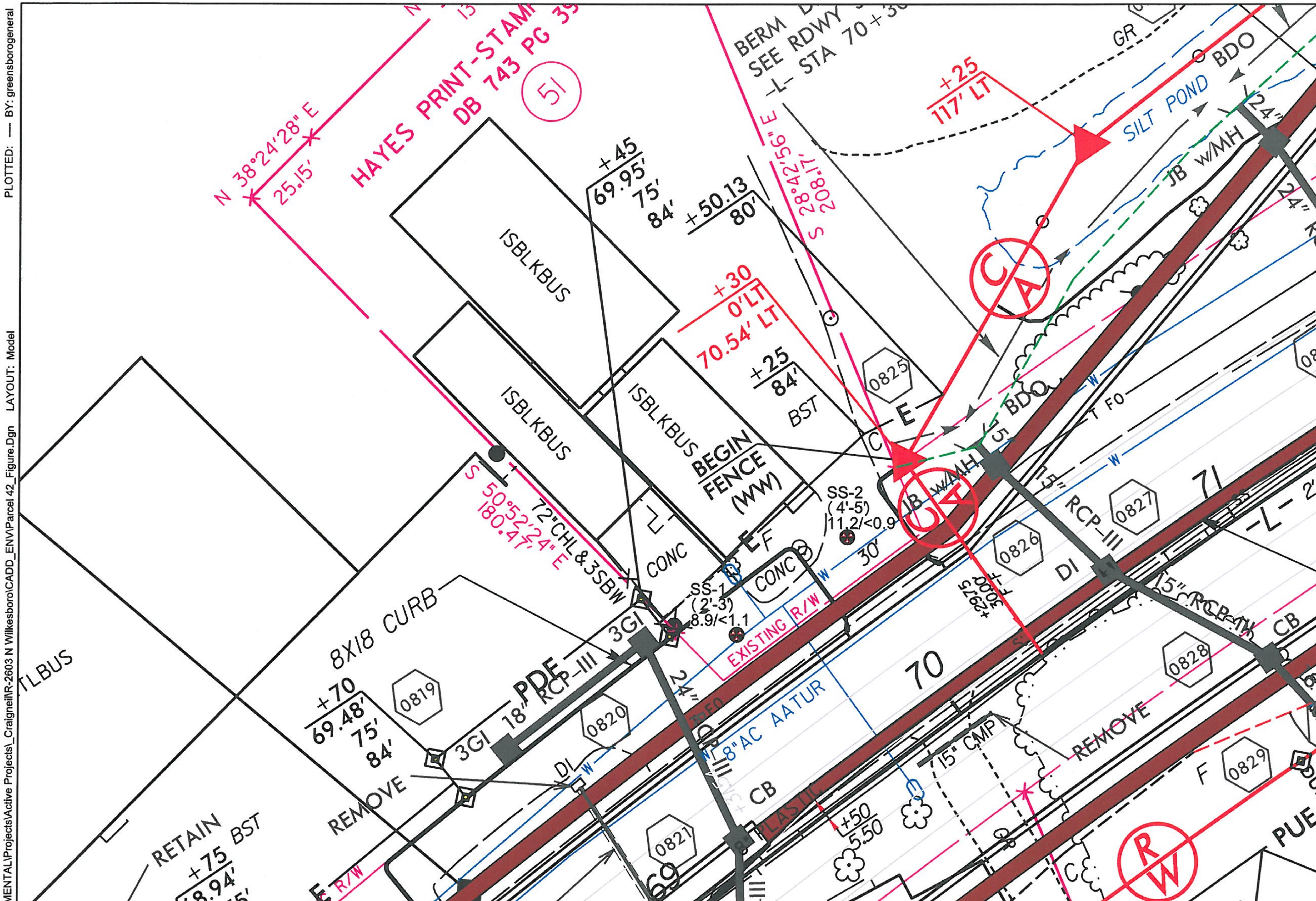
FIGURE 2
SITE MAP

PARCEL 51 HAYES PRINTING
HAYES PRINTING
613 ELKIN HIGHWAY
WILKESBORO, NORTH CAROLINA

DATE: 6/4/2013	APPROVED BY: CDN	SCALE: As Shown
SOURCE: MyTopo.com		PROJECT NO. 134245

CAD FILE: W:\Share_ENVIRONMENTAL\Projects\Active Projects_Craignel\R-2603 N Wilkesboro\CADD_ENV\Parcel 42_Figure.Dgn LAYOUT: Model PLOTTED: — BY: greensborogeneral



LEGEND

- Existing Right of Way
- Proposed Right of Way
- Proposed Construction Easement
- Proposed Cut Line
- Proposed Transition Line
- Proposed Fill Line
- Existing Utilities Water UG Line SUE
- Existing Utilities Telephone UG Line SUE
- Exist Utilities Sanitary Sewer UG Line
- Exist Utilities Power UG Cable SUE
- Approximate Boring Location
- (2'-3') Sample Depth location
- 8.9/<1.1 Concentration of TPH-DRO/TPH-GRO mg/kg (QROS-QED data)
- UST Probable USTs

0 30 60

SCALE: 1" = SCALE IN FEET

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GREENSBORO, NC 27409
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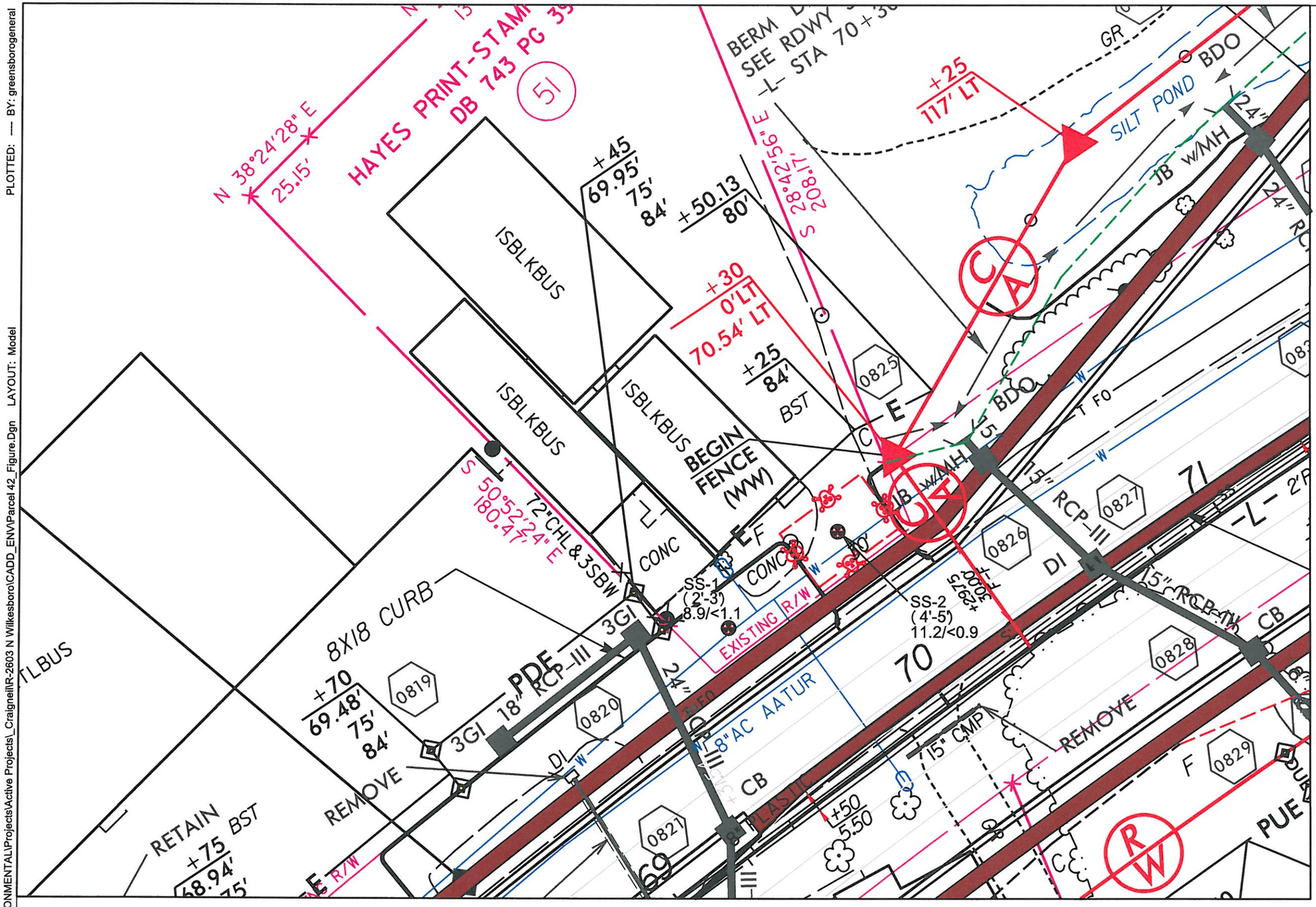
www.kleinfelder.com

PROJECT NO.	134245	BORING LOCATION MAP PARCEL 51	Figure
DRAWN BY	WJF		
CHECKED BY	TO	NC DEPARTMENT OF TRANSPORATION TIP#: R-2603 WILKESBORO, NORTH CAROLINA	3
DATE:	6/6/13		



LEGEND

- Existing Right of Way
- Proposed Right of Way
- E — Proposed Construction Easement
- C — Proposed Cut Line
- T — Proposed Transition Line
- F — Proposed Fill Line
- W — Existing Utilities Water UG Line SUE
- TC — Existing Utilities Telephone UG Line SUE
- SS — Exist Utilities Sanitary Sewer UG Line
- P — Exist Utilities Power UG Cable SUE
- Approximate Boring Location
- (2'-3') Sample Depth location
- 8.9/<1.1 Concentration of TPH-DRO/TPH-GRO mg/kg (QROS-QED data)
- UST Probable USTs
- Approximate location of soil contamination

0 30 60
SCALE: 1" = SCALE IN FEET

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PROJECT NO.	134245
DRAWN BY	WJF
CHECKED BY	TO
DATE:	6/6/13

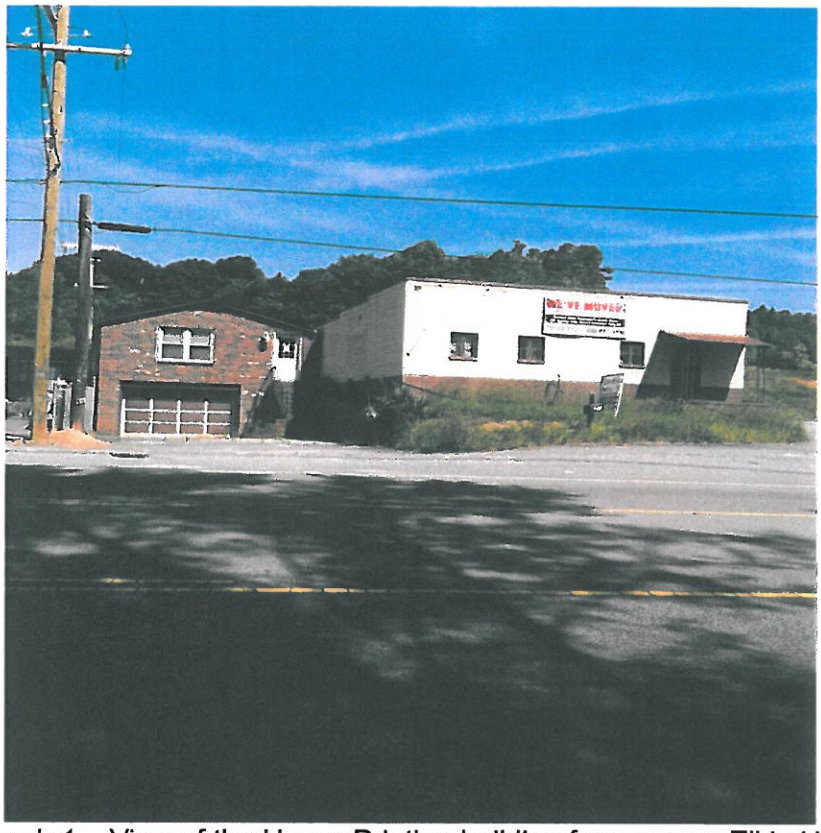
SOIL CONTAMINATION LOCATION MAP
PARCEL 51

NC DEPARTMENT OF TRANSPORATION
TIP#: R-2603
WILKESBORO, NORTH CAROLINA

Figure
4

APPENDIX A

SITE PHOTOGRAPHS
KLEINFELDER PROJECT NO. 134245
PARCEL NO. 51



Photograph 1 – View of the Hayes Printing building from across Elkin Highway.

Photograph 2 – View of the portion of the structure formally utilized by Hayes Printing.

SITE PHOTOGRAPHS
KLEINFELDER PROJECT NO. 134245
PARCEL NO. 51

Photograph 3 – View of the residential portion of the structure.

APPENDIX B

GEOPHYSICAL INVESTIGATION REPORT

EM61 & GPR SURVEYS

KLEINFELDER – NCDOT ROW GEOPHYSICAL SURVEY
PARCEL 51 – NC HWY 268
Wilkes County, North Carolina

June 7, 2013

Report prepared for: **Travis O'Quinn**
Kleinfelder
6200 Harris Technology Blvd.
Charlotte, NC 28269

Prepared by: _____

Eric C. Cross, P.G.
NC License #2181

Reviewed by: _____

Douglas A. Canavello, P.G.
NC License #1066

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

NC Board for Licensing of Geologists C-257
NC Board of Examiners for Engineers & Surveyors C-1251

GEOPHYSICAL INVESTIGATION REPORT
KLEINFELDER – NCDOT ROW GEOPHYSICAL SURVEY
PARCEL 51 – NC HWY 268
Wilkes County, North Carolina

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FIGURES

1.0 INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Kleinfelder as part of the North Carolina Department of Transportation's (NCDOT) proposed right-of way (ROW) and easement areas for Parcel 51, NC Hwy. 268, North Wilkesboro, NC. The survey area extended across the entire south property boundary along NC 268, spanning a distance of approximately 80 feet from east to west. The geophysical survey area extended approximately 35 feet from the roadway north into the property. Conducted on May 17, 2013, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the proposed ROW/easement areas of the site.

The site was relatively open, and consisted primarily of an asphalt parking lot. Aerial photographs showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

2.0 FIELD METHODOLOGY

Prior to conducting the geophysical investigation, a 20-foot by 10-foot survey grid was established across the geophysical survey area using measuring tapes and water-based marking paint. These grid marks were used as X-Y coordinates for location control when collecting the geophysical data and establishing base maps for the geophysical results.

The geophysical investigation consisted of an electromagnetic (EM) induction-metal detection survey. The EM survey was performed on May 17, 2013, using a Geonics EM6 metal detection instrument. According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size) can be detected to a maximum depth of 4 to 5 feet. All of the EM61 data were digitally collected at approximately 0.8 foot intervals along north-south trending (west survey area) or east-west trending (north/east survey area), parallel survey lines spaced five feet apart. All of the data were downloaded to a computer and

reviewed in the field and office using the Geonics DAT61 and Surfer for Windows Version 7.0 software programs.

All EM anomalies recorded could be attributed to visible cultural features at the ground surface. For this reason, a GPR survey was not necessary, and GPR data were not acquired.

3.0 DISCUSSION OF RESULTS

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

Discussion of EM anomalies: The EM anomaly at X=42, Y=50 was the result of a metal water meter cover. The large EM anomaly directly south of the building was the combined result of a metal mailbox and for-sale sign in front of the building, as well as reinforcement within the building foundation itself. The anomaly along the eastern edge of the survey area was the result of a metal fence extending along this location. As mentioned previously, because all EM anomalies could be directly attributed to cultural features, GPR scans were not needed and were not performed.

The geophysical investigation suggests that the area of the proposed ROW/easement at Parcel 51 in North Wilkesboro, NC, does not contain metallic USTs.

4.0 SUMMARY & CONCLUSIONS

Our evaluation of the EM61 data collected across the proposed ROW/easement area at Parcel 51, North Wilkesboro, North Carolina provides the following summary and conclusions:

- The EM61 survey provided reliable results for the detection of metallic USTs within the geophysical survey area.

- All of the EM61 anomalies detected could be attributed to visible objects at the ground surface such as signs and fences. No evidence was observed to indicate the presence of metallic USTs within the proposed ROW.

- The geophysical investigation suggests that the proposed ROW/easement area at the property does not contain metallic USTs.

5.0 LIMITATIONS

Geophysical surveys have been performed and this report prepared for Kleinfelder in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the EM61 and GPR surveys are non-unique and may not represent actual subsurface conditions. The EM61 results obtained for this project have not conclusively determined that metallic USTs do not lie within the proposed ROW/easement area of the Wilkes County property, but that none were detected.

FIGURES

Aerial Photograph Showing Approximate Geophysical Survey Boundaries

View of Print Building
(Photograph Facing Approximately Northeast)

View of Geophysical Survey Area
(Photograph Facing Approximately West)

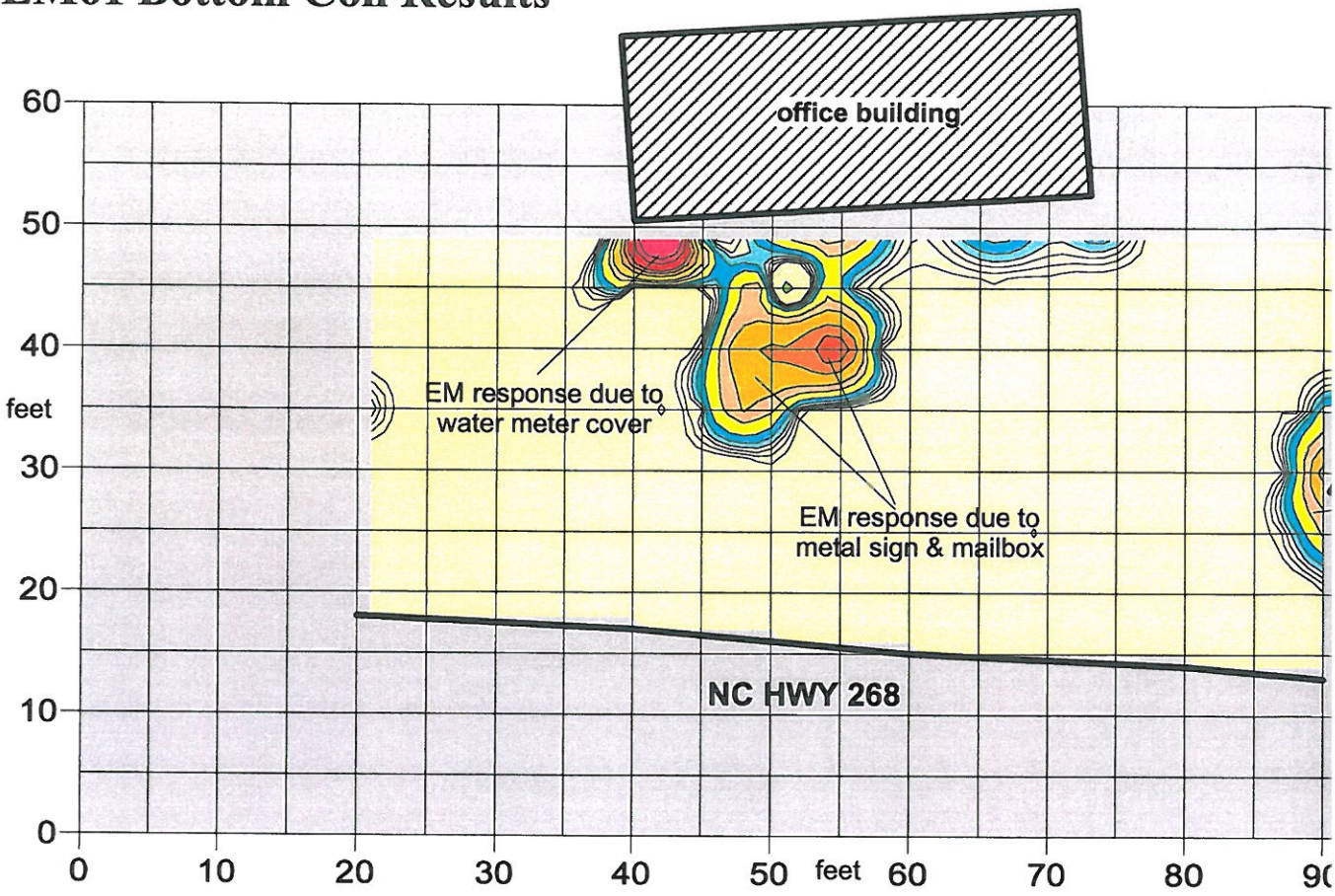
PYRAMID
ENVIRONMENTAL & ENGINEERING, P.C.

CLIENT	KLEINFELDER	DATE	05/16/13	DRAWN	ECC
SITE	PARCEL 51, WILKES COUNTY (NCDOT ROW PROJECT)	LAY		CHKD	
CITY	NORTH WILKESBORO	STATE	NORTH CAROLINA	DWG	
TITLE	GEOPHYSICAL RESULTS	CNTY	2013-131	FIGURE	

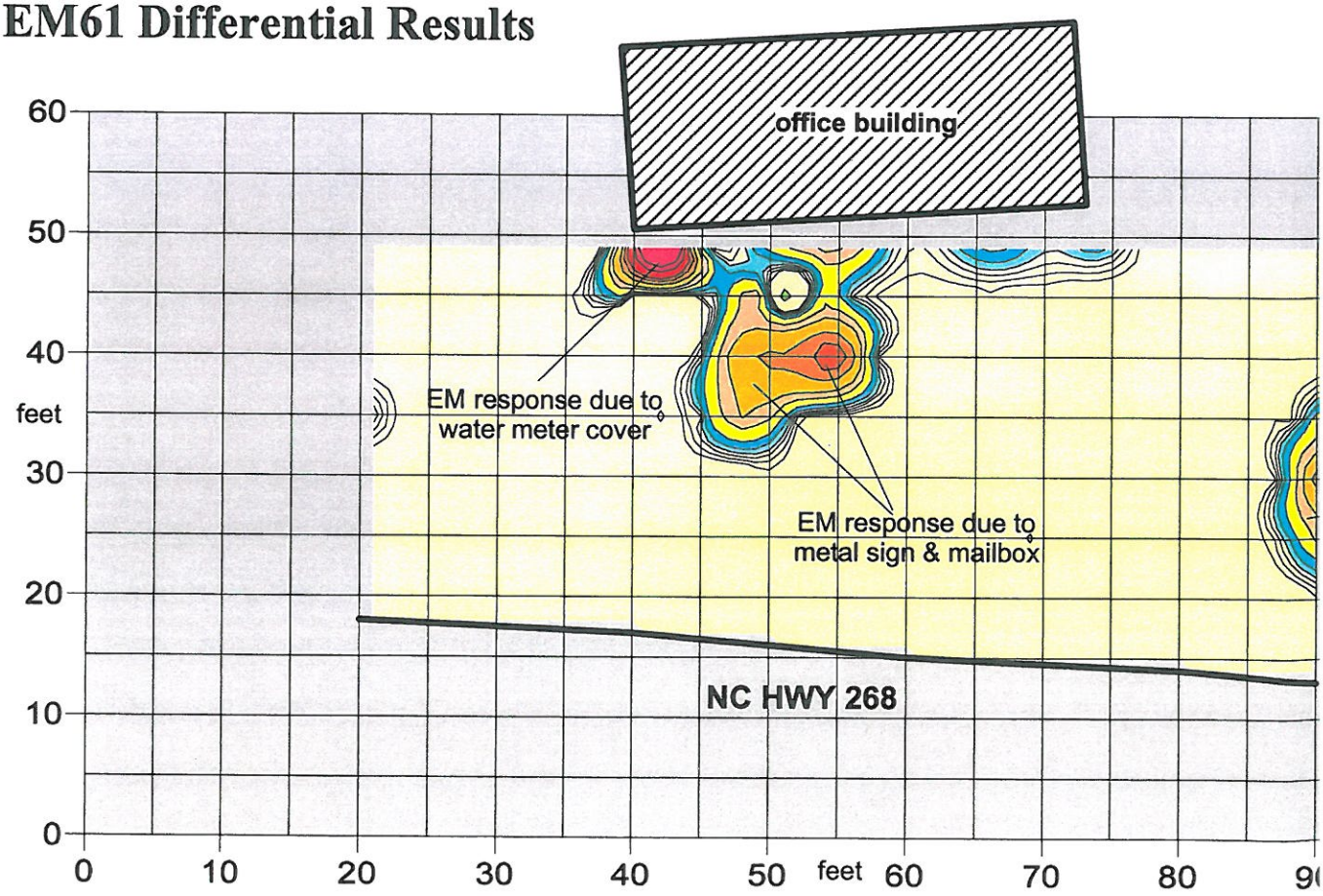
SURVEY BOUNDARIES & SITE PHOTOGRAPHS

FIGURE 1

EM61 Bottom Coil Results



EM61 Differential Results



APPENDIX C

Date Begin - End:	5/29/2013	**Drill Company:**	Probe Technology
Logged By:	Peter Pozzo	**Drill Crew:**	John Allen
Hor.-Vert. Datum:	Not Available	**Drill Equipment:**	6610DT Geoprobe
Angle from Vert.:	0 degrees	**Exploration Method:**	Geoprobe
Weather:	Sunny 70's	**Auger Diameter:**	2.25 in. O.D.

BORING LOG P51_SS-1

FIELD EXPLORATION

No Coordinates Available
No Elevation Available

Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	blows/6 in.	PID / FID (ppmv)	Graphical Log	
							SILT with Sand and Clay: reddish tan, dry, Fill Material
		SS-1			4.9		
					2.7		
5							
					4.2		
							SILT with Sand and Clay: reddish tan and white, dry
					3.7		
10							
15							
20							
25							
30							

The exploration was terminated at approximately 10 ft. below ground surface

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:

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PROJECT NO.:	134245
DRAWN BY:	WJF
CHECKED BY:	PFP
DATE:	
REVISED:	

BORING LOG P51_SS-1

Parcel 51 - Hayes Print-Stamp Co. Inc.
Hayes Printing
613 Elkin Highway
Wilkesboro, NC

PLATE 1

PAGE: 1 of 1

gINT FILE: W:\share_environmental\projects\active Projects\134245_ncdot_wilkesboro\134245.gpj R:KLF_STANDARD_GINT_LIBRARY_SR.1.1.GLB [KLF_ENVIRONMENTAL LOG]

Date Begin - End:	5/29/2013	**Drill Company:**	Probe Technology
Logged By:	Peter Pozzo	**Drill Crew:**	John Allen
Hor.-Vert. Datum:	Not Available	**Drill Equipment:**	6610DT Geoprobe
Angle from Vert.:	0 degrees	**Exploration Method:**	Geoprobe
Weather:	Sunny 70's	**Auger Diameter:**	2.25 in. O.D.

BORING LOG P51_SS-2

FIELD EXPLORATION

Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	blows/6 in.	PID / FID (ppmv)	Graphical Log
0					3.9	
5		SS-2			4.0	
10					0.1	
					1.1	

No Coordinates Available
No Elevation Available

SILT with Clay and Sand: reddish tan, dry, Fill Material

The exploration was terminated at approximately 10 ft. below ground surface

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:

15
20
25
30

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.:	134245
DRAWN BY:	WJF
CHECKED BY:	PFP
DATE:	
REVISED:	

BORING LOG P51_SS-2

Parcel 51 - Hayes Print-Stamp Co. Inc.
Hayes Printing
613 Elkin Highway
Wilkesboro, NC

PLATE 2

PAGE: 1 of 1

gINT FILE: W:\share_environmental\projects\active Projects\134245_ncdot_wilkesboro\134245.gpj R:KLF_STANDARD_GINT_LIBRARY_SR.1.1.GLB [KLF_ENVIRONMENTAL LOG]

APPENDIX D

QED

AQROS

Hydrocarbon Analysis Results

Client: NCDOT
Address: Wilkesboro, nc

Samples taken Wednesday, May 29, 2013
Samples extracted Wednesday, May 29, 2013
Samples analysed Wednesday, May 29, 2013

Contact: Craig Neil

Operator Travis O'Quinn

Project: Parcel 51

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	P51 SS-1 2-3'	22.2	<1.1	<1.1	8.9	8.9	2.05	< 0.11	< 0.056	43.6	45.6	10.8	Degraded Fuel (est) 71%
s	P51 SS-2 4-5'	17.6	<0.9	<0.9	11.2	11.2	3.01	< 0.09	< 0.044	51.8	40.1	8.1	Degraded Fuel (est) 73.1%

Initial Calibrator QC check Screening

Low Range Calibrator Final check

High Range Calibrator Final check

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

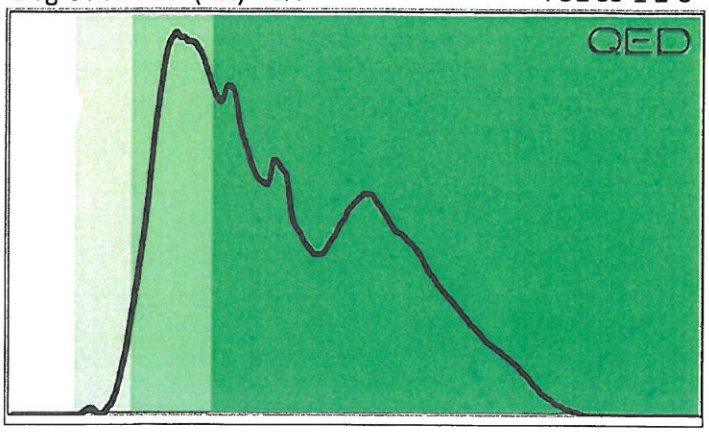
Fingerprints provide a tentative hydrocarbon identification based on operator selected library matches

Fingerprint match abbreviations Est = Specific calibrator not used, result estimated (PFM)= Poor library fingerprint match

(SBS)= site specific background subracted (LBS)= Library background subtracted % = match confidence

Project Parcel 51 **Date** Wednesday, May 29, 2013

Degraded Fuel (est) 71% P51 SS-1 2-3'



Degraded Fuel (est) 73.1% P51 SS-2 4-5'

APPENDIX E

Pace Analytical®
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Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
Eden, NC 27288
(336)623-8921

Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

July 09, 2013

Travis O'Quinn
NCDOT West Central

,

RE: Project: P51 SS-2 44-5'
Pace Project No.: 92164252

Dear Travis O'Quinn:
Enclosed are the analytical results for sample(s) received by the laboratory on May 31, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Angela M. Baioni

Angela Baioni

angela.baioni@pacelabs.com
Project Manager

Enclosures

cc: Chemical Testing Engineer, NCDOT

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CERTIFICATIONS

Project: P51 SS-2 44-5'
Pace Project No.: 92164252

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

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Huntersville, NC 28078
(704)875-9092

SAMPLE SUMMARY

Project: P51 SS-2 44-5'
Pace Project No.: 92164252

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92159930004	**P51 SS-2 4-5'**	Solid	05/28/13 16:44	05/31/13 13:35

REPORT OF LABORATORY ANALYSIS

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Huntersville, NC 28078
(704)875-9092

SAMPLE ANALYTE COUNT

Project: P51 SS-2 44-5'
Pace Project No.: 92164252

Lab ID	Sample ID	Method	Analysts	Analytes Reported
92159930004	**P51 SS-2 4-5'**	EPA 8015 Modified	RES	2
		EPA 8015 Modified	GAW	2
		ASTM D2974-87	TNM	1

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: P51 SS-2 44-5'
Pace Project No.: 92164252

Sample: P51 SS-2 4-5' **Lab ID: 92159930004** Collected: 05/28/13 16:44 Received: 05/31/13 13:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546							
Diesel Components	**8.1**	mg/kg	5.9	1	06/03/13 09:41	06/05/13 23:30	68334-30-5	
Surrogates								
n-Pentacosane (S)	81	%	41-119	1	06/03/13 09:41	06/05/13 23:30	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	**11.9**	mg/kg	6.3	1	06/05/13 12:11	06/05/13 19:58	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	98	%	70-167	1	06/05/13 12:11	06/05/13 19:58	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**15.1**	%	0.10	1		06/07/13 10:15		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: P51 SS-2 44-5'
Pace Project No.: 92164252

QC Batch: GCV/6961
QC Batch Method: EPA 5035A/5030B
Analysis Method: EPA 8015 Modified
Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92159930004

METHOD BLANK: 986894 Matrix: Solid
Associated Lab Samples: 92159930004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	6.0	06/05/13 13:26	
4-Bromofluorobenzene (S)	%	93	70-167	06/05/13 13:26	

LABORATORY CONTROL SAMPLE: 986895

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	49.7	44.9	90	70-165	
4-Bromofluorobenzene (S)	%			88	70-167	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 986896 986897

Parameter	Units	92159972001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Gasoline Range Organics	mg/kg	ND	52.9	52.9	61.3	63.3	116	120	47-187	3	30	
4-Bromofluorobenzene (S)	%						85	92	70-167			

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: P51 SS-2 44-5'
Pace Project No.: 92164252

QC Batch: OEXT/22407
QC Batch Method: EPA 3546
Analysis Method: EPA 8015 Modified
Analysis Description: 8015 Solid GCSV
Associated Lab Samples: 92159930004

METHOD BLANK: 985352 Matrix: Solid
Associated Lab Samples: 92159930004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Components	mg/kg	ND	5.0	06/05/13 19:36	
n-Pentacosane (S)	%	92	41-119	06/05/13 19:36	

LABORATORY CONTROL SAMPLE: 985353

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Components	mg/kg	66.7	54.7	82	49-113	
n-Pentacosane (S)	%			96	41-119	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 985354 985355

Parameter	Units	92159930001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Diesel Components	mg/kg	13.6	80.8	80.8	67.8	53.8	67	50	10-146	23	30	
n-Pentacosane (S)	%						63	60	41-119			

REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

Project: P51 SS-2 44-5'
Pace Project No.: 92164252

QC Batch: PMST/5585
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92159930004

SAMPLE DUPLICATE: 987762

Parameter	Units	92160299001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	24.8	25.0	1	25	

SAMPLE DUPLICATE: 988093

Parameter	Units	92160291002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	22.6	22.2	2	25	

QUALIFIERS

Project: P51 SS-2 44-5'
Pace Project No.: 92164252

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: P51 SS-2 44-5'
Pace Project No.: 92164252

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92159930004	**P51 SS-2 4-5'**	EPA 3546	OEXT/22407	EPA 8015 Modified	GCSV/14790
92159930004	**P51 SS-2 4-5'**	EPA 5035A/5030B	GCV/6961	EPA 8015 Modified	GCV/6962
92159930004	**P51 SS-2 4-5'**	ASTM D2974-87	PMST/5585		

CHAIN-OF-CUSTODY / Analytical Request Document

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The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

1175770

Section A Required Client Information:

Company: Kleinfelder
Address: Charlotte, NC
Email To: tquinn@kleinfelder.com
Phone: Fax:
Requested Due Date/TAT: Std

Section B Required Project Information:

Report To: Travis O'Quinn
Copy To: Craig Neil
Purchase Order No.:
Project Name: NCDOT-Wilkesboro
Project Number: 134245

Section C Invoice Information:

Attention: Craig Neil
Company Name: Kleinfelder
Address:
Pace Quote Reference: WBS 36000.1.1
Pace Project Manager: [illegible] 5/31
Pace Profile #: ~~894~~ 5696-1

REGULATORY AGENCY

NPDES | GROUND WATER | DRINKING WATER | UST | RCRA | OTHER

Site Location STATE: NC

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT

Requested Analysis Filtered (Y/N)

Pace Project No./ Lab I.D.: 92159930

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	Composite Start DATE	Composite Start TIME	Composite End/Grab DATE	Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	DRO	GRO	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
P45 SS-1 14-15'	SL	G			5/28/13	1222												X	X		001
P47 SS-3 7-8'	↓	↓			5/25/13	1358												X	X		002
P48 SS-4 9-10'	↓	↓			5/29/13	0938												X	X		003
P51 SS-2 4-5'	↓	↓			5/29/13	1694 ~~0854~~												X	X		004
P59 SS-4 14-15'	↓	↓			5/30/13	0854															005

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	[signature] / Kleinfelder	5/30/13	13:10	[signature] - Pace	5-31-13	13:10				
	[signature]	5-31-13	13:35	[signature]	5/31/13	13:35	4.5	Y	→	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Travis O'Quinn

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 5/30/13

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-[illegible]-2007