

N00639.AR.002071
NSA MID SOUTH
5090.3a

TECHNICAL MEMORANDUM SOLID WASTE MANAGEMENT UNIT 65 SUBSURFACE
INVESTIGATION MILLINGTON SUPPACT TN
10/4/2012
QUANTUM ENVIRONMENTAL AND ENGINEERING SERVICES, LLC



October 4, 2012

Mr. Roger Donovan
Tennessee Department of Environment and Conservation
Division of Solid Waste Management
5th Floor, L&C Tower
401 Church Street
Nashville, Tennessee 37243-1535

Re: SWMU-65 Subsurface Investigation/TGD-017 Technical Memo
NSA Mid-South, Millington, Tennessee

Dear Mr. Donovan:

On behalf of NAVFAC Midwest, Quantum Environmental & Engineering Services, LLC (QE²) is pleased to submit for review this Technical Memo addressing the previous subsurface petroleum contamination adjacent to former monitoring 065G01UA at Solid Waste Management Unit (SWMU) -65. As requested in the NAVFAC Midwest proposal N40083-11-F-5013, QE² installed three soil borings adjacent to former monitoring well 065G01UA at SWMU-65 on August 8, 2012. A site map indicating the former SWMU-65 monitoring well locations and a site map containing the recent boring locations are located in Attachment A.

The three soil borings were advanced to a depth of 15-ft below ground surface (bgs) using a direct push drill rig on August 8, 2012. Soil samples were obtained from each soil boring in new 5-ft acetate liners. All soil samples were screened with a photoionization detector (PID). No visual evidence of petroleum contamination was noted in any of the soil borings. No PID readings from the soil samples were noted during each boring installation. Each soil boring was properly abandoned upon completion. Soil boring logs are located in Attachment B.

Soil samples collected at 10-12 feet bgs in each boring were submitted to TestAmerica, Inc. for analysis. Each soil sample was analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX); methyl tert-butyl ether (MtBE); and naphthalene, by EPA Method 8260b; and for Total Petroleum Hydrocarbons (TPH) by the Tennessee Extractable Petroleum Hydrocarbons (EPH) method. All soil samples were below the Tennessee Department of Environment and Conservation (TDEC), Division of Underground Storage Tanks (DUST) Risk Based Cleanup Levels (RBCL) based on a commercial/industrial worker indoor inhalation exposure scenario and the TDEC Division of Solid Waste Management (DSWM) TPH action limit of 100 ppm for EPH. Table 1 is a summary of the soil sampling results. Laboratory certificates of analysis and the chain of custody form are located in Attachment C.

First encountered water in each boring occurred at approximately 12-ft bgs. Each soil boring was advanced to 15-ft bgs in order to obtain a water sample. Only one soil boring, 065DPT02, contained enough water for sample collection. Water from 065DPT02 was sampled for BTEX, MtBE, and naphthalene by EPA Method 8260b and for TPH by the Tennessee EPH method. The water sample was below the TDEC, DUST RBCLs (commercial/industrial worker indoor inhalation exposure scenario) and the TDEC, DSWM TPH action limit of 5 ppm for EPH. Table 2 is a summary of the water sampling results.

Table 1
SWMU-65 Soil Boring Investigation
Soil Sample Results
 (mg/kg)

Sample ID	Date	Depth (ft)	Benzene	Toluene	Ethybenzene	Total Xylenes	MtBE	Naphthalene	TN-EPH
065DPT01	8/8/2012	10-12	<0.00059	<0.00059	<0.00077	<0.00065	<0.00012	<0.00071	4.100 J
065DPT02	8/8/2012	10-12	<0.0030	<0.0030	<0.0039	<0.0033	<0.0060	<0.0036	4.000 J
065DPT03	8/8/2012	10-12	<0.0010	<0.0010	<0.0013	<0.0011	<0.0021	<0.0012	7.400 J
Duplicate	8/8/2012	10-12	<0.0010	<0.0010	<0.0014	<0.0011	<0.0021	<0.0013	<3.800
TDEC Cleanup Levels			3.80	62.2	1310	88.0	364	403	100

J - Lab qualifier. Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

mg/kg = milligrams per kilogram

TDEC Cleanup Levels consist of DUST RBCLs for BTEX, MtBE, and naphthalene and the DSWM action limit for EPH.

Table 2
SWMU-65 Soil Boring Investigation
Water Results
 (mg/L)

Sample ID	Date	Benzene	Toluene	Ethybenzene	Total Xylenes	MtBE	Naphthalene	TN-EPH
065DPT02	8/8/2012	<0.00025	<0.00033	<0.00025	<0.00075	<0.00050	<0.0010	0.270 B
Duplicate	8/8/2012	<0.00025	<0.00033	<0.00025	<0.00075	<0.00050	<0.0010	0.320 B
TDEC Cleanup Levels		0.375	39.6	94.8	32.7	1610	31.0	5

B - Lab qualifier. Compound was found in the blank and sample

mg/L - milligrams per liter

TDEC Cleanup Levels consist of DUST RBCLs for BTEX, MtBE, and naphthalene and the DSWM action limit for EPH.

All sample results were inserted into the DUST Technical Guidance Document (TGD) – 017 Risk Analysis Report (version 1.2) in order to develop site RBCLs for BTEX, MtBE, total xylenes, and naphthalene. All sample results ‘passed’ the onsite risk assessment, therefore, offsite risk assessment was not calculated. There is no DUST human health risk number for EPH. The DSWM has soil and groundwater action limits for EPH of 100 ppm and 5 ppm, respectively. Soil and groundwater EPH results were below DSWM action limits. A copy of the TGD-017 Risk Analysis Report is located in Attachment D.



Mr. Roger Donovan

October 4, 2012

Page 3 of 3

The groundwater and soil contaminant concentrations did not exceed the applicable DUST RBCLs or the DSWM action limits for EPH. Based on the soil and groundwater sample results, QE² concludes that no additional investigation is needed to address the former petroleum contamination at SWMU-65

If you have any question regarding this matter, please give me a call at (865) 689-1395.

Sincerely,



Matthew Teglas, P.G.

Project Manager

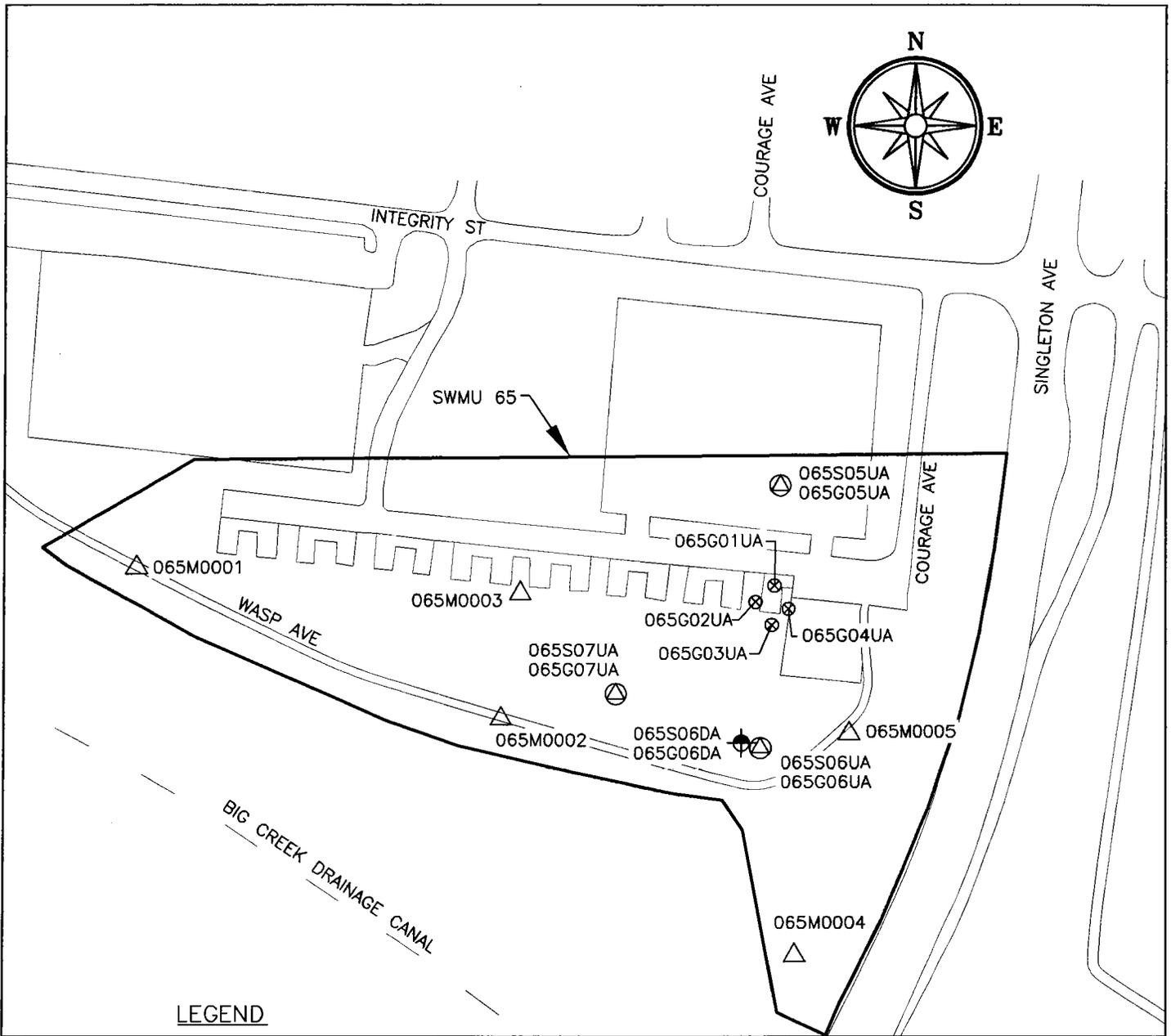
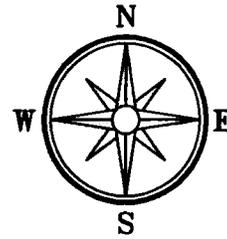
Attachments: Attachment A – Site Maps
Attachment B – Soil Boring Logs
Attachment C – Laboratory Certificates of Analysis and Chain of Custody Form
Attachment D – TGD-017 Risk Analysis Report
Attachment E – Professional Signature Page

c: Mr. Rob Williamson – NSA Mid-South
Ms. Rachel Methvin – NSA Mid-South
Mr. Benjamin Simes – NAVFAC Midwest
QE² File 500903.03



Attachment A

Site Maps



LEGEND

- 065G01UA ⊗ FORMER UPPER ALLUVIUM SOIL BORING/MONITORING WELL LOCATION AND DESIGNATION (1992 SITE INVESTIGATION)
- 065S07UA ⊕ FORMER UPPER ALLUVIUM SOIL BORING/ MONITORING WELL LOCATION AND DESIGNATION.
- 065S06DA ⊕ FORMER DEEP ALLUVIUM SOIL BORING/MONITORING WELL LOCATION AND DESIGNATION
- 065G06DA ⊕ FORMER DEEP ALLUVIUM SOIL BORING/MONITORING WELL LOCATION AND DESIGNATION
- 065M0001 △ FORMER SEDIMENT SAMPLE LOCATION AND DESIGNATION

NOTES: MAPPING INFORMATION PROVIDED BY OTHERS.

PROJ. MGR.:	MST
CHECKED BY:	HSB
CADQA BY:	DEH
DRAWN BY:	DEH
SCALE:	N.T.S.
DATE:	09-07-12
REVISION NO.:	0

SWMU 65
RCRA FACILITY INVESTIGATION
NSA MID-SOUTH
MILLINGTON, TENNESSEE

FIGURE-1
SWMU-65
SITE MAP



Quantum Environmental & Engineering Services, LLC
126 Dante Road
Knoxville, TN 37918
PHONE (865) 689-1395, FAX (865) 689-6844

PROJECT NO.: 500903.003
FILENAME: 500903-FIG.DWG



LEGEND

065DPT03 ● SOIL SAMPLE LOCATION

NOTES: MAPPING INFORMATION PROVIDED BY OTHERS.



Quantum Environmental & Engineering Services, LLC

126 Dante Road
Knoxville, TN 37918
PHONE (865) 689-1395, FAX (865) 689-6844

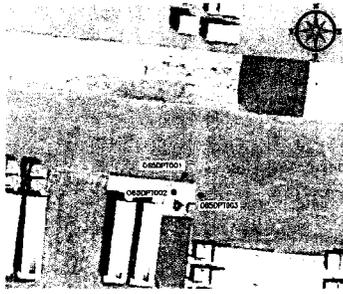
PROJ. MGR.:	MST	SWMU 65 RCRA FACILITY INVESTIGATION NSA MID-SOUTH MILLINGTON, TENNESSEE	
CHECKED BY:	HSH		
CADQA BY:	DEH	FIGURE-2 SWMU-65 BORING LOCATION MAP	
DRAWN BY:	DEH		
SCALE:	N.T.S.		
DATE:	09-07-12		
REVISION NO.:	0	PROJECT NO.: 500903.003	FILENAME: 500903-FIG.DWG

T:\000035.003.dwg 09/07/12 10:03:44 AM

Attachment B

Soil Boring Logs

LOCATION MAP:



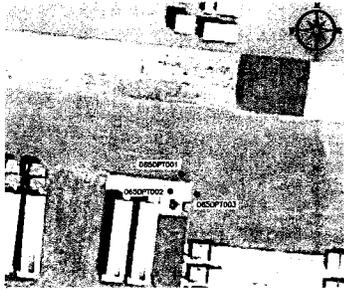
START DATE & TIME 8/8/12	1110
COMP. DATA & TIME 8/8/12	1125
LOGGED BY: M. Schmitz	TN LIC#: 4939
DRILLER: Chase Environmental Group	
DRILLING METHOD: Direct Push	
ELEV (MSL):	

PROJECT#: 500903
Standard Boring Log
State of Tennessee
Underground Storage Tank Division
Department of Environment and Conservation

COMMENTS: 065DPT01 was abandoned after sampling on 8/8/12

MSL	COMPLETION DIAGRAM ----- BOREHOLE DIAMETER	WATER LEVEL	PENETRATION RATE	DEPTH	GRAPHIC LITHOLOGY	OVD	SAMPLES			DESCRIPTION (Color, Texture, Structure, etc...)
							TYPE	INT/R	ANAL.	
0.00				0						Ground Surface
						0				Asphalt and gravel base
										Orange brown loam, chert, gravel, loose, dry
-2.00						0				Gray clay, moist, firm, organics, fill
-4.00										Gray clay with brown speckles, moist soft, organics, alluvium
-6.00				5		0				Mottled clay, orange, brown, gray, moist, firm, organics, alluvium
-8.00										Mottled clay, orange, brown, gray, moist, soft, organics
-10.00						0			SS	Mottled clay, orange, brown, gray, moist, soft, organics Sampled for BTEX, MtBE, Naphthalene, and EPH
-12.00										Mottled clay, orange, brown, gray, moist, soft, organics, wet and plastic
-14.00										
-16.00				15						Note: Not enough water for sample
-18.00										
-20.00				20						
-22.00										
-24.00										
-26.00										
-28.00										
-30.00				30						

LOCATION MAP:



START DATE & TIME 8/8/12	1225
COMP. DATA & TIME 8/8/12	1240
LOGGED BY: M. Schmitz	TN LIC#: 4939
DRILLER: Chase Environmental Group	
DRILLING METHOD: Direct Push	
ELEV (MSL):	

PROJECT#: 500903
Standard Boring Log
State of Tennessee
Underground Storage Tank Division
Department of Environment and Conservation

COMMENTS: 065DPT03 was abandoned after sampling on 8/8/12

MSL	COMPLETION DIAGRAM BOREHOLE DIAMETER	WATER LEVEL	PENETRATION RATE	DEPTH	GRAPHIC LITHOLOGY	SAMPLES			DESCRIPTION (Color, Texture, Structure, etc...)
						OVD	TYPE	INT/R	
0.00				0					Ground Surface
				0					Asphalt and gravel base
				0					Orange brown loam, chert, gravel, loose, dry
-2.00				0		CS			Gray clay, moist, firm, organics, fill
-4.00				0					Gray clay with brown speckles, moist soft, organics, alluvium
-6.00				0					Mottled clay, orange, brown, gray, moist, firm, organics, alluvium
-8.00				0		CS			Mottled clay, orange, brown, gray, moist, soft, organics
-10.00				0					Mottled clay, orange, brown, gray, moist, soft, organics
-12.00				0		CS			Mottled clay, orange, brown, gray, moist, soft, organics Sampled for BTEX, MtBE, Naphthalene, and EPH
-14.00				0					Mottled clay, orange, brown, gray, moist, soft, organics, wet and plastic
-16.00				15					Note: Not enough water for sample
-18.00									
-20.00									
-22.00									
-24.00									
-26.00									
-28.00									
-30.00				30					

Attachment C

**Laboratory Certificates of Analysis
And
Chain of Custody Form**

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

TestAmerica Job ID: 680-81935-1
TestAmerica Sample Delivery Group: 68081935
Client Project/Site: NSA Mid-South SWMU-65

For:
Quantum Environmental & Engineering
126 Dante Road
Knoxville, Tennessee 37918

Attn: Matt Teglas



Authorized for release by:
8/27/2012 1:39:43 PM

Lisa Harvey
Project Manager II
lisa.harvey@testamericainc.com

LINKS

Review your project
results through
Total Access

Have a Question?

 **Ask
The
Expert**

Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Case Narrative

Client: Quantum Environmental & Engineering
Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-1
SDG: 68081935

Job ID: 680-81935-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: Quantum Environmental & Engineering

Project: NSA Mid-South SWMU-65

Report Number: 680-81935-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 08/10/2012; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 4.2 C.

VOLATILE ORGANIC COMPOUNDS (GC-MS)

Samples 065DPT01 (680-81935-1), 065DPT02 (680-81935-2), 065DPT03 (680-81935-3) and Duplicate (680-81935-5) were analyzed for Volatile Organic Compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were prepared on 08/10/2012 and analyzed on 08/17/2012 and 08/22/2012.

The client preprinted labels have DIH₂O terracores; but the terracores are sodium bi-sulfate vials. The following sodium bi-sulfate terracore vials are over weight: -1C & D and -2C & D. Four of the twelve terracores had the tare weights covered. See batch 680-246314.

Naphthalene was detected in method blank MB 680-247237/9 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged "J". If the associated sample reported a result above the MDL and/or RL, the result has been "B" flagged. Refer to the QC report for details.

The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for batch 247237 exceeded control limits for the following analyte: naphthalene. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

The continuing calibration verification standard, while method compliant, is high biased for naphthalene. These samples were scheduled for re-analysis, however, the samples could not be re-analyzed within hold. Because naphthalene was high biased and was not detected in the samples, the deficiencies are noted and the data reported.

Sample Summary

Client: Quantum Environmental & Engineering
Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-1
SDG: 68081935

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-81935-1	065DPT01	Solid	08/08/12 11:20	08/10/12 10:00
680-81935-2	065DPT02	Solid	08/08/12 12:15	08/10/12 10:00
680-81935-3	065DPT03	Solid	08/08/12 12:35	08/10/12 10:00
680-81935-4	065DPT02	Water	08/08/12 13:45	08/10/12 10:00
680-81935-5	Duplicate	Solid	08/08/12 00:00	08/10/12 10:00
680-81935-6	Duplicate	Water	08/08/12 00:00	08/10/12 10:00
680-81935-7	Trip Blank	Water	08/08/12 00:00	08/10/12 10:00

Method Summary

Client: Quantum Environmental & Engineering
Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-1
SDG: 68081935

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL SAV
Moisture	Percent Moisture	EPA	TAL SAV

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Definitions/Glossary

Client: Quantum Environmental & Engineering
Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-1
SDG: 68081935

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
Q	One or more quality control criteria failed.
J	Estimated: The analyte was positively identified; the quantitation is an estimation

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☆	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample Results

Client: Quantum Environmental & Engineering
Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-1
SDG: 68081935

Client Sample ID: 065DPT01

Date Collected: 08/08/12 11:20
Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-1

Matrix: Solid
Percent Solids: 78.2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.59	U	2.9	0.43	ug/Kg	☼	08/10/12 13:20	08/17/12 19:32	1
Ethylbenzene	0.77	U	2.9	0.77	ug/Kg	☼	08/10/12 13:20	08/17/12 19:32	1
Methyl tert-butyl ether	1.2	U	5.9	0.59	ug/Kg	☼	08/10/12 13:20	08/17/12 19:32	1
Naphthalene	0.71	U Q	2.9	0.71	ug/Kg	☼	08/10/12 13:20	08/17/12 19:32	1
Toluene	0.59	U	2.9	0.49	ug/Kg	☼	08/10/12 13:20	08/17/12 19:32	1
Xylenes, Total	0.65	U	5.9	0.65	ug/Kg	☼	08/10/12 13:20	08/17/12 19:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	104		65 - 130	08/10/12 13:20	08/17/12 19:32	1
Dibromofluoromethane	89		65 - 130	08/10/12 13:20	08/17/12 19:32	1
Toluene-d8 (Surr)	100		65 - 130	08/10/12 13:20	08/17/12 19:32	1

Client Sample ID: 065DPT02

Date Collected: 08/08/12 12:15
Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-2

Matrix: Solid
Percent Solids: 78.6

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	3.0	U	15	2.2	ug/Kg	☼	08/10/12 13:20	08/22/12 17:57	5
Ethylbenzene	3.9	U	15	3.9	ug/Kg	☼	08/10/12 13:20	08/22/12 17:57	5
Methyl tert-butyl ether	6.0	U	30	3.0	ug/Kg	☼	08/10/12 13:20	08/22/12 17:57	5
Naphthalene	3.6	U	15	3.6	ug/Kg	☼	08/10/12 13:20	08/22/12 17:57	5
Toluene	3.0	U	15	2.5	ug/Kg	☼	08/10/12 13:20	08/22/12 17:57	5
Xylenes, Total	3.3	U	30	3.3	ug/Kg	☼	08/10/12 13:20	08/22/12 17:57	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	107		65 - 130	08/10/12 13:20	08/22/12 17:57	5
Dibromofluoromethane	112		65 - 130	08/10/12 13:20	08/22/12 17:57	5
Toluene-d8 (Surr)	105		65 - 130	08/10/12 13:20	08/22/12 17:57	5

Client Sample ID: 065DPT03

Date Collected: 08/08/12 12:35
Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-3

Matrix: Solid
Percent Solids: 76.6

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	5.1	0.75	ug/Kg	☼	08/10/12 13:20	08/17/12 20:20	1
Ethylbenzene	1.3	U	5.1	1.3	ug/Kg	☼	08/10/12 13:20	08/17/12 20:20	1
Methyl tert-butyl ether	2.1	U	10	1.0	ug/Kg	☼	08/10/12 13:20	08/17/12 20:20	1
Naphthalene	1.2	U Q	5.1	1.2	ug/Kg	☼	08/10/12 13:20	08/17/12 20:20	1
Toluene	1.0	U	5.1	0.86	ug/Kg	☼	08/10/12 13:20	08/17/12 20:20	1
Xylenes, Total	1.1	U	10	1.1	ug/Kg	☼	08/10/12 13:20	08/17/12 20:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	100		65 - 130	08/10/12 13:20	08/17/12 20:20	1
Dibromofluoromethane	87		65 - 130	08/10/12 13:20	08/17/12 20:20	1
Toluene-d8 (Surr)	101		65 - 130	08/10/12 13:20	08/17/12 20:20	1

Client Sample Results

Client: Quantum Environmental & Engineering
 Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-1
 SDG: 68081935

Client Sample ID: 065DPT02

Lab Sample ID: 680-81935-4

Date Collected: 08/08/12 13:45

Matrix: Water

Date Received: 08/10/12 10:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.25	U	1.0	0.25	ug/L			08/17/12 14:30	1
Ethylbenzene	0.25	U	1.0	0.11	ug/L			08/17/12 14:30	1
Methyl tert-butyl ether	0.50	U	10	0.20	ug/L			08/17/12 14:30	1
Naphthalene	1.0	U	5.0	1.0	ug/L			08/17/12 14:30	1
Toluene	0.33	U	1.0	0.33	ug/L			08/17/12 14:30	1
Xylenes, Total	0.75	U	2.0	0.20	ug/L			08/17/12 14:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	96		70 - 130		08/17/12 14:30	1
Dibromofluoromethane	98		70 - 130		08/17/12 14:30	1
Toluene-d8 (Surr)	91		70 - 130		08/17/12 14:30	1

Client Sample ID: Duplicate

Lab Sample ID: 680-81935-5

Date Collected: 08/08/12 00:00

Matrix: Solid

Date Received: 08/10/12 10:00

Percent Solids: 79.1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.0	U	5.2	0.76	ug/Kg	*	08/10/12 13:20	08/17/12 20:43	1
Ethylbenzene	1.4	U	5.2	1.4	ug/Kg	*	08/10/12 13:20	08/17/12 20:43	1
Methyl tert-butyl ether	2.1	U	10	1.0	ug/Kg	*	08/10/12 13:20	08/17/12 20:43	1
Naphthalene	1.3	U Q	5.2	1.3	ug/Kg	*	08/10/12 13:20	08/17/12 20:43	1
Toluene	1.0	U	5.2	0.88	ug/Kg	*	08/10/12 13:20	08/17/12 20:43	1
Xylenes, Total	1.1	U	10	1.1	ug/Kg	*	08/10/12 13:20	08/17/12 20:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	101		65 - 130	08/10/12 13:20	08/17/12 20:43	1
Dibromofluoromethane	92		65 - 130	08/10/12 13:20	08/17/12 20:43	1
Toluene-d8 (Surr)	100		65 - 130	08/10/12 13:20	08/17/12 20:43	1

Client Sample ID: Duplicate

Lab Sample ID: 680-81935-6

Date Collected: 08/08/12 00:00

Matrix: Water

Date Received: 08/10/12 10:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.25	U	1.0	0.25	ug/L			08/17/12 14:58	1
Ethylbenzene	0.25	U	1.0	0.11	ug/L			08/17/12 14:58	1
Methyl tert-butyl ether	0.50	U	10	0.20	ug/L			08/17/12 14:58	1
Naphthalene	1.0	U	5.0	1.0	ug/L			08/17/12 14:58	1
Toluene	0.33	U	1.0	0.33	ug/L			08/17/12 14:58	1
Xylenes, Total	0.75	U	2.0	0.20	ug/L			08/17/12 14:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	96		70 - 130		08/17/12 14:58	1
Dibromofluoromethane	96		70 - 130		08/17/12 14:58	1
Toluene-d8 (Surr)	89		70 - 130		08/17/12 14:58	1

Client Sample Results

Client: Quantum Environmental & Engineering
 Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-1
 SDG: 68081935

Client Sample ID: Trip Blank

Lab Sample ID: 680-81935-7

Date Collected: 08/08/12 00:00

Matrix: Water

Date Received: 08/10/12 10:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.25	U	1.0	0.25	ug/L			08/17/12 13:33	1
Ethylbenzene	0.25	U	1.0	0.11	ug/L			08/17/12 13:33	1
Methyl tert-butyl ether	0.50	U	10	0.20	ug/L			08/17/12 13:33	1
Naphthalene	1.0	U	5.0	1.0	ug/L			08/17/12 13:33	1
Toluene	0.33	U	1.0	0.33	ug/L			08/17/12 13:33	1
Xylenes, Total	0.75	U	2.0	0.20	ug/L			08/17/12 13:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	97		70 - 130		08/17/12 13:33	1
Dibromofluoromethane	98		70 - 130		08/17/12 13:33	1
Toluene-d8 (Surr)	92		70 - 130		08/17/12 13:33	1

QC Sample Results

Client: Quantum Environmental & Engineering
 Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-1
 SDG: 68081935

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 680-247030/6
 Matrix: Water
 Analysis Batch: 247030

Client Sample ID: Method Blank
 Prep Type: Total/NA

Analyte	MB MB		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	0.25	U	1.0	0.25	ug/L			08/17/12 13:05	1
Ethylbenzene	0.25	U	1.0	0.11	ug/L			08/17/12 13:05	1
Methyl tert-butyl ether	0.50	U	10	0.20	ug/L			08/17/12 13:05	1
Naphthalene	1.0	U	5.0	1.0	ug/L			08/17/12 13:05	1
Toluene	0.33	U	1.0	0.33	ug/L			08/17/12 13:05	1
Xylenes, Total	0.75	U	2.0	0.20	ug/L			08/17/12 13:05	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene	98		70 - 130		08/17/12 13:05	1
Dibromofluoromethane	99		70 - 130		08/17/12 13:05	1
Toluene-d8 (Surr)	92		70 - 130		08/17/12 13:05	1

Lab Sample ID: LCS 680-247030/3
 Matrix: Water
 Analysis Batch: 247030

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethylbenzene	50.0	50.9		ug/L		102	70 - 130
Methyl tert-butyl ether	100	85.1		ug/L		85	64 - 131
Naphthalene	50.0	38.5		ug/L		77	70 - 130
Toluene	50.0	48.4		ug/L		97	70 - 130
Xylenes, Total	150	150		ug/L		100	70 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene	106		70 - 130
Dibromofluoromethane	100		70 - 130
Toluene-d8 (Surr)	98		70 - 130

Lab Sample ID: LCSD 680-247030/4
 Matrix: Water
 Analysis Batch: 247030

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethylbenzene	50.0	49.1		ug/L		98	70 - 130	4	30
Methyl tert-butyl ether	100	82.1		ug/L		82	64 - 131	4	30
Naphthalene	50.0	37.1		ug/L		74	70 - 130	4	30
Toluene	50.0	47.7		ug/L		95	70 - 130	2	30
Xylenes, Total	150	144		ug/L		96	70 - 130	5	30

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene	100		70 - 130
Dibromofluoromethane	96		70 - 130
Toluene-d8 (Surr)	96		70 - 130

QC Sample Results

Client: Quantum Environmental & Engineering
 Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-1
 SDG: 68081935

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 680-247237/9
 Matrix: Solid
 Analysis Batch: 247237

Client Sample ID: Method Blank
 Prep Type: Total/NA

Analyte	MB MB		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	1.0	U	5.0	0.73	ug/Kg			08/17/12 18:44	1
Ethylbenzene	1.3	U	5.0	1.3	ug/Kg			08/17/12 18:44	1
Methyl tert-butyl ether	2.0	U	10	1.0	ug/Kg			08/17/12 18:44	1
Naphthalene	1.31	J	5.0	1.2	ug/Kg			08/17/12 18:44	1
Toluene	1.0	U	5.0	0.84	ug/Kg			08/17/12 18:44	1
Xylenes, Total	1.1	U	10	1.1	ug/Kg			08/17/12 18:44	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene	105		65 - 130		08/17/12 18:44	1
Dibromofluoromethane	98		65 - 130		08/17/12 18:44	1
Toluene-d8 (Surr)	104		65 - 130		08/17/12 18:44	1

Lab Sample ID: LCS 680-247237/4
 Matrix: Solid
 Analysis Batch: 247237

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Benzene	50.0	48.8		ug/Kg		98	70 - 130
Ethylbenzene	50.0	50.5		ug/Kg		101	70 - 130
Methyl tert-butyl ether	100	96.3		ug/Kg		96	70 - 130
Naphthalene	50.0	75.5	Q	ug/Kg		151	62 - 130
Toluene	50.0	48.1		ug/Kg		96	70 - 130
Xylenes, Total	150	153		ug/Kg		102	70 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene	105		65 - 130
Dibromofluoromethane	96		65 - 130
Toluene-d8 (Surr)	99		65 - 130

Lab Sample ID: LCSD 680-247237/5
 Matrix: Solid
 Analysis Batch: 247237

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA

Analyte	Spike Added	LCSD LCSD		Unit	D	%Rec	%Rec. Limits	RPD	
		Result	Qualifier					RPD	Limit
Benzene	50.0	53.1		ug/Kg		106	70 - 130	9	50
Ethylbenzene	50.0	56.1		ug/Kg		112	70 - 130	11	50
Methyl tert-butyl ether	100	105		ug/Kg		105	70 - 130	8	50
Naphthalene	50.0	81.8	Q	ug/Kg		164	62 - 130	8	50
Toluene	50.0	52.5		ug/Kg		105	70 - 130	9	50
Xylenes, Total	150	167		ug/Kg		112	70 - 130	9	50

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene	114		65 - 130
Dibromofluoromethane	105		65 - 130
Toluene-d8 (Surr)	106		65 - 130

QC Sample Results

Client: Quantum Environmental & Engineering
 Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-1
 SDG: 68081935

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 680-247523/7
 Matrix: Solid
 Analysis Batch: 247523

Client Sample ID: Method Blank
 Prep Type: Total/NA

Analyte	MB MB		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	1.0	U	5.0	0.73	ug/Kg			08/22/12 12:11	1
Ethylbenzene	1.3	U	5.0	1.3	ug/Kg			08/22/12 12:11	1
Methyl tert-butyl ether	2.0	U	10	1.0	ug/Kg			08/22/12 12:11	1
Naphthalene	1.2	U	5.0	1.2	ug/Kg			08/22/12 12:11	1
Toluene	1.0	U	5.0	0.84	ug/Kg			08/22/12 12:11	1
Xylenes, Total	1.1	U	10	1.1	ug/Kg			08/22/12 12:11	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene	99		65 - 130		08/22/12 12:11	1
Dibromofluoromethane	101		65 - 130		08/22/12 12:11	1
Toluene-d8 (Surr)	96		65 - 130		08/22/12 12:11	1

Lab Sample ID: LCS 680-247523/4
 Matrix: Solid
 Analysis Batch: 247523

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethylbenzene	50.0	47.8		ug/Kg		96	70 - 130
Methyl tert-butyl ether	100	102		ug/Kg		102	70 - 130
Naphthalene	50.0	51.0		ug/Kg		102	62 - 130
Toluene	50.0	49.0		ug/Kg		98	70 - 130
Xylenes, Total	150	141		ug/Kg		94	70 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene	90		65 - 130
Dibromofluoromethane	99		65 - 130
Toluene-d8 (Surr)	99		65 - 130

Lab Sample ID: LCSD 680-247523/5
 Matrix: Solid
 Analysis Batch: 247523

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethylbenzene	50.0	47.2		ug/Kg		94	70 - 130	1	50
Methyl tert-butyl ether	100	99.3		ug/Kg		99	70 - 130	3	50
Naphthalene	50.0	48.4		ug/Kg		97	62 - 130	5	50
Toluene	50.0	48.5		ug/Kg		97	70 - 130	1	50
Xylenes, Total	150	137		ug/Kg		91	70 - 130	3	50

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene	88		65 - 130
Dibromofluoromethane	98		65 - 130
Toluene-d8 (Surr)	98		65 - 130

QC Association Summary

Client: Quantum Environmental & Engineering
 Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-1
 SDG: 68081935

GC/MS VOA

Prep Batch: 246314

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-81935-1	065DPT01	Total/NA	Solid	5035	
680-81935-2	065DPT02	Total/NA	Solid	5035	
680-81935-3	065DPT03	Total/NA	Solid	5035	
680-81935-5	Duplicate	Total/NA	Solid	5035	

Analysis Batch: 247030

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-81935-4	065DPT02	Total/NA	Water	8260B	
680-81935-6	Duplicate	Total/NA	Water	8260B	
680-81935-7	Trip Blank	Total/NA	Water	8260B	
LCS 680-247030/3	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-247030/4	Lab Control Sample Dup	Total/NA	Water	8260B	
MB 680-247030/6	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 247237

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-81935-1	065DPT01	Total/NA	Solid	8260B	246314
680-81935-3	065DPT03	Total/NA	Solid	8260B	246314
680-81935-5	Duplicate	Total/NA	Solid	8260B	246314
LCS 680-247237/4	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 680-247237/5	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 680-247237/9	Method Blank	Total/NA	Solid	8260B	

Analysis Batch: 247523

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-81935-2	065DPT02	Total/NA	Solid	8260B	246314
LCS 680-247523/4	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 680-247523/5	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 680-247523/7	Method Blank	Total/NA	Solid	8260B	

General Chemistry

Analysis Batch: 246343

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-81935-1	065DPT01	Total/NA	Solid	Moisture	
680-81935-2	065DPT02	Total/NA	Solid	Moisture	
680-81935-3	065DPT03	Total/NA	Solid	Moisture	
680-81935-5	Duplicate	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Quantum Environmental & Engineering
 Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-1
 SDG: 68081935

Client Sample ID: 065DPT01

Date Collected: 08/08/12 11:20
 Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-1

Matrix: Solid
 Percent Solids: 78.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			246314	08/10/12 13:20	FS	TAL SAV
Total/NA	Analysis	8260B		1	247237	08/17/12 19:32	WJC	TAL SAV
Total/NA	Analysis	Moisture		1	246343	08/10/12 16:53	FS	TAL SAV

Client Sample ID: 065DPT02

Date Collected: 08/08/12 12:15
 Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-2

Matrix: Solid
 Percent Solids: 78.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			246314	08/10/12 13:20	FS	TAL SAV
Total/NA	Analysis	8260B		5	247523	08/22/12 17:57	RB	TAL SAV
Total/NA	Analysis	Moisture		1	246343	08/10/12 16:53	FS	TAL SAV

Client Sample ID: 065DPT03

Date Collected: 08/08/12 12:35
 Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-3

Matrix: Solid
 Percent Solids: 76.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			246314	08/10/12 13:20	FS	TAL SAV
Total/NA	Analysis	8260B		1	247237	08/17/12 20:20	WJC	TAL SAV
Total/NA	Analysis	Moisture		1	246343	08/10/12 16:53	FS	TAL SAV

Client Sample ID: 065DPT02

Date Collected: 08/08/12 13:45
 Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	247030	08/17/12 14:30	AJMC	TAL SAV

Client Sample ID: Duplicate

Date Collected: 08/08/12 00:00
 Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-5

Matrix: Solid
 Percent Solids: 79.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			246314	08/10/12 13:20	FS	TAL SAV
Total/NA	Analysis	8260B		1	247237	08/17/12 20:43	WJC	TAL SAV
Total/NA	Analysis	Moisture		1	246343	08/10/12 16:53	FS	TAL SAV

Lab Chronicle

Client: Quantum Environmental & Engineering
Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-1
SDG: 68081935

Client Sample ID: Duplicate

Date Collected: 08/08/12 00:00
Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	247030	08/17/12 14:58	AJMC	TAL SAV

Client Sample ID: Trip Blank

Date Collected: 08/08/12 00:00
Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	247030	08/17/12 13:33	AJMC	TAL SAV

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Login Sample Receipt Checklist

Client: Quantum Environmental & Engineering

Job Number: 680-81935-1

SDG Number: 68081935

Login Number: 81935

List Source: TestAmerica Savannah

List Number: 1

Creator: Conner, Keaton

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	False	Pre-printed labels said DI - client returned Sodium Bisulfate
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

Certification Summary

Client: Quantum Environmental & Engineering
 Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-1
 SDG: 68081935

Laboratory: TestAmerica Savannah

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		0399-01	02-28-13
A2LA	ISO/IEC 17025		399.01	02-28-13
Alabama	State Program	4	41450	08-15-12
Alaska (UST)	State Program	10	UST-104	06-19-13
Arkansas DEQ	State Program	6	88-0692	02-01-13
California	NELAC	9	3217CA	07-31-13
Colorado	State Program	8	N/A	12-31-12
Connecticut	State Program	1	PH-0161	03-31-13
Florida	NELAC	4	E87052	06-30-13
GA Dept. of Agriculture	State Program	4	N/A	12-31-12
Georgia	State Program	4	N/A	06-30-13
Georgia	State Program	4	803	06-30-13
Guam	State Program	9	09-005r	04-17-13
Hawaii	State Program	9	N/A	06-30-13
Illinois	NELAC	5	200022	11-30-12
Indiana	State Program	5	N/A	06-30-13
Iowa	State Program	7	353	07-01-13
Kentucky	State Program	4	90084	12-31-12
Kentucky (UST)	State Program	4	18	02-28-13
Louisiana	NELAC	6	30690	06-30-13
Louisiana	NELAC	6	LA100015	12-31-12
Maine	State Program	1	GA00006	08-16-14
Maryland	State Program	3	250	12-31-12
Massachusetts	State Program	1	M-GA006	06-30-13
Michigan	State Program	5	9925	06-30-13
Mississippi	State Program	4	N/A	06-30-13
Montana	State Program	8	CERT0081	12-31-12
Nebraska	State Program	7	TestAmerica-Savannah	06-30-13
New Jersey	NELAC	2	GA769	06-30-13
New Mexico	State Program	6	N/A	06-30-13
New York	NELAC	2	10842	04-01-13
North Carolina DENR	State Program	4	269	12-31-13
North Carolina DHHS	State Program	4	13701	07-31-13
Oklahoma	State Program	6	9984	08-31-13
Pennsylvania	NELAC	3	68-00474	06-30-13
Puerto Rico	State Program	2	GA00006	01-01-13
Rhode Island	State Program	1	LAO00244	12-30-12
South Carolina	State Program	4	98001	06-30-13
Tennessee	State Program	4	TN02961	06-30-13
Texas	NELAC	6	T104704185-08-TX	11-30-12
USDA	Federal		SAV 3-04	04-07-14
Vermont	State Program	1	87052	11-16-12
Virginia	NELAC	3	460161	06-14-13
Washington	State Program	10	C1794	06-10-13
West Virginia	State Program	3	9950C	12-31-12
West Virginia DEP	State Program	3	94	06-30-13
Wisconsin	State Program	5	999819810	08-31-12
Wyoming	State Program	8	8TMS-Q	06-30-13

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

TestAmerica Job ID: 680-81935-2
TestAmerica Sample Delivery Group: 68081935
Client Project/Site: NSA Mid-South SWMU-65

For:
Quantum Environmental & Engineering
126 Dante Road
Knoxville, Tennessee 37918

Attn: Matt Teglas



Authorized for release by:
8/28/2012 11:05:35 AM

Lisa Harvey
Project Manager II
lisa.harvey@testamericainc.com

LINKS

Review your project
results through
Total Access

Have a Question?

 **Ask
The
Expert**

Visit us at:

www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Case Narrative

Client: Quantum Environmental & Engineering
Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-2
SDG: 68081935

Job ID: 680-81935-2

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: Quantum Environmental & Engineering

Project: NSA Mid-South SWMU-65

Report Number: 680-81935-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 08/10/2012; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 4.2 C.

SEMIVOLATILE PETROLEUM PRODUCTS (TN-EPH)

Samples 065DPT01 (680-81935-1), 065DPT02 (680-81935-2), 065DPT03 (680-81935-3) and Duplicate (680-81935-5) were analyzed for Semivolatile Petroleum Products in accordance with approved methodology. The samples were prepared on 08/21/2012 and analyzed on 08/22/2012.

Samples 065DPT02 (680-81935-4) and Duplicate (680-81935-6) were analyzed for Semivolatile Petroleum Products in accordance with approved methodology. The samples were prepared on 08/15/2012 and analyzed on 08/16/2012.

Surrogate recovery for the following sample(s) was outside control limits: 065DPT02 (680-81935-4), Duplicate (680-81935-6). Re-extraction and/or re-analysis was performed with concurring results. The re-analysis has been reported.

The method blank for preparation batch 12614 contained C12-C40 above the reporting limit (RL). There was insufficient sample to perform a re-extraction and/or re-analysis; therefore, the data have been reported.

Method(s) TN EPH: The laboratory control sample (LCS) and / or the laboratory control sample duplicate (LCSD) for batch 12604 exceeded control limits for the following analytes: C12-C40. LCSD was mistakenly not spiked.

C12-C40 was detected in method blank MB 490-12614/1-A at a level exceeding the reporting limit. If the associated sample reported a result above the MDL and/or RL, the result has been "B" flagged. Refer to the QC report for details.

Sample Summary

Client: Quantum Environmental & Engineering
Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-2
SDG: 68081935

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-81935-1	065DPT01	Solid	08/08/12 11:20	08/10/12 10:00
680-81935-2	065DPT02	Solid	08/08/12 12:15	08/10/12 10:00
680-81935-3	065DPT03	Solid	08/08/12 12:35	08/10/12 10:00
680-81935-4	065DPT02	Water	08/08/12 13:45	08/10/12 10:00
680-81935-5	Duplicate	Solid	08/08/12 00:00	08/10/12 10:00
680-81935-6	Duplicate	Water	08/08/12 00:00	08/10/12 10:00

Method Summary

Client: Quantum Environmental & Engineering
Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-2
SDG: 68081935

Method	Method Description	Protocol	Laboratory
TN EPH	Tennessee - Extractable Petroleum Hydrocarbons (GC)	TN-DHE	TAL NSH
Moisture	Percent Moisture	EPA	TAL SAV

Protocol References:

EPA = US Environmental Protection Agency

TN-DHE = "Laboratory Analysis Of Soil And Water Samples For Total Petroleum Hydrocarbons", Tennessee Department Of Health And Environment, January 3, 1992.

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Definitions/Glossary

Client: Quantum Environmental & Engineering
Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-2
SDG: 68081935

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.
X	Surrogate is outside control limits
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☆	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample Results

Client: Quantum Environmental & Engineering
 Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-2
 SDG: 68081935

Client Sample ID: 065DPT01

Date Collected: 08/08/12 11:20

Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-1

Matrix: Solid

Percent Solids: 78.2

Method: TN EPH - Tennessee - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
C12-C40	4100	J	5100	4000	ug/Kg	*	08/21/12 09:37	08/22/12 18:17	1
Surrogate	%Recovery	Qualifier	Limits						
<i>o</i> -Terphenyl (Surr)	66		50 - 150						
							Prepared	Analyzed	Dil Fac
							08/21/12 09:37	08/22/12 18:17	1

Client Sample ID: 065DPT02

Date Collected: 08/08/12 12:15

Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-2

Matrix: Solid

Percent Solids: 78.6

Method: TN EPH - Tennessee - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
C12-C40	4000	J	4900	3800	ug/Kg	*	08/21/12 09:37	08/22/12 18:33	1
Surrogate	%Recovery	Qualifier	Limits						
<i>o</i> -Terphenyl (Surr)	72		50 - 150						
							Prepared	Analyzed	Dil Fac
							08/21/12 09:37	08/22/12 18:33	1

Client Sample ID: 065DPT03

Date Collected: 08/08/12 12:35

Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-3

Matrix: Solid

Percent Solids: 76.6

Method: TN EPH - Tennessee - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
C12-C40	7400		5200	4000	ug/Kg	*	08/21/12 09:37	08/22/12 18:49	1
Surrogate	%Recovery	Qualifier	Limits						
<i>o</i> -Terphenyl (Surr)	70		50 - 150						
							Prepared	Analyzed	Dil Fac
							08/21/12 09:37	08/22/12 18:49	1

Client Sample ID: 065DPT02

Date Collected: 08/08/12 13:45

Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-4

Matrix: Water

Method: TN EPH - Tennessee - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
C12-C40	270	B	95	68	ug/L	*	08/15/12 12:08	08/16/12 17:01	1
Surrogate	%Recovery	Qualifier	Limits						
<i>o</i> -Terphenyl (Surr)	43	X	50 - 150						
							Prepared	Analyzed	Dil Fac
							08/15/12 12:08	08/16/12 17:01	1

Client Sample ID: Duplicate

Date Collected: 08/08/12 00:00

Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-5

Matrix: Solid

Percent Solids: 79.1

Method: TN EPH - Tennessee - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
C12-C40	3800	U	4900	3800	ug/Kg	*	08/21/12 09:37	08/22/12 16:06	1
Surrogate	%Recovery	Qualifier	Limits						
<i>o</i> -Terphenyl (Surr)	71		50 - 150						
							Prepared	Analyzed	Dil Fac
							08/21/12 09:37	08/22/12 16:06	1

Client Sample Results

Client: Quantum Environmental & Engineering
 Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-2
 SDG: 68081935

Client Sample ID: Duplicate

Lab Sample ID: 680-81935-6

Date Collected: 08/08/12 00:00

Matrix: Water

Date Received: 08/10/12 10:00

Method: TN EPH - Tennessee - Extractable Petroleum Hydrocarbons (GC)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
C12-C40	320	B	97	69	ug/L		08/15/12 12:08	08/16/12 17:18	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl (Surr)	21	X	50 - 150				08/15/12 12:08	08/16/12 17:18	1

QC Sample Results

Client: Quantum Environmental & Engineering
 Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-2
 SDG: 68081935

Method: TN EPH - Tennessee - Extractable Petroleum Hydrocarbons (GC)

Lab Sample ID: MB 490-12614/1-A
 Matrix: Water
 Analysis Batch: 12873

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 12614

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
C12-C40	103		100	71	ug/L		08/15/12 12:08	08/16/12 15:44	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl (Surr)	83		50 - 150	08/15/12 12:08	08/16/12 15:44	1

Lab Sample ID: LCS 490-12614/2-A
 Matrix: Water
 Analysis Batch: 12873

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 12614

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
C10-C28	1000	629		ug/L		63	50 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
<i>o</i> -Terphenyl (Surr)	81		50 - 150

Lab Sample ID: LCSD 490-12614/3-A
 Matrix: Water
 Analysis Batch: 12873

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 12614

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
C10-C28	1000	610		ug/L		61	50 - 150	3	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
<i>o</i> -Terphenyl (Surr)	81		50 - 150

Lab Sample ID: MB 490-13925/1-A
 Matrix: Solid
 Analysis Batch: 14349

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 13925

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
C12-C40	3100	U	4000	3100	ug/Kg		08/21/12 09:37	08/22/12 13:38	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl (Surr)	83		50 - 150	08/21/12 09:37	08/22/12 13:38	1

Lab Sample ID: LCS 490-13925/2-A
 Matrix: Solid
 Analysis Batch: 14349

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 13925

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
C10-C28	40000	27100		ug/Kg		68	50 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
<i>o</i> -Terphenyl (Surr)	77		50 - 150

QC Sample Results

Client: Quantum Environmental & Engineering
 Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-2
 SDG: 68081935

Method: TN EPH - Tennessee - Extractable Petroleum Hydrocarbons (GC) (Continued)

Lab Sample ID: LCSD 490-13925/3-A
 Matrix: Solid
 Analysis Batch: 14349

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 13925

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
							Limits	RPD		
C10-C28	40000	26200		ug/Kg		66	50 - 150	3	20	
		LCSD	LCSD							
Surrogate		%Recovery	Qualifier	Limits						
<i>o</i> -Terphenyl (Surr)		76		50 - 150						

Lab Sample ID: 680-81935-5 MSD
 Matrix: Solid
 Analysis Batch: 14349

Client Sample ID: Duplicate
 Prep Type: Total/NA
 Prep Batch: 13925

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
									Limits	RPD		
C10-C28	3800		50100	34600		ug/Kg	*	69	21 - 174	5	41	
C10-C28	3800		50100	34600		ug/Kg	*	69	21 - 174	5	41	
		MSD	MSD									
Surrogate		%Recovery	Qualifier	Limits								
<i>o</i> -Terphenyl (Surr)		74		50 - 150								
<i>o</i> -Terphenyl (Surr)		74		50 - 150								

Lab Sample ID: 680-81935-A-5-C MS
 Matrix: Solid
 Analysis Batch: 14349

Client Sample ID: 680-81935-A-5-C MS
 Prep Type: Total/NA
 Prep Batch: 13925

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
									Limits	RPD		
C10-C28	3800		48700	32900		ug/Kg	*	68	21 - 174			
C10-C28	3800		48700	32900		ug/Kg	*	68	21 - 174			
		MS	MS									
Surrogate		%Recovery	Qualifier	Limits								
<i>o</i> -Terphenyl (Surr)		77		50 - 150								
<i>o</i> -Terphenyl (Surr)		77		50 - 150								

QC Association Summary

Client: Quantum Environmental & Engineering
 Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-2
 SDG: 68081935

GC Semi VOA

Prep Batch: 12614

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-81935-4	065DPT02	Total/NA	Water	3510C	
680-81935-6	Duplicate	Total/NA	Water	3510C	
LCS 490-12614/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 490-12614/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	
MB 490-12614/1-A	Method Blank	Total/NA	Water	3510C	

Analysis Batch: 12873

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-81935-4	065DPT02	Total/NA	Water	TN EPH	12614
680-81935-6	Duplicate	Total/NA	Water	TN EPH	12614
LCS 490-12614/2-A	Lab Control Sample	Total/NA	Water	TN EPH	12614
LCSD 490-12614/3-A	Lab Control Sample Dup	Total/NA	Water	TN EPH	12614
MB 490-12614/1-A	Method Blank	Total/NA	Water	TN EPH	12614

Prep Batch: 13925

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-81935-1	065DPT01	Total/NA	Solid	3550B	
680-81935-2	065DPT02	Total/NA	Solid	3550B	
680-81935-3	065DPT03	Total/NA	Solid	3550B	
680-81935-5	Duplicate	Total/NA	Solid	3550B	
680-81935-5 MSD	Duplicate	Total/NA	Solid	3550B	
680-81935-A-5-C MS	680-81935-A-5-C MS	Total/NA	Solid	3550B	
LCS 490-13925/2-A	Lab Control Sample	Total/NA	Solid	3550B	
LCSD 490-13925/3-A	Lab Control Sample Dup	Total/NA	Solid	3550B	
MB 490-13925/1-A	Method Blank	Total/NA	Solid	3550B	

Analysis Batch: 14349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-81935-1	065DPT01	Total/NA	Solid	TN EPH	13925
680-81935-2	065DPT02	Total/NA	Solid	TN EPH	13925
680-81935-3	065DPT03	Total/NA	Solid	TN EPH	13925
680-81935-5	Duplicate	Total/NA	Solid	TN EPH	13925
680-81935-5 MSD	Duplicate	Total/NA	Solid	TN EPH	13925
680-81935-A-5-C MS	680-81935-A-5-C MS	Total/NA	Solid	TN EPH	13925
LCS 490-13925/2-A	Lab Control Sample	Total/NA	Solid	TN EPH	13925
LCSD 490-13925/3-A	Lab Control Sample Dup	Total/NA	Solid	TN EPH	13925
MB 490-13925/1-A	Method Blank	Total/NA	Solid	TN EPH	13925

General Chemistry

Analysis Batch: 246343

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-81935-1	065DPT01	Total/NA	Solid	Moisture	
680-81935-2	065DPT02	Total/NA	Solid	Moisture	
680-81935-3	065DPT03	Total/NA	Solid	Moisture	
680-81935-5	Duplicate	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Quantum Environmental & Engineering
 Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-2
 SDG: 68081935

Client Sample ID: 065DPT01

Date Collected: 08/08/12 11:20
 Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-1

Matrix: Solid
 Percent Solids: 78.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			13925	08/21/12 09:37	PA	TAL NSH
Total/NA	Analysis	TN EPH		1	14349	08/22/12 18:17	JL	TAL NSH
Total/NA	Analysis	Moisture		1	246343	08/10/12 16:53	FS	TAL SAV

Client Sample ID: 065DPT02

Date Collected: 08/08/12 12:15
 Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-2

Matrix: Solid
 Percent Solids: 78.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			13925	08/21/12 09:37	PA	TAL NSH
Total/NA	Analysis	TN EPH		1	14349	08/22/12 18:33	JL	TAL NSH
Total/NA	Analysis	Moisture		1	246343	08/10/12 16:53	FS	TAL SAV

Client Sample ID: 065DPT03

Date Collected: 08/08/12 12:35
 Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-3

Matrix: Solid
 Percent Solids: 76.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			13925	08/21/12 09:37	PA	TAL NSH
Total/NA	Analysis	TN EPH		1	14349	08/22/12 18:49	JL	TAL NSH
Total/NA	Analysis	Moisture		1	246343	08/10/12 16:53	FS	TAL SAV

Client Sample ID: 065DPT02

Date Collected: 08/08/12 13:45
 Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			12614	08/15/12 12:08	CH	TAL NSH
Total/NA	Analysis	TN EPH		1	12873	08/16/12 17:01	JF	TAL NSH

Client Sample ID: Duplicate

Date Collected: 08/08/12 00:00
 Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-5

Matrix: Solid
 Percent Solids: 79.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			13925	08/21/12 09:37	PA	TAL NSH
Total/NA	Analysis	TN EPH		1	14349	08/22/12 16:06	JL	TAL NSH
Total/NA	Analysis	Moisture		1	246343	08/10/12 16:53	FS	TAL SAV

Lab Chronicle

Client: Quantum Environmental & Engineering
Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-2
SDG: 68081935

Client Sample ID: Duplicate

Date Collected: 08/08/12 00:00
Date Received: 08/10/12 10:00

Lab Sample ID: 680-81935-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			12814	08/15/12 12:08	CH	TAL NSH
Total/NA	Analysis	TN EPH		1	12873	08/16/12 17:18	JF	TAL NSH

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177
TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

Alternate Laboratory Name/Location

Phone:
Fax:

PROJECT REFERENCE <i>NSA Mid-South SWMU-65</i>	PROJECT NO. <i>500903</i>	PROJECT LOCATION (STATE) <i>TN</i>	MATRIX TYPE	REQUIRED ANALYSIS										PAGE <i>1</i> OF <i>1</i>						
TAL (LAB) PROJECT MANAGER <i>Lisa Harvey</i>	P.O. NUMBER	CONTRACT NO.	COMPOSITE (C) OR GRAB (G) INDICATE AQUEOUS (WATER) SOLID OR SEMISOLID AIR NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	HCl	EPH - TN	STEX FREE / Memphis 82006	HCl	PRESERVATIVE											STANDARD REPORT DELIVERY <input checked="" type="checkbox"/>	DATE DUE _____
CLIENT (SITE) PM <i>Matt Teglas</i>	CLIENT PHONE <i>865-689-1395</i>	CLIENT FAX																	EXPEDITED REPORT DELIVERY (SURCHARGE) <input type="checkbox"/>	DATE DUE _____
CLIENT NAME <i>Quantum Environmental</i>	CLIENT E-MAIL <i>mteglas@qe2llc.com</i>																		NUMBER OF COOLERS SUBMITTED PER SHIPMENT:	
CLIENT ADDRESS <i>126 Dante Road, Knoxville, TN 37918</i>	COMPANY CONTRACTING THIS WORK (if applicable)																			

SAMPLE		SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	NUMBER OF CONTAINERS SUBMITTED										REMARKS		
DATE	TIME							1	2	3	4	5	6	7	8	9	10		11	12
8/8/12	1120	065 DPT 01	G	X				1	4											
8/8/12	1215	065 DPT 02	G	X				1	4											
8/8/12	1235	065 DPT 03	G	X				1	4											
8/8/12	1345	065 DPT 02	G	X				1	3											
8/8/12		Duplicate	G	X				1	4											
8/8/12		Duplicate	G	X				1	3											
8/8/12		Trip Blank		X					1											

RELINQUISHED BY: (SIGNATURE) <i>Michael Schwartz</i>	DATE <i>8/9/12</i>	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>George Kh</i>	DATE <i>8/10/12</i>	TIME <i>1000</i>	CUSTODY INTACT YES <input type="radio"/> NO <input type="radio"/>	CUSTODY SEAL NO.	SAVANNAH LOG NO. <i>680-81935</i>	LABORATORY REMARKS <i>4.20c</i>
---	------------------------	---------------------	---	------------------	--------------------------------------	------------------------------------

Login Sample Receipt Checklist

Client: Quantum Environmental & Engineering

Job Number: 680-81935-2

SDG Number: 68081935

Login Number: 81935

List Source: TestAmerica Savannah

List Number: 1

Creator: Conner, Keaton

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	False	Pre-printed labels said DI - client returned Sodium Bisulfate
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Quantum Environmental & Engineering

Job Number: 680-81935-2

SDG Number: 68081935

Login Number: 81935

List Source: TestAmerica Nashville

List Number: 1

List Creation: 08/14/12 03:58 PM

Creator: Gambill, Shane

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Quantum Environmental & Engineering

Job Number: 680-81935-2

SDG Number: 68081935

Login Number: 81935

List Source: TestAmerica Nashville

List Number: 2

List Creation: 08/14/12 03:59 PM

Creator: Gambill, Shane

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Certification Summary

Client: Quantum Environmental & Engineering
 Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-2
 SDG: 68081935

Laboratory: TestAmerica Savannah

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		0399-01	02-28-13
A2LA	ISO/IEC 17025		399.01	02-28-13
Alabama	State Program	4	41450	08-15-12
Alaska (UST)	State Program	10	UST-104	06-19-13
Arkansas DEQ	State Program	6	88-0692	02-01-13
California	NELAC	9	3217CA	07-31-13
Colorado	State Program	8	N/A	12-31-12
Connecticut	State Program	1	PH-0161	03-31-13
Florida	NELAC	4	E87052	06-30-13
GA Dept. of Agriculture	State Program	4	N/A	12-31-12
Georgia	State Program	4	N/A	06-30-13
Georgia	State Program	4	803	06-30-13
Guam	State Program	9	09-005r	04-17-13
Hawaii	State Program	9	N/A	06-30-13
Illinois	NELAC	5	200022	11-30-12
Indiana	State Program	5	N/A	06-30-13
Iowa	State Program	7	353	07-01-13
Kentucky	State Program	4	90084	12-31-12
Kentucky (UST)	State Program	4	18	02-28-13
Louisiana	NELAC	6	30690	06-30-13
Louisiana	NELAC	6	LA100015	12-31-12
Maine	State Program	1	GA00006	08-16-14
Maryland	State Program	3	250	12-31-12
Massachusetts	State Program	1	M-GA006	06-30-13
Michigan	State Program	5	9925	06-30-13
Mississippi	State Program	4	N/A	06-30-13
Montana	State Program	8	CERT0081	12-31-12
Nebraska	State Program	7	TestAmerica-Savannah	06-30-13
New Jersey	NELAC	2	GA769	06-30-13
New Mexico	State Program	6	N/A	06-30-13
New York	NELAC	2	10842	04-01-13
North Carolina DENR	State Program	4	269	12-31-13
North Carolina DHHS	State Program	4	13701	07-31-13
Oklahoma	State Program	6	9984	08-31-13
Pennsylvania	NELAC	3	68-00474	06-30-13
Puerto Rico	State Program	2	GA00006	01-01-13
Rhode Island	State Program	1	LAO00244	12-30-12
South Carolina	State Program	4	98001	06-30-13
Tennessee	State Program	4	TN02961	06-30-13
Texas	NELAC	6	T104704185-08-TX	11-30-12
USDA	Federal		SAV 3-04	04-07-14
Vermont	State Program	1	87052	11-16-12
Virginia	NELAC	3	460161	06-14-13
Washington	State Program	10	C1794	06-10-13
West Virginia	State Program	3	9950C	12-31-12
West Virginia DEP	State Program	3	94	06-30-13
Wisconsin	State Program	5	999819810	08-31-12
Wyoming	State Program	8	8TMS-Q	06-30-13

Laboratory: TestAmerica Nashville

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Certification Summary

Client: Quantum Environmental & Engineering
 Project/Site: NSA Mid-South SWMU-65

TestAmerica Job ID: 680-81935-2
 SDG: 68081935

Laboratory: TestAmerica Nashville (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report

Authority	Program	EPA Region	Certification ID	Expiration Date
	ACIL		393	10-30-12
A2LA	ISO/IEC 17025		0453.07	12-31-13
Alabama	State Program	4	41150	05-31-13
Alaska (UST)	State Program	10	UST-087	07-24-13
Arizona	State Program	9	AZ0473	05-05-13
Arkansas DEQ	State Program	6	88-0737	04-25-13
California	NELAC	9	1168CA	10-31-12
Canadian Assoc Lab Accred (CALA)	Canada		3744	03-08-14
Colorado	State Program	8	N/A	02-28-13
Connecticut	State Program	1	PH-0220	12-31-13
Florida	NELAC	4	E87358	06-30-13
Illinois	NELAC	5	200010	12-09-12
Iowa	State Program	7	131	05-01-14
Kansas	NELAC	7	E-10229	10-31-12
Kentucky	State Program	4	90038	12-31-12
Kentucky (UST)	State Program	4	19	09-15-13
Louisiana	NELAC	6	LA110014	12-31-12
Louisiana	NELAC	6	30613	06-30-13
Maryland	State Program	3	316	03-31-13
Massachusetts	State Program	1	M-TN032	06-30-13
Minnesota	NELAC	5	047-999-345	12-31-12
Mississippi	State Program	4	N/A	06-30-13
Montana (UST)	State Program	8	NA	01-01-15
Nevada	State Program	9	TN00032	09-30-12
New Hampshire	NELAC	1	2963	10-09-12
New Jersey	NELAC	2	TN965	06-30-13
New York	NELAC	2	11342	04-01-13
North Carolina DENR	State Program	4	387	12-31-12
North Dakota	State Program	8	R-146	06-30-13
Ohio VAP	State Program	5	CL0033	01-19-14
Oklahoma	State Program	6	9412	08-31-12
Oregon	NELAC	10	TN200001	04-30-13
Pennsylvania	NELAC	3	68-00585	06-30-13
Rhode Island	State Program	1	LAO00268	12-30-12
South Carolina	State Program	4	84009 (001)	02-28-13
South Carolina	State Program	4	84009 (002)	02-23-14
Tennessee	State Program	4	2008	02-23-14
Texas	NELAC	6	T104704077-09-TX	08-31-13
USDA	Federal		S-48469	11-02-13
Utah	NELAC	8	TAN	06-30-13
Virginia	NELAC	3	460152	06-14-13
Washington	State Program	10	C789	07-19-13
West Virginia DEP	State Program	3	219	02-28-13
Wisconsin	State Program	5	998020430	08-31-13
Wyoming (UST)	A2LA	8	453.07	12-31-13

Attachment D

TGD-017 Risk Analysis Report



**TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF UNDERGROUND STORAGE TANKS**

TECHNICAL GUIDANCE DOCUMENT - 017

EFFECTIVE DATE - September 1, 2006

Risk Analysis Report

Current Version 1.2, Previous Version(s) 1.1, 1.0

RBCL Report

Site Information and Data Input

1. Facility Name and ID#

NSA Mid-South SWMU-65

2. Ground Water Usage (must select one)

Drinking Water

Non-Drinking Water

3. Type of Petroleum Released

Gasoline

Diesel/Kerosene/Jet Fuel

Gasoline/Diesel/Kerosene/Jet Fuel

Used Oil

Aviation

Unknown

4. Pathway and Receptor Evaluation

Select applicable pathways and receptors

Pathway(s)	
On-site	Off-site
<input checked="" type="checkbox"/> Volatilization to Indoor Air	<input checked="" type="checkbox"/> Volatilization to Indoor Air
<input type="checkbox"/> Ground Water Ingestion	<input type="checkbox"/> Ground Water Ingestion

Receptor(s)		
	On-site	Off-site
Resident Child	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Resident Adult	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Commercial / Industrial Worker	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Surface Water	
Domestic Water Supply	<input type="checkbox"/>
Organisms Only	<input checked="" type="checkbox"/>

RBCL Report

5. Soil Analytical and Depth to Contamination Table:

A. Soil Data Table:

Sampling Date	Soil Samples					
	8/8/2012	8/8/2012	8/8/2012	8/8/2012		
Depth(ft.)	10.00	10.00	10.00	10.00		
Sample Location	065DPT01	065DPT02	065DPT03	Duplicate		
Chemicals of Concern	ppm	ppm	ppm	ppm	ppm	ppm
Benzene	<0.00059	<0.0030	<0.0010	<0.0010		
Toluene	<0.00059	<0.0030	<0.0010	<0.0010		
Ethylbenzene	<0.00077	<0.0039	<0.0013	<0.0014		
Xylenes (Total)	<0.00065	<0.0033	<0.0011	<0.0011		
MtBE	<0.0012	<0.0060	<0.0021	<0.0021		
Acenaphthene						
Acenaphthylene						
Anthracene						
Benzo(a)anthracene						
Benzo(a)pyrene						
Benzo(b)fluoranthene						
Benzo(g,h,i)perylene						
Benzo(k)fluoranthene						
Chrysene						
Dibenz(a,h)anthracene						
Fluoranthene						
Fluorene						
Indeno(1,2,3-c,d)pyrene						
Naphthalene	<0.00071	<0.0036	<0.0012	<0.0013		
Phenanthrene						
Pyrene						

B. Data Verification

Source for Soil Data	Date	Page Number/Table Name
TGD-017	Sept 2012	Table 1

RBCL Report

6. Ground Water Analytical Contamination Table:

A. Ground Water Data Table

Sampling Date	Monitoring Wells					
	8/8/2012	8/8/2012				
Sample Location	065DPT02	Duplicate				
Chemicals of Concern	ppm	ppm	ppm	ppm	ppm	ppm
Benzene	<0.00025	<0.0010				
Toluene	<0.00033	<0.0010				
Ethylbenzene	<0.00025	<0.0014				
Xylenes (Total)	<0.00075	<0.0011				
MtBE	<0.00050	<0.0021				
Acenaphthene						
Acenaphthylene						
Anthracene						
Benzo(a)anthracene						
Benzo(a)pyrene						
Benzo(b)fluoranthene						
Benzo(g,h,i)perylene						
Benzo(k)fluoranthene						
Chrysene						
Dibenz(a,h)anthracene						
Fluoranthene						
Fluorene						
Indeno(1,2,3-c,d)pyrene						
Naphthalene	<0.0010	<0.0013				
Phenanthrene						
Pyrene						

B. Data Verification

Source for Water Data	Date	Page Number/Table Name
TGD-017	Sept 2012	Table 2

RBCL Report

7. Applicable RBCLs and COCs

CHEMICALS OF CONCERN	SUB-SURFACE SOIL		Below RBCLs Y/N
	Indoor Inhalation of Vapor Emissions Comm./Industrial Worker (ppm)	Soil Maximum Concentration (ppm)	
Benzene	3.80E+00	<0.003	Yes
Toluene	6.22E+01	<0.003	Yes
Ethylbenzene	1.31E+03	<0.0039	Yes
Xylenes (Total)	8.80E+01	<0.0033	Yes
MtBE	3.64E+02	<0.006	Yes
Acenaphthene	N/A		N/A
Acenaphthylene	N/A		N/A
Anthracene	N/A		N/A
Benzo(a)anthracene	N/A		N/A
Benzo(a)pyrene	N/A		N/A
Benzo(b)fluoranthene	N/A		N/A
Benzo(g,h,i)perylene	N/A		N/A
Benzo(k)fluoranthene	N/A		N/A
Chrysene	N/A		N/A
Dibenz(a,h)anthracene	N/A		N/A
Fluoranthene	N/A		N/A
Fluorene	N/A		N/A
Indeno(1,2,3-c,d)pyrene	N/A		N/A
Naphthalene	4.03E+02	<0.0036	Yes
Phenanthrene	N/A		N/A
Pyrene	N/A		N/A

RBCL Report

CHEMICALS OF CONCERN	GROUND WATER		Below RBCLs Y/N
	Indoor Inhalation of Vapor Emissions Comm./Industrial Worker (ppm)	Water Maximum Concentration (ppm)	
Benzene	3.75E-01	<0.001	Yes
Toluene	3.96E+01	<0.001	Yes
Ethylbenzene	9.48E+01	<0.0014	Yes
Xylenes (Total)	3.27E+01	<0.0011	Yes
MtBE	1.61E+03	<0.0021	Yes
Acenaphthene	N/A		N/A
Acenaphthylene	N/A		N/A
Anthracene	N/A		N/A
Benzo(a)anthracene	N/A		N/A
Benzo(a)pyrene	N/A		N/A
Benzo(b)fluoranthene	N/A		N/A
Benzo(g,h,i)perylene	N/A		N/A
Benzo(k)fluoranthene	N/A		N/A
Chrysene	N/A		N/A
Dibenz(a,h)anthracene	N/A		N/A
Fluoranthene	N/A		N/A
Fluorene	N/A		N/A
Indeno(1,2,3-c,d)pyrene	N/A		N/A
Naphthalene	3.10E+01	<0.0013	Yes
Phenanthrene	N/A		N/A
Pyrene	N/A		N/A

On-Site SSCL Report

1. Soil Type (Select only one soil type each for the Vadose Zone and Capillary Fringe)

On-site Soil Type (s) (May select 1 or more)	Vadose Zone (Select one)		Capillary Fringe (Select one)		Source For Soil Types	
	<input checked="" type="checkbox"/> Clay <input type="checkbox"/> Sand <input type="checkbox"/> Silt <input type="checkbox"/> Bedrock	<input checked="" type="checkbox"/> Clay <input type="checkbox"/> Sand <input checked="" type="checkbox"/> Silt <input type="checkbox"/> Bedrock	<input checked="" type="checkbox"/> Clay <input type="checkbox"/> Sand <input checked="" type="checkbox"/> Silt <input type="checkbox"/> Bedrock	<input checked="" type="checkbox"/> Clay <input type="checkbox"/> Sand <input checked="" type="checkbox"/> Silt <input type="checkbox"/> Bedrock	Boring logs	
					Date	Boring Log #
				8/8/2012	065DPT01	

2. Site Specific Parameter (Input the depth to ground water and documentation in white cells)

Source For Ground Water Depth	Date	Page Number/Table Name
Boring log 065DPT02	8/8/2012	TGD-17 appendix

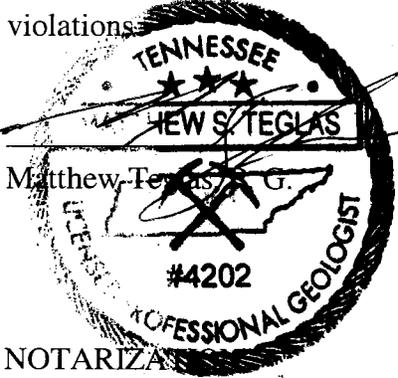
Parameter	Measured Value
Depth to Ground Water (feet)	11.18

Attachment E

Professional Signature Page

SIGNATURE PAGE/QE²

I certify under penalty of law, including but not limited to penalties for perjury, that the information contained in this report and on any attachments, is true, accurate and complete to the best of my knowledge, information, and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for intentional violations.



Matthew Teglas

4202
TN Reg. Number

10-3-12
Date

NOTARIZATION

STATE OF TENNESSEE

Sworn to and subscribed before me by Matthew Teglas
on this date 10-3-12

My commission expires 11-30-15

Kristi S. Reagan
Notary Public (Print Name)

Kristi S. Reagan
Signature

