SUMMARY REPORT
143 ACORN DRIVE (FORMERLY 390 ACORN DRIVE)
LAUREL BAY MILITARY HOUSING AREA
MARINE CORPS AIR STATION BEAUFORT
BEAUFORT, SC

Revision: 0
Prepared for:

Department of the Navy
Naval Facilities Engineering Command, Mid-Atlantic
9324 Virginia Avenue
Norfolk, Virginia 23511-3095

and

Naval Facilities Engineering Command Atlantic
9324 Virginia Avenue
Norfolk, Virginia 23511-3095

JUNE 2021

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Prepared by:

CDM - AECOM Multimedia Joint Venture
10560 Arrowhead Drive, Suite 500
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Contract Number: N62470-14-D-9016
CTO WE52
JUNE 2021

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List of Acronyms

bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CTO	Contract Task Order
COPC	constituents of potential concern
ft	feet
IDIQ	Indefinite Delivery, Indefinite Quantity
IGWA	Initial Groundwater Assessment
JV	Joint Venture
LBMH	Laurel Bay Military Housing
MCAS	Marine Corps Air Station
NAVFAC Mid-Lant	Naval Facilities Engineering Command Mid-Atlantic
NFA	No Further Action
PAH	polynuclear aromatic hydrocarbon
QAPP	Quality Assurance Program Plan
RBSL	risk-based screening level
SCDHEC	South Carolina Department of Health and Environmental Control
Site	LBMH area at MCAS Beaufort, South Carolina
UST	underground storage tank
VISL	vapor intrusion screening level

1.0 INTRODUCTION

The CDM - AECOM Multimedia Joint Venture (JV) was contracted by the Naval Facilities Engineering Command, Mid-Atlantic (NAVFAC Mid-Lant) to provide reporting services for the heating oil underground storage tanks (USTs) located in Laurel Bay Military Housing (LBMH) area at the Marine Corps Air Station (MCAS) Beaufort, South Carolina (Site). This work has been awarded under Contract Task Order (CTO) WE52 of the Indefinite Delivery, Indefinite Quantity (IDIQ) Multimedia Environmental Compliance Contract (Contract No. N62470-14-D-9016).

As of January 2014, the LBMH addresses were re-numbered to comply with the E-911 emergency response addressing system; however, in order to remain consistent with historical sampling and reporting for LBMH area, the residences will continue to be referenced with their original address numbers in sample nomenclature and reporting documents.

This report summarizes the results the environmental investigation activities associated with the storage of home heating oil and the potential release of petroleum constituents at the referenced property. Based on the results of the investigation, a No Further Action (NFA) determination has been made by the South Carolina Department of Health and Environmental Control (SCDHEC) for 143 Acorn Drive (Formerly 390 Acorn Drive). This NFA determination indicates that there are no unacceptable risks to human health or the environment for the petroleum constituents associated with the home heating oil USTs. The following information is included in this report:

- Background information;
- Sampling activities and results; and
- A determination of the property status.

1.1 Background Information

The LBMH area is located approximately 3.5 miles west of MCAS Beaufort. The area is approximately 970 acres in size and serves as an enlisted and officer family housing area. The area is configured with single family and duplex residential structures, and includes recreation, open space, and community facilities. The community includes approximately 1,300 housing units, including legacy Capehart style homes and newer duplex style homes. The housing area

is bordered on the west by salt marshes and the Broad River, and to the north, east and south by uplands. Forested areas lie along the northern and northeastern borders.

Capehart style homes within the LBMH area were formerly heated using heating oil stored in USTs at each residence. There were 1,100 Capehart style housing units in the LBMH area. The newer duplex homes within the LBMH area never utilized heating oil tanks. Heating oil has not been used at Laurel Bay since the mid-1980s. As was the accepted practice at the time, USTs were drained, filled with dirt, capped, and left in place when they were removed from service. Residential USTs are not regulated in the State of South Carolina (i.e., there are no federal or state laws governing installation, management, or removal).

In 2007, MCAS Beaufort began a voluntary program to remove the unregulated, residential heating oil USTs and conduct sampling activities to determine if, and to what extent, petroleum constituents may have impacted the surrounding environment. MCAS Beaufort coordinated with SCDHEC to develop removal procedures that were consistent with procedural requirements for regulated USTs. All tank removal activities and follow-on actions are conducted in coordination with SCDHEC. To date, all known USTs have been removed from all residential properties within the LBMH area.

1.2 UST Removal and Assessment Process

During the UST removal process, a soil sample was collected from beneath the UST excavations (approximately 4 to 6 feet [ft] below ground surface [bgs]) and analyzed for a predetermined list of constituents of potential concern (COPCs) associated with the petroleum compounds found in home heating oil. These COPCs, derived from the *Quality Assurance Program Plan (QAPP) for the Underground Storage Tank Management Division, Revision 3.1* (SCDHEC, February 2016) and the *Underground Storage Tank Assessment Instructions for Permanent Closure and Change-In-Service,* (SCDHEC, 2018), are as follows:

- benzene, toluene, ethylbenzene, and xylenes (BTEX),
- naphthalene, and
- five select polynuclear aromatic hydrocarbon (PAHs): benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene and dibenz(a,h)anthracene.

Soil sample results were submitted by MCAS Beaufort to SCDHEC utilizing SCDHEC's UST Assessment Report form. In accordance with SCDHEC's *QAPP for the UST Management*

Division (SCDHEC, February 2016), the soil screening levels consists of SCDHEC risk-based screening levels (RBSLs). It should be noted that the RBSLs for select PAHs were revised in Revision 2.0 of the QAPP (SCDHEC, April 2013) and were revised again in Revision 3.0 (SCDHEC, May 2015). The screening levels used for evaluation at each site were those levels that were in effect at the time of reporting and review by SCDHEC.

The results of the soil sampling at each former UST location were used to determine if a potential for groundwater contamination exists (i.e., soil results greater than RBSLs) and subsequently to select properties for follow-up initial groundwater assessment (IGWA) sampling. The IGWA sampling process utilizes temporary groundwater sampling points that are typically installed and sampled within the same day. The intent of the sampling point is to determine the presence or absence of the aforementioned COPCs in groundwater and identify whether former UST locations may require additional delineation of COPCs in groundwater. These sampling points are not subjected to the same installation standards as permanent monitoring wells and, as such; the data obtained from the IGWA wells can sometimes be biased high and is considered preliminary data. In order to confirm the presence of any impact to groundwater, a permanent well is installed where IGWA sampling has indicated the presence of COPCs is in excess of the SCDHEC RBSLs for groundwater. If COPCs are found to be present in the permanent well, additional permanent wells are installed to delineate the extent of impact to groundwater and a sampling program is established. Groundwater analytical results from permanent wells are also compared to the site specific groundwater vapor intrusion screening levels (VISLs) to evaluate the potential for vapor intrusion and the necessity for an investigation associated with this media. A multi-media investigation selection process tree, applicable to the LBMH UST investigations, is presented as Appendix A.

2.0 SAMPLING ACTIVITIES AND RESULTS

The following section presents the sampling activities and associated results for 143 Acorn Drive (Formerly 390 Acorn Drive). The sampling activities at 143 Acorn Drive (Formerly 390 Acorn Drive) comprised a soil investigation, IGWA sampling and installation and sampling of a permanent well. Details regarding the soil investigation at this site are provided in the *SCDHEC UST Assessment Report – 390 Acorn Drive* (MCAS Beaufort, 2008). The UST Assessment Report is provided in Appendix B. Details regarding the IGWA sampling activities at this site are provided in the *Investigation of Ground Water at Leaking Heating Oil UST Sites* (Pandey Environmental, 2008). The laboratory report that includes the pertinent IGWA analytical results for this site is presented in Appendix C. Details regarding the permanent well installation and

sampling activities at this site are provided in the *Report of Findings for Laurel Bay Military Housing Area Investigation of Potential Impacts to Groundwater from Former Heating Oil Underground Storage Tanks* (Tetra Tech NUS, Inc, 2010). The pertinent groundwater analytical results for this site is presented in Appendix D.

2.1 UST Removal and Soil Sampling

On June 25, 2007, a single 280 gallon heating oil UST was removed from the front yard at 143 Acorn Drive (Formerly 390 Acorn Drive). The former UST location is indicated on the figures of the UST Assessment Report (Appendix B). The UST was removed and properly disposed of (i.e., shipped offsite for recycling or transported to a landfill). There was no visual evidence (i.e., staining or sheen) of petroleum impact at the time of the UST removal. According to the UST Assessment Report (Appendix B), the depth to the base of the UST was 5'0" bgs and a single soil sample was collected from that depth. The sample was collected from the fill port side of the former UST to represent a worst case scenario. An additional soil sample was collected from a side wall of the excavation.

Following UST removal, soil samples were collected from the base and the side of the excavation and shipped to an offsite laboratory for analysis of the petroleum COPCs. Sampling was performed in accordance with applicable South Carolina regulation R.61-92, Part 280 (SCDHEC, 2017) and assessment guidelines.

2.2 Soil Analytical Results

A summary of the laboratory analytical results and SCDHEC RBSLs is presented in Table 1. A copy of the laboratory analytical data report is included in the UST Assessment Report presented in Appendix B. The laboratory analytical data report includes the soil results for the additional PAHs that were analyzed, but do not have associated RBSLs.

The soil sample results were submitted by MCAS Beaufort to SCDHEC utilizing SCDHEC's UST Assessment Report form (Appendix B). The results of the soil sampling at the former UST location were used by MCAS Beaufort, in consultation with SCDHEC, to determine a path forward (i.e., additional sampling or NFA) for the property. The soil results collected from 143 Acorn Drive (Formerly 390 Acorn Drive) were greater than the SCDHEC RBSLs, which indicated further investigation was required. In a letter dated September 10, 2008, SCDHEC requested an IGWA for 143 Acorn Drive (Formerly 390 Acorn Drive) to determine if the groundwater was impacted by petroleum COPCs. SCDHEC's request letter is provided in Appendix E.

2.3 Initial Groundwater Sampling

On July 29, 2008, a temporary monitoring well was installed at 143 Acorn Drive (Formerly 390 Acorn Drive), in accordance with the South Carolina Well Standards and Regulations (R.61-71.H-I, updated June 24, 2016). In order to provide data that can be used to determine whether COPCs are migrating to underlying groundwater, the monitoring well was placed in the same general location as the former heating oil UST. The former UST location is indicated on the figures of the UST Assessment Report (Appendix B). Further details are provided in the *Investigation of Ground Water at Leaking Heating Oil UST Sites* (Pandey Environmental, 2008).

The sampling strategy for this phase of the investigation required a one-time sampling event of the temporarily installed monitoring well. Following well installation, a groundwater sample was collected using screen point sampling methods and shipped to an offsite laboratory for analysis of the petroleum COPCs. Upon completion of groundwater sampling, the temporary well was abandoned in accordance with the South Carolina Well Standards and Regulations R.61-71.H-I (SCDHEC, 2016). Field forms are provided in the *Investigation of Ground Water at Leaking Heating Oil UST Sites* (Pandey Environmental, 2008).

2.4 Initial Groundwater Analytical Results

A summary of the laboratory analytical results and SCDHEC RBSLs is presented in Table 2. A copy of the laboratory analytical data report is included in Appendix C.

The groundwater results collected from 143 Acorn Drive (Formerly 390 Acorn Drive) were greater than the SCDHEC RBSLs and the site specific groundwater VISLs (Table 2), which indicated further investigation was required. In a letter dated December 30, 2008, SCDHEC requested a permanent well be installed for 143 Acorn Drive (Formerly 390 Acorn Drive) to confirm the impact to groundwater detected in the temporary well sample. SCDHEC's request letter is provided in Appendix E.

2.5 Permanent Well Groundwater Sampling

On February 2010, three permanent monitoring wells were installed at 143 Acorn Drive (Formerly 390 Acorn Drive), in accordance with the South Carolina Well Standards and Regulations (R.61-71.H-I, updated June 24, 2016). MW107 was installed on February 12, 2010, MW108 was installed on February 16, 2010 and MW109 was installed on February 15, 2010. In order to provide data that can be used to determine whether COPCs are migrating to underlying

groundwater, MW107 was placed in the same general location as the former heating oil UST and the IGWA sample location. The former UST location is indicated on the figures of the UST Assessment Report (Appendix B). MW108 and MW109 were placed around the property to delineate the extent of groundwater impact from the former heating oil tank. Further details are provided in the *Report of Findings for Laurel Bay Military Housing Area Investigation of Potential Impacts to Groundwater from Former Heating Oil Underground Storage Tanks* (Tetra Tech NUS, Inc, 2010).

The sampling strategy for this phase of the investigation required a one-time sampling event of the permanent monitoring wells. Following well installation and development, groundwater samples were collected using low-flow methods and shipped to an offsite laboratory for analysis of the petroleum COPCs. Field forms are provided in the *Report of Findings for Laurel Bay Military Housing Area Investigation of Potential Impacts to Groundwater from Former Heating Oil Underground Storage Tanks* (Tetra Tech NUS, Inc, 2010).

2.6 Permanent Well Groundwater Analytical Results

A summary of the laboratory analytical results and SCDHEC RBSLs is presented in Table 3. A copy of the laboratory analytical data report is included in Appendix D.

The groundwater results collected from 143 Acorn Drive (Formerly 390 Acorn Drive) were less than the SCDHEC RBSLs and the site specific groundwater VISLs (Table 3), which indicated that the groundwater was not impacted by COPCs associated with the former UST at concentrations that present a potential risk to human health and the environment.

3.0 PROPERTY STATUS

Based on the analytical results for groundwater collected from the permanent monitoring wells, SCDHEC made the determination that NFA was required for 143 Acorn Drive (Formerly 390 Acorn Drive). This NFA determination was obtained in a letter dated April 6, 2011. SCDHEC's NFA letter is provided in Appendix E.

4.0 REFERENCES

Marine Corps Air Station Beaufort, 2008. *South Carolina Department of Health and Environmental Control (SCDHEC) Underground Storage Tank Assessment Report – 390 Acorn Drive, Laurel Bay Military Housing Area*, January 2008.

Pandey Environmental, 2008. *Investigation of Ground Water at Leaking Heating Oil UST Sites for Laurel Bay Military Housing Area, Multiple Properties, Marine Corps Air Station Beaufort, Beaufort, South Carolina*, November 2008.

Tetra Tech NUS, Inc, 2010. *Report of Findings for Laurel Bay Military Housing Area Investigation of Potential Impacts to Groundwater from Former Heating Oil Underground Storage Tanks*, July 2010.

South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management, 2013. *Quality Assurance Program Plan for the Underground Storage Tank Management* Division*, Revision 2.0*, April 2013.

South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management, 2015. *Quality Assurance Program Plan for the Underground Storage Tank Management* Division*, Revision 3.0*, May 2015.

South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management, 2016. *Quality Assurance Program Plan for the Underground Storage Tank Management* Division*, Revision 3.1*, February 2016.

South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management, 2017. *R.61-92, Part 280, Underground Storage Tank Control Regulations*, March 2017.

South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management, 2018. *Underground Storage Tank Assessment Instructions for Permanent Closure and Change-In-Service*, March 2018.

South Carolina Department of Health and Environmental Control Bureau of Water, 2016. *R.61-71, Well Standards*, June 2016.

Tables

Table 1
Laboratory Analytical Results - Soil
143 Acorn Drive (Formerly 390 Acorn Drive)
Laurel Bay Military Housing Area
Marine Corps Air Station Beaufort
Beaufort, South Carolina

Constituent	SCDHEC RBSLs [(1)]	Results Samples Collected 07/25/07	
		390 Acorn Bottom 01	390 Acorn Side 02
Volatile Organic Compounds Analyzed by EPA Method 8260B (mg/kg)			
Benzene	0.003	ND	ND
Ethylbenzene	1.15	**0.00113**	**0.00277**
Naphthalene	0.036	**0.0238**	**0.0533**
Toluene	0.627	**0.00154**	**0.00174**
Xylenes, Total	13.01	**0.00127**	**0.00228**
Semivolatile Organic Compounds Analyzed by EPA Method 8270 (mg/kg)			
Benzo(a)anthracene	0.066	**3.78**	**0.384**
Benzo(b)fluoranthene	0.066	**2.11**	**0.264**
Benzo(k)fluoranthene	0.066	**0.967**	**0.0951**
Chrysene	0.066	**3.79**	**0.412**
Dibenz(a,h)anthracene	0.066	**0.0539**	ND

Notes:

[(1)] South Carolina Risk-Based Screening Levels from the Quality Assurance Program Plan for the Underground Storage Tank Management Division, Revision 1.0 (SCDHEC, May 2001).

Bold font indicates the analyte was detected.

Bold font and shading indicates the concentration exceeds the SCDHEC RBSL.

EPA - United States Environmental Protection Agency

mg/kg - milligrams per kilogram

ND - not detected at the reporting limit (or method detection limit if shown on the laboratory report). The soil laboratory report is provided in Appendix B.

RBSL - Risk-Based Screening Level

SCDHEC - South Carolina Department Of Health and Environmental Control

Table 2
Laboratory Analytical Results - Initial Groundwater
143 Acorn Drive (Formerly 390 Acorn Drive)
Laurel Bay Military Housing Area
Marine Corps Air Station Beaufort
Beaufort, South Carolina

Constituent	SCDHEC RBSLs [1]	Site-Specific Groundwater VISLs (µg/L)[2]	Results Sample Collected 07/29/08
Volatile Organic Compounds Analyzed by EPA Method 8260B (µg/L)			
Benzene	5	16.24	ND
Ethylbenzene	700	45.95	ND
Naphthalene	25	29.33	**2.2**
Toluene	1000	105,445	**0.12**
Xylenes, Total	10,000	2,133	**0.13**
Semivolatile Organic Compounds Analyzed by EPA Method 8270D (µg/L)			
Benzo(a)anthracene	10	NA	**0.22**
Benzo(b)fluoranthene	10	NA	ND
Benzo(k)fluoranthene	10	NA	ND
Chrysene	10	NA	**0.24**
Dibenz(a,h)anthracene	10	NA	ND

Notes:

(1) South Carolina Risk-Based Screening Levels from the Quality Assurance Program Plan for the Underground Storage Tank Management Division, Revision 1.0 (SCDHEC, May 2001).

(2) Site-specific groundwater VISLs were calculated using the EPA JE Model Spreadsheets (Version 3.1, February 2004) and conservative modeling inputs representative of a small single-story house with an 8 foot ceiling. Site-specific groundwater VISLs were developed based on a target risk level of $1x10^{-6}$, a target hazard quotient of 1 (per target organ), and a default residential exposure scenario, assuming exposure for 24 hours/day, 350 days/year, for 26 years. Modeling was performed for a range of depths to groundwater for application as appropriate in different areas of the Laurel Bay Military Housing Area. The most conservative levels are presented for comparison. Refer to Appendix H of the Uniform Federal Policy Sampling Analysis and Sampling Plan for Vapor Media, Revision 4 (Resolution Consultants, April 2017) for additional information.

Bold font indicates the analyte was detected.

Bold font and shading indicates the concentration exceeds the SCDHEC RBSL and/or the Site-Specific Groundwater VISL.

EPA - United States Environmental Protection Agency

JE - Johnson & Ettinger

NA - not applicable

ND - not detected at the reporting limit (or method detection limit if shown on the laboratory report). The groundwater laboratory report is provided in Appendix C.

RBSL - Risk-Based Screening Level

SCDHEC - South Carolina Department Of Health and Environmental Control

µg/L - micrograms per liter

VISL - Vapor Intrusion Screening Level

Table 3
Laboratory Analytical Results - Permanent Well Groundwater
143 Acorn Drive (Formerly 390 Acorn Drive)
Laurel Bay Military Housing Area
Marine Corps Air Station Beaufort
Beaufort, South Carolina

Constituent	SCDHEC RBSLs [1]	Site-Specific Groundwater VISLs (µg/L)[2]	Results Samples Collected 02/23/10 and 02/24/10		
			MW107 02/23/10	MW108 02/23/10	MW109 02/24/10
Volatile Organic Compounds Analyzed by EPA Method 8260B (µg/L)					
Benzene	5	16.24	ND	ND	ND
Ethylbenzene	700	45.95	ND	ND	ND
Naphthalene	25	29.33	ND	ND	ND
Toluene	1000	105,445	ND	ND	ND
Xylenes, Total	10,000	2,133	ND	ND	ND
Semivolatile Organic Compounds Analyzed by EPA Method 8270D (µg/L)					
Benzo(a)anthracene	10	NA	ND	ND	ND
Benzo(b)fluoranthene	10	NA	ND	ND	ND
Benzo(k)fluoranthene	10	NA	ND	ND	ND
Chrysene	10	NA	ND	ND	ND
Dibenz(a,h)anthracene	10	NA	ND	ND	ND

Notes:

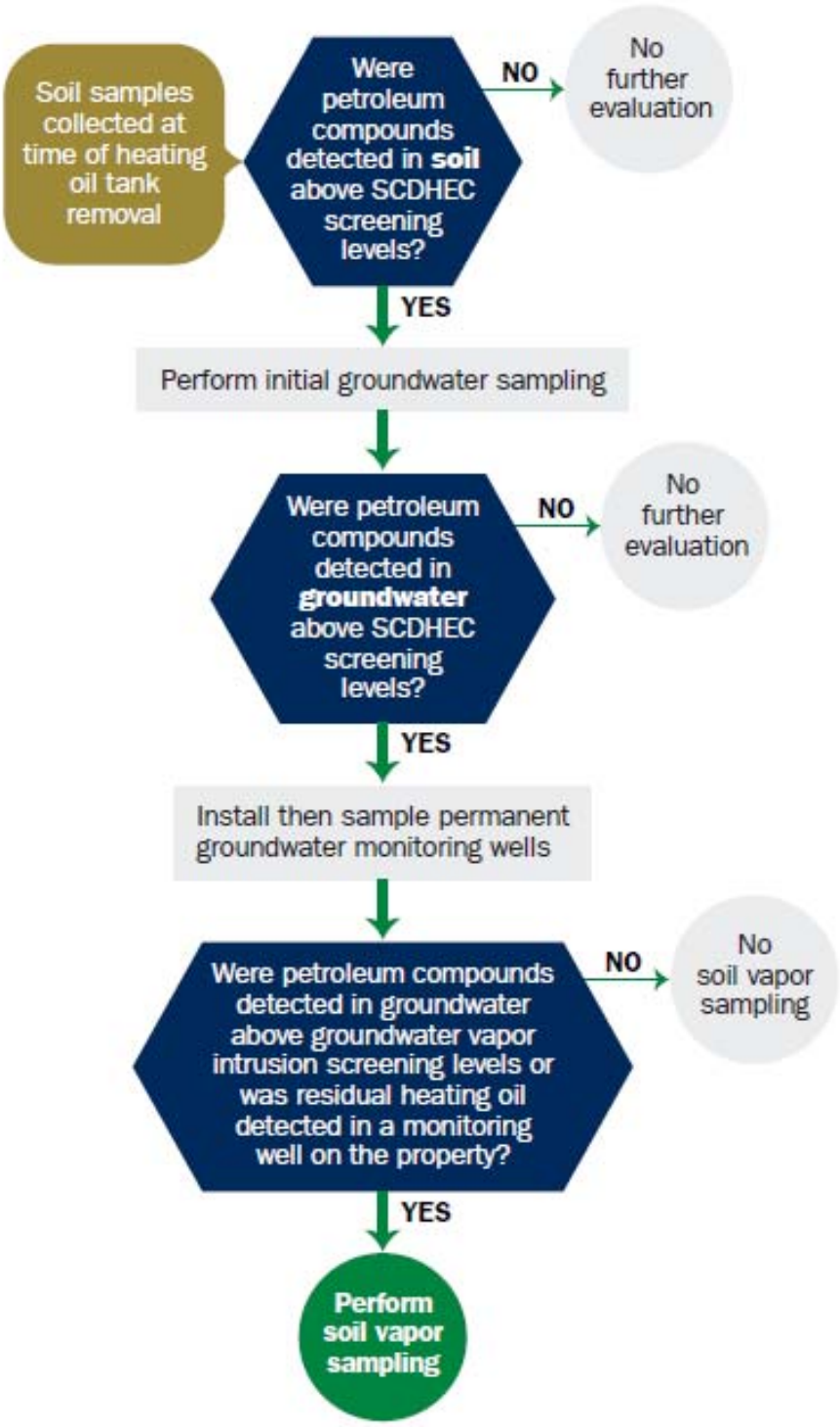
[1] South Carolina Risk-Based Screening Levels from the Quality Assurance Program Plan for the Underground Storage Tank Management Division, Revision 1.0 (SCDHEC, May 2001).

[2] Site-specific groundwater VISLs were calculated using the EPA JE Model Spreadsheets (Version 3.1, February 2004) and conservative modeling inputs representative of a small single-story house with an 8 foot ceiling. Site-specific groundwater VISLs were developed based on a target risk level of $1x10^{-6}$, a target hazard quotient of 1 (per target organ), and a default residential exposure scenario, assuming exposure for 24 hours/day, 350 days/year, for 26 years. Modeling was performed for a range of depths to groundwater for application as appropriate in different areas of the Laurel Bay Military Housing Area. The most conservative levels are presented for comparison. Refer to Appendix H of the Uniform Federal Policy Sampling Analysis and Sampling Plan for Vapor Media, Revision 4 (Resolution Consultants, April 2017) for additional information.

Bold font indicates the analyte was detected.
Bold font and shading indicates the concentration exceeds the SCDHEC RBSL and/or the Site-Specific Groundwater VISL.
EPA - United States Environmental Protection Agency
JE - Johnson & Ettinger
NA - not applicable
ND - not detected at the reporting limit (or method detection limit if shown on the laboratory report). The groundwater laboratory report is provided in Appendix D.
RBSL - Risk-Based Screening Level
SCDHEC - South Carolina Department Of Health and Environmental Control
µg/L - micrograms per liter
VISL - Vapor Intrusion Screening Level

Appendix A
Multi-Media Selection Process for LBMH

CDM - AECOM
Multimedia Joint Venture



Appendix A - Multi-Media Selection Process for LBMH

Appendix B
UST Assessment Report

CDM - AECOM
Multimedia Joint Venture

Attachment 1

South Carolina Department of Health and Environmental Control (SCDHEC)

Underground Storage Tank (UST) Assessment Report

Date Received: [redacted]

State Use Only

Submit Completed Form To:
UST Program
SCDHEC
2600 Bull Street
Columbia, South Carolina 29201
Telephone (803) 896-6240

I. OWNERSHIP OF UST (S)

Beaufort Military Complex Family Housing
Owner Name (Corporation, Individual, Public Agency, Other)

1510 Laurel Bay Blvd.
Mailing Address

Beaufort SC 29906
City State Zip Code

843 379-3305 Kyle Broadfoot
Area Code Telephone Number Contact Person

II. SITE IDENTIFICATION AND LOCATION

N/A
Permit I.D. #

Actus Lend Lease Construction
Facility Name or Company Site Identifier

390 Acorn
Street Address or State Road (as applicable)

Beaufort SC 29906 Beaufort
City ZIP County

Attachment 2

III. INSURANCE INFORMATION

Insurance Statement

The petroleum release reported to DHEC on N/A at Permit ID # may qualify to receive state monies to pay for appropriate site rehabilitation activities. Before participation is allowed in the State Clean-up fund, written confirmation of the existence or non-existence of an environmental insurance policy is required. **This section must be completed.**

Is there now, or has there ever been an insurance policy or other financial mechanism that covers this UST release? **YES**____ **NO**_____ (check one)

If you answered **YES** to the above question, please complete the following information:

My policy provider is:_____
The policy deductible is: _____
The policy limit is: _____

If you have this type of insurance, please include a copy of the policy with this report.

And

I **do/do not** (circle one) wish to participate in the Superb Program.

IV. CERTIFICATION (To be signed by the UST owner/operator.)

I certify that I have personally examined and am familiar with the information submitted in this and all attached documents; and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

Name (Type or print.) _____

Signature _____

To be completed by Notary Public:

Sworn before me this _____ day of_____, 20___.

_____
(Name)

Notary Public for the state of_____.
Please affix State seal if you are commissioned outside South Carolina

V. UST INFORMATION

	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6
A. Product...(ex. Gas, Kerosene)	#2 DIESEL					
B. Capacity..(ex. 1k, 2k)	2806 ~~3500~~ (APPROX)					
C. Age						
D. Construction Material..(ex. Steel, FRP)	Steel					
E. Month/Year of Last Use						
F. Depth (ft.) To Base of Tank	60"					
G. Spill Prevention Equipment Y/N	N					
H. Overfill Prevention Equipment Y/N	N					
I. Method of Closure (Removed/Filled)	Removed					
J. Date Tanks Removed/Filled	6-25-07					
K. Visible Corrosion or Pitting Y/N	N					
L. Visible Holes Y/N	N					

M. Method of disposal for any USTs removed from the ground (attach disposal manifests)

Recycling - Scrap Steel

N. Method of disposal for any liquid petroleum, sludges, or wastewaters removed from the USTs (attach disposal manifests)

TREATMENT FACILITY - BROADHURST LANDFILL
Solidification And Subtitle D LANDFILL

O. If any corrosion, pitting, or holes were observed, describe the location and extent for each UST

MINOR CORROSION And Pitting were VISIBLE ON Bottom 1/2 UST.

VI. PIPING INFORMATION

	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6
A. Construction Material..(ex. Steel, FRP).....	Steel					
B. Distance from UST to Dispenser.....	N/A					
C. Number of Dispensers.....	-0-					
D. Type of System Pressure or Suction.....	Electric Pump					
E. Was Piping Removed from the Ground? Y/N	Y					
F. Visible Corrosion or Pitting Y/N.....	N					
G. Visible Holes Y/N.....	N					
H. Age.....						

I. If any corrosion, pitting, or holes were observed, describe the location and extent for each piping run.

~~None~~ Minor Rust/Pitting were Apparent on Fill Tube and vent pipe -

VII. BRIEF SITE DESCRIPTION AND HISTORY

Home Heating Oil Tank - Residential

VIII. SITE CONDITIONS

	Yes	No	Unk
A. Were any petroleum-stained or contaminated soils found in the UST excavation, soil borings, trenches, or monitoring wells? If yes, indicate depth and location on the site map.		X	
B. Were any petroleum odors detected in the excavation, soil borings, trenches, or monitoring wells? If yes, indicate location on site map and describe the odor (strong, mild, etc.)		X	
C. Was water present in the UST excavation, soil borings, or trenches? If yes, how far below land surface (indicate location and depth)?		X	
D. Did contaminated soils remain stockpiled on site after closure? If yes, indicate the stockpile location on the site map. Name of DHEC representative authorizing soil removal:		X	
E. Was a petroleum sheen or free product detected on any excavation or boring waters? If yes, indicate location and thickness.		X	

IX. SAMPLE INFORMATION

A. SCDHEC Lab Certification Number DW: 84009002

B.

Sample #	Location	Sample Type (Soil/Water)	Soil Type (Sand/Clay)	Depth*	Date/Time of Collection	Collected by	OVA #
1	BOTTOM	S	CLAY	60"	6-25-07 1215	ECHEVARRIA	ND
2	SIDE	S	CLAY	40"	6-25-07 1225	ECHEVARRIA	ND
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

* = Depth Below the Surrounding Land Surface

X.

SAMPLING METHODOLOGY

Provide a detailed description of the methods used to collect and store the samples. Also include the preservative used for each sample. Please use the space provided below.

EPA Method 8260 B Volatile Organic Compounds
- Preservative: 2 ea Sodium Bisulfate 1 ea
EPA Method 8270 Poly Aromatic Hydrocarbons
- No Preservative

One (1) Sidewall and One (1) Bottom Sample were secured from tank excavation. Samples were stored and shipped in an insulated cooler w/ ice.

XI. RECEI)RS

	Yes	No
A. Are there any lakes, ponds, streams, or wetlands located within 1000 feet of the UST system? If yes, indicate type of receptor, distance, and direction on site map.		X
B. Are there any public, private, or irrigation water supply wells within 1000 feet of the UST system? If yes, indicate type of well, distance, and direction on site map.		✓
C. Are there any underground structures (e.g., basements) Located within 100 feet of the UST system? If yes, indicate type of structure, distance, and direction on site map.		✓
D. Are there any underground utilities (e.g., telephone, electricity, gas, water, sewer, storm drain) located within 100 feet of the UST system that could potentially come in contact with the contamination? If yes, indicate the type of utility, distance, and direction on the site map.		✓
E. Has contaminated soil been identified at a depth less than 3 feet below land surface in an area that is not capped by asphalt or concrete? If yes, indicate the area of contaminated soil on the site map.		✓

SUMMARY OF ANALYSIS RESULTS N/A

Enter the soil analytical data for each soil boring for all COC in the table below and on the following page.

CoC	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7	SB-8
Benzene								
Toluene								
Ethylbenzene								
Xylenes								
Naphthalene								
Benzo(a)anthracene								
Benzo(b)flouranthene								
Benzo(k)flouranthene								
Chrysene								
Dibenz(a,h)anthracene								
TPH (EPA 3550)								

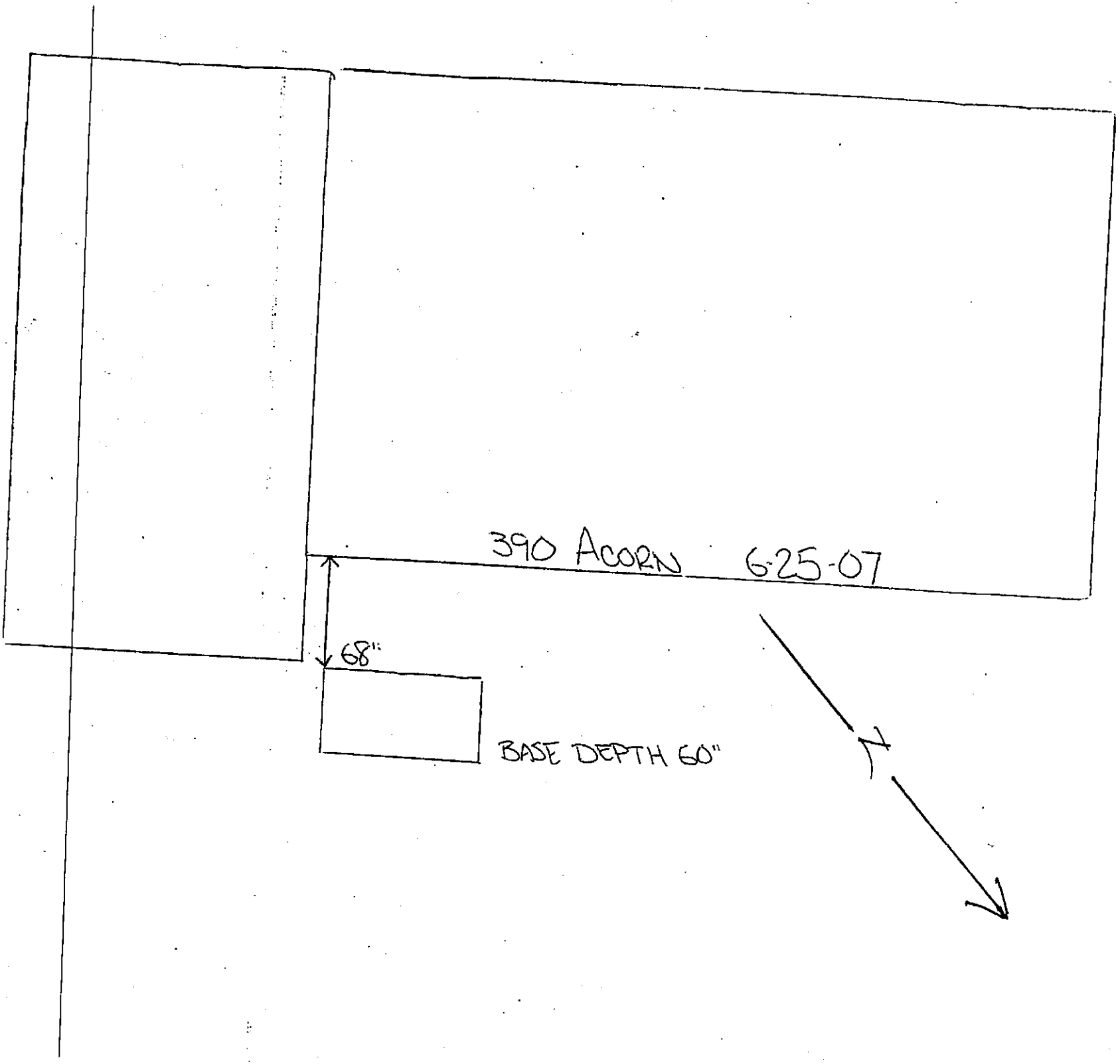
CoC	SB-9	SB-10	SB-11	SB-12	SB-13	SB-14	SB-15	SB-16
Benzene								
Toluene								
Ethylbenzene								
Xylenes								
Naphthalene								
Benzo(a)anthracene								
Benzo(b)flouranthene								
Benzo(k)flouranthene								
Chrysene								
Dibenz(a,h)anthracene								
TPH (EPA 3550)								

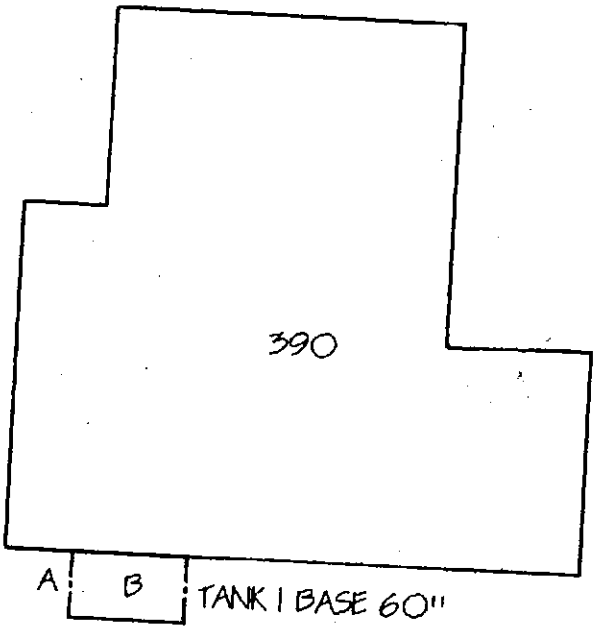
SUMMARY OF ANALYSIS RESULTS (cont'd) N/A

Enter the ground water analytical data for each sample for all CoC in the table below. If free product is present, indicate the measured thickness to the nearest 0.01 feet.

CoC	RBSL (µg/l)	W-1	W-2	W -3	W -4
Free Product Thickness	None				
Benzene	5				
Toluene	1,000				
Ethylbenzene	700				
Xylenes	10,000				
Total BTEX	N/A				
MTBE	40				
Naphthalene	25				
Benzo(a)anthracene	10				
Benzo(b)flouranthene	10				
Benzo(k)flouranthene	10				
Chrysene	10				
Dibenz(a,h)anthracene	10				
EDB	.05				
1,2-DCA	.05				
Lead	Site specific				

OCT 25 2007 12:44
390 ACRES


390 ACORN 6-25-07
68"
BASE DEPTH 60"
N



ACORN DRIVE

TANK I EXCAVATION

A-SOIL TEST SIDE SAMPLE @ 50"
B-SOIL TEST BOTTOM SAMPLE @ 60"

N

CUSTOMER: BEAUFORT MILITARY COMPLEX FAMILY HOUSING	SCALE: 1/16"=1'-0"	EPG INC.
SITE ADDRESS: 390 ACORN DRIVE	SUPPLIER: EPG INC.	P.O. BOX 1096
	DATE: 9/27/2007	MOUNT PLEASANT, SC 29465-1096

ANALYTICAL RESULTS

You must submit the laboratory report and chain-of-custody form for the samples. These samples must be analyzed by a South Carolina certified laboratory.

(Attach Certified Analytical Results and Chain-of-Custody Here)
(Please see Form #4)

Client: EPG, INC.
PO BOX 1096
MT PLEASANT, SC 29465
Attn: JOHN MAHONEY

Work Order: OQG0558
Project: LAUREL BAY
Project Number: EP 2362

Sampled: 07/25/07
Received: 07/27/07

LABORATORY REPORT

Sample ID: 390 ACORN BOTTOM 01 - Lab Number: OQG0558-01 - Matrix: Solid/Soil

CAS #	Analyte	Result	Q	Units	MDL	PQL	Dil Factor	Analyzed Date/Time	By	Method	Batch
General Chemistry Parameters											
NA	% Solids	72.4		%.	0.100	0.100	1	07/31/07 18:15	RRP	EPA 160.3	7G31044
Volatile Organic Compounds by EPA Method 8260B											
71-43-2	Benzene	0.448	U	ug/kg dry	0.448	1.22	1	08/03/07 15:11	JWT	EPA 8260B	7H03050
00-41-4	Ethylbenzene	1.13	J4,I	ug/kg dry	0.518	1.22	1	08/03/07 15:11	JWT	EPA 8260B	7H03050
91-20-3	Naphthalene	23.8	J4	ug/kg dry	0.677	1.22	1	08/03/07 15:11	JWT	EPA 8260B	7H03050
08-88-3	Toluene	1.54		ug/kg dry	1.06	1.22	1	08/03/07 15:11	JWT	EPA 8260B	7H03050
330-20-7	Xylenes, total	1.27	V,J4	ug/kg dry	0.636	1.22	1	08/03/07 15:11	JWT	EPA 8260B	7H03050
'urrogate: 1,2-Dichloroethane-d4 (73-137%)		*121 %*									
urrogate: 4-Bromofluorobenzene (59-118%)		*100 %*									
urrogate: Dibromofluoromethane (55-145%)		*107 %*									
urrogate: Toluene-d8 (80-117%)		*101 %*									
'olynuclear Aromatic Hydrocarbons by EPA Method 8270											
3-32-9	Acenaphthene	1260		ug/kg dry	102	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
08-96-8	Acenaphthylene	135	U	ug/kg dry	135	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
20-12-7	Anthracene	1670		ug/kg dry	73.6	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
5-55-3	Benzo (a) anthracene	3780		ug/kg dry	25.0	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
05-99-2	Benzo (b) fluoranthene	2110		ug/kg dry	24.3	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
07-08-9	Benzo (k) fluoranthene	967		ug/kg dry	24.3	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
91-24-2	Benzo (g,h,i) perylene	285		ug/kg dry	23.9	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
50-32-8	Benzo (a) pyrene	1300		ug/kg dry	28.4	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
90-12-0	1-Methylnaphthalene	5980		ug/kg dry	116	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
18-01-9	Chrysene	3790		ug/kg dry	27.6	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
53-70-3	Dibenz (a,h) anthracene	53.9	I	ug/kg dry	30.3	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
206-44-0	Fluoranthene	8570		ug/kg dry	33.2	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
86-73-7	Fluorene	2000		ug/kg dry	90.3	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
193-39-5	Indeno (1,2,3-cd) pyrene	308		ug/kg dry	29.9	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
91-57-6	2-Methylnaphthalene	9460		ug/kg dry	98.4	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
91-20-3	Naphthalene	764		ug/kg dry	92.6	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
85-01-8	Phenanthrene	6150		ug/kg dry	54.4	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
129-00-0	Pyrene	7210		ug/kg dry	46.9	231	1	08/08/07 21:46	REM	EPA 8270C	7H01015
rogate: 2-Fluorobiphenyl (24-121%)		*72 %*									
rogate: Nitrobenzene-d5 (19-111%)		*70 %*									
rogate: Terphenyl-d14 (44-171%)		*107 %*									

LABORATORY REPORT

Sample ID: 390 ACORN SIDE 02 - Lab Number: OQG0558-02 - Matrix: Solid/Soil

S #	Analyte	Result	Q	Units	MDL	PQL	Dil Factor	Analyzed Date/Time	By	Method	Batch
ıeral Chemistry Parameters											
	% Solids	76.8		%.	0.100	0.100	1	08/01/07 17:50	RRP	EPA 160.3	7H01058
atile Organic Compounds by EPA Method 8260B											
3-2	Benzene	0.448	U	ug/kg dry	0.448	1.22	1	08/03/07 16:53	JWT	EPA 8260B	7H03050

TestAmerica - Orlando, FL
Enid Ortiz For Shali Brown
Project Manager

Client: EPG, INC.
PO BOX 1096
MT PLEASANT, SC 29465
Attn: JOHN MAHONEY

Work Order: OQG0558
Project: LAUREL BAY
Project Number: EP 2362

Sampled: 07/25/07
Received: 07/27/07

LABORATORY REPORT

Sample ID: 390 ACORN SIDE 02 - Lab Number: OQG0558-02 - Matrix: Solid/Soil

CAS #	Analyte	Result	Q	Units	MDL	PQL	Dil Factor	Analyzed Date/Time	By	Method	Batch
Volatile Organic Compounds by EPA Method 8260B - Cont.											
100-41-4	Ethylbenzene	2.77		ug/kg dry	0.518	1.22	1	08/03/07 16:53	JWT	EPA 8260B	7H03050
91-20-3	Naphthalene	53.3		ug/kg dry	0.676	1.22	1	08/03/07 16:53	JWT	EPA 8260B	7H03050
108-88-3	Toluene	1.74		ug/kg dry	1.06	1.22	1	08/03/07 16:53	JWT	EPA 8260B	7H03050
1330-20-7	Xylenes, total	2.28	V	ug/kg dry	0.636	1.22	1	08/03/07 16:53	JWT	EPA 8260B	7H03050
Surrogate: 1,2-Dichloroethane-d4 (73-137%)		*120 %*									
Surrogate: 4-Bromofluorobenzene (59-118%)		*100 %*									
Surrogate: Dibromofluoromethane (55-145%)		*108 %*									
Surrogate: Toluene-d8 (80-117%)		*100 %*									
Polynuclear Aromatic Hydrocarbons by EPA Method 8270											
83-32-9	Acenaphthene	220		ug/kg dry	96.4	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
208-96-8	Acenaphthylene	127	U	ug/kg dry	127	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
120-12-7	Anthracene	220		ug/kg dry	69.4	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
56-55-3	Benzo (a) anthracene	384		ug/kg dry	23.6	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
205-99-2	Benzo (b) fluoranthene	264		ug/kg dry	22.9	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
207-08-9	Benzo (k) fluoranthene	95.1	I	ug/kg dry	22.9	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
191-24-2	Benzo (g,h,i) perylene	27.4	I	ug/kg dry	22.6	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
50-32-8	Benzo (a) pyrene	141	I	ug/kg dry	26.8	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
218-01-9	Chrysene	1480		ug/kg dry	109	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
53-70-3	Dibenz (a,h) anthracene	412		ug/kg dry	26.0	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
206-44-0	Fluoranthene	28.6	U	ug/kg dry	28.6	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
86-73-7	Fluorene	833		ug/kg dry	31.3	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
193-39-5	Indeno (1,2,3-cd) pyrene	330		ug/kg dry	85.1	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
1457-6	2-Methylnaphthalene	37.3	I	ug/kg dry	28.2	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
120-3	Naphthalene	2320		ug/kg dry	92.8	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
201-8	Phenanthrene	466		ug/kg dry	87.4	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
129-00-0	Pyrene	1040		ug/kg dry	51.3	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
Surrogate: 2-Fluorobiphenyl (24-121%)		*781*		ug/kg dry	44.2	218	1	08/08/07 22:08	REM	EPA 8270C	7H01015
Surrogate: Nitrobenzene-d5 (19-111%)		*51 %*									
Surrogate: Terphenyl-d14 (44-171%)		*49 %*									
		92 %									

LABORATORY REPORT

Sample ID: 230 CYPRESS BOTTOM 01 - Lab Number: OQG0558-03 - Matrix: Solid/Soil

CAS #	Analyte	Result	Q	Units	MDL	PQL	Dil Factor	Analyzed Date/Time	By	Method	Batch
General Chemistry Parameters											
	% Solids	78.2		%.	0.100	0.100	1	08/01/07 17:50	RRP	EPA 160.3	7H01058
Volatile Organic Compounds by EPA Method 8260B											
71-43-2	Benzene	0.577	I	ug/kg dry	0.459	1.25	1	08/03/07 17:10	JWT	EPA 8260B	7H03050
100-41-4	Ethylbenzene	7.07		ug/kg dry	0.531	1.25	1	08/03/07 17:10	JWT	EPA 8260B	7H03050
91-20-3	Naphthalene	66.3		ug/kg dry	0.693	1.25	1	08/03/07 17:10	JWT	EPA 8260B	7H03050
108-88-3	Toluene	3.11		ug/kg dry	1.08	1.25	1	08/03/07 17:10	JWT	EPA 8260B	7H03050

TestAmerica - Orlando, FL
Enid Ortiz For Shali Brown
Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

COC-0558

Client Name: EAG Client #: 2411
Address: PO Box 1096
City/State/Zip Code: Mt. Pleasant, SC
Project Manager: John Mahoney
Telephone Number: 843 881-0467 Fax: 843 881 7760
Sampler Name: (Print Name) John Mahoney
Sampler Signature:

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring

Project Name: Laurel Bay
Project #: EP 2362
Site/Location ID: State:
Report To:
Invoice To:
Quote #: PO#:

TAT
__ Standard
__ Rush (surcharges may apply)
Date Needed:
Fax Results: Y (N)

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix: SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify Other	Preservation & # of Containers: HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	Analyze For: BTEX-NAPHS260	PAH 8270	
390 Acorn Bottom-01	7/25/07	12:15	G							1	2	2	X	X	01
390 Acorn Side-02	7/25/07	12:25	C							1	2	2	X	X	02
230 Cypress Bot-01	7/25/07	10:30	G							1	2	2	X	X	03
230 Cypress Side-02	"	"	C							1	2	2	X	X	04
388 Acorn B-01	"	"	G							1	2	2	X	X	05
388 Acorn S-02	"	"	C							1	2	2	X	X	06
1177 Bobwhite B-01	"	"	G							1	2	2	X	X	07
1177 Bobwhite S-01	"	"	C							1	2	2	X	X	08
381 Birch B-05	"	"	G							1	2	2	X	X	09
381 Birch S-06	"	"	C							1	2	2	X	X	10

QC Deliverables
__ None
__ Level 2 (Batch QC)
__ Level 3
__ Level 4
Other:

REMARKS

Special Instructions: E-MAIL RESULTS to: JOHN@EAGSC.com

	Date:	Time:		Date:	Time:
Relinquished By:	7/26/07	07:00	Received By:	7/26/07	0700
Relinquished By:	7/26/07	1730	Received By:	7/26	9:30
Relinquished By:	Date:	Time:	Received By	Date:	Time:

LABORATORY COMMENTS:
Init Lab Temp:
Rec Lab Temp: 2.5
Custody Seals: Y N N/A
Bottles Supplied by Test America: Y N
Method of Shipment: FedEx 8625 2591 1644

Appendix C
Laboratory Analytical Report - Initial Groundwater

CDM - AECOM
Multimedia Joint Venture

Pace Analytical
www.pacelabs.com

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

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

ANALYTICAL RESULTS

Project: LAUREL BAY SAMPLING 7/29/08
Pace Project No.: 9224564

Sample: 388 ACORN A **Lab ID: 9224564015** Collected: 07/29/08 15:40 Received: 07/31/08 13:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM SPE	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3535							
Acenaphthene	**7.3**	ug/L	2.0	1	08/04/08 00:00	08/13/08 04:50	83-32-9	
Acenaphthylene	ND	ug/L	1.5	1	08/04/08 00:00	08/13/08 04:50	208-96-8	
Anthracene	**0.16**	ug/L	0.050	1	08/04/08 00:00	08/13/08 04:50	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	08/04/08 00:00	08/13/08 04:50	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.20	1	08/04/08 00:00	08/13/08 04:50	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.30	1	08/04/08 00:00	08/13/08 04:50	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.20	1	08/04/08 00:00	08/13/08 04:50	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.20	1	08/04/08 00:00	08/13/08 04:50	207-08-9	
Chrysene	ND	ug/L	0.10	1	08/04/08 00:00	08/13/08 04:50	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.20	1	08/04/08 00:00	08/13/08 04:50	53-70-3	
Fluoranthene	ND	ug/L	0.30	1	08/04/08 00:00	08/13/08 04:50	206-44-0	
Fluorene	**4.2**	ug/L	0.31	1	08/04/08 00:00	08/13/08 04:50	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.20	1	08/04/08 00:00	08/13/08 04:50	193-39-5	
1-Methylnaphthalene	**4.1**	ug/L	2.0	1	08/04/08 00:00	08/13/08 04:50	90-12-0	
2-Methylnaphthalene	**5.6**	ug/L	2.0	1	08/04/08 00:00	08/13/08 04:50	91-57-6	
Naphthalene	**52.7**	ug/L	1.5	1	08/04/08 00:00	08/13/08 04:50	91-20-3	
Phenanthrene	**1.2**	ug/L	0.20	1	08/04/08 00:00	08/13/08 04:50	85-01-8	
Pyrene	ND	ug/L	0.10	1	08/04/08 00:00	08/13/08 04:50	129-00-0	
Nitrobenzene-d5 (S)	58	%	50-150	1	08/04/08 00:00	08/13/08 04:50	4165-60-0	
2-Fluorobiphenyl (S)	64	%	50-150	1	08/04/08 00:00	08/13/08 04:50	321-60-8	
Terphenyl-d14 (S)	74	%	50-150	1	08/04/08 00:00	08/13/08 04:50	1718-51-0	
8260 MSV Low Level	Analytical Method: EPA 8260							
Benzene	**1.3**	ug/L	1.0	1		08/05/08 23:04	71-43-2	
Ethylbenzene	**24.6**	ug/L	1.0	1		08/05/08 23:04	100-41-4	
Naphthalene	**95.2**	ug/L	2.0	1		08/05/08 23:04	91-20-3	
Toluene	ND	ug/L	1.0	1		08/05/08 23:04	108-88-3	
m&p-Xylene	**26.1**	ug/L	2.0	1		08/05/08 23:04	1330-20-7	
o-Xylene	**19.9**	ug/L	1.0	1		08/05/08 23:04	95-47-6	
4-Bromofluorobenzene (S)	99	%	87-109	1		08/05/08 23:04	460-00-4	
Dibromofluoromethane (S)	96	%	85-115	1		08/05/08 23:04	1868-53-7	
1,2-Dichloroethane-d4 (S)	100	%	79-120	1		08/05/08 23:04	17060-07-0	
Toluene-d8 (S)	101	%	70-120	1		08/05/08 23:04	2037-26-5	

Sample: 390 ACORN A **Lab ID: 9224564016** Collected: 07/29/08 16:10 Received: 07/31/08 13:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM SPE	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3535							
Acenaphthene	ND	ug/L	2.0	1	08/04/08 00:00	08/13/08 05:14	83-32-9	
Acenaphthylene	ND	ug/L	1.5	1	08/04/08 00:00	08/13/08 05:14	208-96-8	
Anthracene	**1.4**	ug/L	0.050	1	08/04/08 00:00	08/13/08 05:14	120-12-7	
Benzo(a)anthracene	**0.22**	ug/L	0.10	1	08/04/08 00:00	08/13/08 05:14	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.20	1	08/04/08 00:00	08/13/08 05:14	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.30	1	08/04/08 00:00	08/13/08 05:14	205-99-2	

Pace Analytical
www.pacelabs.com

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

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

ANALYTICAL RESULTS

Project: LAUREL BAY SAMPLING 7/29/08
Pace Project No.: 9224564

Sample: 390 ACORN A **Lab ID: 9224564016** Collected: 07/29/08 16:10 Received: 07/31/08 13:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM SPE	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3535							
Benzo(g,h,i)perylene	ND	ug/L	0.20	1	08/04/08 00:00	08/13/08 05:14	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.20	1	08/04/08 00:00	08/13/08 05:14	207-08-9	
Chrysene	**0.24**	ug/L	0.10	1	08/04/08 00:00	08/13/08 05:14	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.20	1	08/04/08 00:00	08/13/08 05:14	53-70-3	
Fluoranthene	**0.97**	ug/L	0.30	1	08/04/08 00:00	08/13/08 05:14	206-44-0	
Fluorene	**7.6**	ug/L	0.31	1	08/04/08 00:00	08/13/08 05:14	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.20	1	08/04/08 00:00	08/13/08 05:14	193-39-5	
1-Methylnaphthalene	**43.1**	ug/L	10.0	5	08/04/08 00:00	08/13/08 17:30	90-12-0	
2-Methylnaphthalene	**81.9**	ug/L	10.0	5	08/04/08 00:00	08/13/08 17:30	91-57-6	
Naphthalene	**20.1**	ug/L	1.5	1	08/04/08 00:00	08/13/08 05:14	91-20-3	
Phenanthrene	**15.0**	ug/L	0.20	1	08/04/08 00:00	08/13/08 05:14	85-01-8	
Pyrene	**0.82**	ug/L	0.10	1	08/04/08 00:00	08/13/08 05:14	129-00-0	
Nitrobenzene-d5 (S)	45	%	50-150	1	08/04/08 00:00	08/13/08 05:14	4165-60-0	1g
2-Fluorobiphenyl (S)	54	%	50-150	1	08/04/08 00:00	08/13/08 05:14	321-60-8	
Terphenyl-d14 (S)	53	%	50-150	1	08/04/08 00:00	08/13/08 05:14	1718-51-0	
8260 MSV Low Level	Analytical Method: EPA 8260							
Benzene	**0.0**	ug/L		1		08/06/08 12:06	71-43-2	
Ethylbenzene	**0.0**	ug/L		1		08/06/08 12:06	100-41-4	
Naphthalene	**2.2**	ug/L		1		08/06/08 12:06	91-20-3	
Toluene	**0.12**	ug/L		1		08/06/08 12:06	108-88-3	
m&p-Xylene	**0.0**	ug/L		1		08/06/08 12:06	1330-20-7	
o-Xylene	**0.13**	ug/L		1		08/06/08 12:06	95-47-6	
4-Bromofluorobenzene (S)	99	%	87-109	1		08/06/08 12:06	460-00-4	
Dibromofluoromethane (S)	95	%	85-115	1		08/06/08 12:06	1868-53-7	
1,2-Dichloroethane-d4 (S)	97	%	79-120	1		08/06/08 12:06	17060-07-0	
Toluene-d8 (S)	102	%	70-120	1		08/06/08 12:06	2037-26-5	

Sample: 392 ACORN A **Lab ID: 9224564017** Collected: 07/29/08 16:30 Received: 07/31/08 13:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM SPE	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3535							
Acenaphthene	**2.1**	ug/L	2.0	1	08/04/08 00:00	08/13/08 05:37	83-32-9	
Acenaphthylene	ND	ug/L	1.5	1	08/04/08 00:00	08/13/08 05:37	208-96-8	
Anthracene	ND	ug/L	0.050	1	08/04/08 00:00	08/13/08 05:37	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	08/04/08 00:00	08/13/08 05:37	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.20	1	08/04/08 00:00	08/13/08 05:37	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.30	1	08/04/08 00:00	08/13/08 05:37	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.20	1	08/04/08 00:00	08/13/08 05:37	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.20	1	08/04/08 00:00	08/13/08 05:37	207-08-9	
Chrysene	ND	ug/L	0.10	1	08/04/08 00:00	08/13/08 05:37	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.20	1	08/04/08 00:00	08/13/08 05:37	53-70-3	
Fluoranthene	ND	ug/L	0.30	1	08/04/08 00:00	08/13/08 05:37	206-44-0	
Fluorene	**1.0**	ug/L	0.31	1	08/04/08 00:00	08/13/08 05:37	86-73-7	

Appendix D
Analytical Data – Permanent Well Groundwater

CDM - AECOM
Multimedia Joint Venture

TABLE 4-1

SUMMARY OF ANALYTICAL RESULTS FOR GROUNDWATER
REPORT OF FINDINGS - LAUREL BAY MILITARY HOUSING
MCAS BEAUFORT, SOUTH CAROLINA

		390 Acorn Drive			
LOCATION	South Carolina	LBMW107	LBMW107	LBMW108	LBMW109
SAMPLE ID	State Screening	BEA-LB390GW1070210	BEA-LB390GW1070210-D	BEA-LB390GW1080210	BEA-LB390GW1090210
SAMPLE DATE	Values[1]	20100223	20100223	20100223	20100224
PAHS (UG/L)					
1-METHYLNAPHTHALENE	10	0.566 U	0.566 U	0.612 U	0.6 U
2-METHYLNAPHTHALENE	10	0.566 U	0.566 U	0.612 U	0.6 U
ACENAPHTHENE	NC	0.585 U	0.585 U	0.633 U	0.62 U
ACENAPHTHYLENE	NC	0.377 U	0.377 U	0.408 U	0.4 U
ANTHRACENE	NC	0.377 U	0.377 U	0.408 U	0.4 U
BENZO(A)ANTHRACENE	10	0.377 U	0.377 U	0.408 U	0.4 U
BENZO(A)PYRENE	10	0.377 U	0.377 U	0.408 U	0.4 U
BENZO(B)FLUORANTHENE	10	0.377 U	0.377 U	0.408 U	0.4 U
BENZO(G,H,I)PERYLENE	NC	0.377 U	0.377 U	0.408 U	0.4 U
BENZO(K)FLUORANTHENE	10	0.377 U	0.377 U	0.408 U	0.4 U
CHRYSENE	10	0.377 U	0.377 U	0.408 U	0.4 U
DIBENZO(A,H)ANTHRACENE	10	0.377 UJ	0.377 UJ	0.408 U	0.4 U
FLUORANTHENE	NC	0.377 U	0.377 U	0.408 U	0.4 U
FLUORENE	NC	0.377 U	0.377 U	0.408 U	0.4 U
INDENO(1,2,3-CD)PYRENE	NC	0.377 U	0.377 U	0.408 U	0.4 U
PHENANTHRENE	NC	0.377 U	0.377 U	0.408 U	0.4 U
PYRENE	NC	0.566 U	0.566 U	0.612 U	0.6 U
VOCS (UG/L)					
BENZENE	5	0.6 U	0.6 U	0.6 U	0.6 U
ETHYLBENZENE	700	0.5 U	0.5 U	0.5 U	0.5 U
METHYL TERT-BUTYL ETHER[2]	40				
NAPHTHALENE	25	0.5 U	0.5 U	0.5 U	0.5 U
TOLUENE	1000	0.5 U	0.5 U	0.5 U	0.5 U
TOTAL XYLENES	10000	0.6 U	0.6 U	0.6 U	0.6 U

Appendix E
Regulatory Correspondence

CDM - AECOM
Multimedia Joint Venture

D H E C
PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment

10 September 2008

Beaufort Military Complex Family Housing
ATTN: Kyle Broadfoot
1510 Laurel Bay Blvd.
Beaufort, SC 29906

Re: MCAS – Laurel Bay Housing – 390 Acorn
Site ID # 04047
UST Closure Reports received 31 January 2008
Beaufort County

Dear Mr. Broadfoot:

The purpose of this letter is to verify a release of fuel oil at the referenced residence. According to information received by the Department, the source of the release is from past onsite use of fuel oil USTs. To date, initial activities by the facility have included tank removal and soil sampling. Based on the information contained in the closure report, a potential violation of the South Carolina Pollution Control Act has occurred in that there has been an unauthorized release of petroleum to the environment.

Additional assessment activities are required for this site. Specifically the Department requests that a groundwater sample be collected from this site. Please note, the Department approved a groundwater sampling proposal for Laurel Bay submitted by MCAS under separate cover dated 16 June 2008.

Should you have any questions, please contact me at 803-898-3553 (office phone), 803-898-2893 (fax) or bishopma@dhec.sc.gov.

Sincerely,

Michael Bishop, Hydrogeologist
Groundwater Quality Section
Bureau of Water

cc: Region 8 District EQC (via pdf)
MCAS, Commanding Officer, Attention: S-4 NREAO (William Drawdy) (via pdf)
Technical File (via pdf)

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

30 December 2008

Commanding Officer
ATTN: S-4 NREAO (Craig Ehde)
MCAS
PO Box 55001
Beaufort, SC 29904-5001

Re: MCAS – Laurel Bay Housing – 390 Acorn
Site ID # 04047
Groundwater Sampling Results received 6 November 2008
Beaufort County

Dear Mr. Ehde:

The Department has completed review of the referenced document. The submitted analytical results indicate that chemicals of concern are above established Risk-Based Screening Levels and additional investigative and/or remedial actions are warranted.

The Department recommends that a permanent groundwater monitoring well be installed to verify the results of the temporary groundwater monitoring well. Please submit the proposal to conduct the necessary assessment and/or remedial measures at this site no later than 28 February 2009.

Should you have any questions, please contact me at 803-896-4179 (office phone), 803-896-6245 (fax) or cookejt@dhec.sc.gov.

Sincerely,

Jan T. Cooke

Jan T. Cooke, Hydrogeologist
AST Petroleum Restoration
& Site Environmental Investigations Section
Land Revitalization Division
Bureau of Land and Waste Management
SC Dept. of Health & Environmental Control

cc: Region 8 District EQC
Tri-Command Communities; Attn: Mr. Robert Bible; 600 Laurel Bay Road Beaufort, SC 29906
Technical File

Received 4/14/11

D H E C

PROMOTE PROTECT PROSPER

Bureau of Land and Waste Management
Division of Waste Management

April 6, 2011

Commanding Officer
Attention: NREAO Mr. William A. Drawdy
United States Marine Corps Air Station
Post Office Box 55001
Beaufort, South Carolina 29904-5001

Facility: Marine Corps Air Station, Beaufort
EPA ID #: SC1 750 216 169

RE: Review
Report of Findings for Laurel Bay Military Housing Area
Dated July 2010 and
Well Installation and Sampling Work Plan for
Laurel Bay Military Housing
Dated March 2011

Dear Mr. Drawdy:

The South Carolina Department of Health and Environmental Control (the Department) received the above referenced Report of Findings for Laurel Bay Military Housing Area on July 23, 2010 and Addendum to Well Installation and Sampling Work Plan for Laurel Bay Military Housing on March 4, 2011. Heating oil stored in underground storage tanks (USTs) historically heated homes in Laurel Bay. The USTs are no longer used for storing heating oil, and MCAS Beaufort is currently removing these USTs and evaluating their integrity. This Report of Findings and Well Installation and Sampling Work Plan document the groundwater conditions following limited soil sampling and temporary monitoring wells showed evidence of groundwater contamination related to some of the heating oil USTs.

Based on this review, the Department has generated the attached memorandum by Michael W. Danielsen from the Federal Facilities Groundwater Section. The response to the Department's comments may be addressed by submitting revised pages to be inserted into the original document, or by submitting another document. If new or revised pages

are submitted, please indicate whether each submitted page is a revision to an existing page in the original document or a new page not contained in the original document. Each revised page should be coded. For example, 32(R-7/30/07) would be page 32, revised 7/30/07. In addition to revisions, please provide a summary of the comment responses and revision pages.

Please note that the Department's review is based on available information provided by the MCAS. Any information found to be contradictory to this decision might require additional action. Furthermore, the Department retains the right to request further investigation if deemed necessary.

If you have any questions regarding this issue, please contact me at (803) 896-6675 or petruslb@dhec.sc.gov.

Sincerely,

Laurel B. Petrus, Environmental Engineer Associate
Corrective Action Engineering Section

Attachments

cc: Michael W. Danielsen, Hydrogeologist
Russell Berry, EQC Region 8
Dan Owens, NAVFAC SE

D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health
and Environmental Control

Federal Facilities
Groundwater Section
2600 Bull Street
Columbia, SC 29201
Telephone (803) 896-4000
Fax (803) 896-4002

MEMORANDUM

TO: Laurel Petrus, Environmental Engineer Associate
Corrective Action Engineering Section
Division of Waste Management
Bureau of Land and Waste Management

FROM: Michael W. Danielsen, Hydrogeologist
Federal Facilities Groundwater Section
Division of Waste Management
Bureau of Land and Waste Management

DATE: April 5, 2011

RE: Marine Corps Air Station (MCAS)
Beaufort, South Carolina
SC1 750 216 169

Report of Findings for Laurel Bay Military Housing Area
Dated July 2010 (Received July 23, 2010)

Addendum to Well Installation and Sampling Work Plan for
Laurel Bay Military Housing Area
Dated March 2011 (Received March 4, 2011)

The above referenced Findings Report provides information from the installation of 35 monitoring wells as part of an ongoing effort to remove underground residential heating oil tanks (USTs) from the Laurel Bay Military Housing Area.

The Addendum to Well Installation and Sampling Work Plan provides the proposed well installation locations and sampling recommended in the Finding Report.

The documents referenced above have been reviewed with respect to the S.C. Pollution Control Act 48-1-10 and the S.C. Hazardous Waste Management Act, and other appropriate guidance documents.

Please see the attached comments.

CC: BLWM file # 50500

Report of Findings for Laurel Bay Military Housing Area and Addendum to Well Installation and Sampling Work Plan for Laurel Bay Military Housing Area
MCAS
Federal Facilities Groundwater Section
Comments prepared by
Michael W. Danielsen April 5, 2011

Report of Findings for Laurel Bay Military Housing Area

1. **Page 11 Section 6.0, Recommendations**

This section recommends no further action (NFA), annual monitoring, or expansion of the monitoring well network as follows:

NFA for:

- 201 Balsam Street,
- 390 Acorn Drive,
- 391 Acorn Drive,
- 299 Birch Lane,
- 1118 Iris Lane,

Annual groundwater monitoring for benzene, toluene, ethylene, xylene (BTEX), naphthalene, and polyaromatic hydrocarbons (PAH) at:

- 398 Acorn Drive,
- 388 Acorn Drive,
- 441 Elderberry Lane,
- 282 Birch Road,
- 1054 Gardenia Drive,

Expansion of the monitoring well networks and performance of annual groundwater monitoring for 1-methylnapthalene, 2-methylnapthalene, and/or naphthalene at the following:

- 437 Elderberry Lane- Install three additional monitoring wells downgradient of MW133.
- 1472 Cardinal Lane- Install three additional monitoring wells sidegradient and downgradient of MW130 to bound the contaminant plume.

In addition, all new monitoring wells will be sampled for BTEX, naphthalene, and PAH.