Preliminary Site Assessment

NCDOT Project U-5008

Charlotte - Sugar Creek Grade Separation

Parcel: William M. Moore Property

Owner: William M. Moore

830 E. Sugar Creek Road

Charlotte, Mecklenburg County, North Carolina

WBS Element: 41141.1.1

January 3, 2014, Revised January 23, 2014

Terracon Project No. 71137774

Prepared for:

North Carolina Department of Transportation (NCDOT)

Geotechnical Engineering Unit

Prepared by:

Terracon Consultants, Inc.

Charlotte, North Carolina

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January 3, 2014
Revised January 23, 2014

North Carolina Department of Transportation (NCDOT)
Geotechnical Engineering Unit
GeoEnvironmental Section
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Attn: Mr. Craig Haden, Geotechnical Project Manager

Re: Preliminary Site Assessment (PSA)
U-5008 – Sugar Creek Grade Separation
Parcel: William M. Moore Property
830 E. Sugar Creek Road
Charlotte, Mecklenburg County, North Carolina
Terracon Project No. 71137774
WBS Element: 41141.1.1

Dear Mr. Haden:

Terracon Consultants, Inc. (Terracon) is pleased to submit a Preliminary Site Assessment (PSA) report for the above referenced site. This assessment was performed in accordance with our Proposal for Preliminary Site Assessments (Terracon Proposal No. 71137E099 dated August 30, 2013). This report includes the findings of our investigation and provides our conclusions and recommendations.

Terracon appreciates the opportunity to provide these services to NCDOT. If you have any questions concerning this report or need additional information, please contact us at 704-509-1777.

Sincerely,

Terracon Consultants, Inc.

Analee Farrell, E.I.
Staff Environmental Professional

Christopher L. Corbitt, PG
Senior Project Manager

Attachments

PRELIMINARY SITE ASSESSMENT

U-5008 – SUGAR CREEK GRADE SEPARATION
PARCEL – WILLIAM M. MOORE PROPERTY
830 E. SUGAR CREEK ROAD
CHARLOTTE, MECKLENBURG COUNTY, NORTH CAROLINA

1.0 INTRODUCTION

1.1 Site Description

Site Name	William M. Moore Property
Site Location/Address	830 E. Sugar Creek Road, Charlotte, Mecklenburg County, North Carolina
General Site Description	The site is occupied by a vacant Citgo gasoline station. The main service station structure is located on the property. Remaining portions of the site are covered by concrete and asphalt-pavements, gravel and grass.

1.2 Site History

The site is occupied by a vacant Citgo gasoline station. According to information reviewed from the North Carolina Department of Environment and Natural Resources (NCDENR) UST database, the facility was identified as Gardner's Gulf Station. Reportedly, three USTs were removed in 1990 and five additional tanks were removed from the site in December 2010. The database indicated two release incidents (5477 and 36889) for the property involving impacts to soil and groundwater. According to the database information, the two incidents have been closed by the NCDENR but residual contamination may be present on the site.

At the request of the NCDOT, Terracon visited the NCDENR Mooresville Regional Office on January 17, 2014 to review the regulatory files for the two release incidents associated with the William M. Moore Property. Based on the information reviewed, three gasoline USTs were installed at the site in 1971 and were removed in 1990. Reportedly, a waste oil UST and a fuel oil UST located at the rear of the on-site building were not removed in 1990. The UST closure report indicated evidence of a release in the soils which resulted in the issuance of incident number 5477 by the NCDENR. New USTs were installed at the site in 1990 presumably within the former tank basin (no indication otherwise).

In 2010, five USTs were removed from the site known as Gardner's Gulf. The tanks included three gasoline USTs, the waste oil UST and the fuel oil UST. Based on laboratory data during closure activities, petroleum contaminants were detected in the soils at levels exceeding regulatory action levels which resulted in the issuance of incident number 36889. The consultant (URS) conducted additional excavation at the site and submitted an Initial Abatement Action Report to the NCDENR in February 2011. Based on petroleum constituents exceeding

their respective risk-based Maximum Soil Contaminant Concentrations (MSCCs), a Limited Site Assessment (LSA) was requested by the NCDENR to evaluate the groundwater at the site. URS conducted the LSA in May 2011 and determined that the groundwater on the site was impacted by the release(s) at levels that exceeded the 2L groundwater quality standards.

The NCDENR issued a No Further Action Letter (NFA) on July 25, 2011 for both release incidents with the stipulation that a Notice of Residual Petroleum and deed recordation be completed for the property resulting in activity use restrictions for on-site soils and groundwater. A copy of excerpted documents obtained from the regulatory file is provided in Appendix A.

1.3 Scope of Work

At your request, Terracon is completing a scope of work in accordance with the NCDOT's Request for Technical and Cost Proposal dated August 7, 2013 and Terracon's Proposal for Preliminary Site Assessment (Proposal No.71137E099) dated August 30, 2013. The scope of work included a geophysical investigation, collection of thirteen soil samples for laboratory analysis, and preparation of a report documenting our soil investigation activities.

1.4 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. Terracon makes no warranties, either expressed or implied, regarding the findings, conclusions or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third parties supplying information used in the preparation of the report. These PSA services were performed in accordance with the scope of work authorized by you, our client, as reflected in our proposal and were not conducted in accordance with ASTM E1903-97.

1.5 Additional Scope Limitations

Findings, conclusions and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, undetectable or not present during these services, as such, we cannot represent that the site is free of hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this PSA. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations or exploratory services; the data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

1.6 Reliance

This report has been prepared for the exclusive use of our client, the North Carolina Department of Transportation (NCDOT). Authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the expressed written consent of the client and Terracon.

2.0 FIELD ACTIVITIES

The following PSA activities are presented in the order that they were conducted in the field on November 3 and 5, 2013 and November 19, 2013. Exhibit 1 presents the general boundaries and topography of the site on portions of the Charlotte East, North Carolina USGS topographic quadrangle map dated 1967 and the Derita, North Carolina USGS topographic quadrangle map dated 1993. Exhibit 2 is a site layout plan that depicts the approximate locations of the site features, soil boring locations and analytical data. Photographs of the site are provided in Appendix B.

2.1 Geophysical Survey

On November 3 and 5, 2013, Pyramid Environmental conducted a geophysical investigation at the site in an effort to determine if unknown, metallic underground storage tanks (USTs) were present beneath the proposed right-of-way (ROW) area. The geophysical investigation included an electromagnetic (EM) induction survey using a Geonics EM-61 MK1 metal detection instrument followed by a ground penetrating radar (GPR) survey using a GSSI SIR-2000 unit.

The geophysical investigation did not reveal the presence of probable metallic USTs in the area of investigation identified for this site; however, some areas of the site may contain buried debris. A copy of the geophysical report that includes a summary of the field findings is included in Appendix C.

2.2 Soil Sampling

Based on the findings of the geophysical investigation, Terracon directed the advancement of thirteen soil borings (MB-1 through MB-13) on the property on November 19, 2013. The borings were completed by Probe Technology, Inc., a North Carolina licensed driller using a Geoprobe® direct-push rig. The drilling equipment was cleaned prior to beginning the project and before the advancement of each boring.

The soil borings were advanced within paved and gravel-covered areas on the eastern half of the site and within grass-covered areas on the western half of the site. Soil samples were collected in 5-foot, disposable, acetate sleeves and were observed to document soil lithology, color, moisture content, and sensory evidence of impairment. Soil samples were placed in re-sealable plastic bags that were set aside for a sufficient amount of time to allow volatilization of

organic compounds that may have been present in the soils. The soil samples were then screened using a field-portable *MiniRAE 3000* Photo-Ionization Detector (PID) by inserting the probe tip into the headspace of the bag. The PID readings and soil sample depths are included on individual Boring Logs in Appendix D and in Tables 1 and 2.

The borings were advanced to depths of approximately 10 feet below ground surface (bgs). Based on our observations, soils obtained from the acetate sleeves were separated into approximate 5-foot intervals but discreet samples were collected throughout each interval. Groundwater was not encountered in any of the borings advanced at the site.

The soil samples were collected and placed in laboratory prepared glassware and placed on ice in a cooler which was secured with a custody seal. The sample cooler and completed chain-of-custody forms were relinquished to QROS in Raleigh, North Carolina.

2.3 Subsurface Conditions

The soils mostly consisted of dark brown to light brown, orange to yellow brown and reddish brown clayey, slightly sandy silt. Slight to strong petroleum odors were noted in borings MB-1 through MB-4. Elevated PID readings were reported in borings MB-1, MB-2, MB-3, MB-4, and MB-9 during the site investigation. The soil samples obtained from these borings were submitted from the interval with the highest PID reading. For borings with no elevated PID readings, soil samples were typically submitted from the deepest sampling interval in each boring.

3.0 LABORATORY ANALYSIS

The soil samples were submitted for rapid laboratory analysis of Gasoline Range Organics (GRO) and Diesel Range Organics (DRO). If detected petroleum (GRO and DRO) constituents exceeded the regulatory action level (10 mg/kg) then additional soil samples were submitted to Pace Analytical Services (Pace) in Huntersville, North Carolina for analysis of volatile organic compounds (VOCs) by EPA Method 8260 and semi-volatile organic compounds (SVOCs) by EPA Method 8270. Please refer to Appendix E for the laboratory analytical reports.

4.0 DATA EVALUATION

4.1 Soil Sample Analytical Results and Interpretation

Based on the laboratory results from QROS, diesel range organics were detected above the laboratory reporting limits in samples MB-1, MB-2, MB-4, MB-5 and MB-9 (Table 1). Gasoline range organics were detected above the laboratory reporting limits in samples MB-2 and MB-9. Samples MB-1, MB-2, MB-4 and MB-9 were submitted to Pace for analysis of VOCs or SVOCs because detected concentrations of gasoline and diesel range organics exceeded the 10 mg/kg regulatory action level. Sample MB-5 was not submitted to the laboratory for additional analysis

of VOCs and SVOCs; however, we consider sample MB-5 to have similar levels of petroleum constituents as samples MB-1, MB-4 and MB-9 due to similar GRO and DRO concentrations. No indications of petroleum constituents were detected in samples MB-3, MB-6, MB-7, MB-8, or MB-10 through MB-13.

Based on the laboratory results from Pace (Table 2), acetone was detected in samples MB-1, MB-4, and MB-9 at concentrations above laboratory reporting limits. According to the laboratory data, acetone is considered to be a laboratory artifact because one of the soil preservatives (sodium bisulfate) reacts with humic acid to produce ketones such as acetone.

Benzene was detected in soil samples MB-1, MB-2 and MB-4 at concentrations that slightly exceed its NCDENR Soil to Water MSCC. No other detected petroleum constituents in samples MB-1 and MB-4 exceeded the Soil to Water MSCCs. Various other volatile and semi-volatile petroleum-related compounds detected in soil sample MB-2 exceeded their respective Soil to Water MSCCs.

The highest concentrations of petroleum constituents detected on the site were noted in boring MB-2. Based on historical fueling operations at the William Moore property, boring MB-2 was located adjacent to a former fuel dispenser island and underground fuel supply lines. Terracon also detected petroleum constituents at lower concentrations in borings MB-1, MB-4, MB-5 and MB-9. Based on the laboratory data and sampling depths, Terracon estimates approximately 2,000 cubic yards (3,000 tons) of impacted soil may be removed for disposal. The estimated horizontal extent of petroleum impact is depicted on Exhibit 2.

5.0 CONCLUSIONS

The findings of this investigation are discussed below:

- The geophysical investigation did not identify probable metallic USTs in the area of investigation identified for this site; however, some areas of the site may contain buried debris.

- Thirteen soil borings were advanced to depths of approximately 10 feet bgs.

- Gasoline range organics were detected above the laboratory reporting limits in soil samples MB-2 and MB-9. The detected GRO concentration in sample MB-2 (271.7 mg/kg) exceeded the 10 mg/kg regulatory action level.

- Diesel range organics were detected above the laboratory reporting limits in samples MB-1, MB-2, MB-4, MB-5 and MB-9. These samples also exceeded the 10 mg/kg regulatory action level.

- Acetone, a laboratory artifact, was detected in soil samples MB-1, MB-4 and MB-9 at concentrations above laboratory reporting limits. The detection of acetone is not considered to be representative of the site.

- Benzene was detected in soil samples MB-1, MB-2 and MB-4 at concentrations that slightly exceed its NCDENR Soil to Water Maximum Soil Contaminant Concentration (MSCC). No other detected petroleum constituents in samples MB-1 and MB-4 exceeded the Soil to Water MSCCs. Various other volatile and semi-volatile petroleum-related compounds detected in soil sample MB-2 exceeded their respective Soil to Water MSCCs.

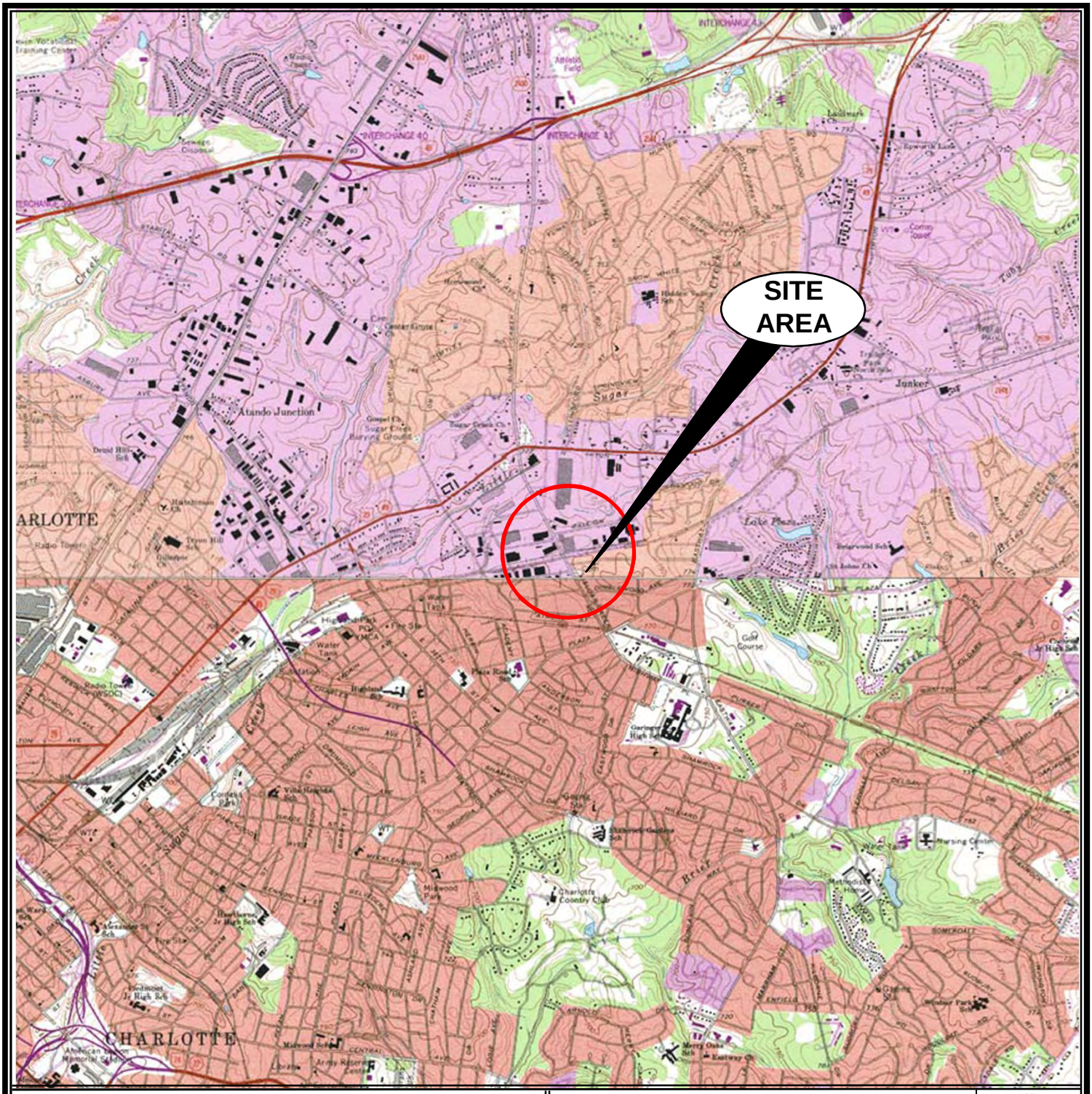
- The highest concentrations of petroleum constituents detected on the site were noted in boring MB-2. Based on historical fueling operations at the William Moore property, boring MB-2 was located adjacent to a former fuel dispenser island and underground fuel supply lines.

- Groundwater was not encountered in the soil borings advanced on the site.

- Based on planned ROW construction information provided by the NCDOT, petroleum impacted soil may be encountered at the site.

- Terracon estimates approximately 2,000 cubic yards (3,000 tons) of impacted soil may be removed for disposal from the site.

FIGURES
EXHIBIT 1 - TOPOGRAPHIC MAP
EXHIBIT 2 – SITE DIAGRAM WITH SOIL BORING LOCATIONS AND ANALYTICAL DATA



USGS TOPOGRAPHIC MAP

WILLIAM MOORE PROPERTY
830 E. SUGAR CREEK ROAD

CHARLOTTE, NORTH CAROLINA

Terracon

N

PROJECT NO.: 71137774	
DATE: December 2013	
DRAWN BY: ALF	
SCALE: 1" = 2000'	EXHIBIT NO. 1

REFERENCE: USGS Topographic Map; Derita, North Carolina Quadrangle; dated 1993; Charlotte East, North Carolina Quadrangle; dated 1967, photorevised 1988.

PROJECT REFERENCE NO.	EXHIBIT
41141.1.1 (U-5008)	2

SITE DIAGRAM WITH SOIL BORING LOCATIONS AND ANALYTICAL DATA

WILLIAM M MOORE PROPERTY
830 E SUGAR CREEK ROAD
MECKLENBURG COUNTY

LEGEND

- PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- PROPOSED RIGHT OF WAY LINE WITH IRON PIN AND CAP MARKER
- PROPOSED CONSTRUCTION EASEMENT
- PROPOSED EDGE OF TRAVEL
- PROPOSED CUT / FILL LINE
- PROPOSED PERMANENT UTILITY EASEMENT
- PROPOSED PERMANENT DRAINAGE EASEMENT
- PROPOSED CATCH BASIN
- PROPOSED DRAINAGE PIPING
- ESTIMATED SOIL CONTAMINATION
- SOIL AND/OR GROUNDWATER SAMPLE LOCATION

MB-1

TPH DRO	14.1 mg/kg
BENZENE	0.0068 mg/kg

MB-2

TPH GRO	271.7 mg/kg
TPH DRO	943.4 mg/kg
1-METHYLNAPHTHALENE	0.922 mg/kg
NAPHTHALENE (EPA 8270)	2.03 mg/kg
BENZENE	0.898 mg/kg
n-BUTYLBENZENE	7.54 mg/kg
sec-BUTYLBENZENE	3.58 mg/kg
ETHYLBENZENE	53.5 mg/kg
ISOPROPYLBENZENE (CUMENE)	5.6 mg/kg
p-ISOPROPYLTOLUENE	5.36 mg/kg
NAPHTHALENE (EPA 8260)	12.6 mg/kg
n-PROPYLBENZENE	21.4 mg/kg
TOLUENE	9.78 mg/kg
1,2,4-TRIMETHYLBENZENE	140 mg/kg
1,3,5-TRIMETHYLBENZENE	50.5 mg/kg
XYLENE (TOTAL)	199 mg/kg

MB-3
NO CONSTITUENTS REPORTED ABOVE STANDARD[1,2]

MB-4

TPH DRO	10.4 mg/kg
BENZENE	0.0159 mg/kg

MB-5

TPH DRO	12.1 mg/kg

MB-6
NO CONSTITUENTS REPORTED ABOVE STANDARD[1,2]

MB-7
NO CONSTITUENTS REPORTED ABOVE STANDARD[1,2]

MB-8
NO CONSTITUENTS REPORTED ABOVE STANDARD[1,2]

MB-9

TPH DRO	18 mg/kg

MB-10
NO CONSTITUENTS REPORTED ABOVE STANDARD[1,2]

MB-11
NO CONSTITUENTS REPORTED ABOVE STANDARD[1]

MB-12
NO CONSTITUENTS REPORTED ABOVE STANDARD[1]

MB-13
NO CONSTITUENTS REPORTED ABOVE STANDARD[1]

NOTES:

1. MAXIMUM SOIL CONTAMINANT CONCENTRATION LEVELS (MSCCs)
2. NCDENR UST SECTION ACTION LEVEL

0 60 120
FEET

TABLES

TABLE 1 – SOIL SAMPLING ANALYTICAL RESULTS SUMMARY (GRO AND DRO)

TABLE 2 – SOIL SAMPLING ANALYTICAL RESULTS SUMMARY (VOCs AND SVOCs)

TABLE 1
Soil Sampling Analytical Results Summary
VOCs and SVOCs
NCDOT Project U-5008 - Charlotte - Sugar Creek Grade Separation
Parcel: William M. Moore Property

Analytical Method →				EPA 8260	EPA 8260	EPA 8260	EPA 8260	EPA 8260	EPA 8260	EPA 8260	EPA 8260	EPA 8260	EPA 8260	EPA 8260	EPA 8260	EPA 8260	EPA 8270	EPA 8270	EPA 8270
Sample ID#	PID (ppm)	Contaminant of Concern → Date Collected (mm/dd/yy)	Sample Depth (ft BGS)	Acetone	Benzene	n-Butylbenzene	sec-Butylbenzene	Ethylbenzene	Isopropylbenzene (Cumene)	p-Isopropyltoluene	Naphthalene	n-Propylbenzene	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Xylene (Total)	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene
MB-1	26.3	11/19/13	5-10	0.368	**0.0068**	ND	ND	0.0074	ND	ND	ND	ND	ND	ND	ND	0.0199	ND	ND	ND
MB-2	1102	11/19/13	0-5	ND	**0.898**	**7.54**	**3.58**	**53.5**	**5.6**	**5.36**	**12.6**	**21.4**	**9.78**	**140**	**50.5**	**199**	**0.922**	2.01	**2.03**
MB-4	38.6	11/19/13	0-5	0.237	**0.0159**	ND	ND	0.049	0.0049	ND	0.0059	0.0143	ND	0.0505	0.0373	0.13	ND	ND	ND
MB-9	6.8	11/19/13	5-10	0.281	ND	0.0171	0.0111	0.0114	0.0184	ND	0.0236	0.0523	0.0061	0.0066	ND	0.0256	ND	ND	ND
Soil-to-Water Maximum Contaminant Concentration (Soil mg/kg)				24	0.0056	4.3	3.3	4.9	1.7	0.12	0.16	1.7	4.3	8.5	8.3	4.6	0.004	3.6	0.16
Residential Soil Cleanup Levels (mg/kg)				14,000	18	626	626	1,560	1,564	100	313	626	1,200	782	782	3,129	20	63	313
Industrial/Commercial Soil Cleanup Levels (mg/kg)				360,000	164	16,350	16,350	40,000	40,880	4,000	8,176	16,350	32,000	20,440	20,440	81,760	100	1,635	8,176

- ND = Not Detected in concentrations above the reporting limit.
- PID = Photo-Ionization Detector
- ft. BGS = feet below ground surface
- Laboratory results reported in milligrams per kilogram (mg/kg).
- Boldface type and yellow shading indicate sample contaminant exceeds Soil-to-Water MCCs

TABLE 2
Soil Sampling Analytical Results Summary
GRO and DRO
NCDOT Project U-5008 - Charlotte - Sugar Creek Grade Separation
Parcel: William M. Moore Property

Analytical Method →						
		Contaminant of Concern →				
Sample ID#	Sample Location	Date Collected (mm/dd/yy)	Sample Depth (ft BGS)	GRO (C5-C10)	DRO (C10-C35)	TPH (C5-C35)
MB-1	26.3	11/19/13	5-10	ND	**14.1**	**14.1**
MB-2	1102	11/19/13	0-5	**271.7**	**943.4**	**1215.1**
MB-3	59.1	11/19/13	0-5	ND	ND	ND
MB-4	38.6	11/19/13	0-5	ND	**10.4**	**10.4**
MB-5	2.9	11/19/13	5-10	ND	**12.1**	**12.1**
MB-6	0.0	11/19/13	5-10	ND	ND	ND
MB-7	0.0	11/19/13	5-10	ND	ND	ND
MB-8	0.0	11/19/13	5-10	ND	ND	ND
MB-9	6.8	11/19/13	5-10	1	**18**	**19**
MB-10	0.0	11/20/13	5-10	ND	ND	ND
MB-11	0.0	11/21/13	5-10	ND	ND	ND
MB-12	0.0	11/22/13	5-10	ND	ND	ND
MB-13	0.0	11/19/13	5-10	ND	ND	ND
NCDENR Regulatory Action Limit (mg/kg)				10	10	10

- ND = Not Detected in concentrations above the reporting limit.
- PID = Photo-Ionization Detector
- ft. BGS = feet below ground surface
- Laboratory results reported in milligrams per kilogram (mg/kg).
- Boldface type and yellow shading indicate sample contaminant exceeds laboratory limit.

APPENDIX A
REGULATORY FILE DOCUMENTATION

NCDENR

North Carolina Department of Environment and Natural Resources

Beverly Eaves Perdue, Governor

Division of Waste Management
UST Section

Dee Freeman, Secretary
Dexter R. Matthews, Director

July 25, 2011

BP Products North America, Inc.
4850 E. 49th Street
MBC-3 Room 155C
Cuyahoga Heights, OH 44125
Attention: Greg Frisch

Re: **Notice of No Further Action**
15A NCAC 2L .0407(d)
Risk-based Assessment and Corrective Action
for Petroleum Underground Storage Tanks

Gardner's Gulf -1
830 East Sugar Creek Road
Charlotte, North Carolina 28205
Mecklenburg County
Incident number: **5477**
Risk Classification: Low

Gardner's Gulf -2
830 East Sugar Creek Road
Charlotte, North Carolina 28205
Mecklenburg County
Incident number: **36889**
Risk Classification: Low

Mr. Frisch:

The Limited Site Assessment Report received by the UST Section, Mooresville Regional Office on June 24, 2011 has been reviewed. The UST Section determines that no further action is warranted for the two incidents located at 830 East Sugar Creek Road. This determination shall apply unless the UST Section later finds that the discharge or release poses an unacceptable risk or a potentially unacceptable risk to human health or the environment. Pursuant to Title 15A NCAC 2L .0407(a) you have a continuing obligation to notify the Department of any changes that might affect the risk or land use classifications that have been assigned.

As groundwater contamination exceeds the groundwater quality standards established in Title 15A NCAC 2L .0202, and soil contamination exceeds the lower of the soil-to-groundwater or residential MSCCs, you must file an approved Notice of Residual Petroleum (NORP) with the Register of Deeds in the county in which the release is located. A certified copy of the deed filing must be submitted to the UST Section within 30 days of receipt of this letter.

This No Further Action determination will not become valid until the UST Section receives a certified copy of the filed Notice of Residual Petroleum. The Notice must be prepared in accordance with instructions and format found at http://portal.ncdenr.org/web/wm/ust/guidance.

The NORP must be sent to this regional office of the UST Section within 30 days of the date of this letter for approval and notarization. The approved and notarized NORP will be sent back to you and the notice must then be filed with the Register of Deeds in Mecklenburg County. A certified copy of the filed NORP must be submitted to this office within 30 days of its return to you.

As groundwater contamination exceeds the groundwater quality standards established in Title 15A NCAC 2L .0202 and soil contamination exceeds the lower of the soil-to-groundwater or residential MSCCs, public notice in accordance with 15A NCAC 2L .0409(b) also is required. Thus, within 30 days of receipt of this letter, a copy of the letter must be provided by certified mail, or by posting in a prominent place, if certified mail is impractical, to the local health director, the chief administrative officer of each political jurisdiction in which the contamination occurs, all property owners and occupants within or contiguous to the area containing contamination, and all property owners and occupants within or contiguous to the area where the contamination is expected to migrate.

Within 60 days of receiving this no further action letter, this office must be provided with proof of receipt of the copy of the letter or of refusal by the addressee to accept delivery of the copy of the letter or with a description of the manner in which the letter was posted.

This No Further Action determination will not become valid until the public notice requirements are completed. Interested parties may examine the incident file by contacting this regional office and may submit comments on the site to the regional office at the address or telephone number listed below.

This No Further Action determination applies only to the subject incident; for any other incidents at the subject site, the responsible party must continue to address contamination as required.

If you have any questions regarding this notice, please contact me at the address or telephone number listed below.

Sincerely,

Daniel Bowser, PG
Hydrogeologist
Mooresville Regional Office
dan.bowser@ncdenr.gov
(704) 235-2172

CC: Amanda Taylor, PG, URS (pdf through email 7/25/2011)

developed until the development water was free and clear of suspended sediment. Monitoring well construction details for newly installed monitoring wells are summarized on **Table 1**.

2.2 SOIL SAMPLING AND ANALYSIS PROCEDURES

Soil samples were collected on March 7, 2010 from the borings of monitoring wells MW-1 and MW-3 for laboratory analysis. Soil samples were collected approximately every five feet starting at 6 ft bgs to the observed top of water. Based on the NC DENR LSA Guidelines, soil samples were not to be collected in backfill material or the saturated zone, and due to the shallow nature of the water table in the area, only two soil samples were submitted for laboratory analysis. Soil samples from MW-1 and MW-3 collected from approximately 9 to 11 ft bgs were submitted for laboratory analysis. Due to the tight soil matrix it appeared that the water table was deeper than 11 ft bgs at the time soil samples were collected. However, following completion of the wells, the apparent water table is approximately 5 to 8 ft bgs therefore the soil samples may have been collected in saturated soils. Samples were analyzed for volatile organic compounds (VOCs) by Environmental Protection Agency (EPA) Method 8260B and volatile petroleum hydrocarbons (VPH) by Massachusetts Department of Environmental Protection (MADEP) VPH.

Sample documentation information included sample labels and chain-of-custody forms. After each sample was collected, the chain-of-custody record was completed. The chain-of-custody accompanied the samples during storage and transport until they were relinquished to the analytical laboratory's receiving agent. All samples collected were shipped via Federal Express to Accutest Laboratories, Inc. (Accutest) in Orlando, Florida, a NC DENR approved laboratory (State Certification No. 573). Soil analytical results are provided on **Table 3**. A copy of the laboratory report is provided as **Appendix C**. Analytical results are discussed in **Section 4**.

2.3 TOC ELEVATION SURVEY

A subsequent top-of-casing (TOC) survey was conducted on March 8, 2011 to determine TOC elevations for newly installed monitoring wells MW-1, MW-2, and MW-3. For well construction details and TOC elevations see **Table 1**.

3.1 SAMPLING PROCEDURES

A comprehensive groundwater monitoring event was conducted on March 11, 2011, during which samples from all Site monitoring wells were collected. Monitoring activities included measuring water levels in all Site monitoring wells with an oil/water interface probe prior to purging and sampling the wells. Depth to groundwater and groundwater elevation data for the sampling event are provided in **Table 4**. The results of those measurements are indicated on **Figure 4**.

Prior to purging, pH, temperature, specific conductance and dissolved oxygen (DO) were measured using a pre-calibrated Yellow Springs Instruments YSI-556® meter. A summary of groundwater quality field parameters is presented on **Table 5**.

The oil/water interface probe and the YSI-556® meter were cleaned in accordance with appropriate decontamination guidelines prior to use in each well. Site personnel wore new nitrile gloves, changed between each well, for sample collection.

Prior to collecting a sample, each well was purged of three well volumes of groundwater or until dry using a new, bottom-loading disposable polyethylene bailer and nylon line. If the monitoring well was purged dry it was allowed adequate time to recover before collecting a sample.

Groundwater from each well sampled was transferred to pre-labeled, laboratory-prepared containers and promptly placed on ice in a cooler with a temperature and trip blank. The samples were shipped under chain-of-custody via overnight courier to Accutest in Orlando, Florida.

3.2 ANALYSIS PROCEDURES

Samples from MW-1, MW-2, and MW-3 were analyzed for VOCs by Standard Methods (SM) 6200B; semi-volatile organic compounds (SVOCs) by U.S. EPA Method 625; VPH and EPH by MADEP; and extractable lead by SW846 6010C. The results of the laboratory analyses are summarized in **Table 6** and on **Figure 5**. Copies of the laboratory reports are provided in **Appendix C**.

3.3 QUALITY ASSURANCE/QUALITY CONTROL

URS validated analytical results from the March 2011 soil and groundwater monitoring events at the Site. The data review was modeled after the *USEPA National Functional Guidelines (NFGs) for Superfund Organic and Inorganic Methods Data Review* (EPA, June 2008 and January 2010, respectively). Qualitative and quantitative limitations associated with the analytical results were determined based on the results of specific quality control criteria. Accuracy was determined from the review of spike recoveries. Precision was based on the evaluation of laboratory duplicate results. Representativeness was evaluated from the review of holding times and blank

data. Sample results have been qualified based on the results of the data review process. Qualified data are valid and usable for their intended purpose. The results on **Tables 3** and **6** and **Figure 5** reflect the results of the data qualification. Copies of the laboratory analytical reports are provided in **Appendix C**.

3.4 INVESTIGATION DERIVED WASTE

Investigation derived waste including soil cuttings and groundwater generated from the monitoring well installation were containerized in 55 gallon drums and stored onsite. The drum containing purge/development water from newly installed monitoring wells were transported to the Shamrock Environmental Corporation (Shamrock) facility in Browns Summit, North Carolina for disposal. The soil drums were transported by Shamrock to the Palmetto Landfill in Wellford, SC for disposal. The waste disposal manifests for soil and groundwater are provided in **Appendix D**.

Table 3
Summary of Soil Sample Results
Former Gulf Service Station No. 16102005 (Gardner's Gulf)
830 East Sugar Creek Road
Charlotte, Mecklenburg County, NC

Sample Identification: / Sample Depth (ft bgs): / Sample Date:	NC MSCC - Soil-to-Water	NC MSCC - Residential	NC MSCC - Industrial	MW-01 (9-11)* 9-11 3/7/2011	MW-03 (9-11) 9-11 3/7/2011
VOC (SW-846 8260B)					
Acetone	24	14000	360000	0.0575	< 0.014
Benzene	0.0056	18	164	0.171	< 0.0011
Ethylbenzene	4.9	1560	40000	0.103	< 0.00072
Isopropyl benzene	1.7	1564	40880	0.0083 J	< 0.0008 UJ
Isopropyl ether	0.37	156	4088	0.0019 J	< 0.00072
Methyl tert-butyl ether	0.091	350	3100	1.6 J	< 0.0014
Naphthalene	0.16	313	8176	0.007	< 0.0014
n-Propylbenzene	1.7	626	16350	0.0166	< 0.001
Toluene	4.3	1200	32000	0.0025 J	< 0.00087
1,2,4-Trimethylbenzene	8.5	782	20440	0.0501	< 0.0008
1,3,5-Trimethylbenzene	8.3	782	20440	0.005	< 0.00094
Xylenes (Total)	4.6	3129	81760	0.0249	< 0.0023
General Chemistry					
Percent solids (%)	NA	NA	NA	87.4	92.7

Notes:

Result exceeds Soil to Water Maximum Contaminant Concentration

Result exceeds Residential Clean-up Level

Result exceeds Industrial/Commercial Clean-up Level

< - Not detected at the specified detection limit

ft bgs - Feet below ground surface

J - Estimated value

NA - Not applicable

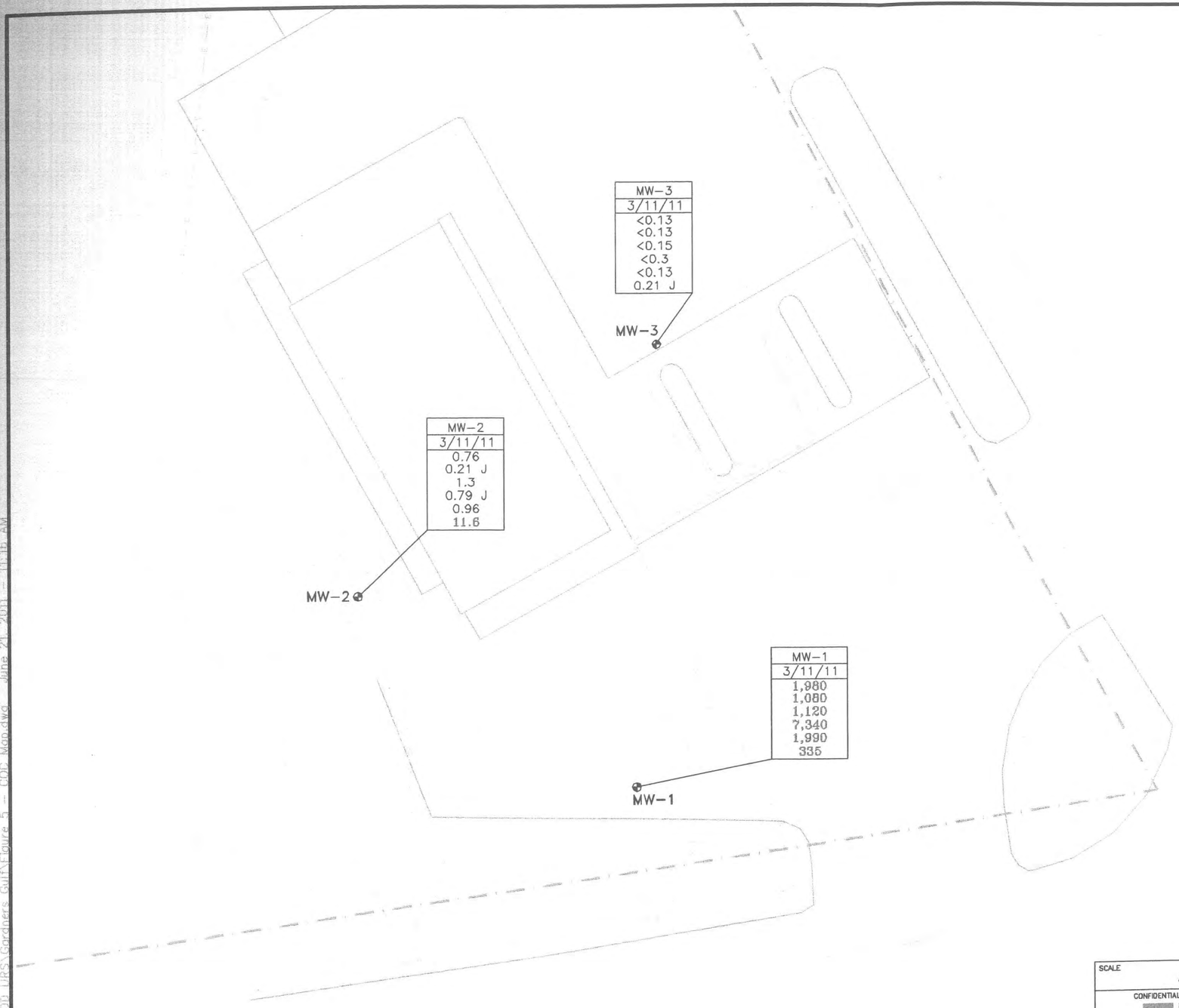
UJ - Not detected and the limit is estimated

VOC - Volatile organic compounds

This table presents the results of all analytes detected. Sample results have been qualified by URS based on the results of the data review process, which is modeled after the *USEPA Contract Laboratory Program National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (EPA, June 2008). All results are reported on a dry weight basis. VOC results are reported in milligrams per kilogram (mg/Kg), while percent solids data are reported as a percentage (%).

Maximum Soil Contaminant Concentration (MSCC), effective January 14, 2010, obtained from the NCDENR, Division of Waste Management, UST Section. A bold border indicates the concentration is greater than the Action Level.

* Sample MW-01 (9-11) is believed to be a saturated soil sample and should be dismissed.



LEGEND

	PROPERTY LINE
	OVERHEAD ELECTRIC LINE
	UNDERGROUND GAS LINE
	UNDERGROUND ELECTRIC LINE
	UNDERGROUND CABLE/FIBER OPTIC
	UNDERGROUND WATER LINE
UST	UNDERGROUND STORAGE TANK
⊕	GROUNDWATER MONITORING WELL
J	ESTIMATED VALUE
BOLD	EXCEEDS NC2L STANDARD

MW-2		NC2L
3/11/11		
0.76	BENZENE	1
0.21 J	TOLUENE	600
1.3	ETHYLBENZENE	600
0.79 J	XYLENES (Total)	500
0.96	MTBE	20
11.6	NAPHTHALENE	6

ALL CONCENTRATIONS SHOWN ARE IN ug/L.

0 20

APPROX. SCALE, ft.

SCALE: AS SHOWN	DESIGNED BY	DATE	Figure 5. COC Map BP Gardners Gulf 830 E. Sugar Creek Road Charlotte, North Carolina
CONFIDENTIAL–ALL RIGHTS RESERVED–PROPERTY OF URS RDU, NORTH CAROLINA 27560	DRAWN BY: TSH	DATE: 03MAY11	
	CHECKED BY: BM	DATE: 03MAY11	CONTRACT NO.: 38436633 / DRAWING NO.: FIGURE-5 / REV.: 0
	APPROVED BY: BM	DATE: 03MAY11	

P:\BP\CADD URS\Gardners Gulf\Figure 5 – COC Map.dwg June 21, 2011 – 11:16 AM

INITIAL ABATEMENT ACTION REPORT

Former Gulf Service Station No. 16142005 (Gardner's Gulf)
830 E. Sugar Creek Road
Charlotte, Mecklenburg County, North Carolina
Facility ID: 0-014468

Prepared for:
Atlantic Richfield Company (ARCO)
a BP Products North America Inc. affiliated company
4850 E. 49th St
MBC-3 Room 155C
Cuyahoga Heights, OH 44124

February 3, 2011

Prepared by:

URS Corporation – North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, North Carolina 27560

URS Project No. 38436630

APPENDIX A

TABLES

3.	Primary Contact Person	Greg Frisch, BP (216) 271-8740
4.	Primary Consultant	URS Corporation – North Carolina 1600 Perimeter Park Drive, Suite 400 Morrisville, NC 27560 (919) 461-1100
5.	Closure Subcontractor	A&D Environmental P.O. Box 484 High Point, NC 27261
6.	Analytical Laboratory	Lancaster Laboratories 2524 New Holland Pike Lancaster, PA 17605

2.3 UST Information

Table 1 summarizes the information regarding the five USTs that were closed at the Site. The tanks were permanently closed through their removal and off-site disposal from December 6 - 14, 2010.

2.4 Site Characteristics

2.4.1 Past Release Information

The Former BP 16142005 (Gardner's Gulf) located at the Site was issued an Incident Number of 05477 due to a prior release of petroleum associated with an earlier UST system. The release was discovered during a UST closure event in 1990. As shown in **Table 1**, a series of USTs have been present on Site. According to NC DENR UST registration records, three 6,000-gallon gasoline USTs were present on the site from 1971 to 1990 and three 8,000-gallon USTs were present from 1990 to 2010.

In January 1990, Petroleum Environmental Consultants (PEC) removed the three 6,000-gallon USTs. Several soil samples were collected during the UST removal. Three soil samples indicated concentrations of total petroleum hydrocarbons (TPH) above the UST Section Action Level of 10 mg/kg. The January 1990 UST Closure Report indicates the presence of a waste oil UST and fuel oil UST on the west side of the store building. However, the report makes no mention of the removal of the waste oil/fuel oil USTs. Following the 1990 UST removal, NC DENR opened incident number #5477 for the UST release associated with the January 1990 UST removal. No additional information is available for the 6,000-gallon USTs or incident number #5477. Select documentation from historic investigations is provided in **Appendix A**.

2.4.2 Facility Status

The Site is currently an unused parcel with the former store building and gasoline dispenser canopy remaining. Following the 1990 UST removal, BP did not own or operate tanks at the Site. New USTs were installed in 1990 by the most recent tenant, Mr. Mike Gardner, of Gardner Gulf & Discount Beverage. According to conversations between URS personnel and the property owner, Mr. William Moore, the facility discontinued selling petroleum products in 2009 at which time the above ground components to the gasoline, kerosene, and diesel dispensers were removed. In addition, several above ground storage tanks (ASTs) were observed during a 2008 Site visit by URS that were no longer present during the 2010 removal activities. It is unknown what was contained in the ASTs, but it is inferred that at a minimum diesel fuel and kerosene fuel that serviced the former diesel and kerosene dispensers were stored in the ASTs.

2.4.3 Surrounding Property

The surrounding property is zoned industrial. The property is located at the northwest of the intersection of E. Sugar Creek Road and Northmore Street. **Figure 1** shows the Site location with respect to streets and topographic landmarks.

2.4.4 Site Setting

The Site is located within the Piedmont physiographic province, which is characterized by regolith, typically saprolite, overlying fractured bedrock. Regolith at the Site is saprolite that consists primarily of silty to clayey sand. Bedrock in the Charlotte, North Carolina area is mapped within the Charlotte Belt lithologic division of the Piedmont, which is dominated by igneous and meta-igneous rock. According to the *Geologic Map of North Carolina* (NC Geological Survey, 1985), bedrock beneath the site mainly consists of metadiorite and metagabbro. In the vicinity of the former UST basin, fill material consisting of reddish brown silty clay and pea gravel was observed in the excavation. Groundwater was encountered at approximately 14 feet below ground surface (ft bgs) in the UST basin.

3.0 CLOSURE PROCEDURES

3.1 Preparation for Closure

Notice of UST closure activities was provided to the NCDENR Mooresville Regional Office by BP on October 17, 2010 by submitting a UST-3, Notice of Intent: UST Permanent Closure or Change-in-Service form. The UST-3 form was prepared based on the 2010 NOV issued to Mr. Moore by NCDENR. Copies of all submittals to the NCDENR regarding this UST system are provided in **Appendix B**.

3.3.5 Dispenser Excavation

Dispenser closure samples were collected on December 7, 2010 at 2 ft bgs. One soil sample was collected from below each dispenser. Additional excavation was not conducted at the dispensers due to the presence of the dispenser island canopy and the right of way for Northmore Street. Soil impacts will be addressed during the limited site assessment (LSA).

3.3.6 Disposal of Impacted Soil

Approximately 830 tons of soils were removed during the excavation of the USTs and associated piping. Waste Manifests are located in **Appendix D**.

3.4 Site Restoration

The excavation areas were backfilled with clean sand and compacted with the track-hoe bucket to match the existing grade. The backfill was topped with a 3-inch layer of ABC crushed stone and compacted with the track-hoe bucket.

4.0 SITE INVESTIGATION

4.1 Field Screening of Soils

Soils were screened in the field using a PID. The PID was fresh air calibrated at the start of each workday according to the manufacturer's direction. Discrete soil samples collected from the excavated areas were placed in resealable plastic bags. The bags were sealed and the headspace within the bag was allowed to equilibrate for approximately 5 to 10 minutes. The probe of the PID was then inserted into the headspace of the bag and the concentration of volatile vapors in parts per million (ppm) present in the headspace was recorded in the field log book. Field screening results are provided in **Table 2**.

4.2 Soil Sampling Locations and Sampling Procedures

4.2.1 Gasoline UST Field Excavation

Thirteen (13) closure soil samples were collected from between 10 and 12 ft bgs during the removal of the gasoline USTs. Due to the presence of a concrete pad in the gasoline UST excavation, 12 base samples were collected from a depth of approximately 10 to 12 ft bgs around the edge of the concrete pad and one base sample was collected below the middle of the concrete pad. Following the over excavation of the gasoline UST, three additional closure samples were collected at approximately 12 ft bgs. Closure soil samples are shown on **Figure 3** and over excavation samples on **Figure 4**.

4.2.2 Waste Oil/Fuel Oil UST Field Excavation

Four closure soil samples were collected at 8 ft bgs during the removal of the waste oil and fuel oil USTs. Following the over excavation of the gasoline UST, five additional closure samples were collected at approximately 9 to 10 ft bgs. Closure soil samples are shown on **Figure 3** and over excavation samples on **Figure 4**.

4.2.3 Ancillary Piping and Dispenser Excavation

Ten soil samples were collected along the product lines and seven were collected from beneath the former dispensers at approximately 2 ft bgs. Following the over excavation of the product lines, two additional closure samples were collected from the over excavation at approximately 7 ft bgs. Closure soil samples are shown on **Figure 3** and over excavation samples on **Figure 4**.

All soil samples were collected in laboratory-supplied glassware and were placed on ice in an insulated cooler for delivery to Lancaster Laboratory (Lancaster) in Lancaster, PA. The soil closure samples were analyzed by USEPA Method 8015B for gasoline range organic (GRO) and/or diesel range organics (DRO) TPH and/or chromium and lead by USEPA Method 6010C. Over excavation samples were analyzed by USEPA Method 8260 for VOCs, USEPA Method 8270 for SVOCs and MADEP extractable petroleum hydrocarbons (EPH) and volatile petroleum hydrocarbons (VPH) and EPA Method 6010C for chromium and lead.

4.3 Soil Sampling Results

The soil sampling results for the closure samples are summarized in **Table 3** and **Figure 3**. Several closure samples were above the UST Section Action Levels:

- The closure samples collected from several locations along the western, northern and southern sidewall of the gasoline UST excavation reported GRO concentrations above the UST Section Action Level of 10 mg/kg.
- The closure samples for dispensers 1 through 6 (D1-D6) were above the UST Section Action Level for TPH-GRO.
- The closure sample for the diesel dispenser (Diesel) was above the UST Section Action Levels for TPH-GRO and TPH-DRO.
- The waste oil UST closure samples were above the UST Section Action Levels for TPH-GRO and TPH-DRO. The WO-E-8 closure sample was above the UST Section Action Level of 27 mg/kg for chromium.

- The fuel oil UST closure samples were above the UST Section Action Level for TPH-DRO.

- The product piping closure samples OP-2, P1-2, P2-2, and P3-2 were above the UST Section Action Levels for TPH-GRO.

Based upon analytical findings, a release was reported to NC DENR on December 16, 2010. Form UST-61, 24-Hour Release Notification is included in **Appendix B**.

The over excavation samples that were collected had several petroleum constituents detected above the soil-to-groundwater MSCC:

- W-OE-12 contained concentrations of benzene and methyl tert butyl ether (MTBE) above the MSCC.

- S-OE-12 contained concentrations of benzene, xylenes, MTBE and naphthalene above the MSCC.

- E-OE-12 contained concentrations of MTBE and naphthalene above the MSCC.

- The over excavation samples collected from the waste oil/fuel oil excavation were below the MSCCs for all constituents analyzed except chromium.

- The product piping over excavation samples (P1-OE-4, P4-OE-4) exceeded the MSCC for benzene and MTBE. P4-OE-4 also exceeded the MSCC for naphthalene.

Table 4 and **Figure 4** show the analytical results for the over excavation samples. Copies of the laboratory analytical report(s) are provided in **Appendix E**.

4.4 Quality Control Measures

All samples for laboratory analysis were collected according to NC DENR approved methods using new disposable nitrile gloves and were transferred to laboratory-supplied containers immediately upon collection. The containers were labeled with the sample location information, including date, time of collection, and requested analyses. The filled containers were placed on ice to chill pending delivery to the laboratory. Samples were shipped via overnight courier for delivery to Lancaster Laboratories, under chain of custody procedures.

5.0 SUMMARY

Five petroleum underground storage tanks were permanently closed by removal at the Former BP 16142005 (Gardner's Gulf) located at 830 E. Sugar Creek Road, Charlotte, Mecklenburg County, North Carolina. Closure activities were conducted from December 6 to 14, 2010.

A total of 8,700 gallons of liquid was removed from the USTs for off-site disposal. An additional 15,300 gallons of petroleum-impacted water was removed from the UST field. During the removal of the tanks, field observations and field screening indicated the presence of petroleum-impacted soils in the overburden adjacent to several of the USTs, associated piping and dispensers. Excavation activities were conducted in an attempt to remove petroleum-impacted soils from the area of the product lines and USTs. A total of 830 tons of soil was removed from the UST closure event.

Laboratory analytical results confirmed the presence of TPH impacted soils within the UST basin. Petroleum constituents in the over excavation samples from the UST excavations and product lines were reported above soil-to-groundwater MSCCs for benzene, xylenes, MTBE, naphthalene and chromium.

A 24-hour Release Notice has been submitted to NC DENR and an LSA is being prepared. Results of the LSA will be submitted to NC DENR as soon as possible.

Table 1
Summary of Underground Storage Tank Information
Former Gulf Service Station No. 16142005 (Gardner's Gulf)
830 E. Sugar Creek Road, Charlotte, NC

Tank Number	Current or Last Content	Capacity (gallons)	Construction Material	Installation Date	UST Removal Date	Associated UST Release
1	Gasoline	6,000	Steel	May-71	1/15/1990	Y
2	Gasoline	6,000	Steel	May-71	1/15/1990	Y
3	Gasoline	6,000	Steel	May-71	1/15/1990	Y
4	Diesel	500	U	U	1/15/1990	U
5	Kerosene	500	U	U	1/15/1990	U
6	Gasoline (regular)	8,000	Fiberglass	May-90	12/7/2010	U
7	Gasoline (midgrade)	8,000	Fiberglass	May-90	12/7/2010	U
8	Gasoline (premium)	8,000	Fiberglass	May 1990	12/7/2010	U
9	Waste Oil	550	Steel	U	12/7/2010	U
10	Fuel Oil	550	Steel	U	12/7/2010	U

U - Unknown
Y - Yes
Data generated prior to December 6, 2010 was taken from historical documentation.

Table 2
Former Gulf Service Station No. 16142005 (Gardner's Gulf)
Field Screening Results
830 E. Sugar Creek Road, Charlotte, NC

Sample ID	Date Collected	Depth of Sample	PID (ppm)	Comments
Gasoline UST Field				
EN-10	12/07/10	10	12.3	sidewall sample
E-10	12/07/10	10	9.6	sidewall sample
ES-10	12/07/10	10	21.3	sidewall sample
SE-12	12/08/10	12	193	sidewall sample
S2-12	12/08/10	12	68.0	sidewall sample
S1-12	12/08/10	12	45.3	sidewall sample
SW-12	12/08/10	12	124	sidewall sample
WS-12	12/08/10	12	27.8	sidewall sample
W-12	12/08/10	12	224	sidewall sample
WN-12	12/08/10	12	313	sidewall sample
NW-12	12/08/10	12	102	sidewall sample
NE-12	12/08/10	12	24.9	sidewall sample
MB-12	12/08/10	12	55.8	middle of base sample below concrete pad
W-12	12/09/10	12	24.0	overexcavation sidewall sample
S-12	12/09/10	12	328	overexcavation sidewall sample
Waste Oil/Fuel Oil UST Field				
WO-W-8	12/08/10	8	53.8	waste oil sidewall
WO-E-8	12/08/10	8	72.1	waste oil sidewall
FO-W-8	12/08/10	8	39.4	fuel oil sidewall
FO-E-8	12/08/10	8	89.5	fuel oil sidewall
WO-B-OE-10	12/09/10	10	26.8	waste oil overexcavation base sample
WO-N-OE-9	12/09/10	9	12.1	waste oil overexcavation sidewall sample
WO-S-OE-9	12/09/10	9	0.3	waste oil overexcavation sidewall sample
WO-W-OE-9	12/09/10	9	1.9	waste oil overexcavation sidewall sample
WO-E-OE-9	12/09/10	9	0.3	waste oil overexcavation sidewall sample
Dispensers				
D-1	12/07/10	2	350	dispenser sample 2' below dispenser
D-2	12/07/10	2	516	dispenser sample 2' below dispenser
D-3	12/07/10	2	397	dispenser sample 2' below dispenser
D-4	12/07/10	2	131	dispenser sample 2' below dispenser
D-5	12/07/10	2	223	dispenser sample 2' below dispenser
D-6	12/07/10	2	553	dispenser sample 2' below dispenser
DIESEL	12/08/10	2	61.8	diesel dispenser sample 2' below dispenser

Table 2
Former Gulf Service Station No. 16142005 (Gardner's Gulf)
Field Screening Results
830 E. Sugar Creek Road, Charlotte, NC

Sample ID	Date Collected	Depth of Sample	PID (ppm)	Comments
Product Lines				
P1-2	12/09/10	2	99.1	product line sample, 2' below product line
P2-2	12/09/10	2	68.3	product line sample, 2' below product line
P3-2	12/09/10	2	57.3	product line sample, 2' below product line
P4-2	12/09/10	2	61.9	product line sample, 2' below product line
P5-2	12/09/10	2	36.8	product line sample, 2' below product line
P6-2	12/09/10	2	35.7	product line sample, 2' below product line
P7-2	12/09/10	2	44.6	product line sample, 2' below product line
P8-2	12/09/10	2	351	product line sample, 2' below product line
P9-2	12/09/10	2	17.5	product line sample, 2' below product line
OP1-2	12/09/10	2	351	product line sample, 2' below product line
P1-OE-4	12/09/10	4	26.0	product line overexcavation sample, 4' below product line
P4-OE-4	12/09/10	4	42.8	product line overexcavation sample, 4' below product line

Notes
ppm - parts per million
PID - Photoionization detector

Table 3
Former Gulf Service Station No. 16142005 (Gardner's Gulf)
Closure Soil Sample Results
830 E. Sugar Creek Road, Charlotte, NC

Parameter		TPH GRO	TPH DRO	CHROMIUM	LEAD
Method		SW-846 8015	SW-846 8015	SM-20 2540	SM-20 2540
Units		mg/kg	mg/kg	mg/kg	mg/kg
NCDENR Action Level		10	10	27	270
Sample ID	**Date Collected**				
Gasoline UST Field					
EN-10	12/07/10	1.1 J			
E-10	12/07/10	0.74 J			
ES-10	12/07/10	0.61 J			
SE-12	12/08/10	3.8			
S2-12	12/08/10	1.1 J			
S1-12	12/08/10	**15**			
SW-12	12/08/10	**1,300**			
WS-12	12/08/10	2.2			
W-12	12/08/10	**47**			
WN-12	12/08/10	**1,100**			
NW-12	12/08/10	**17**			
NE-12	12/08/10	3.5			
MB-12	12/08/10	0.76 J			
Waste Oil/Fuel Oil UST Field					
WO-W-8	12/08/10	**200**	**480**	26.4	55.1
WO-E-8	12/08/10	**56**	**420**	**60.2**	21.7
FO-W-8	12/08/10		**91**		
FO-E-8	12/08/10		**130**		
Dispensers					
D-1	12/07/10	**2,100**			
D-2	12/07/10	**2,400**			
D-3	12/07/10	**1,700**			
D-4	12/07/10	**1,100**			
D-5	12/07/10	**740**			
D-6	12/07/10	**1,500**			
DIESEL	12/08/10	**260**	**12,000**		

Table 3
Former Gulf Service Station No. 16142005 (Gardner's Gulf)
Closure Soil Sample Results
830 E. Sugar Creek Road, Charlotte, NC

Parameter		TPH GRO	TPH DRO	CHROMIUM	LEAD
Method		SW-846 8015	SW-846 8015	SM-20 2540	SM-20 2540
Units		mg/kg	mg/kg	mg/kg	mg/kg
NCDENR Action Level		10	10	27	270
Sample ID	**Date Collected**				
Product Lines					
P1-2	12/09/10	**13**			
P2-2	12/09/10	**14**			
P3-2	12/09/10	**12**			
P4-2	12/09/10	5.3			
P5-2	12/09/10	8.2			
P6-2	12/09/10	2.4			
P7-2	12/09/10	4.4			
P8-2	12/09/10	1.6			
P9-2	12/09/10	3.5			
OP1-2	12/09/10	**1,100**			

Notes
< - Not detected at the specified detection limit
J = Estimated value
DRO = Diesel range organics
GRO = Gasoline range organics
mg/kg = milligrams per kilogram
NA = Not analyzed
TPH = Total petroleum hydrocarbons

This table presents the results of all analytes detected. Sample results have been qualified by URS based on the results of the data review process, which is modeled after the *USEPA Contract Laboratory Program National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (EPA, June 2008) and *USEPA Contract Laboratory Program NFG Inorganic Superfund Data Review* (USEPA, January 2010). All results are reported on a dry weight basis.

A bold, highlighted value indicates the concentration is greater than the Action Level.

FIGURES

Table 4
Summary of Soil Sample Results
Compared to NC Maximum Soil Contaminant Concentration Levels
Former Gulf Service Station No. 16102005
830 East Sugar Creek Road
Charlotte, NC

Sample Identification:	Soil-to-Water NC MSCC	Residential NC MSCC	Industrial NC MSCC	Unit	E-0E-11	S-0E-12	W-0E-12	P1-0E-04	P4-0E-04	WOB-0E-10	WO-E-08	WOE-0E-09
Sample Depth (ft bgs):					11	12	12	4	4	10	8	9
Sample Date:					12/13/2010	12/9/2010	12/9/2010	12/9/2010	12/9/2010	12/9/2010	12/8/2010	12/9/2010
VOC (SW-846 8260B)												
1,2,4-Trimethylbenzene	8.5	782	20440	mg/kg	< 0.0013	7.8	0.0022 J	< 0.0011	0.11	< 0.0013	-	0.073
1,3,5-Trimethylbenzene	8.3	782	20440	mg/kg	< 0.0013	2.8	0.0012 J	< 0.0011	0.04	< 0.0013	-	0.019
Acetone	24	14000	360000	mg/kg	0.06 J	< 0.52	0.077 J	0.071 J	0.053 J	0.089 J	-	0.11 J
Benzene	0.0056	18	164	mg/kg	< 0.00066	0.77	0.057	0.12	0.29	< 0.00063	-	0.004 J
Ethylbenzene	4.9	1560	40000	mg/kg	< 0.0013	3.4	0.0086	0.0084	0.26	< 0.0013	-	0.045
Isopropyl benzene	1.7	1564	40880	mg/kg	0.0056 J	0.25 J	0.016	< 0.0011	0.0077	0.013	-	0.0026 J
Isopropyl ether	0.37	156	4088	mg/kg	0.002 J	< 0.075	< 0.001	0.0017 J	< 0.00097	< 0.0013	-	< 0.0013
Methyl ethyl ketone	16	9385	245280	mg/kg	0.013 J	< 0.3	0.02 J	0.0078 J	0.0086 J	0.012 J	-	0.014 J
Methyl tert-butyl ether	0.091	350	3100	mg/kg	2	1.5	0.14	2.4	0.26	0.0007 J	-	0.0041 J
Methylene chloride	0.02	85	763	mg/kg	< 0.0013	< 0.075	< 0.001	0.0018 J	< 0.00097	< 0.0013	-	< 0.0013
Naphthalene (VOA)	0.16	313	8176	mg/kg	0.0047 J	0.81	0.064	< 0.0011	0.0027 J	0.018	-	0.0089
n-Butylbenzene	4.3	626	16350	mg/kg	0.0016 J	0.36 J	0.012	< 0.0011	0.0015 J	0.0016 J	-	0.0038 J
n-Propylbenzene	1.7	626	16350	mg/kg	0.02	1.2	0.079	< 0.0011	0.012	0.021	-	0.015
p-Isopropyltoluene	NE	NE	NE	mg/kg	< 0.0013	< 0.075	0.002 J	< 0.0011	0.0045 J	< 0.0013	-	0.0022 J
sec-Butylbenzene	3.3	626	16350	mg/kg	0.0018 J	0.13 J	0.0056	< 0.0011	0.0014 J	0.002 J	-	0.0019 J
tert-Butylbenzene	3.4	626	16350	mg/kg	< 0.0013	< 0.075	< 0.001	< 0.0011	< 0.00097	< 0.0013	-	< 0.0013
Toluene	4.3	1200	32000	mg/kg	< 0.0013	0.38	0.0014 J	< 0.0011	0.0076	< 0.0013	-	0.003 J
Xylenes (Total)	4.6	3129	81760	mg/kg	< 0.0013	15	0.014	0.0095	1.9	< 0.0013	-	0.17
SVOC (SW-846 8270D)												
2-Methylnaphthalene	3.6	63	1635	mg/kg	-	-	-	-	-	< 0.043	-	< 0.042
Naphthalene (SVOA)	0.16	313	8176	mg/kg	-	-	-	-	-	< 0.043	-	< 0.042
Phenanthrene	56	469	12264	mg/kg	-	-	-	-	-	< 0.043	-	< 0.042
Hydrocarbons (MADEP EPH-VPH)												
Aliphatics C5-C8	68	939	24528	mg/kg	< 2.63	31.3	< 4.49	< 6.7	< 5.07	< 5.9		< 6.24
Aliphatics C9-C18 (1)	540	1500	40000	mg/kg	< 2.63	< 6.16	< 4.49	< 6.7	< 5.07	< 7.7		< 7.6
Aromatics C9-C22 (2)	31	469	12264	mg/kg	< 2.63	32.1	< 4.49	< 6.7	< 5.07	< 20.9		< 21.24
Metals (SW-846 6010C)												
Chromium	5.4	47	1226	mg/kg	-	-	-	-	-	34.3	60.2	52.7
Lead	270	400	400	mg/kg	-	-	-	-	-	14.4	21.7	10.7
Miscellaneous												
Percent solids	NA	NA	NA	%	80.1	78.9	83.9	78.2	86.5	77.8	75.9	79

Table 4
Summary of Soil Sample Results
Compared to NC Maximum Soil Contaminant Concentration Levels
Former Gulf Service Station No. 16102005
830 East Sugar Creek Road
Charlotte, NC

Sample Identification:	Soil-to-Water NC MSCC	Residential NC MSCC	Industrial NC MSCC	Unit	WON-0E-09	WOS-0E-09	WO-W-08	WOW-0E-09
Sample Depth (ft bgs):					9	9	8	9
Sample Date:					12/9/2010	12/9/2010	12/8/2010	12/9/2010
VOC (SW-846 8260B)								
1,2,4-Trimethylbenzene	8.5	782	20440	mg/kg	0.0012 J	< 0.0014	-	0.0015 J
1,3,5-Trimethylbenzene	8.3	782	20440	mg/kg	< 0.0012	< 0.0014	-	< 0.0012
Acetone	24	14000	360000	mg/kg	0.062 J	0.082 J	-	0.072 J
Benzene	0.0056	18	164	mg/kg	0.0024 J	0.00075 J	-	< 0.00062
Ethylbenzene	4.9	1560	40000	mg/kg	0.017	< 0.0014	-	< 0.0012
Isopropyl benzene	1.7	1564	40880	mg/kg	0.076	0.02	-	< 0.0012
Isopropyl ether	0.37	156	4088	mg/kg	< 0.0012	< 0.0014	-	< 0.0012
Methyl ethyl ketone	16	9385	245280	mg/kg	0.01 J	0.012 J	-	0.0062 J
Methyl tert-butyl ether	0.091	350	3100	mg/kg	0.00065 J	0.00094 J	-	< 0.00062
Methylene chloride	0.02	85	763	mg/kg	< 0.0012	< 0.0014	-	< 0.0012
Naphthalene (VOA)	0.16	313	8176	mg/kg	0.073	0.048	-	< 0.0012
n-Butylbenzene	4.3	626	16350	mg/kg	0.058	0.0085	-	0.0015 J
n-Propylbenzene	1.7	626	16350	mg/kg	0.15	0.05	-	< 0.0012
p-Isopropyltoluene	NE	NE	NE	mg/kg	< 0.0012	< 0.0014	-	< 0.0012
sec-Butylbenzene	3.3	626	16350	mg/kg	0.03	0.0062 J	-	0.0016 J
tert-Butylbenzene	3.4	626	16350	mg/kg	0.0028 J	< 0.0014	-	< 0.0012
Toluene	4.3	1200	32000	mg/kg	0.0012 J	< 0.0014	-	< 0.0012
Xylenes (Total)	4.6	3129	81760	mg/kg	0.0051 J	0.0023 J	-	0.0038 J
SVOC (SW-846 8270D)								
2-Methylnaphthalene	3.6	63	1635	mg/kg	0.21 J	0.18 J	-	< 0.043
Naphthalene (SVOA)	0.16	313	8176	mg/kg	0.071 J	< 0.044	-	< 0.043
Phenanthrene	56	469	12264	mg/kg	0.059 J	< 0.044	-	< 0.043
Hydrocarbons (MADEP EPH-VPH)								
Aliphatics C5-C8	68	939	24528	mg/kg	< 5.24	< 6.73		< 5.65
Aliphatics C9-C18 (1)	540	1500	40000	mg/kg	3.35 J	< 7.9		< 7.8
Aromatics C9-C22 (2)	31	469	12264	mg/kg	5.56 J	< 22.73		< 21.65
Metals (SW-846 6010C)								
Chromium	5.4	47	1226	mg/kg	33.8	46.1	26.4 J	41.3
Lead	270	400	400	mg/kg	9.47	7.87	55.1 J	10.1
Miscellaneous								
Percent solids	NA	NA	NA	%	75.8	76.3	75	77

Table 4
Summary of Soil Sample Results
Compared to NC Maximum Soil Contaminant Concentration Levels
Former Gulf Service Station No. 16102005
830 East Sugar Creek Road
Charlotte, Mecklenburg County, NC

Notes:

Result exceeds NC MSCC - Soil-to-Water (2010)
Result exceeds NC MSCC - Residential (2010)
Result exceeds NC MSCC - Industrial (2010)

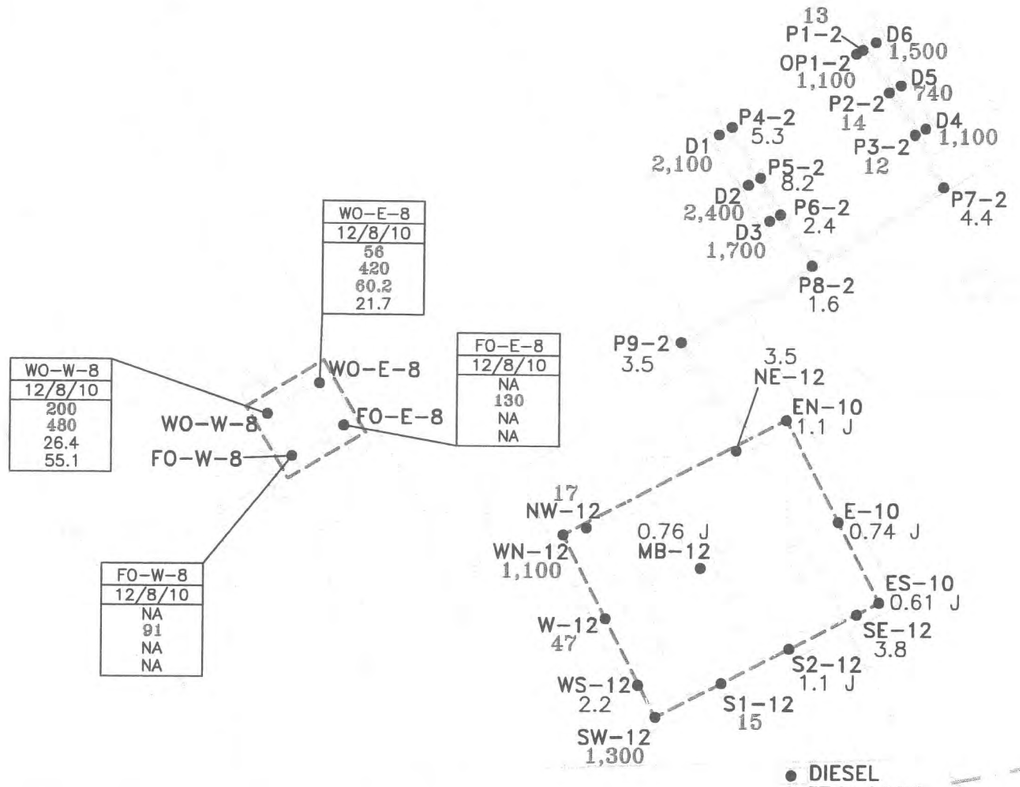
"-" - Not analyzed
< - Not detected at the specified detection limit
EPH - Extractable petroleum hydrocarbons
Ft bgs - Feet below ground surface
J - Estimated value
NA - Not applicable
NC MSCC - North Carolina Maximum Contaminant Concentration Level
NE - Not established
VOC – Volatile organic compounds
VPH - Volatile petroleum hydrocarbons

This table presents the results of all analytes detected. Sample results have been qualified by URS based on the results of the data review process, which is modeled after the *USEPA Contract Laboratory Program National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (EPA, June 2008) and *USEPA Contract Laboratory Program NFG Inorganic Superfund Data Review* (USEPA, January 2010). All results are reported on a dry weight basis.

Maximum Soil Contaminant Concentration (MSCC), effective January 14, 2010, obtained from the NCDENR, Division of Waste Management, UST Section. A highlighted cell indicates the concentration is greater than the MSCC.

(1) The result reported for C9-C18 Aliphatics is based on the sum of the C9-C12 and C9-18 Aliphatics results minus C9-C10 Aromatics
(2) The result reported for C9-C22 Aromatics is based on the sum of the C9-C10 and C11-22 Aromatic results.

FIGURES



LEGEND

	PROPERTY LINE
	OVERHEAD ELECTRIC LINE
	UNDERGROUND GAS LINE
	UNDERGROUND ELECTRIC LINE
	UNDERGROUND CABLE/FIBER OPTIC
UST	UNDERGROUND STORAGE TANK
D1●	DISPENSER SAMPLE LOCATION
P1●	PRODUCT LINE SAMPLE LOCATION
E-●	UST CLOSURE SAMPLE LOCATION
	FORMER UST LOCATION
	FORMER PRODUCT LINE LOCATION
[---]	UST EXCAVATION LIMITS
J	ESTIMATED VALUE
NA	NOT ANALYZED
BOLD	EXCEEDS NCDENR ACTION LEVEL

NCDENR Action Level	
10	TPH-GRO
10	TPH-DRO
27	CHROMIUM
270	LEAD

NOTES:

1. THE WASTE OIL AND FUEL OIL TANKS WERE ANALYZED FOR GRO, DRO, CHROMIUM AND LEAD. ALL OTHERS SAMPLES WERE ANALYZED FOR GRO ONLY (UNLESS SPECIFIED).
2. ALL CONCENTRATIONS SHOWN ARE IN mg/Kg.

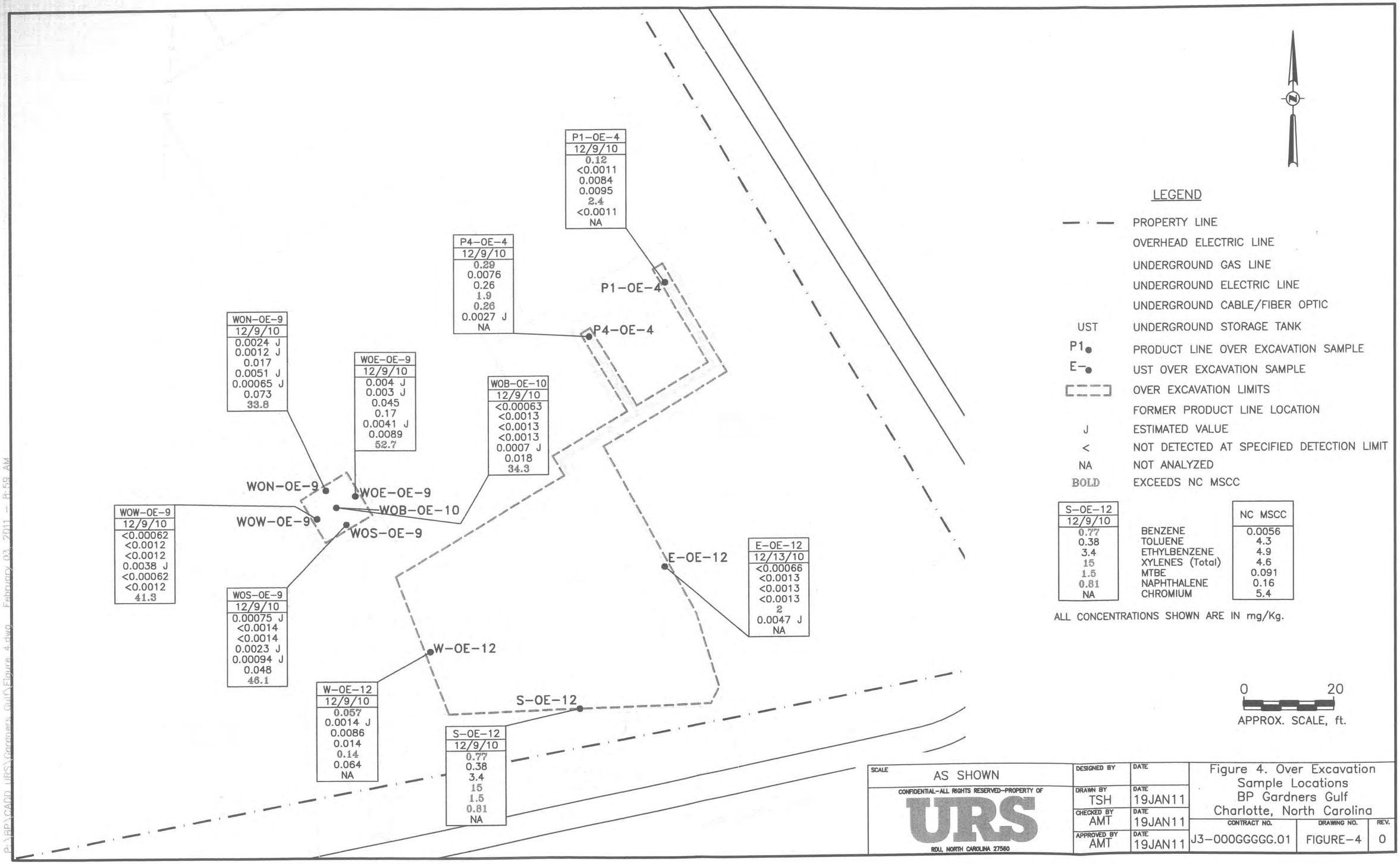
0 20

APPROX. SCALE, ft.

P:\BP\CADD URS\Gardners Gulf\Figure 3.dwg, February 03, 2011 - 8:58 AM

SCALE: AS SHOWN	DESIGNED BY	DATE	Figure 3. UST Closure Sample Locations BP Gardners Gulf Charlotte, North Carolina
CONFIDENTIAL-ALL RIGHTS RESERVED-PROPERTY OF URS RDU, NORTH CAROLINA 27560	DRAWN BY: TSH	DATE: 19JAN11	
	CHECKED BY: AMT	DATE: 19JAN11	
	APPROVED BY: AMT	DATE: 19JAN11	

CONTRACT NO.	DRAWING NO.	REV.
J3-000GGGGG.01	FIGURE-3	0



P:\BP\CADD URS\Gardners Gulf\Figure 4.dwg February 03, 2011 - 8:59 AM

SCALE: AS SHOWN	DESIGNED BY	DATE	Figure 4. Over Excavation Sample Locations BP Gardners Gulf Charlotte, North Carolina
CONFIDENTIAL–ALL RIGHTS RESERVED–PROPERTY OF URS RDU, NORTH CAROLINA 27560	DRAWN BY: TSH	DATE: 19JAN11	
	CHECKED BY: AMT	DATE: 19JAN11	
	APPROVED BY: AMT	DATE: 19JAN11	

CONTRACT NO.	DRAWING NO.	REV.
J3–000GGGGG.01	FIGURE–4	0

APPENDIX B
PHOTOGRAPHS

Photo 1 View of former gasoline station building and dispenser islands on the property.

Photo 2 View of former UST basin (gravel covered area) immediately south of the on-site building.

Photo 3 View of former UST location at rear of on-site building, looking northwest.

APPENDIX C
GEOPHYSICAL SURVEY REPORT

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.

PYRAMID ENVIRONMENTAL & ENGINEERING
(PROJECT 2013-259)

GEOPHYSICAL SURVEY

W.M. MOORE PROPERTY –
830 E. SUGAR CREEK ROAD
NCDOT PROJECT U-5008

CHARLOTTE, MECKLENBURG COUNTY, NC

OCTOBER 15, 2013

Report prepared for: Christopher L. Corbitt, PG
Terracon Consultants, Inc.
2020 Starita Rd., Suite E
Charlotte, North Carolina 28206

Prepared by: _____
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NC License #2181

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503 INDUSTRIAL AVENUE, GREENSBORO, NC 27406
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C257: GEOLOGY C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
830 E. Sugar Creek Road
Charlotte, Mecklenburg County, North Carolina

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EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Terracon at the WM M Moore property, located at 830 E. Sugar Creek Road, Charlotte, Mecklenburg County, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-5008). Terracon directed Pyramid as to the geophysical survey boundaries at the project site, which were designed to include all proposed ROW and easement areas depicted in the NCDOT engineering plans. The geophysical investigation consisted of an electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys.

Geophysical Results: The majority of the EM61 anomalies detected could be attributed to visible objects at the ground surface such as signs and fences, or were minor and attributed to buried debris. Three anomalies were observed on the west side of the survey area that could not be attributed to visible objects. Anomalies suggestive of utilities/conduits were observed at the southwest corner of the building and to the north and south of the former pump islands. An area of suspected reinforced concrete was across the north, east, and south sides of the building, and was investigated further with GPR. The GPR survey confirmed that the anomalies on the west side of the survey area were the likely the result of isolated buried metallic debris. The GPR survey confirmed the presence of reinforcement within the concrete on the north, east, and south sides of the building. The GPR survey confirmed the presence of likely utilities/conduits at the southwest corner of the building and to the north and south of the former pump islands. The geophysical investigation did not record any evidence of metallic USTs within the directed survey area.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Terracon at the WM M Moore property, located at 830 E. Sugar Creek Road, Charlotte, Mecklenburg County, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-5008). Terracon directed Pyramid as to the geophysical survey boundaries at the project site, which were designed to include all proposed ROW and easement areas depicted in the NCDOT engineering plans. The survey grid spanned approximately 205 feet from west to east and approximately 260 feet from north to south. Conducted on November 3 and 5, 2013, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site was relatively open, and consisted of a combination of grassy open space, asphalt, and concrete parking areas. Aerial photographs showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

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

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. The EM survey was performed on November 3, 2013, using a Geonics EM61 metal detection instrument. According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size) can be detected to a maximum depth of 4 to 5 feet. The EM61 data were digitally collected at approximately 0.8 foot intervals along north-south trending or east-west trending, parallel survey lines spaced five feet apart. The data were downloaded to a

computer and reviewed in the field and office using the Geonics DAT61 and Surfer for Windows Version 11.0 software programs.

GPR data were acquired across select EM differential anomalies and/or across areas of reinforced concrete on November 5, 2013, using a Geophysical Survey Systems, Inc. (GSSI) SIR-2000 unit equipped with a 400 MHz antenna. Data were collected generally from east to west and north to south across the northwest portion of the property. The GPR data were viewed in real time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 8 feet, based on an estimated two-way travel time of 8 nanoseconds per foot. GPR transects were saved to the hard drive for post-processing.

DISCUSSION OF RESULTS

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

Discussion of EM Anomalies: The EM response surrounding the north, east, and south sides of the building as well as the former pump islands was associated with reinforced concrete across this area. Congruently, the EM anomlaies along the eastern boundary of the survey area from Y=45 to Y=80 and from Y=155 to Y=190 were associated with reinforcement in concrete curbs. Reinforced concrete also generated the EM anomaly at X=160, Y=25. The anomalies centered at X=200, Y=35 were the result of three reinforced concrete sign bases. The anomaly at X=115, Y=125 was the result of a metal gas meter. A metal wire fence extended from south to north along the west boundary of the survey area, which resulted in varying degrees of EM responses along the western edge of the survey. Similarly, a chain link fence extended along the north boundary of the survey, resulting in the observed EM response across the north edge of the grid.

The anomaly at X=170, Y=220 was the result of a metal pole. The anomaly centered at X=110, Y=65 was minor and was suspected to be the result of isolated debris.

Several EM anomalies were observed that warranted further investigation with the GPR. Specifically, anomalies were recorded on the west side of the survey area at X=45, Y=135, at X=65, Y=145, and at X=60, Y=175. Additionally, anomalies that were suggestive of utilities or former product lines were recorded adjacent to the southwest corner of the building, on the south side of the former pump islands, and on the north side of the former pump islands. All of these features were further investigated by the GPR.

Discussion of GPR Survey

The above-mentioned EM anomalies on the west side of the survey area and the suspected utilities were investigated further with the GPR. In addition, a grid of GPR transects was established across the entire area containing reinforced concrete to further examine the subsurface due to the high degree of EM interference associated with the metal reinforcement. **Figure 3** provides the locations of all GPR transects performed at the property, as well as images of select GPR transects.

GPR transects 1, 2 and 3 were performed across the three EM anomalies on the west side of the survey area. GPR transects 1 and 2 recorded isolated reflectors near the ground surface that were indicative of small objects/debris, indicating the EM response at these locations was due to isolated metallic debris. GPR transect 3 did not record any distinct reflectors, suggesting the EM response was also due to metallic debris that was less-defined that the objects observed at the locations of transects 1 and 2. GPR transect 4 was performed near the southwest corner of the building across the EM feature that was suspected to be associated with a subsurface utility/conduit. An isolated reflector was recorded at this location that was consistent with such a utility/conduit.

The grid of GPR transects across the areas of reinforced concrete included GPR transects 5-22. All of these transects confirmed the presence of reinforcement within the concrete, resulting in the observed high amplitude EM responses. GPR Transect 7 is included on **Figure 3** as an example of the reinforcement. No significant objects were observed to underlie the reinforcement in any of the transects performed. It should be noted that the strong signal of the reinforcement

generates “multiple” reflectors at depths below the initial reinforcement depth that can potentially mask other objects. However, the data generally indicate that no evidence of USTs was observed below the reinforcement.

GPR Transects 23 and 24 were performed on the north and south sides of the former pump islands, respectively, to investigate the suspected utilities/conduits observed on the EM contour map. Both of these GPR transects recorded evidence of isolated reflectors that are consistent with a utility or conduit line at the locations of the EM features. Transect 23 was suggestive of a single utility/conduit crossing that location, while Transect 24 provided evidence of two possible utility/conduit lines. Images of all GPR Transects performed at the property are included in **Appendix A**.

The geophysical investigation did not record any evidence of metallic USTs within the proposed ROW and easement areas at the property.

SUMMARY & CONCLUSIONS

Our evaluation of the EM61 and GPR data collected across the properties at 830 E. Sugar Creek Road in Charlotte, North Carolina, provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- The majority of the EM61 anomalies detected could be attributed to visible objects at the ground surface such as signs and fences, or were minor and attributed to buried debris.
- Three anomalies were observed on the west side of the survey area that could not be attributed to visible objects.
- Anomalies suggestive of utilities/conduits were observed at the southwest corner of the building and to the north and south of the former pump islands.
- An area of suspected reinforced concrete was across the north, east, and south sides of the building, and was investigated further with GPR.
- The GPR survey confirmed that the anomalies on the west side of the survey area were the likely the result of isolated buried metallic debris.
- The GPR survey confirmed the presence of reinforcement within the concrete on the north, east, and south sides of the building.
- The GPR survey confirmed the presence of likely utilities/conduits at the southwest corner of the building and to the north and south of the former pump islands.
- The geophysical investigation did not record any evidence of metallic USTs within the directed survey area.

LIMITATIONS

Geophysical surveys have been performed and this report prepared for Terracon in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the EM61 and GPR surveys are non-unique and may not represent actual subsurface conditions. The EM61 and GPR results obtained for this project have not conclusively determined that no metallic UST lie within the survey area of the Mecklenburg County property, but that no

evidence of metallic USTs was detected. Additionally, it should be understood that areas containing extensive vegetation, reinforced concrete, or other restrictions to the accessibility of the geophysical instruments could not be fully investigated.

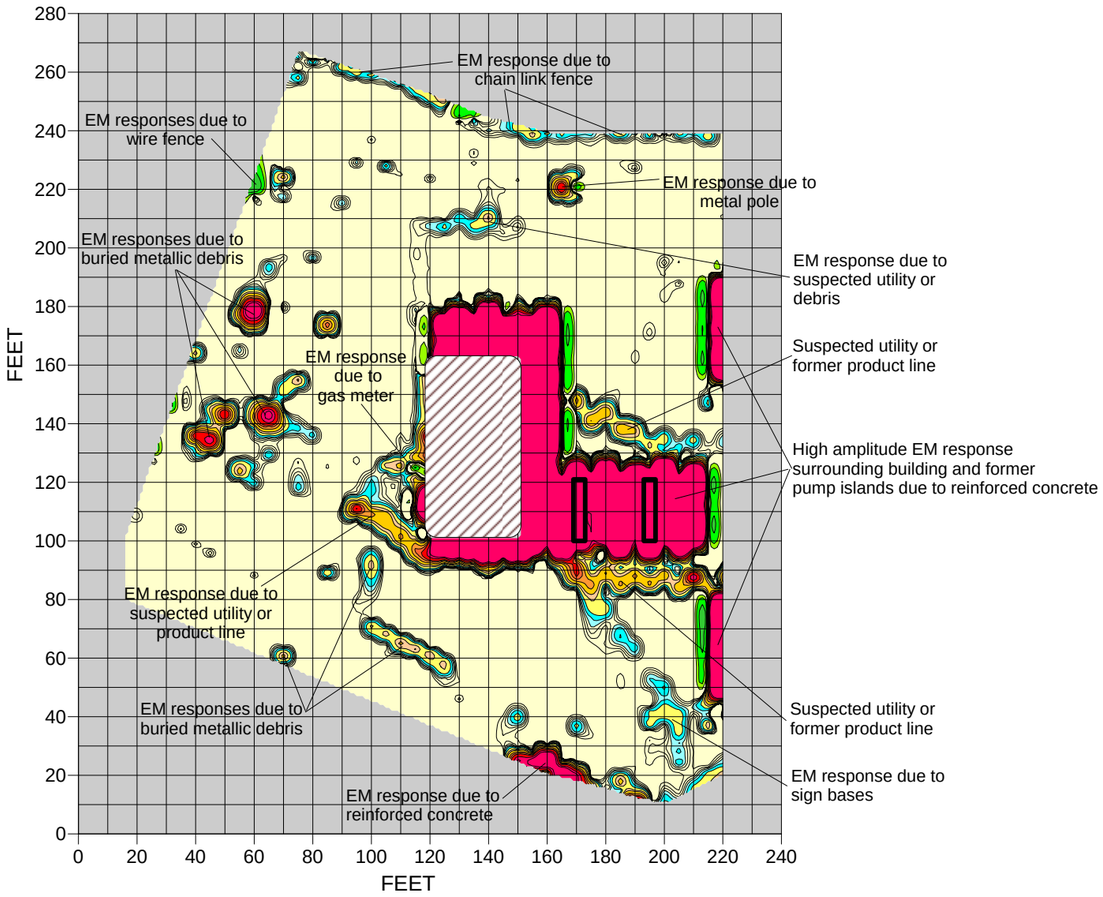
Approximate Boundaries of the Geophysical Survey Area

View of East Side of Moore Property
(Facing Approximately North)

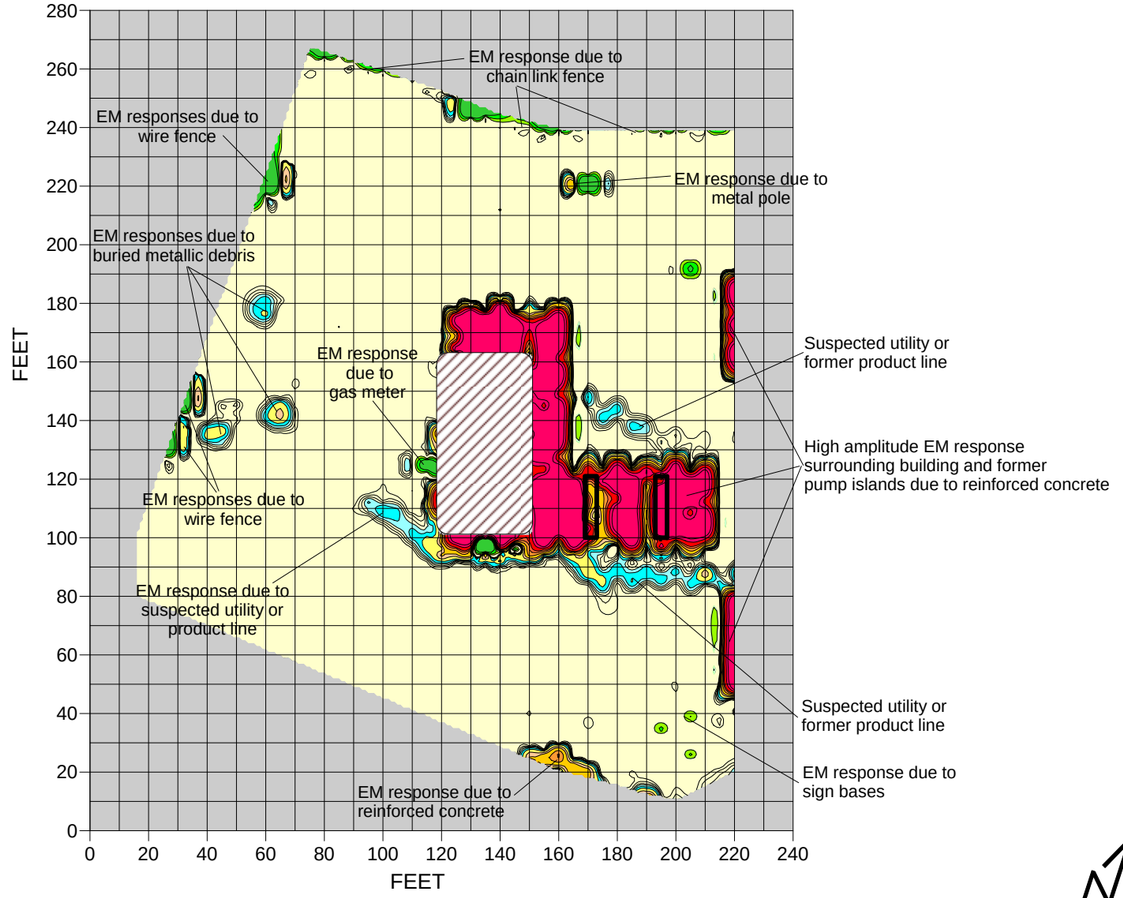
View of West Side of Moore Property
(Facing Approximately North)

TITLE	WM M MOORE PROPERTY: GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS
PROJECT	SUGAR CREEK ROAD NCDOT ROW IMPROVEMENT PROJECT CHARLOTTE, MECKLENBURG COUNTY, NC
PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.	503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology
DATE 11/6/2013	CLIENT TERRACON
PYRAMID PROJECT #: 2013-259	**FIGURE 1**

EM61 Bottom Coil Results



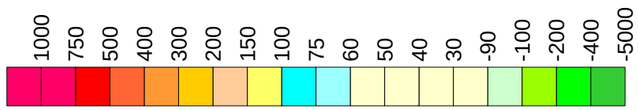
EM61 Differential Results



NO EVIDENCE OF METALLIC USTs OBSERVED

The contour plots show the bottom coil (most sensitive) and differential results of the EM61 instrument in millivolts (mV). The bottom coil response shows buried metallic objects regardless of size. The differential response focuses on larger, buried metallic objects such as drums and USTs and ignores smaller miscellaneous buried, metal debris.The EM61 data were collected on October 31, 2013 using a Geonics EM61 instrument. Ground penetrating radar (GPR) data were collected on November 5, 2013, using a GSSI SIR 2000 unit coupled to a 400 MHz antennae.

EM61 Metal Detection Response (millivolts)



TITLE: WM M MOORE PROPERTY: EM61 BOTTOM COIL & DIFFERENTIAL RESULTS CONTOUR MAPS

PROJECT: SUGAR CREEK ROAD NCDOT ROW IMPROVEMENT PROJECT CHARLOTTE, MECKLENBURG COUNTY, NC

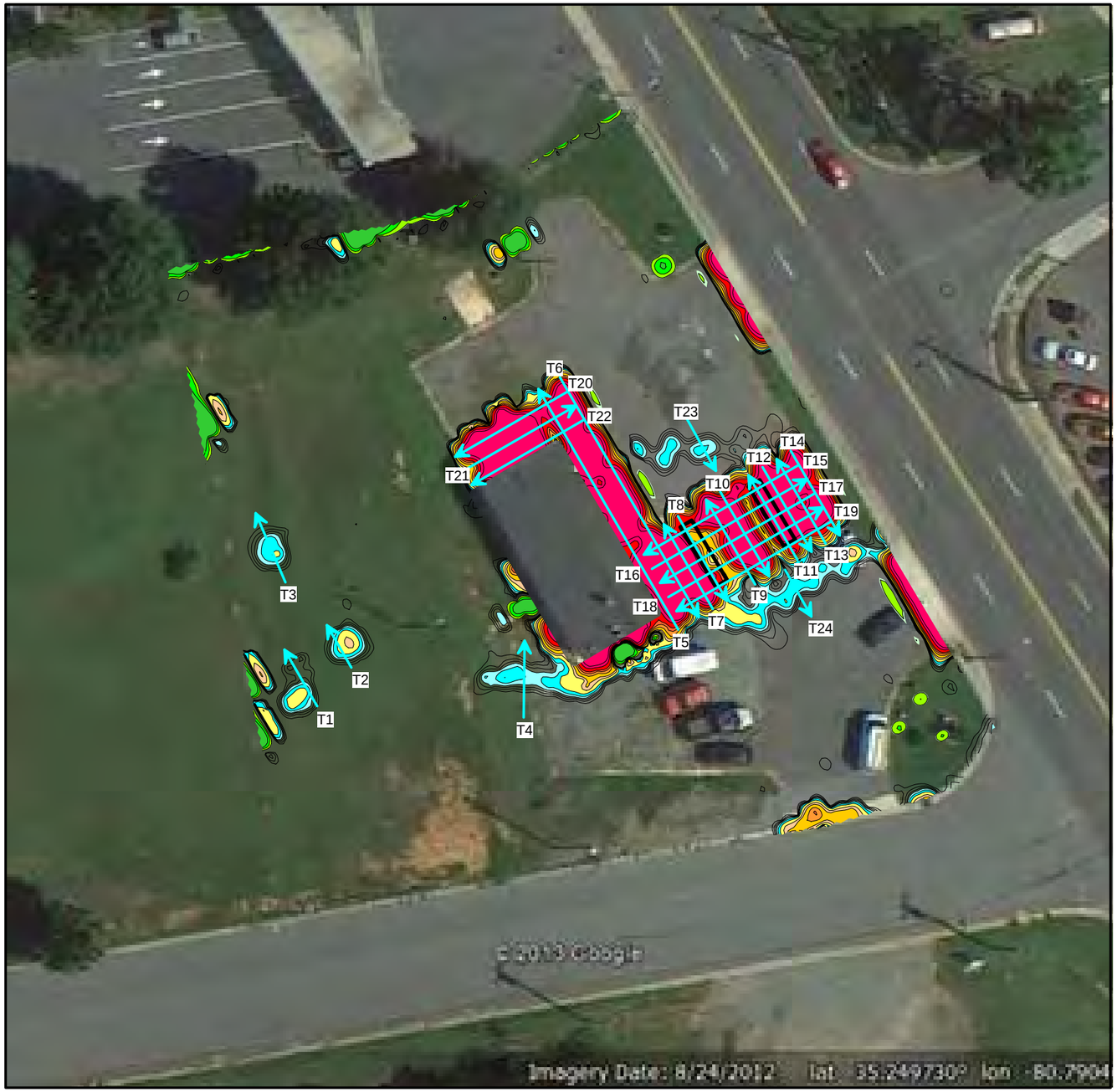
PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE: 11/6/2013

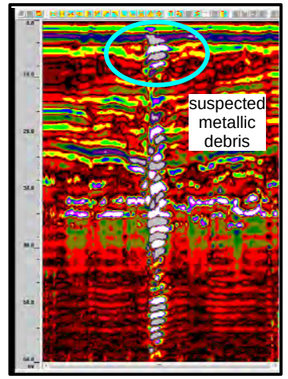
CLIENT: TERRACON

PYRAMID PROJECT #: 2013-259

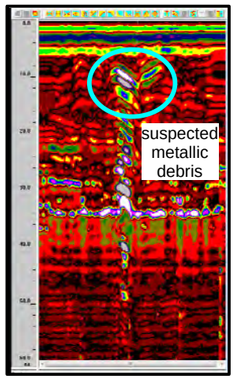
FIGURE 2



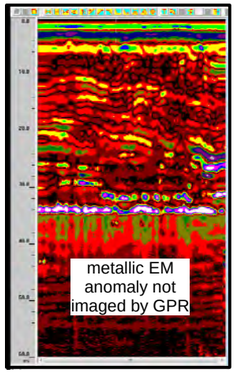
Approximate Locations of GPR Transects



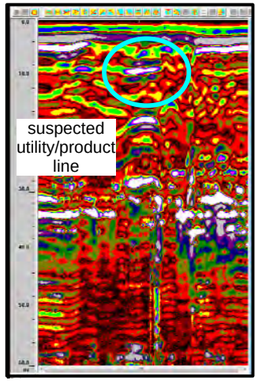
GPR Transect 1



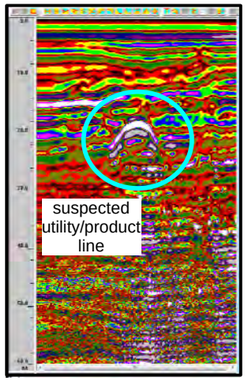
GPR Transect 2



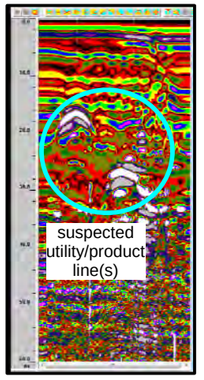
GPR Transect 3



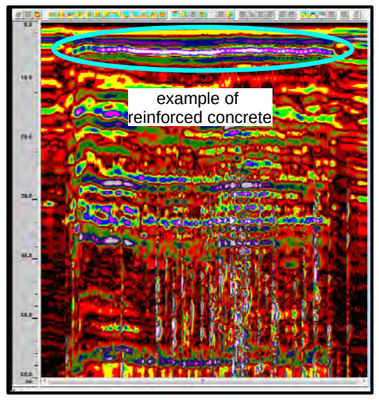
GPR Transect 4



GPR Transect 23



GPR Transect 24



GPR Transect 7

N

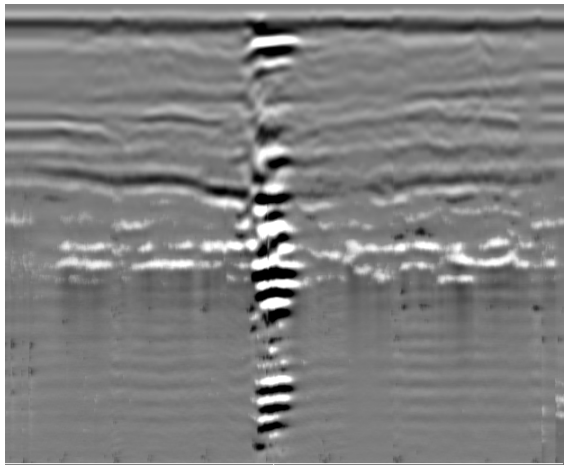
TITLE	WM M MOORE PROPERTY: GPR TRANSECT LOCATIONS AND SELECT IMAGES
PROJECT	SUGAR CREEK ROAD NCDOT ROW IMPROVEMENT PROJECT CHARLOTTE, MECKLENBURG COUNTY, NC

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE	11/6/2013	CLIENT	TERRACON
PYRAMID PROJECT #:	2013-259		**FIGURE 3**

Appendix A – GPR Transect Images

Transect 1



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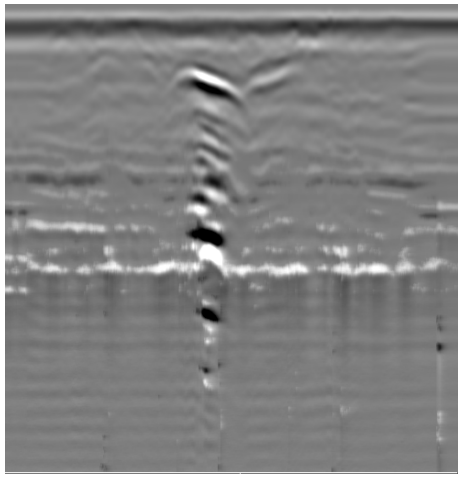

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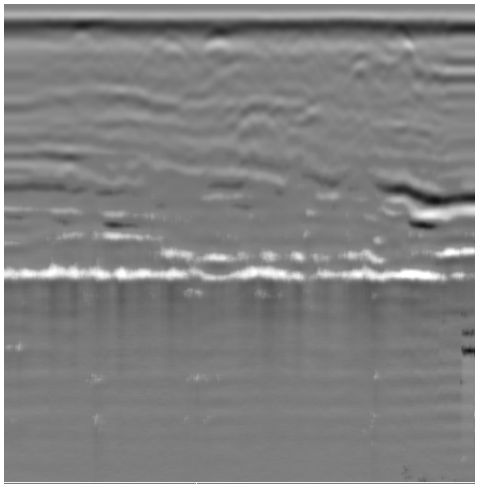

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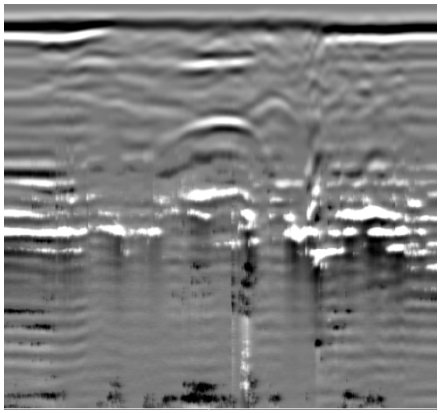

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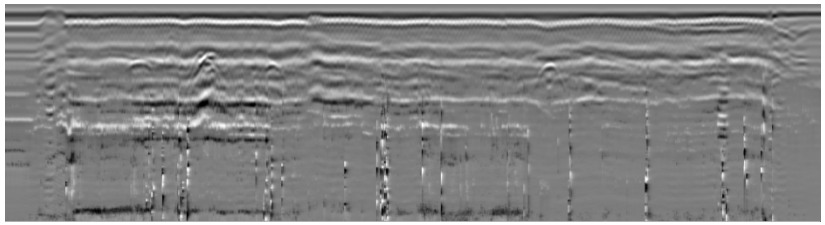

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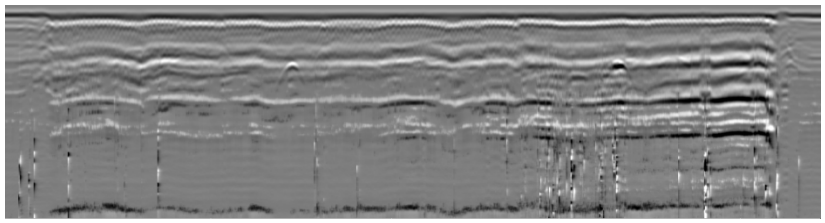
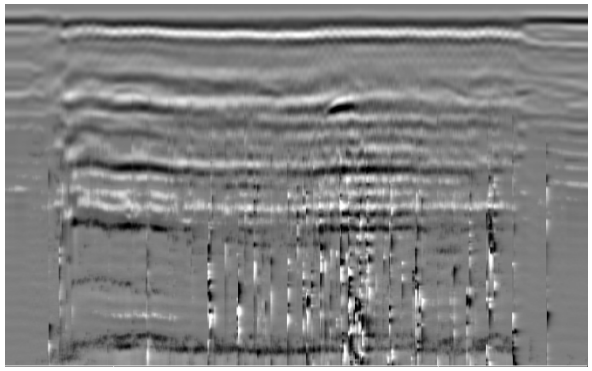


Transect 7



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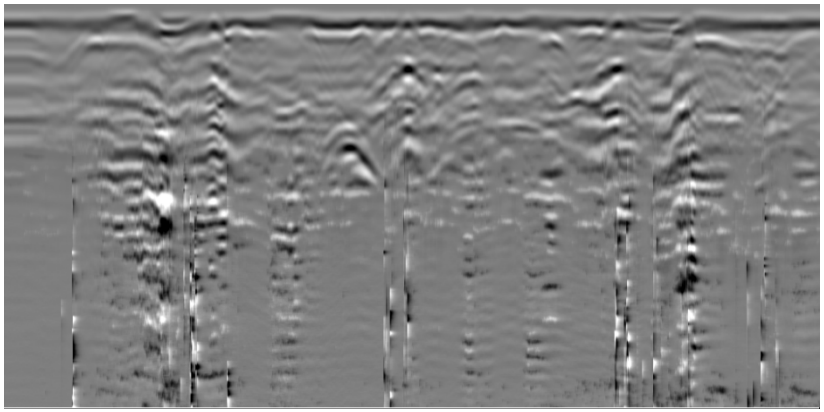

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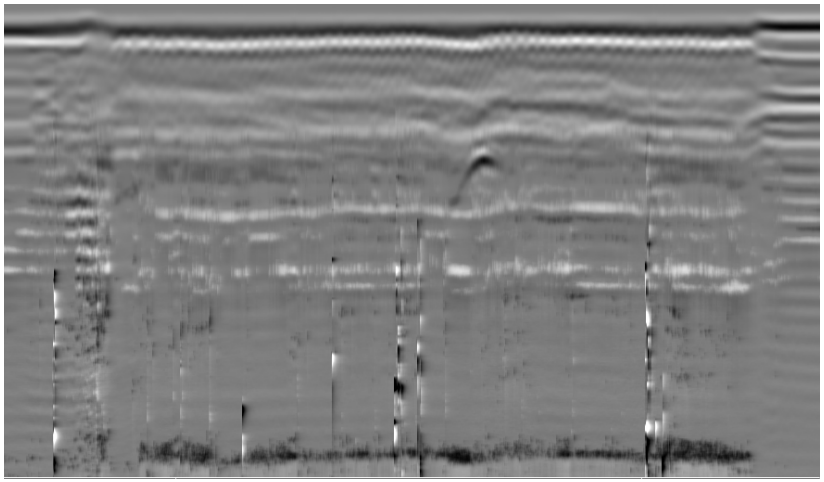

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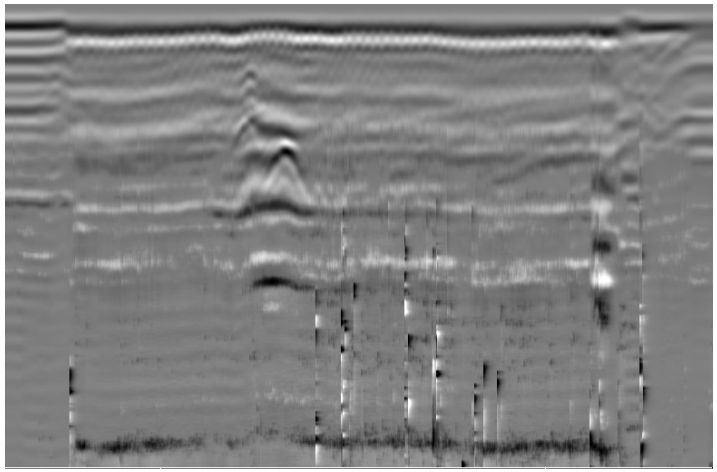

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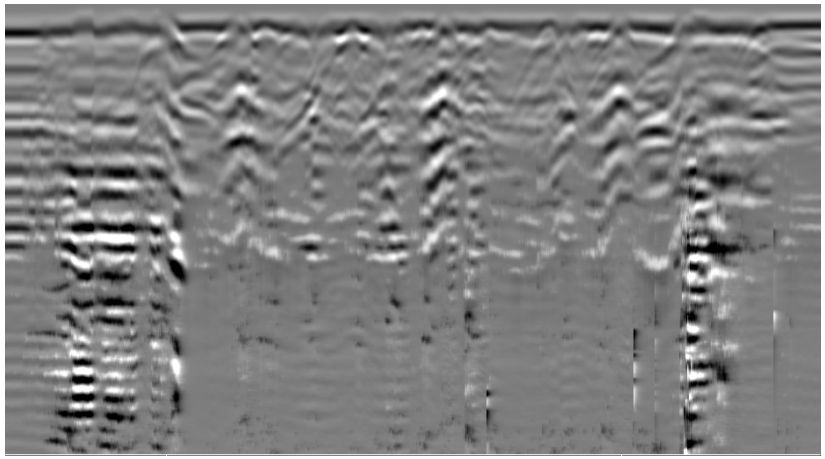

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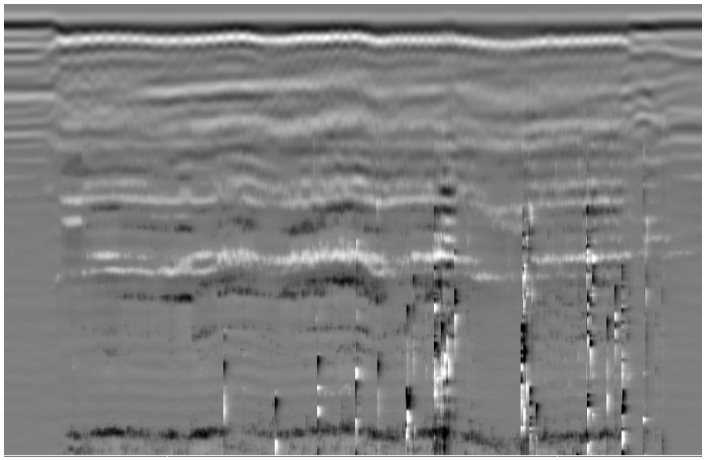

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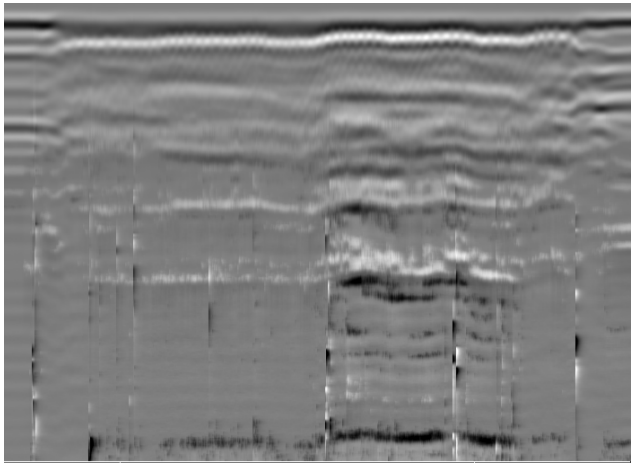

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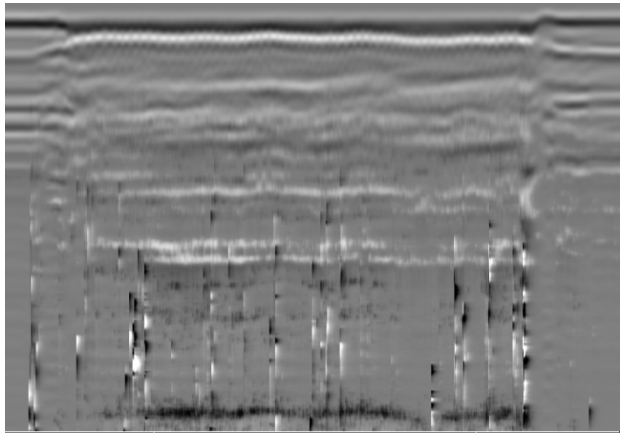

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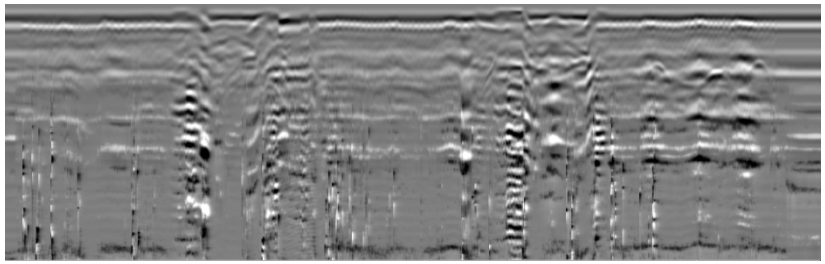

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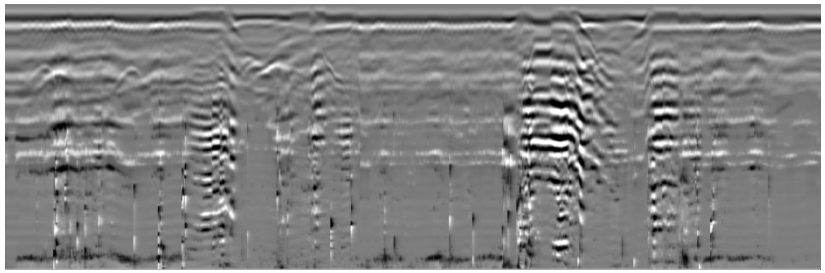

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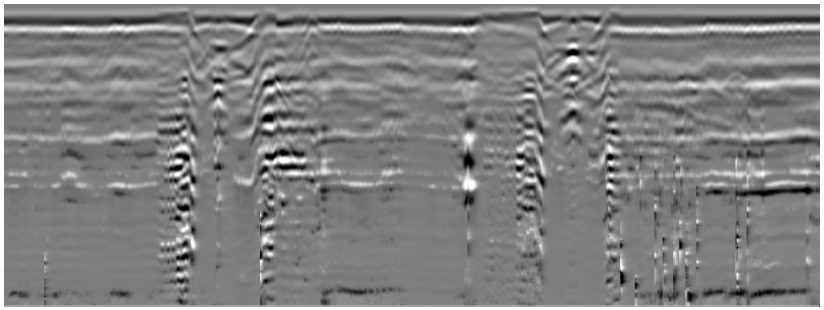

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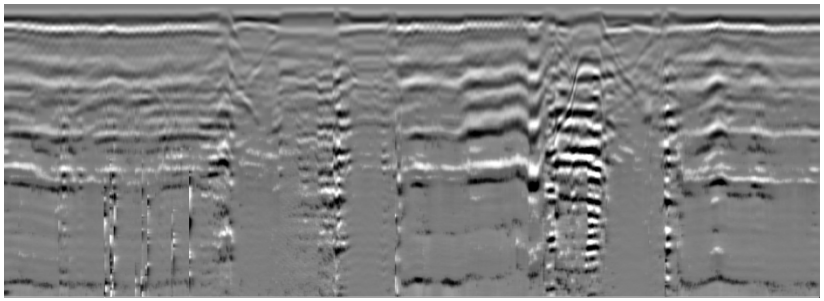

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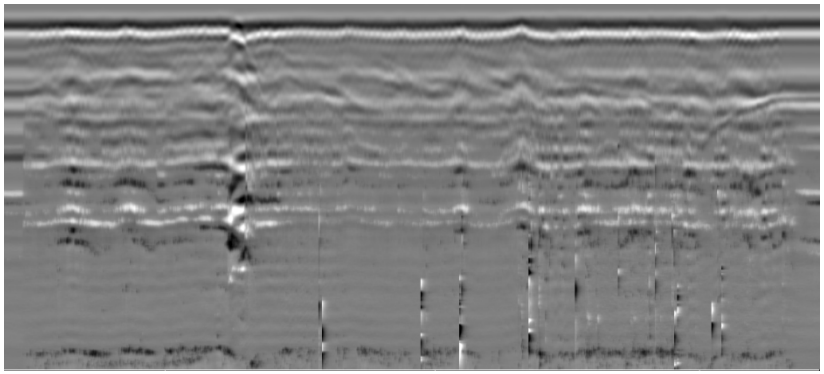

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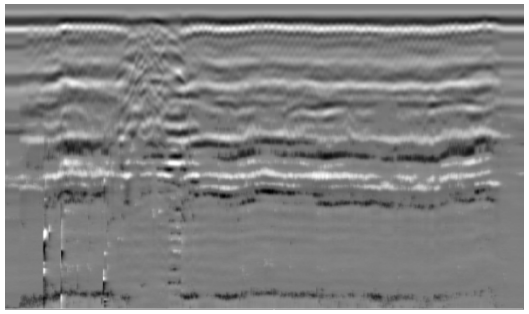

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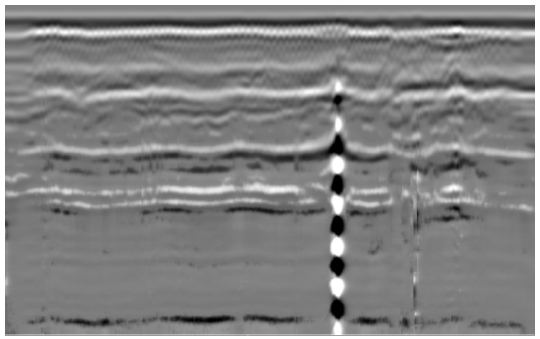

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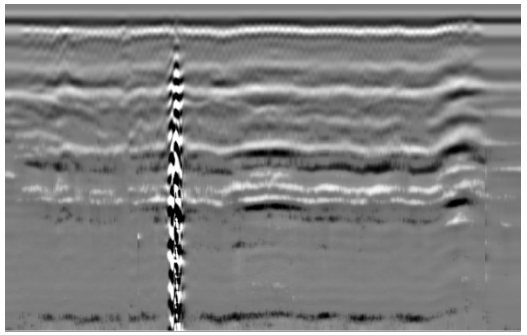

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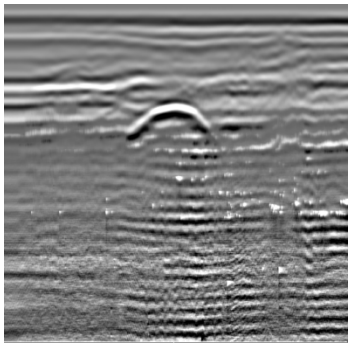

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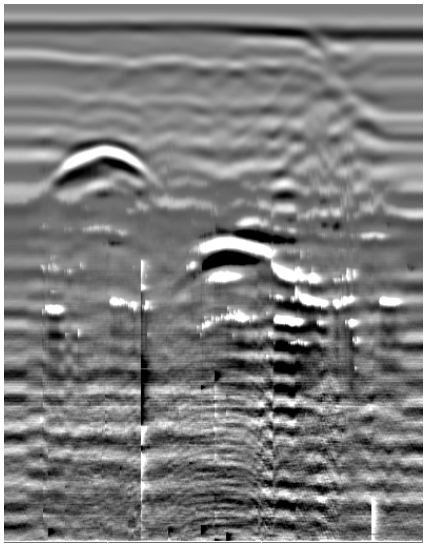


APPENDIX D
BORING LOGS

SOIL BORING LOG

PROJECT NAME: William Moore Property	SOIL BORING I.D.: MB-1
PROJECT NO.: 71137774	DATE(S) DRILLED: November 19, 2013
PROJECT LOCATION: 830 E. Sugar Creek Road Charlotte, North Carolina	DRILLING CONTR.: Probe Technology DRILL METHOD: Direct Push BORING DIAMETER: 2 inches
CLIENT: North Carolina Department of Transportation	SAMPLING METHOD/INTERVAL: GP (5-Foot)
LOGGED BY: S. Alex Chinery	REMARKS: BGS = below grade surface

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF SOIL
					0.0	asphalt pavement (approx. 4")
					0.5	brown/orange clayey silt
					1.0	
					1.5	
					2.0	slight petroleum odor
0 - 5.0		NA	27.2		2.5	
					3.0	
					3.5	
					4.0	
					4.5	
					5.0	
					5.5	dark brown clayey silt
					6.0	
					6.5	
					7.0	
5.0-10.0		NA	26.3		7.5	
					8.0	
					8.5	
					9.0	
					9.5	
					10.0	BORING TERMINATED AT 10 FEET BGS
					10.5	
					11.0	
					11.5	
					12.0	
					15.5	
					13.0	
					13.5	
					14.0	
					14.5	
					15.0	
					15.5	
					16.0	

DRILLING METHODS
AR - AIR ROTARY
CFA - CONTINUOUS FLIGHT AUGER
DC - DRIVEN CASING
HA - HAND AUGER
HSA - HOLLOW STEM AUGER
MD - MUD DRILLING
RC - ROCK CORING
WR - WATER ROTARY

SAMPLING METHODS
SS - SPLIT SPOON
ST - SHELBY TUBE
GP - GEOPROBE

* - Sample collected for analysis
ND = <1 ppm

Terracon

SOIL BORING LOG

PROJECT NAME: William Moore Property	SOIL BORING I.D.: MB-2
PROJECT NO.: 71137774	DATE(S) DRILLED: November 19, 2013
PROJECT LOCATION: 830 E. Sugar Creek Road Charlotte, North Carolina	DRILLING CONTR.: Probe Technology
	DRILL METHOD: Direct Push
	BORING DIAMETER: 2 inches
CLIENT: North Carolina Department of Transportation	SAMPLING METHOD/INTERVAL: GP (5-Foot)
LOGGED BY: S. Alex Chinery	REMARKS: BGS = below grade surface

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF SOIL
					0.0	asphalt pavement (approx. 4")
					0.5	orange/brown clayey silt
					1.0	
					1.5	
					2.0	stong petroleum odor
0 - 5.0		NA	1102.0		2.5	
					3.0	
					3.5	
					4.0	
					4.5	
					5.0	
					5.5	light brown/gray clayey silt
					6.0	
					6.5	
					7.0	
5.0-10.0		NA	82.7		7.5	
					8.0	
					8.5	
					9.0	
					9.5	
					10.0	BORING TERMINATED AT 10 FEET BGS
					10.5	
					11.0	
					11.5	
					12.0	
					15.5	
					13.0	
					13.5	
					14.0	
					14.5	
					15.0	
					15.5	
					16.0	

DRILLING METHODS
AR - AIR ROTARY
CFA - CONTINUOUS FLIGHT AUGER
DC - DRIVEN CASING
HA - HAND AUGER
HSA - HOLLOW STEM AUGER
MD - MUD DRILLING
RC - ROCK CORING
WR - WATER ROTARY

SAMPLING METHODS
SS - SPLIT SPOON
ST - SHELBY TUBE
GP - GEOPROBE

* - Sample collected for analysis
ND = <1 ppm

Terracon

SOIL BORING LOG

PROJECT NAME: William Moore Property	SOIL BORING I.D.: MB-3
PROJECT NO.: 71137774	DATE(S) DRILLED: November 19, 2013
PROJECT LOCATION: 830 E. Sugar Creek Road Charlotte, North Carolina	DRILLING CONTR.: Probe Technology DRILL METHOD: Direct Push BORING DIAMETER: 2 inches
CLIENT: North Carolina Department of Transportation	SAMPLING METHOD/INTERVAL: GP (5-Foot)
LOGGED BY: S. Alex Chinery	REMARKS: BGS = below grade surface

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF SOIL
					0.0	asphalt pavement (approx. 4")
					0.5	yellow/brown/orange clayey silt
					1.0	
					1.5	
					2.0	slight petroleum odor
0 - 5.0		NA	59.1		2.5	
					3.0	
					3.5	
					4.0	
					4.5	
					5.0	
					5.5	light brown/grey clayey silt
					6.0	
					6.5	
					7.0	
5.0-10.0		NA	29.4		7.5	
					8.0	
					8.5	
					9.0	
					9.5	
					10.0	BORING TERMINATED AT 10 FEET BGS
					10.5	
					11.0	
					11.5	
					12.0	
					15.5	
					13.0	
					13.5	
					14.0	
					14.5	
					15.0	
					15.5	
					16.0	

DRILLING METHODS
AR - AIR ROTARY
CFA - CONTINUOUS FLIGHT AUGER
DC - DRIVEN CASING
HA - HAND AUGER
HSA - HOLLOW STEM AUGER
MD - MUD DRILLING
RC - ROCK CORING
WR - WATER ROTARY

SAMPLING METHODS
SS - SPLIT SPOON
ST - SHELBY TUBE
GP - GEOPROBE

* - Sample collected for analysis
ND = <1 ppm

Terracon

SOIL BORING LOG

PROJECT NAME: William Moore Property	SOIL BORING I.D.: MB-4
PROJECT NO.: 71137774	DATE(S) DRILLED: November 19, 2013
PROJECT LOCATION: 830 E. Sugar Creek Road Charlotte, North Carolina	DRILLING CONTR.: Probe Technology
	DRILL METHOD: Direct Push
	BORING DIAMETER: 2 inches
CLIENT: North Carolina Department of Transportation	SAMPLING METHOD/INTERVAL: GP (5-Foot)
LOGGED BY: S. Alex Chinery	REMARKS: BGS = below grade surface

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF SOIL
					0.0	asphalt pavement (approx. 4")
					0.5	brown/orange clayey silt
					1.0	
					1.5	
					2.0	slight petroleum odor
0 - 5.0		NA	38.6		2.5	
					3.0	
					3.5	
					4.0	
					4.5	
					5.0	
					5.5	light brown/white/grey clayey silt
					6.0	
					6.5	
					7.0	
5.0-10.0		NA	2.4		7.5	
					8.0	
					8.5	
					9.0	
					9.5	
					10.0	BORING TERMINATED AT 10 FEET BGS
					10.5	
					11.0	
					11.5	
					12.0	
					15.5	
					13.0	
					13.5	
					14.0	
					14.5	
					15.0	
					15.5	
					16.0	

DRILLING METHODS
AR - AIR ROTARY
CFA - CONTINUOUS FLIGHT AUGER
DC - DRIVEN CASING
HA - HAND AUGER
HSA - HOLLOW STEM AUGER
MD - MUD DRILLING
RC - ROCK CORING
WR - WATER ROTARY

SAMPLING METHODS
SS - SPLIT SPOON
ST - SHELBY TUBE
GP - GEOPROBE

* - Sample collected for analysis
ND = <1 ppm

Terracon

SOIL BORING LOG

PROJECT NAME: William Moore Property	SOIL BORING I.D.: MB-5
PROJECT NO.: 71137774	DATE(S) DRILLED: November 19, 2013
PROJECT LOCATION: 830 E. Sugar Creek Road Charlotte, North Carolina	DRILLING CONTR.: Probe Technology DRILL METHOD: Direct Push BORING DIAMETER: 2 inches
CLIENT: North Carolina Department of Transportation	SAMPLING METHOD/INTERVAL: GP (5-Foot)
LOGGED BY: S. Alex Chinery	REMARKS: BGS = below grade surface

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF SOIL
					0.0	asphalt pavement (approx. 4")
					0.5	brown/red/orange clayey silt
					1.0	
					1.5	
					2.0	
0 - 5.0		NA	4.3		2.5	
					3.0	
					3.5	
					4.0	
					4.5	
					5.0	
					5.5	grey/light brown sandy/clayey silt
					6.0	
					6.5	
					7.0	
5.0-10.0		NA	2.7		7.5	
					8.0	
					8.5	
					9.0	
					9.5	
					10.0	BORING TERMINATED AT 10 FEET BGS
					10.5	
					11.0	
					11.5	
					12.0	
					15.5	
					13.0	
					13.5	
					14.0	
					14.5	
					15.0	
					15.5	
					16.0	

DRILLING METHODS
AR - AIR ROTARY
CFA - CONTINUOUS FLIGHT AUGER
DC - DRIVEN CASING
HA - HAND AUGER
HSA - HOLLOW STEM AUGER
MD - MUD DRILLING
RC - ROCK CORING
WR - WATER ROTARY

SAMPLING METHODS
SS - SPLIT SPOON
ST - SHELBY TUBE
GP - GEOPROBE

* - Sample collected for analysis
ND = <1 ppm

Terracon

SOIL BORING LOG

PROJECT NAME: William Moore Property	SOIL BORING I.D.: MB-6
PROJECT NO.: 71137774	DATE(S) DRILLED: November 19, 2013
PROJECT LOCATION: 830 E. Sugar Creek Road Charlotte, North Carolina	DRILLING CONTR.: Probe Technology DRILL METHOD: Direct Push BORING DIAMETER: 2 inches
CLIENT: North Carolina Department of Transportation	SAMPLING METHOD/INTERVAL: GP (5-Foot)
LOGGED BY: S. Alex Chinery	REMARKS: BGS = below grade surface

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF SOIL
					0.0	asphalt pavement (approx. 4")
					0.5	dark brown/orange clayey silt
					1.0	
					1.5	
					2.0	
0 - 5.0		NA	0.4		2.5	
					3.0	
					3.5	
					4.0	
					4.5	
					5.0	
					5.5	light brown/orange sandy/clayey silt
					6.0	
					6.5	
					7.0	
5.0-10.0		NA	0.0		7.5	
					8.0	
					8.5	
					9.0	
					9.5	
					10.0	BORING TERMINATED AT 10 FEET BGS
					10.5	
					11.0	
					11.5	
					12.0	
					15.5	
					13.0	
					13.5	
					14.0	
					14.5	
					15.0	
					15.5	
					16.0	

DRILLING METHODS
AR - AIR ROTARY
CFA - CONTINUOUS FLIGHT AUGER
DC - DRIVEN CASING
HA - HAND AUGER
HSA - HOLLOW STEM AUGER
MD - MUD DRILLING
RC - ROCK CORING
WR - WATER ROTARY

SAMPLING METHODS
SS - SPLIT SPOON
ST - SHELBY TUBE
GP - GEOPROBE

* - Sample collected for analysis
ND = <1 ppm

Terracon

SOIL BORING LOG

PROJECT NAME: William Moore Property	SOIL BORING I.D.: MB-7
PROJECT NO.: 71137774	DATE(S) DRILLED: November 19, 2013
PROJECT LOCATION: 830 E. Sugar Creek Road Charlotte, North Carolina	DRILLING CONTR.: Probe Technology
	DRILL METHOD: Direct Push
	BORING DIAMETER: 2 inches
CLIENT: North Carolina Department of Transportation	SAMPLING METHOD/INTERVAL: GP (5-Foot)
LOGGED BY: S. Alex Chinery	REMARKS: BGS = below grade surface

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF SOIL
					0.0	asphalt pavement (approx. 4")
					0.5	dark grey/brown clayey silt
					1.0	
					1.5	
					2.0	
0 - 5.0		NA	0.0		2.5	
					3.0	
					3.5	
					4.0	
					4.5	
					5.0	
					5.5	
					6.0	
					6.5	
					7.0	
5.0-10.0		NA	0.0		7.5	
					8.0	
					8.5	
					9.0	
					9.5	
					10.0	BORING TERMINATED AT 10 FEET BGS
					10.5	
					11.0	
					11.5	
					12.0	
					15.5	
					13.0	
					13.5	
					14.0	
					14.5	
					15.0	
					15.5	
					16.0	

DRILLING METHODS
AR - AIR ROTARY
CFA - CONTINUOUS FLIGHT AUGER
DC - DRIVEN CASING
HA - HAND AUGER
HSA - HOLLOW STEM AUGER
MD - MUD DRILLING
RC - ROCK CORING
WR - WATER ROTARY

SAMPLING METHODS
SS - SPLIT SPOON
ST - SHELBY TUBE
GP - GEOPROBE

* - Sample collected for analysis
ND = <1 ppm

Terracon

SOIL BORING LOG

PROJECT NAME: William Moore Property	SOIL BORING I.D.: MB-8
PROJECT NO.: 71137774	DATE(S) DRILLED: November 19, 2013
PROJECT LOCATION: 830 E. Sugar Creek Road Charlotte, North Carolina	DRILLING CONTR.: Probe Technology
	DRILL METHOD: Direct Push
	BORING DIAMETER: 2 inches
CLIENT: North Carolina Department of Transportation	SAMPLING METHOD/INTERVAL: GP (5-Foot)
LOGGED BY: S. Alex Chinery	REMARKS: BGS = below grade surface

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF SOIL
					0.0	dark brown clayey silt
					0.5	
					1.0	
					1.5	
					2.0	
0 - 5.0		NA	0.0		2.5	
					3.0	
					3.5	
					4.0	
					4.5	
					5.0	
					5.5	dark grey/brown clayey silt
					6.0	
					6.5	
					7.0	
5.0-10.0		NA	0.0		7.5	
					8.0	
					8.5	
					9.0	
					9.5	
					10.0	BORING TERMINATED AT 10 FEET BGS
					10.5	
					11.0	
					11.5	
					12.0	
					15.5	
					13.0	
					13.5	
					14.0	
					14.5	
					15.0	
					15.5	
					16.0	

DRILLING METHODS
AR - AIR ROTARY
CFA - CONTINUOUS FLIGHT AUGER
DC - DRIVEN CASING
HA - HAND AUGER
HSA - HOLLOW STEM AUGER
MD - MUD DRILLING
RC - ROCK CORING
WR - WATER ROTARY

SAMPLING METHODS
SS - SPLIT SPOON
ST - SHELBY TUBE
GP - GEOPROBE

* - Sample collected for analysis
ND = <1 ppm

Terracon

SOIL BORING LOG

PROJECT NAME: William Moore Property	SOIL BORING I.D.: MB-9
PROJECT NO.: 71137774	DATE(S) DRILLED: November 19, 2013
PROJECT LOCATION: 830 E. Sugar Creek Road Charlotte, North Carolina	DRILLING CONTR.: Probe Technology
	DRILL METHOD: Direct Push
	BORING DIAMETER: 2 inches
CLIENT: North Carolina Department of Transportation	SAMPLING METHOD/INTERVAL: GP (5-Foot)
LOGGED BY: S. Alex Chinery	REMARKS: BGS = below grade surface

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF SOIL
					0.0	light brown/grey clayey silt
					0.5	
					1.0	
					1.5	
					2.0	
0 - 5.0		NA	0.0		2.5	
					3.0	
					3.5	
					4.0	
					4.5	
					5.0	
					5.5	light brown clayey silt
					6.0	
					6.5	
					7.0	
5.0-10.0		NA	6.8		7.5	
					8.0	
					8.5	
					9.0	
					9.5	
					10.0	BORING TERMINATED AT 10 FEET BGS
					10.5	
					11.0	
					11.5	
					12.0	
					15.5	
					13.0	
					13.5	
					14.0	
					14.5	
					15.0	
					15.5	
					16.0	

DRILLING METHODS
AR - AIR ROTARY
CFA - CONTINUOUS FLIGHT AUGER
DC - DRIVEN CASING
HA - HAND AUGER
HSA - HOLLOW STEM AUGER
MD - MUD DRILLING
RC - ROCK CORING
WR - WATER ROTARY

SAMPLING METHODS
SS - SPLIT SPOON
ST - SHELBY TUBE
GP - GEOPROBE

* - Sample collected for analysis
ND = <1 ppm

Terracon

SOIL BORING LOG

PROJECT NAME: William Moore Property	SOIL BORING I.D.: MB-10
PROJECT NO.: 71137774	DATE(S) DRILLED: November 19, 2013
PROJECT LOCATION: 830 E. Sugar Creek Road Charlotte, North Carolina	DRILLING CONTR.: Probe Technology
	DRILL METHOD: Direct Push
	BORING DIAMETER: 2 inches
CLIENT: North Carolina Department of Transportation	SAMPLING METHOD/INTERVAL: GP (5-Foot)
LOGGED BY: S. Alex Chinery	REMARKS: BGS = below grade surface

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF SOIL
					0.0	dark brown/orange clayey silt
					0.5	
					1.0	
					1.5	
					2.0	
0 - 5.0		NA	0.0		2.5	
					3.0	
					3.5	
					4.0	
					4.5	
					5.0	
					5.5	brown/orange clayey silt
					6.0	
					6.5	
					7.0	
5.0-10.0		NA	0.0		7.5	
					8.0	
					8.5	
					9.0	
					9.5	
					10.0	BORING TERMINATED AT 10 FEET BGS
					10.5	
					11.0	
					11.5	
					12.0	
					15.5	
					13.0	
					13.5	
					14.0	
					14.5	
					15.0	
					15.5	
					16.0	

DRILLING METHODS
AR - AIR ROTARY
CFA - CONTINUOUS FLIGHT AUGER
DC - DRIVEN CASING
HA - HAND AUGER
HSA - HOLLOW STEM AUGER
MD - MUD DRILLING
RC - ROCK CORING
WR - WATER ROTARY

SAMPLING METHODS
SS - SPLIT SPOON
ST - SHELBY TUBE
GP - GEOPROBE

* - Sample collected for analysis
ND = <1 ppm

Terracon

SOIL BORING LOG

PROJECT NAME: William Moore Property	SOIL BORING I.D.: MB-11
PROJECT NO.: 71137774	DATE(S) DRILLED: November 19, 2013
PROJECT LOCATION: 830 E. Sugar Creek Road Charlotte, North Carolina	DRILLING CONTR.: Probe Technology
	DRILL METHOD: Direct Push
	BORING DIAMETER: 2 inches
CLIENT: North Carolina Department of Transportation	SAMPLING METHOD/INTERVAL: GP (5-Foot)
LOGGED BY: S. Alex Chinery	REMARKS: BGS = below grade surface

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF SOIL
					0.0	dark brown/orange clayey silt
					0.5	
					1.0	
					1.5	
					2.0	
0 - 5.0		NA	0.0		2.5	
					3.0	
					3.5	
					4.0	
					4.5	
					5.0	
					5.5	brown/orange clayey silt
					6.0	
					6.5	
					7.0	
5.0-10.0		NA	0.0		7.5	
					8.0	
					8.5	
					9.0	
					9.5	
					10.0	BORING TERMINATED AT 10 FEET BGS
					10.5	
					11.0	
					11.5	
					12.0	
					15.5	
					13.0	
					13.5	
					14.0	
					14.5	
					15.0	
					15.5	
					16.0	

DRILLING METHODS
AR - AIR ROTARY
CFA - CONTINUOUS FLIGHT AUGER
DC - DRIVEN CASING
HA - HAND AUGER
HSA - HOLLOW STEM AUGER
MD - MUD DRILLING
RC - ROCK CORING
WR - WATER ROTARY

SAMPLING METHODS
SS - SPLIT SPOON
ST - SHELBY TUBE
GP - GEOPROBE

* - Sample collected for analysis
ND = <1 ppm

Terracon

SOIL BORING LOG

PROJECT NAME: William Moore Property	SOIL BORING I.D.: MB-12
PROJECT NO.: 71137774	DATE(S) DRILLED: November 19, 2013
PROJECT LOCATION: 830 E. Sugar Creek Road Charlotte, North Carolina	DRILLING CONTR.: Probe Technology
	DRILL METHOD: Direct Push
	BORING DIAMETER: 2 inches
CLIENT: North Carolina Department of Transportation	SAMPLING METHOD/INTERVAL: GP (5-Foot)
LOGGED BY: S. Alex Chinery	REMARKS: BGS = below grade surface

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF SOIL
					0.0	orange/brown clayey silt
					0.5	
					1.0	
					1.5	
					2.0	
0 - 5.0		NA	0.0		2.5	
					3.0	
					3.5	
					4.0	
					4.5	
					5.0	
					5.5	dark brown/orange clayey silt
					6.0	
					6.5	
					7.0	
5.0-10.0		NA	0.0		7.5	
					8.0	
					8.5	
					9.0	
					9.5	
					10.0	BORING TERMINATED AT 10 FEET BGS
					10.5	
					11.0	
					11.5	
					12.0	
					15.5	
					13.0	
					13.5	
					14.0	
					14.5	
					15.0	
					15.5	
					16.0	

DRILLING METHODS
AR - AIR ROTARY
CFA - CONTINUOUS FLIGHT AUGER
DC - DRIVEN CASING
HA - HAND AUGER
HSA - HOLLOW STEM AUGER
MD - MUD DRILLING
RC - ROCK CORING
WR - WATER ROTARY

SAMPLING METHODS
SS - SPLIT SPOON
ST - SHELBY TUBE
GP - GEOPROBE

* - Sample collected for analysis
ND = <1 ppm

Terracon

SOIL BORING LOG

PROJECT NAME: William Moore Property	SOIL BORING I.D.: MB-13
PROJECT NO.: 71137774	DATE(S) DRILLED: November 19, 2013
PROJECT LOCATION: 830 E. Sugar Creek Road Charlotte, North Carolina	DRILLING CONTR.: Probe Technology
	DRILL METHOD: Direct Push
	BORING DIAMETER: 2 inches
CLIENT: North Carolina Department of Transportation	SAMPLING METHOD/INTERVAL: GP (5-Foot)
LOGGED BY: S. Alex Chinery	REMARKS: BGS = below grade surface

DESCRIPTIVE LOG

SAMPLE INTERVAL	SAMPLE REC. (IN.)	BLOWS PER 6"	PID/FID (ppm)	GRAPHIC COLUMN	DEPTH (FT)	DESCRIPTION OF SOIL
					0.0	dark brown/orange clayey silt
					0.5	
					1.0	
					1.5	
					2.0	
0 - 5.0		NA	0.0		2.5	
					3.0	
					3.5	
					4.0	
					4.5	
					5.0	
					5.5	
					6.0	
					6.5	
					7.0	
5.0-10.0		NA	0.0		7.5	
					8.0	
					8.5	
					9.0	
					9.5	
					10.0	BORING TERMINATED AT 10 FEET BGS
					10.5	
					11.0	
					11.5	
					12.0	
					15.5	
					13.0	
					13.5	
					14.0	
					14.5	
					15.0	
					15.5	
					16.0	

DRILLING METHODS
AR - AIR ROTARY
CFA - CONTINUOUS FLIGHT AUGER
DC - DRIVEN CASING
HA - HAND AUGER
HSA - HOLLOW STEM AUGER
MD - MUD DRILLING
RC - ROCK CORING
WR - WATER ROTARY

SAMPLING METHODS
SS - SPLIT SPOON
ST - SHELBY TUBE
GP - GEOPROBE

* - Sample collected for analysis
ND = <1 ppm

Terracon

APPENDIX E
LABORATORY ANALYTICAL REPORTS AND CHAIN OF CUSTODY

KB LABS, INC.
6821 SW Archer Road
Gainesville, Florida 32608
***Telephone* (352) 367-0073**
***Fax* (352) 378-6491**
Email: info@kbmobilelabs.com

November 27, 2013

Christopher Corbitt
Terracon Consultants
2020 Starita Road, Suite E
Charlotte, NC 28206

RE: NCDOT Sugar Creek Road

Dear Mr. Corbitt:

Enclosed is the final report of the on-site analysis performed by KB Labs, Inc. on behalf of QROS for the above referenced site. Included are a brief project narrative, final analytical results, and sample chain-of-custody form.

If you have any questions, please do not hesitate to call me or Kelly Bergdoll, President of KB Labs, at (352) 367-0073.

Sincerely,

KB Labs, Inc.

Todd Romero
Director of Operations

KB Labs, Inc.
6821 SW Archer Road
Gainesville, FL 32608
Phone: 352-367-0073
Fax: 352-367-0073
Email: info@kbmobilelabs.com

PROJECT NARRATIVE

Project Scope

On November 21, 2013, a total of 22 soil samples were received and analyzed for a NCDOT site. The samples were analyzed for field TPH.

Analytical Procedure

All samples were analyzed using Ultra -violet Fluorescence Spectrometry. For soils, ten grams of soil was extracted in 20 mL of methanol. Extracts were then analyzed on a UV fluorometer. Fluorescence was compared against a series of prepared calibration standards to produce the results. For this project a QED analyzer was used that provides a fluorescence fingerprint image for each sample and uses a spectral library to help identify the dominant hydrocarbon type where possible.

Analytical Results

Laboratory results were provided to the client on November 21, 2013. Final results of the on-site analyses are provided in this report. The data produced and reported in the field has been reviewed and approved for this final report by the Director of Operations for KB Labs.

Method Blanks: Daily analysis of methanol reagent samples was performed in order to monitor the cleanliness of the analytical system before and during each analytical run. Continuing Calibration: Following initial standardization with a five point PAH curve, standards were analyzed periodically to determine the stability of the calibration before, during, and after each analytical run.

Data are reported on an as received (wet weight) basis.

QED

AQROS

Hydrocarbon Analysis Results

Client: Terracon Consultants, Inc.
Address:

Samples taken November 20,2013
Samples extracted November 20,2013
Samples analysed November 21,2013

Contact: Chris Corbitt

Operator CSB

Project: NCDOT-Sugar Creek

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	CB-1	10.7	<0.5	<0.5	5.1	5.1	3.82	0.09	< 0.027	50.5	38.2	11.2	V.Deg.PHC 99.6%
s	CB-2	11.6	<0.6	<0.6	3.3	3.3	2.52	< 0.06	< 0.029	45.1	39.7	15.2	V.Deg.PHC 99.1%
s	CB-3	12.0	<0.6	<0.6	<0.6	<0.6	< 0.6	< 0.06	< 0.03	0	0	100	Match not possible
s	CB-4	11.6	<0.6	<0.6	6.5	6.5	4.8	0.17	< 0.029	55.5	34.7	9.8	V.Deg.PHC 82.4%
s	CB-5	11.5	<0.6	<0.6	<0.6	<0.6	< 0.57	< 0.06	< 0.029	0	10.9	89.1	Match not possible
s	CB-6	12.4	<0.6	<0.6	<0.6	<0.6	< 0.62	< 0.06	< 0.031	0	0	100	Match not possible
s	CB-7	10.9	<0.5	<0.5	<0.5	<0.5	< 0.55	< 0.05	< 0.027	0	15.8	84.2	Match not possible
s	CB-8	10.2	<0.5	<0.5	<0.5	<0.5	< 0.51	< 0.05	< 0.026	0	6.1	93.9	Match not possible
s	CB-9	12.3	<0.6	<0.6	<0.6	<0.6	< 0.61	< 0.06	< 0.031	0	17.6	82.4	Match not possible
s	CB-6-req	12.4	<0.6	<0.6	<0.6	<0.6	< 0.62	< 0.06	< 0.031	0	0	100	Match not possible

Initial Calibrator QC check OK

Low Range Calibrator Final check Low 0.063

High Range Calibrator Final check OK 1.492

Results generated by a QED HC-1 analyser

Concentration values in mg/kg for soil samples and mg/L for water samples.

Soil values are not corrected for moisture or stone content

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

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

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

Hydrocarbon Analysis Results

Client: Terracon Consultants, Inc.
Address:

Samples taken November 19,2013
Samples extracted November 19,2013
Samples analysed November 21,2013

Contact: Chris Corbitt

Operator CSB

Project: NCDOT-Sugar Creek

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	MB-1	11.7	<0.6	<0.6	14.1	14.1	10.58	0.25	< 0.029	50.5	43.1	6.4	V.Deg.PHC 100%
s	MB-2	60.8	100.2	271.7	943.4	1215.1	111.2	1.61	< 0.152	99.1	0.7	0.2	Deg.Kerosene (est) 73.4%
s	MB-3	11.4	<0.6	<0.6	<0.6	<0.6	< 0.57	< 0.06	< 0.028	0	59.1	40.9	V.Deg.PHC 90.6%
s	MB-4	11.1	<0.6	<0.6	10.4	10.4	7.86	0.25	< 0.028	49.9	42.6	7.5	V.Deg.PHC 99.4%
s	MB-5	12.0	<0.6	<0.6	12.1	12.1	8.81	0.2	< 0.03	57.6	36.2	6.2	V.Deg.PHC 98.8%
s	MB-6	20.0	<1	<1	<1	<1	< 1	< 0.1	< 0.05	0	68.1	31.9	Match not possible
s	MB-7	9.8	<0.5	<0.5	<0.5	<0.5	< 0.49	< 0.05	< 0.024	0	14	86	Match not possible
s	MB-8	10.1	<0.5	<0.5	<0.5	<0.5	< 0.51	< 0.05	< 0.025	0	0	100	Match not possible
s	MB-9	11.8	<0.6	1	18	19	16.81	0.4	< 0.029	85	12.8	2.1	Degraded Fuel (est) (PFM)
s	MB-10	11.9	<0.6	<0.6	<0.6	<0.6	< 0.59	< 0.06	< 0.03	0	0	100	Match not possible

Initial Calibrator QC check OK

Low Range Calibrator Final check OK 0.069

High Range Calibrator Final check OK 1.485

Results generated by a QED HC-1 analyser

Concentration values in mg/kg for soil samples and mg/L for water samples.

Soil values are not corrected for moisture or stone content

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

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

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

Hydrocarbon Analysis Results

Client: Terracon Consultants, Inc.
Address:

Samples taken November 19,2013
Samples extracted November 19,2013
Samples analysed November 21,2013

Contact: Chris Corbitt

Operator CSB

Project: NCDOT-Sugar Creek

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	MB-11	12.2	<0.6	<0.6	<0.6	<0.6	< 0.61	< 0.06	< 0.03	0	67.8	32.2	Match not possible
s	MB-12	12.5	<0.6	<0.6	<0.6	<0.6	< 0.63	< 0.06	< 0.031	0	66.9	33.1	Match not possible
s	MB-13	12.1	<0.6	<0.6	<0.6	<0.6	< 0.6	< 0.06	< 0.03	0	66.4	33.6	Match not possible

Initial Calibrator QC check OK

Low Range Calibrator Final check OK 0.070

High Range Calibrator Final check OK 1.496

Results generated by a QED HC-1 analyser

Concentration values in mg/kg for soil samples and mg/L for water samples.

Soil values are not corrected for moisture or stone content

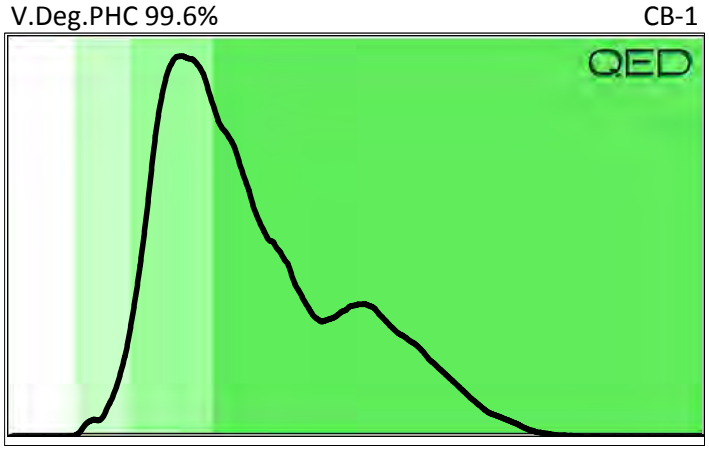
Fingerprints provide a tentative hydrocarbon identification based on operator selected library matches

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

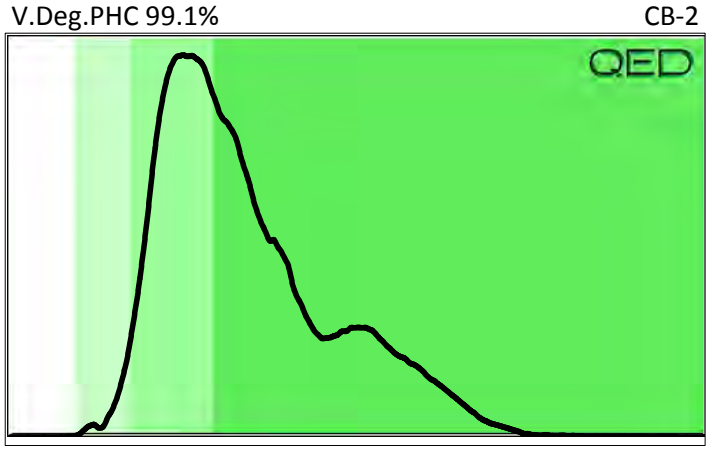
(SBS)= site specific background subracted (LBS)= Library background subtracted % = match confidence

Project NCDOT-Sugar Creek **Date** November 21,2013

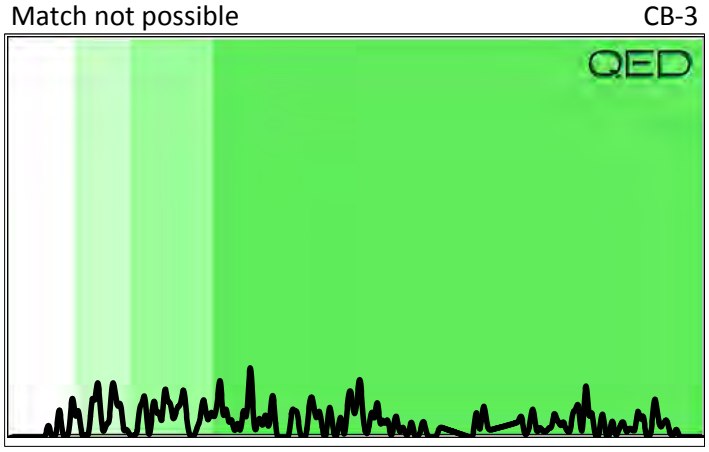
V.Deg.PHC 99.6% CB-1



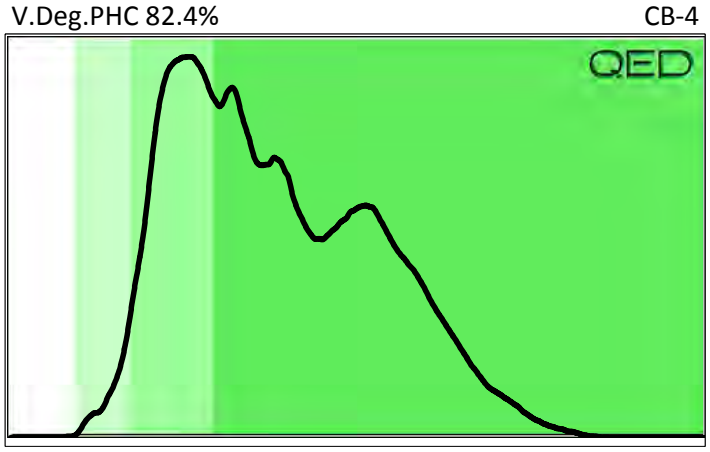
V.Deg.PHC 99.1% CB-2



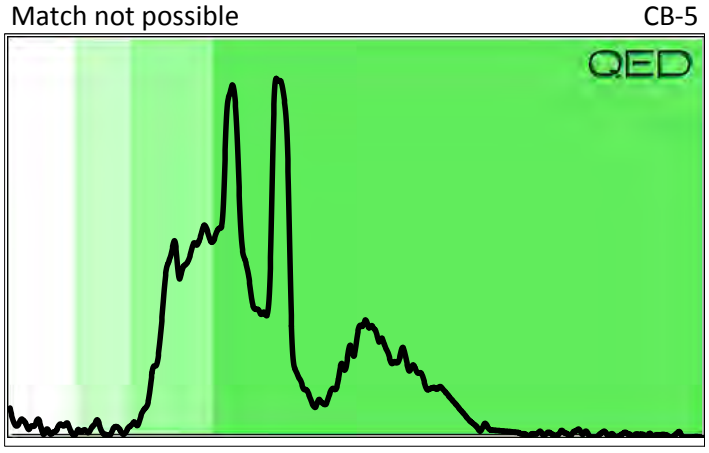
Match not possible CB-3



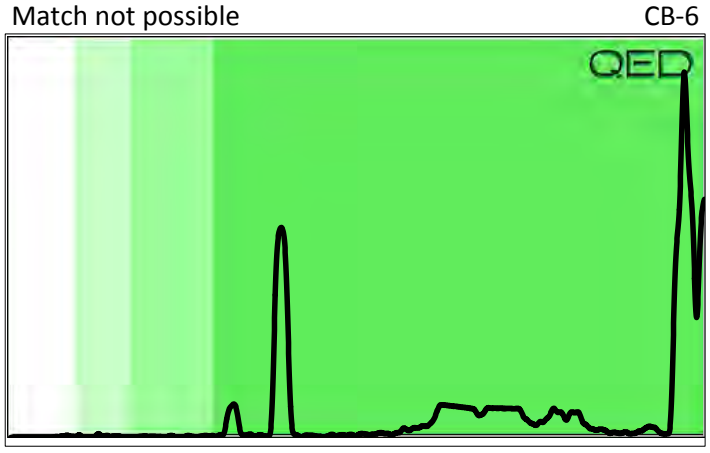
V.Deg.PHC 82.4% CB-4



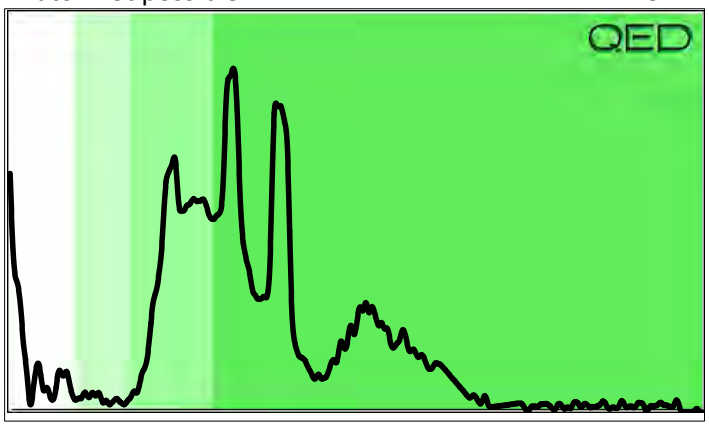
Match not possible CB-5



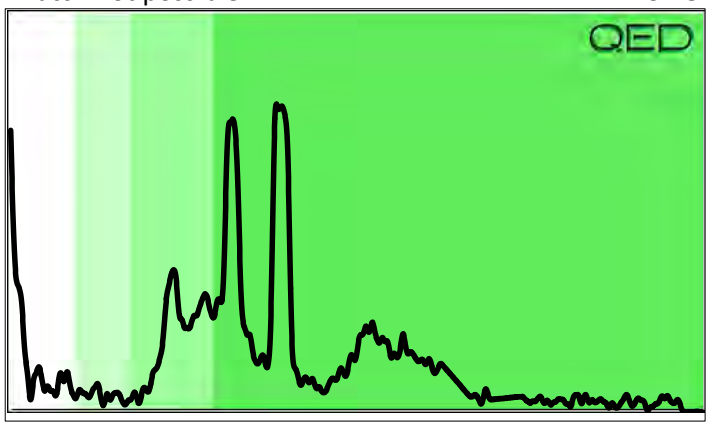
Match not possible CB-6



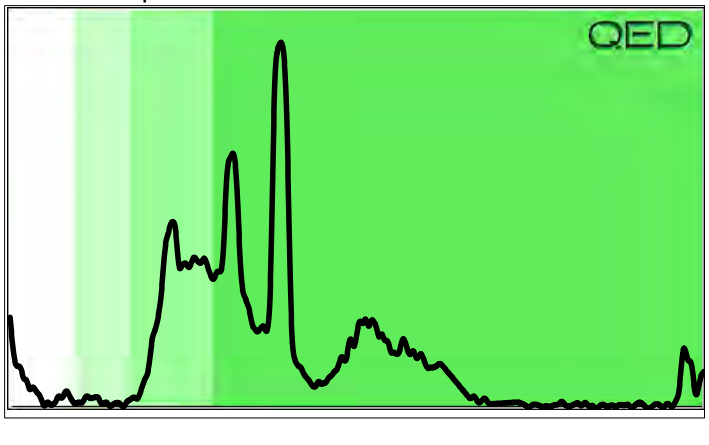
Match not possible CB-7



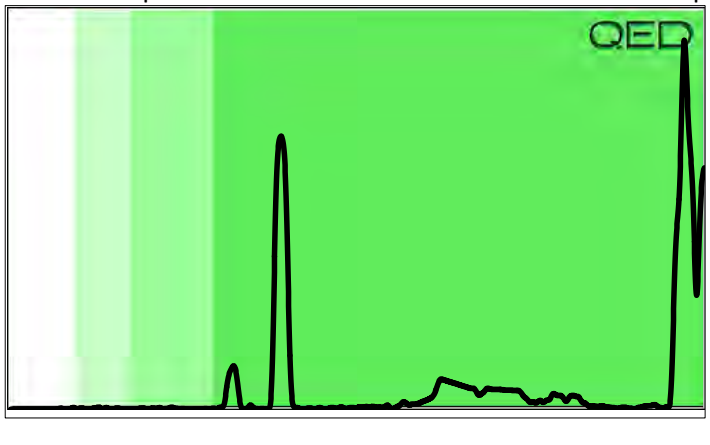
Match not possible CB-8



Match not possible CB-9

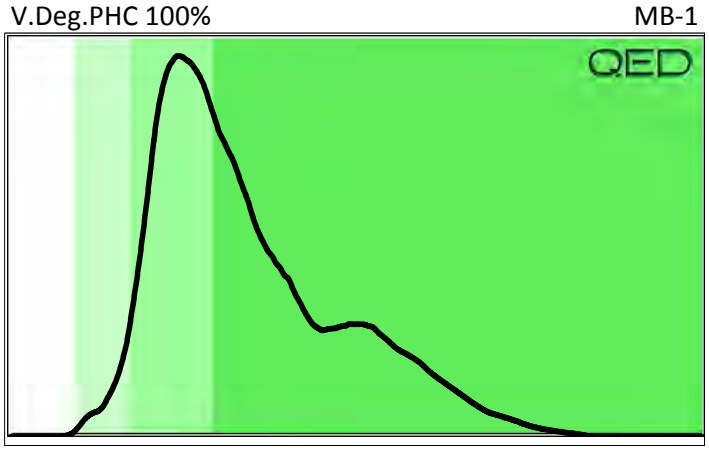


Match not possible CB-6-req

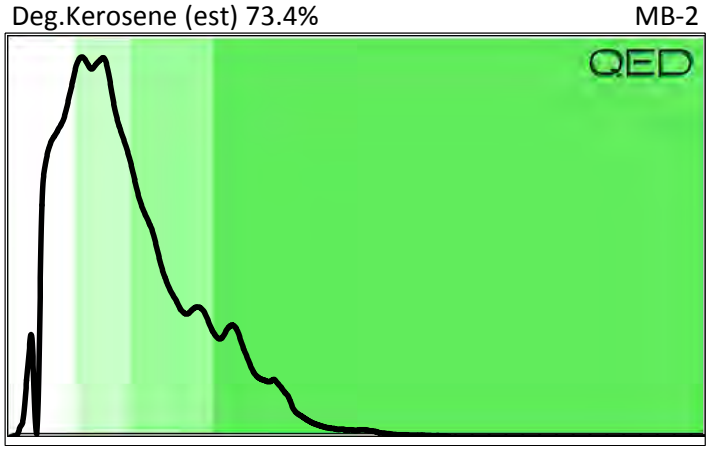


Project NCDOT-Sugar Creek **Date** November 21,2013

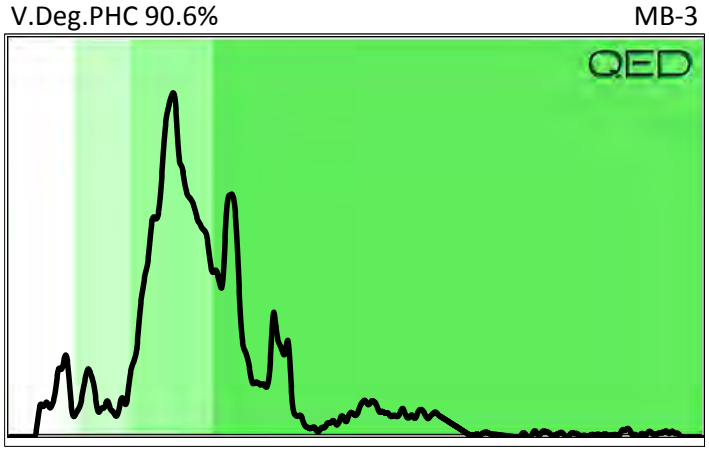
V.Deg.PHC 100% MB-1



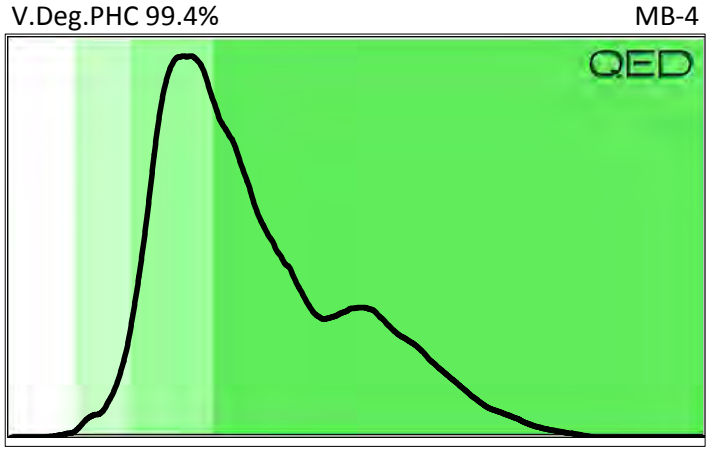
Deg.Kerosene (est) 73.4% MB-2



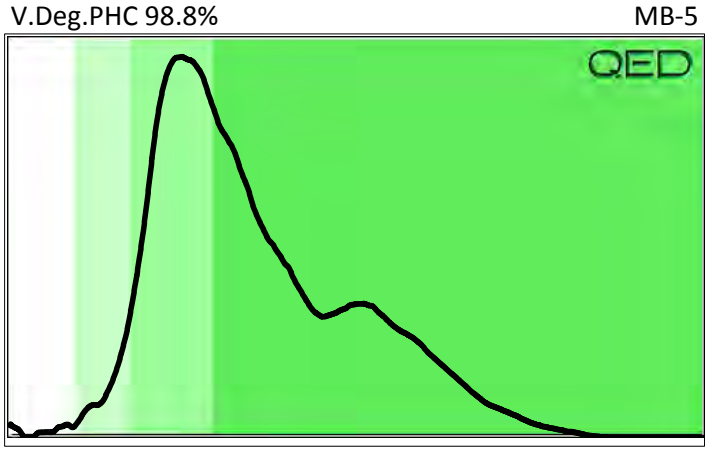
V.Deg.PHC 90.6% MB-3



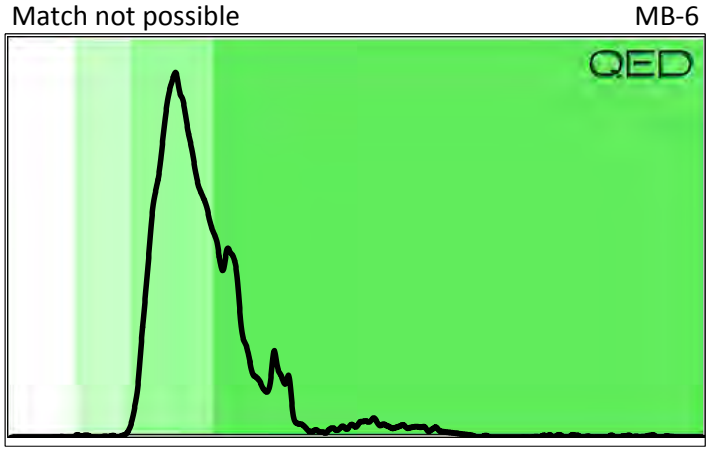
V.Deg.PHC 99.4% MB-4



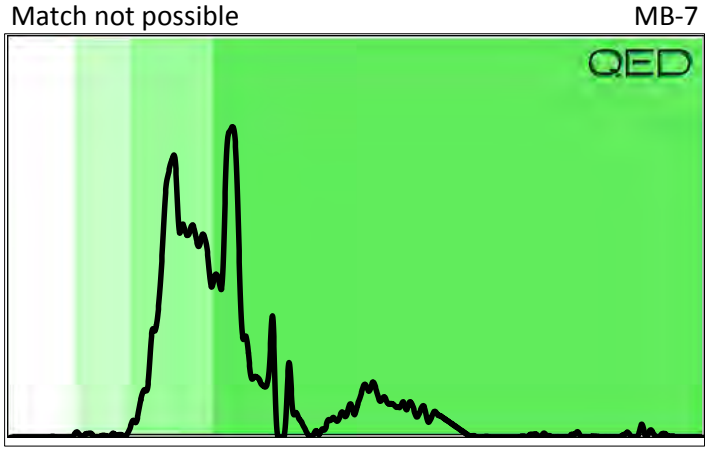
V.Deg.PHC 98.8% MB-5



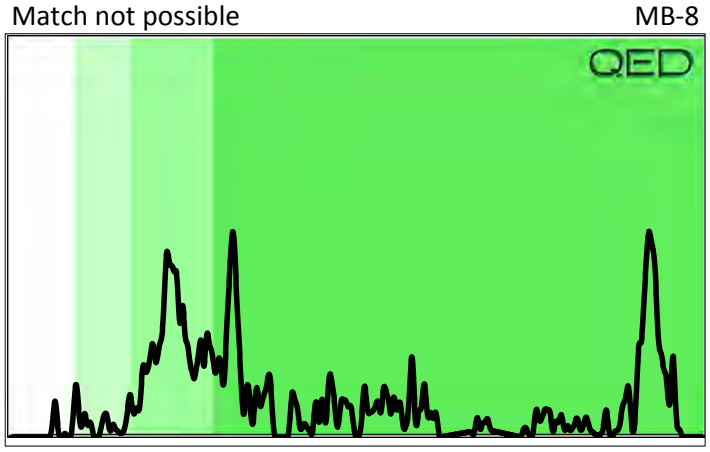
Match not possible MB-6



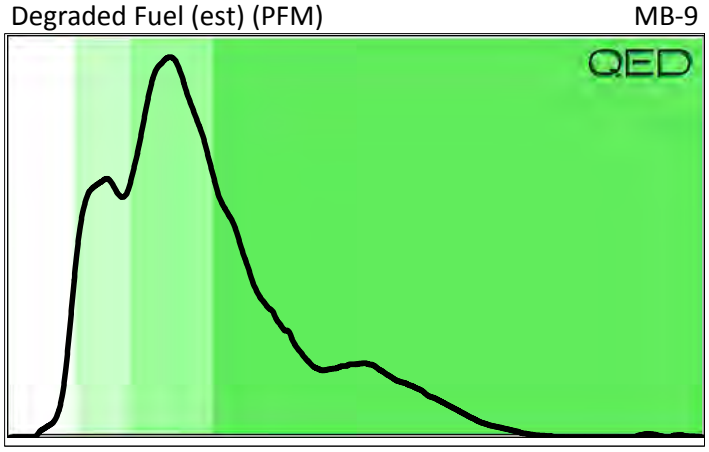
Match not possible MB-7



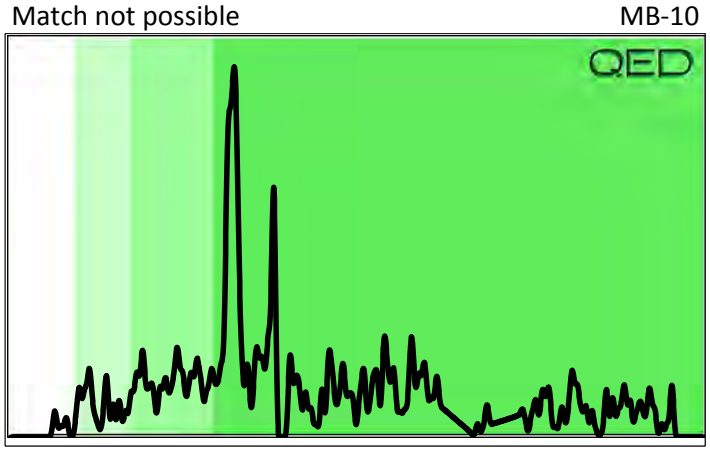
Match not possible MB-8



Degraded Fuel (est) (PFM) MB-9

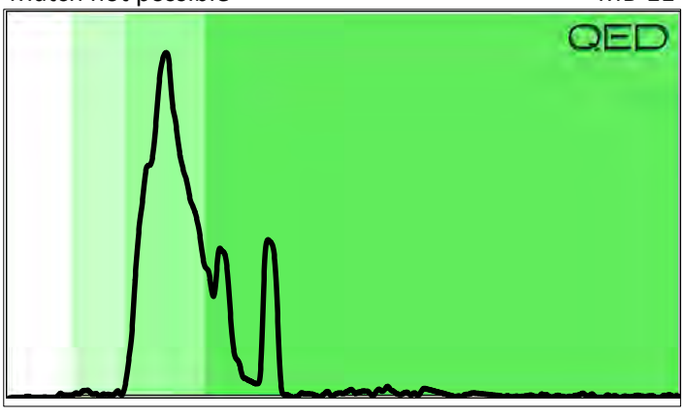


Match not possible MB-10

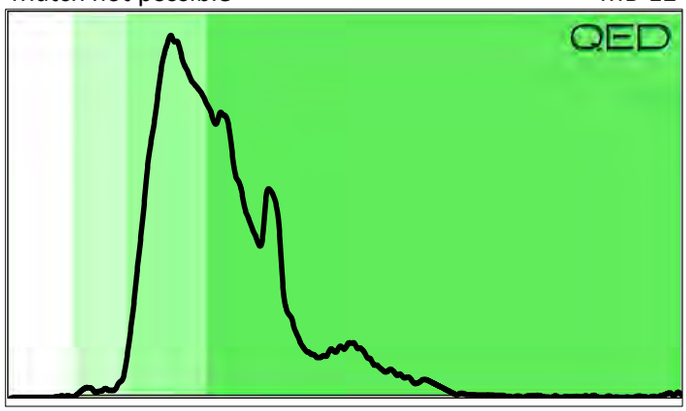


Project NCDOT-Sugar Creek **Date** November 21,2013

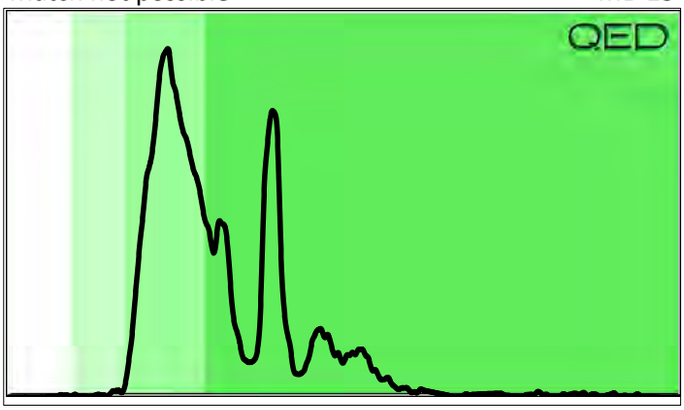
Match not possible MB-11



Match not possible MB-12



Match not possible MB-13



CHAIN-OF-CUSTODY RECORD

Mobile Laboratory Services

6821 SW Archer Road
Gainesville, FL 32608
TEL (352) 367-0073 · FAX (352) 378-6491

6701 Conference Drive
Raleigh, NC 27607
TEL (352) 538-6507

MOBILE UNIT # 4

CLIENT NAME	PROJECT NAME & ADDRESS	
Terracon Consultants, Inc	NCDOT - Sugar Creek Road, Charlotte, NC	
SAMPLERS	CONTACT PERSON	BATCH # (Lab Use Only)
Alex Chinery	Chris Corbitt	

PRESERVATION: C Chilled; H HCL; Ot Other (see Remarks)

SAMPLE FIELD ID.\ NUMBER	DATE SAMPLED	TIME SAMPLED	COMP.	GRAB	DATE REC'D	TIME REC'D	STATION LOCATION / No.	SAMPLE MATRIX	NUMBER OF CONTAINERS	IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: TPH 8260, GRO	COMMENT / SAMPLE PRE FIX
MB 1	11/19/13	14:00		X				S	1		12
MB 2	↓	14:05		X				↓	↓	↓	10.2
MB 3		14:10		X							12.3
MB 4		14:15		X							12.6
MB 5		14:20		X							11.7
MB 6		15:00		X							peak observed, no match 7
MB 7		16:00		X							14.3
MB 8		15:55		X							13.8
MB 9		15:45		X							11.9
MB 10		15:20		X							11.8
MB 11		15:15		X							peak observed, no match 11.5
MB 12		15:10		X							" " 11.2
MB 13	↓	15:05		X				↓	↓	↓	" " 11.6

	Date / Time		Date / Time	Remarks and Observations
Precleaned Containers Relinquished by: *(Signature)*		Received by: *(Signature)*		
Relinquished by: *(Signature)* Chris Corbitt	Date / Time 11/20/13 15:30	Received by: *(Signature)*	Date / Time 11/21/13 1340	

Matrix Types S Soil SW Surface Water GW Ground Water SG Soil Gas

CHAIN-OF-CUSTODY RECORD

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MOBILE UNIT # 4

CLIENT NAME	PROJECT NAME & ADDRESS	
Terracon Consultants, Inc.	NCDOT – Sugar Creek Road, Charlotte, NC	
SAMPLERS	**CONTACT PERSON**	**BATCH # (Lab Use Only)**
Alex Chinery	Chris Corbitt	

PRESERVATION: C Chilled; H HCL; Ot Other (see Remarks)

SAMPLE FIELD ID.\ NUMBER	DATE SAMPLED	TIME SAMPLED	COMP.	GRAB	DATE REC'D	TIME REC'D	STATION LOCATION / No.	SAMPLE MATRIX	NUMBER OF CONTAINERS	IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: TPH DRO, GRO	COMMENT / SAMPLE PRE FIX
✓CB 1	11/20/13	10:50		X				S	1		13.1
✓CB 2	↓	10:55		X				↓	↓		12.1
✓CB 3		11:00		X							11.7
✓CB 4		11:05		X							12.1
✓CB 5		11:10		X							12.2
✓CB 6		11:15		X							Extract was very colored 11.3
✓CB 7		11:20		X							12.8
✓CB 8		11:25		X							13.7
✓CB 9	↓	11:30		X				↓	↓	↓	11.9

	Date / Time	Received by: *(Signature)*	Date / Time	**Remarks and Observations**
Precleaned Containers Relinquished by: *(Signature)*				
Relinquished by: *(Signature)*	Date / Time 11/20/13 15:30	Received by: *(Signature)*	Date / Time 11/21/13 1300	

Matrix Types S Soil SW Surface Water GW Ground Water SG Soil Gas

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Huntersville, NC 28078
(704)875-9092

December 05, 2013

Chemical Testing Engineer
NCDOT
Materials & Tests Unit
1801 Blue Ridge Road
Raleigh, NC 27607

RE: Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Dear Chemical Engineer:
Enclosed are the analytical results for sample(s) received by the laboratory on November 22, 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 Herring

kevin.herring@pacelabs.com
Project Manager

Enclosures

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(704)875-9092

CERTIFICATIONS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

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

REPORT OF LABORATORY ANALYSIS

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(704)875-9092

SAMPLE ANALYTE COUNT

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92180616001	**MB1**	EPA 8270	RES	74	PASI-C
		EPA 8260	DLK	70	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92180616002	**MB2**	EPA 8270	RES	74	PASI-C
		EPA 8260	DLK	70	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92180616003	**MB4**	EPA 8270	RES	74	PASI-C
		EPA 8260	DLK	70	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92180616004	**MB9**	EPA 8270	RES	74	PASI-C
		EPA 8260	DLK	70	PASI-C
		ASTM D2974-87	TNM	1	PASI-C

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92180616001	**MB1**					
EPA 8260	Acetone	368	ug/kg	102	12/02/13 23:41	
EPA 8260	Benzene	6.8	ug/kg	5.1	12/02/13 23:41	
EPA 8260	Ethylbenzene	7.4	ug/kg	5.1	12/02/13 23:41	
EPA 8260	Xylene (Total)	19.9	ug/kg	10.2	12/02/13 23:41	
EPA 8260	m&p-Xylene	19.9	ug/kg	10.2	12/02/13 23:41	
ASTM D2974-87	Percent Moisture	21.0	%	0.10	12/04/13 08:36	
92180616002	**MB2**					
EPA 8270	1-Methylnaphthalene	922	ug/kg	466	12/01/13 16:06	
EPA 8270	2-Methylnaphthalene	2010	ug/kg	466	12/01/13 16:06	
EPA 8270	Naphthalene	2030	ug/kg	466	12/01/13 16:06	
EPA 8260	Benzene	898	ug/kg	705	12/03/13 00:00	
EPA 8260	n-Butylbenzene	7540	ug/kg	705	12/03/13 00:00	
EPA 8260	sec-Butylbenzene	3580	ug/kg	705	12/03/13 00:00	
EPA 8260	Ethylbenzene	53500	ug/kg	3530	12/03/13 14:07	
EPA 8260	Isopropylbenzene (Cumene)	5600	ug/kg	705	12/03/13 00:00	
EPA 8260	p-Isopropyltoluene	5360	ug/kg	705	12/03/13 00:00	
EPA 8260	Naphthalene	12600	ug/kg	705	12/03/13 00:00	
EPA 8260	n-Propylbenzene	21400	ug/kg	705	12/03/13 00:00	
EPA 8260	Toluene	9780	ug/kg	705	12/03/13 00:00	
EPA 8260	1,2,4-Trimethylbenzene	140000	ug/kg	3530	12/03/13 14:07	
EPA 8260	1,3,5-Trimethylbenzene	50500	ug/kg	3530	12/03/13 14:07	
EPA 8260	Xylene (Total)	199000	ug/kg	7050	12/03/13 14:07	
EPA 8260	m&p-Xylene	166000	ug/kg	7050	12/03/13 14:07	
EPA 8260	o-Xylene	32800	ug/kg	705	12/03/13 00:00	
ASTM D2974-87	Percent Moisture	29.1	%	0.10	12/04/13 08:37	
92180616003	**MB4**					
EPA 8260	Acetone	237	ug/kg	94.1	12/03/13 00:20	A+
EPA 8260	Benzene	15.9	ug/kg	4.7	12/03/13 00:20	
EPA 8260	Ethylbenzene	49.0	ug/kg	4.7	12/03/13 00:20	
EPA 8260	Isopropylbenzene (Cumene)	4.9	ug/kg	4.7	12/03/13 00:20	
EPA 8260	Naphthalene	5.9	ug/kg	4.7	12/03/13 00:20	
EPA 8260	n-Propylbenzene	14.3	ug/kg	4.7	12/03/13 00:20	
EPA 8260	1,2,4-Trimethylbenzene	50.5	ug/kg	4.7	12/03/13 00:20	
EPA 8260	1,3,5-Trimethylbenzene	37.3	ug/kg	4.7	12/03/13 00:20	
EPA 8260	Xylene (Total)	130	ug/kg	9.4	12/03/13 00:20	
EPA 8260	m&p-Xylene	125	ug/kg	9.4	12/03/13 00:20	
EPA 8260	o-Xylene	5.0	ug/kg	4.7	12/03/13 00:20	
ASTM D2974-87	Percent Moisture	21.4	%	0.10	12/04/13 08:37	
92180616004	**MB9**					
EPA 8260	Acetone	281	ug/kg	102	12/03/13 00:39	A+
EPA 8260	n-Butylbenzene	17.1	ug/kg	5.1	12/03/13 00:39	
EPA 8260	sec-Butylbenzene	11.1	ug/kg	5.1	12/03/13 00:39	
EPA 8260	Ethylbenzene	11.4	ug/kg	5.1	12/03/13 00:39	
EPA 8260	Isopropylbenzene (Cumene)	18.4	ug/kg	5.1	12/03/13 00:39	
EPA 8260	Naphthalene	23.6	ug/kg	5.1	12/03/13 00:39	
EPA 8260	n-Propylbenzene	52.3	ug/kg	5.1	12/03/13 00:39	

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92180616004	**MB9**					
EPA 8260	Toluene	6.1	ug/kg	5.1	12/03/13 00:39	
EPA 8260	1,2,4-Trimethylbenzene	6.6	ug/kg	5.1	12/03/13 00:39	
EPA 8260	Xylene (Total)	25.6	ug/kg	10.2	12/03/13 00:39	
EPA 8260	m&p-Xylene	25.6	ug/kg	10.2	12/03/13 00:39	
ASTM D2974-87	Percent Moisture	24.5	%	0.10	12/04/13 08:37	

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PROJECT NARRATIVE

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Method: **EPA 8270**
Description: 8270 MSSV Microwave
Client: NCDOT West Central
Date: December 05, 2013

General Information:
4 samples were analyzed for EPA 8270. 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.

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, where applicable, 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.

QC Batch: OEXT/24888

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92180616004

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1093065)
  - 1,2-Dichlorobenzene
  - 2,4-Dinitrophenol
  - Benzoic Acid
- MSD (Lab ID: 1093066)
  - 1,2-Dichlorobenzene

R1: RPD value was outside control limits.

- MSD (Lab ID: 1093066)
  - 4,6-Dinitro-2-methylphenol

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Huntersville, NC 28078
(704)875-9092

PROJECT NARRATIVE

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Method: **EPA 8270**
Description: 8270 MSSV Microwave
Client: NCDOT West Central
Date: December 05, 2013

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Method: **EPA 8260**
Description: 8260/5035A Volatile Organics
Client: NCDOT West Central
Date: December 05, 2013

General Information:
4 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.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, 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.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: MSV/25102

R1: RPD value was outside control limits.

- DUP (Lab ID: 1097144)
  - Acetone
  - Ethylbenzene
  - m&p-Xylene

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Sample: MB1 **Lab ID: 92180616001** Collected: 11/22/13 08:30 Received: 11/22/13 09:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
Acenaphthene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	83-32-9	
Acenaphthylene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	208-96-8	
Aniline	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	62-53-3	
Anthracene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	120-12-7	
Benzo(a)anthracene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	56-55-3	
Benzo(a)pyrene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	207-08-9	
Benzoic Acid	ND	ug/kg	2090	1	11/22/13 16:42	12/01/13 15:36	65-85-0	
Benzyl alcohol	ND	ug/kg	836	1	11/22/13 16:42	12/01/13 15:36	100-51-6	
4-Bromophenylphenyl ether	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	101-55-3	
Butylbenzylphthalate	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	85-68-7	
4-Chloro-3-methylphenol	ND	ug/kg	836	1	11/22/13 16:42	12/01/13 15:36	59-50-7	
4-Chloroaniline	ND	ug/kg	2090	1	11/22/13 16:42	12/01/13 15:36	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	108-60-1	
2-Chloronaphthalene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	91-58-7	
2-Chlorophenol	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	7005-72-3	
Chrysene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	53-70-3	
Dibenzofuran	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	2090	1	11/22/13 16:42	12/01/13 15:36	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	120-83-2	
Diethylphthalate	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	105-67-9	
Dimethylphthalate	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	131-11-3	
Di-n-butylphthalate	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	836	1	11/22/13 16:42	12/01/13 15:36	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	2090	1	11/22/13 16:42	12/01/13 15:36	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	606-20-2	
Di-n-octylphthalate	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	117-81-7	
Fluoranthene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	206-44-0	
Fluorene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	87-68-3	
Hexachlorobenzene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	118-74-1	
Hexachlorocyclopentadiene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	77-47-4	
Hexachloroethane	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	193-39-5	

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ANALYTICAL RESULTS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Sample: MB1 **Lab ID: 92180616001** Collected: 11/22/13 08:30 Received: 11/22/13 09:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
Isophorone	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	78-59-1	
1-Methylnaphthalene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	90-12-0	
2-Methylnaphthalene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36		
Naphthalene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	91-20-3	
2-Nitroaniline	ND	ug/kg	2090	1	11/22/13 16:42	12/01/13 15:36	88-74-4	
3-Nitroaniline	ND	ug/kg	2090	1	11/22/13 16:42	12/01/13 15:36	99-09-2	
4-Nitroaniline	ND	ug/kg	836	1	11/22/13 16:42	12/01/13 15:36	100-01-6	
Nitrobenzene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	98-95-3	
2-Nitrophenol	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	88-75-5	
4-Nitrophenol	ND	ug/kg	2090	1	11/22/13 16:42	12/01/13 15:36	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	86-30-6	
Pentachlorophenol	ND	ug/kg	2090	1	11/22/13 16:42	12/01/13 15:36	87-86-5	
Phenanthrene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	85-01-8	
Phenol	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	108-95-2	
Pyrene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	418	1	11/22/13 16:42	12/01/13 15:36	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	71	%	23-110	1	11/22/13 16:42	12/01/13 15:36	4165-60-0	
2-Fluorobiphenyl (S)	82	%	30-110	1	11/22/13 16:42	12/01/13 15:36	321-60-8	
Terphenyl-d14 (S)	85	%	28-110	1	11/22/13 16:42	12/01/13 15:36	1718-51-0	
Phenol-d6 (S)	81	%	22-110	1	11/22/13 16:42	12/01/13 15:36	13127-88-3	
2-Fluorophenol (S)	81	%	13-110	1	11/22/13 16:42	12/01/13 15:36	367-12-4	
2,4,6-Tribromophenol (S)	85	%	27-110	1	11/22/13 16:42	12/01/13 15:36	118-79-6	
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Acetone	**368**	ug/kg	102	1		12/02/13 23:41	67-64-1	
Benzene	**6.8**	ug/kg	5.1	1		12/02/13 23:41	71-43-2	
Bromobenzene	ND	ug/kg	5.1	1		12/02/13 23:41	108-86-1	
Bromochloromethane	ND	ug/kg	5.1	1		12/02/13 23:41	74-97-5	
Bromodichloromethane	ND	ug/kg	5.1	1		12/02/13 23:41	75-27-4	
Bromoform	ND	ug/kg	5.1	1		12/02/13 23:41	75-25-2	
Bromomethane	ND	ug/kg	10.2	1		12/02/13 23:41	74-83-9	
2-Butanone (MEK)	ND	ug/kg	102	1		12/02/13 23:41	78-93-3	
n-Butylbenzene	ND	ug/kg	5.1	1		12/02/13 23:41	104-51-8	
sec-Butylbenzene	ND	ug/kg	5.1	1		12/02/13 23:41	135-98-8	
tert-Butylbenzene	ND	ug/kg	5.1	1		12/02/13 23:41	98-06-6	
Carbon tetrachloride	ND	ug/kg	5.1	1		12/02/13 23:41	56-23-5	
Chlorobenzene	ND	ug/kg	5.1	1		12/02/13 23:41	108-90-7	
Chloroethane	ND	ug/kg	10.2	1		12/02/13 23:41	75-00-3	
Chloroform	ND	ug/kg	5.1	1		12/02/13 23:41	67-66-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Sample: MB1 **Lab ID: 92180616001** Collected: 11/22/13 08:30 Received: 11/22/13 09:35 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							
Chloromethane	ND	ug/kg	10.2	1		12/02/13 23:41	74-87-3	
2-Chlorotoluene	ND	ug/kg	5.1	1		12/02/13 23:41	95-49-8	
4-Chlorotoluene	ND	ug/kg	5.1	1		12/02/13 23:41	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	5.1	1		12/02/13 23:41	96-12-8	
Dibromochloromethane	ND	ug/kg	5.1	1		12/02/13 23:41	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	5.1	1		12/02/13 23:41	106-93-4	
Dibromomethane	ND	ug/kg	5.1	1		12/02/13 23:41	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	5.1	1		12/02/13 23:41	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	5.1	1		12/02/13 23:41	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	5.1	1		12/02/13 23:41	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	10.2	1		12/02/13 23:41	75-71-8	
1,1-Dichloroethane	ND	ug/kg	5.1	1		12/02/13 23:41	75-34-3	
1,2-Dichloroethane	ND	ug/kg	5.1	1		12/02/13 23:41	107-06-2	
1,1-Dichloroethene	ND	ug/kg	5.1	1		12/02/13 23:41	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	5.1	1		12/02/13 23:41	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	5.1	1		12/02/13 23:41	156-60-5	
1,2-Dichloropropane	ND	ug/kg	5.1	1		12/02/13 23:41	78-87-5	
1,3-Dichloropropane	ND	ug/kg	5.1	1		12/02/13 23:41	142-28-9	
2,2-Dichloropropane	ND	ug/kg	5.1	1		12/02/13 23:41	594-20-7	
1,1-Dichloropropene	ND	ug/kg	5.1	1		12/02/13 23:41	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	5.1	1		12/02/13 23:41	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	5.1	1		12/02/13 23:41	10061-02-6	
Diisopropyl ether	ND	ug/kg	5.1	1		12/02/13 23:41	108-20-3	
Ethylbenzene	**7.4**	ug/kg	5.1	1		12/02/13 23:41	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	5.1	1		12/02/13 23:41	87-68-3	
2-Hexanone	ND	ug/kg	51.1	1		12/02/13 23:41	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	5.1	1		12/02/13 23:41	98-82-8	
p-Isopropyltoluene	ND	ug/kg	5.1	1		12/02/13 23:41	99-87-6	
Methylene Chloride	ND	ug/kg	20.5	1		12/02/13 23:41	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	51.1	1		12/02/13 23:41	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	5.1	1		12/02/13 23:41	1634-04-4	
Naphthalene	ND	ug/kg	5.1	1		12/02/13 23:41	91-20-3	
n-Propylbenzene	ND	ug/kg	5.1	1		12/02/13 23:41	103-65-1	
Styrene	ND	ug/kg	5.1	1		12/02/13 23:41	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	5.1	1		12/02/13 23:41	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.1	1		12/02/13 23:41	79-34-5	
Tetrachloroethene	ND	ug/kg	5.1	1		12/02/13 23:41	127-18-4	
Toluene	ND	ug/kg	5.1	1		12/02/13 23:41	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	5.1	1		12/02/13 23:41	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	5.1	1		12/02/13 23:41	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	5.1	1		12/02/13 23:41	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	5.1	1		12/02/13 23:41	79-00-5	
Trichloroethene	ND	ug/kg	5.1	1		12/02/13 23:41	79-01-6	
Trichlorofluoromethane	ND	ug/kg	5.1	1		12/02/13 23:41	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	5.1	1		12/02/13 23:41	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	5.1	1		12/02/13 23:41	95-63-6	

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ANALYTICAL RESULTS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Sample: MB1 **Lab ID: 92180616001** Collected: 11/22/13 08:30 Received: 11/22/13 09:35 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							
1,3,5-Trimethylbenzene	ND	ug/kg	5.1	1		12/02/13 23:41	108-67-8	
Vinyl acetate	ND	ug/kg	51.1	1		12/02/13 23:41	108-05-4	
Vinyl chloride	ND	ug/kg	10.2	1		12/02/13 23:41	75-01-4	
Xylene (Total)	**19.9**	ug/kg	10.2	1		12/02/13 23:41	1330-20-7	
m&p-Xylene	**19.9**	ug/kg	10.2	1		12/02/13 23:41	179601-23-1	
o-Xylene	ND	ug/kg	5.1	1		12/02/13 23:41	95-47-6	
Surrogates								
Toluene-d8 (S)	102	%	70-130	1		12/02/13 23:41	2037-26-5	
4-Bromofluorobenzene (S)	85	%	70-130	1		12/02/13 23:41	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-132	1		12/02/13 23:41	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**21.0**	%	0.10	1		12/04/13 08:36		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Sample: MB2 **Lab ID: 92180616002** Collected: 11/22/13 08:35 Received: 11/22/13 09:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
Acenaphthene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	83-32-9	
Acenaphthylene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	208-96-8	
Aniline	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	62-53-3	
Anthracene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	120-12-7	
Benzo(a)anthracene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	56-55-3	
Benzo(a)pyrene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	207-08-9	
Benzoic Acid	ND	ug/kg	2330	1	11/22/13 16:42	12/01/13 16:06	65-85-0	
Benzyl alcohol	ND	ug/kg	931	1	11/22/13 16:42	12/01/13 16:06	100-51-6	
4-Bromophenylphenyl ether	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	101-55-3	
Butylbenzylphthalate	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	85-68-7	
4-Chloro-3-methylphenol	ND	ug/kg	931	1	11/22/13 16:42	12/01/13 16:06	59-50-7	
4-Chloroaniline	ND	ug/kg	2330	1	11/22/13 16:42	12/01/13 16:06	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	108-60-1	
2-Chloronaphthalene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	91-58-7	
2-Chlorophenol	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	7005-72-3	
Chrysene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	53-70-3	
Dibenzofuran	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	2330	1	11/22/13 16:42	12/01/13 16:06	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	120-83-2	
Diethylphthalate	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	105-67-9	
Dimethylphthalate	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	131-11-3	
Di-n-butylphthalate	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	931	1	11/22/13 16:42	12/01/13 16:06	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	2330	1	11/22/13 16:42	12/01/13 16:06	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	606-20-2	
Di-n-octylphthalate	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	117-81-7	
Fluoranthene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	206-44-0	
Fluorene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	87-68-3	
Hexachlorobenzene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	118-74-1	
Hexachlorocyclopentadiene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	77-47-4	
Hexachloroethane	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	193-39-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Sample: MB2 **Lab ID: 92180616002** Collected: 11/22/13 08:35 Received: 11/22/13 09:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
Isophorone	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	78-59-1	
1-Methylnaphthalene	**922**	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	90-12-0	
2-Methylnaphthalene	**2010**	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06		
Naphthalene	**2030**	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	91-20-3	
2-Nitroaniline	ND	ug/kg	2330	1	11/22/13 16:42	12/01/13 16:06	88-74-4	
3-Nitroaniline	ND	ug/kg	2330	1	11/22/13 16:42	12/01/13 16:06	99-09-2	
4-Nitroaniline	ND	ug/kg	931	1	11/22/13 16:42	12/01/13 16:06	100-01-6	
Nitrobenzene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	98-95-3	
2-Nitrophenol	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	88-75-5	
4-Nitrophenol	ND	ug/kg	2330	1	11/22/13 16:42	12/01/13 16:06	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	86-30-6	
Pentachlorophenol	ND	ug/kg	2330	1	11/22/13 16:42	12/01/13 16:06	87-86-5	
Phenanthrene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	85-01-8	
Phenol	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	108-95-2	
Pyrene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	466	1	11/22/13 16:42	12/01/13 16:06	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	58	%	23-110	1	11/22/13 16:42	12/01/13 16:06	4165-60-0	
2-Fluorobiphenyl (S)	82	%	30-110	1	11/22/13 16:42	12/01/13 16:06	321-60-8	
Terphenyl-d14 (S)	84	%	28-110	1	11/22/13 16:42	12/01/13 16:06	1718-51-0	
Phenol-d6 (S)	77	%	22-110	1	11/22/13 16:42	12/01/13 16:06	13127-88-3	
2-Fluorophenol (S)	68	%	13-110	1	11/22/13 16:42	12/01/13 16:06	367-12-4	
2,4,6-Tribromophenol (S)	67	%	27-110	1	11/22/13 16:42	12/01/13 16:06	118-79-6	
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Acetone	ND	ug/kg	14100	100		12/03/13 00:00	67-64-1	
Benzene	**898**	ug/kg	705	100		12/03/13 00:00	71-43-2	
Bromobenzene	ND	ug/kg	705	100		12/03/13 00:00	108-86-1	
Bromochloromethane	ND	ug/kg	705	100		12/03/13 00:00	74-97-5	
Bromodichloromethane	ND	ug/kg	705	100		12/03/13 00:00	75-27-4	
Bromoform	ND	ug/kg	705	100		12/03/13 00:00	75-25-2	
Bromomethane	ND	ug/kg	1410	100		12/03/13 00:00	74-83-9	
2-Butanone (MEK)	ND	ug/kg	14100	100		12/03/13 00:00	78-93-3	
n-Butylbenzene	**7540**	ug/kg	705	100		12/03/13 00:00	104-51-8	
sec-Butylbenzene	**3580**	ug/kg	705	100		12/03/13 00:00	135-98-8	
tert-Butylbenzene	ND	ug/kg	705	100		12/03/13 00:00	98-06-6	
Carbon tetrachloride	ND	ug/kg	705	100		12/03/13 00:00	56-23-5	
Chlorobenzene	ND	ug/kg	705	100		12/03/13 00:00	108-90-7	
Chloroethane	ND	ug/kg	1410	100		12/03/13 00:00	75-00-3	
Chloroform	ND	ug/kg	705	100		12/03/13 00:00	67-66-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Sample: MB2 **Lab ID: 92180616002** Collected: 11/22/13 08:35 Received: 11/22/13 09:35 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							
Chloromethane	ND	ug/kg	1410	100		12/03/13 00:00	74-87-3	
2-Chlorotoluene	ND	ug/kg	705	100		12/03/13 00:00	95-49-8	
4-Chlorotoluene	ND	ug/kg	705	100		12/03/13 00:00	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	705	100		12/03/13 00:00	96-12-8	
Dibromochloromethane	ND	ug/kg	705	100		12/03/13 00:00	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	705	100		12/03/13 00:00	106-93-4	
Dibromomethane	ND	ug/kg	705	100		12/03/13 00:00	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	705	100		12/03/13 00:00	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	705	100		12/03/13 00:00	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	705	100		12/03/13 00:00	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	1410	100		12/03/13 00:00	75-71-8	
1,1-Dichloroethane	ND	ug/kg	705	100		12/03/13 00:00	75-34-3	
1,2-Dichloroethane	ND	ug/kg	705	100		12/03/13 00:00	107-06-2	
1,1-Dichloroethene	ND	ug/kg	705	100		12/03/13 00:00	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	705	100		12/03/13 00:00	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	705	100		12/03/13 00:00	156-60-5	
1,2-Dichloropropane	ND	ug/kg	705	100		12/03/13 00:00	78-87-5	
1,3-Dichloropropane	ND	ug/kg	705	100		12/03/13 00:00	142-28-9	
2,2-Dichloropropane	ND	ug/kg	705	100		12/03/13 00:00	594-20-7	
1,1-Dichloropropene	ND	ug/kg	705	100		12/03/13 00:00	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	705	100		12/03/13 00:00	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	705	100		12/03/13 00:00	10061-02-6	
Diisopropyl ether	ND	ug/kg	705	100		12/03/13 00:00	108-20-3	
Ethylbenzene	**53500**	ug/kg	3530	500		12/03/13 14:07	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	705	100		12/03/13 00:00	87-68-3	
2-Hexanone	ND	ug/kg	7050	100		12/03/13 00:00	591-78-6	
Isopropylbenzene (Cumene)	**5600**	ug/kg	705	100		12/03/13 00:00	98-82-8	
p-Isopropyltoluene	**5360**	ug/kg	705	100		12/03/13 00:00	99-87-6	
Methylene Chloride	ND	ug/kg	2820	100		12/03/13 00:00	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	7050	100		12/03/13 00:00	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	705	100		12/03/13 00:00	1634-04-4	
Naphthalene	**12600**	ug/kg	705	100		12/03/13 00:00	91-20-3	
n-Propylbenzene	**21400**	ug/kg	705	100		12/03/13 00:00	103-65-1	
Styrene	ND	ug/kg	705	100		12/03/13 00:00	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	705	100		12/03/13 00:00	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	705	100		12/03/13 00:00	79-34-5	
Tetrachloroethene	ND	ug/kg	705	100		12/03/13 00:00	127-18-4	
Toluene	**9780**	ug/kg	705	100		12/03/13 00:00	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	705	100		12/03/13 00:00	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	705	100		12/03/13 00:00	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	705	100		12/03/13 00:00	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	705	100		12/03/13 00:00	79-00-5	
Trichloroethene	ND	ug/kg	705	100		12/03/13 00:00	79-01-6	
Trichlorofluoromethane	ND	ug/kg	705	100		12/03/13 00:00	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	705	100		12/03/13 00:00	96-18-4	
1,2,4-Trimethylbenzene	**140000**	ug/kg	3530	500		12/03/13 14:07	95-63-6	

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ANALYTICAL RESULTS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Sample: MB2 **Lab ID: 92180616002** Collected: 11/22/13 08:35 Received: 11/22/13 09:35 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							
1,3,5-Trimethylbenzene	**50500**	ug/kg	3530	500		12/03/13 14:07	108-67-8	
Vinyl acetate	ND	ug/kg	7050	100		12/03/13 00:00	108-05-4	
Vinyl chloride	ND	ug/kg	1410	100		12/03/13 00:00	75-01-4	
Xylene (Total)	**199000**	ug/kg	7050	500		12/03/13 14:07	1330-20-7	
m&p-Xylene	**166000**	ug/kg	7050	500		12/03/13 14:07	179601-23-1	
o-Xylene	**32800**	ug/kg	705	100		12/03/13 00:00	95-47-6	
Surrogates								
Toluene-d8 (S)	94	%	70-130	100		12/03/13 00:00	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130	100		12/03/13 00:00	460-00-4	
1,2-Dichloroethane-d4 (S)	112	%	70-132	100		12/03/13 00:00	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**29.1**	%	0.10	1		12/04/13 08:37		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Sample: MB4 **Lab ID: 92180616003** Collected: 11/22/13 08:40 Received: 11/22/13 09:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
Acenaphthene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	83-32-9	
Acenaphthylene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	208-96-8	
Aniline	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	62-53-3	
Anthracene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	120-12-7	
Benzo(a)anthracene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	56-55-3	
Benzo(a)pyrene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	207-08-9	
Benzoic Acid	ND	ug/kg	2100	1	11/22/13 16:42	12/01/13 16:37	65-85-0	
Benzyl alcohol	ND	ug/kg	840	1	11/22/13 16:42	12/01/13 16:37	100-51-6	
4-Bromophenylphenyl ether	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	101-55-3	
Butylbenzylphthalate	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	85-68-7	
4-Chloro-3-methylphenol	ND	ug/kg	840	1	11/22/13 16:42	12/01/13 16:37	59-50-7	
4-Chloroaniline	ND	ug/kg	2100	1	11/22/13 16:42	12/01/13 16:37	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	108-60-1	
2-Chloronaphthalene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	91-58-7	
2-Chlorophenol	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	7005-72-3	
Chrysene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	53-70-3	
Dibenzofuran	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	2100	1	11/22/13 16:42	12/01/13 16:37	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	120-83-2	
Diethylphthalate	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	105-67-9	
Dimethylphthalate	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	131-11-3	
Di-n-butylphthalate	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	840	1	11/22/13 16:42	12/01/13 16:37	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	2100	1	11/22/13 16:42	12/01/13 16:37	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	606-20-2	
Di-n-octylphthalate	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	117-81-7	
Fluoranthene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	206-44-0	
Fluorene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	87-68-3	
Hexachlorobenzene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	118-74-1	
Hexachlorocyclopentadiene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	77-47-4	
Hexachloroethane	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	193-39-5	

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ANALYTICAL RESULTS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Sample: MB4 **Lab ID: 92180616003** Collected: 11/22/13 08:40 Received: 11/22/13 09:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
Isophorone	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	78-59-1	
1-Methylnaphthalene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	90-12-0	
2-Methylnaphthalene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37		
Naphthalene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	91-20-3	
2-Nitroaniline	ND	ug/kg	2100	1	11/22/13 16:42	12/01/13 16:37	88-74-4	
3-Nitroaniline	ND	ug/kg	2100	1	11/22/13 16:42	12/01/13 16:37	99-09-2	
4-Nitroaniline	ND	ug/kg	840	1	11/22/13 16:42	12/01/13 16:37	100-01-6	
Nitrobenzene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	98-95-3	
2-Nitrophenol	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	88-75-5	
4-Nitrophenol	ND	ug/kg	2100	1	11/22/13 16:42	12/01/13 16:37	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	86-30-6	
Pentachlorophenol	ND	ug/kg	2100	1	11/22/13 16:42	12/01/13 16:37	87-86-5	
Phenanthrene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	85-01-8	
Phenol	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	108-95-2	
Pyrene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	420	1	11/22/13 16:42	12/01/13 16:37	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	66	%	23-110	1	11/22/13 16:42	12/01/13 16:37	4165-60-0	
2-Fluorobiphenyl (S)	72	%	30-110	1	11/22/13 16:42	12/01/13 16:37	321-60-8	
Terphenyl-d14 (S)	71	%	28-110	1	11/22/13 16:42	12/01/13 16:37	1718-51-0	
Phenol-d6 (S)	69	%	22-110	1	11/22/13 16:42	12/01/13 16:37	13127-88-3	
2-Fluorophenol (S)	72	%	13-110	1	11/22/13 16:42	12/01/13 16:37	367-12-4	
2,4,6-Tribromophenol (S)	81	%	27-110	1	11/22/13 16:42	12/01/13 16:37	118-79-6	
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Acetone	**237**	ug/kg	94.1	1		12/03/13 00:20	67-64-1	A+
Benzene	**15.9**	ug/kg	4.7	1		12/03/13 00:20	71-43-2	
Bromobenzene	ND	ug/kg	4.7	1		12/03/13 00:20	108-86-1	
Bromochloromethane	ND	ug/kg	4.7	1		12/03/13 00:20	74-97-5	
Bromodichloromethane	ND	ug/kg	4.7	1		12/03/13 00:20	75-27-4	
Bromoform	ND	ug/kg	4.7	1		12/03/13 00:20	75-25-2	
Bromomethane	ND	ug/kg	9.4	1		12/03/13 00:20	74-83-9	
2-Butanone (MEK)	ND	ug/kg	94.1	1		12/03/13 00:20	78-93-3	
n-Butylbenzene	ND	ug/kg	4.7	1		12/03/13 00:20	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.7	1		12/03/13 00:20	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.7	1		12/03/13 00:20	98-06-6	
Carbon tetrachloride	ND	ug/kg	4.7	1		12/03/13 00:20	56-23-5	
Chlorobenzene	ND	ug/kg	4.7	1		12/03/13 00:20	108-90-7	
Chloroethane	ND	ug/kg	9.4	1		12/03/13 00:20	75-00-3	
Chloroform	ND	ug/kg	4.7	1		12/03/13 00:20	67-66-3	

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ANALYTICAL RESULTS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Sample: MB4 **Lab ID: 92180616003** Collected: 11/22/13 08:40 Received: 11/22/13 09:35 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							
Chloromethane	ND	ug/kg	9.4	1		12/03/13 00:20	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.7	1		12/03/13 00:20	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.7	1		12/03/13 00:20	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.7	1		12/03/13 00:20	96-12-8	
Dibromochloromethane	ND	ug/kg	4.7	1		12/03/13 00:20	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.7	1		12/03/13 00:20	106-93-4	
Dibromomethane	ND	ug/kg	4.7	1		12/03/13 00:20	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.7	1		12/03/13 00:20	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.7	1		12/03/13 00:20	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.7	1		12/03/13 00:20	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	9.4	1		12/03/13 00:20	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.7	1		12/03/13 00:20	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.7	1		12/03/13 00:20	107-06-2	
1,1-Dichloroethene	ND	ug/kg	4.7	1		12/03/13 00:20	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.7	1		12/03/13 00:20	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.7	1		12/03/13 00:20	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.7	1		12/03/13 00:20	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.7	1		12/03/13 00:20	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.7	1		12/03/13 00:20	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.7	1		12/03/13 00:20	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.7	1		12/03/13 00:20	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.7	1		12/03/13 00:20	10061-02-6	
Diisopropyl ether	ND	ug/kg	4.7	1		12/03/13 00:20	108-20-3	
Ethylbenzene	**49.0**	ug/kg	4.7	1		12/03/13 00:20	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.7	1		12/03/13 00:20	87-68-3	
2-Hexanone	ND	ug/kg	47.0	1		12/03/13 00:20	591-78-6	
Isopropylbenzene (Cumene)	**4.9**	ug/kg	4.7	1		12/03/13 00:20	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.7	1		12/03/13 00:20	99-87-6	
Methylene Chloride	ND	ug/kg	18.8	1		12/03/13 00:20	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	47.0	1		12/03/13 00:20	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	4.7	1		12/03/13 00:20	1634-04-4	
Naphthalene	**5.9**	ug/kg	4.7	1		12/03/13 00:20	91-20-3	
n-Propylbenzene	**14.3**	ug/kg	4.7	1		12/03/13 00:20	103-65-1	
Styrene	ND	ug/kg	4.7	1		12/03/13 00:20	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	4.7	1		12/03/13 00:20	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	4.7	1		12/03/13 00:20	79-34-5	
Tetrachloroethene	ND	ug/kg	4.7	1		12/03/13 00:20	127-18-4	
Toluene	ND	ug/kg	4.7	1		12/03/13 00:20	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	4.7	1		12/03/13 00:20	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	4.7	1		12/03/13 00:20	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	4.7	1		12/03/13 00:20	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	4.7	1		12/03/13 00:20	79-00-5	
Trichloroethene	ND	ug/kg	4.7	1		12/03/13 00:20	79-01-6	
Trichlorofluoromethane	ND	ug/kg	4.7	1		12/03/13 00:20	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	4.7	1		12/03/13 00:20	96-18-4	
1,2,4-Trimethylbenzene	**50.5**	ug/kg	4.7	1		12/03/13 00:20	95-63-6	

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ANALYTICAL RESULTS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Sample: MB4 **Lab ID: 92180616003** Collected: 11/22/13 08:40 Received: 11/22/13 09:35 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							
1,3,5-Trimethylbenzene	**37.3**	ug/kg	4.7	1		12/03/13 00:20	108-67-8	
Vinyl acetate	ND	ug/kg	47.0	1		12/03/13 00:20	108-05-4	
Vinyl chloride	ND	ug/kg	9.4	1		12/03/13 00:20	75-01-4	
Xylene (Total)	**130**	ug/kg	9.4	1		12/03/13 00:20	1330-20-7	
m&p-Xylene	**125**	ug/kg	9.4	1		12/03/13 00:20	179601-23-1	
o-Xylene	**5.0**	ug/kg	4.7	1		12/03/13 00:20	95-47-6	
Surrogates								
Toluene-d8 (S)	105	%	70-130	1		12/03/13 00:20	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130	1		12/03/13 00:20	460-00-4	
1,2-Dichloroethane-d4 (S)	125	%	70-132	1		12/03/13 00:20	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**21.4**	%	0.10	1		12/04/13 08:37		

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ANALYTICAL RESULTS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Sample: MB9 **Lab ID: 92180616004** Collected: 11/22/13 08:45 Received: 11/22/13 09:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
Acenaphthene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	83-32-9	
Acenaphthylene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	208-96-8	
Aniline	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	62-53-3	
Anthracene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	120-12-7	
Benzo(a)anthracene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	56-55-3	
Benzo(a)pyrene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	207-08-9	
Benzoic Acid	ND	ug/kg	2190	1	11/22/13 16:42	12/01/13 17:08	65-85-0	
Benzyl alcohol	ND	ug/kg	874	1	11/22/13 16:42	12/01/13 17:08	100-51-6	
4-Bromophenylphenyl ether	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	101-55-3	
Butylbenzylphthalate	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	85-68-7	
4-Chloro-3-methylphenol	ND	ug/kg	874	1	11/22/13 16:42	12/01/13 17:08	59-50-7	
4-Chloroaniline	ND	ug/kg	2190	1	11/22/13 16:42	12/01/13 17:08	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	108-60-1	
2-Chloronaphthalene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	91-58-7	
2-Chlorophenol	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	7005-72-3	
Chrysene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	53-70-3	
Dibenzofuran	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	2190	1	11/22/13 16:42	12/01/13 17:08	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	120-83-2	
Diethylphthalate	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	105-67-9	
Dimethylphthalate	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	131-11-3	
Di-n-butylphthalate	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	874	1	11/22/13 16:42	12/01/13 17:08	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	2190	1	11/22/13 16:42	12/01/13 17:08	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	606-20-2	
Di-n-octylphthalate	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	117-81-7	
Fluoranthene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	206-44-0	
Fluorene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	87-68-3	
Hexachlorobenzene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	118-74-1	
Hexachlorocyclopentadiene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	77-47-4	
Hexachloroethane	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	193-39-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Sample: MB9 **Lab ID: 92180616004** Collected: 11/22/13 08:45 Received: 11/22/13 09:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
Isophorone	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	78-59-1	
1-Methylnaphthalene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	90-12-0	
2-Methylnaphthalene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08		
Naphthalene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	91-20-3	
2-Nitroaniline	ND	ug/kg	2190	1	11/22/13 16:42	12/01/13 17:08	88-74-4	
3-Nitroaniline	ND	ug/kg	2190	1	11/22/13 16:42	12/01/13 17:08	99-09-2	
4-Nitroaniline	ND	ug/kg	874	1	11/22/13 16:42	12/01/13 17:08	100-01-6	
Nitrobenzene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	98-95-3	
2-Nitrophenol	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	88-75-5	
4-Nitrophenol	ND	ug/kg	2190	1	11/22/13 16:42	12/01/13 17:08	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	86-30-6	
Pentachlorophenol	ND	ug/kg	2190	1	11/22/13 16:42	12/01/13 17:08	87-86-5	
Phenanthrene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	85-01-8	
Phenol	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	108-95-2	
Pyrene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	437	1	11/22/13 16:42	12/01/13 17:08	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	36	%	23-110	1	11/22/13 16:42	12/01/13 17:08	4165-60-0	
2-Fluorobiphenyl (S)	43	%	30-110	1	11/22/13 16:42	12/01/13 17:08	321-60-8	
Terphenyl-d14 (S)	67	%	28-110	1	11/22/13 16:42	12/01/13 17:08	1718-51-0	
Phenol-d6 (S)	44	%	22-110	1	11/22/13 16:42	12/01/13 17:08	13127-88-3	
2-Fluorophenol (S)	44	%	13-110	1	11/22/13 16:42	12/01/13 17:08	367-12-4	
2,4,6-Tribromophenol (S)	61	%	27-110	1	11/22/13 16:42	12/01/13 17:08	118-79-6	
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Acetone	**281**	ug/kg	102	1		12/03/13 00:39	67-64-1	A+
Benzene	ND	ug/kg	5.1	1		12/03/13 00:39	71-43-2	
Bromobenzene	ND	ug/kg	5.1	1		12/03/13 00:39	108-86-1	
Bromochloromethane	ND	ug/kg	5.1	1		12/03/13 00:39	74-97-5	
Bromodichloromethane	ND	ug/kg	5.1	1		12/03/13 00:39	75-27-4	
Bromoform	ND	ug/kg	5.1	1		12/03/13 00:39	75-25-2	
Bromomethane	ND	ug/kg	10.2	1		12/03/13 00:39	74-83-9	
2-Butanone (MEK)	ND	ug/kg	102	1		12/03/13 00:39	78-93-3	
n-Butylbenzene	**17.1**	ug/kg	5.1	1		12/03/13 00:39	104-51-8	
sec-Butylbenzene	**11.1**	ug/kg	5.1	1		12/03/13 00:39	135-98-8	
tert-Butylbenzene	ND	ug/kg	5.1	1		12/03/13 00:39	98-06-6	
Carbon tetrachloride	ND	ug/kg	5.1	1		12/03/13 00:39	56-23-5	
Chlorobenzene	ND	ug/kg	5.1	1		12/03/13 00:39	108-90-7	
Chloroethane	ND	ug/kg	10.2	1		12/03/13 00:39	75-00-3	
Chloroform	ND	ug/kg	5.1	1		12/03/13 00:39	67-66-3	

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ANALYTICAL RESULTS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Sample: MB9 **Lab ID: 92180616004** Collected: 11/22/13 08:45 Received: 11/22/13 09:35 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							
Chloromethane	ND	ug/kg	10.2	1		12/03/13 00:39	74-87-3	
2-Chlorotoluene	ND	ug/kg	5.1	1		12/03/13 00:39	95-49-8	
4-Chlorotoluene	ND	ug/kg	5.1	1		12/03/13 00:39	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	5.1	1		12/03/13 00:39	96-12-8	
Dibromochloromethane	ND	ug/kg	5.1	1		12/03/13 00:39	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	5.1	1		12/03/13 00:39	106-93-4	
Dibromomethane	ND	ug/kg	5.1	1		12/03/13 00:39	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	5.1	1		12/03/13 00:39	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	5.1	1		12/03/13 00:39	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	5.1	1		12/03/13 00:39	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	10.2	1		12/03/13 00:39	75-71-8	
1,1-Dichloroethane	ND	ug/kg	5.1	1		12/03/13 00:39	75-34-3	
1,2-Dichloroethane	ND	ug/kg	5.1	1		12/03/13 00:39	107-06-2	
1,1-Dichloroethene	ND	ug/kg	5.1	1		12/03/13 00:39	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	5.1	1		12/03/13 00:39	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	5.1	1		12/03/13 00:39	156-60-5	
1,2-Dichloropropane	ND	ug/kg	5.1	1		12/03/13 00:39	78-87-5	
1,3-Dichloropropane	ND	ug/kg	5.1	1		12/03/13 00:39	142-28-9	
2,2-Dichloropropane	ND	ug/kg	5.1	1		12/03/13 00:39	594-20-7	
1,1-Dichloropropene	ND	ug/kg	5.1	1		12/03/13 00:39	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	5.1	1		12/03/13 00:39	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	5.1	1		12/03/13 00:39	10061-02-6	
Diisopropyl ether	ND	ug/kg	5.1	1		12/03/13 00:39	108-20-3	
Ethylbenzene	**11.4**	ug/kg	5.1	1		12/03/13 00:39	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	5.1	1		12/03/13 00:39	87-68-3	
2-Hexanone	ND	ug/kg	51.0	1		12/03/13 00:39	591-78-6	
Isopropylbenzene (Cumene)	**18.4**	ug/kg	5.1	1		12/03/13 00:39	98-82-8	
p-Isopropyltoluene	ND	ug/kg	5.1	1		12/03/13 00:39	99-87-6	
Methylene Chloride	ND	ug/kg	20.4	1		12/03/13 00:39	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	51.0	1		12/03/13 00:39	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	5.1	1		12/03/13 00:39	1634-04-4	
Naphthalene	**23.6**	ug/kg	5.1	1		12/03/13 00:39	91-20-3	
n-Propylbenzene	**52.3**	ug/kg	5.1	1		12/03/13 00:39	103-65-1	
Styrene	ND	ug/kg	5.1	1		12/03/13 00:39	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	5.1	1		12/03/13 00:39	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.1	1		12/03/13 00:39	79-34-5	
Tetrachloroethene	ND	ug/kg	5.1	1		12/03/13 00:39	127-18-4	
Toluene	**6.1**	ug/kg	5.1	1		12/03/13 00:39	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	5.1	1		12/03/13 00:39	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	5.1	1		12/03/13 00:39	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	5.1	1		12/03/13 00:39	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	5.1	1		12/03/13 00:39	79-00-5	
Trichloroethene	ND	ug/kg	5.1	1		12/03/13 00:39	79-01-6	
Trichlorofluoromethane	ND	ug/kg	5.1	1		12/03/13 00:39	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	5.1	1		12/03/13 00:39	96-18-4	
1,2,4-Trimethylbenzene	**6.6**	ug/kg	5.1	1		12/03/13 00:39	95-63-6	

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ANALYTICAL RESULTS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Sample: MB9 **Lab ID: 92180616004** Collected: 11/22/13 08:45 Received: 11/22/13 09:35 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							
1,3,5-Trimethylbenzene	ND	ug/kg	5.1	1		12/03/13 00:39	108-67-8	
Vinyl acetate	ND	ug/kg	51.0	1		12/03/13 00:39	108-05-4	
Vinyl chloride	ND	ug/kg	10.2	1		12/03/13 00:39	75-01-4	
Xylene (Total)	**25.6**	ug/kg	10.2	1		12/03/13 00:39	1330-20-7	
m&p-Xylene	**25.6**	ug/kg	10.2	1		12/03/13 00:39	179601-23-1	
o-Xylene	ND	ug/kg	5.1	1		12/03/13 00:39	95-47-6	
Surrogates								
Toluene-d8 (S)	100	%	70-130	1		12/03/13 00:39	2037-26-5	
4-Bromofluorobenzene (S)	81	%	70-130	1		12/03/13 00:39	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	70-132	1		12/03/13 00:39	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**24.5**	%	0.10	1		12/04/13 08:37		

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QUALITY CONTROL DATA

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

QC Batch: MSV/25102 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92180616001, 92180616002, 92180616003, 92180616004

METHOD BLANK: 1096755 Matrix: Solid
Associated Lab Samples: 92180616001, 92180616002, 92180616003, 92180616004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	4.7	12/02/13 17:47	
1,1,1-Trichloroethane	ug/kg	ND	4.7	12/02/13 17:47	
1,1,2,2-Tetrachloroethane	ug/kg	ND	4.7	12/02/13 17:47	
1,1,2-Trichloroethane	ug/kg	ND	4.7	12/02/13 17:47	
1,1-Dichloroethane	ug/kg	ND	4.7	12/02/13 17:47	
1,1-Dichloroethene	ug/kg	ND	4.7	12/02/13 17:47	
1,1-Dichloropropene	ug/kg	ND	4.7	12/02/13 17:47	
1,2,3-Trichlorobenzene	ug/kg	ND	4.7	12/02/13 17:47	
1,2,3-Trichloropropane	ug/kg	ND	4.7	12/02/13 17:47	
1,2,4-Trichlorobenzene	ug/kg	ND	4.7	12/02/13 17:47	
1,2,4-Trimethylbenzene	ug/kg	ND	4.7	12/02/13 17:47	
1,2-Dibromo-3-chloropropane	ug/kg	ND	4.7	12/02/13 17:47	
1,2-Dibromoethane (EDB)	ug/kg	ND	4.7	12/02/13 17:47	
1,2-Dichlorobenzene	ug/kg	ND	4.7	12/02/13 17:47	
1,2-Dichloroethane	ug/kg	ND	4.7	12/02/13 17:47	
1,2-Dichloropropane	ug/kg	ND	4.7	12/02/13 17:47	
1,3,5-Trimethylbenzene	ug/kg	ND	4.7	12/02/13 17:47	
1,3-Dichlorobenzene	ug/kg	ND	4.7	12/02/13 17:47	
1,3-Dichloropropane	ug/kg	ND	4.7	12/02/13 17:47	
1,4-Dichlorobenzene	ug/kg	ND	4.7	12/02/13 17:47	
2,2-Dichloropropane	ug/kg	ND	4.7	12/02/13 17:47	
2-Butanone (MEK)	ug/kg	ND	94.5	12/02/13 17:47	
2-Chlorotoluene	ug/kg	ND	4.7	12/02/13 17:47	
2-Hexanone	ug/kg	ND	47.3	12/02/13 17:47	
4-Chlorotoluene	ug/kg	ND	4.7	12/02/13 17:47	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	47.3	12/02/13 17:47	
Acetone	ug/kg	ND	94.5	12/02/13 17:47	
Benzene	ug/kg	ND	4.7	12/02/13 17:47	
Bromobenzene	ug/kg	ND	4.7	12/02/13 17:47	
Bromochloromethane	ug/kg	ND	4.7	12/02/13 17:47	
Bromodichloromethane	ug/kg	ND	4.7	12/02/13 17:47	
Bromoform	ug/kg	ND	4.7	12/02/13 17:47	
Bromomethane	ug/kg	ND	9.5	12/02/13 17:47	
Carbon tetrachloride	ug/kg	ND	4.7	12/02/13 17:47	
Chlorobenzene	ug/kg	ND	4.7	12/02/13 17:47	
Chloroethane	ug/kg	ND	9.5	12/02/13 17:47	
Chloroform	ug/kg	ND	4.7	12/02/13 17:47	
Chloromethane	ug/kg	ND	9.5	12/02/13 17:47	
cis-1,2-Dichloroethene	ug/kg	ND	4.7	12/02/13 17:47	
cis-1,3-Dichloropropene	ug/kg	ND	4.7	12/02/13 17:47	
Dibromochloromethane	ug/kg	ND	4.7	12/02/13 17:47	
Dibromomethane	ug/kg	ND	4.7	12/02/13 17:47	
Dichlorodifluoromethane	ug/kg	ND	9.5	12/02/13 17:47	

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QUALITY CONTROL DATA

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

METHOD BLANK: 1096755 Matrix: Solid
Associated Lab Samples: 92180616001, 92180616002, 92180616003, 92180616004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/kg	ND	4.7	12/02/13 17:47	
Ethylbenzene	ug/kg	ND	4.7	12/02/13 17:47	
Hexachloro-1,3-butadiene	ug/kg	ND	4.7	12/02/13 17:47	
Isopropylbenzene (Cumene)	ug/kg	ND	4.7	12/02/13 17:47	
m&p-Xylene	ug/kg	ND	9.5	12/02/13 17:47	
Methyl-tert-butyl ether	ug/kg	ND	4.7	12/02/13 17:47	
Methylene Chloride	ug/kg	ND	18.9	12/02/13 17:47	
n-Butylbenzene	ug/kg	ND	4.7	12/02/13 17:47	
n-Propylbenzene	ug/kg	ND	4.7	12/02/13 17:47	
Naphthalene	ug/kg	ND	4.7	12/02/13 17:47	
o-Xylene	ug/kg	ND	4.7	12/02/13 17:47	
p-Isopropyltoluene	ug/kg	ND	4.7	12/02/13 17:47	
sec-Butylbenzene	ug/kg	ND	4.7	12/02/13 17:47	
Styrene	ug/kg	ND	4.7	12/02/13 17:47	
tert-Butylbenzene	ug/kg	ND	4.7	12/02/13 17:47	
Tetrachloroethene	ug/kg	ND	4.7	12/02/13 17:47	
Toluene	ug/kg	ND	4.7	12/02/13 17:47	
trans-1,2-Dichloroethene	ug/kg	ND	4.7	12/02/13 17:47	
trans-1,3-Dichloropropene	ug/kg	ND	4.7	12/02/13 17:47	
Trichloroethene	ug/kg	ND	4.7	12/02/13 17:47	
Trichlorofluoromethane	ug/kg	ND	4.7	12/02/13 17:47	
Vinyl acetate	ug/kg	ND	47.3	12/02/13 17:47	
Vinyl chloride	ug/kg	ND	9.5	12/02/13 17:47	
Xylene (Total)	ug/kg	ND	9.5	12/02/13 17:47	
1,2-Dichloroethane-d4 (S)	%	108	70-132	12/02/13 17:47	
4-Bromofluorobenzene (S)	%	96	70-130	12/02/13 17:47	
Toluene-d8 (S)	%	102	70-130	12/02/13 17:47	

LABORATORY CONTROL SAMPLE: 1096756

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	53.3	52.7	99	70-131	
1,1,1-Trichloroethane	ug/kg	53.3	53.6	101	70-141	
1,1,2,2-Tetrachloroethane	ug/kg	53.3	57.6	108	70-130	
1,1,2-Trichloroethane	ug/kg	53.3	54.0	101	70-132	
1,1-Dichloroethane	ug/kg	53.3	59.7	112	70-143	
1,1-Dichloroethene	ug/kg	53.3	56.5	106	70-137	
1,1-Dichloropropene	ug/kg	53.3	58.7	110	70-135	
1,2,3-Trichlorobenzene	ug/kg	53.3	48.7	91	69-153	
1,2,3-Trichloropropane	ug/kg	53.3	53.8	101	70-130	
1,2,4-Trichlorobenzene	ug/kg	53.3	46.6	87	55-171	
1,2,4-Trimethylbenzene	ug/kg	53.3	52.7	99	70-149	
1,2-Dibromo-3-chloropropane	ug/kg	53.3	52.2	98	68-141	
1,2-Dibromoethane (EDB)	ug/kg	53.3	55.2	104	70-130	
1,2-Dichlorobenzene	ug/kg	53.3	49.6	93	70-140	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

LABORATORY CONTROL SAMPLE: 1096756

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/kg	53.3	57.3	108	70-137	
1,2-Dichloropropane	ug/kg	53.3	58.5	110	70-133	
1,3,5-Trimethylbenzene	ug/kg	53.3	52.0	98	70-143	
1,3-Dichlorobenzene	ug/kg	53.3	47.9	90	70-144	
1,3-Dichloropropane	ug/kg	53.3	59.7	112	70-132	
1,4-Dichlorobenzene	ug/kg	53.3	49.0	92	70-142	
2,2-Dichloropropane	ug/kg	53.3	55.4	104	68-152	
2-Butanone (MEK)	ug/kg	107	138	130	70-149	
2-Chlorotoluene	ug/kg	53.3	50.7	95	70-141	
2-Hexanone	ug/kg	107	127	119	70-149	
4-Chlorotoluene	ug/kg	53.3	52.2	98	70-149	
4-Methyl-2-pentanone (MIBK)	ug/kg	107	124	117	70-153	
Acetone	ug/kg	107	123	115	70-157	
Benzene	ug/kg	53.3	55.5	104	70-130	
Bromobenzene	ug/kg	53.3	54.5	102	70-141	
Bromochloromethane	ug/kg	53.3	56.9	107	70-149	
Bromodichloromethane	ug/kg	53.3	52.4	98	70-130	
Bromoform	ug/kg	53.3	53.1	100	70-131	
Bromomethane	ug/kg	53.3	57.3	107	64-136	F3
Carbon tetrachloride	ug/kg	53.3	45.1	85	70-154	
Chlorobenzene	ug/kg	53.3	51.2	96	70-135	
Chloroethane	ug/kg	53.3	54.0	101	68-151	
Chloroform	ug/kg	53.3	55.7	104	70-130	
Chloromethane	ug/kg	53.3	64.3	121	70-132	
cis-1,2-Dichloroethene	ug/kg	53.3	59.8	112	70-140	
cis-1,3-Dichloropropene	ug/kg	53.3	57.1	107	70-137	
Dibromochloromethane	ug/kg	53.3	54.1	101	70-130	
Dibromomethane	ug/kg	53.3	52.8	99	70-136	
Dichlorodifluoromethane	ug/kg	53.3	49.0	92	36-148	
Diisopropyl ether	ug/kg	53.3	70.7	133	70-139	
Ethylbenzene	ug/kg	53.3	53.7	101	70-137	
Hexachloro-1,3-butadiene	ug/kg	53.3	49.8	93	70-145	
Isopropylbenzene (Cumene)	ug/kg	53.3	54.4	102	70-141	
m&p-Xylene	ug/kg	107	110	104	70-140	
Methyl-tert-butyl ether	ug/kg	53.3	63.0	118	45-150	
Methylene Chloride	ug/kg	53.3	63.1	118	70-133	
n-Butylbenzene	ug/kg	53.3	52.3	98	65-155	
n-Propylbenzene	ug/kg	53.3	54.4	102	70-148	
Naphthalene	ug/kg	53.3	51.7	97	70-148	
o-Xylene	ug/kg	53.3	55.3	104	70-141	
p-Isopropyltoluene	ug/kg	53.3	52.6	99	70-148	
sec-Butylbenzene	ug/kg	53.3	52.9	99	70-145	
Styrene	ug/kg	53.3	55.9	105	70-138	
tert-Butylbenzene	ug/kg	53.3	52.5	98	70-143	
Tetrachloroethene	ug/kg	53.3	52.1	98	70-140	
Toluene	ug/kg	53.3	52.1	98	70-130	
trans-1,2-Dichloroethene	ug/kg	53.3	56.7	106	70-136	
trans-1,3-Dichloropropene	ug/kg	53.3	56.4	106	70-138	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

LABORATORY CONTROL SAMPLE: 1096756

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	53.3	48.1	90	70-132	
Trichlorofluoromethane	ug/kg	53.3	50.0	94	69-134	
Vinyl acetate	ug/kg	107	143	134	24-161	
Vinyl chloride	ug/kg	53.3	54.0	101	55-140	
Xylene (Total)	ug/kg	160	166	104	70-141	
1,2-Dichloroethane-d4 (S)	%			108	70-132	
4-Bromofluorobenzene (S)	%			101	70-130	
Toluene-d8 (S)	%			103	70-130	

MATRIX SPIKE SAMPLE: 1097145

Parameter	Units	92180745007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/kg	ND	47.7	38.0	80	49-180	
Benzene	ug/kg	ND	47.7	41.0	86	50-166	
Chlorobenzene	ug/kg	ND	47.7	39.1	82	43-169	
Toluene	ug/kg	ND	47.7	38.6	81	52-163	
Trichloroethene	ug/kg	ND	47.7	36.0	76	49-167	
1,2-Dichloroethane-d4 (S)	%				103	70-132	
4-Bromofluorobenzene (S)	%				96	70-130	
Toluene-d8 (S)	%				101	70-130	

SAMPLE DUPLICATE: 1097144

Parameter	Units	92180616001 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	10.1		
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	7.9		
1,3-Dichlorobenzene	ug/kg	ND	ND		
1,3-Dichloropropane	ug/kg	ND	ND		
1,4-Dichlorobenzene	ug/kg	ND	ND		
2,2-Dichloropropane	ug/kg	ND	ND		

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QUALITY CONTROL DATA

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

SAMPLE DUPLICATE: 1097144

Parameter	Units	92180616001 Result	Dup Result	RPD	Qualifiers
2-Butanone (MEK)	ug/kg	ND	39.6J		
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	368	267	32	A+,R1
Benzene	ug/kg	6.8	3.8J		
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	7.4	12.0	47	R1
Hexachloro-1,3-butadiene	ug/kg	ND	ND		
Isopropylbenzene (Cumene)	ug/kg	ND	ND		
m&p-Xylene	ug/kg	19.9	34.1	53	R1
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	2.5J		
Naphthalene	ug/kg	ND	ND		
o-Xylene	ug/kg	ND	4.5J		
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	5.7		
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		
Xylene (Total)	ug/kg	19.9	34.1	53	RS
1,2-Dichloroethane-d4 (S)	%	102	113	16	
4-Bromofluorobenzene (S)	%	85	92	14	

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QUALITY CONTROL DATA

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

SAMPLE DUPLICATE: 1097144

Parameter	Units	92180616001 Result	Dup Result	RPD	Qualifiers
Toluene-d8 (S)	%	102	102	6	

REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

QC Batch: OEXT/24888 Analysis Method: EPA 8270
QC Batch Method: EPA 3546 Analysis Description: 8270 Solid MSSV Microwave
Associated Lab Samples: 92180616001, 92180616002, 92180616003, 92180616004

METHOD BLANK: 1093063 Matrix: Solid
Associated Lab Samples: 92180616001, 92180616002, 92180616003, 92180616004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	11/27/13 12:33	
1,2-Dichlorobenzene	ug/kg	ND	330	11/27/13 12:33	
1,3-Dichlorobenzene	ug/kg	ND	330	11/27/13 12:33	
1,4-Dichlorobenzene	ug/kg	ND	330	11/27/13 12:33	
1-Methylnaphthalene	ug/kg	ND	330	11/27/13 12:33	
2,4,5-Trichlorophenol	ug/kg	ND	330	11/27/13 12:33	
2,4,6-Trichlorophenol	ug/kg	ND	330	11/27/13 12:33	
2,4-Dichlorophenol	ug/kg	ND	330	11/27/13 12:33	
2,4-Dimethylphenol	ug/kg	ND	330	11/27/13 12:33	
2,4-Dinitrophenol	ug/kg	ND	1650	11/27/13 12:33	
2,4-Dinitrotoluene	ug/kg	ND	330	11/27/13 12:33	
2,6-Dinitrotoluene	ug/kg	ND	330	11/27/13 12:33	
2-Chloronaphthalene	ug/kg	ND	330	11/27/13 12:33	
2-Chlorophenol	ug/kg	ND	330	11/27/13 12:33	
2-Methylnaphthalene	ug/kg	ND	330	11/27/13 12:33	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	11/27/13 12:33	
2-Nitroaniline	ug/kg	ND	1650	11/27/13 12:33	
2-Nitrophenol	ug/kg	ND	330	11/27/13 12:33	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	330	11/27/13 12:33	
3,3'-Dichlorobenzidine	ug/kg	ND	1650	11/27/13 12:33	
3-Nitroaniline	ug/kg	ND	1650	11/27/13 12:33	
4,6-Dinitro-2-methylphenol	ug/kg	ND	660	11/27/13 12:33	
4-Bromophenylphenyl ether	ug/kg	ND	330	11/27/13 12:33	
4-Chloro-3-methylphenol	ug/kg	ND	660	11/27/13 12:33	
4-Chloroaniline	ug/kg	ND	1650	11/27/13 12:33	
4-Chlorophenylphenyl ether	ug/kg	ND	330	11/27/13 12:33	
4-Nitroaniline	ug/kg	ND	660	11/27/13 12:33	
4-Nitrophenol	ug/kg	ND	1650	11/27/13 12:33	
Acenaphthene	ug/kg	ND	330	11/27/13 12:33	
Acenaphthylene	ug/kg	ND	330	11/27/13 12:33	
Aniline	ug/kg	ND	330	11/27/13 12:33	
Anthracene	ug/kg	ND	330	11/27/13 12:33	
Benzo(a)anthracene	ug/kg	ND	330	11/27/13 12:33	
Benzo(a)pyrene	ug/kg	ND	330	11/27/13 12:33	
Benzo(b)fluoranthene	ug/kg	ND	330	11/27/13 12:33	
Benzo(g,h,i)perylene	ug/kg	ND	330	11/27/13 12:33	
Benzo(k)fluoranthene	ug/kg	ND	330	11/27/13 12:33	
Benzoic Acid	ug/kg	ND	1650	11/27/13 12:33	
Benzyl alcohol	ug/kg	ND	660	11/27/13 12:33	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	11/27/13 12:33	
bis(2-Chloroethyl) ether	ug/kg	ND	330	11/27/13 12:33	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	11/27/13 12:33	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	11/27/13 12:33	

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QUALITY CONTROL DATA

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

METHOD BLANK: 1093063 Matrix: Solid
Associated Lab Samples: 92180616001, 92180616002, 92180616003, 92180616004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	11/27/13 12:33	
Chrysene	ug/kg	ND	330	11/27/13 12:33	
Di-n-butylphthalate	ug/kg	ND	330	11/27/13 12:33	
Di-n-octylphthalate	ug/kg	ND	330	11/27/13 12:33	
Dibenz(a,h)anthracene	ug/kg	ND	330	11/27/13 12:33	
Dibenzofuran	ug/kg	ND	330	11/27/13 12:33	
Diethylphthalate	ug/kg	ND	330	11/27/13 12:33	
Dimethylphthalate	ug/kg	ND	330	11/27/13 12:33	
Fluoranthene	ug/kg	ND	330	11/27/13 12:33	
Fluorene	ug/kg	ND	330	11/27/13 12:33	
Hexachloro-1,3-butadiene	ug/kg	ND	330	11/27/13 12:33	
Hexachlorobenzene	ug/kg	ND	330	11/27/13 12:33	
Hexachlorocyclopentadiene	ug/kg	ND	330	11/27/13 12:33	
Hexachloroethane	ug/kg	ND	330	11/27/13 12:33	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	11/27/13 12:33	
Isophorone	ug/kg	ND	330	11/27/13 12:33	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	11/27/13 12:33	
N-Nitrosodimethylamine	ug/kg	ND	330	11/27/13 12:33	
N-Nitrosodiphenylamine	ug/kg	ND	330	11/27/13 12:33	
Naphthalene	ug/kg	ND	330	11/27/13 12:33	
Nitrobenzene	ug/kg	ND	330	11/27/13 12:33	
Pentachlorophenol	ug/kg	ND	1650	11/27/13 12:33	
Phenanthrene	ug/kg	ND	330	11/27/13 12:33	
Phenol	ug/kg	ND	330	11/27/13 12:33	
Pyrene	ug/kg	ND	330	11/27/13 12:33	
2,4,6-Tribromophenol (S)	%	87	27-110	11/27/13 12:33	
2-Fluorobiphenyl (S)	%	85	30-110	11/27/13 12:33	
2-Fluorophenol (S)	%	86	13-110	11/27/13 12:33	
Nitrobenzene-d5 (S)	%	86	23-110	11/27/13 12:33	
Phenol-d6 (S)	%	85	22-110	11/27/13 12:33	
Terphenyl-d14 (S)	%	90	28-110	11/27/13 12:33	

LABORATORY CONTROL SAMPLE: 1093064

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	1110	67	39-101	
1,2-Dichlorobenzene	ug/kg	1670	1150	69	36-110	
1,3-Dichlorobenzene	ug/kg	1670	1140	69	35-110	
1,4-Dichlorobenzene	ug/kg	1670	1160	69	35-110	
1-Methylnaphthalene	ug/kg	1670	1230	74	45-105	
2,4,5-Trichlorophenol	ug/kg	1670	1390	83	48-109	
2,4,6-Trichlorophenol	ug/kg	1670	1220	73	45-111	
2,4-Dichlorophenol	ug/kg	1670	1230	74	51-116	
2,4-Dimethylphenol	ug/kg	1670	1320	79	42-103	
2,4-Dinitrophenol	ug/kg	8330	6780	81	28-103	

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QUALITY CONTROL DATA

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

LABORATORY CONTROL SAMPLE: 1093064

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dinitrotoluene	ug/kg	1670	1550	93	46-114	
2,6-Dinitrotoluene	ug/kg	1670	1410	84	48-112	
2-Chloronaphthalene	ug/kg	1670	1090	66	44-105	
2-Chlorophenol	ug/kg	1670	1330	80	36-110	
2-Methylnaphthalene	ug/kg	1670	1290	78	39-112	
2-Methylphenol(o-Cresol)	ug/kg	1670	1380	83	39-101	
2-Nitroaniline	ug/kg	3330	3080	92	44-111	
2-Nitrophenol	ug/kg	1670	1290	77	41-100	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1350	81	43-103	
3,3'-Dichlorobenzidine	ug/kg	3330	2610	78	10-150	
3-Nitroaniline	ug/kg	3330	2930	88	35-110	
4,6-Dinitro-2-methylphenol	ug/kg	3330	3150	95	38-118	
4-Bromophenylphenyl ether	ug/kg	1670	1540	92	47-115	
4-Chloro-3-methylphenol	ug/kg	3330	2730	82	43-127	
4-Chloroaniline	ug/kg	3330	2570	77	34-109	
4-Chlorophenylphenyl ether	ug/kg	1670	1430	86	44-115	
4-Nitroaniline	ug/kg	3330	3040	91	37-111	
4-Nitrophenol	ug/kg	8330	7840	94	21-152	
Acenaphthene	ug/kg	1670	1340	80	38-117	
Acenaphthylene	ug/kg	1670	1310	79	46-107	
Aniline	ug/kg	1670	1210	73	29-110	
Anthracene	ug/kg	1670	1560	94	50-110	
Benzo(a)anthracene	ug/kg	1670	1510	91	47-116	
Benzo(a)pyrene	ug/kg	1670	1580	95	47-106	
Benzo(b)fluoranthene	ug/kg	1670	1490	90	47-109	
Benzo(g,h,i)perylene	ug/kg	1670	1570	94	39-115	
Benzo(k)fluoranthene	ug/kg	1670	1450	87	45-117	
Benzoic Acid	ug/kg	8330	4950	59	16-110	
Benzyl alcohol	ug/kg	3330	2420	73	38-105	
bis(2-Chloroethoxy)methane	ug/kg	1670	1280	77	39-110	
bis(2-Chloroethyl) ether	ug/kg	1670	1350	81	19-119	
bis(2-Chloroisopropyl) ether	ug/kg	1670	1170	70	21-110	
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1360	82	35-116	
Butylbenzylphthalate	ug/kg	1670	1350	81	38-110	
Chrysene	ug/kg	1670	1600	96	49-110	
Di-n-butylphthalate	ug/kg	1670	1350	81	43-109	
Di-n-octylphthalate	ug/kg	1670	1320	79	37-109	
Dibenz(a,h)anthracene	ug/kg	1670	1640	98	43-116	
Dibenzofuran	ug/kg	1670	1140	68	45-106	
Diethylphthalate	ug/kg	1670	1330	80	41-114	
Dimethylphthalate	ug/kg	1670	1290	77	43-110	
Fluoranthene	ug/kg	1670	1590	95	50-114	
Fluorene	ug/kg	1670	1450	87	46-114	
Hexachloro-1,3-butadiene	ug/kg	1670	1100	66	28-111	
Hexachlorobenzene	ug/kg	1670	1220	73	46-120	
Hexachlorocyclopentadiene	ug/kg	1670	1530	92	18-119	
Hexachloroethane	ug/kg	1670	1120	67	33-110	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	1650	99	42-115	

REPORT OF LABORATORY ANALYSIS

Pace Analytical
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Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

LABORATORY CONTROL SAMPLE: 1093064

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	1670	1360	82	44-109	
N-Nitroso-di-n-propylamine	ug/kg	1670	1140	68	43-104	
N-Nitrosodimethylamine	ug/kg	1670	1120	67	29-110	
N-Nitrosodiphenylamine	ug/kg	1670	1150	69	48-113	
Naphthalene	ug/kg	1670	1290	78	41-110	
Nitrobenzene	ug/kg	1670	1300	78	38-110	
Pentachlorophenol	ug/kg	3330	2920	88	32-128	
Phenanthrene	ug/kg	1670	1500	90	50-110	
Phenol	ug/kg	1670	1300	78	28-106	
Pyrene	ug/kg	1670	1510	91	45-114	
2,4,6-Tribromophenol (S)	%			97	27-110	
2-Fluorobiphenyl (S)	%			80	30-110	
2-Fluorophenol (S)	%			86	13-110	
Nitrobenzene-d5 (S)	%			79	23-110	
Phenol-d6 (S)	%			87	22-110	
Terphenyl-d14 (S)	%			90	28-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093065 1093066

Parameter	Units	92180616004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	ND	2210	2210	978	886	44	40	18-119	10	
1,2-Dichlorobenzene	ug/kg	ND	2210	2210	975	945	44	43	50-110	3	M1
1,3-Dichlorobenzene	ug/kg	ND	2210	2210	968	927	44	42	27-110	4	
1,4-Dichlorobenzene	ug/kg	ND	2210	2210	1020	967	46	44	28-110	5	
1-Methylnaphthalene	ug/kg	ND	2210	2210	1120	1020	51	46	24-116	9	
2,4,5-Trichlorophenol	ug/kg	ND	2210	2210	1240	1230	56	56	28-110	0	
2,4,6-Trichlorophenol	ug/kg	ND	2210	2210	1070	1030	49	47	17-117	4	
2,4-Dichlorophenol	ug/kg	ND	2210	2210	1030	1030	47	47	21-128	0	
2,4-Dimethylphenol	ug/kg	ND	2210	2210	1170	1070	53	48	10-120	9	
2,4-Dinitrophenol	ug/kg	ND	11000	11000	ND	1150J	0	10	10-107		M1
2,4-Dinitrotoluene	ug/kg	ND	2210	2210	1460	1580	66	72	36-109	8	
2,6-Dinitrotoluene	ug/kg	ND	2210	2210	1310	1440	59	65	32-110	10	
2-Chloronaphthalene	ug/kg	ND	2210	2210	961	951	44	43	30-107	1	
2-Chlorophenol	ug/kg	ND	2210	2210	1130	1060	51	48	14-106	7	
2-Methylnaphthalene	ug/kg	ND	2210	2210	1160	1080	52	49	10-135	7	
2-Methylphenol(o-Cresol)	ug/kg	ND	2210	2210	1100	1020	50	46	10-124	7	
2-Nitroaniline	ug/kg	ND	4410	4410	2740	2730	62	62	26-116	0	
2-Nitrophenol	ug/kg	ND	2210	2210	1010	989	46	45	28-103	2	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	2210	2210	1120	1040	51	47	10-109	8	
3,3'-Dichlorobenzidine	ug/kg	ND	4410	4410	3140	3380	71	77	10-150	7	
3-Nitroaniline	ug/kg	ND	4410	4410	2680	2740	61	62	22-110	2	
4,6-Dinitro-2-methylphenol	ug/kg	ND	4410	4410	1590	2410	36	55	13-121	41	R1
4-Bromophenylphenyl ether	ug/kg	ND	2210	2210	1470	1540	67	70	31-109	4	
4-Chloro-3-methylphenol	ug/kg	ND	4410	4410	2420	2270	55	51	13-128	7	
4-Chloroaniline	ug/kg	ND	4410	4410	2310	2190	52	50	18-102	6	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093065 1093066

Parameter	Units	92180616004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
4-Chlorophenylphenyl ether	ug/kg	ND	2210	2210	1360	1360	62	62	29-112	0	
4-Nitroaniline	ug/kg	ND	4410	4410	2930	3040	66	69	16-111	3	
4-Nitrophenol	ug/kg	ND	11000	11000	5100	5980	46	54	14-135	16	
Acenaphthene	ug/kg	ND	2210	2210	1200	1190	54	54	26-114	0	
Acenaphthylene	ug/kg	ND	2210	2210	1210	1190	55	54	32-108	2	
Aniline	ug/kg	ND	2210	2210	990	964	45	44	10-107	3	
Anthracene	ug/kg	ND	2210	2210	1550	1640	70	74	32-111	6	
Benzo(a)anthracene	ug/kg	ND	2210	2210	1620	1670	73	76	25-117	3	
Benzo(a)pyrene	ug/kg	ND	2210	2210	1620	1720	73	78	25-106	6	
Benzo(b)fluoranthene	ug/kg	ND	2210	2210	1530	1760	70	80	24-110	14	
Benzo(g,h,i)perylene	ug/kg	ND	2210	2210	1630	1770	74	80	19-112	8	
Benzo(k)fluoranthene	ug/kg	ND	2210	2210	1430	1480	65	67	24-114	3	
Benzoic Acid	ug/kg	ND	11000	11000	376J	1460J	3	13	10-110		M1
Benzyl alcohol	ug/kg	ND	4410	4410	2030	1800	46	41	24-106	12	
bis(2-Chloroethoxy)methane	ug/kg	ND	2210	2210	1070	1020	49	46	13-119	5	
bis(2-Chloroethyl) ether	ug/kg	ND	2210	2210	1200	1140	54	52	10-134	5	
bis(2-Chloroisopropyl) ether	ug/kg	ND	2210	2210	1010	944	46	43	10-113	7	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	2210	2210	1430	1530	65	69	10-125	6	
Butylbenzylphthalate	ug/kg	ND	2210	2210	1380	1520	62	69	18-110	10	
Chrysene	ug/kg	ND	2210	2210	1680	1740	76	79	30-110	4	
Di-n-butylphthalate	ug/kg	ND	2210	2210	1330	1490	60	68	19-112	12	
Di-n-octylphthalate	ug/kg	ND	2210	2210	1400	1510	63	68	17-105	7	
Dibenz(a,h)anthracene	ug/kg	ND	2210	2210	1670	1860	75	84	23-111	11	
Dibenzofuran	ug/kg	ND	2210	2210	1080	1020	49	46	35-103	5	
Diethylphthalate	ug/kg	ND	2210	2210	1300	1380	59	62	27-113	6	
Dimethylphthalate	ug/kg	ND	2210	2210	1270	1350	58	61	26-111	6	
Fluoranthene	ug/kg	ND	2210	2210	1570	1720	71	78	33-109	10	
Fluorene	ug/kg	ND	2210	2210	1410	1400	64	63	32-113	1	
Hexachloro-1,3-butadiene	ug/kg	ND	2210	2210	930	888	42	40	16-116	5	
Hexachlorobenzene	ug/kg	ND	2210	2210	1230	1270	56	58	27-120	3	
Hexachlorocyclopentadiene	ug/kg	ND	2210	2210	996	910	45	41	10-108	9	
Hexachloroethane	ug/kg	ND	2210	2210	906	850	41	39	10-117	6	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	2210	2210	1680	1850	76	84	10-122	10	
Isophorone	ug/kg	ND	2210	2210	1170	1090	53	49	28-114	7	
N-Nitroso-di-n-propylamine	ug/kg	ND	2210	2210	935	812	42	37	27-113	14	
N-Nitrosodimethylamine	ug/kg	ND	2210	2210	933	920	42	42	10-109	1	
N-Nitrosodiphenylamine	ug/kg	ND	2210	2210	1200	1250	54	57	10-128	4	
Naphthalene	ug/kg	ND	2210	2210	1210	1150	55	52	25-110	5	
Nitrobenzene	ug/kg	ND	2210	2210	1060	1020	48	46	18-114	4	
Pentachlorophenol	ug/kg	ND	4410	4410	2760	3030	63	69	10-122	9	
Phenanthrene	ug/kg	ND	2210	2210	1570	1600	71	73	30-114	2	
Phenol	ug/kg	ND	2210	2210	1060	998	48	45	11-102	6	
Pyrene	ug/kg	ND	2210	2210	1590	1640	72	74	25-116	3	
2,4,6-Tribromophenol (S)	%						73	78	27-110		
2-Fluorobiphenyl (S)	%						51	49	30-110		
2-Fluorophenol (S)	%						52	52	13-110		
Nitrobenzene-d5 (S)	%						44	46	23-110		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1093065 1093066

Parameter	Units	92180616004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Phenol-d6 (S)	%						53	50	22-110		
Terphenyl-d14 (S)	%						72	74	28-110		

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QUALITY CONTROL DATA

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

QC Batch: PMST/6045
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92180616001, 92180616002, 92180616003, 92180616004

SAMPLE DUPLICATE: 1097036

Parameter	Units	92180757005 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	19.9	20.8	5	

SAMPLE DUPLICATE: 1097037

Parameter	Units	92180884001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	22.1	22.5	2	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

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

A+	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.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.
RS	The RPD value in one of the constituent analytes was outside the control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NCDOT - SUGAR CREEK 41141.1.1
Pace Project No.: 92180616

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92180616001	**MB1**	EPA 3546	OEXT/24888	EPA 8270	MSSV/8493
92180616002	**MB2**	EPA 3546	OEXT/24888	EPA 8270	MSSV/8493
92180616003	**MB4**	EPA 3546	OEXT/24888	EPA 8270	MSSV/8493
92180616004	**MB9**	EPA 3546	OEXT/24888	EPA 8270	MSSV/8493
92180616001	**MB1**	EPA 8260	MSV/25102		
92180616002	**MB2**	EPA 8260	MSV/25102		
92180616003	**MB4**	EPA 8260	MSV/25102		
92180616004	**MB9**	EPA 8260	MSV/25102		
92180616001	**MB1**	ASTM D2974-87	PMST/6045		
92180616002	**MB2**	ASTM D2974-87	PMST/6045		
92180616003	**MB4**	ASTM D2974-87	PMST/6045		
92180616004	**MB9**	ASTM D2974-87	PMST/6045		

Pace Analytical	Document Name: Sample Condition Upon Receipt (SCUR)	Page 1 of 2
	Document Number: F-CHR-CS-03-rev.11	Issuing Authority: Pace Huntersville Quality Office

Client Name: Terracon

Where Received: ☑ Huntersville ☐ Asheville ☐ Eden ☐ Raleigh

Courier: ☐ 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_____

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.: 4.0 C **Biological Tissue is Frozen:** Yes No N/A

Temp should be above freezing to 6°C **Comments:**

Optional
Proj. Due Date:
Proj. Name:

Date and Initials of person examining contents: 11/22

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix:_____		
All containers needing preservation have been checked.	☐Yes ☐No ☑N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☑N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☑No	
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☐N/A	
Pace Trip Blank Lot # (if purchased):_____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted:_____ Date/Time:_____

Comments/ Resolution:_____

SCURF Review: KCH **Date:** 11/22/13

SRF Review: KCH **Date:** 11/25/13

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#: 92180616

92180616

(if no label available)

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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

1602502

Section A Required Client Information:

Company:	TERRACON CONSULTANTS
Address:	2020 E STARITA RD. CHARLOTTE, NC 28206
Email To:	ckorbitt@terracon.com
Phone:	704.509.1777
Fax:	704.509.1888
Requested Due Date/TAT:	STANDARD

Section B Required Project Information:

Report To:	Chris Corbitt
Copy To:	
Purchase Order No.:	
Project Name:	NCDOT - SUGAR CRK
Project Number:	7113777-4

Section C Invoice Information:

Attention:	SAME
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	KEVIN HERRING
Pace Profile #:	4860-1

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☒ OTHER _____

Site Location STATE: NC

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: 8260	8270	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MB 1	SL	G			11/22/13	8:30		5	2					2	1		X	X		92180616 001
2	MB 2	SL	G				8:35		5	2					2	1		X	X		002
3	MB 4	SL	G				8:40		5	2					2	1		X	X		003
4	MB 9	SL	G				8:45		5	2					2	1		X	X		004
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	TERRACON	11/22/13	9:15		11/22/13	0935	4.0	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: S. ALEX GHINERY

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 11/22/13

ORIGINAL

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

F-ALL-Q-020rev.07, 15-May-2007