

Preliminary Site Assessment Report Samuel Roberti et. al Property

**Parcels 38 & 40
Durham
Durham County, North Carolina**

**H&H Job No. ROW-416
State Project U-0071
WBS Element #34745.1.1
August 15, 2013**



SMARTER ENVIRONMENTAL SOLUTIONS

Preliminary Site Assessment Report
Samuel Roberti, et al. Properties Parcels 38 & 40
Durham, Durham County, North Carolina
H&H Project ROW-416

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Preliminary Site Assessment Report
Samuel Roberti, et al. Properties Parcels 38 & 40
Durham, Durham County, North Carolina
H&H Project ROW-416

1.0 Introduction

Hart & Hickman, PC (H&H) has prepared this Preliminary Site Assessment (PSA) report documenting assessment activities performed at the Samuel Roberti, et. al properties (Parcels 38 & 40) located at 211-212 and 217 S. Hoover Road in Durham, Durham County, North Carolina. This assessment was conducted on behalf of the North Carolina Department of Transportation (NC DOT) in accordance with H&H's May 8, 2013 proposal.

The purpose of this assessment was to collect data to evaluate the potential for underground storage tank (UST) systems and the presence or absence of impacted soil in proposed right-of-way and construction easement areas on the subject properties related to the proposed widening of US Highway 70 (State Project U-0071). A site location map is included as Figure 1. Site maps of Parcels 38 and 40 are presented as Figures 2 and 3, respectively. The NC DOT preliminary plans of the US Highway 70 widening area near the Parcel 38 and 40 properties are attached as Appendix A.

The Parcel 38 property currently operates as a vehicle repair shop, auto painting shop, and junk yard. The structure in the southern portion of the property is used as a church. The Parcel 40 property currently operates as Clean Green who uses the facility to recycle antifreeze, oil filters, heat transfer fluid, and glycol fluids. The recycling process is conducted within a concrete secondary containment unit located within the building outside of proposed NC DOT work areas. The western portions of Parcels 38 and 40 are used for trailer parking. The Parcel 38 and 40 properties were formerly occupied by Public Service Company of North Carolina (PSNC). H&H reviewed North Carolina Department of Environment and Natural Resources (DENR) incident files for the subject properties (Parcels 38 and 40) to better target UST system areas and to find locations of previously reported environmental impacts. The DENR file review information is summarized below.

Parcel 38

As part of a property transaction, PSNC Energy contracted TBE Group, Inc. (TBE) to complete a Phase I Environmental Site Assessment (ESA) of the site (Parcel 38) for Lincoln Harris Company, LLC in November 2000. Results of the Phase I ESA indicated the following areas of potential environmental concern:

- Historical on-site vehicle repair operations
- Former 1,000-gallon gasoline UST
- Debris disposal including crushed 55-gallon drums
- Potential impacts from petroleum products or solvents entering floor drains
- Concrete pads and pipe stubs observed on-site (potential UST areas)
- Oil ASTs and drums

Soil and groundwater assessment activities were initiated at the site in 2000. Soil impacted by PAHs was identified near a floor drain in the garage building outside of proposed NC DOT work areas. Eleven monitoring wells have been installed to date to delineate groundwater impacts at the site. Groundwater samples collected from monitoring wells at the site indicate the presence of volatile organic compounds (VOCs) and semi-VOCs above the 15A NCAC 2L .0202 Groundwater Quality Standards (2L Standards). VOCs including petroleum and chlorinated solvents have been detected in groundwater samples above 2L Standards.

The Parcel 38 site is on the DENR Inactive Hazardous Sites Branch (IHSB) Inactive Hazardous Sites List. On February 11, 2011, PSNC entered into an Administrative Agreement (AA) for Registered Environmental Consultant (REC) - Directed Assessment and Remedial Action with DENR for voluntary remedial action at the site under North Carolina's REC Program. PSNC completed a Remedial Investigation Work Plan (RIWP) for the site. PSNC is in the process of completing the Remedial Investigation (RI) in the REC Program.

Based on the most recent site survey, monitoring wells MW-6G, MW-7G, MW-9G through MW-12G, MW-14G, DMW-1, and Micro-1 are located in the NC DOT proposed right-of-way and construction easement areas (Figure 2).

Parcel 40

As part of a property transaction, PSNC contracted TBE to complete a Phase I ESA of the site (Parcel 40) for Lincoln Harris Company, LLC in July 2000. Results of the Phase I ESA indicated the following areas of potential environmental concern:

- Historical on-site vehicle repair operations
- Hydraulic lift in former repair shop
- On-site staining and improper drum storage
- Historical and current USTs

Multiple USTs have been removed from the site. During two UST closure events in 1990, four gasoline USTs and one kerosene UST were removed from the site. Most of the impacted soils from the initial UST closure event were excavated from the UST basin areas. No significant groundwater impacts were identified near the former UST basins. One diesel UST and two gasoline USTs that were subsequently installed in the previous UST basin areas were removed in 2001. DENR issued a No Further Action letter for the USTs that were removed in 2001. The USTs were located near the southwest corner of the site building near the proposed NCDOT construction easement. Although some impacted soil was removed during prior UST removal activities, petroleum impacted soil may remain in the UST basin area. No known USTs remain buried at the site.

Soil and groundwater assessment activities were initiated at the site in 2000 to evaluate the Phase I ESA environmental concerns. Soil impacted by petroleum compounds, chlorinated solvents, PAHs, and metals above DENR screening levels was identified on the southeast side of the site building outside of proposed NC DOT work areas. Fifteen monitoring wells have been installed to date to delineate groundwater impacts at the site. VOCs including petroleum compounds and chlorinated solvents have been detected in groundwater above the 2L Standard.

The Parcel 40 site is on the DENR IHSB Inactive Hazardous Sites List. On February 11, 2011, PSNC entered into an AA for REC - Directed Assessment and Remedial Action with DENR for

voluntary remedial action at the site under North Carolina's REC Program. PSNC completed a RIWP for the site. PSNC is in the process of completing the RI for the site in the REC Program.

Based on the most recent site survey, monitoring wells MW-6W, MW-7W, MW-9W, and MW-12W are located in the NCDOT proposed right-of-way and construction easement areas (Figure 3). Pertinent information from the file review is included in Appendix B.

The PSA activities conducted by H&H in the NCDOT proposed right-of-way and construction easement areas on the subject property are discussed below.

2.0 Site Assessment

Soil Assessment Field Activities

H&H mobilized to Parcels 38 and 40 on July 10 and 11, 2013 and advanced nine borings on each of the two parcels by direct push technology (DPT). Prior to advancing the soil borings, H&H reviewed the results of a geophysical survey performed at each site by Schnabel Engineering (Schnabel) in May and June 2013. Schnabel utilized electromagnetic (EM) induction technology and ground penetrating radar (GPR) to identify potential geophysical anomalies and potential USTs at each parcel. The EM results indicated the presence of anomalies attributed metallic objects at grade (e.g. trailers, surface metal, etc.); however, follow up with GPR did not indicate the presence of USTs. Based on the Schnabel EM and GPR results, no potential USTs were identified in the survey areas on Parcels 38 and 40. Please note that portions of each site were not surveyed due to the presence of many trailers, vehicles, etc. in the proposed survey area. The gated area in the northern portion of Parcel 38 was inaccessible during PSA activities. Schnabel's reports, including site maps depicting the results of the EM and GPR surveys, are provided in Appendix C.

Prior to conducting soil borings, utilities were marked by NC One Call and a private utility locator. Borings were also cleared to a five foot depth by hand auger. H&H utilized Probe Technology, Inc. (PTI) of Concord, North Carolina to advance the soil borings. To facilitate the selection of soil samples for laboratory analysis, soil from each boring was screened continuously for the presence of VOCs with an OVA. Additionally, H&H observed the soil for

visual and olfactory indications of petroleum impacts. The soil sampling activities for each parcel are discussed below.

Parcel 38

H&H attempted to advance all soil borings to a total depth of 12 ft below ground surface (bgs); however, DPT refusal was encountered at depths ranging from 4.5 ft to 10 ft bgs in borings 38-1 through 38-9. During soil screening, there were no indications of potential impacts in soil borings 38-1 through 38-9. Soil samples were collected at depths of 0 to 1 ft bgs from each boring location. Soil boring logs are included in Appendix D.

Soil borings 38-1 through 38-4 were advanced in the gravel parking areas in the western portion of the property where some slightly stained surface soils were observed. Soil borings 38-5, 38-6, 38-8, and 38-9 were advanced in the gravel parking areas west of the site building, and soil boring 38-7 was advanced near a potential former dispenser island south of the site building. GPS coordinate data for soil borings are included in Table 1.

Parcel 40

H&H attempted to advance all soil borings to a total depth of 12 ft bgs; however, DPT refusal was encountered at depths ranging from 5 ft to 10 ft bgs in borings 40-2 and 40-4 through 40-9. During soil screening, there were moderate indications of potential impacts in soil boring 40-3. There were no indications of potential impacts in the remaining soil borings. Soil samples were collected at depths of 0 ft to 1 ft bgs from each boring location except for soil boring 40-3 (4 ft to 5 ft bgs). Soil boring logs are included in Appendix D.

Soil borings 40-1 through 40-5 were advanced in gravel parking areas in the northwest and southwest portions of the property. Soil borings 40-7 and 40-8 were advanced near former UST basin areas west of the site building. Soil borings 40-6 and 40-9 were advanced in the driveway areas of the property. GPS coordinate data for soil borings are included in Table 2.

H&H submitted nine soil samples from Parcel 38 (38-1 through 38-9) and nine soil samples from Parcel 40 (40-1 through 40-9) for laboratory analysis. Samples were sent to Pace Analytical

Services, Inc. of Huntersville, NC using standard chain-of-custody protocol for analysis of total petroleum hydrocarbons (TPH) as gasoline-range organics (GRO) and diesel-range organics (DRO) by EPA Method 8015. Because groundwater is impacted with VOCs on each Parcel, the soil samples were also analyzed for VOCs by EPA Method 8260. Sample depths and analytical results for soil samples collected from Parcels 38 and 40 are summarized in Tables 3 and 4, respectively. Laboratory analytical data sheets for Parcel 38 and Parcel 40 samples and chain-of-custody documentation are provided in Appendix E. The analytical results are discussed below.

3.0 Analytical Results

Parcel 38

Target analytes were detected in three soil samples collected from Parcel 38. Concentrations of TPH DRO (213 mg/kg and 84.1 mg/kg) were detected in soil samples 38-2 and 38-5 above the DENR Action Level (10 mg/kg). A concentration of TPH DRO (9.3 mg/kg) was detected in soil sample 38-3 below the DENR Action Level. A concentration of acetone (0.114 mg/kg) was also detected in sample 38-5 below potential target screening levels. Acetone is a common laboratory contaminant.

The TPH DRO impacted soils are located in the unpaved parking areas in the western portion of the property and in the gravel parking area west of the site building.

- H&H estimates that there are roughly 300 cubic yards (450 tons) of petroleum impacted soil between the surface and 4 ft in the gravel parking near the boring 38-2.
- There are roughly 100 cubic yards (150 tons) of petroleum impacted soil below the DENR Action Level between the surface and 2 ft in the gravel parking area near soil boring 38-3.
- There are roughly 250 cubic yards (375 tons) of petroleum impacted soil between the surface and 4 ft in the gravel parking area west of the site building near soil boring 38-5.

The estimated depth of impacted soils is based on field screening results. However, field screening and lab results did not provide information that defines the impacted soil interval or extent in all locations. Therefore, impacts may extend beyond the depths and amounts indicated above.

Although the TPH DRO impacts are below the Action Level near boring 38-3, these soils should also be managed as impacted if they are disturbed or excavated by site work. The approximate areas of petroleum impacted soils are shown on Figure 2.

Parcel 40

Target analytes were detected in six soil samples collected from Parcel 40. TPH DRO (up to 205 mg/kg) was detected in soil samples 40-1 through 40-3, 40-5, 40-6, and 40-9 above the DENR Action Level. TPH GRO (53.7 mg/kg) was also detected in soil sample 40-3 above the DENR Action Level (10 mg/kg). Naphthalene (0.673 mg/kg) was detected in soil sample 40-3 above the IHSB Protection of Groundwater (POG) Soil Remediation Goal (SRG). VOCs including 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and total xylenes were detected in soil samples 40-1 and 40-3 below DENR target screening levels.

- H&H estimates that there are roughly 800 cubic yards (1,200 tons) of petroleum impacted soil between the surface and 4 ft in the gravel parking area near soil borings 40-1 and 40-5.
- There are roughly 250 cubic yards (375 tons) of petroleum impacted soil between the surface and 4 ft in the gravel parking area near boring 40-2.
- There are roughly 300 cubic yards (450 tons) of petroleum impacted soil between the surface and 8 ft in the gravel parking area near boring 40-3.
- There are roughly 150 cubic yards (225 tons) of petroleum impacted soil between the surface and 4ft in the driveway area near boring 40-6.
- There are roughly 150 cubic yards (225 tons) of petroleum impacted soil between the surface and 4ft in the driveway area near boring 40-9.

The estimated depth of impacted soils is based on field screening results. However, field screening and lab results did not provide information that defines the impacted soil interval or extent in most locations. Therefore, impacts may extend beyond the depths and amounts indicated above. The approximate areas of petroleum impacted soils are shown on Figure 3.

4.0 Summary and Regulatory Considerations

H&H has reviewed DENR incident files, geophysical survey results, and analytical results of soil samples collected on Parcels 38 and 40. The Parcel 38 and 40 sites are on the DENR IHSB Inactive Hazardous Sites List and each site has been entered into an Administrative Agreement with DENR for voluntary remedial action under North Carolina's REC Program. Previous assessment activities indicate the presence of petroleum and chlorinated solvent impacted groundwater at each site. Petroleum impacted soils may be located near the former UST basin on Parcel 40. No other impacted soil areas were identified within proposed NC DOT work areas during previous assessment activities conducted on each parcel. Monitoring wells are located within the proposed NC DOT right-of-way and construction easement areas on each parcel. Based on Schnabel's EM/GPR surveys, no potential USTs were identified in the survey areas on Parcels 38 and 40.

Analytical results of soil samples collected by H&H indicate TPH DRO impacts in three of nine soil samples collected on Parcel 38.

- H&H estimates that there are roughly 300 cubic yards (450 tons) of petroleum impacted soil between the surface and 4 ft in the gravel parking near the boring 38-2.
- There are roughly 100 cubic yards (150 tons) of petroleum impacted soil below the DENR Action Level between the surface and 2 ft in the gravel parking area near soil boring 38-3.
- There are roughly 250 cubic yards (375 tons) of petroleum impacted soil between the surface and 4 ft in the gravel parking area west of the site building near soil boring 38-5.

H&H estimates there are roughly 650 cubic yards of impacted soil on the Parcel 38 property. However, field screening and lab results did not provide information that defines the extent of impacts.

Widespread petroleum impacts were detected on Parcel 40. Analytical results of soil samples collected by H&H indicate TPH DRO, GRO, and/or naphthalene above the DENR target screening levels in six of nine soil samples collected on Parcel 40.

- H&H estimates that there are roughly 800 cubic yards (1,200 tons) of petroleum impacted soil between the surface and 4 ft in the gravel parking area near soil borings 40-1 and 40-5.
- There are roughly 250 cubic yards (375 tons) of petroleum impacted soil between the surface and 4 ft in the gravel parking area near soil boring 40-2.
- There are roughly 300 cubic yards (450 tons) of petroleum impacted soil between the surface and 8 ft in the gravel parking area near soil boring 40-3.
- There are roughly 150 cubic yards (225 tons) of petroleum impacted soil between the surface and 4 ft in the driveway area near soil boring 40-6.
- There are roughly 150 cubic yards (225 tons) of petroleum impacted soil between the surface and 4 ft in the driveway area near soil boring 40-9.

H&H estimates there are roughly 1,650 cubic yards of impacted soil on the Parcel 40 property. However, field screening and lab results did not provide information that defines the extent of impacts.

NC DOT plans indicate a proposed cut and installation of drainage pipes in proposed NC DOT work areas on Parcels 38 and 40. Impacted soil that is removed during road construction activities and drainage pipe installations should be properly managed and disposed at a permitted facility. After coordinating with the responsible party and/or DENR, the on-site monitoring wells should also be properly abandoned prior to road construction activities if they are in the path of the road construction work.

5.0 Signature Page

This report was prepared by:



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Project Geologist for
Hart and Hickman, PC

This report was reviewed by:



Matt Bramblett, PE
Principal and Project Manager for
Hart and Hickman, PC

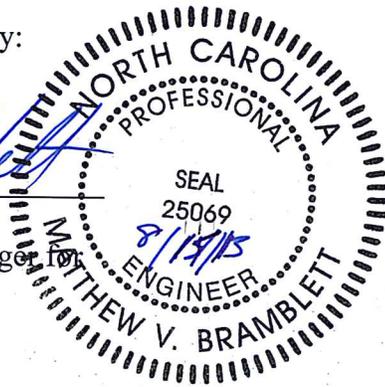


Table 1
Soil Boring GPS Coordinate Data - Parcel 38
Samuel Roberti et al. Property
Durham, Durham County, North Carolina
H&H Job No. ROW-416

Sample ID	Latitude	Longitude
38-1	35.988275282	-78.861583985
38-2	35.988718025	-78.861862139
38-3	35.988842071	-78.861836024
38-4	35.989316856	-78.861745970
38-5	35.988640718	-78.861429527
38-6	35.988608615	-78.861506187
38-7	35.988509175	-78.861478817
38-8	35.988799436	-78.861579170
38-9	35.988979197	-78.861481988

Notes:

GPS coordinates for soil boring data points collected using a Trimble GeoExplorer 6000 series unit with external satellite for increased accuracy.

Table 2
Soil Boring GPS Coordinate Data - Parcel 40
Samuel Roberti et al. Property
Durham, Durham County, North Carolina
H&H Job No. ROW-416

Sample ID	Latitude	Longitude
40-1	35.987553613	-78.861122375
40-2	35.987512932	-78.861519456
40-3	35.986873179	-78.860797112
40-4	35.986986549	-78.861041356
40-5	35.987295959	-78.861064974
40-6	35.987753049	-78.860791596
40-7	35.987063628	-78.860663154
40-8	35.987147500	-78.860667830
40-9	35.987413451	-78.860717785

Notes:

GPS coordinate data points collected using a Trimble GeoExplorer 6000 series unit with external satellite for increased accuracy.

Table 3
Soil Analytical Results - Parcel 38
Samuel Roberti et al. Property
Durham, Durham County, North Carolina
H&H Job No. ROW-416

Sample ID Sample Depth (ft) Sample Date	38-1	38-2	38-3	38-4	38-5	38-6	38-7	38-8	38-9	Regulatory Standard (mg/kg)	
	0-1 7/11/2013	0-1 7/11/2013	0-1 7/11/2013	0-1 7/11/2013	0-1 7/11/2013	0-1 7/11/2013	0-1 7/11/2013	0-1 7/11/2013	0-1 7/11/2013	0-1 7/11/2013	IHSB SRG ¹
<u>VOCs (8260)</u> <u>(mg/kg)</u> Acetone	<0.101	<0.0845	<0.0812	<0.0893	0.114	<0.102	<0.0876	<0.0996	<0.104	12,000	24
<u>TPH-DRO/GRO (8015)</u> <u>(mg/kg)</u> Diesel-Range Organics (DRO) Gasoline-Range Organics (GRO)	<5.8 <6.1	213 <7.4	9.3 <6.5	<5.7 <5.3	84.1 <5.7	<6.0 <7.0	<6.5 <6.4	<6.6 <5.9	<6.4 <6.4	NCDENR Action Level (mg/kg) 10 10	

Notes:

1. NC DENR Inactive Hazardous Sites Branch (IHSB) Residential Health Based Soil Remediation Goals (SRGs) - February 2013

2. NC DENR IHSB Protection of Groundwater (POG) SRGs - February 2013

EPA Method follows parameter in parenthesis;

VOCs = volatile organic compounds; TPH = total petroleum hydrocarbons;

Bold indicates above potential target screening levels

Table 4
Soil Analytical Results - Parcel 40
Samuel Roberti et al., Property
Durham, Durham County, North Carolina
H&H Job No. ROW-416

Sample ID Sample Depth (ft) Sample Date	40-1	40-2	40-3	40-4	40-5	40-6	40-7	40-8	40-9	Regulatory Standard (mg/kg)	
	0-1 7/10/2013	0-1 7/10/2013	4-5 7/10/2013	0-1 7/10/2013	0-1 7/10/2013	0-1 7/10/2013	0-1 7/10/2013	0-1 7/10/2013	0-1 7/10/2013	IHSB SRG ¹	IHSB POG ²
<u>VOCs (8260)</u> <u>(mg/kg)</u>											
Naphthalene	<0.0052	<0.0049	0.673	<0.0049	<0.0050	<0.0045	<0.0048	<0.0040	<0.0032	3.6	0.21
1,2,4-Trimethylbenzene	0.0121	<0.0049	1.85	<0.0049	<0.0050	<0.0045	<0.0048	<0.0040	<0.0032	12	6.7
1,3,5-Trimethylbenzene	0.0072	<0.0049	1.10	<0.0049	<0.0050	<0.0045	<0.0048	<0.0040	<0.0032	160	6.7
Total Xylene	0.0229	<0.0099	2.73	<0.0099	<0.0101	<0.0090	<0.0097	<0.0081	<0.0065	130	5.8
<u>TPH-DRO/GRO (8015)</u> <u>(mg/kg)</u>										NCDENR Action Level (mg/kg)	
Diesel-Range Organics (DRO)	63.6	205	60.8	<6.0	45.2	106	<5.9	<5.7	67.7	10	
Gasoline-Range Organics (GRO)	<5.1	<5.4	53.7	<4.9	<4.8	<5.4	<5.2	<4.9	<4.5	10	

Notes:

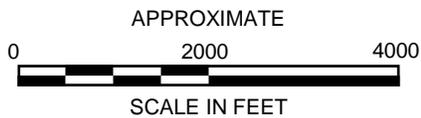
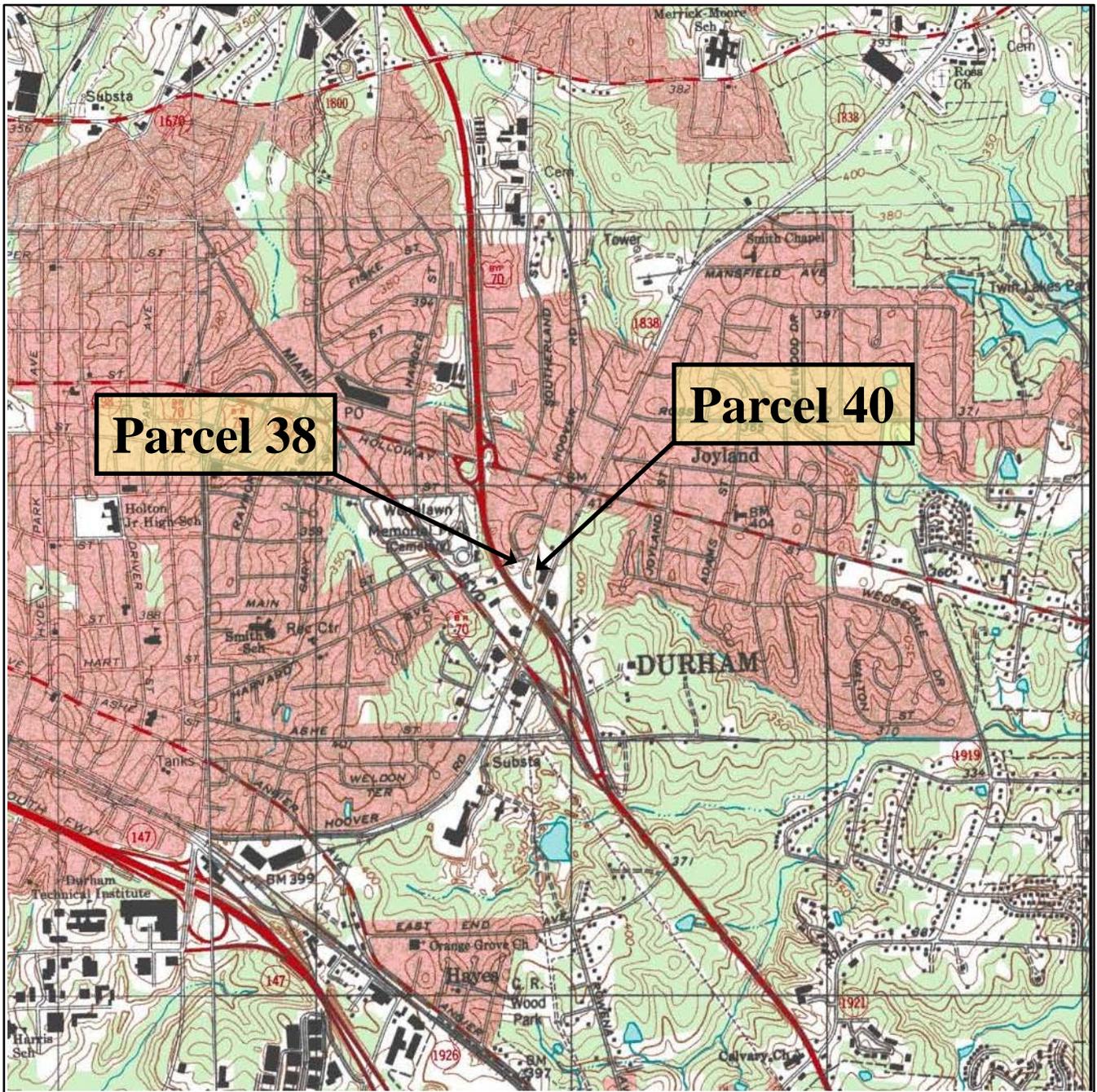
1. NC DENR Inactive Hazardous Sites Branch (IHSB) Residential Health Based Soil Remediation Goals (SRGs) - February 2013

2. NC DENR IHSB Protection of Groundwater (POG) SRGs - February 2013

EPA Method follows parameter in parenthesis;

VOCs = volatile organic compounds; TPH = total petroleum hydrocarbons;

Bold indicates above potential target screening levels



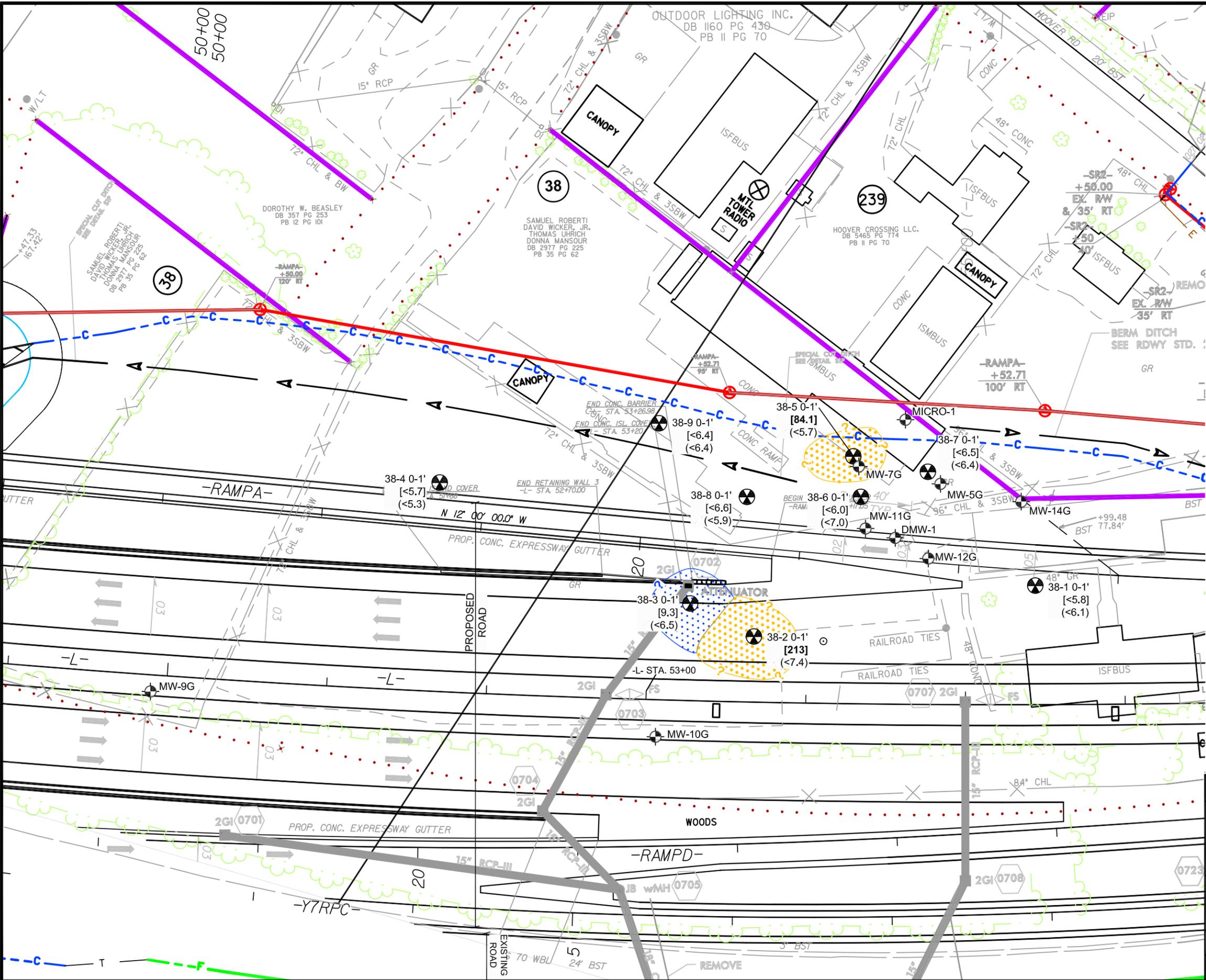
U.S.G.S. QUADRANGLE MAP

SOUTHEAST DURHAM, NORTH CAROLINA 2002

QUADRANGLE
7.5 MINUTE SERIES (TOPOGRAPHIC)

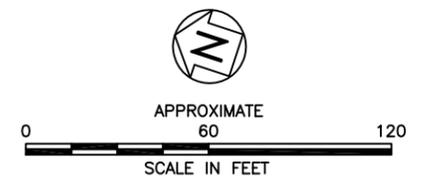
TITLE		SITE LOCATION MAP	
PROJECT		SAMUEL ROBERTI, ET, AL. PROPERTIES PARCELS 38 & 40 DURHAM, DURHAM COUNTY, NORTH CAROLINA	
		 2923 South Tryon Street-Suite 100 Charlotte, North Carolina 28203 704-586-0007 (p) 704-586-0373 (f)	
DATE:		7-8-2013	REVISION NO: 0
JOB NO:		ROW-416	FIGURE: 1

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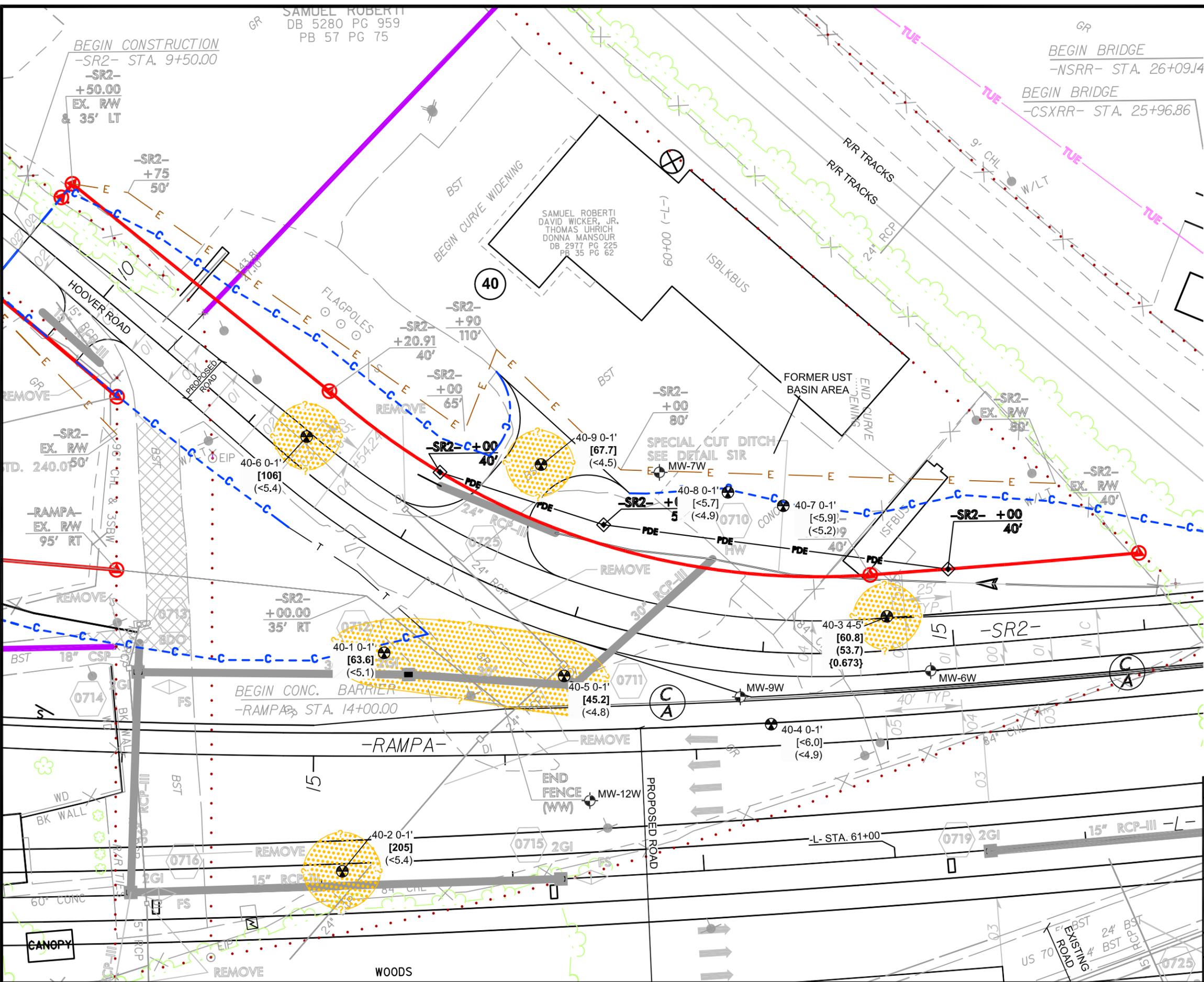
LEGEND

- PROPERTY LINE
- · · · · EXISTING RIGHT-OF-WAY
- ▲— PROPOSED RIGHT-OF-WAY
- - - C - - - PROPOSED CUT LINE
- - - F - - - PROPOSED FILL LINE
- PROPOSED DRAINAGE PIPE
- E — PROPOSED CONSTRUCTION EASEMENT
- PROPOSED CATCH BASIN
- 38 PARCEL ID
- ⊕ MONITORING WELL LOCATION
- ⊗ SOIL SAMPLE LOCATION
- 38-1 0-1' SAMPLE ID / DEPTH (FT)
- [<5.8] TPH DRO (mg/kg)
- (<6.1) TPH GRO (mg/kg)
- BOLD INDICATES EXCEEDANCE OF DENR ACTION LEVEL**
- · · · · ESTIMATED AREA OF IMPACTED SOIL ABOVE DENR ACTION LEVEL
- · · · · ESTIMATED AREA OF IMPACTED SOIL BELOW DENR ACTION LEVEL



TITLE SITE MAP AND SOIL ANALYTICAL RESULTS	
PROJECT SAMUEL ROBERTI, ET AL. PROPERTY PARCEL 38 211-212 SOUTH HOOVER ROAD DURHAM, DURHAM COUNTY, NORTH CAROLINA	
2923 South Tryon Street-Suite 100 Charlotte, North Carolina 28203 704-586-0007(p) 704-586-0373(f) License # C-1269 / #C-245 Geology	
DATE: 8-9-13	REVISION NO. 0
JOB NO. ROW-416	FIGURE NO. 2

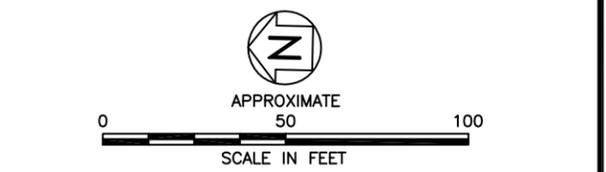
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LEGEND

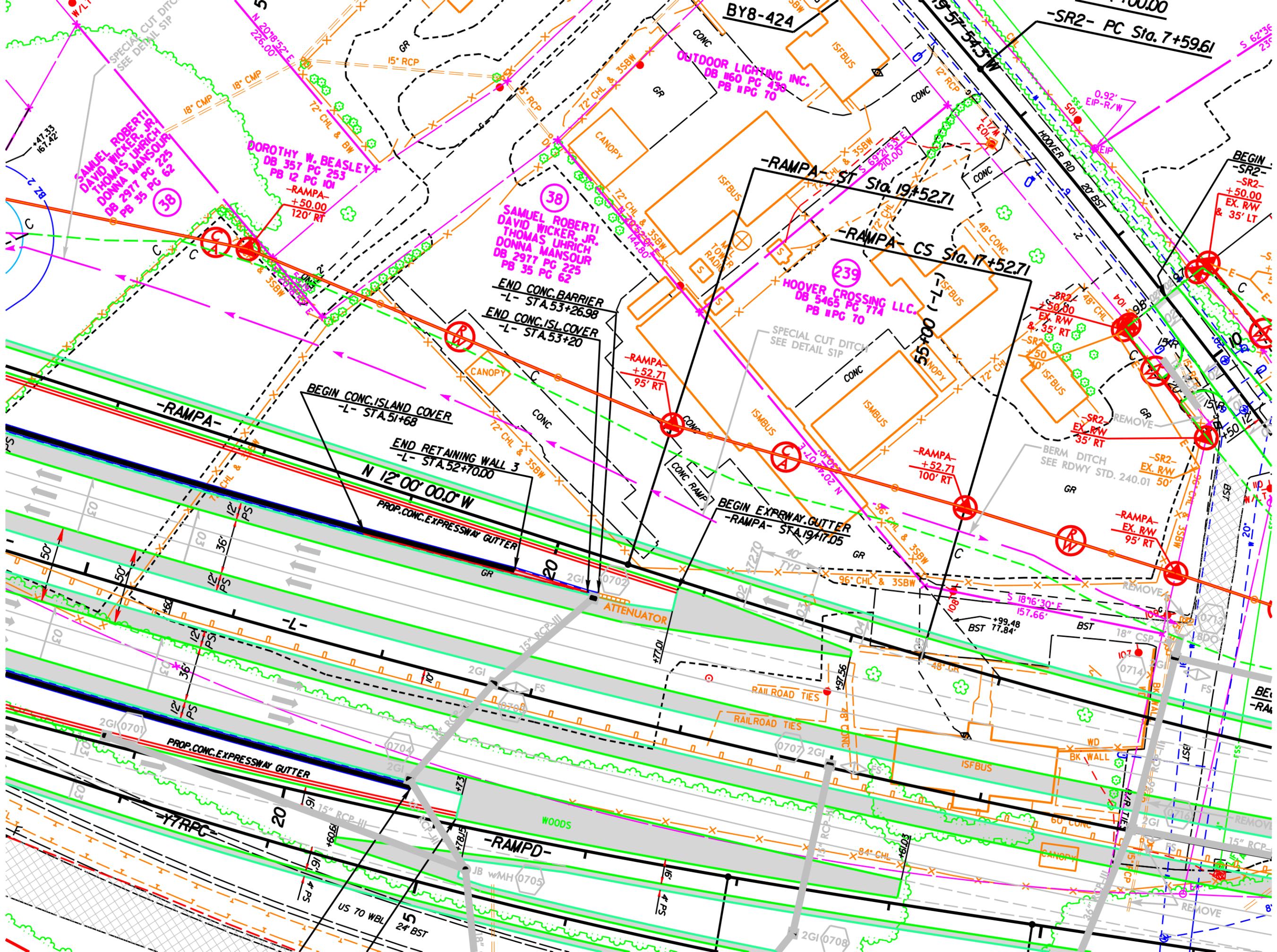
- PROPERTY LINE
- - - EXISTING RIGHT-OF-WAY
- ▲— PROPOSED RIGHT-OF-WAY
- - - C - - - PROPOSED CUT LINE
- T — PROPOSED TRANSITION LINE
- PROPOSED DRAINAGE PIPE
- - - TUE - - - TEMPORARY UTILITY EASEMENT
- E — PROPOSED CONSTRUCTION EASEMENT
- PDE — PROPOSED DRAINAGE EASEMENT
- PROPOSED CATCH BASIN
- 40 PARCEL ID
- SOIL SAMPLE LOCATION
- MONITORING WELL LOCATION
- 40-3 4-5' SAMPLE ID / DEPTH (FT)
- [60.8]** TPH DRO (mg/kg)
- (53.7)** TPH GRO (mg/kg)
- {0.673}** NAPHTHALENE CONCENTRATION (mg/kg)
- BOLD INDICATES EXCEEDANCE OF DENR TARGET SCREENING LEVEL**
- ESTIMATED AREA OF IMPACTED SOIL ABOVE DENR TARGET SCREENING LEVEL

NOTE:
ADDITIONAL VOCs DETECTED; SEE TABLE 4 FOR COMPLETE LIST.



SITE MAP AND SOIL ANALYTICAL RESULTS	
PROJECT SAMUEL ROBERTI ET. AL. PROPERTY PARCEL 40 217 SOUTH HOOVER ROAD DURHAM, DURHAM COUNTY, NORTH CAROLINA	
2923 South Tryon Street-Suite 100 Charlotte, North Carolina 28203 704-586-0007(p) 704-586-0373(f) License # C-1269 / #C-245 Geology	
DATE: 8-12-13	REVISION NO. 0
JOB NO. ROW-416	FIGURE NO. 3

Appendix A
NCDOT Preliminary Plans



SAMUEL ROBERTI
DAVID WICKER, JR.
THOMAS UHRICH
DONNA MANSOUR
DB 2977 PG 225
PB 35 PG 62

DOROTHY W. BEASLEY
DB 357 PG 253
PB 12 PG 101
-RAMP A-
+50.00
120' RT

SAMUEL ROBERTI
DAVID WICKER, JR.
THOMAS UHRICH
DONNA MANSOUR
DB 2977 PG 225
PB 35 PG 62

OUTDOOR LIGHTING INC.
DB 160 PG 439
PB 1PG 70

HOOPER CROSSING LLC.
DB 5465 PG 774
PB 1PG 70

-RAMP A-

BEGIN CONC. ISLAND COVER
-L- STA. 51+68

END RETAINING WALL 3
-L- STA. 52+70.00

N 12°00'00.0\"/>

PROP. CONC. EXPRESSWAY GUTTER

-RAMP A- ST Sta. 19+52.71

-RAMP A- CS Sta. 17+52.71

-RAMP A-
+52.71
95' RT

-RAMP A-
+52.71
100' RT

-RAMP A-
EX. RW
95' RT

BEGIN EXPRWAY GUTTER
-RAMP A- STA. 19+17.05

-SR2-
EX. RW
35' RT

-SR2-
EX. RW
50'

PROP. CONC. EXPRESSWAY GUTTER

-RAMP D-

US TO WBL
24' BST

BK WALL

REMOVE

Appendix B
DENR Incident Files

Parcel 38 Incident Files

ENVIRONMENTAL SITE ASSESSMENT
for
3001 Harvard Ave / 210 South Hoover Rd
Durham, North Carolina 27703

Prepared for

Lincoln Harris Company, LLC.
4201 Congress Street, Suite 175
Charlotte, North Carolina 28209

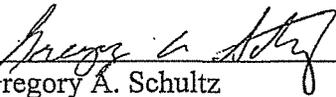
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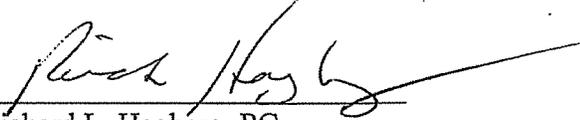


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TBE Project No. 00326-021-00

November 2000

Signed by: 
Gregory A. Schultz
Project Engineer

Signed by: 
Richard L. Hagberg, PG
Senior Project Manager

EXECUTIVE SUMMARY

TBE has completed a Phase I Environmental Site Assessment of 3001 Harvard Avenue/210 South Hoover Road. This site is developed with a Public Service Company of North Carolina (PSNC) vehicle maintenance facility and office building (3001 Harvard Avenue), and a vacant single-family residence (210 South Hoover Road), located between the south terminus of South Hoover Road and the Highway 70 Bypass in Durham, Durham County, North Carolina. The assessment was performed to satisfy the requirements of the Client and/or other interested parties with respect to potential environmental impairment and liabilities associated with the property due to contamination by hazardous substances or petroleum products on or near the site.

This assessment has revealed no recognized adverse environmental conditions at the subject property as defined by ASTM Standard Practice E1527-97, except for the following: (1) historical on-site vehicle repair operations, (2) former on-site gasoline UST, (3) debris disposal including crushed 55-gallon drums, (4) potential impacts from petroleum products or solvents entering floor drains; (5) concrete pads and pipe stubs observed on-site (potential UST areas). In addition, the limited asbestos and lead-based paint screening surveys detected the presence of friable asbestos containing spray-on ceiling texture and lead-based paint, respectively. Therefore, TBE recommends further assessment of the subject property.

The conclusions and recommendations contained herein are based on the data developed during the Phase I investigation. This report was prepared for Lincoln Harris Company (LHC), LLC. and is intended solely for their use. This report is not intended for third-party use without the expressed written consent of LHC and TBE. This report has been prepared in general accordance with accepted scientific practices, including the *ASTM E 1527-97 Standard Practice for Environmental Site Assessments*. No warranty, expressed or implied, is made.

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FIGURES

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SECTION 1.0 INTRODUCTION AND SCOPE OF INVESTIGATION

Past contamination of property by hazardous substances or petroleum products creates potential for liability with respect to remediation and possible civil and/or criminal penalties. TBE was retained by Lincoln Harris Company (LHC) to perform the Phase I portion of an Environmental Site Assessment (ESA).

A Phase I investigation includes a site inspection to assess the physical characteristics of the site and surrounding area, identifying visually observable evidence of contamination by hazardous substances or petroleum products. Also, limited historical data and regulatory records are reviewed to identify previous activities on or near the site that may have involved hazardous substances or petroleum products. This report is the result of a site visit observations and a Phase I records search only, and did not include an exhaustive review of publicly available information. The Phase I study was conducted to identify potential problem areas, and to determine the appropriate level of any subsequent studies, if required.

A Phase II ESA typically consists of a more intensive records search followed by site specific qualitative/quantitative sampling and analysis of air, soils, sediment and/or water (surface and/or groundwater), as appropriate. The sampling and analysis phase of the ESA can confirm the presence of contaminants and provide the data used to decide whether or not additional study or site remediation is necessary.

Lead-based paint, and lead-in-drinking water surveys were requested by LHC if on-site structures were built prior to 1976. Similarly, limited asbestos surveys were requested if on-site structures were built prior to 1982. As the on-site structures, including the single-family residence, appear to have been built prior to 1976, limited asbestos, lead-based paint, and lead-in-drinking water screening surveys were performed on all structures. Due to the low potential for elevated indoor radon concentrations in Durham County, no radon screening survey was performed at this facility.

The site (herein referred to as "the property" or "the site") is located at 3001 Harvard Avenue and includes a residence at 210 South Hoover Road. The site is situated between the south terminus of South Hoover Road and Highway 70 Bypass in Durham, Durham County, North Carolina. A site location map and site vicinity sketch are depicted in Figures 1 and 2, respectively.

SECTION 2.0 METHODOLOGY

Although not currently regulated by Federal, State or Local regulations, the standard approach and methods used in this Phase I investigation are generally consistent with commonly accepted industry standards and scientific practices including the ASTM *E 1527-97 Standard Practice for Environmental Site Assessments*. This approach to Phase I assessments incorporates an on-site visual observation, a historical review, agency reviews, and hydrogeological evaluation of the property and vicinity, and is outlined below.

2.1 SITE INSPECTION

A site inspection was conducted to identify the existing physical characteristics of the site and surrounding area and to verify that it is consistent with the data obtained through the historical evaluation and other data collection activities. During the site inspection, observations were made to identify conditions that may suggest the presence or absence of suspect areas where environmental contamination may have occurred. Such areas would generally include active or former refuse dump sites; unusual excavated or filled areas; areas of discolored soils and/or vegetative stress; discolored surface water; areas exhibiting unusual, noticeable odors; and the presence of unusual, discarded containers or other suspicious materials. Adjacent properties were also visually scanned for such evidence. At the request of LHC, radon, limited asbestos, lead-based paint and lead-in-drinking water screening surveys also were performed during the site inspection, where applicable.

2.2 HYDROGEOLOGICAL EVALUATION

To aid in predicting the potential migration and transport pathway of possible contaminants, a review of available data pertaining to the topography, geology, soils, and surface/subsurface hydrology of the area was conducted. If, during the site review, it is determined that adjacent properties have experienced contamination, the geologic analysis would aid in determining potential impact to the site caused by off-site migration of contaminants via shallow groundwater or surface flow onto the site. The sources reviewed for soil and geological data include the US Geological Survey (USGS), Southeast Durham Quadrangle 7.5-minute series topographic map, hydrogeological and soils information provided by Environmental Data Resources (EDR), and Contamination Assessment Reports (CARs) for sites in the immediate vicinity.

2.3 HISTORICAL EVALUATION

A historical evaluation was performed for the site to determine its prior usage. This included a review of its ownership and use, and the identification of any previous waste disposal activities on or near the site. Historical aerial photographs and maps were examined for visual evidence of past activities on or near the site that may have potential to adversely affect the site. In addition, interviews were performed (when possible) and historical City Directories and Sanborn Fire Insurance maps provided by EDR were reviewed. This limited review identified changes in site usage and was corroborated with information gained from aerial photographic interpretation. In addition, a fifty-year chain-of-title was reviewed.

2.4 AGENCY REVIEWS

Federal agency checks included a review of the National Priority List (NPL) of known, uncontrolled or abandoned hazardous waste sites identified for priority remedial action; the Federal Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) listing of known, suspected or potentially contaminated sites; the Resource Conservation and Recovery Act (RCRA) listing of Treatment, Storage and Disposal (TSD) facilities and other generators engaged in the generation of hazardous wastes; and the Emergency Response Notification System (ERNS) listing of actions taken for releases of hazardous substances or petroleum products. These lists, compiled and maintained by the Environmental Protection Agency (EPA) were reviewed to identify any such sites or areas on or near the property in order to assess the potential impact to the project due to possible migration of contaminants.

State agency checks included a review of the State Superfund/Cleanup Sites, State CERCLIS Equivalent Sites, State landfill/solid waste sites; leaking UST's; and registered UST's. These lists are all maintained by the North Carolina Department of Environment and Natural Resources (DENR). In addition to the standard ASTM databases, supplemental databases as described below also were searched. All database searches were conducted by EDR in June 2000, for the 210 South Hoover Road address. No changes have occurred to these databases since that time. EDR conducted the searches using the following search radii:

EPA Databases

NPL/Superfund Sites

CERCLIS Sites

RCRA CORRACTS TSD Facilities

Search Radius Used

1-Mile Search Radius

½-Mile Search Radius

1-Mile Search Radius

RCRA non-CORRACTS TSD Facilities
RCRA Generators
ERNS Hazardous Spills

½-Mile Search Radius
Adjacent Property (600' radius)
Site Search Only

State Databases

State Superfund/Cleanup Sites
State CERCLIS Equivalent
State Landfill/Solid Waste Sites
Leaking USTs
Registered USTs

1-Mile Search Radius
½-Mile Search Radius
½-Mile Search Radius
½-Mile Search Radius
Adjacent Property (600' radius)

Supplemental Databases

Superfund Consent Decrees (CONSENT)
NPL Records of Decision (RODS)
Facility Index System (FINDS)
Hazardous Material Information Reporting System
Material Licensing Tracking System (MLTS)
Master Mines Index (MINES)
Superfund Liens (NPL Liens)
PCB Activity Database System (PADS)
RCRA Administrative Action Tracking (RAATS)
Toxic Chemical Release Inventory System (TRIS)
Toxic Substance Control Act (TSCA)
NC Hazardous Substance Disposal Site (HSDS)
Incident Management Database (IMD)
Former Coal Gasification Sites (Coal Gas)

1-Mile Search Radius
1-Mile Search Radius
Site Search Only
Site Search Only
Site Search Only
Site Search Only
¼-Mile Search Radius
Site Search Only
1-Mile Search Radius
Site Search Only
1-Mile Search Radius

When deemed necessary to provided additional information, Federal, State and/or County agency files of suspect sites were also reviewed.

SECTION 3.0 RESULTS

3.1 SITE INSPECTION

A site inspection was conducted on October 27, 2000, to identify and characterize the existing physical parameters of the site, including its current usage, topography, ground cover, soils, and surface hydrology. Efforts were made to detect and identify obvious conditions that could indicate the presence of contamination by hazardous substances or petroleum products. The site inspection revealed the following specific information (see Figure 2, Site Location Map; Appendix A, Site Photographs):

- The site, located at 3001 Harvard Avenue, is irregularly shaped and contains approximately 5.9 acres of land, according to information from the Durham County GIS Department. A vacant single-family residential structure, located at 210 South Hoover Road, abuts the 3001 Harvard Avenue site. This residence was included as part of the subject property for purposes of this assessment. South Hoover Road terminates near the southeast corner of the residential portion of the property. Harvard Avenue extends approximately 250 feet southwest from the terminus to the right-of-way of US Highway 70. The site located in an area of Durham developed with commercial, industrial and residential properties.
- The subject site (except for the residence) and the previously assessed, adjacent PSNC properties to the east (See *Environmental Site Assessment for 211 South Hoover Road, July 2000*) are enclosed with a perimeter chain-link fence topped with barbed wire. A keypad activated entrance gate is located across South Hoover Road, immediately prior to its terminus. A vacated portion of Harvard Avenue effectively is contained within the fenced compound of the subject and adjacent PSNC properties. This portion of Harvard Avenue forms the southern boundary of the subject site. Vehicular access to the site is available from Harvard Avenue via South Hoover Road. Vehicular access to the north portion of the site is available from an unpaved portion of Liberty Street, which appears to terminate at the northeast corner of the site. Durham County GIS Maps show Liberty Street continuing west and connecting to the Highway 70 Bypass (west boundary of the site). Based on site visit observations and information from the fifty-year chain of title, the portion of Liberty Street within the fenced enclosure of the site has been vacated, as was the case with Harvard Avenue. No other vehicular access is available to the site.
- The subject property currently is developed with three buildings. The first structure is an approximately 3,300 square-foot office building for site personnel. The second structure is an approximately 36,600 square-foot vehicle maintenance facility. This structure appears to have been two separate buildings that were joined by an approximately 15 foot-wide

connecting room to form a single building. The southern portion of the building contains three former repair bays that currently are used for storage. The northern portion of the building consists of four vehicle repair bays and an office and break room area. Both of these structures are located within the fenced compound of the subject site. The third building is an approximately 1,100 square foot vacant residential structure. The gravel driveway for the residence is located immediately north of the gated site entrance on Hoover Road. An asphalt-paved parking area is located on the east side of the office building. The remainder of the site primarily is occupied by a gravel parking area and equipment yard.

- An approximately four-foot by four-foot concrete pad was observed approximately 40 feet southwest of the south portion of the maintenance facility. An approximately 4-inch diameter pipe stub was observed in the center of the pad. The interior of the pipe was threaded and was full of gravel. No information was available on-site to indicate the former use of the pipe. The potential for an unregistered UST in this area cannot be ruled out.
- No curbs, gutters and stormwater collection inlets were observed along adjacent roadways. The site is not expected to receive run-off from adjacent properties or roadways. No on-site stormwater retention basins or surface water features were observed on the subject property. Three stormwater collection drop-inlets were observed near the on-site office building. The discharge point of these inlets could not be determined during the site visit.
- Mr. Milton Hill (maintenance facility supervisor) indicated that the site is connected to municipal water, and that the structures on the subject property utilized an on-site septic system until approximately the second week of November 2000, at which time it was connected to the municipal sewer. The use of septic systems on the subject and nearby properties increases the potential concerns associated with chemical use. Hazardous substances or petroleum-products entering drains or shop sinks would likely impact soil and groundwater via the septic system drain field rather than entering the municipal sewer.
- No on-site wells were observed or reported during the inspection. A floor drain surrounded by oily staining, and a repair-trench that had been filled with dirt were observed in the southern portion of the garage building. The trench reportedly had a concrete base and walls. According to Mr. Hill, both the floor drain and a drain in the base of the trench were connected to a pipe that discharged at the east side of the gravel parking lot located directly north of the office building. The discharged point was inspected and no obvious staining or stressed vegetation was noted. An approximately two-foot by two-foot concrete sump was observed in the northern portion of the garage. The sump was empty at the time of the site inspection. The sump reportedly is used to collect water during heavy rains and pump the water to the exterior of the building. The discharge point at the building exterior was inspected and no staining, odors or stressed vegetation was observed.
- An approximately 20 foot-wide concrete pad was observed approximately 40 feet west of the north portion of the garage building. The pad extends approximately 200 feet northward to the fence enclosing the subject site. Steel I-beams that appeared to have been cut off to a height of approximately four feet (i.e. they appear to have extended higher), were observed at

both ends of the pad. The former use of the pad and I-beams is not known. However, a mechanic indicated that he had been told that a structure used to dry/cure pipe sections was formerly located on the pad. He had no further information regarding the site. An approximately 4-inch diameter pipe stub was observed in the concrete pad. The pipe was filled with dirt and gravel and its former use is not known. The potential for an unregistered UST cannot be ruled out.

- Mr. Milton Hill stated that the facility did not have an emergency generator nor did it historically have a petroleum-fired boiler. He indicated that the facility currently has a 1,000-gallon gasoline AST that is located approximately 100 feet northeast of the repair building. The facility also has a 250-gallon new oil AST located in the north portion of the building. Also, an approximately 100-gallon AST containing waste oil and an approximately 75-gallon poly-drum containing waste anti-freeze was observed adjacent to the northwest corner of the maintenance facility. According to Mr. Hill, the waste oil and anti-freeze are removed by Safety-Kleen. A circuit breaker located in the south portion of the maintenance facility was labeled "gas pump". Information provided by PSNC confirmed that a 1,000-gallon UST containing gasoline had been removed (in 1990) from the area adjacent to the south wall of the maintenance facility. Low-level contamination encountered during removal of the UST did not require removal. Additional information about the UST removal is discussed further in Section 3.4.
- The maintenance facility currently uses three Safety-Kleen parts washers. Two small parts washers are used in conjunction with brake repairs, and the larger washer is used for all other general repairs. Mr. Hill indicated that they had used a parts washer for approximately 5 to 7 years. Prior to that, mineral spirits was used on rags and 5-gallon buckets. He indicated that licensed contractors historically removed the waste mineral spirits, but was not able to provide manifests. Five empty 55-gallon drums were observed on the concrete pad adjacent to the gasoline AST. Three of the drums were labeled mineral spirits and the others had no labels. The drums were in fair condition with surface rust only. No staining was observed near the drums. In addition to the five drums nears the AST, approximately four 55-gallon drums were observed resting on bare ground near the northwest corner of the property. Labels were either missing or illegible, and two of the drums had been crushed. Minor staining and stressed vegetation was observed in this area.
- The west portion of the property appears to have been filled and leveled to create the existing gravel parking lot. The west edge of the parking lot slopes downward approximately 10 to 15 feet to the fence line along the Highway 70 Bypass. Debris was observed protruding from the side slope of the parking lot. Debris observed included the following items: metal and plastic pipe of varying diameter; rusted one gallon cans; a 2.5-gallon paint thinner-type can; wood and concrete debris; and two crushed 55-gallon drums. No labels were visible on any of the containers observed in this area. No obvious staining, odors or stressed vegetation was noted in the vicinity of the debris.
- Historical waste generation at the facility is expected to have included petroleum products and solvents associated with the vehicle repair shop building. Mr. Hill stated that the repair

operations were of a smaller scale prior to approximately 10 years ago. He indicated that the majority of the large-scale repair activity was performed at the repair garage on the adjacent PSNC property.

- No spent mercury-containing light bulbs or light ballasts were observed at the facility.
- A pole-mounted transformer was observed between the office building and the residential structure. The transformer was in good condition, with no signs of corrosion, damage, leakage or surface staining. No obvious labels concerning PCB content were observed.
- A Driver's License office and Water World watercraft are located on the adjacent properties to the southwest of the Highway 70 Bypass. A cemetery occupies the adjacent property to the west and northwest of the Highway 70 Bypass. A Christian Academy and outdoor lighting company occupy the adjacent properties to the east. PSNC also owns the adjacent property to the east of the residence and southeast of the office building. Assessment activity at this site was completed in July 2000 (See *Environmental Site Assessment for 211 South Hoover Road, July 2000*). Morris Plumbing occupies the adjacent property to the northeast. The adjacent properties to the north of the site are undeveloped.

3.1.1 Radon Screening Survey

Due to the low potential for elevated indoor radon concentrations in Durham County, no radon screening survey was performed at this facility.

3.1.2 Asbestos Screening Survey

LHC requested that limited asbestos screening surveys be performed on all structures built prior to 1982. Because all on-site structures were visible in the 1980 aerial photograph, a limited screening for the presence of asbestos containing materials was conducted by TBE. The number of samples collected was contingent upon the size of the building and presence of potentially asbestos-containing materials (PACMs). The goal was to identify and sample those materials which, if asbestos containing, would represent a significant impact on the value of the building.

A total of fifteen bulk samples were collected and one sample was found to contain asbestos in an amount greater than one (1) percent. The asbestos-containing material (ACM) detected consisted of friable spray-on ceiling texture. The screening does not constitute a renovation or demolition survey as defined under the EPA NESHAP's regulation. If the ACM is to remain in place, TBE recommends that an Asbestos Operations and Maintenance Program (O&M) be developed to manage and

maintain the identified ACM in good condition. If renovation or demolition of the structure is planned, a comprehensive asbestos renovation/demolition survey should be prepared. Methodology, limitations, and results of the screening are found in Appendix B.

3.1.3 Lead-Based Paint Screening Survey

The presence of lead-based paint was investigated at the request of LHC, if the buildings were originally built in 1975 or earlier. Because the age of the structures was not available at the time of the site visit, and based on the fact that all on-site buildings appear on the 1972 aerial photograph, a limited screening for the presence of lead-based paint was conducted by TBE. The number of samples collected was contingent upon the size of the building and presence of painted surfaces. The goal was to identify and sample those materials which, if lead-based paint containing, would represent a significant impact on the value of the building. A total of 19 samples were collected of which two contained lead in excess of the regulatory limit of 0.5% by weight. Methodology, limitations, and results of the screening are found in Appendix C.

3.1.4 Lead In Drinking Water Screening Survey

The sampling and analytical determination of lead content in drinking water was requested by LHC if the structure was originally built in 1975 or earlier. Because the age of the structures was not available at the time of the site visit, and based on the fact that all on-site buildings appear on the 1972 aerial photograph, a limited screening for the presence of lead in drinking water was conducted by TBE. Based on the size of the structure and the number of potable water discharge points (i.e. sinks, water fountains, etc.), a total of three samples were collected and shipped to Environmental Conservation Laboratories (ENCO) for lead analysis. No samples were found to contain lead concentrations in excess of the Federal Primary Drinking Water Standard of 15 µg/l. Methodology, limitations, and results of the screening are found in Appendix D.

3.2 HYDROGEOLOGICAL EVALUATION

Hydrogeological resources were examined to identify the probable direction of surface water and shallow groundwater flow at the site. The USGS Southeast Durham, North Carolina, 7.5-minute series topographic map produced in 1993 was reviewed. The topographic map indicates the site is

located at an approximate elevation ranging between 400 feet above mean sea level (msl) on the east portion of the site to approximately 380 feet above msl along portions of the west property line. This map indicates topographic conditions and contours from which the general direction of surface water flow can be inferred to be toward the west. The USGS Quadrangle map is shown as the site location map in Figure 1.

The subject and adjacent properties to the north, northeast, east and northwest are located in an area that is tinted to indicate an urban zone where only landmark buildings are depicted. No structures are depicted on these properties. The current structures are depicted on the adjacent PSNC property. The current surrounding street pattern is depicted on the map. The nearest surface water features are an unnamed creek located approximately 1,100 feet to the east, and an unnamed creek located approximately 1,400 feet to the west.

The topography in the vicinity of the site is hilly, with ridges, spurs and draws in the vicinity of the site. Land surface in the immediate vicinity slopes generally downward to the west in the immediate vicinity.

The direction of shallow groundwater flow often reflects the overlying topography, flowing from elevated areas toward low areas and surface waters (i.e.: ponds, streams, and lakes). This data, although not conclusive, would suggest groundwater may flow away from the site in a west direction toward the nearby unnamed creek. The creek identified to the east is located on the opposite side of a ridgeline, and is therefore not expected to influence groundwater flow at the site. Available groundwater flow information in the regulatory file and in reports provided by PSNC for the adjacent Hoover Road facility indicate a groundwater flow direction to the west at the site. The depth to water was recorded at approximately 9 feet below land surface.

Examination of hydrogeological data provided by EDR and contained in regulatory files indicates that the site is located within the Chatham Group of the Triassic Basin. The rocks beneath the site consist of a tan, medium to coarse grained micaceous Arkosic sandstone and brown clayey sandstone interbedded with brown to dark gray sandstone and mudstone.

3.3 HISTORICAL EVALUATION

The following information was compiled as a result of the historical evaluation performed on the subject site and the surrounding properties.

3.3.1 Historical Aerial Photographs

Historical aerial photographs were reviewed at the Durham County Planning and GIS Departments in Durham and at the Durham Soil and Water Conservation District Office. Historical aerial photographs from 1959, 1966, 1972, 1980, 1994, and 1999 were examined for visual evidence of past activities on or near the site that may have the potential to adversely affect the site. The scale of the photographs, while sufficient to describe general land use, inhibits discerning details of activities and specific land use. No aerial photographs for years prior to 1959 were readily available for the site. Information obtained from the review is presented below with the date and scale of the photograph. A copy of the 1999 aerial photograph is included as Appendix E.

- **1959 (Scale 1" = 1,250')**

Subject Property:

- The subject property appears to be wooded and undeveloped. No other significant features were observed.

Surrounding Properties:

- The warehouse building on the adjacent PSNC property (to the southeast) is visible.
- The cemetery on the adjacent property to the west of the Highway 70 Bypass is visible.
- A building that appears consistent with the drives license office on the adjacent property is visible to the southwest of the Highway 70 Bypass.
- The adjacent properties to the east and northeast appear residential.
- The adjacent properties to the north and northwest appear undeveloped.
- The current surrounding street pattern is visible.

- **1966 (Scale 1" = 1,667')**

Subject Property:

- The drive that currently is located along the east side of the on-site office building is visible.
- An apparent driveway is visible on the portion of the site occupied by the single-family residence. No structures are visible on the subject site. However, tree-cover may obscure the residence. No other significant features were observed.

Surrounding Properties:

- No significant changes from the previous aerial photograph were noted in the immediate vicinity of the site.

- **1972 (Scale 1" = 1,667')**

Subject Property:

- Buildings that appear consistent with the current structures are visible on the subject site.
- The gravel lot adjacent to the west side of the current maintenance facility appears to be approximately one-half its current size.
- No other significant changes from the previous aerial photograph were noted.

Surrounding Properties:

- No significant changes from the previous aerial photograph were noted in the immediate vicinity of the site.

- **1980 (Scale 1" = 200')**

Subject Property:

- No significant changes from the previous aerial photograph were noted.

Surrounding Properties:

- No significant changes from the previous aerial photograph were noted in the immediate vicinity of the site.

- **1994 (Scale 1" = 30')**

Subject Property:

- Approximately 25 trucks and cars, and several pieces of heavy equipment are visible parked on-site. Equipment trailers and numerous small objects are visible in the gravel lot portion of the site.
- A large area of disturbed soil is visible in the current gravel parking lot along the south side of Harvard Avenue (i.e. approximately 125 feet southeast of the office building). Shadows visible along the southern edge indicate that this may be an eroded slope or area where soil has been removed, rather than an area of piled soil. Prior conversations with Mr. Whitted (the warehouse supervisor interviewed during the July 2000 Phase I) indicated that a drainage system was installed in that general area and the slope graded to allow additional parking.
- Small spots of disturbed vegetation or debris are visible along the west side of the gravel lot (i.e. the area where debris disposal was observed during the site visit).
- No other significant changes from the 1980 aerial photograph were noted.

Surrounding Properties:

- Buildings currently occupied by Outdoor Lighting, and the current communications tower are visible on the adjacent property to the east of the northeast corner of the site.

- **1999 (Scale 1" = 30')**

Subject Property:

- No significant changes from the 1994 aerial photograph were noted. Conditions appear similar to those observed during the site visit.

Surrounding Properties:

- No significant changes from the 1994 aerial photograph were noted.

3.3.2 Historical Directories

Historical City Directories were researched and an abstract of available directory information was provide by EDR, Inc. In addition, city directories were researched at the Durham County Public Library. The directories for the study area were reviewed to help identify changes in land use based on the type of businesses that occupied the subject site and surrounding area. The type of business, such as automotive, dry cleaning, gasoline/service stations, etc. are indicative of the possible presence of hazardous substances or petroleum products. City directories were reviewed for the following years: 1961, 1966, 1971, 1976, 1981, 1985, 1990, and 1999. No city directories for years prior to 1961 were available. Information gathered from this review is presented below. The main portion of the subject property (3100 Harvard Avenue) did not appear in the city directories reviewed. No listings for Harvard Avenue were found for the immediate vicinity of the site. The on-site single-family residence at 210 South Hoover Road was listed in the directories reviewed.

1961: The on-site residence (210 South Hoover Road) is listed. No non-residential addresses were noted in the vicinity. The adjacent city directory coverage appears to terminate at 208 South Hoover Road.

1966: No significant changes from the previous directory listings were noted.

1971: No significant changes from the previous directory listings were noted.

1976: No significant changes from the previous directory listings were noted.

1981: No significant changes from the previous directory listings were noted.

1985: Burch Fencing is listed at 120 South Hoover Road (approximately 100 feet northeast of the site). No other significant changes from the previous directory listings were noted.

1990: Ed's Barber Shop/Jan's Hairstyling is listed at 202 South Hoover Road (adjacent property to the east). The United Food & Commercial Workers Local is listed at 208 South Hoover Road (adjacent property to the east). No other significant changes from the previous directory listings were noted.

1999: Al's Barber Shop, Communications Structures, Larson Electric, and Outdoor Lighting all are listed at 202 South Hoover Road. Morris Plumbing is listed at 120 South Hoover Road. No other changes from the previous directory listings were noted.

Due to the lack of coverage along Harvard Avenue and limited coverage along South Hoover Road for the majority of the time period, the city directory research did not provide substantial useful information. No on-site or nearby properties of concern were listed.

3.3.3 Sanborn Fire Insurance Maps

Sanborn Fire Insurance Maps have been produced since the late 1800's to provide information relative to fire hazards on insurable property. These maps often indicate locations of underground and aboveground gasoline tanks, storage facilities for flammable chemicals, such as dry cleaners, paint shops, maintenance and garage facilities, as well as historical information on occupants of buildings, unavailable through other sources.

EDR owns the Sanborn Fire Insurance Company and has complete access to the entire archive of historical maps. EDR conducted a search of its archive and indicated that the site is located in an area where Sanborn Fire Insurance Maps were not produced. Therefore, no review was possible.

3.3.4 Historical Title Information

The Law Firm of Manning, Fulton & Skinner, performed a fifty-year chain-of-title search, which was reviewed to identify past owners or occupants of potential concern. The preliminary title information submitted by the law firm indicates that Hutchinson Construction Company owned the portion of the site at 3001 Harvard Avenue from 1966 until 1970, at which time it was sold to the Antrim-Tech Corporation. Antrim-Tech owned the property until 1974. The former on-site activities of these businesses are unknown. No other owners of concern were listed between 1936 and present. PSNC appears to have acquired this portion of the property in 1983. Title information for the residence was not provided within the time frame of the project, but is not expected to provide significant information.

3.4 AGENCY REVIEWS

Environmental Data Resources, Inc. (EDR) conducted an automated search of agency listings for the area surrounding the subject site. This review of National and State listings was conducted to identify sites in the vicinity of the subject site which might pose an environmental concern. In addition to the plotted sites, the database report also contains a list of sites that are unmappable due to inadequate address information. This list was reviewed and field checked, and none of the sites were considered as significant environmental concerns for the subject site. The database report is included as Appendix F. Based on the distances to the subject site and the expected direction of groundwater flow (west), only the following sites were considered as significant potential environmental concerns:

- **Public Service Company, Small-Quantity Generator, 3001 Harvard Avenue (subject property- [note the address in the public record is 3100 Harvard Avenue])**
Agency files reviewed at the North Carolina DENR office in Raleigh showed no compliance violations or discharges listed at the subject property. Mr. Hill indicated that licensed contractors remove wastes, such as parts cleaning solvent, generated at the site. In addition, USTs formerly located at the adjacent PSNC site appeared incorrectly listed at the 3001 Harvard Avenue address. PSNC files indicate that a 1,000-gallon gasoline UST was removed from adjacent to the south wall of the garage, also in February/March 1990. Two soil borings were conducted in the tank pit, and two soil samples were collected for laboratory analysis. Benzene and total petroleum hydrocarbons were detected at levels below regulatory guidelines and no groundwater was encountered in the excavation. No additional assessment was requested by DENR in this area. Based on the limited sampling and lack of groundwater data, potential impacts from this former UST cannot be ruled out.
- **Public Service Company, Leaking UST site, 211 South Hoover Road, (adjacent property to the east and southeast)**
Agency files were reviewed at the North Carolina DENR and corporate file information related to the site was provided for review by PSNC. This information indicates that one 20,000-gallon gasoline, one 8,000-gallon gasoline, and one 550-gallon kerosene UST were removed from the current UST area in February/March 1990. A 12,000-gallon diesel UST was subsequently removed from the same general location in September 1990. Excessively contaminated soil was encountered during the initial UST closure and was excavated and

stockpiled on-site. No soil contamination above state guidance levels was encountered during the removal of the 12,000-gallon diesel UST (September 1990). However, additional soil contamination was encountered when widening the excavation to allow installation of the current 6,000- and two 15,000-gallon USTs. This contamination was determined to be related to the tanks removed in early 1990. A total of 700 cubic yards of contaminated soil was removed from the area between February and September 1990. The soil was stockpiled on visqueen until stockpile samples (March 1991) indicated the material was acceptable to land apply at the site. Approval from DENR was given on March 18, 1991. Mr. Whitted indicated that the majority of the soil was spread on the adjacent PSNC parcel. Based on review of aerial photographs, the gravel parking lot between Harvard Avenue and the main portion of 211 South Hoover Road site appears to be the area where the soil was spread (i.e. the disturbed area in the 1994 aerial photograph). This could not be confirmed based on available information.

Due to the potential for impacts groundwater from the initial discovery of contaminated soil, groundwater sampling was conducted in May 1990. Laboratory results for samples from the three monitoring wells located near the tank pit indicated that all EPA Method 602 and 625 parameters were below detection levels (BDL). In addition, Total Petroleum Hydrocarbon (TPH) levels were BDL in soil samples collected from the soil/groundwater interface during well installation.

Based on the sampling information to date, DENR determined (7/27/90 letter) that "any remaining contamination posed a minimal threat to the environment". However, due to the proximity of the contamination to groundwater, semi-annual sampling of the two down-gradient wells was requested. DENR indicated that if no contamination was detected during the first year that the site would be eligible for closure. Groundwater sampling events were conducted in 12/90, 5/91, and 11/91. Concentrations detected ranged from BDL to 2.1 ppb benzene and from BDL to 4 ppb of Methyl tert-butyl ether (MTBE). No other analytes were detected. No sampling data more recent than November 1991 was available and no letters discontinuing the sampling requirement were found in the files.

No leaks or discharges from the current USTs have been reported, and the USTs appear to have been emptied sometime in 1999.

TBE Group conducted Phase II assessment activities at the site in October 2000. Five monitoring wells were installed at the property. Analysis of groundwater samples from these wells identified low-level groundwater contamination that is not expected to impact the subject property.

- **Etna #3, Leaking UST site, 2301 Holloway Street (approximately 800 feet to the north)**
Agency files reviewed at the North Carolina DENR indicate that this site has a large groundwater contaminant plume resulting from a release of approximately 5,262 gallons of gasoline in 1995. The file indicates that groundwater flow is generally toward the northwest at the site and that a remediation system with recovery wells is in-place at the site. Available contaminant plume maps do not show contamination to the south of Holloway Street. Based on the recorded direction of groundwater flow at the Etna site (northwest), the presence of a remediation system, the apparent lack of impacts south of Holloway Street, and the distance to the site, this facility is not expected to adversely impact the subject property.
- **Buy And Go Citgo, Leaking UST site, 2502 Holloway Street (approximately 1,000 feet to the northeast)**
Agency files reviewed at the North Carolina DENR indicate that DENR approved a "closed status" for this site on June 6, 1999, indicating that no further action will be required by the state unless subsequent discharges occur. Based on the approval of a "closed status" for the site and the distance to the site, this facility is not expected to adversely impact the subject property.
- **BP gasoline station, approximately 2406 Holloway Street (approximately 850 feet to the north-northeast)**
This site was not identified during the regulatory database search, but was noted during the site inspection. Agency files reviewed at the North Carolina DENR indicate no contamination has been reported at the site and that the USTs appear to be in compliance. Based on this information and the distance to the site, this facility is not expected to adversely impact the subject property.

The remaining facilities listed in the database report each are located either outside the specified search radii or more than ¼-mile from the subject site. Based on their respective distances, the expected direction of groundwater flow (west), none of the remaining sites were considered as significant environmental concerns for the subject site. Additional information regarding these sites is contained in Appendix F.

SECTION 4.0 CONCLUSIONS

TBE Group, Inc. (TBE) has completed a Phase I Environmental Site Assessment (ESA) of the PSNC facility located at 3001 Harvard Avenue and including the residence at 210 South Hoover Road in Durham, Durham County, North Carolina. This Phase I ESA has been prepared in general accordance with the scope and limitations of ASTM *Standard Practice E 1527-97*. The conclusions and recommendations presented in this report are based upon data developed in this Phase I investigation.

FINDINGS:

On-Site Considerations

This investigation has revealed evidence suggesting the potential for environmental impairment of the subject site caused by current and/or historical on-site activities including: (1) historical on-site vehicle repair operations, (2) former on-site gasoline UST, (3) debris disposal including crushed 55-gallon drums, (4) potential impacts from petroleum products or solvents entering floor drains; (5) concrete pads and pipe stubs observed on-site (potential UST areas). In addition, the limited asbestos and lead-based paint screening surveys detected the presence of friable asbestos containing spray-on ceiling texture and lead-based paint, respectively.

Off-Site Considerations

This investigation has revealed no direct evidence suggesting environmental impairment of the subject site caused by current and/or historical off-site activities.

CONCLUSIONS:

This assessment has revealed no recognized adverse environmental concerns associated with the subject property as defined by ASTM *Standard Practice E 1527-97*, except for the following: (1) historical on-site vehicle repair operations, (2) former on-site gasoline UST, (3) debris disposal including crushed 55-gallon drums, (4) potential impacts from petroleum products or solvents entering floor drains; (5) concrete pads and pipe stubs observed on-site (potential UST areas). In addition, the limited asbestos and lead-based paint screening surveys detected the presence of friable asbestos containing spray-on ceiling texture and lead-based paint, respectively. The lead in drinking water screening survey performed at the subject property identified no lead concentrations above regulatory guidelines.

Section 5.0 RECOMMENDATIONS

Based on the information compiled and analyzed for this Phase I investigation and upon the conclusions reached, the following recommendations are made:

- To address potential effects from current and historical on-site activities, TBE recommends soil and groundwater testing at the PSNC facility located at 3001 Harvard Avenue/210 South Hoover Road in Durham, Durham County, North Carolina.
- TBE further recommends that a geophysical survey, including electro-magnetic and ground-penetrating radar, be performed to assess the potential for unregistered USTs and evaluate areas of observed debris disposal.
- In addition, TBE recommends that secondary containment and overhead cover be provided for any drums stored in an exterior location. Observed drums that are no longer needed should be characterized and disposed of properly.
- TBE recommends that a comprehensive asbestos survey be prepared prior to any renovation or demolition at the facility. If the ACM is to remain in place, TBE recommends that an Asbestos Operations and Maintenance Program (O&M) be developed to manage and maintain the identified ACM in good condition to prevent worker exposure.
- TBE also recommends that a Lead-Based Paint Operations and Maintenance Program (O&M) be developed to manage and maintain the identified LBP in good condition and prevent worker exposure.

This report has been prepared in general accordance with accepted scientific practices, including the ASTM E 1527-97 Standard Practice for Environmental Site Assessments. No warranty, expressed or implied, is made.

Section 6.0
REFERENCES

Durham County Aerials, 1959, 1966, 1972, 1975, 1986, and 1995.

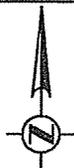
United States Geological Survey, Southeast Durham Quadrangle 1993.

Historical City Directory Abstracts and Sanborn Fire Insurance Maps provided by EDR.

Regulatory Database Search, EDR

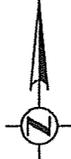
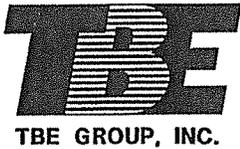
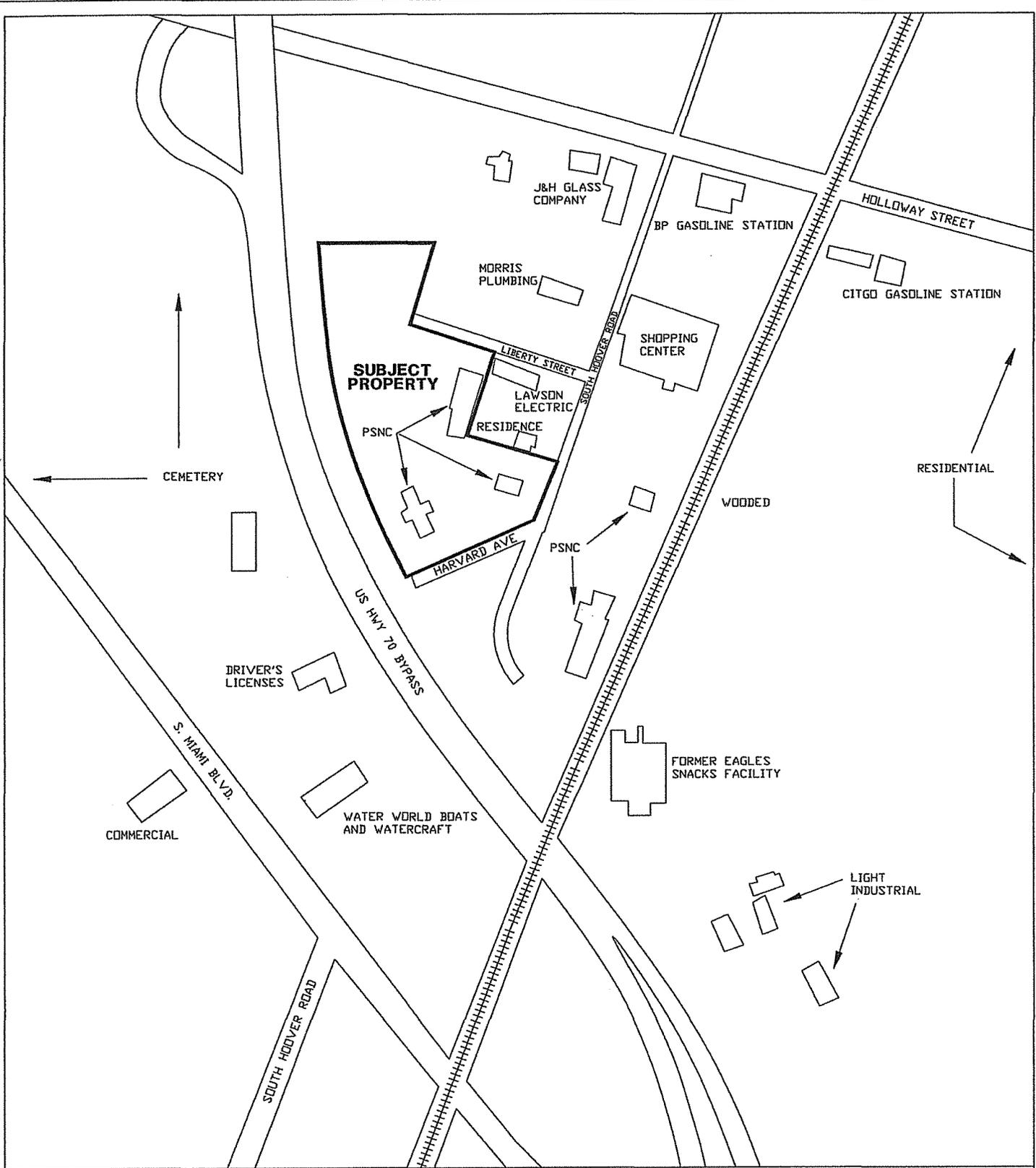
Various Regulatory Files/Reports, North Carolina Department of Environment and Natural Resources (DENR) and PSNC corporate files

Figure



PSNC DURHAM
OFFICE AND
MAINTENANCE FACILITY
3001 HARVARD AVENUE
DURHAM, N.C.

FIGURE 1
SITE LOCATION MAP



**PSNC DURHAM
OFFICE AND
MAINTENANCE FACILITY
3001 HARVARD AVENUE
DURHAM, N.C.**

**FIGURE 2
SITE VICINITY SKETCH**

**COMPREHENSIVE
SITE ASSESSMENT REPORT**

**Former PSNC Operations and Garage Site
3001 Harvard Avenue
Durham, North Carolina 27703**

Submitted to:



**North Carolina Department of Environment and Natural Resources
Raleigh Regional Office
3800 Barrett Drive, Suite 101
Raleigh, North Carolina 276-7600**

Prepared for:



a SCANA Company
800 Gaston Road
Gastonia, North Carolina
Attn: Mr. Ken Johnson

Prepared by:



Corporate Office: 380 Park Place Boulevard, Suite 300
Clearwater, Florida 33759

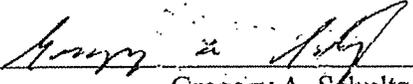
Local Office: 6000 Fairview Road, Suite 300
Charlotte, North Carolina

TBE Project No. 00326-021-01

May 2004

PROFESSIONAL ENGINEERING SEAL

I, Gregory A. Schultz, P.E. # 028123, certify that I currently hold an active license as a Professional Engineer in the State of North Carolina and am competent through education or experience to provide the engineering services contained in this report. Furthermore, I certify that the evaluations and interpretations contained in this Comprehensive Environmental Site Assessment Report, dated May 2004, were prepared by me, or under my direct responsible charge. Moreover, I certify that TBE Group, Inc., holds an active License #C-1749 to provide the engineering service.



Gregory A. Schultz, PE
Professional Engineer #028123
Date 5/27/04

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- B FIELD SAMPLING LOGS
- C LABORATORY ANALYTICAL DATA
- D CITY OF DURHAM – POTABLE WATER & SEWER ATLAS SHEETS

1.0 INTRODUCTION

In November 2000, TBE Group, Inc. (TBE) was retained by Lincoln Property Company, on behalf of PSNC Energy (PSNC) to conduct a Phase I environmental site assessment (ESA) at 3001 Harvard Avenue (a/k/a 2200 Liberty Street according to Durham GIS), Durham, North Carolina. The ESA of the operations facility and garage site was completed as part of a pending property transfer. The Phase I ESA identified potential environmental concerns on the property including: (1) historical on-site vehicle repair operations, (2) former on-site gasoline UST, (3) debris disposal (metal, pipe, etc.) (4) potential impacts from petroleum products or solvents entering floor drains; (5) concrete pads and pipe stubs observed on-site (potential UST areas), and potential off-site contaminant sources.

To further evaluate these concerns a limited Phase II ESA was conducted in November/December 2000. Petroleum- and solvent-related impacts in excess of North Carolina Administrative Code 15A, Subchapter 2L groundwater standards were detected in a monitoring well and further assessment was recommended. The property transaction occurred and funds to continue the assessment were placed in escrow.

Since December 2000, the evaluation of site conditions has taken place in several stages, as results from prior events are used to direct additional assessment. The assessment activities conducted to date are detailed in the remainder of this report. These activities were conducted in accordance with procedures established in the *Groundwater Section Guidelines for the Investigation and Remediation of Soil and Groundwater*, July 2000.

The goal of this work is to provide assessment data needed to adequately evaluate the nature and extent of identified contamination and characterize the risk posed to human health and the environment .

2.0 SITE HISTORY AND SOURCE CHARACTERIZATION

2.1 SITE DESCRIPTION/LOCATION

The former PSNC operations (office) and garage site (subject property) is located at 3001 Harvard Avenue, between the south terminus of South Hoover Road and US Highway 70 in Durham, Durham County, North Carolina. Information obtain from the Durham GIS department identifies the site address as 2200 Liberty Street. A site location map and site vicinity sketch are depicted in Figures 1 and 2, respectively.

The subject property is irregularly shaped and contains approximately 5.69 acres of land. A vacant single-family residential structure (now occupied by a landscaping company), located at 210 South Hoover Road, abuts the 3001 Harvard Avenue site. This residence was included as part of the subject property for purposes of this assessment.

The site is bounded by the commercial properties (to the east), right-of-way for US Highway 70 (to the west), South Hoover Road and a vacated portion of Harvard Avenue (to the south), and a commercial property (to the north). South Hoover Road terminates along the middle of the west property line of the former residential structure and a vacated portion of Harvard Avenue extends approximately 430 feet southwest from the terminus to the right-of-way of US Highway 70. The vacated portion of Harvard Avenue effectively is contained within the fenced compound of the subject and adjacent contiguous property. This vacated portion of Harvard Avenue forms the southern boundary of the subject site.

Vehicular access to the site is available from Harvard Avenue via South Hoover Road. Vehicular access to the site is also available from an unpaved portion of Liberty Street, which appears to terminate at the northeast corner of the site. Durham County GIS Maps show Liberty Street continuing west and connecting to the Highway 70 Bypass (west boundary of the site). Based on site visit observations and information from the fifty-year chain of title, the portion of Liberty Street within the fenced enclosure of the site has been vacated, as was the case with Harvard Avenue. No other vehicular access is available to the site. The site located in an area of Durham developed with

commercial, industrial and residential properties. The site and all adjacent properties are zoned industrial (I-2).

The site and the adjoining former PSNC property at 211 South Hoover Road are located within one contiguous fence line, with gated access along South Hoover Road. Original information available to TBE in late-2000, identified the entire fenced property by the 211 South Hoover Road address. Therefore, initial notification of contaminant impacts made to NCDENR reflect only the 211 South Hoover Road address.

2.2 SITE HISTORY

The subject property currently is developed with three buildings. The first structure is an approximately 3,300 square-foot office building formerly for site personnel. The second structure is an approximately 36,600 square-foot vehicle maintenance facility. This structure appears to have been two separate buildings that were joined by an approximately 15 foot-wide connecting room to form a single building. The southern portion of the building contains three former repair bays that currently are used for storage. The northern portion of the building consists of four vehicle repair bays and an office and break room area. Both of these structures are located within the fenced compound of the subject site. The third building is an approximately 1,100 square foot vacant residential structure. The gravel driveway for the residence is located immediately north of the gated site entrance on Hoover Road. An asphalt-paved parking area is located on the east side of the office building. The remainder of the site primarily is occupied by a gravel parking area and equipment yard.

During the Phase I ESA, the Law Firm of Manning, Fulton & Skinner, performed a fifty-year chain-of-title search, which was reviewed to identify past owners or occupants of potential concern. The preliminary title information submitted by the law firm indicated that Hutchinson Construction Company owned the portion of the site at 3001 Harvard Avenue from 1966 until 1970, at which time it was sold to the Antrim-Tech Corporation. Antrim-Tech owned the property until 1974. The former on-site activities of these businesses are unknown. No other owners of concern were listed between 1936 and present. PSNC appears to have acquired this portion of the property in 1983. PSNC sold the property to the current owner (Mr. Sam Robertti) in 2001.

2.3 REGIONAL HYDROGEOLOGY

The USGS Southeast Durham, North Carolina, 7.5-minute series topographic map produced in 1993 was reviewed. The topographic map indicates the site is located at an approximate elevation of 400 feet above mean sea level. This map indicates topographic conditions and contours from which the general direction of surface water flow can be inferred to be toward the west. The USGS Quadrangle map is shown as the site location map in Figure 1.

The nearest surface water features depicted on the topographic map are an unnamed creek located approximately 1,200 feet to the east, and an unnamed creek located approximately 1,500 feet to the west.

The topography in the vicinity of the site is hilly, with ridges, spurs and draws in the vicinity of the site. Land surface in the immediate vicinity slopes generally downward to the west in the immediate vicinity.

Examination of hydrogeological data from the Geological Map of North Carolina indicates that the site is located within the Chatham Group of the Triassic Basin. The rocks beneath the site consist of a tan, medium to coarse grained micaceous Arkosic sandstone and brown clayey sandstone interbedded with brown to dark gray sandstone, saprolite and mudstone

Field observations appear to indicate that the unique geology of the Triassic Basin can contribute to inconsistent results from field activities. Such observations include dry wells, difficult soil boring/well installation, slow recharge rates, and adjacent wells of similar depth being dry while others produce water.

3.0 ASSESSMENT METHODOLOGY

This section describes field sampling and laboratory analysis methodologies for assessment activities conducted by TBE to date at this facility. Assessment activities were conducted in several stages due to difficulties in coordinating site access with current occupants and obtaining access to adjacent rights-of way.

3.1 INITIAL ASSESSMENT (PHASE II ESA) METHODOLOGY

Based on concerns identified in the Phase I ESA, TBE conducted initial Phase II assessment activities at the subject property that included a ground-penetrating radar (GPR) and magnetometer survey, installation of soil borings for organic vapor analysis, as well as soil and groundwater sampling for laboratory analysis.

Site investigation work was initiated on November 17, 2000. The scope of this investigation was developed from review of the Phase I ESA conducted by TBE. To confirm removal of the reported UST, and evaluate the potential for undetected USTs or subsurface debris, a GPR/magnetometer survey was conducted. No USTs or significant indications of subsurface debris were detected during the GPR/Magnetometer survey. A copy of the survey report is included as Appendix A.

To determine the potential for petroleum and/or organic contamination to exist on-site, TBE conducted soil and groundwater testing in potential suspect contaminant source areas as identified in the above review.

On November 11 and 12, 2000, TBE's sub consultant (Applied Earth Sciences) installed 30 soil borings on-site using a Geoprobe™ drill rig for the collection of soil samples. The soil borings were advanced until refusal conditions were encountered at an average depth of 10 to 15 feet (bls). The soils were screened with an Organic Vapor Analyzer (OVA) equipped with a photo ionization detector to identify the presence of hydrocarbon/solvent vapors in the soil. This task included coring through the existing concrete where required. The borings were strategically placed in areas most likely to represent potential contamination source areas (areas with concrete patches, near the former

UST, and potential off-site concerns). See Figure 3 for boring/sampling locations. Soil boring analytical data are included on Table 1, as well as the field logs contained in Appendix B.

Based on the results of the OVA screening, soil and groundwater samples were to be obtained from the boring(s) performed in areas with the highest OVA readings; or, in the absence of elevated OVA readings, in locations deemed most likely to intercept migrating contamination.

Soil samples were collected on November 17, 2000, from Geoprobe™ boring GP-4 and Hand Augered borings HA-1 and HA-2. Soil sample GP-4 was collected in the former UST area (a 1,000-gallon gasoline UST was removed in March 1990 –no soil or groundwater impacts were detected). GP-4 was collected at 10 ft bls to ensure representative native soil from beneath the former tank pit was collected. Sample GP-4 was obtained in accordance with appropriate protocols and analyzed for the presence of TPH (GRO/DRO), and via EPA method 8270.

Soil sample HA-1 was collected adjacent to a floor drain in the garage building. Soil sample HA-2 was collected beneath an unknown pipe outfall at the west edge of the parking lot. The samples were obtained in accordance with appropriate protocols and analyzed for Oil & Grease (Method 9071A), and via EPA method 8270.

No impacts were detected at concentrations that exceeded North Carolina Administrative Code 15A, Subchapter 2L soil-to-groundwater quality standards. The laboratory results are shown on Table 1.

On November 20, 2000, five groundwater monitoring wells (MW-6 through MW-10) were installed to an approximate depth of 20 feet bls. The wells were installed with a mechanical drill rig, constructed of 2-inch, 0.01-slotted PVC screen from 10 ft to 20 ft bls, and solid riser from 0 ft to 10 ft bls, with surrounding sand pack, manhole, and locking cap. Field measurements indicated the wells were dry after installation.

Conversations with the geologist from AES indicated that it often takes some time for wells installed in this area to produce water. Based on this information, the depth to water in the wells was rechecked on November 27, 2000. Monitoring wells MW-6 and MW-7 were dry. The depth to water

readings in the remaining wells are shown in parenthesis after their respective well numbers: MW-8 (12.90 ft bls), MW-9 (19.82 ft bls), MW-10 (16.91 ft bls). A decision was made to sample the three wells containing water and return at a later date to attempt to sample MW-6 and MW-7. Based on the water level data from MW-8, MW-9 and MW-10, a shallow groundwater flow direction generally towards the west-southwest was calculated. This direction of flow is consistent with the overlying topography.

The wells (MW-8 and MW-10) were each purged a minimum of three well volumes each using new dedicated Teflon bailers. Once purged, samples were collected via Teflon bailer and were transferred to appropriate containers. The samples were maintained at four degrees Celsius using wet ice and transported to Environmental Science Corp. (ESC) Laboratories, along with completed chain-of-custody documentation. Samples were obtained in accordance with appropriate protocols and analyzed for the presence of solvent, gasoline, and aromatic hydrocarbons per EPA methods 8021 and 8270. MW-9 had very little water present, and could not be adequately purged. Personnel returned to the site on November 30, 2000 to sample MW-9. Due to the small amount of water in the well, only a limited purge was possible. The sample from the well was analyzed via EPA Method 8021 (BTEX/MTBE).

Results of the analysis of MW-8 indicated that Bis(2-ethylhexyl)phthalate (BEHP) was detected at a concentration of 100 µg/l, which exceeds the North Carolina Administrative Code 15A, Subchapter 2L (NCAC 15A, 2L) groundwater quality standard of 3 µg/l. No impacts above minimum laboratory detection limits were detected in MW-9 or MW-10.

Personnel returned to the site on December 29, 2000, and determined that sufficient volumes of water were present in MW-6 and MW-7 to conduct sampling. The wells each contained approximately 1.5 ft of water, and only minimal purging could be conducted. Samples were collected via Teflon bailer and were transferred to appropriate containers. The samples were maintained at four degrees Celsius using wet ice and transported to Environmental Science Corp. (ESC) Laboratories, along with completed chain-of-custody documentation. Samples were obtained in accordance with appropriate protocols and analyzed for the presence of solvent, gasoline, and aromatic hydrocarbons per EPA method 8010/8020. In addition, MW-6 was sampled for lead due to

the former presence of the gasoline UST at this location..

The results of the sampling indicated petroleum, and solvent compounds detected in excess of North Carolina Administrative Code 15A, Subchapter 2L (NCAC 15A, 2L) standards (See Tables 1 & 2).

Based on the presence of groundwater impacts above 2L criteria, TBE recommended that supplemental testing be conducted on-site to confirm the preliminary results and help identify potential sources of the observed impacts.

3.2 EXPANDED PHASE II ESA (JULY 2001)

The primary focus of expanded Phase II assessment activities was twofold: (1) re-sample monitoring wells MW-6, MW-7 and MW-8 to confirm prior results, (2) to install, sample and laboratory analyze groundwater from the new permanent groundwater monitoring wells. Two wells (MW-11G and MW-12G) were installed downgradient of MW-6 (well with majority of exceedances) and one well (MW-13G) was installed upgradient of the MW-6. The designation "G" (for Garage) was added to all of the existing and newly installed wells to provide a clear distinction from wells installed on the adjoining Warehouse facility at 211 South Hoover Road (also being assessed by TBE).

3.2.1 Monitoring Well Installation, Groundwater Sampling and Analysis

On July 11, 2001, TBE installed three permanent two-inch PVC monitoring wells MW-11G, MW-12G and MW-13G using a truck mounted air drill rig. Wells MW-11G through MW-13G were constructed of 2-inch, 0.01-slotted PVC screen from 15 ft to 30 ft bls, and solid riser from 0 ft to 15 ft bls, with surrounding sand pack, manhole, and locking cap. Field measurements indicated the wells were dry after installation. (see Appendix B for Monitor Well Construction Detail).

Due to the lack of water in the newly installed wells, only wells MW-6G, MW-7G and MW-8G were sampled during this field event. The wells were purged with a dedicated Teflon bailer. Due to the lack of a substantial volume of water in the wells and the slow recharge rate, only minimal purging was possible. Once purged, samples were collected via Teflon bailer and were transferred to appropriate containers. The samples were maintained at four degrees Celsius using wet ice and transported to Environmental Science Corp. Laboratories along with completed chain-of-custody

documentation. Samples were obtained in accordance with appropriate protocols and analyzed for the presence of volatile petroleum product parameters per EPA Method 8021.

TBE personnel returned to the site on September 19, 2001, to sample the previously dry wells (MW-11G, MW-12G and MW-13G). Monitoring wells (MW-11G and MW-12G) were each purged of five well volumes each using new dedicated Teflon bailers. Once purged, samples were collected via Teflon bailer and were transferred to appropriate containers. The samples were maintained at four degrees Celsius using wet ice and transported to Environmental Science Corp. (ESC) Laboratories, along with completed chain-of-custody documentation. Samples were obtained in accordance with appropriate protocols and analyzed for the presence of solvent, gasoline, and aromatic hydrocarbons per EPA methods 8021 and 8310.

MW-13G, which was installed on the adjacent residential property at 210 South Hoover Road (formerly part of the site), could not be located by the field crew during this sampling event. Since the installation date, approximately 3 inches of gravel/rock base was added to the residential property to create a parking area for the landscaping firm now occupying the structure. The field crew attempted to locate the well manhole using a rented metal detector, but was not successful.

3.2.2 Results of Groundwater Analysis

Groundwater samples collected in July 2001 from monitoring wells MW-6G, MW-7G and MW-8G), were analyzed for solvent- and petroleum-related constituents per EPA Method 8021. The results of the above groundwater analysis identified exceedances of NCAC 15A, 2L groundwater quality standards in MW-6G. MTBE and 1,1-dichloroethane were detected in MW-7G at levels below NCAC 15A,2L standards. No EPA method 8021 parameters were detected above minimum laboratory detection limits in MW-8G (see Table 2 for results).

Groundwater samples collected in September 2001 from the two previously dry monitoring wells installed by TBE (MW-11G and MW-12G), were analyzed for solvent- and petroleum-related constituents per EPA Method 8021 and 8310. The results of the above groundwater analysis identified no solvent- or petroleum-related impacts above minimum laboratory detection limits (see Table 2 for results).

3.3 SUPPLEMENTAL GROUNDWATER ASSESSMENT (AUGUST 2002)

Based on the results of the July 2001 assessment, TBE recommended that additional assessment be conducted inside the garage building to determine if the source of the identified impacts was beneath the building or originating from an adjacent site.

3.3.1 Soil Boring/Micro-Well Installation and Groundwater Sampling

TBE personnel returned to the site on August 20, 2002 and completed six Geoprobe™ soil borings through the concrete floor of the garage building. The soil borings were completed to an average depth of six to eight feet bls, at which point refusal conditions were encountered. The soil from each boring was screened at two-foot vertical intervals to the base of the boring. Each OVA sample was divided equally into two separate 16-ounce mason jars and covered with aluminum foil. The samples were then screened with a Foxboro 128 GC Organic Vapor Analyzer (OVA) equipped with a flame-ionized detector (FID) using a standard probe and a charcoal-filled probe. The charcoal probe filters non-methane hydrocarbons. The difference between the unfiltered and filtered OVA readings represents levels presumably attributable to petroleum- or solvent-related hydrocarbon vapors.

To evaluate groundwater quality beneath the on-site garage building, a Geoprobe™ 1-inch diameter micro-well, with pre-packed sand pack was installed, as shown on Figure 3. The micro-well (Micro 1) was installed to a total depth of eight feet bls, at which point refusal conditions were encountered. The well was completed with a grout seal and 4-inch diameter, flush-mounted locking brass manhole.

In addition, MW-13G was located by the project engineer present at the time of installation. Monitoring wells MW-7G, 8G and 13G were sampled for EPA method 8021 parameters. In addition, to confirm the prior detection for bis(2-ethylhexyl) phthalate, MW-8G was also sampled for EPA Method 8270 parameters. The newly installed micro-well (Micro-1) had no water, and could not be sampled during this event.

3.3.2 Groundwater Flow Gradient Determination

During the August 2002 event, depth-to-water readings were collected from MW-6G through MW-8G and MW-11G through MW-13G to allow interpretation of the direction of shallow groundwater flow at the site. MW-10G could not be located by the field crew (due to numerous parked semi-trailers) and MW-9G was located in a locked, fenced area that was inaccessible during the field event.

All wells used for the gradient determination were surveyed and elevations established relative to an arbitrary elevation established on-site. Once the elevation of the wells was established, depth to water within the wells was measured and the water table elevation was calculated and groundwater flow direction determined. The well survey and water table elevation data are presented on Table 3 for the various dates measured. A total of 6 wells were utilized for the groundwater flow interpretation.. The resultant groundwater elevation contour maps are presented on Figures 4 and 4A for further review.

3.3.3 Results of OVA Screening and Groundwater Sampling

The results of the OVA screening of soils from DP-1 through DP-6 (completed in the garage building) showed no elevated readings. The results of the OVA screening are shown on Table 1A.

Groundwater samples collected in August 2002 from monitoring wells MW-7G, MW-8G and MW-13G), were analyzed for solvent- and petroleum-related constituents per EPA Method 8021. In addition, MW-8G was also sampled for EPA Method 8270 parameters. The results of the above groundwater analysis identified exceedances of NCAC 15A, 2L groundwater quality standards in MW-13G for 1,1-dichloroethene (23 µg/l). MTBE, 1,1-dichloroethane, and 1,1-dichloroethene were detected in MW-7G at levels below NCAC 15A,2L standards. No EPA method 8021 or 8270 parameters were detected above minimum laboratory detection limits in MW-8G. The results are shown on Table 2 and Figure 5.

3.4 SUPPLEMENTAL WELL INSTALLATION (JANUARY 2003)

To finalize the horizontal delineation of the solvent impacts detected in MW-13G (upgradient well), TBE returned to the site on January 14, 2003 to supervise the installation of monitoring wells MW-

14G and MW-15G on the adjacent former residence (now occupied by a landscaping business).

MW-14G and MW-15G were installed to a total depth of 30 feet bls to ensure adequate water would be available for sampling and due to the type of contamination detected in MW-13G. MW-15G, MW-6G and the previously dry Micro-1 were sampled on January 15, 2003 for petroleum and solvent-related compounds via EPA Method 8021. Monitoring well MW-14G was dry and could not be sampled during this field event.

No method parameters were detected in excess of NCAC15A, 2L groundwater quality standards in MW-15G or Micro-1. The groundwater sample from MW-6G contained the following parameters in excess of NCAC15A, 2L groundwater quality standards: Benzene (13 µg/l), 1,2-dichloroethane (22 µg/l), 1,1-dichloroethene (8.9 µg/l) and 1,2 dichloropropane (5.8 µg/l).

3.5 SUPPLEMENTAL GROUNDWATER SAMPLING – FEBRUARY 2003

On February 19, 2003, TBE personnel returned to the site to sample MW-14G. The well was sampled for petroleum and solvent-related compounds via EPA Method 8021. No method parameters were detected in excess of NCAC15A, 2L groundwater quality standards.

4.0 ASSESSMENT RESULTS

4.1 GROUNDWATER QUALITY RESULTS

Between November 2000 and February 2003, TBE sampled a total of 11 permanent monitoring wells as shown on Table 2 and Figure 5. The results of the most recent sampling event(s) for each well with impacts above NCAC 15A-2L standards are detailed below, along with the date of the last sample event. Wells that that were previously sampled and revealed no contaminants of concern above laboratory detection limits were not resampled. All parameters analyzed were at levels below detection limits or 15A-2L standards, except as summarized below (exceeded North Carolina Administrative Code 15A, Subchapter 2L groundwater quality standards listed in parenthesis):

MW-6G (Southwest corner of building - near former UST location) – January 15,2003

- Benzene 13 µg/l (1.0 µg/l)
- 1,2-Dichloroethane 22 µg/l (0.38 µg/l)
- 1,1-Dichloroethene 8.9 µg/l (7.0 µg/l)
- 1,2-Dichloropropane 5.8 µg/l (0.56 µg/l)

MW-13G (approximately 55 feet east of MW-6G – at former residence) – August 20,2002

- 1,1-Dichloroethene 20 µg/l (7.0 µg/l)

Groundwater analytical results from the above sampling events are summarized on Table 2 and are graphically presented on Figure 5. Laboratory reports are included in Appendix C.

4.2 SOIL QUALITY RESULTS

4.3.1 Soil OVA Results

Elevated OVA readings were only detected in Geoprobe™ soil boring GP-4. This boring was installed at the northwest corner of the former UST location, adjacent to the south side of the garage building. In addition, a soil sample collected for laboratory analysis from GP-4 at 10 feet bls contained no exceedances of NCAC 15A, 2L soil-to-groundwater standards. No other elevated OVA readings were detected in the 30 direct-push/Geoprobe™ or five hand-augered borings completed at the site (See Table 1A and Figure 3). No OVA samples were collected during the monitoring well installations, as the air rig produced a very small amount of soil cuttings.

4.3.3 Soil Analytical Results

During the initial Phase II ESA, soil samples were collected from borings GP-4, HA-1 and HA-2 (See Table 1 and Figure 3). Samples were obtained in accordance with appropriate protocols and analyzed for the presence of TPH, and 8270 (full list).

No impacts were detected at concentrations that exceeded North Carolina Administrative Code 15A, Subchapter 2L soil-to-groundwater quality standards in the soil samples from GP-4 or HA-2. The soil sample from HA-1 (boring adjacent to drain inside the garage) contained benzo(a)anthracene (0.62 mg/kg) and benzo(a)pyrene (0.44 mg/kg). These concentrations slightly exceed the NCAC 15A, 2L soil-to-groundwater standards of 0.34 mg/kg and 0.091 mg/kg, respectively. The laboratory results are shown on Table 1.

5.0 SITE GEOLOGY AND HYDROGEOLOGY

Because the geology and hydrogeology of a given site affects the distribution and migration of contaminants, the soil lithology and relative groundwater elevation measurements were collected during this investigation.

5.1 SOIL LITHOLOGY

To characterize site-specific soil lithology, soil was examined during the installation of soil borings and monitoring wells on the property. Soil borings installed on-site encountered a variety of soil conditions ranging from reddish brown silt with fine-grained micaceous sands near the land surface to saprolite and weathered bedrock at depths ranging from ± 9 feet bls to ± 14 feet bls.

5.2 GROUNDWATER GRADIENT

An arbitrary benchmark with an elevation of 100 feet was established at the corner of the concrete pad near MW-6. All subsequent well elevations were referenced from this benchmark. Monitoring wells installed by TBE were tied in to the existing well elevations upon completion in November 2000. Depth to groundwater readings were collected on multiple occasions and a groundwater elevation contour map prepared for the two most recent events. Depth to water readings and monitoring well construction details are shown on Table 3.

The surficial groundwater gradient for the subject site was generally toward the west-southwest. The resultant groundwater elevation contour maps are presented on Figures 4 and 4A, for further review.

5.3 SITE-SPECIFIC RECEPTOR SURVEY

Per information provided by Ms. Martha Fillinger with the Public Water Supply Section of DENR, no public water supply wells are located within a ½-mile radius of the subject site. According to the City of Durham Utilities Department, the site and surrounding area are supplied by public water. Copies of atlas sheets showing potable water and sewer service in the vicinity of the site are included in Appendix D.

According to the City of Durham Utilities Department, the source of the public water is either the Little River Reservoir or Lake Michie. The closest of these intakes is the Little River Reservoir, located more than eight miles north of the site.

An unnamed intermittent stream is located approximately 1,200 feet east of the apparent source area. According to the USGS topographic map for the site and surrounding area, the stream is a tributary of Little Lick Creek. The USGS map is depicted as Figure 1.

A vehicular and pedestrian survey conducted by TBE identified no obvious potable or irrigation wells within a 1,500-foot radius of the site.

No artificial conduit or subsurface utilities are known to exist in the vicinity of the impacted monitoring wells.

According to the Raleigh Regional office of the DWQ Groundwater Section, there are no designated wellhead protection areas, as defined by USC 300h-7(e), within 1,500 feet of the site.

According to Zoning Atlas Sheet # 0841, the site and surrounding properties are zoned I-2 (light industrial). The Light Industrial District (I-2) provides for a wide range of light manufacturing, warehousing, and wholesaling activities as well as offices and some support services.

6.0 CONCLUSIONS

Soil Lithology

Soil borings installed on-site encountered a variety of soil conditions ranging from reddish brown silt with fine-grained micaceous sands near the land surface to saprolite and weathered bedrock at depths ranging from ± 9 feet bls to ± 14 feet bls.

Field observations indicate that the unique geology of the Triassic Basin can contribute to inconsistent results from field activities. Such observations include dry wells, difficult soil boring/well installation, slow recharge rates, and adjacent wells of similar depth being dry while others produce water.

Groundwater Gradient

Based on groundwater data collected during this investigation, the apparent groundwater gradient is toward the west-southwest on the portion of the site where groundwater data has been collected.

Extent of Soil Contamination

Laboratory analysis of soil samples collected from three soil borings identified only low-level exceedances of North Carolina Administrative Code 15A, Subchapter 2L soil-to-groundwater quality standards in the boring completed within the garage building. As the only identified impacts are beneath the garage structure, there is little risk of human contact with the soil.

No indications of soil contamination were identified on other portions of the site.

Extent of Groundwater Contamination

Petroleum-related groundwater impacts in excess of NCAC 15A, 2L standards were identified only in MW-6G (former UST area). The concentration of the only compound exceeding 2L standards (benzene) has decreased from 200 $\mu\text{g}/\text{l}$ in December 2000 to 13 $\mu\text{g}/\text{l}$ in January 2003. Likewise, the level of total xylenes has decreased from 710 $\mu\text{g}/\text{l}$ to 94 $\mu\text{g}/\text{l}$ for the same period and no longer exceed 2L standards. Based on this data it appears that the petroleum-related impacts are naturally

attenuating. No other petroleum-related exceedances were identified on-site and the groundwater sampling from inside the garage building (Micro-1) identified no impacts above minimum laboratory detection limits.

The solvent-related groundwater impacts identified to date consist primarily of 1,2 dichloroethane; 1,1-dichloroethane and 1,2-dichloropropane. The extent of these impacts appears limited to a small area in the vicinity of MW-6G and MW-13G, to the south and southeast of the garage building. As previously noted, groundwater sampling from inside the garage building (Micro-1) identified no impacts above minimum laboratory detection limits. Based on the lack of a potential onsite source, the proximity of the solvent-impacted wells to the property line and the direction of groundwater flow, it appears that the identified solvent impacts may be originating from an **off-site** source.

7.0 RECOMMENDATIONS

Based on the contaminant reductions observed in MW-6 (monitoring well with most sampling data) it appears that Natural Attenuation processes are occurring and that remaining contaminant concentrations are likely to further degrade. In addition, the absence of tetrachloroethene (PCE) and the presence of its breakdown/daughter products in impacted on-site wells indicates that natural attenuation through reductive dechlorination is occurring at the site.

Based on the lack of a potential onsite source, the proximity of the solvent-impacted wells to the property line and the direction of groundwater flow (towards the subject property), it appears that the identified solvent impacts may be originating from an **off-site** source.

As the contaminant levels remaining on-site are low and the threat of human exposure is minimal, TBE recommends that the remaining impacts be addressed through natural attenuation and that the site be considered for a no further action status. Furthermore, TBE recommends that PSNC be released from further obligation to conduct groundwater investigations and that the Department consider continuing the investigation for potential source areas located off-site.

**DURHAM GARAGE, 3001 Harvard Avenue,
PSNC Energy - a SCANA Company**

TABLE 1 - Soil Analytical Summary



NA = Not Analyzed BDL = Below detection limits
NS = Not Sampled Analytical Results = mg/kg

Sample Location	Sample Date	Naphthalene	Anthracene	Benzo(a)anthracene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Chrysene	Fluoranthene	Phenanthrene	Pyrene	Indeno(1,2,3-cd)pyrene	Hexachlorobutadiene	Bis(2-chloroethyl)ether	2,4-Dimethylphenol
GARAGE															
GP-4 @10ft	11/17/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
HA-1 @3ft (inside building)	11/17/00	BDL	0.46	0.62	0.56	BDL	0.44	0.62	1.2	1.5	0.91	BDL	BDL	BDL	BDL
HA-2 @3ft	11/17/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

TABLE 1A : SOIL OVA DATA SUMMARY

Facility Name: PSNC Durham Garage
 Facility Address: 3001 Harvard Avenue



NS = Not Sampled
 fl bls = feet below surface
 ppm = parts per million

UNK = Unknown
 NR = Not recorded

Boring Number	Date	Depth to Water (ft)	Interval (ft bls)	OVA-PID Total Reading (ppm)	Vapor Odor (Y/N)	Water Table (Y/N)	Lithology/Comments
INITIAL ASSESSMENT (PHASE II ESA)							
GP-1 Refusal @ 10.5'	11/17/2000	UNK	0 to 1	NR	N	N	Gravel fill
			1 to 4	0.9	N	N	Reddish brown silt w/ some fine to medium grained sand
			4 to 6	1.3	N	N	Same as above with trace of mica
			6 to 8	1.4	N	N	Reddish brown silt w/ some fine to medium grained sand & clay
			8 to 10.5	6.6	N	N	Gray saprolite - weatered bedrock - some sand and silt
GP-2 Refusal @ 10'	11/17/2000	UNK	0 to 1	NR	N	N	Gravel /topsoil
			1 to 4	1.9	N	N	Reddish brown silt w/ some fine to medium grained micaceous sand
			4 to 6	1.1	N	N	Same as above
			6 to 8	1.4	N	N	Same as above
			8 to 10	0.9	N	N	Reddish brown saprolitic silt w/ some fine to medium grained micaceous sand
GP-3 Refusal @ 7'	11/17/2000	UNK	0 to 1	NR	N	N	Gravel /topsoil
			1 to 4	22.4	N	N	Reddish brown silt w/ some fine to medium grained micaceous sand
			4 to 7	1.1	N	N	Same as above with organic material & saprolite
GP-4	11/17/2000	UNK	0 to 1	86.4	N	N	Gravel /topsoil
			1 to 4	4.2	N	N	Reddish brown silt w/ some fine to medium grained micaceous sand
			4 to 6	69.4	N	N	Same as above
			6 to 8	173	Moderate	N	Same as above
			8 to 10	182	Moderate	N	Reddish brown silt w/ some fine to medium grained micaceous sand
10 to 11	186	Moderate	N	Pink/gray saprolite - some sand/silt - stiff			
GP-5	11/17/2000	UNK	0 to 0.5	NR	N	N	Concrete
			0.5 to 4	1.6	N	N	Reddish brown silt w/ some fine to medium grained micaceous sand
			4 to 6	1.5	N	N	Same as above
			6 to 8	1.5	N	N	Same as above
			8 to 10	1.1	N	N	Reddish brown saprolite w/ some silt/ sand - relic structures
GP-6 Refusal @ 7'	11/17/2000	UNK	0 to 0.5	NR	N	N	Concrete
			0.5 to 4	0.9	N	N	Reddish brown silt w/ some fine to medium grained micaceous sand
			4 to 6	0.4	N	N	Same as above
			6 to 7	0.4	N	N	Reddish brown saprolite w/ some silt/ sand
GP-7 Refusal @ 7'	11/17/2000	UNK	0 to 0.5	NR	N	N	Concrete
			0.5 to 4	0.4	N	N	Reddish brown silt w/ some fine to medium grained micaceous sand
			4 to 7	0.4	N	N	Reddish brown saprolite w/ some gravel
GP-8 Refusal @ 9.5'	11/17/2000	UNK	0 to 0.5	NR	N	N	Gravel
			0.5 to 4	0.5	N	moist	Reddish brown silt w/ some fine grained micaceous sand
			4 to 6	0.5	N	N	Reddish brown micaceous silt w/ some fine to medium grained sand
			6 to 9.5	1.8	N	N	Reddish brown saprolite w/ some micaceous silt/ sand - relic structures
GP-9	11/17/2000	UNK	0 to 0.5	NR	N	N	Gravel
			0.5 to 4	0.4	N	N	Reddish brown silt w/ some fine to medium grained micaceous sand
			4 to 6	0.5	N	N	Same as above
			6 to 8	0.6	N	N	Same as above
			8 to 10	0.5	N	N	Reddish brown micaceous saprolite w/ some relic structures
GP-10 Refusal @ 9.5'	11/17/2000	UNK	0 to 0.5	NR	N	N	Gravel
			0.5 to 4	0.4	N	N	Reddish brown silt w/ some fine to medium grained micaceous sand
			4 to 6	0.5	N	N	Same as above
			6 to 8	0.6	N	N	Same as above
			8 to 9.5	0.5	N	N	Reddish brown micaceous saprolite w/ some relic structures
GP-11 Refusal @ 6'	11/17/2000	UNK	0 to 0.5	NR	N	N	Gravel
			0.5 to 4	0.6	N	N	Reddish brown silt w/ some fine to medium grained micaceous sand
			4 to 6	0.5	N	N	Reddish brown saprolite w/ some micaceous silt/ sand
GP-12 Refusal @ 8'	11/17/2000	UNK	0 to 1	NR	N	N	Asphalt
			1 to 4	0.4	N	N	Reddish brown micaceous silt w/ some sand
			4 to 6	0.6	N	N	Same as above
			6 to 8	0.4	N	N	Reddish brown micaceous saprolite w/ some relic structures

TABLE 1A : SOIL OVA DATA SUMMARY

Facility Name: PSNC Durham Garage
 Facility Address: 3001 Harvard Avenue



NS = Not Sampled
 ft bls = feet below surface
 ppm = parts per million

UNK = Unknown
 NR = Not recorded

Boring Number	Date	Depth to Water (ft)	Interval (ft bls)	OVA-PID Total Reading (ppm)	Vapor Odor (Y/N)	Water Table (Y/N)	Lithology/Comments
GP-13	11/17/2000	UNK	0 to 1	NR	N	N	Concrete/Gravel
			1 to 4	1.6	N	N	Reddish brown micaceous silt w/ some sand
			4 to 6	0.6	N	N	Same as above
			6 to 8	0.4	N	N	Same as above
			8 to 10	0.6	N	N	Reddish brown saprolite w/ some micaceous silt/ sand
			10 to 11.5'	0	N	N	Same as above
Refusal @ 11.5'	11/17/2000	UNK	0 to 0.5	NR	N	N	Gravel
			0.5 to 4	0.7	N	N	Reddish brown silt w/ some fine to medium grained micaceous sand
			4 to 6	0.5	N	N	Same as above
			6 to 8	0.5	N	N	Same as above
			8 to 9.5	0.6	N	N	Reddish brown micaceous saprolite w/ some relic structures
GP-14	11/17/2000	UNK	0 to 0.5	NR	N	N	Gravel
			0.5 to 4	0.4	N	N	Reddish brown silt w/ some sand & feldspar lenses
			4 to 6	0.5	N	N	Same as above
			6 to 8	0.5	N	N	Reddish brown micaceous saprolite w/ some relic structures
Refusal @ 9.5'	11/17/2000	UNK	0 to 0.5	NR	N	N	Gravel
			0.5 to 4	0.4	N	N	Reddish brown silt w/ some sand & feldspar lenses
			4 to 6	0.5	N	N	Same as above
GP-15	11/17/2000	UNK	0 to 4	0.4	N	N	Reddish brown/gray micaceous silt w/ some sand
			4 to 6	0.5	N	N	Same as above
			6 to 7.5	1.9	N	N	Reddish brown/Pink saprolite w/ some silt/sand/clay
Refusal @ 8'	11/17/2000	UNK	0 to 4	0.4	N	N	Pink/white/brown saprolite w/micaceous silt/sand
			4 to 6	0.5	N	N	Same as above
GP-16	11/17/2000	UNK	0 to 4	0.4	N	N	Pink/white/brown saprolite w/micaceous silt/sand - stiff
			4 to 6	0.5	N	N	Same as above
			6 to 7.5	0.5	N	N	Reddish brown micaceous saprolite w/ some relic structures
Refusal @ 7.5'	11/17/2000	UNK	0 to 4	0.4	N	N	Reddish brown/gray micaceous silt w/ some sand
			4 to 6	0.5	N	N	Same as above
GP-17	11/17/2000	UNK	0 to 4	0.4	N	N	Reddish brown/gray micaceous silt w/ some sand
			4 to 6	0.5	N	N	Same as above
			6 to 7.5	0.5	N	N	Reddish brown micaceous saprolite w/ some relic structures
Refusal @ 7.5'	11/17/2000	UNK	0 to 4	0.4	N	N	Reddish brown micaceous saprolite w/ some relic structures
			4 to 6	0.5	N	N	Same as above
GP-18	11/17/2000	UNK	0 to 4	0.4	N	N	Top soil - Brown/tan/gray silt w/some sand & trace clay -stiff
			4 to 6	0.5	N	N	Reddish brown silt w/some micaceous sand & trace clay -stiff
			6 to 8	0.5	N	N	Reddish /brown saprolite w/micaceous silt/sand - stiff
Refusal @ 8'	11/17/2000	UNK	0 to 4	0.4	N	N	Reddish brown/gray micaceous silt w/ some sand
			4 to 6	0.6	N	N	Reddish brown micaceous saprolite w/ some relic structures
GP-19	11/17/2000	UNK	0 to 4	0.4	N	N	Reddish brown micaceous saprolite w/ some relic structures
			4 to 6	0.6	N	N	Reddish brown micaceous saprolite w/ some relic structures
			6 to 8	0.4	N	N	Reddish /brown saprolite w/micaceous silt/sand - stiff
Refusal @ 8'	11/17/2000	UNK	0 to 4	0.4	N	N	Reddish brown/gray micaceous silt w/ some sand
			4 to 6	0.6	N	N	Reddish brown micaceous saprolite w/ some relic structures
GP-20	11/17/2000	UNK	0 to 4	0.4	N	N	Top soil - Brown/tan/gray silt w/some sand & trace clay -stiff
			4 to 6	0.6	N	N	Reddish brown silt w/some micaceous sand & trace clay -stiff
			6 to 8	0.4	N	N	Reddish /brown saprolite w/micaceous silt/sand - stiff
Refusal @ 7'	11/17/2000	UNK	0 to 4	0.4	N	N	Reddish brown/gray micaceous silt w/ some sand
			4 to 6	0.6	N	N	Reddish brown micaceous saprolite w/ some relic structures
GP-21	11/17/2000	UNK	0 to 4	0.4	N	N	Reddish brown micaceous saprolite w/ some relic structures
			4 to 6	0.6	N	N	Reddish brown micaceous saprolite w/ some relic structures
			6 to 8	0.4	N	N	Reddish /brown saprolite w/micaceous silt/sand - stiff
Refusal @ 8'	11/17/2000	UNK	0 to 4	0.4	N	N	Reddish brown/gray micaceous silt w/ some sand
			4 to 6	0.5	N	N	Reddish brown clay w/some silt and sand -stiff
GP-22	11/17/2000	UNK	0 to 4	0.4	N	moist	Tan/gray clay w/some silt and sand -stiff
			4 to 6	0.5	N	moist	Reddish brown clay w/some silt and sand -stiff
			6 to 8	0.5	N	N	Reddish /brown saprolite w/micaceous silt/sand - stiff
Refusal @ 8'	11/17/2000	UNK	0 to 4	0.4	N	moist	Tan/gray clay w/some silt and sand -stiff
			4 to 6	NR	N	moist	Same as above
GP-23	11/18/2000	UNK	0 to 4	0.5	N	N	Reddish /brown saprolite w/micaceous silt/sand - stiff
			4 to 6	NR	N	moist	Same as above
			6 to 8	0.5	N	N	Reddish /brown saprolite w/micaceous silt/sand - stiff
Refusal @ 10'	11/18/2000	UNK	8 to 10	0.8	N	N	Same as above - stiff/dry
			12 to 16	0.9	N	N	Same as above - stiff/dry
GP-24	11/18/2000	UNK	0 to 4	0.4	N	moist	Tan clayey fill w/some gravel & misc. debris
			4 to 8	0.4	N	N	Same as above to green/black micaceous silt w/misc. debris - fill
			8 to 12	0.4	N	moist	Brown silty fill w/some sand & trace of clay - stiff
			12 to 16	0.9	N	N	Brown/black saprolite w/ some sand & silt - stiff
			16 to 18.5	1.1	N	N	Same as above - to green/white saprolite w/mica - stiff/dry
Refusal @ 18.5'	11/18/2000	UNK	0 to 4	0.8	N	N	Tan clayey fill w/some silt/sand & misc. debris
			4 to 8	1	N	moist	Same as above to green/white saprolite w/some sand & clay - micaceous
			8 to 12	0.5	N	N	Brown silt w/some sand - concrete noted @ 10' - stiff
			12 to 15	0.5	N	moist	Green/white saprolitic silt w/ some sand & clay
			15 to 16	0.8	N	N	Same as above
GP-25	11/18/2000	UNK	0 to 4	1.1	N	N	Tan/brown/green micaceous silty fill w/some sand & clay
			4 to 8	1.1	N	N	Same as above - w/some concrete & asphalt
			8 to 12	0.8	N	moist	Same as above to 10' -then reddish brown silt w/some sand & clay
			12 to 15	0.9	N	N	Reddish /brown saprolite w/micaceous silt/sand - stiff
Refusal @ 16'	11/18/2000	UNK	0 to 4	1.1	N	N	Tan/brown clayey fill w/some concrete & asphalt
			4 to 8	1.1	N	N	Same as above
			8 to 10	0.8	N	moist	Same as above
			10 to 14	0.9	N	N	Reddish /brown saprolite w/micaceous silt/sand - stiff
GP-26	11/18/2000	UNK	0 to 4	0.4	N	N	Gravel to brown gray sand w/some silt & clay - stiff
			4 to 8	0.3	N	N	Reddish/brown saprolite w/micaceous silt/sand - stiff
			8 to 9.5	0.5	N	N	Same as above
Refusal @ 9.5'	11/18/2000	UNK	0 to 4	0.4	N	N	Gravel to brown gray sand w/some silt & clay - stiff
			4 to 8	0.3	N	N	Reddish/brown saprolite w/micaceous silt/sand - stiff

TABLE 1A : SOIL OVA DATA SUMMARY

Facility Name: PSNC Durham Garage
 Facility Address: 3001 Harvard Avenue



NS = Not Sampled UNK = Unknown
 ft b/s = feet below surface NR = Not recorded
 ppm = parts per million

Boring Number	Date	Depth to Water (ft)	Interval (ft b/s)	OVA-PID Total Reading (ppm)	Vapor Odor (Y/N)	Water Table (Y/N)	Lithology/Comments
GP-29	11/18/2000	UNK	0 to 4	0.5	N	N	Gravel to brown gray sand w/some silt & clay - stiff
			4 to 6	0.4	N	N	Brown silt w/some sand & trace clay - micaceous - stiff
			6 to 9	1.1	N	N	Reddish /brown saprolite w/micaceous silt/sand - stiff
			9 to 10.5	0.9	N	N	Same as above
Refusal @10.5'							
GP-30	11/18/2000	UNK	0 to 4	0.6	N	N	Tan silt w/ some sand - dry/stiff
			4 to 6	0.4	N	N	Tan/brown silt w/some sand & trace clay - micaceous - stiff
			6 to 8	0.4	N	N	Same as above
			8 to 11	0.4	N	N	Reddish /brown saprolite w/micaceous silt/sand - stiff
Refusal @11'							
HA-1 (in garage bay)	11/21/2000	3'	0 to 0.5	NR	N	N	Concrete
		Refusal @3'	0.5 to 3	2.2	Y	moist	Brown/gray clay w/some sand & silt - micaceous - oil & grease odor
HA-2	11/21/2000	3'	0 to 1	NR	N	N	Organic material/topsoil
			1 to 3	2.5	N	Y	Tan to reddish brown sand w/some silt & clay
HA-3	11/21/2000	2.5	0 to 1	NR	N	N	Organic material/topsoil
			1 to 2.5	<1.0	N	Y	Tan to reddish brown sand w/some silt & clay
HA-4	11/21/2000	2.5	0 to 1	NR	N	N	Organic material/topsoil
			1 to 2.5	<1.0	N	Y	Tan to reddish brown sand w/some silt & clay
HA-5	11/21/2000	2.5	0 to 1	NR	N	N	No staining or odors (no lithology recorded)
			1 to 4	<1.0	N	Y	No staining or odors (no lithology recorded)

TABLE 3: GROUNDWATER ELEVATION SUMMARY



Site Name: Durham Garage
 Facility Address: 3001 Harvard Avenue, Durham, NC

DTW = Depth to water
 NA = Not Applicable
 All measurements in feet unless noted.
 DTNAPL = Depth to non-aqueous phase liquids
 ELEV = Relative Water Table Elevation
 NS = Not Surveyed

WELL NO.	MW-6G	MW-7G	MW-9G	MW-10G
DIAMETER (inches)	2	2	2	2
WELL DEPTH (feet)	20	20	20	20
SCREEN INTERVAL (feet)	10 to 20	10 to 20	10 to 20	10 to 20
TOC ELEVATION	100.05	99.86	91.61	91.83

DATE	ELEV	DTW	DTNAPL												
11/27/00	Dry	NA	NA	86.42	12.90	NA	71.79	19.82	NA	74.92	16.91	NA	79.80	12.03	NA
07/11/01	85.33	14.72	NA	85.19	14.67	NA	83.53	16.33	NA	86.80	12.52	NA	79.80	12.03	NA
08/20/02	86.17	13.88	NA	84.38	15.48	NA	87.85	11.47	NA	NA	NA	NA	NA	NA	NA
01/15/03	87.15	12.90	NA												

WELL NO.	MW-11G	MW-12G	MW-13G	MW-14G	MW-15G
DIAMETER (inches)	2	2	2	2	2
WELL DEPTH	30	30	30	30	30
SCREEN INTERVAL	15 to 30				
TOC ELEVATION	98.43	98.01	103.40	NS	NS

DATE	ELEV	DTW	DTNAPL	ELEV	DTW	DTNAPL									
11/06/00	88.30	10.13	NA	87.97	10.04	NA	83.67	15.65	NA	88.60	14.80	NA	NA	14.00	NA
07/11/01	Dry	NA	NA	Dry	NA	NA	83.67	15.65	NA	88.60	14.80	NA	NA	14.00	NA
08/20/02	85.35	14.70	NA	84.34	15.52	NA	82.95	15.06	NA	88.60	14.80	NA	NA	14.00	NA
01/15/03	84.09	14.34	NA	82.95	15.06	NA	88.60	14.80	NA	88.60	14.80	NA	NA	14.00	NA
02/19/03	NA	NA	NA	NA	NA	NA									

WELL NO.	Micro-1
DIAMETER (inches)	1
WELL DEPTH	8
SCREEN INTERVAL	3 to 8
TOC ELEVATION	NS

DATE	ELEV	DTW	DTNAPL												
01/15/03	5.68														

DURHAM GARAGE, 3001 HARVARD AVENUE
 PSNC Energy - a SCANA Company

TABLE 2 - GROUNDWATER ANALYTICAL SUMMARY



NA = Not Analyzed BDL = Below detection limits
 NS = Not Sampled Analytical Results = ug/L
 * mg/L

Sample Location	Sample Date	Benzene	sec-Butylbenzene	Ethylbenzene	Toluene	Total Xylenes	MTBE	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	1,2-Dichloropropane	cis-1,2-Dichloroethene	Isopropylbenzene	p-Isopropyltoluene	Tetrachloroethene	Trichloroethene	n-Propylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Bis(2-ethylhexyl)phthalate
Target Levels (ug/L)		1	70	29	1000	530	200	700	0.38	7	0.56	70	70		0.7	2.8	70	350	350	3
GARAGE																				
MW-6G	12/29/00	200	BDL	28	65	710	NA	BDL	54	BDL	10	BDL	BDL	BDL	BDL	BDL	BDL	63	200	NA
	07/11/01	32	1.3	2.2	BDL	11.8	BDL	7.3	64	8.6	10	BDL	1.9	2.5	BDL	BDL	2.2	4.4	9.4	BDL
	01/15/03	13	BDL	2.2	7.6	94	BDL	6.9	22	8.9	5.8	BDL	1.9	BDL	BDL	BDL	3.2	23	11	BDL
MW-7G	12/29/00	BDL	BDL	BDL	BDL	BDL	NA	1.1	1.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	07/11/01	BDL	BDL	BDL	BDL	BDL	48	5.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	08/20/02	BDL	BDL	BDL	BDL	BDL	170	17	BDL	6.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-8G	11/27/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	07/11/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	100
	08/20/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NA
MW-9G	11/30/00	BDL	NA	BDL	BDL	BDL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-10G	11/27/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-11G	09/19/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-12G	09/19/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-13G	08/20/02	BDL	BDL	BDL	BDL	BDL	BDL	6.5	BDL	23	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-14G	02/19/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-15G	01/15/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Micro-1	01/15/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL



January 30, 2006

Mr. Ken Johnson
PSNC Energy
800 Gaston Road
Gastonia, NC 28053

RE: **Supplemental Assessment, ORC Injection Summary and Post-injection Sampling**
Durham Garage Site
3001 Harvard Avenue, Durham, N.C.

INTRODUCTION

TBE Group, Inc (TBE) is pleased to submit this supplemental assessment summary detailing sampling conducted in February 2005, an Oxygen Release Compound (ORC) injection event in May 2005, and subsequent post-injection sampling conducted in August 2005, for the above referenced site.

The approved proposal for the February 2005 work (dated January 26, 2005), specified collection of a full round of depth-to-water readings, sampling of three key wells (MW-6G, MW-7G and MW-13G), and collection of field parameters from sampled wells.

The approved proposal for the May 2005 (dated March 23, 2005), ORC event specified injection of 500 pounds of ORC in a grid pattern at the former UST area located at the south end on the building. In addition, the proposal specified conducting semi-annual groundwater sampling of MW-6G, MW-11G, MW-12G, MW-13G, MW-14G, MW-15G and Micro-1. The first semi-annual event was scheduled for August 2005 (approximately 90 days after the ORC injection).

This summary details the current level of contaminant impacts, evaluates natural attenuation and field parameters collected in February 2005, details the ORC injection event, and subsequent semi-annual monitoring event. A site plan is attached as **Figure 1**.

BACKGROUND

Environmental site assessment work has been conducted in various stages at the site since November 2000. The work included the installation of a total of 11 groundwater monitor wells and a limited ground-penetrating radar (GPR) survey. Groundwater impacts have been detected in monitors wells located near the south end of the main on-site building.

METHODOLOGY

February 2005 Supplemental Assessment

TBE completed the following scope of work to update existing assessment data, and evaluate of certain natural attenuation parameters. All field sampling activities were conducted in accordance with TBE's Comprehensive Quality Assurance Plan (CompQAP). All analytical work was done by a State of North Carolina-certified lab accredited by the National Environmental Laboratory Accreditation Conference (NELAC).

Select monitor wells were sampled to determine the current extent of impacts and to evaluate of certain natural attenuation parameters. On February 23, 2005, monitor wells MW-6G, and MW-13G were sampled for volatile organics via EPA Method 8260 and for select natural attenuation parameters (Nitrate, Nitrite, Sulfate, Ethane, Ethene, Ferrous Iron, Sulfide and Total Organic Carbon). The samples were collected using new disposable polyethylene bailers and were transferred to appropriate glassware. The sample jars were maintained at four degrees Celsius using wet ice and transported to Environmental Science Corporation (ESC) laboratory along with completed chain-of-custody documentation. MW-7 could not be located and was apparently buried due to the addition of crushed rock to the parking area.

May 2005 ORC Injection Methodology

TBE personnel mobilized to the site on May 10, 2005, to direct the injection of 500 pounds of ORC into the subsurface in the impacted area along the south side of the main building. Due to the tight soils and above-grade obstructions (recently installed chain link fencing), a modified grid consisting of 34 injection points at approximately 7.5 ft centers was used (see Figure 2).

A 50 percent water/ORC mixture was pumped through the Geoprobe™ rig injection rods directly into the ground at each location. Injection depths were dependant on depth of refusal, and generally averaged from 5 to 8.5 ft below land surface (bls).

August 2005 Post Injection Semi-Annual Monitoring Event

TBE completed the following scope of work to evaluate the effectiveness of the ORC injection and current contaminant levels in monitor wells MW-6G, MW-11G, MW-12G, MW-13G, MW-14G, MW-15G and Micro-1. All field sampling activities were conducted in accordance with TBE's Comprehensive Quality Assurance Plan (CompQAP). All analytical work was done by a State of North Carolina-certified lab accredited by the National Environmental Laboratory Accreditation Conference (NELAC).

On August 11 and 12, 2005, monitor wells MW-6G, MW-11G, MW-12G, MW-13G, MW-14G, MW-15G and Micro-1 were sampled for volatile organics via EPA Method 8260. The samples were collected using new disposable polyethylene bailers and were transferred to appropriate glassware. The sample jars were maintained at four degrees Celsius using wet ice and transported to Environmental Science Corporation (ESC) laboratory along with completed chain-of-custody documentation.

FEBRUARY 2005 ASSESSMENT RESULTS

All parameters analyzed were at levels below detection limits or NCAC 15A, 2L standards, except as summarized below (exceeded NCAC 15A, 2L groundwater quality standards listed in parenthesis):

MW- 6G (near southeast corner of the former garage building)

- Benzene 110 µg/l (1 µg/l)
- 1,1- Dichloroethene (1,1-DCE) 19 µg/l (7 µg/l)
- Naphthalene 230 µg/l (21 µg/l)
- 1,2,4-Trimethylbenzene 510 µg/l (350 µg/l)

MW-13G (East of the southeast corner of the building)

- 1,1-Dichloroethene (1,1-DCE) 18 µg/l (7 µg/l)

Discussion of Natural Attenuation Parameters

- Dissolved oxygen (DO) concentrations ranged from 0.0864 mg/l to 0.295 mg/l. Typically, DO concentrations less than 0.1 mg/l indicate conditions favorable for biodegradation of chlorinated organics.
- Nitrate concentrations were all below the detection limit of 0.1 mg/l. Typically, nitrate concentrations less than 1 mg/l are desirable as nitrate competes at higher concentrations with the reductive pathway.
- Sulfate concentrations ranged from less than 20 mg/l to 25 mg/l. Typically, sulfate concentrations less than 20 mg/l are desirable as sulfate competes at higher concentrations with the reductive pathway.
- Sulfide concentrations ranged from 0.083 to 0.13 mg/l. Typically, sulfide concentrations greater than 1 mg/l provide supportive evidence that the reductive pathway is possible.
- Ethene and ethane are daughter products of vinyl chloride and ethene, respectively, and their presence would indicate that reductive dechlorination of the contaminant plume is proceeding to its end point. Unfortunately, neither ethene nor ethane was detected above the minimum laboratory detection limit of 10 parts per billion (ppb). This may indicate the absence of the specific bacteria (dehalococoides) that are capable of completing the dechlorination process to the ethene/ethane end product. Bioaugmentation with these microbes may be necessary to complete the dechlorination process.
- Ferrous iron concentration ranged from 0.670 mg/l to 1.1 mg/l. Typically, ferrous iron concentrations of greater than 1 mg/l provide supportive evidence that the reductive pathway is possible.
- Total Organic Carbon (TOC) readings ranged from 14 mg/l to 24 mg/l. TOC is used to assess the availability of "general" organic substrates that may be supportive of microbial growth and activity. Typically the higher the TOC concentrations, the more chlorinated solvents can be biodegraded.

The results of the natural attenuation parameter sampling are included on the attached **Table 1**.

MAY 2005 ORC INJECTION RESULTS

Between May 10 and 11, 2005, a total of 500 lbs of ORC was injected into 34 injection points located adjacent to the south end of the garage building. The ORC/water slurry was injected at an average rate of 3 gallons per foot. The field noted from the injection event and a sketch showing the injection point locations are included in **Attachment 1**.

AUGUST 2005 POST INJECTION SEMI-ANNUAL MONITORING EVENT

All parameters analyzed were at levels below detection limits or NCAC 15A, 2L standards, except as summarized below (exceeded NCAC 15A, 2L groundwater quality standards listed in parenthesis):

MW- 6G (near southeast corner of the former garage building)

- | | |
|---------------------------------|---------------------|
| • Benzene | 52 µg/l (1 µg/l) |
| • 1,1- Dichloroethene (1,1-DCE) | 16 µg/l (7 µg/l) |
| • Naphthalene | 31 µg/l (21 µg/l) |
| • 1,2,4-Trimethylbenzene | 150 µg/l (350 µg/l) |

Mr. Ken Johnson
January 30, 2006
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MW-13G (East of the southeast corner of the building)

- 1,1-Dichloroethene (1,1-DCE) 18 µg/l (7 µg/l)

The results of the August sampling event are detailed on **Table 2** and in the attached laboratory results.

CONCLUSIONS AND RECOMMENDATIONS

Based on the February data, petroleum- and solvent-related impacts are still present near the south end of the garage building. The results of the February sampling supported proceeding with the planned ORC injection in May 2005.

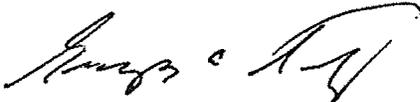
The ORC injection was successfully completed with approximately 500 pounds of ORC injected into 34 injection points covering the former UST area.

The results of the August 2005 post-injection sampling indicate that the concentrations of all petroleum-related constituents were reduced by more than 50% by the injection of ORC. As the ORC is a slow-decay, time-release product, additional contaminant degradation is anticipated by the next sampling event, which is currently scheduled for February 2006.

Should you have any questions or require additional information, please do not hesitate to contact me at 727-531-3505.

Best Regards,

TBE GROUP, Inc



Greg A. Schultz, P.E.
Project Manager

GAS/hs



**DURHAM GARAGE, 3001 HARVARD AVENUE
PSNC Energy - a SCANA Company**

TABLE 1 - GROUNDWATER ANALYTICAL SUMMARY - NATURAL ATTENUATION PARAMETERS

NA = Not Analyzed BDL = Below detection limits
NS = Not Sampled Analytical Results = ug/L

Sample Location	Sample Date	Nitrate	Nitrite	Sulfate	Ethane	Ethene	Ferrous Iron	Sulfide	Total Organic Carbon
GARAGE									
MW-6G	02/23/05	BDL	BDL	20000	BDL	BDL	1100	130	14000
MW-13G	02/23/05	BDL	BDL	25000	BDL	BDL	670	83	24000

DURHAM GARAGE, 3001 HARVARD AVENUE
 PSNC Energy - a SCANA Company

TABLE 2 - GROUNDWATER ANALYTICAL SUMMARY - VOLATILE ORGANICS

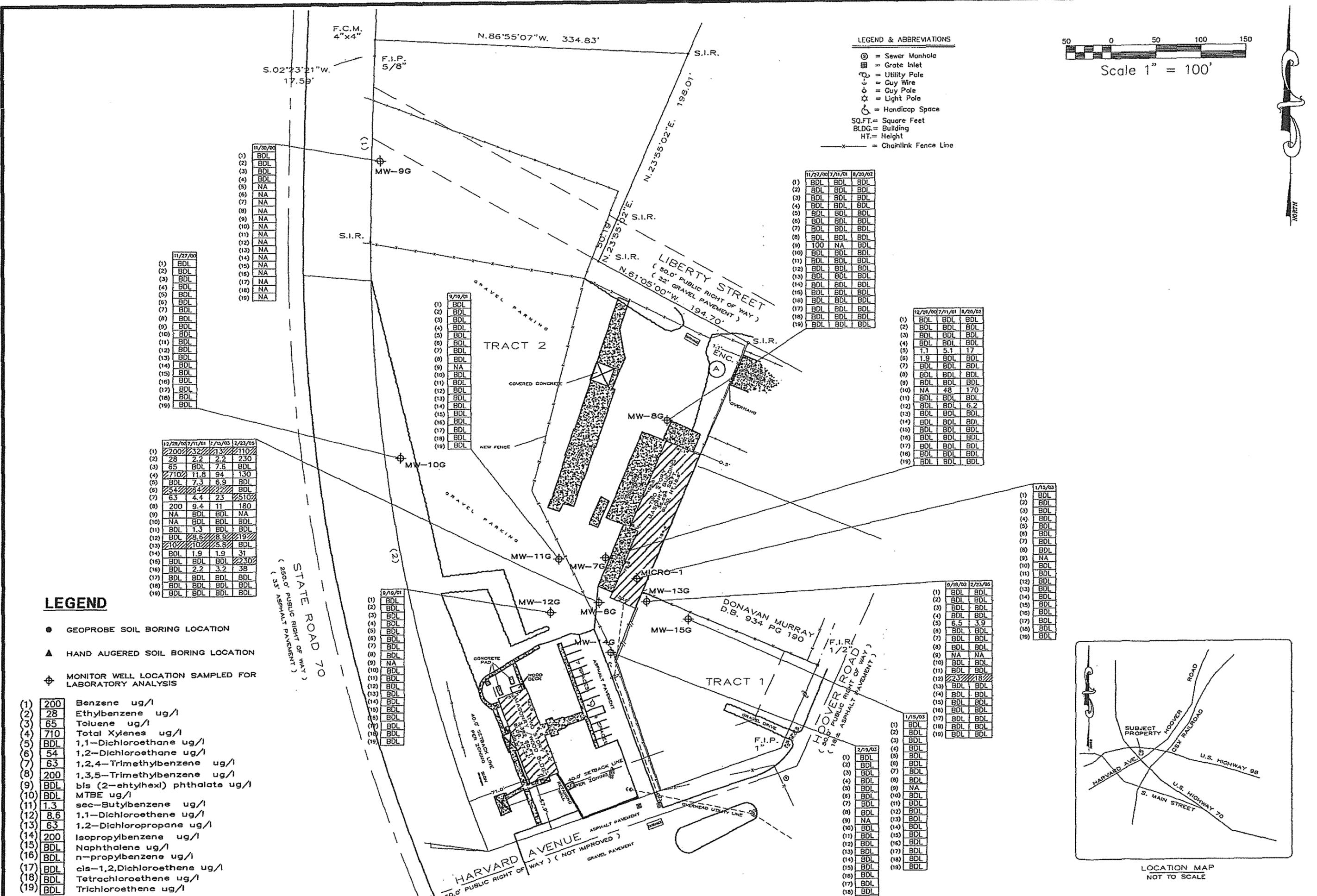


NA = Not Analyzed
 NS = Not Sampled

BDL = Below detection limits
 Analytical Results = in bold with units in ug/L

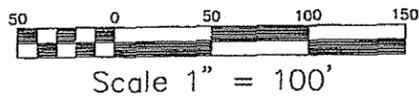
Shaded results denote exceedance of State Target Levels
 NE = Not Established

Sample Location	Sample Date	Benzene	sec-Butylbenzene	Ethylbenzene	Toluene	Total Xylenes	MTBE	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	1,2-Dichloropropane	cis-1,2-Dichloroethene	Isopropylbenzene	p-Isopropyltoluene	Tetrachloroethene	Trichloroethene	Naphthalene	n-Propylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Bis(2-ethylhexyl)phthalate		
Target Levels (ug/L)		1	70	550	1000	530	200	70	0.38	7	0.51	70	70	NE	0.7	2.8	21	70	350	350	2.5		
GARAGE																							
MW-6G	12/29/00	200	BDL	28	65	710	NA	BDL	54	BDL	10	BDL	BDL	BDL	BDL	BDL	BDL	BDL	63	200	NA		
	07/11/01	32	1.3	2.2	BDL	11.8	BDL	7.3	64	8.6	10	BDL	1.9	2.5	BDL	BDL	BDL	BDL	2.2	4.4	9.4	BDL	
	01/15/03	13	BDL	2.2	7.6	94	BDL	6.9	22	8.9	5.8	BDL	1.9	BDL	BDL	BDL	BDL	BDL	3.2	23	11	BDL	
	02/23/05	110	BDL	230	BDL	130	BDL	BDL	BDL	19	BDL	BDL	31	BDL	BDL	BDL	BDL	BDL	230	38	510	180	NA
	08/12/05	52	1.0	63	0.59	1.0	0.94	6.9	BDL	16	1.8	BDL	10	1.1	BDL	BDL	BDL	BDL	31	9.6	150	96	NA
MW-7G	12/29/00	BDL	BDL	BDL	BDL	BDL	NA	1.1	1.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
	07/11/01	BDL	BDL	BDL	BDL	BDL	48	5.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
	08/20/02	BDL	BDL	BDL	BDL	BDL	170	17	BDL	6.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
MW-8G	11/27/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	100	
	07/11/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NA	
	08/20/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
MW-9G	11/30/00	BDL	NA	BDL	BDL	BDL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	BDL	NA	NA	NA	NA	NA	
MW-10G	11/27/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
MW-11G	09/19/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NA	
	08/12/05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.8	BDL	0.57	BDL	NA
MW-12G	09/19/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NA	
	08/12/05	BDL	BDL	0.33	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.32	BDL	0.43	BDL	NA
MW-13G	08/20/02	BDL	BDL	BDL	BDL	BDL	BDL	6.5	BDL	23	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NA	
	02/23/05	BDL	BDL	BDL	BDL	BDL	BDL	3.9	BDL	18	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NA	
	08/12/05	BDL	BDL	BDL	BDL	BDL	BDL	4.4	BDL	18	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.27	BDL	NA	
MW-14G	02/19/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NA	
	08/11/05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NA	
MW-15G	01/15/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NA	
	08/12/05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NA	
Micro-1	01/15/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NA	
	08/12/05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NA	



LEGEND & ABBREVIATIONS

- ⊙ = Sewer Manhole
- ⊞ = Grate Inlet
- ⊕ = Utility Pole
- ⊖ = Guy Wire
- ⊙ = Guy Pole
- ☆ = Light Pole
- ♿ = Handicap Space
- SQ.FT. = Square Feet
- BLDG. = Building
- HT. = Height
- x- = Chainlink Fence Line



LEGEND

- GEOPROBE SOIL BORING LOCATION
- ▲ HAND AUGERED SOIL BORING LOCATION
- ⊕ MONITOR WELL LOCATION SAMPLED FOR LABORATORY ANALYSIS

(1)	200	Benzene ug/l
(2)	28	Ethylbenzene ug/l
(3)	65	Toluene ug/l
(4)	710	Total Xylenes ug/l
(5)	BDL	1,1-Dichloroethane ug/l
(6)	54	1,2-Dichloroethane ug/l
(7)	63	1,2,4-Trimethylbenzene ug/l
(8)	200	1,3,5-Trimethylbenzene ug/l
(9)	BDL	bis (2-ethylhexyl) phthalate ug/l
(10)	BDL	MTBE ug/l
(11)	1.3	sec-Butylbenzene ug/l
(12)	8.6	1,1-Dichloroethene ug/l
(13)	63	1,2-Dichloropropane ug/l
(14)	200	Isopropylbenzene ug/l
(15)	BDL	Naphthalene ug/l
(16)	BDL	n-propylbenzene ug/l
(17)	BDL	cis-1,2-Dichloroethene ug/l
(18)	BDL	Tetrachloroethene ug/l
(19)	BDL	Trichloroethene ug/l

11/27/00	
(1)	BDL
(2)	BDL
(3)	BDL
(4)	BDL
(5)	BDL
(6)	BDL
(7)	BDL
(8)	BDL
(9)	BDL
(10)	BDL
(11)	BDL
(12)	BDL
(13)	BDL
(14)	BDL
(15)	BDL
(16)	BDL
(17)	BDL
(18)	BDL
(19)	BDL

11/30/00	
(1)	BDL
(2)	BDL
(3)	BDL
(4)	BDL
(5)	NA
(6)	NA
(7)	NA
(8)	NA
(9)	NA
(10)	NA
(11)	NA
(12)	NA
(13)	NA
(14)	NA
(15)	NA
(16)	NA
(17)	NA
(18)	NA
(19)	NA

12/29/00		7/1/01		1/15/03		2/23/05	
(1)	200	32	1.3	110			
(2)	28	2.2	2.2	230			
(3)	65	BDL	7.6	BDL			
(4)	710	11.8	94	130			
(5)	BDL	7.3	6.9	BDL			
(6)	54	8.4	2.2	BDL			
(7)	63	4.4	23	510			
(8)	200	9.4	11	180			
(9)	NA	BDL	BDL	NA			
(10)	NA	BDL	BDL	BDL			
(11)	BDL	1.3	BDL	BDL			
(12)	BDL	8.6	8.9	19			
(13)	63	10	5.8	BDL			
(14)	BDL	1.9	1.9	31			
(15)	BDL	BDL	BDL	230			
(16)	BDL	2.2	3.2	38			
(17)	BDL	BDL	BDL	BDL			
(18)	BDL	BDL	BDL	BDL			
(19)	BDL	BDL	BDL	BDL			

9/19/01	
(1)	BDL
(2)	BDL
(3)	BDL
(4)	BDL
(5)	BDL
(6)	BDL
(7)	BDL
(8)	BDL
(9)	NA
(10)	BDL
(11)	BDL
(12)	BDL
(13)	BDL
(14)	BDL
(15)	BDL
(16)	BDL
(17)	BDL
(18)	BDL
(19)	BDL

9/19/01	
(1)	BDL
(2)	BDL
(3)	BDL
(4)	BDL
(5)	BDL
(6)	BDL
(7)	BDL
(8)	BDL
(9)	NA
(10)	BDL
(11)	BDL
(12)	BDL
(13)	BDL
(14)	BDL
(15)	BDL
(16)	BDL
(17)	BDL
(18)	BDL
(19)	BDL

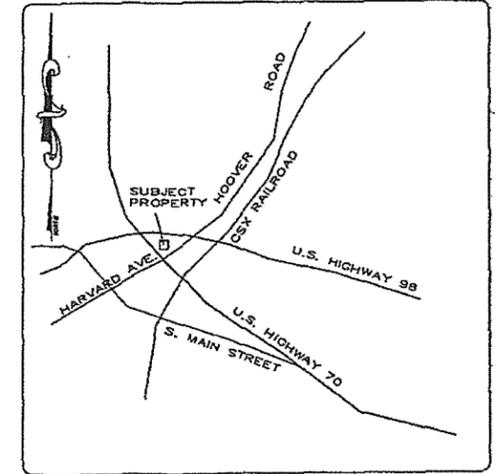
11/27/00		7/1/01		8/29/02	
(1)	BDL	BDL	BDL		
(2)	BDL	BDL	BDL		
(3)	BDL	BDL	BDL		
(4)	BDL	BDL	BDL		
(5)	BDL	BDL	BDL		
(6)	BDL	BDL	BDL		
(7)	BDL	BDL	BDL		
(8)	BDL	BDL	BDL		
(9)	100	NA	BDL		
(10)	BDL	BDL	BDL		
(11)	BDL	BDL	BDL		
(12)	BDL	BDL	BDL		
(13)	BDL	BDL	BDL		
(14)	BDL	BDL	BDL		
(15)	BDL	BDL	BDL		
(16)	BDL	BDL	BDL		
(17)	BDL	BDL	BDL		
(18)	BDL	BDL	BDL		
(19)	BDL	BDL	BDL		

12/29/00		7/1/01		8/29/02	
(1)	BDL	BDL	BDL		
(2)	BDL	BDL	BDL		
(3)	BDL	BDL	BDL		
(4)	BDL	BDL	BDL		
(5)	1.1	5.1	17		
(6)	1.9	BDL	BDL		
(7)	BDL	BDL	BDL		
(8)	BDL	BDL	BDL		
(9)	BDL	BDL	BDL		
(10)	NA	48	170		
(11)	BDL	BDL	BDL		
(12)	BDL	BDL	6.2		
(13)	BDL	BDL	BDL		
(14)	BDL	BDL	BDL		
(15)	BDL	BDL	BDL		
(16)	BDL	BDL	BDL		
(17)	BDL	BDL	BDL		
(18)	BDL	BDL	BDL		
(19)	BDL	BDL	BDL		

9/19/01		2/23/05	
(1)	BDL	BDL	
(2)	BDL	BDL	
(3)	BDL	BDL	
(4)	BDL	BDL	
(5)	6.5	3.9	
(6)	BDL	BDL	
(7)	BDL	BDL	
(8)	BDL	BDL	
(9)	NA	NA	
(10)	BDL	BDL	
(11)	BDL	BDL	
(12)	23	18	
(13)	BDL	BDL	
(14)	BDL	BDL	
(15)	BDL	BDL	
(16)	BDL	BDL	
(17)	BDL	BDL	
(18)	BDL	BDL	
(19)	BDL	BDL	

2/19/03	
(1)	BDL
(2)	BDL
(3)	BDL
(4)	BDL
(5)	BDL
(6)	BDL
(7)	BDL
(8)	BDL
(9)	BDL
(10)	BDL
(11)	BDL
(12)	BDL
(13)	BDL
(14)	BDL
(15)	BDL
(16)	BDL
(17)	BDL
(18)	BDL
(19)	BDL

1/15/03	
(1)	BDL
(2)	BDL
(3)	BDL
(4)	BDL
(5)	BDL
(6)	BDL
(7)	BDL
(8)	BDL
(9)	NA
(10)	BDL
(11)	BDL
(12)	BDL
(13)	BDL
(14)	BDL
(15)	BDL
(16)	BDL
(17)	BDL
(18)	BDL
(19)	BDL



CONTAMINATION ASSESSMENT

**3001 HARVARD AVENUE
DURHAM, NORTH CAROLINA**

GROUNDWATER CONCENTRATION MAP

TBE GROUP, INC.
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Project Mgr. GAS
Checked/OC GAS
Scale: 1"=100'

Figure



September 29, 2008

Mr. Darrell Shier
1426 Main St
MC 133
Columbia, SC 29201

RE: **August 2008 Groundwater Sampling Event Summary**
Durham Garage Site
3001 Harvard Avenue, Durham, N.C.

INTRODUCTION

TBE Group, Inc (TBE) is pleased to submit this groundwater sampling event summary detailing the sampling activities conducted in August 2008, for the above referenced site.

The approved scope included the collection groundwater samples from monitor wells MW-6G, MW-11G, MW-12G, MW-13G, MW-14G, MW-15G and Micro-1. In addition to these wells, depth to water (DTW) measurements were collected from MW-7G and MW-8G.

This summary details the current level of contaminant impacts based on the results of the August 2008 groundwater sampling event. A site plan is attached as **Figure 1**.

BACKGROUND

Environmental site assessment work has been conducted in various stages at the site since November 2000. The work has included the installation of a total of 11 groundwater monitor wells and limited ground-penetrating radar (GPR) survey. Groundwater impacts have been detected in monitor wells located near the south end of the main on-site building.

February 2005 Supplemental Assessment

To update existing assessment data and evaluate certain natural attenuation parameters, TBE personnel sampled existing monitor wells (MW-6G and MW-13G). Although MW-7 was scheduled to be sampled, it could not be located as it was apparently buried due to the addition of crushed rock to the parking area. In addition, depth-to-water readings were collected from all accessible wells to determine an estimated direction of shallow groundwater flow at the site.

On February 23, 2005, monitor wells MW-6G and MW-13G were sampled for volatile organics via EPA Method 8260 and for select natural attenuation parameters (Nitrate, Nitrite, Sulfate, Ethane, Ethene, Ferrous Iron, Sulfide and Total Organic Carbon). Laboratory analysis identified petroleum- and solvent-related impacts in MW-6G, and solvent-related impacts in MW-13G.

Field screening and laboratory data indicated that ambient subsurface conditions may not support natural attenuation without some form of bioaugmentation.

May 2005 ORC Injection Methodology

Based on information from the February 2005 sampling event, TBE personnel mobilized to the site on May 10, 2005, to direct the injection of 500 pounds of oxygen release compound (ORC) into the subsurface in the impacted area along the south side of the main building. Due to the tight soils and above-grade obstructions (recently installed chain link fencing), a modified grid consisting of 34 injection points at approximately 7.5 ft centers was used.

A 50 percent water/ORC mixture was pumped through the Geoprobe™ rig injection rods directly into the ground at each location. Injection depths were dependant on depth of refusal, and generally averaged from 5 to 8.5 ft below land surface (bls).

August 2005 Post Injection Semi-Annual Monitoring Event

To evaluate the effectiveness of the ORC injection and remaining contaminant levels, TBE personnel sampled select monitor wells in the area of the recently completed ORC injection.

On August 11 and 12, 2005, monitor wells MW-6G, MW-11G, MW-12G, MW-13G, MW-14G, MW-15G and Micro-1 were sampled for volatile organics via EPA Method 8260. The laboratory results confirmed reductions in petroleum-related hydrocarbon impacts. An average reduction in petroleum-related contaminant concentrations of 71% was noted. As expected, no significant reductions were observed in the solvent-related contaminants as they degrade under anaerobic conditions.

February/March 2006 Final Semi-Annual Monitoring Event

TBE conducted the final semi-annual sampling event to evaluate remaining contaminant levels approximately one year after the ORC injection event. On February 22, 2006, monitor wells MW-6G, MW-7G, MW-8G, MW-11G, MW-12G, MW-14G, and Micro-1 were sampled for volatile organics via EPA Method 8260. Attempts to locate MW-13G and MW-15G were initially unsuccessful, and personnel returned to the site on March 1, 2006, and located and sampled MW-13G, MW-15G for volatile organics via EPA Method 8260.

The results of the February/March 2006 final semi-annual monitoring event, indicated that the only petroleum-related contaminant detected at the site above North Carolina Administrative Code (NCAC) 15A, Subchapter 2L water quality standards was benzene (2 µg/l). Remaining solvent-related impacts included 1,2-DCA (1.4 µg/l), 1,1 DCE (10 µg/l) and 1,2-Dichloropropane (2.6 µg/l) in monitor well MW-6G and MW-13G.

Pursuant to a request from PSNC, TBE submitted a proposal, which was subsequently approved on November 13, 2006, to conduct baseline sampling of solvent impacted wells, conduct a Hydrogen Release Compound (HRC) injection event, and conduct follow up sampling to evaluate the effectiveness of the injection event. The intent of the HRC injection event was to address remaining low-level solvent-related impacts.

December 2006 Groundwater Sampling Event

TBE conducted the baseline groundwater sampling activities in December 2006. Groundwater was collected from monitor wells MW-6G and MW-13G. Samples were analyzed for volatile organics via EPA Method 8260. Based on the data obtained from these sampling activities, the only petroleum related contaminant detected at the site above NCAC 15A, Subchapter 2L water quality standards was benzene (13 µg/L) in MW-6G. Remaining solvent-related impacts include 1,1-dichloroethene in MW-6G (8.6 µg/L) and MW-13G (9.1 µg/L). Pursuant to a request from PSNC, the HRC injection and subsequent sampling was put on hold to allow additional time for natural attenuation to reduce remaining contaminant levels.

METHODOLOGY

August 2008 Groundwater Sampling Event

In an effort to determine if the injection event should be implemented, PSNC requested a proposal to conduct a new round of baseline sampling. TBE completed the following scope of work to establish baseline contaminant concentrations in seven on site wells. Field sampling activities were conducted in accordance with TBE's Comprehensive Quality Assurance Plan (CompQAP). All analytical work was done by a State of North Carolina-certified lab accredited by the National Environmental Laboratory Accreditation Conference (NELAC).

On August 4, 2008, monitor wells MW-6G, MW-11G, MW-12G, MW-13G, MW-14G, MW-15G and Micro-1 were sampled for volatile organics via EPA Method 8260. The samples were collected using new disposable polyethylene bailers and were transferred to appropriate glassware. The sample containers were maintained at four degrees Celsius using wet ice and transported to Environmental Science Corporation (ESC) laboratory along with completed chain-of-custody documentation.

AUGUST 2008 ASSESSMENT RESULTS

All parameters analyzed were at levels below detection limits and/or below NCAC 15A, 2L standards, except as summarized below (exceeded NCAC 15A, 2L groundwater quality standards listed in parenthesis):

MW- 6G (near southeast corner of the former garage building)

- Benzene 13 µg/l (1 µg/l)
- 1,1- Dichloroethene (1,1-DCE) 8.6 µg/l (7 µg/l)

MW-13G (East of the southeast corner of the building)

- 1,1-Dichloroethene (1,1-DCE) 9.1 µg/l (7 µg/l)

The results of the August 2008 sampling event are detailed on **Table 1**, and the laboratory analytical data and sampling logs are included in **Attachment 1**.

Mr. Darrell Shier
September 29, 2008
Page 4 of 4

AUGUST 2008 GROUNDWATER ELEVATION SUMMARY

DTW measurements were collected from 9 existing on-site monitor wells. The DTW measurements were compared to surveyed top-of-casing elevations to calculate relative water-table elevations, where applicable. The groundwater elevations collected from shallow monitor wells indicate groundwater flow to the west. A groundwater elevation summary is included as **Table 2** and presented graphically with contours on **Figure 2**.

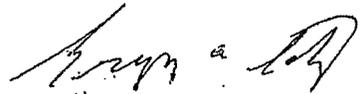
CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the groundwater sampling event conducted in August 2008, it appears concentrations of constituents of concern have decreased, with the exception of benzene in MW-6G. Additionally, shallow groundwater flow, as indicated by the collected DTW measurements, reveal a gradient to the west. TBE recommends preparation of a proposal to conduct ORC augmentation to stimulate biodegradation of the petroleum-related impacts remaining in the vicinity of MW-6G and MW-13G, and allow natural attenuation of the solvent impacts to reach 2L criteria.

Should you have any questions or require additional information, please do not hesitate to contact me at 727-531-3505.

Best Regards,

TBE GROUP, Inc



Greg A. Schultz, P.E.
Senior Project Manager
NC Registration No. 028123



Rick Hagberg, PG
Director of Environmental Services

GAS/jkm



TABLE 1 - GROUNDWATER ANALYTICAL SUMMARY - VOLATILE ORGANICS

DURHAM GARAGE, 3001 HARVARD AVENUE
PSNC Energy - a SCANA Company

NA = Not Analyzed
NS = Not Sampled

BDL = Below detection limits
Analytical Results = in bold with units in ug/L

Shaded results denote exceedance of State Target Levels
NE = Not Established

J = Estimated value below the lowest calibration point

Sample Location	Sample Date	Benzene	sec-Butylbenzene	Ethylbenzene	Toluene	Total Xylenes	MTBE	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	1,2-Dichloropropane	cis-1,2-Dichloroethene	Isopropylbenzene	p-Isopropyltoluene	Tetrachloroethene	Trichloroethene	Naphthalene	n-Propylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Bis(2-ethylhexyl)phthalate	
Target Levels (ug/L)		1	70	550	1000	530	200	70	0.38	7	0.51	70	70	NE	0.7	2.8	21	70	350	350	2.5	
GARAGE																						
MW-6G	12/29/00	200	BDL	28	65	710	NA	BDL	54	BDL	10	BDL	BDL	BDL	BDL	BDL	BDL	BDL	63	200	NA	
	07/11/01	32	1.3	2.2	BDL	11.8	BDL	7.3	64	8.6	10	BDL	1.9	2.5	BDL	BDL	BDL	2.2	4.4	9.4	BDL	
	01/15/03	13	BDL	2.2	7.6	94	BDL	6.9	22	8.9	5.8	BDL	1.9	BDL	BDL	BDL	BDL	3.2	23	11	BDL	
	02/23/05	110	BDL	230	BDL	130	BDL	BDL	BDL	19	BDL	BDL	31	BDL	BDL	BDL	230	38	510	180	NA	
	08/12/05	52	1.0	63	0.59	1.0	0.94	6.9	BDL	16	1.8	BDL	10	1.1	BDL	BDL	31	9.6	150	96	NA	
	02/02/06	2	BDL	BDL	BDL	BDL	BDL	6.7	1.4	10	2.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NA
	12/13/06	3.5	BDL	0.58 J	0.46 J	BDL	BDL	7.6	2.7	12	1.5	BDL	BDL	BDL	BDL	0.74 J	BDL	BDL	BDL	BDL	BDL	NA
	08/04/08	13	2.9	30.0	9.9	30.0	1.1	4.4	BDL	8.6	BDL	BDL	23	BDL	BDL	BDL	BDL	BDL	8	13	3.3	NA
MW-7G	12/29/00	BDL	BDL	BDL	BDL	BDL	NA	1.1	1.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
	07/11/01	BDL	BDL	BDL	BDL	BDL	48	5.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
	08/20/02	BDL	BDL	BDL	BDL	BDL	170	17	BDL	6.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
	02/02/06	BDL	BDL	BDL	BDL	BDL	13	2.7	BDL	0.72	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
MW-8G	11/27/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	100	
	07/11/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
	08/20/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
MW-9G	11/30/00	BDL	NA	BDL	BDL	BDL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	BDL	NA	NA	NA	NA	
MW-10G	11/27/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
MW-11G	09/19/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
	08/12/05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
	02/02/06	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.8	BDL	0.57	BDL	
	08/04/08	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
MW-12G	09/19/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
	08/12/05	BDL	BDL	0.33	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
	02/02/06	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.32	BDL	0.43	BDL	
	08/04/08	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	

TABLE 2: GROUNDWATER ELEVATION SUMMARY

Site Name: Durham Garage
 Facility Address: 3001 Harvard Avenue, Durham, NC



DTW = Depth to water
 NA= Not Applicable
 All measurements in feet unless noted.
 DTNAPL= Depth to non-aqueous phase liquids
 ELEV = Relative Water Table Elevation
 NS= Not Surveyed

WELL NO.	MW-6G	MW-7G	MW-8G	MW-9G	MW-10G
DIAMETER (inches)	2	2	2	2	2
WELL DEPTH (feet)	20	20	20	20	20
SCREEN INTERVAL (feet)	10 to 20				
TOC ELEVATION	100.05	99.86	99.32	91.61	91.83

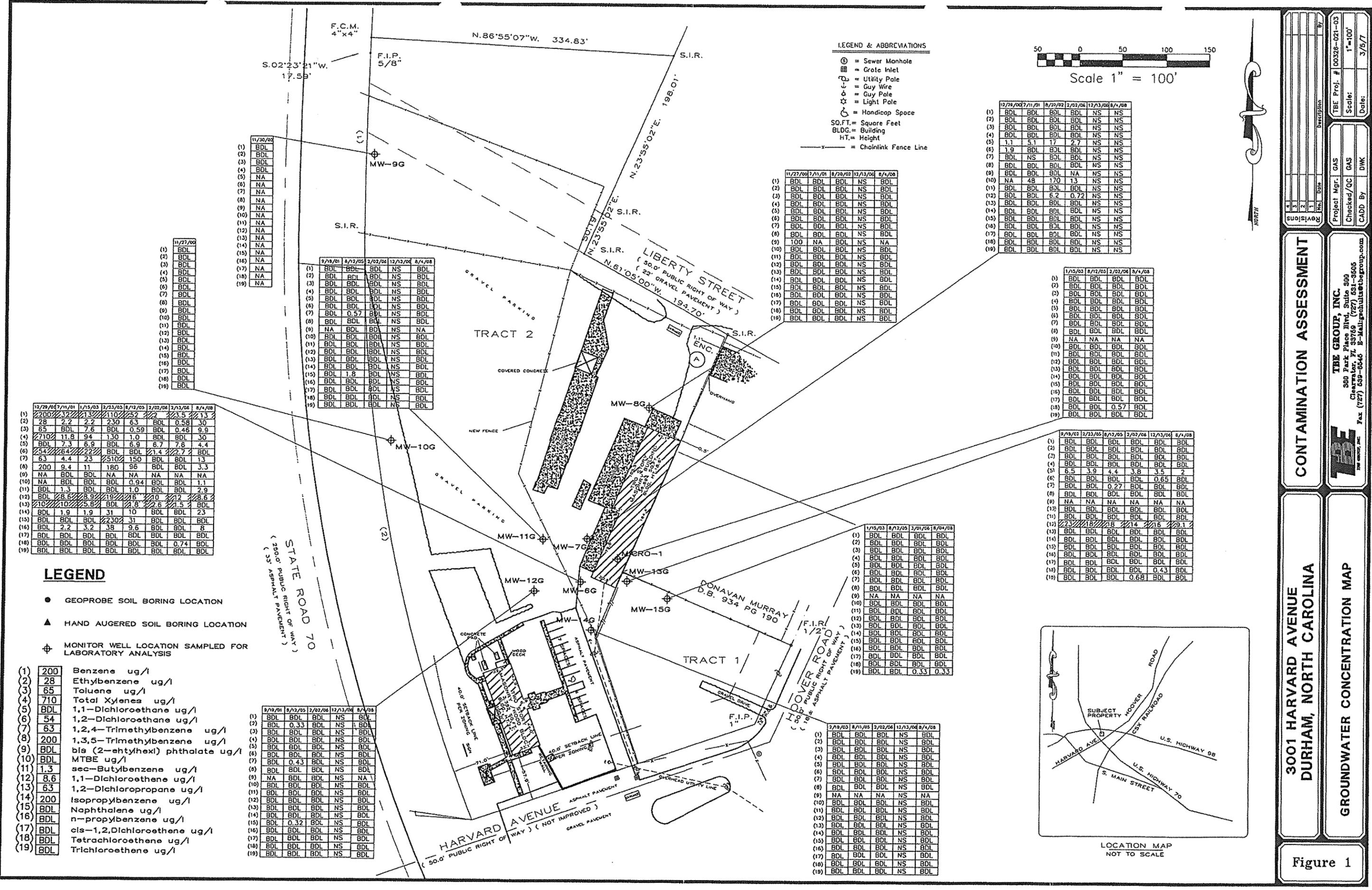
DATE	ELEV	DTW	DTNAPL												
11/27/00	Dry	Dry	NA	Dry	Dry	NA	86.42	12.90	NA	71.79	19.82	NA	74.92	16.91	NA
07/11/01	85.33	14.72	NA	85.19	14.67	NA	88.02	11.30	NA	74.75	16.86	NA	79.80	12.03	NA
08/20/02	86.17	13.88	NA	83.53	16.33	NA	86.80	12.52	NA	NA	NA	NA	79.80	12.03	NA
01/15/03	87.15	12.90	NA	84.38	15.48	NA	87.85	11.47	NA	NA	NA	NA	NA	NA	NA
02/23/05	88.45	11.60	NA	NA	NA	NA	87.86	11.46	NA	NA	NA	NA	NA	NA	NA
08/04/08	88.87	11.18	NA	84.64	15.22	NA	87.12	12.20	NA	NA	NA	NA	NA	NA	NA

WELL NO.	MW-11G	MW-12G	MW-13G	MW-14G	MW-15G
DIAMETER (inches)	2	2	2	2	2
WELL DEPTH	30	30	30	30	30
SCREEN INTERVAL	15 to 30				
TOC ELEVATION	98.43	98.01	103.40	NS	NS

DATE	ELEV	DTW	DTNAPL	ELEV	DTW	DTNAPL	ELEV	DTW	DTNAPL	ELEV	DTW	DTNAPL	ELEV	DTW	DTNAPL
11/06/00	88.30	10.13	NA	87.97	10.04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
07/11/01	Dry	Dry	NA	Dry	Dry	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
08/20/02	85.35	14.70	NA	84.34	15.52	NA	83.67	15.65	NA	NA	NA	NA	NA	NA	NA
01/15/03	84.09	14.34	NA	82.95	15.06	NA	88.60	14.80	NA	NA	Dry	NA	NA	24.43	NA
02/19/03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.00	NA	NA	NA	NA
02/23/05	85.13	13.30	NA	85.50	12.51	NA	89.69	13.71	NA	NA	14.14	NA	NA	16.33	NA
08/04/08	86.70	11.73	NA	85.36	12.65	NA	89.33	14.07	NA	NA	12.36	NA	NA	12.15	NA

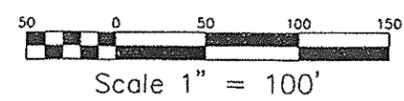
WELL NO.	Micro-1				
DIAMETER (inches)	1				
WELL DEPTH	8				
SCREEN INTERVAL	3 to 8				
TOC ELEVATION	NS				

DATE	ELEV	DTW	DTNAPL												
08/20/02	NA	NA	NA												
01/15/03	NA	5.68	NA												
02/19/03	NA	NA	NA												
02/23/05	NA	NA	NA												
08/04/08	NA	4.94	NA												



LEGEND & ABBREVIATIONS

- ⊙ = Sewer Manhole
- ⊞ = Grate Inlet
- ⊕ = Utility Pole
- ⊖ = Guy Wire
- ⊙ = Guy Pole
- ⊙ = Light Pole
- ♿ = Handicap Space
- SO.FT. = Square Feet
- BLDG. = Building
- HT. = Height
- x— = Chainlink Fence Line



(1)	BDL
(2)	BDL
(3)	BDL
(4)	BDL
(5)	BDL
(6)	BDL
(7)	BDL
(8)	BDL
(9)	BDL
(10)	BDL
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(1)	BDL
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(13)	BDL
(14)	BDL
(15)	BDL
(16)	BDL
(17)	BDL
(18)	BDL
(19)	BDL

(1)	BDL	BDL	BDL	NS	BDL
(2)	BDL	BDL	BDL	NS	BDL
(3)	BDL	BDL	BDL	NS	BDL
(4)	BDL	BDL	BDL	NS	BDL
(5)	BDL	BDL	BDL	NS	BDL
(6)	BDL	BDL	BDL	NS	BDL
(7)	BDL	BDL	BDL	NS	BDL
(8)	BDL	BDL	BDL	NS	BDL
(9)	BDL	BDL	BDL	NS	BDL
(10)	BDL	BDL	BDL	NS	BDL
(11)	BDL	BDL	BDL	NS	BDL
(12)	BDL	BDL	BDL	NS	BDL
(13)	BDL	BDL	BDL	NS	BDL
(14)	BDL	BDL	BDL	NS	BDL
(15)	BDL	BDL	BDL	NS	BDL
(16)	BDL	BDL	BDL	NS	BDL
(17)	BDL	BDL	BDL	NS	BDL
(18)	BDL	BDL	BDL	NS	BDL
(19)	BDL	BDL	BDL	NS	BDL

(1)	BDL	BDL	BDL	NS	BDL
(2)	BDL	BDL	BDL	NS	BDL
(3)	BDL	BDL	BDL	NS	BDL
(4)	BDL	BDL	BDL	NS	BDL
(5)	BDL	BDL	BDL	NS	BDL
(6)	BDL	BDL	BDL	NS	BDL
(7)	BDL	BDL	BDL	NS	BDL
(8)	BDL	BDL	BDL	NS	BDL
(9)	BDL	BDL	BDL	NS	BDL
(10)	BDL	BDL	BDL	NS	BDL
(11)	BDL	BDL	BDL	NS	BDL
(12)	BDL	BDL	BDL	NS	BDL
(13)	BDL	BDL	BDL	NS	BDL
(14)	BDL	BDL	BDL	NS	BDL
(15)	BDL	BDL	BDL	NS	BDL
(16)	BDL	BDL	BDL	NS	BDL
(17)	BDL	BDL	BDL	NS	BDL
(18)	BDL	BDL	BDL	NS	BDL
(19)	BDL	BDL	BDL	NS	BDL

(1)	BDL	BDL	BDL	NS	BDL
(2)	BDL	BDL	BDL	NS	BDL
(3)	BDL	BDL	BDL	NS	BDL
(4)	BDL	BDL	BDL	NS	BDL
(5)	1.1	5.1	17	2.7	NS
(6)	1.9	BDL	BDL	BDL	NS
(7)	BDL	NS	BDL	BDL	NS
(8)	BDL	BDL	BDL	BDL	NS
(9)	BDL	BDL	BDL	BDL	NS
(10)	NA	48	170	13	NS
(11)	BDL	BDL	BDL	BDL	NS
(12)	BDL	BDL	6.2	0.72	NS
(13)	BDL	BDL	BDL	BDL	NS
(14)	BDL	BDL	BDL	BDL	NS
(15)	BDL	BDL	BDL	BDL	NS
(16)	BDL	BDL	BDL	BDL	NS
(17)	BDL	BDL	BDL	BDL	NS
(18)	BDL	BDL	BDL	BDL	NS
(19)	BDL	BDL	BDL	BDL	NS

(1)	BDL	BDL	BDL	BDL	BDL
(2)	BDL	BDL	BDL	BDL	BDL
(3)	BDL	BDL	BDL	BDL	BDL
(4)	BDL	BDL	BDL	BDL	BDL
(5)	BDL	BDL	BDL	BDL	BDL
(6)	BDL	BDL	BDL	BDL	BDL
(7)	BDL	BDL	BDL	BDL	BDL
(8)	BDL	BDL	BDL	BDL	BDL
(9)	BDL	BDL	BDL	BDL	BDL
(10)	BDL	BDL	BDL	BDL	BDL
(11)	BDL	BDL	BDL	BDL	BDL
(12)	BDL	BDL	BDL	BDL	BDL
(13)	BDL	BDL	BDL	BDL	BDL
(14)	BDL	BDL	BDL	BDL	BDL
(15)	BDL	BDL	BDL	BDL	BDL
(16)	BDL	BDL	BDL	BDL	BDL
(17)	BDL	BDL	BDL	BDL	BDL
(18)	BDL	BDL	BDL	BDL	BDL
(19)	BDL	BDL	BDL	BDL	BDL

(1)	BDL	BDL	BDL	BDL	BDL
(2)	BDL	BDL	BDL	BDL	BDL
(3)	BDL	BDL	BDL	BDL	BDL
(4)	BDL	BDL	BDL	BDL	BDL
(5)	6.5	3.9	4.4	3.8	3.5
(6)	BDL	BDL	BDL	BDL	0.65
(7)	BDL	BDL	0.27	BDL	BDL
(8)	BDL	BDL	BDL	BDL	BDL
(9)	BDL	BDL	BDL	BDL	BDL
(10)	BDL	BDL	BDL	BDL	BDL
(11)	BDL	BDL	BDL	BDL	BDL
(12)	BDL	BDL	BDL	BDL	BDL
(13)	BDL	BDL	BDL	BDL	BDL
(14)	BDL	BDL	BDL	BDL	BDL
(15)	BDL	BDL	BDL	BDL	BDL
(16)	BDL	BDL	BDL	BDL	BDL
(17)	BDL	BDL	BDL	BDL	BDL
(18)	BDL	BDL	BDL	BDL	0.43
(19)	BDL	BDL	BDL	0.68	BDL

(1)	200	32	13	110	52	22	3.5	13
(2)	28	2.2	2.2	230	63	BDL	0.58	30
(3)	65	BDL	7.6	BDL	0.59	BDL	0.46	9.9
(4)	710	11.8	94	130	1.0	BDL	BDL	30
(5)	BDL	7.3	6.9	BDL	6.9	6.7	7.6	4.4
(6)	54	64	22	BDL	BDL	1.4	2.7	BDL
(7)	63	4.4	23	510	150	BDL	BDL	13
(8)	200	9.4	11	180	96	BDL	BDL	3.3
(9)	NA	BDL	BDL	NA	NA	NA	NA	NA
(10)	NA	BDL	BDL	BDL	0.94	BDL	BDL	1.1
(11)	BDL	1.3	BDL	BDL	1.0	BDL	BDL	2.9
(12)	BDL	8.6	8.9	19	16	0	2	8.6
(13)	10	10	5.6	BDL	8	2.6	2.5	BDL
(14)	BDL	1.9	1.9	31	10	BDL	BDL	23
(15)	BDL	BDL	BDL	230	31	BDL	BDL	BDL
(16)	BDL	2.2	3.2	38	9.6	BDL	BDL	8
(17)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
(18)	BDL	BDL	BDL	BDL	BDL	BDL	0.74	BDL
(19)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

LEGEND

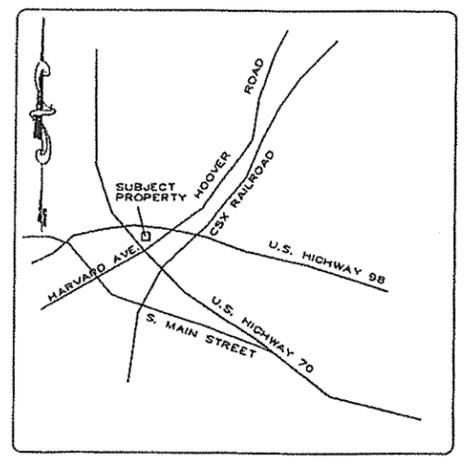
- GEOPROBE SOIL BORING LOCATION
- ▲ HAND AUGERED SOIL BORING LOCATION
- ⊕ MONITOR WELL LOCATION SAMPLED FOR LABORATORY ANALYSIS

(1)	200	Benzene ug/l
(2)	28	Ethylbenzene ug/l
(3)	65	Toluene ug/l
(4)	710	Total Xylenes ug/l
(5)	BDL	1,1-Dichloroethane ug/l
(6)	54	1,2-Dichloroethane ug/l
(7)	63	1,2,4-Trimethylbenzene ug/l
(8)	200	1,3,5-Trimethylbenzene ug/l
(9)	BDL	bis (2-ethylhexyl) phthalate ug/l
(10)	BDL	MTBE ug/l
(11)	1.3	sec-Butylbenzene ug/l
(12)	8.6	1,1-Dichloroethene ug/l
(13)	63	1,2-Dichloropropane ug/l
(14)	200	Isopropylbenzene ug/l
(15)	BDL	Naphthalene ug/l
(16)	BDL	n-propylbenzene ug/l
(17)	BDL	cis-1,2-Dichloroethene ug/l
(18)	BDL	Tetrachloroethene ug/l
(19)	BDL	Trichloroethene ug/l

(1)	BDL	BDL	BDL	NS	BDL
(2)	BDL	0.33	BDL	NS	BDL
(3)	BDL	BDL	BDL	NS	BDL
(4)	BDL	BDL	BDL	NS	BDL
(5)	BDL	BDL	BDL	NS	BDL
(6)	BDL	0.43	BDL	NS	BDL
(7)	BDL	BDL	BDL	NS	BDL
(8)	BDL	BDL	BDL	NS	BDL
(9)	NA	BDL	BDL	NS	BDL
(10)	BDL	BDL	BDL	NS	BDL
(11)	BDL	BDL	BDL	NS	BDL
(12)	BDL	BDL	BDL	NS	BDL
(13)	BDL	BDL	BDL	NS	BDL
(14)	BDL	BDL	BDL	NS	BDL
(15)	BDL	0.32	BDL	NS	BDL
(16)	BDL	BDL	BDL	NS	BDL
(17)	BDL	BDL	BDL	NS	BDL
(18)	BDL	BDL	BDL	NS	BDL
(19)	BDL	BDL	BDL	NS	BDL

(1)	BDL	BDL	BDL	BDL
(2)	BDL	BDL	BDL	BDL
(3)	BDL	BDL	BDL	BDL
(4)	BDL	BDL	BDL	BDL
(5)	BDL	BDL	BDL	BDL
(6)	BDL	BDL	BDL	BDL
(7)	BDL	BDL	BDL	BDL
(8)	BDL	BDL	BDL	BDL
(9)	NA	NA	NA	NA
(10)	BDL	BDL	BDL	BDL
(11)	BDL	BDL	BDL	BDL
(12)	BDL	BDL	BDL	BDL
(13)	BDL	BDL	BDL	BDL
(14)	BDL	BDL	BDL	BDL
(15)	BDL	BDL	BDL	BDL
(16)	BDL	BDL	BDL	BDL
(17)	BDL	BDL	BDL	BDL
(18)	BDL	BDL	BDL	BDL
(19)	BDL	BDL	0.33	0.33

(1)	BDL	BDL	BDL	NS	BDL
(2)	BDL	BDL	BDL	NS	BDL
(3)	BDL	BDL	BDL	NS	BDL
(4)	BDL	BDL	BDL	NS	BDL
(5)	BDL	BDL	BDL	NS	BDL
(6)	BDL	BDL	BDL	NS	BDL
(7)	BDL	BDL	BDL	NS	BDL
(8)	BDL	BDL	BDL	NS	BDL
(9)	BDL	BDL	BDL	NS	BDL
(10)	NA	NA	NA	NS	BDL
(11)	BDL	BDL	BDL	NS	BDL
(12)	BDL	BDL	BDL	NS	BDL
(13)	BDL	BDL	BDL	NS	BDL
(14)	BDL	BDL	BDL	NS	BDL
(15)	BDL	BDL	BDL	NS	BDL
(16)	BDL	BDL	BDL	NS	BDL
(17)	BDL	BDL	BDL	NS	BDL
(18)	BDL	BDL	BDL	NS	BDL
(19)	BDL	BDL	BDL	NS	BDL



CONTAMINATION ASSESSMENT

**3001 HARVARD AVENUE
DURHAM, NORTH CAROLINA**

GROUNDWATER CONCENTRATION MAP

Figure 1

Project Mgr.	GAS
Checked/QC	GAS
CADD By	DWK
TBE Proj. #	00326-021-03
Scale:	1"=100'
Date:	3/5/17

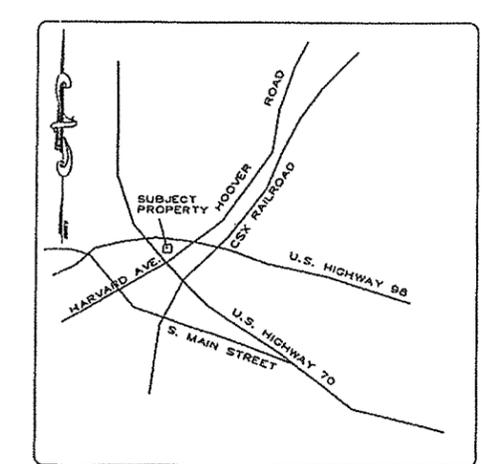
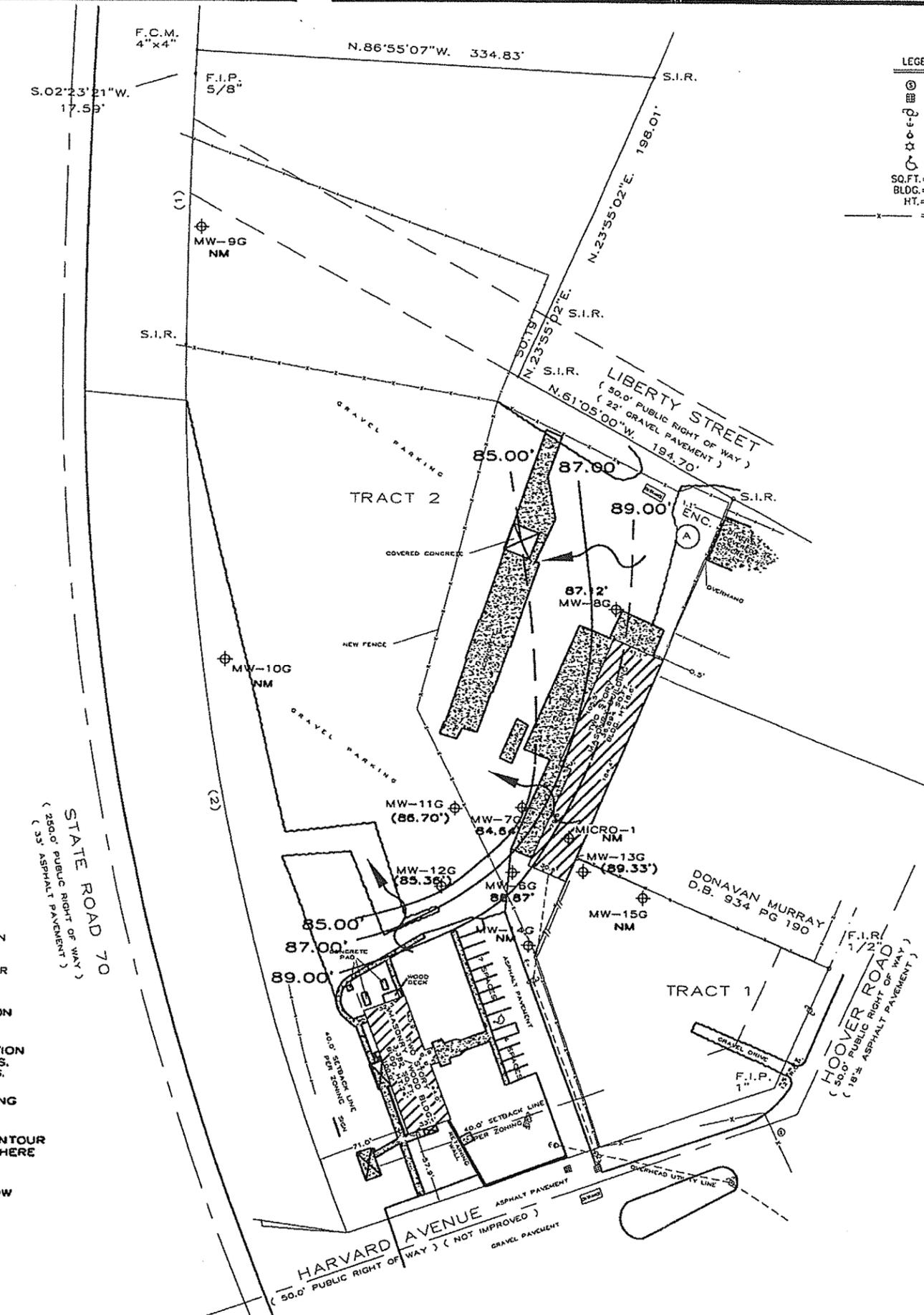
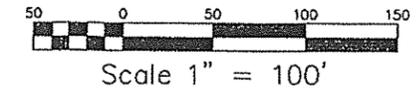
TBE GROUP, INC.
300 Park Place Blvd, Suite 300
Charlotte, NC 28206 (727) 531-3605
E-Mail: tbe@tbe-group.com

LEGEND

- GEOPROBE SOIL BORING LOCATION
- ▲ HAND AUGERED SOIL BORING LOCATION
- ⊕ MONITOR WELL LOCATION SAMPLED FOR LABORATORY ANALYSIS
- 84.64' RELATIVE GROUNDWATER ELEVATION
- (89.33') RELATIVE GROUNDWATER ELEVATION FROM DEEP/INTERMEDIATE WELLS. DATA NOT USED IN CONTOURING.
- NM NOT MEASURED OR TOP OF CASING WAS NOT SURVEYED
- 84.64' ESTIMATED GROUNDWATER CONTOUR ELEVATION (FEET), DASHED WHERE INFERRED
- ESTIMATED GROUNDWATER FLOW DIRECTION

LEGEND & ABBREVIATIONS

- ⊙ = Sewer Manhole
- ⊞ = Grate Inlet
- ⊕ = Utility Pole
- ⊗ = Guy Wire
- ⊙ = Guy Pole
- ☆ = Light Pole
- ♿ = Handicap Space
- SQ.FT. = Square Feet
- BLDG. = Building
- HT. = Height
- x- = Chainlink Fence Line



LOCATION MAP NOT TO SCALE

CONTAMINATION ASSESSMENT

**3001 HARVARD AVENUE
DURHAM, NORTH CAROLINA**

GROUNDWATER ELEVATIONS W/ CONTOURS

Figure 2

Revisions		Project Mgr.		Checked/QC		CADD By	
No.	Date	By	Date	By	Date	By	Date
1							
2							
3							
4							

TBE Proj. # 00326-021-03	TBE Scale: 1"=100'	Date: 3/5/7
Project Mgr. GAS	Checked/QC GAS	CADD By DMK

TBE GROUP, INC.
 380 Park Place Blvd, Suite 300
 Cary, NC 27513 (727) 531-3805
 Fax (727) 539-5845 B-Mail: tbe@tbeinc.com



**Remedial Investigation Work Plan
Former PSNC Operations and Garage Site
3001 Harvard Avenue
Durham, North Carolina
NONCD 0002338**

February 6, 2012

**Prepared by:
Hart & Hickman, PC
H&H Job No. SCA-003**

**Prepared for:
PSNC Energy
800 Gaston Road
Gastonia, NC 28056**



2923 South Tryon Street
Suite 100
Charlotte, NC 28203
704-586-0007

3334 Hillsborough Street
Raleigh, NC 27607
919-847-4241

Engineers License # C-1269
Geologists License # C-245



OUR CLIENTS DEMAND A SMARTER SOLUTION

Sent Via Hand Delivery

February 14, 2012

Ms. Janet Macdonald
REC Program
Inactive Hazardous Sites Branch - Superfund Section
NC Division of Waste Management
217 West Jones Street
Raleigh, North Carolina 27603

Hart & Hickman, PC
3334 Hillsborough Street
Raleigh, NC 27607

919-847-4241 phone
919-847-4261 fax
www.harthickman.com

Reference: Remedial Investigation Work Plan
PSNC Operations and Garage, Durham, NC
NONCD 0002338
H&H Project No. SCA.003

Dear Ms. Macdonald:

Hart & Hickman is pleased to provide this Remedial Investigation Work Plan (RIWP) for the above-referenced site. One copy of the certified Work Plan, including the Remediating Party and RSM certification statements, are provided on the enclosed CD.

If you have any questions or concerns, please contact me at (919) 847-4241.

Sincerely,

Hart & Hickman, PC

Leonard C. Moretz, L.G., RSM
Project Director/Branch Manager

Enclosures (1)

cc w/enclosure: Wali Motorwalla– SCANA Corporation

**Remedial Investigation Work Plan
Former PSNC Operations and Garage Site
Durham, NC
NONCD 0002338**

H&H Job No. SCA-003

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**Remedial Investigation Work Plan
Former PSNC Operations and Garage Site
Durham, NC
NONCD 0002338**

H&H Job No. SCA-003

1.0 Introduction

Hart & Hickman, PC (H&H), on behalf of PSNC Energy (PSNC) has prepared this Remedial Investigation (RI) Work Plan (Work Plan) for submittal to the North Carolina Department of Environment and Natural Resources (NCDENR) for completion of an RI of the Former Public Service Company of North Carolina (PSNC) Operations and Garage Site located at 3001 Harvard Avenue in Durham, Durham County, North Carolina (Site). A Site Location Map is included as Figure 1 and the Site Plan, illustrating site features, is included as Figure 2.

On February 11, 2011, PSNC entered into an Administrative Agreement (AA) for Registered Environmental Consultant (REC) - Directed Assessment and Remedial Action Pursuant to North Carolina General Statutes (N.C.G.S.) 130A-310.9(c) and 15A North Carolina Administrative Code (NCAC) 13C .0300 (Docket No. 10-SF-337) with NCDENR for voluntary remedial action at the Site under North Carolina's REC Program. Under this AA and in accordance with the rules and requirements of the REC program, PSNC retained H&H as its REC.

The objectives of the RI are to identify releases of hazardous substances to the environment, identify potential exposure pathways, characterize the nature of such releases, collect sufficient sampling data to support cleanup-level determination, delineate the areal and vertical extent of contamination, and characterize Site conditions sufficiently to conduct a feasibility study of remedial alternatives and support a proposed remedy.

The scope of work presented in this Work Plan is based on information obtained from:

- A review of current and past operational activities at the facility;
- An evaluation of potential sensitive receptors in the Site area;

- A review of historical aerial photographs and other historical information for the Site and Site area; and
- Results of previous investigations.

This RI Work Plan has been prepared to meet the specific requirements of the following:

- the Site specific AA;
- the NCDENR REC Program Implementation Guide dated August 2011 (referred to herein as the REC Guidance); and
- the requirements for RI Work Plans contained in NCAC Title 15A 13C .0306(g).

2.0 Site Background Information

The Site is currently owned by Samuel Roberti, R. David Wicker, Jr, Thomas Uhrich, and Donna Mansour (the owners), who purchased the property in December 2000. The owners currently lease the property to several tenants. The on-site office building is leased to Believers Assembly Christian Church where regular church services are held. The former Fleet Maintenance Garage and Parts Storage buildings are leased to Mr. Craig Delay who uses the property to repair automobiles. The former Fleet Vehicle Parking Lot is leased to West Brothers Transfer & Storage for trailer parking.

The Site is located at 3001 Harvard Avenue in Durham, Durham County, North Carolina (latitude 35°59'18.82"N, longitude 78°51'40.46") and consists of approximately 5.683 acres with two buildings. The first structure is an approximately 3,300 sq ft office building formerly for Site personnel. The second structure is an approximately 6,815 sq ft vehicle maintenance facility. This structure appears to have been two separate buildings that were joined by an approximately 15 ft-wide connecting room to form a single building. The southern portion of the building contains three former repair bays. The northern portion of the building consists of four vehicle repair bays and an office and break room area. Both of these structures are located within the fenced compound of the Site. The remainder of the site primarily is occupied by a gravel parking area. A single-family residential structure, located at 210 South Hoover Road, abuts the 3001 Harvard Avenue site to the east. This property was formerly owned by PSNC and has been included in historic investigations. The residential structure is not used as a residence but as a business that is currently occupied by Hoover Crossings, LLC.

The Site is bounded by commercial properties (to the east), right-of-way (ROW) for US Highway 70 (to the west), South Hoover Road and a vacated portion of Harvard Avenue (to the south), and a commercial property (to the north). Vehicular access to the Site is available from Harvard Avenue via South Hoover Road and from an unpaved portion of Liberty Street, which appears to terminate at the northeast corner of the site.

The Site is located in an area of Durham developed with commercial, industrial and residential properties. The Site and all adjacent properties are zoned industrial (I-2). The office building is currently being leased to Believers Assembly Christian Church. The former Fleet Maintenance Garage is being leased to Mr. Craig Delay. Mr. Craig Delay currently operates a vehicle repair shop at the facility. Various fuels, oils, and antifreeze are used in on-site vehicle repair activities. Currently, a 300-gallon tote containing spent motor oil is present on the south side of the parts storage building. The 300-gallon tote has no secondary containment. Craig Delay does not currently handle waste under any RCRA permits. The large gravel parking lot that occupies the western portion of the property is being leased by West Brothers Transfer & Storage for trailer storage.

An asphalt driveway and parking area and vegetated buffer are present in front of the former office building. Access to the former Fleet maintenance garage is from Liberty Street on the northern portion of the property. A gravel driveway and parking area are present in the front of the facility. A large gravel lot is present on the northeast portion of the property.

The Site and the adjoining former PSNC property at 211 South Hoover Road are located along one contiguous fence line, with gated access on South Hoover Road. Original information concerning the Site address identified the entire fenced property by the 211 South Hoover Road address. Therefore, initial notification of contaminant impacts made to NCDENR reflects only the 211 South Hoover Road address.

During the Phase I Environmental Site Assessment (ESA), the Law Firm of Manning, Fulton & Skinner performed a fifty-year chain of-title search, which was reviewed to identify past owners or occupants of potential concern. The preliminary title information submitted by the law firm indicated that Hutchinson Construction Company owned the portion of the site at 3001 Harvard Avenue from 1966 until 1970, at which time it was sold to the Antrim-Tech Corporation. Antrim-Tech owned the property until 1974. The former on-site activities of these businesses are unknown. No other owners of concern were listed between 1936 and present. PSNC appears to have acquired this portion of the property in 1983. PSNC sold the property to the current owners

in 2001. The current tenants have occupied the facility from approximately 2002 until present. Copies of the current property deeds are located in Appendix A. A Site Survey Map, which was completed by a Licensed North Carolina Land Surveyor in March 2011, is included as Appendix B.

3.0 Environmental Setting

3.1 Regional and Site Geology

The Site is situated within the Piedmont physiographic province of North Carolina. The Piedmont province is bordered to the east by the Coastal Plain physiographic province and to the west by the Blue Ridge physiographic province. More specifically the Site is located within the Durham sub-basin, the northernmost Triassic basin in the Deep River Basin. The Triassic Basin lies between the Carolina Slate Belt to the west and the Raleigh Belt to the east. The Triassic Basin is underlain by igneous and metamorphic rocks covered by consolidated and unconsolidated sedimentary deposits. Structurally, the Triassic Basin is a half-graben flanked by a major normal fault along the western boundary toward which the strata in the basin dip. Based on a review of the Geologic Map of North Carolina (Parker, 1985) the Site is located within the Chatham Group of the Triassic Basin. Near-surface sedimentary rocks in the vicinity of the Site consist of a tan, medium to coarse grained micaceous, Arkosic sandstone and brown clayey sandstone interbedded with brown to dark gray sandstone and mudstone.

During the Comprehensive Site Investigation (CSA), conducted by TBE at the Site in May 2004 (Appendix C), competent sedimentary rock was encountered at depths ranging from 9 to 14 ft below ground surface (bgs) and consisted primarily of arkosic sandstone. The wells installed as part of previous site investigations are screened in the shallow, unconfined zone composed of unconsolidated surficial soils and/or regolith.

The Durham County soil survey describes soils at the Site as belonging to the Mayodan Series. These soils consist of nearly level to moderately steep, grayish brown sandy loam grading to a dark red sandy clay loam and sandy clay at depth. Soil borings installed by TBE during multiple investigations encountered a variety of soil conditions ranging from reddish brown silt with fine-grained micaceous sands, sandy clay and clayey sands to a depth of approximately 14 ft bgs.

3.2 Regional and Site Hydrogeology

The occurrence and movement of groundwater within rift basins such as the Triassic Basin is within two separate but interconnected water-bearing zones. A shallow, unconfined zone occurs within the unconsolidated surficial soils and/or weathered rock (regolith) and a deeper zone occurs within the underlying competent sedimentary rocks. Groundwater in the shallow unconsolidated materials is typically under water table conditions with generalized groundwater flow being from topographic highs (recharge areas) to topographic lows (discharge areas). The occurrence and movement of groundwater in the underlying, more competent sedimentary rocks is primarily controlled by joints, fractures, and faults. Groundwater within the rock may occur under unconfined or confined conditions.

As indicated on the United States Geological Survey (USGS) *7.5-Minute Topographic Quadrangles, Southeast Durham, Northeast Durham, Northwest Durham, and Southwest Durham, North Carolina* (Figure 1), surface elevations at the Site range from a high of approximately 400 ft above mean sea level (amsl) along the eastern boundary of the Site to a low of approximately 390 ft amsl along the western boundary. Based on the slope of the surficial topography, shallow groundwater in the immediate vicinity of the Site is expected to flow toward an unnamed creek, located approximately 1,000 ft west and topographically downgradient from the Site. The unnamed creek flows in a northerly direction in the vicinity of the Site. Characteristics of the subsurface conditions beneath the Site have been evaluated based on the findings of numerous assessment activities completed at the Site (see Section 5.1). The results of these assessment activities are discussed within this Work Plan and provided in their entirety as appendices to this submittal.

Potentiometric data generated as part of the assessment activities completed to date at the Site indicate that shallow groundwater beneath the Site is generally flowing from east to west towards the unnamed creek. Monitoring wells on Site are screened at depths of 10 to 20 and 15 to 30 ft bgs. Historical monitoring data indicate that depth to groundwater on Site typically ranges from 10 to 18 ft bgs. A groundwater flow map using groundwater elevation data collected by TBE on August 4, 2008 is included as Figure 3.

3.3 Water Resources in the Vicinity

The Facility has reportedly been connected to public water since it was constructed in 1959. A municipal sewer connection was connected in November 2000. No public water supply wells were identified on, or adjacent to the subject property. The North Carolina Surface Water Assessment Program (SWAP) did not identify any public water supply wells within 0.5 miles of the Site. TBE conducted a vehicular and pedestrian survey and did not identify any obvious potable or irrigation wells within a 1,500 ft radius of the Site.

According to the City of Durham Utilities Department, the Site and surrounding areas are supplied by public water. According to the City of Durham Utilities Department, the source of the public water is either the Little River Reservoir or Lake Michie. The closest of these intakes is the Little River Reservoir located more than eight miles north of the site.

3.4 Environmentally Sensitive Areas in the Vicinity

The REC Program Guidance requires, the Site and all adjacent properties be evaluated for the existence of the environmentally sensitive areas. A summary of the agencies contacted, environmentally sensitive areas managed by that agency, persons contacted, and the contact results are summarized in Appendix D. Where applicable, supporting documentation for the agency contacts is also included in Appendix D. Other than the information received from NCDENR DWQ, apparently there are no environmentally sensitive areas known to exist in the vicinity of the Site.

4.0 Site History

4.1 Operational History

To identify past and current hazardous substance use and waste management practices, H&H conducted the following:

- obtained an Environmental Data Resources, Inc. (EDR) radius map report (Appendix E);
- reviewed the Site file at the NCDENR Division of Waste Management Superfund Section and documents provided by PSNC;
- conducted a site visit and interviewed current PSNC employees that were knowledgeable about historical operations at the facility;
- reviewed the ESA conducted by TBE in November 2000; and
- reviewed historical aerial photographs for the Site and surrounding area.

Two previous PSNC employees were interviewed at the site on January 7, 2011. Scott Parker worked at the 211 South Hoover Rd Facility from approximately 1990 to 2000 and at that time was a Locating Crew Leader. Frank Berry worked at the 3001 Harvard Avenue Facility from approximately 1970 to 2000 and was a Meter Technician during that timeframe. They indicated that the Operations Center and Garage Site was acquired by PSNC in 1983 as a facility to repair, maintain, and store fleet vehicles for residential gas service. Routine maintenance was performed on fleet vehicles at the facility. Petroleum fluids, gasoline, antifreeze, and solvents were used on site during routine maintenance and larger repairs. No records of petroleum fluids, gasoline, antifreeze, and/or solvent purchase or waste removal were kept by PSNC.

The following chemical storage and waste management practices were identified in the TBE Phase I ESA completed in November 2000 when PSNC still owned and operated the facility.

- During the ESA, the maintenance facility used three Safety-Kleen parts washers. Two small parts washers were used in conjunction with brake repairs, and a larger washer was used for all other general repairs. Mr. Milton Hill (Maintenance Facility Supervisor)

indicated that they had used the parts washers for approximately 5 to 7 years. Prior to that, mineral spirits were used with rags and stored in 5-gallon buckets. He indicated that licensed contractors historically removed the waste mineral spirits, but was not able to provide any manifests. Five empty 55-gallon drums were observed on the concrete pad adjacent to a gasoline Above Ground Storage (AST) tank (northeast of building). Three of the drums were labeled mineral spirits and the others had no labels. The drums were in fair condition with surface rust only. No staining was observed near the drums. In addition to the five drums near the AST, approximately four 55-gallon drums were observed resting on bare ground near the northwest corner of the property. Labels were either missing or illegible, and two of the drums had been crushed. Minor staining and stressed vegetation were observed in this area.

- The west portion of the property appears to have been filled and leveled to create the existing gravel parking lot. The west edge of the parking lot slopes downward approximately 10 to 15 ft to the fence line along the Highway 70 Bypass. Debris was observed protruding from the side slope of the parking lot. Debris observed included the following items: metal and plastic pipe of varying diameter; rusted one gallon cans; a 2.5-gallon paint thinner-type can; wood and concrete debris; and two crushed 55-gallon drums. No labels were visible on any of the containers observed in this area. No obvious staining, odors or stressed vegetation were noted in the vicinity of the debris.
- No on-site wells were observed or reported during the inspection. A floor drain surrounded by oily staining, and a repair-trench that had been filled with dirt were observed in the southern portion of the garage building. The trench reportedly had a concrete base and walls. According to Mr. Hill, both of the floor drains and a drain in the base of the trench were connected to a pipe that discharged at the east side of the gravel parking lot located directly north of the office building. The discharge point was inspected and no obvious staining or stressed vegetation was noted. An approximately two-foot by two-foot concrete sump was observed in the northern portion of the garage. The sump was empty at the time of the site inspection. The sump reportedly was used to

collect water during heavy rains and pump the water to the exterior of the building. The discharge point at the building exterior was inspected and no staining, odors, or stressed vegetation were observed.

- A 20 ft wide by 200 ft long concrete pad was observed approximately 40 ft west of the north portion of the garage building. Steel I-beams that appeared to have been cut off to a height of approximately four ft were observed at both ends of the pad. The former use of the pad and I-beams is unknown. A PSNC mechanic indicated that he had been told a structure used to dry/cure pipe sections was formerly located on the pad. An approximately 4-inch diameter pipe stub was observed in the concrete pad. The pipe was filled with dirt and gravel and its former use is unknown.
- Mr. Hill stated the facility did not have an emergency generator nor did it historically have a petroleum-fired boiler. In November 2000 he indicated the facility had a 1,000-gallon gasoline AST that was located approximately 100 ft northeast of the fleet maintenance garage. The facility also had a 250-gallon new oil AST located in the north portion of the building. A 100-gallon AST containing waste oil and an approximately 75-gallon poly-drum containing waste antifreeze observed adjacent to the northwest corner of the maintenance facility. According to Mr. Hill, the waste oil and antifreeze were routinely removed by Safety-Kleen. A circuit breaker located in the south portion of the maintenance facility was labeled "gas pump". Information provided by PSNC confirmed that a 1,000-gallon UST containing gasoline had been removed (in 1990) from the area adjacent to the south wall of the maintenance facility. Low-level contamination encountered during removal of the UST did not require removal.
- Historical waste generation at the facility is expected to have included petroleum products and solvents associated with the vehicle repair shop building. Mr. Hill stated that the repair operations were of a smaller scale prior to approximately 1990. He indicated that the majority of the large-scale repair activity was performed at the repair garage on the adjacent PSNC property.

- No spent mercury-containing light bulbs or light ballasts were observed at the facility.
- A pole-mounted transformer was observed between the office building and the residential structure. The transformer was in good condition, with no signs of corrosion, damage, leakage or surface staining. No obvious labels concerning PCB content were observed.
- Mr. Hill indicated that the site is connected to municipal water, and that the structures on the subject property utilized an on-site septic system until approximately the second week of November 2000, at which time it was connected to the municipal sewer. The use of septic systems on the subject property and nearby properties increases the potential concerns associated with chemical use. Hazardous substances or petroleum-products entering drains or shop sinks would likely impact soil and groundwater via the septic system drain field rather than entering the municipal sewer.

The Environmental Data Report (EDR) for this facility incorrectly identifies several USTs formerly located at the adjacent 211 South Hoover Rd Site. Information provided by PSNC confirmed that a 1,000-gallon UST containing gasoline had been removed from the site in 1990. No additional assessment was requested by NCDENR in this area and the UST was designated Permanently Closed.

There is no Sanborn fire insurance map coverage for the Site area because it was not within the City limits during that period of history. However, historic aerial photos provided by the North Carolina Department of Transportation (NCDOT) were reviewed. Aerial photos of the Site and vicinity were procured and reviewed for NCDOT aerial missions flown on March 6th, 1964, March 20, 1975, July 21, 1987, and February 23, 1993 (Appendix F).

The 1964 aerial photo clearly shows that no development had taken place on site before the photo was taken. The Site was not operational and appears heavily vegetated in 1964.

The 1975 aerial photo shows the buildings that make up the Operations and Garage Site. The property was not owned by PSNC in 1975. A large linear concrete pad that is oriented approximately north/south in the center of the property can be seen. Cement trucks and large flat bed trailers can also be seen in the photo.

The 1987 aerial photo shows the Operations and Garage Site with additional clearing on the northeast portion of the property. Construction vehicles, building materials, and debris appear to be present on the northeastern portion of the property. Shadows on the image and higher humidity during the summer image capture decrease the visibility for any small objects that may be present.

The 1993 aerial shows the Operations and Garage Site with no additional development. The cleared area to the northeast contains piping and construction machinery. Various construction equipment is also stored in the central portion of the property near the linear concrete pad. One drum appears to be stored on the northern side of the Garage facility near the northwest corner of the building.

4.2 Site Regulatory History

The former PSNC Operations and Garage Site was regulated under the NCDENR Aquifer Protection Section (APS) under incident #86756 from the early 2000s to approximately 2008 when it was transferred in to the NCDENR Inactive Hazardous Sites Branch (IHSB) under Site ID#NONCD0002338. The IHSB requested that PSNC enter the Registered Environmental Consultant (REC) program on July 17, 2009. On September 30, 2009 an Administrative Agreement (AA) was drafted by the IHSB for PSNC review. After multiple revisions, and payment of the initial program fees, the final AA was signed on February 11, 2011.

The former PSNC Operations and Garage Site handled waste under RCRA permit NCD986229821 (Non-Generator) during their tenure at the property. The EDR Radius Report indicates PSNC handled ignitable hazardous wastes at the facility listed under RCRA code D001

(Appendix E). A notice of violation (NOV) was issued to PSNC on January 16, 1997. PSNC achieved compliance for the NOV on February 17, 1997. No other information concerning the NOV is included in the EDR Radius Report. PSNC did not receive any additional NOVs during their tenure at the facility.

5.0 Previous Investigations

Previous soil and groundwater investigations activities have been conducted at the Site on behalf of PSNC. A brief summary of the previous investigations is provided below, and copies of the reports are presented in Appendix C.

5.1 Phase I Environmental Site Assessment (November 2000)

As part of a property transaction, PSNC contracted TBE to complete a Phase I ESA of the Site for Lincoln Harris Company, LLCs in November 2000.

Results of the Phase I ESA indicated the following areas of potential environmental concern:

- Historical on-site vehicle repair operations
- Former on-site gasoline UST
- Debris disposal including crushed 55-gallon drums
- Potential impacts from petroleum products or solvents entering floor drains
- Concrete pads and pipe stubs observed on-site (potential UST areas)

As part of the ESA, NCDENR files were reviewed. No compliance violations or discharges were listed at the subject property. Mr. Milton Hill indicated that licensed contractors removed wastes, such as parts cleaning solvent, generated at the site. In addition, USTs formerly located at the adjacent PSNC site (211 South Hoover Rd) appeared incorrectly listed at the 3001 Harvard Avenue address.

Mr. Hill also indicated that the facility had a 1,000-gallon gasoline AST located approximately 100 ft northeast of the repair building at the time the ESA was conducted. The facility also had several other oil and waste oil ASTs and drums containing various fluids including antifreeze stored on the property. According to Mr. Hill, the waste oil and antifreeze were removed by Safety-Kleen. Information provided by PSNC confirmed that a 1,000-gallon UST containing gasoline had been removed (in 1990) from the area adjacent to the south wall of the maintenance facility. Two soil borings were advanced in the tank pit, and two soil samples were collected for laboratory

analysis. Benzene and total petroleum hydrocarbons (TPH) were detected at levels below regulatory guidelines and no groundwater was encountered in the excavation. No additional assessment was requested by NCDENR in this area. A copy of the Phase I ESA report is included in Appendix C.

5.2 Limited Phase II ESA (November 2000)

As a result of environmental concerns identified during the Phase I ESA report, TBE conducted initial Phase II assessment activities at the Site that included a ground-penetrating radar (GPR) and magnetometer survey, installation of soil borings for organic vapor analysis, as well as soil and groundwater sampling for laboratory analysis. Site investigation work was initiated on November 11, 2000. To confirm removal of the reported UST, and evaluate the potential for undetected USTs or subsurface debris, a GPR/Magnetometer survey was conducted. No USTs or significant indications of subsurface debris were detected during the GPR/Magnetometer survey. To determine the potential for petroleum and/or organic contamination to exist on-site, TBE conducted soil and groundwater testing in potential suspect contaminant source areas as identified in the ESA.

On November 11 and 12, 2000, Applied Earth Sciences (subcontractor to TBE) installed 30 soil borings on-site using Direct Push Technology (DPT). The soil borings were advanced until refusal conditions were encountered at an average depth of 10 to 15 ft bgs. The soils were screened with a Photo Ionization Detector (PID) to identify the presence of hydrocarbon/solvent vapors in the soil. The borings were strategically placed in areas most likely to represent potential contamination source areas (areas with concrete patches, near the former UST).

Soil samples were collected on November 17, 2000, from DPT boring GP-4 and hand augered borings HA-1 and HA-2. Soil sample GP-4 was collected in the former UST area at 10 ft bgs. Sample GP-4 was analyzed for the presence of TPH Gasoline Range Organics (GRO)/Diesel Range Organics (DRO) and Semi-Volatile Organic Compounds (SVOCs). Soil sample HA-1 was collected adjacent to a floor drain in the garage building. Soil sample HA-2 was collected

beneath an unknown pipe outfall at the west edge of the parking lot. The samples were analyzed for Oil & Grease and SVOCs. Benzo(a)anthracene and benzo(a)pyrene were detected at concentrations in excess of the NCAC 15A soil-to-groundwater quality standards in the soil sample collected at HA-1.

On November 20, 2000, five groundwater monitoring wells (MW-6G through MW-10G) were installed to an approximate depth of 20 ft bgs. Water level data from MW-8G, MW-9G, and MW-10G, indicated that shallow groundwater flow was generally towards the west-southwest. Groundwater samples were collected from the newly installed wells and analyzed for the presence of solvent, gasoline, and aromatic hydrocarbons by EPA Methods 8021 and 8270.

Benzene, 1,2-dichloroethane (1,2-DCA), 1,2-dichloropropane (1,2-DCP), and bis (2-ethylhexyl)phthalate were detected at concentrations in excess of the NCAC 15A 2L Groundwater Quality Standards (2L Standards). Based on the presence of groundwater impacts above 2L Standards, TBE recommended that supplemental testing be conducted on Site to confirm the preliminary results. Information concerning this investigation is included in the Comprehensive Site Assessment (CSA) Report in Appendix C.

5.3 Expanded Phase II ESA (July 2001)

On July 11, 2001, TBE installed three permanent two-inch PVC monitoring wells (MW-11G, MW-12G, and MW-13G) using a truck mounted air drill rig. The wells were installed with 15 ft of 2-inch, 0.01-slotted screen and 15 ft of solid PVC riser. Groundwater samples were obtained in accordance with appropriate protocols and analyzed for the presence of Volatile Organic Compounds (VOCs) by EPA methods 8021 and 8310. Benzene, 1,1-dichloroethane (1,1-DCA), 1,2-DCA, 1,1-dichloroethene (1,1-DCE), 1,2-DCP, and methyl tert- butyl ether (MTBE), and were detected at concentrations in excess of the 2L Standards. Information concerning this investigation is included in the CSA Report in Appendix C.

5.4 Supplemental Groundwater Assessment (August 2002)

Based on the presence of groundwater impacts above 2L Standards, it was determined that additional investigation was necessary to define the source area. TBE returned to the site on August 20, 2002 and completed six direct push soil borings inside the garage.

Soil borings were completed inside the garage building using a direct push rig and advanced to an average depth of six to eight ft bgs (refusal). The samples were then screened with a flame-ionization detector (FID) to evaluate the presence of VOCs. Field screening did not reveal the presence of VOCs in soils beneath the garage, so no samples were submitted for laboratory analysis.

To evaluate groundwater quality beneath the on-site garage building, a 1-inch diameter PVC, direct push well with a pre-packed screen was installed to a total depth of 8 ft bgs. Additionally, monitoring wells MW-7G, MW-8G and MW-13G were sampled for VOCs by EPA Method 8021. To confirm the prior detection of bis(2-ethylhexyl)phthalate, MW-8G was also sampled for SVOCs by EPA Method 8270.

Groundwater sampling revealed the presence of 1,1-DCA, 1,1-DCE, and MTBE at concentrations in excess of the 2L Standards. Bis(2-ethylhexyl)phthalate was not detected above the laboratory reporting limits of 10 µg/L in MW-8G. Information concerning this investigation is included in the CSA Report in Appendix C.

5.5 Supplemental Well Installation (January 2003)

To complete horizontal delineation of the solvent impacts detected in MW-13G, TBE returned to the site on January 14, 2003 to install monitoring wells MW-14G and MW-15G on the adjacent former residence (210 South Hoover Rd [to the east]). MW-14G and MW-15G were both installed to a total depth 30 ft bgs. On January 15, 2003, groundwater samples were collected from the newly installed wells and several existing wells and analyzed for VOCs via EPA Method 8021. Groundwater collected from MW-6G contained benzene, 1,1-DCA, 1,2-DCA,

1,1-DCE, and 1,2-DCP at concentrations in excess of the 2L Standards. No other constituents were detected in excess of the 2L Standards. Based on the results, horizontal delineation of solvent and petroleum impacts had been achieved. Information concerning this investigation is included in the CSA Report in Appendix C.

5.6 Supplemental Assessment (February 2005)

In order to update the existing assessment data and evaluate natural attenuation parameters at the site, TBE collected additional groundwater samples. On February 23, 2005, monitoring wells MW-6G and MW-13G were sampled for VOCs via EPA Method 8260 and for select natural attenuation parameters (Nitrate, Nitrite, Sulfate, Ethane, Ethene, Ferrous Iron, Sulfide and Total Organic Carbon).

Benzene, 1,1-DCE, naphthalene, and 1,2,4-trimethylbenzene (1,2,4-TMB), were detected in excess of the 2L Standards in monitoring wells MW-6G and MW-13G (TBE 2006). Dissolved oxygen (DO) concentrations ranged from 0.0864 mg/L to 0.295 mg/L. Nitrate was not detected above the detection limit of 0.1 mg/L. Sulfate concentrations ranged from less than 20 mg/L to 25 mg/L. Sulfide concentrations ranged from 0.083 mg/L to 0.13 mg/L. Ferrous iron concentration ranged from 0.670 mg/L to 1.1 mg/L. Total Organic Carbon (TOC) readings ranged from 14 mg/L to 24 mg/L. Ethene and ethane were not detected at concentrations above the laboratory detection limit (10 µg/L) during the investigation. A copy of the Supplemental Assessment, ORC Injection Summary and Post-Injection Sampling Report is included in Appendix C.

5.7 Oxygen Release Compound (ORC) Injection (May 2005)

TBE personnel mobilized to the site on May 10, 2005, to direct the injection of 500 pounds of Oxygen Release Compound (ORC) into the subsurface in the impacted area along the south side of the parts storage building. Between May 10th and 11th, 2005, a total of 500 lbs of ORC was injected on a grid consisting of 34 injection points at approximately 7.5 foot centers. A 50

percent (%) water/ORC mixture was injected through the DPT rods at an average rate of 3 gallons per foot. Injection depths were dependant on depth of refusal, and generally averaged from 5 to 8.5 ft bgs. A copy of the Supplemental Assessment, ORC Injection Summary and Post-Injection Sampling Report is included in Appendix C.

5.8 Post Injection Groundwater Monitoring (August 2005)

In order to evaluate the effectiveness of the ORC injection and remaining contaminant concentrations in on-site monitoring wells, MW-6G, MW-11G, MW-12G, MW-13G, MW-14G, MW-15G and Micro-1 were sampled for VOCs on August 11th and 12th, 2005. Benzene, 1,1-DCE, naphthalene, and 1,2,4-TMB remained at concentrations in excess of their respective 2L Standards in MW-6G and MW-13G. However, results of the August 2005 post-injection sampling indicate that the concentrations of all petroleum related constituents were reduced by more than 50% by the injection of ORC. A copy of the Supplemental Assessment, ORC Injection Summary and Post-Injection Sampling Report is included in Appendix C.

5.9 Additional Groundwater Sampling (August 2008)

In order to determine if an additional groundwater injection event using Hydrogen Release Compound (HRC) to reduce solvent concentrations should be implemented, PSNC requested a new round of baseline sampling. TBE conducted groundwater sampling at seven on site wells. On August 4, 2008, monitoring wells MW-6G, MW-11G, MW-12G, MW-13G, MW-14G, MW-15G, and Micro-1 were sampled for VOCs via EPA Method 8260.

Benzene (13 µg/L) and 1,1-DCE (8.6 µg/L) were detected in excess of the 2L Standards in MW-6G. 1,1-DCE (9.1 µg/L) was detected in excess of the 2L Standard in MW-13G. No other constituents were detected in excess of the 2L Standards during the groundwater sampling event. HRC was never injected at the Site. A copy of the August 2008 Groundwater Sampling Event Summary Report is included in Appendix C.

5.10 Conclusions from Previous Work

Historic site investigations indicate that impacts remain in soil and groundwater on-site. A summary of soil and groundwater findings are included below.

5.10.1 Soil

Areas of potential environmental concern identified in the Phase I ESA were investigated by TBE in subsequent Phase II investigations. Over 30 Soil Borings have been advanced at the Site since the initial investigation in November 2000. Soil samples were screened for volatile chemicals at multiple depth intervals using an OVA. Select soil samples were submitted for laboratory analysis of TPH (GRO/DRO), Oil and Grease, and SVOCs. Soil sample HA-1 collected from beneath the Parts Storage Building contained benzo(a)anthracene and benzo(a)pyrene at concentrations slightly above the IHSB Soil Remediation Goals (SRGs). The only identified soil impacts are beneath the garage structure; therefore, there is little risk of human contact. Soils were not detected in excess of the SRGs in the other areas of potential environmental concern investigated during Phase II investigations conducted by TBE. Historic soil data are included in Appendix C.

5.10.2 Groundwater

Residual dissolved-phase groundwater impacts remain at several Site monitoring wells. Historic data indicate that 1,1-DCE slightly exceeds the 2L Standard at monitoring well MW-6G and at MW-13G (well destroyed). Benzene also slightly exceeds the 2L Standard at MW-6G. A Shallow Groundwater Contaminant Concentration map is included as Figure 4. Shallow dissolved-phase VOC impacts have been horizontally delineated.

6.0 Project Objectives

In accordance with the REC Program rules and regulations, the objectives of the RI are to identify releases of hazardous substances to the environment, identify potential exposure pathways, characterize the nature of such releases and collect sufficient sampling data to support a cleanup-level determination, delineate the areal and vertical extent of contamination, and to characterize Site conditions sufficiently to conduct a feasibility study of remedial alternatives and to support a proposed remedy.

During previous investigations, soil has been sampled and analyzed for TPH (DRO/GRO), Oil and Grease, and SVOCs. Groundwater at the Site has been analyzed for VOCs and SVOCs. Assessment activities completed at the Site have not included soil and/or groundwater analysis of pesticides, dioxins, cyanide, and/or formaldehyde as these compounds/constituents have never been utilized as part of the Facility operations and subsequently have never been known to be present on the Site. In accordance with applicable REC sampling requirements, since historical operations and chemicals storage information indicate that these constituents were not used at the Site, their evaluation is not necessary.

The objective of the RI is to fill in the existing data gap by completing vertical delineation of VOCs in groundwater. H&H will perform RI activities in accordance with applicable REC guidelines. The scope of work included in Section 7 of this Work Plan describes: monitoring well installation, the collection of groundwater samples, and a vapor intrusion screening evaluation. Adherence to these field procedures will aid sample representativeness and minimize the potential for sample contamination. A Quality Assurance/ Quality Control (QA/QC) program (Section 8) will be implemented to meet the above objectives. Sample collection data quality will be controlled through the use of standard collection methods and field logbooks.

Field activities will be performed in accordance with the Site-specific HASP, as presented in Appendix G. It is assumed that the RI activities can be completed with Occupational Safety and Health Administration (OSHA) Level D personal protection equipment (PPE). Prior to

mobilization to the Site, H&H will perform pre-work notifications, acquire off-site access agreements, and obtain monitoring well permits for off-site monitoring wells. In addition, H&H will coordinate with North Carolina One Call to mark public underground utilities in the vicinity of the work area. H&H will retain the services of a geophysical contractor to identify and mark all private underground utilities in the vicinity of the work area.

7.0 Field Sampling Plan

7.1 Groundwater Sampling

Samples have not been collected from on Site groundwater monitoring wells in almost four years. To gain an accurate view of current groundwater conditions, samples will be collected from Site monitoring wells MW-6G, MW-7G, MW-12G, MW-14G, MW-15G, and Micro-1. These monitoring wells have at some point yielded samples with detectable concentrations of contaminants. Other existing site monitoring wells will not be sampled because they have never had detectable concentrations of contaminants. Monitoring wells will be sampled via the low flow/low stress sampling method using a peristaltic pump.

Groundwater will be pumped at a flow rate that minimizes water-level drawdown (likely between 100 ml/min and 400 ml/min). H&H field personnel will monitor stabilization parameters while pumping groundwater at a low flow rate. Stabilization is considered to be achieved when three consecutive readings, taken at three to five minute intervals, are within the following limits:

- Turbidity ($\pm 10\%$, less than 10 Nephelometric Turbidity Units [NTUs])
- DO (± 0.3 milligrams per liter [mg/L])
- Specific conductance ($\pm 3\%$)
- pH (± 0.1 Standard Unit [SU])
- ORP (± 10 millivolt [mV])
- Temperature ($\pm 3\%$)

Measurements, excluding turbidity, will be obtained using a water quality meter equipped with an in-line flow-through cell. Once parameter stabilization has been achieved, groundwater samples will be collected directly into laboratory-supplied containers and submitted for the analysis of VOCs + 10 Tentatively Identified Compounds (TICs) by EPA Method 8260B. H&H will utilize the soda straw method in order to collect VOC samples that are undisturbed by the squeezing action of the peristaltic pump head. See Table 1 for the detailed groundwater sampling and analysis plan.

7.2 Delineation of Groundwater Impacts

7.2.1 Well Installation

Monitoring well MW-13G has been destroyed since the last groundwater sampling event in August 2008. Since this well contained 1,1-DCE at a concentration in excess of the 2L Standard, a monitoring well will be installed in its place. Additionally, the vertical extent of contamination has not been delineated; therefore, at least one deep Type III well will be installed immediately downgradient of the area with the highest groundwater impacts, west of existing shallow well MW-6G. H&H will oversee a North Carolina-licensed driller during installation of monitoring wells at the locations depicted in Figure 5.

The Type II groundwater monitoring well (MW-13GR) will be installed at the former location of MW-13G using hollow stem auger (HSA) and/or air rotary drilling techniques. It is anticipated that MW-13GR will be installed to approximately 30 ft bgs with 15-ft of slotted screen to match the specifications of destroyed monitoring well MW-13G. If HSA drilling encounters drilling refusal prior to reaching the water table, an air rotary drill rig will be mobilized to the Site and utilized to continue borehole advancement.

The deep Type III groundwater monitoring well (DW-01G) will be installed using a combination of HSA and air rotary techniques. The proposed deep well will be installed to monitor the deeper consolidated aquifer. An outer casing will be set at approximately 30 ft bgs and grouted in place. After allowing the outer casing to cure for a minimum of 24-hours, the vertical delineation well will be installed to a depth of approximately 60 ft bgs with 10-ft of slotted screen.

During HSA drilling, soil samples will be collected at 5-ft intervals using a 24-inch long steel barrel split spoon sampler to observe and characterize subsurface lithology and select the appropriate well screen depth interval. The monitoring wells will be constructed using 2-inch diameter flush threaded polyvinyl chloride (PVC) riser pipe and 0.010-inch slot PVC well screen.

Each screen section will be 10 to 15 ft in length. A sand pack will be installed within the annular space between the well and the borehole from the base of the screen to approximately 2 ft above the screened interval. A 2-ft thick bentonite seal will be placed above the sand pack and the remaining annular space will be tremie grouted to the ground surface using cement grout. The monitoring wells will be completed at the surface with a flush-mount well vault with expansion cap and lock. Well construction will be completed in accordance with 15A NCAC 02C.0108 Well Construction Standards.

7.2.2 Well Development

Following installation, the new wells will be developed using a combination of surging/pumping development techniques to ensure samples representative of undisturbed aquifer conditions are collected. Monitoring wells will be developed with dedicated tubing, footvalves, and surge blocks. Groundwater will be purged until the following parameters have stabilized: temperature, dissolved oxygen (DO), turbidity, specific conductivity, oxidation-reduction potential (ORP), and pH. Stabilization criteria are as follows:

- Turbidity ($\pm 10\%$, less than 10 NTUs)
- DO (± 0.3 mg/L)
- Specific conductance ($\pm 3\%$)
- pH (± 0.1 SU)
- ORP (± 10 mV)
- Temperature ($\pm 3\%$)

Note that a turbidity level below 10 NTUs may be unattainable. If so, development will be continued until it is evident that further improvement is unobtainable. Development water and drill cuttings generated during the well installation process will be contained on-site in labeled, DOT-approved, 55-gallon steel drums for proper disposal at a permitted facility.

7.2.3 Well Sampling

Following additional monitoring well installation and development activities, groundwater samples will be collected from the new wells in accordance with the methods outlined in Section 7.1.

7.3 Vapor Intrusion Screening Evaluation

Currently, no on-site contaminants exceed the Acceptable Groundwater Concentration (C_{gw}) in the IHSB Industrial/Commercial Vapor Intrusion Screening Table. The screening evaluation will be updated after additional groundwater data are received. Groundwater concentrations at the Site do not currently warrant the collection of soil gas samples.

7.4 Decontamination

Prior to advancing down-hole drilling tools into the subsurface, equipment will be adequately decontaminated by the following procedures. Hollow stem augers, drill rods, split spoon samplers, and air hammers will be steam cleaned with a hot-water, pressure washer. Additionally, after pressure washing, split spoon samplers will be scrubbed with a brush in a liquinox solution.

As described above in Section 7.3, monitoring wells will be developed with dedicated tubing, footvalves and surge blocks; decontamination of well-development equipment will not be necessary.

A water-level indicator will be used to gauge wells for groundwater elevation and to evaluate effectiveness of low-flow sampling. After each use, the indicator will be washed with a liquinox solution, and rinsed with deionized water.

All equipment used onsite will be decontaminated prior to demobilization from the site to ensure protection of the public.

7.5 Investigative Derived Waste

Investigative Derived Waste (IDW) generated during the RI activities, including soil cuttings and purge and decontamination water will be contained in appropriately labeled, 55-gallon, DOT-approved, steel drums. IDW will be separated based on aqueous and solid media.

Following waste classification, the drums will be transported offsite by a North Carolina-licensed treatment/disposal contractor to an approved permitted facility. IDW under appropriate manifest will be transported offsite within sixty (60) days after waste generation.

7.6 Site Survey

Following field activities, H&H will retain a licensed North Carolina land surveyor to survey new monitoring well locations. The survey points will be tied into existing survey information for the Site. The survey will record top of casing (TOC) elevations for the new monitoring wells.

7.7 Community Health & Safety Plan

The field activities will be conducted in a manner that is protective of the public. All activities will be conducted in accordance with the Site Specific Health & Safety Plan included as Appendix G. An exclusion zone will be established which will restrict onsite workers from entering the work area. Routine air quality monitoring will be conducted and any potential storm water runoff or dust will be controlled. All equipment including drill rigs will be decontaminated prior to egress from the Site.

8.0 QA/QC Program

To ensure data quality objectives of all field programs, H&H will include QA/QC sampling during all investigation activities. Field quality control requirements and procedures are discussed below.

8.1 Trip Blanks

Trip blanks will accompany sampling teams during sample collection activities and will travel with samples during shipment of each cooler of VOC water samples sent to the laboratory. One trip blank will accompany groundwater VOC samples per day of sampling.

8.2 Equipment Blanks

One equipment blank will be collected per every 20 samples collected during field sampling for each media. The equipment blank will be analyzed for VOCs.

8.3 Duplicates

One duplicate soil and one duplicate groundwater sample will be collected per every 20 samples collected during field sampling for each respective media. The field duplicates will be analyzed for a select set of analytes including VOCs.

8.4 Matrix Spike/ Matrix Spike Duplicates

One Matrix Spike/Matrix Spike Duplicate (MS/MSD) sample will be collected and reported per every 20 samples collected for each respective media.

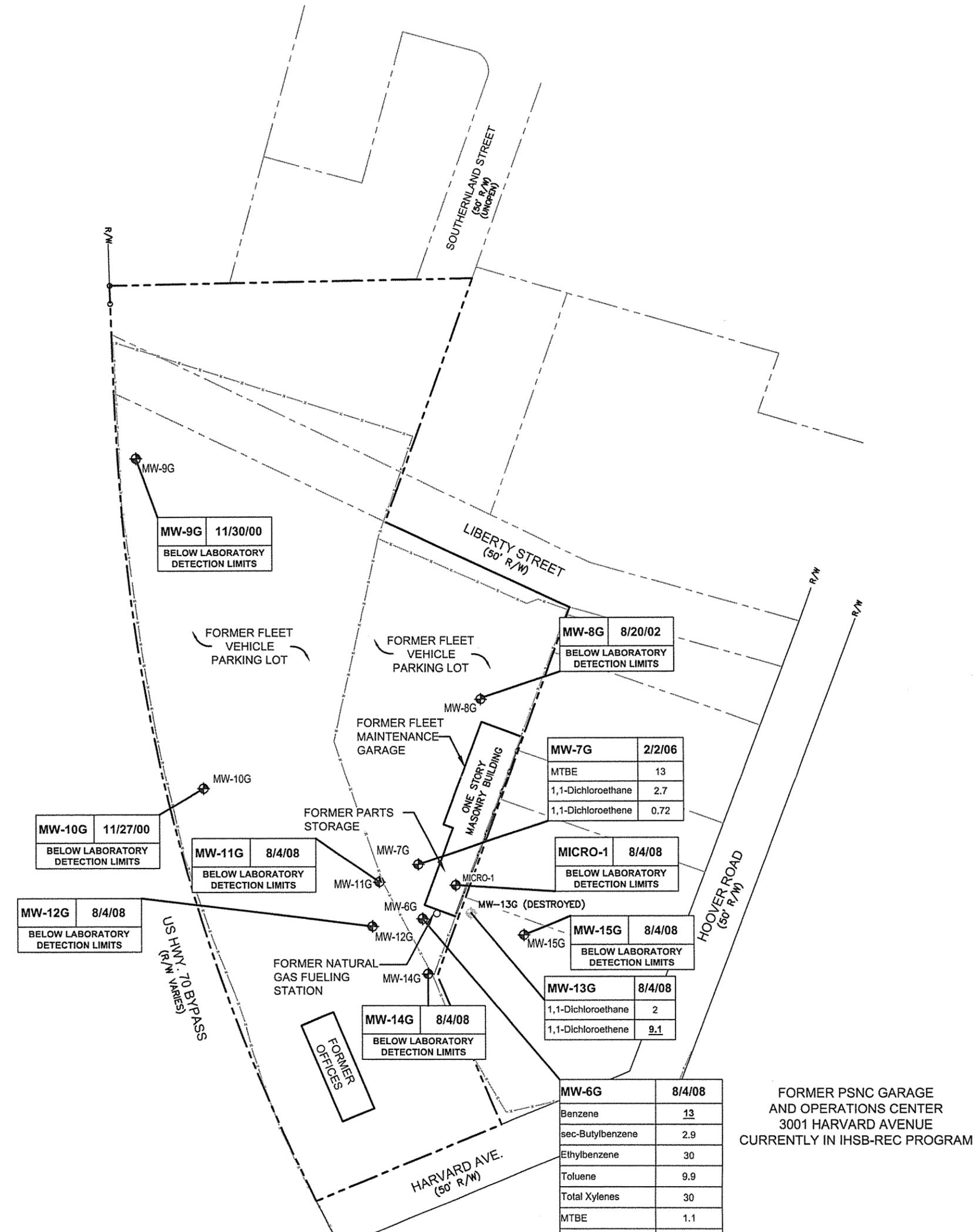
9.0 Reporting

At the conclusion of the RI sampling a report will be prepared in accordance with REC Program Guidelines. The RI report will include a discussion of the methods and results of the RI soil and groundwater analyses, field observations including boring logs, and graphic representations that may include cross-sections and constituent isopleths. The RI Report is intended to support the site clean-up level determination and the feasibility study of potential remedial alternatives and remedy selection. Based upon the results of the RI, a Remedial Action Plan will be prepared.

10.0 Certification Statements

The required document certification statements for both the Remediating Party and the Registered Site Manager are included in Appendix H.

S:\VAA-Master Projects\Scana (SCA)\SCA-003 - Durham REC Sites\3001 Harvard Ave\B1 Workplan\Figures\FIGURE 2.dwg, Contaminants, 4/13/2011 11:13:53 AM.



MW-10G	11/27/00
BELOW LABORATORY DETECTION LIMITS	

MW-11G	8/4/08
BELOW LABORATORY DETECTION LIMITS	

MW-12G	8/4/08
BELOW LABORATORY DETECTION LIMITS	

MW-14G	8/4/08
BELOW LABORATORY DETECTION LIMITS	

MW-8G	8/20/02
BELOW LABORATORY DETECTION LIMITS	

MW-7G	2/2/06
MTBE	13
1,1-Dichloroethane	2.7
1,1-Dichloroethane	0.72

MICRO-1	8/4/08
BELOW LABORATORY DETECTION LIMITS	

MW-15G	8/4/08
BELOW LABORATORY DETECTION LIMITS	

MW-13G	8/4/08
1,1-Dichloroethane	2
1,1-Dichloroethane	<u>9.1</u>

MW-6G	8/4/08
Benzene	13
sec-Butylbenzene	2.9
Ethylbenzene	30
Toluene	9.9
Total Xylenes	30
MTBE	1.1
1,1-Dichloroethane	4.4
1,1-Dichloroethane	<u>8.6</u>
Isopropylbenzene	23

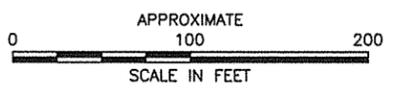
FORMER PSNC GARAGE AND OPERATIONS CENTER
3001 HARVARD AVENUE
CURRENTLY IN IHSB-REC PROGRAM

LEGEND

- SITE PROPERTY BOUNDARY
- PARCEL LINE
- x-x-x- FENCE LINE
- ⊕ MONITORING WELL LOCATION
- ⊙ DESTROYED MONITORING WELL

WELL ID	SAMPLE DATE
MW-13G	8/4/08
1,1-Dichloroethane	2
1,1-Dichloroethane	<u>9.1</u>
CONSTITUENT	CONCENTRATION

NOTE:
BOLD AND UNDERLINED EXCEEDS NCAC 2L GROUNDWATER STANDARD



TITLE SHALLOW GROUNDWATER CONTAMINANT CONCENTRATIONS	
PROJECT FORMER PSNC OPERATIONS AND GARAGE SITE 3001 HARVARD AVENUE DURHAM, NORTH CAROLINA	
 3334 Hillsborough Street Raleigh, North Carolina 27607 919-847-4241(p) 919-847-4261(f) License # C-1269 / #C-245 Geology	
DATE: 4-1-11	REVISION NO. 0
JOB NO. SCA-003	FIGURE NO. 4

ROBIN L. LEE, PLS-3759 CERTIFY THAT THIS MAP WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

CLASS OF SURVEY: AA
 POSITIONAL ACCURACY: 0.013 METERS HORIZONTAL & 0.039 METERS VERTICAL
 TYPE OF GPS FIELD PROCEDURE: RTK VRS
 DATES OF SURVEY: 2/28/2011
 DATUM/EPOCH: NAD 83/NSRS 2007
 PUBLISHED/FIXED CONTROL USE: FIXED CONTROL
 GEOID MODEL: GEOID 09
 COMBINED GRID FACTOR(S): 0.999940928
 UNITS: US SURVEY FEET
 TYPE AND MODEL OF GPS RECEIVER USED: TRIMBLE 5800

N/F DEPARTMENT OF TRANSPORTATION
 DB 4622, PG. 361
 PB 106, PG. 30
 PIN # 0841.09-05-8408

N/F LENZY R. BEASLEY AND WIFE,
 GONTHY W. BEASLEY
 DB 981, PG. 486
 PB 106, PG. 30
 PIN # 0841.09-05-8464

****FUTURE EAST END CONNECTOR PROJECT****

NC DOT PROJECT U-0071
 AT THE TIME OF THIS SURVEY THE PROPOSED NEW R/W FOR PROJECT U-0071 HAS NOT BEEN DETERMINED, BUT BASED ON THE CURRENT DESIGN FILE A PORTION OF THIS PROPERTY WILL BE AFFECTED.

CURVE	RADIUS	ARC LENGTH	TANGENT	CHORD	LENGTH	DELTA
CZ	1779.86	798.77	406.22	1119'14"36"W	792.08	25'42"48"

SPIRAL	RADIUS	LENGTH	THETA	A	TS	LS
SP1	1779.86	300.00	4'49"43"	730.72	100.07	200.07
SP2	-1779.86	300.00	4'49"43"	730.72	100.07	200.07

DESCRIPTION	NORTHING	EASTING	ELEVATION
MW14G	814682.04'	2041003.59'	402.73'
MW12G	814727.61'	2040950.18'	400.95'
MW7G	814787.13'	2040994.19'	402.87'
MICRO1	814787.24'	2041030.17'	403.24'
MW8G	814734.85'	2040998.20'	402.86'
MW8G	814848.04'	2041054.53'	402.09'
MW15G	814719.44'	2041095.47'	406.12'
MW10G	814859.58'	2040789.40'	394.79'
MW9G	815177.60'	2040726.26'	394.49'
MW11G	814770.22'	2040956.87'	401.37'
DMW01	814751.58'	2040957.73'	401.91'



I, ROBIN L. LEE, PLS L-3759
 CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION FROM INFORMATION SHOWN IN DEED BOOKS REFERENCED ON MAP AND MAP BOOKS REFERENCED ON MAP; THAT ANY LINES NOT ACTUALLY SURVEYED APPEAR AS BROKEN LINES AND WERE PLOTTED FROM INFORMATION AS NOTED ON THE PLAT; THAT THE RATIO OF PRECISION AS CALCULATED IS BETTER THAN 1:10,000; THAT THE AREA IS COMPUTED BY COORDINATE METHOD; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL THIS THE 5th DAY OF JULY, A.D., 2012.

ROBIN L. LEE
 PROFESSIONAL LAND SURVEYOR - L-3759

I, ROBIN L. LEE, PLS L-3759
 CERTIFY THAT THE SURVEY IS OF AN EXISTING PARCEL OR PARCELS OF LAND AND DOES NOT CREATE A NEW STREET OR CHANGE AN EXISTING STREET; AND THAT THE SURVEY IS OF AN EXISTING BUILDING OR OTHER STRUCTURE, OR NATURAL FEATURE, SUCH AS A WATERCOURSE, OR AN AS-BUILT.

DATE: 7-5-12

NORTH CAROLINA COUNTY
 THIS INSTRUMENT IS DULY RECORDED AND VERIFIED THIS DAY OF A.D. 2012, AT O'CLOCK IN MAP BOOK/SIDE CABINET PAGE/SIDE

REGISTER OF DEEDS

N.C. GRID (NAD 83) (NSRS 07)
 ELEV. = 409.12'

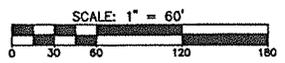
REFERENCES:
 1. DB 2977, PG. 225
 2. DB 5280, PG. 959
 3. PB 58, PG. 28
 4. PB 57, PG. 75
 5. PB 62, PG. 62
 6. PB 12, PG. 101
 7. PB 35, PG. 62
 8. DB 1209, PG. 874
 9. PB 9, PG. 73
 10. PB 11, PG. 70
 11. NC DOT STATE PROJ. # 4175
 12. UNRECORDED ALTA/ACSM SURVEY PREPARED BY MARTIN R. GILL OF AMERICAN SURVEY COMPANY OF TAMPA, INC. DATED AUGUST 15, 2000.
 13. NC DOT PROJ. # U-0071
 14. DB 326, PG. 475

STATEMENT OF ENCROACHMENTS
 (C) FENCE ENCOACHES INTO NC DOT RIGHT-OF-WAY.
 (B) BUILDING ENCOACHES INTO ZONING SETBACK LINE BY 18.15'.
 (A) FENCE ENCOACHES INTO ADJOINING PROPERTY.

NOTE:

- ALL DISTANCES SHOWN ARE HORIZONTAL GROUND DISTANCES IN U.S. SURVEY FEET. (UNLESS OTHERWISE STATED)
- NO NC GRID MONUMENT IS WITHIN 2000' OF SURVEYED TRACT.
- ALL BEARINGS ARE BASED ON THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM (NAD 1983/07).
- THIS SURVEY PERFORMED AND MAP PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT. THIS SURVEY IS SUBJECT TO ANY FACTS AND EASEMENTS WHICH MAY BE DISCLOSED BY A FULL AND ACCURATE TITLE SEARCH.
- THERE ARE NO BURIAL GROUNDS OR CEMETERIES VISIBLE.
- ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM.
- ELEVATIONS OF MONITORING WELLS WERE TAKEN ON TOP OF PVC CASINGS.
- THIS PROPERTY IS ZONED X; AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE AND FUTURE CONDITIONS 1% ANNUAL CHANCE FLOODPLAIN, ACCORDING TO FLOOD INSURANCE RATE MAP NUMBER 2720084100J WITH AN EFFECTIVE DATE OF MAY 2, 2006.

- LEGEND
- IRF IRON ROD FOUND
 - IRP IRON PIPE FOUND
 - IRS IRON ROD SET
 - MW MONITOR WELL
 - CONC CONCRETE
 - LINE NOT SURVEYED
 - RIGHT-OF-WAY
 - DEED BOOK
 - PG PAGE
 - PB PLAT BOOK
 - PP POWER POLE
 - YI YARD INLET
 - CMF CONCRETE MONUMENT FOUND
 - CP CUI POLE
 - WM WATER MANHOLE
 - SM SANITARY SEWER MANHOLE



MCKIM & CREED
 1730 Varsity Drive, Suite 500
 Raleigh, North Carolina 27606
 Phone: (919)233-8091, Fax: (919)233-8031
 F-1222
 Internet Site: <http://www.mckimcreed.com>

BOUNDARY AND MONITORING WELL UPDATE SURVEY
 OF
 SAMUEL ROBERTI, THOMAS W. UHRICH, R. DAVID WICKER, JR. AND DONNA MANSOUR PROPERTY
 FOR
PUBLIC SERVICE COMPANY OF NORTH CAROLINA
 DATE: 7-3-12 SCALE: 1" = 60'
 DURHAM TOWNSHIP DURHAM COUNTY NORTH CAROLINA

PROJECT # : 1315-0072
 PROJ. SVYR : RLL
 DRAWN BY : RLL
 FIELD BK. : R0822
 COMP. FILE : V8102-13150072.DWG
 SHEET # : 2 OF 2
 DWG. # : R.1.310.1026

Parcel 40 Incident Files

ENVIRONMENTAL SITE ASSESSMENT
for
211 South Hoover Road
Durham, North Carolina 27703

Prepared for

Lincoln Harris Company, LLC.
4201 Congress Street, Suite 175
Charlotte, North Carolina 28209

Prepared by

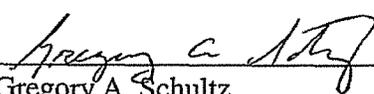


TBE GROUP, INC.
6000 Fairview Road, Suite 1200
Charlotte, NC 28210
(704) 552-3705

TBE Project No. 00326-014-00

July 2000

Signed by:


Gregory A. Schultz
Project Engineer

Signed by:


for Richard L. Hagberg, PG
Senior Project Manager

EXECUTIVE SUMMARY

TBE has completed a Phase I Environmental Site Assessment of 211 South Hoover Road. This site is developed with a Public Service Company of North Carolina (PSNC) warehouse and training facility, located between the south terminus of South Hoover Road and US Highway 70 in Durham, Durham County, North Carolina. The assessment was performed to satisfy the requirements of the Client and/or other interested parties with respect to potential environmental impairment and liabilities associated with the property due to contamination by hazardous substances or petroleum products on or near the site.

This assessment has revealed no recognized adverse environmental conditions at the subject property as defined by ASTM Standard Practice E1527-97, except for the following: (1) historical on-site vehicle repair operations, (2) hydraulic lift in former repair shop, (3) on-site staining and improper drum storage (4) historical and current USTs and (5) presence of asbestos-containing materials in the structure. Lead-based paint and lead in drinking water screening surveys performed at the subject property identified no lead concentrations above regulatory guidelines. Therefore, TBE recommends further assessment of the subject property.

The conclusions and recommendations contained herein are based on the data developed during the Phase I investigation. This report was prepared for Lincoln Harris Company (LHC), LLC. and is intended solely for their use. This report is not intended for third-party use without the expressed written consent of LHC and TBE. This report has been prepared in general accordance with accepted scientific practices, including the *ASTM E 1527-97 Standard Practice for Environmental Site Assessments*. No warranty, expressed or implied, is made.

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FIGURES

FIGURE 1	SITE LOCATION MAP
FIGURE 2	SITE VICINITY SKETCH

LIST OF APPENDICES

Appendix	Title
A	SITE PHOTOGRAPHS
B	LIMITED ASBESTOS SCREENING SURVEY
C	LIMITED LEAD-BASED PAINT SCREENING SURVEY
D	LIMITED LEAD IN DRINKING WATER SCREENING SURVEY
E	1995 AERIAL PHOTOGRAPH
F	AGENCY DATABASE SEARCH

SECTION 1.0 INTRODUCTION AND SCOPE OF INVESTIGATION

Past contamination of property by hazardous substances or petroleum products creates potential for liability with respect to remediation and possible civil and/or criminal penalties. TBE was retained by Lincoln Harris Company (LHC) to perform the Phase I portion of an Environmental Site Assessment (ESA).

A Phase I investigation includes a site inspection to assess the physical characteristics of the site and surrounding area, identifying visually observable evidence of contamination by hazardous substances or petroleum products. Also, limited historical data and regulatory records are reviewed to identify previous activities on or near the site that may have involved hazardous substances or petroleum products. This report is the result of a site visit observations and a Phase I records search only, and did not include an exhaustive review of publicly available information. The Phase I study was conducted to identify potential problem areas, and to determine the appropriate level of any subsequent studies, if required.

A Phase II ESA typically consists of a more intensive records search followed by site specific qualitative/quantitative sampling and analysis of air, soils, sediment and/or water (surface and/or groundwater), as appropriate. The sampling and analysis phase of the ESA can confirm the presence of contaminants and provide the data used to decide whether or not additional study or site remediation is necessary.

Lead-based paint, and lead-in-drinking water surveys were requested by LHC if on-site structures were built prior to 1976. Similarly, limited asbestos surveys were requested if on-site structures were built prior to 1982. As the on-site warehouse structure was built in 1959 and the attached training center built in 1975, limited asbestos, lead-based paint, and lead-in-drinking water screening surveys were performed on both portions of the structure. Due to the low potential for elevated indoor radon concentrations in Durham County, no radon screening survey was performed at this facility.

The site (herein referred to as "the property" or "the site") is located at 211 South Hoover Road, between the south terminus of South Hoover Road and US Highway 70 in Durham, Durham County, North Carolina. A site location map and site vicinity sketch are depicted in Figures 1 and 2, respectively.

SECTION 2.0 METHODOLOGY

Although not currently regulated by Federal, State or Local regulations, the standard approach and methods used in this Phase I investigation are generally consistent with commonly accepted industry standards and scientific practices including the ASTM E 1527-97 *Standard Practice for Environmental Site Assessments*. This approach to Phase I assessments incorporates an on-site visual observation, a historical review, agency reviews, and hydrogeological evaluation of the property and vicinity, and is outlined below.

2.1 SITE INSPECTION

A site inspection was conducted to identify the existing physical characteristics of the site and surrounding area and to verify that it is consistent with the data obtained through the historical evaluation and other data collection activities. During the site inspection, observations were made to identify conditions that may suggest the presence or absence of suspect areas where environmental contamination may have occurred. Such areas would generally include active or former refuse dump sites; unusual excavated or filled areas; areas of discolored soils and/or vegetative stress; discolored surface water; areas exhibiting unusual, noticeable odors; and the presence of unusual, discarded containers or other suspicious materials. Adjacent properties were also visually scanned for such evidence. At the request of LHC, radon, limited asbestos, lead-based paint and lead-in-drinking water screening surveys also were performed during the site inspection, where applicable.

2.2 HYDROGEOLOGICAL EVALUATION

To aid in predicting the potential migration and transport pathway of possible contaminants, a review of available data pertaining to the topography, geology, soils, and surface/subsurface hydrology of the area was conducted. If, during the site review, it is determined that adjacent properties have experienced contamination, the geologic analysis would aid in determining potential impact to the site caused by off-site migration of contaminants via shallow groundwater or surface flow onto the site. The sources reviewed for soil and geological data include the US Geological Survey (USGS), Southeast Durham Quadrangle 7.5-minute series topographic map, hydrogeological and soils information provided by Environmental Data Resources (EDR), and Contamination Assessment Reports (CARs) for sites in the immediate vicinity.

2.3 HISTORICAL EVALUATION

A historical evaluation was performed for the site to determine its prior usage. This included a review of its ownership and use, and the identification of any previous waste disposal activities on or near the site. Historical aerial photographs and maps were examined for visual evidence of past activities on or near the site that may have potential to adversely affect the site. In addition, interviews were performed (when possible) and historical City Directories and Sanborn Fire Insurance maps provided by EDR were reviewed. This limited review identified changes in site usage and was corroborated with information gained from aerial photographic interpretation. In addition, limited historical title information provided by LHC was reviewed.

2.4 AGENCY REVIEWS

Federal agency checks included a review of the National Priority List (NPL) of known, uncontrolled or abandoned hazardous waste sites identified for priority remedial action; the Federal Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) listing of known, suspected or potentially contaminated sites; the Resource Conservation and Recovery Act (RCRA) listing of Treatment, Storage and Disposal (TSD) facilities and other generators engaged in the generation of hazardous wastes; and the Emergency Response Notification System (ERNS) listing of actions taken for releases of hazardous substances or petroleum products. These lists, compiled and maintained by the Environmental Protection Agency (EPA) were reviewed to identify any such sites or areas on or near the property in order to assess the potential impact to the project due to possible migration of contaminants.

State agency checks included a review of the State Superfund/Cleanup Sites, State CERCLIS Equivalent Sites, State landfill/solid waste sites; leaking UST's; and registered UST's. These lists are all maintained by the North Carolina Department of Environment and Natural Resources (DENR). In addition to the standard ASTM databases, supplemental databases as described below also were searched. All database searches were conducted by EDR using the following search radii:

EPA Databases

NPL/Superfund Sites
CERCLIS Sites
RCRA CORRACTS TSD Facilities
RCRA non-CORRACTS TSD Facilities
RCRA Generators
ERNS Hazardous Spills

Search Radius Used

1-Mile Search Radius
1/2-Mile Search Radius
1-Mile Search Radius
1/2-Mile Search Radius
Adjacent Property (600' radius)
Site Search Only

State Databases

State Superfund/Cleanup Sites	1-Mile Search Radius
State CERCLIS Equivalent	1/2-Mile Search Radius
State Landfill/Solid Waste Sites	1/2-Mile Search Radius
Leaking USTs	1/2-Mile Search Radius
Registered USTs	Adjacent Property (600' radius)

Supplemental Databases

Superfund Consent Decrees (CONSENT)	1-Mile Search Radius
NPL Records of Decision (RODS)	1-Mile Search Radius
Facility Index System (FINDS)	Site Search Only
Hazardous Material Information Reporting System	Site Search Only
Material Licensing Tracking System (MLTS)	Site Search Only
Master Mines Index (MINES)	1/4-Mile Search Radius
Superfund Liens (NPL Liens)	Site Search Only
PCB Activity Database System (PADS)	Site Search Only
RCRA Administrative Action Tracking (RAATS)	Site Search Only
Toxic Chemical Release Inventory System (TRIS)	Site Search Only
Toxic Substance Control Act (TSCA)	Site Search Only
NC Hazardous Substance Disposal Site (HSDS)	1-Mile Search Radius
Incident Management Database (IMD)	Site Search Only
Former Coal Gasification Sites (Coal Gas)	1-Mile Search Radius

When deemed necessary to provided additional information, Federal, State and/or County agency files of suspect sites were also reviewed.

SECTION 3.0 RESULTS

3.1 SITE INSPECTION

A site inspection was conducted on June 07, 2000, to identify and characterize the existing physical parameters of the site, including its current usage, topography, ground cover, soils, and surface hydrology. Efforts were made to detect and identify obvious conditions that could indicate the presence of contamination by hazardous substances or petroleum products. The site inspection revealed the following specific information (see Figure 2, Site Location Map; Appendix A, Site Photographs):

- The site, located at 211 South Hoover Road, is irregularly shaped and contains approximately 5.69 acres of land. It should be noted that the address provided at the start of the project (210 South Hoover Road) corresponds to an adjacent residence owned by PSNC. Appraisal and survey information indicated that the 211 South Hoover Road location is correct. The site is bounded by the Seaboard Coast Line Railroad (to the east), right-of-way for US Highway 70 (to the south), South Hoover Road and Harvard Avenue (to the west), and a commercial property (to the north). South Hoover Road terminates along the middle of the west property line and Harvard Avenue extends approximately 250 feet southwest from the terminus to the right-of-way of US Highway 70. The site located in an area of Durham developed with commercial, industrial and residential properties.
- The subject property currently is developed with an approximately 12,760 square foot building containing a warehouse and training center. Appraisal information provided by PSNC indicates the warehouse portion of the structure was built in 1959, with the training center portion added in 1975. In addition, a 1,215 square foot metal storage warehouse (located on the north portion of the site) was built in 1988. An asphalt-paved parking area is located on the north and east sides of the warehouse/training center building (main structure). A gravel lot is located between the main structure and the metal storage building. The portion of the site located between the metal storage building and the north property line is wooded.
- The subject site and adjacent PSNC properties to the west are enclosed with a perimeter chain-link fence topped with barbed wire. A keypad activated entrance gate is located across South Hoover Road, immediately prior to its terminus. Harvard Avenue effectively is contained within the fenced compound of the subject and adjacent PSNC properties. Vehicular access to the site is available from South Hoover Road. No other vehicular access is available to the site.

- No curbs, gutters and stormwater collection inlets were observed along adjacent roadways. The site is not expected to receive run-off from adjacent properties or roadways. No stormwater collection drop-inlets, on-site stormwater retention basins or surface water features were observed on the subject property.
- A Driver's License office and Water World watercraft are located on the adjacent properties to the southwest of US Highway 70. The adjacent properties to the northwest also are owned by PSNC. The adjacent PSNC facility includes an office and vehicle repair garage located at 3001 Harvard Avenue. In addition, a residence located at 210 South Hoover Road also is owned by PSNC. Based on the appraisal and survey provided by PSNC, these properties are defined as adjacent sites for the purpose of this assessment. A Christian Academy occupies an adjacent property to the north-northwest, across South Hoover Road. A commercial property with no obvious signs also occupies an adjacent property to the north-northwest. Two trucks parked at this property had Larson Electric painted on their doors. The adjacent property to the north-northeast is occupied by a shopping center anchored by a Food Lion grocery store. A commercial/light industrial property with no obvious signs occupies the property adjacent to the south portion of the east property line. The remainder of the property adjacent to the east property line is undeveloped.
- Mr. Johnny Whitted (warehouse supervisor) indicated that the site is connected to municipal water, and that the facility has a septic system. The use of septic systems on the subject and nearby properties increases the potential concerns associated with chemical use. Materials entering drains or shop sinks would likely impact soil and groundwater via the septic system drain field rather than entering the municipal sewer.
- A locked monitoring well apparently associated with the on-site USTs was observed adjacent to the southeast corner of the tank pad. Two other monitoring wells were described in files reviewed for the site, but were not located during the site inspection. No other on-site wells were observed or reported during the inspection.
- Mr. James English, the PSNC site contact stated that the facility did not have an emergency generator nor did it historically have a petroleum-fired boiler. He indicated that the facility currently has one 6,000 gallon and two 15,000 gallon UST located adjacent to the southwest corner of the main structure. He indicated that the smaller UST formerly contained diesel while the two larger USTs contained unleaded gasoline. The USTs are no longer in use and were reported to be empty at the time of the site visit. Four pumps were observed at the location of the USTs. Mr. English and Mr. Whitted indicated that the current USTs were installed in 1990 and replaced three USTs removed from the same approximate location. Contamination was encountered during the UST removals and is discussed further in Section 3.4.
- No activities requiring significant chemical use were observed. However, two stand-mounted 55-gallon drums were observed adjacent to the south side of the warehouse. One drum was labeled mineral spirits and the other had no labels. The drums were in fair condition with surface rust only. Although the drum stands were on a concrete pad, the spigots extended

over the gravel lot and a soil staining was observed. Mr. Whitted indicated that that one drum contained paint thinner used in cleanup associated with the painting of gas meters and stations. He stated that the other drum contained cutting oil used to thread pipe sections. In addition to the stand-mounted drums approximately ten 55-gallon drums were observed resting on bare ground along the property line to the southeast of the main building. The majority of labels were missing or illegible. However, drums labeled new oil, and heat transfer fluid (primarily ethylene glycol) were noted. Minor staining and stressed vegetation was observed in this area.

- An approximately 14 foot by 8 foot area of stained soil was observed beneath a parked truck adjacent to the southeast corner of the concrete UST pad. Mr. Whitted indicated that the staining was from a previously parked backhoe and trucks at that spot. An area of oily stained soil also was observed along the fence line near the northeast corner of the training center. The stained area was approximately 6 feet by 2 feet. Based on review of the most recent available survey (1990), this area appears to be located within the adjacent railroad right-of-way. No other staining, odors or stressed vegetation was noted on the site.
- Historical waste generation at the facility is expected to have included petroleum products and solvents associated with the vehicle repair shop formerly located in the metal storage building. Mr. Whitted indicated that the repair shop was in use for approximately 10 years. A former apparent hydraulic lift was noted in the former repair shop.
- No spent mercury-containing light bulbs or light ballasts were observed at the facility.
- A pole-mounted transformer was observed between the main building and the metal storage building. The transformer was in good condition, with no signs of corrosion, damage, leakage or surface staining. No obvious labels concerning PCB content were observed.

3.1.1 Radon Screening Survey

Due to the low potential for elevated indoor radon concentrations in Durham County, no radon screening survey was performed at this facility.

3.1.2 Asbestos Screening Survey

LHC requested that limited asbestos screening surveys be performed on all structures built prior to 1982. Because the main on-site structure was built in 1959 and added to in 1975, a limited screening for the presence of asbestos containing materials was conducted by TBE. As the metal storage building was built in 1988, no asbestos survey was performed on this structure. The number of

samples collected was contingent upon the size of the building and presence of potentially asbestos-containing materials (PACMs). The goal was to identify and sample those materials which, if asbestos containing, would represent a significant impact on the value of the building.

A total of ten bulk samples were collected and one sample was found to contain asbestos in an amount greater than one (1) percent. The asbestos-containing materials (ACM) detected consisted of non-friable spray-on fire proofing material. The screening does not constitute a renovation or demolition survey as defined under the EPA NESHAP's regulation. If the ACM is to remain in place, TBE recommends that an Asbestos Operations and Maintenance Program (O&M) be developed to manage and maintain the identified ACM in good condition. If renovation or demolition of the structure is planned, a comprehensive asbestos renovation/demolition survey should be prepared. Methodology, limitations, and results of the screening are found in Appendix B.

3.1.3 Lead-Based Paint Screening Survey

The presence of lead-based paint was investigated at the request of LHC, if the building was originally built in 1975 or earlier. Because the main on-site structure was built in 1959 and added to in 1975, a limited screening for the presence of lead-based paint was conducted by TBE. As the metal storage building was built in 1988, no lead-based paint survey was performed on this structure. The number of samples collected was contingent upon the size of the building and presence of painted surfaces. The goal was to identify and sample those materials which, if lead-based paint containing, would represent a significant impact on the value of the building. A total of eight samples were collected of which none contained lead in excess of the regulatory limit of 0.5% by weight. Methodology, limitations, and results of the screening are found in Appendix C.

3.1.4 Lead In Drinking Water Screening Survey

The sampling and analytical determination of lead content in drinking water was requested by LHC if the structure was originally built in 1975 or earlier. Since the main on-site structure was built in 1959 and added to in 1975, a limited screening for the presence of lead in drinking water was conducted by TBE. As the metal storage building was built in 1988, no lead in drinking water survey was performed on this structure. Based on the size of the structure and the number of potable

water discharge points (i.e. sinks, water fountains, etc.), a total of two samples were collected and shipped to Environmental Conservation Laboratories (ENCO) for lead analysis. No samples were found to contain lead concentrations in excess of the Federal Primary Drinking Water Standard of 15 µg/l. Methodology, limitations, and results of the screening are found in Appendix D.

3.2 HYDROGEOLOGICAL EVALUATION

Hydrogeological resources were examined to identify the probable direction of surface water and shallow groundwater flow at the site. The USGS Southeast Durham, North Carolina, 7.5-minute series topographic map produced in 1993 was reviewed. The topographic map indicates the site is located at an approximate elevation of 400 feet above mean sea level. This map indicates topographic conditions and contours from which the general direction of surface water flow can be inferred to be toward the west. The USGS Quadrangle map is shown as the site location map in Figure 1.

Structures consistent with those observed during the site visit are depicted on the subject and adjacent properties to the north and east. The adjacent properties to the west and northwest are located in an area that is tinted to indicate an urban zone where only landmark buildings are depicted. No structures are depicted on these properties. The current surrounding street pattern is depicted on the map. The nearest surface water features are an unnamed creek located approximately 1,000 feet to the east, and an unnamed creek located approximately 1,700 feet to the west.

The topography in the vicinity of the site is hilly, with ridges, spurs and draws in the vicinity of the site. Land surface in the immediate vicinity slopes generally downward to the west in the immediate vicinity.

The direction of shallow groundwater flow often reflects the overlying topography, flowing from elevated areas toward low areas and surface waters (i.e.: ponds, streams, and lakes). This data, although not conclusive, would suggest groundwater may flow away from the site in a west direction toward the nearby unnamed creek. The creek identified to the east is located on the opposite side of a ridgeline, and is therefore not expected to influence groundwater flow at the site. Available

groundwater flow information in the regulatory file and in reports provided by PSNC indicates a groundwater flow direction to the west at the site. The depth to water was recorded at approximately 9 feet below land surface.

Examination of hydrogeological data provided by EDR and contained in regulatory files indicates that the site is located within the Chatham Group of the Triassic Basin. The rocks beneath the site consist of a tan, medium to coarse grained micaceous Arkosic sandstone and brown clayey sandstone interbedded with brown to dark gray sandstone and mudstone.

3.3 HISTORICAL EVALUATION

The following information was compiled as a result of the historical evaluation performed on the subject site and the surrounding properties.

3.3.1 Historical Aerial Photographs

Historical aerial photographs were reviewed at the Durham County Planning and GIS Departments in Durham. Historical aerial photographs from 1980, 1994, and 1999 were examined for visual evidence of past activities on or near the site that may have the potential to adversely affect the site. The scale of the photographs, while sufficient to describe general land use, inhibits discerning details of activities and specific land use. No aerial photographs for years prior to 1980 were readily available for the site. Older historical aerial photographs are believed to exist for the site, but were not obtainable within the timeframe of the project. Information obtained from the review is presented below with the date and scale of the photograph. A copy of the 1999 aerial photograph is included as Appendix E.

- **1980 (Scale 1" = 200')**

Subject Property:

- The subject property is developed with structures consistent with those observed during the site visit. The majority of the site appears disturbed apparently from vehicular traffic. Several large trucks and numerous cars can be seen at various locations on the property. A concrete pad is visible in the approximate current location of the on-site USTs. The pad appears smaller than that observed during the site visit. No other significant features were observed.

Surrounding Properties:

- The adjacent properties to the west, northwest, southwest, east, and southeast are developed with structures similar to those observed during the site visit. (see Section 3.1).
- The adjacent properties to the north-northwest appear residential.
- The current surrounding street pattern is visible.

- **1994 (Scale 1" = 67')**

Subject Property:

- Numerous apparent LP-gas cylinders occupy the majority of the area between the main structure and the metal repair shop. A large area of disturbed soil is visible in the current gravel parking lot along the south side of Harvard Avenue. Shadows visible along the southern edge indicate that this may be an eroded slope or area where soil has been removed, rather than an area of piled soil. Mr. Whitted indicated that a drainage system was installed in that general area and the slope graded to allow additional parking. A large concrete pad consistent with the tank pad observed during the site visit is visible adjacent to the southwest corner of the main structure. The current shopping center on the adjacent property to the north-northeast is visible. The structures on the adjacent properties to the north-northwest appear similar to those observed during the site visit. No other significant changes from the 1980 aerial photograph were noted.

Surrounding Properties:

- No significant changes from the 1980 aerial photograph were noted.

- **1999 (Scale 1" = 67')**

Subject Property:

- No significant changes from the 1994 aerial photograph were noted. Conditions appear similar to those observed during the site visit.

Surrounding Properties:

- No significant changes from the 1994 aerial photograph were noted.

3.3.2 Historical Directories

Historical City Directories were researched and an abstract of available directory information was provide by EDR, Inc. The directories for the study area were reviewed to help identify changes in land use based on the type of businesses that occupied the subject site and surrounding area. The type of business, such as automotive, dry cleaning, gasoline/service stations, etc. are indicative of the possible presence of hazardous substances or petroleum products. City directories were reviewed for the following years: 1961, 1966, 1971, 1976, 1981, 1985, 1990, and 1999. No city directories for years prior to 1961 were available. Information gathered from this review is presented below.

The subject property (211 South Hoover Road) did not appear in the city directories reviewed by EDR.

- 1961: No non-residential addresses were noted in the vicinity. The city directory coverage appears to terminate at 208 South Hoover Road.
- 1966: No significant changes from the previous directory listings were noted.
- 1971: No significant changes from the previous directory listings were noted.
- 1976: No significant changes from the previous directory listings were noted.
- 1981: No significant changes from the previous directory listings were noted.
- 1985: Burch Fencing is listed at 120 South Hoover Road (approximately 400 feet north-northwest of the site). No other significant changes from the previous directory listings were noted.
- 1990: Ed's Barber Shop/Jan's Hairstyling is listed at 202 South Hoover Road (adjacent property to the north-northwest). The United Food & Commercial Workers Local is listed at 208 South Hoover Road (adjacent property to the north-northwest). No other significant changes from the previous directory listings were noted.
- 1999: Al's Barber Shop, Communications Structures, Larson Electric, and Outdoor Lighting all are listed at 202 South Hoover Road. No other changes from the previous directory listings were noted.

Due to the lack of coverage along South Hoover Road for the majority of the time period, the city directory research did not provide substantial useful information. No on-site or nearby properties of concern were listed.

3.3.3 Sanborn Fire Insurance Maps

Sanborn Fire Insurance Maps have been produced since the late 1800's to provide information relative to fire hazards on insurable property. These maps often indicate locations of underground and aboveground gasoline tanks, storage facilities for flammable chemicals, such as dry cleaners, paint shops, maintenance and garage facilities, as well as historical information on occupants of buildings, unavailable through other sources.

EDR owns the Sanborn Fire Insurance Company and has complete access to the entire archive of historical maps. EDR conducted a search of its archive and indicated that the site is located in an area where Sanborn Fire Insurance Maps were not produced. Therefore, no review was possible.

3.3.4 Historical Title Information

Historical property title information, as provided by LHC and/or contained in appraisal documents was reviewed to identify past owners or occupants of potential concern. Review of available title information recording the acquisition of the site by PSNC between 1959 and 1969 identified no prior owners or occupants of concern. No title information for years prior to 1959 was provided.

3.4 AGENCY REVIEWS

Environmental Data Resources, Inc. (EDR) conducted an automated search of agency listings for the area surrounding the subject site. This review of National and State listings was conducted to identify sites in the vicinity of the subject site which might pose an environmental concern. In addition to the plotted sites, the database report also contains a list of sites that are unmappable due to inadequate address information. This list was reviewed and field checked, and none of the sites were considered as significant environmental concerns for the subject site. The database report is included as Appendix F. Based on the distances to the subject site and the expected direction of groundwater flow (west), only the following sites were considered as significant potential environmental concerns:

- **Public Service Company, Leaking UST site, 211 South Hoover Road, (subject property)**
Agency files were reviewed at the North Carolina DENR and corporate file information related to the site was provided for review by PSNC. This information indicates that one 20,000-gallon gasoline, one 8,000-gallon gasoline, and one 550-gallon kerosene UST were removed from the current UST area in February/March 1990. A 12,000-gallon diesel UST was subsequently removed from the same general location in September 1990. Excessively contaminated soil was encountered during the initial UST closure and was excavated and stockpiled on-site. No soil contamination above state guidance levels was encountered during the removal of the 12,000-gallon diesel UST (September 1990). However, additional soil contamination was encountered when widening the excavation to allow installation of the current 6,000- and two 15,000-gallon USTs. This contamination was determined to be

related to the tanks removed in early 1990. A total of 700 cubic yards of contaminated soil was removed from the area between February and September 1990. The soil was stockpiled on visqueen until stockpile samples (March 1991) indicated the material was acceptable to land apply at the site. Approval from DENR was given on March 18, 1991. Mr. Whitted indicated that the majority of the soil was spread on the adjacent PSNC parcel.

Due to the potential for impacts groundwater from the initial discovery of contaminated soil, groundwater sampling was conducted in May 1990. Laboratory results for samples from the three monitoring wells located near the tank pit indicated that all EPA Method 602 and 625 parameters were below detection levels (BDL). In addition, Total Petroleum Hydrocarbon (TPH) levels were BDL in soil samples collected from the soil/groundwater interface during well installation.

Based on the sampling information to date, DENR determined (7/27/90 letter) that "any remaining contamination posed a minimal threat to the environment". However, due to the proximity of the contamination to groundwater, semi-annual sampling of the two down-gradient wells was requested. DENR indicated that if no contamination was detected during the first year that the site would be eligible for closure. Groundwater sampling events were conducted in 12/90, 5/91, and 11/91. Concentrations detected ranged from BDL to 2.1 ppb benzene and from BDL to 4 ppb of Methyl tert-butyl ether (MTBE). No other analytes were detected. No sampling data more recent than November 1991 was available and no letters discontinuing the sampling requirement were found in the files.

No leaks or discharges from the current USTs have been reported, and the USTs appear to have been emptied sometime in 1999.

- **Public Service Company, Small-Quantity Generator, 3001 Harvard Avenue (adjacent property to the northwest)**

Agency files were not available for review at the North Carolina DENR office in Raleigh. Mr. English and Mr. Witted indicated that licensed contractors remove wastes, such as parts cleaning solvent, generated at the site. In addition, the USTs formerly located at the subject site appeared incorrectly listed at the 3001 Harvard Avenue address. PSNC files indicate that a 1,000-gallon gasoline UST was removed from adjacent to the south wall of the garage, also in February/March 1990. No soil contamination above regulatory guidelines was reported and no groundwater was encountered in the excavation. No additional assessment was

requested by DENR in this area. Based on the above information, the distance to the site (approximately 275 feet), and the expected direction of groundwater flow (west), this site is not expected to affect the subject property.

- **Etna #3, Leaking UST site, 2301 Holloway Street (approximately 1,300 feet to the north)**

Agency files reviewed at the North Carolina DENR indicate that this site has a large groundwater contaminant plume resulting from a release of approximately 5,262 gallons of gasoline in 1995. The file indicates that groundwater flow is generally toward the northwest at the site and that a remediation system with recovery wells is in-place at the site. Available contaminant plume maps do not show contamination to the south of Holloway Street. Based on the recorded direction of groundwater flow at the Etna site (northwest), the presence of a remediation system, the apparent lack of impacts south of Holloway Street, and the distance to the site, this facility is not expected to adversely impact the subject property.

- **Buy And Go Citgo, Leaking UST site, 2502 Holloway Street (approximately 1,000 feet to the north-northeast)**

Agency files reviewed at the North Carolina DENR indicate that DENR approved a "closed status" for this site on June 6, 1999, indicating that no further action will be required by the state unless subsequent discharges occur. Based on the approval of a "closed status" for the site and the distance to the site, this facility is not expected to adversely impact the subject property.

- **BP gasoline station, approximately 2406 Holloway Street (approximately 850 feet to the north-northeast)**

This site was not identified during the regulatory database search, but was noted during the site inspection. Agency files reviewed at the North Carolina DENR indicate no contamination has been reported at the site and that the USTs appear to be in compliance. Based on this information and the distance to the site, this facility is not expected to adversely impact the subject property.

The remaining facilities listed in the database report each are located either outside the specified search radii or more than ¼-mile from the subject site. Based on their respective distances, the expected direction of groundwater flow (west), none of the remaining sites were considered as significant environmental concerns for the subject site. Additional information regarding these sites is contained in Appendix F.

SECTION 4.0 CONCLUSIONS

TBE Group, Inc. (TBE) has completed a Phase I Environmental Site Assessment (ESA) of the facility located at 211 South Hoover Road in Durham, Durham County, North Carolina. This Phase I ESA has been prepared in general accordance with the scope and limitations of ASTM *Standard Practice E 1527-97*. The conclusions and recommendations presented in this report are based upon data developed in this Phase I investigation.

FINDINGS:

On-Site Considerations

This investigation has revealed evidence suggesting the potential for environmental impairment of the subject site caused by current and/or historical on-site activities including: (1) historical on-site vehicle repair operations, (2) hydraulic lift in former repair shop, (3) on-site staining and improper drum storage. (4) historical and current USTs. In addition, the limited asbestos screening survey detected the presence of non-friable asbestos containing spray-on fireproofing material.

Off-Site Considerations

This investigation has revealed no direct evidence suggesting environmental impairment of the subject site caused by current and/or historical off-site activities.

CONCLUSIONS:

This assessment has revealed no recognized adverse environmental concerns associated with the subject property as defined by ASTM *Standard Practice E 1527-97*, except for the following: (1) historical on-site vehicle repair operations, (2) hydraulic lift in former repair shop, (3) on-site staining and improper drum storage. (4) historical and current USTs and (5) presence of asbestos-containing materials in the structure. Lead-based paint and lead in drinking water screening surveys performed at the subject property identified no lead concentrations above regulatory guidelines.

Section 5.0 RECOMMENDATIONS

Based on the information compiled and analyzed for this Phase I investigation and upon the conclusions reached, the following recommendations are made:

- To address potential effects from current and historical on-site activities, TBE recommends soil and groundwater testing at the PSNC facility located at 211 South Hoover Road in Durham, Durham County, North Carolina. As discussed in Section 3.4, it may be prudent to locate and resample the three monitoring wells adjacent to the tank pit to both confirm that levels of contaminants have not increased since 1991 and to provide a baseline for site conditions at the time ownership of the property is transferred.
- TBE further recommends that the observed soil staining be sampled and containerized for subsequent off-site disposal at an approved facility. To reduce overall costs, this work should be performed in conjunction with the recommended soil/groundwater testing at the site.
- Also, TBE recommends that if the hydraulic lift in the former repair shop is no longer to be used, consideration should be given to removing it as the presence of hydraulic fluid in the reservoir represents a potential source of future contamination.
- In addition, TBE recommends that secondary containment and overhead cover be provided for any drums stored in an exterior location. Observed drums that are no longer needed should be characterized and disposed of properly.
- TBE recommends that a comprehensive asbestos survey be prepared prior to any renovation or demolition at the facility. If the ACM is to remain in place, TBE recommends that an Asbestos Operations and Maintenance Program (O&M) be developed to manage and maintain the identified ACM in good condition to prevent worker exposure.

This report has been prepared in general accordance with accepted scientific practices, including the ASTM E 1527-97 Standard Practice for Environmental Site Assessments. No warranty, expressed or implied, is made.

Section 6.0
REFERENCES

Durham County Aerials, 1975, 1986, and 1995.

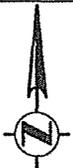
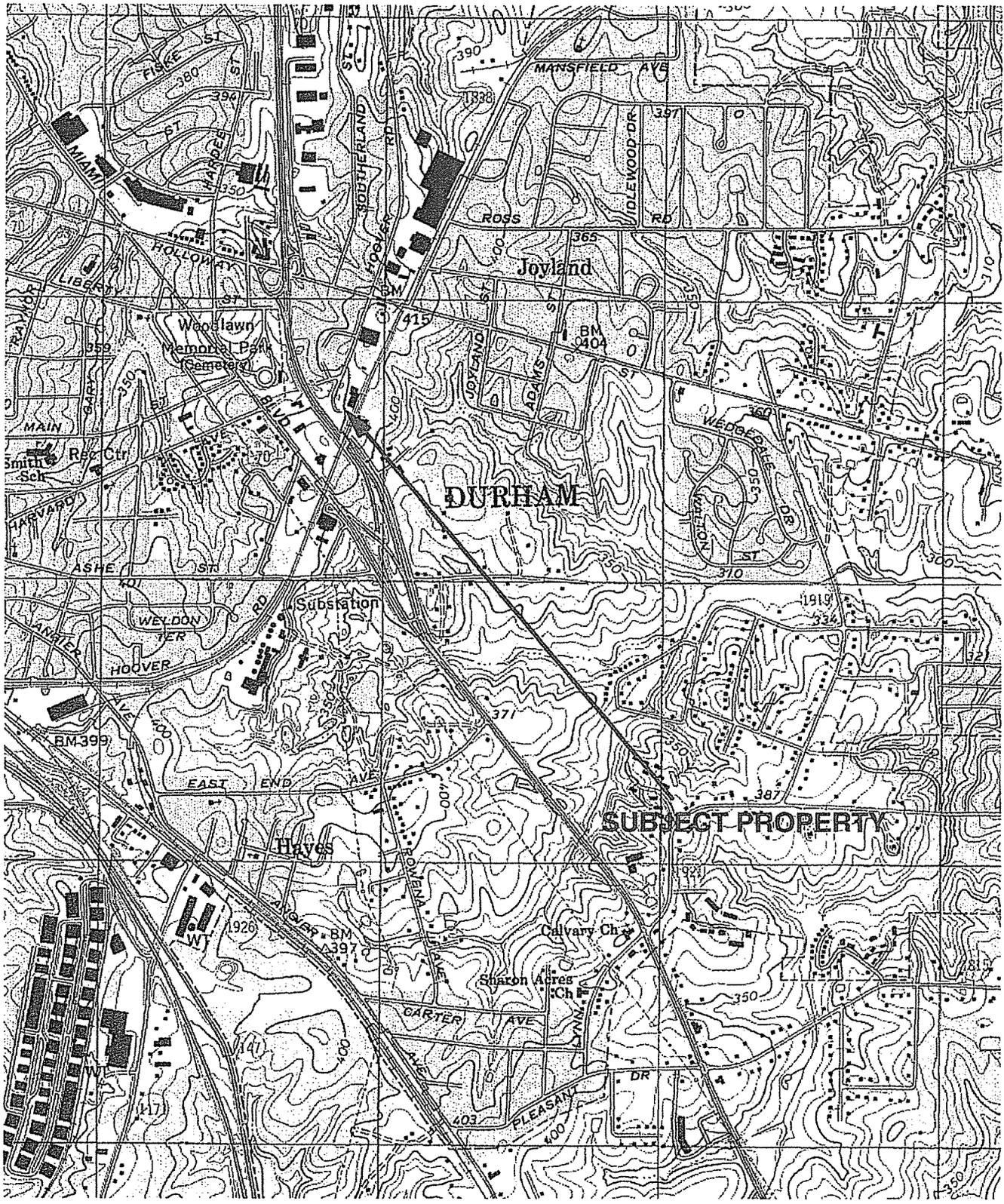
United States Geological Survey, Southeast Durham Quadrangle 1993.

Historical City Directory Abstracts and Sanborn Fire Insurance Maps provided by EDR.

Regulatory Database Search, EDR

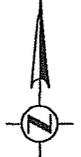
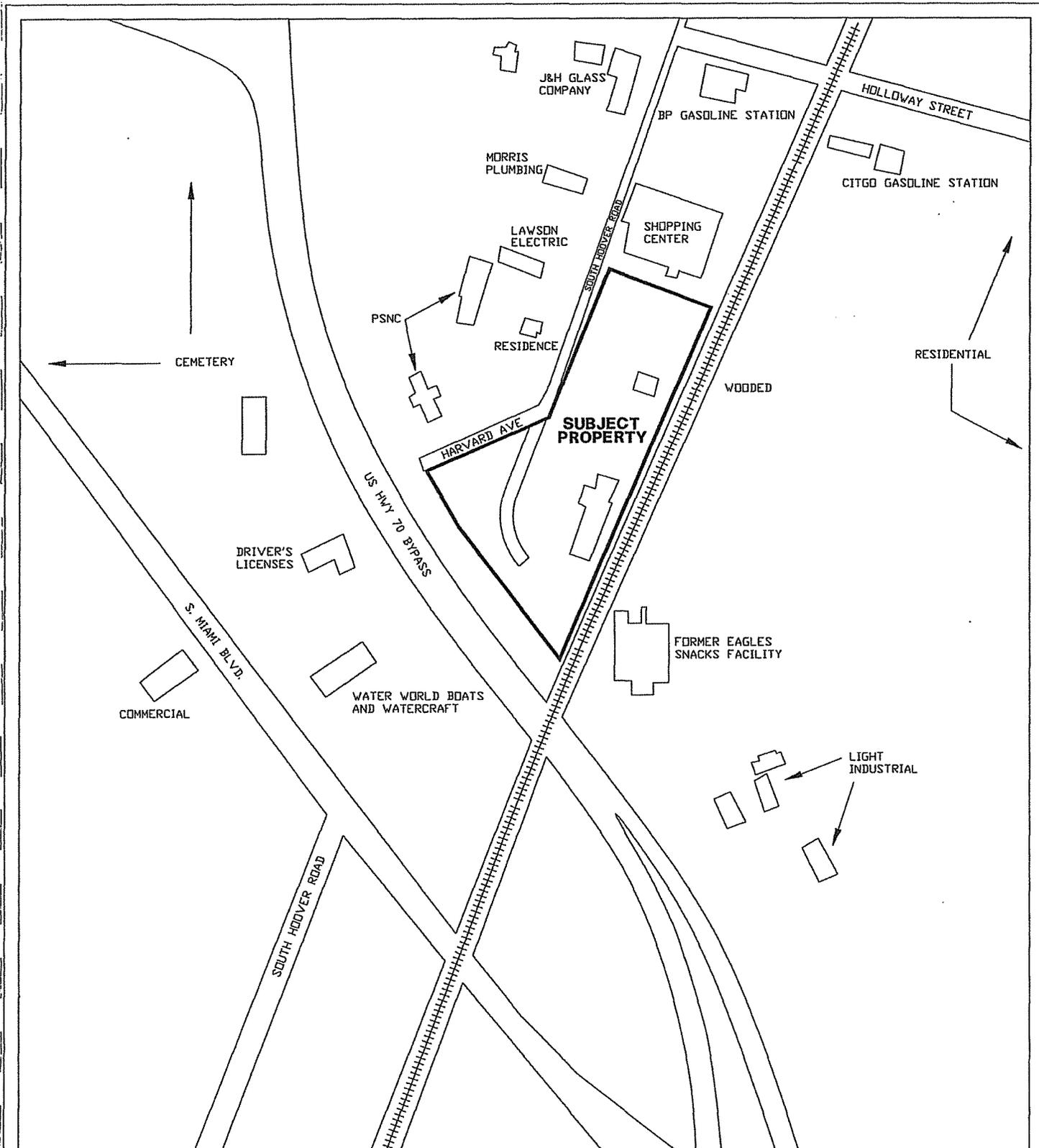
Various Regulatory Files/Reports, North Carolina Department of Environment and Natural Resources (DENR) and PSNC corporate files

Figures



PSNC DURHAM OPERATION CENTER
211 SOUTH HOOVER ROAD
DURHAM, N.C.

FIGURE 1
SITE LOCATION MAP



PSNC DURHAM
OPERATION CENTER
211 SOUTH HOOVER ROAD
DURHAM, N.C.

FIGURE 2
SITE VICINITY SKETCH

Charlotte, NC
Raleigh, NC
Columbia, SC

Winston-Salem, NC
Asheville, NC
Knoxville, TN

NC
Greenville, SC
Chattanooga, TN
Nashville, TN

SPATCO environmental

March 14, 1990

Public Service Company of North Carolina, Inc.
Post Office Box 2008
Durham, NC 27702

Attention: Mr. Rodney Myers

RE: Preliminary Report for the Removal of
Underground Storage Tanks and Soil
Sample Analysis

Dear Mr. Myers:

On February 26 through March 1, 1990, SPATCO Environmental was on site to remove one (1) 20,000 gallon, one (1) 8,000 gallon, and one (1) 1,000 gallon Gasoline tank. One (1) 550 gallon Kerosene tank was also removed. Ten (10) soil samples were collected from the resulting excavations. Please find the enclosed laboratory analysis results.

The locations of Samples 1, 2, 3, 4, 5, 8, 9, and 10 are on Figure 1; the locations of Samples 6 and 7 are on Figure 2. Water was noted collecting in the 8,000 gallon tank excavation at a depth of approximately 13 feet.

All samples were collected using a hand augering instrument. The hand auger was decontaminated prior to collecting any samples using a soap and water wash, a tap water rinse, an isopropyl alcohol wash then a de-ionized water rinse. The samples were split into two (2) parts. The first part was placed in a sealable, plastic bag, left for at least (15) minutes, then evaluated with an Organic Vapor Analyzer (OVA). The second half of the sample was sealed in a new glass jar and cooled to approximately 4 degrees Celcius until they were transported to a sub-contracted laboratory for analysis. The results of the OVA evaluation and the laboratory analysis results are on Table 1. Chain of Custody for the soil samples were kept and accompany this report.

The laboratory analysis results for Samples 1, 2, 3, 4, 5, 8, and 10 indicate Total Petroleum Hydrocarbon (TPH) concentrations greater than the State of North Carolina guidelines of 10 mg/kg parts per million (PPM). Due to contamination levels found in these samples, and water encountered in the excavation, it is possible that groundwater contamination may be present. Groundwater monitoring wells would be necessary to evaluate groundwater conditions. Contaminated soil around the 20,000 gallon tank was excavated to 13 feet where water was encountered. The contaminated soil was placed on 10 Mil plastic, bermed on all sides, and covered with 10 Mil plastic.

Federal guidelines administered by the Environmental Protection Agencies Publication CFR, Part 280, require tank owners and operators to begin corrective action if contaminated soils, groundwater, or free product is encountered when sampling to satisfy tank closure requirements.

SPATCO Environmental appreciates the opportunity to serve you and your company. If you have any questions, please contact us.

Sincerely,



Gil W. Rowland *SBL*
Environmental Technician
SPATCO Environmental

GWR/jbu
enclosures

PS: Certificates of Disposal for the tanks removed will be forwarded when we receive them.

SPATCO 

TABLE 1
 LABORATORY ANALYSIS RESULTS AND OVA EVALUATIONS
 PUBLIC SERVICE COMPANY OF N.C., INC.
 DURHAM, NORTH CAROLINA

<u>Sample No.</u>	<u>Depth (feet)</u>	<u>OVA Evaluation Units = mg/kg = Parts Per Million (PPM)</u>	<u>Laboratory Analysis Results (TPH) Units = mg/kg = Parts Per Billion (PPB)</u>
1	8.0	480	2,900,000
2	8.5	240	1,900,000
3	13.0	12	540,000
4	13.0	20	160,000
5	13.0	24	110,000
6	8.0	2	3,400
7	8.0	1	660
8	13.0	160	140,000
9	13.0	240	10,000
10	13.0	100	15,000

BUILDING

LOADING DOCK

PARKING AREA

Sample 10

Sample 9

Sample 8

Sample 5

Sample 4

Sample 3

Sample 2

Sample 1

FIGURE 1		SPATCO ENVIRONMENTAL DIVISION	
CUSTOMER NO. NO.	DATE	120 PENMARG DR.	
SPATCO DIV. NO.	3/13/90	RALEIGH, NC, 27603	
DRAWN BY	CHEKED BY	PUBLIC SERVICE CO OF NORTH CAROLINA INC.	
CMR	BY	P.O. BOX 2008	
REVISION	DATE	DURHAM, NC 27702	
REVISION	DATE	NTS	

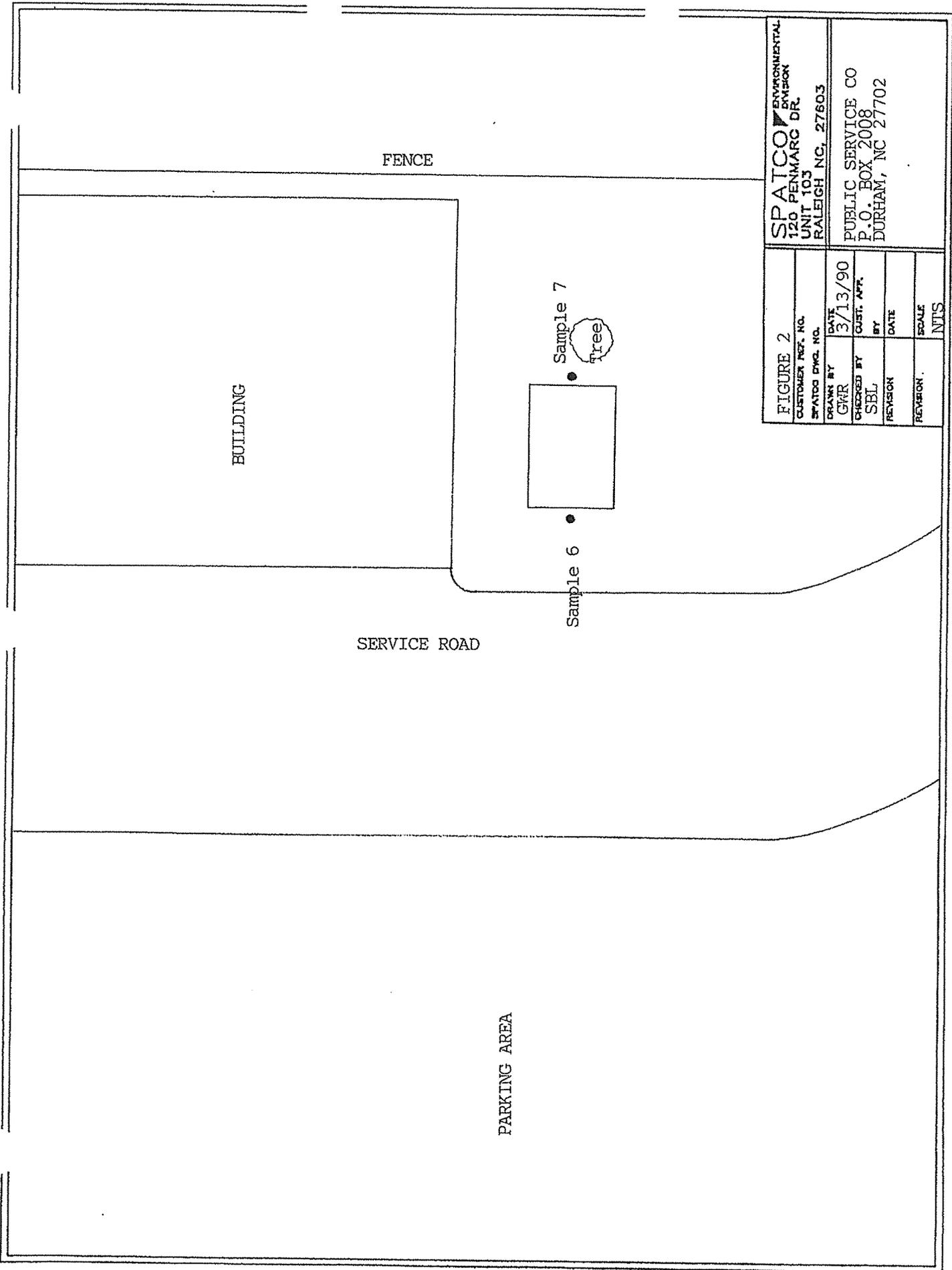


FIGURE 2		SPATCO ENVIRONMENTAL DIVISION	
CUSTOMER REF. NO.	SPATCO DWG. NO.	120 PENMARCO DR. UNIT 103 RALEIGH NC, 27603	
DRAWN BY	DATE	PUBLIC SERVICE CO	
GWR	3/13/90	P.O. BOX 2008 DURHAM, NC 27702	
CHECKED BY	QUST. APT.		
SBL	BY		
REVISION	DATE		
REVISION	SCALE	NTS	

Charlotte, NC Winston-Salem, NC Greenville, SC
Raleigh, NC Asheville, NC Chattanooga, TN
Columbia, SC Knoxville, TN Nashville, TN

SPATCO environmental

June 19, 1990

Mr. Rodney Myers
Public Service Company of North Carolina
Post Office Box 2008
Durham, North Carolina 27702

Reference: Groundwater and Soil Boring Samples Collected from
Public Service Company of North Carolina
211 South Hoover Road
Durham, North Carolina

Dear Mr. Myers:

The following report details the services performed, the analytical results of samples collected from the above referenced site and recommendations for further action.

SPATCO Environmental appreciates the opportunity to be of service to you and Public Service Company. If you have any questions, please feel free to contact us.

Sincerely,

Gil W. Rowland
Gil W. Rowland
Project Manager
SPATCO Environmental

Steven B. Lucas
Steven B. Lucas
Branch Manager
SPATCO Environmental

GWR/jbu

Enclosures

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- 2.0 BORING AND GROUNDWATER MONITORING WELL INSTALLATION PROCEDURES
- 3.0 SOIL AND GROUNDWATER SAMPLING
 - 3.1 SOIL SAMPLING PROCEDURES
 - 3.2 GROUNDWATER SAMPLING PROCEDURES
- 4.0 FIELD EVALUATION AND LABORATORY RESULTS
 - 4.1 FIELD EVALUATIONS
 - 4.2 ANALYTICAL ANALYSIS
- 5.0 CONCLUSIONS AND RECOMMENDATIONS

1.0 INTRODUCTION AND SCOPE OF WORK:

The site is located on Highway 70 by-pass in Durham, North Carolina and appears to slope to the northwest. The site seems to have been raised to its present elevation with fill material. The general area around the area of concern is used as a parts storage facility. SPATCO Environmental installed three (3) monitor wells, collected three (3) soil samples during installation, and three (3) groundwater samples from the wells after installation.

2.0 BORING AND GROUNDWATER MONITORING WELL INSTALLATION PROCEDURES:

Three (3) soil borings were performed at the above referenced site. Soil boring logs are on Table 1. Split spoon samples were obtained from the borings at five (5) foot intervals. The split spoon sample obtained at the water table interface was collected and submitted for laboratory analysis. The boring was then extended to approximately 7 feet below the water table, and a 2" PVC monitor well was installed. A schematic of each well is enclosed. The locations of the monitor wells and a water table flow direction is shown on Figure 2.

3.0 SOIL AND GROUNDWATER SAMPLING:

3.1 SOIL SAMPLING PROCEDURE

The samples were obtained using a split spoon sampling instrument. The split spoon was decontaminated before each sample was collected using a steam cleaner. All soil samples were collected at the groundwater interface. The samples were then split, placing one-half of the sample into a sealable plastic bag. This portion of the sample was evaluated with an Organic Vapor Analyzer (OVA). The remaining half of the sample was placed into a new glass jar, sealed, labelled, and kept at approximately 4 degrees Celsius until delivery to a sub-contracted laboratory for analysis.

3.2 GROUNDWATER WELL DEVELOPMENT AND SAMPLING PROCEDURES:

The groundwater monitoring wells were developed before samples were collected. The wells were developed and sampled using laboratory decontaminated teflon bailers. The samples were placed in new glass vials with teflon septum caps and immediately chilled to approximately 4 degrees Celsius until they were transported to the laboratory for analysis. A trip blank was obtained from the laboratory and accompanied the samples at all times. The results of the water and the soil sample analysis, the OVA evaluations, and the depths the samples were taken are presented Table 2.

4.0 FIELD EVALUATION AND LABORATORY RESULTS:

4.1 FIELD EVALUATIONS

The soil samples were evaluated with an OVA after being placed in a sealable plastic bag for at least 15 minutes. All of the samples were below detectable limits.

4.2 ANALYTICAL ANALYSIS

All of the soil samples were analyzed for Total Petroleum Hydrocarbons as gasoline by EPA Method 5030 and for mid-boiling point hydrocarbons such as kerosene and diesel fuel by EPA Method 3550. All analytes were below quantitation limits. The water samples were analyzed for base neutral extractables by EPA Method 625, and for Benzene, Toluene, Ethylbenzene, and Total Xylenes by EPA Method 602. All of the analytes in all of the samples were below quantitation limits of detection.

5.0 CONCLUSION AND RECOMMENDATIONS:

The laboratory analysis results indicated non detectable levels of the contaminants analyzed. Lateral concentrations of contaminants may differ. The data reported herein is only representative of the sampling point from which it was obtained.

SPATCO Environmental has been retained to conduct the removal of the remaining 12,000 gallon diesel fuel tank at this site. After the closure samples are obtained from this area and contaminated soils from the 550 gallon kerosene tank area are removed, additional recommendations will be made accordingly.

TABLE 1
 Boring Log for MW-1, MW-2, MW-3
 Public Service Company of North Carolina
 211 South Hoover Road
 Durham, North Carolina

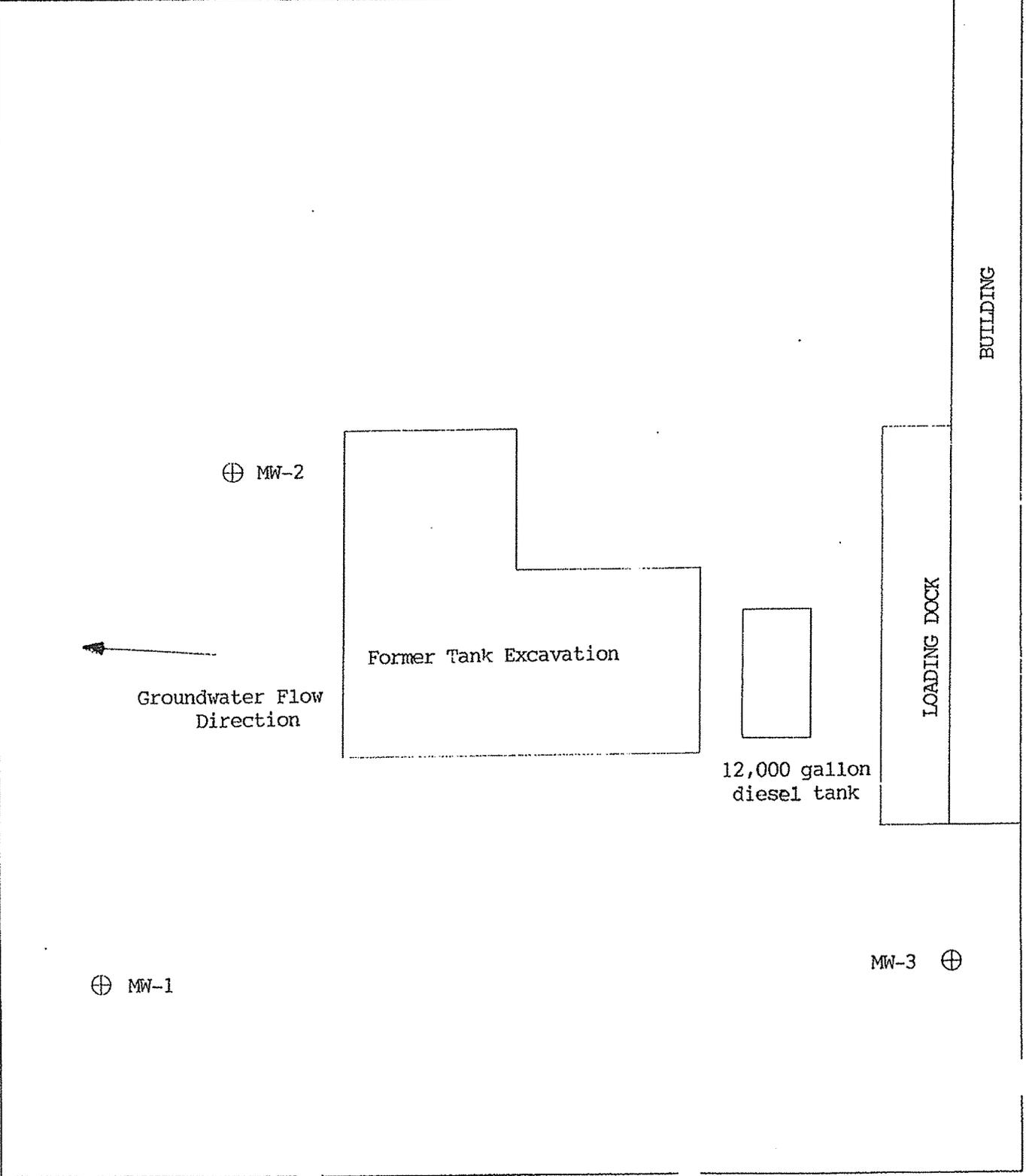
<u>Sample No.</u>	<u>Depth (feet)</u>	<u>Description</u>
MW-1	0.0' - 4.0'	Brown, Silty, Fine Sand
	4.0' - 6.0'	Tannish Brown, Silty, Fine Sand
	6.0' - 12.0'	Gray, Silty, Fine To Medium Sand
	12.0' - 13.5'	Tannish Gray, Silty, Fine Sand
	13.5'	Boring Terminated
MW-2	0.0' - 2.0'	Tannish Brown, Silty, Fine to Medium Sand with Gravel
	2.0' - 3.0'	Black, Silty, Medium Sand with Gravel
	3.0' - 8.0'	Tannish Brown, Fine Sandy, Silty, Clay
	8.0' - 13.0'	Tannish Gray, Fine Sandy, Silty, Clay
	13.0' - 22.0'	Grayish Brown, Fine Sandy, Silt
	22.0' - 22.5'	Partially Weathered Rock
22.5'	Boring Terminated	
MW-3	0.0' - 3.5'	Brown, Fine Sandy, Silty, Clay
	3.5' - 6.0'	Yellowish Tan, Silty, Clay
	6.0' - 9.0'	Yellowish Tan, Fine Sandy, Silty, Clay
	9.0' - 11.5'	Light Tan, Silty, Clay
	11.5' - 16.0'	Grayish Tan, Clayey, Silt
	16.0' - 20.0'	Brown, Clayey, Silt
	20.0' - 23.5'	Tannish Brown, Clayey, Silt
	23.5'	Boring Terminated

TABLE 2
 OVA Evaluations and Laboratory Analysis Results for
 Total Petroleum Hydrocarbons (TPH)
 Public Service Company of North Carolina
 211 South Hoover Road
 Durham, North Carolina

Sample #	Depth (feet)	OVA Evaluations units = mg/kg = parts per million (ppm)	Laboratory Analysis Results units = ug/kg = parts per billion (ppb)
MW-1 (soil)	3.5' - 5.0	ND	BQL
MW-2 (soil)	12.0' - 13.5'	ND	BQL
MW-3 (soil)	13.5' - 15.0'	ND	BQL
MW-1 (water)	NA	NA	BQL
MW-2 (water)	NA	NA	BQL
MW-3 (water)	NA	NA	BQL
Trip Blank	NA	NA	BQL

ND - Nondetectable
 BQL - Below Quantitation Limit

FIGURE 2		SPATCO ENVIRONMENTAL DIVISION 120 PENMARO DR. UNIT 103 RALEIGH NC, 27603
CUSTOMER REF. NO.		
SPATCO DWG. NO.		Public Service Co. of North Carolina 211 South Hoover Road Durham, North Carolina
DRAWN BY	DATE	
GWR	6-19-90	
CHECKED BY	CUST. APP. BY	
REVISION	DATE	
REVISION	SCALE	
	1"=20'	





October 23, 1990

Public Service Gas Company of North Carolina
Post Office Box 1398
Gastonia, North Carolina 38053

Attention: Mr. Rodney Myers

Reference: UST Closure and Stockpiling of contaminated soil at
Public Service Gas Company of North Carolina
South Hoover Road
Durham, North Carolina

Dear Mr. Myers:

SPATCO Environmental was on site September 21 through 24, 1990 to close one 12,000 gallon diesel fuel tank. The closure involved the removal of the UST and the collection of soil samples to evaluate the excavation for evidence of a release. In addition to the tank closure, SPATCO Environmental was on site during the excavation required for the installation of one (1) 6,000 and two (2) 15,000 gallon UST's. Excavated soils were screened with an Organic Vapor Analyzer (OVA) and soils evaluated as contaminated were stockpiled on site. The following report documents the tank closure and the procedures involved in the excavation of contaminated soils.

SPATCO Environmental appreciates the opportunity to be of service to you and your company. If you have any questions, please feel free to call.

Thank you,

Gil W. Rowland
Project Manager
SPATCO Environmental

GWR/klc
GR.008

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1.0 INTRODUCTION

The Public Service Gas Company of North Carolina is located at 211 South Hoover Road, Durham, North Carolina. See Figure 1 for the site location. The facility is currently being used as a natural gas distributor. The site has approximately ten feet of relief with a topographical gradient to the North west.

2.0 SITE HISTORY

On February 26, 27, and 28, 1990, SPATCO Environmental removed and disposed of one (1) 20,000 gallon, one (1) 8,000 gallon and one (1) 1,000 gallon gasoline tanks. One (1) 550 gallon kerosene tank was also removed and disposed of. Ten (10) soil samples were collected from the resulting excavations and analyzed for Total Petroleum Hydrocarbons (TPH). The sample locations are shown on Figure 2. Groundwater was encountered during excavation at a depth of approximately 13 feet. Some of the soils excavated during removal of the UST's were evaluated as contaminated and were stockpiled on plastic at the site. Laboratory analysis revealed contaminant levels above state guidelines in samples: 1,2,3,4,5,8,9 and 10. The results are shown on Table 1.

Due to the possibility of groundwater contamination, SPATCO Environmental was requested to evaluate the groundwater quality around the former UST excavations. On May 15, 1990, SPATCO Environmental performed three soil borings, collecting one (1) soil sample in each boring at the soil/groundwater interface for analysis. Each boring was completed as a groundwater monitoring well. The locations of the wells are shown on Figure 3. The wells were all developed and sampled. The soil samples from each boring/monitor well were analyzed for TPH. The groundwater samples were analyzed by EPA Method 602 and 625. Non detectable levels of the compounds analyzed were found for the soil and groundwater samples.

SPATCO Environmental was retained on May 11, 1990 to close the remaining 12,000 gallon diesel fuel tank. New UST's were to be installed in the resulting excavation, As the excavation was prepared and sized for the new UST's, soils excavated were to be screened for petroleum contaminants and handled appropriately.

3.0 SCOPE OF WORK

SPATCO Environmental was retained to perform the following tasks:

- remove and dispose of one (1) 12,000 gallon diesel fuel tank.

- collect in situ soil samples from beneath the tanks and analyze the samples for TPH.

- generate a report documenting methods used, the results of laboratory analysis, and submit conclusions with recommendations.

4.0 TANK REMOVAL PROCEDURES

On September 21, 1990, SPATCO Environmental excavated and removed one (1) 12,000 gallon steel, underground storage tank. Subsequent to removal, the UST was visually inspected for corrosion, perforations and product seepage. The tank exhibited little evidence of corrosion. The tank was then transported to a disposal facility and destroyed according to EPA regulations. A certificate of disposal will be forwarded to you.

5.0 SOIL ASSESSMENT PROCEDURES

The following section describes sampling and analysis procedures used to evaluate in situ soils beneath the tank.

5.1 SAMPLING METHODS

The samples were obtained from the in situ soils approximately two feet below the base of the UST, at a depth of approximately 13 feet from grade. The sample locations are shown on Figure 4. All samples were screened with an OVA and the results of the evaluation are shown on Table 2.

5.2 ANALYTICAL ANALYSES

Samples PS-1 through PS-3 were submitted to a sub-contracted laboratory and were analyzed by EPA Method 5030 for TPH as gasoline and Method 3550 for TPH mid-boiling point. The results of the analysis are shown in Table 2.

6.0 EXCAVATION OF CONTAMINATED SOILS

Public Service Gas Company of North Carolina had contracted Southern Pump and Tank Company to install one (1) 6,000 gallon fiberglass UST in the excavation resulting from the removal of the 12,000 gallon diesel UST. Two (2) 15,000 gallon fiberglass UST's were also to be installed adjacent to the 6,000 gallon fiberglass UST. To facilitate this, further excavation was necessary. Because samples collected previously from the soils in this area indicated petroleum contamination, SPATCO Environmental was on site to screen the excavated soils for contamination.

On September 25, 1990, excavation for the new UST installation began. Preliminary screening of the soils revealed OVA readings ranging from 200 to 600 parts per million (ppm). Mr. Rodney Myers of Public Service Gas Company was contacted and authorized soils to be stockpiled for future treatment or disposal. Excavation continued with soils exhibiting high OVA readings, discoloration, and/or hydrocarbon odor being stockpiled on and covered with

polyethylene plastic. Soils were excavated to approximately 14 feet from grade. Water entered the excavation at this point. The excavation continued until grab samples collected from the sidewalls exhibited readings of less than 20 ppm. The extent of the excavation is shown in Figure 5.

7.0 OBSERVATIONS

No discoloration or hydrocarbon odor was noted in soils excavated from around the 12,000 gallon UST or from soil samples collected from beneath the tank. Both discoloration and hydrocarbon odor were noted in soils excavated from the previous tank excavation. No free product was noticed in any of the borings or excavations.

8.0 CONCLUSIONS AND RECOMMENDATIONS

Soil samples PS-1 through PS-3 contained contaminants below North Carolina state guidelines for TPH contaminants in soil. The state guideline for TPH in soil is 10 ppm. Soils that were excavated and preliminarily evaluated as contaminated remain on site. Laboratory analysis of the soils will need to be conducted in order to evaluate treatment or disposal alternatives.

SPATCO Environmental suggests that this report be submitted to the Division of Environmental Management. The address of the regional office managing this site is:

Division of Environmental Management
Groundwater Section
Raleigh Regional Office
3800 Barrett Drive
Raleigh, North Carolina 27611

TABLE 1
 Laboratory Analysis Results and OVA Evaluations
 Public Service Company of N.C., Inc.
 Durham, North Carolina

<u>Sample Number</u>	<u>Depth (feet)</u>	<u>OVA Evaluation Units = mg/kg = Parts Per Million(PPM)</u>	<u>Laboratory Analysis Results (TPH) Units = ug/kg = Parts Per Billion(PPB)</u>
1	8.0	480	2,900,000
2	8.5	240	1,900,000
3	13.00	12	540,000
4	13.00	20	160,000
5	13.00	24	110,000
6	8.0	2	3,400
7	8.0	1	660
8	13.0	160	140,000
9	13.0	240	10,000
10	13.0	100	15,000

TABLE 2
 Laboratory Analysis Results and OVA Evaluations
 Public Service Company of N.C., Inc.
 Durham, North Carolina

<u>Sample Number</u>	<u>Depth (feet)</u>	<u>OVA Evaluation Units = mg/kg = Parts Per Million(PPM)</u>	<u>Laboratory Analysis Results (TPH) Units = ug/kg = Parts Per Billion(PPB)</u>
PS-1	13.0	2	410
PS-2	13.5	2	ND
PS-3	13.5	11	ND
PS-4	NA	NA	300
PS-5	NA	NA	ND

NA = Not Applicable

ND = Contaminants Below Detectable Limits

BUILDING

LOADING DOCK

PARKING AREA

Sample 10

Sample 9

Sample 8

Sample 5

Sample 3

Sample 4

Sample 2

Sample 1

SPATCO ENVIRONMENTAL DIVISION 120 PENMARCO DR. UNIT 103 RALEIGH NC, 27603	
FIGURE 2 CUSTOMER REF. NO. SPATCO DWG. NO.	DATE 10-11-90
DRAWN BY GMR	CHECKED BY CUST. APP.
SET REVISION REVISION	BY DATE
SCALE NTS	DATE
PUBLIC SERVICE CO OF NORTH CAROLINA INC. P.O. BOX 2008 DURHAM, NC 27702	

FIGURE 3		SPATCO ENVIRONMENTAL DIVISION 120 PENMARCO DR. UNIT 103 RALEIGH NC, 27803
CUSTOMER PROJ. NO.		
VTDG DWG. NO.		Public Service Co. of North Carolina 211 South Hoover Road Durham, North Carolina
DESIGNED BY	DATE	
CHKD BY	DATE	
REVISION	DATE	
REVISION	SCALE	
	1"=20'	

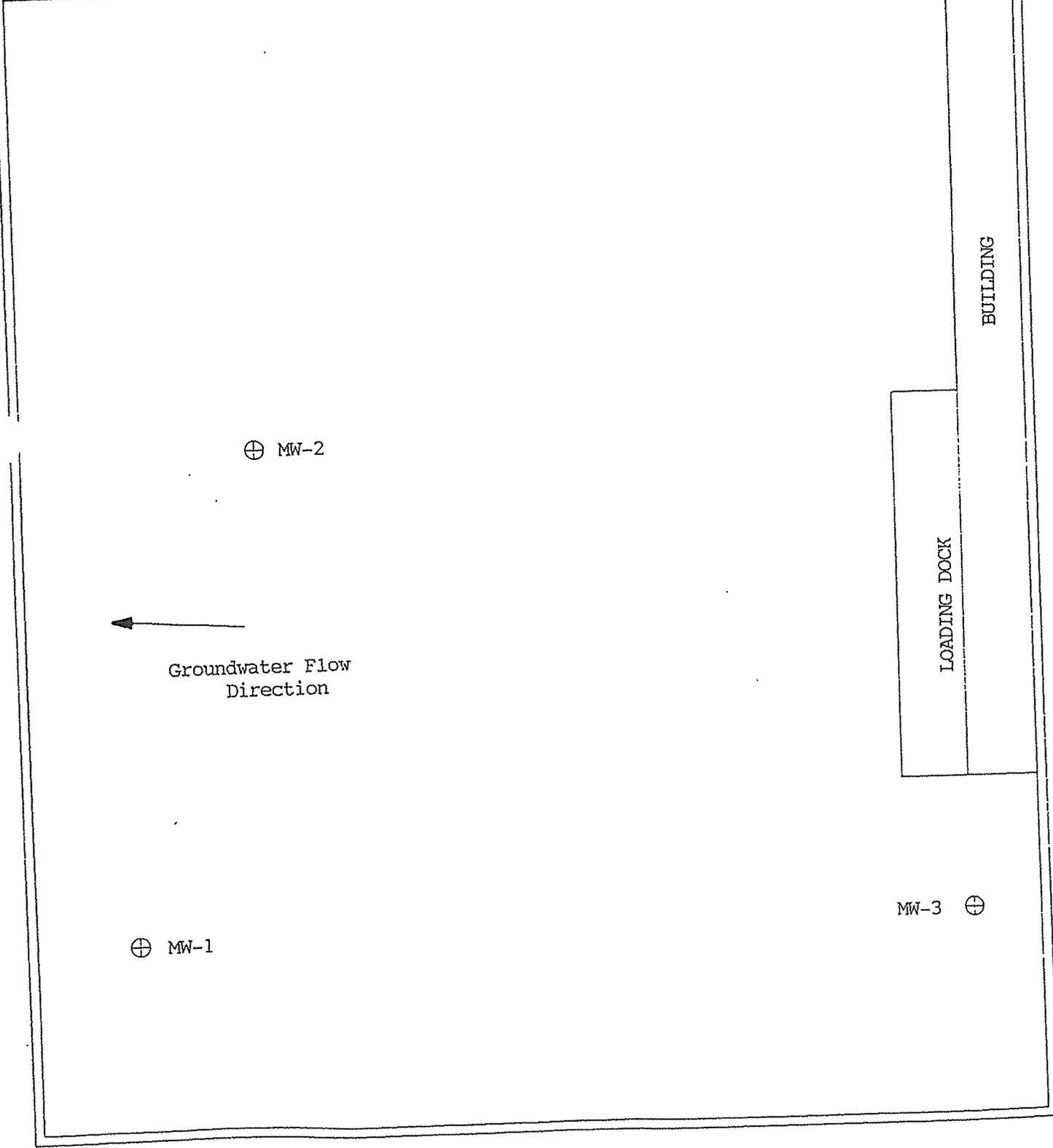


FIGURE 5	
CUSTOMER PROJ. NO.	
SPATCO DWG. NO.	
DRAWN BY GWR	DATE 10-11-90
CHECKED BY	CHECK APP. BY
REVISION	DATE
REVISION	SCALE 1"=20'

SPATCO ENVIRONMENTAL DIVISION
 120 PENMARO DR.
 UNIT 103
 RALEIGH NC, 27603

 Public Service Co.
 of North Carolina
 211 South Hoover Road
 Durham, North
 Carolina

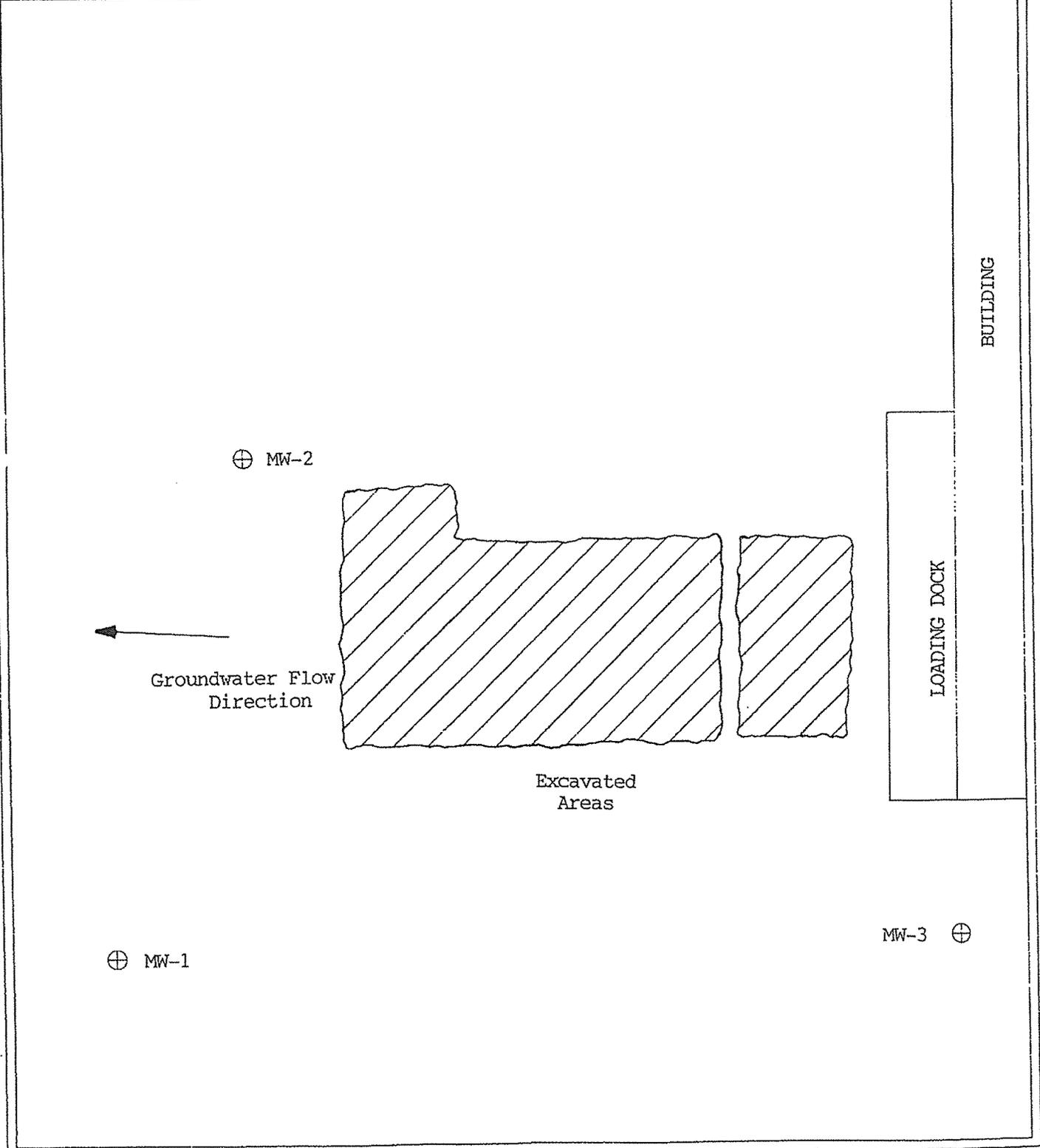
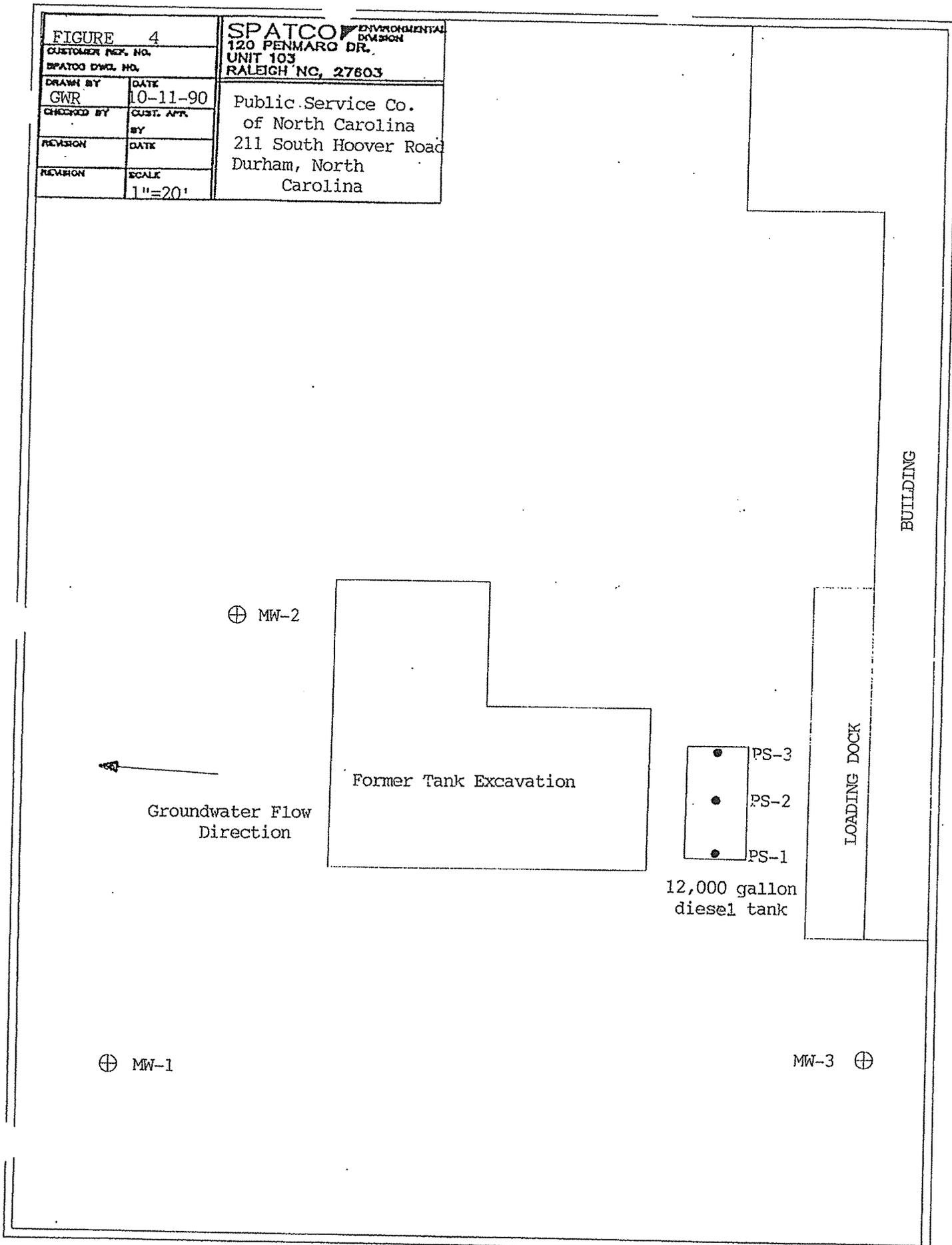


FIGURE 4		SPATCO ENVIRONMENTAL DESIGN 120 PENMARO DR. UNIT 103 RALEIGH NC, 27603
CUSTOMER REF. NO.	SPATCO DWG. NO.	
DRAWN BY GWR	DATE 10-11-90	Public Service Co. of North Carolina 211 South Hoover Road Durham, North Carolina
CHECKED BY	CUST. APP. BY	
REVISION	DATE	
REVISION	SCALE 1"=20'	



Charlotte, NC Winston-Salem, NC Greenville, SC
Raleigh, NC Asheville, NC Chattanooga, TN
Columbia, SC Knoxville, TN Nashville, TN



December 20, 1990

Mr. Rodney Meyers
Public Service Company of North Carolina, Inc.
Post Office Box 1398
Gastonia, North Carolina 28053-1398

Reference: Sampling of Groundwater Monitoring Wells at
Public Service Gas Company
211 South Hoover Street
Durham, North Carolina

Dear Rodney:

SPATCO Environmental sincerely apologizes for any inconvenience we may have caused. Due to miscommunication, for which we are responsible, all three monitor wells were sampled. An invoice will be issued to you for the sampling of only two of the wells. Water samples from the wells were collected and analyzed for total petroleum hydrocarbon (TPH) content. TPH concentrations in each were either not detected or below the North Carolina allowable limit. The following report details the technical services provided, describes field procedures, and presents analytical results of the groundwater analysis.

SPATCO Environmental appreciates your continued business. If you need any assistance or have any questions, please contact us.

Thank You,

Gil W. Rowland
Project Manager
SPATCO Environmental

GWR/klc

GR.041

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3.0	Scope of Work
4.0	Sampling Procedures
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6.0	Conclusions and Recommendations

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Figure 3	Monitor Well Locations
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Table 2	12,000 Gallon UST Closure Sample Results

1.0 INTRODUCTION

The Public Service Gas Company of North Carolina is located at 211 South Hoover Road, Durham, North Carolina. See Figure 1 for the site location. The facility is currently being used as a natural gas distributor. The site has approximately ten feet of relief with a topographic gradient to the north west.

2.0 SITE HISTORY

On February 26 through the 28, 1990, SPATCO Environmental removed and disposed of one (1) 20,000 gallon, one (1) 8,000 gallon and one (1) 1,000 gallon gasoline tanks. One (1) 550 gallon kerosene tank was also removed and disposed of. Groundwater was encountered during excavation at a depth of approximately 13 feet. Some of the soils excavated during removal of the UST's were evaluated as contaminated and were stockpiled on plastic at the site. Ten (10) soil samples were collected from the resulting excavations and analyzed for Total Petroleum Hydrocarbons (TPH). The sample locations are shown on Figure 2. Laboratory analysis revealed contaminant levels above state guidelines in samples 1,2,3,4,5,8,9 and 10. (Table 1).

Due to the possibility of groundwater contamination, SPATCO Environmental was requested by the Public Service Gas Company to evaluate the groundwater quality around the former UST excavations. On May 15, 1990, SPATCO Environmental performed three soil borings, collecting one (1) soil sample in each boring at the soil/groundwater interface for analysis, each boring was completed as a groundwater monitoring well. The locations of the wells and groundwater flow direction are shown on Figure 3. The wells were all developed and sampled. The soil samples from each boring/monitor well were analyzed for TPH. The groundwater samples were analyzed by EPA Method 602 and 625. Non detectable levels of the compounds analyzed were found for the soil and groundwater samples.

On September 21, 1990, SPATCO Environmental excavated and removed one (1) 12,000 gallon steel underground storage tank. Three (3) soil samples were collected from in situ soils beneath the tank (See Figure 4). All samples were below North Carolina State Guidelines for maximum allowable concentrations for TPH in soil. Table 2 shows the laboratory results for the soil samples collected beneath the 12,000 gallon diesel tank. New UST's were installed in the resulting excavation. As the excavation was prepared and sized for the new UST's, excavated soils were screened with an Organic Vapor Analyzer (OVA). Contaminated soils were stockpiled on plastic. Soils were excavated until no discoloration, hydrocarbon odor, or organic vapors of above 20 parts per million (ppm) were detected. Figure 5 shows the extent of excavation.

3.0 SCOPE OF WORK

To satisfy Department of Environmental Management Groundwater Division's requirements, SPATCO Environmental was retained to sample monitor wells MW-1 and MW-2 after six months to determine if groundwater has been impacted. The following tasks were to be performed.

1. Sample MW-1 and MW-2 and analyze the groundwater samples by EPA Methods 625 and 602.
2. Generate a report documenting methods used, include analytical results, and provide conclusions and recommendations.

4.0 SAMPLING PROCEDURES

Monitoring wells MW-1, MW-2, and MW-3 were sampled on November 12, 1990. Sampling was conducted by first purging of groundwater from the well prior to sampling. The purging and sampling was performed using a separate laboratory decontaminated PVC bailer and new nylon rope for each well. This process was conducted to remove stagnant groundwater from the well and to introduce groundwater representative of the aquifer into the well. This was

accomplished by removing at least six (6) well volumes from the well.

After sufficient time lapsed to allow well recovery, the wells were sampled. Sampling was done by lowering the bailer to a depth not exceeding 2.5 feet past the water table to collect a sample from the surface. Water was then drawn from the bailer and a sample placed in laboratory decontaminated glass containers, labelled, and kept at approximately 4 degrees Celsius until they were transported to a sub-contracted laboratory. Chain of Custody records were kept and a copy of the Chain of Custody is included with this report.

5.0 ANALYTICAL RESULTS

The analytical results indicated non-detectable concentrations of compounds analyzed by EPA Method 625 and 602. The equipment blank contained 24 parts per billion (ppb) of bis-(2-Ethylhexyl)phthalate. Phthalates are commonly associated with rubber gloves used during sampling.

6.0 CONCLUSIONS AND RECOMMENDATIONS

These two wells will need to be sampled again, on or about May 15, 1991 to determine if groundwater has been impacted by petroleum hydrocarbons.

SPATCO Environmental suggests that this report be submitted to the Division of Environmental Management, in order to meet their reporting guidelines. The address of the regional office managing this site is:

Division of Environmental Management
Groundwater Section
Raleigh Regional Office
3800 Barrett Drive
Raleigh, North Carolina 27611

TABLE 1
 Laboratory Analysis Results and OVA Evaluations
 Public Service Company of N.C., Inc.
 Durham, North Carolina

<u>Sample Number</u>	<u>Depth (feet)</u>	<u>OVA Evaluation Units = mg/kg = Parts Per Million(PPM)</u>	<u>Laboratory Analysis Results (TPH) Units = ug/kg = Parts Per Billion(PPB)</u>
1	8.0	480	2,900,000
2	8.5	240	1,900,000
3	13.00	12	540,000
4	13.00	20	160,000
5	13.00	24	110,000
6	8.0	2	3,400
7	8.0	1	660
8	13.0	160	140,000
9	13.0	240	10,000
10	13.0	100	15,000

TABLE 2
 Laboratory Analysis Results and OVA Evaluations of Soil Samples Collected
 Beneath the 12,000 gallon Diesel Tank
 Public Service Company of N.C., Inc.
 Durham, North Carolina

<u>Sample Number</u>	<u>Depth (feet)</u>	<u>OVA Evaluation Units = mg/kg = Parts Per Million(PPM)</u>	<u>Laboratory Analysis Results (TPH) Units = ug/kg = Parts Per Billion(PPB)</u>
PS-1	13.0	2	410
PS-2	13.5	2	ND
PS-3	13.5	11	ND

ND = Contaminants Below Detectable Limits

BUILDING

LOADING DOCK

PARKING AREA

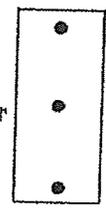
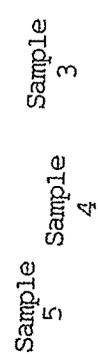
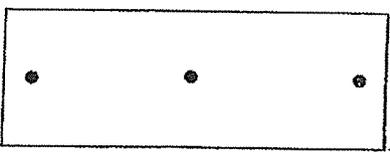
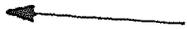


FIGURE 2		SPATCO ENVIRONMENTAL DIVISION	
CUSTOMER REF. NO.		120 PENMARC DR.	
SPATCO DWG. NO.		UNIT 103	
DRAWN BY		RALEIGH NC, 27603	
CHECKED BY		DATE	10-11-90
SBI REVISION		CUST. APP.	
REVISION		BY	
		DATE	
		SCALE	Nfs
		PUBLIC SERVICE CO OF NORTH CAROLINA INC.	
		P.O. BOX 2008	
		DURHAM, NC 27702	

FIGURE 3		SPATCO ENVIRONMENTAL DIVISION 120 PENMARO DR. UNIT 103 RALEIGH NC, 27803
CUSTOMER PROJ. NO.		
SPATCO DWG. NO.		Public Service Co. of North Carolina 211 South Hoover Road Durham, North Carolina
DRAWN BY	DATE	
HECKED BY	CUST. APP. BY	
REVISION	DATE	
REVISION	SCALE	
	1"=20'	

⊕ MW-2



Groundwater Flow
Direction

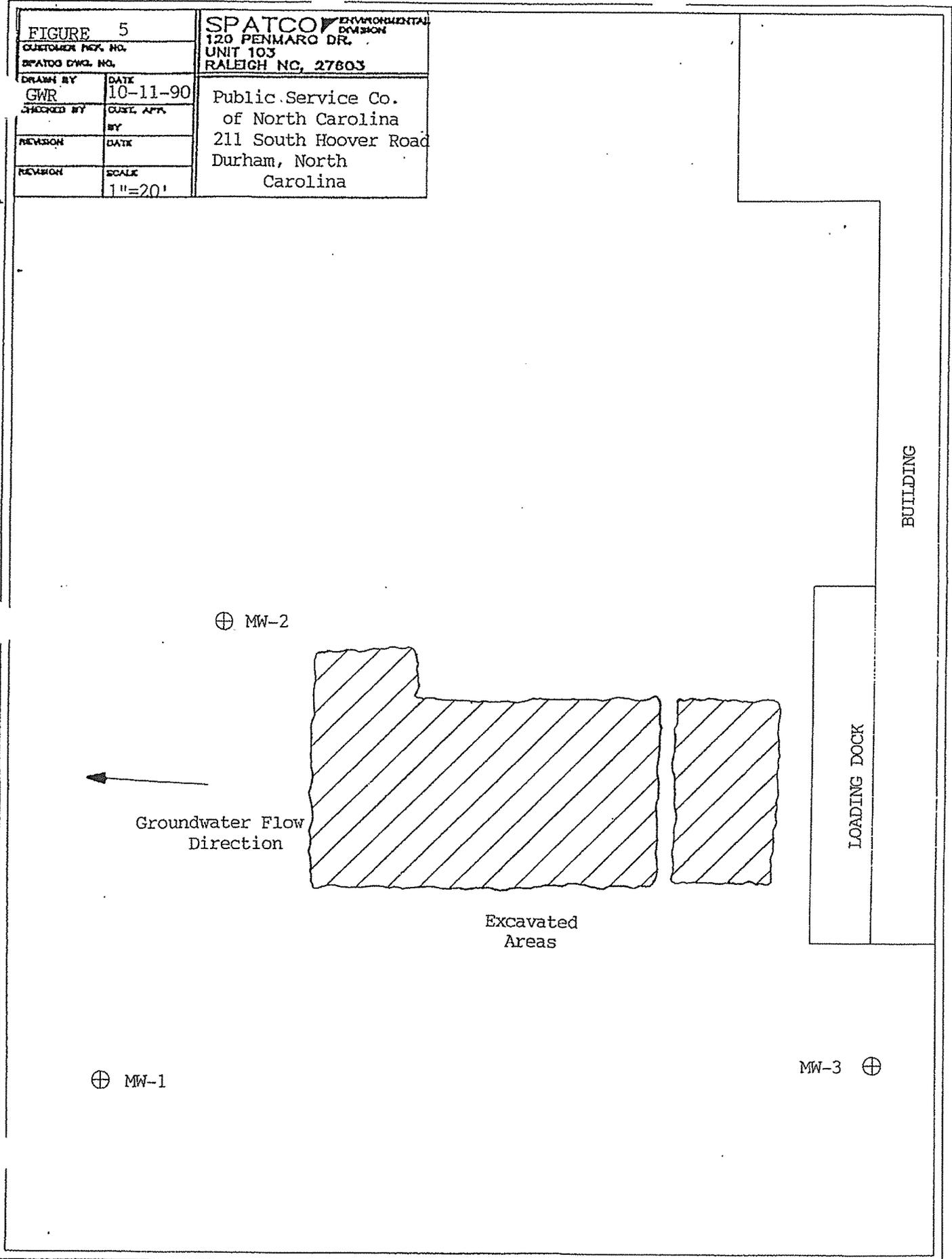
⊕ MW-1

MW-3 ⊕

BUILDING

LOADING DOCK

FIGURE 5		SPATCO ENVIRONMENTAL DIVISION 120 PENMARO DR. UNIT 103 RALEIGH NC, 27603
CUSTOMER PROJ. NO.		
SPATCO DWG. NO.		Public Service Co. of North Carolina 211 South Hoover Road Durham, North Carolina
DRAWN BY	DATE	
GWR	10-11-90	
CHECKED BY	CUST. APP. BY	
REVISION	DATE	
REVISION	SCALE	
	1"=20'	



**UST CLOSURE REPORT
PSNC ENERGY DURHAM OPERATIONS SITE
214 S. HOOVER ROAD
DURHAM, NORTH CAROLINA
S&ME PROJECT NO. 1584-01-064**

Prepared For:

PSNC Energy
800 Gaston Road
Gastonia, North Carolina 28056
Attn.: Mr. Ken Johnson

Prepared By:

S&ME, Inc.
3718 Old Battleground Road
Greensboro, NC 27410

December 14, 2001



December 14, 2001

PSNC Energy
800 Gaston Road
Gastonia, North Carolina 28056

Attention: Mr. Ken Johnson

Reference: **UST CLOSURE, PSNC DURHAM OPERATIONS SITE**
214 S. Hoover Road
Durham, North Carolina
S&ME Project # 1584-01-064

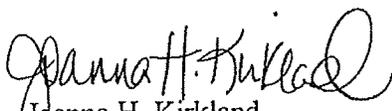
Dear Mr. Johnson:

S&ME, Inc. (S&ME) has completed the required underground storage tank (UST) closure assessment at the above referenced site. Soil sample analytical results obtained during this assessment for the permanent closure of the two 15,248-gallon gasoline USTs and one 6,089-gallon diesel UST provide no evidence of a release from the UST system. Based on this information no further actions should be required. A copy of this report should be submitted to:

North Carolina Department of Environment and Natural Resources
Raleigh Regional Office
1628 Mail Service Center
Raleigh, NC 27699
Attention: UST Section

The enclosed copy is for your records. S&ME appreciates the opportunity to serve you. Please contact our office if you have any questions or need additional assistance.

Sincerely,
S&ME, Inc.


Joanna H. Kirkland
Staff Professional


Wayne H. Watterson, P.E.
Senior Engineer

S&ME, Inc.
3718 Old Battleground Road
Greensboro, North Carolina 27410

(336) 288-7180
(336) 288-8980 fax
(800) 849-2985

www.smeinc.com

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Appendix II: Disposal Manifests
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Appendix IV: Photographs of Tank Excavation

1.0 INTRODUCTION

The former PSNC Energy site is located at 214 S. Hoover Road, Durham, North Carolina (see **Figure 1**). On November 28, 2001, two 15,248-gallon gasoline underground storage tanks (USTs) and one 6,089 diesel UST were permanently closed by removal.

1.1 GENERAL INFORMATION

OWNERSHIP OF UST

Owner: PSNC Energy
Address: P.O. Box 1398
Gastonia, North Carolina, 28053
Phone #: (704) 810-3259

CONTACTS

Primary Contact: Mr. Ken Johnson
c/o PSNC Energy
800 Gaston Road, Gastonia, North Carolina, 28056
Phone (704) 810-3115

Closure Contractor: Soil Solutions, Inc., 1703 Vargrave Street
Winston Salem, North Carolina

Primary Consultant: S&ME Inc., 3818 Old Battleground Road
Greensboro, North Carolina, 27410
Phone (910) 288-7180

Laboratory: Environmental Science Corporation, 12065 Lebanon Rd.
Mt. Juliet, Tennessee. Phone (800) 764-5859.
State Certification # ENV 375

TABLE 1
UST INFORMATION
UST CLOSURE ASSESSMENT
214 S. HOOVER ROAD, DURHAM, NC
S&ME PROJECT NO. 1584-01-064

Tank No.	Installation Date	Size in Gallons	Tank Dimensions	Last Contents	Previous Contents
#1	1990	6,089	8' x 17.5'	Diesel	Same
#2	1990	15,248	10' 6" x 27.5'	Gasoline	Same
#3	1990	15,248	10' 6" x 27.5'	Gasoline	Same

The associated facility identification number is 0-031990.

1.2 SURROUNDING LAND USE AND SITE GEOLOGY

The subject facility is a warehouse and surrounding land use is primarily commercial and industrial. **Figure 1** shows the location of the subject site and the topography of the surrounding area. The City of Durham provides potable water and sewer services to the surrounding area.

The subject site is located in the Sanford-Durham Triassic Sub-basin, and is underlain by rocks described as the Chatham Group. The Triassic Basin is underlain by igneous and metamorphic rocks covered by consolidated and unconsolidated sedimentary deposits. The site is underlain by a formation consisting of arkosic sandstone. The Chatham Group is described by the Geologic Map of North Carolina (1985) as "tan, medium to very coarse grained, micaceous." The Triassic Basin deposits are generally variable in composition in their vertical sequence and are horizontally discontinuous.

Groundwater in this region is recharged by precipitation in the interstream areas. Groundwater is primarily stored in void spaces in the saprolite with secondary storage in fractures within the bedrock. The groundwater flow direction generally trends from topographic highs, or re-charge areas, toward surface water bodies (discharge points). Based on this general trend, the groundwater flow at the subject site will be toward the southwest.

A discussion of the site geology, based on observations made during the tank removal operations, is provided in Section 3.0.

2.0 CLOSURE PROCEDURES

On November 13, 2001, a Notice of Intent, UST Permanent Closure Form (GW/UST-3) was submitted to the Raleigh Regional Office of the North Carolina Department of Environment, and Natural Resources (NCDENR). S&ME staff were present at the subject site to document the removal activities performed by Soil Solutions, Inc. **Appendix I** contains a copy of the completed GW/UST-2 and GW/UST-3 forms.

2.1 EXCAVATION

On November 27, 2001, Soil Solutions began to remove the concrete, which covered the three USTs on-site. On November 28, 2001, the USTs were removed. The USTs were located west of the warehouse and loading dock area (see **Figure 2**). One dispenser pump was located less than 1 foot from Tank #3. A second dispenser pump was located approximately 5 feet from Tank #1. The USTs were buried approximately 3 feet below the ground surface and pea gravel surrounded them, the product lines, and the dispensers. Approximately 104 gallons of residual product and water were recovered from the USTs prior to removal. **Appendix II** contains a copy of the Certificate of Disposal.

Upon removal, the tanks were inspected for holes and evidence of any stress. Corrosion was not a concern since the tanks and the product piping were made of fiberglass. A visual inspection of the tanks provided no evidence of any holes, cracks, or any other indications of tank distress. The tanks were properly labeled, decontaminated, crushed and transported to the Safeway Tank Disposal, in Walnut Cove, North Carolina, for proper disposal. **Appendix II** contains a copy of the Tank Disposal Certificate.

According to PSNC Energy, the three USTs were second generation tanks. During the removal of the previous tanks (prior to 1990), soil had been excavated from an area that measured 100 feet long by 100 feet wide. The pre-1990 UST excavation was filled with gravel. The existing USTs were installed in 1990 in the former, but much larger UST basin.

After the existing three USTs were removed on November 28, 2001, the pea gravel had to be excavated to locate native soil. Soil samples were collected from the native soil beneath the tanks at approximately 14 feet below the ground surface. No additional soil was removed. The excavation's final dimensions are shown on Figure 2. The excavation was backfilled with the pre-existing pea gravel and a clean backfill obtained from an off-site borrow pit. See Appendix IV for photographs of the tank excavation.

As directed by PSNC Energy, no samples were collected beneath the product lines and dispenser pumps. In addition, pea gravel surrounded the product lines and dispensers to a depth of at least 14 feet below the ground surface.

2.2 CONTAMINATED SOIL

No free product was observed at the bottom of the excavation after the USTs were removed and no suspect petroleum contaminated soils or pea gravel were encountered or removed. No odors were observed during the excavation. The native soils observed beneath the USTs and pea gravel consisted of clayey sands.

3.0 SITE ASSESSMENT ACTIVITIES

3.1 SOIL SAMPLING

Since the UST basin consisted of pea gravel to at least 14 feet, it was difficult to obtain a soil sample without it containing pea gravel. Soil samples SS-1A-14 and SS-1B-14 were collected from the native soils/gravel located beneath Tank #1 at a depth of 14 feet. Soil samples SS-2A-14, SS-2B-14, and SS-2C-14 were collected from the native soils/gravel located beneath Tank #2 at a depth of 14 feet. Soil samples SS-3A-14, SS-3B-14, and SS-3C-14 were collected from the native soils/gravel located beneath Tank #3 at a depth of 14 feet. All eight soil samples were submitted for laboratory analyses according to Method 8015/5030 for the detection of Total Petroleum Hydrocarbons (TPH) in the gasoline range and Method 8105/3550 for TPH in the diesel range.

3.2 GROUNDWATER OR SURFACE WATER SAMPLING

Water was observed upon removal of the USTs; however, it may have been perched water in the pea gravel around the USTs. According to PSNC, a depth to groundwater in a nearby groundwater monitor well is reportedly 16 feet below the ground surface. The determination to groundwater depth was primarily based on measurements taken in the adjacent monitoring well, contour maps of groundwater depths, and flow directions provided by TBE Group, who installed the wells. Water from the excavation was not sampled during the UST Closure activities. No odor or sheen was observed on the water that was encountered in the UST basin.

3.3 QUALITY CONTROL MEASURES

Grab soil samples were collected by hand from the backhoe bucket. A new pair of latex gloves were used to place the soil into a laboratory-prepared containers. The sample containers were completely filled with sample to reduce headspace. The containers were immediately sealed, labeled accordingly and placed in a cooler containing ice. The samples were packed in ice and

UST Closure Report
214 S. Hoover Road, Durham, NC

S&ME Project No. 1584-01-064
December 14, 2001

maintained at 4°C during shipment to Environmental Science Corporation in Mt. Juliet, Tennessee, for analysis. The chain of custody form and copies of the laboratory analytical reports are included in **Appendix III**.

4.0 ANALYTICAL RESULTS

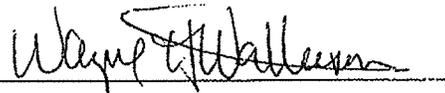
The soil sample locations and laboratory analyses results are summarized in **Table 1**. As summarized, the analytical data detected no TPH concentrations above the North Carolina Department of Environment and Natural Resources action level of 10 milligrams per kilogram (mg/kg). A copy of the soil sample analytical report is contained in **Appendix III**.

5.0 CONCLUSIONS

On November 28, 2001, Soil Solutions removed two 15,268-gallon fiberglass gasoline USTs and one 6,089-gallon fiberglass diesel UST from the subject site. A visual inspection of the tanks evidenced no holes, cracks, or any other indications of tank distress. No free product was evident at the bottom of the excavation after the tanks were removed. The UST excavation consisted of pea gravel to a depth of approximately 14 feet below the ground surface.

Analytical results for soil samples collected beneath the USTs provide no evidence of a release from the UST system. Based on these analytical results, no further actions are required to complete the permanent closure of the subject USTs.

This report was prepared under the responsible charge of the undersigned. This UST Closure Report is based on field data compiled during assessment activities at the site.



Wayne H. Watterson, P.E.
Professional Engineering License No. 19243

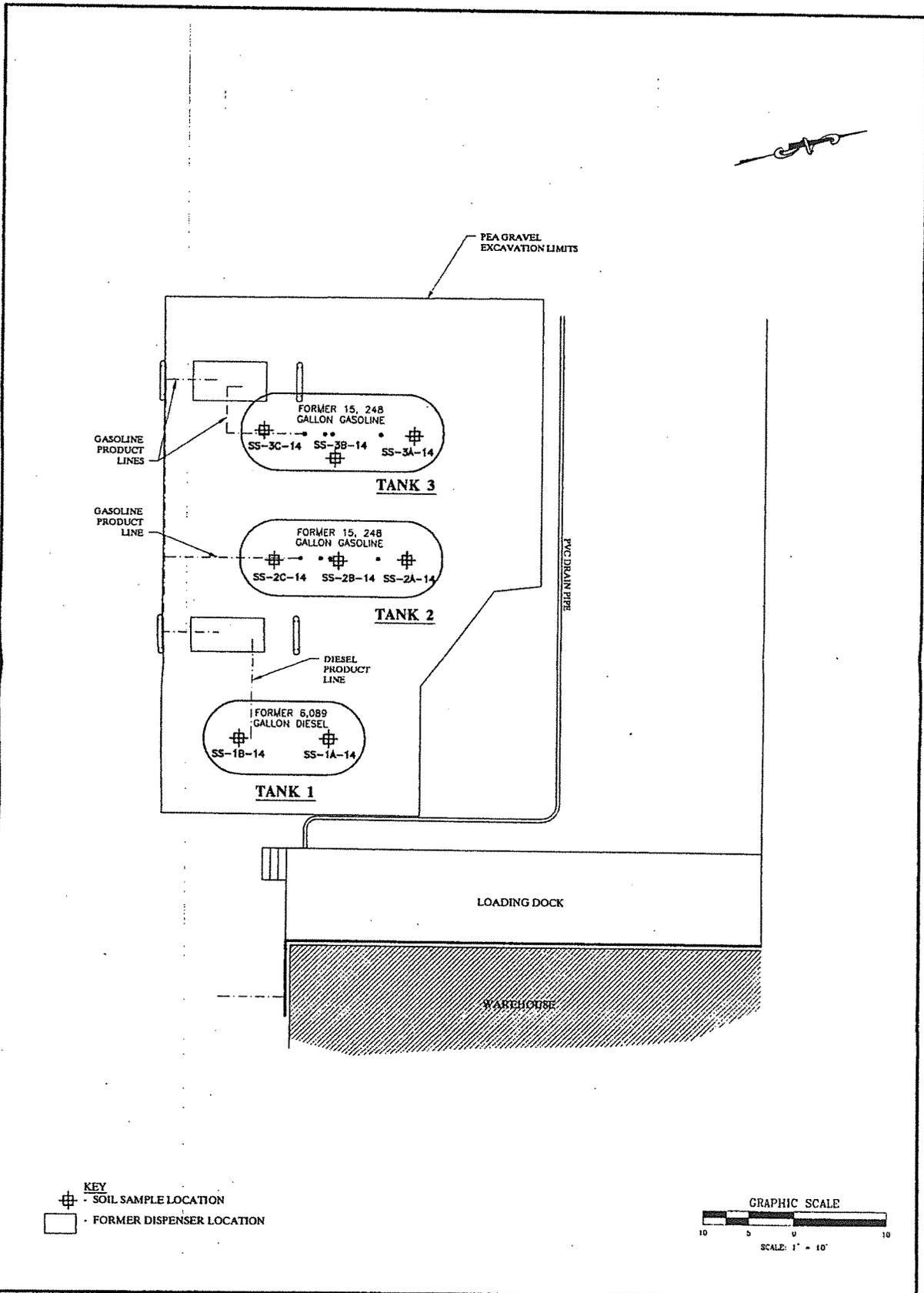
6.0 SOLE USE STATEMENT

The materials and information obtained by S&ME on this project will be provided for the sole use of PSNC Energy, for this project. Use of the report issued for this project by any third parties will be at such party's sole risk, and S&ME disclaims liability for any use of or reliance on the report issued for this project by third parties.

TABLE 1
SOIL SAMPLE ANALYTICAL SUMMARY
PSNC ENERGY-DURHAM OPERATIONS CENTER
214 S. HOOVER ROAD, DURHAM, NC
S&ME PROJECT NO. 1584-01-064

METHODS 5030 and 3550										
Sample Date	11/28/2001	11/28/2001	11/28/2001	11/28/2001	11/28/2001	11/28/2001	11/28/2001	11/28/2001	11/28/2001	Action Limit
Sample Location	SS-1A-14	SS-1B-14	SS-2A-14	SS-2B-14	SS-2C-14	SS-3A-14	SS-3B-14	SS-3C-14		
TPH as gasoline	<10	<10	<10	<10	<10	<10	<10	<10	<10	10
TPH as diesel	<10	<10	<10	<10	<10	6	8	<10	<10	10

all concentrations are reported in milligrams per kilogram (mg/kg)



KEY
 ⊕ - SOIL SAMPLE LOCATION
 □ - FORMER DISPENSER LOCATION

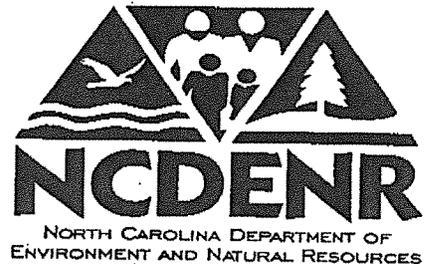
GRAPHIC SCALE
 10 5 0 5 10
 SCALE: 1" = 10'



SITE PLAN 214 S. HOOVER ROAD DURHAM, NORTH CAROLINA		
SCALE: AS SHOWN	DRAWN BY: RDM	CHECKED BY: JHK
JOB NO. 1584-01-064	DATE: DECEMBER 2001	FIGURE NO. 2

North Carolina
Department of Environment and Natural Resources
Raleigh Regional Office

Michael F. Easley, Governor
William G. Ross Jr., Secretary
Dexter R. Matthews, Director



DIVISION OF WASTE MANAGEMENT
UST SECTION
January 17, 2002

MAILED

JAN 17 2002

Mr. Ken Johnson
PSNC Energy
800 Gaston Rd.
Gastonia, NC 28056

23875

RE: Notice of No Further Action
15A NCAC 2L .0115(h)
RISK-BASED ASSESSMENT AND CORRECTIVE ACTION FOR
PETROLEUM UNDERGROUND STORAGE TANKS

PSNC Durham Operations
Facility # 0-031990
214 S. Hoover Road
Durham, NC
Durham County
Incident # Pending

Dear Mr. Johnson:

On January 11, 2002, the UST Section received an Underground Storage Tank (UST) Closure Report for one (1) 6,000-gallon diesel UST and two (2) 15,000-gallon gasoline USTs, at the above-referenced site. A review of the report shows that soil contamination does not exceed the residential or soil-to-groundwater maximum soil contaminant concentrations established in 15A NCAC 2L .0115(m), whichever are lower.

Based on information provided to date, the DWM classifies the risk posed by the discharge or release as low risk and determines that no further action is required for this incident. This determination shall apply unless the DWM later determines that the discharge or release poses an unacceptable risk or a potentially unacceptable risk to human health or the environment.

Please be advised that you must close any monitoring wells or injection wells used to investigate or remediate this incident in accordance with 15A NCAC 2C .0113 and .0214, respectively. For guidance on closure of infiltration galleries, please contact The Division of Water Quality, Groundwater Section.

Pursuant to 15A NCAC 2L .0115(e), you have a continuing obligation to notify the DWM of any changes that you know of or should know of, that might affect the level of risk assigned to the discharge or release.

Should you have any questions, please contact John F. Maloy at the letterhead address or at (919) 571-4700

Sincerely,

Robert K. Davies

Robert K. Davies, L.G.
UST Section Regional Supervisor

cc: Ruth Strauss - Central Office
Raleigh Regional Office
Durham County Health Department

1628 Mail Service Center, Raleigh, NC 27699-1628
Telephone (919) 571-4700 \ FAX (919) 571-4718 \ Internet: www.enr.state.nc.us/ENR/
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**INTERIM
SITE ASSESSMENT REPORT**

**Former PSNC Warehouse and Training Center
211 South Hoover Road
Durham, Durham County, North Carolina 27703**

Prepared for:

Mr. Ken Johnson
PSNC ENERGY
a SCANA Company
800 Gaston Road
Gastonia, North Carolina
(704) 810-3115

Submitted to:

North Carolina Department of Environment and Natural Resources
Raleigh Regional Office
3800 Barrett Drive, Suite 101
Raleigh, North Carolina 276-7600

Prepared by:



Corporate Office: 380 Park Place Boulevard, Suite 300
Clearwater, Florida 33759
727-531-3505

Local Office: 6000 Fairview Road, Suite 300
Charlotte, North Carolina

TBE Project No. 00326-014-03

December 2003

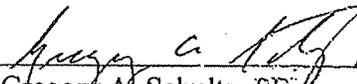
Signed by:  12/31/03
Gregory A. Schultz, PE
PE Number 028123

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1.0 INTRODUCTION

In July 2000, TBE Group, Inc. (TBE) was retained by PSNC Energy (PSNC) to conduct a Phase I environmental site assessment (ESA) at 211 South Hover Road, Durham, North Carolina. The ESA of the warehouse and training facility site was completed as part of a pending property transfer. The Phase I ESA identified potential environmental concerns on the property including: (1) historical on-site vehicle repair operations, (2) a hydraulic lift in former repair shop, (3) on-site staining and drum storage, (4) historical and current USTs, and potential off-site contaminant sources.

To further evaluate these concerns a limited Phase II ESA was conducted in August 2000. Solvent impacts were detected in an existing monitoring well and further assessment was recommended. The property transaction occurred and funds to continue the assessment were placed in escrow.

Since August 2000, the evaluation of site conditions has taken place in several stages, as results from prior events are used to direct additional assessment. The assessment activities conducted to date are detailed in the remainder of this report. These activities were conducted in accordance with procedures established in the *Groundwater Section Guidelines for the Investigation and Remediation of Soil and Groundwater*, July 2000.

The goal of this work is to provide assessment data needed to adequately evaluate the nature and extent of identified contamination and characterize the risk posed to human health and the environment .

2.0 SITE HISTORY AND SOURCE CHARACTERIZATION

2.1 SITE DESCRIPTION/LOCATION

The former PSNC warehouse and training center site (subject property) is located at 211 South Hoover Road, between the south terminus of South Hoover Road and US Highway 70 in Durham, Durham County, North Carolina. A site location map and site vicinity sketch are depicted in Figures 1 and 2, respectively.

The subject property is irregularly shaped and contains approximately 5.69 acres of land. The site is bounded by the Seaboard Coast Line Railroad (to the east), right-of-way for US Highway 70 (to the south), South Hoover Road and Harvard Avenue (to the west), and a commercial property (to the north). South Hoover Road terminates along the middle of the west property line and Harvard Avenue extends approximately 250 feet southwest from the terminus to the right-of-way of US Highway 70. The site located in an area of Durham developed with commercial, industrial and residential properties. The site and all adjacent properties are zoned industrial (I-2).

The site and the adjoining former PSNC property at 3001 Harvard Avenue are located within one contiguous fence line, with gated access along South Hoover Road. Original information available to TBE in late-2000, identified the entire fenced property by the 211 South Hoover Road address. Therefore, initial notification of contaminant impacts made to NCDENR reflect only the 211 South Hoover Road address.

2.2 SITE HISTORY

The subject property currently is developed with an approximately 12,760 square foot building that formerly contained the warehouse and training center. Appraisal information provided by PSNC indicates the warehouse portion of the structure was built in 1959, with the training center portion added in 1975. In addition, a 1,215 square foot metal storage warehouse (located on the north portion of the site) was built in 1988. An asphalt-paved parking area is located on the north and east sides of the former warehouse/training center building (main structure). A gravel lot is located between the main structure and the metal storage building. The portion of the site located between the metal

storage building and the north property line is wooded. A Site Layout Plan is provided as Figure 3.

The current site owner, Mr. Sam Robertti, leases the former warehouse to Clean Green, who recycles used antifreeze. The recycling process is conducted within a concrete secondary containment unit located within the building.

2.3 REGIONAL HYDROGEOLOGY

The USGS Southeast Durham, North Carolina, 7.5-minute series topographic map produced in 1993 was reviewed. The topographic map indicates the site is located at an approximate elevation of 400 feet above mean sea level. This map indicates topographic conditions and contours from which the general direction of surface water flow can be inferred to be toward the west. The USGS Quadrangle map is shown as the site location map in Figure 1.

The nearest surface water features depicted on the topographic map are an unnamed creek located approximately 1,000 feet to the east, and an unnamed creek located approximately 1,700 feet to the west.

The topography in the vicinity of the site is hilly, with ridges, spurs and draws in the vicinity of the site. Land surface in the immediate vicinity slopes generally downward to the west in the immediate vicinity.

Examination of hydrogeological data from the Geological Map of North Carolina indicates that the site is located within the Chatham Group of the Triassic Basin. The rocks beneath the site consist of a tan, medium to coarse grained micaceous Arkosic sandstone and brown clayey sandstone interbedded with brown to dark gray sandstone and mudstone.

3.0 ASSESSMENT METHODOLOGY

This section describes field sampling and laboratory analysis methodologies for assessment activities conducted by TBE to date at this facility. Assessment activities were conducted in several stages due to difficulties in coordinating site access with current occupants and obtaining access to adjacent rights-of way.

3.1 INITIAL ASSESSMENT (PHASE II ESA) METHODOLOGY

Based on concerns identified in the Phase I ESA, TBE conducted initial Phase II assessment activities at the subject property that included installation of soil borings for organic vapor analysis, as well as soil and groundwater sampling for laboratory analysis.

Site investigation work was initiated on August 23, 2000. The scope of this investigation was developed from review of the Phase I ESA conducted by TBE. To determine the potential for petroleum and/or organic contamination to exist on-site, TBE conducted soil and groundwater testing in potential suspect contaminant source areas as identified in the above review.

TBE installed 13 soil borings on-site using a Geoprobe™ drill rig for the collection of soil samples to the groundwater table (or refusal) to approximately 15-17 feet below land surface (bls). TBE screened the excavated soils with an Organic Vapor Analyzer (OVA) equipped with a photo ionization detector to identify the presence of hydrocarbon/solvent vapors in the soil. This task included coring through the existing concrete where required. The borings were strategically placed in areas most likely to represent potential contamination source areas (areas with surface staining, near the former out-of-service USTs, and suspect source areas - including potential off-site concerns). See Figure 4 for boring/sampling locations. Soil boring analytical data are included on Table 1, as well as the field logs contained in Appendix A.

Based on the results of the OVA screening, soil and groundwater samples were to be obtained from the boring(s) performed in areas with the highest OVA readings; or, in the absence of elevated OVA readings, in locations deemed most likely to intercept migrating contamination.

Soil samples were collected from Boring PB-2 (samples SS-1 @ 2 ft, 6ft & 8ft bls) from an area with surface staining along the south side of the warehouse building. This boring location exhibited elevated OVA responses in several sample intervals. Samples were obtained in accordance with appropriate protocols and analyzed for the presence of 8-RCRA metals, solvents, and petroleum hydrocarbons per EPA methods 6010, 8021 and 8270 (PAHs).

No impacts were detected at concentrations that exceeded North Carolina Administrative Code 15A, Subchapter 2L soil quality standards. The laboratory results are shown on Table 1.

Groundwater samples were collected from temporary one-inch PVC micro-wells (GW 1 & GW-2) installed using the Geoprobe™ rig. The Geoprobe™ uses direct-push technology to advance the sampling probe to the selected depth. The wells were installed to a depth of approximately 15 feet bls and constructed using a ten foot screen section and 5 feet of solid riser. In addition, one existing 2-inch diameter compliance well (MW-3), located adjacent to the out-of-service USTs, was sampled. Field measurements indicated the well had an approximate depth of 20 feet.

The wells were each purged a minimum of five well volumes each using new polyethylene tubing attached to a vacuum pump located on the rig. Once purged, samples were collected via Teflon bailer and were transferred to appropriate containers. The samples were maintained at four degrees Celsius using wet ice and transported to Environmental Science Corp. (ESC) Laboratories, along with completed chain-of-custody documentation. Samples were obtained in accordance with appropriate protocols and analyzed for the presence of solvent, gasoline, and aromatic hydrocarbons per EPA methods 8021 and 8270 (PAHs).

Results of this analysis indicated that 1, 1-dichloroethene and tetrachloroethene were detected at concentrations that exceeded North Carolina Administrative Code 15A, Subchapter 2L groundwater quality standards in MW-3 (see Table 2). No impacts above minimum laboratory detection limits were detected in GW-1 or GW-2.

Based on the presence of groundwater impacts above 2L criteria, TBE recommended that supplemental testing be conducted on-site to confirm the preliminary results using permanent well installation and sampling.

3.2 EXPANDED PHASE II ESA (OCTOBER/NOVEMBER 2000)

The primary focus of expanded Phase II assessment activities were twofold: (1) to install, sample and laboratory analyze groundwater initially from five permanent groundwater monitoring wells and evaluate the direction of groundwater flow, and (2) evaluate the presence of solvent-impacted groundwater originally detected during the Phase II ESA conducted by TBE.

3.2.1 Monitoring Well Installation Groundwater Sampling and Analysis

On October 30, 2000, TBE installed five permanent two-inch PVC monitoring wells MW-4 through MW-8 were using a truck mounted air drill rig. Wells MW-4 through MW-7 were installed to a depth of 20 feet below land surface (bls). The 20-foot wells were screened from 10 feet bls to the base of the well (10 feet of screen). Monitoring well MW-8 was installed to a depth of 30 feet bls due to its position at a higher surface elevation (i.e. to ensure that the water table was encountered). MW-8 was installed with 15 feet of 2-inch, 0.01-slotted screen and 15 feet of solid PVC riser. Each well was completed using 20/30 graded silica sand filter pack, bentonite seal, grout to land surface, and finished with a locking flush manhole (see Appendix A for Monitor Well Construction Detail).

Prior to sampling, the wells were purged a minimum of three well volumes each using new polyethylene tubing attached to a vacuum pump located on the rig. Once purged, samples were collected via Teflon bailer and were transferred to appropriate containers. The samples were maintained at four degrees Celsius using wet ice and transported to Environmental Science Corp. Laboratories along with completed chain-of-custody documentation. Samples were obtained in accordance with appropriate protocols and analyzed for the presence of volatile and semi-volatile solvent and petroleum product parameters per EPA methods 8021 and 8270C (full list).

3.2.2 Groundwater Flow Gradient Determination

Initially, monitoring wells MW-3 through MW-8 were utilized as part of the groundwater flow assessment. These wells were installed to depths of 20 to 25 feet bls. All wells used for the gradient determination were surveyed and elevations established relative to an arbitrary elevation established on-site. Once the elevation of the wells was established, depth to water within the wells was measured and the water table elevation was calculated and groundwater flow direction determined.

The well survey and water table elevation data are presented on Table 3 for the various dates measured. A total of 11 wells were eventually installed on-site as well as off-site. The resultant groundwater elevation contour maps are presented on Figures 5 and 5A for further review.

3.2.3 Results of Groundwater Analysis

Groundwater samples collected in November 2000 from all six monitoring wells installed by TBE were analyzed for solvent and petroleum constituents per EPA Method 8021 and 8270. The results of the above groundwater analysis identified the presence of solvent- and petroleum-related impacts below 2L criteria (see Table 2 for results). No clear source of the detected impacts was readily identifiable based on the existing sampling data. Based on these and prior data, TBE, on behalf of PSNC Energy, notified DENR of the preliminary results and need for further assessment to establish the source and extent of the contaminants detected on-site.

3.3 SUPPLEMENTAL GROUNDWATER ASSESSMENT

Based on the results of the preliminary assessment conducted above, it was determined that additional testing was necessary to determine the potential source location(s) of the contaminants detected. TBE personnel subsequently installed three additional permanent two-inch PVC monitoring wells during July 2001. The designation "W" (for Warehouse) was added to all of the existing and newly installed wells to provide a clear distinction from wells installed on the adjoining garage and office facility at 3001 Harvard Avenue (also being assessed by TBE).

MW-9W was installed downgradient of the out-of-service USTs and wells MW-10W and MW-11W were installed along the east and west sides of the former warehouse building (see Figure 6 for well locations). Each well was installed using a truck mounted air drill rig. Wells MW-9W through MW-11W were installed to a depth of 30 feet bls and were screened from 15 feet bls to the base of the well (15 feet of screen). Each well was completed using 20/30 graded silica sand filter pack, bentonite seal, grout to land surface, and finished with a locking flush manhole (see Appendix A for Monitor Well Construction Details).

Subsequent to the well installation, monitoring wells MW-3W, MW-4W, MW-6W, MW-9W, MW-10W and MW-11W were sampled for petroleum and solvent related impacts via EPA Method 8021. The results of the July 2001 sampling event revealed the following chemicals in excess of State 2L standards: MTBE in MW-9W (downgradient of USTs), trichloroethene in MW-10W (east side of warehouse), and tetrachloroethene and trichloroethene in MW-11W. The results are shown on Table 2 and Figure 6.

3.4 OUT-OF-SERVICE UST REMOVAL

In December 2001, the existing empty USTs were removed from the site by other consultants, at the direction of PSNC. A UST closure report documenting the removal of one 6,000-gallon diesel UST and two 15,000-gallon gasoline USTs was submitted to NCDENR on January 11, 2002. A Notice of No Further Action was sent to PSNC on January 17, 2002, referencing 214 South Hoover Road as the subject site address. The NCDENR letter is included as Appendix B.

3.5 SUPPLEMENTAL WELL INSTALLATION

While conducting field activities at the adjacent former PSNC garage facility (3001 Harvard Avenue), it was decided to install one additional well downgradient of MW-9W (previous MTBE exceedance). This well would provide perimeter groundwater data for use in report preparation and eliminate the need for an additional mobilization.

MW-12W was installed with a direct-push rig as a pre-packed one-inch diameter monitoring well. The well was initially labeled MW-DPB by the field crew on notes and the chain-of custody. The name was changed to MW-12W to maintain consistency with the existing well numbering scheme.

MW-12W was installed to a total depth of ten feet bls (based on a lower surface elevation than existing wells). The well was sampled for petroleum and solvent-related compounds via EPA Method 8021. No method parameters were detected in excess of North Carolina Administrative Code 15A, Subchapter 2L groundwater quality standards.

3.6 POTENTIAL SOURCE AREA IDENTIFICATION AND ASSESSMENT

During the field activities on August 19, 2002, the new property owner's tenant informed TBE personnel of an area of stained soil. The area was found after clearing vegetation from a previously overgrown area between the warehouse building and the property fence line, along the adjacent railroad. The new owner's tenant reportedly dug several small shovel holes into the area upon discovery and noticed an unusual odor.

TBE personnel collected a water sample from standing water in a shovel hole and collected a surface soil sample from the stained material. A solvent odor was noted, and a greenish liquid/residue was observed on portions of the standing water. The greenish liquid was collected as the surface water sample and labeled "unknown GW"(unknown Greenish Water). As noted above, the sample was from surface water and was not a groundwater sample. The samples were analyzed via EPA Methods 8260 and 8270.

The results of the sampling indicated petroleum, solvent and phenolic compounds detected in excess of North Carolina Administrative Code 15A, Subchapter 2L standards (See Tables 1 & 2).

3.6.1 Initial Soil Removal (January 2003)

Based on the results of the above sampling, this area may be one potential source area for the localized impacts detected on site. PSNC elected to remove the material to prevent potential further degradation of water quality on this portion of the site. Excavation and disposal activities were conducted by Contaminant Control, and oversight and confirmatory sampling was provided by TBE.

On January 22, 2003, TBE personnel oversaw the removal of approximately 28 tons of impacted soil from the area between the unused rail spur (located along the eastern side of the warehouse building) and the fenced property line adjacent to the active railroad (See Figure 7). Grab samples were collected for OVA analysis during the excavation and the readings are presented in Table 1A.

The excavation proceeded based on visual indications of impacts (e.g. staining, greenish liquid) and OVA readings, but was limited in size due to the property line and rail spur. A section of corrugated

metal pipe was encountered during the soil removal. The pipe was connected to a vitrified clay pipe (VCP) that stubbed up directly beneath a rain gutter downspout on the east side of the building. The pipe lay beneath the rail spur and extended to the property line. During the initial soil removal, the metal pipe was broken with the track-hoe at the east edge of the rail spur (leaving the portion from the spur to the building in place). Small observation holes were dug with a shovel to confirm the routing and connection of the pipe to the VCP stub.

A decision was made to collect confirmatory soil samples for laboratory analysis and evaluate the need for additional excavation based on the results. Six confirmatory soil samples were collected from the base and sidewalls of the excavation as shown on Figure 7.

The soil samples were collected per standard protocols and transferred directly to sample containers provided the laboratory. The samples were maintained at four degrees Celsius using wet ice and transported to Environmental Science Corp. Laboratories along with completed chain-of-custody documentation. The soil samples were analyzed for via EPA Methods 8082 (PCBs), 8270 (semi-volatile organics), 8260 (volatile organics), the 8-RCRA Metals, and gasoline- and diesel-range total petroleum hydrocarbons (TPH).

The excavation was secured pending receipt of the analytical results. The analytical data indicated exceedances of several NCAC 15A, 2L soil-to-groundwater target levels, as discussed in Section 4.

3.6.2 Supplemental Soil Removal (February 2003)

Based on the results of the above sampling, TBE and Contaminant Control personnel returned to the site on February 18, 2003, to resume excavation activities. Due to a large ice storm the previous day, the delivery of the OVA-PID was delayed. The excavation proceeded based on visual observations and odors. The previous hole was over-excavated until no visual/olfactory indications of impacts were observed.

In addition, the remainder of the corrugated metal pipe was removed from beneath the rail spur, and the approximately 3 foot by 3 foot area between the spur and building was excavated. All soil with visible impacts or exhibiting unusual odors was removed.

Melting snow and ice run-off was observed entering the excavation. A sump pump was used to pump the accumulated liquid into 55-gallon drums . Confirmatory soil samples SS-1, SS-2 and SS-3 were collected as shown on Figure 8. Due to the increasingly wet conditions from the melting snow and ice, it was determined that no additional representative, dry samples could be collected. To prevent the excavation from filling with water, which could potentially require specialized disposal at a future date, a decision was made to backfill and stabilize the excavation.

The following day additional confirmatory soil samples were collected with a direct push Geoprobe™ rig. Soil samples SS-4 and SS-5 were collected after probing to the appropriate depth to ensure collection of native material. After collection of the remaining soil samples, a permanent monitoring well was installed in the former excavation. The source well was installed to a depth of 20 feet bls and was screened from 10 feet bls to the base of the well (10 feet of screen). The well was completed using 20/30 graded silica sand filter pack, bentonite seal, grout to land surface, and finished with a locking flush manhole (see Appendix A for well construction details).

4.0 ASSESSMENT RESULTS

4.1 GROUNDWATER QUALITY RESULTS

Between August 2000 and February 2003, TBE sampled a total of 11 permanent and two temporary monitoring wells as shown on Table 1 and Figure 6. The results of the most recent sampling event are detailed below. Wells that that were previously sampled and revealed no contaminants of concern above laboratory detection limits were not resampled. All parameters analyzed were at levels below detection limits or 15A-2L standards, except as summarized below (exceeded North Carolina Administrative Code 15A, Subchapter 2L groundwater quality standards listed in parenthesis):

MW-3W (Southwest corner of building - near UST fuel island)

- 1,1-Dichloroethene 10 µg/l (7.0 µg/l)
- Trichloroethene (TCE) 12 µg/l (2.8 µg/l)
- Tetrachloroethene (PCE) 1.9 µg/l (0.7 µg/l)

MW-9W (downgradient from UST area)

- Methyl tert-butyl ether (MTBE) 300 µg/l (200 µg/l)

MW- 10W (southeast corner of building – near rail spur)

- Trichloroethene (TCE) 6.4 µg/l (2.8 µg/l)

MW-11W (West side of building – ± 100 feet southwest of excavated area)

- Trichloroethene (TCE) 4.5 µg/l (2.8 µg/l)
- Tetrachloroethene (PCE) 16 µg/l (0.7 µg/l)

MW-13W (potential source area)

- Tetrachloroethene (PCE) 10 µg/l (0.7µg/l)

Upon completion of the soil removals, a source area well (MW-13W) was installed. The groundwater sample from the well was analyzed via EPA Methods 8260 and 8270. The only exceedance of NCAC 15A, Subchapter 2L standards was for Tetrachloroethene (PCE) detected at 10 µg/l (2L standard is 0.7 µg/l).

Groundwater analytical results from the above sampling events are summarized on Table 2 and are graphically presented on Figure 6. Laboratory reports are included in Appendix C.

4.2 SURFACE WATER SAMPLE

TBE personnel collected a water sample from standing water in a shovel hole in the potential source area located along the abandoned rail spur to the east of the building. A solvent odor was noted, and a greenish liquid/residue was observed on portions of the standing water. The greenish liquid was collected as the surface water sample and labeled "unknown GW"(unknown Greenish Water). The samples were analyzed via EPA Methods 8260 and 8270.

The results of the sampling indicated petroleum, solvent and phenolic compounds detected in excess of North Carolina Administrative Code 15A, Subchapter 2L standards (in parenthesis) as shown below:

Source Area Surface Water (unknown GW)

• Benzene	120 µg/l (1.0 µg/l)
• Ethylbenzene	1500 µg/l (29 µg/l)
• Total Xylenes	3400 µg/l (530 µg/l)
• cis-1,2-Dichloroethene	5700 µg/l (70 µg/l)
• Trichloroethene (TCE)	710 µg/l (2.8 µg/l)
• Tetrachloroethene (PCE)	740 µg/l (0.7 µg/l)
• Fluoranthene	350 µg/l (280µg/l)
• Pyrene	250 µg/l (210µg/l)
• Phenol	190 µg/l (31µg/l)

All visual traces of the green liquid were removed with a sump pump and containerized in 55-gallon drums during the soil excavations conducted in this area. Waste disposal manifest are included in Appendix D.

4.3 SOIL QUALITY RESULTS

4.3.1 Soil OVA Results – Initial Assessment

Elevated OVA readings were detected in Geoprobe™ soil borings PB-1 through PB-4. However, no visual/olfactory evidence of significant impacts was observed. In addition, a soil sample collected for laboratory analysis from the location with one of the highest OVA readings contained no exceedances of NCAC 15A, 2L soil-to-groundwater standards. No other elevated OVA readings were detected in the 13 direct-push/Geoprobe™ borings completed at the site (See Figure 3). No OVA samples were collected during the monitoring well installations, as the air rig produced a very small amount of soil cuttings.

4.3.2 Soil OVA Results – Soil Excavation

OVA readings collected during the soil excavations ranged from <1.0 ppm to 280 ppm. The OVA results are shown on Table 1A, and the sample locations are depicted on Figures 7 and 8.

4.3.3 Soil Analytical Results – Initial Assessment

During the initial Phase II ESA, three soil samples were collected from boring PB-2, located in a stained area adjacent to a concrete pad (See Figure 4). The soil samples were collected 2 ft, 6 ft and 8 ft below land surface. Samples were obtained in accordance with appropriate protocols and analyzed for the presence of 8-RCRA metals, solvents, and petroleum hydrocarbons per EPA methods 6010, 8021 and 8270 (PAHs).

No impacts were detected at concentrations that exceeded North Carolina Administrative Code 15A, Subchapter 2L soil-to-groundwater quality standards. The laboratory results are shown on Table 1.

4.3.4 Soil Analytical Results – Surface Soil (Source Area)

During the August 2002 sampling event, a surface soil sample was collected from an area of stained soil located between the warehouse building and the property fence line, along the adjacent railroad. The area, located between an abandoned rail spur and the fence line, may be one potential source for the localized impacts identified on site. The soil sample was analyzed via EPA Methods 8260 and 8270. The analytical data indicated exceedances of NCAC 15A, 2L soil-to-groundwater target levels for the following compounds:

Surface Soil Staining

• Naphthalene	52 mg/kg (0.58 mg/kg)
• Benzo(a)anthracene	45 mg/kg (0.34 mg/kg)
• Benzo(b)fluoranthene	68 mg/kg (1.0 mg/kg)
• Benzo(k)fluoranthene	38 mg/kg (12 mg/kg)
• Benzo(a)pyrene	39 mg/kg (0.091 mg/kg)
• Indeo(1,2,3-cd)pyrene	11 mg/kg (3.0 mg/kg)

These compounds, in particular benzo(a)anthracene, are often encountered in association with railroad sites.

4.3.5 Initial Soil Removal Confirmatory Analytical Results – January 2003

Confirmatory soil samples collected after the first excavation of this area (January 2003) were analyzed via EPA Methods 8082 (PCBs), 8260 and 8270, GRO/DRO, and the 8-RCRA metals (As, Ag, Ba, Cd, Cr, Hg, Pb, and Se). The analytical data indicated exceedances of NCAC 15A, 2L soil-to-groundwater target levels (in parenthesis) for the following compounds:

SS-1 (west wall)

- Tetrachloroethene (PCE) 0.014 mg/kg (0.0074 mg/kg)
- Benzo(a)anthracene 0.65 mg/kg (0.34 mg/kg)
- Chromium 30 mg/kg (27 mg/kg)

SS-2 (north wall)

- Benzene 0.0068 mg/kg (0.0056 mg/kg)
- Ethylbenzene 0.86 mg/kg (0.24 mg/kg)
- cis-1,2-Dichloroethene 2.9 mg/kg (0.35 mg/kg)
- Tetrachloroethene (PCE) 0.06 mg/kg (0.0074 mg/kg)
- Trichloroethene (TCE) 0.062 mg/kg (0.0183 mg/kg)

SS-3 (east wall)

- Chromium 27 mg/kg (27 mg/kg)
- No Other Exceedances

SS-4 (south wall)

- No Exceedances

SS-5 (base - north)

- Ethylbenzene 0.77 mg/kg (0.24 mg/kg)
- cis-1,2-Dichloroethene 1.3 mg/kg (0.35 mg/kg)
- Tetrachloroethene (PCE) 0.44 mg/kg (0.0074 mg/kg)
- Trichloroethene (TCE) 0.1 mg/kg (0.0183 mg/kg)

SS-6 (base - south)

- Tetrachloroethene (PCE) 0.1 mg/kg (0.0074 mg/kg)
- Benzo(a)anthracene 0.5 mg/kg (0.34 mg/kg)

4.3.6 Supplemental Soil Removal Confirmatory Analytical Results - February 2003

Based on the above results a second excavation was conducted in February 2003 to remove additional impacted material. Confirmatory soil samples collected after the second excavation (February 2003) were analyzed via EPA Methods, 8260 and 8310, GRO/DRO, and the 8-RCRA metals (As, Ag, Ba, Cd, Cr, Hg, Pb, and Se). The analytical data indicated low-level exceedances of NCAC 15A, 2L soil-to-groundwater target levels (in parenthesis) for the following compounds:

SS-1 (west wall @ building)

- Tetrachloroethene (PCE) 0.084 mg/kg (0.0074 mg/kg)
- Benzo(a)anthracene 0.65 mg/kg (0.34 mg/kg)
- Chromium 60 mg/kg (27 mg/kg)

SS-2 (north wall)

- Tetrachloroethene (PCE) 0.008 mg/kg (0.0074 mg/kg)
- Chromium 27 mg/kg (27 mg/kg)

SS-3 (south wall @ base)

- Benzene 0.0068 mg/kg (0.0056 mg/kg)
- Tetrachloroethene (PCE) 0.22 mg/kg (0.0074 mg/kg)
- Benzo(a)anthracene 0.51 mg/kg (0.34 mg/kg)

SS-4 (east wall)

- Tetrachloroethene (PCE) 0.012 mg/kg (0.0074 mg/kg)

SS-5 (base - north)

- Tetrachloroethene (PCE) 0.077 mg/kg (0.0074 mg/kg)

5.0 SITE GEOLOGY AND HYDROGEOLOGY

Because the geology and hydrogeology of a given site affects the distribution and migration of contaminants, the soil lithology and relative groundwater elevation measurements were collected during this investigation.

5.1 SOIL LITHOLOGY

To characterize site-specific soil lithology, soil was examined during the installation of soil borings and monitoring wells on the property. Soil borings installed on-site encountered a variety of soil conditions ranging from fine-grained red orange clay, sandy clay and clayey sands to a depth of ± 16 feet bls. No significant contiguous confining layer was observed at this site.

5.2 GROUNDWATER GRADIENT

TBE personnel established monitoring well MW-3 as an arbitrary benchmark with an elevation of 25 feet. All subsequent well elevations were referenced from MW-3. Monitoring wells installed by TBE were tied in to the existing well elevations upon completion in November 2000. Depth to groundwater readings were collected on two separate occasions and a groundwater elevation contour map prepared for each event. Depth to water readings were not collected during the February 2003 event from MW-12W, as the diameter of the rented groundwater interface probe was too large for the micro-well.

The surficial groundwater gradient for the subject site was generally toward the west-southwest. The resultant groundwater elevation contour maps are presented on Figures 4 and 5 for further review.

5.3 SITE-SPECIFIC RECEPTOR SURVEY

Per information provided by Ms. Martha Fillinger with the Public Water Supply Section of DENR, no public water supply wells are located within a ½-mile radius of the subject site. According to the City of Durham Utilities Department, the site and surrounding area are supplied by public water. Copies of atlas sheets showing potable water and sewer service in the vicinity of the site are included in Appendix E.

According to the City of Durham Utilities Department, the source of the public water is either the Little River Reservoir or Lake Michie. The closest of these intakes is the Little River Reservoir, located more than eight miles north of the site.

An unnamed intermittent stream is located approximately 1,200 feet east of the apparent source area. According to the USGS topographic map for the site and surrounding area, the stream is a tributary of Little Lick Creek. The USGS map is depicted as Figure 1.

A vehicular and pedestrian survey conducted by TBE identified no obvious potable or irrigation wells within a 1,500-foot radius of the site.

According to the Raleigh Regional office of the DWQ Groundwater Section, there are no designated wellhead protection areas, as defined by USC 300h-7(e), within 1,500 feet of the site.

No subsurface conduits or structures are known to exist in the source area (the corrugated metal pipe and VCP stub were removed during the excavation).

According to Zoning Atlas Sheet # 0841, the site and surrounding properties are zoned I-2 (light industrial). The Light Industrial District (I-2) provides for a wide range of light manufacturing, warehousing, and wholesaling activities as well as offices and some support services.

6.0 CONCLUSIONS

Soil Lithology

Soil borings installed on-site encountered a variety of soil conditions ranging from fine-grained red orange clay, sandy clay and clayey sands to a depth of \pm 16 feet bls. No contiguous confining layer was observed at this site.

Groundwater Gradient

Based on groundwater data collected during this investigation, the apparent groundwater gradient is toward the west-southwest on the portion of the site where groundwater data has been collected.

Extent of Soil Contamination

Laboratory analysis of confirmatory soil samples collected from the second excavation of the apparent source area indicate that exceedances of North Carolina Administrative Code 15A, Subchapter 2L soil-to-groundwater quality standards remain in the apparent source area. Waste disposal manifests for the soil excavation are included in Appendix D. In addition, it appears that the extent of soil impacts either extends off-site to or originates from the adjacent railroad right-of-way.

No indications of soil contamination were identified on other portions of the site.

Extent of Groundwater Contamination

The groundwater impacts identified to date consist primarily of tetrachloroethene (PERC) and associated breakdown/daughter products. In addition, levels of MTBE above NCAC 15A, 2L groundwater quality standards were identified in MW-9W. The extent of these impacts has not been fully defined to date.

7.0 RECOMMENDATIONS

Based on the data available to date, TBE recommends the following actions be undertaken to finalize the assessment at the site:

- TBE recommends installing two additional 2-inch by 30 feet deep monitoring wells as shown on Figure 6, to finalize the on-site delineation of impacts.
- TBE recommends a full round of groundwater sampling from all wells, after the installation of the additional on-site wells. This will allow a more current evaluation of the levels of contaminants remaining on-site, and will assist TBE in determining if natural attenuation is occurring at the site.
- In addition to sampling the wells for identified solvents and petroleum-products, TBE recommends collecting natural attenuation parameters (e.g. nitrate, nitrite, iron, sulfate heterotrophic plate count) from select wells to evaluate the rate of natural degradation and the potential for use of bioremediation, should active remediation be necessary.

DURHAM WAREHOUSE: Confirmatory Soil Data
PSNC Energy - a SCANA Company



NE = Not Established

NA = Not Applicable

NS = Not Sampled

BDL = Below detection limits

Analytical Results = mg/kg

TABLE 1: SOIL ANALYTICAL SUMMARY

Sample Location	Sample Date	Benzene	sec-Butylbenzene	Ethylbenzene	Toluene	Total Xylenes	MIBK	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	Isopropylbenzene	Tetrachloroethene	Trichloroethene	n-Propylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Naphthalene	
Soil-to-Groundwater Maximum Contaminant Levels (mg/kg)		0.0056	3	0.24	7	5	0.92	4	0.0018	0.045	0.35	2	0.0074	0.0183	2	8	7	0.58	
INITIAL PHASE II ESA SAMPLES																			
SS-1 @ 2 ft	10/30/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SS-1 @ 6 ft	10/30/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SS-1 @ 8 ft	10/30/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
PRE-EXCAVATION SAMPLE																			
Unknown Soil	08/19/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	52
WAREHOUSE																			
1st EXCAVATION																			
SS-1	01/22/03	BDL	BDL	0.17	BDL	0.18	BDL	BDL	BDL	BDL	0.15	BDL	0.014	0.011	BDL	0.0013	BDL	BDL	BDL
SS-2	01/22/03	0.026	0.015	0.86	0.036	1.6	BDL	BDL	BDL	0.25	2.9	0.006	0.06	0.062	0.011	0.11	0.05	0.05	0.05
SS-3	01/22/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.0027	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SS-4	01/22/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.0019	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SS-5	01/22/03	0.0021	BDL	0.77	0.018	1.2	BDL	0.014	BDL	0.013	1.3	BDL	0.44	0.1	BDL	0.019	0.01	0.0095	0.0095
SS-6	01/22/03	BDL	BDL	0.067	BDL	0.055	BDL	BDL	BDL	BDL	0.018	BDL	0.1	0.0055	BDL	BDL	BDL	BDL	BDL
WAREHOUSE																			
2nd EXCAVATION																			
SS-1	02/19/03	BDL	BDL	0.22	BDL	BDL	BDL	BDL	BDL	BDL	0.15	BDL	0.084	BDL	BDL	0.0013	BDL	BDL	BDL
SS-2	02/19/03	BDL	BDL	BDL	BDL	BDL	BDL	0.0038	BDL	0.0038	0.0031	BDL	0.008	0.0023	BDL	BDL	BDL	BDL	BDL
SS-3	02/19/03	0.0068	BDL	0.16	BDL	0.034	BDL	BDL	BDL	BDL	0.16	BDL	0.22	0.018	BDL	0.0029	0.0015	0.0015	BDL
SS-4	02/19/03	BDL	BDL	BDL	BDL	BDL	BDL	0.0077	BDL	0.018	0.0085	BDL	0.012	0.0023	BDL	BDL	BDL	BDL	BDL
SS-5	02/19/03	BDL	BDL	BDL	BDL	BDL	BDL	0.016	BDL	0.033	0.034	BDL	0.077	0.0084	BDL	BDL	BDL	BDL	BDL

**DURHAM WAREHOUSE: Confirmatory Soil Data
PSNC Energy - a SCANA Company**



NE = Not Established
NA = Not Applicable
NS = Not Sampled
BDL = Below detection limits
Analytical Results = mg/kg

TABLE 1: SOIL ANALYTICAL SUMMARY

TABLE 1 : CONTINUED

Sample Location	Sample Date	Benz(a)anthracene	Benz(b)fluoranthene	Benz(k)fluoranthene	Benz(a)pyrene	Fluoranthene	Phenanthrene	Pyrene	Indeo(1,2,3-cd)pyrene	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	
Contaminant Levels (mg/kg)		0.34	1	12	0.091	276	60	286	3	NE	848	NE	27	270	NE	NE	NE	
INITIAL PHASE II ESA SAMPLES																		
SS-1 @ 2 ft	10/30/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NS	NS	NS	NS	NS	NS	NS	NS	
SS-1 @ 6 ft	10/30/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NS	NS	NS	NS	NS	NS	NS	NS	
SS-1 @ 8 ft	10/30/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NS	NS	NS	NS	NS	NS	NS	NS	
PRE-EXCAVATION SAMPLE																		
Unknown Soil	08/19/02	45	68	38	39	210	14	100	11	NS	NS	NS	NS	NS	NS	NS	NS	
WAREHOUSE																		
1st EXCAVATION																		
SS-1	01/22/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2	46	1.1	30	9.5	0.076	BDL	BDL	
SS-2	01/22/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.81	23	BDL	4.7	11	BDL	BDL	BDL	
SS-3	01/22/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2.4	55	0.97	27	9.2	0.12	BDL	BDL	
SS-4	01/22/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.3	54	0.5	14	18	0.035	BDL	BDL	
SS-5	01/22/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.4	53	0.67	17	10	BDL	BDL	BDL	
SS-6	01/22/03	0.5	BDL	0.42	BDL	3.2	0.72	1.9	BDL	2	19	0.72	19	8.1	BDL	BDL	BDL	
WAREHOUSE																		
2nd EXCAVATION																		
SS-1	02/19/03	0.65	0.79	0.15	BDL	7.3	2.2	1.8	0.064	5.1	180	0.49	60	38	0.042	BDL	BDL	
SS-2	02/19/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	76	BDL	27	12	0.044	BDL	BDL	
SS-3	02/19/03	0.51	0.28	0.17	0.067	2.7	1.4	1.4	BDL	BDL	74	BDL	18	12	BDL	BDL	BDL	
SS-4	02/19/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	86	BDL	27	12	BDL	BDL	BDL	
SS-5	02/19/03	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	RDL	90	BDL	24	7.3	BDL	BDL	BDL	

Notes: NE = Not established

DURHAM WAREHOUSE: Groundwater Data
 PSNC Energy - a SCANA Company

TABLE 2: GROUNDWATER ANALYTICAL SUMMARY



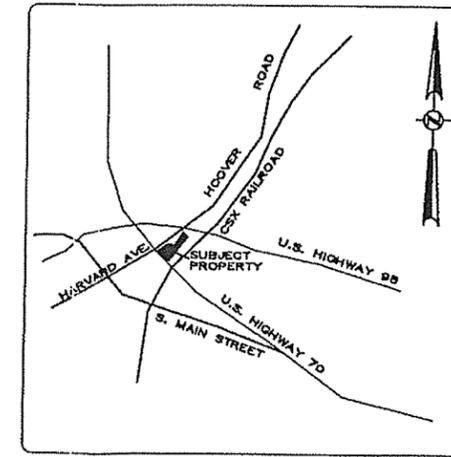
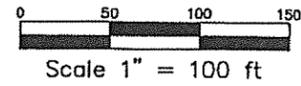
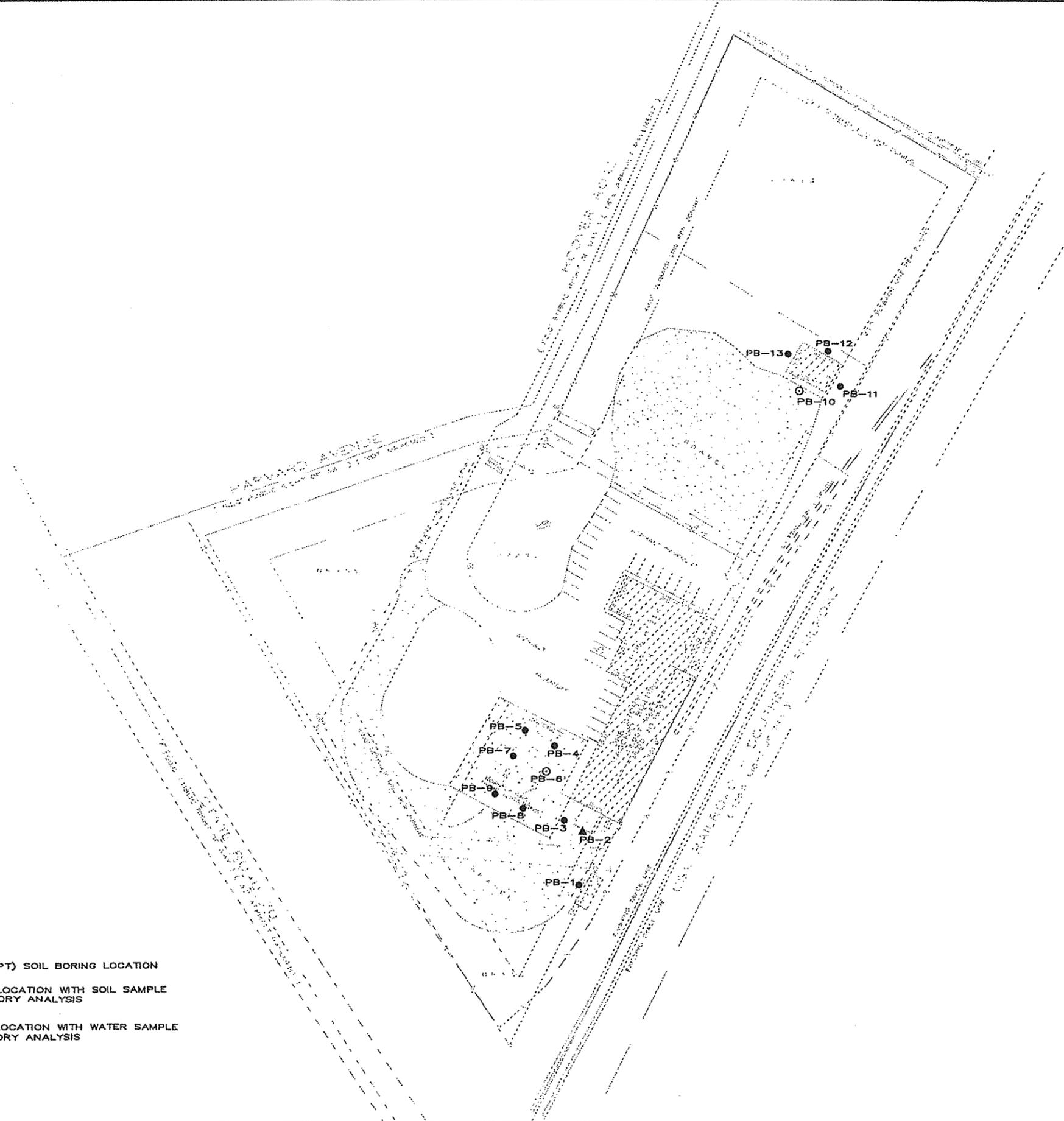
NA = Not Analyzed
 NS = Not Sampled
 BDL = Below detection limits
 Analytical Results = ug/L
 * ng/L

Sample Location	Sample Date	Benzene	sec-Butylbenzene	Ethylbenzene	Toluene	Total Xylenes	MTBE	1,1-Dichloroethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1,1-Trichloroethane	1,2-Dichloropropane	cis-1,2-Dichloroethane	Isopropylbenzene	Tetrachloroethene	Trichloroethene	n-Propylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Bis(2-ethylhexyl)phthalate	Fluoranthene	Phenanthrene	Pyrene	Phenol	
Target Levels (ug/L)		1	70	29	1000	530	200	700	0.38	7	0.56	1,2-Dichloropropane	70	70	0.7	2.8	70	350	350	3	280	210	210	31	
WAREHOUSE																									
GW-1	08/25/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
GW-2	08/25/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-3W	08/24/00	BDL	BDL	BDL	BDL	BDL	BDL	2.3	BDL	8.7	BDL	BDL	BDL	BDL	1.1	14	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	11/06/00	BDL	BDL	BDL	BDL	BDL	BDL	2.1	BDL	5.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	07/11/01	BDL	BDL	BDL	BDL	BDL	7.1	3.7	BDL	10	BDL	BDL	BDL	BDL	1.9	12	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-4W	11/06/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.5	BDL	BDL	BDL	BDL	BDL	2.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	07/11/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-5W	11/06/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	07/11/01	BDL	BDL	BDL	BDL	BDL	56	BDL	BDL	BDL	BDL	BDL	1.1	BDL	BDL	BDL	3.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-6W	11/06/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	07/11/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-7W	11/06/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	07/11/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-8W	11/06/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	07/11/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-9W	11/20/00	BDL	NS	BDL	BDL	BDL	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	BDL	BDL	BDL	BDL
	07/11/01	BDL	BDL	BDL	BDL	BDL	300	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-10W	07/11/01	BDL	BDL	BDL	BDL	BDL	BDL	2.1	BDL	2.7	BDL	BDL	BDL	BDL	BDL	6.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	07/10/01	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	16	4.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-11W	08/20/02	BDL	BDL	BDL	BDL	BDL	1.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Unknown GW (greenish liquid surface water from silted area)	120	BDL	1500	BDL	3400	BDL	47	BDL	BDL	BDL	BDL	5700	BDL	740	710	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
Source well (MW-13W)	2/19/2003	BDL	BDL	4.1	BDL	9.5	BDL	1.6	BDL	3.4	BDL	BDL	3.6	BDL	10	1.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	

DATE: 11/09/03 TIME: 11:17 SCALE: 100 FILENAME: J:\CAD\00326\00326014.02\FIG-1.DWG

LEGEND

- GROPROBE (DPT) SOIL BORING LOCATION
- ▲ SOIL BORING LOCATION WITH SOIL SAMPLE FOR LABORATORY ANALYSIS
- SOIL BORING LOCATION WITH WATER SAMPLE FOR LABORATORY ANALYSIS

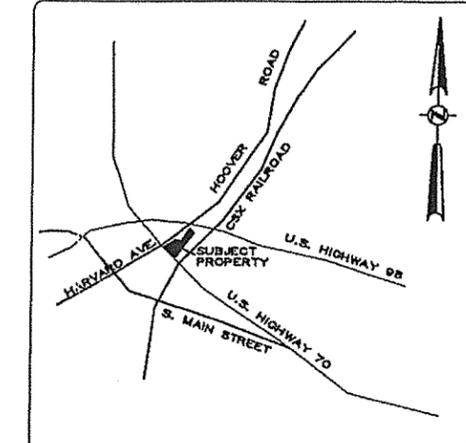
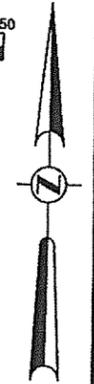
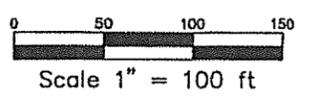
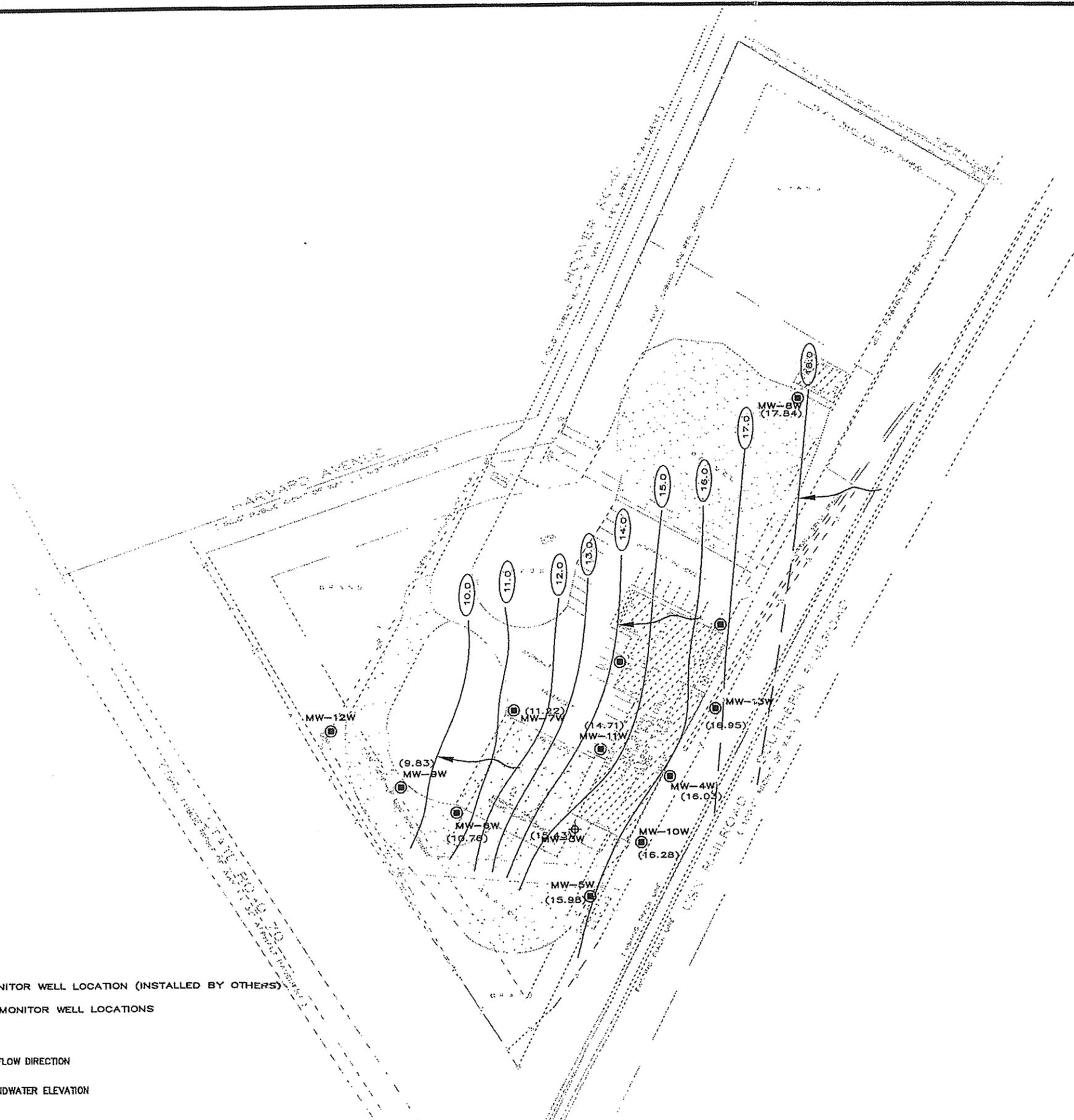


LOCATION MAP
NOT TO SCALE

<p>PSNC ENERGY & SCANA COMPANY 800 GASTON ROAD, GASTONIA, NORTH CAROLINA</p>		<p>TBE GROUP, INC. 880 Park Place Blvd., Suite 900 Clearwater, Florida 33759 (727) 631-3806 Fax (727) 639-8646</p>									
<p>211 SOUTH HOOVER ROAD DURHAM, NORTH CAROLINA</p>		<p>LIMITED PHASE II SAMPLE LOCATIONS</p>									
<p>Figure 4</p>											
<p>Revisions</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Date</th> <th>Description</th> <th>By</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	No.	Date	Description	By					<p>Project Mgr. CAS</p>	<p>Checked/QC</p>	<p>CADD By DWK</p>
No.	Date	Description	By								
<p>TBE Proj. # 00326-014-02</p>		<p>Scale: 1"=100'</p>									
<p>Date: 10/21/02</p>		<p> </p>									

DATE: 11/09/03 TIME: 11:17 SCALE: 100 FILENAME: J:\CAD\00326\00326014.02\FIG-1.DWG

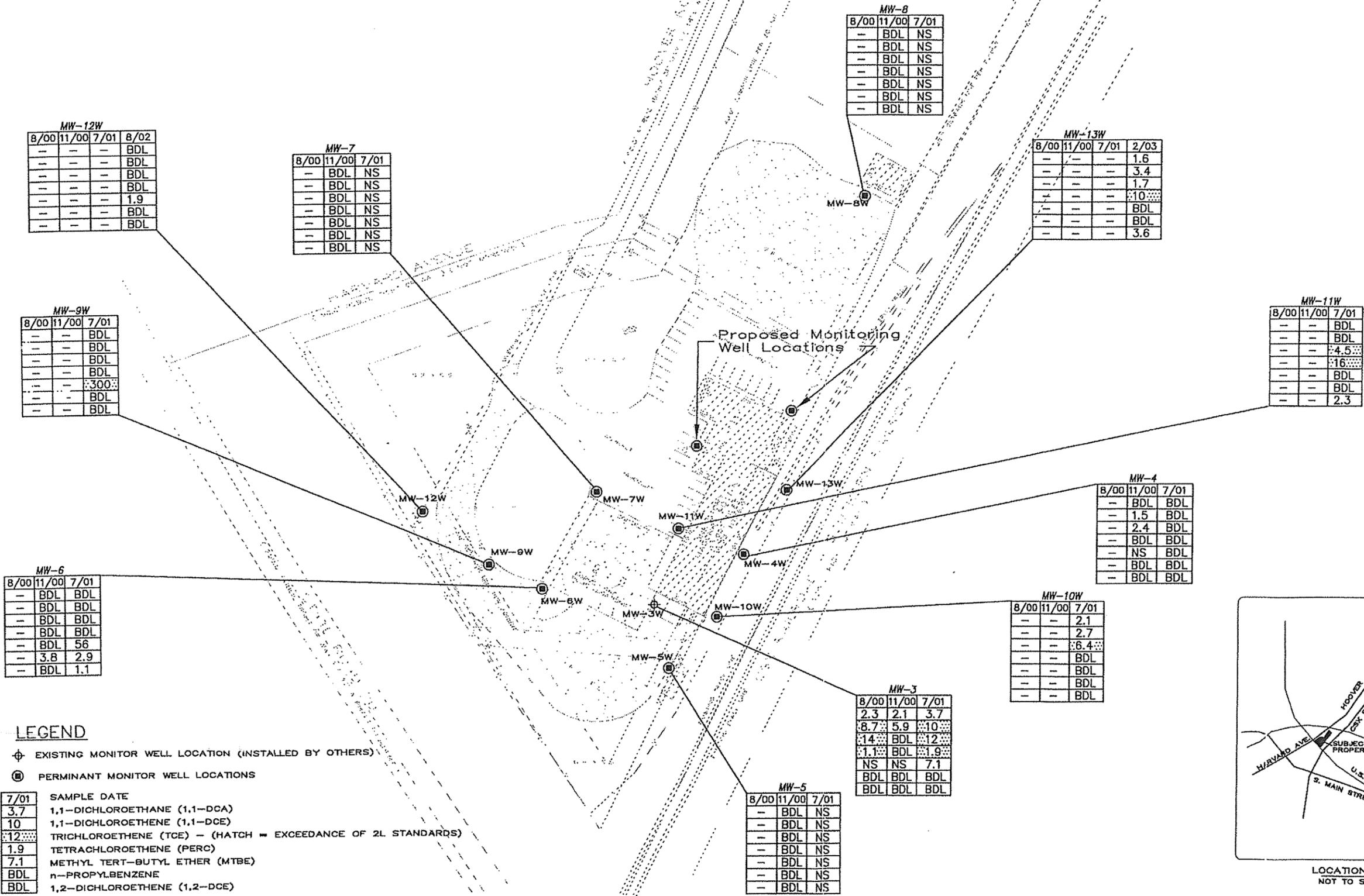
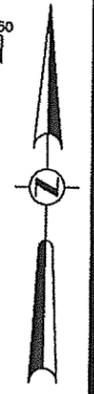
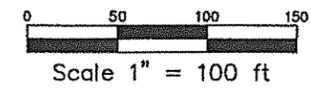
- LEGEND**
- ⊕ EXISTING MONITOR WELL LOCATION (INSTALLED BY OTHERS)
 - ⊙ PERMINANT MONITOR WELL LOCATIONS
 - GROUNDWATER FLOW DIRECTION
 - (10.76') RELATIVE GROUNDWATER ELEVATION



LOCATION MAP
NOT TO SCALE

<p>Revisions</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Date</th> <th>Description</th> <th>By</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	No.	Date	Description	By													<p>Project Mgr.: GAS Checked/QC: --- CADD By: DWK</p>	<p>TBE Group, Inc. 380 Park Plaza Blvd., Suite 800 Winston-Salem, NC 27106 Phone: (727) 539-8646 Fax: (727) 539-8646</p>	<p>TBE Proj. # 00326-014-02 Scale: 1"=100' Date: 10/21/02</p>
No.	Date	Description	By																
<p>PSNC ENERGY a SCANA COMPANY 800 GASTON ROAD, GASTONIA, NORTH CAROLINA</p>		<p>211 SOUTH HOOVER ROAD DURHAM, NORTH CAROLINA</p>																	
<p>GROUNDWATER ELEVATION CONTOUR MAP 2-19-2003</p>		<p>Figure 5A</p>																	

DATE: 11/09/03 TIME: 11:17 SCALE: 100 FILENAME: \\CAD\00326\00326014.02 FIG-1.DWG



MW-12W

8/00	11/00	7/01	8/02
-	-	-	BDL
-	-	-	BDL
-	-	-	BDL
-	-	-	BDL
-	-	-	1.9
-	-	-	BDL
-	-	-	BDL

MW-7

8/00	11/00	7/01
-	BDL	NS

MW-8

8/00	11/00	7/01
-	BDL	NS

MW-13W

8/00	11/00	7/01	2/03
-	-	-	1.6
-	-	-	3.4
-	-	-	1.7
-	-	-	10
-	-	-	BDL
-	-	-	BDL
-	-	-	3.6

MW-9W

8/00	11/00	7/01
-	-	BDL
-	-	300.3
-	-	BDL
-	-	BDL

MW-11W

8/00	11/00	7/01
-	-	BDL
-	-	BDL
-	-	4.5
-	-	16
-	-	BDL
-	-	BDL
-	-	2.3

MW-6

8/00	11/00	7/01
-	BDL	BDL
-	BDL	56
-	3.8	2.9
-	BDL	1.1

MW-4

8/00	11/00	7/01
-	BDL	BDL
-	1.5	BDL
-	2.4	BDL
-	BDL	BDL
-	NS	BDL
-	BDL	BDL
-	BDL	BDL

MW-10W

8/00	11/00	7/01
-	-	2.1
-	-	2.7
-	-	6.4
-	-	BDL
-	-	BDL
-	-	BDL

MW-3

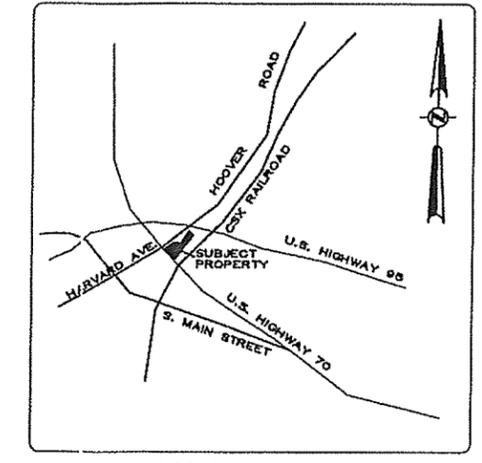
8/00	11/00	7/01
2.3	2.1	3.7
8.7	5.9	10
14	BDL	12
1.1	BDL	1.9
NS	NS	7.1
BDL	BDL	BDL
BDL	BDL	BDL

MW-5

8/00	11/00	7/01
-	BDL	NS

LEGEND

- ⊕ EXISTING MONITOR WELL LOCATION (INSTALLED BY OTHERS)
 - ⊙ PERMANENT MONITOR WELL LOCATIONS
- SAMPLE DATE**
- 3.7 1,1-DICHLOROETHANE (1,1-DCA)
 - 10 1,1-DICHLOROETHENE (1,1-DCE)
 - 12 TRICHLOROETHENE (TCE) - (HATCH = EXCEEDANCE OF 2L STANDARDS)
 - 1.9 TETRACHLOROETHENE (PERC)
 - 7.1 METHYL TERT-BUTYL ETHER (MTBE)
 - BDL n-PROPYLBENZENE
 - BDL 1,2-DICHLOROETHENE (1,2-DCE)



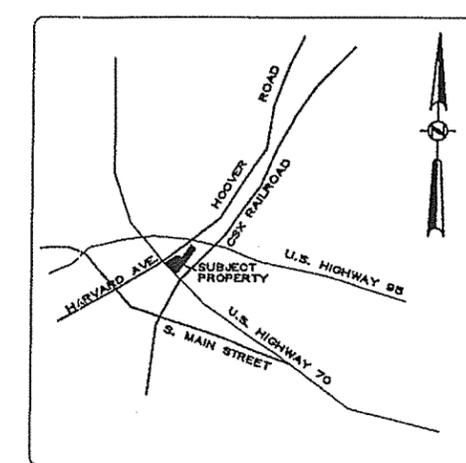
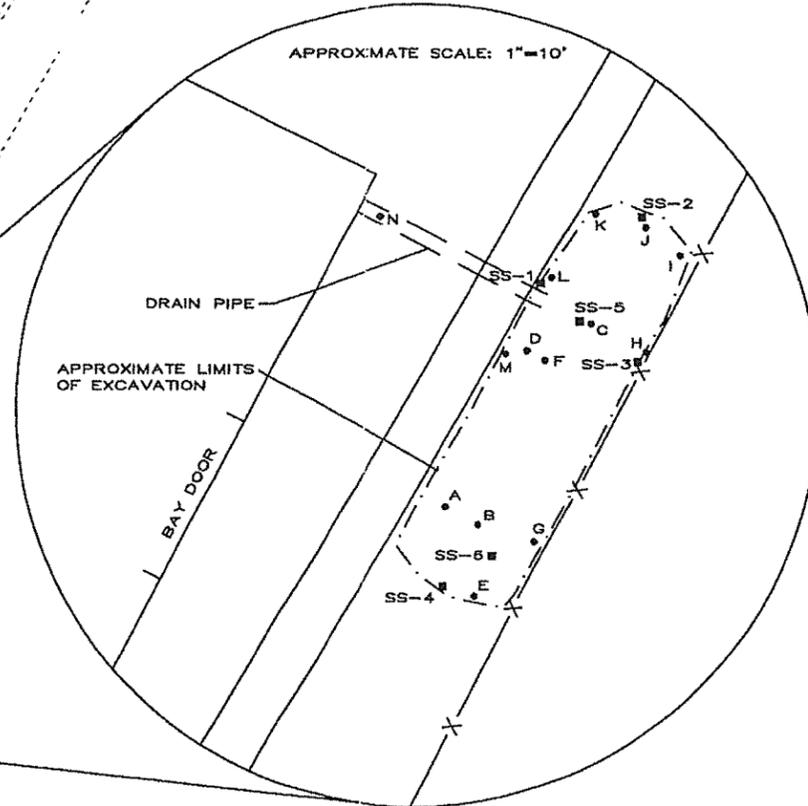
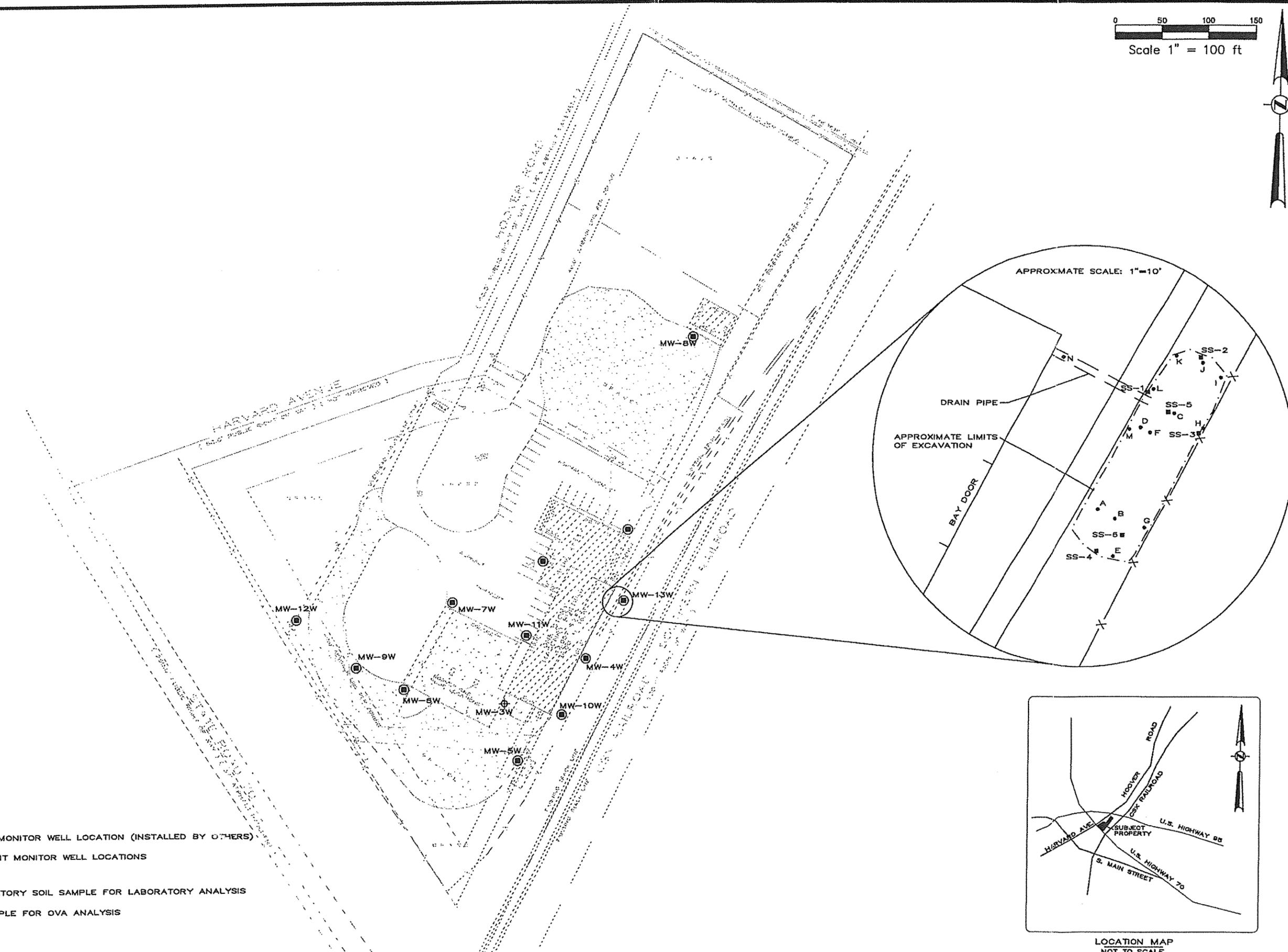
LOCATION MAP
NOT TO SCALE

<p>PSNC ENERGY a SCANA COMPANY 800 GASTON ROAD, GASTONIA, NORTH CAROLINA</p>	<p>TBE GROUP, INC. 590 Park Place Blvd., Suite 300 Clearwater, Florida 34750 (727) 631-8606 Clearwater, Fla (727) 639-8646</p>	<p>Project Mgr. GAS Checked/QC --- CADD By DWK</p>	<p>TBE Proj. # 00326-014-02 Scale: 1"=100' Date: 10/21/02</p>
<p>211 SOUTH HOOPER ROAD DURHAM, NORTH CAROLINA</p>			
<p>GROUNDWATER CONTAMINANT CONCENTRATIONS</p>			
<p>Figure 6</p>			

DATE: 11/09/03 TIT SCALE: 100 FILENAME: J:\CAD\00326\00326014.D2\FG-1.DWG

LEGEND

- ⊕ EXISTING MONITOR WELL LOCATION (INSTALLED BY OTHERS)
- ⊙ PERMINANT MONITOR WELL LOCATIONS
- CONFIRMATORY SOIL SAMPLE FOR LABORATORY ANALYSIS
- SOIL SAMPLE FOR OVA ANALYSIS



LOCATION MAP NOT TO SCALE

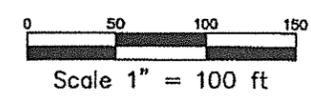
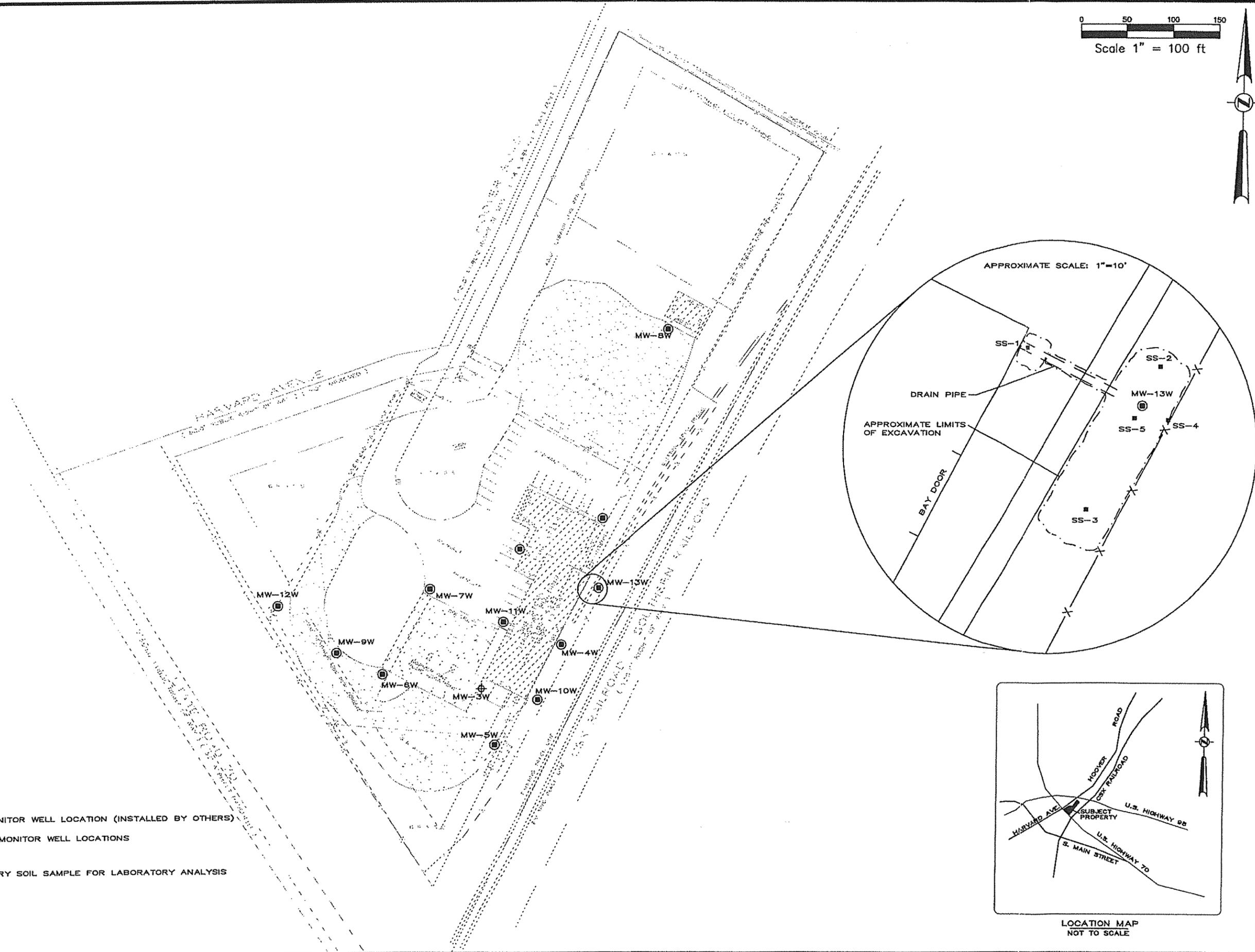
PSNC ENERGY a SCANA COMPANY 800 GASTON ROAD, GASTONIA, NORTH CAROLINA	
TBE GROUP, INC. 380 Park Plaza Blvd., Suite 300 Cary, NC 27513 (919) 851-8605 Fax: (919) 851-8646	
211 SOUTH HOOVER ROAD DURHAM, NORTH CAROLINA	
SOIL EXCAVATION PLAN JANUARY 22, 2003	
Figure 7	

Project Mgr:	GAS
Checked/QC:	
CADD By:	DWK
TBE Proj. #	00326-014-02
Scale:	1"=100'
Date:	10/21/02

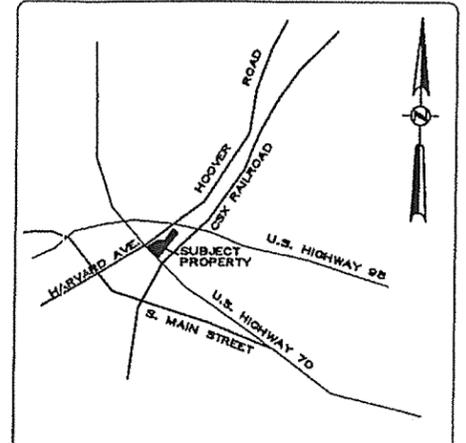
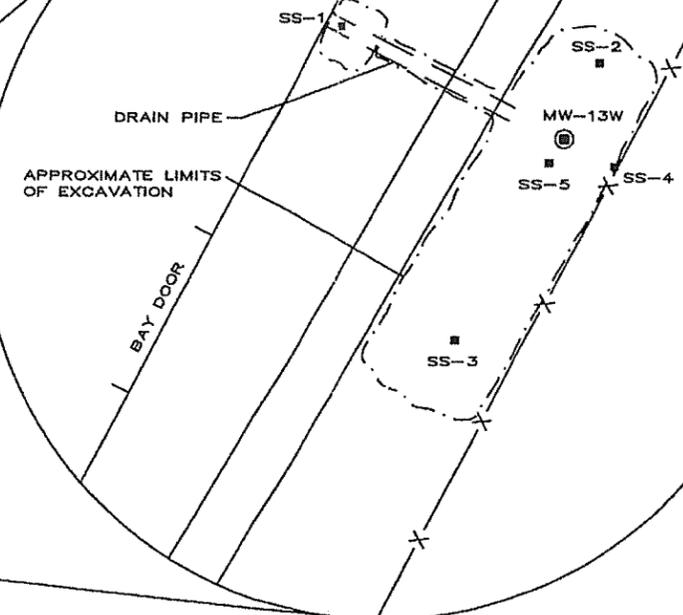
DATE: 11/09/03 TRV 1:17 SCALE: 100 FILENAME: J:\CAD\00326\00326014.02\FD-1.DWG

LEGEND

- ⊕ EXISTING MONITOR WELL LOCATION (INSTALLED BY OTHERS)
- ⊙ PERMINANT MONITOR WELL LOCATIONS
- CONFIRMATORY SOIL SAMPLE FOR LABORATORY ANALYSIS



APPROXIMATE SCALE: 1"=10'



LOCATION MAP
NOT TO SCALE

<p>PSNC ENERGY & SCANA COMPANY 800 GASTON ROAD, GASTONIA, NORTH CAROLINA</p>	<p>TBE GROUP, INC. 380 Park Place Blvd., Suite 800 Clearwater, Florida 33759 (727) 631-3605 Fax (727) 631-8445</p>	<p>Project Mgr.: GAS Checked/QC: --- CADD By: DWK</p>	<p>TBE Proj. # 00326-014-02 Scale: 1"=100' Date: 10/21/02</p>
<p>211 SOUTH HOOVER ROAD DURHAM, NORTH CAROLINA</p>			
<p>SOIL EXCAVATION PLAN FEBRUARY 18, 2003</p>			
<p>Figure 8</p>			



September 29, 2008

Mr. Darrell Shier
1426 Main St
MC 133
Columbia, SC 29201

RE: **August 2008 Groundwater Sampling Event Summary**
Durham Warehouse Site
211 South Hoover Road, Durham, N.C.

INTRODUCTION

TBE Group, Inc (TBE) is pleased to submit this groundwater sampling event summary detailing the sampling activities conducted in August 2008, for the above referenced site.

The approved scope included the collection of groundwater samples from monitor wells MW-3W, MW-4W, MW-5W, MW-6W, MW-7W, MW-9W, MW-10W, MW-11W, MW-13W, MW-14W, and MW-15W. In addition, a depth-to-water (DTW) measurement was collected from MW-8W.

This summary details the current level of contaminant impacts collected during the August 2008 groundwater sampling event. A site plan is attached as **Figure 1**.

BACKGROUND

Environmental site assessment work has been conducted in various stages at the site since August 2000. The work has included the installation of a total of 13 groundwater monitor wells and the removal of a small amount of impacted soils. Groundwater impacts (primarily solvent-related) have been detected in monitor wells located around the perimeter of the main on-site building.

February 2005 Supplemental Assessment

TBE personnel sampled existing monitor wells to update existing assessment data and evaluate certain natural attenuation parameters. In addition, depth-to-water readings were collected from all accessible wells to determine an estimated direction of shallow groundwater flow at the site.

On February 23, 2005, monitor wells MW-9W, MW-10W, MW-11W, and MW-13W were sampled for volatile organics via EPA Method 8260 and for select natural attenuation parameters (Nitrate, Nitrite, Sulfate, Ethane, Ethene, Ferrous Iron, Sulfide and Total Organic Carbon). Laboratory analysis identified solvent-related impacts in MW-10W, MW-11W, and MW-13W. Based on these results, monitor wells MW-14W and MW-15W were installed.

May 2005

TBE personnel sampled the recently installed monitor wells MW-14W and MW-15W to further delineate the contaminant plume on site and evaluate certain natural attenuation parameters.

On May 11, 2005, monitor wells MW-14W and MW-15W were sampled for volatile organics via EPA Method 8260. Laboratory analysis identified solvent related impacts in MW-15W. No constituents of concern exceeded the North Carolina Administrative Code (NCAC) 15A Subchapter 2L water quality standards in MW-14W.

August 2005

TBE personnel sampled select monitor wells to evaluate the contamination levels and degradation rates in the contaminate plumes.

On August 10 and 11, 2005, monitor wells MW-3W, MW-4W, MW-5W, MW-6W, MW-7W, MW-9W, MW-10W, MW-11W, MW-13W, MW-14W, and MW-15W were sampled for volatile organics via EPA Method 8260. The results of the August 2005 semi-annual monitoring event, indicated that all sampled wells with the exception of MW-4W and MW-6W contained petroleum and/or solvent-related contaminants at the site above NCAC 15A Subchapter 2L water quality standards.

February 2006

TBE personnel sampled select monitor wells to update existing assessment data and evaluate certain natural attenuation parameters.

On February 21, 2006, monitor wells MW-3W, MW-4W, MW-5W, MW-6W, MW-7W, MW-9W, MW-10W, MW-11W, MW-13W, MW-14W, and MW-15W were sampled for volatile organics via EPA Method 8260. The results of the data obtained from the February 2006 monitoring event, indicate that both petroleum and solvent-related contaminants were detected at the site above NCAC 15A Subchapter 2L water quality standards in MW-3W, MW-7W, MW-11W, and MW-15W.

Pursuant to a request from PSNC, TBE submitted a proposal, which was subsequently approved on November 14, 2006, to conduct baseline sampling of solvent impacted wells, conduct a Emulsified Oil Substrate (EOS®) injection pilot test, and conduct follow up sampling to evaluate the effectiveness of the injection event. The intent of the EOS® injection pilot test is to determine the effectiveness of the EOS product, obtain design information for full-scale implementation and to evaluate the need for microbe addition.

December 2006

TBE completed the following scope of work to establish baseline contaminant concentrations in the area of proposed EOS® injection in the vicinity of monitor wells MW-3W, MW-4W, MW-7W, MW-13W, and MW-15W. . On December 13, 2006, monitor wells MW-3W, MW-4W, MW-7W, MW-13W, and MW-15W were sampled for volatile organics via EPA Method 8260, nitrate, iron, sulfate, methane, ethane, dissolved organic carbon (DOC), and total organic carbon (TOC).

Based on the data obtained from these sampling activities, the only contaminants detected at the site above NCAC 15A, Subchapter 2L, water quality standards were tetrachloroethene, trichloroethene, and 1,1-Dichloroethene in MW-3W and MW-13W. Additionally, vinyl chloride and ferrous iron exceedances were detected in MW-7W, and ferrous iron, tetrachloroethene, and trichloroethene exceedances were detected in MW-15W. Pursuant to a request from PSNC, the EOS injection pilot test and subsequent sampling were put on hold to allow additional time for natural attenuation to reduce or eliminate remaining contaminant levels. *

METHODOLOGY

August 2008 Groundwater Sampling Event

In an effort to determine if the pilot test should be conducted, PSNC requested a proposal to conduct a new round of baseline sampling. TBE completed the following scope of work to establish contaminant concentrations in eleven on site monitor wells. Field sampling activities were conducted in accordance with TBE's Comprehensive Quality Assurance Plan (CompQAP). All analytical work was done by a State of North Carolina-certified lab accredited by the National Environmental Laboratory Accreditation Conference (NELAC).

On August 5th and 6th, 2008, monitor wells MW-3W, MW-4W, MW-5W, MW-6W, MW-7W, MW-9W, MW-10W, MW-11W, MW-13W, MW-14W, and MW-15W were sampled for volatile organics via EPA Method 8260. The samples were collected using new disposable polyethylene bailers and were transported to appropriate glassware. The sample containers were maintained at four degrees Celsius using wet ice and transported to Environmental Science Corporation (ESC) laboratory along with completed chain-of-custody documentation.

AUGUST 2008 ASSESSMENT RESULTS

All parameters analyzed were at levels below detection limits or NCAC 15A, 2L standards, except as summarized below (exceeded NCAC 15A, 2L groundwater quality standards listed in parenthesis):

MW-3W (northeast corner of building)

- 1,1-Dichloroethene (1,1-DCE) 36 µg/l (7 µg/l)
- Tetrachloroethene 2.5 µg/l (0.7 µg/l)
- Trichloroethene 30 µg/l (2.8 µg/l)

MW-7W

- Benzene 2.7 µg/l (1 µg/l)
- Vinyl Chloride 8.2 µg/l (0.015 µg/l)

MW-10W

- 1,1-Dichloroethene (1,1-DCE) 13 µg/l (7 µg/l)
- Trichloroethene 4.6 µg/l (2.8 µg/l)

MW-11W

- 1,1-Dichloroethene (1,1-DCE) 19 µg/l (7 µg/l)
- Tetrachloroethene 42 µg/l (0.7 µg/l)
- Trichloroethene 25 µg/l (2.8 µg/l)

MW-13W

- 1,1-Dichloroethene (1,1-DCE) 24 µg/l (7 µg/l)
- Tetrachloroethene 52 µg/l (0.7 µg/l)
- Trichloroethene 11 µg/l (2.8 µg/l)

MW-15W (Parking lot along west side of building-±80 feet north of MW-11W)

- Tetrachloroethene 8.6 µg/l (0.7 µg/l)
- Trichloroethene 9.8 µg/l (2.8 µg/l)

No exceedances were detected in the sample from MW-4W, MW-5W, MW-6W, MW-9W, and MW-14W. The results of the August 2008 sampling event are detailed in **Table 1**, and laboratory analytical data and sampling logs are included in **Attachment 1**.

AUGUST 2008 GROUNDWATER ELEVATION SUMMARY

DTW measurements were collected from twelve existing on site monitor wells. The DTW measurements were compared to surveyed top-of-casing elevations to calculate relative water-table elevations, where applicable. The groundwater elevations collected from shallow monitor wells indicate groundwater flow to the southwest and northwest. A groundwater elevations summary is included as **Table 2** and presented graphically with contours on **Figure 2**.

CONCLUSIONS AND RECOMMENDATIONS

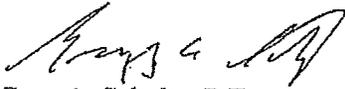
Based on the results from the baseline groundwater sampling event conducted in August 2008, it appears concentrations of constituents of concern have, in general, increased across the site. Additionally, shallow groundwater flow, as indicated by DTW measurements collected from MW-8W and sampled monitor wells, reveal a gradient to the northwest and southwest. TBE recommends the preparation of a proposal to conduct bioaugmentation to stimulate the degradation of the contaminant impacts remaining at the site.

Mr. Darrell Shier
September 29, 2008
Page 5 of 5

Should you have any questions or require additional information, please do not hesitate to contact me at 727-531-3505.

Best Regards,

TBE GROUP, Inc



Greg A. Schultz, P.E.
Senior Project Manager
NC Registration No. 028123



Rick Hagberg, PG
Director of Environmental Services

GAS/jkm

**Remedial Investigation Work Plan
Former PSNC Warehouse and Training Center
211 South Hoover
Durham, North Carolina
NONCD 0001869**

February 6, 2012

**Prepared by:
Hart & Hickman, PC
H&H Job No. SCA-003**

**Prepared for:
PSNC Energy
800 Gaston Road
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OUR CLIENTS DEMAND A SMARTER SOLUTION

Sent Via Hand Delivery

February 14, 2012

Ms. Janet Macdonald
REC Program
Inactive Hazardous Sites Branch - Superfund Section
NC Division of Waste Management
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Raleigh, North Carolina 27603

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Reference: Remedial Investigation Work Plan
Former PSNC Warehouse and Training Center, Durham, NC
NONCD 0001869
H&H Project No. SCA.003

Dear Ms. Macdonald:

Hart & Hickman is pleased to provide this Remedial Investigation Work Plan (RIWP) for the above-referenced site. One copy of the certified Work Plan, including the Remediating Party and RSM certification statements, are provided on the enclosed CD.

If you have any questions or concerns, please contact me at (919) 847-4241.

Sincerely,

Hart & Hickman, PC

Leonard C. Moretz, L.G., RSM
Project Director/Branch Manager

Enclosures (1)

cc w/enclosure: Wali Motorwalla– SCANA Corporation

**Remedial Investigation Work Plan
Former PSNC Warehouse and Training Center
Durham, NC
NONCD 0001869**

H&H Job # SCA-003

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**Remedial Investigation Work Plan
Former PSNC Warehouse and Training Center
Durham, NC
NONCD 0001869**

H&H Job # SCA-003

1.0 Introduction

Hart & Hickman, PC (H&H), on behalf of PSNC Energy (PSNC) has prepared this Remedial Investigation (RI) Work Plan (Work Plan) for submittal to the North Carolina Department of Environment and Natural Resources (NCDENR) for completion of an RI of the former Public Service Company of North Carolina (PSNC) Warehouse and Training Center located at 211 South Hoover Road in Durham, Durham County, North Carolina (Site). A Site Location Map is included as Figure 1 and the Site Plan, illustrating site features, is included as Figure 2.

On February 11, 2011, PSNC entered into an Administrative Agreement (AA) for Registered Environmental Consultant (REC) - Directed Assessment and Remedial Action Pursuant to North Carolina General Statutes (N.C.G.S.) 130A-310.9(c) and 15A North Carolina Administrative Code (NCAC) 13C .0300 (Docket No. 10-SF-337) with the NCDENR for voluntary remedial action at the Site under North Carolina's REC Program. Under this AA and in accordance with the rules and requirements of the REC program, PSNC retained H&H as its REC.

The objectives of the RI are to identify releases of hazardous substances to the environment, identify potential exposure pathways, characterize the nature of such releases, collect sufficient sampling data to support cleanup-level determination, delineate the areal and vertical extent of contamination, and characterize Site conditions sufficiently to conduct a feasibility study of remedial alternatives and support a proposed remedy.

The scope of work presented in this Work Plan is based on information obtained from:

- A review of current and past operational activities at the facility;
- An evaluation of potential sensitive receptors in the Site area;

- A review of historical aerial photographs and other historical information for the Site and Site area; and
- Results of previous investigations.

This RI Work Plan has been prepared to meet the specific requirements of the following:

- the Site specific AA;
- the NCDENR REC Program Implementation Guide dated August 2011 (referred to herein as the REC Guidance); and
- the requirements for RI Work Plans contained in NCAC Title 15A 13C .0306(g).

2.0 Site Background Information

The Site is currently owned by Samuel Roberti, R. David Wicker, Jr., Thomas Uhrich, and Donna Mansour (the owners), who purchased the property in December 2000. The owners currently lease the property to Resource Reformers, LLC (aka Clean Green) who uses the facility to recycle antifreeze, oil filters, heat transfer fluid, and glycol fluids. Clean Green also removes and recovers waste oil, removes and disposes of tanks, and removes waste water, fuel oil, and diesel fuel. The recycling process is conducted within a concrete secondary containment unit located within the building.

The Site is located at 211 South Hoover Road in Durham, Durham County, North Carolina (latitude 35°59'13.96"N, longitude 78°51'37.26") and consists of approximately 5.69 acres with a 12,760 sq ft, one-story building. The warehouse portion of the structure was built in 1959, with the training center portion added in 1975. In addition, a 1,215 sq ft metal storage warehouse (located on the northern portion of the site) was added in 1988. The Site is bounded by CSX Railroad/Norfolk Southern right-of-way (ROW) to the east, US Highway 70 ROW to the south, South Hoover Road and Harvard Avenue to the west, and commercial property to the north.

The Site is located in an area of Durham developed with commercial, industrial and residential properties. The Site and all adjacent properties are zoned industrial (I-2). The Facility currently consists of office space and a fluids recycling area. A paved (asphalt and concrete) driveway, above-ground antifreeze / oil storage area with secondary containment, and loading dock area are present in the front of the Facility. An asphalt-paved parking area is located on the north and west sides of the former warehouse/training center building (main structure). A gravel lot is located between the main structure and the metal storage building. The portion of the site located between the metal storage building and the north property line is wooded.

The Site and the adjoining former PSNC property at 3001 Harvard Avenue are located along one contiguous fence line, with gated access on South Hoover Road. Original information

concerning the Site address identified the entire fenced property by the 211 South Hoover Road address. Therefore, initial notification of contaminant impacts made to NCDENR reflects only the 211 South Hoover Road address.

No information is available concerning the status of the Site prior to 1959. PSNC owned the property from 1959 until January 2001 when they sold the property to Samuel Roberti (50%), Thomas Uhrich (20%), David Wicker (20%), and Donna Mansour (10%). In June of 2006, Thomas Uhrich sold his 20% ownership of the two undeveloped acres on the northern portion of the property to Samuel Roberti. Clean Green has operated a fluids recycling facility, as discussed above, at the property from 2002 until present. Copies of the current property deeds are located in Appendix A. A Site Survey Map, which was completed by a Licensed North Carolina Land Surveyor in March 2011, is included as Appendix B.

3.0 Environmental Setting

3.1 Regional and Site Geology

The Site is situated within the Piedmont physiographic province of North Carolina. The Piedmont is bordered to the east by the Coastal Plain physiographic province and to the west by the Blue Ridge physiographic province. More specifically the Site is located within the Durham sub-basin, the northernmost Triassic basin in the Deep River Basin. The Triassic Basin lies between the Carolina Slate Belt to the west and the Raleigh Belt to the east. The Triassic Basin is underlain by igneous and metamorphic rocks covered by consolidated and unconsolidated sedimentary deposits. Structurally, the Triassic Basin is a half-graben flanked by a major normal fault along the western boundary toward which the strata in the basin dip. Based on a review of the Geologic Map of North Carolina (Parker, 1985) the Site is located within the Chatham Group of the Triassic Basin. Near-surface sedimentary rocks in the vicinity of the Site consist of a tan, medium to coarse grained micaceous, Arkosic sandstone and brown clayey sandstone interbedded with brown to dark gray sandstone and mudstone.

During the Interim Site Assessment (ISA), conducted by TBE Group, Inc. (TBE) at the Site in December 2003 (Appendix C), competent sedimentary rock was encountered at depths ranging from 6 to 17 ft below ground surface (bgs) and consisted primarily of arkosic sandstone. The wells installed as part of the ISA are screened in the shallow, unconfined zone composed of unconsolidated surficial soils and/or regolith.

The Durham County soil survey describes soils at the Site as belonging to the Mayodan Series. These soils consist of nearly level to moderately steep, grayish brown sandy loam grading to a dark red sandy clay loam and sandy clay at depth. Soil borings installed by TBE during multiple investigations encountered a variety of soil conditions ranging from fine-grained red orange clay, sandy clay and clayey sands to a depth of approximately 16 ft bgs. No significant contiguous confining layer was observed at this site (TBE 2003).

3.2 Regional and Site Hydrogeology

The occurrence and movement of groundwater within rift basins such as the Triassic Basin is within two separate but interconnected water-bearing zones. A shallow, unconfined zone occurs within the unconsolidated surficial soils and/or weathered rock (regolith) and a deeper zone occurs within the underlying competent sedimentary rocks. Groundwater in the shallow unconsolidated materials is typically under water table conditions with generalized groundwater flow being from topographic highs (recharge areas) to topographic lows (discharge areas). The occurrence and movement of groundwater in the underlying, more competent sedimentary rocks is primarily controlled by joints, fractures, and faults. Groundwater within the rock may occur under unconfined or confined conditions.

As indicated on the United States Geological Survey (USGS) *7.5-Minute Topographic Quadrangles, Southeast Durham, Northeast Durham, Northwest Durham, and Southwest Durham, North Carolina* (Figure 1), surface elevations at the Site range from a high of approximately 416 ft above mean sea level (amsl) along the northern boundary of the Site to a low of approximately 380 ft amsl along the western boundary. Based on the slope of the surficial topography, shallow groundwater in the immediate vicinity of the Site is expected to flow toward an unnamed creek, located approximately 1000 ft west and topographically downgradient from the Site. The unnamed creek flows in a northerly direction in the vicinity of the Site. Characteristics of the subsurface conditions beneath the Site have been evaluated based on the findings of numerous assessment activities completed at the Site (see Section 5.1). The results of these assessment activities are discussed within this Work Plan and provided in their entirety as appendices to this submittal.

Potentiometric data generated as part of the assessment activities completed to date at the Site indicate that shallow groundwater beneath the Site is generally flowing from east to west towards the unnamed creek. Monitoring wells on Site are screened at depths of 10 to 20 and 20 to 30 ft bgs. Historical monitoring data indicate that depth to groundwater on Site typically ranges from

6 to 13 ft bgs. A groundwater flow map using groundwater elevation data collected by TBE on August 6, 2008 is included as Figure 3.

3.3 Water Resources in the Vicinity

The Facility has reportedly been connected to public water and sewer since it was constructed in 1959. No public water supply wells were identified on, or adjacent to the subject property. The North Carolina Surface Water Assessment Program (SWAP) did not identify any public water supply wells within 0.5 miles of the Site. TBE conducted a vehicular and pedestrian survey and did not identify any obvious potable or irrigation wells within a 1,500-ft radius of the Site.

According to the City of Durham Utilities Department, the Site and surrounding areas are supplied by public water. According to the City of Durham Utilities Department, the source of the public water is either the Little River Reservoir or Lake Michie. The closest of these intakes is the Little River Reservoir located more than eight miles north of the site.

3.4 Environmentally Sensitive Areas in the Vicinity

The REC Program Guidance requires the Site and all adjacent properties be evaluated for the existence of environmentally sensitive areas. A summary of the agencies contacted, environmentally sensitive areas managed by that agency, persons contacted, and the contact results are summarized in Appendix D. Where applicable, supporting documentation for the agency contacts is also included in Appendix D. Other than the information received from NCDENR DWQ, apparently there are no environmentally sensitive areas known to exist in the vicinity of the Site.

4.0 Site History

4.1 Operational History

To identify past and current hazardous substance use and waste management practices, H&H conducted the following:

- obtained an Environmental Data Resources, Inc. (EDR) radius map report (Appendix E);
- reviewed the Site file at the NCDENR Division of Waste Management Superfund Section and documents provided by PSNC;
- conducted a site visit and interviewed current PSNC employees that were knowledgeable about historical operations at the facility;
- reviewed the ESA conducted by TBE in July 2000; and
- reviewed historical aerial photographs for the Site and surrounding area.

Two previous PSNC employees were interviewed at the site on January 7, 2011. Scott Parker worked at the 211 South Hoover Rd Facility from approximately 1990 to 2000 and at that time was a Locating Crew Leader. Frank Berry worked at the 3001 Harvard Avenue Facility from approximately 1970 to 2000 and was a Meter Technician during that timeframe. They indicated the Warehouse portion of the Site was built in 1959 as a facility to repair and maintain residential gas meters. Residential gas meters were brought to the facility where they were cleaned, serviced, and repainted for return to service. Paint was removed from gas meters via various solvents including mineral spirits. Cutting oils were also used on site while threading sections of pipe that connected to natural gas meters. No records of solvent or cutting oil purchase or waste removal were kept by PSNC. These employees also indicated mercury was used in the repair and replacement of gauges in the gas meters. However, no written records of mercury handling were kept by PSNC.

The following chemical storage and waste management practices were identified in the TBE Phase I ESA completed in July 2000 when PSNC still owned and operated the facility.

- No activities requiring significant chemical use were observed at the Site. However, two stand-mounted 55-gallon drums were observed adjacent to the south side of the warehouse. One drum was labeled mineral spirits and the other had no labels. The drums were in fair condition with surface rust only. Soil staining was observed on the adjacent parking lot. Mr. Whitted (Warehouse Supervisor) indicated that one drum contained paint thinner used in cleanup associated with the painting of gas meters and stations. He stated that the other drum contained cutting oil used to thread pipe sections. In addition to the stand-mounted drums, approximately ten 55-gallon drums were observed resting on bare ground along the property line to the southeast of the main building. The majority of labels were missing or illegible. However, drums labeled new oil, and heat transfer fluid (primarily ethylene glycol) were noted. Minor staining and stressed vegetation was observed in this area.
- An area of stained soil approximately 14 ft by 8 ft area was observed beneath a parked truck adjacent to the southeast corner of the concrete underground storage tank (UST) pad. Mr. Whitted indicated the staining was from a previously parked backhoe and trucks at that spot. Another area of oily stained soil was also observed along the fence line near the northeast corner of the training center. The stained area was approximately 6 ft by 2 ft. Based on review of the Site survey, this area appears to be located within the adjacent railroad ROW. No other staining, odors or stressed vegetation was noted on the site.
- Historical waste generation at the facility is expected to have included petroleum products and solvents associated with the vehicle repair shop formerly located in the metal storage building. Mr. Whitted indicated the repair shop was in use for approximately 10 years. An in-ground hydraulic lift was noted in the former repair shop. During a recent site visit, presence of the in-ground lift was confirmed. These types of in-ground hydraulic lifts are considered underground storage tanks and therefore closure of this lift would be regulated by the NCDENR UST Section.
- No spent mercury-containing light bulbs or light ballasts were observed at the facility.

- A pole-mounted transformer was observed between the main building and the metal storage building. The transformer was in good condition, with no signs of corrosion, damage, leakage or surface staining. No obvious labels concerning PCB content were observed.
- Mr. Whitted indicated the facility is connected to municipal water, but has a septic system. The use of a septic system on the Site increases the potential concern associated with chemical use. Materials entering drains or shop sinks would likely impact soil and groundwater via the septic system drain field rather than entering the municipal sewer. Recent contact with the property owners indicates that the facility has been connected to the municipal sewer system for some time.

The Environmental Data Report (EDR) for this facility identified eight underground storage tanks listed below. Tank closure reports are included in Appendix C.

- One 12,000-gallon diesel UST installed in 1980; removed and permanently closed in 1990;
- One 550-gallon Kerosene UST installed in 1963; removed and permanently closed in 1990;
- One 8,000-gallon gasoline UST installed in 1963; removed and permanently closed in 1990;
- One 1,000-gallon gasoline UST installed in 1964; removed and permanently closed in 1990;
- One 20,000-gallon gasoline UST installed in 1973; removed and permanently closed in 1990;
- Two 15,000-gallon gasoline USTs installed in 1990 and removed in November 2001 (NFA-January 17, 2002); and
- One 6,000-gallon diesel UST installed in 1990 and removed in November 2001 (NFA-January 17, 2002)

There is no Sanborn fire insurance map coverage for the Site area because it was not within the City limits during that period of history. However, historic aerial photos provided by the North Carolina Department of Transportation (NCDOT) were reviewed. Aerial photos of the Site and vicinity were procured and reviewed for NCDOT aerial missions flown on March 6th, 1964, March 20, 1975, July 21, 1987, and February 23, 1993 (Appendix F).

The 1964 aerial photo was of poor quality but the main Warehouse and Training Center building was distinguishable. Based on the presence of vehicles parked outside the facility, it appears the Site was operational in 1964. The railroad spur in the northeast portion of the Site appears to have been installed prior to 1964.

The 1975 aerial photo shows the Warehouse and Training Center as well as the vehicle maintenance building on the northeast portion of the property. Wooded areas on the property have been cleared for additional development and parking areas. Some small circular objects on the southeast side of the maintenance building may indicate a drum storage area. Some unidentified objects are resting adjacent to the property line on the northeast corner of the warehouse building.

The 1987 aerial photo shows the presence of a concrete pad on the southwest side of the warehouse in the former UST area. No additional site development except for the installation of two large natural gas tanks to the southwest of the warehouse building. Vehicles, building materials, and debris appear to be stored on the northern portion of the property adjacent to the vehicle maintenance building. Shadows on the image and higher humidity during the summer image capture decrease the visibility for any small objects that may be present.

The 1993 aerial photo shows expansion of the concrete pad area on the southeast side of the warehouse building. Various sized natural gas tanks appear to be stored on the northern portion of the property near the vehicle maintenance building. A drum storage area is evident on the south side of the warehouse building. Some unidentified objects are resting adjacent to the

property line on the northeast corner of the warehouse building. These appear to be the same objects that were seen in the 1975 aerial photo.

4.2 Site Regulatory History

The former PSNC Warehouse and Training Center was regulated under the NCDENR Aquifer Protection Section (APS) under incident #86755 from the early 2000s to approximately 2008 when it was transferred in to the NCDENR Inactive Hazardous Sites Branch (IHSB) under Site ID#NONCD0001869. The IHSB requested that PSNC enter the Registered Environmental Consultant (REC) program on July 17, 2009. On September 30, 2009 an Administrative Agreement (AA) was drafted by the IHSB for PSNC review. After multiple revisions, and payment of the initial program fees, the final AA was signed on February 11, 2011.

The former PSNC Warehouse and Training Center did not handle waste under any RCRA permits during their tenure at the property.

5.0 Previous Investigations

Previous investigative and soil removal activities associated with the Site have been conducted by PSNC. These activities included the sampling of soils, groundwater, and the excavation and disposal of impacted soil. A brief summary of the previous activities is provided below, and copies of the reports are presented in Appendix C. The areas addressed are shown on Figures 2, 4 and 5.

5.1 Phase I Environmental Site Assessment – July 2000

As part of a property transaction, PSNC contracted TBE to complete a Phase I Environmental Site Assessment (Phase I ESA) of the Site for Lincoln Harris Company, LLCs in July 2000.

Results of the Phase I ESA indicated the following areas of potential environmental concern:

- Historical on-site vehicle repair operations.
- Hydraulic lift in former repair shop.
- On-site staining and improper drum storage.
- Historical and current USTs.

As part of the Phase I ESA, NCDENR files were reviewed. The files indicated that one, 20,000-gallon gasoline, one 8,000-gallon gasoline, and one 550-gallon kerosene UST were removed from the Site in February/March 1990. A 12,000-gallon diesel UST was removed from the Site in September 1990. Contaminated soil was encountered during the initial UST closure and was excavated and stockpiled on-site. No soil contamination above state guidance levels was encountered during the removal of the 12,000-gallon diesel UST. However, additional soil contamination was encountered when widening the excavations to allow for installation of one new 6,000- and two new 15,000-gallon USTs. This contamination was determined to be related to the tanks removed in early 1990. A total of 700 cubic yards of contaminated soil was removed from the area between February and September 1990. The soil was stockpiled on plastic sheeting until

stockpile samples (March 1991) indicated the material was acceptable to land apply at the site. The majority of the soil was spread on the adjacent PSNC parcel located at 3001 Harvard Avenue.

5.2 Limited Phase II ESA (August 2000)

As a result of environmental concerns identified during the Phase I ESA report, TBE completed a Limited Phase II ESA at the Site on August 23 through 24, 2000. Unfortunately, no copy of this report was located for reference. However, information regarding this Limited Phase II ESA was incorporated into later reports; therefore, the summary provided comes from those later reports.

The Limited Phase II ESA was conducted to evaluate the presence of soil and groundwater contamination associated with areas of potential environmental concern. Soil and groundwater samples were collected via direct push technology (DPT) methods. Groundwater was collected from existing well MW-3 associated with UST compliance. On October 30, 2000, monitoring wells MW-4 through MW-8 were installed to assess the extent of impacts. Soil samples SS-1 2ft, 4ft, and 6ft were collected. No soil impacts were detected.

TBE installed 13 soil borings on-site using a DPT rig to approximately 15-17 ft bgs. Soil samples were collected from Boring PB-2 (samples SS-1 @ 2ft, 6ft & 8ft bgs) from an area with surface staining along the south side of the warehouse building. This boring location exhibited elevated Organic Vapor Analyzer (OVA) responses in several sample intervals. Samples were analyzed for the presence of 8-RCRA metals, solvents, and petroleum hydrocarbons per EPA Methods 6010, 8021, and 8270.

No impacts were detected at concentrations that exceeded 15A North Carolina Administrative Code (NCAC) Soil-to-Groundwater standards. Groundwater samples were collected from temporary one-inch PVC wells (GW-1 & GW-2) installed using DPT methods. In addition, one existing 2-inch diameter compliance well (MW-3), located adjacent to the out-of-service USTs, was sampled. Samples were analyzed for the presence of VOCs and SVOCs by EPA methods 8021 and 8270.

1,1-Dichloroethene (1,1-DCE) and tetrachloroethene (PCE) were detected at concentrations in excess of the 15 A NCAC Subchapter 2L groundwater quality standards (2L Standards) in MW-3. Based on the presence of groundwater impacts above 2L Standards, TBE recommended that supplemental testing be conducted on Site to confirm the preliminary results.

5.3 Expanded Phase II ESA (October/November 2000)

On October 30, 2000, TBE installed five permanent two-inch PVC monitoring wells (MW-4 through MW-8) using a truck mounted air drill rig. MW-8 was installed with 15 ft of 2-inch, 0.01-slotted screen and 15 ft of solid PVC riser. Groundwater samples were obtained in accordance with appropriate protocols and analyzed for the presence of VOCs and SVOCs by EPA methods 8021 and 8270C.

Groundwater sampling indicated the presence of VOC impacts below the 2L standard. No clear source area had been defined. TBE, on behalf of PSNC Energy, notified NCDENR of the preliminary results and need for further assessment to establish the source and extent of the contaminants detected on-site.

5.4 Supplemental Groundwater Assessment (July 2001)

Based on the results of the preliminary assessment conducted in October/November 2000, it was determined that additional investigation was necessary to define the source area. On July 10 and 11, 2001, TBE personnel installed three additional permanent two-inch PVC monitoring wells (MW-9W, MW-10W, and MW-11W) using a truck mounted air rig. A designation of "W" was given to these wells to distinguish them from the wells at the adjacent 3001 Harvard Avenue Site.

The results of the July 2001 groundwater assessment revealed the presence of the following chemicals in excess of the 2L Standards: MTBE in MW-9W (downgradient of UST area),

trichloroethene in MW-10W (east side of warehouse), and PCE and trichloroethene (in MW-11W).

5.5 Out of-Service UST Removal (December 2001)

In December 2001, the existing, empty USTs were removed from the site by S&ME, Inc. at the direction of PSNC. A UST closure report documenting the removal of one 6,000-gallon diesel UST and two 15,000-gallon gasoline USTs was submitted to NCDENR on January 11, 2002. A Notice of No Further Action was sent to PSNC on January 17, 2002, referencing 214 South Hoover Road as the subject site address.

5.6 Supplemental Well Installation (July 2001)

TBE installed one additional well, designated MW-12, downgradient of MW-9W. MW-12W was installed to a total depth of 10 ft bgs with a DPT rig as a pre-packed one-inch diameter monitoring well. No VOCs were detected in excess of the 2L Standards.

5.7 Potential Source Area Identification and Assessment (August 2002)

During field activities on August 19, 2002, the new property owner's tenant informed TBE personnel of an area of stained soil. The area was found after clearing vegetation from a previously overgrown area between the warehouse building and the property fence line, along the adjacent railroad. The new owner's tenant reportedly dug several small shovel holes into the area upon discovery and noticed an unusual odor.

TBE personnel collected a water sample from standing water in a shovel hole and collected a surface soil sample from the stained material. A solvent odor was noted, and a greenish liquid residue was observed on portions of the standing water. The greenish liquid was collected as the surface water sample and labeled "unknown GW" (unknown Greenish Water). As noted above, the sample was from surface water and was not a groundwater sample. The samples were

analyzed via EPA Methods 8260 and 8270. The results of the sampling indicated petroleum, solvent, and phenolic compounds detected in excess of the 2L Standards.

5.8 Initial Soil Removal (January 2003)

Based on the results of the soil sampling conducted in August 2002, PSNC elected to remove the impacted soil to prevent potential further degradation of water quality on this portion of the site. Excavation and disposal activities were conducted by Contaminant Control, Inc. (CCI), with oversight and confirmatory sampling by TBE.

On January 22, 2003, approximately 25 tons of impacted soil was removed from the area between the unused rail spur (located along the eastern side of the warehouse building) and the fenced property line adjacent to the active railroad. The location of this excavation is illustrated on Figure 2. The excavation proceeded based on visual indications of impacts (e.g. staining, greenish liquid) and OVA readings, but was limited in size due to the property line and rail spur. Soils were excavated to depths of approximately 1 to 2.5 ft bgs. A section of corrugated metal pipe was encountered during the soil removal. The pipe was connected to a vitrified clay pipe (VCP) that stubbed up directly beneath a rain gutter downspout on the east side of the building. The pipe lay beneath the rail spur and extended to the property line. During the initial soil removal, the metal pipe was broken with the track-hoe at the east edge of the rail spur (leaving the portion from the spur to the building in place). Small observation holes were dug with a shovel to confirm the routing and connection of the pipe to the VCP stub.

Confirmation soil samples were collected from depths of 1.5 to 2.5 ft bgs and analyzed for VOCs, SVOCs, Polychlorinated Biphenols (PCBs), metals, and gasoline- and diesel-range total petroleum hydrocarbons (TPH). The excavation was secured pending receipt of the analytical results. The analytical data indicated that PCE, TCE, cis-1,2-DCE, benzene, ethylbenzene, benzo(a)anthracene, and chromium exceeded their respective soil-to-groundwater cleanup levels. Analytical data are included in the ISA report completed by TBE in December 2003 (Appendix C).

5.9 Supplemental Soil Removal (February 2003)

Based on the results of confirmatory sampling from the initial excavation, additional soil was removed on February 18, 2003. The existing excavation was over-excavated until no visual or olfactory indications of impacts were observed. The depth of the over-excavation was approximately 3 ft bgs. In addition, the remainder of the corrugated metal pipe was removed from beneath the rail spur, and the approximately 3 ft by 3 ft area between the spur and building was excavated. All soil with visible impacts or exhibiting unusual odors was removed.

The work was being completed in February after a snow/ice storm and melting snow and ice runoff was observed entering the excavation. A sump pump was used to pump the accumulated liquid into 55-gallon drums. Confirmatory soil samples SS-1, SS-2, and SS-3 were collected at the base of the excavation, a depth of 3 ft bgs. Due to the increasingly wet conditions from the melting snow and ice, it was determined that no additional representative, dry samples could be collected. To prevent the excavation from filling with water, which could potentially require specialized disposal at a future date, the decision was made to backfill and stabilize the excavation.

The following day additional confirmatory soil samples were collected with a DPT rig. Soil samples SS-4 (4 ft bgs) and SS-5 (5 ft bgs) were collected after probing to the appropriate depth to ensure collection of native material. The analytical data indicated that PCE, benzene, benzo(a)anthracene, and chromium remained at concentrations exceeding their respective soil-to-groundwater cleanup levels. Analytical data are included in the ISA report completed by TBE in December 2003 (Appendix C). After collecting the remaining soil samples, a permanent monitoring well (MW-13W) was installed in the former excavation. The groundwater sample collected from MW-13W was analyzed for VOCs (8260B), SVOCs (8270C), and metals (6010B + 7470A). Tetrachloroethene was detected in excess of the 2L Standards. Arsenic, Barium, Cadmium, Chromium, and Lead were also detected in excess of the 2L Standards.

5.10 Conclusions from Previous Work

Historic site investigations indicate that impacts remain in soil and groundwater on-site. A summary of soil and groundwater findings are included below.

5.10.1 Soil

Areas of potential environmental concern identified in the Phase I ESA were investigated by TBE in subsequent Phase II investigations. Impacted soils were detected during site assessment activities in August 2002 in the area adjacent to the railroad spur (MW-13W area). More than 30 tons of impacted soils were removed in the vicinity of MW-13W during two removal actions completed in January and February 2003. Due to site physical and boundary restrictions it was not possible to remove residual impacted soil that extended below the railroad spur or adjacent Railroad ROW. Residual soil impacts of chlorinated solvents and SVOCs remain above the IHSB Soil Remediation Goals (SRGs) at several locations beneath and adjacent to the excavation area. Total chromium was also detected in confirmation samples in excess of the IHSB SRGs for Chromium (IV); however, Chromium speciation was not conducted during sample analysis so it is possible that the Chromium detected is Chromium III and therefore is not an issue. Residual soil impacts in the vicinity of MW-13W have not been delineated and will require further evaluation to determine if they are a continuing source of groundwater impact. No other areas of potential environmental concern were assessed during Phase II investigations conducted by TBE that had soil impacted above SRGs. An isoconcentration map of PCE in soil is included as Figure 4. Historic soil data are included in the ISA report completed by TBE in December 2003 (Appendix C).

5.10.2 Groundwater

Residual dissolved-phase groundwater impacts remain at several Site monitoring wells. Historic data indicate that PCE and its daughter products slightly exceed the 2L Standards at monitoring wells MW-3W, MW-5W, MW-7W, MW-10W, MW-11W, MW-13W, and MW-15W. A total

Chlorinated Volatile Organic Compound (CVOC) groundwater isoconcentration map is included as Figure 5. Minor dissolved-phase petroleum hydrocarbon impacts associated with historic vehicle fueling operations also remain. MTBE has historically exceeded the NCAC 2L Ground Water Standard at monitoring well MW-7W and MW-9W (located downgradient from the former gasoline USTs); although more recent sampling events demonstrate that MTBE has consistently decreased. Benzene at monitoring well MW-7W remains slightly above the 2L Standards. Dissolved-phase VOC impacts have not been delineated and will require further investigation.

Immediately after installation in February 2003, monitoring well MW-13W was sampled for VOCs and metals. Historic data indicate that arsenic, barium, cadmium, chromium, and lead were detected in excess of their respective 2L Standards in groundwater at MW-13W. No additional historic sample data were collected for metals in groundwater. Elevated concentrations of metals can often be caused by high turbidity levels in water samples. The presence of elevated metals concentrations will require further evaluation to determine if groundwater is impacted with dissolved metals or if the metals historically detected are the result of turbid samples.

6.0 Project Objectives

In accordance with the REC Program rules and regulations, the objectives of the RI are to identify releases of hazardous substances to the environment, identify potential exposure pathways, characterize the nature of such releases and collect sufficient sampling data to support a cleanup-level determination, delineate the areal and vertical extent of contamination, and to characterize Site conditions sufficiently to conduct a feasibility study of remedial alternatives and to support a proposed remedy.

During previous investigations, soil has been sampled and analyzed for VOCs, SVOCs, TPH, PCBs, and metals by EPA Methods 8260, 8270, 8021, 8082, and 6010, respectively. Groundwater at the Site has been analyzed for VOCs, SVOCs, metals, and TPH. Soil and groundwater at the Site will be further evaluated for metals during the RI, fulfilling minimum IHSB sampling requirements. Assessment activities completed at the Site have not included soil and/or groundwater analysis of pesticides, dioxins, cyanide, and/or formaldehyde as these compounds/constituents have never been utilized as part of the Facility operations and subsequently have never been known to be present on the Site. In accordance with applicable REC sampling requirements, since historical operations and chemical storage information indicate that these constituents were not used at the Site, their evaluation is not necessary.

The objectives of the RI are to fill in existing data gaps by:

1. Completing horizontal and vertical delineation of VOCs in groundwater.
2. Determining the possible presence of metals in groundwater.

Collecting additional soil samples in the previously excavated area to determine if remaining soils are a potential source for groundwater impacts.

H&H will perform RI activities in accordance with applicable REC guidelines. The scope of work included in Section 7 of this Work Plan describes soil sampling, monitoring well installation, the collection of groundwater samples, and a vapor intrusion screening evaluation. Adherence to these field procedures will aid sample representativeness and minimize the

potential for sample contamination. A Quality Assurance/ Quality Control (QA/QC) program (Section 8) will be implemented to meet the above objectives. Sample collection data quality will be controlled through the use of standard collection methods and field logbooks.

Field activities will be performed in accordance with the Site-specific HASP, as presented in Appendix G. It is assumed the RI activities can be completed with Occupational Safety and Health Administration (OSHA) Level D personal protection equipment (PPE). Prior to mobilization to the Site, H&H will perform pre-work notifications, acquire off-site access agreements, and obtain monitoring well permits for off-site monitoring wells. In addition, H&H will coordinate with North Carolina One Call to mark public underground utilities in the vicinity of the work area. H&H will retain the services of a geophysical contractor to identify and mark all private underground utilities in the vicinity of the work area.

7.0 Field Sampling Plan

7.1 Groundwater Sampling

Samples have not been collected from on Site groundwater monitoring wells in almost four(4) years. To gain an accurate view of current groundwater conditions on site, samples will be collected from all Site monitoring wells. Monitoring wells will be sampled via the low flow/low stress sampling method using a peristaltic pump.

Groundwater will be pumped at a flow rate that minimizes water-level drawdown (likely between 100 ml/min and 400 ml/min). H&H field personnel will monitor stabilization parameters while pumping groundwater at a low flow rate. Stabilization is considered to be achieved when three consecutive readings, taken at three to five minute intervals, are within the following limits:

- Turbidity ($\pm 10\%$, less than 10 Nephelometric Turbidity Units [NTUs])
- DO (± 0.3 milligrams per liter [mg/L])
- Specific conductance ($\pm 3\%$)
- pH (± 0.1 Standard Unit [SU])
- ORP (± 10 millivolt [mV])
- Temperature ($\pm 3\%$)

Measurements (excluding turbidity), will be obtained using a water quality meter equipped with an in-line flow-through cell. Once parameter stabilization has been achieved, groundwater samples will be collected directly into laboratory-supplied containers and submitted for the analysis of VOCs + 10 Tentatively Identified Compounds (TICs) by United States Environmental Protection Agency (EPA) Method 8260B. H&H will utilize the soda straw method in order to collect VOC samples that are undisturbed by the squeezing action of the peristaltic pump head. Groundwater samples from wells MW-10W and MW-13W will also be submitted for analysis of 1,4-Dioxane by EPA Method 8260 SIM. Well MW-13W will also be sampled for priority pollutant metals and magnesium by Method 6010 and 7420. Additionally, four wells will be

analyzed for total organic carbon (TOC). See Table 1 for the detailed groundwater sampling and analysis plan.

7.2 Additional Soil Assessment

H&H will revisit the stained soil excavation area (TBE 2003) adjacent to the northeast corner of the Training Center building to conduct soil delineation activities. H&H will oversee a North Carolina-licensed driller that will advance soil borings along the northern, western, and southern portions of the excavation. No sampling will be conducted to the east of the excavation due to limited access from a CSX Railroad ROW/property line.

Seven soil borings will be advanced using a DPT rig to the depth of refusal, anticipated to be at 15-17 ft bgs or the water table surface, whichever occurs first. Soil cores will be recovered for visual characterization and field screening with a photo-ionization detector (PID). One soil sample from each boring exhibiting the highest PID response will be retained for laboratory analysis. An additional soil sample may be collected from just above the water table or depth of refusal. All soil samples will be submitted to a North Carolina-certified laboratory for analysis of total VOCs + 10 TICs by EPA Method 8260. A select set of soil samples will be submitted for analysis of total SVOCs + 10 TICs, and hexavalent chromium by EPA Method 3060A. Each sample will be collected as a split sample – one to be analyzed for total concentrations and one will be held and possibly analyzed using the SPLP leaching method. If the total analyses are less than the SRGs, then the SPLP sample will not be analyzed. However, if total concentrations are above the SRGs, the SPLP sample will be analyzed to determine if the constituents leach out above the 2L groundwater standard. The SPLP data may also be utilized to determine a site-specific remediation goal as outlined in the REC Guidance. See Figure 6 and Table 2 for the detailed soil sampling and analysis plan.

7.3 Delineation of Groundwater Impacts

7.3.1 Well Installation

If results from the initial groundwater sampling event indicate the horizontal impact of the plume is not completely defined, H&H will install additional downgradient monitoring wells. It is anticipated up to 4 downgradient wells may be installed as shown on Figure 7. The vertical extent of contamination has not been delineated, therefore, at least one deep Type III well will be installed immediately downgradient of the area with the highest groundwater impacts; near existing shallow well MW-7. H&H will oversee a North Carolina-licensed driller during installation of monitoring wells at the locations depicted in Figure 7.

The shallow Type II groundwater monitoring well/s will be installed using hollow stem auger (HSA) and/or air rotary drilling techniques. It is anticipated the proposed shallow wells will be installed to monitor the upper unconsolidated aquifer. Therefore, based on observations from previous assessment activities, it is anticipated the shallow wells will be installed to approximately 20 or 30 ft bgs with 10 ft of slotted screen. If HSA drilling encounters drilling refusal prior to reaching the water table, an air rotary drill rig will be mobilized to the Site and utilized to continue borehole advancement.

The boring for the deep Type III groundwater monitoring well will be drilled using a combination of HSA and air rotary techniques. The proposed deep well will be installed to monitor a deeper portion of the consolidated aquifer. An outer casing will be set at approximately 30 ft bgs and grouted in place. After allowing the outer casing to cure for a minimum of 24-hours, the vertical delineation well will be installed to a depth of approximately 60 ft bgs with 10 ft of slotted screen.

During HSA drilling, soil samples will be collected at 5-ft intervals using a 24-inch long steel barrel split spoon sampler to observe and characterize subsurface lithology and select the appropriate well screen depth interval. The monitoring wells will be constructed using 2-inch

diameter flush threaded polyvinyl chloride (PVC) riser pipe and 0.010-inch slot PVC well screen. Each screen section will be 10 ft in length. A sand pack will be installed within the annular space between the well and the borehole from the base of the screen to approximately 2 ft above the screened interval. A 2-ft thick bentonite seal will be placed above the sand pack and the remaining annular space will be tremie grouted to the ground surface using cement grout. The monitoring wells will be completed at the surface with a flush-mount well vault with expansion cap and lock. Well construction will be completed in accordance with 15A NCAC 02C.0108 Well Construction Standards.

7.3.2 Well Development

Following installation, the new wells will be developed using a combination of surging/pumping development techniques to ensure samples representative of undisturbed aquifer conditions are collected. Monitoring wells will be developed with dedicated tubing, footvalves, and surge blocks. Groundwater will be purged until the following parameters have stabilized: temperature, dissolved oxygen (DO), turbidity, specific conductivity, oxidation-reduction potential (ORP), and pH. Stabilization criteria are as follows:

- Turbidity ($\pm 10\%$, less than 10 Nephelometric Turbidity Units [NTUs])
- DO (± 0.3 mg/L)
- Specific conductance ($\pm 3\%$)
- pH (± 0.1 SU)
- ORP (± 10 mV)
- Temperature ($\pm 3\%$)

Note that a turbidity level below 10 NTUs may be unattainable. If so, development will be continued until it is evident that further improvement is unobtainable. Development water and drill cuttings generated during the well installation process will be contained on-site in labeled, DOT-approved, 55-gallon steel drums for proper disposal at a permitted facility.

7.3.3 Well Sampling

Following additional monitoring well installation and development activities, groundwater samples will be collected from the new wells in accordance with the methods outlined in Section 7.1.

7.4 Vapor Intrusion Screening Evaluation

Currently, PCE is the only contaminant that exceeds the Acceptable Groundwater Concentration (Cgw) in the IHSB Industrial/Commercial Vapor Intrusion Screening Table. However, based on the current Site groundwater concentrations, the collective cancer risk is below 1.0E-04 for carcinogenic contaminants. The screening evaluation will be updated after additional groundwater data are received. Groundwater concentrations at the Site do not currently warrant the collection of soil gas samples.

7.5 Decontamination

Prior to advancing down-hole drilling tools into the subsurface, equipment will be adequately decontaminated by the following procedures. Hollow stem augers, drill rods, split spoon samplers, and air hammers will be steam cleaned with a hot-water, pressure washer. Additionally, after pressure washing, split spoon samplers will be scrubbed with a brush in a liquinox solution.

As described above in Section 7.3, monitoring wells will be developed with dedicated tubing, footvalves and surge blocks; decontamination of well-development equipment will not be necessary.

A water-level indicator will be used to gauge wells for groundwater elevation and to evaluate effectiveness of low-flow sampling. After each use, the indicator will be washed with a liquinox solution, and rinsed with deionized water.

All equipment used onsite will be decontaminated prior to demobilization from the site to ensure protection of the public.

7.6 Investigative Derived Waste

Investigative Derived Waste (IDW) generated during the RI activities, including soil cuttings and purge and decontamination water will be contained in appropriately labeled, 55-gallon, DOT-approved, steel drums. IDW will be separated based on aqueous and solid media.

Following waste classification, the drums will be transported offsite by a North Carolina-licensed treatment/disposal contractor to an approved permitted facility. IDW under appropriate manifest will be transported offsite within sixty (60) days after waste generation.

7.7 Site Survey

Following field activities, H&H will retain a licensed North Carolina land surveyor to survey soil borings, and new monitoring well locations. The survey points will be tied into existing survey information for the Site. The survey will record top of casing (TOC) elevations for the new monitoring wells.

7.8 Community Health & Safety Plan

The field activities will be conducted in a manner that is protective of the public. All activities will be conducted in accordance with the Site Specific Health & Safety Plan included as Appendix G. An exclusion zone will be established which will restrict onsite workers from entering the work area. Routine air quality monitoring will be conducted and any potential storm water runoff or dust will be controlled. All equipment including drill rigs will be decontaminated prior to egress from the Site.

8.0 QA/QC Program

To ensure data quality objectives of all field programs, H&H will include QA/QC sampling during all investigation activities. Field quality control requirements and procedures are discussed below.

8.1 Trip Blanks

Trip blanks will accompany sampling teams during sample collection activities and will travel with samples during shipment of each cooler of VOC water samples sent to the laboratory. One trip blank will accompany groundwater VOC samples per day of sampling.

8.2 Equipment Blanks

One equipment blank will be collected per every 20 samples collected during field sampling for each media. The equipment blank will be analyzed for a select set of analytes including VOCs, 1,4-Dioxane, or metals.

8.3 Duplicates

One duplicate soil and one duplicate groundwater sample will be collected per every 20 samples collected during field sampling for each respective media. The field duplicates will be analyzed for a select set of analytes including VOCs, 1,4-Dioxane, SVOCs, or metals. Duplicate analysis will depend on the analyses of the parent sample.

8.4 Matrix Spike/ Matrix Spike Duplicates

One Matrix Spike/Matrix Spike Duplicate (MS/MSD) sample will be collected and reported per every 20 samples collected for each respective media.

9.0 Reporting

At the conclusion of the RI investigation a report will be prepared in accordance with REC Program Guidelines. The RI Report will include a discussion of the methods and results of the RI soil and groundwater analyses, field observations including boring logs, and graphic representations that may include cross-sections and constituent isopleths. The RI Report is intended to support the site clean-up level determination and the feasibility study of potential remedial alternatives and remedy selection. Based upon the results of the RI, a Remedial Action Plan will be prepared.

10.0 Certification Statements

The required document certification statements for both the Remediating Party and the Registered Site Manager are included in Appendix H.

11.0 References

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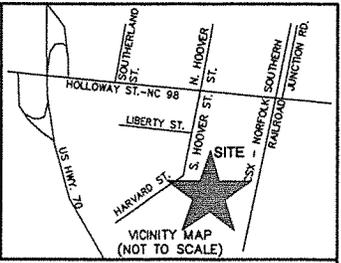
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TBE Group, Inc., 2008. *August 2008 Groundwater Sampling Event Summary, Durham Warehouse Site, 211 South Hoover Rd, Durham, North Carolina*. September 29, 2008.

I, ROBIN L. LEE, PLS-3759 CERTIFY THAT THIS MAP WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:

CLASS OF SURVEY: AA
 POSITIONAL ACCURACY: 0.013 METERS HORIZONTAL & 0.039 METERS VERTICAL
 TYPE OF GPS FIELD PROCEDURE: RTK VRS
 DATES OF SURVEY: 2/28/2011
 DATUM/EPOCH: NAD 83/NSRS 2007
 PUBLISHED/FIXED CONTROL USE: FIXED CONTROL
 GEOD MODEL: GEOD 09
 COMBINED GRID FACTOR(S): 0.999940928
 UNITS: US SURVEY FEET
 TYPE AND MODEL OF GPS RECEIVER USED: TRIMBLE 5800

"THE AREA IDENTIFIED ON THIS SURVEY AS BEING WITHIN THE NORFOLK SOUTHERN/CSX RAILROAD COMPANIES BOUNDARY LINE IS SUBJECT TO THE OWNERSHIP OR RIGHTS OF THE NORFOLK SOUTHERN/CSX RAILROAD COMPANIES. PURSUANT TO REQUIREMENTS OF THE RAILROAD, ANY PROPOSED USE OF THE PROPERTY WITHIN THAT BOUNDARY REQUIRES THE USERS TO COMPLY WITH POLICIES AND LICENSING PROCEDURES OF NORFOLK SOUTHERN AND CSX RAILROAD COMPANIES"

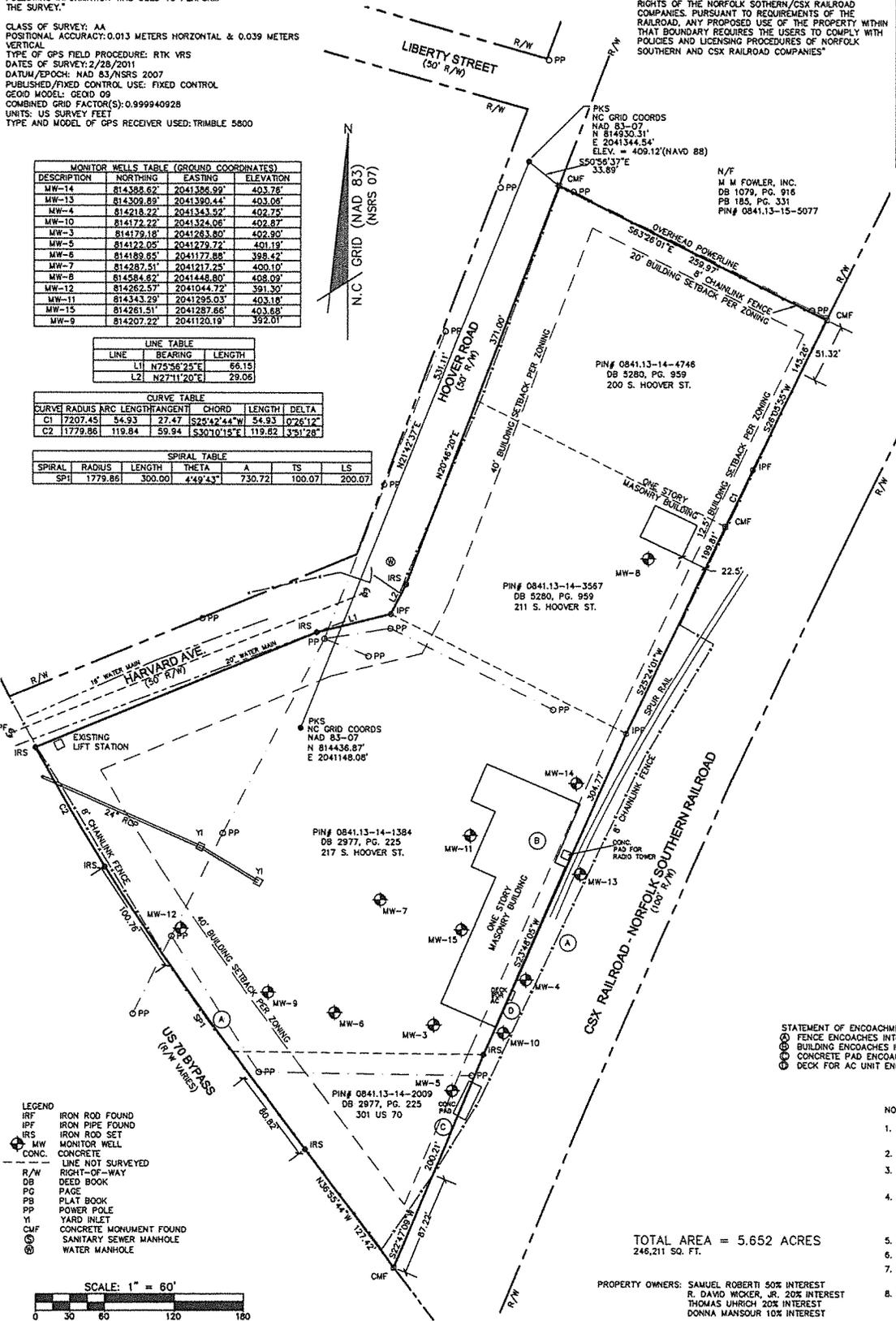


MONITOR WELLS TABLE (GROUND COORDINATES)			
DESCRIPTION	NORTHING	EASTING	ELEVATION
MW-14	814388.82	2041386.99	403.78
MW-13	814309.89	2041390.44	403.08
MW-4	814218.22	2041343.52	402.75
MW-10	814172.22	2041324.06	402.87
MW-3	814179.18	2041283.80	402.90
MW-5	814122.05	2041279.72	401.19
MW-6	814189.95	2041177.88	398.47
MW-7	814287.51	2041217.25	420.10
MW-8	814584.82	2041448.80	408.09
MW-12	814262.57	2041044.72	391.30
MW-11	814343.29	2041295.03	403.18
MW-15	814261.51	2041287.86	403.68
MW-9	814207.22	2041120.19	392.01

LINE TABLE		
LINE	BEARING	LENGTH
L1	N75°56'25"E	66.15
L2	N27°11'20"E	29.06

CURVE TABLE						
CURVE	RADIUS	ARC LENGTH	CHORD	DELTA		
C1	7207.45	54.93	27.47	S24°42'44"W	54.93	0°26'12"
C2	1179.86	119.84	59.94	S30°10'18"E	119.82	3°51'28"

SPIRAL TABLE						
SPIRAL	RADIUS	LENGTH	THETA	A	TS	LS
SP1	1779.86	300.00	4°49'43"	730.72	100.07	200.07



I, ROBIN L. LEE, PLS L-3759, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION FROM INFORMATION SHOWN IN DEED BOOKS REFERENCED ON MAP AND MAP BOOKS REFERENCED ON MAP. THAT ANY LINES NOT ACTUALLY SURVEYED APPEAR AS BROKEN LINES AND WERE PLOTTED FROM INFORMATION AS NOTED ON THE PLAT. THAT THE RATIO OF PRECISION AS CALCULATED IS BETTER THAN 1:10,000, THAT THE AREA IS COMPUTED BY COORDINATE METHOD; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED. WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER, AND SEAL DAY OF March 2011.

Robin L. Lee
 ROBIN L. LEE
 PROFESSIONAL LAND SURVEYOR
 PIN# 0841.13-15-5077

I, ROBIN L. LEE, PLS L-3759, CERTIFY THAT THE SURVEY IS ON AN EXISTING PARCEL OR PARCELS OF LAND, AND DOES NOT CREATE A NEW STREET OR CHANGE AN EXISTING STREET, AND THAT THE SURVEY IS OF AN EXISTING BUILDING OR OTHER STRUCTURE OR NATURAL FEATURE, SUCH AS A WATERCOURSE, OR AN AS-BUILT.

Robin L. Lee DATE 3-14-2011

NORTH CAROLINA _____ COUNTY
 THIS INSTRUMENT IS DULY RECORDED AND VERIFIED
 THIS _____ DAY OF _____ A.D. 2011,
 AT _____ O'CLOCK IN MAP BOOK/SIDE
 CABINET _____ PAGE/SIDE

REGISTER OF DEEDS

****FUTURE EAST END CONNECTOR PROJECT****
 NCDOT PROJECT U-0071
 AT THE TIME OF THIS SURVEY THE PROPOSED NEW R/W FOR PROJECT U-0071 HAS NOT BEEN DETERMINED, BUT BASED ON THE CURRENT DESIGN FILE A PORTION OF THIS PROPERTY WILL BE AFFECTED.

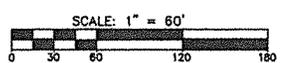
- REFERENCES:
- DB 2977, PG. 225
 - DB 5280, PG. 959
 - PB 58, PG. 28
 - PB 57, PG. 75
 - PB 62, PG. 62
 - PB 12, PG. 101
 - PB 35, PG. 62
 - DB 1209, PG. 874
 - PB 9, PG. 73
 - PB 11, PG. 70
 - NCDOT STATE PROJ. # 4175
 - UNRECORDED ALTA/ACSM SURVEY PREPARED BY MARTIN R. GILL OF AMERICAN SURVEY COMPANY OF TAMPA, INC. DATED AUGUST 15, 2000.
 - NCDOT PROJ. # U-0071

STATEMENT OF ENCOACHMENTS
 (1) FENCE ENCOACHES INTO RAILROAD RIGHT-OF-WAY AND NCDOT RIGHT-OF-WAY.
 (2) BUILDING ENCOACHES INTO ZONING SETBACK LINE BY 11.3'.
 (3) CONCRETE PAD ENCOACHES INTO RAILROAD RIGHT-OF-WAY BY 8.3'.
 (4) DECK FOR AC UNIT ENCOACHES INTO RAILROAD RIGHT-OF-WAY 3.2'.

- NOTE:
- ALL DISTANCES SHOWN ARE HORIZONTAL GROUND DISTANCES IN U.S. SURVEY FEET, (UNLESS OTHERWISE STATED)
 - NO NC GRID MONUMENT IS WITHIN 2000' OF SURVEYED TRACT.
 - ALL BEARINGS ARE BASED ON THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM (NAD 1983/07).
 - THIS SURVEY PERFORMED AND MAP PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT. THIS SURVEY IS SUBJECT TO ANY FACTS AND EASEMENTS WHICH MAY BE DISCLOSED BY A FULL AND ACCURATE TITLE SEARCH.
 - THERE ARE NO BURIAL GROUNDS OR CEMETERIES VISIBLE.
 - ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM.
 - ELEVATIONS OF MONITORING WELLS WERE TAKEN ON TOP OF PVC CASINGS.
 - THIS PROPERTY IS ZONED X; AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE AND FLOOD CONDITIONS 1% ANNUAL CHANCE FLOODPLAIN, ACCORDING TO FLOOD INSURANCE RATE MAP NUMBER 27200841000 WITH AN EFFECTIVE DATE OF MAY 2, 2006.

TOTAL AREA = 5.652 ACRES
 246,211 SQ. FT.

PROPERTY OWNERS: SAMUEL ROBERTI 50% INTEREST
 R. DAVID WICKER, JR. 20% INTEREST
 THOMAS UHRICH 20% INTEREST
 DONNA MANSOUR 10% INTEREST



REVISED 03-14-11 ADDED MW-11, MW-12, MW-9 AND MW-15 RLL

1730 Varsity Drive, Suite 500
 Raleigh, North Carolina 27606
 Phone: (919)233-8091, Fax: (919)233-8031
 C-0342
 Internet Site: <http://www.mckimcreed.com>

BOUNDARY AND MONITORING WELL SURVEY
 OF
 SAMUEL ROBERTI, THOMAS W. UHRICH, R. DAVID WICKER, JR. AND DONNA MANSOUR PROPERTY
 FOR
 PUBLIC SERVICE COMPANY OF NORTH CAROLINA
 DATE: 3-8-2011 SCALE: 1" = 60'
 DURHAM TOWNSHIP DURHAM COUNTY NORTH CAROLINA

PROJECT # : 1315-0066
 PROJ. SVYR : RLL
 DRAWN BY : RLL
 FIELD BK. : R0738
 COMP. FILE : VB101-13150066.DWG
 SHEET # : OF
 DWG. # : R.1.3.9.974

Appendix C

Schnabel Engineering Geophysical Survey Reports



July 25, 2013

Mr. Matt Bramblett
Hart & Hickman, PC
2923 South Tryon Street, Suite 100
Charlotte, NC 28203

RE: State Project: U-0071
 WBS Element: 34745.1.1
 County: Durham
 Description: Durham East End Connector from NC 147 (Buck Dean Freeway) to
 North of NC 98

**Subject: Project 11821014.28, Report on Geophysical Surveys
 Parcel 38, Samuel Roberti, et. al. Property, Durham, North Carolina**

Dear Mr. Bramblett:

SCHNABEL ENGINEERING SOUTH, PC (Schnabel) is pleased to present this report on the geophysical surveys we performed on the subject property. The report includes two 11x17 color figures and two 8.5x11 color figures. This study was performed in accordance with our proposal for Geophysical Surveys to Locate Possible USTs dated May 21, 2013, as approved by Cathy Houser on May 30, 2013, and our agreement dated June 2, 2011. Terry Fox provided a verbal notice to proceed on May 24, 2013.

INTRODUCTION

The field work described in this report was performed on June 10, June 11, and June 26, 2013, by Schnabel under our 2011 contract with the NCDOT. The purpose of the geophysical surveys is to evaluate the potential presence of metal underground storage tanks (USTs) in the accessible areas of the NCDOT right-of-way and/or easement at Parcel 38. Photographs of the property are included on Figure 1. The property is located south of NC 98 (Holloway Street) on the west side of S. Hoover Road (200 S. Hoover Road) in Durham, NC.

The geophysical surveys consisted of an electromagnetic (EM) induction survey and a ground penetrating radar (GPR) survey. The EM survey was performed using a Geonics EM61-MK2 (EM61) instrument. The EM61 is a time domain metal detector that stores data digitally for later processing and review. Sensitivity to metallic objects is dependent on the size, depth, and orientation of the buried object and the amount of noise (i.e. response from spurious metallic objects) in the area. The EM61 can generally observe a single

buried 55 gallon drum at a depth of 10 feet or less. The EM61 makes measurements by creating an electromagnetic pulse and then measuring the response from metallic objects with time after the pulse is generated. We recorded the response at several times after the pulse to help evaluate relative size and depth of metallic objects in the earth.

The GPR survey was performed over selected EM61 anomalies using a Geophysical Survey Systems SIR-3000 system equipped with a 400 MHz antenna to further investigate and evaluate EM responses that could indicate a potential UST.

Photographs of the equipment used are shown on Figure 2.

FIELD METHODOLOGY

We obtained locations of geophysical data points using a sub-meter Trimble Pro-XRS differential global positioning system (DGPS). References to direction and location in this report are based on the US State Plane 1983 System, North Carolina 3200 Zone, using the NAD 83 datum, with units in US survey feet. We also recorded the locations of existing site features (metal objects, thick vegetation, etc.) with the DGPS for later correlation with the geophysical data and a site plan provided by the NCDOT.

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 approximately one to two feet apart in orthogonal directions over anomalous EM readings not attributed to cultural features. The GPR data were reviewed in the field to evaluate the possible presence of USTs. The GPR data also were recorded digitally and later transferred to a desktop computer for further review.

DISCUSSION OF RESULTS

The contoured EM61 data collected over Parcel 38 and the GPR survey area locations are shown on Figure 3, EM61 Early Time Gate Response, and Figure 4, EM61 Differential Response. Areas outside the colored, contoured EM61 data were not surveyed. Early time data refer to the response measured at a short time after the initial EM pulse is generated. Early time data typically contain responses from all metal objects, small or large and shallow or deep, within the sensitivity range of the instrument. Differential data represent the difference in response between the top and bottom coils of the EM61 instrument at a later time after the initial pulse than early time data. Differential data naturally tend to filter out the effect of surface and very shallowly buried metallic objects. Typically, the differential response emphasizes anomalies from deeper and larger objects such as USTs.

We were not able to access significant portions of the planned survey area despite multiple attempts to coordinate access through the tenants. Therefore EM and GPR data were not collected in the fenced area immediately west of the easternmost building or the fenced area at the northern end of the site. We were not able to survey other significant portions of the planned survey area due to the presence of many large trailers within the planned survey area. The EM data contain multiple anomalies, all of which appear to be the result of buried utilities, reinforced concrete, or other metal objects at the ground surface or at shallow depths. We collected GPR data over several EM anomalies as shown on Figures 3 and 4 to

further investigate those EM anomalies. The geophysical data collected at the site do not indicate the presence of metallic USTs within the areas surveyed.

CONCLUSIONS

As shown in Figures 3 and 4, the EM data we collected over Parcel 38 did not cover significant portions of the planned survey area due to limited access to portions of the site and the presence of many large trailers within the planned survey area. The EM data include responses from several visible metallic objects at grade (e.g. trailers, surface metal, etc.). We did not observe anomalies in the EM or the GPR geophysical data at the subject property that we interpret to be the results of metallic USTs within about 6 feet of the ground surface.

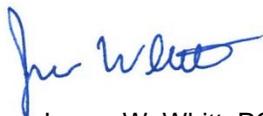
LIMITATIONS

These services have been performed and this report prepared for Hart & Hickman, PC and the North Carolina Department of Transportation 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.

We appreciate the opportunity to have provided these services. Please call if you need additional information or have any questions.

Sincerely,

SCHNABEL ENGINEERING SOUTH, PC



James W. Whitt, PG
Senior Staff Geophysicist



Gary D. Rogers, PG
Senior Associate

JWW:MAP:GDR

Attachments: Figures (4)

CC: NCDOT, Terry Fox

FILE: G:\2011-SDE-JOBS\11821014_00_NCDOT_2011_GEOTECHNICAL_UNIT_SERVICES\11821014_28_U-0071_DURHAM_COUNTY\REPORT\PARCEL 38\SCHNABEL GEOPHYSICAL REPORT ON PARCEL 38 (U-0071).DOCX

Attachments:

- Figure 1 - Parcel 38 Site Photos
- Figure 2 - Photos of Geophysical Equipment Used
- Figure 3 - Parcel 38 Early Time Gate Response
- Figure 4 - Parcel 38 Differential Response



Parcel 38 (Samuel Roberti, et. al. Property), looking northwest



Parcel 38 (Samuel Roberti, et. al. Property), looking north



Geonics EM61-MK2 Metal Detector with Trimble DGPS Unit



GSSI SIR-3000 Ground-Penetrating Radar with 400 MHz Antenna

Note: Stock photographs – not taken on site.

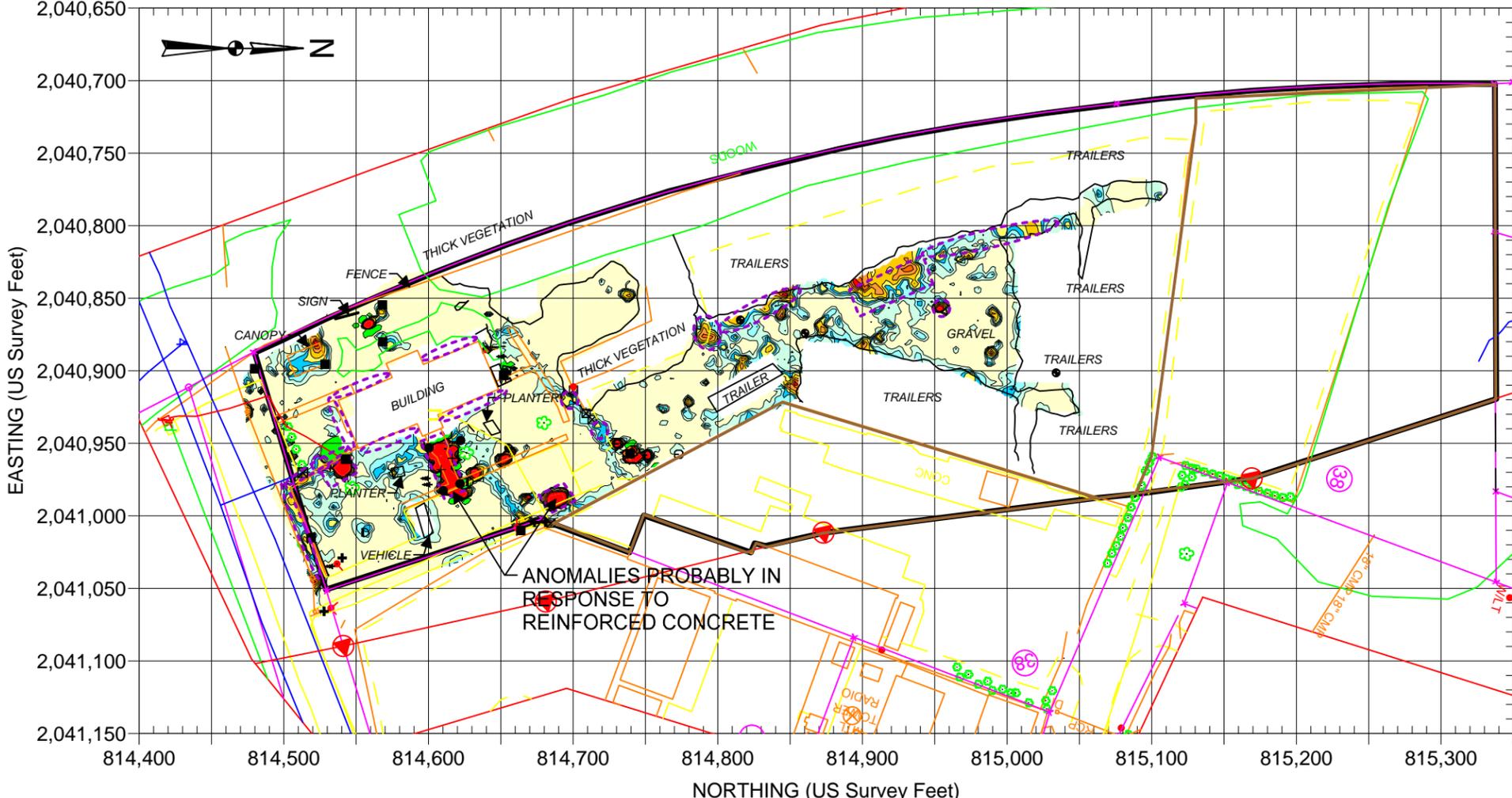


STATE PROJECT U-0071
NC DEPT. OF TRANSPORTATION
DURHAM COUNTY, NC
PROJECT NO. 11821014.28

PHOTOS OF
GEOPHYSICAL
EQUIPMENT USED

FIGURE 2

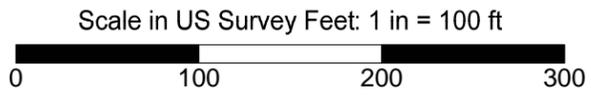
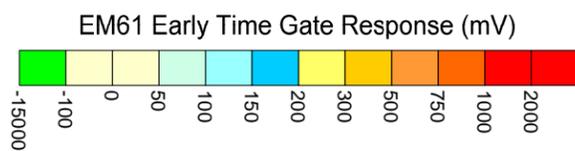
PARCEL 38



EXPLANATION

- LIGHTPOLE
- ⊕ PROPOSED BORING LOCATION (HART & HICKMAN)
- ⊖ SIGN
- MISCELLANEOUS METALLIC OBJECT
- ⊠ UTILITY MANHOLE, METER, BOX, ETC.
- ⊕ GUY WIRE
- MONITORING WELL
- ▲ EDGE OF NCDOT PROPOSED RW
- ▭ PLANNED EM61 SURVEY AREA
- ▭ AREA NOT SURVEYED WITH EM61 DUE TO INACCESSIBILITY
- ▭ GPR SURVEY AREA

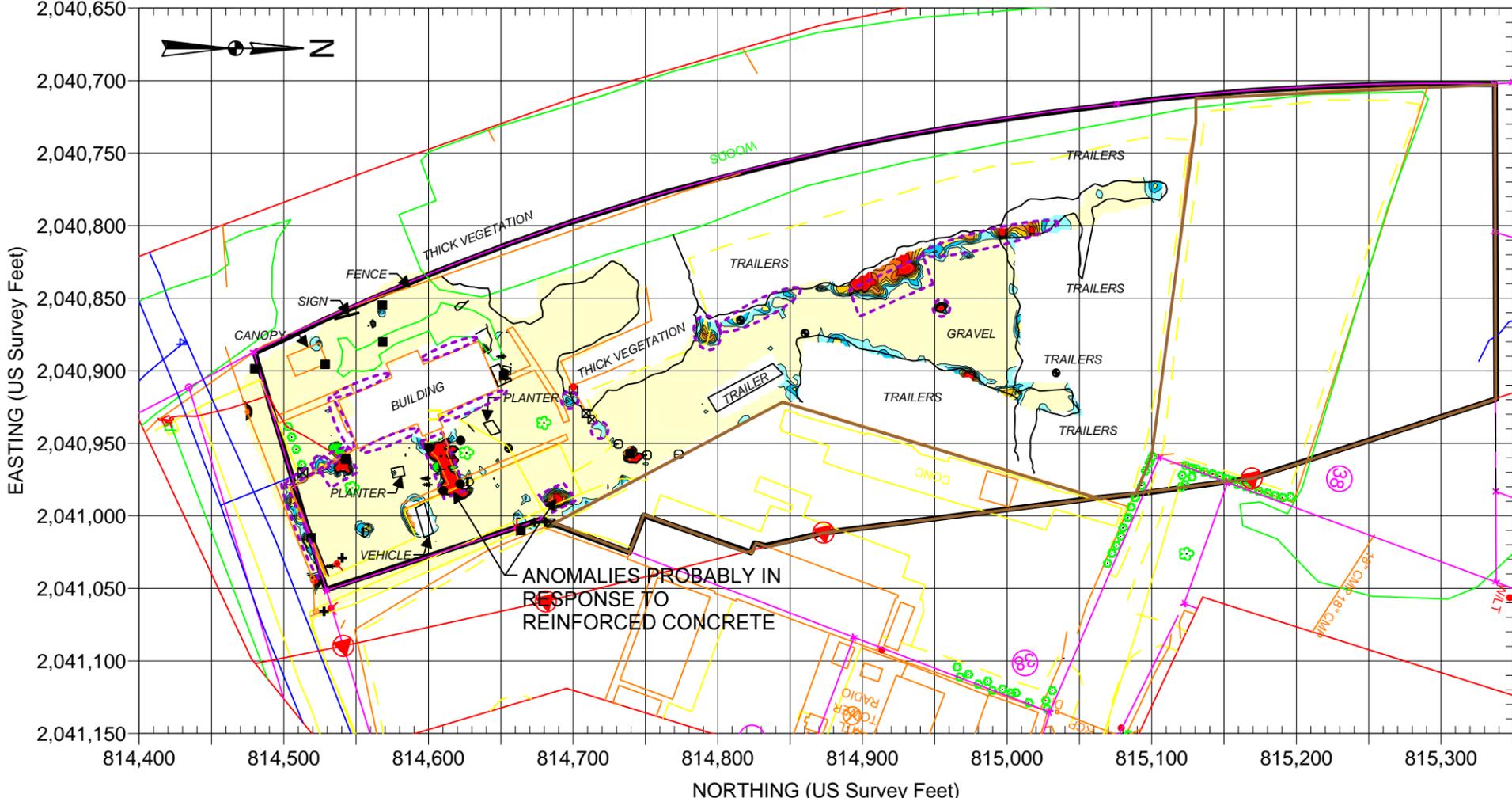
BASE PLAN FROM NCDOT FILE:
u0071_rdy_psh07.dgn
(FOR SOME SITE FEATURES)



Note: The contour plot shows the earliest and more sensitive time gate of the EM61 bottom coil/channel in millivolts (mV). The EM data were collected on June 10 and June 11, 2013, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina Zone 3200, using the NAD 1983 datum. GPR data were acquired on June 26, 2013, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

	<p>STATE PROJECT U-0071 NC DEPARTMENT OF TRANSPORTATION DURHAM COUNTY, NC PROJECT NO. 11821014.28</p>	<p>EM61 EARLY TIME GATE RESPONSE</p> <p>FIGURE 3</p>
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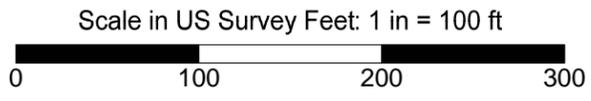
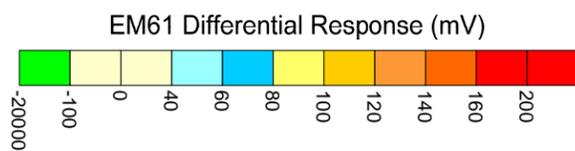
PARCEL 38



EXPLANATION

- LIGHTPOLE
- ⊕ PROPOSED BORING LOCATION (HART & HICKMAN)
- ⊖ SIGN
- MISCELLANEOUS METALLIC OBJECT
- ⊠ UTILITY MANHOLE, METER, BOX, ETC.
- ⊕ GUY WIRE
- MONITORING WELL
- ▲ EDGE OF NCDOT PROPOSED R/W
- ▭ PLANNED EM61 SURVEY AREA
- ▭ AREA NOT SURVEYED WITH EM61 DUE TO INACCESSIBILITY
- ⋯ GPR SURVEY AREA

BASE PLAN FROM NCDOT FILE:
u0071_rdy_psh07.dgn
(FOR SOME SITE FEATURES)



Note: The contour plot shows the difference, in millivolts (mV), between the readings from the top and bottom coils of the EM61. The difference is taken to reduce the effect of shallow metal objects and emphasize anomalies caused by deeper metallic objects, such as drums and tanks. The EM data were collected on June 10 and June 11, 2013, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina 3200 Zone, using the NAD 1983 datum. GPR data were acquired on June 26, 2013, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

	STATE PROJECT U-0071 NC DEPARTMENT OF TRANSPORTATION DURHAM COUNTY, NC PROJECT NO. 11821014.28	EM61 DIFFERENTIAL RESPONSE FIGURE 4
--	---	--



July 25, 2013

Mr. Matt Bramblett
Hart & Hickman, PC
2923 South Tryon Street, Suite 100
Charlotte, NC 28203

RE: State Project: U-0071
 WBS Element: 34745.1.1
 County: Durham
 Description: Durham East End Connector from NC 147 (Buck Dean Freeway) to
 North of NC 98

**Subject: Project 11821014.28, Report on Geophysical Surveys
 Parcel 40, Samuel Roberti, et. al. Property, Durham, North Carolina**

Dear Mr. Bramblett:

SCHNABEL ENGINEERING SOUTH, PC (Schnabel) is pleased to present this report on the geophysical surveys we performed on the subject property. The report includes two 11x17 color figures and two 8.5x11 color figures. This study was performed in accordance with our proposal for Geophysical Surveys to Locate Possible USTs dated May 21, 2013, as approved by Cathy Houser on May 30, 2013, and our agreement dated June 2, 2011. Terry Fox provided a verbal notice to proceed on May 24, 2013.

INTRODUCTION

The field work described in this report was performed on May 30, July 2, and July 3, 2013, by Schnabel under our 2011 contract with the NCDOT. The purpose of the geophysical surveys is to evaluate the potential presence of metal underground storage tanks (USTs) in the accessible areas of the NCDOT right-of-way and/or easement at Parcel 40. Photographs of the property are included on Figure 1. The property is located south of NC 98 (Holloway Street) on the east side of S. Hoover Road (211 S. Hoover Road) in Durham, NC.

The geophysical surveys consisted of an electromagnetic (EM) induction survey and a ground penetrating radar (GPR) survey. The EM survey was performed using a Geonics EM61-MK2 (EM61) instrument. The EM61 is a time domain metal detector that stores data digitally for later processing and review. Sensitivity to metallic objects is dependent on the size, depth, and orientation of the buried object and the amount of noise (i.e. response from spurious metallic objects) in the area. The EM61 can generally observe a single

buried 55 gallon drum at a depth of 10 feet or less. The EM61 makes measurements by creating an electromagnetic pulse and then measuring the response from metallic objects with time after the pulse is generated. We recorded the response at several times after the pulse to help evaluate relative size and depth of metallic objects in the earth.

The GPR survey was performed over selected EM61 anomalies using a Geophysical Survey Systems SIR-3000 system equipped with a 400 MHz antenna to further investigate and evaluate EM responses that could indicate a potential UST.

Photographs of the equipment used are shown on Figure 2.

FIELD METHODOLOGY

We obtained locations of geophysical data points using a sub-meter Trimble Pro-XRS differential global positioning system (DGPS). References to direction and location in this report are based on the US State Plane 1983 System, North Carolina 3200 Zone, using the NAD 83 datum, with units in US survey feet. We also recorded the locations of existing site features (metal objects, thick vegetation, etc.) with the DGPS for later correlation with the geophysical data and a site plan provided by the NCDOT.

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 approximately one to two feet apart in orthogonal directions over anomalous EM readings not attributed to cultural features. The GPR data were reviewed in the field to evaluate the possible presence of USTs. The GPR data also were recorded digitally and later transferred to a desktop computer for further review.

DISCUSSION OF RESULTS

The contoured EM61 data collected over Parcel 40 and the GPR survey area locations are shown on Figure 3, EM61 Early Time Gate Response, and Figure 4, EM61 Differential Response. Areas outside the colored, contoured EM61 data were not surveyed. Early time data refer to the response measured at a short time after the initial EM pulse is generated. Early time data typically contain responses from all metal objects, small or large and shallow or deep, within the sensitivity range of the instrument. Differential data represent the difference in response between the top and bottom coils of the EM61 instrument at a later time after the initial pulse than early time data. Differential data naturally tend to filter out the effect of surface and very shallowly buried metallic objects. Typically, the differential response emphasizes anomalies from deeper and larger objects such as USTs.

We were not able to access significant portions of the planned survey area due to the presence of many large trailers and vehicles within the planned survey area that were not able to be moved by the tenants. The EM data contain multiple anomalies that we investigated with GPR (as shown on Figures 3 and 4), all of which appear to be the result of buried utilities, reinforced concrete, or other metal objects at the ground surface or at shallow depths. We were unable to collect GPR data over a few of the smaller EM anomalies and a portion of the reinforced concrete because additional trailers and vehicles were located within the EM survey area when the GPR survey was conducted. The geophysical data collected at the site do not indicate the presence of metallic USTs within the areas surveyed.

CONCLUSIONS

As shown in Figures 3 and 4, the EM data we collected over Parcel 40 did not cover significant portions of the planned survey area due to the presence of many large trailers and several vehicles within the planned survey area. The EM data include responses from several visible metallic objects at grade (e.g. trailers, surface metal, etc.). We did not observe anomalies in the EM or the GPR geophysical data at the subject property that we interpret to be the results of metallic USTs within about 6 feet of the ground surface.

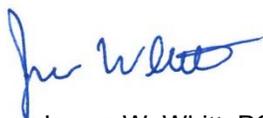
LIMITATIONS

These services have been performed and this report prepared for Hart & Hickman, PC and the North Carolina Department of Transportation 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.

We appreciate the opportunity to have provided these services. Please call if you need additional information or have any questions.

Sincerely,

SCHNABEL ENGINEERING SOUTH, PC



James W. Whitt, PG
Senior Staff Geophysicist



Gary D. Rogers, PG
Senior Associate

JWW:MAP:GDR

Attachments: Figures (4)

CC: NCDOT, Terry Fox

FILE: G:\2011-SDE-JOBS\11821014_00_NCDOT_2011_GEOTECHNICAL_UNIT_SERVICES\11821014_28_U-0071_DURHAM_COUNTY\REPORT\PARCEL 40\SCHNABEL GEOPHYSICAL REPORT ON PARCEL 40 (U-0071).DOCX

Attachments:

- Figure 1 - Parcel 40 Site Photos
- Figure 2 - Photos of Geophysical Equipment Used
- Figure 3 - Parcel 40 Early Time Gate Response
- Figure 4 - Parcel 40 Differential Response



Parcel 40 (Samuel Roberti, et. al. Property), looking southeast



Parcel 40 (Samuel Roberti, et. al. Property), looking southwest



Geonics EM61-MK2 Metal Detector with Trimble DGPS Unit



GSSI SIR-3000 Ground-Penetrating Radar with 400 MHz Antenna

Note: Stock photographs – not taken on site.

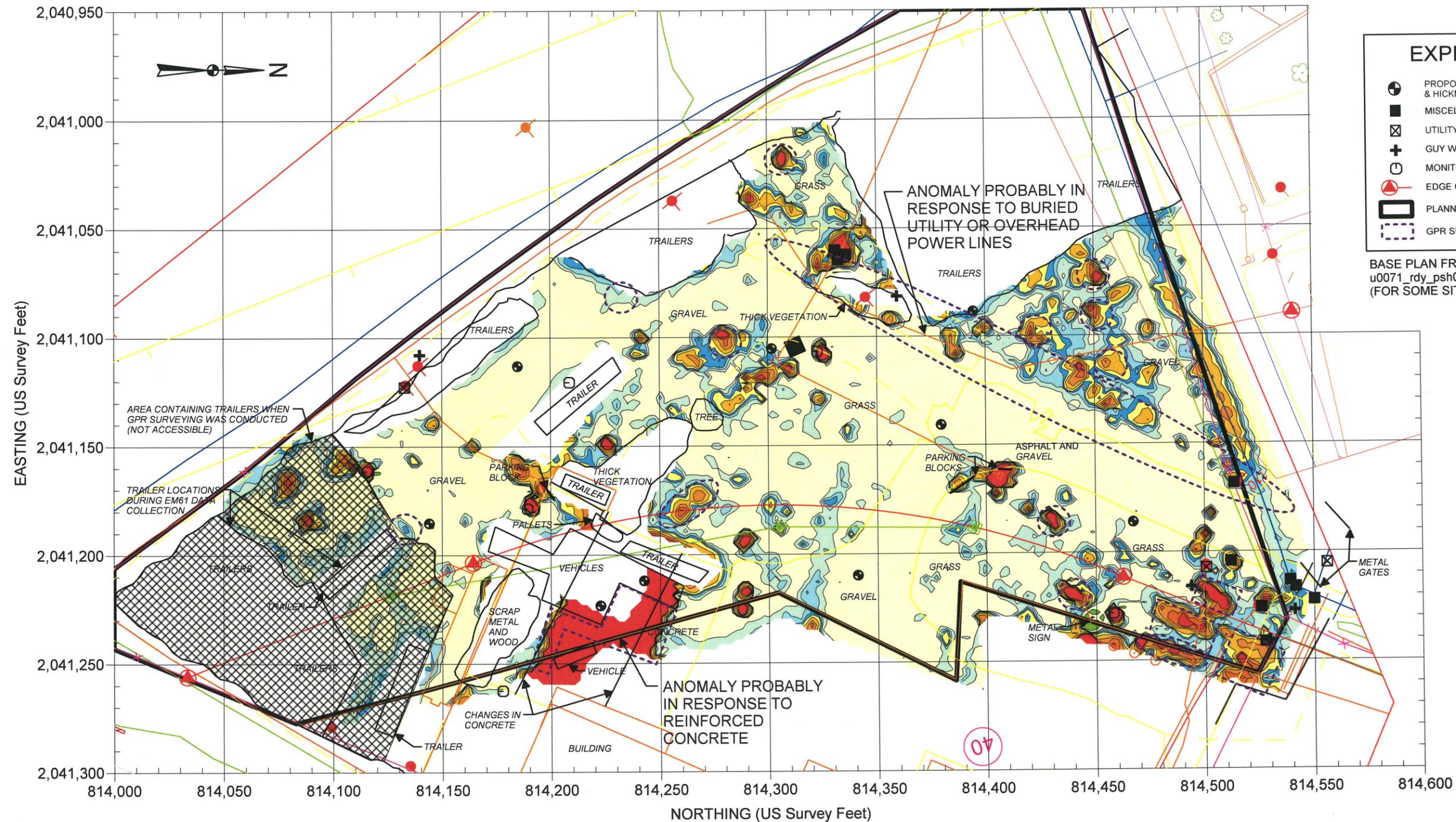


STATE PROJECT U-0071
NC DEPT. OF TRANSPORTATION
DURHAM COUNTY, NC
PROJECT NO. 11821014.28

PHOTOS OF
GEOPHYSICAL
EQUIPMENT USED

FIGURE 2

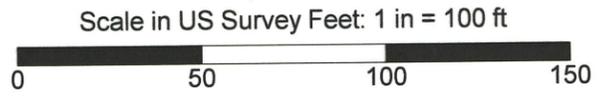
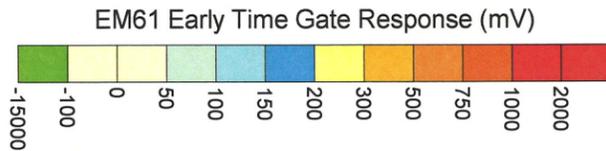
PARCEL 40



EXPLANATION

- ⊕ PROPOSED BORING LOCATION (HART & HICKMAN)
- MISCELLANEOUS METALLIC OBJECT
- ⊠ UTILITY MANHOLE, METER, BOX, ETC.
- ⊕ GUY WIRE
- ⊙ MONITORING WELL
- ⊖ EDGE OF NCDOT PROPOSED RW
- ▭ PLANNED EM61 SURVEY AREA
- ⋯ GPR SURVEY AREA

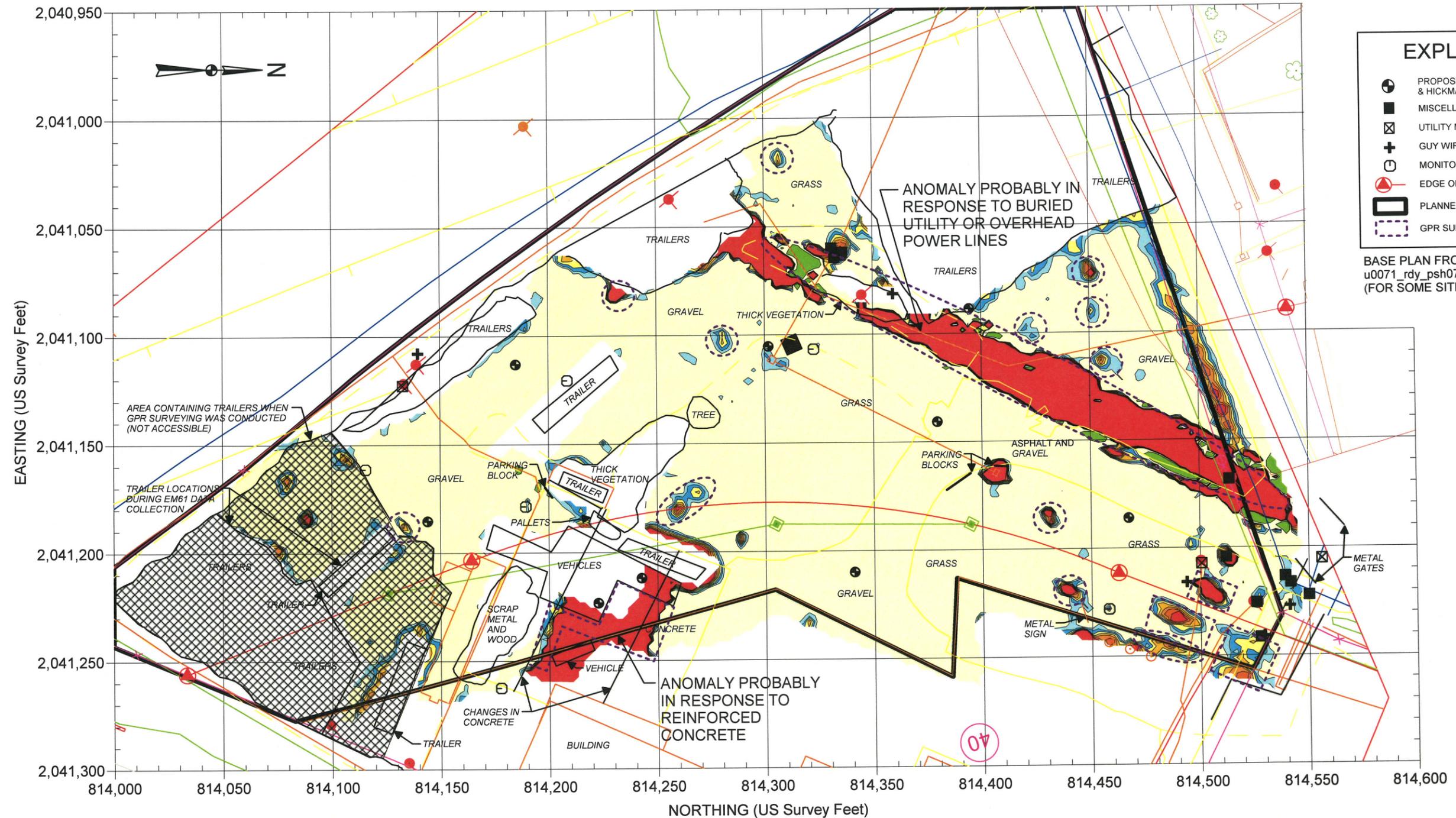
BASE PLAN FROM NCDOT FILE:
u0071_rdy_psh07.dgn
(FOR SOME SITE FEATURES)



Note: The contour plot shows the earliest and more sensitive time gate of the EM61 bottom coil/channel in millivolts (mV). The EM data were collected on May 30, 2013, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina Zone 3200, using the NAD 1983 datum. GPR data were acquired on July 3, 2013, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

	<p>STATE PROJECT U-0071 NC DEPARTMENT OF TRANSPORTATION DURHAM COUNTY, NC PROJECT NO. 11821014.28</p>	<p>EM61 EARLY TIME GATE RESPONSE</p> <p>FIGURE 3</p>
--	---	--

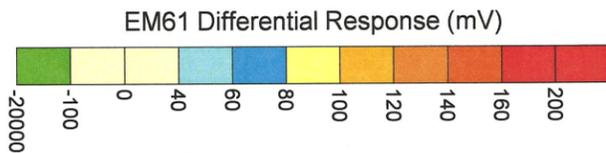
PARCEL 40



EXPLANATION

- ⊙ PROPOSED BORING LOCATION (HART & HICKMAN)
- MISCELLANEOUS METALLIC OBJECT
- ⊠ UTILITY MANHOLE, METER, BOX, ETC.
- ⊕ GUY WIRE
- ⊖ MONITORING WELL
- ⊙ EDGE OF NCDOT PROPOSED RW
- ▭ PLANNED EM61 SURVEY AREA
- ⋯ GPR SURVEY AREA

BASE PLAN FROM NCDOT FILE:
u0071_rdy_psh07.dgn
(FOR SOME SITE FEATURES)



Note: The contour plot shows the difference, in millivolts (mV), between the readings from the top and bottom coils of the EM61. The difference is taken to reduce the effect of shallow metal objects and emphasize anomalies caused by deeper metallic objects, such as drums and tanks. The EM data were collected on May 30, 2013, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina 3200 Zone, using the NAD 1983 datum. GPR data were acquired on July 3, 2013, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

<p>Schnabel ENGINEERING</p>	<p>STATE PROJECT U-0071 NC DEPARTMENT OF TRANSPORTATION DURHAM COUNTY, NC PROJECT NO. 11821014.28</p>	<p>EM61 DIFFERENTIAL RESPONSE</p> <p>FIGURE 4</p>
--	---	---

Appendix D
Soil Boring Logs



BORING NUMBER 38-1

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT State Project U-0071 - Parcel 38

JOB NUMBER: ROW-416

LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0						Topsoil		0.0
		GB	0	0		Tan brown, sandy SILT, trace of mica		
			0	0				
2.5			0	0		Orange brown, clayey SILT		2.5
			0	0		Tan brown, clayey SILT		
5.0			0	0		Red brown, fine sandy SILT		5.0
			0	0				
7.5						Refusal at 7.0 feet. Bottom of borehole at 7.0 feet.		7.5

BORING LOG - HART HICKMAN.GDT - 7/29/13 15:34 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 38.GPJ

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: GES

BORING STARTED: 7/11/13
BORING COMPLETED: 7/11/13
TOTAL DEPTH: 7 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 0 to 1 ft bgs



BORING NUMBER 38-2

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT State Project U-0071 - Parcel 38

JOB NUMBER: ROW-416

LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0		GB	0	0	Gravel			0.0
			0	0	Tan brown, sandy SILT			
2.5			0	0	Orange brown, sandy SILT			2.5
5.0			0	0	Orange tan, sandy CLAY			5.0
7.5			0	0				7.5
10.0			0	0				10.0
Refusal at 10.0 feet. Bottom of borehole at 10.0 feet.								

BORING LOG - HART HICKMAN.GDT - 7/29/13 15:34 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 38.GPJ

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: GES

BORING STARTED: 7/11/13
BORING COMPLETED: 7/11/13
TOTAL DEPTH: 10 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 0 to 1 ft bgs



BORING NUMBER 38-3

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT State Project U-0071 - Parcel 38

JOB NUMBER: ROW-416

LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0		GB	0	0	Gravel			0.0
			0	0	Orange brown, sandy CLAY			
			0	0	Orange tan, fine sandy SILT			
2.5			0	0				2.5
			0	0				
			0	0				
5.0			0	0				5.0
			0	0				
			0	0				
7.5			0	0				7.5
			0	0				
			0	0				
10.0						Refusal at 9.0 feet. Bottom of borehole at 9.0 feet.		10.0

BORING LOG - HART HICKMAN.GDT - 7/29/13 15:34 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 38.GPJ

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: GES

BORING STARTED: 7/11/13
BORING COMPLETED: 7/11/13
TOTAL DEPTH: 9 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 0 to 1 ft bgs



BORING NUMBER 38-5

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT State Project U-0071 - Parcel 38

JOB NUMBER: ROW-416

LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0					Gravel			0.0
		GB	0	0	Tan brown, sandy CLAY			
			0	0				
2.5			0	0	Red brown, sandy CLAY			2.5
			0	0				
5.0			0	0	Red brown, fine sandy SILT			5.0
			0	0				
7.5					Refusal at 7.0 feet. Bottom of borehole at 7.0 feet.			7.5

BORING LOG - HART HICKMAN.GDT - 7/29/13 15:34 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 38.GPJ

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: GES

BORING STARTED: 7/11/13
BORING COMPLETED: 7/11/13
TOTAL DEPTH: 7 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 0 to 1 ft bgs



BORING NUMBER 38-6

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT State Project U-0071 - Parcel 38

JOB NUMBER: ROW-416

LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0					Gravel			0.0
		GB	0	0	Orange tan, sandy CLAY			
			0	0				
2.5			0	0	Red brown, sandy CLAY			2.5
			0	0				
5.0			0	0	Red brown, fine sandy SILT			5.0
			0	0				
						Refusal at 6.0 feet. Bottom of borehole at 6.0 feet.		

BORING LOG - HART HICKMAN.GDT - 7/29/13 15:34 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 38.GPJ

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: GES

BORING STARTED: 7/11/13
BORING COMPLETED: 7/11/13
TOTAL DEPTH: 6 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 0 to 1 ft bgs



BORING NUMBER 38-7

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT State Project U-0071 - Parcel 38

JOB NUMBER: ROW-416

LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0					Gravel			0
0.5		GB	0	0	Orange tan, sandy CLAY			0.5
1.5			0	0				1.5
2.5			0	0				2.5
3.5			0	0	Red brown, sandy CLAY			3.5
4.5			0	0	Tan brown, fine sandy SILT			4.5
5.0					Refusal at 5.0 feet. Bottom of borehole at 5.0 feet.			5.0
6.0								6.0

BORING LOG - HART HICKMAN.GDT - 7/29/13 15:34 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 38.GPJ

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Hand Auger
SAMPLING METHOD: Hand Auger
LOGGED BY: MJG
DRAWN BY: GES

BORING STARTED: 7/11/13
BORING COMPLETED: 7/11/13
TOTAL DEPTH: 5 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 0 to 1 ft bgs



BORING NUMBER 38-8

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT State Project U-0071 - Parcel 38

JOB NUMBER: ROW-416

LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0					Gravel			0
0.5		GB	0	0	Orange tan, sandy CLAY			0.5
1.0			0	0				1.0
2.0			0	0				2.0
3.0			0	0				3.0
4.0			0	0	Red brown, sandy CLAY			4.0
5.0			0	0				5.0
5.0					Refusal at 5.0 feet. Bottom of borehole at 5.0 feet.			5.0
6.0								6.0

BORING LOG - HART HICKMAN.GDT - 7/29/13 15:34 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 38.GPJ

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Hand Auger
SAMPLING METHOD: Hand Auger
LOGGED BY: MJG
DRAWN BY: GES

BORING STARTED: 7/11/13
BORING COMPLETED: 7/11/13
TOTAL DEPTH: 5 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 0 to 1 ft bgs



BORING NUMBER 38-9

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT State Project U-0071 - Parcel 38

JOB NUMBER: ROW-416

LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0					Gravel			0
0.5		GB	0	0	Orange tan, sandy CLAY			0.5
1			0	0				1
2			0	0				2
3			0	0	Red brown, fine sandy SILT			3
4			0	0				4
4.5			0	0		Refusal at 4.5 feet. Bottom of borehole at 4.5 feet.		4.5
5								5

BORING LOG - HART HICKMAN.GDT - 7/29/13 15:34 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 38.GPJ

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Hand Auger
SAMPLING METHOD: Hand Auger
LOGGED BY: MJG
DRAWN BY: GES

BORING STARTED: 7/11/13
BORING COMPLETED: 7/11/13
TOTAL DEPTH: 4.5 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 0 to 1 ft bgs



BORING NUMBER 40-1

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT State Project U-0071 - Parcel 40

JOB NUMBER: ROW-416

LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0		GB	0	0	Gravel			0.0
			0	0	Brown, sandy SILT			
2.5			0	0	Tan brown, sandy CLAY			2.5
5.0			0	0	Reddish brown, silty CLAY			5.0
7.5			0	0				7.5
10.0			0	0	Wet, tan, silty SAND			10.0
12.5					Bottom of borehole at 12.0 feet.			12.5

BORING LOG - HART HICKMAN.GDT - 8/14/13 08:42 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 40.GPJ

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: GES

BORING STARTED: 7/10/13
BORING COMPLETED: 7/10/13
TOTAL DEPTH: 12 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 0 to 1 ft bgs



BORING NUMBER 40-2

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT State Project U-0071 - Parcel 40

JOB NUMBER: ROW-416

LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0					Gravel			0.0
		GB	0	0	Red brown, sandy SILT			
			0	0				
2.5			0	0	Tan brown, sandy CLAY			2.5
			0	0				
5.0			0	0				5.0
			0	0				
7.5						Refusal at 7.0 feet. Bottom of borehole at 7.0 feet.		7.5

BORING LOG - HART HICKMAN.GDT - 8/14/13 08:42 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 40.GPJ

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: GES

BORING STARTED: 7/10/13
BORING COMPLETED: 7/10/13
TOTAL DEPTH: 7 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 0 to 1 ft bgs



BORING NUMBER 40-3

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT State Project U-0071 - Parcel 40

JOB NUMBER: ROW-416

LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0					Gravel			0.0
			0	6	[Reddish brown, sandy SILT pattern]	Reddish brown, sandy SILT		
			0	20.1				
			0	72.2	[Tan brown, sandy CLAY pattern]	Tan brown, sandy CLAY		
2.5			0	52.8				
		GB	0	155	[Orange gray, silty CLAY pattern]	Orange gray, silty CLAY		
5.0			0	121				
			0	2.7	[Orange gray, silty CLAY pattern]	Orange gray, silty CLAY		
			0	1.7				
			0	0	[Orange gray, silty CLAY pattern]			
			0	0				
			0	0	[Orange gray, silty CLAY pattern]			
			0	0				
			0	0	[Orange gray, silty CLAY pattern]			
			0	0				
12.5					Bottom of borehole at 12.0 feet.			12.5

BORING LOG - HART HICKMAN.GDT - 8/14/13 08:42 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 40.GPJ

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: GES

BORING STARTED: 7/10/13
BORING COMPLETED: 7/10/13
TOTAL DEPTH: 12 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 4 to 5 ft bgs



BORING NUMBER 40-4

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT State Project U-0071 - Parcel 40

JOB NUMBER: ROW-416

LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0					Gravel			0.0
		GB	0	0	Orange tan, silty CLAY			
			0	0				
2.5			0	0				2.5
			0	0				
5.0			0	0	Orange, clayey SILT			5.0
			0	0				
7.5			0	0	Reddish brown, sandy CLAY			7.5
						Refusal at 7.0 feet. Bottom of borehole at 7.0 feet.		

BORING LOG - HART HICKMAN.GDT - 8/14/13 08:42 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 40.GPJ

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: GES

BORING STARTED: 7/10/13
BORING COMPLETED: 7/10/13
TOTAL DEPTH: 7 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 0 to 1 ft bgs



BORING NUMBER 40-5

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT State Project U-0071 - Parcel 40

JOB NUMBER: ROW-416

LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0		GB	0	0	Gravel and topsoil			0.0
			0	0	Reddish brown, sandy SILT			
2.5			0	0				2.5
			0	0	Wet at 9 ft bgs, tan brown, sandy CLAY			
5.0			0	0				5.0
			0	0				
7.5			0	0				7.5
			0	0				
10.0			0	0				10.0
						Refusal at 10.0 feet. Bottom of borehole at 10.0 feet.		

BORING LOG - HART HICKMAN.GDT - 8/14/13 08:42 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 40.GPJ

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: GES

BORING STARTED: 7/10/13
BORING COMPLETED: 7/10/13
TOTAL DEPTH: 10 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 0 to 1 ft bgs



BORING NUMBER 40-6

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT State Project U-0071 - Parcel 40

JOB NUMBER: ROW-416

LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0					Gravel			0
0.5		GB	0	0	Brown, sandy SILT			0.5
1			0	0				1
2			0	0	Orange brown, sandy CLAY, water in borehole at 5 ft bgs			2
3			0	0				3
4			0	0				4
5			0	0		Refusal at 5.0 feet. Bottom of borehole at 5.0 feet.		5
6								6

BORING LOG - HART HICKMAN.GDT - 8/14/13 08:42 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 40.GPJ

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Hand Auger
SAMPLING METHOD: Hand Auger
LOGGED BY: MJG
DRAWN BY: GES

BORING STARTED: 7/10/13
BORING COMPLETED: 7/10/13
TOTAL DEPTH: 5 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 0 to 1 ft bgs



BORING NUMBER 40-7

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT State Project U-0071 - Parcel 40

JOB NUMBER: ROW-416

LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0		GB	0	0	Concrete			0.0
			0	0	Reddish brown, sandy SILT			
2.5			0	0				2.5
			0	0				
5.0			0	0				5.0
						Wet, no recovery due to gravel and potential perched water		
7.5								7.5
10.0						Refusal at 10.0 feet. Bottom of borehole at 10.0 feet.		10.0

BORING LOG - HART HICKMAN.GDT - 8/14/13 08:42 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 40.GPJ

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: GES

BORING STARTED: 7/10/13
BORING COMPLETED: 7/10/13
TOTAL DEPTH: 10 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 0 to 1 ft bgs



BORING NUMBER 40-8

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT State Project U-0071 - Parcel 40

JOB NUMBER: ROW-416

LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0		GB	0	0	Concrete			0.0
			0	0	Reddish brown, sandy SILT			
2.5			0	0				2.5
			0	0				
5.0			0	0				5.0
						Wet, no recovery due to gravel and potential perched water		
7.5								7.5
10.0						Refusal at 10.0 feet. Bottom of borehole at 10.0 feet.		10.0

BORING LOG - HART HICKMAN.GDT - 8/14/13 08:42 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 40.GPJ

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: GES

BORING STARTED: 7/10/13
BORING COMPLETED: 7/10/13
TOTAL DEPTH: 10 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 0 to 1 ft bgs



BORING NUMBER 40-9

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT State Project U-0071 - Parcel 40

JOB NUMBER: ROW-416

LOCATION: Durham, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	BORING DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0						Asphalt and gravel		0.0
		GB	0	0		Reddish brown, sandy SILT, light odor		
			0	0				
2.5			0	0		Orange tan, silty CLAY		2.5
			0	0				
5.0			0	0		Tan brown, sandy SILT		5.0
			0	0				
7.5						Refusal at 7.0 feet. Bottom of borehole at 7.0 feet.		7.5

BORING LOG - HART HICKMAN.GDT - 8/14/13 08:42 - S:\AAA-MASTER GINT PROJECTS\ROW-416\PARCEL 40.GPJ

DRILLING CONTRACTOR: Probe Technology
DRILL RIG/ METHOD: Geoprobe
SAMPLING METHOD: Macro-Core
LOGGED BY: MJG
DRAWN BY: GES

BORING STARTED: 7/10/13
BORING COMPLETED: 7/10/13
TOTAL DEPTH: 7 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 0 to 1 ft bgs

Appendix E
Laboratory Analytical Report



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 Kinsey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

July 19, 2013

Chemical Testing Engineer
NCDOT
Materials & Tests Unit
1801 Blue Ridge Road
Raleigh, NC 27607

RE: Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164741

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on July 11, 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,

Kevin Godwin

kevin.godwin@pacelabs.com
Project Manager

Enclosures

cc: David Graham, NCDOT East Central



REPORT OF LABORATORY ANALYSIS

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Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164741

Charlotte Certification IDs

9800 Kinsey 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

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SAMPLE ANALYTE COUNT

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164741

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92164741001	38-1 @ 0-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164741002	38-2 @ 0-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164741003	38-3 @ 0-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164741004	38-4 @ 0-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164741005	38-5 @ 0-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164741006	38-6 @ 0-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164741007	38-7 @ 0-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164741008	38-8 @ 0-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92164741009	38-9 @ 0-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	JEA	1	PASI-C

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PROJECT NARRATIVE

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164741

Method: EPA 8015 Modified
Description: 8015 GCS THC-Diesel
Client: NCDOT East Central
Date: July 19, 2013

General Information:

9 samples were analyzed for EPA 8015 Modified. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164741

Method: EPA 8015 Modified
Description: Gasoline Range Organics
Client: NCDOT East Central
Date: July 19, 2013

General Information:

9 samples were analyzed for EPA 8015 Modified. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 5035A/5030B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164741

Method: EPA 8260
Description: 8260/5035A Volatile Organics
Client: NCDOT East Central
Date: July 19, 2013

General Information:

9 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

QC Batch: MSV/23637

S2: Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis).

- 38-5 @ 0-1 (Lab ID: 92164741005)
- 1,2-Dichloroethane-d4 (S)

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

QC Batch: MSV/23637

L0: Analyte recovery in the laboratory control sample (LCS) was outside QC limits.

- LCS (Lab ID: 1010238)
- Chloromethane

QC Batch: MSV/23645

L0: Analyte recovery in the laboratory control sample (LCS) was outside QC limits.

- LCS (Lab ID: 1011128)
- 2-Butanone (MEK)
- Chloromethane
- Methylene Chloride

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164741

Method: EPA 8260
Description: 8260/5035A Volatile Organics
Client: NCDOT East Central
Date: July 19, 2013

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: MSV/23637

1g: The internal standard response is below criteria. No hits associated with this internal standard. Results unaffected by high bias.

- 38-5 @ 0-1 (Lab ID: 92164741005)
 - Dichlorodifluoromethane
- 38-7 @ 0-1 (Lab ID: 92164741007)
 - Dichlorodifluoromethane

QC Batch: MSV/23645

- MS (Lab ID: 1012436)
 - Benzene
 - Chlorobenzene
 - Toluene
 - Trichloroethene

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Project No.: 92164741

Sample: 38-1 @ 0-1 **Lab ID: 92164741001** Collected: 07/11/13 09:15 Received: 07/11/13 14:20 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	ND	mg/kg	5.8	1	07/13/13 15:00	07/15/13 16:45	68334-30-5	
Surrogates								
n-Pentacosane (S)	75	%	41-119	1	07/13/13 15:00	07/15/13 16:45	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	6.1	1	07/14/13 18:02	07/14/13 20:26	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	79	%	70-167	1	07/14/13 18:02	07/14/13 20:26	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	101	1		07/17/13 00:24	67-64-1	
Benzene	ND	ug/kg	5.1	1		07/17/13 00:24	71-43-2	
Bromobenzene	ND	ug/kg	5.1	1		07/17/13 00:24	108-86-1	
Bromochloromethane	ND	ug/kg	5.1	1		07/17/13 00:24	74-97-5	
Bromodichloromethane	ND	ug/kg	5.1	1		07/17/13 00:24	75-27-4	
Bromoform	ND	ug/kg	5.1	1		07/17/13 00:24	75-25-2	
Bromomethane	ND	ug/kg	10.1	1		07/17/13 00:24	74-83-9	
2-Butanone (MEK)	ND	ug/kg	101	1		07/17/13 00:24	78-93-3	
n-Butylbenzene	ND	ug/kg	5.1	1		07/17/13 00:24	104-51-8	
sec-Butylbenzene	ND	ug/kg	5.1	1		07/17/13 00:24	135-98-8	
tert-Butylbenzene	ND	ug/kg	5.1	1		07/17/13 00:24	98-06-6	
Carbon tetrachloride	ND	ug/kg	5.1	1		07/17/13 00:24	56-23-5	
Chlorobenzene	ND	ug/kg	5.1	1		07/17/13 00:24	108-90-7	
Chloroethane	ND	ug/kg	10.1	1		07/17/13 00:24	75-00-3	
Chloroform	ND	ug/kg	5.1	1		07/17/13 00:24	67-66-3	
Chloromethane	ND	ug/kg	10.1	1		07/17/13 00:24	74-87-3	
2-Chlorotoluene	ND	ug/kg	5.1	1		07/17/13 00:24	95-49-8	
4-Chlorotoluene	ND	ug/kg	5.1	1		07/17/13 00:24	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	5.1	1		07/17/13 00:24	96-12-8	
Dibromochloromethane	ND	ug/kg	5.1	1		07/17/13 00:24	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	5.1	1		07/17/13 00:24	106-93-4	
Dibromomethane	ND	ug/kg	5.1	1		07/17/13 00:24	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	5.1	1		07/17/13 00:24	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	5.1	1		07/17/13 00:24	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	5.1	1		07/17/13 00:24	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	10.1	1		07/17/13 00:24	75-71-8	
1,1-Dichloroethane	ND	ug/kg	5.1	1		07/17/13 00:24	75-34-3	
1,2-Dichloroethane	ND	ug/kg	5.1	1		07/17/13 00:24	107-06-2	
1,1-Dichloroethene	ND	ug/kg	5.1	1		07/17/13 00:24	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	5.1	1		07/17/13 00:24	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	5.1	1		07/17/13 00:24	156-60-5	
1,2-Dichloropropane	ND	ug/kg	5.1	1		07/17/13 00:24	78-87-5	
1,3-Dichloropropane	ND	ug/kg	5.1	1		07/17/13 00:24	142-28-9	
2,2-Dichloropropane	ND	ug/kg	5.1	1		07/17/13 00:24	594-20-7	
1,1-Dichloropropene	ND	ug/kg	5.1	1		07/17/13 00:24	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	5.1	1		07/17/13 00:24	10061-01-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Project No.: 92164741

Sample: 38-1 @ 0-1 **Lab ID: 92164741001** Collected: 07/11/13 09:15 Received: 07/11/13 14:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	5.1	1		07/17/13 00:24	10061-02-6	
Diisopropyl ether	ND	ug/kg	5.1	1		07/17/13 00:24	108-20-3	
Ethylbenzene	ND	ug/kg	5.1	1		07/17/13 00:24	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	5.1	1		07/17/13 00:24	87-68-3	
2-Hexanone	ND	ug/kg	50.7	1		07/17/13 00:24	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	5.1	1		07/17/13 00:24	98-82-8	
p-Isopropyltoluene	ND	ug/kg	5.1	1		07/17/13 00:24	99-87-6	
Methylene Chloride	ND	ug/kg	20.3	1		07/17/13 00:24	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	50.7	1		07/17/13 00:24	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	5.1	1		07/17/13 00:24	1634-04-4	
Naphthalene	ND	ug/kg	5.1	1		07/17/13 00:24	91-20-3	
n-Propylbenzene	ND	ug/kg	5.1	1		07/17/13 00:24	103-65-1	
Styrene	ND	ug/kg	5.1	1		07/17/13 00:24	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	5.1	1		07/17/13 00:24	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.1	1		07/17/13 00:24	79-34-5	
Tetrachloroethene	ND	ug/kg	5.1	1		07/17/13 00:24	127-18-4	
Toluene	ND	ug/kg	5.1	1		07/17/13 00:24	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	5.1	1		07/17/13 00:24	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	5.1	1		07/17/13 00:24	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	5.1	1		07/17/13 00:24	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	5.1	1		07/17/13 00:24	79-00-5	
Trichloroethene	ND	ug/kg	5.1	1		07/17/13 00:24	79-01-6	
Trichlorofluoromethane	ND	ug/kg	5.1	1		07/17/13 00:24	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	5.1	1		07/17/13 00:24	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	5.1	1		07/17/13 00:24	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	5.1	1		07/17/13 00:24	108-67-8	
Vinyl acetate	ND	ug/kg	50.7	1		07/17/13 00:24	108-05-4	
Vinyl chloride	ND	ug/kg	10.1	1		07/17/13 00:24	75-01-4	
Xylene (Total)	ND	ug/kg	10.1	1		07/17/13 00:24	1330-20-7	
m&p-Xylene	ND	ug/kg	10.1	1		07/17/13 00:24	179601-23-1	
o-Xylene	ND	ug/kg	5.1	1		07/17/13 00:24	95-47-6	
Surrogates								
Dibromofluoromethane (S)	102 %		70-130	1		07/17/13 00:24	1868-53-7	
Toluene-d8 (S)	101 %		70-130	1		07/17/13 00:24	2037-26-5	
4-Bromofluorobenzene (S)	91 %		70-130	1		07/17/13 00:24	460-00-4	
1,2-Dichloroethane-d4 (S)	102 %		70-132	1		07/17/13 00:24	17060-07-0	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	14.0 %		0.10	1		07/16/13 09:31		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164741

Sample: 38-2 @ 0-1 **Lab ID: 92164741002** Collected: 07/11/13 09:35 Received: 07/11/13 14:20 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	213	mg/kg	5.4	1	07/13/13 15:00	07/16/13 17:27	68334-30-5	
Surrogates								
n-Pentacosane (S)	109	%	41-119	1	07/13/13 15:00	07/16/13 17:27	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	7.4	1	07/14/13 18:02	07/14/13 20:49	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	79	%	70-167	1	07/14/13 18:02	07/14/13 20:49	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	84.5	1		07/17/13 00:43	67-64-1	
Benzene	ND	ug/kg	4.2	1		07/17/13 00:43	71-43-2	
Bromobenzene	ND	ug/kg	4.2	1		07/17/13 00:43	108-86-1	
Bromochloromethane	ND	ug/kg	4.2	1		07/17/13 00:43	74-97-5	
Bromodichloromethane	ND	ug/kg	4.2	1		07/17/13 00:43	75-27-4	
Bromoform	ND	ug/kg	4.2	1		07/17/13 00:43	75-25-2	
Bromomethane	ND	ug/kg	8.5	1		07/17/13 00:43	74-83-9	
2-Butanone (MEK)	ND	ug/kg	84.5	1		07/17/13 00:43	78-93-3	
n-Butylbenzene	ND	ug/kg	4.2	1		07/17/13 00:43	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.2	1		07/17/13 00:43	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.2	1		07/17/13 00:43	98-06-6	
Carbon tetrachloride	ND	ug/kg	4.2	1		07/17/13 00:43	56-23-5	
Chlorobenzene	ND	ug/kg	4.2	1		07/17/13 00:43	108-90-7	
Chloroethane	ND	ug/kg	8.5	1		07/17/13 00:43	75-00-3	
Chloroform	ND	ug/kg	4.2	1		07/17/13 00:43	67-66-3	
Chloromethane	ND	ug/kg	8.5	1		07/17/13 00:43	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.2	1		07/17/13 00:43	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.2	1		07/17/13 00:43	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.2	1		07/17/13 00:43	96-12-8	
Dibromochloromethane	ND	ug/kg	4.2	1		07/17/13 00:43	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.2	1		07/17/13 00:43	106-93-4	
Dibromomethane	ND	ug/kg	4.2	1		07/17/13 00:43	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.2	1		07/17/13 00:43	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.2	1		07/17/13 00:43	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.2	1		07/17/13 00:43	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	8.5	1		07/17/13 00:43	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.2	1		07/17/13 00:43	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.2	1		07/17/13 00:43	107-06-2	
1,1-Dichloroethene	ND	ug/kg	4.2	1		07/17/13 00:43	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.2	1		07/17/13 00:43	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.2	1		07/17/13 00:43	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.2	1		07/17/13 00:43	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.2	1		07/17/13 00:43	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.2	1		07/17/13 00:43	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.2	1		07/17/13 00:43	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.2	1		07/17/13 00:43	10061-01-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164741

Sample: 38-2 @ 0-1 **Lab ID: 92164741002** Collected: 07/11/13 09:35 Received: 07/11/13 14:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	4.2	1		07/17/13 00:43	10061-02-6	
Diisopropyl ether	ND	ug/kg	4.2	1		07/17/13 00:43	108-20-3	
Ethylbenzene	ND	ug/kg	4.2	1		07/17/13 00:43	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.2	1		07/17/13 00:43	87-68-3	
2-Hexanone	ND	ug/kg	42.3	1		07/17/13 00:43	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.2	1		07/17/13 00:43	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.2	1		07/17/13 00:43	99-87-6	
Methylene Chloride	ND	ug/kg	16.9	1		07/17/13 00:43	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	42.3	1		07/17/13 00:43	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	4.2	1		07/17/13 00:43	1634-04-4	
Naphthalene	ND	ug/kg	4.2	1		07/17/13 00:43	91-20-3	
n-Propylbenzene	ND	ug/kg	4.2	1		07/17/13 00:43	103-65-1	
Styrene	ND	ug/kg	4.2	1		07/17/13 00:43	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.2	1		07/17/13 00:43	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.2	1		07/17/13 00:43	79-34-5	
Tetrachloroethene	ND	ug/kg	4.2	1		07/17/13 00:43	127-18-4	
Toluene	ND	ug/kg	4.2	1		07/17/13 00:43	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.2	1		07/17/13 00:43	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.2	1		07/17/13 00:43	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.2	1		07/17/13 00:43	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.2	1		07/17/13 00:43	79-00-5	
Trichloroethene	ND	ug/kg	4.2	1		07/17/13 00:43	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.2	1		07/17/13 00:43	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.2	1		07/17/13 00:43	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	4.2	1		07/17/13 00:43	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.2	1		07/17/13 00:43	108-67-8	
Vinyl acetate	ND	ug/kg	42.3	1		07/17/13 00:43	108-05-4	
Vinyl chloride	ND	ug/kg	8.5	1		07/17/13 00:43	75-01-4	
Xylene (Total)	ND	ug/kg	8.5	1		07/17/13 00:43	1330-20-7	
m&p-Xylene	ND	ug/kg	8.5	1		07/17/13 00:43	179601-23-1	
o-Xylene	ND	ug/kg	4.2	1		07/17/13 00:43	95-47-6	
Surrogates								
Dibromofluoromethane (S)	101 %		70-130	1		07/17/13 00:43	1868-53-7	
Toluene-d8 (S)	102 %		70-130	1		07/17/13 00:43	2037-26-5	
4-Bromofluorobenzene (S)	93 %		70-130	1		07/17/13 00:43	460-00-4	
1,2-Dichloroethane-d4 (S)	107 %		70-132	1		07/17/13 00:43	17060-07-0	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	7.6 %		0.10	1		07/16/13 09:31		

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164741

Sample: 38-3 @ 0-1 **Lab ID: 92164741003** Collected: 07/11/13 09:45 Received: 07/11/13 14:20 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	9.3	mg/kg	5.7	1	07/13/13 15:00	07/15/13 17:08	68334-30-5	
Surrogates								
n-Pentacosane (S)	70	%	41-119	1	07/13/13 15:00	07/15/13 17:08	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	6.5	1	07/14/13 18:02	07/14/13 21:12	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	90	%	70-167	1	07/14/13 18:02	07/14/13 21:12	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	81.2	1		07/17/13 01:02	67-64-1	
Benzene	ND	ug/kg	4.1	1		07/17/13 01:02	71-43-2	
Bromobenzene	ND	ug/kg	4.1	1		07/17/13 01:02	108-86-1	
Bromochloromethane	ND	ug/kg	4.1	1		07/17/13 01:02	74-97-5	
Bromodichloromethane	ND	ug/kg	4.1	1		07/17/13 01:02	75-27-4	
Bromoform	ND	ug/kg	4.1	1		07/17/13 01:02	75-25-2	
Bromomethane	ND	ug/kg	8.1	1		07/17/13 01:02	74-83-9	
2-Butanone (MEK)	ND	ug/kg	81.2	1		07/17/13 01:02	78-93-3	
n-Butylbenzene	ND	ug/kg	4.1	1		07/17/13 01:02	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.1	1		07/17/13 01:02	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.1	1		07/17/13 01:02	98-06-6	
Carbon tetrachloride	ND	ug/kg	4.1	1		07/17/13 01:02	56-23-5	
Chlorobenzene	ND	ug/kg	4.1	1		07/17/13 01:02	108-90-7	
Chloroethane	ND	ug/kg	8.1	1		07/17/13 01:02	75-00-3	
Chloroform	ND	ug/kg	4.1	1		07/17/13 01:02	67-66-3	
Chloromethane	ND	ug/kg	8.1	1		07/17/13 01:02	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.1	1		07/17/13 01:02	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.1	1		07/17/13 01:02	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.1	1		07/17/13 01:02	96-12-8	
Dibromochloromethane	ND	ug/kg	4.1	1		07/17/13 01:02	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.1	1		07/17/13 01:02	106-93-4	
Dibromomethane	ND	ug/kg	4.1	1		07/17/13 01:02	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.1	1		07/17/13 01:02	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.1	1		07/17/13 01:02	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.1	1		07/17/13 01:02	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	8.1	1		07/17/13 01:02	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.1	1		07/17/13 01:02	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.1	1		07/17/13 01:02	107-06-2	
1,1-Dichloroethene	ND	ug/kg	4.1	1		07/17/13 01:02	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.1	1		07/17/13 01:02	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.1	1		07/17/13 01:02	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.1	1		07/17/13 01:02	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.1	1		07/17/13 01:02	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.1	1		07/17/13 01:02	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.1	1		07/17/13 01:02	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.1	1		07/17/13 01:02	10061-01-5	

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1
 Pace Project No.: 92164741

Sample: 38-3 @ 0-1 Lab ID: 92164741003 Collected: 07/11/13 09:45 Received: 07/11/13 14:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	4.1	1		07/17/13 01:02	10061-02-6	
Diisopropyl ether	ND	ug/kg	4.1	1		07/17/13 01:02	108-20-3	
Ethylbenzene	ND	ug/kg	4.1	1		07/17/13 01:02	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.1	1		07/17/13 01:02	87-68-3	
2-Hexanone	ND	ug/kg	40.6	1		07/17/13 01:02	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.1	1		07/17/13 01:02	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.1	1		07/17/13 01:02	99-87-6	
Methylene Chloride	ND	ug/kg	16.2	1		07/17/13 01:02	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	40.6	1		07/17/13 01:02	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	4.1	1		07/17/13 01:02	1634-04-4	
Naphthalene	ND	ug/kg	4.1	1		07/17/13 01:02	91-20-3	
n-Propylbenzene	ND	ug/kg	4.1	1		07/17/13 01:02	103-65-1	
Styrene	ND	ug/kg	4.1	1		07/17/13 01:02	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.1	1		07/17/13 01:02	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.1	1		07/17/13 01:02	79-34-5	
Tetrachloroethene	ND	ug/kg	4.1	1		07/17/13 01:02	127-18-4	
Toluene	ND	ug/kg	4.1	1		07/17/13 01:02	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.1	1		07/17/13 01:02	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.1	1		07/17/13 01:02	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.1	1		07/17/13 01:02	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.1	1		07/17/13 01:02	79-00-5	
Trichloroethene	ND	ug/kg	4.1	1		07/17/13 01:02	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.1	1		07/17/13 01:02	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.1	1		07/17/13 01:02	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	4.1	1		07/17/13 01:02	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.1	1		07/17/13 01:02	108-67-8	
Vinyl acetate	ND	ug/kg	40.6	1		07/17/13 01:02	108-05-4	
Vinyl chloride	ND	ug/kg	8.1	1		07/17/13 01:02	75-01-4	
Xylene (Total)	ND	ug/kg	8.1	1		07/17/13 01:02	1330-20-7	
m&p-Xylene	ND	ug/kg	8.1	1		07/17/13 01:02	179601-23-1	
o-Xylene	ND	ug/kg	4.1	1		07/17/13 01:02	95-47-6	
Surrogates								
Dibromofluoromethane (S)	100 %		70-130	1		07/17/13 01:02	1868-53-7	
Toluene-d8 (S)	97 %		70-130	1		07/17/13 01:02	2037-26-5	
4-Bromofluorobenzene (S)	92 %		70-130	1		07/17/13 01:02	460-00-4	
1,2-Dichloroethane-d4 (S)	106 %		70-132	1		07/17/13 01:02	17060-07-0	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	12.4 %		0.10	1		07/16/13 09:32		

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164741

Sample: 38-4 @ 0-1 **Lab ID: 92164741004** Collected: 07/11/13 10:00 Received: 07/11/13 14:20 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	ND	mg/kg	5.7	1	07/13/13 15:00	07/15/13 17:08	68334-30-5	
Surrogates								
n-Pentacosane (S)	81	%	41-119	1	07/13/13 15:00	07/15/13 17:08	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	5.3	1	07/14/13 18:02	07/14/13 21:35	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	83	%	70-167	1	07/14/13 18:02	07/14/13 21:35	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	89.3	1		07/17/13 01:21	67-64-1	
Benzene	ND	ug/kg	4.5	1		07/17/13 01:21	71-43-2	
Bromobenzene	ND	ug/kg	4.5	1		07/17/13 01:21	108-86-1	
Bromochloromethane	ND	ug/kg	4.5	1		07/17/13 01:21	74-97-5	
Bromodichloromethane	ND	ug/kg	4.5	1		07/17/13 01:21	75-27-4	
Bromoform	ND	ug/kg	4.5	1		07/17/13 01:21	75-25-2	
Bromomethane	ND	ug/kg	8.9	1		07/17/13 01:21	74-83-9	
2-Butanone (MEK)	ND	ug/kg	89.3	1		07/17/13 01:21	78-93-3	
n-Butylbenzene	ND	ug/kg	4.5	1		07/17/13 01:21	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.5	1		07/17/13 01:21	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.5	1		07/17/13 01:21	98-06-6	
Carbon tetrachloride	ND	ug/kg	4.5	1		07/17/13 01:21	56-23-5	
Chlorobenzene	ND	ug/kg	4.5	1		07/17/13 01:21	108-90-7	
Chloroethane	ND	ug/kg	8.9	1		07/17/13 01:21	75-00-3	
Chloroform	ND	ug/kg	4.5	1		07/17/13 01:21	67-66-3	
Chloromethane	ND	ug/kg	8.9	1		07/17/13 01:21	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.5	1		07/17/13 01:21	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.5	1		07/17/13 01:21	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.5	1		07/17/13 01:21	96-12-8	
Dibromochloromethane	ND	ug/kg	4.5	1		07/17/13 01:21	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.5	1		07/17/13 01:21	106-93-4	
Dibromomethane	ND	ug/kg	4.5	1		07/17/13 01:21	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.5	1		07/17/13 01:21	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.5	1		07/17/13 01:21	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.5	1		07/17/13 01:21	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	8.9	1		07/17/13 01:21	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.5	1		07/17/13 01:21	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.5	1		07/17/13 01:21	107-06-2	
1,1-Dichloroethene	ND	ug/kg	4.5	1		07/17/13 01:21	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.5	1		07/17/13 01:21	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.5	1		07/17/13 01:21	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.5	1		07/17/13 01:21	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.5	1		07/17/13 01:21	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.5	1		07/17/13 01:21	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.5	1		07/17/13 01:21	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.5	1		07/17/13 01:21	10061-01-5	

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164741

Sample: 38-4 @ 0-1 **Lab ID: 92164741004** Collected: 07/11/13 10:00 Received: 07/11/13 14:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	4.5	1		07/17/13 01:21	10061-02-6	
Diisopropyl ether	ND	ug/kg	4.5	1		07/17/13 01:21	108-20-3	
Ethylbenzene	ND	ug/kg	4.5	1		07/17/13 01:21	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.5	1		07/17/13 01:21	87-68-3	
2-Hexanone	ND	ug/kg	44.7	1		07/17/13 01:21	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.5	1		07/17/13 01:21	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.5	1		07/17/13 01:21	99-87-6	
Methylene Chloride	ND	ug/kg	17.9	1		07/17/13 01:21	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	44.7	1		07/17/13 01:21	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	4.5	1		07/17/13 01:21	1634-04-4	
Naphthalene	ND	ug/kg	4.5	1		07/17/13 01:21	91-20-3	
n-Propylbenzene	ND	ug/kg	4.5	1		07/17/13 01:21	103-65-1	
Styrene	ND	ug/kg	4.5	1		07/17/13 01:21	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.5	1		07/17/13 01:21	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.5	1		07/17/13 01:21	79-34-5	
Tetrachloroethene	ND	ug/kg	4.5	1		07/17/13 01:21	127-18-4	
Toluene	ND	ug/kg	4.5	1		07/17/13 01:21	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.5	1		07/17/13 01:21	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.5	1		07/17/13 01:21	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.5	1		07/17/13 01:21	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.5	1		07/17/13 01:21	79-00-5	
Trichloroethene	ND	ug/kg	4.5	1		07/17/13 01:21	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.5	1		07/17/13 01:21	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.5	1		07/17/13 01:21	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	4.5	1		07/17/13 01:21	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.5	1		07/17/13 01:21	108-67-8	
Vinyl acetate	ND	ug/kg	44.7	1		07/17/13 01:21	108-05-4	
Vinyl chloride	ND	ug/kg	8.9	1		07/17/13 01:21	75-01-4	
Xylene (Total)	ND	ug/kg	8.9	1		07/17/13 01:21	1330-20-7	
m&p-Xylene	ND	ug/kg	8.9	1		07/17/13 01:21	179601-23-1	
o-Xylene	ND	ug/kg	4.5	1		07/17/13 01:21	95-47-6	
Surrogates								
Dibromofluoromethane (S)	99 %		70-130	1		07/17/13 01:21	1868-53-7	
Toluene-d8 (S)	97 %		70-130	1		07/17/13 01:21	2037-26-5	
4-Bromofluorobenzene (S)	94 %		70-130	1		07/17/13 01:21	460-00-4	
1,2-Dichloroethane-d4 (S)	105 %		70-132	1		07/17/13 01:21	17060-07-0	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	11.7 %		0.10	1		07/16/13 09:32		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164741

Sample: 38-5 @ 0-1 **Lab ID: 92164741005** Collected: 07/11/13 11:00 Received: 07/11/13 14:20 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	84.1	mg/kg	6.2	1	07/13/13 15:00	07/15/13 17:32	68334-30-5	
Surrogates								
n-Pentacosane (S)	82	%	41-119	1	07/13/13 15:00	07/15/13 17:32	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	5.7	1	07/15/13 14:02	07/15/13 13:39	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	81	%	70-167	1	07/15/13 14:02	07/15/13 13:39	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	114	ug/kg	89.5	1		07/17/13 01:40	67-64-1	B9
Benzene	ND	ug/kg	4.5	1		07/17/13 01:40	71-43-2	
Bromobenzene	ND	ug/kg	4.5	1		07/17/13 01:40	108-86-1	
Bromochloromethane	ND	ug/kg	4.5	1		07/17/13 01:40	74-97-5	
Bromodichloromethane	ND	ug/kg	4.5	1		07/17/13 01:40	75-27-4	
Bromoform	ND	ug/kg	4.5	1		07/17/13 01:40	75-25-2	
Bromomethane	ND	ug/kg	8.9	1		07/17/13 01:40	74-83-9	
2-Butanone (MEK)	ND	ug/kg	89.5	1		07/17/13 01:40	78-93-3	
n-Butylbenzene	ND	ug/kg	4.5	1		07/17/13 01:40	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.5	1		07/17/13 01:40	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.5	1		07/17/13 01:40	98-06-6	
Carbon tetrachloride	ND	ug/kg	4.5	1		07/17/13 01:40	56-23-5	
Chlorobenzene	ND	ug/kg	4.5	1		07/17/13 01:40	108-90-7	
Chloroethane	ND	ug/kg	8.9	1		07/17/13 01:40	75-00-3	
Chloroform	ND	ug/kg	4.5	1		07/17/13 01:40	67-66-3	
Chloromethane	ND	ug/kg	8.9	1		07/17/13 01:40	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.5	1		07/17/13 01:40	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.5	1		07/17/13 01:40	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.5	1		07/17/13 01:40	96-12-8	
Dibromochloromethane	ND	ug/kg	4.5	1		07/17/13 01:40	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.5	1		07/17/13 01:40	106-93-4	
Dibromomethane	ND	ug/kg	4.5	1		07/17/13 01:40	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.5	1		07/17/13 01:40	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.5	1		07/17/13 01:40	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.5	1		07/17/13 01:40	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	8.9	1		07/17/13 01:40	75-71-8	1g
1,1-Dichloroethane	ND	ug/kg	4.5	1		07/17/13 01:40	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.5	1		07/17/13 01:40	107-06-2	
1,1-Dichloroethene	ND	ug/kg	4.5	1		07/17/13 01:40	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.5	1		07/17/13 01:40	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.5	1		07/17/13 01:40	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.5	1		07/17/13 01:40	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.5	1		07/17/13 01:40	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.5	1		07/17/13 01:40	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.5	1		07/17/13 01:40	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.5	1		07/17/13 01:40	10061-01-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164741

Sample: 38-5 @ 0-1 **Lab ID: 92164741005** Collected: 07/11/13 11:00 Received: 07/11/13 14:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	4.5	1		07/17/13 01:40	10061-02-6	
Diisopropyl ether	ND	ug/kg	4.5	1		07/17/13 01:40	108-20-3	
Ethylbenzene	ND	ug/kg	4.5	1		07/17/13 01:40	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.5	1		07/17/13 01:40	87-68-3	
2-Hexanone	ND	ug/kg	44.7	1		07/17/13 01:40	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.5	1		07/17/13 01:40	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.5	1		07/17/13 01:40	99-87-6	
Methylene Chloride	ND	ug/kg	17.9	1		07/17/13 01:40	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	44.7	1		07/17/13 01:40	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	4.5	1		07/17/13 01:40	1634-04-4	
Naphthalene	ND	ug/kg	4.5	1		07/17/13 01:40	91-20-3	
n-Propylbenzene	ND	ug/kg	4.5	1		07/17/13 01:40	103-65-1	
Styrene	ND	ug/kg	4.5	1		07/17/13 01:40	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.5	1		07/17/13 01:40	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.5	1		07/17/13 01:40	79-34-5	
Tetrachloroethene	ND	ug/kg	4.5	1		07/17/13 01:40	127-18-4	
Toluene	ND	ug/kg	4.5	1		07/17/13 01:40	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.5	1		07/17/13 01:40	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.5	1		07/17/13 01:40	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.5	1		07/17/13 01:40	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.5	1		07/17/13 01:40	79-00-5	
Trichloroethene	ND	ug/kg	4.5	1		07/17/13 01:40	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.5	1		07/17/13 01:40	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.5	1		07/17/13 01:40	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	4.5	1		07/17/13 01:40	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.5	1		07/17/13 01:40	108-67-8	
Vinyl acetate	ND	ug/kg	44.7	1		07/17/13 01:40	108-05-4	
Vinyl chloride	ND	ug/kg	8.9	1		07/17/13 01:40	75-01-4	
Xylene (Total)	ND	ug/kg	8.9	1		07/17/13 01:40	1330-20-7	
m&p-Xylene	ND	ug/kg	8.9	1		07/17/13 01:40	179601-23-1	
o-Xylene	ND	ug/kg	4.5	1		07/17/13 01:40	95-47-6	
Surrogates								
Dibromofluoromethane (S)	119 %		70-130	1		07/17/13 01:40	1868-53-7	
Toluene-d8 (S)	103 %		70-130	1		07/17/13 01:40	2037-26-5	
4-Bromofluorobenzene (S)	97 %		70-130	1		07/17/13 01:40	460-00-4	
1,2-Dichloroethane-d4 (S)	139 %		70-132	1		07/17/13 01:40	17060-07-0	S2
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	19.7 %		0.10	1		07/16/13 09:32		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Project No.: 92164741

Sample: 38-6 @ 0-1 **Lab ID: 92164741006** Collected: 07/11/13 11:10 Received: 07/11/13 14:20 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	ND	mg/kg	6.0	1	07/13/13 15:00	07/15/13 17:32	68334-30-5	
Surrogates								
n-Pentacosane (S)	82	%	41-119	1	07/13/13 15:00	07/15/13 17:32	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	7.0	1	07/15/13 14:02	07/15/13 15:11	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	83	%	70-167	1	07/15/13 14:02	07/15/13 15:11	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	102	1		07/17/13 01:59	67-64-1	
Benzene	ND	ug/kg	5.1	1		07/17/13 01:59	71-43-2	
Bromobenzene	ND	ug/kg	5.1	1		07/17/13 01:59	108-86-1	
Bromochloromethane	ND	ug/kg	5.1	1		07/17/13 01:59	74-97-5	
Bromodichloromethane	ND	ug/kg	5.1	1		07/17/13 01:59	75-27-4	
Bromoform	ND	ug/kg	5.1	1		07/17/13 01:59	75-25-2	
Bromomethane	ND	ug/kg	10.2	1		07/17/13 01:59	74-83-9	
2-Butanone (MEK)	ND	ug/kg	102	1		07/17/13 01:59	78-93-3	
n-Butylbenzene	ND	ug/kg	5.1	1		07/17/13 01:59	104-51-8	
sec-Butylbenzene	ND	ug/kg	5.1	1		07/17/13 01:59	135-98-8	
tert-Butylbenzene	ND	ug/kg	5.1	1		07/17/13 01:59	98-06-6	
Carbon tetrachloride	ND	ug/kg	5.1	1		07/17/13 01:59	56-23-5	
Chlorobenzene	ND	ug/kg	5.1	1		07/17/13 01:59	108-90-7	
Chloroethane	ND	ug/kg	10.2	1		07/17/13 01:59	75-00-3	
Chloroform	ND	ug/kg	5.1	1		07/17/13 01:59	67-66-3	
Chloromethane	ND	ug/kg	10.2	1		07/17/13 01:59	74-87-3	
2-Chlorotoluene	ND	ug/kg	5.1	1		07/17/13 01:59	95-49-8	
4-Chlorotoluene	ND	ug/kg	5.1	1		07/17/13 01:59	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	5.1	1		07/17/13 01:59	96-12-8	
Dibromochloromethane	ND	ug/kg	5.1	1		07/17/13 01:59	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	5.1	1		07/17/13 01:59	106-93-4	
Dibromomethane	ND	ug/kg	5.1	1		07/17/13 01:59	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	5.1	1		07/17/13 01:59	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	5.1	1		07/17/13 01:59	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	5.1	1		07/17/13 01:59	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	10.2	1		07/17/13 01:59	75-71-8	
1,1-Dichloroethane	ND	ug/kg	5.1	1		07/17/13 01:59	75-34-3	
1,2-Dichloroethane	ND	ug/kg	5.1	1		07/17/13 01:59	107-06-2	
1,1-Dichloroethene	ND	ug/kg	5.1	1		07/17/13 01:59	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	5.1	1		07/17/13 01:59	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	5.1	1		07/17/13 01:59	156-60-5	
1,2-Dichloropropane	ND	ug/kg	5.1	1		07/17/13 01:59	78-87-5	
1,3-Dichloropropane	ND	ug/kg	5.1	1		07/17/13 01:59	142-28-9	
2,2-Dichloropropane	ND	ug/kg	5.1	1		07/17/13 01:59	594-20-7	
1,1-Dichloropropene	ND	ug/kg	5.1	1		07/17/13 01:59	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	5.1	1		07/17/13 01:59	10061-01-5	

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1
Project No.: 92164741

Sample: 38-6 @ 0-1 **Lab ID: 92164741006** Collected: 07/11/13 11:10 Received: 07/11/13 14:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	5.1	1		07/17/13 01:59	10061-02-6	
Diisopropyl ether	ND	ug/kg	5.1	1		07/17/13 01:59	108-20-3	
Ethylbenzene	ND	ug/kg	5.1	1		07/17/13 01:59	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	5.1	1		07/17/13 01:59	87-68-3	
2-Hexanone	ND	ug/kg	50.8	1		07/17/13 01:59	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	5.1	1		07/17/13 01:59	98-82-8	
p-Isopropyltoluene	ND	ug/kg	5.1	1		07/17/13 01:59	99-87-6	
Methylene Chloride	ND	ug/kg	20.3	1		07/17/13 01:59	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	50.8	1		07/17/13 01:59	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	5.1	1		07/17/13 01:59	1634-04-4	
Naphthalene	ND	ug/kg	5.1	1		07/17/13 01:59	91-20-3	
n-Propylbenzene	ND	ug/kg	5.1	1		07/17/13 01:59	103-65-1	
Styrene	ND	ug/kg	5.1	1		07/17/13 01:59	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	5.1	1		07/17/13 01:59	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.1	1		07/17/13 01:59	79-34-5	
Tetrachloroethene	ND	ug/kg	5.1	1		07/17/13 01:59	127-18-4	
Toluene	ND	ug/kg	5.1	1		07/17/13 01:59	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	5.1	1		07/17/13 01:59	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	5.1	1		07/17/13 01:59	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	5.1	1		07/17/13 01:59	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	5.1	1		07/17/13 01:59	79-00-5	
Trichloroethene	ND	ug/kg	5.1	1		07/17/13 01:59	79-01-6	
Trichlorofluoromethane	ND	ug/kg	5.1	1		07/17/13 01:59	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	5.1	1		07/17/13 01:59	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	5.1	1		07/17/13 01:59	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	5.1	1		07/17/13 01:59	108-67-8	
Vinyl acetate	ND	ug/kg	50.8	1		07/17/13 01:59	108-05-4	
Vinyl chloride	ND	ug/kg	10.2	1		07/17/13 01:59	75-01-4	
Xylene (Total)	ND	ug/kg	10.2	1		07/17/13 01:59	1330-20-7	
m&p-Xylene	ND	ug/kg	10.2	1		07/17/13 01:59	179601-23-1	
o-Xylene	ND	ug/kg	5.1	1		07/17/13 01:59	95-47-6	
Surrogates								
Dibromofluoromethane (S)	98 %		70-130	1		07/17/13 01:59	1868-53-7	
Toluene-d8 (S)	98 %		70-130	1		07/17/13 01:59	2037-26-5	
4-Bromofluorobenzene (S)	96 %		70-130	1		07/17/13 01:59	460-00-4	
1,2-Dichloroethane-d4 (S)	100 %		70-132	1		07/17/13 01:59	17060-07-0	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	16.4 %		0.10	1		07/16/13 09:32		

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164741

Sample: 38-7 @ 0-1 **Lab ID: 92164741007** Collected: 07/11/13 11:25 Received: 07/11/13 14:20 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	ND	mg/kg	6.5	1	07/13/13 15:00	07/15/13 17:56	68334-30-5	
Surrogates								
n-Pentacosane (S)	90	%	41-119	1	07/13/13 15:00	07/15/13 17:56	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	6.4	1	07/15/13 14:02	07/15/13 15:34	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	82	%	70-167	1	07/15/13 14:02	07/15/13 15:34	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	87.6	1		07/17/13 02:18	67-64-1	
Benzene	ND	ug/kg	4.4	1		07/17/13 02:18	71-43-2	
Bromobenzene	ND	ug/kg	4.4	1		07/17/13 02:18	108-86-1	
Bromochloromethane	ND	ug/kg	4.4	1		07/17/13 02:18	74-97-5	
Bromodichloromethane	ND	ug/kg	4.4	1		07/17/13 02:18	75-27-4	
Bromoform	ND	ug/kg	4.4	1		07/17/13 02:18	75-25-2	
Bromomethane	ND	ug/kg	8.8	1		07/17/13 02:18	74-83-9	
2-Butanone (MEK)	ND	ug/kg	87.6	1		07/17/13 02:18	78-93-3	
n-Butylbenzene	ND	ug/kg	4.4	1		07/17/13 02:18	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.4	1		07/17/13 02:18	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.4	1		07/17/13 02:18	98-06-6	
Carbon tetrachloride	ND	ug/kg	4.4	1		07/17/13 02:18	56-23-5	
Chlorobenzene	ND	ug/kg	4.4	1		07/17/13 02:18	108-90-7	
Chloroethane	ND	ug/kg	8.8	1		07/17/13 02:18	75-00-3	
Chloroform	ND	ug/kg	4.4	1		07/17/13 02:18	67-66-3	
Chloromethane	ND	ug/kg	8.8	1		07/17/13 02:18	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.4	1		07/17/13 02:18	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.4	1		07/17/13 02:18	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.4	1		07/17/13 02:18	96-12-8	
Dibromochloromethane	ND	ug/kg	4.4	1		07/17/13 02:18	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.4	1		07/17/13 02:18	106-93-4	
Dibromomethane	ND	ug/kg	4.4	1		07/17/13 02:18	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.4	1		07/17/13 02:18	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.4	1		07/17/13 02:18	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.4	1		07/17/13 02:18	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	8.8	1		07/17/13 02:18	75-71-8	1g
1,1-Dichloroethane	ND	ug/kg	4.4	1		07/17/13 02:18	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.4	1		07/17/13 02:18	107-06-2	
1,1-Dichloroethene	ND	ug/kg	4.4	1		07/17/13 02:18	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.4	1		07/17/13 02:18	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.4	1		07/17/13 02:18	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.4	1		07/17/13 02:18	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.4	1		07/17/13 02:18	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.4	1		07/17/13 02:18	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.4	1		07/17/13 02:18	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.4	1		07/17/13 02:18	10061-01-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164741

Sample: 38-7 @ 0-1 **Lab ID: 92164741007** Collected: 07/11/13 11:25 Received: 07/11/13 14:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	4.4	1		07/17/13 02:18	10061-02-6	
Diisopropyl ether	ND	ug/kg	4.4	1		07/17/13 02:18	108-20-3	
Ethylbenzene	ND	ug/kg	4.4	1		07/17/13 02:18	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.4	1		07/17/13 02:18	87-68-3	
2-Hexanone	ND	ug/kg	43.8	1		07/17/13 02:18	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.4	1		07/17/13 02:18	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.4	1		07/17/13 02:18	99-87-6	
Methylene Chloride	ND	ug/kg	17.5	1		07/17/13 02:18	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	43.8	1		07/17/13 02:18	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	4.4	1		07/17/13 02:18	1634-04-4	
Naphthalene	ND	ug/kg	4.4	1		07/17/13 02:18	91-20-3	
n-Propylbenzene	ND	ug/kg	4.4	1		07/17/13 02:18	103-65-1	
Styrene	ND	ug/kg	4.4	1		07/17/13 02:18	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.4	1		07/17/13 02:18	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.4	1		07/17/13 02:18	79-34-5	
Tetrachloroethene	ND	ug/kg	4.4	1		07/17/13 02:18	127-18-4	
Toluene	ND	ug/kg	4.4	1		07/17/13 02:18	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.4	1		07/17/13 02:18	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.4	1		07/17/13 02:18	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.4	1		07/17/13 02:18	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.4	1		07/17/13 02:18	79-00-5	
Trichloroethene	ND	ug/kg	4.4	1		07/17/13 02:18	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.4	1		07/17/13 02:18	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.4	1		07/17/13 02:18	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	4.4	1		07/17/13 02:18	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.4	1		07/17/13 02:18	108-67-8	
Vinyl acetate	ND	ug/kg	43.8	1		07/17/13 02:18	108-05-4	
Vinyl chloride	ND	ug/kg	8.8	1		07/17/13 02:18	75-01-4	
Xylene (Total)	ND	ug/kg	8.8	1		07/17/13 02:18	1330-20-7	
m&p-Xylene	ND	ug/kg	8.8	1		07/17/13 02:18	179601-23-1	
o-Xylene	ND	ug/kg	4.4	1		07/17/13 02:18	95-47-6	
Surrogates								
Dibromofluoromethane (S)	102 %		70-130	1		07/17/13 02:18	1868-53-7	
Toluene-d8 (S)	102 %		70-130	1		07/17/13 02:18	2037-26-5	
4-Bromofluorobenzene (S)	97 %		70-130	1		07/17/13 02:18	460-00-4	
1,2-Dichloroethane-d4 (S)	104 %		70-132	1		07/17/13 02:18	17060-07-0	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	22.5 %		0.10	1		07/16/13 09:32		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164741

Sample: 38-8 @ 0-1 **Lab ID: 92164741008** Collected: 07/11/13 11:35 Received: 07/11/13 14:20 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	ND	mg/kg	6.6	1	07/13/13 15:00	07/15/13 17:56	68334-30-5	
Surrogates								
n-Pentacosane (S)	81	%	41-119	1	07/13/13 15:00	07/15/13 17:56	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	5.9	1	07/15/13 14:02	07/15/13 15:57	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	83	%	70-167	1	07/15/13 14:02	07/15/13 15:57	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	99.6	1		07/17/13 02:37	67-64-1	
Benzene	ND	ug/kg	5.0	1		07/17/13 02:37	71-43-2	
Bromobenzene	ND	ug/kg	5.0	1		07/17/13 02:37	108-86-1	
Bromochloromethane	ND	ug/kg	5.0	1		07/17/13 02:37	74-97-5	
Bromodichloromethane	ND	ug/kg	5.0	1		07/17/13 02:37	75-27-4	
Bromoform	ND	ug/kg	5.0	1		07/17/13 02:37	75-25-2	
Bromomethane	ND	ug/kg	10	1		07/17/13 02:37	74-83-9	
2-Butanone (MEK)	ND	ug/kg	99.6	1		07/17/13 02:37	78-93-3	
n-Butylbenzene	ND	ug/kg	5.0	1		07/17/13 02:37	104-51-8	
sec-Butylbenzene	ND	ug/kg	5.0	1		07/17/13 02:37	135-98-8	
tert-Butylbenzene	ND	ug/kg	5.0	1		07/17/13 02:37	98-06-6	
Carbon tetrachloride	ND	ug/kg	5.0	1		07/17/13 02:37	56-23-5	
Chlorobenzene	ND	ug/kg	5.0	1		07/17/13 02:37	108-90-7	
Chloroethane	ND	ug/kg	10	1		07/17/13 02:37	75-00-3	
Chloroform	ND	ug/kg	5.0	1		07/17/13 02:37	67-66-3	
Chloromethane	ND	ug/kg	10	1		07/17/13 02:37	74-87-3	
2-Chlorotoluene	ND	ug/kg	5.0	1		07/17/13 02:37	95-49-8	
4-Chlorotoluene	ND	ug/kg	5.0	1		07/17/13 02:37	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	5.0	1		07/17/13 02:37	96-12-8	
Dibromochloromethane	ND	ug/kg	5.0	1		07/17/13 02:37	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	5.0	1		07/17/13 02:37	106-93-4	
Dibromomethane	ND	ug/kg	5.0	1		07/17/13 02:37	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	5.0	1		07/17/13 02:37	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	5.0	1		07/17/13 02:37	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	5.0	1		07/17/13 02:37	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	10	1		07/17/13 02:37	75-71-8	
1,1-Dichloroethane	ND	ug/kg	5.0	1		07/17/13 02:37	75-34-3	
1,2-Dichloroethane	ND	ug/kg	5.0	1		07/17/13 02:37	107-06-2	
1,1-Dichloroethene	ND	ug/kg	5.0	1		07/17/13 02:37	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	5.0	1		07/17/13 02:37	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	5.0	1		07/17/13 02:37	156-60-5	
1,2-Dichloropropane	ND	ug/kg	5.0	1		07/17/13 02:37	78-87-5	
1,3-Dichloropropane	ND	ug/kg	5.0	1		07/17/13 02:37	142-28-9	
2,2-Dichloropropane	ND	ug/kg	5.0	1		07/17/13 02:37	594-20-7	
1,1-Dichloropropene	ND	ug/kg	5.0	1		07/17/13 02:37	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	5.0	1		07/17/13 02:37	10061-01-5	

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164741

Sample: 38-8 @ 0-1 **Lab ID: 92164741008** Collected: 07/11/13 11:35 Received: 07/11/13 14:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	5.0	1		07/17/13 02:37	10061-02-6	
Diisopropyl ether	ND	ug/kg	5.0	1		07/17/13 02:37	108-20-3	
Ethylbenzene	ND	ug/kg	5.0	1		07/17/13 02:37	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	5.0	1		07/17/13 02:37	87-68-3	
2-Hexanone	ND	ug/kg	49.8	1		07/17/13 02:37	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	5.0	1		07/17/13 02:37	98-82-8	
p-Isopropyltoluene	ND	ug/kg	5.0	1		07/17/13 02:37	99-87-6	
Methylene Chloride	ND	ug/kg	19.9	1		07/17/13 02:37	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	49.8	1		07/17/13 02:37	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	5.0	1		07/17/13 02:37	1634-04-4	
Naphthalene	ND	ug/kg	5.0	1		07/17/13 02:37	91-20-3	
n-Propylbenzene	ND	ug/kg	5.0	1		07/17/13 02:37	103-65-1	
Styrene	ND	ug/kg	5.0	1		07/17/13 02:37	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	5.0	1		07/17/13 02:37	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.0	1		07/17/13 02:37	79-34-5	
Tetrachloroethene	ND	ug/kg	5.0	1		07/17/13 02:37	127-18-4	
Toluene	ND	ug/kg	5.0	1		07/17/13 02:37	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	5.0	1		07/17/13 02:37	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	5.0	1		07/17/13 02:37	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	5.0	1		07/17/13 02:37	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	5.0	1		07/17/13 02:37	79-00-5	
Trichloroethene	ND	ug/kg	5.0	1		07/17/13 02:37	79-01-6	
Trichlorofluoromethane	ND	ug/kg	5.0	1		07/17/13 02:37	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	5.0	1		07/17/13 02:37	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	5.0	1		07/17/13 02:37	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	5.0	1		07/17/13 02:37	108-67-8	
Vinyl acetate	ND	ug/kg	49.8	1		07/17/13 02:37	108-05-4	
Vinyl chloride	ND	ug/kg	10	1		07/17/13 02:37	75-01-4	
Xylene (Total)	ND	ug/kg	10	1		07/17/13 02:37	1330-20-7	
m&p-Xylene	ND	ug/kg	10	1		07/17/13 02:37	179601-23-1	
o-Xylene	ND	ug/kg	5.0	1		07/17/13 02:37	95-47-6	
Surrogates								
Dibromofluoromethane (S)	97 %		70-130	1		07/17/13 02:37	1868-53-7	
Toluene-d8 (S)	100 %		70-130	1		07/17/13 02:37	2037-26-5	
4-Bromofluorobenzene (S)	98 %		70-130	1		07/17/13 02:37	460-00-4	
1,2-Dichloroethane-d4 (S)	100 %		70-132	1		07/17/13 02:37	17060-07-0	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	23.8 %		0.10	1		07/16/13 09:32		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164741

Sample: 38-9 @ 0-1 **Lab ID: 92164741009** Collected: 07/11/13 11:45 Received: 07/11/13 14:20 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	ND	mg/kg	6.4	1	07/13/13 15:00	07/15/13 18:20	68334-30-5	
Surrogates								
n-Pentacosane (S)	83	%	41-119	1	07/13/13 15:00	07/15/13 18:20	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	6.4	1	07/15/13 14:02	07/15/13 16:20	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	87	%	70-167	1	07/15/13 14:02	07/15/13 16:20	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	104	1		07/17/13 02:56	67-64-1	
Benzene	ND	ug/kg	5.2	1		07/17/13 02:56	71-43-2	
Bromobenzene	ND	ug/kg	5.2	1		07/17/13 02:56	108-86-1	
Bromochloromethane	ND	ug/kg	5.2	1		07/17/13 02:56	74-97-5	
Bromodichloromethane	ND	ug/kg	5.2	1		07/17/13 02:56	75-27-4	
Bromoform	ND	ug/kg	5.2	1		07/17/13 02:56	75-25-2	
Bromomethane	ND	ug/kg	10.4	1		07/17/13 02:56	74-83-9	
2-Butanone (MEK)	ND	ug/kg	104	1		07/17/13 02:56	78-93-3	
n-Butylbenzene	ND	ug/kg	5.2	1		07/17/13 02:56	104-51-8	
sec-Butylbenzene	ND	ug/kg	5.2	1		07/17/13 02:56	135-98-8	
tert-Butylbenzene	ND	ug/kg	5.2	1		07/17/13 02:56	98-06-6	
Carbon tetrachloride	ND	ug/kg	5.2	1		07/17/13 02:56	56-23-5	
Chlorobenzene	ND	ug/kg	5.2	1		07/17/13 02:56	108-90-7	
Chloroethane	ND	ug/kg	10.4	1		07/17/13 02:56	75-00-3	
Chloroform	ND	ug/kg	5.2	1		07/17/13 02:56	67-66-3	
Chloromethane	ND	ug/kg	10.4	1		07/17/13 02:56	74-87-3	
2-Chlorotoluene	ND	ug/kg	5.2	1		07/17/13 02:56	95-49-8	
4-Chlorotoluene	ND	ug/kg	5.2	1		07/17/13 02:56	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	5.2	1		07/17/13 02:56	96-12-8	
Dibromochloromethane	ND	ug/kg	5.2	1		07/17/13 02:56	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	5.2	1		07/17/13 02:56	106-93-4	
Dibromomethane	ND	ug/kg	5.2	1		07/17/13 02:56	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	5.2	1		07/17/13 02:56	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	5.2	1		07/17/13 02:56	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	5.2	1		07/17/13 02:56	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	10.4	1		07/17/13 02:56	75-71-8	
1,1-Dichloroethane	ND	ug/kg	5.2	1		07/17/13 02:56	75-34-3	
1,2-Dichloroethane	ND	ug/kg	5.2	1		07/17/13 02:56	107-06-2	
1,1-Dichloroethene	ND	ug/kg	5.2	1		07/17/13 02:56	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	5.2	1		07/17/13 02:56	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	5.2	1		07/17/13 02:56	156-60-5	
1,2-Dichloropropane	ND	ug/kg	5.2	1		07/17/13 02:56	78-87-5	
1,3-Dichloropropane	ND	ug/kg	5.2	1		07/17/13 02:56	142-28-9	
2,2-Dichloropropane	ND	ug/kg	5.2	1		07/17/13 02:56	594-20-7	
1,1-Dichloropropene	ND	ug/kg	5.2	1		07/17/13 02:56	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	5.2	1		07/17/13 02:56	10061-01-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164741

Sample: 38-9 @ 0-1 **Lab ID: 92164741009** Collected: 07/11/13 11:45 Received: 07/11/13 14:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	5.2	1		07/17/13 02:56	10061-02-6	
Diisopropyl ether	ND	ug/kg	5.2	1		07/17/13 02:56	108-20-3	
Ethylbenzene	ND	ug/kg	5.2	1		07/17/13 02:56	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	5.2	1		07/17/13 02:56	87-68-3	
2-Hexanone	ND	ug/kg	51.9	1		07/17/13 02:56	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	5.2	1		07/17/13 02:56	98-82-8	
p-Isopropyltoluene	ND	ug/kg	5.2	1		07/17/13 02:56	99-87-6	
Methylene Chloride	ND	ug/kg	20.8	1		07/17/13 02:56	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	51.9	1		07/17/13 02:56	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	5.2	1		07/17/13 02:56	1634-04-4	
Naphthalene	ND	ug/kg	5.2	1		07/17/13 02:56	91-20-3	
n-Propylbenzene	ND	ug/kg	5.2	1		07/17/13 02:56	103-65-1	
Styrene	ND	ug/kg	5.2	1		07/17/13 02:56	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	5.2	1		07/17/13 02:56	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.2	1		07/17/13 02:56	79-34-5	
Tetrachloroethene	ND	ug/kg	5.2	1		07/17/13 02:56	127-18-4	
Toluene	ND	ug/kg	5.2	1		07/17/13 02:56	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	5.2	1		07/17/13 02:56	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	5.2	1		07/17/13 02:56	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	5.2	1		07/17/13 02:56	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	5.2	1		07/17/13 02:56	79-00-5	
Trichloroethene	ND	ug/kg	5.2	1		07/17/13 02:56	79-01-6	
Trichlorofluoromethane	ND	ug/kg	5.2	1		07/17/13 02:56	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	5.2	1		07/17/13 02:56	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	5.2	1		07/17/13 02:56	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	5.2	1		07/17/13 02:56	108-67-8	
Vinyl acetate	ND	ug/kg	51.9	1		07/17/13 02:56	108-05-4	
Vinyl chloride	ND	ug/kg	10.4	1		07/17/13 02:56	75-01-4	
Xylene (Total)	ND	ug/kg	10.4	1		07/17/13 02:56	1330-20-7	
m&p-Xylene	ND	ug/kg	10.4	1		07/17/13 02:56	179601-23-1	
o-Xylene	ND	ug/kg	5.2	1		07/17/13 02:56	95-47-6	
Surrogates								
Dibromofluoromethane (S)	94 %		70-130	1		07/17/13 02:56	1868-53-7	
Toluene-d8 (S)	97 %		70-130	1		07/17/13 02:56	2037-26-5	
4-Bromofluorobenzene (S)	93 %		70-130	1		07/17/13 02:56	460-00-4	
1,2-Dichloroethane-d4 (S)	93 %		70-132	1		07/17/13 02:56	17060-07-0	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	21.5 %		0.10	1		07/16/13 09:32		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164741

QC Batch: GCV/7074 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 5035A/5030B Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92164741001, 92164741002, 92164741003, 92164741004

METHOD BLANK: 1009905 Matrix: Solid
Associated Lab Samples: 92164741001, 92164741002, 92164741003, 92164741004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	6.0	07/14/13 13:10	
4-Bromofluorobenzene (S)	%	81	70-167	07/14/13 13:10	

LABORATORY CONTROL SAMPLE: 1009906

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	49.6	47.7	96	70-165	
4-Bromofluorobenzene (S)	%			79	70-167	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1009907 1009908

Parameter	Units	92164612004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Gasoline Range Organics	mg/kg	ND	51.2	51.2	58.3	58.3	113	113	47-187	0	
4-Bromofluorobenzene (S)	%						82	83	70-167		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164741

QC Batch: GCV/7080 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 5035A/5030B Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92164741005, 92164741006, 92164741007, 92164741008, 92164741009

METHOD BLANK: 1010101 Matrix: Solid
Associated Lab Samples: 92164741005, 92164741006, 92164741007, 92164741008, 92164741009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	6.0	07/15/13 13:16	
4-Bromofluorobenzene (S)	%	93	70-167	07/15/13 13:16	

LABORATORY CONTROL SAMPLE: 1010102

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	49.6	48.2	97	70-165	
4-Bromofluorobenzene (S)	%			78	70-167	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1010103 1010104

Parameter	Units	92164741005		1010104		MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result					
Gasoline Range Organics	mg/kg	ND	47.3	47.3	55.6	54.9	117	115	47-187	1
4-Bromofluorobenzene (S)	%						85	86	70-167	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164741

QC Batch: MSV/23637 Analysis Method: EPA 8260
 QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
 Associated Lab Samples: 92164741001, 92164741002, 92164741003, 92164741004, 92164741005, 92164741006, 92164741007

METHOD BLANK: 1010237 Matrix: Solid
 Associated Lab Samples: 92164741001, 92164741002, 92164741003, 92164741004, 92164741005, 92164741006, 92164741007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	4.9	07/16/13 20:00	
1,1,1-Trichloroethane	ug/kg	ND	4.9	07/16/13 20:00	
1,1,2,2-Tetrachloroethane	ug/kg	ND	4.9	07/16/13 20:00	
1,1,2-Trichloroethane	ug/kg	ND	4.9	07/16/13 20:00	
1,1-Dichloroethane	ug/kg	ND	4.9	07/16/13 20:00	
1,1-Dichloroethene	ug/kg	ND	4.9	07/16/13 20:00	
1,1-Dichloropropene	ug/kg	ND	4.9	07/16/13 20:00	
1,2,3-Trichlorobenzene	ug/kg	ND	4.9	07/16/13 20:00	
1,2,3-Trichloropropane	ug/kg	ND	4.9	07/16/13 20:00	
1,2,4-Trichlorobenzene	ug/kg	ND	4.9	07/16/13 20:00	
1,2,4-Trimethylbenzene	ug/kg	ND	4.9	07/16/13 20:00	
1,2-Dibromo-3-chloropropane	ug/kg	ND	4.9	07/16/13 20:00	
1,2-Dibromoethane (EDB)	ug/kg	ND	4.9	07/16/13 20:00	
1,2-Dichlorobenzene	ug/kg	ND	4.9	07/16/13 20:00	
1,2-Dichloroethane	ug/kg	ND	4.9	07/16/13 20:00	
1,2-Dichloropropane	ug/kg	ND	4.9	07/16/13 20:00	
1,3,5-Trimethylbenzene	ug/kg	ND	4.9	07/16/13 20:00	
1,3-Dichlorobenzene	ug/kg	ND	4.9	07/16/13 20:00	
1,3-Dichloropropane	ug/kg	ND	4.9	07/16/13 20:00	
1,4-Dichlorobenzene	ug/kg	ND	4.9	07/16/13 20:00	
2,2-Dichloropropane	ug/kg	ND	4.9	07/16/13 20:00	
2-Butanone (MEK)	ug/kg	ND	98.0	07/16/13 20:00	
2-Chlorotoluene	ug/kg	ND	4.9	07/16/13 20:00	
2-Hexanone	ug/kg	ND	49.0	07/16/13 20:00	
4-Chlorotoluene	ug/kg	ND	4.9	07/16/13 20:00	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	49.0	07/16/13 20:00	
Acetone	ug/kg	ND	98.0	07/16/13 20:00	
Benzene	ug/kg	ND	4.9	07/16/13 20:00	
Bromobenzene	ug/kg	ND	4.9	07/16/13 20:00	
Bromochloromethane	ug/kg	ND	4.9	07/16/13 20:00	
Bromodichloromethane	ug/kg	ND	4.9	07/16/13 20:00	
Bromoform	ug/kg	ND	4.9	07/16/13 20:00	
Bromomethane	ug/kg	ND	9.8	07/16/13 20:00	
Carbon tetrachloride	ug/kg	ND	4.9	07/16/13 20:00	
Chlorobenzene	ug/kg	ND	4.9	07/16/13 20:00	
Chloroethane	ug/kg	ND	9.8	07/16/13 20:00	
Chloroform	ug/kg	ND	4.9	07/16/13 20:00	
Chloromethane	ug/kg	ND	9.8	07/16/13 20:00	
cis-1,2-Dichloroethene	ug/kg	ND	4.9	07/16/13 20:00	
cis-1,3-Dichloropropene	ug/kg	ND	4.9	07/16/13 20:00	
Dibromochloromethane	ug/kg	ND	4.9	07/16/13 20:00	
Dibromomethane	ug/kg	ND	4.9	07/16/13 20:00	
Dichlorodifluoromethane	ug/kg	ND	9.8	07/16/13 20:00	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164741

METHOD BLANK: 1010237

Matrix: Solid

Associated Lab Samples: 92164741001, 92164741002, 92164741003, 92164741004, 92164741005, 92164741006, 92164741007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/kg	ND	4.9	07/16/13 20:00	
Ethylbenzene	ug/kg	ND	4.9	07/16/13 20:00	
Hexachloro-1,3-butadiene	ug/kg	ND	4.9	07/16/13 20:00	
Isopropylbenzene (Cumene)	ug/kg	ND	4.9	07/16/13 20:00	
m&p-Xylene	ug/kg	ND	9.8	07/16/13 20:00	
Methyl-tert-butyl ether	ug/kg	ND	4.9	07/16/13 20:00	
Methylene Chloride	ug/kg	ND	19.6	07/16/13 20:00	
n-Butylbenzene	ug/kg	ND	4.9	07/16/13 20:00	
n-Propylbenzene	ug/kg	ND	4.9	07/16/13 20:00	
Naphthalene	ug/kg	ND	4.9	07/16/13 20:00	
o-Xylene	ug/kg	ND	4.9	07/16/13 20:00	
p-Isopropyltoluene	ug/kg	ND	4.9	07/16/13 20:00	
sec-Butylbenzene	ug/kg	ND	4.9	07/16/13 20:00	
Styrene	ug/kg	ND	4.9	07/16/13 20:00	
tert-Butylbenzene	ug/kg	ND	4.9	07/16/13 20:00	
Tetrachloroethene	ug/kg	ND	4.9	07/16/13 20:00	
Toluene	ug/kg	ND	4.9	07/16/13 20:00	
trans-1,2-Dichloroethene	ug/kg	ND	4.9	07/16/13 20:00	
trans-1,3-Dichloropropene	ug/kg	ND	4.9	07/16/13 20:00	
Trichloroethene	ug/kg	ND	4.9	07/16/13 20:00	
Trichlorofluoromethane	ug/kg	ND	4.9	07/16/13 20:00	
Vinyl acetate	ug/kg	ND	49.0	07/16/13 20:00	
Vinyl chloride	ug/kg	ND	9.8	07/16/13 20:00	
Xylene (Total)	ug/kg	ND	9.8	07/16/13 20:00	
1,2-Dichloroethane-d4 (S)	%	95	70-132	07/16/13 20:00	
4-Bromofluorobenzene (S)	%	93	70-130	07/16/13 20:00	
Dibromofluoromethane (S)	%	97	70-130	07/16/13 20:00	
Toluene-d8 (S)	%	100	70-130	07/16/13 20:00	

LABORATORY CONTROL SAMPLE: 1010238

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	44.4	43.5	98	70-131	
1,1,1-Trichloroethane	ug/kg	44.4	44.2	99	70-141	
1,1,2,2-Tetrachloroethane	ug/kg	44.4	45.9	103	70-130	
1,1,2-Trichloroethane	ug/kg	44.4	41.9	94	70-132	
1,1-Dichloroethane	ug/kg	44.4	41.5	93	70-143	
1,1-Dichloroethene	ug/kg	44.4	39.8	90	70-137	
1,1-Dichloropropene	ug/kg	44.4	44.5	100	70-135	
1,2,3-Trichlorobenzene	ug/kg	44.4	47.1	106	69-153	
1,2,3-Trichloropropane	ug/kg	44.4	41.5	93	70-130	
1,2,4-Trichlorobenzene	ug/kg	44.4	46.9	106	55-171	
1,2,4-Trimethylbenzene	ug/kg	44.4	41.3	93	70-149	
1,2-Dibromo-3-chloropropane	ug/kg	44.4	39.2	88	68-141	
1,2-Dibromoethane (EDB)	ug/kg	44.4	45.0	101	70-130	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164741

LABORATORY CONTROL SAMPLE: 1010238

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/kg	44.4	45.7	103	70-140	
1,2-Dichloroethane	ug/kg	44.4	41.8	94	70-137	
1,2-Dichloropropane	ug/kg	44.4	40.7	92	70-133	
1,3,5-Trimethylbenzene	ug/kg	44.4	43.7	98	70-143	
1,3-Dichlorobenzene	ug/kg	44.4	45.0	101	70-144	
1,3-Dichloropropane	ug/kg	44.4	41.8	94	70-132	
1,4-Dichlorobenzene	ug/kg	44.4	45.7	103	70-142	
2,2-Dichloropropane	ug/kg	44.4	40.5	91	68-152	
2-Butanone (MEK)	ug/kg	88.8	69J	78	70-149	
2-Chlorotoluene	ug/kg	44.4	45.7	103	70-141	
2-Hexanone	ug/kg	88.8	85.4	96	70-149	
4-Chlorotoluene	ug/kg	44.4	46.3	104	70-149	
4-Methyl-2-pentanone (MIBK)	ug/kg	88.8	72.7	82	70-153	
Acetone	ug/kg	88.8	76.5J	86	70-157	
Benzene	ug/kg	44.4	43.3	97	70-130	
Bromobenzene	ug/kg	44.4	44.0	99	70-141	
Bromochloromethane	ug/kg	44.4	41.8	94	70-149	
Bromodichloromethane	ug/kg	44.4	40.2	90	70-130	
Bromoform	ug/kg	44.4	42.8	96	70-131	
Bromomethane	ug/kg	44.4	37.8	85	64-136	
Carbon tetrachloride	ug/kg	44.4	39.8	90	70-154	
Chlorobenzene	ug/kg	44.4	44.0	99	70-135	
Chloroethane	ug/kg	44.4	36.9	83	68-151	
Chloroform	ug/kg	44.4	40.8	92	70-130	
Chloromethane	ug/kg	44.4	29.7	67	70-132	F3,L0
cis-1,2-Dichloroethene	ug/kg	44.4	40.6	91	70-140	
cis-1,3-Dichloropropene	ug/kg	44.4	39.3	88	70-137	
Dibromochloromethane	ug/kg	44.4	41.3	93	70-130	
Dibromomethane	ug/kg	44.4	42.6	96	70-136	
Dichlorodifluoromethane	ug/kg	44.4	23.0	52	36-148	F3
Diisopropyl ether	ug/kg	44.4	42.2	95	70-139	
Ethylbenzene	ug/kg	44.4	45.0	101	70-137	
Hexachloro-1,3-butadiene	ug/kg	44.4	43.6	98	70-145	
Isopropylbenzene (Cumene)	ug/kg	44.4	45.9	103	70-141	
m&p-Xylene	ug/kg	88.8	90.7	102	70-140	
Methyl-tert-butyl ether	ug/kg	44.4	44.0	99	45-150	
Methylene Chloride	ug/kg	44.4	32.8	74	70-133	
n-Butylbenzene	ug/kg	44.4	43.4	98	65-155	
n-Propylbenzene	ug/kg	44.4	43.8	99	70-148	
Naphthalene	ug/kg	44.4	44.8	101	70-148	
o-Xylene	ug/kg	44.4	46.6	105	70-141	
p-Isopropyltoluene	ug/kg	44.4	44.9	101	70-148	
sec-Butylbenzene	ug/kg	44.4	45.6	103	70-145	
Styrene	ug/kg	44.4	46.4	105	70-138	
tert-Butylbenzene	ug/kg	44.4	44.4	100	70-143	
Tetrachloroethene	ug/kg	44.4	43.8	99	70-140	
Toluene	ug/kg	44.4	43.0	97	70-130	
trans-1,2-Dichloroethene	ug/kg	44.4	40.9	92	70-136	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164741

LABORATORY CONTROL SAMPLE: 1010238

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
trans-1,3-Dichloropropene	ug/kg	44.4	38.5	87	70-138	
Trichloroethene	ug/kg	44.4	40.5	91	70-132	
Trichlorofluoromethane	ug/kg	44.4	39.1	88	69-134	
Vinyl acetate	ug/kg	88.8	71.8	81	24-161	
Vinyl chloride	ug/kg	44.4	34.9	79	55-140	
Xylene (Total)	ug/kg	133	137	103	70-141	
1,2-Dichloroethane-d4 (S)	%			95	70-132	
4-Bromofluorobenzene (S)	%			101	70-130	
Dibromofluoromethane (S)	%			103	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE SAMPLE: 1011881

Parameter	Units	92164741001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/kg	ND	50	73.8	148	49-180	
Benzene	ug/kg	ND	50	51.1	102	50-166	
Chlorobenzene	ug/kg	ND	50	50.0	100	43-169	
Toluene	ug/kg	ND	50	48.6	97	52-163	
Trichloroethene	ug/kg	ND	50	52.3	105	49-167	
1,2-Dichloroethane-d4 (S)	%				98	70-132	
4-Bromofluorobenzene (S)	%				94	70-130	
Dibromofluoromethane (S)	%				100	70-130	
Toluene-d8 (S)	%				96	70-130	

SAMPLE DUPLICATE: 1011882

Parameter	Units	92164741002 Result	Dup Result	RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		
1,1,1-Trichloroethane	ug/kg	ND	ND		
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		
1,1,2-Trichloroethane	ug/kg	ND	ND		
1,1-Dichloroethane	ug/kg	ND	ND		
1,1-Dichloroethene	ug/kg	ND	ND		
1,1-Dichloropropene	ug/kg	ND	ND		
1,2,3-Trichlorobenzene	ug/kg	ND	ND		
1,2,3-Trichloropropane	ug/kg	ND	ND		
1,2,4-Trichlorobenzene	ug/kg	ND	ND		
1,2,4-Trimethylbenzene	ug/kg	ND	ND		
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		
1,2-Dichlorobenzene	ug/kg	ND	ND		
1,2-Dichloroethane	ug/kg	ND	ND		
1,2-Dichloropropane	ug/kg	ND	ND		
1,3,5-Trimethylbenzene	ug/kg	ND	ND		
1,3-Dichlorobenzene	ug/kg	ND	ND		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164741

SAMPLE DUPLICATE: 1011882

Parameter	Units	92164741002 Result	Dup Result	RPD	Qualifiers
1,3-Dichloropropane	ug/kg	ND	ND		
1,4-Dichlorobenzene	ug/kg	ND	ND		
2,2-Dichloropropane	ug/kg	ND	ND		
2-Butanone (MEK)	ug/kg	ND	ND		
2-Chlorotoluene	ug/kg	ND	ND		
2-Hexanone	ug/kg	ND	ND		
4-Chlorotoluene	ug/kg	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		
Acetone	ug/kg	ND	164		B9
Benzene	ug/kg	ND	ND		
Bromobenzene	ug/kg	ND	ND		
Bromochloromethane	ug/kg	ND	ND		
Bromodichloromethane	ug/kg	ND	ND		
Bromoform	ug/kg	ND	ND		
Bromomethane	ug/kg	ND	ND		
Carbon tetrachloride	ug/kg	ND	ND		
Chlorobenzene	ug/kg	ND	ND		
Chloroethane	ug/kg	ND	ND		
Chloroform	ug/kg	ND	ND		
Chloromethane	ug/kg	ND	ND		
cis-1,2-Dichloroethene	ug/kg	ND	ND		
cis-1,3-Dichloropropene	ug/kg	ND	ND		
Dibromochloromethane	ug/kg	ND	ND		
Dibromomethane	ug/kg	ND	ND		
Dichlorodifluoromethane	ug/kg	ND	ND		
Diisopropyl ether	ug/kg	ND	ND		
Ethylbenzene	ug/kg	ND	ND		
Hexachloro-1,3-butadiene	ug/kg	ND	ND		
Isopropylbenzene (Cumene)	ug/kg	ND	ND		
m&p-Xylene	ug/kg	ND	ND		
Methyl-tert-butyl ether	ug/kg	ND	ND		
Methylene Chloride	ug/kg	ND	28.7		
n-Butylbenzene	ug/kg	ND	ND		
n-Propylbenzene	ug/kg	ND	ND		
Naphthalene	ug/kg	ND	ND		
o-Xylene	ug/kg	ND	ND		
p-Isopropyltoluene	ug/kg	ND	ND		
sec-Butylbenzene	ug/kg	ND	ND		
Styrene	ug/kg	ND	ND		
tert-Butylbenzene	ug/kg	ND	ND		
Tetrachloroethene	ug/kg	ND	ND		
Toluene	ug/kg	ND	ND		
trans-1,2-Dichloroethene	ug/kg	ND	ND		
trans-1,3-Dichloropropene	ug/kg	ND	ND		
Trichloroethene	ug/kg	ND	ND		
Trichlorofluoromethane	ug/kg	ND	ND		
Vinyl acetate	ug/kg	ND	ND		
Vinyl chloride	ug/kg	ND	ND		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164741

SAMPLE DUPLICATE: 1011882

Parameter	Units	92164741002 Result	Dup Result	RPD	Qualifiers
Xylene (Total)	ug/kg	ND	ND		
1,2-Dichloroethane-d4 (S)	%	107	105	14	
4-Bromofluorobenzene (S)	%	93	86	7	
Dibromofluoromethane (S)	%	101	104	19	
Toluene-d8 (S)	%	102	98	12	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164741

QC Batch: MSV/23645 Analysis Method: EPA 8260
 QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
 Associated Lab Samples: 92164741008, 92164741009

METHOD BLANK: 1011127 Matrix: Solid

Associated Lab Samples: 92164741008, 92164741009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	5.0	07/16/13 19:41	
1,1,1-Trichloroethane	ug/kg	ND	5.0	07/16/13 19:41	
1,1,2,2-Tetrachloroethane	ug/kg	ND	5.0	07/16/13 19:41	
1,1,2-Trichloroethane	ug/kg	ND	5.0	07/16/13 19:41	
1,1-Dichloroethane	ug/kg	ND	5.0	07/16/13 19:41	
1,1-Dichloroethene	ug/kg	ND	5.0	07/16/13 19:41	
1,1-Dichloropropene	ug/kg	ND	5.0	07/16/13 19:41	
1,2,3-Trichlorobenzene	ug/kg	ND	5.0	07/16/13 19:41	
1,2,3-Trichloropropane	ug/kg	ND	5.0	07/16/13 19:41	
1,2,4-Trichlorobenzene	ug/kg	ND	5.0	07/16/13 19:41	
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	07/16/13 19:41	
1,2-Dibromo-3-chloropropane	ug/kg	ND	5.0	07/16/13 19:41	
1,2-Dibromoethane (EDB)	ug/kg	ND	5.0	07/16/13 19:41	
1,2-Dichlorobenzene	ug/kg	ND	5.0	07/16/13 19:41	
1,2-Dichloroethane	ug/kg	ND	5.0	07/16/13 19:41	
1,2-Dichloropropane	ug/kg	ND	5.0	07/16/13 19:41	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	07/16/13 19:41	
1,3-Dichlorobenzene	ug/kg	ND	5.0	07/16/13 19:41	
1,3-Dichloropropane	ug/kg	ND	5.0	07/16/13 19:41	
1,4-Dichlorobenzene	ug/kg	ND	5.0	07/16/13 19:41	
2,2-Dichloropropane	ug/kg	ND	5.0	07/16/13 19:41	
2-Butanone (MEK)	ug/kg	ND	99.8	07/16/13 19:41	
2-Chlorotoluene	ug/kg	ND	5.0	07/16/13 19:41	
2-Hexanone	ug/kg	ND	49.9	07/16/13 19:41	
4-Chlorotoluene	ug/kg	ND	5.0	07/16/13 19:41	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	49.9	07/16/13 19:41	
Acetone	ug/kg	ND	99.8	07/16/13 19:41	
Benzene	ug/kg	ND	5.0	07/16/13 19:41	
Bromobenzene	ug/kg	ND	5.0	07/16/13 19:41	
Bromochloromethane	ug/kg	ND	5.0	07/16/13 19:41	
Bromodichloromethane	ug/kg	ND	5.0	07/16/13 19:41	
Bromoform	ug/kg	ND	5.0	07/16/13 19:41	
Bromomethane	ug/kg	ND	10	07/16/13 19:41	
Carbon tetrachloride	ug/kg	ND	5.0	07/16/13 19:41	
Chlorobenzene	ug/kg	ND	5.0	07/16/13 19:41	
Chloroethane	ug/kg	ND	10	07/16/13 19:41	
Chloroform	ug/kg	ND	5.0	07/16/13 19:41	
Chloromethane	ug/kg	ND	10	07/16/13 19:41	
cis-1,2-Dichloroethene	ug/kg	ND	5.0	07/16/13 19:41	
cis-1,3-Dichloropropene	ug/kg	ND	5.0	07/16/13 19:41	
Dibromochloromethane	ug/kg	ND	5.0	07/16/13 19:41	
Dibromomethane	ug/kg	ND	5.0	07/16/13 19:41	
Dichlorodifluoromethane	ug/kg	ND	10	07/16/13 19:41	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164741

METHOD BLANK: 1011127

Matrix: Solid

Associated Lab Samples: 92164741008, 92164741009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/kg	ND	5.0	07/16/13 19:41	
Ethylbenzene	ug/kg	ND	5.0	07/16/13 19:41	
Hexachloro-1,3-butadiene	ug/kg	ND	5.0	07/16/13 19:41	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	07/16/13 19:41	
m&p-Xylene	ug/kg	ND	10	07/16/13 19:41	
Methyl-tert-butyl ether	ug/kg	ND	5.0	07/16/13 19:41	
Methylene Chloride	ug/kg	ND	20.0	07/16/13 19:41	
n-Butylbenzene	ug/kg	ND	5.0	07/16/13 19:41	
n-Propylbenzene	ug/kg	ND	5.0	07/16/13 19:41	
Naphthalene	ug/kg	ND	5.0	07/16/13 19:41	
o-Xylene	ug/kg	ND	5.0	07/16/13 19:41	
p-Isopropyltoluene	ug/kg	ND	5.0	07/16/13 19:41	
sec-Butylbenzene	ug/kg	ND	5.0	07/16/13 19:41	
Styrene	ug/kg	ND	5.0	07/16/13 19:41	
tert-Butylbenzene	ug/kg	ND	5.0	07/16/13 19:41	
Tetrachloroethene	ug/kg	ND	5.0	07/16/13 19:41	
Toluene	ug/kg	ND	5.0	07/16/13 19:41	
trans-1,2-Dichloroethene	ug/kg	ND	5.0	07/16/13 19:41	
trans-1,3-Dichloropropene	ug/kg	ND	5.0	07/16/13 19:41	
Trichloroethene	ug/kg	ND	5.0	07/16/13 19:41	
Trichlorofluoromethane	ug/kg	ND	5.0	07/16/13 19:41	
Vinyl acetate	ug/kg	ND	49.9	07/16/13 19:41	
Vinyl chloride	ug/kg	ND	10	07/16/13 19:41	
Xylene (Total)	ug/kg	ND	10	07/16/13 19:41	
1,2-Dichloroethane-d4 (S)	%	99	70-132	07/16/13 19:41	
4-Bromofluorobenzene (S)	%	96	70-130	07/16/13 19:41	
Dibromofluoromethane (S)	%	97	70-130	07/16/13 19:41	
Toluene-d8 (S)	%	100	70-130	07/16/13 19:41	

LABORATORY CONTROL SAMPLE: 1011128

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	49.3	46.3	94	70-131	
1,1,1-Trichloroethane	ug/kg	49.3	45.3	92	70-141	
1,1,2,2-Tetrachloroethane	ug/kg	49.3	46.5	94	70-130	
1,1,2-Trichloroethane	ug/kg	49.3	44.8	91	70-132	
1,1-Dichloroethane	ug/kg	49.3	43.8	89	70-143	
1,1-Dichloroethene	ug/kg	49.3	40.9	83	70-137	
1,1-Dichloropropene	ug/kg	49.3	45.9	93	70-135	
1,2,3-Trichlorobenzene	ug/kg	49.3	47.7	97	69-153	
1,2,3-Trichloropropane	ug/kg	49.3	43.1	87	70-130	
1,2,4-Trichlorobenzene	ug/kg	49.3	46.9	95	55-171	
1,2,4-Trimethylbenzene	ug/kg	49.3	44.7	91	70-149	
1,2-Dibromo-3-chloropropane	ug/kg	49.3	43.0	87	68-141	
1,2-Dibromoethane (EDB)	ug/kg	49.3	46.6	95	70-130	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164741

LABORATORY CONTROL SAMPLE: 1011128

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/kg	49.3	48.4	98	70-140	
1,2-Dichloroethane	ug/kg	49.3	42.5	86	70-137	
1,2-Dichloropropane	ug/kg	49.3	43.0	87	70-133	
1,3,5-Trimethylbenzene	ug/kg	49.3	47.1	96	70-143	
1,3-Dichlorobenzene	ug/kg	49.3	47.5	96	70-144	
1,3-Dichloropropane	ug/kg	49.3	45.2	92	70-132	
1,4-Dichlorobenzene	ug/kg	49.3	47.0	95	70-142	
2,2-Dichloropropane	ug/kg	49.3	41.9	85	68-152	
2-Butanone (MEK)	ug/kg	98.6	68J	69	70-149	L0
2-Chlorotoluene	ug/kg	49.3	48.1	98	70-141	
2-Hexanone	ug/kg	98.6	83.8	85	70-149	
4-Chlorotoluene	ug/kg	49.3	48.0	97	70-149	
4-Methyl-2-pentanone (MIBK)	ug/kg	98.6	71.7	73	70-153	
Acetone	ug/kg	98.6	79J	80	70-157	
Benzene	ug/kg	49.3	45.7	93	70-130	
Bromobenzene	ug/kg	49.3	46.7	95	70-141	
Bromochloromethane	ug/kg	49.3	44.4	90	70-149	
Bromodichloromethane	ug/kg	49.3	42.7	87	70-130	
Bromoform	ug/kg	49.3	41.6	84	70-131	
Bromomethane	ug/kg	49.3	37.4	76	64-136	
Carbon tetrachloride	ug/kg	49.3	39.7	81	70-154	
Chlorobenzene	ug/kg	49.3	46.5	94	70-135	
Chloroethane	ug/kg	49.3	37.5	76	68-151	
Chloroform	ug/kg	49.3	42.0	85	70-130	
Chloromethane	ug/kg	49.3	31.0	63	70-132	F3,L0
cis-1,2-Dichloroethene	ug/kg	49.3	42.3	86	70-140	
cis-1,3-Dichloropropene	ug/kg	49.3	40.6	82	70-137	
Dibromochloromethane	ug/kg	49.3	43.0	87	70-130	
Dibromomethane	ug/kg	49.3	45.8	93	70-136	
Dichlorodifluoromethane	ug/kg	49.3	23.5	48	36-148	F3
Diisopropyl ether	ug/kg	49.3	44.5	90	70-139	
Ethylbenzene	ug/kg	49.3	48.1	97	70-137	
Hexachloro-1,3-butadiene	ug/kg	49.3	45.6	92	70-145	
Isopropylbenzene (Cumene)	ug/kg	49.3	49.0	99	70-141	
m&p-Xylene	ug/kg	98.6	95.6	97	70-140	
Methyl-tert-butyl ether	ug/kg	49.3	44.6	90	45-150	
Methylene Chloride	ug/kg	49.3	34.2	69	70-133	L0
n-Butylbenzene	ug/kg	49.3	45.7	93	65-155	
n-Propylbenzene	ug/kg	49.3	46.2	94	70-148	
Naphthalene	ug/kg	49.3	45.3	92	70-148	
o-Xylene	ug/kg	49.3	49.0	99	70-141	
p-Isopropyltoluene	ug/kg	49.3	47.9	97	70-148	
sec-Butylbenzene	ug/kg	49.3	47.7	97	70-145	
Styrene	ug/kg	49.3	49.0	99	70-138	
tert-Butylbenzene	ug/kg	49.3	47.1	95	70-143	
Tetrachloroethene	ug/kg	49.3	45.0	91	70-140	
Toluene	ug/kg	49.3	45.4	92	70-130	
trans-1,2-Dichloroethene	ug/kg	49.3	42.3	86	70-136	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164741

LABORATORY CONTROL SAMPLE: 1011128

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
trans-1,3-Dichloropropene	ug/kg	49.3	40.6	82	70-138	
Trichloroethene	ug/kg	49.3	42.4	86	70-132	
Trichlorofluoromethane	ug/kg	49.3	40.9	83	69-134	
Vinyl acetate	ug/kg	98.6	60.1	61	24-161	
Vinyl chloride	ug/kg	49.3	35.9	73	55-140	
Xylene (Total)	ug/kg	148	145	98	70-141	
1,2-Dichloroethane-d4 (S)	%			91	70-132	
4-Bromofluorobenzene (S)	%			101	70-130	
Dibromofluoromethane (S)	%			97	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE SAMPLE: 1012436

Parameter	Units	92164741008 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/kg	ND	51.1	48.5	95	49-180	
Benzene	ug/kg	ND	51.1	35.5	70	50-166	
Chlorobenzene	ug/kg	ND	51.1	38.1	75	43-169	
Toluene	ug/kg	ND	51.1	34.9	68	52-163	
Trichloroethene	ug/kg	ND	51.1	37.1	73	49-167	
1,2-Dichloroethane-d4 (S)	%				90	70-132	
4-Bromofluorobenzene (S)	%				101	70-130	
Dibromofluoromethane (S)	%				92	70-130	
Toluene-d8 (S)	%				96	70-130	

SAMPLE DUPLICATE: 1011878

Parameter	Units	92164878001 Result	Dup Result	RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		
1,1,1-Trichloroethane	ug/kg	ND	ND		
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		
1,1,2-Trichloroethane	ug/kg	ND	ND		
1,1-Dichloroethane	ug/kg	ND	ND		
1,1-Dichloroethene	ug/kg	ND	ND		
1,1-Dichloropropene	ug/kg	ND	ND		
1,2,3-Trichlorobenzene	ug/kg	ND	ND		
1,2,3-Trichloropropane	ug/kg	ND	ND		
1,2,4-Trichlorobenzene	ug/kg	ND	ND		
1,2,4-Trimethylbenzene	ug/kg	ND	43.5		
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		
1,2-Dichlorobenzene	ug/kg	ND	ND		
1,2-Dichloroethane	ug/kg	ND	ND		
1,2-Dichloropropane	ug/kg	ND	ND		
1,3,5-Trimethylbenzene	ug/kg	ND	16.7		
1,3-Dichlorobenzene	ug/kg	ND	ND		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164741

SAMPLE DUPLICATE: 1011878

Parameter	Units	92164878001 Result	Dup Result	RPD	Qualifiers
1,3-Dichloropropane	ug/kg	ND	ND		
1,4-Dichlorobenzene	ug/kg	ND	ND		
2,2-Dichloropropane	ug/kg	ND	ND		
2-Butanone (MEK)	ug/kg	ND	ND		
2-Chlorotoluene	ug/kg	ND	ND		
2-Hexanone	ug/kg	ND	ND		
4-Chlorotoluene	ug/kg	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		
Acetone	ug/kg	ND	ND		
Benzene	ug/kg	ND	38.0		
Bromobenzene	ug/kg	ND	ND		
Bromochloromethane	ug/kg	ND	ND		
Bromodichloromethane	ug/kg	ND	ND		
Bromoform	ug/kg	ND	ND		
Bromomethane	ug/kg	ND	ND		
Carbon tetrachloride	ug/kg	ND	ND		
Chlorobenzene	ug/kg	ND	ND		
Chloroethane	ug/kg	ND	ND		
Chloroform	ug/kg	ND	ND		
Chloromethane	ug/kg	ND	ND		
cis-1,2-Dichloroethene	ug/kg	ND	ND		
cis-1,3-Dichloropropene	ug/kg	ND	ND		
Dibromochloromethane	ug/kg	ND	ND		
Dibromomethane	ug/kg	ND	ND		
Dichlorodifluoromethane	ug/kg	ND	ND		IO
Diisopropyl ether	ug/kg	ND	ND		
Ethylbenzene	ug/kg	ND	49.8		
Hexachloro-1,3-butadiene	ug/kg	ND	ND		
Isopropylbenzene (Cumene)	ug/kg	ND	2.3J		
m&p-Xylene	ug/kg	ND	132		
Methyl-tert-butyl ether	ug/kg	ND	ND		
Methylene Chloride	ug/kg	ND	ND		
n-Butylbenzene	ug/kg	ND	ND		
n-Propylbenzene	ug/kg	ND	9.1		
Naphthalene	ug/kg	ND	1.6J		
o-Xylene	ug/kg	ND	18.7		
p-Isopropyltoluene	ug/kg	ND	ND		
sec-Butylbenzene	ug/kg	ND	ND		
Styrene	ug/kg	ND	ND		
tert-Butylbenzene	ug/kg	ND	ND		
Tetrachloroethene	ug/kg	ND	ND		
Toluene	ug/kg	ND	2.7J		
trans-1,2-Dichloroethene	ug/kg	ND	ND		
trans-1,3-Dichloropropene	ug/kg	ND	ND		
Trichloroethene	ug/kg	ND	ND		
Trichlorofluoromethane	ug/kg	ND	ND		
Vinyl acetate	ug/kg	ND	ND		
Vinyl chloride	ug/kg	ND	ND		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164741

SAMPLE DUPLICATE: 1011878

Parameter	Units	92164878001 Result	Dup Result	RPD	Qualifiers
Xylene (Total)	ug/kg	ND	151		
1,2-Dichloroethane-d4 (S)	%	61	106	51	
4-Bromofluorobenzene (S)	%	73	100	28	
Dibromofluoromethane (S)	%	147	99	43	
Toluene-d8 (S)	%	95	100	1	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164741

QC Batch: OEXT/22977 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 3546 Analysis Description: 8015 Solid GCSV
Associated Lab Samples: 92164741001, 92164741002, 92164741003, 92164741004, 92164741005, 92164741006, 92164741007, 92164741008, 92164741009

METHOD BLANK: 1009863 Matrix: Solid
Associated Lab Samples: 92164741001, 92164741002, 92164741003, 92164741004, 92164741005, 92164741006, 92164741007, 92164741008, 92164741009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Components	mg/kg	ND	5.0	07/15/13 15:33	
n-Pentacosane (S)	%	77	41-119	07/15/13 15:33	

LABORATORY CONTROL SAMPLE: 1009864

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Components	mg/kg	66.7	48.6	73	49-113	
n-Pentacosane (S)	%			75	41-119	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1009865 1009866

Parameter	Units	92164739001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Diesel Components	mg/kg	22.9	85.1	85.1	56.6	68.7	40	54	10-146	19	
n-Pentacosane (S)	%						82	80	41-119		

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1
 Pace Project No.: 92164741

QC Batch: PMST/5671 Analysis Method: ASTM D2974-87
 QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
 Associated Lab Samples: 92164741001, 92164741002, 92164741003, 92164741004, 92164741005, 92164741006, 92164741007,
 92164741008, 92164741009

SAMPLE DUPLICATE: 1009682

Parameter	Units	92164873001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	16.2	15.9	2	

SAMPLE DUPLICATE: 1009683

Parameter	Units	92165001001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	21.8	22.7	4	

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QUALIFIERS

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164741

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.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

- | | |
|----|---|
| 1g | The internal standard response is below criteria. No hits associated with this internal standard. Results unaffected by high bias. |
| B9 | The reaction of the soil preservative, sodium bisulfate, is known to react with humic acid in soils to produce ketones. Based upon method blank results, the laboratory feels the ketones in this sample are a result of that reaction. |
| F3 | The recovery of the second source standard used to verify the initial calibration curve for this analyte is outside the laboratory's control limits. The result is estimated. |
| IO | The internal standard response was outside the laboratory acceptance limits confirmed by reanalysis. The results reported are from the most QC compliant analysis. |
| L0 | Analyte recovery in the laboratory control sample (LCS) was outside QC limits. |
| S2 | Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis). |

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164741

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92164741001	38-1 @ 0-1	EPA 3546	OEXT/22977	EPA 8015 Modified	GCSV/15070
92164741002	38-2 @ 0-1	EPA 3546	OEXT/22977	EPA 8015 Modified	GCSV/15070
92164741003	38-3 @ 0-1	EPA 3546	OEXT/22977	EPA 8015 Modified	GCSV/15070
92164741004	38-4 @ 0-1	EPA 3546	OEXT/22977	EPA 8015 Modified	GCSV/15070
92164741005	38-5 @ 0-1	EPA 3546	OEXT/22977	EPA 8015 Modified	GCSV/15070
92164741006	38-6 @ 0-1	EPA 3546	OEXT/22977	EPA 8015 Modified	GCSV/15070
92164741007	38-7 @ 0-1	EPA 3546	OEXT/22977	EPA 8015 Modified	GCSV/15070
92164741008	38-8 @ 0-1	EPA 3546	OEXT/22977	EPA 8015 Modified	GCSV/15070
92164741009	38-9 @ 0-1	EPA 3546	OEXT/22977	EPA 8015 Modified	GCSV/15070
92164741001	38-1 @ 0-1	EPA 5035A/5030B	GCV/7074	EPA 8015 Modified	GCV/7077
92164741002	38-2 @ 0-1	EPA 5035A/5030B	GCV/7074	EPA 8015 Modified	GCV/7077
92164741003	38-3 @ 0-1	EPA 5035A/5030B	GCV/7074	EPA 8015 Modified	GCV/7077
92164741004	38-4 @ 0-1	EPA 5035A/5030B	GCV/7074	EPA 8015 Modified	GCV/7077
92164741005	38-5 @ 0-1	EPA 5035A/5030B	GCV/7080	EPA 8015 Modified	GCV/7081
92164741006	38-6 @ 0-1	EPA 5035A/5030B	GCV/7080	EPA 8015 Modified	GCV/7081
92164741007	38-7 @ 0-1	EPA 5035A/5030B	GCV/7080	EPA 8015 Modified	GCV/7081
92164741008	38-8 @ 0-1	EPA 5035A/5030B	GCV/7080	EPA 8015 Modified	GCV/7081
92164741009	38-9 @ 0-1	EPA 5035A/5030B	GCV/7080	EPA 8015 Modified	GCV/7081
92164741001	38-1 @ 0-1	EPA 8260	MSV/23637		
92164741002	38-2 @ 0-1	EPA 8260	MSV/23637		
92164741003	38-3 @ 0-1	EPA 8260	MSV/23637		
92164741004	38-4 @ 0-1	EPA 8260	MSV/23637		
92164741005	38-5 @ 0-1	EPA 8260	MSV/23637		
92164741006	38-6 @ 0-1	EPA 8260	MSV/23637		
92164741007	38-7 @ 0-1	EPA 8260	MSV/23637		
92164741008	38-8 @ 0-1	EPA 8260	MSV/23645		
92164741009	38-9 @ 0-1	EPA 8260	MSV/23645		
92164741001	38-1 @ 0-1	ASTM D2974-87	PMST/5671		
92164741002	38-2 @ 0-1	ASTM D2974-87	PMST/5671		
92164741003	38-3 @ 0-1	ASTM D2974-87	PMST/5671		
92164741004	38-4 @ 0-1	ASTM D2974-87	PMST/5671		
92164741005	38-5 @ 0-1	ASTM D2974-87	PMST/5671		
92164741006	38-6 @ 0-1	ASTM D2974-87	PMST/5671		
92164741007	38-7 @ 0-1	ASTM D2974-87	PMST/5671		
92164741008	38-8 @ 0-1	ASTM D2974-87	PMST/5671		
92164741009	38-9 @ 0-1	ASTM D2974-87	PMST/5671		

REPORT OF LABORATORY ANALYSIS

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Document Name: **Sample Condition Upon Receipt (SCUR)**

Document Revised: March 13, 2013
Page 1 of 2

Document No.:
F-RAL-CS-001-rev.01

Issuing Authorities:
Pace Asheville Quality Office

Client Name: Hart & Hickman

Where Received: Huntersville Asheville Eden Raleigh

Courier (Circle): Fed Ex UPS USPS Client Commercial Pace Other _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Circle Thermometer Used: IR Gun SN:122065387 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

IR Gun Back Up SN:122065376

Temp Correction Factor: Add Subtract _____ C

Corrected Cooler Temp.: 18.9 C Biological Tissue is Frozen: Yes No N/A

Temp should be above freezing to 6°C

Comments:

Date and Initials of person examining contents: NAC 7/11/13

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:	<u>NA</u>	
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed <u>NAC</u>
Samples checked for dechlorination:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

SCURF Review:

JDB

Date:

7/11/13

SRF Review:

JDB

Date:

7/12/13

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

WO#: 92164741



92164741



CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

1686034

Section A Required Client Information: Company: <u>Hart & Hickman</u> Address: <u>2923 S. Taven Street</u> Email To: <u>Site 100 Charlotte, NC</u> Phone: <u>704-857-4630</u> Requested Due Date/TAT:		Section B Required Project Information: Report To: <u>David Graham</u> Copy To: Purchase Order No.: <u>WBS# 34745.1.1</u> Project Name: <u>NC DOT - ROW-416</u> Project Number: <u>ROW-416</u>		Section C Invoice Information: Attention: <u>Cynthia Wells</u> Company Name: <u>Hart & Hickman</u> Address: <u>OWells@hart-hickman.com</u> Reference: <u>NC DOT - ROW-416</u> Pace Project Manager:		REGULATORY AGENCY <input type="checkbox"/> NPDES <input type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER Site Location STATE: <u>NC</u>	
--	--	---	--	--	--	---	--

ITEM #	Section D Required Client Information SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE	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	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives						Analysis Test ↓			Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.	
					DATE	TIME			DATE	TIME	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol	Other			Y
1	38-1 @ 0-1		SL G					8								X	X	X		281
2	38-2 @ 0-1															X	X	X		282
3	38-3 @ 0-1															X	X	X		283
4	38-4 @ 0-1															X	X	X		284
5	38-5 @ 0-1															X	X	X		285
6	38-6 @ 0-1															X	X	X		286
7	38-7 @ 0-1															X	X	X		287
8	38-8 @ 0-1															X	X	X		288
9	38-9 @ 0-1															X	X	X		289

ADDITIONAL COMMENTS * Separate report required for each site		RELINQUISHED BY / AFFILIATION <u>Metcalf</u>		DATE <u>7/11/13</u>		ACCEPTED BY / AFFILIATION <u>Pace</u>		DATE <u>7/11/13</u>		SAMPLE CONDITIONS Temp in °C Received on Ice (Y/N) Custody Sealed Cooler (Y/N) Samples Intact (Y/N)	
--	--	--	--	-------------------------------	--	---	--	-------------------------------	--	--	--

ORIGINAL

SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: <u>Metc Gills</u> SIGNATURE of SAMPLER: <u>Metc gills</u> DATE Signed (MM/DD/YY): <u>7/11/13</u>	
--	--

*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.



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July 19, 2013

Chemical Testing Engineer
NCDOT
Materials & Tests Unit
1801 Blue Ridge Road
Raleigh, NC 27607

RE: Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164770

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on July 11, 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,

Kevin Godwin

kevin.godwin@pacelabs.com
Project Manager

Enclosures

cc: David Graham, NCDOT East Central



REPORT OF LABORATORY ANALYSIS

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(704)875-9092

CERTIFICATIONS

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164770

Charlotte Certification IDs

9800 Kinsey 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

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SAMPLE ANALYTE COUNT

Project: NCDOT-ROW-416 WBS#34745.1.1
 Pace Project No.: 92164770

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92164770001	40-1 @ 0-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92164770002	40-2 @ 0-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92164770003	40-3 @ 4-5	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92164770004	40-4 @ 0-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92164770005	40-5 @ 0-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92164770006	40-6 @ 0-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92164770007	40-7 @ 0-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92164770008	40-8 @ 0-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92164770009	40-9 @ 0-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 8260	MCK	71	PASI-C
		ASTM D2974-87	TNM	1	PASI-C

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164770

Sample: 40-1 @ 0-1 **Lab ID: 92164770001** Collected: 07/10/13 14:15 Received: 07/11/13 15:40 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	63.6	mg/kg	5.2	1	07/11/13 17:30	07/12/13 20:58	68334-30-5	
Surrogates								
n-Pentacosane (S)	72	%	41-119	1	07/11/13 17:30	07/12/13 20:58	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	5.1	1	07/16/13 16:34	07/16/13 17:38	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	88	%	70-167	1	07/16/13 16:34	07/16/13 17:38	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	104	1		07/13/13 19:56	67-64-1	
Benzene	ND	ug/kg	5.2	1		07/13/13 19:56	71-43-2	
Bromobenzene	ND	ug/kg	5.2	1		07/13/13 19:56	108-86-1	
Bromochloromethane	ND	ug/kg	5.2	1		07/13/13 19:56	74-97-5	
Bromodichloromethane	ND	ug/kg	5.2	1		07/13/13 19:56	75-27-4	
Bromoform	ND	ug/kg	5.2	1		07/13/13 19:56	75-25-2	
Bromomethane	ND	ug/kg	10.4	1		07/13/13 19:56	74-83-9	
2-Butanone (MEK)	ND	ug/kg	104	1		07/13/13 19:56	78-93-3	
n-Butylbenzene	ND	ug/kg	5.2	1		07/13/13 19:56	104-51-8	
sec-Butylbenzene	ND	ug/kg	5.2	1		07/13/13 19:56	135-98-8	
tert-Butylbenzene	ND	ug/kg	5.2	1		07/13/13 19:56	98-06-6	
Carbon tetrachloride	ND	ug/kg	5.2	1		07/13/13 19:56	56-23-5	
Chlorobenzene	ND	ug/kg	5.2	1		07/13/13 19:56	108-90-7	
Chloroethane	ND	ug/kg	10.4	1		07/13/13 19:56	75-00-3	
Chloroform	ND	ug/kg	5.2	1		07/13/13 19:56	67-66-3	
Chloromethane	ND	ug/kg	10.4	1		07/13/13 19:56	74-87-3	
2-Chlorotoluene	ND	ug/kg	5.2	1		07/13/13 19:56	95-49-8	
4-Chlorotoluene	ND	ug/kg	5.2	1		07/13/13 19:56	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	5.2	1		07/13/13 19:56	96-12-8	
Dibromochloromethane	ND	ug/kg	5.2	1		07/13/13 19:56	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	5.2	1		07/13/13 19:56	106-93-4	
Dibromomethane	ND	ug/kg	5.2	1		07/13/13 19:56	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	5.2	1		07/13/13 19:56	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	5.2	1		07/13/13 19:56	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	5.2	1		07/13/13 19:56	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	10.4	1		07/13/13 19:56	75-71-8	IO
1,1-Dichloroethane	ND	ug/kg	5.2	1		07/13/13 19:56	75-34-3	
1,2-Dichloroethane	ND	ug/kg	5.2	1		07/13/13 19:56	107-06-2	
1,1-Dichloroethene	ND	ug/kg	5.2	1		07/13/13 19:56	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	5.2	1		07/13/13 19:56	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	5.2	1		07/13/13 19:56	156-60-5	
1,2-Dichloropropane	ND	ug/kg	5.2	1		07/13/13 19:56	78-87-5	
1,3-Dichloropropane	ND	ug/kg	5.2	1		07/13/13 19:56	142-28-9	
2,2-Dichloropropane	ND	ug/kg	5.2	1		07/13/13 19:56	594-20-7	
1,1-Dichloropropene	ND	ug/kg	5.2	1		07/13/13 19:56	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	5.2	1		07/13/13 19:56	10061-01-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1
 Project No.: 92164770

Sample: 40-1 @ 0-1 **Lab ID: 92164770001** Collected: 07/10/13 14:15 Received: 07/11/13 15:40 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	5.2	1		07/13/13 19:56	10061-02-6	
Diisopropyl ether	ND	ug/kg	5.2	1		07/13/13 19:56	108-20-3	
Ethylbenzene	ND	ug/kg	5.2	1		07/13/13 19:56	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	5.2	1		07/13/13 19:56	87-68-3	
2-Hexanone	ND	ug/kg	51.9	1		07/13/13 19:56	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	5.2	1		07/13/13 19:56	98-82-8	
p-Isopropyltoluene	ND	ug/kg	5.2	1		07/13/13 19:56	99-87-6	
Methylene Chloride	ND	ug/kg	20.8	1		07/13/13 19:56	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	51.9	1		07/13/13 19:56	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	5.2	1		07/13/13 19:56	1634-04-4	
Naphthalene	ND	ug/kg	5.2	1		07/13/13 19:56	91-20-3	
n-Propylbenzene	ND	ug/kg	5.2	1		07/13/13 19:56	103-65-1	
Styrene	ND	ug/kg	5.2	1		07/13/13 19:56	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	5.2	1		07/13/13 19:56	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.2	1		07/13/13 19:56	79-34-5	
Tetrachloroethene	ND	ug/kg	5.2	1		07/13/13 19:56	127-18-4	
Toluene	ND	ug/kg	5.2	1		07/13/13 19:56	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	5.2	1		07/13/13 19:56	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	5.2	1		07/13/13 19:56	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	5.2	1		07/13/13 19:56	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	5.2	1		07/13/13 19:56	79-00-5	
Trichloroethene	ND	ug/kg	5.2	1		07/13/13 19:56	79-01-6	
Trichlorofluoromethane	ND	ug/kg	5.2	1		07/13/13 19:56	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	5.2	1		07/13/13 19:56	96-18-4	
1,2,4-Trimethylbenzene	12.1	ug/kg	5.2	1		07/13/13 19:56	95-63-6	
1,3,5-Trimethylbenzene	7.2	ug/kg	5.2	1		07/13/13 19:56	108-67-8	
Vinyl acetate	ND	ug/kg	51.9	1		07/13/13 19:56	108-05-4	
Vinyl chloride	ND	ug/kg	10.4	1		07/13/13 19:56	75-01-4	
Xylene (Total)	22.9	ug/kg	10.4	1		07/13/13 19:56	1330-20-7	
m&p-Xylene	17.6	ug/kg	10.4	1		07/13/13 19:56	179601-23-1	
o-Xylene	5.4	ug/kg	5.2	1		07/13/13 19:56	95-47-6	
Surrogates								
Dibromofluoromethane (S)	119	%	70-130	1		07/13/13 19:56	1868-53-7	
Toluene-d8 (S)	89	%	70-130	1		07/13/13 19:56	2037-26-5	
4-Bromofluorobenzene (S)	79	%	70-130	1		07/13/13 19:56	460-00-4	
1,2-Dichloroethane-d4 (S)	119	%	70-132	1		07/13/13 19:56	17060-07-0	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	4.6	%	0.10	1		07/12/13 13:28		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164770

Sample: 40-2 @ 0-1 **Lab ID: 92164770002** Collected: 07/10/13 14:30 Received: 07/11/13 15:40 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	205	mg/kg	5.9	1	07/11/13 17:30	07/12/13 21:21	68334-30-5	
Surrogates								
n-Pentacosane (S)	113	%	41-119	1	07/11/13 17:30	07/12/13 21:21	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	5.4	1	07/16/13 16:34	07/16/13 18:01	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	87	%	70-167	1	07/16/13 16:34	07/16/13 18:01	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	98.8	1		07/13/13 20:15	67-64-1	
Benzene	ND	ug/kg	4.9	1		07/13/13 20:15	71-43-2	
Bromobenzene	ND	ug/kg	4.9	1		07/13/13 20:15	108-86-1	
Bromochloromethane	ND	ug/kg	4.9	1		07/13/13 20:15	74-97-5	
Bromodichloromethane	ND	ug/kg	4.9	1		07/13/13 20:15	75-27-4	
Bromoform	ND	ug/kg	4.9	1		07/13/13 20:15	75-25-2	
Bromomethane	ND	ug/kg	9.9	1		07/13/13 20:15	74-83-9	
2-Butanone (MEK)	ND	ug/kg	98.8	1		07/13/13 20:15	78-93-3	
n-Butylbenzene	ND	ug/kg	4.9	1		07/13/13 20:15	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.9	1		07/13/13 20:15	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.9	1		07/13/13 20:15	98-06-6	
Carbon tetrachloride	ND	ug/kg	4.9	1		07/13/13 20:15	56-23-5	
Chlorobenzene	ND	ug/kg	4.9	1		07/13/13 20:15	108-90-7	
Chloroethane	ND	ug/kg	9.9	1		07/13/13 20:15	75-00-3	
Chloroform	ND	ug/kg	4.9	1		07/13/13 20:15	67-66-3	
Chloromethane	ND	ug/kg	9.9	1		07/13/13 20:15	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.9	1		07/13/13 20:15	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.9	1		07/13/13 20:15	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.9	1		07/13/13 20:15	96-12-8	
Dibromochloromethane	ND	ug/kg	4.9	1		07/13/13 20:15	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.9	1		07/13/13 20:15	106-93-4	
Dibromomethane	ND	ug/kg	4.9	1		07/13/13 20:15	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.9	1		07/13/13 20:15	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.9	1		07/13/13 20:15	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.9	1		07/13/13 20:15	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	9.9	1		07/13/13 20:15	75-71-8	1g
1,1-Dichloroethane	ND	ug/kg	4.9	1		07/13/13 20:15	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.9	1		07/13/13 20:15	107-06-2	
1,1-Dichloroethene	ND	ug/kg	4.9	1		07/13/13 20:15	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.9	1		07/13/13 20:15	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.9	1		07/13/13 20:15	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.9	1		07/13/13 20:15	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.9	1		07/13/13 20:15	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.9	1		07/13/13 20:15	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.9	1		07/13/13 20:15	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.9	1		07/13/13 20:15	10061-01-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1
 Pace Project No.: 92164770

Sample: 40-2 @ 0-1 **Lab ID: 92164770002** Collected: 07/10/13 14:30 Received: 07/11/13 15:40 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	4.9	1		07/13/13 20:15	10061-02-6	
Diisopropyl ether	ND	ug/kg	4.9	1		07/13/13 20:15	108-20-3	
Ethylbenzene	ND	ug/kg	4.9	1		07/13/13 20:15	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.9	1		07/13/13 20:15	87-68-3	
2-Hexanone	ND	ug/kg	49.4	1		07/13/13 20:15	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.9	1		07/13/13 20:15	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.9	1		07/13/13 20:15	99-87-6	
Methylene Chloride	ND	ug/kg	19.8	1		07/13/13 20:15	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	49.4	1		07/13/13 20:15	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	4.9	1		07/13/13 20:15	1634-04-4	
Naphthalene	ND	ug/kg	4.9	1		07/13/13 20:15	91-20-3	
n-Propylbenzene	ND	ug/kg	4.9	1		07/13/13 20:15	103-65-1	
Styrene	ND	ug/kg	4.9	1		07/13/13 20:15	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.9	1		07/13/13 20:15	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.9	1		07/13/13 20:15	79-34-5	
Tetrachloroethene	ND	ug/kg	4.9	1		07/13/13 20:15	127-18-4	
Toluene	ND	ug/kg	4.9	1		07/13/13 20:15	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.9	1		07/13/13 20:15	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.9	1		07/13/13 20:15	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.9	1		07/13/13 20:15	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.9	1		07/13/13 20:15	79-00-5	
Trichloroethene	ND	ug/kg	4.9	1		07/13/13 20:15	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.9	1		07/13/13 20:15	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.9	1		07/13/13 20:15	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	4.9	1		07/13/13 20:15	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.9	1		07/13/13 20:15	108-67-8	
Vinyl acetate	ND	ug/kg	49.4	1		07/13/13 20:15	108-05-4	
Vinyl chloride	ND	ug/kg	9.9	1		07/13/13 20:15	75-01-4	
Xylene (Total)	ND	ug/kg	9.9	1		07/13/13 20:15	1330-20-7	
m&p-Xylene	ND	ug/kg	9.9	1		07/13/13 20:15	179601-23-1	
o-Xylene	ND	ug/kg	4.9	1		07/13/13 20:15	95-47-6	
Surrogates								
Dibromofluoromethane (S)	122 %		70-130	1		07/13/13 20:15	1868-53-7	
Toluene-d8 (S)	87 %		70-130	1		07/13/13 20:15	2037-26-5	
4-Bromofluorobenzene (S)	78 %		70-130	1		07/13/13 20:15	460-00-4	
1,2-Dichloroethane-d4 (S)	111 %		70-132	1		07/13/13 20:15	17060-07-0	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	14.7 %		0.10	1		07/12/13 13:28		

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164770

Sample: 40-3 @ 4-5 **Lab ID: 92164770003** Collected: 07/10/13 14:50 Received: 07/11/13 15:40 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	60.8	mg/kg	6.2	1	07/11/13 17:30	07/12/13 21:21	68334-30-5	
Surrogates								
n-Pentacosane (S)	76	%	41-119	1	07/11/13 17:30	07/12/13 21:21	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	53.7	mg/kg	5.5	1	07/16/13 16:34	07/16/13 18:24	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	114	%	70-167	1	07/16/13 16:34	07/16/13 18:24	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	11500	100		07/13/13 20:34	67-64-1	
Benzene	ND	ug/kg	573	100		07/13/13 20:34	71-43-2	
Bromobenzene	ND	ug/kg	573	100		07/13/13 20:34	108-86-1	
Bromochloromethane	ND	ug/kg	573	100		07/13/13 20:34	74-97-5	
Bromodichloromethane	ND	ug/kg	573	100		07/13/13 20:34	75-27-4	
Bromoform	ND	ug/kg	573	100		07/13/13 20:34	75-25-2	
Bromomethane	ND	ug/kg	1150	100		07/13/13 20:34	74-83-9	
2-Butanone (MEK)	ND	ug/kg	11500	100		07/13/13 20:34	78-93-3	
n-Butylbenzene	ND	ug/kg	573	100		07/13/13 20:34	104-51-8	
sec-Butylbenzene	ND	ug/kg	573	100		07/13/13 20:34	135-98-8	
tert-Butylbenzene	ND	ug/kg	573	100		07/13/13 20:34	98-06-6	
Carbon tetrachloride	ND	ug/kg	573	100		07/13/13 20:34	56-23-5	
Chlorobenzene	ND	ug/kg	573	100		07/13/13 20:34	108-90-7	
Chloroethane	ND	ug/kg	1150	100		07/13/13 20:34	75-00-3	
Chloroform	ND	ug/kg	573	100		07/13/13 20:34	67-66-3	
Chloromethane	ND	ug/kg	1150	100		07/13/13 20:34	74-87-3	
2-Chlorotoluene	ND	ug/kg	573	100		07/13/13 20:34	95-49-8	
4-Chlorotoluene	ND	ug/kg	573	100		07/13/13 20:34	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	573	100		07/13/13 20:34	96-12-8	
Dibromochloromethane	ND	ug/kg	573	100		07/13/13 20:34	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	573	100		07/13/13 20:34	106-93-4	
Dibromomethane	ND	ug/kg	573	100		07/13/13 20:34	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	573	100		07/13/13 20:34	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	573	100		07/13/13 20:34	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	573	100		07/13/13 20:34	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	1150	100		07/13/13 20:34	75-71-8	D3
1,1-Dichloroethane	ND	ug/kg	573	100		07/13/13 20:34	75-34-3	
1,2-Dichloroethane	ND	ug/kg	573	100		07/13/13 20:34	107-06-2	
1,1-Dichloroethene	ND	ug/kg	573	100		07/13/13 20:34	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	573	100		07/13/13 20:34	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	573	100		07/13/13 20:34	156-60-5	
1,2-Dichloropropane	ND	ug/kg	573	100		07/13/13 20:34	78-87-5	
1,3-Dichloropropane	ND	ug/kg	573	100		07/13/13 20:34	142-28-9	
2,2-Dichloropropane	ND	ug/kg	573	100		07/13/13 20:34	594-20-7	
1,1-Dichloropropene	ND	ug/kg	573	100		07/13/13 20:34	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	573	100		07/13/13 20:34	10061-01-5	

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164770

Sample: 40-3 @ 4-5 **Lab ID: 92164770003** Collected: 07/10/13 14:50 Received: 07/11/13 15:40 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	573	100		07/13/13 20:34	10061-02-6	
Diisopropyl ether	ND	ug/kg	573	100		07/13/13 20:34	108-20-3	
Ethylbenzene	ND	ug/kg	573	100		07/13/13 20:34	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	573	100		07/13/13 20:34	87-68-3	
2-Hexanone	ND	ug/kg	5730	100		07/13/13 20:34	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	573	100		07/13/13 20:34	98-82-8	
p-Isopropyltoluene	ND	ug/kg	573	100		07/13/13 20:34	99-87-6	
Methylene Chloride	ND	ug/kg	2290	100		07/13/13 20:34	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	5730	100		07/13/13 20:34	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	573	100		07/13/13 20:34	1634-04-4	
Naphthalene	673	ug/kg	573	100		07/13/13 20:34	91-20-3	
n-Propylbenzene	ND	ug/kg	573	100		07/13/13 20:34	103-65-1	
Styrene	ND	ug/kg	573	100		07/13/13 20:34	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	573	100		07/13/13 20:34	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	573	100		07/13/13 20:34	79-34-5	
Tetrachloroethene	ND	ug/kg	573	100		07/13/13 20:34	127-18-4	
Toluene	ND	ug/kg	573	100		07/13/13 20:34	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	573	100		07/13/13 20:34	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	573	100		07/13/13 20:34	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	573	100		07/13/13 20:34	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	573	100		07/13/13 20:34	79-00-5	
Trichloroethene	ND	ug/kg	573	100		07/13/13 20:34	79-01-6	
Trichlorofluoromethane	ND	ug/kg	573	100		07/13/13 20:34	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	573	100		07/13/13 20:34	96-18-4	
1,2,4-Trimethylbenzene	1850	ug/kg	573	100		07/13/13 20:34	95-63-6	
1,3,5-Trimethylbenzene	1100	ug/kg	573	100		07/13/13 20:34	108-67-8	
Vinyl acetate	ND	ug/kg	5730	100		07/13/13 20:34	108-05-4	
Vinyl chloride	ND	ug/kg	1150	100		07/13/13 20:34	75-01-4	
Xylene (Total)	2730	ug/kg	1150	100		07/13/13 20:34	1330-20-7	
m&p-Xylene	2100	ug/kg	1150	100		07/13/13 20:34	179601-23-1	
o-Xylene	638	ug/kg	573	100		07/13/13 20:34	95-47-6	
Surrogates								
Dibromofluoromethane (S)	107 %		70-130	100		07/13/13 20:34	1868-53-7	
Toluene-d8 (S)	101 %		70-130	100		07/13/13 20:34	2037-26-5	
4-Bromofluorobenzene (S)	99 %		70-130	100		07/13/13 20:34	460-00-4	
1,2-Dichloroethane-d4 (S)	101 %		70-132	100		07/13/13 20:34	17060-07-0	

Percent Moisture

Analytical Method: ASTM D2974-87

Percent Moisture	19.5 %	0.10	1	07/12/13 13:28
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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164770

Sample: 40-4 @ 0-1 **Lab ID: 92164770004** Collected: 07/10/13 14:55 Received: 07/11/13 15:40 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	ND	mg/kg	6.0	1	07/11/13 17:30	07/12/13 22:09	68334-30-5	
Surrogates								
n-Pentacosane (S)	73	%	41-119	1	07/11/13 17:30	07/12/13 22:09	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	4.9	1	07/16/13 16:34	07/16/13 18:47	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	93	%	70-167	1	07/16/13 16:34	07/16/13 18:47	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	98.9	1		07/13/13 20:52	67-64-1	
Benzene	ND	ug/kg	4.9	1		07/13/13 20:52	71-43-2	
Bromobenzene	ND	ug/kg	4.9	1		07/13/13 20:52	108-86-1	
Bromochloromethane	ND	ug/kg	4.9	1		07/13/13 20:52	74-97-5	
Bromodichloromethane	ND	ug/kg	4.9	1		07/13/13 20:52	75-27-4	
Bromoform	ND	ug/kg	4.9	1		07/13/13 20:52	75-25-2	
Bromomethane	ND	ug/kg	9.9	1		07/13/13 20:52	74-83-9	
2-Butanone (MEK)	ND	ug/kg	98.9	1		07/13/13 20:52	78-93-3	
n-Butylbenzene	ND	ug/kg	4.9	1		07/13/13 20:52	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.9	1		07/13/13 20:52	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.9	1		07/13/13 20:52	98-06-6	
Carbon tetrachloride	ND	ug/kg	4.9	1		07/13/13 20:52	56-23-5	
Chlorobenzene	ND	ug/kg	4.9	1		07/13/13 20:52	108-90-7	
Chloroethane	ND	ug/kg	9.9	1		07/13/13 20:52	75-00-3	
Chloroform	ND	ug/kg	4.9	1		07/13/13 20:52	67-66-3	
Chloromethane	ND	ug/kg	9.9	1		07/13/13 20:52	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.9	1		07/13/13 20:52	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.9	1		07/13/13 20:52	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.9	1		07/13/13 20:52	96-12-8	
Dibromochloromethane	ND	ug/kg	4.9	1		07/13/13 20:52	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.9	1		07/13/13 20:52	106-93-4	
Dibromomethane	ND	ug/kg	4.9	1		07/13/13 20:52	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.9	1		07/13/13 20:52	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.9	1		07/13/13 20:52	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.9	1		07/13/13 20:52	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	9.9	1		07/13/13 20:52	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.9	1		07/13/13 20:52	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.9	1		07/13/13 20:52	107-06-2	
1,1-Dichloroethene	ND	ug/kg	4.9	1		07/13/13 20:52	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.9	1		07/13/13 20:52	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.9	1		07/13/13 20:52	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.9	1		07/13/13 20:52	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.9	1		07/13/13 20:52	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.9	1		07/13/13 20:52	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.9	1		07/13/13 20:52	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.9	1		07/13/13 20:52	10061-01-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Project No.: 92164770

Sample: 40-4 @ 0-1 **Lab ID: 92164770004** Collected: 07/10/13 14:55 Received: 07/11/13 15:40 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	4.9	1		07/13/13 20:52	10061-02-6	
Diisopropyl ether	ND	ug/kg	4.9	1		07/13/13 20:52	108-20-3	
Ethylbenzene	ND	ug/kg	4.9	1		07/13/13 20:52	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.9	1		07/13/13 20:52	87-68-3	
2-Hexanone	ND	ug/kg	49.5	1		07/13/13 20:52	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.9	1		07/13/13 20:52	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.9	1		07/13/13 20:52	99-87-6	
Methylene Chloride	ND	ug/kg	19.8	1		07/13/13 20:52	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	49.5	1		07/13/13 20:52	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	4.9	1		07/13/13 20:52	1634-04-4	
Naphthalene	ND	ug/kg	4.9	1		07/13/13 20:52	91-20-3	
n-Propylbenzene	ND	ug/kg	4.9	1		07/13/13 20:52	103-65-1	
Styrene	ND	ug/kg	4.9	1		07/13/13 20:52	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.9	1		07/13/13 20:52	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.9	1		07/13/13 20:52	79-34-5	
Tetrachloroethene	ND	ug/kg	4.9	1		07/13/13 20:52	127-18-4	
Toluene	ND	ug/kg	4.9	1		07/13/13 20:52	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.9	1		07/13/13 20:52	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.9	1		07/13/13 20:52	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.9	1		07/13/13 20:52	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.9	1		07/13/13 20:52	79-00-5	
Trichloroethene	ND	ug/kg	4.9	1		07/13/13 20:52	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.9	1		07/13/13 20:52	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.9	1		07/13/13 20:52	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	4.9	1		07/13/13 20:52	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.9	1		07/13/13 20:52	108-67-8	
Vinyl acetate	ND	ug/kg	49.5	1		07/13/13 20:52	108-05-4	
Vinyl chloride	ND	ug/kg	9.9	1		07/13/13 20:52	75-01-4	
Xylene (Total)	ND	ug/kg	9.9	1		07/13/13 20:52	1330-20-7	
m&p-Xylene	ND	ug/kg	9.9	1		07/13/13 20:52	179601-23-1	
o-Xylene	ND	ug/kg	4.9	1		07/13/13 20:52	95-47-6	
Surrogates								
Dibromofluoromethane (S)	98 %		70-130	1		07/13/13 20:52	1868-53-7	
Toluene-d8 (S)	100 %		70-130	1		07/13/13 20:52	2037-26-5	
4-Bromofluorobenzene (S)	93 %		70-130	1		07/13/13 20:52	460-00-4	
1,2-Dichloroethane-d4 (S)	100 %		70-132	1		07/13/13 20:52	17060-07-0	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	17.0 %		0.10	1		07/12/13 13:28		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164770

Sample: 40-5 @ 0-1 **Lab ID: 92164770005** Collected: 07/10/13 15:05 Received: 07/11/13 15:40 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	45.2	mg/kg	5.6	1	07/11/13 17:30	07/12/13 22:09	68334-30-5	
Surrogates								
n-Pentacosane (S)	84	%	41-119	1	07/11/13 17:30	07/12/13 22:09	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	4.8	1	07/16/13 16:34	07/16/13 19:10	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	95	%	70-167	1	07/16/13 16:34	07/16/13 19:10	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	101	1		07/13/13 21:11	67-64-1	
Benzene	ND	ug/kg	5.0	1		07/13/13 21:11	71-43-2	
Bromobenzene	ND	ug/kg	5.0	1		07/13/13 21:11	108-86-1	
Bromochloromethane	ND	ug/kg	5.0	1		07/13/13 21:11	74-97-5	
Bromodichloromethane	ND	ug/kg	5.0	1		07/13/13 21:11	75-27-4	
Bromoform	ND	ug/kg	5.0	1		07/13/13 21:11	75-25-2	
Bromomethane	ND	ug/kg	10.1	1		07/13/13 21:11	74-83-9	
2-Butanone (MEK)	ND	ug/kg	101	1		07/13/13 21:11	78-93-3	
n-Butylbenzene	ND	ug/kg	5.0	1		07/13/13 21:11	104-51-8	
sec-Butylbenzene	ND	ug/kg	5.0	1		07/13/13 21:11	135-98-8	
tert-Butylbenzene	ND	ug/kg	5.0	1		07/13/13 21:11	98-06-6	
Carbon tetrachloride	ND	ug/kg	5.0	1		07/13/13 21:11	56-23-5	
Chlorobenzene	ND	ug/kg	5.0	1		07/13/13 21:11	108-90-7	
Chloroethane	ND	ug/kg	10.1	1		07/13/13 21:11	75-00-3	
Chloroform	ND	ug/kg	5.0	1		07/13/13 21:11	67-66-3	
Chloromethane	ND	ug/kg	10.1	1		07/13/13 21:11	74-87-3	
2-Chlorotoluene	ND	ug/kg	5.0	1		07/13/13 21:11	95-49-8	
4-Chlorotoluene	ND	ug/kg	5.0	1		07/13/13 21:11	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	5.0	1		07/13/13 21:11	96-12-8	
Dibromochloromethane	ND	ug/kg	5.0	1		07/13/13 21:11	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	5.0	1		07/13/13 21:11	106-93-4	
Dibromomethane	ND	ug/kg	5.0	1		07/13/13 21:11	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	5.0	1		07/13/13 21:11	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	5.0	1		07/13/13 21:11	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	5.0	1		07/13/13 21:11	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	10.1	1		07/13/13 21:11	75-71-8	
1,1-Dichloroethane	ND	ug/kg	5.0	1		07/13/13 21:11	75-34-3	
1,2-Dichloroethane	ND	ug/kg	5.0	1		07/13/13 21:11	107-06-2	
1,1-Dichloroethene	ND	ug/kg	5.0	1		07/13/13 21:11	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	5.0	1		07/13/13 21:11	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	5.0	1		07/13/13 21:11	156-60-5	
1,2-Dichloropropane	ND	ug/kg	5.0	1		07/13/13 21:11	78-87-5	
1,3-Dichloropropane	ND	ug/kg	5.0	1		07/13/13 21:11	142-28-9	
2,2-Dichloropropane	ND	ug/kg	5.0	1		07/13/13 21:11	594-20-7	
1,1-Dichloropropene	ND	ug/kg	5.0	1		07/13/13 21:11	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	5.0	1		07/13/13 21:11	10061-01-5	

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164770

Sample: 40-5 @ 0-1 **Lab ID: 92164770005** Collected: 07/10/13 15:05 Received: 07/11/13 15:40 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	5.0	1		07/13/13 21:11	10061-02-6	
Diisopropyl ether	ND	ug/kg	5.0	1		07/13/13 21:11	108-20-3	
Ethylbenzene	ND	ug/kg	5.0	1		07/13/13 21:11	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	5.0	1		07/13/13 21:11	87-68-3	
2-Hexanone	ND	ug/kg	50.5	1		07/13/13 21:11	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	5.0	1		07/13/13 21:11	98-82-8	
p-Isopropyltoluene	ND	ug/kg	5.0	1		07/13/13 21:11	99-87-6	
Methylene Chloride	ND	ug/kg	20.2	1		07/13/13 21:11	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	50.5	1		07/13/13 21:11	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	5.0	1		07/13/13 21:11	1634-04-4	
Naphthalene	ND	ug/kg	5.0	1		07/13/13 21:11	91-20-3	
n-Propylbenzene	ND	ug/kg	5.0	1		07/13/13 21:11	103-65-1	
Styrene	ND	ug/kg	5.0	1		07/13/13 21:11	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	5.0	1		07/13/13 21:11	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.0	1		07/13/13 21:11	79-34-5	
Tetrachloroethene	ND	ug/kg	5.0	1		07/13/13 21:11	127-18-4	
Toluene	ND	ug/kg	5.0	1		07/13/13 21:11	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	5.0	1		07/13/13 21:11	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	5.0	1		07/13/13 21:11	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	5.0	1		07/13/13 21:11	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	5.0	1		07/13/13 21:11	79-00-5	
Trichloroethene	ND	ug/kg	5.0	1		07/13/13 21:11	79-01-6	
Trichlorofluoromethane	ND	ug/kg	5.0	1		07/13/13 21:11	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	5.0	1		07/13/13 21:11	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	5.0	1		07/13/13 21:11	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	5.0	1		07/13/13 21:11	108-67-8	
Vinyl acetate	ND	ug/kg	50.5	1		07/13/13 21:11	108-05-4	
Vinyl chloride	ND	ug/kg	10.1	1		07/13/13 21:11	75-01-4	
Xylene (Total)	ND	ug/kg	10.1	1		07/13/13 21:11	1330-20-7	
m&p-Xylene	ND	ug/kg	10.1	1		07/13/13 21:11	179601-23-1	
o-Xylene	ND	ug/kg	5.0	1		07/13/13 21:11	95-47-6	
Surrogates								
Dibromofluoromethane (S)	101 %		70-130	1		07/13/13 21:11	1868-53-7	
Toluene-d8 (S)	97 %		70-130	1		07/13/13 21:11	2037-26-5	
4-Bromofluorobenzene (S)	85 %		70-130	1		07/13/13 21:11	460-00-4	
1,2-Dichloroethane-d4 (S)	94 %		70-132	1		07/13/13 21:11	17060-07-0	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	10.6 %		0.10	1		07/12/13 13:29		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164770

Sample: 40-6 @ 0-1 **Lab ID: 92164770006** Collected: 07/10/13 15:15 Received: 07/11/13 15:40 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	106	mg/kg	5.9	1	07/11/13 17:30	07/12/13 22:32	68334-30-5	
Surrogates								
n-Pentacosane (S)	91	%	41-119	1	07/11/13 17:30	07/12/13 22:32	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	5.4	1	07/16/13 16:34	07/16/13 16:29	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	91	%	70-167	1	07/16/13 16:34	07/16/13 16:29	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	90.2	1		07/17/13 00:05	67-64-1	
Benzene	ND	ug/kg	4.5	1		07/17/13 00:05	71-43-2	
Bromobenzene	ND	ug/kg	4.5	1		07/17/13 00:05	108-86-1	
Bromochloromethane	ND	ug/kg	4.5	1		07/17/13 00:05	74-97-5	
Bromodichloromethane	ND	ug/kg	4.5	1		07/17/13 00:05	75-27-4	
Bromoform	ND	ug/kg	4.5	1		07/17/13 00:05	75-25-2	
Bromomethane	ND	ug/kg	9.0	1		07/17/13 00:05	74-83-9	
2-Butanone (MEK)	ND	ug/kg	90.2	1		07/17/13 00:05	78-93-3	
n-Butylbenzene	ND	ug/kg	4.5	1		07/17/13 00:05	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.5	1		07/17/13 00:05	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.5	1		07/17/13 00:05	98-06-6	
Carbon tetrachloride	ND	ug/kg	4.5	1		07/17/13 00:05	56-23-5	
Chlorobenzene	ND	ug/kg	4.5	1		07/17/13 00:05	108-90-7	
Chloroethane	ND	ug/kg	9.0	1		07/17/13 00:05	75-00-3	
Chloroform	ND	ug/kg	4.5	1		07/17/13 00:05	67-66-3	
Chloromethane	ND	ug/kg	9.0	1		07/17/13 00:05	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.5	1		07/17/13 00:05	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.5	1		07/17/13 00:05	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.5	1		07/17/13 00:05	96-12-8	
Dibromochloromethane	ND	ug/kg	4.5	1		07/17/13 00:05	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.5	1		07/17/13 00:05	106-93-4	
Dibromomethane	ND	ug/kg	4.5	1		07/17/13 00:05	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.5	1		07/17/13 00:05	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.5	1		07/17/13 00:05	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.5	1		07/17/13 00:05	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	9.0	1		07/17/13 00:05	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.5	1		07/17/13 00:05	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.5	1		07/17/13 00:05	107-06-2	
1,1-Dichloroethene	ND	ug/kg	4.5	1		07/17/13 00:05	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.5	1		07/17/13 00:05	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.5	1		07/17/13 00:05	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.5	1		07/17/13 00:05	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.5	1		07/17/13 00:05	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.5	1		07/17/13 00:05	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.5	1		07/17/13 00:05	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.5	1		07/17/13 00:05	10061-01-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164770

Sample: 40-6 @ 0-1 **Lab ID: 92164770006** Collected: 07/10/13 15:15 Received: 07/11/13 15:40 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	4.5	1		07/17/13 00:05	10061-02-6	
Diisopropyl ether	ND	ug/kg	4.5	1		07/17/13 00:05	108-20-3	
Ethylbenzene	ND	ug/kg	4.5	1		07/17/13 00:05	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.5	1		07/17/13 00:05	87-68-3	
2-Hexanone	ND	ug/kg	45.1	1		07/17/13 00:05	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.5	1		07/17/13 00:05	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.5	1		07/17/13 00:05	99-87-6	
Methylene Chloride	ND	ug/kg	18.0	1		07/17/13 00:05	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	45.1	1		07/17/13 00:05	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	4.5	1		07/17/13 00:05	1634-04-4	
Naphthalene	ND	ug/kg	4.5	1		07/17/13 00:05	91-20-3	
n-Propylbenzene	ND	ug/kg	4.5	1		07/17/13 00:05	103-65-1	
Styrene	ND	ug/kg	4.5	1		07/17/13 00:05	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.5	1		07/17/13 00:05	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.5	1		07/17/13 00:05	79-34-5	
Tetrachloroethene	ND	ug/kg	4.5	1		07/17/13 00:05	127-18-4	
Toluene	ND	ug/kg	4.5	1		07/17/13 00:05	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.5	1		07/17/13 00:05	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.5	1		07/17/13 00:05	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.5	1		07/17/13 00:05	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.5	1		07/17/13 00:05	79-00-5	
Trichloroethene	ND	ug/kg	4.5	1		07/17/13 00:05	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.5	1		07/17/13 00:05	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.5	1		07/17/13 00:05	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	4.5	1		07/17/13 00:05	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.5	1		07/17/13 00:05	108-67-8	
Vinyl acetate	ND	ug/kg	45.1	1		07/17/13 00:05	108-05-4	
Vinyl chloride	ND	ug/kg	9.0	1		07/17/13 00:05	75-01-4	
Xylene (Total)	ND	ug/kg	9.0	1		07/17/13 00:05	1330-20-7	
m&p-Xylene	ND	ug/kg	9.0	1		07/17/13 00:05	179601-23-1	
o-Xylene	ND	ug/kg	4.5	1		07/17/13 00:05	95-47-6	
Surrogates								
Dibromofluoromethane (S)	100 %		70-130	1		07/17/13 00:05	1868-53-7	
Toluene-d8 (S)	92 %		70-130	1		07/17/13 00:05	2037-26-5	
4-Bromofluorobenzene (S)	85 %		70-130	1		07/17/13 00:05	460-00-4	
1,2-Dichloroethane-d4 (S)	106 %		70-132	1		07/17/13 00:05	17060-07-0	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	15.2 %		0.10	1		07/12/13 13:29		

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164770

Sample: 40-7 @ 0-1 **Lab ID: 92164770007** Collected: 07/10/13 15:55 Received: 07/11/13 15:40 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	ND	mg/kg	5.9	1	07/11/13 17:30	07/12/13 22:32	68334-30-5	
Surrogates								
n-Pentacosane (S)	79	%	41-119	1	07/11/13 17:30	07/12/13 22:32	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	5.2	1	07/16/13 16:34	07/16/13 19:33	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	93	%	70-167	1	07/16/13 16:34	07/16/13 19:33	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	96.5	1		07/13/13 21:49	67-64-1	
Benzene	ND	ug/kg	4.8	1		07/13/13 21:49	71-43-2	
Bromobenzene	ND	ug/kg	4.8	1		07/13/13 21:49	108-86-1	
Bromochloromethane	ND	ug/kg	4.8	1		07/13/13 21:49	74-97-5	
Bromodichloromethane	ND	ug/kg	4.8	1		07/13/13 21:49	75-27-4	
Bromoform	ND	ug/kg	4.8	1		07/13/13 21:49	75-25-2	
Bromomethane	ND	ug/kg	9.7	1		07/13/13 21:49	74-83-9	
2-Butanone (MEK)	ND	ug/kg	96.5	1		07/13/13 21:49	78-93-3	
n-Butylbenzene	ND	ug/kg	4.8	1		07/13/13 21:49	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.8	1		07/13/13 21:49	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.8	1		07/13/13 21:49	98-06-6	
Carbon tetrachloride	ND	ug/kg	4.8	1		07/13/13 21:49	56-23-5	
Chlorobenzene	ND	ug/kg	4.8	1		07/13/13 21:49	108-90-7	
Chloroethane	ND	ug/kg	9.7	1		07/13/13 21:49	75-00-3	
Chloroform	ND	ug/kg	4.8	1		07/13/13 21:49	67-66-3	
Chloromethane	ND	ug/kg	9.7	1		07/13/13 21:49	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.8	1		07/13/13 21:49	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.8	1		07/13/13 21:49	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.8	1		07/13/13 21:49	96-12-8	
Dibromochloromethane	ND	ug/kg	4.8	1		07/13/13 21:49	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.8	1		07/13/13 21:49	106-93-4	
Dibromomethane	ND	ug/kg	4.8	1		07/13/13 21:49	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.8	1		07/13/13 21:49	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.8	1		07/13/13 21:49	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.8	1		07/13/13 21:49	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	9.7	1		07/13/13 21:49	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.8	1		07/13/13 21:49	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.8	1		07/13/13 21:49	107-06-2	
1,1-Dichloroethene	ND	ug/kg	4.8	1		07/13/13 21:49	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.8	1		07/13/13 21:49	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.8	1		07/13/13 21:49	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.8	1		07/13/13 21:49	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.8	1		07/13/13 21:49	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.8	1		07/13/13 21:49	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.8	1		07/13/13 21:49	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.8	1		07/13/13 21:49	10061-01-5	

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164770

Sample: 40-7 @ 0-1 **Lab ID: 92164770007** Collected: 07/10/13 15:55 Received: 07/11/13 15:40 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	4.8	1		07/13/13 21:49	10061-02-6	
Diisopropyl ether	ND	ug/kg	4.8	1		07/13/13 21:49	108-20-3	
Ethylbenzene	ND	ug/kg	4.8	1		07/13/13 21:49	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.8	1		07/13/13 21:49	87-68-3	
2-Hexanone	ND	ug/kg	48.3	1		07/13/13 21:49	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.8	1		07/13/13 21:49	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.8	1		07/13/13 21:49	99-87-6	
Methylene Chloride	ND	ug/kg	19.3	1		07/13/13 21:49	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	48.3	1		07/13/13 21:49	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	4.8	1		07/13/13 21:49	1634-04-4	
Naphthalene	ND	ug/kg	4.8	1		07/13/13 21:49	91-20-3	
n-Propylbenzene	ND	ug/kg	4.8	1		07/13/13 21:49	103-65-1	
Styrene	ND	ug/kg	4.8	1		07/13/13 21:49	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.8	1		07/13/13 21:49	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.8	1		07/13/13 21:49	79-34-5	
Tetrachloroethene	ND	ug/kg	4.8	1		07/13/13 21:49	127-18-4	
Toluene	ND	ug/kg	4.8	1		07/13/13 21:49	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.8	1		07/13/13 21:49	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.8	1		07/13/13 21:49	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.8	1		07/13/13 21:49	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.8	1		07/13/13 21:49	79-00-5	
Trichloroethene	ND	ug/kg	4.8	1		07/13/13 21:49	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.8	1		07/13/13 21:49	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.8	1		07/13/13 21:49	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	4.8	1		07/13/13 21:49	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.8	1		07/13/13 21:49	108-67-8	
Vinyl acetate	ND	ug/kg	48.3	1		07/13/13 21:49	108-05-4	
Vinyl chloride	ND	ug/kg	9.7	1		07/13/13 21:49	75-01-4	
Xylene (Total)	ND	ug/kg	9.7	1		07/13/13 21:49	1330-20-7	
m&p-Xylene	ND	ug/kg	9.7	1		07/13/13 21:49	179601-23-1	
o-Xylene	ND	ug/kg	4.8	1		07/13/13 21:49	95-47-6	
Surrogates								
Dibromofluoromethane (S)	115 %		70-130	1		07/13/13 21:49	1868-53-7	
Toluene-d8 (S)	102 %		70-130	1		07/13/13 21:49	2037-26-5	
4-Bromofluorobenzene (S)	95 %		70-130	1		07/13/13 21:49	460-00-4	
1,2-Dichloroethane-d4 (S)	109 %		70-132	1		07/13/13 21:49	17060-07-0	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	15.7 %		0.10	1		07/12/13 13:29		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164770

Sample: 40-8 @ 0-1 **Lab ID: 92164770008** Collected: 07/10/13 15:40 Received: 07/11/13 15:40 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	ND	mg/kg	5.7	1	07/11/13 17:30	07/12/13 22:55	68334-30-5	
Surrogates								
n-Pentacosane (S)	82	%	41-119	1	07/11/13 17:30	07/12/13 22:55	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	4.9	1	07/16/13 16:34	07/16/13 19:56	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	89	%	70-167	1	07/16/13 16:34	07/16/13 19:56	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	81.0	1		07/13/13 22:08	67-64-1	
Benzene	ND	ug/kg	4.0	1		07/13/13 22:08	71-43-2	
Bromobenzene	ND	ug/kg	4.0	1		07/13/13 22:08	108-86-1	
Bromochloromethane	ND	ug/kg	4.0	1		07/13/13 22:08	74-97-5	
Bromodichloromethane	ND	ug/kg	4.0	1		07/13/13 22:08	75-27-4	
Bromoform	ND	ug/kg	4.0	1		07/13/13 22:08	75-25-2	
Bromomethane	ND	ug/kg	8.1	1		07/13/13 22:08	74-83-9	
2-Butanone (MEK)	ND	ug/kg	81.0	1		07/13/13 22:08	78-93-3	
n-Butylbenzene	ND	ug/kg	4.0	1		07/13/13 22:08	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.0	1		07/13/13 22:08	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.0	1		07/13/13 22:08	98-06-6	
Carbon tetrachloride	ND	ug/kg	4.0	1		07/13/13 22:08	56-23-5	
Chlorobenzene	ND	ug/kg	4.0	1		07/13/13 22:08	108-90-7	
Chloroethane	ND	ug/kg	8.1	1		07/13/13 22:08	75-00-3	
Chloroform	ND	ug/kg	4.0	1		07/13/13 22:08	67-66-3	
Chloromethane	ND	ug/kg	8.1	1		07/13/13 22:08	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.0	1		07/13/13 22:08	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.0	1		07/13/13 22:08	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.0	1		07/13/13 22:08	96-12-8	
Dibromochloromethane	ND	ug/kg	4.0	1		07/13/13 22:08	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.0	1		07/13/13 22:08	106-93-4	
Dibromomethane	ND	ug/kg	4.0	1		07/13/13 22:08	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.0	1		07/13/13 22:08	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.0	1		07/13/13 22:08	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.0	1		07/13/13 22:08	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	8.1	1		07/13/13 22:08	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.0	1		07/13/13 22:08	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.0	1		07/13/13 22:08	107-06-2	
1,1-Dichloroethene	ND	ug/kg	4.0	1		07/13/13 22:08	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.0	1		07/13/13 22:08	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.0	1		07/13/13 22:08	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.0	1		07/13/13 22:08	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.0	1		07/13/13 22:08	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.0	1		07/13/13 22:08	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.0	1		07/13/13 22:08	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.0	1		07/13/13 22:08	10061-01-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Project No.: 92164770

Sample: 40-8 @ 0-1 **Lab ID: 92164770008** Collected: 07/10/13 15:40 Received: 07/11/13 15:40 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	4.0	1		07/13/13 22:08	10061-02-6	
Diisopropyl ether	ND	ug/kg	4.0	1		07/13/13 22:08	108-20-3	
Ethylbenzene	ND	ug/kg	4.0	1		07/13/13 22:08	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.0	1		07/13/13 22:08	87-68-3	
2-Hexanone	ND	ug/kg	40.5	1		07/13/13 22:08	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.0	1		07/13/13 22:08	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.0	1		07/13/13 22:08	99-87-6	
Methylene Chloride	ND	ug/kg	16.2	1		07/13/13 22:08	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	40.5	1		07/13/13 22:08	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	4.0	1		07/13/13 22:08	1634-04-4	
Naphthalene	ND	ug/kg	4.0	1		07/13/13 22:08	91-20-3	
n-Propylbenzene	ND	ug/kg	4.0	1		07/13/13 22:08	103-65-1	
Styrene	ND	ug/kg	4.0	1		07/13/13 22:08	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.0	1		07/13/13 22:08	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.0	1		07/13/13 22:08	79-34-5	
Tetrachloroethene	ND	ug/kg	4.0	1		07/13/13 22:08	127-18-4	
Toluene	ND	ug/kg	4.0	1		07/13/13 22:08	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.0	1		07/13/13 22:08	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.0	1		07/13/13 22:08	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.0	1		07/13/13 22:08	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.0	1		07/13/13 22:08	79-00-5	
Trichloroethene	ND	ug/kg	4.0	1		07/13/13 22:08	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.0	1		07/13/13 22:08	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.0	1		07/13/13 22:08	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	4.0	1		07/13/13 22:08	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	4.0	1		07/13/13 22:08	108-67-8	
Vinyl acetate	ND	ug/kg	40.5	1		07/13/13 22:08	108-05-4	
Vinyl chloride	ND	ug/kg	8.1	1		07/13/13 22:08	75-01-4	
Xylene (Total)	ND	ug/kg	8.1	1		07/13/13 22:08	1330-20-7	
m&p-Xylene	ND	ug/kg	8.1	1		07/13/13 22:08	179601-23-1	
o-Xylene	ND	ug/kg	4.0	1		07/13/13 22:08	95-47-6	
Surrogates								
Dibromofluoromethane (S)	89 %		70-130	1		07/13/13 22:08	1868-53-7	
Toluene-d8 (S)	99 %		70-130	1		07/13/13 22:08	2037-26-5	
4-Bromofluorobenzene (S)	96 %		70-130	1		07/13/13 22:08	460-00-4	
1,2-Dichloroethane-d4 (S)	97 %		70-132	1		07/13/13 22:08	17060-07-0	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	12.8 %		0.10	1		07/12/13 13:29		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Sample Project No.: 92164770

Sample: 40-9 @ 0-1 **Lab ID: 92164770009** Collected: 07/10/13 16:10 Received: 07/11/13 15:40 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	67.7	mg/kg	5.7	1	07/11/13 17:30	07/12/13 22:55	68334-30-5	
Surrogates								
n-Pentacosane (S)	88	%	41-119	1	07/11/13 17:30	07/12/13 22:55	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	4.5	1	07/16/13 16:34	07/16/13 20:19	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	89	%	70-167	1	07/16/13 16:34	07/16/13 20:19	460-00-4	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	64.7	1		07/16/13 22:50	67-64-1	
Benzene	ND	ug/kg	3.2	1		07/16/13 22:50	71-43-2	
Bromobenzene	ND	ug/kg	3.2	1		07/16/13 22:50	108-86-1	
Bromochloromethane	ND	ug/kg	3.2	1		07/16/13 22:50	74-97-5	
Bromodichloromethane	ND	ug/kg	3.2	1		07/16/13 22:50	75-27-4	
Bromoform	ND	ug/kg	3.2	1		07/16/13 22:50	75-25-2	
Bromomethane	ND	ug/kg	6.5	1		07/16/13 22:50	74-83-9	
2-Butanone (MEK)	ND	ug/kg	64.7	1		07/16/13 22:50	78-93-3	
n-Butylbenzene	ND	ug/kg	3.2	1		07/16/13 22:50	104-51-8	
sec-Butylbenzene	ND	ug/kg	3.2	1		07/16/13 22:50	135-98-8	
tert-Butylbenzene	ND	ug/kg	3.2	1		07/16/13 22:50	98-06-6	
Carbon tetrachloride	ND	ug/kg	3.2	1		07/16/13 22:50	56-23-5	
Chlorobenzene	ND	ug/kg	3.2	1		07/16/13 22:50	108-90-7	
Chloroethane	ND	ug/kg	6.5	1		07/16/13 22:50	75-00-3	
Chloroform	ND	ug/kg	3.2	1		07/16/13 22:50	67-66-3	
Chloromethane	ND	ug/kg	6.5	1		07/16/13 22:50	74-87-3	
2-Chlorotoluene	ND	ug/kg	3.2	1		07/16/13 22:50	95-49-8	
4-Chlorotoluene	ND	ug/kg	3.2	1		07/16/13 22:50	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	3.2	1		07/16/13 22:50	96-12-8	
Dibromochloromethane	ND	ug/kg	3.2	1		07/16/13 22:50	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	3.2	1		07/16/13 22:50	106-93-4	
Dibromomethane	ND	ug/kg	3.2	1		07/16/13 22:50	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	3.2	1		07/16/13 22:50	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	3.2	1		07/16/13 22:50	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	3.2	1		07/16/13 22:50	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	6.5	1		07/16/13 22:50	75-71-8	1g
1,1-Dichloroethane	ND	ug/kg	3.2	1		07/16/13 22:50	75-34-3	
1,2-Dichloroethane	ND	ug/kg	3.2	1		07/16/13 22:50	107-06-2	
1,1-Dichloroethene	ND	ug/kg	3.2	1		07/16/13 22:50	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	3.2	1		07/16/13 22:50	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	3.2	1		07/16/13 22:50	156-60-5	
1,2-Dichloropropane	ND	ug/kg	3.2	1		07/16/13 22:50	78-87-5	
1,3-Dichloropropane	ND	ug/kg	3.2	1		07/16/13 22:50	142-28-9	
2,2-Dichloropropane	ND	ug/kg	3.2	1		07/16/13 22:50	594-20-7	
1,1-Dichloropropene	ND	ug/kg	3.2	1		07/16/13 22:50	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	3.2	1		07/16/13 22:50	10061-01-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT-ROW-416 WBS#34745.1.1

Project No.: 92164770

Sample: 40-9 @ 0-1 **Lab ID: 92164770009** Collected: 07/10/13 16:10 Received: 07/11/13 15:40 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
trans-1,3-Dichloropropene	ND	ug/kg	3.2	1		07/16/13 22:50	10061-02-6	
Diisopropyl ether	ND	ug/kg	3.2	1		07/16/13 22:50	108-20-3	
Ethylbenzene	ND	ug/kg	3.2	1		07/16/13 22:50	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	3.2	1		07/16/13 22:50	87-68-3	
2-Hexanone	ND	ug/kg	32.4	1		07/16/13 22:50	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	3.2	1		07/16/13 22:50	98-82-8	
p-Isopropyltoluene	ND	ug/kg	3.2	1		07/16/13 22:50	99-87-6	
Methylene Chloride	ND	ug/kg	12.9	1		07/16/13 22:50	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	32.4	1		07/16/13 22:50	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	3.2	1		07/16/13 22:50	1634-04-4	
Naphthalene	ND	ug/kg	3.2	1		07/16/13 22:50	91-20-3	
n-Propylbenzene	ND	ug/kg	3.2	1		07/16/13 22:50	103-65-1	
Styrene	ND	ug/kg	3.2	1		07/16/13 22:50	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	3.2	1		07/16/13 22:50	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	3.2	1		07/16/13 22:50	79-34-5	
Tetrachloroethene	ND	ug/kg	3.2	1		07/16/13 22:50	127-18-4	
Toluene	ND	ug/kg	3.2	1		07/16/13 22:50	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	3.2	1		07/16/13 22:50	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	3.2	1		07/16/13 22:50	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	3.2	1		07/16/13 22:50	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	3.2	1		07/16/13 22:50	79-00-5	
Trichloroethene	ND	ug/kg	3.2	1		07/16/13 22:50	79-01-6	
Trichlorofluoromethane	ND	ug/kg	3.2	1		07/16/13 22:50	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	3.2	1		07/16/13 22:50	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	3.2	1		07/16/13 22:50	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	3.2	1		07/16/13 22:50	108-67-8	
Vinyl acetate	ND	ug/kg	32.4	1		07/16/13 22:50	108-05-4	
Vinyl chloride	ND	ug/kg	6.5	1		07/16/13 22:50	75-01-4	
Xylene (Total)	ND	ug/kg	6.5	1		07/16/13 22:50	1330-20-7	
m&p-Xylene	ND	ug/kg	6.5	1		07/16/13 22:50	179601-23-1	
o-Xylene	ND	ug/kg	3.2	1		07/16/13 22:50	95-47-6	
Surrogates								
Dibromofluoromethane (S)	107 %		70-130	1		07/16/13 22:50	1868-53-7	
Toluene-d8 (S)	100 %		70-130	1		07/16/13 22:50	2037-26-5	
4-Bromofluorobenzene (S)	97 %		70-130	1		07/16/13 22:50	460-00-4	
1,2-Dichloroethane-d4 (S)	108 %		70-132	1		07/16/13 22:50	17060-07-0	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	12.8 %		0.10	1		07/12/13 13:29		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164770

QC Batch: GCV/7085 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 5035A/5030B Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92164770001, 92164770002, 92164770003, 92164770004, 92164770005, 92164770006, 92164770007, 92164770008, 92164770009

METHOD BLANK: 1010778 Matrix: Solid
Associated Lab Samples: 92164770001, 92164770002, 92164770003, 92164770004, 92164770005, 92164770006, 92164770007, 92164770008, 92164770009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	6.0	07/16/13 16:05	
4-Bromofluorobenzene (S)	%	80	70-167	07/16/13 16:05	

LABORATORY CONTROL SAMPLE: 1010779

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	49.8	49.0	98	70-165	
4-Bromofluorobenzene (S)	%			85	70-167	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1010780 1010781

Parameter	Units	92164770006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Gasoline Range Organics	mg/kg	ND	44.7	44.7	51.4	51.7	115	115	47-187	0	
4-Bromofluorobenzene (S)	%						83	87	70-167		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164770

QC Batch: MSV/23615 Analysis Method: EPA 8260
 QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
 Associated Lab Samples: 92164770001, 92164770002, 92164770003, 92164770004, 92164770005, 92164770007, 92164770008

METHOD BLANK: 1009413 Matrix: Solid
 Associated Lab Samples: 92164770001, 92164770002, 92164770003, 92164770004, 92164770005, 92164770007, 92164770008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	5.1	07/13/13 14:34	
1,1,1-Trichloroethane	ug/kg	ND	5.1	07/13/13 14:34	
1,1,2,2-Tetrachloroethane	ug/kg	ND	5.1	07/13/13 14:34	
1,1,2-Trichloroethane	ug/kg	ND	5.1	07/13/13 14:34	
1,1-Dichloroethane	ug/kg	ND	5.1	07/13/13 14:34	
1,1-Dichloroethene	ug/kg	ND	5.1	07/13/13 14:34	
1,1-Dichloropropene	ug/kg	ND	5.1	07/13/13 14:34	
1,2,3-Trichlorobenzene	ug/kg	ND	5.1	07/13/13 14:34	
1,2,3-Trichloropropane	ug/kg	ND	5.1	07/13/13 14:34	
1,2,4-Trichlorobenzene	ug/kg	ND	5.1	07/13/13 14:34	
1,2,4-Trimethylbenzene	ug/kg	ND	5.1	07/13/13 14:34	
1,2-Dibromo-3-chloropropane	ug/kg	ND	5.1	07/13/13 14:34	
1,2-Dibromoethane (EDB)	ug/kg	ND	5.1	07/13/13 14:34	
1,2-Dichlorobenzene	ug/kg	ND	5.1	07/13/13 14:34	
1,2-Dichloroethane	ug/kg	ND	5.1	07/13/13 14:34	
1,2-Dichloropropane	ug/kg	ND	5.1	07/13/13 14:34	
1,3,5-Trimethylbenzene	ug/kg	ND	5.1	07/13/13 14:34	
1,3-Dichlorobenzene	ug/kg	ND	5.1	07/13/13 14:34	
1,3-Dichloropropane	ug/kg	ND	5.1	07/13/13 14:34	
1,4-Dichlorobenzene	ug/kg	ND	5.1	07/13/13 14:34	
2,2-Dichloropropane	ug/kg	ND	5.1	07/13/13 14:34	
2-Butanone (MEK)	ug/kg	ND	103	07/13/13 14:34	
2-Chlorotoluene	ug/kg	ND	5.1	07/13/13 14:34	
2-Hexanone	ug/kg	ND	51.4	07/13/13 14:34	
4-Chlorotoluene	ug/kg	ND	5.1	07/13/13 14:34	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	51.4	07/13/13 14:34	
Acetone	ug/kg	ND	103	07/13/13 14:34	
Benzene	ug/kg	ND	5.1	07/13/13 14:34	
Bromobenzene	ug/kg	ND	5.1	07/13/13 14:34	
Bromochloromethane	ug/kg	ND	5.1	07/13/13 14:34	
Bromodichloromethane	ug/kg	ND	5.1	07/13/13 14:34	
Bromoform	ug/kg	ND	5.1	07/13/13 14:34	
Bromomethane	ug/kg	ND	10.3	07/13/13 14:34	
Carbon tetrachloride	ug/kg	ND	5.1	07/13/13 14:34	
Chlorobenzene	ug/kg	ND	5.1	07/13/13 14:34	
Chloroethane	ug/kg	ND	10.3	07/13/13 14:34	
Chloroform	ug/kg	ND	5.1	07/13/13 14:34	
Chloromethane	ug/kg	ND	10.3	07/13/13 14:34	
cis-1,2-Dichloroethene	ug/kg	ND	5.1	07/13/13 14:34	
cis-1,3-Dichloropropene	ug/kg	ND	5.1	07/13/13 14:34	
Dibromochloromethane	ug/kg	ND	5.1	07/13/13 14:34	
Dibromomethane	ug/kg	ND	5.1	07/13/13 14:34	
Dichlorodifluoromethane	ug/kg	ND	10.3	07/13/13 14:34	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164770

METHOD BLANK: 1009413

Matrix: Solid

Associated Lab Samples: 92164770001, 92164770002, 92164770003, 92164770004, 92164770005, 92164770007, 92164770008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/kg	ND	5.1	07/13/13 14:34	
Ethylbenzene	ug/kg	ND	5.1	07/13/13 14:34	
Hexachloro-1,3-butadiene	ug/kg	ND	5.1	07/13/13 14:34	
Isopropylbenzene (Cumene)	ug/kg	ND	5.1	07/13/13 14:34	
m&p-Xylene	ug/kg	ND	10.3	07/13/13 14:34	
Methyl-tert-butyl ether	ug/kg	ND	5.1	07/13/13 14:34	
Methylene Chloride	ug/kg	ND	20.6	07/13/13 14:34	
n-Butylbenzene	ug/kg	ND	5.1	07/13/13 14:34	
n-Propylbenzene	ug/kg	ND	5.1	07/13/13 14:34	
Naphthalene	ug/kg	ND	5.1	07/13/13 14:34	
o-Xylene	ug/kg	ND	5.1	07/13/13 14:34	
p-Isopropyltoluene	ug/kg	ND	5.1	07/13/13 14:34	
sec-Butylbenzene	ug/kg	ND	5.1	07/13/13 14:34	
Styrene	ug/kg	ND	5.1	07/13/13 14:34	
tert-Butylbenzene	ug/kg	ND	5.1	07/13/13 14:34	
Tetrachloroethene	ug/kg	ND	5.1	07/13/13 14:34	
Toluene	ug/kg	ND	5.1	07/13/13 14:34	
trans-1,2-Dichloroethene	ug/kg	ND	5.1	07/13/13 14:34	
trans-1,3-Dichloropropene	ug/kg	ND	5.1	07/13/13 14:34	
Trichloroethene	ug/kg	ND	5.1	07/13/13 14:34	
Trichlorofluoromethane	ug/kg	ND	5.1	07/13/13 14:34	
Vinyl acetate	ug/kg	ND	51.4	07/13/13 14:34	
Vinyl chloride	ug/kg	ND	10.3	07/13/13 14:34	
Xylene (Total)	ug/kg	ND	10.3	07/13/13 14:34	
1,2-Dichloroethane-d4 (S)	%	98	70-132	07/13/13 14:34	
4-Bromofluorobenzene (S)	%	99	70-130	07/13/13 14:34	
Dibromofluoromethane (S)	%	100	70-130	07/13/13 14:34	
Toluene-d8 (S)	%	100	70-130	07/13/13 14:34	

LABORATORY CONTROL SAMPLE: 1009414

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	49.1	55.5	113	70-131	
1,1,1-Trichloroethane	ug/kg	49.1	51.4	105	70-141	
1,1,2,2-Tetrachloroethane	ug/kg	49.1	55.5	113	70-130	
1,1,2-Trichloroethane	ug/kg	49.1	55.1	112	70-132	
1,1-Dichloroethane	ug/kg	49.1	50.6	103	70-143	
1,1-Dichloroethene	ug/kg	49.1	50.0	102	70-137	
1,1-Dichloropropene	ug/kg	49.1	61.8	126	70-135	
1,2,3-Trichlorobenzene	ug/kg	49.1	57.5	117	69-153	
1,2,3-Trichloropropane	ug/kg	49.1	52.3	107	70-130	
1,2,4-Trichlorobenzene	ug/kg	49.1	57.6	117	55-171	
1,2,4-Trimethylbenzene	ug/kg	49.1	55.7	113	70-149	
1,2-Dibromo-3-chloropropane	ug/kg	49.1	49.4	101	68-141	
1,2-Dibromoethane (EDB)	ug/kg	49.1	52.8	108	70-130	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164770

LABORATORY CONTROL SAMPLE: 1009414

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/kg	49.1	55.2	112	70-140	
1,2-Dichloroethane	ug/kg	49.1	48.2	98	70-137	
1,2-Dichloropropane	ug/kg	49.1	58.0	118	70-133	
1,3,5-Trimethylbenzene	ug/kg	49.1	55.0	112	70-143	
1,3-Dichlorobenzene	ug/kg	49.1	55.6	113	70-144	
1,3-Dichloropropane	ug/kg	49.1	54.9	112	70-132	
1,4-Dichlorobenzene	ug/kg	49.1	55.9	114	70-142	
2,2-Dichloropropane	ug/kg	49.1	52.8	107	68-152	
2-Butanone (MEK)	ug/kg	98.2	73.7J	75	70-149	
2-Chlorotoluene	ug/kg	49.1	57.0	116	70-141	
2-Hexanone	ug/kg	98.2	82.7	84	70-149	
4-Chlorotoluene	ug/kg	49.1	56.2	114	70-149	
4-Methyl-2-pentanone (MIBK)	ug/kg	98.2	84.6	86	70-153	
Acetone	ug/kg	98.2	39.2J	40	70-157	F3,L0
Benzene	ug/kg	49.1	52.6	107	70-130	
Bromobenzene	ug/kg	49.1	54.9	112	70-141	
Bromochloromethane	ug/kg	49.1	51.3	104	70-149	
Bromodichloromethane	ug/kg	49.1	56.1	114	70-130	
Bromoform	ug/kg	49.1	52.9	108	70-131	
Bromomethane	ug/kg	49.1	65.7	134	64-136	
Carbon tetrachloride	ug/kg	49.1	72.8	148	70-154	
Chlorobenzene	ug/kg	49.1	54.9	112	70-135	
Chloroethane	ug/kg	49.1	55.3	113	68-151	
Chloroform	ug/kg	49.1	50.7	103	70-130	
Chloromethane	ug/kg	49.1	49.3	100	70-132	
cis-1,2-Dichloroethene	ug/kg	49.1	48.2	98	70-140	
cis-1,3-Dichloropropene	ug/kg	49.1	58.6	119	70-137	
Dibromochloromethane	ug/kg	49.1	49.2	100	70-130	
Dibromomethane	ug/kg	49.1	53.9	110	70-136	
Dichlorodifluoromethane	ug/kg	49.1	61.7	126	36-148	
Diisopropyl ether	ug/kg	49.1	41.6	85	70-139	
Ethylbenzene	ug/kg	49.1	54.9	112	70-137	
Hexachloro-1,3-butadiene	ug/kg	49.1	56.7	115	70-145	
Isopropylbenzene (Cumene)	ug/kg	49.1	55.8	114	70-141	
m&p-Xylene	ug/kg	98.2	108	110	70-140	
Methyl-tert-butyl ether	ug/kg	49.1	40.7	83	45-150	
Methylene Chloride	ug/kg	49.1	45.6	93	70-133	
n-Butylbenzene	ug/kg	49.1	55.5	113	65-155	
n-Propylbenzene	ug/kg	49.1	55.6	113	70-148	
Naphthalene	ug/kg	49.1	58.6	119	70-148	
o-Xylene	ug/kg	49.1	55.4	113	70-141	
p-Isopropyltoluene	ug/kg	49.1	55.8	114	70-148	
sec-Butylbenzene	ug/kg	49.1	56.1	114	70-145	
Styrene	ug/kg	49.1	55.3	112	70-138	
tert-Butylbenzene	ug/kg	49.1	54.9	112	70-143	
Tetrachloroethene	ug/kg	49.1	54.5	111	70-140	
Toluene	ug/kg	49.1	52.9	108	70-130	
trans-1,2-Dichloroethene	ug/kg	49.1	50.4	103	70-136	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164770

LABORATORY CONTROL SAMPLE: 1009414

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
trans-1,3-Dichloropropene	ug/kg	49.1	59.7	122	70-138	
Trichloroethene	ug/kg	49.1	48.7	99	70-132	
Trichlorofluoromethane	ug/kg	49.1	51.0	104	69-134	
Vinyl acetate	ug/kg	98.2	77.7	79	24-161	
Vinyl chloride	ug/kg	49.1	54.1	110	55-140	
Xylene (Total)	ug/kg	147	163	111	70-141	
1,2-Dichloroethane-d4 (S)	%			85	70-132	
4-Bromofluorobenzene (S)	%			101	70-130	
Dibromofluoromethane (S)	%			111	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE SAMPLE: 1010226

Parameter	Units	92164770004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/kg	ND	44.8	51.4	115	49-180	IS
Benzene	ug/kg	ND	44.8	45.3	101	50-166	
Chlorobenzene	ug/kg	ND	44.8	43.0	96	43-169	
Toluene	ug/kg	ND	44.8	43.1	96	52-163	
Trichloroethene	ug/kg	ND	44.8	46.5	104	49-167	
1,2-Dichloroethane-d4 (S)	%				118	70-132	
4-Bromofluorobenzene (S)	%				97	70-130	
Dibromofluoromethane (S)	%				84	70-130	
Toluene-d8 (S)	%				99	70-130	

SAMPLE DUPLICATE: 1010225

Parameter	Units	92164770001 Result	Dup Result	RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		
1,1,1-Trichloroethane	ug/kg	ND	ND		
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		
1,1,2-Trichloroethane	ug/kg	ND	ND		
1,1-Dichloroethane	ug/kg	ND	ND		
1,1-Dichloroethene	ug/kg	ND	ND		
1,1-Dichloropropene	ug/kg	ND	ND		
1,2,3-Trichlorobenzene	ug/kg	ND	ND		
1,2,3-Trichloropropane	ug/kg	ND	ND		
1,2,4-Trichlorobenzene	ug/kg	ND	ND		
1,2,4-Trimethylbenzene	ug/kg	12.1	12.3	2	
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		
1,2-Dichlorobenzene	ug/kg	ND	ND		
1,2-Dichloroethane	ug/kg	ND	ND		
1,2-Dichloropropane	ug/kg	ND	ND		
1,3,5-Trimethylbenzene	ug/kg	7.2	6.9	5	
1,3-Dichlorobenzene	ug/kg	ND	ND		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164770

SAMPLE DUPLICATE: 1010225

Parameter	Units	92164770001 Result	Dup Result	RPD	Qualifiers
1,3-Dichloropropane	ug/kg	ND	ND		
1,4-Dichlorobenzene	ug/kg	ND	ND		
2,2-Dichloropropane	ug/kg	ND	ND		
2-Butanone (MEK)	ug/kg	ND	ND		
2-Chlorotoluene	ug/kg	ND	ND		
2-Hexanone	ug/kg	ND	ND		
4-Chlorotoluene	ug/kg	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		
Acetone	ug/kg	ND	ND		
Benzene	ug/kg	ND	1.4J		
Bromobenzene	ug/kg	ND	ND		
Bromochloromethane	ug/kg	ND	ND		
Bromodichloromethane	ug/kg	ND	ND		
Bromoform	ug/kg	ND	ND		
Bromomethane	ug/kg	ND	ND		
Carbon tetrachloride	ug/kg	ND	ND		
Chlorobenzene	ug/kg	ND	ND		
Chloroethane	ug/kg	ND	ND		
Chloroform	ug/kg	ND	ND		
Chloromethane	ug/kg	ND	ND		
cis-1,2-Dichloroethene	ug/kg	ND	ND		
cis-1,3-Dichloropropene	ug/kg	ND	ND		
Dibromochloromethane	ug/kg	ND	ND		
Dibromomethane	ug/kg	ND	ND		
Dichlorodifluoromethane	ug/kg	ND	ND		
Diisopropyl ether	ug/kg	ND	ND		
Ethylbenzene	ug/kg	ND	2.7J		
Hexachloro-1,3-butadiene	ug/kg	ND	ND		
Isopropylbenzene (Cumene)	ug/kg	ND	ND		
m&p-Xylene	ug/kg	17.6	15.8	11	
Methyl-tert-butyl ether	ug/kg	ND	ND		
Methylene Chloride	ug/kg	ND	ND		
n-Butylbenzene	ug/kg	ND	ND		
n-Propylbenzene	ug/kg	ND	2.3J		
Naphthalene	ug/kg	ND	2.8J		
o-Xylene	ug/kg	5.4	5.1	6	
p-Isopropyltoluene	ug/kg	ND	3.4J		
sec-Butylbenzene	ug/kg	ND	ND		
Styrene	ug/kg	ND	ND		
tert-Butylbenzene	ug/kg	ND	ND		
Tetrachloroethene	ug/kg	ND	ND		
Toluene	ug/kg	ND	ND		
trans-1,2-Dichloroethene	ug/kg	ND	ND		
trans-1,3-Dichloropropene	ug/kg	ND	ND		
Trichloroethene	ug/kg	ND	ND		
Trichlorofluoromethane	ug/kg	ND	ND		
Vinyl acetate	ug/kg	ND	ND		
Vinyl chloride	ug/kg	ND	ND		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164770

SAMPLE DUPLICATE: 1010225

Parameter	Units	92164770001 Result	Dup Result	RPD	Qualifiers
Xylene (Total)	ug/kg	22.9	20.9	10	
1,2-Dichloroethane-d4 (S)	%	119	123	21	
4-Bromofluorobenzene (S)	%	79	79	25	
Dibromofluoromethane (S)	%	119	82	61	
Toluene-d8 (S)	%	89	89	25	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164770

QC Batch: MSV/23637

Analysis Method: EPA 8260

QC Batch Method: EPA 8260

Analysis Description: 8260 MSV 5035A Volatile Organics

Associated Lab Samples: 92164770006, 92164770009

METHOD BLANK: 1010237

Matrix: Solid

Associated Lab Samples: 92164770006, 92164770009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	4.9	07/16/13 20:00	
1,1,1-Trichloroethane	ug/kg	ND	4.9	07/16/13 20:00	
1,1,2,2-Tetrachloroethane	ug/kg	ND	4.9	07/16/13 20:00	
1,1,2-Trichloroethane	ug/kg	ND	4.9	07/16/13 20:00	
1,1-Dichloroethane	ug/kg	ND	4.9	07/16/13 20:00	
1,1-Dichloroethene	ug/kg	ND	4.9	07/16/13 20:00	
1,1-Dichloropropene	ug/kg	ND	4.9	07/16/13 20:00	
1,2,3-Trichlorobenzene	ug/kg	ND	4.9	07/16/13 20:00	
1,2,3-Trichloropropane	ug/kg	ND	4.9	07/16/13 20:00	
1,2,4-Trichlorobenzene	ug/kg	ND	4.9	07/16/13 20:00	
1,2,4-Trimethylbenzene	ug/kg	ND	4.9	07/16/13 20:00	
1,2-Dibromo-3-chloropropane	ug/kg	ND	4.9	07/16/13 20:00	
1,2-Dibromoethane (EDB)	ug/kg	ND	4.9	07/16/13 20:00	
1,2-Dichlorobenzene	ug/kg	ND	4.9	07/16/13 20:00	
1,2-Dichloroethane	ug/kg	ND	4.9	07/16/13 20:00	
1,2-Dichloropropane	ug/kg	ND	4.9	07/16/13 20:00	
1,3,5-Trimethylbenzene	ug/kg	ND	4.9	07/16/13 20:00	
1,3-Dichlorobenzene	ug/kg	ND	4.9	07/16/13 20:00	
1,3-Dichloropropane	ug/kg	ND	4.9	07/16/13 20:00	
1,4-Dichlorobenzene	ug/kg	ND	4.9	07/16/13 20:00	
2,2-Dichloropropane	ug/kg	ND	4.9	07/16/13 20:00	
2-Butanone (MEK)	ug/kg	ND	98.0	07/16/13 20:00	
2-Chlorotoluene	ug/kg	ND	4.9	07/16/13 20:00	
2-Hexanone	ug/kg	ND	49.0	07/16/13 20:00	
4-Chlorotoluene	ug/kg	ND	4.9	07/16/13 20:00	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	49.0	07/16/13 20:00	
Acetone	ug/kg	ND	98.0	07/16/13 20:00	
Benzene	ug/kg	ND	4.9	07/16/13 20:00	
Bromobenzene	ug/kg	ND	4.9	07/16/13 20:00	
Bromochloromethane	ug/kg	ND	4.9	07/16/13 20:00	
Bromodichloromethane	ug/kg	ND	4.9	07/16/13 20:00	
Bromoform	ug/kg	ND	4.9	07/16/13 20:00	
Bromomethane	ug/kg	ND	9.8	07/16/13 20:00	
Carbon tetrachloride	ug/kg	ND	4.9	07/16/13 20:00	
Chlorobenzene	ug/kg	ND	4.9	07/16/13 20:00	
Chloroethane	ug/kg	ND	9.8	07/16/13 20:00	
Chloroform	ug/kg	ND	4.9	07/16/13 20:00	
Chloromethane	ug/kg	ND	9.8	07/16/13 20:00	
cis-1,2-Dichloroethene	ug/kg	ND	4.9	07/16/13 20:00	
cis-1,3-Dichloropropene	ug/kg	ND	4.9	07/16/13 20:00	
Dibromochloromethane	ug/kg	ND	4.9	07/16/13 20:00	
Dibromomethane	ug/kg	ND	4.9	07/16/13 20:00	
Dichlorodifluoromethane	ug/kg	ND	9.8	07/16/13 20:00	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164770

METHOD BLANK: 1010237

Matrix: Solid

Associated Lab Samples: 92164770006, 92164770009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/kg	ND	4.9	07/16/13 20:00	
Ethylbenzene	ug/kg	ND	4.9	07/16/13 20:00	
Hexachloro-1,3-butadiene	ug/kg	ND	4.9	07/16/13 20:00	
Isopropylbenzene (Cumene)	ug/kg	ND	4.9	07/16/13 20:00	
m&p-Xylene	ug/kg	ND	9.8	07/16/13 20:00	
Methyl-tert-butyl ether	ug/kg	ND	4.9	07/16/13 20:00	
Methylene Chloride	ug/kg	ND	19.6	07/16/13 20:00	
n-Butylbenzene	ug/kg	ND	4.9	07/16/13 20:00	
n-Propylbenzene	ug/kg	ND	4.9	07/16/13 20:00	
Naphthalene	ug/kg	ND	4.9	07/16/13 20:00	
o-Xylene	ug/kg	ND	4.9	07/16/13 20:00	
p-Isopropyltoluene	ug/kg	ND	4.9	07/16/13 20:00	
sec-Butylbenzene	ug/kg	ND	4.9	07/16/13 20:00	
Styrene	ug/kg	ND	4.9	07/16/13 20:00	
tert-Butylbenzene	ug/kg	ND	4.9	07/16/13 20:00	
Tetrachloroethene	ug/kg	ND	4.9	07/16/13 20:00	
Toluene	ug/kg	ND	4.9	07/16/13 20:00	
trans-1,2-Dichloroethene	ug/kg	ND	4.9	07/16/13 20:00	
trans-1,3-Dichloropropene	ug/kg	ND	4.9	07/16/13 20:00	
Trichloroethene	ug/kg	ND	4.9	07/16/13 20:00	
Trichlorofluoromethane	ug/kg	ND	4.9	07/16/13 20:00	
Vinyl acetate	ug/kg	ND	49.0	07/16/13 20:00	
Vinyl chloride	ug/kg	ND	9.8	07/16/13 20:00	
Xylene (Total)	ug/kg	ND	9.8	07/16/13 20:00	
1,2-Dichloroethane-d4 (S)	%	95	70-132	07/16/13 20:00	
4-Bromofluorobenzene (S)	%	93	70-130	07/16/13 20:00	
Dibromofluoromethane (S)	%	97	70-130	07/16/13 20:00	
Toluene-d8 (S)	%	100	70-130	07/16/13 20:00	

LABORATORY CONTROL SAMPLE: 1010238

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	44.4	43.5	98	70-131	
1,1,1-Trichloroethane	ug/kg	44.4	44.2	99	70-141	
1,1,2,2-Tetrachloroethane	ug/kg	44.4	45.9	103	70-130	
1,1,2-Trichloroethane	ug/kg	44.4	41.9	94	70-132	
1,1-Dichloroethane	ug/kg	44.4	41.5	93	70-143	
1,1-Dichloroethene	ug/kg	44.4	39.8	90	70-137	
1,1-Dichloropropene	ug/kg	44.4	44.5	100	70-135	
1,2,3-Trichlorobenzene	ug/kg	44.4	47.1	106	69-153	
1,2,3-Trichloropropane	ug/kg	44.4	41.5	93	70-130	
1,2,4-Trichlorobenzene	ug/kg	44.4	46.9	106	55-171	
1,2,4-Trimethylbenzene	ug/kg	44.4	41.3	93	70-149	
1,2-Dibromo-3-chloropropane	ug/kg	44.4	39.2	88	68-141	
1,2-Dibromoethane (EDB)	ug/kg	44.4	45.0	101	70-130	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164770

LABORATORY CONTROL SAMPLE: 1010238

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/kg	44.4	45.7	103	70-140	
1,2-Dichloroethane	ug/kg	44.4	41.8	94	70-137	
1,2-Dichloropropane	ug/kg	44.4	40.7	92	70-133	
1,3,5-Trimethylbenzene	ug/kg	44.4	43.7	98	70-143	
1,3-Dichlorobenzene	ug/kg	44.4	45.0	101	70-144	
1,3-Dichloropropane	ug/kg	44.4	41.8	94	70-132	
1,4-Dichlorobenzene	ug/kg	44.4	45.7	103	70-142	
2,2-Dichloropropane	ug/kg	44.4	40.5	91	68-152	
2-Butanone (MEK)	ug/kg	88.8	69J	78	70-149	
2-Chlorotoluene	ug/kg	44.4	45.7	103	70-141	
2-Hexanone	ug/kg	88.8	85.4	96	70-149	
4-Chlorotoluene	ug/kg	44.4	46.3	104	70-149	
4-Methyl-2-pentanone (MIBK)	ug/kg	88.8	72.7	82	70-153	
Acetone	ug/kg	88.8	76.5J	86	70-157	
Benzene	ug/kg	44.4	43.3	97	70-130	
Bromobenzene	ug/kg	44.4	44.0	99	70-141	
Bromochloromethane	ug/kg	44.4	41.8	94	70-149	
Bromodichloromethane	ug/kg	44.4	40.2	90	70-130	
Bromoform	ug/kg	44.4	42.8	96	70-131	
Bromomethane	ug/kg	44.4	37.8	85	64-136	
Carbon tetrachloride	ug/kg	44.4	39.8	90	70-154	
Chlorobenzene	ug/kg	44.4	44.0	99	70-135	
Chloroethane	ug/kg	44.4	36.9	83	68-151	
Chloroform	ug/kg	44.4	40.8	92	70-130	
Chloromethane	ug/kg	44.4	29.7	67	70-132	F3,L0
cis-1,2-Dichloroethene	ug/kg	44.4	40.6	91	70-140	
cis-1,3-Dichloropropene	ug/kg	44.4	39.3	88	70-137	
Dibromochloromethane	ug/kg	44.4	41.3	93	70-130	
Dibromomethane	ug/kg	44.4	42.6	96	70-136	
Dichlorodifluoromethane	ug/kg	44.4	23.0	52	36-148	F3
Diisopropyl ether	ug/kg	44.4	42.2	95	70-139	
Ethylbenzene	ug/kg	44.4	45.0	101	70-137	
Hexachloro-1,3-butadiene	ug/kg	44.4	43.6	98	70-145	
Isopropylbenzene (Cumene)	ug/kg	44.4	45.9	103	70-141	
m&p-Xylene	ug/kg	88.8	90.7	102	70-140	
Methyl-tert-butyl ether	ug/kg	44.4	44.0	99	45-150	
Methylene Chloride	ug/kg	44.4	32.8	74	70-133	
n-Butylbenzene	ug/kg	44.4	43.4	98	65-155	
n-Propylbenzene	ug/kg	44.4	43.8	99	70-148	
Naphthalene	ug/kg	44.4	44.8	101	70-148	
o-Xylene	ug/kg	44.4	46.6	105	70-141	
p-Isopropyltoluene	ug/kg	44.4	44.9	101	70-148	
sec-Butylbenzene	ug/kg	44.4	45.6	103	70-145	
Styrene	ug/kg	44.4	46.4	105	70-138	
tert-Butylbenzene	ug/kg	44.4	44.4	100	70-143	
Tetrachloroethene	ug/kg	44.4	43.8	99	70-140	
Toluene	ug/kg	44.4	43.0	97	70-130	
trans-1,2-Dichloroethene	ug/kg	44.4	40.9	92	70-136	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164770

LABORATORY CONTROL SAMPLE: 1010238

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
trans-1,3-Dichloropropene	ug/kg	44.4	38.5	87	70-138	
Trichloroethene	ug/kg	44.4	40.5	91	70-132	
Trichlorofluoromethane	ug/kg	44.4	39.1	88	69-134	
Vinyl acetate	ug/kg	88.8	71.8	81	24-161	
Vinyl chloride	ug/kg	44.4	34.9	79	55-140	
Xylene (Total)	ug/kg	133	137	103	70-141	
1,2-Dichloroethane-d4 (S)	%			95	70-132	
4-Bromofluorobenzene (S)	%			101	70-130	
Dibromofluoromethane (S)	%			103	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE SAMPLE: 1011881

Parameter	Units	92164741001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/kg	ND	50	73.8	148	49-180	
Benzene	ug/kg	ND	50	51.1	102	50-166	
Chlorobenzene	ug/kg	ND	50	50.0	100	43-169	
Toluene	ug/kg	ND	50	48.6	97	52-163	
Trichloroethene	ug/kg	ND	50	52.3	105	49-167	
1,2-Dichloroethane-d4 (S)	%				98	70-132	
4-Bromofluorobenzene (S)	%				94	70-130	
Dibromofluoromethane (S)	%				100	70-130	
Toluene-d8 (S)	%				96	70-130	

SAMPLE DUPLICATE: 1011882

Parameter	Units	92164741002 Result	Dup Result	RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		
1,1,1-Trichloroethane	ug/kg	ND	ND		
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		
1,1,2-Trichloroethane	ug/kg	ND	ND		
1,1-Dichloroethane	ug/kg	ND	ND		
1,1-Dichloroethene	ug/kg	ND	ND		
1,1-Dichloropropene	ug/kg	ND	ND		
1,2,3-Trichlorobenzene	ug/kg	ND	ND		
1,2,3-Trichloropropane	ug/kg	ND	ND		
1,2,4-Trichlorobenzene	ug/kg	ND	ND		
1,2,4-Trimethylbenzene	ug/kg	ND	ND		
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		
1,2-Dichlorobenzene	ug/kg	ND	ND		
1,2-Dichloroethane	ug/kg	ND	ND		
1,2-Dichloropropane	ug/kg	ND	ND		
1,3,5-Trimethylbenzene	ug/kg	ND	ND		
1,3-Dichlorobenzene	ug/kg	ND	ND		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164770

SAMPLE DUPLICATE: 1011882

Parameter	Units	92164741002 Result	Dup Result	RPD	Qualifiers
1,3-Dichloropropane	ug/kg	ND	ND		
1,4-Dichlorobenzene	ug/kg	ND	ND		
2,2-Dichloropropane	ug/kg	ND	ND		
2-Butanone (MEK)	ug/kg	ND	ND		
2-Chlorotoluene	ug/kg	ND	ND		
2-Hexanone	ug/kg	ND	ND		
4-Chlorotoluene	ug/kg	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		
Acetone	ug/kg	ND	164		B9
Benzene	ug/kg	ND	ND		
Bromobenzene	ug/kg	ND	ND		
Bromochloromethane	ug/kg	ND	ND		
Bromodichloromethane	ug/kg	ND	ND		
Bromoform	ug/kg	ND	ND		
Bromomethane	ug/kg	ND	ND		
Carbon tetrachloride	ug/kg	ND	ND		
Chlorobenzene	ug/kg	ND	ND		
Chloroethane	ug/kg	ND	ND		
Chloroform	ug/kg	ND	ND		
Chloromethane	ug/kg	ND	ND		
cis-1,2-Dichloroethene	ug/kg	ND	ND		
cis-1,3-Dichloropropene	ug/kg	ND	ND		
Dibromochloromethane	ug/kg	ND	ND		
Dibromomethane	ug/kg	ND	ND		
Dichlorodifluoromethane	ug/kg	ND	ND		
Diisopropyl ether	ug/kg	ND	ND		
Ethylbenzene	ug/kg	ND	ND		
Hexachloro-1,3-butadiene	ug/kg	ND	ND		
Isopropylbenzene (Cumene)	ug/kg	ND	ND		
m&p-Xylene	ug/kg	ND	ND		
Methyl-tert-butyl ether	ug/kg	ND	ND		
Methylene Chloride	ug/kg	ND	28.7		
n-Butylbenzene	ug/kg	ND	ND		
n-Propylbenzene	ug/kg	ND	ND		
Naphthalene	ug/kg	ND	ND		
o-Xylene	ug/kg	ND	ND		
p-Isopropyltoluene	ug/kg	ND	ND		
sec-Butylbenzene	ug/kg	ND	ND		
Styrene	ug/kg	ND	ND		
tert-Butylbenzene	ug/kg	ND	ND		
Tetrachloroethene	ug/kg	ND	ND		
Toluene	ug/kg	ND	ND		
trans-1,2-Dichloroethene	ug/kg	ND	ND		
trans-1,3-Dichloropropene	ug/kg	ND	ND		
Trichloroethene	ug/kg	ND	ND		
Trichlorofluoromethane	ug/kg	ND	ND		
Vinyl acetate	ug/kg	ND	ND		
Vinyl chloride	ug/kg	ND	ND		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164770

SAMPLE DUPLICATE: 1011882

Parameter	Units	92164741002 Result	Dup Result	RPD	Qualifiers
Xylene (Total)	ug/kg	ND	ND		
1,2-Dichloroethane-d4 (S)	%	107	105	14	
4-Bromofluorobenzene (S)	%	93	86	7	
Dibromofluoromethane (S)	%	101	104	19	
Toluene-d8 (S)	%	102	98	12	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164770

QC Batch: OEXT/22949 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 3546 Analysis Description: 8015 Solid GCSV
Associated Lab Samples: 92164770001, 92164770002, 92164770003, 92164770004, 92164770005, 92164770006, 92164770007, 92164770008, 92164770009

METHOD BLANK: 1008526 Matrix: Solid
Associated Lab Samples: 92164770001, 92164770002, 92164770003, 92164770004, 92164770005, 92164770006, 92164770007, 92164770008, 92164770009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Components	mg/kg	ND	5.0	07/12/13 12:23	
n-Pentacosane (S)	%	69	41-119	07/12/13 12:23	

LABORATORY CONTROL SAMPLE: 1008527

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Components	mg/kg	66.7	48.7	73	49-113	
n-Pentacosane (S)	%			79	41-119	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1008528 1008529

Parameter	Units	92164770003		MSD		MS		MSD		% Rec Limits	RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec				
Diesel Components	mg/kg	60.8	82.9	82.9	4250	366	5061	369	10-146	168	M3,R1	
n-Pentacosane (S)	%						203	82	41-119		S5	

REPORT OF LABORATORY ANALYSIS

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 2225 Riverside Dr.
 Asheville, NC 28804
 (828)254-7176

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

QUALITY CONTROL DATA

Project: NCDOT-ROW-416 WBS#34745.1.1
 Pace Project No.: 92164770

QC Batch: PMST/5666 Analysis Method: ASTM D2974-87
 QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
 Associated Lab Samples: 92164770001, 92164770002, 92164770003, 92164770004, 92164770005, 92164770006, 92164770007,
 92164770008, 92164770009

SAMPLE DUPLICATE: 1008402

Parameter	Units	92164631001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	27.1	26.4	2	

SAMPLE DUPLICATE: 1008403

Parameter	Units	92164645001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	97.7	97.9	0	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: NCDOT-ROW-416 WBS#34745.1.1
Pace Project No.: 92164770

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.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

1g The internal standard response is below criteria. No hits associated with this internal standard. Results unaffected by high bias.

B9 The reaction of the soil preservative, sodium bisulfate, is known to react with humic acid in soils to produce ketones. Based upon method blank results, the laboratory feels the ketones in this sample are a result of that reaction.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

F3 The recovery of the second source standard used to verify the initial calibration curve for this analyte is outside the laboratory's control limits. The result is estimated.

IO The internal standard response was outside the laboratory acceptance limits confirmed by reanalysis. The results reported are from the most QC compliant analysis.

IS The internal standard response is below criteria. Results may be biased high.

L0 Analyte recovery in the laboratory control sample (LCS) was outside QC limits.

M3 Matrix spike recovery was outside laboratory control limits due to matrix interferences.

R1 RPD value was outside control limits.

S5 Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

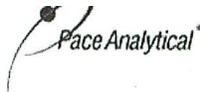
Project: NCDOT-ROW-416 WBS#34745.1.1

Pace Project No.: 92164770

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92164770001	40-1 @ 0-1	EPA 3546	OEXT/22949	EPA 8015 Modified	GCSV/15062
92164770002	40-2 @ 0-1	EPA 3546	OEXT/22949	EPA 8015 Modified	GCSV/15062
92164770003	40-3 @ 4-5	EPA 3546	OEXT/22949	EPA 8015 Modified	GCSV/15062
92164770004	40-4 @ 0-1	EPA 3546	OEXT/22949	EPA 8015 Modified	GCSV/15062
92164770005	40-5 @ 0-1	EPA 3546	OEXT/22949	EPA 8015 Modified	GCSV/15062
92164770006	40-6 @ 0-1	EPA 3546	OEXT/22949	EPA 8015 Modified	GCSV/15062
92164770007	40-7 @ 0-1	EPA 3546	OEXT/22949	EPA 8015 Modified	GCSV/15062
92164770008	40-8 @ 0-1	EPA 3546	OEXT/22949	EPA 8015 Modified	GCSV/15062
92164770009	40-9 @ 0-1	EPA 3546	OEXT/22949	EPA 8015 Modified	GCSV/15062
92164770001	40-1 @ 0-1	EPA 5035A/5030B	GCV/7085	EPA 8015 Modified	GCV/7090
92164770002	40-2 @ 0-1	EPA 5035A/5030B	GCV/7085	EPA 8015 Modified	GCV/7090
92164770003	40-3 @ 4-5	EPA 5035A/5030B	GCV/7085	EPA 8015 Modified	GCV/7090
92164770004	40-4 @ 0-1	EPA 5035A/5030B	GCV/7085	EPA 8015 Modified	GCV/7090
92164770005	40-5 @ 0-1	EPA 5035A/5030B	GCV/7085	EPA 8015 Modified	GCV/7090
92164770006	40-6 @ 0-1	EPA 5035A/5030B	GCV/7085	EPA 8015 Modified	GCV/7090
92164770007	40-7 @ 0-1	EPA 5035A/5030B	GCV/7085	EPA 8015 Modified	GCV/7090
92164770008	40-8 @ 0-1	EPA 5035A/5030B	GCV/7085	EPA 8015 Modified	GCV/7090
92164770009	40-9 @ 0-1	EPA 5035A/5030B	GCV/7085	EPA 8015 Modified	GCV/7090
92164770001	40-1 @ 0-1	EPA 8260	MSV/23615		
92164770002	40-2 @ 0-1	EPA 8260	MSV/23615		
92164770003	40-3 @ 4-5	EPA 8260	MSV/23615		
92164770004	40-4 @ 0-1	EPA 8260	MSV/23615		
92164770005	40-5 @ 0-1	EPA 8260	MSV/23615		
92164770006	40-6 @ 0-1	EPA 8260	MSV/23637		
92164770007	40-7 @ 0-1	EPA 8260	MSV/23615		
92164770008	40-8 @ 0-1	EPA 8260	MSV/23615		
92164770009	40-9 @ 0-1	EPA 8260	MSV/23637		
92164770001	40-1 @ 0-1	ASTM D2974-87	PMST/5666		
92164770002	40-2 @ 0-1	ASTM D2974-87	PMST/5666		
92164770003	40-3 @ 4-5	ASTM D2974-87	PMST/5666		
92164770004	40-4 @ 0-1	ASTM D2974-87	PMST/5666		
92164770005	40-5 @ 0-1	ASTM D2974-87	PMST/5666		
92164770006	40-6 @ 0-1	ASTM D2974-87	PMST/5666		
92164770007	40-7 @ 0-1	ASTM D2974-87	PMST/5666		
92164770008	40-8 @ 0-1	ASTM D2974-87	PMST/5666		
92164770009	40-9 @ 0-1	ASTM D2974-87	PMST/5666		

REPORT OF LABORATORY ANALYSIS

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**Sample Condition Upon Receipt (SCUR)**Document Number:
F-CHR-CS-03-rev.11Issuing Authority:
Pace Huntersville Quality OfficeClient Name: Hart and HickmanWhere Received: Huntersville Asheville Eden RaleighCourier: Fed Ex UPS USPS Client Commercial Pace Other _____Custody Seal on Cooler/Box Present: yes no Seals intact: yes noPacking Material: Bubble Wrap Bubble Bags None Other _____Thermometer Used: IR Gun T1102 **T1301** Type of Ice: **Wet** Blue None Samples on ice, cooling process has begun

Temp Correction Factor T1102: No Correction T1301: No Correction

Corrected Cooler Temp.: 5.8 CBiological Tissue is Frozen: Yes No **N/A**Date and Initials of person examining contents: TA 7/11/13

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:		
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

SCURF Review: LADate: 7/12/13SRF Review: LADate: 7/12/13

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

WO#: 92164770

92164770

CHAIN-OF-CUSTODY / Analytical Request Document
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information: Company: Hart & Hickman Report To: David Graham Attention: Cynthia Wells
Address: 223 S. Tryon Street Copy To: David Graham Company Name: Hart & Hickman
Email To: Suite 100 Charlotte, NC Purchase Order No.: WGS # 34745.1.1 Address: cwells@hart+hickman.com
Phone: 704-887-4630 Fax: 704-887-4630 Project Name: NCDOT - ROW-416 Pace Quote Reference: 4122-3 Pace Project Manager: 4122-3 Pace Profile #: 4122-3
Requested Due Date/TAT: ROW-416 Project Number: ROW-416

Section B Required Project Information: Invoice Information: Requested Analysis Filtered (Y/N) NC
Section C Regulatory Agency: NC
REGULATORY AGENCY: 1686033
NPDES GROUND WATER DRINKING WATER
UST RCRA OTHER

ITEM #	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	Matrix Code (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives		Analysis Test	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
				COMPOSITE START	COMPOSITE END/GRAB			H ₂ SO ₄	HNO ₃				
1		40-1 @ 0-1	SL G		7/10/13 1415	8				TPH - GRD TPH - DRD VOLs - 8260			001
2		40-2 @ 0-1			7/10/13 1430								008
3		40-3 @ 4-5			7/10/13 1450								003
4		40-4 @ 0-1			7/10/13 1455								004
5		40-5 @ 0-1			7/10/13 1505								005
6		40-6 @ 0-1			7/10/13 1515								006
7		40-7 @ 0-1			7/10/13 1555								007
8		40-8 @ 0-1			7/10/13 1540								008
9		40-9 @ 0-1			7/10/13 1610								009
10													
11													
12													

ADDITIONAL COMMENTS: * Separate lab report required for each site
RELINQUISHED BY / AFFILIATION: Matthew
DATE: 7/10/13
TIME: 1540
ACCEPTED BY / AFFILIATION: David Graham
DATE: 7/11/13
TIME: 0850
TEMP IN °C: 5.8
RECEIVED ON ICE (Y/N): Y
CUSTODY SEALED COOLER (Y/N): N
SAMPLES INTACT (Y/N): Y

SAMPLER NAME AND SIGNATURE: Matthew
PRINT NAME OF SAMPLER: Matthew
SIGNATURE OF SAMPLER: Matthew
DATE SIGNED (MM/DD/YY): 7/11/13

ORIGINAL